

# HYDRAULIC LUBE FILTRATION

## Products Catalog



High Pressure Filters

Element Technology

Medium Pressure  
Filters

Low Pressure  
Filters

Suction Filters

Manifold Cartridge Kits & Filters

Custom Solutions



## About Schroeder Industries

Schroeder Industries is a family company of 76 years which manufactures, designs, and markets a complete range of Advanced Fluid Conditioning Solutions®. Headquartered in Leetsdale, PA, we are in the heart of manufacturing country.

Schroeder Brothers Corporation was founded after Bill Schroeder returned from WW2. Bill wrote a letter to his brother Jack, a young engineer, describing an opportunity to distribute an important new product to the mining industry. In the letter, Bill explained that he believed they could build a business around this technology.

Schroeder Brothers Corporation grew rapidly, adding additional mining products and eventually becoming the largest mining equipment distributor in the Appalachia's. Over time, Schroeder began to manufacture hydraulic systems and components for the mines. The systems came first, and with the systems came issues related to contamination.

To this day, underground mining is still one of the most difficult hydraulic system operating environments. With his system experience, Bill realized that there was a critical need for high efficiency filtration. Together with his brothers Jack & Reed, Bill pioneered the development of many hydraulic and lubrication filtration concepts, products, and standards that are still the benchmarks of performance today. Time continued to march on, and Schroeder's business continued to evolve further into a manufacturing company.

Today, Schroeder Industries serves almost every market where high efficiency fluid filtration is required. Our Advanced Fluid Conditioning Solutions® are forged through the real-world experience gained in the world's toughest operating environments.

## Mission Statement

Our success is a product of customer-driven innovation and technically advanced fluid conditioning products and services, in which our people deliver value to our stakeholders, communities and environment.

## Quality Policy

Continuous improvement in our business to ensure a quality product, shipped on time, without compromise.

## Vision

To be the global leader of engineered, fluid conditioning products & services.

## Core Values (F.I.L.T.E.R.S)

- **Fueled:** By the success of our customer.
- **Ingenuity:** Engineered solutions for a complex environment.
- **Lead by example:** Better every day through continuous improvement.
- **Together:** We excel through clear communication & teamwork.
- **Empowering:** Employees to provide exceptional quality & service.
- **Responsiveness:** With determination, we make it happen.
- **Safety:** We pride ourselves on a safe, fun & family-oriented work environment.

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The information contained in the catalog (including, but not limited to, specifications, configurations, drawings, photographs, dimensions and packaging) is for descriptive purposes only. Any description of the products contained in this catalog is for the sole purpose of identifying the products and shall not be deemed a warranty that the products shall conform to such description. No representation or warranty is made concerning the information contained in this catalog as to the accuracy or completeness of such information. Schroeder Industries LLC reserves the right to make changes to the products included in this catalog without notice. A copy of our warranty terms and other conditions of sale are available upon request. A placed order constitutes acceptance of Schroeder's terms and conditions.

Failure, improper selection or improper use of the products and/or systems described herein or related items can cause death, personal injury and property damage.

This catalog and other documentation from Schroeder Industries provides product information for consideration by users possessing technical expertise.

It is important that the user analyze all aspects of the specific application and review the current product information in the current catalog. Due to the variety of operating conditions and applications for these products, the user is solely responsible for making the final product selection and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, design, availability and pricing are subject to change at any time without notice.





A close-up, low-angle shot of a woven mesh filter, likely made of metal or plastic. The mesh is composed of many small, interlocking loops, creating a dense, textured surface. The lighting is dramatic, with strong highlights and shadows that emphasize the three-dimensional quality of the weave. In the upper right corner, a circular opening is visible, showing a bright, out-of-focus light source. The overall composition is abstract and focuses on the intricate pattern of the filter.

Section 1:

# *PRINCIPLES OF FILTRATION*

# Contamination Control Fundamentals

## Why Filter?

**Over 70% of all hydraulic system failures are caused by contaminants in the fluid.** Even when no immediate failures occur, high contamination levels can sharply decrease operating efficiency.

Contamination is defined as any substance which is foreign to a fluid system and damaging to its performance. Contamination can exist as a gas, liquid or solid. Solid contamination, generally referred to as particulate contamination, comes in all sizes and shapes and is normally abrasive.

High contaminant levels accelerate component wear and decrease service life. Worn components, in turn, contribute to inefficient system operation, seizure of parts, higher fluid temperatures, leakage, and loss of control. All of these phenomena are the result of direct mechanical action between the contaminants and the system components. Contamination can also act as a catalyst to accelerate oxidation of the fluid and spur the chemical breakdown of its constituents.

Filtering a system's fluid can remove many of these contaminants and extend the life of system components.

## How a System Gets Contaminated

Contaminants come from two basic sources: they either enter the system from outside (ingestion) or are generated from within (ingression). New systems often have contaminants left behind from manufacturing and assembly operations. Unless they are filtered as they enter the circuit, both the original fluid and make-up fluid are likely to contain more contaminants than the system can tolerate. Most systems ingest contaminants through such components as inefficient air breathers and worn cylinder rod seals during normal operation. Airborne contaminants are likely to gain admittance during routine servicing or maintenance. Also, friction and heat can produce internally generated contamination.

**Figure 1. Typical Examples of Wear Due to Contamination**



Vanes for Vane Pump



Relief Valve Piston



Vane Pump Cam Ring

## Size of Solid Contaminants

The size of solid particle contaminants is commonly measured in micrometers,  $\mu\text{m}$ , (usually referred to as microns,  $\mu$ ). A micron is a unit of length equal to one millionth of a meter or about .00004 inch. Particles that are less than 40  $\mu$  cannot be detected by the human eye.

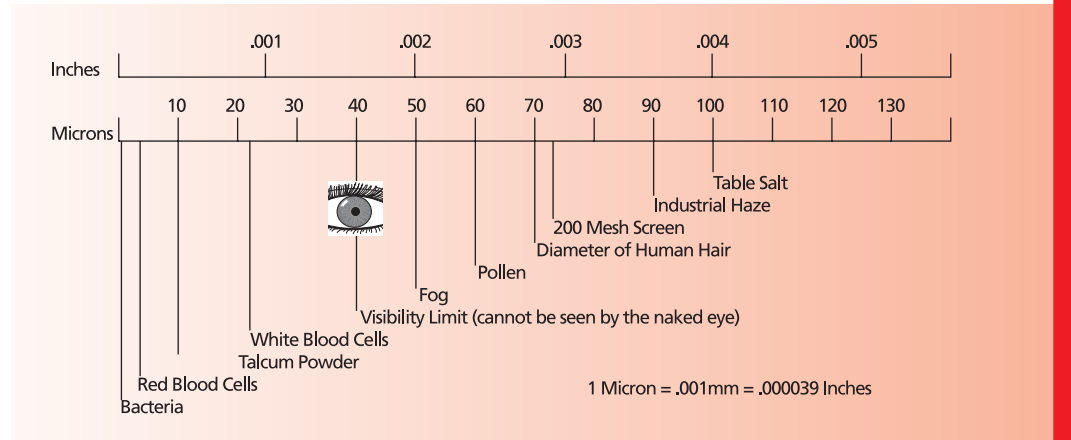
| Substance           | Microns   | Inches   |
|---------------------|-----------|----------|
| Grain of table salt | 100 $\mu$ | .0039"   |
| Human hair          | 70 $\mu$  | .0027"   |
| Talcum powder       | 10 $\mu$  | .00039"  |
| Bacteria (average)  | 2 $\mu$   | .000078" |

Figure 2 shows the sizes of some common substances. To gain some perspective, consider the diameters of the following substances:

A *micron rating* identifies the size of particles that a particular filtration media will remove. For instance, Schroeder Z10 filter media is rated at  $\beta_{10} \geq 1000$ , meaning that it can remove particles of 10  $\mu$  and greater at 99.9% efficiency.



**Figure 2. Sizes of Known Particles in Inches and Microns**



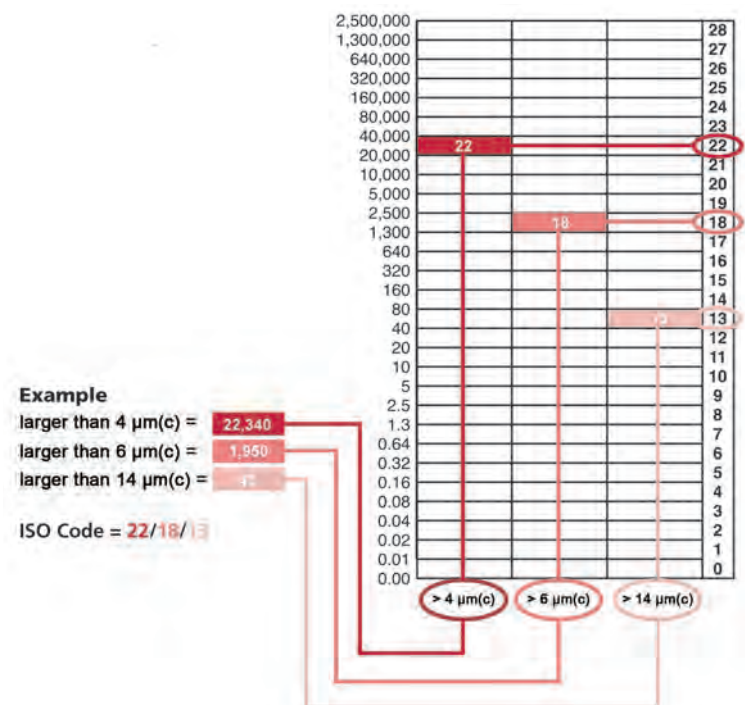
In hydraulic fluid power systems, power is transmitted and contained through a liquid under pressure within an enclosed circuit. These fluids all contain a certain amount of solid particle contaminants. The amount of particulate contaminants present in a hydraulic or lubrication system's fluid is commonly referred to as its cleanliness level.

## How Contaminants are Measured and Reported

ISO 4406:1999 provides guidelines for defining the level of contamination present in a fluid sample in terms of an ISO rating. It uses three scale numbers, representing the number of particles greater than or equal to 4  $\mu(c)$ , 6  $\mu(c)$ , and 14  $\mu(c)$  in size per 1 mL of sample fluid.

Figure 3 shows the graph used to plot particle counts per ISO 4406:1999.

## ISO Scale Numbers—ISO 4406:1999



- Reproducibility below scale number 8 is affected by the actual number of particles counted in the fluid sample. Raw counts should be more than 20 particles. If this is not possible, then refer to bullet below.
- When the raw data in one of the size ranges results in a particle count of fewer than 20 particles, the scale number for that size range shall be labeled with the symbol  $\geq$ .

EXAMPLE: A code of 14/12/ $\geq 7$  signifies that there are more than 80 and up to and including 160 particles equal to or larger than 4  $\mu(c)$  per mL and more than 20 and up to and including 40 particles equal to or larger than 6  $\mu(c)$  per mL. The third part of the code,  $\geq 7$  indicates that there are more than 0.64 and up to and including 1.3 particles equal to or larger than 14  $\mu(c)$  per mL. The  $\geq$  symbol indicates that less than 20 particles were counted, which lowers statistical confidence. Because of this lower confidence, the 14  $\mu(c)$  part of the code could actually be higher than 7, thus the presence of the  $\geq$  symbol.

## Cleanliness Levels—ISO 4406:1999

The following example shown in Figure 4 illustrates the cleanliness level, or ISO rating, of a typical petroleum-based fluid sample using the ISO Code 4406:1999 rating system.

The fluid sample contains a certain amount of solid particle contaminants, in various shapes and sizes.

Since the number of 4  $\mu(c)$  particles falls between 2500 and 5000, the first ISO range number is 19 using Table 1. The number of 6  $\mu(c)$  particles falls between 160 and 320 particles, so the second ISO range number is 15. The number of 14  $\mu(c)$  particles falls between 10 and 20, making the third range number 11. Therefore, the cleanliness level for the fluid sample shown in Figure 4 per ISO 4406:1999 is 19/15/11.

**Figure 4. Determining the ISO Rating of a Fluid Using ISO 4406:1999**

| Sample Fluid (1 mL) |                     | If Particle Count Falls Between | Scale Number is* |
|---------------------|---------------------|---------------------------------|------------------|
| Particle Size       | Number of Particles | 2500-5000                       | 19               |
| $\geq 4 \mu(c)$     | 3,000               | <b>160-320</b>                  | <b>15</b>        |
| $\geq 5 \mu(c)$     | 700                 | <b>10-20</b>                    | <b>11</b>        |
| $\geq 6 \mu(c)$     | 200                 |                                 |                  |
| $\geq 10 \mu(c)$    |                     |                                 |                  |
| $\geq 14 \mu(c)$    | 15                  |                                 |                  |
| $\geq 15 \mu(c)$    |                     |                                 |                  |
| $\geq 20 \mu(c)$    | 10                  |                                 |                  |
| $\geq 30 \mu(c)$    | 3                   |                                 |                  |

\*Source: ISO 4406:1999

The Sample Fluid is ISO 19/15/11.

\*Note: When the raw data in one of the size ranges results in a particle count of fewer than 20 particles the range code for that number for that size range shall be preceded with a  $\geq$  sign.

## Required Cleanliness Levels

The pressure of a hydraulic system provides the starting point for determining the cleanliness level required for efficient operation. Table 2 provides guidelines for recommended cleanliness levels based on pressure. In general, Schroeder defines pressure as follows:

Low pressure: 0-500 psi (0-35 bar)  
 Medium pressure: 500-2999 psi (35-206 bar)  
 High pressure: 3000 psi (206 bar) and above

A second consideration is the type of components present in the hydraulic system. The amount of contamination that any given component can tolerate is a function of many factors, such as clearance between moving parts, frequency and speed of operation, operating pressure, and materials of construction. Tolerances for contamination range from that of low pressure gear pumps, which normally will give satisfactory performance with cleanliness levels typically found in new fluid (ISO 19/17/14), to the more stringent requirements for servo-control valves, which need oil that is eight times cleaner (ISO 16/14/11).

Today, many fluid power component manufacturers are providing cleanliness level (ISO code) recommendations for their components. They are often listed in the manufacturer's component product catalog or can be obtained by contacting the manufacturer directly. Their recommendations may be expressed in desired filter element ratings or in system cleanliness levels (ISO codes or other codes). Some typically recommended cleanliness levels for components are provided in Table 3.

This table is based on data shown in various hydraulic component manufacturer's catalogs. Contact Schroeder for recommendations for your specific system needs.

**Table 2. Cleanliness Level Guidelines Based on Pressure**

| System Type                                        | Recommended Cleanliness Levels (ISO Code) |
|----------------------------------------------------|-------------------------------------------|
| Low pressure – manual control (0 - 500 psi)        | 20/18/15 or better                        |
| Low to medium pressure – electrohydraulic controls | 19/17/14 or better                        |
| High pressure – servo controlled                   | 16/14/11 or better                        |

**Table 3. Recommended Cleanliness Levels (ISO Codes) for Fluid Power Components**

| Components                     | Cleanliness Levels (ISO Code)<br>4 $\mu(c)$ /6 $\mu(c)$ /14 $\mu(c)$ |
|--------------------------------|----------------------------------------------------------------------|
| Hydraulic Servo Valves         | 15/13/11                                                             |
| Hydraulic Proportional Valves  | 16/14/12                                                             |
| Hydraulic Variable Piston Pump | 16/14/12                                                             |
| Hydraulic Fixed Piston Pump    | 17/15/12                                                             |
| Hydraulic Variable Vane Pump   | 17/15/12                                                             |
| Hydraulic Fixed Vane Pump      | 18/16/13                                                             |
| Hydraulic Fixed Gear Pump      | 18/16/13                                                             |
| Ball Bearings                  | 15/13/11                                                             |
| Roller Bearings                | 16/14/12                                                             |
| Journal Bearings (>400 rpm)    | 17/15/13                                                             |
| Journal Bearings (<400 rpm)    | 18/16/14                                                             |
| Gearboxes                      | 18/16/13                                                             |
| Hydrostatic Transmissions      | 16/14/11                                                             |
| Pumps                          | 16/14/12                                                             |



**Table 4. Cleanliness Class Comparisons**

| ISO<br>4409:1999 | SAE AS<br>4059:E | NAS<br>1638-01/196 | MIL-STD<br>1246A 1967 | ACFTD Gravimetric Level-mg/L |
|------------------|------------------|--------------------|-----------------------|------------------------------|
| 24               |                  |                    |                       |                              |
| 23/20/18         |                  | 12                 |                       |                              |
| 22/19/17         | 12               | 11                 |                       |                              |
| 21/18/16         | 11               | 10                 |                       |                              |
| 20/17/15         | 10               | 9                  | 300                   |                              |
| 19/16/14         | 9                | 8                  |                       |                              |
| 18/15/13         | 8                | 7                  | 200                   | 1                            |
| 17/14/12         | 7                | 6                  |                       |                              |
| 16/13/11         | 6                | 5                  |                       |                              |
| 15/12/10         | 5                | 4                  |                       | 0.1                          |
| 14/11/9          | 4                | 3                  | 100                   |                              |
| 13/10/8          | 3                | 2                  |                       |                              |
| 12/9/7           | 2                | 1                  |                       | 0.01                         |
| 11/8/6           | 1                | 0                  |                       |                              |
| 10/7/5           | 0                | 00                 |                       |                              |
| 8/7/4            | 00               |                    | 50                    |                              |
| 5/3/01           |                  |                    | 25                    |                              |
| 2/0/0            |                  |                    | 5                     |                              |

## Required Cleanliness Levels

(continued)

For your convenience, Table 4 provides a cross reference showing the approximate correlation between several different scales or levels used in the marketplace to quantify contamination.

The table shows the code levels used for military standards 1638 and 1246A, as well as the SAE AS4059 standard.

## What does ISO Code Cleanliness mean to **YOUR** Hydraulic System?



# Element Technical Data Fundamentals

## Performance Specifications/ Filtration Ratings

Schroeder filter elements meet a wide variety of requirements in today's workplace, from the simplest to the most sophisticated fluid power systems. Established industry standards enable users to select the optimal filter element for any application.

When evaluating the performance of hydraulic filter elements, the most important parameters to consider are:

- (a) efficiency
- (b) beta stability
- (c) dirt holding capacity
- (d) pressure drop vs. flow

(a) *Efficiency*, or filtration ratio, expressed by "Beta" ( $\beta$ ) relates to how well an element removes contamination from fluid. Higher efficiency translates to cleaner oil, better protection of system components, less down time for repair, and lower maintenance costs.

(b) *Beta stability* is defined as an element's ability to maintain its expected efficiency as differential pressure across the element increases. Differential pressure will increase as contamination is trapped, or with an increase in fluid viscosity (cold start). Beta stability is important because it relates to how well an element will perform in service over time. When the element is loaded with contamination, or when it is subjected to cold starts, will it perform as well as it did when new?

(c) *Dirt holding capacity (DHC)* is the amount of contamination that an element can trap before it reaches a predetermined "terminal" differential pressure. Dirt holding capacity is related to element life. Since elements with higher DHC need changed less frequently, DHC has a direct impact on the overall cost of operation. When selecting filter elements, it is beneficial to compare DHC of elements with similar particle removal efficiency.

(d) *Pressure Drop vs. Flow* is simply a measure of resistance to fluid flow in a system. It is important to consider the initial pressure drop ( $\Delta p$ ) across the filter element (and housing). Ideally, a filter element should be sized so that the initial pressure drop across the clean element (plus the filter housing drop) is less than half the bypass valve setting in the filter housing.

When selecting a filter element for your system, be sure to consider all four of these performance criteria. If an element is strong in three areas, but weak in another, it may not be the right choice. At every level of filtration, Schroeder's Excellement® Z-Media® elements offer the best combination of high efficiency, high beta stability, high dirt holding capacity, and low pressure drop.

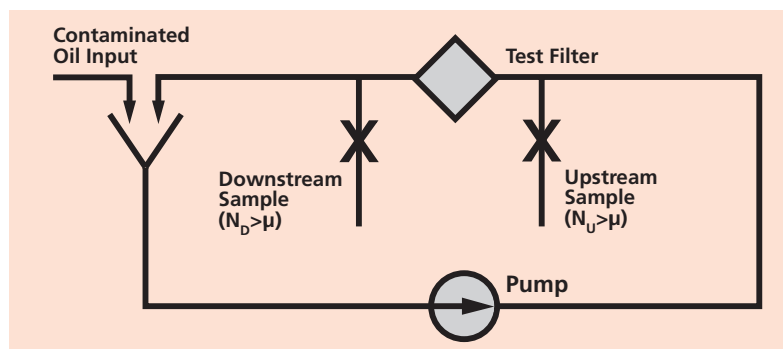
## The Multi-pass Test

Filter element efficiency ratings, beta stability, and capacities are determined by conducting a multi-pass test under controlled laboratory conditions. This is a standard industry test with procedure published by the International Standards Organization (ISO 16889). The multi-pass test yields reproducible test data for appraising the filtration performance of a filter element including its particle removal efficiency. These test results enable the user to: (1) compare the quality and specifications offered by various filter element suppliers and (2) select the proper filter element to obtain the optimal contamination control level for any particular system.

Hydraulic fluid (Mil-H-5606) is circulated through a system containing the filter element to be tested. Additional fluid contaminated with ISO MTD Test Dust is introduced upstream of the element being tested. Fluid samples are then extracted upstream and downstream of the test element.

Dirt holding capacity is defined as the total grams of ISO MTD Test Dust added to the system to bring the test filter element to terminal pressure drop.

Figure 5. Multi-Pass Test Schematic





The filtration ratio (more commonly referred to as the Beta ratio) is, in fact, a measure of the particle capture efficiency of a filter element.

Per ISO 16889 
$$\beta_{x(c)} = \frac{\text{number of particles upstream @ } x(c) \text{ microns}}{\text{number of particles downstream @ } x(c) \text{ microns}}$$

where  $x(c)$  is a specified particle size.

$$\text{Example: } \beta_{10} = \frac{400}{100} = 4$$

This particle capture efficiency can also be expressed as a percent by subtracting the number 1 from the Beta (in this case 4) and multiplying it by 100:

$$\text{Efficiency}_{10} = \frac{(4 - 1)}{4} \times 100 = 75\%$$

The example is read as "Beta ten is equal to four, where 400 particles, 10 microns and larger, were counted upstream of the test filter (before) and 100 particles, 10 microns and larger, were counted downstream of the test filter (after)."

The filter element tested was 75% efficient in removing particles 10 microns and larger.

## Efficiency / Filtration Ratio (Beta)

To calculate a filter element's percent efficiency, subtract 1 from the Beta, divide that answer by the Beta, then multiply by 100.

### Example

|         |                            |
|---------|----------------------------|
| Step 1: | $\beta_{10(c)} > +1000$    |
| Step 2: | $1000 - 1 = 999$           |
| Step 3: | $999 \div 1000 = .999\%$   |
| Step 4: | $.999 \times 100 = 99.9\%$ |

## Efficiency

According to ISO 16889, each filter manufacturer can test a given filter element at a variety of flow rates and terminal pressure drop ratings that fit the application, system configuration and filter element size. Results may vary depending on the configuration of the filter element tested and the test conditions.

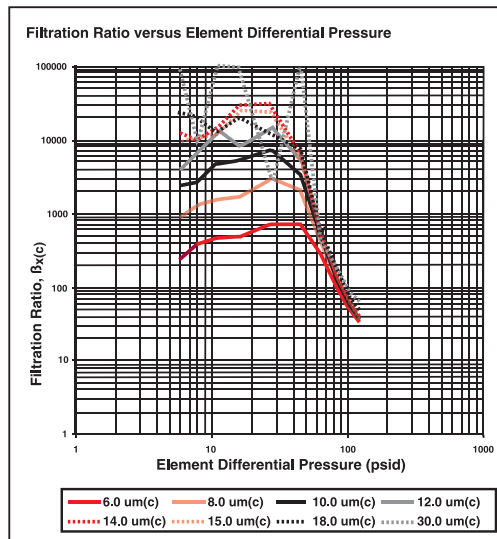
Currently, there is no accepted ISO, ANSI, or NFPA standard regarding absolute ratings. Some filter manufacturers use  $\beta_{x(c)} \geq 75$  (98.7% efficiency) for their absolute rating. Others use  $\beta_{x(c)} \geq 100$  (99.0% efficiency),  $\beta_{x(c)} \geq 200$  (99.5% efficiency), or  $\beta_{x(c)} \geq 1000$  (99.9% efficiency). Performance of Schroeder elements is shown in the Element Performance Chart for each filter housing in Sections 3 through 8 at a number of filtration ratios to allow the user to evaluate our performance against that of our competitors.

## Filtration Ratio

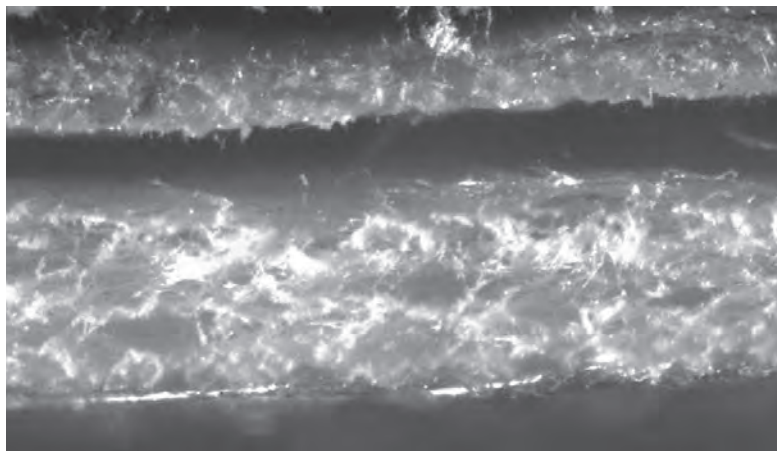
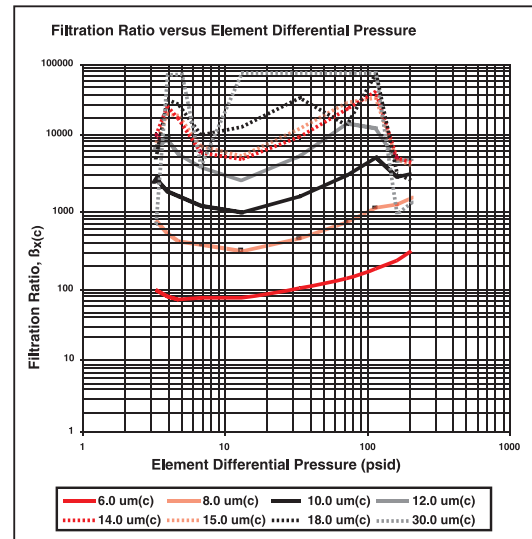
## Beta Stability

*Beta stability* is defined as an element's ability to maintain its expected efficiency as differential pressure increases. Differential pressure will increase as contamination is trapped, or with an increase in fluid viscosity. An element's beta stability is displayed in the Filtration Ratio (Beta) vs. Differential Pressure curve from a typical multi-pass test report per ISO 16889. Good beta stability is demonstrated by consistent or improving efficiency as differential pressure builds across the element. Conversely, decreasing efficiency as pressure builds is a sign of poor stability. Poor beta stability is an indication of a filter element's structural deficiency. It is a sign of potential problems in a "real world" situation. Contamination, "cold starts", and flow surges can all create high differential pressure across an element that may cause efficiency to decrease if it is not structurally sound. In cases of "cold starts" and flow surges, the media structure in elements with poor stability can become permanently damaged in milliseconds. The result is lower efficiency and decreased system protection without warning to the operator. High beta stability results when an element is well-built with quality, durable materials. Strength of filter media and reinforcement layers, impervious seaming, proper end cap adhesion, and a rigidly supported structure all play a part in an element's beta stability. Excellement® media structure typically maintains beta stability over 100 psi.

**Example of poor beta stability – efficiency declines as differential pressure increases.**



**Example of Excellement® beta stability – efficiency does not decline as differential pressure increases.**



**Microscopic Photo - 50x magnification**

**Top: competitor's media      Bottom: Schroeder Excellement® Z-Media®**  
**Thin, weak media cannot withstand differential pressure as well as Z-Media®.**

This photo shows a comparison of our competitors filtering layer media versus our Schroeder Excellement® Z-Media®. Schroeder Z-Media® offers better depth filtration to withstand a higher differential pressure and entrap more contaminant / particles.

Dirt holding capacity (DHC) is the amount of contaminant (expressed in grams) the element will retain before it goes into bypass. All other factors being equal, an element's DHC generally indicates how long the element will operate until it needs to be replaced. The element's life span is directly related to the cost of operating the filter.

Dirt holding capacity, sometimes referred to as "retained capacity," is a very important and often overlooked factor in selecting the right element for the application. The dirt holding capacity of an element is measured in grams of ISO medium test dust contaminant as determined from the multi-pass test (ISO 16889). When selecting filter elements, it is beneficial to compare the dirt holding capacities of elements with similar particle removal efficiencies.

## Dirt Holding Capacity

When sizing a filter, it is important to consider the initial differential pressure ( $\Delta P$ ) across the element and the housing. Elements offering a lower pressure drop at a high Beta efficiency are better than elements with a high  $\Delta P$  at the same efficiency. At every level of filtration, Schroeder's Excellement® Z-Media® elements offer the best combination of high efficiency, high stability, high dirt holding capacity, and low pressure drop. The pressure drop of an element is determined by testing according to ISO 3968.

## Pressure Drop

The collapse (crush) rating of a filter (determined by ISO 2941/ANSI B93.25) represents the differential pressure across the element that causes it to collapse. The collapse rating of a filter element installed in a filter housing, with a bypass valve, should be at least two times greater than the full flow bypass valve pressure drop. The collapse rating for filter elements used in filter housings with no bypass valve should be at least the same as the setting of the system relief valve upstream of the high-crush element. When a high collapse element becomes clogged with contamination all functions downstream of the filter will become inoperative.

## Collapse Rating



# Element Media Selection Considerations

## The Right Media for the Right Application= Job Matched Filtration

### Filtration Application Guidelines

Selecting the proper Schroeder media for your application is easy if you follow these simple guidelines.

**Step 1.** Remember that the key to cost effective contamination control is to maintain the system's cleanliness at the tolerance level of the system's most sensitive component. So, the first step is to identify the most sensitive component.

**Step 2.** Determine the desired cleanliness level (ISO Code) for that component by referring to Figure 3 on page 13 or by contacting the component manufacturer directly.

**Step 3.** Identify the Schroeder filter medium referencing Table 6 that will meet or exceed the desired cleanliness level.

**Step 4.** Remember to regularly check the effectiveness of the selected media through the use of contamination monitoring equipment.

**Table 6. Schroeder Element Media Recommendations**

| Desired Cleanliness Levels (ISO Code) | Schroeder Media |
|---------------------------------------|-----------------|
| 20/18/15-19/17/14                     | Z25             |
| 19/17/14-18/16/13                     | Z10             |
| 18/16/13-15/13/10                     | Z5              |
| 15/13/10-14/12/9                      | Z3              |
| 14/12/9-13/11/8                       | Z1              |

### Effect of Ingression

Filter element life varies with the dirt holding capacity of the element and the amount of dirt introduced into the circuit. The rate of this ingress in combination with the desired cleanliness level should be considered when selecting the media to be used for a particular application. Table 7 provides recommendations accordingly.

The amount of dirt introduced can vary from day to day and hour to hour, generally making it difficult to predict when an element will become fully loaded. This is why we recommend specifying a Dirt Alarm®.

Schroeder-designed Dirt Alarms® provide a vital measure of protection for your system by indicating when the filter element needs to be changed or cleaned. Schroeder filters are available with visual, electrical and electrical-visual combination Dirt Alarms®. These indicators may also be purchased as separate items. For more information on Dirt Alarms®, see Appendix A.

**Table 7. Recommended Schroeder Media to Achieve Desired Cleanliness Levels Based on Ingression Level**

| Desired Cleanliness Levels (ISO Code) | Ingression Rate | Schroeder Element Medium |
|---------------------------------------|-----------------|--------------------------|
| 20/18/15                              | High            | Z25                      |
| 19/17/14                              | Low             | Z25                      |
| 19/17/14                              | High            | Z10                      |
| 18/16/13                              | Low             | Z10                      |
| 18/16/13                              | High            | Z5                       |
| 15/13/10                              | Low             | Z5                       |
| 15/13/10                              | High            | Z3                       |
| 14/12/9                               | Low             | Z3                       |
| 14/12/9                               | High            | Z1                       |
| 13/12/9                               | Low             | Z1                       |

To obtain the desired cleanliness level (ISO Code) using the suggested Schroeder filter medium, it is recommended that a minimum of one-third of the total fluid volume in the system pass through the filter per minute. If fluid is filtered at a higher flow rate, better results may be achieved. If only a lesser flow rate can be filtered, a more efficient media will be required.

Systems operating in a clean environment, with efficient air-breather filters and effective cylinder rod wiper seals, may achieve the desired results at a lower turnover rate. Systems operating in a severe environment or under minimal maintenance conditions should have a higher turnover. Turnover must be considered when selecting the location of the system's filter(s).

Since the pressure drop versus flow data contained in our filter catalog is for fluids with a viscosity of 150 SUS (32.0 cSt), and a specific gravity of .86, we are often asked how to size a filter with a viscosity other than 150 SUS (32.0 cSt) or a specific gravity other than .86. In those instances where the viscosity or specific gravity is significantly higher, it may be necessary to use a larger element. To make this determination, we need to calculate the life of the element, using the following equation:

$$EL = RC - (H + E)$$

Where:

EL = Element Life (expressed in psi)

H = Housing pressure drop

RC = Relief valve cracking pressure

E = Element pressure drop

1. The housing pressure drop can be read directly from the graph. This value is not affected by viscosity or the number of elements in the housing, since housing flow is turbulent.
2. The element pressure drop is directly proportional to viscosity, since element flow is laminar.

Schroeder's "rule of thumb" for element life, as calculated from the above equation, is to work towards a differential pressure drop that is no more than half (50%) of the bypass setting.

The interval between element change outs can be extended by increasing the total filter element area. Many Schroeder filters can be furnished with one, two, or three elements or with larger elements. By selecting a filter with additional element area, the time between servicing can be extended for little additional cost.

Schroeder filters have been used successfully to filter a variety of fire resistant fluids for over five decades. Filtering these fluids requires careful attention to filter selection and application. Your fluid supplier should be the final source of information when using these fluids. The supplier should be consulted for recommendations regarding limits of operating conditions, material and seal compatibility, and other requirements peculiar to the fluid being used within the conditions specified by the fluid supplier.

### High Water Content Fluids

High water content fluids consist primarily of two types: water and soluble mineral base oil, and water with soluble synthetic oil. The oil proportion is usually 5%, but may vary from as low as 2% to as high as 10%.

Standard Schroeder Z1, Z3, Z5, Z10, and Z25 elements are compatible with both types of high water content fluids. Filter sizing should be the same as with 150 SUS (32 cSt) mineral based hydraulic oil. Z1 and Z3 elements may be used; however, element change outs will be more frequent. Some special factors that need to be considered in the selection process include the following:

- All aluminum in the filter housing should be anodized. This can be accomplished by using the "W" adder as shown in the filter model number selection chart.
- When using 95/5 fluids, check with fluid supplier for compatibility with aluminum.
- Buna N or Viton® seals are recommended.
- The high specific gravity and low vapor pressure of these fluids create a potential for severe cavitation problems. Suction filters or strainers should not be used. The Schroeder Magnetic Separator (SKB), page 327, with its low pressure drop, is recommended for pump protection from ferrous or large particles.

### Invert Emulsions

Invert emulsions consist of a mixture of petroleum based oil and water. Typical proportions are 60% oil to 40% water. Standard Schroeder filters with Z10 and Z25 media elements are satisfactory for use with these fluids. Filters should be sized conservatively for invert emulsions. These fluids are non-Newtonian—their viscosity is a function of shear. We recommend up to twice the normal element area be used as space and other conditions permit.

## Amount of Fluid Filtered

## Sizing a Filter Element

## Fluid Compatibility: Fire Resistant Fluids

## Fluid Compatibility: Fire Resistant Fluids (cont.)

Some special factors that need to be considered in the selection process include the following:

- Potential exists for cavitation problems with invert emulsions similar to high water based fluids. SKB suction separators are recommended for pump protection from ferrous or large particles.
- Buna N or Viton® seals are recommended.

### Water Glycols

Water glycols consist of a mixture of water, glycol, and various additives. Schroeder Z3, Z5, Z10 and Z25 elements are satisfactory for use with these fluids. Some special factors that need to be considered in the selection process include the following:

- All aluminum in the filter should be anodized. This can be accomplished by using the "W" option as shown in the filter model number selection chart.
- Potential exists for cavitation problems with water glycols similar to high water based fluids. SKB suction separators are recommended for pump protection from ferrous or large particles.
- Buna N or Viton® seals are recommended.

### Phosphate Esters

Phosphate esters are classified as synthetic fluids. All Schroeder filters and elements can be used with most of these fluids. Sizing should be the same as with mineral based oils of similar viscosity. Some special factors that need to be considered in the selection process include the following:

- For phosphate esters, specify EPR seals (designated by "H" seal option) for all elements. As a general rule, all Z-Media® (synthetic) is compatible and 10 and 25 µ only E media (cellulose) with phosphate esters.
- For Skydrol®, only 3, 5, 10, and 25 µ Z-Media® (synthetic) should be used, and "H.5" should be designated as the seal option. The "H.5" seal designation calls for EPR seals and stainless steel wire mesh in element construction.

### Pressure Drop Correction for Specific Gravity

Pressure drop curves shown in this catalog are predicated on the use of petroleum based fluid with a specific gravity of 0.86. The various fire resistant fluids discussed in this section have a specific gravity higher than 0.86, which affects pressure drop. Use the following formula to compute the correct pressure drop for the higher specific gravity:

$$\text{Corrected pressure drop} = \frac{\text{Fluid specific gravity}}{0.86} \times \text{Catalog pressure drop}$$

Viton® is a registered trademark of DuPont Dow Elastomers.

Skydrol® is a registered trademark of Solutia Inc.



# 7 Steps to Selecting a Filter

In the new era, systems are getting smaller and more compact, causing flow rates in hydraulic reservoirs to decrease, as well as a tighter space for overall reservoir components.

Without a properly sized filter and element in your machine's reservoir, operators can experience occurrences such as: foaming, cavitation, shortened fluid lifespan, poor response time from hydraulic valves, increase in replacement filter elements, and more valve and pump repairs.

In this section, we will walk you through our **7 Steps for Choosing the Correct Filtration**.

**Example Parameters:** A piston pump and servo system with 20 gpm (76 L/min) pump flow, 30 gpm (144 L/min) return flow, 4000 psi (275 bar) system pressure, and a total system volume of 60 gallons (227 liters), with a non-pressurized reservoir. The fluid is 150 SUS.

## Seven Steps to Selecting a Filter



### Step 1: "Operating Pressures"

Determine the operating pressure of the system you are looking to apply filtration to.



### Step 2: "Flow Rate"

Look at all of the characteristics of the fluid that is needing the filtration, including the flow rate.



### Step 3: "MVP Components"

Determine what component is the most critical to your operation.



### Step 4: "ISO Level"

Reference our chart on page 13 to determine the recommended ISO level of your MVP component (determined in Step 3). This will help you select what media type will help you achieve your cleanliness goal.



### Step 5: "Fluid Type"

Ask yourself "what type of fluid is being filtered?" and "what is my main contamination type?" (Reference contamination types on page 16).



### Step 6: "Temperature"

Determine the highest and lowest temperatures of your operating fluid.



### Step 7: "Piecing It All Together"

Based on the previous steps, you can now take the information learned, calculate overall system differential pressure, and determine the right choice for filtration.

By following these simple steps, we can guarantee you will see cleaner fluid. In addition, all major hydraulic components should be working to expectation, last longer, and ultimately save you and your company money.

# Filter Selection Considerations

## Filter Location

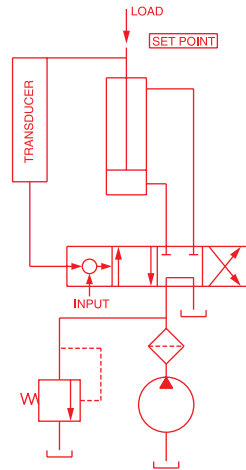


Figure 6(a). Pressure Filtration Circuit

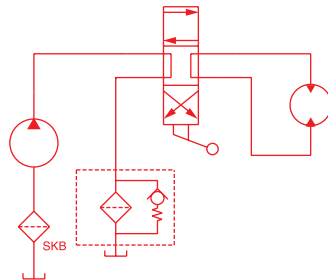


Figure 6(b). Return Line Filtration Circuit

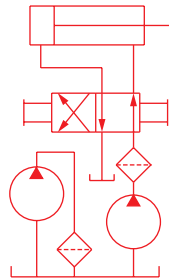


Figure 6(c). Re-circulating Filtration Circuit

**Pressure filtration:** Pressure filters usually produce the lowest system contamination levels to assure clean fluid for sensitive high-pressure components and provide protection of downstream components in the event of catastrophic failures. Systems with high intermittent return line flows may need only be sized to match the output of the pump, where the return line may require a much larger filter for the higher intermittent flows. See Figure 6(a).

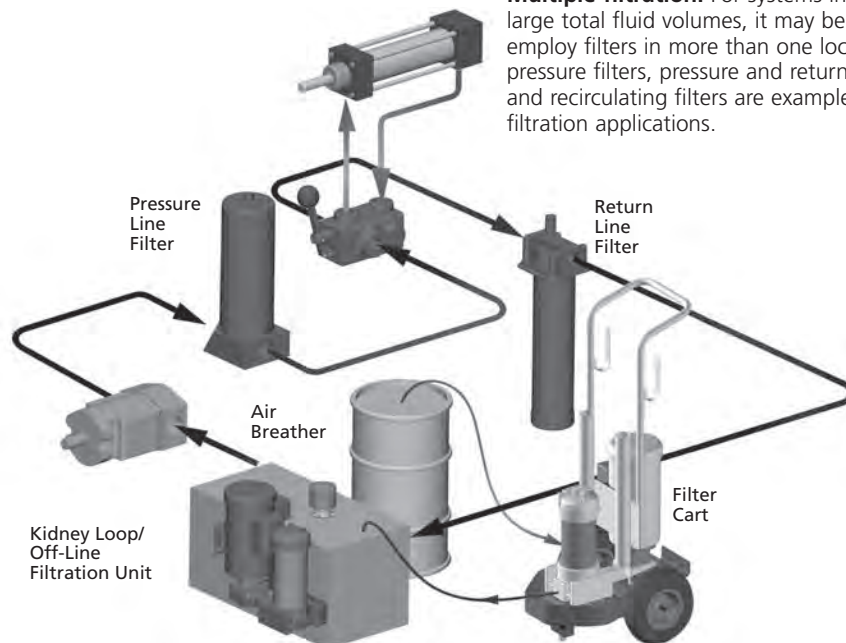
**Return line filtration:** Return line filters are often considered when initial cost is a major concern. A special concern in applying return line filters is sizing for flow. Large rod cylinders and other components can cause return line flows to be much greater than pump output. Return lines can have substantial pressure surges, which need to be taken into consideration when selecting filters and their locations. See Figure 6(b).

**Re-circulating filtration:** While usually not recommended as a system's primary filtration (due to the high cost of obtaining adequate flow rates) re-circulating, or off-line, filtration is often used to supplement on-line filters when adequate turnover cannot be obtained with the latter. It is also often an ideal location in which to use a water removal filter. Off-line re-circulating filters normally do not provide adequate turnover flow rates to handle the high contamination loading occasioned by component failures and/or inefficient maintenance practices. See Figure 6(c).

**Suction filtration:** Micronic suction filters are not recommended for open-loop circuits. The cavitation these filters can cause significantly outweighs any advantage obtained by attempting to clean the fluid in this part of the system. SKB magnetic suction separators are recommended, as they will protect the pump from large and ferrous particles, without the risks of cavitation.

**Breather filtration:** Efficient filter breathers are required for effective contamination control on non-pressurized reservoirs and should complement the liquid filtration component.

**Multiple filtration:** For systems incorporating large total fluid volumes, it may be necessary to employ filters in more than one location. Multiple pressure filters, pressure and return line filters, and recirculating filters are examples of multiple filtration applications.



Parameters: A piston pump and servo system with 20 gpm (76 L/min) pump flow, 30 gpm (114 L/min) return flow, 4000 psi (275 bar) system pressure, and total system volume of 60 gallons (227 liters), with a non-pressurized reservoir.

**Step 1 example.** The servo valve is the system's most sensitive component. Referring to Figures 2 and 3 (page 13), you can see that a cleanliness level (ISO Code) of 16/14/11 or better is recommended for a high pressure system containing a servo valve.

**Step 2 example.** Table 8 recommends the Schroeder Z5 element media or finer to achieve a cleanliness level of 16/14/11.

**Step 3 example.** A combination of a pressure filter upstream of the servo valve and a return line filter would provide cost effective contamination control for servo systems.

**Step 4 example.** Filter model DF40, shown on page 65, is selected as the appropriate pressure filter because of its 30 gpm and 4000 psi capacities. A look at the Element Selection Chart for the DF40 located on page 67 verifies that the CZ5 element will handle 20 gpm, and the appropriate model number is DF40-1CZ5.

The ZT in-tank return line filter is selected for the 30 gpm return flow and the Z5 media. As shown in the model selection chart for the ZT on page 266, the proper model number to meet the specifications is ZT-8ZZ5.

**Step 5 example.** Using our Accessories Catalog; L-4329, select the ABF-3/10-S breather/strainer.

**Step 6 example.** Implement the appropriate manufacturing, assembly and maintenance contamination control procedures.

**Step 7 example.** Check start-up and ongoing system cleanliness (ISO Codes). Schroeder offers oil sampling kits that can be forwarded to a lab for particle counting and determination of cleanliness levels.

**Table 8. Schroeder Element Media Recommendations**

| Desired Cleanliness Levels<br>(ISO Code) | Schroeder<br>Media |
|------------------------------------------|--------------------|
| 20/18/15-19/17/14                        | Z25                |
| 19/17/14-18/16/13                        | Z10                |
| 18/16/13-15/13/10                        | Z5                 |
| 15/13/10-14/12/9                         | Z3                 |
| 14/12/9-13/11/8                          | Z1                 |

## Rated Fatigue Pressure

The application of individual filters should take fatigue ratings into consideration when there are flow or pressure variations creating pressure peaks and shock loads.

Typical hydraulic systems that use highly repetitive operations include plastic injection molding machines, die-cast machines, and forging and stamping press systems. In these and other similar applications, rated fatigue pressure should be considered when selecting a filter.

It has been common practice in the fluid power industry to establish component ratings for maximum operating pressure based on the minimum yield pressure, which is usually one third of the minimum yield pressure for higher-pressure components and one fourth of the minimum yield pressure for lower-pressure components. This rating method has proved satisfactory for many years, but it does not directly address the subject of fatigue.

The National Fluid Power Association has introduced a method (NFPA T2.6.1) for verifying the fatigue pressure rating of the pressure-containing envelope of a metal fluid power component. In this method, components are cycled from 0 to test pressure for 1 million cycles (10 million cycles is optional). The rated fatigue pressure (RFP) is verified by testing. We establish the desired RFP from design, then we calculate the cycle testing pressure (CTP), and then conduct tests at CTP per 1,000,000 cycles.

The T2.6.1 Pressure Rating document is available from the National Fluid Power Association, 3333 N. Mayfair Road, Milwaukee, WI 53222-3219.

**Table 9. Fatigue Pressure Ratings**

| Model      | Rated Fatigue Pressure psi (bar) | Model              | Rated Fatigue Pressure psi (bar) |
|------------|----------------------------------|--------------------|----------------------------------|
| NF30/NFS30 | 2400 (165)                       | LW60               | 5800 (400)                       |
| YF30       | 1800 (125)                       | ZT                 | 90 (6)                           |
| DF40/CF40  | 1800 (125)                       | RT/LRT             | 90 (6)                           |
| PF40       | 2500 (173)                       | QT/IRF             | 100 (7)                          |
| LC50       | 5000 (350)                       | KF3                | 290 (20)                         |
| CFX30      | 1800 (125)                       | KL3                | 300 (20)                         |
| RF60       | 3500 (240)                       | TF1                | 270 (19)                         |
| CF60       | 4000 (276)                       | LF1/MLF1           | 250 (17)                         |
| VF60       | 3300 (230)                       | RLD                | 350 (24)                         |
| KF30       | 2500 (170)                       | RLT                | 750 (52)                         |
| TF50       | 3500 (240)                       | GH                 | 725 (50)                         |
| KF50/KC50  | 3500 (240)                       | GHHF               | 725 (50)                         |
| KFH50      | 3500 (240)                       | SRLT               | 750 (52)                         |
| MKF50      | 3500 (240)                       | KF8/QF5/3QF5       | 500 (35)                         |
| KC65       | 5500 (380)                       | K9/2K9/3K9         | 750 (52)                         |
| NOF50-760  | 4000 (275)                       | QF15/QLF15/SSQLF15 | 800 (55)                         |
| FOF60/PF40 | 4000 (275)                       | HS60               | 6000 (415)                       |
| CTF60      | 6000 (415)                       |                    |                                  |

Contact Factory For: RF550, FOF30, NOF30-05, MTA, MTB, KT, BFT, PAF1, MAF1, MF2, RTI, KTK, LTK, QF5 and QFD5 Fatigue Ratings. All water service and GeoSeal® models match their standard model for Rated Fatigue Pressure.

## Manifold Mounting

In some filtration applications, it is advantageous to have the inlet and outlet ports mount directly onto a block without any hydraulic hose in between. Schroeder offers several such manifold-mounted filter models, including NF530, YF30, PF40, LC50 DF40, RF550, KF30, TF50, KF50, KC50, and KFH50. Drawings for these porting options are labelled "Optional Subplate Porting" and are included on respective catalog pages.

## No-Element Indicator

The No-Element Indicator is a unique, patented signaling device designed to alert the user if no filter element is present in the housing. This virtually eliminates any possible confusion on the part of the user that the filter contains an element and is functioning in a normal manner.

The tamper proof system utilizes a patented internal valve design. If the element is not installed in the housing, the valve restricts flow, causing a high pressure drop. The high pressure drop, in turn, causes the Schroeder Dirt Alarm® to indicate that the element is not installed in the housing.

The only way to deactivate the indicator is to install the element in the housing.

This feature is available in the following filter models: RT, TF1, KF3, CF40, DF40, CF60, TF50, KF30, KF50, KC50, KC65, and MKF50 that are equipped with a Schroeder Dirt Alarm®. No-element indicator is not available when the indicator is placed in the cap in base-ported filters.



# Ordering Information

For each filter that is shown in Sections 3, 4, 5, and 6 there is a Model Number Selection Chart. This chart lists all the configurations and accessories available for that specific filter.

Model numbers for all Schroeder filters are formulated by listing the appropriate codes, from left to right, according to the designated boxes shown in the chart. The letter or letter/number combination identifies the basic filter series. For instance, as shown in Figure 7, KF303KZ10PD5 designates a KF30 high-pressure, base-ported filter with three synthetic 3 µ elements, Buna N seals, 1½" NPTF porting, and a visual cartridge Dirt Alarm®.

**Figure 7. Model Number Selection**

## How to Build a Valid Model Number for a Schroeder KF30:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| KF30  |       |       |       |       |       |       |       |       |        |

**Example:** NOTE: Only boxes 8 and 10 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| KF30  | 3K    | Z     | 10    |       |       | P     |       | D5    |        |

= KF303KZ10PD5

| BOX 1                                                                                                                                                                                                                                                        | BOX 2                                                                                                                                         | BOX 3                                                                                                                                                                                                                                                                                                  | BOX 4                                                                                                                                                                                                                                                                                                              | BOX 5                                                                                          | BOX 6                                                                                         | BOX 7                                                                                                                                                                                               | BOX 8                                                                                                                                                                                                                                                                                                                   | BOX 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | BOX 10                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Filter Series</b><br><b>KF30</b><br><b>KFN30</b><br>(Non-bypassing: requires ZX high collapse elements)<br><b>GKF30</b><br>(GeoSeal®)<br><b>KF50</b><br><b>KFN50</b><br>(Non-bypassing: requires ZX high collapse elements)<br><b>GKF50</b><br>(GeoSeal®) | <b>Number &amp; Size of Elements</b><br>1 = K, KK, 27K<br>2 = K<br>3 = K<br><b>GeoSeal® Options</b><br>1 = KG, KKG, 27KKG<br>2 = KG<br>3 = KG | <b>Media Type</b><br>Omit = E Media (Cellulose)<br>AS = Anti-Stat Media (synthetic)<br>Z = Excellement® Z-Media® (synthetic)<br>ZW = Aqua-Excellement® ZW Media<br>ZX = Excellement® Z-Media® (High Collapse centertube)<br>W = W Media (water removal)<br>M = Media (reusable metal mesh) N size only | <b>Micron Rating</b><br>1 = 1 Micron (Z, ZW, ZX media)<br>3 = 3 Micron (AS,E, Z, ZW, ZX media)<br>5 = 5 Micron (AS, Z, ZW, ZX media)<br>10 = 10 Micron (AS,E,M, Z, ZW, ZX media)<br>25 = 25 Micron (E, M, Z, ZW, ZX media)<br>60 = 60 Micron (M media)<br>150 = 150 Micron (M media)<br>260 = 260 Micron (M media) | <b>Seal Material</b><br>Omit = Buna N<br>V = Viton®<br>H = EPR<br>H.5 = Skydrol® compatibility | <b>Magnet Option</b><br>Omit = None<br>M = Magnet inserts (not available w/ indicator in cap) | <b>Porting</b><br>P = 1 ½" NPTF<br>P32 = 2" NPTF<br>S = SAE-24<br>F = 1 ½" SAE 4-bolt flange Code 61<br>F32 = 2" SAE 4-bolt flange Code 61(KF30) *KF30 Only<br>O = Subplate<br>B24 = ISO 228 G-1 ½" | <b>Options</b><br>Omit = None<br>X = Blocked bypass<br>50 = 50 psi bypass setting<br>L = Two ¼" NPTF inlet & outlet female test ports<br>U = Series 1215 ¾ UNF Schroeder Check Test Point installed in cap (upstream)<br>UU = Series 1215 ¾ UNF Schroeder Check Test Point installed in block (upstream and downstream) | <b>Dirt Alarm® Options</b><br>Omit = None<br>D = Pointer<br>D5 = Visual pop-up<br>D5C = D5 in cap<br>D9 = All stainless D5<br>D8 = Visual w/ thermal lockout<br>D8C = D8 in cap<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T<br>MS = Cam operated switch w/ ½" conduit female connection<br>MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT | <b>Additional Options</b><br>Omit = None<br>N = No-Element Indicator (not available w/ KFN30/KFN50/GKF30/GKF50 or housings w/ indicator in cap)<br>G509 = Dirt Alarm and drain opposite standard<br>G588 = Electric Switch and drain opposite standard |

## Model Number Selection

### NOTES:

- Box 2. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length.
- Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.
- Box 7. For options F & F32, bolt depth .75" (19 mm).
- For option O, O-rings included; hardware not included.
- Box 8. X and 50 options are not available with KFN30.
- Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.
- Box 10. Options N, G509 and G588 are not available with KFN30. N option should be used in conjunction with dirt alarm.

Element Selection Chart for Flow Requirements

For each filter shown in the catalog, there is an element selection chart to determine the correct element to be used for a particular flow requirement (see Figure 8 for an example). The chart uses a petroleum-based hydraulic fluid with 150 SUS viscosity.

The process involves the following: Determine the working pressure of the system (3000 psi in this example) and the maximum flow (75 gpm). Then select the media (Z-Media®), and the micron filtration (3 μ). For example, the filter selected, following the above steps, is a KF30-3KZ3-P-D5. If the system pressure is 5000 psi and all other parameters are the same, then the model number would be KF50-3KZ3-P-D5.

Figure 8. KF30 Housing and Element Selection Chart for Flow Requirement

|                       | Element |          | Element selections are predicated on the use of 150 SUS (32 cSt) petroleum based fluid and a 40 psi (2.8 bar) bypass valve. |     |      |      |           |           |       |      |  |
|-----------------------|---------|----------|-----------------------------------------------------------------------------------------------------------------------------|-----|------|------|-----------|-----------|-------|------|--|
| Pressure              | Series  | Part No. |                                                                                                                             |     |      |      |           |           |       |      |  |
| To 3000 psi (210 bar) | E Media | K3       | 1K3                                                                                                                         | 2K3 |      | 3K3  | See MFK50 |           |       |      |  |
|                       |         | K10      | 1K10                                                                                                                        |     | 2K10 | 3K10 | 3K10      | See MFK50 |       |      |  |
|                       |         | K25      | 1K25                                                                                                                        |     |      |      | 2K25      |           |       |      |  |
|                       | Z Media | KZ1      | 1KZ1                                                                                                                        |     |      | 2KZ1 |           |           |       | 3KZ1 |  |
|                       |         | KZ3      | 1KZ3                                                                                                                        |     |      |      |           | 2KZ3      |       | 3KZ3 |  |
|                       |         | KZ5      | 1KZ5                                                                                                                        |     |      |      |           |           | 2KZ5  | 3KZ5 |  |
|                       |         | KZ10     | 1KZ10                                                                                                                       |     |      |      |           |           | 2KZ10 | 3K10 |  |
|                       |         | KZ25     | 2KZ25                                                                                                                       |     |      |      |           |           | 2KZ25 |      |  |
|                       |         | Flow     | gpm                                                                                                                         | 0   | 25   | 50   | 75        | 100       | 125   | 150  |  |
| (L/min)               | 0       |          | 100                                                                                                                         | 200 | 300  | 400  | 500       | 600       |       |      |  |

Shown above are the elements most commonly used in this housing. **requires 2" porting (P32)**

Correcting for Viscosity and Specific Gravity

Element pressure drop information in this publication is based on the viscosity (150 SUS or 32 cSt) and specific gravity (0.86) of the most commonly used hydraulic oils.

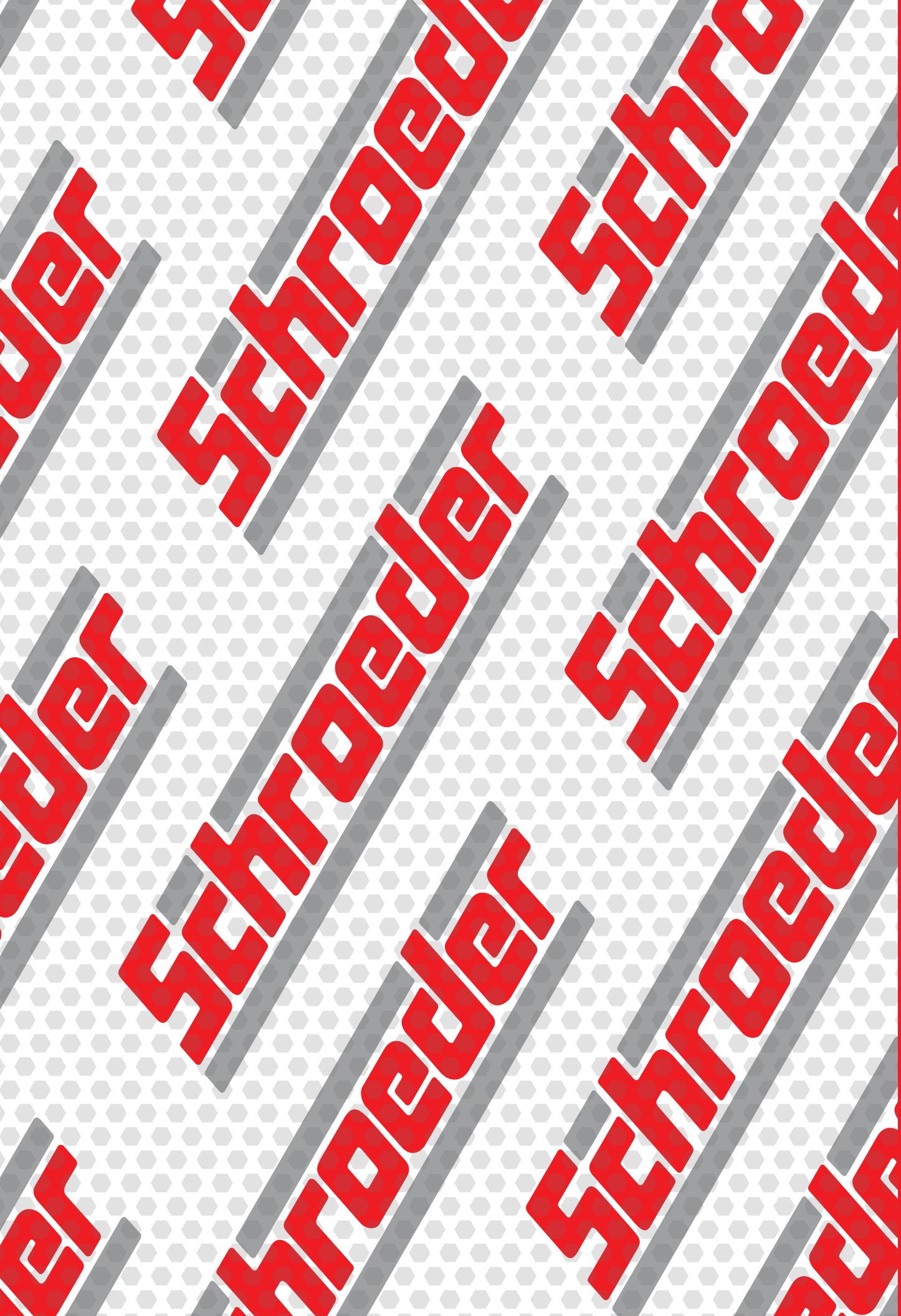
If the viscosity or specific gravity of the fluid you are designing for is different from these, use the following formulas to obtain the correct ΔP values.

Corrected element ΔP = ΔP from curve x  $\frac{\text{SUS viscosity}}{150}$  x  $\frac{\text{specific gravity}}{0.86}$

OR

Corrected element ΔP = ΔP from curve x  $\frac{\text{cST viscosity}}{32}$  x  $\frac{\text{specific gravity}}{0.86}$

# ***FILTER ELEMENTS***



# Schroeder Element Media

## Z-Media® Elements (Synthetic)



**Schroeder**  
ORIGINAL ELEMENTS

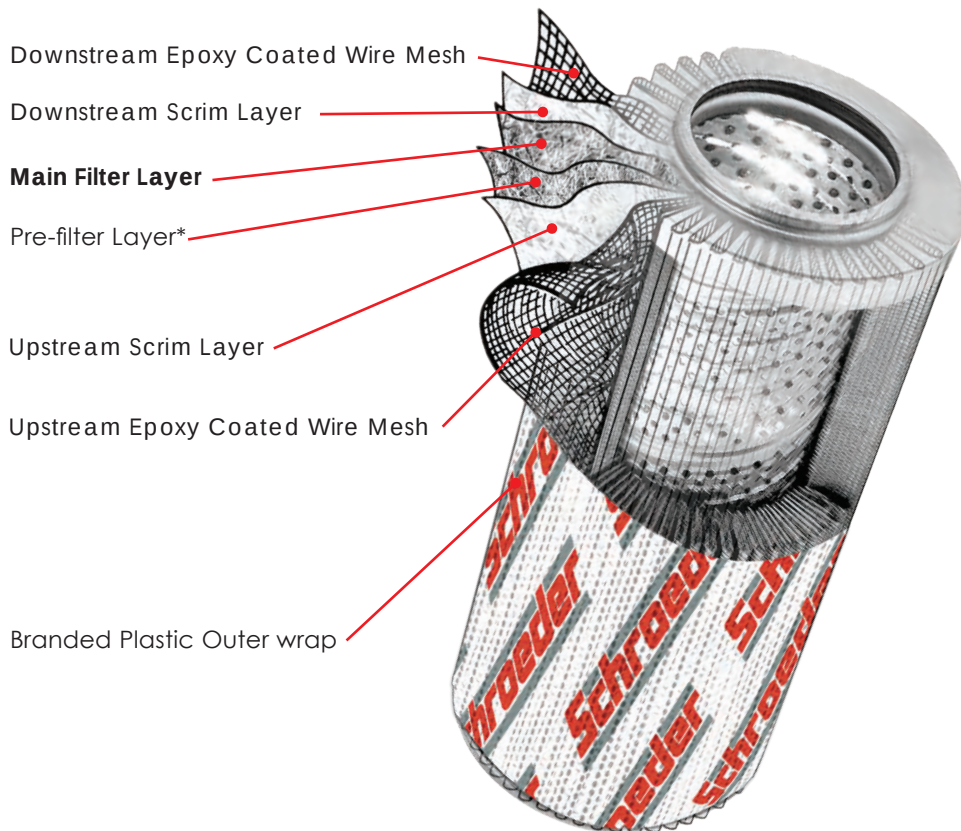
# EXCELLEMENT

Synthetic Microglass Filtration Media

The special class of micro-glass and other fibers used in Z-Media® are manufactured with utmost precision, to specific thicknesses and densities, and bonded with select resins to create material with extra fine passages. No other filter media can provide the benefits of Schroeder's Excellement® Z-Media®: maximum dirt-holding capacity, superior particle capture, excellent beta stability, minimum pressure drop, high flow rate and low operating cost.

The typical multiple layer construction (shown in Figure 9) has evolved from comprehensive laboratory testing to provide extended element life and system protection. Each successive layer performs a distinct and necessary function. The outermost layer is designed to maintain element integrity. Beyond this layer is a spun bonded scrim, offering coarse filtration and protection for the filtering layers within. Multiple sheets of fine filtering media follow, providing intricate passageways for the entrapment of dirt particles. Together, the various layers of filter media provide the ideal combination for peak filtration performance.

Figure 9. Cutaway of Excellement® Z-Media®

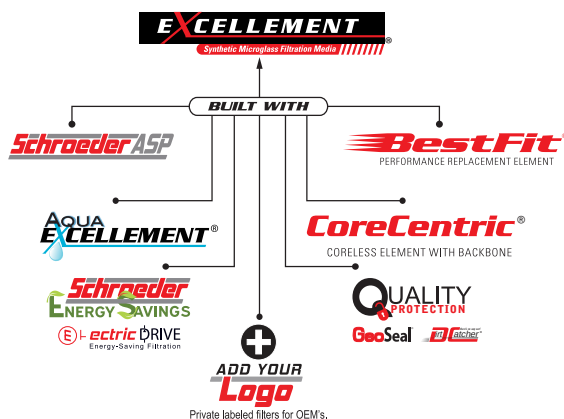


Schroeder's complete line of quality filtration elements—including Schroeder's original element designs, BestFit® replacement elements, CoreCentric® coreless elements and DirtCatcher®—are manufactured with Excellement® Z-Media®.

The better efficiencies, excellent stability, lower pressure drops, and higher dirt holding capacities provided by Excellement® Z-Media® mean cleaner oil, longer element life, and less downtime. They outlast, outperform, and excel in every measurable benchmark.

The Excellement® Z-Media® series of filter elements have been designed, tested, and proven to be the best performing elements available on the market today.





- **Better flow characteristics:**  
Lower pressure drop and improved flow stability
- **Improved efficiency:**  
Cleans oil in less time and improved reliability
- **Higher dirt holding capacity:**  
Longer element life, lower maintenance costs (labor) and decreased inventory costs (parts)
- **Multi-layer construction:**  
Each layer performs a distinct function
- **Beta stability:**  
Excellement® Z-Media® maintains efficiency as differential pressure increases

## Features and Benefits

Schroeder Z-Media® elements are tested under cyclic flow conditions to verify flow fatigue characteristics. Extra strength and rigidity are engineered into every one of these filter elements through the use of epoxy-coated steel wire mesh and additional support layers. (ZX Series high crush strength capabilities are available for 3000 psi applications.)

A wide range of Schroeder Z-Media® elements enable you to achieve the desired cleanliness level for your system. Developed through comprehensive laboratory testing and field performance studies, these elements have been proven effective. Shown in Table 10 are cleanliness levels that can be achieved using Z-Media® filter elements in various applications.

**Table 10. Typical Field Application Results**

| Application                           | Cleanliness* Level |
|---------------------------------------|--------------------|
| Railroad Maintenance-of-Way Equipment | ISO 19/17/14       |
| Power Generation Turbine Skid         | ISO 17/15/13       |
| Timber Harvesting Equipment           | ISO 17/15/12       |
| Plastic Injection Molding Machine     | ISO 17/15/12       |
| Paper Mill Lube System                | ISO 16/14/11       |
| Aircraft Test Stand                   | ISO 15/13/10       |
| Hydraulic Production Test Stand       | ISO 13/11/8        |

\*Higher or lower levels can be obtained by selecting coarser or finer Schroeder Z-Media®, respectively.

## Excellement® Elements Have Improved Filtration Ratios

Table 11 shows the ISO 16889 filtration ratios (Betas) for Schroeder Z-Media® elements Z1, Z3, Z5, Z10 and Z25. Figure 10 depicts the information in Table 11 graphically and provides corresponding % efficiencies. The numbers contained in the tables are simply specific data points from the plots for the respective media shown. The filtration ratio (Beta) is shown on the left side and the equivalent particle capture efficiency (%) is shown on the right for particle sizes shown across the bottom. The filtration ratio (in Table 13) indicates the particle size at which the filtration ratio for the element is greater than a given number.

**Table 11. Z-Media® Filtration Ratios**

| Element Media | Filtration Ratio Per ISO 16889  |                                |                                  |                                   |
|---------------|---------------------------------|--------------------------------|----------------------------------|-----------------------------------|
|               | $\beta_x(c) \geq 75$<br>(98.7%) | $\beta_x(c) \geq 100$<br>(99%) | $\beta_x(c) \geq 200$<br>(99.5%) | $\beta_x(c) \geq 1000$<br>(99.9%) |
| Z1            | <4.0                            | <4.0                           | <4.0                             | 4.2                               |
| Z3            | <4.0                            | <4.0                           | <4.0                             | 4.8                               |
| Z5            | <4.0                            | 4.2                            | 4.8                              | 6.3                               |
| Z10           | 6.8                             | 7.1                            | 8.0                              | 10.0                              |
| Z25           | 16.3                            | 17.1                           | 19.0                             | 24.0                              |

Schroeder offers a line of high crush media elements with a collapse rating of 3000 psid for use in its non-bypass version of filter housings, which include the: NFN30, DFN40, CFN40, RFN60, CFN60, TFN50, KFN30, KFN50, KCN50, MKFN50, KCN65, FOF30, FOF60 and NOF30.

## Series ZX High Collapse Elements (Synthetic)



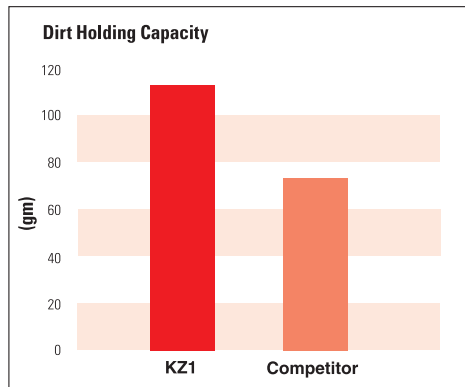
**Schroeder**  
ORIGINAL ELEMENTS

**Excellement  
Elements Have  
High Dirt  
Holding  
Capacities**

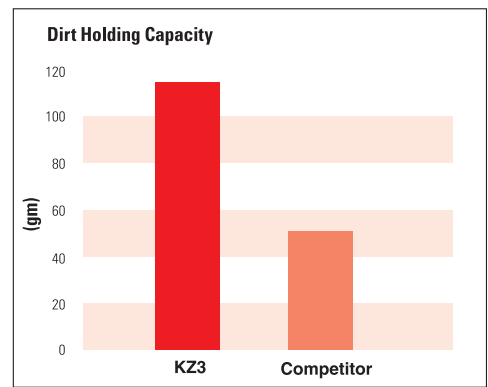


Dirt holding capacity (DHC), simply stated, is the amount of solid contamination that an element can hold before the filter housing reaches its terminal bypass setting. The higher the dirt holding capacity, the longer the element will last. This translates to fewer element purchases, less frequent equipment shutdowns, decreased maintenance time, and reduced inventory. In short, it means money saved.

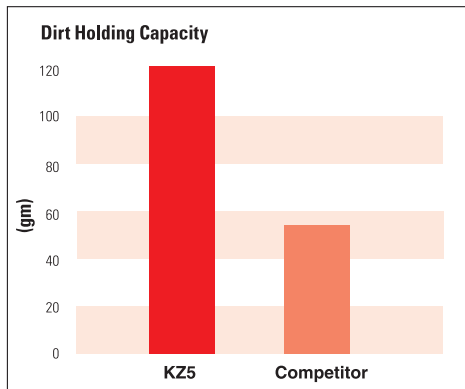
**Figures 11(a) - 11(e). DHC Comparison for Z-Media® Elements and Competition**



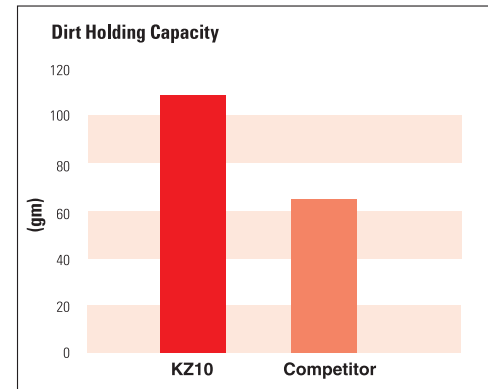
11(a)



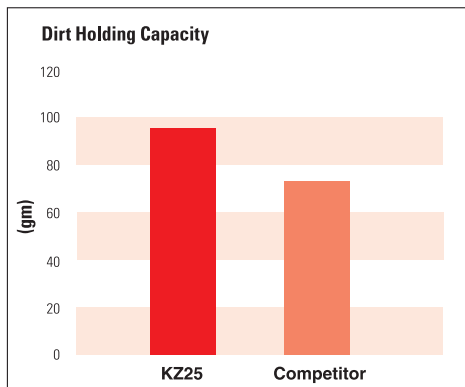
11(b)



11(c)



11(d)



11(e)

**Table 12. Typical Dirt-Holding Capacities for Z-Media® Element (in grams)**

| Type Medium | Element Size (Diameter x Length) |            |           |             |            |
|-------------|----------------------------------|------------|-----------|-------------|------------|
|             | 2" x 6" 6R                       | 3" x 8" 8T | 4" x 9" K | 5" x 18" BB | 6" x 39" Q |
| Z1          | 15                               | 51         | 112       | 268         | 1485       |
| Z3          | 15                               | 52         | 115       | 275         | 1525       |
| Z5          | 16                               | 59         | 119       | 301         | 1536       |
| Z10         | 14                               | 55         | 108       | 272         | 1432       |
| Z25         | 15                               | 56         | 93        | 246         | 1299       |

The data shown represents the cumulative results of multi-pass tests in accordance with ISO 16889. Tests are conducted on a regular basis at Schroeder's own laboratory and at approved independent facilities.

A monetary value can be calculated for a filter element by considering its dirt holding capacity and efficiency in combination with its cost. To make this determination, first find out how much you're spending to clean your fluid to a desirable cleanliness level. Then figure out how much contamination (in grams) that the element is actually retaining. These two numbers will make it possible to calculate the grams of dirt per dollar spent. It's one thing to clean the oil, but it's another to clean the oil and simultaneously provide maximum element life. With Excellement® Z-Media®, you don't need to sacrifice element life to achieve high efficiency.

We are confident that the high efficiencies, exceptional dirt holding capacities, and low pressure drops—combined with Schroeder's competitive prices—make elements made with Excellement® Z-Media® the best value in the market today.

## Cost Per Gram Analysis/ Excellement® Efficiency

Figure 12. Grams of Dirt Retained per Dollar Spent

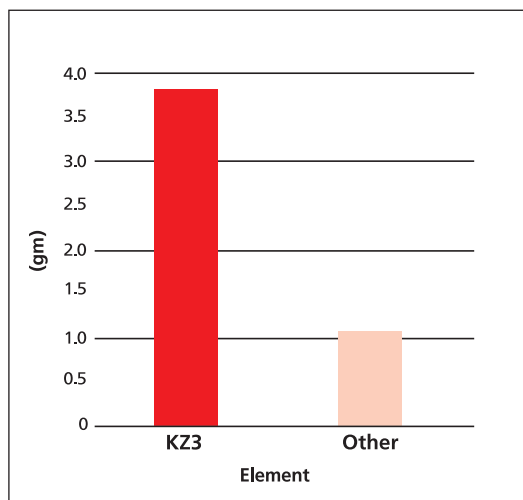
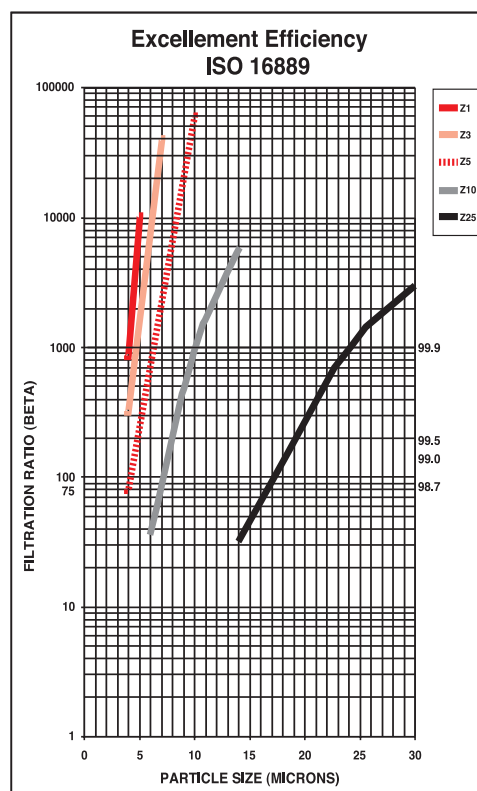


Figure 10. Z-Media® Excellement® Efficiency



## Element Case Weights

In proportion to the high volume of filter elements we make and ship, one of the most frequently asked questions our order desk receives involves the weights of various cases of elements. In an effort to include this information in this edition of the catalog, we made the assumption that the various micron ratings within a media type weigh the same; i.e., a KZ1 weighs approximately the same as a KZ25.

The following table represents our findings given the above assumption.

|       |               | Case Lot | Weight (lb.) |     |               | Case Lot | Weight (lb.) |        |               | Case Lot | Weight (lb.) |
|-------|---------------|----------|--------------|-----|---------------|----------|--------------|--------|---------------|----------|--------------|
| A     | paper         | 12       | 7            | K   | paper         | 12       | 17           | 8Z     | paper         | 12       | 12           |
| AZ    | synthetic (Z) | 12       | 8            | KZ  | synthetic (Z) | 12       | 22           | 8ZZ    | synthetic (Z) | 12       | 13           |
| BB    | paper         | 6        | 29           | KW  | Water Removal | 12       | 18           | 9V     | synthetic (Z) | 12       | 14           |
| BBZ   | synthetic (Z) | 6        | 29           | KK  | paper         | 6        | 18           | 14V    | synthetic (Z) | 6        | 10           |
| C     | paper         | 12       | 7            | KKZ | synthetic (Z) | 6        | 20           | 14C    | synthetic (Z) | 6        | 11           |
| CZ    | synthetic (Z) | 12       | 8            | 27K | paper         | 6        | 20           | 18L    | synthetic (Z) | 6        | 20           |
| CC    | paper         | 12       | 11           | M   | paper         | 12       | 33           | 39Q    | paper         | 1        | 17           |
| CCZ   | synthetic (Z) | 12       | 15           | N   | paper         | 12       | 4            | 39QPML | synthetic (Z) | 1        | 18           |
| FZX3  | synthetic (Z) | 12       | 3            | NZ  | synthetic (Z) | 12       | 7            | 39QCL  | synthetic (Z) | 1        | 11           |
| FZX10 | synthetic (Z) | 12       | 3            | NN  | paper         | 12       | 6            | 16Q    | paper         | 1        | 8            |
| 6G    | synthetic (Z) | 12       | 8            | NNZ | synthetic (Z) | 12       | 9            | 16QPML | synthetic (Z) | 1        | 15           |
| 9G    | synthetic (Z) | 12       | 13           | 6R  | synthetic (Z) | 12       | 10           | 16QCL  | synthetic (Z) | 1        | 3            |

# GeoSeal®

U.S. Patent D658740

Far too often, customers make purchasing decisions based solely on price, only to be extremely disappointed with the poor quality delivered by low cost imitations. To make the matter worse, the customer often points an accusing finger at the filter housing manufacturer for poor performance, rather than the inadequate element they used as a replacement for the original Schroeder element.

GeoSeal® is a patented offering from Schroeder that provides a unique way for OEM's to retain replacement element business and to keep a filter's performance at the level that it was supplied. The idea is brilliantly simple: the critical sealing arrangement between a filter housing and its replacement element takes on a shape other than the standard circular arrangement. Specifically, the element grommet & mating bushing are given a new geometric shape. Figures 1 & 2 show the initial configuration being used.



Figure 1. Filter element with GeoSeal grommet.

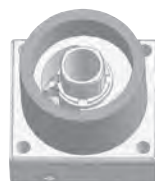


Figure 2. Filter housing (cut-away) with GeoSeal bushing.

## Availability

Currently, the GeoSeal® design is available on the K-size element and in the following Schroeder filter series: KF30, KF50, KC50, KC65, MKF50, K9, 2K9, 3K9, KF3, KL3, MLF1, KF5, RT, ZT, and LRT.

## How To Order

To order the filter housing and element incorporated with the GeoSeal® design:

- "G" is added to the front of the housing model code (KF30, KF50, KC50, KC65, MKF50, KF3, KL3, MLF1, KF5, K9, 2K9, 3K9, RT, ZT, and LRT).
- "BG" is added to the element model code for RT (one end of the element has the GeoSeal®; the other end has an integrated bypass valve)

## GeoSeal® Filters Selection Guide

|                  | Pressure<br>psi (bar)            | Flow<br>gpm (L/min) | Element<br>Length/Size | Page                |     |
|------------------|----------------------------------|---------------------|------------------------|---------------------|-----|
| GeoSeal® Filters | High Pressure GeoSeal® Filters   |                     |                        |                     |     |
|                  | <a href="#">GKF30 GeoSeal®</a>   | 3000 (210)          | 100/150 (380/570)      | KG, KKG, 27KG       | 99  |
|                  | <a href="#">GKF50 GeoSeal®</a>   | 5000 (345)          | 100/150 (380/570)      | KG, KKG, 27KG       | 99  |
|                  | <a href="#">GKC50 GeoSeal®</a>   | 5000 (345)          | 100/150 (380/570)      | KG, KKG, 27KG       | 107 |
|                  | <a href="#">GMKF50 GeoSeal®</a>  | 5000 (345)          | 200 (760)              | KG, KKG, 27KG       | 111 |
|                  | <a href="#">GKC65 GeoSeal®</a>   | 6500 (450)          | 100 (380)              | KG, KKG, 27KG       | 115 |
|                  | Medium Pressure GeoSeal® Filters |                     |                        |                     |     |
|                  | <a href="#">GKF5 GeoSeal®</a>    | 500 (35)            | 100 (380)              | KG                  | 171 |
|                  | <a href="#">GK9 GeoSeal®</a>     | 900 (60)            | 100 (380)              | KG, KKG, 27KG       | 179 |
|                  | <a href="#">G2K9 GeoSeal®</a>    | 900 (60)            | 100 (380)              | KG, KKG, 27KG       | 183 |
|                  | <a href="#">G3K9 GeoSeal®</a>    | 900 (60)            | 100 (380)              | KG, KKG, 27KG       | 183 |
|                  | Low Pressure GeoSeal® Filters    |                     |                        |                     |     |
|                  | <a href="#">GKF3 GeoSeal®</a>    | 300 (20)            | 100 (380)              | KG, KKG, 27KG       | 225 |
|                  | <a href="#">GKL3 GeoSeal®</a>    | 300 (20)            | 120 (455)              | KG, KKG, 27KG, 18LG | 229 |
|                  | <a href="#">GMLF1 GeoSeal®</a>   | 300 (20)            | 200 (760)              | KG                  | 237 |
|                  | <a href="#">GZT GeoSeal®</a>     | 100 (7)             | 40 (150)               | 8GTZ                | 257 |
|                  | <a href="#">GRT GeoSeal®</a>     | 100 (7)             | 100 (380)              | KBG, KKBG, 27KBG    | 269 |
|                  | <a href="#">GLRT GeoSeal®</a>    | 100 (7)             | 150 (570)              | 18LG                | 277 |



# Private Labeled Elements

Schroeder offers a full line of branding solutions for air breathers, spin-ons, and replacement elements. Using the Element Private Label Form (L-2993), OEMs can obtain Schroeder elements with their very own custom logo (for Spin-on elements and air breathers, reference L-2994 on our website). Furnishing elements with custom branding enables OEMs to capture their aftermarket element business. Custom labeled products also protect against the use of unauthorized elements, thus reducing the potential of field warranty issues. Additionally, private branded products are proprietary and will not be shared with others without written consent from the OEM.

## Steps for Establishing an Outer Wrap/End Cap Markings

1. Elements can be private labeled by marking the end caps, adding a private labeled plastic outerwrap, or both.
2. Customer name and part number will be etched on to one of the end caps with Schroeder date codes unless otherwise specified.
  - a. Logos can be laser etched onto the end cap if space allows on the desired element (a .DXF file of the logo is required).
3. When requesting a plastic outer wrap, the customer must supply all artwork in a vector file format (.AI or .EPS).
4. Once the artwork is received, a RIP file (used to print the wrap) will be created and a sample swatch will be provided for customer approval (average lead time is approximately 2 weeks).
5. The sample printed polyester swatch will be sent to the customer for approval. The sample swatch can be temporarily wrapped around a SBF-9600-8 element, but this must be requested.
6. Once the customer has approved the sample, element part numbers (specific to element size) can be established and structured. Cost, delivery and required minimum quantity may depend on element size and private labeling style.



## Packaging Capabilities

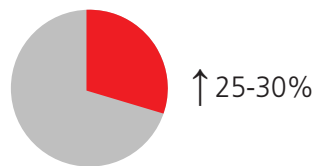
Schroeder has the ability to brand both individual and master cartons as requested. We can apply the customer name, part number, logo (black and white - .jpg file), and other customer texts. Bar coding and customer pre-printed boxes can also be requested (set up fees and minimum order quantities are required for customer pre-printed boxes).

## Extra Aftermarket Retention Advantages:

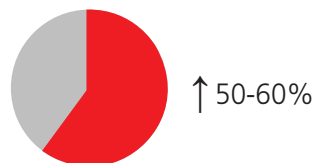
Incorporating a private labeling program has shown that upwards of 60% of aftermarket element business is retained. Instituting of a private branding program also protects against the use of inferior and/or unqualified replacement element substitutions.



- 1. Schroeder Branding**  
Expected Retention Rate:



- 2. OEM Branding**  
Expected Retention Rate:



- 3. OEM Branding with Aftermarket Protection**  
- Exclusive to OEM  
Expected Retention Rate:



## Anti-Static Pleat Elements



## Schroeder ASP

During the production of hydraulic oils, "additive packages" are introduced into the base oils to give the fluids certain characteristics they need for the demanding conditions of today's systems. The additives improve viscosity, reduce friction, prevent wear, and allow the fluid to tolerate high temperatures without oxidation. Some oils are produced with toxic aromatics and heavy metals, with a high electrical conductivity, but because of their toxicity and potential threat to the environment, they no longer comply with current, international environmental standards. Other groups of oils are produced with the appropriate, approved additive packages, often labeled as highly refined or synthetic. They contain no toxins or carcinogens, and are free of heavy metals, but due to their metal-free nature, they have a lower electrical conductivity rating. Low electrical conductivity means that any charges that are generated through the oil flow may not be dissipated quick enough, thus causing sparking. Ultimately, this can cause explosions in the reservoir or damages in vital hydraulic components, such as valves and filters.

The sparks can also interfere with or damage expensive electronic components, and form oil-ageing deposits, such as varnish. Varnish then settles on the oily surfaces of the vital components and has a detrimental effect on how well your machine functions. Potential consequences of varnish also includes seized valve spools, overheated solenoids, and extremely short filter element service life.

The Anti-Static Pleat Media (ASP®) element was developed to greatly reduce or eliminate electrostatic discharging problems that can occur during filtration of hydraulic and lube fluids. By combining proven Excellement® media and ASP® technology, it is now possible to offer both high filtration efficiency and electrical conductivity.

### Other key areas that can contribute to Electrostatic Discharge:

- Filter Media – media layer construction can influence high voltage charge
- Hydraulic Fluids – group II and III have low conductivity
- Temperature – higher voltage charge will generally exist with lower temperature

## DirtCatcher® Elements



## DirtCatcher®

Patent # 7384547

DirtCatcher® elements from Schroeder offer a superior alternative to inside-out filtration. The patented outer shell prevents contaminants from falling back into the system during element changes while still providing the excellent dirt retention of Excellement® media. DirtCatcher® elements are currently available in single and double length K, BB, and 18L size elements, and feature Excellement® media within.

Currently, DirtCatcher® elements can be purchased separately or as part of our RT, KF3, KF8, BFT, and LRT filter assemblies.

The DirtCatcher® solution provides peace of mind to those concerned with dirt escaping from elements during the removal process while delivering all the advantages of Schroeder original (outside-in flow) elements:

- Better Pressure Drop
- Greater Surface Area
- Better Pleat Stability

This design is only available from Schroeder. It goes without saying that DirtCatcher's unique design also allows OEM's to retain 100% of after-market business.



Schroeder Industries manufactures over 2000 BestFit® performance replacement elements. In addition, Schroeder Industries produces all of the technical data to support the sale of these products. The BestFit® family consists of standard cartridge and spin-on replacements, CoreCentric® coreless elements, high collapse elements, and the melt-blown and spun-bonded process filtration elements. Most importantly, we offer the easiest way to determine the Schroeder equivalent of more than 42,000 competitive elements using the Schroeder online element search, accessible through our web site at [www.schroederindustries.info](http://www.schroederindustries.info).

Simply clicking on “BestFit® Element Cross Reference” on the Schroeder Industries home page ([www.schroederindustries.com](http://www.schroederindustries.com)) allows you to match filter elements by entering either the manufacturer’s name or part number.

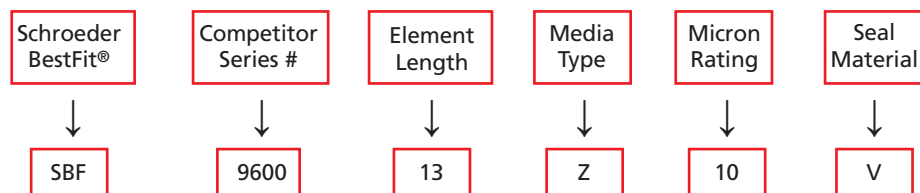
There are two ways to search on the Schroeder BestFit® cross reference page. The first way is to type a competitor element part number in the search bar. When searching by competitor part number, the search will activate as soon as three characters are entered (no spaces or symbols). The second way is to use the two drop down menus to find the competitor and part number you are trying to cross. When a cross has been located, the results table includes the corresponding BestFit® replacement element, dimensions (inside diameter, outside diameter and length), element style (e.g., cartridge or spin-on), media type (metal mesh, water removal, synthetic glass, or paper) and performance specifications, including beta ratios and dirt holding capacity. Also, a link to the left of the results table links to a generalized element drawing with all of the desired information on it. If there is an element that cannot be crossed, Schroeder Industries can work with you in finding a replacement solution to your element problem!

Schroeder BestFit® Elements include the following series:

|                         |           |           |           |          |              |            |
|-------------------------|-----------|-----------|-----------|----------|--------------|------------|
| QCLZ (8314 replacement) | SBF-0160R | SBF-0660R | SBF-170B  | SBF-7500 | SBF-9021     | SBF-MF-100 |
| QPML (8310 replacement) | SBF-0161D | SBF-0661D | SBF-2000  | SBF-7507 | SBF-9100     | SBF-PXX    |
| SBF-0030D               | SBF-0240D | SBF-0850R | SBF-2544  | SBF-8200 | SBF-9400     | SBF-PXW    |
| SBF-0030R               | SBF-0240R | SBF-0950R | SBF-2600R | SBF-8300 | SBF-9600     | SBF-RP83   |
| SBF-0031D               | SBF-0241D | SBF-1000  | SBF-270   | SBF-8400 | SBF-9601     | SBF-TXX    |
| SBF-0060D               | SBF-0280D | SBF-1001  | SBF-270B  | SBF-8500 | SBF-9604     | SBF-TXW    |
| SBF-0060R               | SBF-0281D | SBF-1002  | SBF-370   | SBF-8700 | SBF-9650     | SBF-UE210  |
| SBF-0661D               | SBF-0330D | SBF-1010  | SBF-370B  | SBF-8800 | SBF-9651     | SBF-UE219  |
| SBF-0110D               | SBF-0330R | SBF-1050  | SBF-6000  | SBF-8900 | SBF-9800     | SBF-UE310  |
| SBF-0110R               | SBF-0331D | SBF-1051  | SBF-6400  | SBF-8914 | SBF-9801     | SBF-UE319  |
| SBF-0111D               | SBF-0500R | SBF-1300R | SBF-6500  | SBF-937  | SBF-9901     | SBF-UE610  |
| SBF-0160D               | SBF-0660D | SBF-170   | SBF-7400  | SBF-9020 | SBF-BPE-7509 | SBF-UE619  |

Schroeder BestFit® element model codes are determined by replicating the element model code it is replacing. An example of a breakdown of the model code is shown below:

Schroeder BestFit® Model Code: **SBF-9600-13Z10V**



**BestFit®**  
High Performance  
Replacement  
Elements

**Schroeder**  
ORIGINAL ELEMENTS

## CoreCentric® Coreless Element



**Schroeder**  
ORIGINAL ELEMENTS

## CoreCentric®

### CORELESS ELEMENT WITH BACKBONE

The CoreCentric® Coreless element is an environmentally friendly, all plastic element (no metal parts) that can be crushed, shredded or burned. These alternative methods of disposal will not only greatly reduce solid waste volumes, but also reduce disposal costs simultaneously.

CoreCentric® Coreless elements are designed to ensure optimum performance and ease of service. Built with Excellement® Z-Media®, CoreCentric® Coreless elements (QCL) fit in all Pall 8304 and 8314 housings and are available in the 8", 13", 16", and 39" lengths. Note: To ensure fast delivery, CoreCentric® elements are available with Viton® seals only.

CoreCentric® elements are designed with an integral patent design, cylindrical center core that provides column strength, added structural stability, and easy element removal. This core eliminates both the sticking and vertical sagging problems that can occur when using other manufacturer's coreless designs.

Schroeder's CoreCentric® elements are the only coreless element designed with backbone. We call it the "CORE ON CORE" element design.

## Melt-Blown and Spun-Bonded Filter Elements For Process and Cutting Fluid Applications



Used in process and cutting fluid applications, melt-blown and spun-bonded elements are manufactured with either polypropylene or nylon filter media. Element fibers are blown onto and thermally bonded to a central support core with increasing fiber density towards the core, creating depth filtration. All layers are interlinked to offer maximum support while ensuring high void volume. The thermal bonding process minimizes media migration, providing consistent and reliable performance. They excel in dirt holding capacity and have low pressure drops. They also offer wide chemical compatibility, as well as being structurally sound and able to withstand high flow rates.

Melt-blown and spun-bonded elements fit most industrial housings incorporating the double open ended sealing arrangement, as well as standard polypropylene, PVC, and polycarbonate housings. In addition, these elements are available with end caps for most plug-in style O-ring fittings, making them ideally suited to more critical applications requiring the assurance of these double seals.

They have a wide range of applications including:

- Machine tool coolants
- Roll mill coolants
- EDM fluids
- Quench oils
- Parts washing solvents
- Electrophoretic paints
- Etching solutions
- Plating solutions
- Light oils
- Fuels
- High water containing fluids

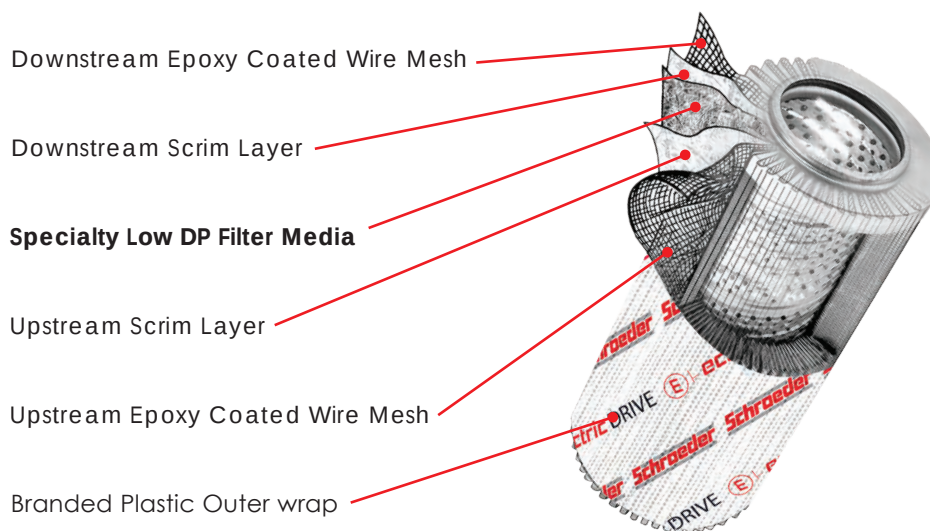
For technical information on process filtration solutions, request catalog #L-2728.

The use of Schroeder's GREEN, Electric Drive (E-Drive) Media filtration technology guarantees safe and reliable equipment operation, all-while conserving the use of energy.

Part of Schroeder's Energy Saver initiative, filter elements made using the all-new E-Drive Media are characterized by a low pressure drop, making them suitable for low energy requirements compared to conventional hydraulic elements under the same ambient conditions.

In certain applications, the E-Drive Media can lower the pressure drop to a point where consumers may be able to size down their horsepower requirements on their current motor.

E-Drive filter elements are made using an all-new specialty formulated, high efficiency, low differential pressure media and are the perfect choice for use in electric hydraulic drive motor-pump units. Use them for conserving energy bills and wherever high viscosity fluids are employed – especially at low temperatures that produce a cold start behavior.



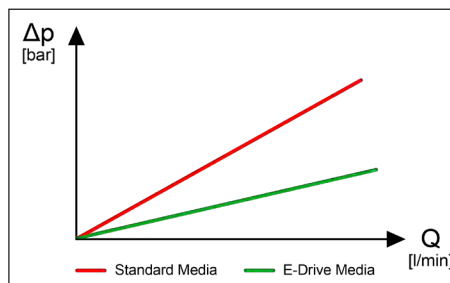
Our testing below shows a great comparison of a 10-micron Electric Drive media element to one with the typical synthetic microglass media that is available on the market today.

#### Technical Specs (evaluated in K-sized element):

| Media Type                          | $\beta_{200}$<br>[ $\mu\text{m(c)}$ ] | Pressure Drop Factor<br>[psid/gpm] |
|-------------------------------------|---------------------------------------|------------------------------------|
| E-Drive Media (10 $\mu$ )           | 10.2                                  | 0.050                              |
| Typical Synthetic Media (10 $\mu$ ) | 10.6                                  | 0.156                              |

- Element Collapse Rating:  
145 psid (10 bar)
- Temperature Range: -22°F to 212°F  
(-30°C to 100°C)
- Flow Direction: Outside to Inside

E-Drive Media is currently rated for 10-micron filtration, with other micron options available in the near future.



#### Electric Drive Elements



**Schroeder**  
INDUSTRIES 2030



## E Media Elements (Cellulose)



Recognized as one of the industry's most cost effective media available in the marketplace, Schroeder E media is an excellent choice for a wide variety of hydraulic system applications.

The E3 media is a specially designed mixture of cellulose and micro-glass, which provides both high dirt holding capacity and high particle capture efficiency, resulting in one of the industry's most cost effective cellulose media. Schroeder E10 media, used in the popular K10 element, is a standard for numerous industries, enabling continuous, trouble-free system operation.

**Please note: The "E" identification for the media is not shown in the element model number. For example, our standard K3 and K10 elements are constructed with E media.**

Table 14 shows the filtration ratios for Schroeder E media elements, while Figure 18 depicts this information graphically and provides corresponding % efficiencies for both the E3 and E10 media.

**Table 14. E Media Efficiency Ratings per ISO 4572 without Antistatic Additive**

| Element Media | Filtration Ratios (Beta)     |                             |                               |           |           |              |              |
|---------------|------------------------------|-----------------------------|-------------------------------|-----------|-----------|--------------|--------------|
|               | $\beta_x \geq 75$<br>(98.7%) | $\beta_x \geq 100$<br>(99%) | $\beta_x \geq 200$<br>(99.5%) | $\beta_3$ | $\beta_5$ | $\beta_{10}$ | $\beta_{20}$ |
| E3            | 6.8                          | 7.5                         | 10.0                          | 28        | 48        | 200          | >1000        |
| E10           | 15.5                         | 16.2                        | 18.0                          | —         | 1.3       | 10           | 400          |

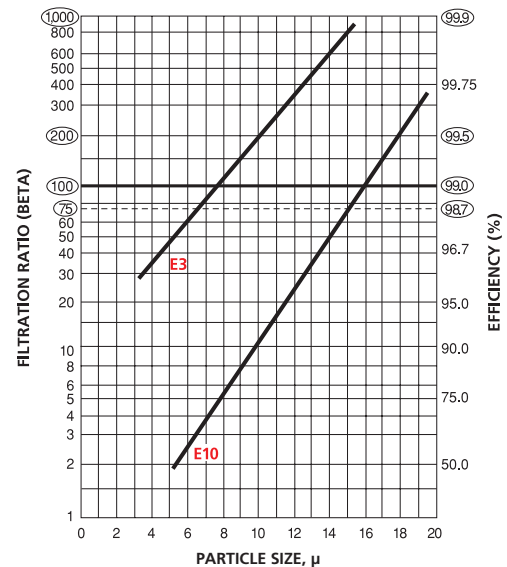
The cost effectiveness of E media becomes even more apparent when dirt holding capacity is considered (see Table 15). The dollars spent per gram of dirt retained with an E media element makes it an excellent choice for many contamination control programs.

**Table 15. Typical Dirt Holding Capacities for E Media Elements (ACFTD capacity in grams)**

| Element Size | Media |     |
|--------------|-------|-----|
|              | E3    | E10 |
| N            | 8     | 7   |
| NN           | 12    | 10  |
| C            | 14    | 12  |
| CC           | 30    | 25  |
| A            | 16    | 13  |
| K            | 54    | 44  |
| 9C           | 30    | 25  |
| BB           | 162   | 132 |
| 18L          | 108   | 88  |
| M            | 50    | 37  |
| 8Z           | 39    | 32  |
| 8T           | 39    | 32  |
| P            | —     | 37  |
| 9V           | 32    | 26  |
| 14V          | 51    | 41  |
| 6R           | 9     | 8   |

The data shown represents the cumulative results of E media multi-pass tests. Tests are conducted on a regular basis at Schroeder's own laboratory and at approved independent facilities. Tests are conducted without antistatic additive.

**Figure 16. E Media Element Efficiencies Per ISO 4572**



The data shown represents the cumulative results of E media multi-pass tests. Tests are conducted on a regular basis at Schroeder's own laboratory and at approved independent facilities. Tests are conducted without antistatic additive.

Schroeder offers a line of metal reusable elements to meet specific application needs. These rugged elements are constructed of high-strength woven stainless steel wire mesh. The wire mesh and center tube are epoxy-bonded to the end caps.

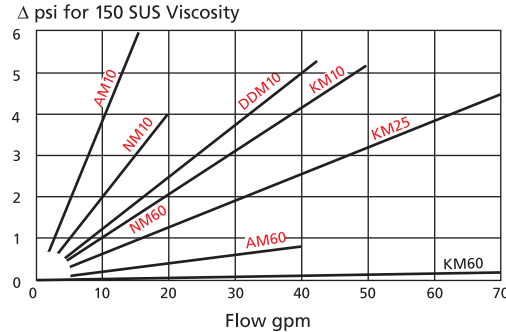
The element design incorporates shallow pleats which provide an efficient flow pattern with optimum pressure drop. In addition, the shallow pleat construction simplifies the cleaning process. These elements may be cleaned using a liquid solution (either Kleenite or Oakite) or by ultrasonics. Request Schroeder's #L-2094 Data Sheet for details regarding recommended cleaning procedures.

Schroeder metal elements are available in a variety of sizes for 10, 25, 60, 150, and 260  $\mu$  filtration and are shown in Table 16. The size and type of wire mesh used for each micron rating are shown in Table 17.

**Table 17. Micron Ratings and Wire Mesh**

|           |                                |
|-----------|--------------------------------|
| 10 $\mu$  | 200 x 1400 twilled Dutch weave |
| 25 $\mu$  | 165 x 1400 twilled Dutch weave |
| 60 $\mu$  | 50 x 250 plain Dutch weave     |
| 150 $\mu$ | 100 x 100 square Dutch weave   |
| 260 $\mu$ | 60 x 60 square Dutch weave     |

**Figure 17. Typical Pressure Drop Performance Data for Schroeder Series M Media Elements**



Today's demand for the use of fire-resistant fluids that assure safe and dependable operation in an electrohydraulic control system (EHC) demand peak performing media. The change-over to Schroeder "F" Pack media from a traditional, high performance, synthetic media results in lower, clean pressure drop and higher efficiency. Most importantly, the change eliminates cast-off, or shedding of synthetic fibers, which can result in servo valve failure.

## Construction

- Total stainless steel, sintered depth style media
- Pleated media
- Sintered construction prevents shedding of media
- Outside/in flow

## Performance

- Extremely efficient:  $\beta_3=1000$  and  $\beta_{10}=1000$
- Excellent choice for use with phosphate esters and Fyrquel® fluids
- Operating temperature -20°F to 350°F with use of Viton® seals
- Element collapse rating 3000 psid for use at high differential pressures

## M Media Elements (Reusable Metal)



## F-Pack Media



## W Media Elements (Water Removal)



Water can cause a host of contamination problems in hydraulic and lubrication systems. It can exist in a system in a dissolved state or in a free state. In a dissolved state, the fluid is holding the water. In a free state, the water is above the specific saturation point of the fluid, and thus cannot dissolve or hold more water. A mild discoloration of the fluid generally indicates that a free water condition exists in the system.

Schroeder's uniquely designed water removal elements employ a quick-acting water-absorbent polymer, capable of holding over 400 times its own weight in water. These elements are ideal for in-line use, re-circulating filter systems, or in portable filtration carts.

Water retention is positive, even under high pressure, so there is no downstream unloading. However, water retention capacity is dependent on the type of fluid and additives present in a system, its viscosity and its flow rate. As a result, retention capacity may be diminished by some additives present in the system, by a high viscosity, or a high flow rate.

Table 18 shows water holding capacity and Table 19 shows the pressure drops for select W media elements. (On net page)

For best results, flow rates through a single KW element should be 10 gpm (38 L/min) or less.

## Aqua-Excellement™ High Efficiency Particulate Water Removal Media



Schroeder offers Aqua-Excellement™ filter elements, which excel at removing both water and solid particulates from petroleum-based fluids. The filtering media incorporated into Aqua-Excellement™ elements is referred to as ZW and includes layers of Schroeder's high efficiency Excellement® Z-Media® for capturing particulate contaminations in combination with water removal capabilities. The high efficiencies, outstanding beta stabilities, and excellent dirt holding capacities that Excellement® customers have become accustomed to are present in the new ZW media. Paired together, these two types of media make a winning combination and are highly effective at filtering out water and solids simultaneously.

Aqua-Excellement™ elements are currently available in multiple sizes for both cartridge and spin on style. Equipped, with ZW media, Schroeder MFS/AMS series carts can be effectively utilized for on-site flushing applications for cleaning stagnant large volume reservoirs. When used on a kidney loop system installed on power units, the ZW media allows for smaller kidney loop system and lower dimensional clearance and weight. Other applications include mobile filtration systems and bulk transfer systems.

## Schroeder Kidney Loop Systems and Mobile Filtration Carts *can utilize the KZW cartridge elements*



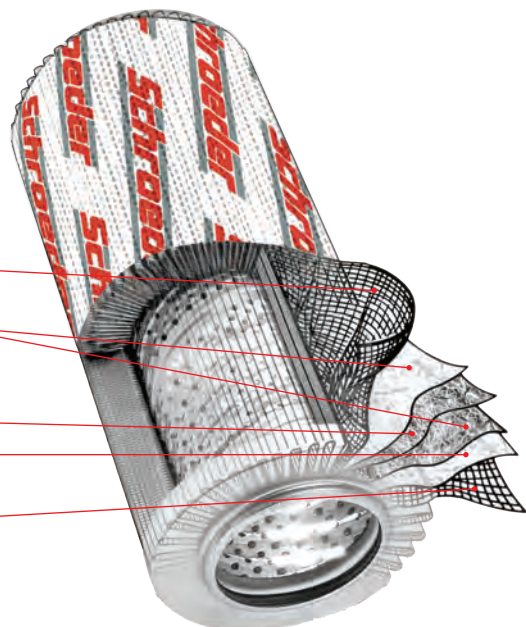
## ZW Spin-On Elements



NOTE: When using any K-size housing do not exceed 14 gpm

Shown below is a breakdown of the layers of the new K-size ZW cartridge element.

- Epoxy-coated steel wire fabric provides maximum support and rigidity.
- Two layers of Z-Media provide maximum efficiency and dirt-holding capacity with minimal pressure drop
- Water removal media
- Spun-bonded scrim provides downstream media support and increased stability
- Epoxy-coated steel wire fabric provides maximum support and rigidity.



Total water injection flow rate: 2.0 ml/min.

Table 18. Water Holding Capacity

| Element Model No. | Flow gpm (L/min) | Capacity |        |
|-------------------|------------------|----------|--------|
|                   |                  | mL       | ounces |
| KW                | 20 (75)          | 150      | 5      |
| KW                | 16 (60)          | 200      | 7      |
| KW                | 10 (38)          | 320      | 11     |
| KW                | 2 (7.5)          | 500      | 17     |
| 6RW               | 20 (75)          | 31       | 1      |
| 6RW               | 2 (7.5)          | 104      | 4      |
| 8TW               | 20 (75)          | 93       | 3      |
| 8TW               | 2 (7.5)          | 311      | 11     |
| 9VW               | 20 (75)          | 81       | 3      |
| 9VW               | 2 (7.5)          | 270      | 9      |
| 14VW              | 20 (75)          | 130      | 4.4    |
| 14VW              | 2 (7.5)          | 435      | 14.7   |
| 16QW              | 60 (225)         | 480      | 16     |
| 16QW              | 10 (38)          | 1350     | 45     |
| 39QW              | 140 (530)        | 1100     | 37     |
| 39QW              | 22 (83)          | 3100     | 105    |
| MW                | 14 (53)          | 100      | 3.5    |
| MW                | 1.5 (6)          | 350      | 12     |

Table 19. Pressure Drop

| Element Model No. | Flow gpm (L/min) | $\Delta P$ psi (bar) |
|-------------------|------------------|----------------------|
| KW                | 20 (75)          | 2.5 (0.17)           |
| 14VW              | 20 (75)          | 2.5 (0.17)           |
| 16QW              | 65 (246)         | 2.5 (0.17)           |
| 39QW              | 150 (570)        | 2.5 (0.17)           |

Table 20. Maximum Recommended Flow Rate

| Element Model No. | Maximum Recommended Flow Rate |       |
|-------------------|-------------------------------|-------|
|                   | gpm                           | L/min |
| KW                | 20                            | 75.7  |
| 6RW               | 4                             | 16    |
| 8TW               | 12                            | 47    |
| 9VW               | 11                            | 41    |
| 14VW              | 20                            | 75    |
| 16QW              | 60                            | 225   |
| 39QW              | 140                           | 530   |
| MW                | 16                            | 6     |

Table 21. KZW Cartridge Element Dirt and Water Holding Capacities

| Element Part Number | DHC (g) | Water Removal Capacity |                    | Filtration Ratios (Beta) |                     |                   |
|---------------------|---------|------------------------|--------------------|--------------------------|---------------------|-------------------|
|                     |         | 2.5 gpm                | 10 gpm             | $\beta_x \geq 200$       | $\beta_x \geq 1000$ | $\Delta P$ Factor |
| KZW1                | 61      | 197 mL/<br>6.66 oz     | 134 mL/<br>4.53 oz | <4.0                     | <4.0                | 0.43              |
| KZW3/KKZW3          | 64/128  |                        |                    | 4.0                      | 4.8                 | 0.32              |
| KZW5/KKZW5          | 63/126  |                        |                    | 5.1                      | 6.4                 | 0.28              |
| KZW10/KKZW10        | 57/114  |                        |                    | 6.9                      | 8.6                 | 0.23              |
| KZW25/KKZW25        | 79/158  |                        |                    | 15.4                     | 18.5                | 0.14              |



**Aqua-Excellement™**  
High Efficiency  
Particulate Water  
Removal Media

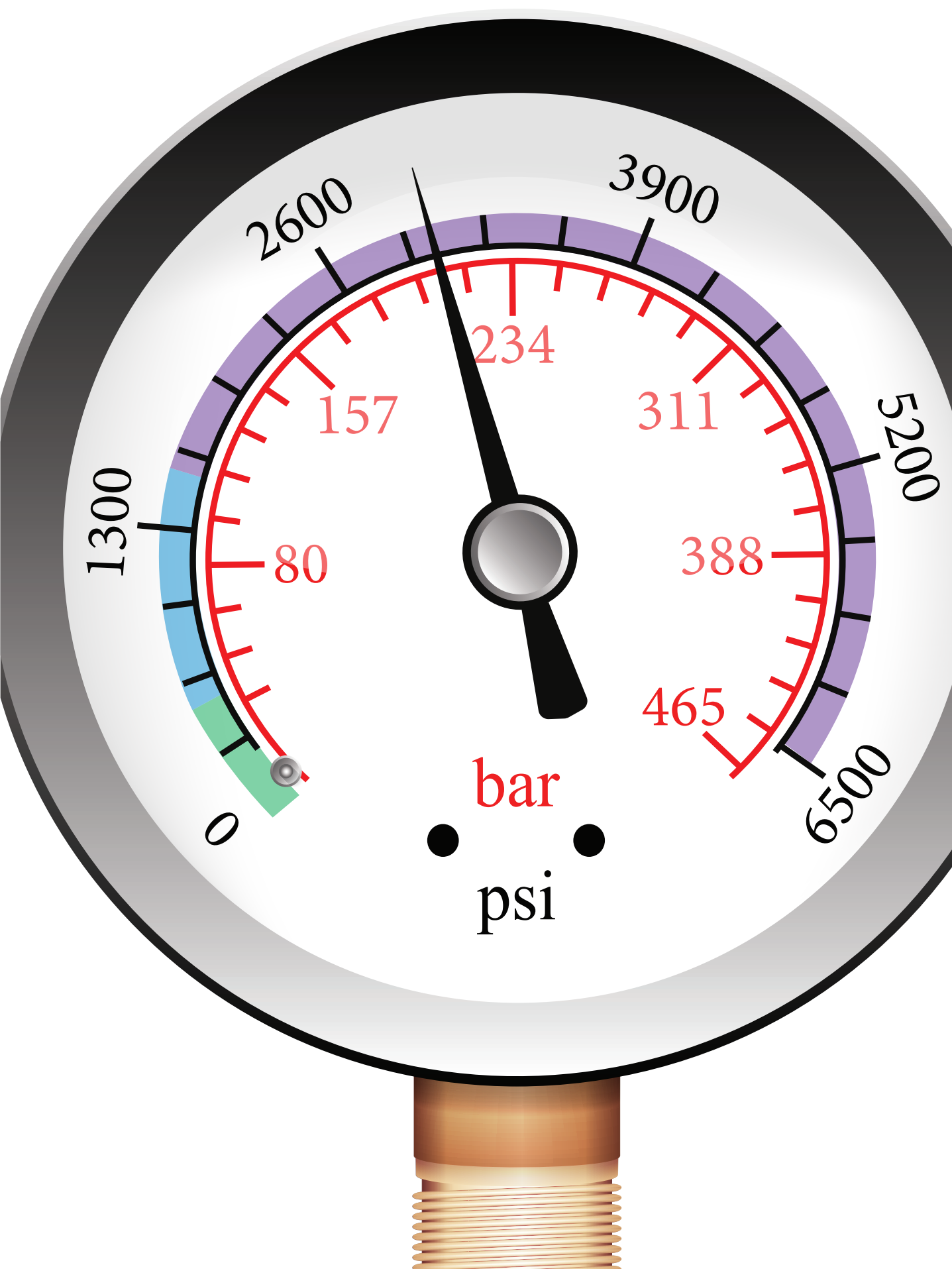
Table 22. ZW Spin-On Element Dirt and Water Holding Capacities

| Element Part Number | DHC (g) | Water Removal Capacity |                   | Filtration Ratios (Beta) |                     |
|---------------------|---------|------------------------|-------------------|--------------------------|---------------------|
|                     |         | 2.5 gpm                | 10 gpm            | $\beta_x \geq 200$       | $\beta_x \geq 1000$ |
| 10MZW10             | 53      | 185 mL/<br>6.3 oz      | 126 mL/<br>4.3 oz | 6.9                      | 8.6                 |

## This image shows a single sheet of white paper with horizontal red ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



# HIGH PRESSURE FILTERS



## Section 3

# High Pressure Filters Selection Guide

|                                         |                                                                                                          | Pressure<br>psi (bar) | Flow<br>gpm (L/min) | Element<br>Length/Size | Page |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------|---------------------|------------------------|------|
| High Pressure Filters (1500 - 6500 psi) | Top-Ported High Pressure Filters                                                                         |                       |                     |                        |      |
|                                         | <a href="#">NF30</a>                                                                                     | 3000 (210)            | 20 (75)             | N, NN                  | 47   |
|                                         | <a href="#">NFS30</a>                                                                                    | 3000 (210)            | 20 (75)             | N, NN                  | 51   |
|                                         | <a href="#">YF30</a>                                                                                     | 3000 (210)            | 25 (100)            | 4Y, 8Y                 | 55   |
|                                         | <a href="#">CFX30</a>                                                                                    | 3000 (210)            | 30 (115)            | CC, DD                 | 59   |
|                                         | <a href="#">PLD</a>                                                                                      | 3000 (210)            | 100 (380)           | DV                     | 63   |
|                                         | <a href="#">CF40</a>                                                                                     | 4000 (275)            | 45 (170)            | C, CC                  | 67   |
|                                         | <a href="#">DF40</a>                                                                                     | 4000 (275)            | 30 (113)            | C, CC                  | 67   |
|                                         | <a href="#">PF40</a>                                                                                     | 4000 (275)            | 50 (190)            | 5H, 9H                 | 71   |
|                                         | <a href="#">RFS50</a>                                                                                    | 5000 (345)            | 30 (115)            | 8R                     | 75   |
|                                         | <a href="#">RF60</a>                                                                                     | 6000 (415)            | 30 (115)            | 8R                     | 79   |
|                                         | <a href="#">CF60</a>                                                                                     | 6000 (415)            | 50 (190)            | CC                     | 83   |
|                                         | <a href="#">CTF60</a>                                                                                    | 6000 (415)            | 75 (284)            | 5CT, 8CT, 14CT         | 87   |
|                                         | <a href="#">VF60</a>                                                                                     | 6000 (415)            | 70 (265)            | 9V                     | 91   |
|                                         | <a href="#">LW60</a>                                                                                     | 6000 (415)            | 300 (1135)          | 39ZP                   | 95   |
|                                         | Base-Ported High Pressure Filters                                                                        |                       |                     |                        |      |
|                                         | <a href="#">KF30</a>    | 3000 (210)            | 100/150 (380/570)   | K, KK, 27K             | 99   |
|                                         | <a href="#">KF50</a>    | 5000 (345)            | 100/150 (380/570)   | K, KK, 27K             | 99   |
|                                         | <a href="#">TF50</a>                                                                                     | 5000 (345)            | 40 (150)            | A, CC                  | 103  |
|                                         | <a href="#">KC50</a>   | 5000 (345)            | 100/150 (380/570)   | K, KK, 27K             | 107  |
|                                         | <a href="#">MKF50</a>                                                                                    | 5000 (345)            | 200 (760)           | K, KK, 27K             | 111  |
|                                         | <a href="#">MKC50</a>                                                                                    | 5000 (345)            | 200 (760)           | K, KK, 27K             | 111  |
|                                         | <a href="#">KC65</a>  | 6500 (450)            | 100 (380)           | K, KK, 27K             | 115  |
|                                         | <a href="#">MKC65</a>                                                                                    | 6000 (413)            | 300 (1136)          | K, KK, 27K             | 119  |
|                                         | Hydrostatic (Bidirectional) Flow High Pressure Filters                                                   |                       |                     |                        |      |
|                                         | <a href="#">HS60</a>                                                                                     | 6000 (415)            | 120 (450)           | 13HZ                   | 123  |
|                                         | <a href="#">MHS60</a>                                                                                    | 6000 (415)            | 120 (450)           | 13HZ                   | 123  |
|                                         | <a href="#">KFH50 (Base-Ported)</a>                                                                      | 5000 (345)            | 70 (265)            | K, KK, 27K             | 127  |
|                                         | In-Line Filters                                                                                          |                       |                     |                        |      |
|                                         | <a href="#">LC60</a>                                                                                     | 6000 (415)            | 8 (30)              | SSD                    | 131  |
|                                         | <a href="#">LC35</a>                                                                                     | 3500 (241)            | 15 (57)             | BS                     | 133  |
|                                         | <a href="#">LI50</a>                                                                                     | 5000 (345)            | 35 (130)            | IZ                     | 135  |
|                                         | <a href="#">LC50</a>                                                                                     | 5000 (345)            | 9 (35)              | 5H                     | 139  |
|                                         | Servo Protection (Sandwich) Filters DO7, DO3, Moog, Parker & Vickers                                     |                       |                     |                        |      |
|                                         | <a href="#">NOF30-05</a>                                                                                 | 3000 (210)            | 12 (45)             | NN                     | 141  |
|                                         | <a href="#">NOF50-760</a>                                                                                | 5000 (345)            | 15 (57)             | SV                     | 145  |
|                                         | <a href="#">FOF60-03</a>                                                                                 | 6000 (415)            | 12 (45)             | F                      | 149  |
|                                         | Manifold Mount Filter Kits (Bowls & Installation Drawings)                                               |                       |                     |                        |      |
|                                         | <a href="#">NMF30</a>                                                                                    | 3000 (210)            | 20 (75)             | NN                     | 153  |
|                                         | <a href="#">RMF60</a>                                                                                    | 6000 (415)            | 30 (115)            | 8R                     | 155  |
|                                         | Cartridge Elements for use in Manifold Applications                                                      |                       |                     |                        |      |
|                                         | <a href="#">14-CRZX10</a>                                                                                | 3000 (210)            | 6 (23)              | —                      | 157  |
|                                         | <a href="#">20-CRZX10</a>                                                                                | 3000 (210)            | 12 (45)             | —                      | 158  |

# Top-Ported Pressure Filter

## NF30

NF30



### Features and Benefits

- Top-ported pressure filter
- All aluminum assembly
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread and ISO 228 porting
- Same day shipment model available
- Available with quality protected Lock & Key Elements (NFLK30)

20 gpm  
75 L/min  
3000 psi  
210 bar

Model No. of filter in photograph is NF301NZ10SD5.

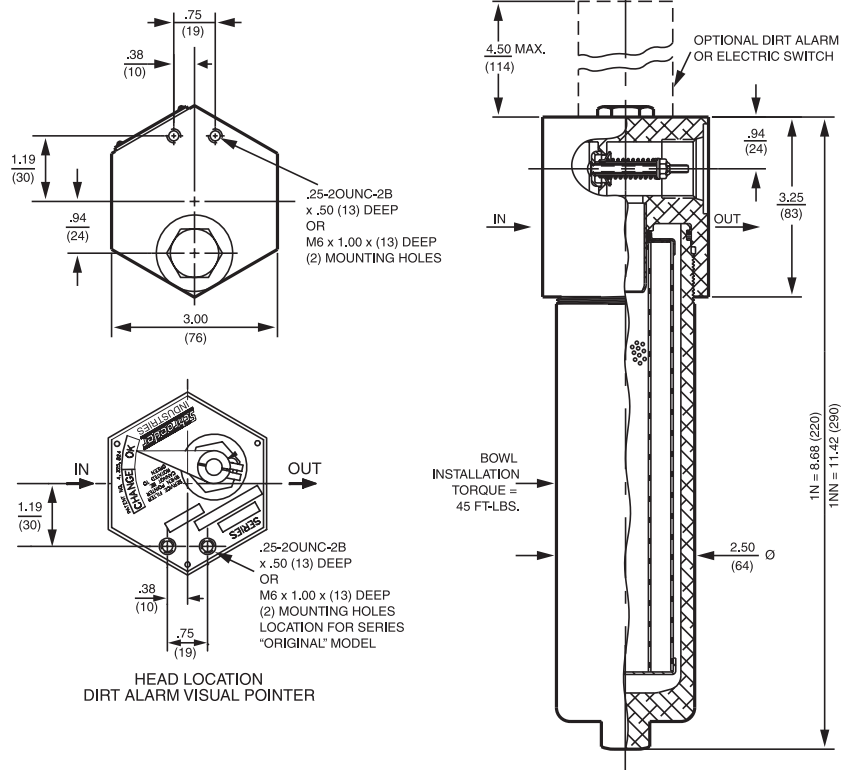
|                           |                                                                                                        |
|---------------------------|--------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids                                                    |
| Max. Operating Pressure:  | 3000 psi (210 bar)                                                                                     |
| Min. Yield Pressure:      | 10,000 psi (690 bar), per NFPA T2.6.1                                                                  |
| Rated Fatigue Pressure:   | 2400 psi (165 bar), per NFPA T2.6.1                                                                    |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                        |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 85 psi (5.9 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Head:             | Aluminum                                                                                               |
| Element Case:             | Aluminum                                                                                               |
| Weight of NF30-1N:        | 3.4 lbs. (1.5 kg)                                                                                      |
| Weight of NF30-1NN:       | 4.4 lbs. (2.0 kg)                                                                                      |
| Element Change Clearance: | 4.50" (115 mm)                                                                                         |

### Filter Housing Specifications

|                        |                                                                     |
|------------------------|---------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                         |
| Petroleum Based Fluids | All E Media (cellulose), Z-Media® and ASP® Media (synthetic)        |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                             |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and 3, 5 and 10 µ ASP® Media (synthetic) |

### Fluid Compatibility

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
KC65  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
LC50  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element                         | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated<br>per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|                                 | $\beta_x \geq 75$                                                                                                 | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| NZ1 / NNZ1 / NLKZ1 / NNLKZ1     | <1.0                                                                                                              | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| NZ3 / NNZ3 / NLKZ3 / NNLKZ3     | <1.0                                                                                                              | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| NZ5 / NNZ5 / NLKZ5 / NNLKZ5     | 2.5                                                                                                               | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| NZ10 / NNZ10 / NLKZ10 / NNLKZ10 | 7.4                                                                                                               | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| NZ25 / NNZ25 / NLKZ25 / NNLKZ25 | 18.0                                                                                                              | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| NNZX3                           | <1.0                                                                                                              | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |
| NNZX10                          | 7.4                                                                                                               | 8.2                | 10.0               | 8.0                                                                  | 9.8                      |

#### Dirt Holding Capacity

| Element       | DHC (gm) | Element         | DHC (gm) |
|---------------|----------|-----------------|----------|
| NZ1 / NLKZ1   | 12       | NNZ3 / NNLKZ3   | 16       |
| NZ3 / NLKZ3   | 12       | NNZ5 / NNLKZ5   | 18       |
| NZ5 / NLKZ5   | 12       | NNZ10 / NNLKZ10 | 15       |
| NZ10 / NLKZ10 | 11       | NNZ25 / NNLKZ25 | 15       |
| NZ25 / NLKZ5  | 11       | NNZX3           | 11*      |
| NNZ1 / NNLKZ1 | 15       | NNZX10          | 13*      |

\* Based on 100 psi terminal pressure

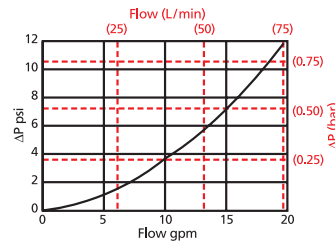
Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: N: 1.75" (45 mm) O.D. x 5.25" (135 mm) long  
NN: 1.75" (45 mm) O.D. x 8.0" (200 mm) long

$\Delta P_{\text{housing}}$

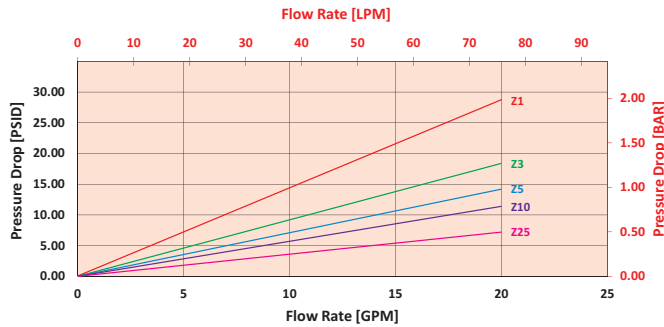
NF30  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

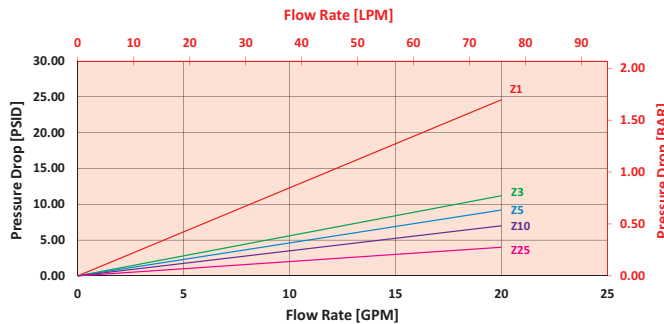
1NZ / NLKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



1NNZ / NNLKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for NF301NZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 7 psi (.48 bar) according to the graph for an NF30 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 8 psi (.55 bar) according to the graph for an NZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 7 \text{ psi } [0.48 \text{ bar}] \mid \Delta P_{\text{element}} = 8 \text{ psi } [0.55 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 7 \text{ psi} + (8 \text{ psi} * 1.1) = 15.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .48 \text{ bar} + (.55 \text{ bar} * 1.1) = 1.1 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ |
|-------|------------|
| N3    | 1.10       |
| N10   | 0.17       |
| N25   | 0.10       |
| NAS3  | 0.92       |
| NAS5  | 0.71       |
| NAS10 | 0.57       |



Filter  
Model  
Number  
Selection

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| NF30  |       |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| NF30  | 1N    | Z     | 10    |       | S     |       | D5    |       |

= NF301NZ10SD5

| BOX 1                                                                       | BOX 2                               | BOX 3                                                                |
|-----------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------|
| Filter Series                                                               | Number & Size of Elements           | Media Type                                                           |
| NF30                                                                        | N = Single Length<br>1              | Omit = E Media (Cellulose)                                           |
| NFN30<br><small>(Non-bypassing; requires ZX high collapse elements)</small> | NN = Double Length                  | Z = Excellement® Z-Media® (synthetic)                                |
| NFLK30                                                                      | NLK = Single Length Lock & Key<br>1 | AS = Anti-Stat Media (synthetic)                                     |
|                                                                             | NNLK = Double Length Lock & Key     | ZX = Excellement® Z-Media® (high collapse center tube; NN size only) |
|                                                                             |                                     | M = Media (reusable metal mesh) N size only                          |

| BOX 4                                | BOX 5                   | BOX 6           | BOX 7                               |
|--------------------------------------|-------------------------|-----------------|-------------------------------------|
| Micron Rating                        | Seal Material           | Porting         | Bypass                              |
| 1 = 1 Micron (Z, ZX media)           | Omit = Buna N           | B = ISO228 G-¾" | Omit = 40 PSI bypass                |
| 3 = 3 Micron (AS,E, Z, ZX media)     | V = Viton®              | P = ¾" NPTF     | 50 = 50 PSI Bypass                  |
| 5 = 5 Micron (AS, Z, ZX media)       | W = Buna N,             | S = SAE-12      | X = Blocked bypass                  |
| 10 = 10 Micron (AS,E,M, Z, ZX media) | Anodized Aluminum parts |                 | (omit box 7 when NFN30 is selected) |
| 25 = 25 Micron (E, Z, ZX media)      |                         |                 |                                     |
| 60 = 60 Micron (M media)             |                         |                 |                                     |

| BOX 8                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Options                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                        | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Visual                                 | D = Pointer<br>D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                 |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

| BOX 9                             |
|-----------------------------------|
| Additional Options                |
| Omit = None                       |
| G792 = ⅞"-20 UNF drain on housing |

## NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.

Box 5. E media (cellulose) elements are only available with Buna N seals. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

# Manifold Mounted Pressure Filter

## NFS30



### Features and Benefits

- Manifold mounted pressure filter
- Offered in square head conventional subplate porting
- Direct mounting to inlet port on customer's manifold

20 gpm  
75 L/min  
3000 psi  
210 bar

Model No. of filter in photograph is NFS301NZ3OD5.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids       |
| Max. Operating Pressure:  | 3000 psi (210 bar)                                        |
| Min. Yield Pressure:      | 10,000 psi (690 bar), per NFPA T2.6.1                     |
| Rated Fatigue Pressure:   | 2400 psi (165 bar), per NFPA T2.6.1                       |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 85 psi (5.9 bar) |
| Porting Head:             | Aluminum                                                  |
| Element Case:             | Aluminum                                                  |
| Weight of NFS30-1N:       | 3.6 lbs. (1.6 kg)                                         |
| Weight of NFS30-1NN:      | 4.3 lbs. (2.0 kg)                                         |
| Element Change Clearance: | 4.50" (115 mm)                                            |

### Filter Housing Specifications

|                        |                                                                     |
|------------------------|---------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                         |
| Petroleum Based Fluids | All E Media (cellulose), Z-Media* and ASP* Media (synthetic)        |
| High Water Content     | All Z-Media* and ASP* media (synthetic)                             |
| Invert Emulsions       | 10 and 25 µ Z-Media* and 10 µ ASP* media (synthetic)                |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* and 3, 5 and 10 µ ASP* Media (synthetic) |

### Fluid Compatibility

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

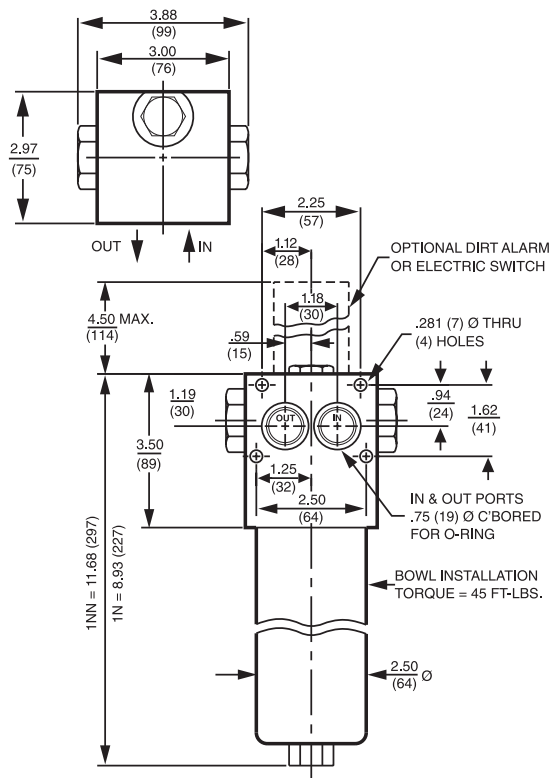
FOF60-03

NMF30

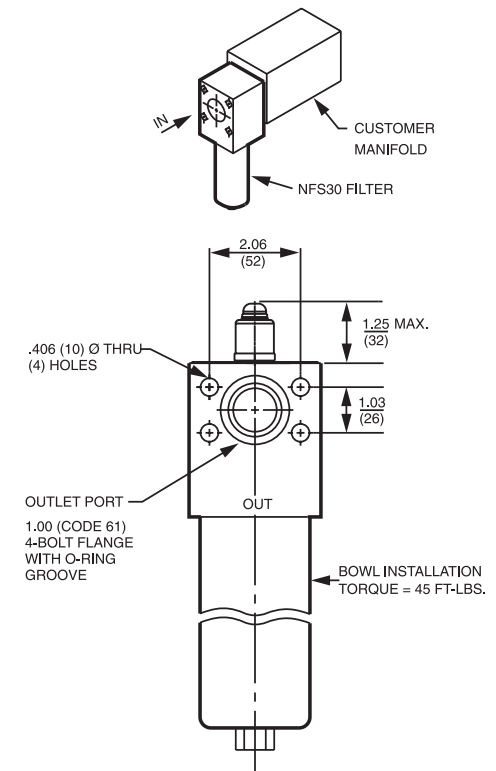
RMF60

14-CRZX10

### NFS30 WITH "O" PORT CONFIGURATION



### NFS30 WITH PO, SO, FO PORT CONFIGURATION



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

Element  
Performance  
Information & Dirt  
Holding Capacity

| Element    | Filtration Ratio Per ISO<br>4572/NFPA T3.10.8.8                |                    |                    | Filtration Ratio<br>per ISO 16889  |                          |
|------------|----------------------------------------------------------------|--------------------|--------------------|------------------------------------|--------------------------|
|            | Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Using APC calibrated per ISO 11171 |                          |
|            | $\beta_x \geq 75$                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$            | $\beta_{x(c)} \geq 1000$ |
| NZ1/NNZ1   | <1.0                                                           | <1.0               | <1.0               | <4.0                               | 4.2                      |
| NZ3/NNZ3   | <1.0                                                           | <1.0               | <2.0               | <4.0                               | 4.8                      |
| NZ5/NNZ5   | 2.5                                                            | 3.0                | 4.0                | 4.8                                | 6.3                      |
| NZ10/NNZ10 | 7.4                                                            | 8.2                | 10.0               | 8.0                                | 10.0                     |
| NZ25/NNZ25 | 18.0                                                           | 20.0               | 22.5               | 19.0                               | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| NZ1     | 12       | NNZ1    | 15       |
| NZ3     | 12       | NNZ3    | 16       |
| NZ5     | 12       | NNZ5    | 18       |
| NZ10    | 11       | NNZ10   | 15       |
| NZ25    | 11       | NNZ25   | 15       |

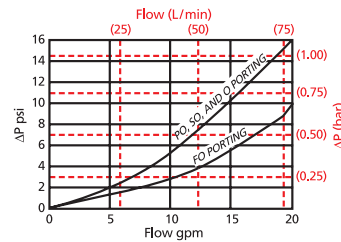
Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: N: 1.75" (45 mm) O.D. x 5.25" (135 mm) long  
NN: 1.75" (45 mm) O.D. x 8.0" (200 mm) long

$\Delta P_{\text{housing}}$

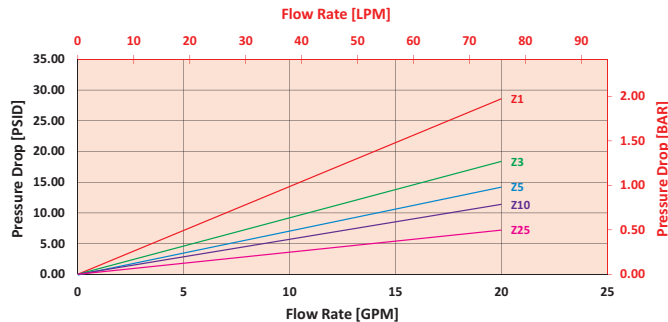
NFS30  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

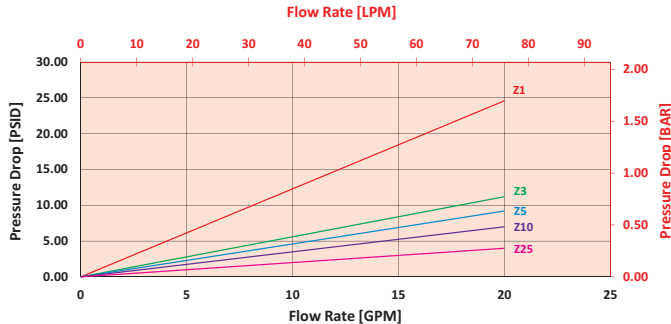
NZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



NNZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for NFS301NZ10S0 using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 10 psi (.69 bar) on the graph for the NFS30 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 8 psi (.55 bar) according to the graph for the NZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 10 \text{ psi [.69 bar]} \mid \Delta P_{\text{element}} = 8 \text{ psi [.55 bar]}$$

$$V_f = 175 \text{ SUS (37.2 cSt)} / 150 \text{ SUS (32 cSt)} = 1.2$$

$$\Delta P_{\text{filter}} = 10 \text{ psi} + (8 \text{ psi} * 1.2) = 19.6 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .69 \text{ bar} + (.55 \text{ bar} * 1.2) = 1.35 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.   | $\Delta P$ |
|-------|------------|--------|------------|
| N3    | 1.10       | NN3    | 0.77       |
| N10   | 0.17       | NN10   | 0.13       |
| N25   | 0.10       | NN25   | 0.07       |
| NAS3  | 0.92       | NNAS3  | 0.56       |
| NAS5  | 0.71       | NNAS5  | 0.46       |
| NAS10 | 0.57       | NNAS10 | 0.35       |

Filter  
Model  
Number  
Selection

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| NFS30 |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| NFS30 | 1N    | Z     | 10    |       | SO    |       | D     |

| BOX 1                                                                  | BOX 2                                   | BOX 3                                                                                                                                                                                                            |
|------------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series                                                          | Number & Size of Elements               | Media Type                                                                                                                                                                                                       |
| NFS30                                                                  | N = Single Length<br>NN = Double Length | Omit = E Media (Cellulose)<br>Z = Excellement® Z-Media® (synthetic)<br>AS = Anti-Stat Media (synthetic)<br>ZX = Excellement® Z-Media® (high collapse center tube)<br>M = Media (reusable metal mesh) N size only |
| NFSN30<br>(Non-bypassing;<br>requires ZX<br>high collapse<br>elements) |                                         |                                                                                                                                                                                                                  |

| BOX 4                                                                                                                                                                                                      | BOX 5                                                                       | BOX 6                                                                                 | BOX 7                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Micron Rating                                                                                                                                                                                              | Seal Material                                                               | Porting                                                                               | Bypass                                                                                                         |
| 1 = 1 Micron (Z, ZX media)<br>3 = 3 Micron (AS, E, Z, ZX media)<br>5 = 5 Micron (AS, Z, ZX media)<br>10 = 10 Micron (AS, E, M, Z, ZX media)<br>25 = 25 Micron (E, Z, ZX media)<br>60 = 60 Micron (M media) | Omit = Buna N<br>V = Viton®<br>W = Buna N,<br>Anodized<br>Aluminum<br>parts | SO = SAE-12<br>PO = 3/4" NPTF<br>FO = 1" SAE 4-bolt<br>flange Code 61<br>O = Manifold | Omit = 40 PSI<br>Bypass<br>50 = 50 PSI<br>Bypass<br>X = Blocked<br>bypass<br>(Omit box 7 if NFSN30<br>is used) |

| BOX 8                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Options                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Omit = None                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Visual                                          | D = Pointer<br>D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Visual with<br>Thermal<br>Lockout               | D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Electrical                                      | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical<br>with<br>Thermal<br>Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical<br>Visual                            | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                     |
| Electrical<br>Visual with<br>Thermal<br>Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

## NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.

Box 5. E media (cellulose) elements are only available with Buna N seals. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 6. For option O, O-rings included; fastening hardware not included.

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 8. For options SO, PO and FO, available dirt alarm is D only.



# Top-Ported Pressure Filter

## YF30



### Features and Benefits

- Top-ported pressure filter
- All aluminum assembly
- Meets HF2 automotive standards
- Offered in straight thread porting
- Optional drain plug in bowl for easy servicing
- Available with non-bypass option

25 gpm  
100 L/min  
3000 psi  
210 bar

Model No. of filter in photograph is YF308YZ10SD5.

|                           |                                                                         |
|---------------------------|-------------------------------------------------------------------------|
| Flow Rating:              | Up to 25 gpm (100 L/min) for 150 SUS (32 cSt) fluids                    |
| Max. Operating Pressure:  | 3000 psi (210 bar)                                                      |
| Min. Yield Pressure:      | 10,000 psi (690 bar), per NFPA T2.6.1                                   |
| Rated Fatigue Pressure:   | 1800 psi (124 bar), per NFPA T2.6.1-2005                                |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                         |
| Bypass Setting:           | Cracking: 50 psi (3.4 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Head:             | Aluminum                                                                |
| Element Case:             | Aluminum                                                                |
| Weight of YF30-4Y:        | 3.75 lbs. (1.70 kg)                                                     |
| Weight of YF30-8Y:        | 4.25 lbs. (1.93 kg)                                                     |
| Element Change Clearance: | 4.50" (115 mm)                                                          |

### Filter Housing Specifications

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                      |
| Petroleum Based Fluids | All E Media (cellulose) and Z-Media* (synthetic) |
| High Water Content     | All Z-Media* (synthetic)                         |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic)                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic)           |

### Fluid Compatibility

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

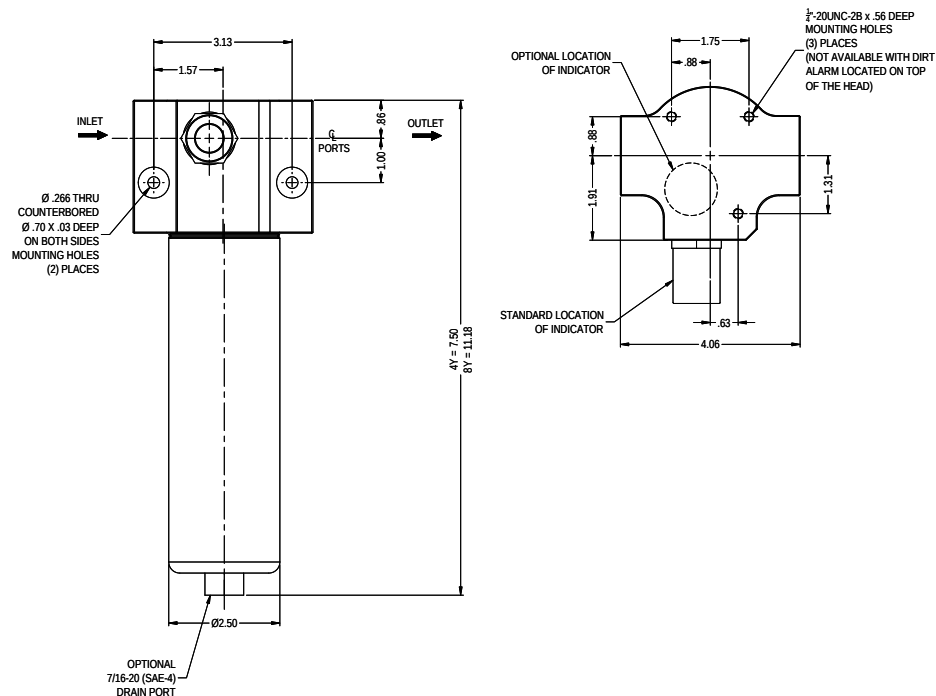
NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



NOTES:  
1.) BOWL INSTALLATION TORQUE = 45 FT.LBS.

Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

| Element       | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|               | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 4YZ1/8YZ1     | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 4YZ3/8YZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 4YZ5/8YZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 4YZ10/8YZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 4YZ25/8YZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| 4YZX5/8YZX5   | 2.5                                                                                                            | 3.0                | 4.0                | 5.6                                                                  | 7.2                      |
| 4YZX10/8YZX10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                      |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 4YZ1    | 6.3      | 8YZ1    | 12.1     |
| 4YZ3    | 5.1      | 8YZ3    | 9.9      |
| 4YZ5    | 6.4      | 8YZ5    | 12.4     |
| 4YZ10   | 5.4      | 8YZ10   | 10.5     |
| 4YZ25   | 4.9      | 8YZ25   | 9.4      |
| 4YZX5   | 4.3      | 8YZX5   | 8.9      |
| 4YZX10  | 4.3      | 8YZX10  | 8.9      |

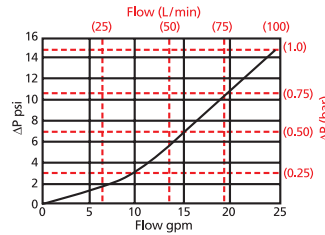
Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: 4Y: 1.77" (45 mm) O.D. x 4.50" (114 mm) long  
8Y: 1.77" (45 mm) O.D. x 8.21" (209 mm) long

$\Delta P_{\text{housing}}$

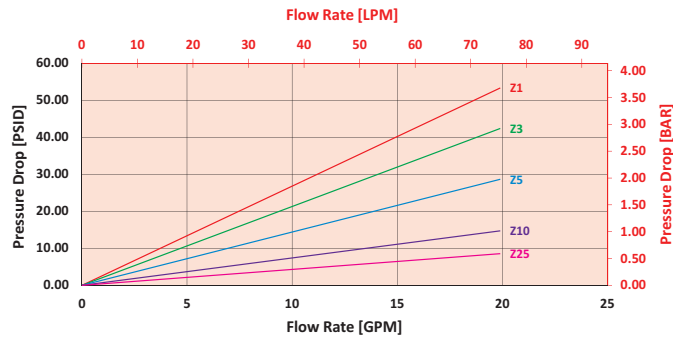
YF30  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

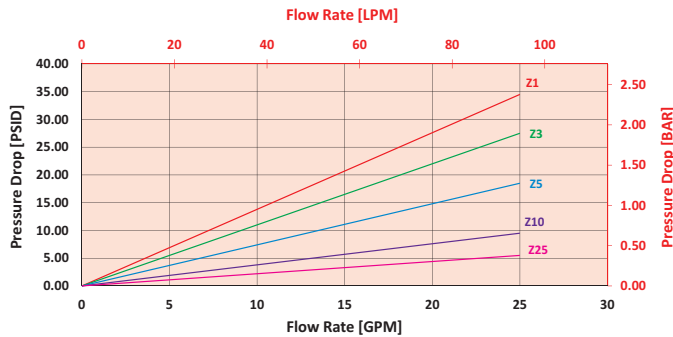
4YZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



8YZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 10 gpm (37.9 L/min) for YF304YZ10WSDRD5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 10 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the YF30 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 10 gpm. In this case,  $\Delta P_{\text{element}}$  is 8 psi (.55 bar) according to the graph for the 4YZ10 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 8 \text{ psi } [.55 \text{ bar}]$$

$$V_f = 200 \text{ SUS (42.6 cSt)} / 150 \text{ SUS (32 cSt)} = 1.3$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (8 \text{ psi} * 1.3) = 13.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.55 \text{ bar} * 1.3) = .93 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

### Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.   | $\Delta P$ | Ele.   | $\Delta P$ |
|--------|------------|--------|------------|
| 4YZX5  | 1.65       | 8YZX5  | 0.92       |
| 4YZX10 | 0.09       | 8YZX10 | 0.63       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder YF30:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| YF30  |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| YF30  | 4     | YZ10  | W     | S     |       | DR    | D5    |

= YF304YZ10WSDRD5

| BOX 1                                                        | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                          | BOX 4                                                                 | BOX 5                                        |
|--------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------|
| Filter Series                                                | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                                         | Seal Material                                                         | Inlet Port                                   |
| YF30                                                         | 4<br>8              | YZ1 = Y size 1 µ Excellement® Z-Media® (synthetic)<br>YZ3 = Y size 3 µ Excellement® Z-Media® (synthetic)<br>YZ5 = Y size 5 µ Excellement® Z-Media® (synthetic)<br>YZ10 = Y size 10 µ Excellement® Z-Media® (synthetic)<br>YZ25 = Y size 25 µ Excellement® Z-Media® (synthetic)<br>YZX5 = Y size 5 µ Excellement® Z-Media® (high collapse center tube)<br>YZX10 = Y size 10 µ Excellement® Z-Media® (high collapse center tube) | Omit = Buna N<br>V = Viton®<br>W = Buna N,<br>Anodized Aluminum parts | S = SAE-12<br>O = Subplate (contact factory) |
| YFN30<br>(Non-bypassing; requires ZX high collapse elements) |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                       |                                              |

| BOX 6                                                | BOX 7                         | BOX 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Location                                 | Optional Bowl Drain           | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Omit = Side of filter head<br>T = Top of filter head | Omit = No drain<br>DR = Drain | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                      |                               | Visual D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                      |                               | Visual with Thermal Lockout D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                      |                               | Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
|                                                      |                               | Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LC T = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LC T = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LC T = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LC T = Low current MS16T<br>MS17LC T = Low current MS17T                                                                                                |
|                                                      |                               | Electrical Visual<br>MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                          |
|                                                      |                               | Electrical Visual with Thermal Lockout<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                       |

## NOTES:

Box 2. Replacement element part numbers are combination of Boxes 2,3, and 4.  
Example 4YZ10V

Box 4. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 8. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

# Non-Bypassing Pressure Filter

## CFX30



### Features and Benefits

- Top-ported non-bypassing pressure filter
- Unique valve eliminates need for high collapse elements, valve begins to close off flow at 50 psi: Differential Pressure and fully closes off flow by 80 psi: DP. This ensures that no un-filtered flow is allowed down stream to critical components.
- Offered in pipe, SAE straight thread and ISO 228 porting
- Integral inlet and outlet female test points option available

**30 gpm**  
**115 L/min**  
**3000 psi**  
**210 bar**

Model No. of filter in photograph is CFX301CC10SD5.

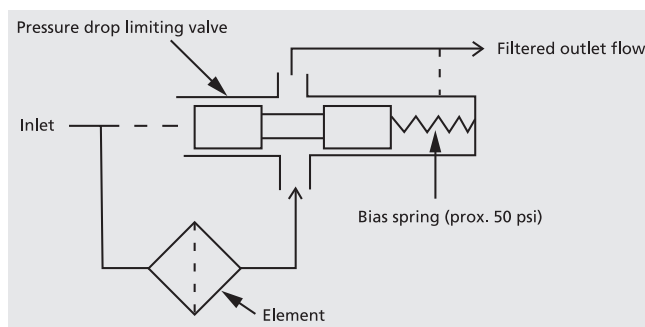
|                           |                                                      |
|---------------------------|------------------------------------------------------|
| Flow Rating:              | Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 3000 psi (210 bar)                                   |
| Min. Yield Pressure:      | 12,000 psi (828 bar), per NFPA T2.6.1                |
| Rated Fatigue Pressure:   | 1800 psi (125 bar), per NFPA T2.6.1-2005             |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                      |
| Bypass Setting:           | Non-Bypassing                                        |
| Porting Head:             | Aluminum                                             |
| Element Case:             | Steel                                                |
| Weight of CFX30-1CC:      | 19.5 lbs. (8.9 kg)                                   |
| Element Change Clearance: | 4.00" (100 mm)                                       |

### Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E Media (cellulose), Z-Media* and ASP* Media (synthetic)                                                                                                     |
| High Water Content     | All Z-Media* and ASP* media (synthetic)                                                                                                                          |
| Invert Emulsions       | 10 and 25 µ Z-Media* and 10 µ ASP* media (synthetic)                                                                                                             |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* and 3, 5 and 10 µ ASP* Media (synthetic)                                                                                              |
| Phosphate Esters       | All Z-Media* and ASP* media (synthetic) with H (EPR) seal designation                                                                                            |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media* (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

Schroeder's CFX30 series is a non-bypassing filter that incorporates the use of a unique pressure drop limiting valve that maintains the differential pressure across the element below the element's collapse pressure rating. As the element accumulates dirt, the pressure drop increases across the element and, therefore, across the spool of the valve. At 50 psi, the spool begins to move, restricting flow as needed to prevent the pressure drop from increasing further and compromising element integrity. This design allows the CFX30 filters to safely use the lower cost standard elements, eliminating the need for expensive high-crush replacement elements.



**Unique Non-Bypassing Filtration:**  
A Better Way That Does Not Require High Crush Elements

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

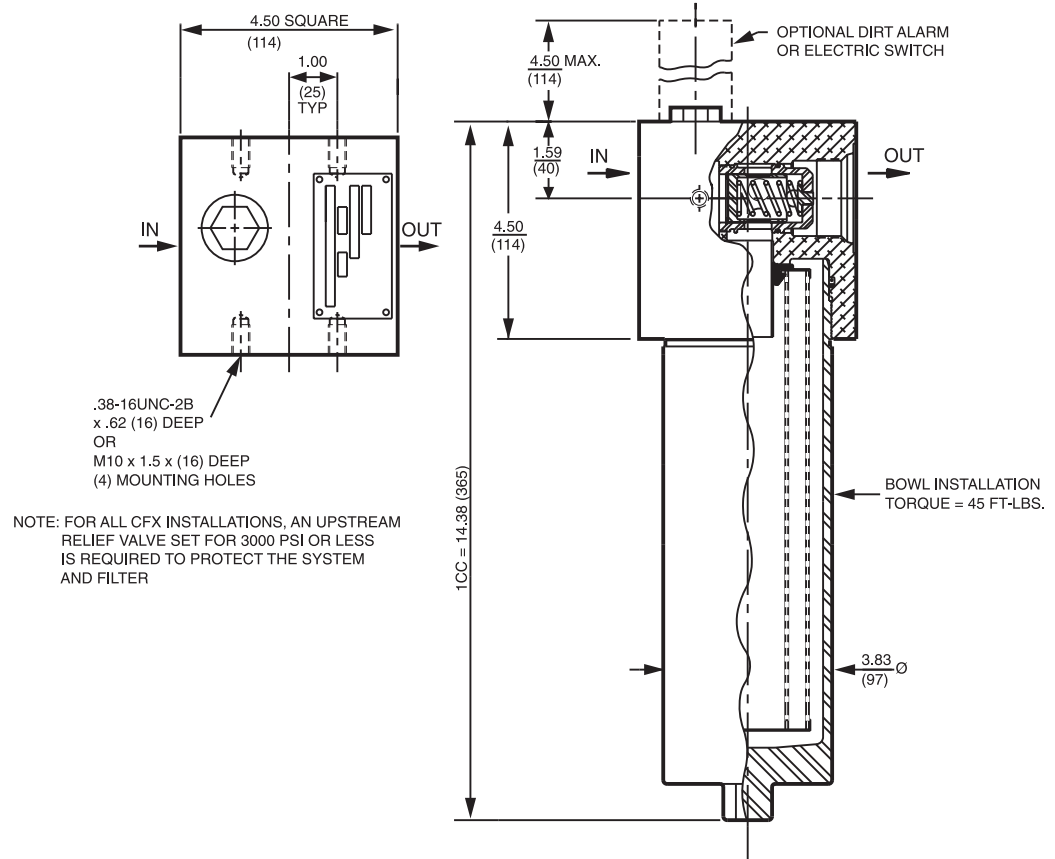
NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8                   |                    |                    | Filtration Ratio per ISO 16889     |                          |
|---------|----------------------------------------------------------------|--------------------|--------------------|------------------------------------|--------------------------|
|         | Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Using APC calibrated per ISO 11171 |                          |
|         | $\beta_x \geq 75$                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$            | $\beta_{x(c)} \geq 1000$ |
| CCZ1    | <1.0                                                           | <1.0               | <1.0               | <4.0                               | 4.2                      |
| CCZ3    | <1.0                                                           | <1.0               | <2.0               | <4.0                               | 4.8                      |
| CCZ5    | 2.5                                                            | 3.0                | 4.0                | 4.8                                | 6.3                      |
| CCZ10   | 7.4                                                            | 8.2                | 10.0               | 8.0                                | 10.0                     |
| CCZ25   | 18.0                                                           | 20.0               | 22.5               | 19.0                               | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| CCZ1    | 57       |
| CCZ3    | 58       |
| CCZ5    | 63       |
| CCZ10   | 62       |
| CCZ25   | 63       |

Element Collapse Rating: 150 psid (10 bar) for standard elements

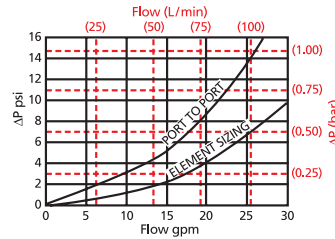
Flow Direction: Outside In

Element Nominal CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long  
Dimensions:



$\Delta P_{\text{housing}}$

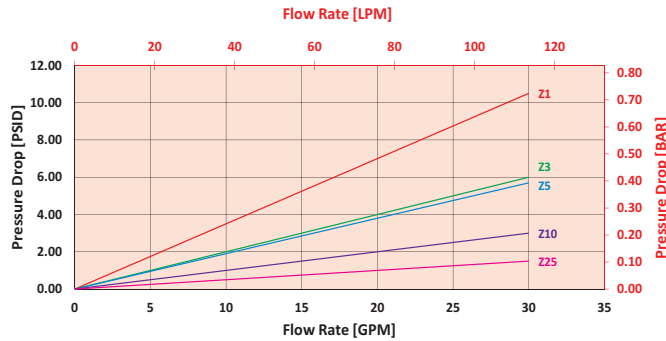
CFX30  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

CCZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for CFX301CZ5SD5 using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 5 psi (.34 bar) on the graph for the CFX30 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 3 psi (.21 bar) according to the graph for the CZ5 element.

Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 5 \text{ psi } [.34 \text{ bar}] \mid \Delta P_{\text{element}} = 3 \text{ psi } [.21 \text{ bar}]$$

$$V_f = 100 \text{ SUS (21.3 cSt)} / 150 \text{ SUS (32 cSt)} = .67$$

$$\Delta P_{\text{filter}} = .34 \text{ psi} + (.21 \text{ psi} * .67) = .48 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .34 \text{ bar} + (.21 \text{ bar} * .67) = .48 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.         | $\Delta P$ |
|--------------|------------|
| CC3          | 0.22       |
| CC10         | 0.13       |
| CC25         | 0.03       |
| CAS3/CCAS3   | 0.20       |
| CAS5/CCAS5   | 0.19       |
| CAS10/CCAS10 | 0.35       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder CFX30:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| CFX30 |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| CFX30 | CC    | Z     | 5     |       | S     |       | D5    |

= CFX30CCZ5SD5

| BOX 1         | BOX 2                                        | BOX 3                                                                                                                                      |
|---------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series | Number & Size of Elements                    | Media Type                                                                                                                                 |
| CFX30         | 1<br>C = Single Length<br>CC = Double Length | Omit = E Media (cellulose)<br>Z = Excellement® Z-Media® (synthetic)<br>AS = Anti-Stat Media (synthetic)<br>M = Media (reusable metal mesh) |

| BOX 4                                                                                                                                                         | BOX 5                                                                                                               | BOX 6                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Micron Rating                                                                                                                                                 | Seal Material                                                                                                       | Porting                                         |
| 1 = 1 Micron (Z-Media®)<br>3 = 3 Micron (E, Z, AS Media)<br>5 = 5 Micron (Z, AS Media)<br>10 = 10 Micron (E, M, Z, AS Media)<br>25 = 25 Micron (E & Z-Media®) | Omit = Buna N<br>V = Viton®<br>W = Buna N,<br>Anodized<br>Aluminum parts<br>H = EPR<br>H.5 = Skydrol® compatibility | S = SAE-20<br>P = 1¼" NPTF<br>B = ISO 228 G-1¼" |

| BOX 7                                                                                                                                           | BOX 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Options                                                                                                                                         | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Omit = None<br>L = Two ¼" NPTF inlet and outlet female test ports<br>U = Schroeder Check 7/16"-20 UNF Test Point installation in cap (upstream) | Omit = None<br>D5 = Visual pop-up<br>D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                                 | Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
|                                                                                                                                                 | Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                     |
|                                                                                                                                                 | Electrical Visual<br>MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                 | Electrical Visual with Thermal Lockout<br>MS13DCLCT = MS13 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = MS14 (see above), direct current, w/ thermal lockout                                                                                                                                                                                                                                                                                                         |

## NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. E media (cellulose) elements are only available with Buna N seals.

Box 5. For options H, V, W, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 6. B porting option supplied with metric mounting holes.

# High Pressure Filter

PLD

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



## Features and Benefits

- Durable carbon steel construction
- Filter housings are designed to withstand pressure surges as well as high static pressure loads
- Screw-in bowl allows the filter element to be easily removed for replacement or cleaning
- Standard model supplied with drain plugs
- Standard Viton® seal on filter housing
- Filter contains an integrated equalization valve
- Pressure is equalized between filters by raising the change-over lever prior to switching it to the relevant filter side

100 gpm  
380 L/min  
3000 psi  
210 bar

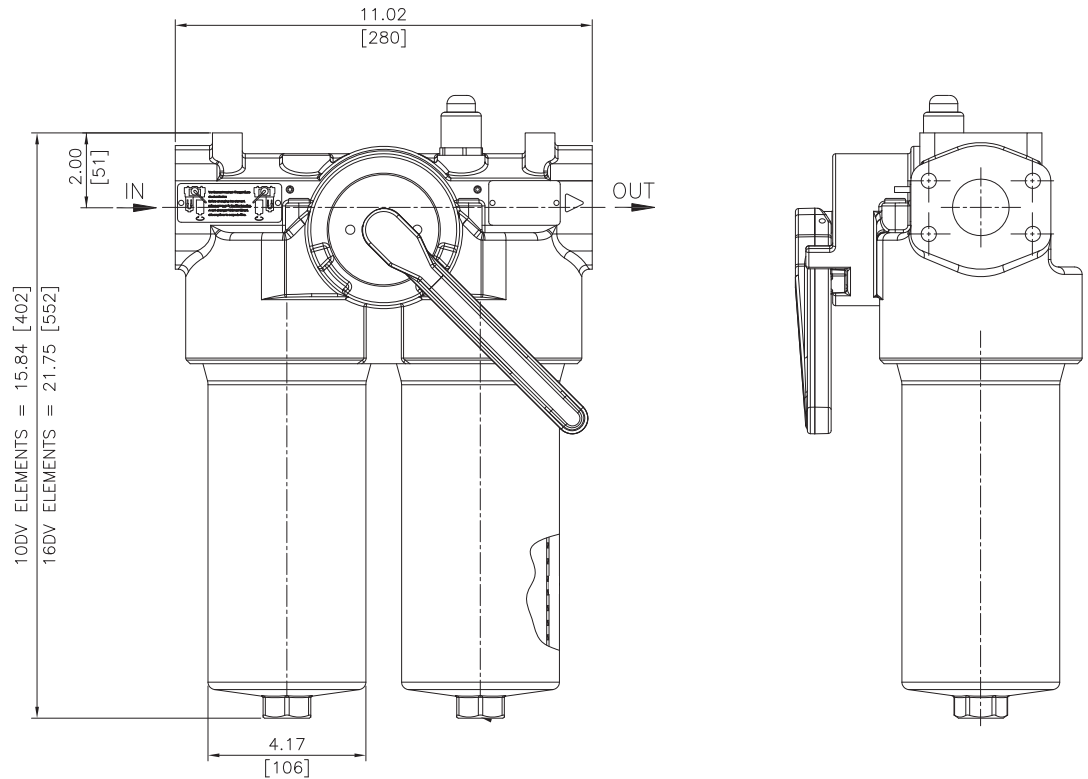
Model No. of filter in photograph is PLD10DVZ3VF24.

|                           |                                                       |
|---------------------------|-------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 3000 psi (207 bar)                                    |
| Min. Yield Pressure:      | 10,600 psi (730 bar)                                  |
| Rated Fatigue Pressure:   | 3000 psi (207 bar)                                    |
| Temp. Range:              | -22°F to 250°F (-30°C to 121°C)                       |
| Bypass Setting:           | 102 psi (7 bar)                                       |
| Porting Head:             | Ductile Iron                                          |
| Element Case:             | Steel                                                 |
| Weight of PLD-10DV:       | 97 lbs. (43.9 kg)                                     |
| Weight of PLD-16DV:       | 100 lbs. (45.3 kg)                                    |
| Element Change Clearance: | 10DV: 3.5" (89 mm)<br>16DV: 3.5" (89 mm)              |

## Filter Housing Specifications

|                        |                                        |
|------------------------|----------------------------------------|
| Type Fluid             | Appropriate Schroeder Media            |
| Petroleum Based Fluids | All Z-Media® (synthetic)               |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)       |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic) |

## Fluid Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element    | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|            | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 10/16DVZ1  | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 10/16DVZ3  | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 10/16DVZ5  | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 10/16DVZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 10/16DVZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 10DVZ1  | 57       | 16DVZ1  | 110      |
| 10DVZ3  | 59       | 16DVZ3  | 114      |
| 10DVZ5  | 64       | 16DVZ5  | 124      |
| 10DVZ10 | 62       | 16DVZ10 | 112      |
| 10DVZ25 | 63       | 16DVZ25 | 102      |

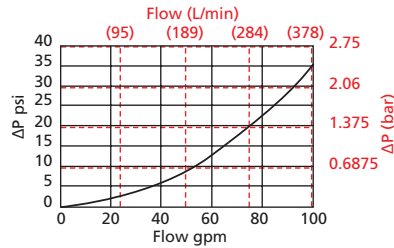
Element Collapse Rating: 290 psid (20 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 3.0" (75 mm) O.D. x 14.5" (370 mm) long

$\Delta P_{\text{housing}}$

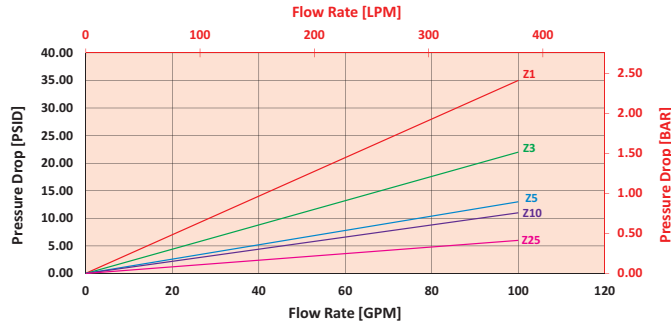
PLD  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

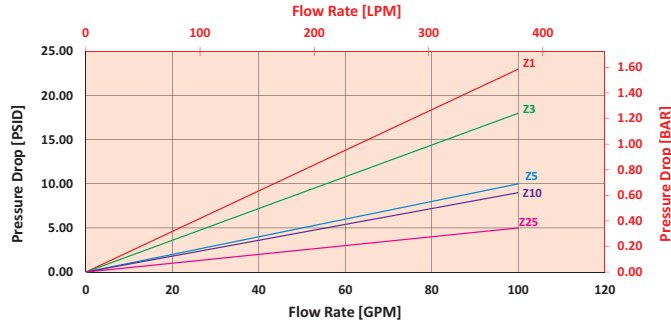
10DVZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



16DVZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 50 gpm (189 L/min) for PLD10DVZ1VF24VM using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 8 psi (.55 bar) on the graph for the PLD housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm. In this case,  $\Delta P_{\text{element}}$  is 17.5 psi (1.2 bar) according to the graph for the 10DVZ1 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 8 \text{ psi } [.55 \text{ bar}] \quad \Delta P_{\text{element}} = 17.5 \text{ psi } [1.2 \text{ bar}]$$

$$V_f = 200 \text{ SUS (42.6 cSt)} / 150 \text{ SUS (32 cSt)} = 1.3$$

$$\Delta P_{\text{filter}} = 8 \text{ psi} + (17.5 \text{ psi} * 1.3) = 30.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .55 \text{ bar} + (1.2 \text{ bar} * 1.3) = 2.1 \text{ bar}$$

Pressure Drop Information  
Based on Flow Rate and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.   | $\Delta P$ | Ele.   | $\Delta P$ |
|-------|------------|--------|------------|--------|------------|
| K3    | 0.25       | KZW25  | 0.14       | 2KZW10 | 0.12       |
| K10   | 0.09       | 2K3    | 0.12       | 2KZW25 | 0.07       |
| K25   | 0.02       | 2K10   | 0.05       | 3K3    | 0.08       |
| KAS3  | 0.10       | 2K25   | 0.01       | 3K10   | 0.03       |
| KAS5  | 0.08       | 2KAS3  | 0.05       | 3K25   | 0.01       |
| KAS10 | 0.05       | 2KAS5  | 0.04       | 3KAS3  | 0.03       |
| KZX10 | 0.22       | 2KAS10 | 0.03       | 3KAS5  | 0.02       |
| KZW1  | 0.43       | 2KZX10 | 0.11       | 3KAS10 | 0.02       |
| KZW3  | 0.32       | 2KZW1  | -          | 3KZX10 | 0.07       |
| KZW5  | 0.28       | 2KZW3  | 0.16       |        |            |
| KZW10 | 0.23       | 2KZW5  | 0.14       |        |            |

## Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder PLD:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| PLD   |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| PLD   | 10    | DVZ1  | V     | F24   | VM    |

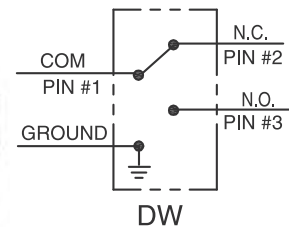
= PLD10DVZ1VF24VM

| BOX 1         | BOX 2                   | BOX 3                                                                                                                                                                                                              | BOX 4                       |
|---------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Filter Series | Length of Elements (in) | Element Size and Media                                                                                                                                                                                             | Seal Material               |
| PLD           | 10<br>16                | DVZ1 = DV size 1 $\mu$ synthetic media<br>DVZ3 = DV size 3 $\mu$ synthetic media<br>DVZ5 = DV size 5 $\mu$ synthetic media<br>DVZ10 = DV size 10 $\mu$ synthetic media<br>DVZ25 = DV size 25 $\mu$ synthetic media | Omit = Buna N<br>V = Viton® |

| BOX 5                                                     | BOX 6                                                                                             |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Porting                                                   | Dirt Alarm® Options                                                                               |
| F24 = 1½" SAE 4-bolt flange Code 61<br>S24 = SAE-24 (1½") | Omit = None<br>Visual VM = Visual pop-up w/manual rest<br>Electrical DW = AC/DC 3-wire (NO or NC) |



VM = Manual Reset



DW = AC/DC 3-wire  
(NO or NC)

### NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4.  
Example: 16DVZ10

Box 4. Filter housings are supplied with standard Viton seals. Seal designation in Box 4 applies to element only. Viton is a registered trademark of DuPont Dow Elastomers.



# Top-Ported Pressure Filter

## CF40/DF40

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
KC65  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
LC50  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



### Features and Benefits

- Top-ported pressure filter
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread and ISO 228 porting
- Integral inlet and outlet female test points option available
- No-Element indicator option available

Up to  
45 gpm  
170 L/min  
4000 psi  
275 bar

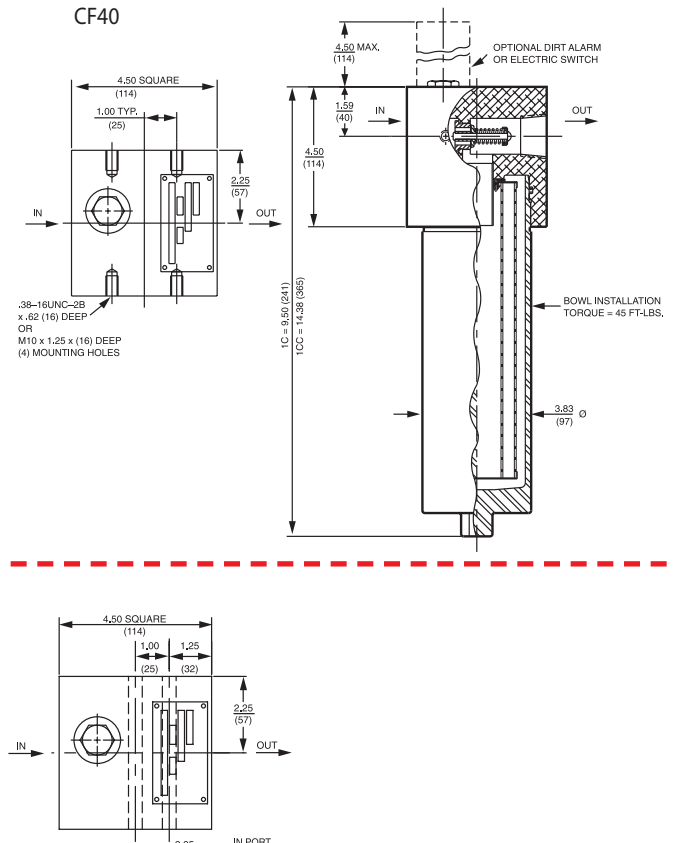
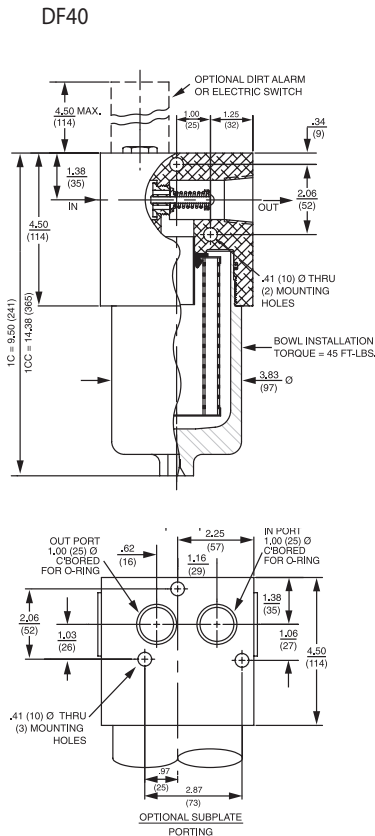
Model No. of filters in photograph are CF401CC10SD5 and DF401CCZ10PD5.

|                           |                                                                                                                |
|---------------------------|----------------------------------------------------------------------------------------------------------------|
| Flow Rating:              | CF40 - 45 gpm (170 L/min) for 150 SUS (32 cSt) fluids<br>DF40 - 30 gpm (113 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 4000 psi (275 bar)                                                                                             |
| Min. Yield Pressure:      | 12,000 psi (828 bar), per NFPA T2.6.1                                                                          |
| Rated Fatigue Pressure:   | 1800 psi (125 bar), per NFPA T2.6.1-2005                                                                       |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                                |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 72 psi (5.0 bar)<br>Non-bypassing model has a blocked bypass.         |
| Porting Head:             | Aluminum                                                                                                       |
| Element Case:             | Steel                                                                                                          |
| Weight of CF40/DF40-1C:   | 14.0 lbs. (6.4 kg)                                                                                             |
| Weight of CF40/DF40-1CC:  | 19.5 lbs. (8.9 kg)                                                                                             |
| Element Change Clearance: | 4.00" (100 mm) for C elements<br>8.75" (219 mm) for CC elements                                                |

### Filter Housing Specifications

|                        |                                                                                                                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                   |
| Petroleum Based Fluids | All E Media (cellulose), Z-Media* and ASP* Media (synthetic)                                                                                                                                  |
| High Water Content     | All Z-Media* and ASP* Media (synthetic)                                                                                                                                                       |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic), 10 µ ASP* Media (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic), and all ASP* Media (synthetic)                                                                                                                        |
| Phosphate Esters       | All Z-Media* and ASP* Media (synthetic) with H (EPR) seal designation                                                                                                                         |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media (synthetic) and all ASP Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element    | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|            | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| CZ1/CCZ1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| CZ3/CCZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| CZ5/CCZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| CZ10/CCZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| CZ25/CCZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| CCZX3      | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |
| CCZX10     | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                      |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| CZ1     | 25       | CCZ1    | 57       |
| CZ3     | 26       | CCZ3    | 58       |
| CZ5     | 30       | CCZ5    | 63       |
| CZ10    | 28       | CCZ10   | 62       |
| CZ25    | 28       | CCZ25   | 63       |
|         |          | CCZX3   | 26*      |
|         |          | CCZX10  | 28*      |

Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: C: 3.0" (75 mm) O.D. x 4.75" (120 mm) long  
CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long

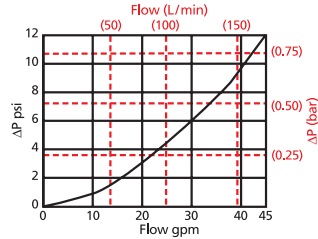
\* Based on 100 psi terminal pressure

## Pressure Drop Information Based on Flow Rate and Viscosity

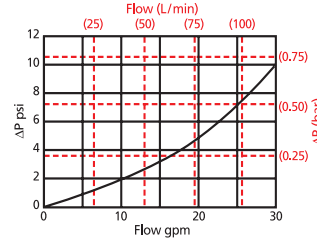
$\Delta P_{\text{housing}}$

CF40/DF40  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:

CF40- 1-1/4" Porting



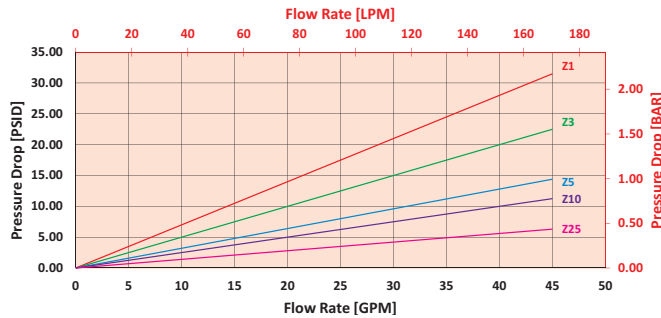
DF40- 1" Porting



$\Delta P_{\text{element}}$

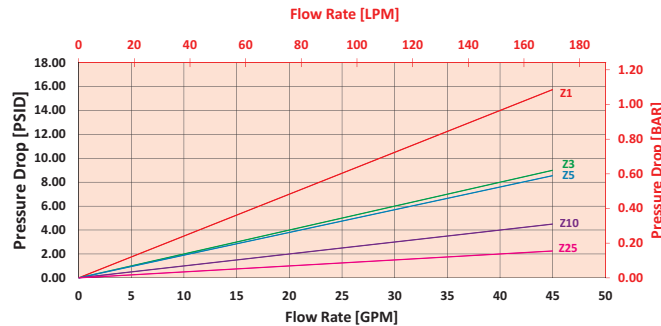
CZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



CCZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 25 gpm (94.6 L/min) for CF401CZ10SD5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 25 gpm. In this case,  $\Delta P_{\text{housing}}$  is 4.5 psi (.31 bar) on the graph for the CF40 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 25 gpm. In this case,  $\Delta P_{\text{element}}$  is 6 psi (.42 bar) according to the graph for the CZ10 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 4.5 \text{ psi } [.31 \text{ bar}] \mid \Delta P_{\text{element}} = 6 \text{ psi } [.42 \text{ bar}]$$

$$V_f = 200 \text{ SUS (42.6 cSt)} / 150 \text{ SUS (32 cSt)} = 1.3$$

$$\Delta P_{\text{filter}} = 4.5 \text{ psi} + (6 \text{ psi} * 1.3) = 12.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .31 \text{ bar} + (.42 \text{ bar} * 1.3) = .86 \text{ bar}$$

Note:

If your element is not graphed, use the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.   | $\Delta P$ |
|-------|------------|--------|------------|
| C3    | 0.50       | CC3    | 0.22       |
| C10   | 0.19       | CC10   | 0.13       |
| C25   | 0.09       | CC25   | 0.03       |
| CAS3  | 0.50       | CCAS3  | 0.20       |
| CAS5  | 0.32       | CCAS5  | 0.19       |
| CAS10 | 0.25       | CCAS10 | 0.10       |
|       |            | CCZX3  | 0.29       |
|       |            | CCZX10 | 0.26       |

## Filter Model Number Selection

## How to Build a Valid Model Number for a Schroeder CF40:

BOX 1 BOX 2 BOX 3 BOX 4 BOX 5 BOX 6 BOX 7 BOX 8 BOX 9 BOX 10  
CF40

Diagram illustrating the assembly of the alphanumeric string CF401CZ10SD5 from ten boxes:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| CF40  | 1C    | Z     | 10    |       | S     |       |       | D5    |        |

The final assembled string is: CF401CZ10SD5

| BOX 1                                                        | BOX 2                                              | BOX 3                                  |                                                                          | BOX 6                        |
|--------------------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------|------------------------------|
| Filter Series                                                | Number and Size of Elements                        | Media Type                             |                                                                          | Porting                      |
| CF40                                                         | 1 C<br>CC                                          | Omit                                   | E Media(Cellulose)                                                       |                              |
| CFN40<br>(Non-bypassing: requires ZX high collapse elements) |                                                    | Z                                      | = Excellen <sup>™</sup> Z-Media <sup>™</sup> (synthetic)                 | S = SAE-20"                  |
| DF40                                                         |                                                    | ZX                                     | = Excellen <sup>™</sup> Z-Media <sup>™</sup> (high collapse center tube) | P = 1¼" NPTF                 |
| DFN40<br>(Non-bypassing: requires ZX high collapse elements) |                                                    | AS                                     | = Anti-Stat Media (synthetic)                                            | B = ISO 228                  |
|                                                              |                                                    | M                                      | = Media (reusable metal mesh) D size only                                | G-1¼"                        |
| BOX 4                                                        |                                                    | BOX 5                                  |                                                                          | BOX 6 (Cont.)                |
| Micron Rating                                                |                                                    | Seal Material                          |                                                                          | *Only for DF40 Configuration |
| 1                                                            | = 1 Micron (Z, ZX media)                           | Omit                                   | = Buna N                                                                 | Porting                      |
| 3                                                            | = 3 Micron (AS, E, Z, ZX media)                    | V                                      | = Viton <sup>®</sup>                                                     | O = Manifold mounting        |
| 5                                                            | = 5 Micron (AS, Z, ZX media)                       | W                                      | = Buna N,                                                                | S = SAE-16                   |
| 10                                                           | = 10 Micron (AS, E, M, Z, ZX media)                |                                        | Anodized Aluminum parts                                                  | P = 1" NPTF                  |
| 25                                                           | = 25 Micron (E, Z & ZX media)                      | H                                      | = EPR                                                                    | B = ISO 228 G-1              |
|                                                              |                                                    | H.5                                    | = Skydrol <sup>®</sup> compatibility                                     |                              |
| BOX 7                                                        |                                                    | BOX 9                                  |                                                                          |                              |
| Bypass                                                       |                                                    | Dirt Alarm <sup>®</sup> Options        |                                                                          |                              |
| Omit                                                         | = 40 PSI Bypass                                    | Omit                                   | = None                                                                   |                              |
| X                                                            | = Blocked bypass                                   | Visual                                 | D = Pointer                                                              |                              |
| 25                                                           | = 25 psi bypass setting (CF40 only)                |                                        | D5 = Visual pop-up                                                       |                              |
| 30                                                           | = 30 psi bypass setting (CF40 only)                | Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout                                           |                              |
| 50                                                           | = 50 psi bypass setting                            |                                        |                                                                          |                              |
| (Omit box 7 if a non-bypassing filter housing is selected)   |                                                    | Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable                    |                              |
|                                                              |                                                    |                                        | MS5LC = Low current MS5                                                  |                              |
|                                                              |                                                    |                                        | MS10 = Electrical w/ DIN connector (male end only)                       |                              |
|                                                              |                                                    |                                        | MS10LC = Low current MS10                                                |                              |
|                                                              |                                                    |                                        | MS11 = Electrical w/ 12 ft. 4-conductor wire                             |                              |
|                                                              |                                                    |                                        | MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)       |                              |
|                                                              |                                                    |                                        | MS12LC = Low current MS12                                                |                              |
|                                                              |                                                    |                                        | MS16 = Electrical w/ weather-packed sealed connector                     |                              |
|                                                              |                                                    |                                        | MS16LC = Low current MS16                                                |                              |
|                                                              |                                                    |                                        | MS17LC = Electrical w/ 4 pin Brad Harrison male connector                |                              |
|                                                              |                                                    | Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout                                |                              |
|                                                              |                                                    |                                        | MS5LCT = Low current MS5T                                                |                              |
|                                                              |                                                    |                                        | MS10T = MS10 (see above) w/ thermal lockout                              |                              |
|                                                              |                                                    |                                        | MS10LCT = Low current MS10T                                              |                              |
|                                                              |                                                    |                                        | MS12T = MS12 (see above) w/ thermal lockout                              |                              |
|                                                              |                                                    |                                        | MS12LCT = Low current MS12T                                              |                              |
|                                                              |                                                    |                                        | MS16T = MS16 (see above) w/ thermal lockout                              |                              |
|                                                              |                                                    |                                        | MS16LCT = Low current MS16T                                              |                              |
|                                                              |                                                    |                                        | MS17LCT = Low current MS17T                                              |                              |
|                                                              |                                                    | Electrical Visual                      | MS = Cam operated switch w/ ½" conduit female connection                 |                              |
|                                                              |                                                    |                                        | MS13DC = Supplied w/ threaded connector & light                          |                              |
|                                                              |                                                    |                                        | MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)    |                              |
|                                                              |                                                    | Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout           |                              |
|                                                              |                                                    |                                        | MS13DCLCT = Low current MS13DCT                                          |                              |
|                                                              |                                                    |                                        | MS14DCT = MS14 (see above), direct current, w/ thermal lockout           |                              |
|                                                              |                                                    |                                        | MS14DCLCT = Low current MS14DCT                                          |                              |
| BOX 8                                                        |                                                    | BOX 10                                 |                                                                          |                              |
| Test Ports                                                   |                                                    | Additional Options                     |                                                                          |                              |
| Omit                                                         | = None                                             | Omit                                   | = None                                                                   |                              |
| L                                                            | = Two 1/4" NPTF inlet and outlet female test ports | N                                      | = No-Element Indicator (CF40 or DF40)                                    |                              |

NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.

Box 5. For options H, V, W, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 6. B porting option  
supplied with metric  
mounting holes.

**Box 7.** When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.

Box 10. N option is not available with CFN40 or DFN40. N option should be used in conjunction with dirt alarm.

# Top-Ported Pressure Filter

**PF40**



## Features and Benefits

- Top-ported pressure filter
- All steel housing offers unparalleled fatigue rating
- Available with non-bypass option with high collapse element
- Two bowl lengths provide optimal sizing for the application
- Offered in conventional sub-plate, SAE straight thread, and ISO 228 porting

**50 gpm**  
**190 L/min**  
**4000 psi**  
**275 bar**

Model No. of filter in photograph is PF409HZ10S.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids      |
| Max. Operating Pressure:  | 4000 psi (275 bar)                                        |
| Min. Yield Pressure:      | 12,000 psi (828 bar), per NFPA T2.6.1                     |
| Rated Fatigue Pressure:   | 2500 psi (173 bar), per NFPA T2.6.1-R1-2005               |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 75 psi (5.2 bar) |
| Porting Head:             | Steel                                                     |
| Element Case:             | Steel                                                     |
| Weight of PF40-5H:        | 21.8 lbs. (9.9 kg)                                        |
| Weight of PF40-9H:        | 25.5 lbs. (11.6 kg)                                       |
| Element Change Clearance: | 3.25" (83 mm)                                             |

## Filter Housing Specifications

|                        |                                                        |
|------------------------|--------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                            |
| Petroleum Based Fluids | All E Media (cellulose) and Z-Media* (synthetic)       |
| High Water Content     | All Z-Media* (synthetic)                               |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic)                       |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic)                 |
| Phosphate Esters       | All Z-Media* (synthetic) with H (EPR) seal designation |

## Fluid Compatibility

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

**PF40**

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

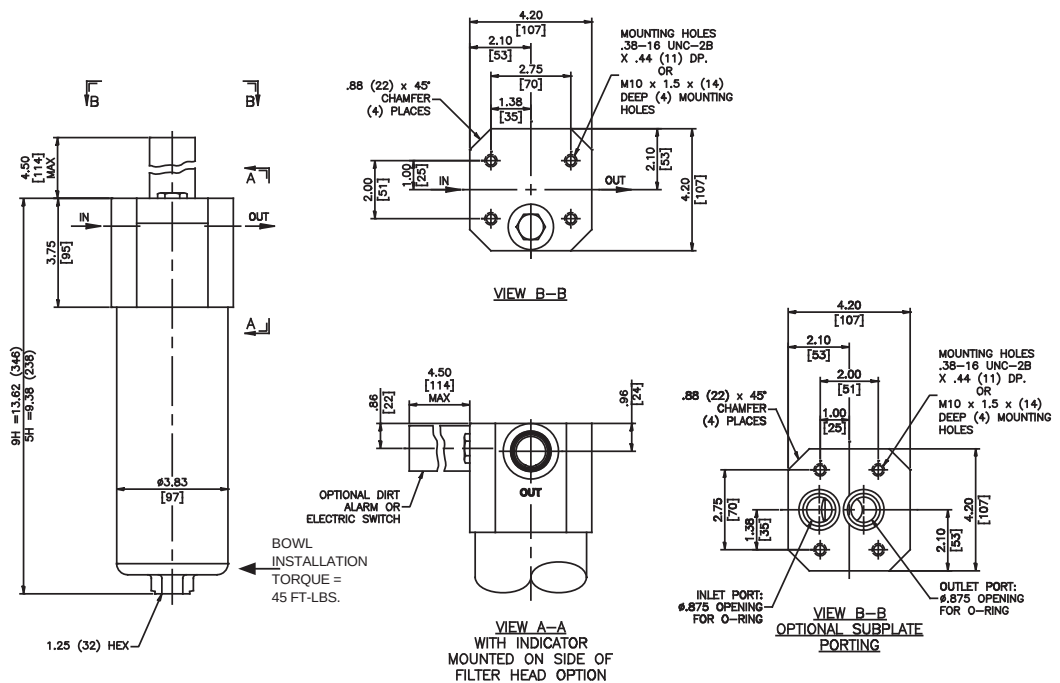
NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

Element  
Performance  
Information & Dirt  
Holding Capacity

|               | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
| Element       | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 5HZ1/9HZ1     | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 5HZ3/9HZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <1.0                                                                 | 4.8                      |
| 5HZ5/9HZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 5HZ10/9HZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 5HZ25/9HZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| 5HZX1/9HZX1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 5HZX3/9HZX3   | <1.0                                                                                                           | <1.0               | <2.0               | <1.0                                                                 | 4.8                      |
| 5HZX5/9HZX5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 5HZX10/9HZX10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 5HZX25/9HZX25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) |
|---------|-------------|---------|-------------|---------|-------------|---------|-------------|
| 5HZ1    | 26          | 9HZ1    | 51          | 5HZX1   | 14          | 9HZX1   | 29          |
| 5HZ3    | 28          | 9HZ3    | 42          | 5HZX3   | 14          | 9HZX3   | 29          |
| 5HZ5    | 39          | 9HZ5    | 59          | 5HZX5   | 15          | 9HZX5   | 31          |
| 5HZ10   | 31          | 9HZ10   | 47          | 5HZX10  | 15          | 9HZX10  | 31          |
| 5HZ25   | 32          | 9HZ25   | 48          | 5HZX25  | 16          | 9HZX25  | 33          |

Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse elements

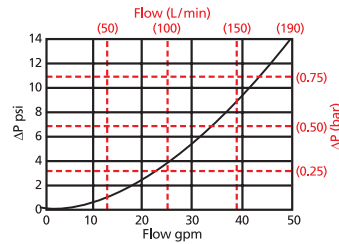
Flow Direction: Outside In

Element Nominal Dimensions: 5H: 2.5" (100 mm) O.D. x 5.36" (136 mm) long  
9H: 2.5" (100 mm) O.D. x 9.63" (244 mm) long



$\Delta P_{\text{housing}}$

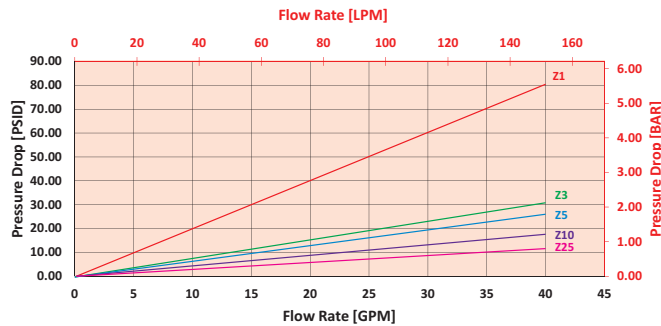
PF40  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

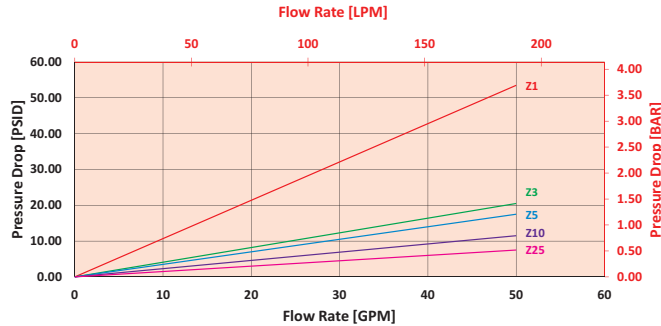
5HZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



9HZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 20 gpm (75.7 L/min) for PF405HZ3SD5S using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 20 gpm. In this case,  $\Delta P_{\text{housing}}$  is 2.5 psi (.17 bar) on the graph for the PF40 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 20 gpm. In this case,  $\Delta P_{\text{element}}$  is 15 psi (1 bar) according to the graph for the 5HZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 2.5 \text{ psi [.17 bar]} \mid \Delta P_{\text{element}} = 15 \text{ psi [1 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 2.5 \text{ psi} + (15 \text{ psi} * 1.1) = 19 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .17 \text{ bar} + (1 \text{ bar} * 1.1) = 1.3 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.   | $\Delta P$ |
|--------|------------|
| 5HZX3  | 1.17       |
| 5HZX10 | 0.50       |
| 5HZX25 | 0.27       |
| 9HZX3  | 0.62       |
| 9HZX10 | 0.26       |
| 9HZX25 | 0.14       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder PF40:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| PF40  |       |       |       |       |       |       |       |       |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| PF40  | 5     | HZ3   |       | S     |       |       | D5    | S     |        |

= PF405HZ3SD5S

| BOX 1                                               | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series                                       | Element Length (in) | Element Part Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| PF40                                                | 5                   | HZ1 = H size 1 μ Excellement® Z-Media® (synthetic)<br>HZ3 = H size 3 μ Excellement® Z-Media® (synthetic)<br>HZ5 = H size 5 μ Excellement® Z-Media® (synthetic)<br>HZ10 = H size 10 μ Excellement® Z-Media® (synthetic)<br>HZ25 = H size 25 μ Excellement® Z-Media® (synthetic)<br>HZX3 = H size 3 μ Excellement® Z-Media® (high collapse center tube)<br>HZX10 = H size 10 μ Excellement® Z-Media® (high collapse center tube)<br>HZX25 = H size 25 μ Excellement® Z-Media® (high collapse center tube) |
| PFN40                                               | 9                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| (Non-bypassing: requires ZX high collapse elements) |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                     |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| BOX 4                                                                  | BOX 5                          | BOX 6                                                                                             | BOX 7                                                                                                                                       |
|------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Seal Material                                                          | Porting                        | Bypass                                                                                            | Test Points                                                                                                                                 |
| Omit = Buna N<br>H = EPR<br>V = Viton®<br>H.5 = Skydrol® compatibility | S = SAE-16<br>B = ISO 228 G-1" | Omit = 40 PSI bypass<br>X = Blocked Bypass<br>50 = 50 PSI bypass<br>(Omit box 6 if PFN40 is used) | Omit = None<br>L = Two ¼" NPTF inlet & outlet female test ports<br>U = Schroeder Check ⅜"-20 UNF test point installation in head (upstream) |

| BOX 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | BOX 9                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Dirt Alarm® Location |
| Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Omit = Top mounted   |
| Visual D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                                              | S = Side mounted     |
| Visual with Thermal Lockout D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |
| Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |                      |
| Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                     |                      |
| Electrical Visual<br>MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                          |                      |
| Electrical Visual with Thermal Lockout<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                       |                      |

| BOX 10             |
|--------------------|
| Bowl Drain Options |
| Omit = None        |
| DR = Drain ⅜"-20   |

## NOTES:

- Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4.  
Example: 5HZ10V
- Box 4. For options H, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.
- Box 5. B porting option supplied with metric mounting holes.
- Box 6. When X is paired with a standard filter series, a standard bushing and spring plate will be used.
- Box 8. Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.

# Manifold Mounted Pressure Filter

## RFS50



### Features and Benefits

- Manifold mounted high pressure filter
- Offered in square head conventional subplate porting
- Direct mounting to customer's manifold
- Standard drain plug in bowl for easy servicing
- Various dirt alarm options available

30 gpm  
115 L/min  
5000 psi  
345 bar

Model No. of filter in photograph is RFS508R100.

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

**RFS50**

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10

Flow Rating: Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids

Max. Operating Pressure: 5000 psi (345 bar)

Min. Yield Pressure: 15,500 psi (1070 bar), per NFPA T2.6.1

Rated Fatigue Pressure: Contact Factory

Temp. Range: -20°F to 225°F (-29°C to 107°C)

Bypass Setting: Cracking: 40 psi (2.8 bar)  
Full Flow: 56 psi (3.9 bar)

Porting Head: Steel

Element Case: Steel

Weight of RFS50-8R: 16.50 lbs. (7.5 kg)

Element Change Clearance: 3.0" (75 mm)

### Filter Housing Specifications

Type Fluid: Appropriate Schroeder Media

Petroleum Based Fluids: All E Media (cellulose) and Z-Media\* (synthetic)

High Water Content: All Z-Media\* (synthetic)

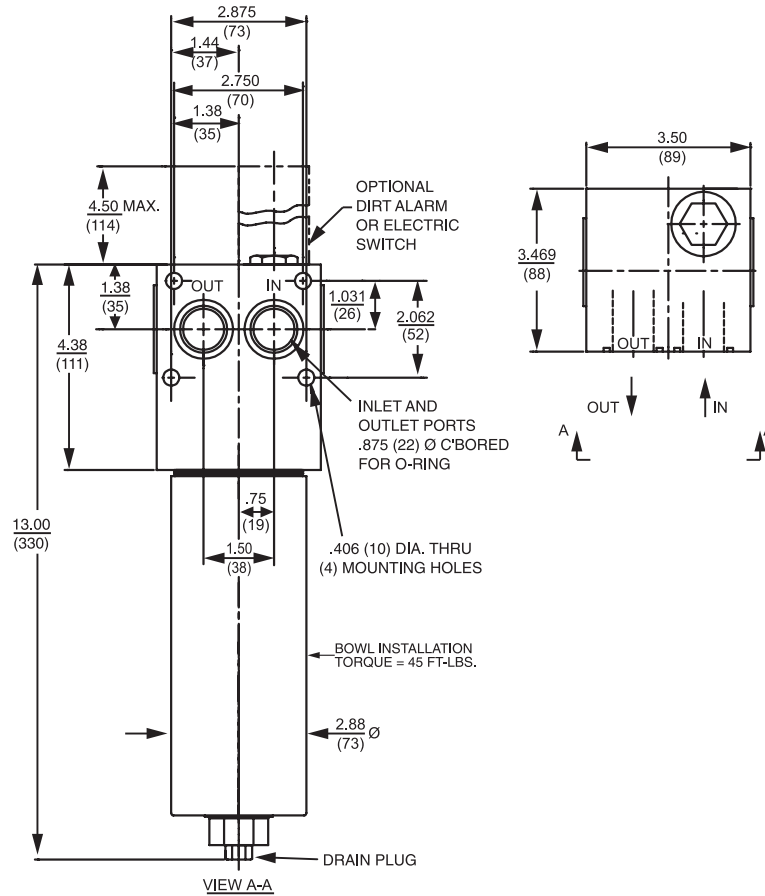
Invert Emulsions: 10 and 25 µ Z-Media\* (synthetic)

Water Glycols: 3, 5, 10 and 25 µ Z-Media\* (synthetic)

Phosphate Esters: All Z-Media\* (synthetic) with H (EPR) seal designation

Skydrol®: 3, 5, 10 and 25 µ Z-Media\* (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

### Fluid Compatibility



### Element Performance Information & Dirt Holding Capacity

Metric dimensions in ( ).  
Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
For complete dimensions please contact Schroeder Industries to request a certified print.

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 8RZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| 8RZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| 8RZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| 8RZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| 8RZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element | DHC (gm) |
|---------|----------|
| 8RZ1    | 33       |
| 8RZ3    | 26       |
| 8RZ5    | 51       |
| 8RZ10   | 29       |
| 8RZ25   | 30       |

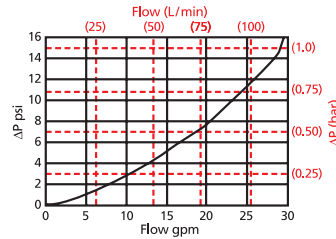
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: 2.18" (55 mm) O.D. x 8.15" (206 mm) long

$\Delta P_{\text{housing}}$

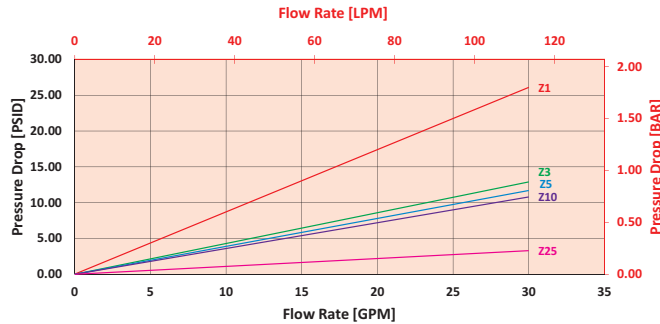
RFS50  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

8RZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for RFS508RZ10VOD5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 5 psi (.34 bar) on the graph for the RFS50 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 5 psi (.34 bar) according to the graph for the 8RZ10 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 5 \text{ psi } [.34 \text{ bar}] \mid \Delta P_{\text{element}} = 5 \text{ psi } [.34 \text{ bar}]$$

$$V_f = 200 \text{ SUS (42.6 cSt)} / 150 \text{ SUS (32 cSt)} = 1.3$$

$$\Delta P_{\text{filter}} = 5 \text{ psi} + (5 \text{ psi} * 1.3) = 11.5 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .34 \text{ bar} + (.34 \text{ bar} * 1.3) = .78 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele. | $\Delta P$ |
|------|------------|
| 8R3  | 0.35       |
| 8R10 | 0.30       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder RFS50:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| RFS50 |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| RFS50 | 8     | RZ10  | V     | O     |       |       | D5    |

= RFS508RZ10VOD5

| BOX 1         | BOX 2               |
|---------------|---------------------|
| Filter Series | Element Length (in) |
| RFS50         | 8                   |
| RFSN50        |                     |

| BOX 4         | BOX 5                 |
|---------------|-----------------------|
| Seal Material | Inlet Port            |
| Omit = Buna N | O = Manifold mounting |
| H = EPR       |                       |
| V = Viton*    |                       |

| BOX 3                                                                     |
|---------------------------------------------------------------------------|
| Element Size and Media                                                    |
| R3 = R size 3 $\mu$ E media (cellulose)                                   |
| R10 = R size 10 $\mu$ E media (cellulose)                                 |
| RZ1 = R size 1 $\mu$ Excellement* Z-Media* (synthetic)                    |
| RZ3 = R size 3 $\mu$ Excellement* Z-Media* (synthetic)                    |
| RZ5 = R size 5 $\mu$ Excellement* Z-Media* (synthetic)                    |
| RZ10 = R size 10 $\mu$ Excellement* Z-Media* (synthetic)                  |
| RZ25 = R size 25 $\mu$ Excellement* Z-Media* (synthetic)                  |
| RZX1 = R size 1 $\mu$ Excellement* Z-Media* (high collapse center tube)   |
| RZX3 = R size 3 $\mu$ Excellement* Z-Media* (high collapse center tube)   |
| RZX5 = R size 5 $\mu$ Excellement* Z-Media* (high collapse center tube)   |
| RZX10 = R size 10 $\mu$ Excellement* Z-Media* (high collapse center tube) |
| RZX25 = R size 25 $\mu$ Excellement* Z-Media* (high collapse center tube) |

| BOX 6                          |
|--------------------------------|
| Options                        |
| Omit = 40 PSI Bypass           |
| X = Blocked bypass             |
| 50 = 50 psi bypass setting     |
| (Omit Box 6 if RFSN50 is used) |

| BOX 7                                                                       |
|-----------------------------------------------------------------------------|
| Test Points                                                                 |
| L = Two 1/4" NPTF inlet and outlet female test ports                        |
| U = Schroeder Check 7/16"-20 UNF Test Point installation in head (upstream) |

| BOX 8                                                                 |
|-----------------------------------------------------------------------|
| Dirt Alarm* Options                                                   |
| Omit = None                                                           |
| Visual D5 = Visual pop-up                                             |
| Visual with Thermal Lockout D8 = Visual w/ thermal lockout            |
| Electrical                                                            |
| MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable                 |
| MS5LC = Low current MS5                                               |
| MS10 = Electrical w/ DIN connector (male end only)                    |
| MS10LC = Low current MS10                                             |
| MS11 = Electrical w/ 12 ft. 4-conductor wire                          |
| MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)    |
| MS12LC = Low current MS12                                             |
| MS16 = Electrical w/ weather-packed sealed connector                  |
| MS16LC = Low current MS16                                             |
| MS17LC = Electrical w/ 4 pin Brad Harrison male connector             |
| Electrical with Thermal Lockout                                       |
| MS5T = MS5 (see above) w/ thermal lockout                             |
| MS5LCT = Low current MS5T                                             |
| MS10T = MS10 (see above) w/ thermal lockout                           |
| MS10LCT = Low current MS10T                                           |
| MS12T = MS12 (see above) w/ thermal lockout                           |
| MS12LCT = Low current MS12T                                           |
| MS16T = MS16 (see above) w/ thermal lockout                           |
| MS16LCT = Low current MS16T                                           |
| MS17LCT = Low current MS17T                                           |
| Electrical Visual                                                     |
| MS13DC = Supplied w/ threaded connector & light                       |
| MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end) |
| Electrical Visual with Thermal Lockout                                |
| MS13DCT = MS13 (see above), direct current, w/ thermal lockout        |
| MS13DCLCT = Low current MS13DCT                                       |
| MS14DCT = MS14 (see above), direct current, w/ thermal lockout        |
| MS14DCLCT = Low current MS14DCT                                       |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.

Box 3. Example: 8RZ1V synthetic media elements are only available with Viton seals.

Box 4. Viton\* is a registered trademark of DuPont Dow Elastomers.

Box 5. For option O, O-rings included, fastening hardware not included.

Box 6. When X is paired with a standard filter series, a standard bushing and spring plate will be used



# Top-Ported Pressure Filter

## RF60



### Features and Benefits

- Top-ported high pressure filter
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- Available with non-bypass option with high collapse element
- Various dirt alarm options available

30 gpm  
115 L/min  
6000 psi  
415 bar

Model No. of filter in photograph is RF608R10P.

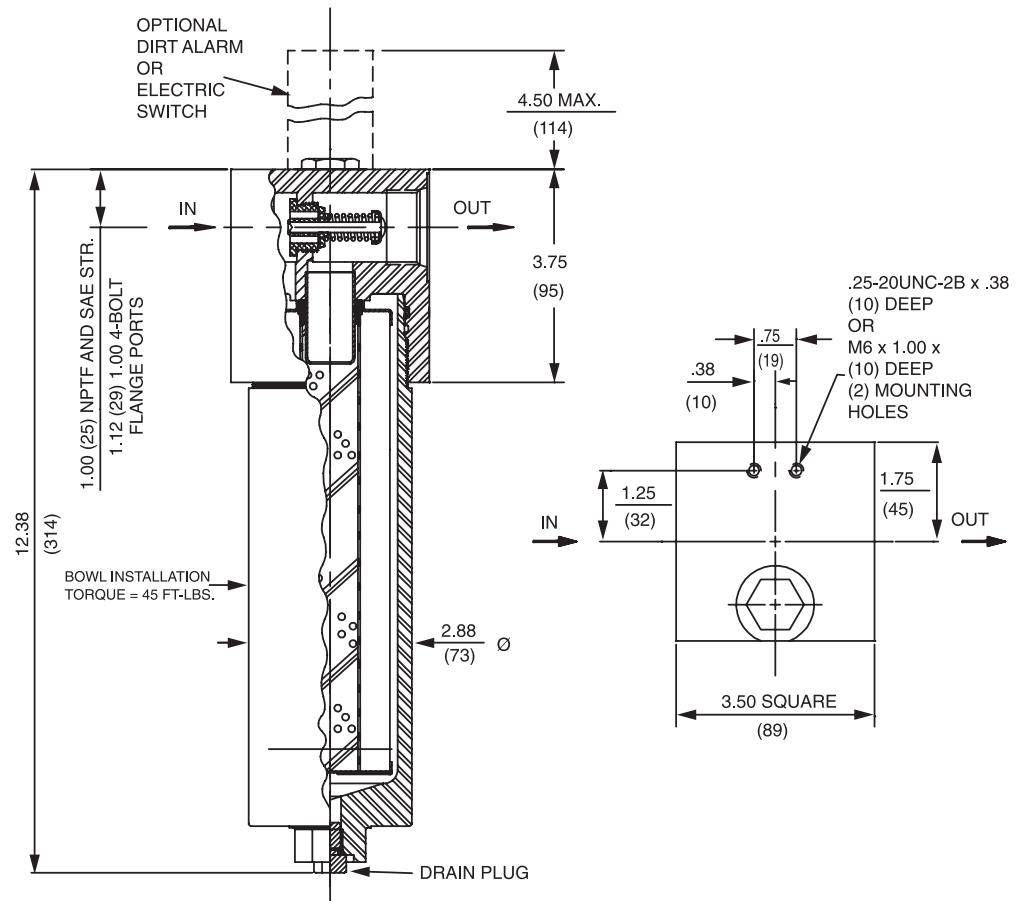
|                           |                                                                                                        |
|---------------------------|--------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids                                                   |
| Max. Operating Pressure:  | 6000 psi (415 bar)                                                                                     |
| Min. Yield Pressure:      | 18,000 psi (1241 bar), per NFPA T2.6.1                                                                 |
| Rated Fatigue Pressure:   | 2300 psi (159 bar), per NFPA T2.6.1-2005                                                               |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                        |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 56 psi (3.9 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Head:             | Steel                                                                                                  |
| Element Case:             | Steel                                                                                                  |
| Weight of RF60-8R:        | 15.75 lbs. (7.2 kg)                                                                                    |
| Element Change Clearance: | 3.0" (75 mm)                                                                                           |

### Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E-Media (cellulose) and Z-Media* (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media* (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media* (synthetic) with H (EPR) seal designation                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media* (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
KC65  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
LC50  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 8RZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 8RZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 8RZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 8RZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 8RZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| 8RZX3   | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |
| 8RZX10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                      |

| Element | DHC (gm) |
|---------|----------|
| 8RZ1    | 33       |
| 8RZ3    | 26       |
| 8RZ5    | 51       |
| 8RZ10   | 29       |
| 8RZ25   | 30       |
| 8RZX3   | C/F      |
| 8RZX10  | C/F      |

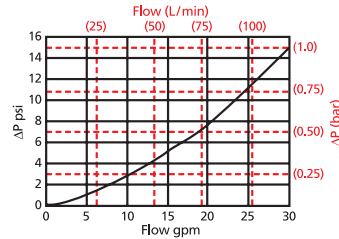
Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: 2.18" (55 mm) O.D. x 8.15" (206 mm) long

$\Delta P_{\text{housing}}$

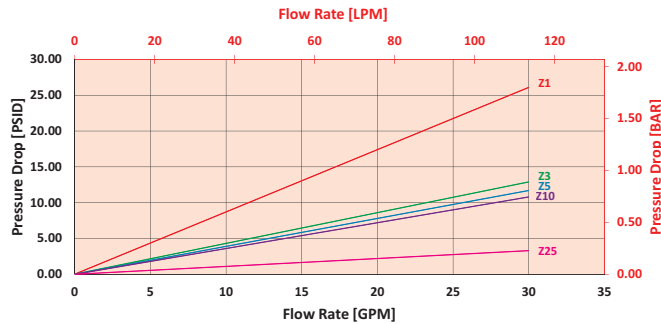
RF60  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

8RZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for RF608RZ10VPD5 using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 5 psi (.34 bar) on the graph for the RF60 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 5 psi (.34 bar) according to the graph for the 8RZ10 element.

Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 5 \text{ psi } [.34 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 5 \text{ psi } [.34 \text{ bar}]$$

$$V_f = 100 \text{ SUS (21.3 cSt)} / 150 \text{ SUS (32 cSt)} = .67$$

$$\Delta P_{\text{filter}} = 5 \text{ psi} + (5 \text{ psi} * .67) = 8.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .34 \text{ bar} + (.34 \text{ bar} * .67) = .57 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.   | $\Delta P$ |
|--------|------------|
| 8R3    | 0.35       |
| 8R10   | 0.30       |
| 8RZX3  | C/F        |
| 8RZX10 | C/F        |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder RF60:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| RF60  |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| RF60  | 8     | RZ10  | V     | P     |       |       | D5    |

= RF608RZ10VPD5

| BOX 1                                                        | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | BOX 4                                  |
|--------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Filter Series                                                | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Seal Material                          |
| RF60                                                         | 8                   | R3 = R size 3 $\mu$ E media (cellulose)<br>R10 = R size 10 $\mu$ E media (cellulose)<br>RZ1 = R size 1 $\mu$ Excellement® Z-Media® (synthetic)<br>RZ3 = R size 3 $\mu$ Excellement® Z-Media® (synthetic)<br>RZ5 = R size 5 $\mu$ Excellement® Z-Media® (synthetic)<br>RZ10 = R size 10 $\mu$ Excellement® Z-Media® (synthetic)<br>RZ25 = R size 25 $\mu$ Excellement® Z-Media® (synthetic)<br>RZX1 = R size 1 $\mu$ Excellement® Z-Media® (high collapse center tube)<br>RZX3 = R size 3 $\mu$ Excellement® Z-Media® (high collapse center tube)<br>RZX5 = R size 5 $\mu$ Excellement® Z-Media® (high collapse center tube)<br>RZX10 = R size 10 $\mu$ Excellement® Z-Media® (high collapse center tube)<br>RZX25 = R size 25 $\mu$ Excellement® Z-Media® (high collapse center tube) | Omit = Buna N<br>H = EPR<br>V = Viton® |
| RFN60<br>(Non-bypassing; requires ZX high collapse elements) |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                        |

| BOX 5                                                                                                                               | BOX 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inlet Port                                                                                                                          | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| P = 1" NPTF<br>S = SAE-16<br>F = 1" SAE 4-bolt flange Code 62<br>B = ISO 228 G-1"                                                   | Omit = None<br>Visual D5 = Visual pop-up<br>Visual with Thermal Lockout D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| BOX 6                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Bypass                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Omit = 40 PSI Bypass<br>X = Blocked bypass<br>50 = 50 psi bypass setting<br>(Omit Box 6 if RFN60 is used)                           | Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector<br>Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T<br>Electrical Visual<br>MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)<br>Electrical Visual with Thermal Lockout<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT |
| BOX 7                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Points                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| L = Two 1/4" NPTF inlet and outlet female test ports<br>U = Schroeder Check 7/16"-20 UNF Test Point installation in head (upstream) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4.  
Example: 8RZ1V synthetic media elements are only available with Viton seals.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. B porting option supplied with metric mounting holes.

Box 6. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 8. Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.

# Top-Ported Pressure Filter

CF60



## Features and Benefits

- Top-ported high pressure filter
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- No-Element indicator option available

50 gpm  
190 L/min  
6000 psi  
415 bar

Model No. of filter in photograph is CF601CCZ3SD5.

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

FOF60-03

NMF30

RMF60

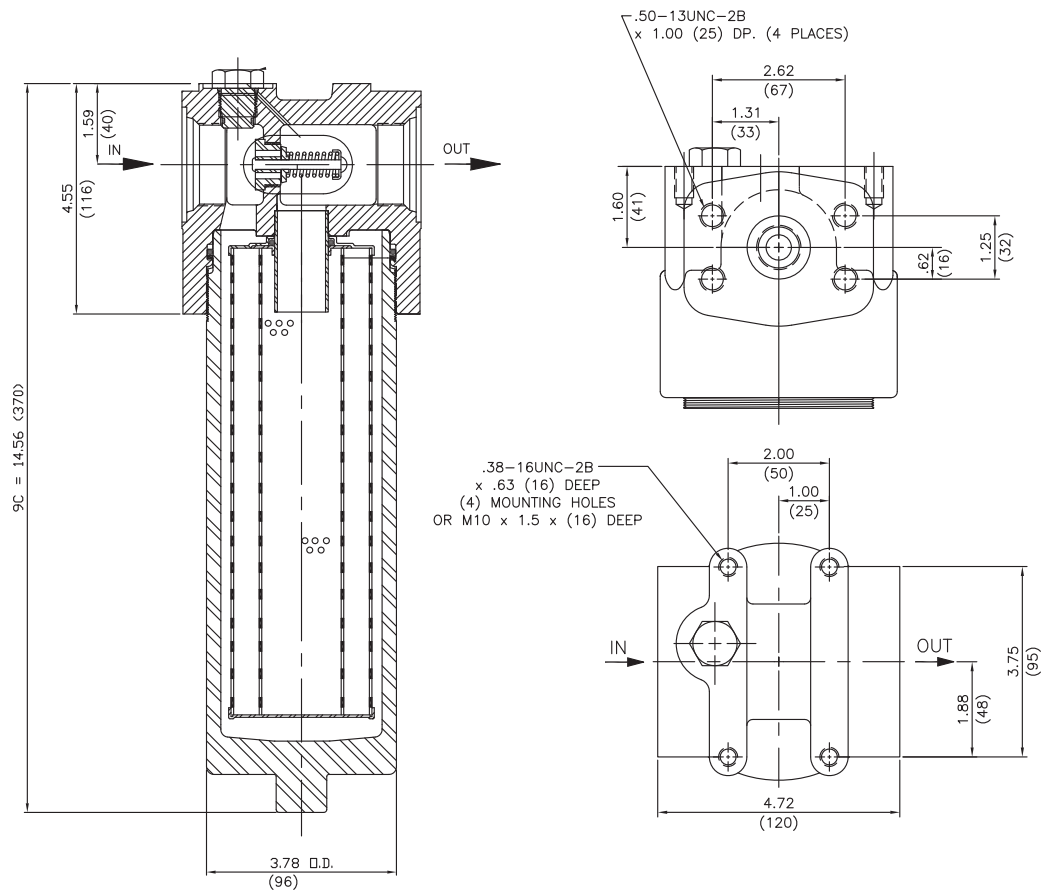
14-CRZX10

## Filter Housing Specifications

|                           |                                                                                                        |
|---------------------------|--------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids                                                   |
| Max. Operating Pressure:  | 6000 psi (415 bar)                                                                                     |
| Min. Yield Pressure:      | 15,500 psi (1070 bar), per NFPA T2.6.1                                                                 |
| Rated Fatigue Pressure:   | 4000 psi (276 bar), per NFPA T2.6.1-R1-2005                                                            |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                        |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 75 psi (5.2 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Head:             | Ductile Iron                                                                                           |
| Element Case:             | Steel                                                                                                  |
| Weight of CF60-9C:        | 24.0 lbs. (10.9 kg)                                                                                    |
| Element Change Clearance: | 4.0" (103 mm)                                                                                          |

## Fluid Compatibility

|                        |                                                                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                         |
| Petroleum Based Fluids | All E-Media (cellulose), Z-Media* and ASP* Media (synthetic)                                                                                                                        |
| High Water Content     | All Z-Media* and ASP* Media (synthetic)                                                                                                                                             |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic) and 10 µ ASP* Media (synthetic)                                                                                                                    |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* and all ASP* Media (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media* and ASP* Media (synthetic) with H (EPR) seal designation                                                                                                               |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media* and all ASP* Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| CCZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| CCZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| CCZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| CCZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| CCZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| CCZX3   | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |

| Element | DHC (gm) |
|---------|----------|
| CCZ1    | 57       |
| CCZ3    | 58       |
| CCZ5    | 63       |
| CCZ10   | 62       |
| CCZ25   | 63       |
| CCZX3   | 26*      |

Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

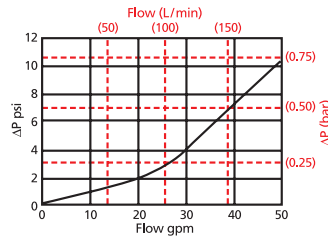
Flow Direction: Outside In

Element Nominal Dimensions: CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long



$\Delta P_{\text{housing}}$

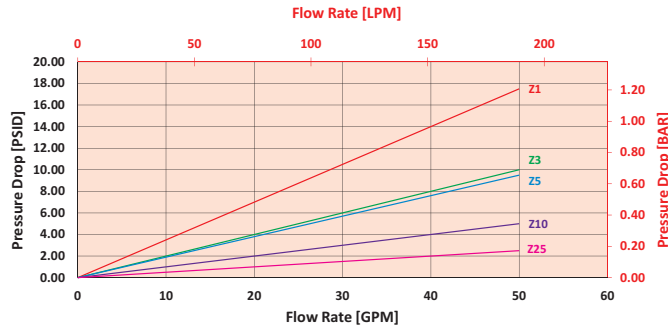
CF60  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

CCZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 30 gpm (113.6 L/min) for CF601CCZ10SD5 using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 30 gpm. In this case,  $\Delta P_{\text{housing}}$  is 4 psi (.28 bar) on the graph for the CF60 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 30 gpm. In this case,  $\Delta P_{\text{element}}$  is 3 psi (.21 bar) according to the graph for the CCZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 4 \text{ psi } [.28 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 3 \text{ psi } [.21 \text{ bar}]$$

$$V_f = 175 \text{ SUS (37.2 cSt)} / 150 \text{ SUS (32 cSt)} = 1.2$$

$$\Delta P_{\text{filter}} = 4 \text{ psi} + (3 \text{ psi} * 1.2) = 7.6 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .28 \text{ bar} + (.21 \text{ bar} * 1.2) = .53 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.   | ΔP   |
|--------|------|
| CC3    | 0.22 |
| CC10   | 0.13 |
| CC25   | 0.03 |
| CCAS3  | 0.20 |
| CCAS5  | 0.19 |
| CCAS10 | 0.10 |
| CCZX3  | 0.29 |
| CCZX10 | 0.26 |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder CF60:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| CF60  |       |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| CF60  | 1CC   | Z     | 10    |       | S     |       | D5    |       |

= CF601CCZ10SD5

| BOX 1                                                                 | BOX 2                       | BOX 3                                                                                                                               |
|-----------------------------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series                                                         | Number and Size of Elements | Media Type                                                                                                                          |
| CF60                                                                  | 1CC                         | Omit E Media (cellulose)                                                                                                            |
| CFN60<br>(Non-bypassing:<br>requires ZX<br>high collapse<br>elements) |                             | Z = Excellement® Z-Media® (synthetic)<br>ZX = Excellement® Z-Media® (high collapse center tube)<br>AS = Anti-Stat Media (synthetic) |

| BOX 4                                                                                                                                                                               | BOX 5                                                                  | BOX 6                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Micron Rating                                                                                                                                                                       | Seal Material                                                          | Porting                                                                                          |
| 1 = 1 Micron (Z media)<br>3 = 3 Micron (AS,E, Z and ZX media)<br>5 = 5 Micron (AS, Z, and ZX media)<br>10 = 10 Micron (AS,E, Z, and ZX media)<br>25 = 25 Micron (E, Z and ZX media) | Omit = Buna N<br>V = Viton®<br>H = EPR<br>H.5 = Skydrol® compatibility | S = SAE-20<br>P = 1 1/4" NPTF<br>F = 1 1/4" SAE 4-bolt<br>flange code 62<br>B = ISO 228 G-1 1/4" |

| BOX 7                                                                                                                                         | BOX 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bypass                                                                                                                                        | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Omit = 40 PSI Bypass<br>X = Blocked Bypass<br>30 = 30 psi bypass setting<br>50 = 50 psi bypass setting<br>(Omit box 7 if a CFN60 is selected) | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                                               | Visual D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                               | Visual with Thermal Lockout D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                               | Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
|                                                                                                                                               | Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                     |
|                                                                                                                                               | Electrical Visual<br>MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                               | Electrical Visual with Thermal Lockout<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                       |

## NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. E media (cellulose) elements are only available with Buna N seals.

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 6. B porting option supplied with metric mounting holes.

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 8. Standard indicator setting for non-bypassing model is 50 psi unless

# Top-Ported Pressure Filter

## CTF60



### Features and Benefits

- Top-ported high pressure filter
- High cyclic fatigue performance (6000 psi)
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- Thread on bowl with optional drain plug for easy element service

75 gpm  
284 L/min  
6000 psi  
415 bar

Model No. of filter in photograph is CTF608CTZ10F20D9.

|                           |                                                                                                        |
|---------------------------|--------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 75 gpm (284 L/min) for 150 SUS (32 cSt) fluids                                                   |
| Max. Operating Pressure:  | 6000 psi (415 bar)                                                                                     |
| Min. Yield Pressure:      | 18,000 psi (1241 bar), per NFPA T2.6.1                                                                 |
| Rated Fatigue Pressure:   | 6000 psi (415 bar), per NFPA T2.6.1-R1-2005 (only with F20 4-bolt flange porting)                      |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                        |
| Bypass Setting:           | Cracking: 50 psi (3.4 bar)<br>Full Flow: 83 psi (5.7 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Head:             | Ductile Iron                                                                                           |
| Element Case:             | Steel                                                                                                  |
| Weight of CTF60-5CT:      | 25 lbs. (11.4 kg)                                                                                      |
| CTF60-8CT:                | 29 lbs. (13.2 kg)                                                                                      |
| CTF60-14CT:               | 38 lbs. (17.3 kg)                                                                                      |
| Element Change Clearance: | 4.0" (103 mm)                                                                                          |

### Filter Housing Specifications

|                    |                                                        |
|--------------------|--------------------------------------------------------|
| Type Fluid         | Appropriate Schroeder Media                            |
| High Water Content | All Z-Media* (synthetic)                               |
| Invert Emulsions   | 10 and 25 µ Z-Media* (synthetic)                       |
| Water Glycols      | 3, 5, 10 and 25 µ Z-Media* (synthetic)                 |
| Phosphate Esters   | All Z-Media* (synthetic) with H (EPR) seal designation |

### Fluid Compatibility

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RF550

RF60

CF60

**CTF60**

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

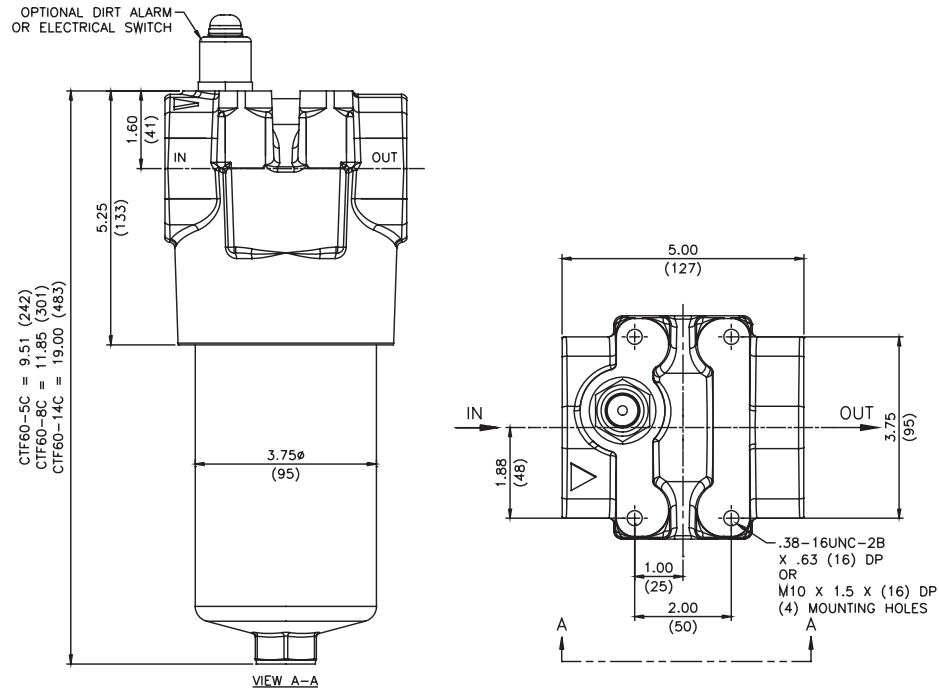
NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element      | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|--------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|              | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| CTZ1/CTZX1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| CTZ3/CTZX3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| CTZ5/CTZX5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| CTZ10/CTZX10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| CTZ25/CTZX25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) | Element  | DHC (gm) |
|---------|----------|---------|----------|----------|----------|
| 5CTZ1   | 19       | 8CTZ1   | 31       | 14CTZ1   | 66       |
| 5CTZ3   | 16       | 8CTZ3   | 27       | 14CTZ3   | 57       |
| 5CTZ5   | 18       | 8CTZ5   | 30       | 14CTZ5   | 64       |
| 5CTZ10  | 21       | 8CTZ10  | 34       | 14CTZ10  | 72       |
| 5CTZ25  | 17       | 8CTZ25  | 28       | 14CTZ25  | 60       |
| 5CTZX1  | 14       | 8CTZX1  | 24       | 14CTZX1  | 53       |
| 5CTZX3  | 11       | 8CTZX3  | 18       | 14CTZX3  | 41       |
| 5CTZX5  | 10       | 8CTZX5  | 17       | 14CTZX5  | 38       |
| 5CTZX10 | 12       | 8CTZX10 | 20       | 14CTZX10 | 44       |
| 5CTZX25 | 11       | 8CTZX25 | 18       | 14CTZX25 | 39       |

Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: 3000 psid (210 bar) for high collapse (ZX) versions

Outside In

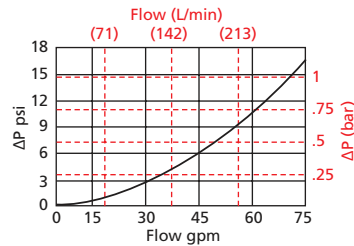
Element Nominal Dimensions: 5CT : 2.64" (67 mm) O.D. x 4.88" (124 mm) long

8CT : 2.64" (67 mm) O.D. x 7.25" (184 mm) long

14CT : 2.64" (67 mm) O.D. x 14.38" (365 mm) long

$\Delta P_{\text{housing}}$

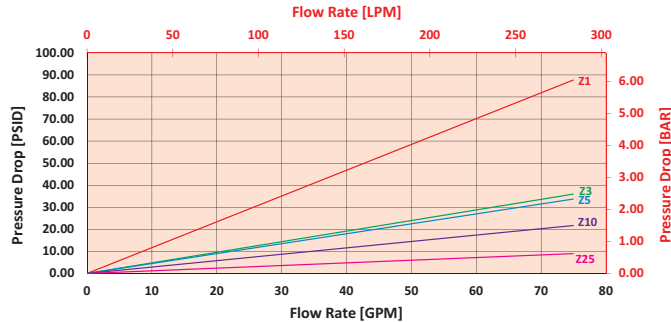
CTF60  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

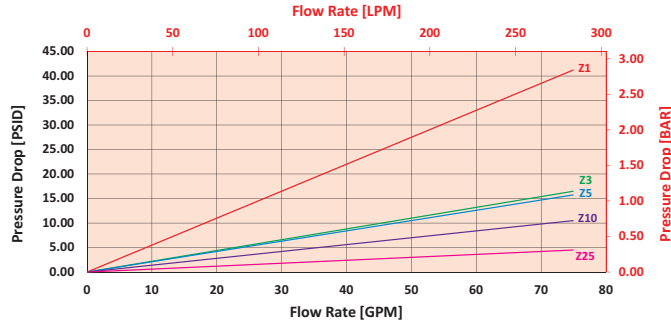
8CTZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



14CTZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 50 gpm (189 L/min) for CTF608CTZ5S20D9 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 7 psi (.48 bar) on the graph for the CTF60 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm. In this case,  $\Delta P_{\text{element}}$  is 22 psi (1.5 bar) according to the graph for the 8CTZ5 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 7 \text{ psi [.48 bar]} \mid \Delta P_{\text{element}} = 22 \text{ psi [1.5 bar]}$$

$$V_f = 200 \text{ SUS (42.6 cSt)} / 150 \text{ SUS (32 cSt)} = 1.3$$

$$\Delta P_{\text{filter}} = 7 \text{ psi} + (22 \text{ psi} * 1.3) = 35.6 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .48 \text{ bar} + (1.5 \text{ bar} * 1.3) = 2.4 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.     | $\Delta P$ | Ele.     | $\Delta P$ | Ele.    | $\Delta P$ |
|----------|------------|----------|------------|---------|------------|
| 5CTZ1    | 1.87       | 5CTZX1   | 1.64       | 8CTZX1  | 1.00       |
| 5CTZ3    | 0.77       | 5CTZX3   | 0.96       | 8CTZX3  | 0.59       |
| 5CTZ5    | 0.72       | 5CTZX5   | 0.68       | 8CTZX5  | 0.41       |
| 5CTZ10   | 0.46       | 5CTZX10  | 0.46       | 8CTZX10 | 0.28       |
| 5CTZ25   | 0.19       | 5CTZX25  | 0.25       | 8CTZX25 | 0.15       |
| 14CTZX1  | 0.46       | 14CTZX3  | 0.27       | 14CTZX5 | 0.19       |
| 14CTZX10 | 0.13       | 14CTZX25 | 0.07       |         |            |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder CTF60:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| CTF60 |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| CTF60 | 8     | CTZ5  |       | S20   |       |       | D9    |

= CTF608CTZ5S20D9

| BOX 1                                                         | BOX 2                | BOX 3                                                           | BOX 4         |
|---------------------------------------------------------------|----------------------|-----------------------------------------------------------------|---------------|
| Filter Series                                                 | Element Length (in.) | Element Part Number                                             | Seal Material |
| CTF60                                                         | 5                    | CTZ1 = 1 µ Excellement® Z-Media® (synthetic)                    | Omit = Buna N |
|                                                               | 8                    | CTZ3 = 3 µ Excellement® Z-Media® (synthetic)                    | V = Viton®    |
|                                                               | 14                   | CTZ5 = 5 µ Excellement® Z-Media® (synthetic)                    | H = EPR       |
| CTFN60<br>(Non-bypassing; requires ZX high collapse elements) |                      | CTZ10 = 10 µ Excellement® Z-Media® (synthetic)                  |               |
|                                                               |                      | CTZ25 = 25 µ Excellement® Z-Media® (synthetic)                  |               |
|                                                               |                      | CTZX1 = 1 µ Excellement® Z-Media® (high collapse center tube)   |               |
|                                                               |                      | CTZX3 = 3 µ Excellement® Z-Media® (high collapse center tube)   |               |
|                                                               |                      | CTZX5 = 5 µ Excellement® Z-Media® (high collapse center tube)   |               |
|                                                               |                      | CTZX10 = 10 µ Excellement® Z-Media® (high collapse center tube) |               |
|                                                               |                      | CTZX25 = 25 µ Excellement® Z-Media® (high collapse center tube) |               |

| BOX 5                                     |
|-------------------------------------------|
| Inlet Port                                |
| P20 = 1¼" NPTF                            |
| S20 = SAE-20                              |
| F20 = 1¼" SAE<br>4-bolt flange<br>Code 62 |
| B20 = ISO 228<br>G-1¼"                    |

| BOX 6                                                        |
|--------------------------------------------------------------|
| Bypass                                                       |
| Omit = 50 PSI Bypass<br>(Omit Box 6 if a CTFN60 is selected) |

| BOX 7                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------|
| Options                                                                                                                        |
| UU Series 1215<br>7/16" UNF<br>Schroeder<br>Check Test<br>Points installed<br>in the filter<br>head (upstream<br>& downstream) |
| DR = Drain on bowl                                                                                                             |

| BOX 8                                                                 |
|-----------------------------------------------------------------------|
| Dirt Alarm® Options                                                   |
| Omit = None                                                           |
| Visual D9 = Visual pop-up                                             |
| Electrical                                                            |
| MS5SS = Electrical w/ 12 in. 18 gauge 4-conductor cable               |
| MS5SSLC = Low current MS5                                             |
| MS10SS = Electrical w/ DIN connector (male end only)                  |
| MS10SSLC = Low current MS10                                           |
| MS11SS = Electrical w/ 12 ft. 4-conductor wire                        |
| MS12SS = Electrical w/ 5 pin Brad Harrison connector (male end only)  |
| MS12SSLC = Low current MS12                                           |
| MS16SS = Electrical w/ weather-packed sealed connector                |
| MS16SSLC = Low current MS16                                           |
| MS17SSLC = Electrical w/ 4 pin Brad Harrison male connector           |
| Electrical with Thermal Lockout                                       |
| MS5SST = MS5 (see above) w/ thermal lockout                           |
| MS5SSLC = Low current MS5T                                            |
| MS10SST = MS10 (see above) w/ thermal lockout                         |
| MS10SSLC = Low current MS10T                                          |
| MS12SST = MS12 (see above) w/ thermal lockout                         |
| MS12SSLC = Low current MS12T                                          |
| MS16SST = MS16 (see above) w/ thermal lockout                         |
| MS16SSLC = Low current MS16T                                          |
| MS17SSLC = Low current MS17T                                          |
| Electrical Visual                                                     |
| MS13DC = Supplied w/ threaded connector & light                       |
| MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end) |
| Electrical Visual with Thermal Lockout                                |
| MS13SSDCT = MS13 (see above), direct current, w/ thermal lockout      |
| MS13SSDCLCT = Low current MS13DCT                                     |
| MS14SSDCT = MS14 (see above), direct current, w/ thermal lockout      |
| MS14SSDCLCT = Low current MS14DCT                                     |

## NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3 and 4.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. B porting option supplied with metric mounting holes.

Box 8. All Dirt Alarm® Indicators must be Stainless Steel. Standard indicator setting is 50 psi. For replacement indicators, contact the factory.



# Top-Ported Pressure Filter

## VF60



### Features and Benefits

- Top-ported high pressure filter
- Threaded bowl for easy element servicing
- Offered in pipe, SAE straight thread and ISO 228 porting
- Various dirt alarm options available

**70 gpm**  
**265 L/min**  
**6000 psi**  
**415 bar**

Model No. of filter in photograph is VF609VZ10SD5.

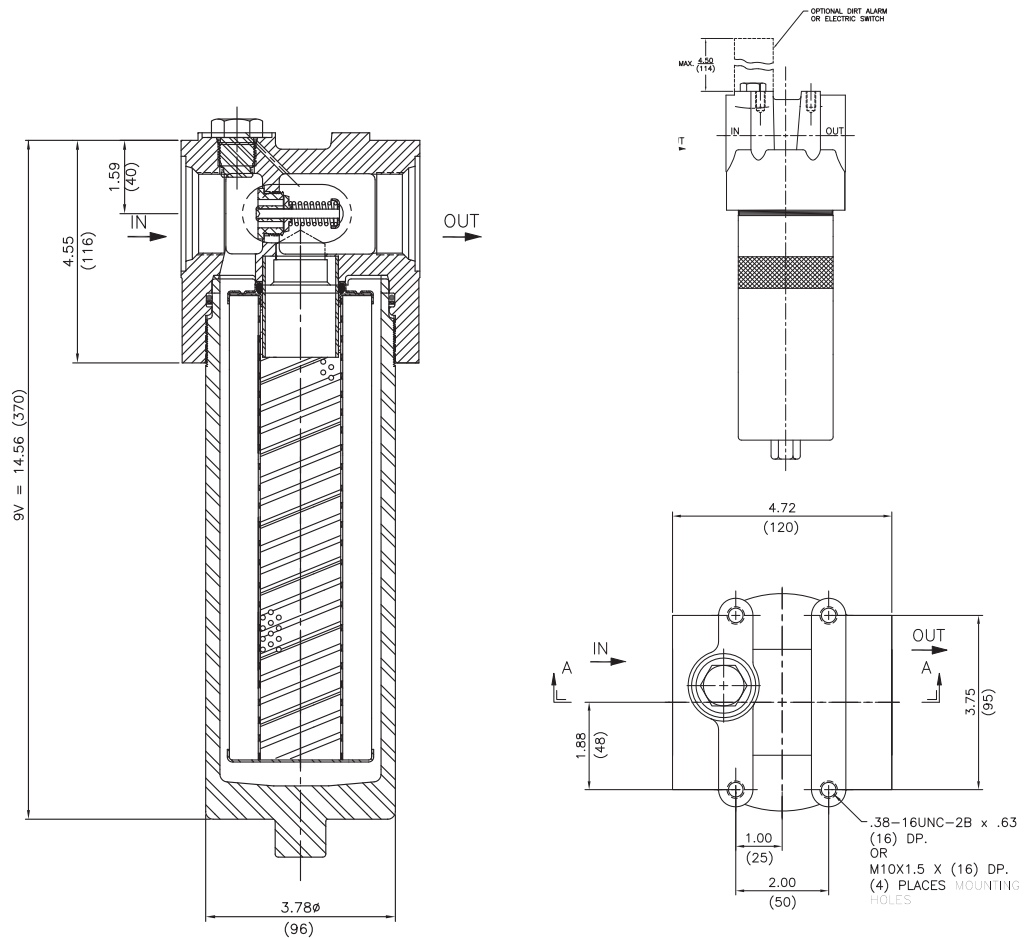
|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 70 gpm (265 L/min) for 150 SUS (32 cSt) fluids      |
| Max. Operating Pressure:  | 6000 psi (415 bar)                                        |
| Min. Yield Pressure:      | 15,500 psi (1070 bar), per NFPA T2.6.1                    |
| Rated Fatigue Pressure:   | 3300 psi (230 bar), per NFPA T2.6.1-R1-2005               |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 50 psi (3.5 bar)<br>Full Flow: 65 psi (4.5 bar) |
| Porting Head:             | Ductile Iron                                              |
| Element Case:             | Steel                                                     |
| Weight of VF60-9V:        | 24.0 lbs. (10.9 kg)                                       |
| Element Change Clearance: | 4.0" (103 mm)                                             |

### Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E-Media (cellulose) and Z-Media* (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media* (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media* (synthetic) with H (EPR) seal designation                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media* (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
**VF60**  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
KC65  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
LC50  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 9VZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 9VZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 9VZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 9VZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 9VZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| 9VZ1    | 55       |
| 9VZ3    | 57       |
| 9VZ5    | 62       |
| 9VZ10   | 60       |
| 9VZ25   | 61       |

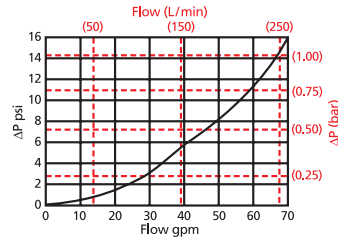
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: 9V: 2.9" (75 mm) O.D. x 9.5" (240 mm) long

$\Delta P_{\text{housing}}$

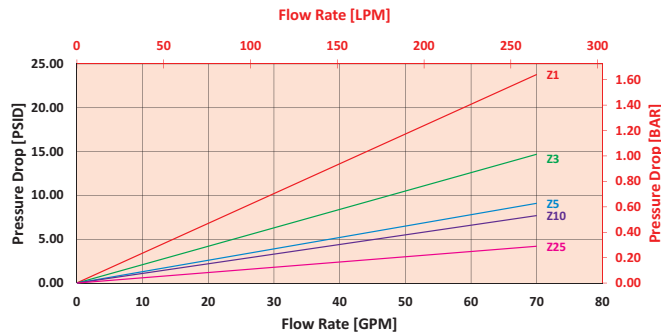
VF60  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

9VZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 40 gpm (151 L/min) for VF609VZ1S using 120 SUS (25.5 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 40 gpm. In this case,  $\Delta P_{\text{housing}}$  is 6 psi (.42 bar) on the graph for the VF60 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 40 gpm. In this case,  $\Delta P_{\text{element}}$  is 13 psi (.90 bar) according to the graph for the 9VZ1 element.

Because the viscosity in this sample is 120 SUS (25.5 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 6 \text{ psi [.42 bar]} \quad | \quad \Delta P_{\text{element}} = 13 \text{ psi [.90 bar]}$$

$$V_f = 120 \text{ SUS (25.5 cSt)} / 150 \text{ SUS (32 cSt)} = .80$$

$$\Delta P_{\text{filter}} = 6 \text{ psi} + (13 \text{ psi} * .80) = 16.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .42 \text{ bar} + (.90 \text{ bar} * .80) = 1.14 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele. | $\Delta P$ |
|------|------------|
| 9V3  | 0.32       |
| 9V10 | 0.24       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder VF60:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| VF60  |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| VF60  | 9     | VZ1   |       | S     |       |       |

= VF609VZ1S

| BOX 1         | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                           | BOX 4                                  |
|---------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Filter Series | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                          | Seal Material                          |
| VF60          | 9                   | V3 = V size 3 μ E media (cellulose)<br>V10 = V size 10 μ E media (cellulose)<br>VZ1 = V size 1 μ Excellement® Z-Media® (synthetic)<br>VZ3 = V size 3 μ Excellement® Z-Media® (synthetic)<br>VZ5 = V size 5 μ Excellement® Z-Media® (synthetic)<br>VZ10 = V size 10 μ Excellement® Z-Media® (synthetic)<br>VZ25 = V size 25 μ Excellement® Z-Media® (synthetic)<br>VM150 = V size 150 μ M media (reusable metal) | Omit = Buna N<br>V = Viton®<br>H = EPR |

| BOX 5                                           | BOX 6                                      |
|-------------------------------------------------|--------------------------------------------|
| Inlet Port                                      | Bypass                                     |
| P = 1¼" NPTF<br>S = SAE-20<br>B = ISO 228 G-1¼" | Omit = 50 PSI bypass<br>40 = 40 PSI bypass |

| BOX 7                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Options                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Omit = None                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Visual                                 | D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                 |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.

Box 2. Example: 9VZ1V synthetic media elements are only available with Viton seals.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. B porting option supplied with metric mounting holes.

# High-Flow, High Pressure Filter

**LW60**

## Features and Benefits

- Horizontal alignment allows straight-through flow, maximizing efficiency and minimizing pressure drop
- Proprietary synthetic media designed specifically for the mining industry. Excellement-MD™ provides level of filtration not achievable using alternative wire mesh elements because of their lack of absolute ratings
- Two-inch BSPP ports are easily adaptable to Super Stecko fittings commonly used underground
- Stainless steel bypass valve that ensures smooth integration with 95/5 fluid
- Non-bypassing version available with high crush (4500 psid) cleanable metal mesh (25 micron) element



Model No. of filter in photograph is LW6039ZPZ5VB32DPG.

**300 gpm**  
**1135 L/min**  
**6000 psi**  
**415 bar**

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

**LW60**

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

FOF60-03

NMF30

RMF60

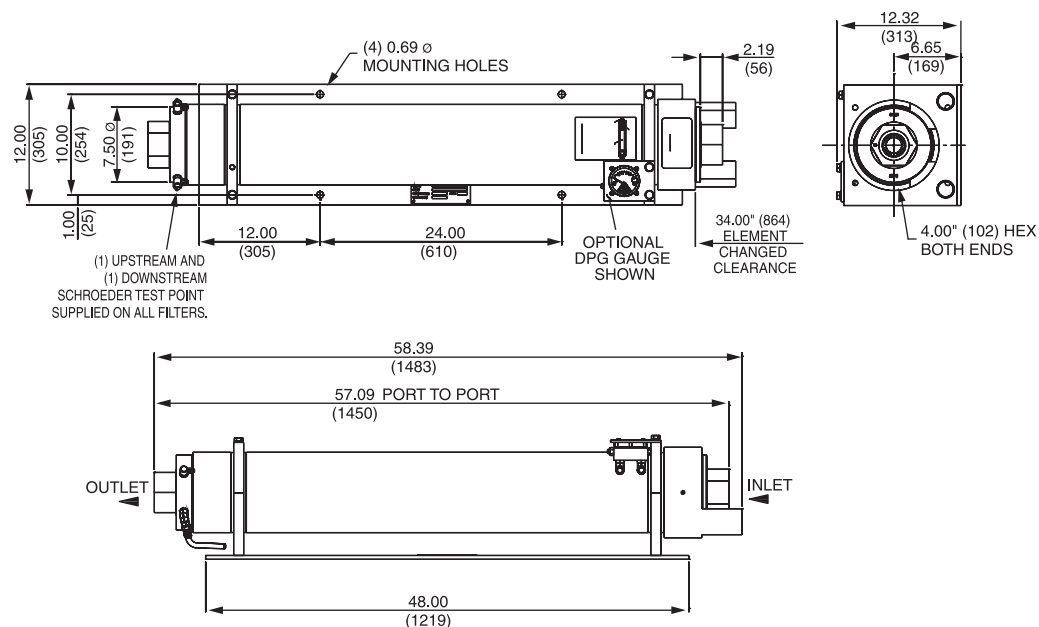
14-CRZX10

|                           |                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 300 gpm (1135 L/min) for use with 95/5 fluids                                       |
| Max. Operating Pressure:  | 6000 psi (414 bar)                                                                        |
| Min. Yield Pressure:      | 18,000 psi (1240 bar), per NFPA T2.6.1                                                    |
| Rated Fatigue Pressure:   | 4500 psi (310 bar), per NFPA T2.6.1                                                       |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                           |
| Bypass Setting:           | Cracking: 50 psi (3.4 bar)<br>LWN60 non-bypassing model available with high crush element |
| Porting Cap:              | Steel                                                                                     |
| Housing:                  | Steel                                                                                     |
| Weight:                   | 550 lb. (250 kg)                                                                          |
| Element Change Clearance: | 34.0" (864 mm)                                                                            |

## Filter Housing Specifications

|             |                                                             |
|-------------|-------------------------------------------------------------|
| Type Fluid  | Appropriate Schroeder Media                                 |
| 95/5 fluids | Specifically designed for use with 95/5 fluids applications |

## Fluid Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

Filtration Ratio per ISO 16889  
Using APC calibrated per ISO 11171

Element  $\beta_{x(d)} \geq 1000$

|          |      |
|----------|------|
| 39ZPZ3V  | 5.1  |
| 39ZPZ5V  | 6.1  |
| 39ZPZ10V | 12.1 |
| 39ZPZ25V | 17.7 |

Element DHC (gm)

|          |     |
|----------|-----|
| 39ZPZ3V  | 449 |
| 39ZPZ5V  | 359 |
| 39ZPZ10V | 429 |
| 39ZPZ25V | 284 |

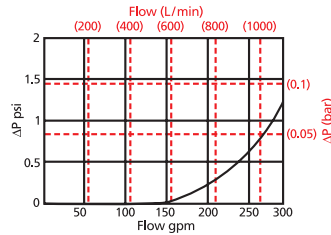
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 5.0" (127 mm) O.D. x 38.0" (965 mm) long

$\Delta P_{\text{housing}}$

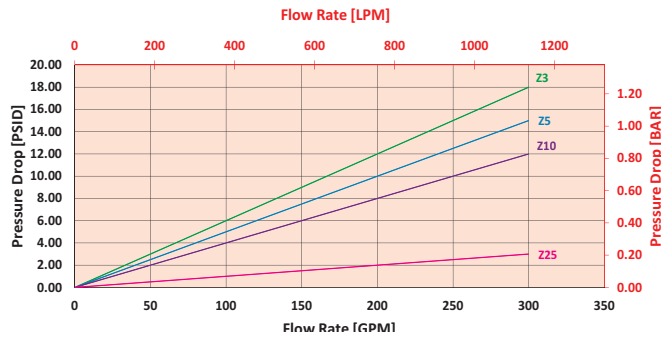
LW60  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

39ZPZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 200 gpm (757 L/min) for LW6039ZPZ3VB32DPG using 75 SUS (16 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 200 gpm. In this case,  $\Delta P_{\text{housing}}$  is .25 psi (.02 bar) on the graph for the LW60 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 200 gpm. In this case,  $\Delta P_{\text{element}}$  is 12 psi (.83 bar) according to the graph for the 39ZPZ3 element.

Because the viscosity in this sample is 75 SUS (16 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = .25 \text{ psi } [.02 \text{ bar}] \mid \Delta P_{\text{element}} = 12 \text{ psi } [.83 \text{ bar}]$$

$$V_f = 75 \text{ SUS (16 cSt)} / 150 \text{ SUS (32 cSt)} = .50$$

$$\Delta P_{\text{filter}} = .25 \text{ psi} + (12 \text{ psi} * .50) = 6.25 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .02 \text{ bar} + (.83 \text{ bar} * .50) = .44 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity



## Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder LW60:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LW60  |       |       |       |       |

| BOX 1 | BOX 2   | BOX 3 | BOX 4 | BOX 5 |                     |
|-------|---------|-------|-------|-------|---------------------|
| LW60  | 39ZPZ3V | B32   |       | DPG   | = LW6039ZPZ3VB32DPG |

| BOX 1         | BOX 2                                                                                                                                                                                                            | BOX 3                          |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Filter Series | Element Part Number                                                                                                                                                                                              | Porting                        |
| LW60          | 39ZPZ3V = 3 µm Excellement® Z-Media® (synthetic)<br>39ZPZ5V = 5 µm Excellement® Z-Media® (synthetic)<br>39ZPZ10V = 10 µm Excellement® Z-Media® (synthetic)<br>39ZPZ25V = 25 µm Excellement® Z-Media® (synthetic) | B32 = ISO 228 G-2" (2-11 BSPP) |

| BOX 4                                          | BOX 5                             |
|------------------------------------------------|-----------------------------------|
| Bypass Settings                                | Dirt Alarm® Options               |
| Omit = 50 psi cracking<br>30 = 30 psi cracking | DPG = Differential pressure gauge |

How to Build a Valid Model Number for a Schroeder LWN60:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LWN60 |       |       |       |       |

| BOX 1 | BOX 2     | BOX 3 | BOX 4 | BOX 5 |                       |
|-------|-----------|-------|-------|-------|-----------------------|
| LWN60 | 39ZPMX25V | B32   |       | DPG   | = LW6039ZPMX25VB32DPG |

| BOX 1                                                               | BOX 2                                                               | BOX 3                          |
|---------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------|
| Filter Series                                                       | Element Part Number                                                 | Porting                        |
| <b>LWN60</b><br>(Non-bypassing; requires MX high collapse elements) | 39ZPMX25V = 25 µm Excellement® Z-Media® (high collapse center tube) | B32 = ISO 228 G-2" (2-11 BSPP) |

| BOX 4           | BOX 5                             |
|-----------------|-----------------------------------|
| Bypass Settings | Dirt Alarm® Options               |
| Omit = Blocked  | DPG = Differential pressure gauge |

# Base-Ported Pressure Filter

KF30/KF50



## Features and Benefits

- Base-ported pressure filter
- Can be installed in vertical or horizontal position
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting
- Same day shipment model available
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements
- Available with quality-protected GeoSeal® Elements (GKF30/GKF50)

100/150 gpm  
**380/570 L/min**  
 KF30- 3000 psi  
**210 bar**  
 KF50- 5000 psi  
**345 bar**

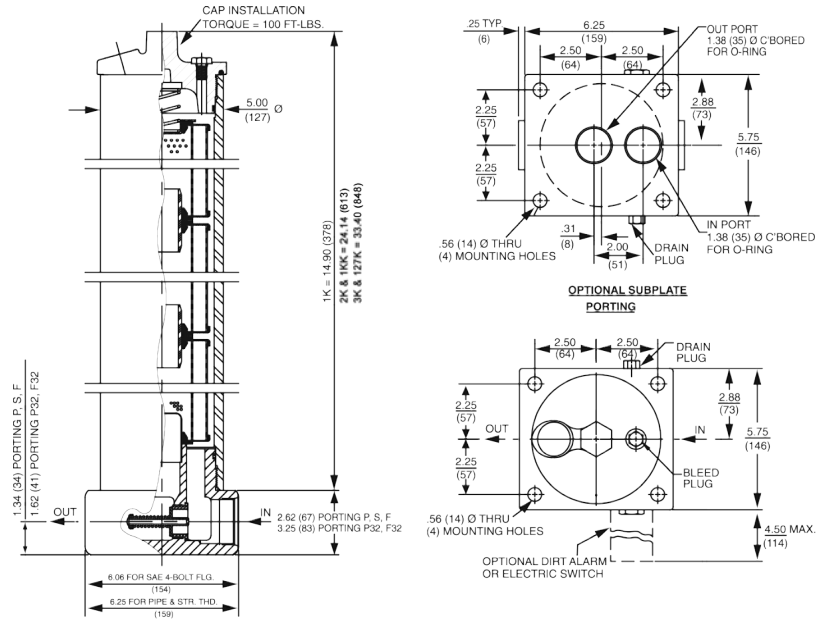
Model No. of filter in photograph is KF30/KF501K10SD.

|                           |                                                                                                                                      |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids<br>With 2" porting only, up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | KF30- 3000 psi (210 bar)<br>KF50- 5000 psi (345 bar)                                                                                 |
| Min. Yield Pressure:      | KF30- 12,000 psi (830 bar), per NFPA T2.6.1<br>KF50- 15,000 psi (1025 bar), per NFPA T2.6.1                                          |
| Rated Fatigue Pressure:   | KF30- 2500 psi (170 bar), per NFPA T2.6.1-2005<br>KF50- 3500 psi (240 bar), per NFPA T2.6.1-2005                                     |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                                                      |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 61 psi (4.2 bar)<br>Non-bypassing model has a blocked bypass.                               |
| Porting Base & Cap:       | Ductile Iron                                                                                                                         |
| Element Case:             | Steel                                                                                                                                |
| Weight of KF30-1K:        | 48 lbs. (22 kg)                                                                                                                      |
| Weight of KF30-2K:        | 65 lbs. (30 kg)                                                                                                                      |
| Weight of KF30-3K:        | 81 lbs. (37 kg)                                                                                                                      |
| Weight of KF50-1K:        | 59.7 lbs. (27.1 kg)                                                                                                                  |
| Weight of KF50-2K:        | 80.7 lbs. (36.6 kg)                                                                                                                  |
| Weight of KF50-3K:        | 102.0 lbs. (46.3 kg)                                                                                                                 |
| Element Change Clearance: | 8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K                                                                |

## Filter Housing Specifications

|                        |                                                                                                                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                     |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® Media (synthetic)                                                                                                                                    |
| High Water Content     | All Z-Media® and ASP® Media (synthetic)                                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® Media                                                                                                                                               |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic) and all ASP® Media                                                                                                                                       |
| Phosphate Esters       | All Z-Media® and ASP® Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                                          |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) and all ASP® Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

## Fluid Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element              | Filtration Ratio Per<br>ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC)<br>calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|----------------------|----------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                      | $\beta_x \geq 75$                                                                                                    | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1       | <1.0                                                                                                                 | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KKZ3/27KZ3       | <1.0                                                                                                                 | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KKZ5/27KZ5       | 2.5                                                                                                                  | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KKZ10/27KZ10    | 7.4                                                                                                                  | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25/27KZ25    | 18.0                                                                                                                 | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1                 | N/A                                                                                                                  | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3           | N/A                                                                                                                  | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5           | N/A                                                                                                                  | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10         | N/A                                                                                                                  | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25         | N/A                                                                                                                  | N/A                | N/A                | 15.4                                                                 | 18.5                   |
| KZX3/KKZX3/27KZX3    | <1.0                                                                                                                 | <1.0               | <2.0               | 4.7                                                                  | 5.8                    |
| KZX10/KKZX10/27KZX10 | 7.4                                                                                                                  | 8.2                | 10.0               | 8.0                                                                  | 9.8                    |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
| KZ1     | 112      | KKZ1    | 224      | 27KZ1   | 336      | KZW1    | 61       |         |          |
| KZ3     | 115      | KKZ3    | 230      | 27KZ3   | 345      | KZW3    | 64       | KKZW3   | 128      |
| KZ5     | 119      | KKZ5    | 238      | 27KZ5   | 357      | KZW5    | 63       | KKZW5   | 126      |
| KZ10    | 108      | KKZ10   | 216      | 27KZ10  | 324      | KZW10   | 57       | KKZW10  | 114      |
| KZ25    | 93       | KKZ25   | 186      | 27KZ25  | 279      | KZW25   | 79       | KKZW25  | 158      |
| KZX3    | 81*      | KKZX3   | 163*     | 27KZX3  | 249*     |         |          |         |          |
| KZX10   | 90*      | KKZX10  | 182*     | 27KZX10 | 279*     |         |          |         |          |

\* Based on 100 psi terminal pressure

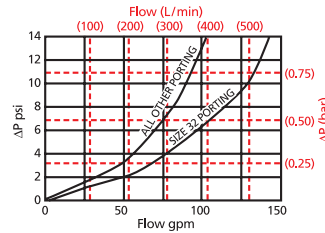
Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

$\Delta P_{\text{housing}}$

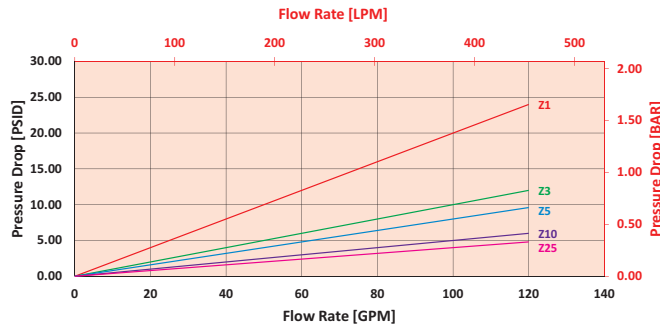
KF30/KF50  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

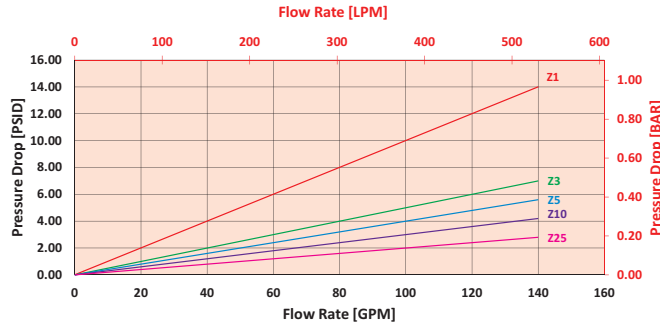
KZ/KGZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



KKZ/KKGZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 50 gpm (189.5 L/min) for KF301KZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the KF30 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm. In this case,  $\Delta P_{\text{element}}$  is 2.5 psi (.17 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 2.5 \text{ psi } [.17 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (2.5 \text{ psi} * 1.1) = 5.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.17 \text{ bar} * 1.1) = .40 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.              | $\Delta P$ | Ele.               | $\Delta P$ |
|-------|------------|-------------------|------------|--------------------|------------|
| K3    | 0.25       | 2K3/<br>KK3       | 0.12       | 3KZ1/<br>27KZ1     | 0.05       |
| K10   | 0.09       | 2K10/<br>KK10     | 0.05       | 3KZ3/<br>27KZ3     | 0.03       |
| K25   | 0.02       | 2K25/<br>KK25     | 0.01       | 3KZ5/<br>27KZ5     | 0.02       |
| KAS3  | 0.10       | 2KAS3/<br>KKAS3   | 0.05       | 3KZ10/<br>27KZ10   | 0.02       |
| KAS5  | 0.08       | 2KAS5/<br>KKAS5   | 0.04       | 3KZ25/<br>27KZ25   | 0.01       |
| KAS10 | 0.05       | 2KAS10/<br>KKAS10 | 0.03       | 3K3                | 0.08       |
| KZX10 | 0.22       | 2KZX10/<br>KKZX10 | 0.11       | 3K10               | 0.03       |
| KZW1  | 0.43       | 2KZW1             | -          | 3K25               | 0.01       |
| KZW3  | 0.32       | 2KZW3/<br>KKZW3   | 0.16       | 3KAS3/<br>27KAS3   | 0.03       |
| KZW5  | 0.28       | 2KZW5/<br>KKZW5   | 0.14       | 3KAS5/<br>27KAS5   | 0.02       |
| KZW10 | 0.23       | 2KZW10/<br>KKZW10 | 0.12       | 3KAS10/<br>27KAS10 | 0.02       |
| KZW25 | 0.14       | 2KZW25/<br>KKZW25 | 0.07       | 3KAS25/<br>27KAS25 | 0.07       |

Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## NOTES:

Box 2. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900(LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-3255C).

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 7. For options F & F32, bolt depth .75" (19 mm).

For option O, O-rings included; hardware not included.

Box 8. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

Box 10. Options N, are not available with KFN30, KFN50. N option should be used in conjunction with dirt alarm.

## How to Build a Valid Model Number for a Schroeder KF30:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| KF30  |       |       |       |       |       |       |       |       |        |        |

Example: NOTE: Only boxes 8 and 10 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| GKF30 | KG    | Z     | 10    |       |       | S     |       | D5    |        |        |

= GKF30Z10SD5

| BOX 1                                                                                                                                                                                                                                                                                                                 | BOX 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | BOX 3                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Filter Series</b><br><b>KF30</b><br><b>KFN30</b><br>(Non-bypassing; requires ZX high collapse elements)<br><b>GKF30</b><br>(GeoSeal®)<br><b>KF50</b><br><b>KFN50</b><br>(Non-bypassing; requires ZX high collapse elements)<br><b>GKF50</b><br>(GeoSeal®)                                                          | <b>Number &amp; Size of Elements</b><br>1 = K, KK, 27K<br>2 = K<br>3 = K<br><br><b>GeoSeal® Options</b><br>1 = KG, KKG, 27KKG<br>2 = KG<br>3 = KG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Media Type</b><br>Omit = E Media (Cellulose)<br>AS = Anti-Stat Media (synthetic)<br>Z = Excellement® Z-Media® (synthetic)<br>ZW = Aqua-Excellement® ZW Media<br>ZX = Excellement® Z-Media® (High Collapse centertube)<br>W = W Media (water removal)<br>M = Media (reusable metal mesh) N size only         |
| BOX 4                                                                                                                                                                                                                                                                                                                 | BOX 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | BOX 6                                                                                                                                                                                                                                                                                                          |
| <b>Micron Rating</b><br>1 = 1 Micron (Z, ZW, ZX media)<br>3 = 3 Micron (AS, E, Z, ZW, ZX media)<br>5 = 5 Micron (AS, Z, ZW, ZX media)<br>10 = 10 Micron (AS, E, M, Z, ZW, ZX media)<br>25 = 25 Micron (E, M, Z, ZW, ZX media)<br>60 = 60 Micron (M media)<br>150 = 150 Micron (M media)<br>260 = 260 Micron (M media) | <b>Seal Material</b><br>Omit = Buna N<br>V = Viton®<br>H = EPR<br>H.5 = Skydrol® compatibility                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Magnet Option</b><br>Omit = None<br>M = Magnet inserts (not available w/ indicator in cap)                                                                                                                                                                                                                  |
| BOX 8                                                                                                                                                                                                                                                                                                                 | BOX 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BOX 11                                                                                                                                                                                                                                                                                                         |
| <b>Bypass</b><br>Omit = 40 PSI Bypass<br>X = Blocked bypass<br>50 = 50 psi bypass setting<br>60 = 60 psi bypass setting<br>(Omit Box 8 if non-bypassing filter is used)                                                                                                                                               | <b>Dirt Alarm® Options</b><br>Omit = None<br>D = Pointer<br>D5 = Visual pop-up<br>D5C = D5 in cap<br>D9 = All stainless D5<br>D8 = Visual w/ thermal lockout<br>D8C = D8 in cap<br><br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T<br><br>MS = Cam operated switch w/ 1/2" conduit female connection<br>MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)<br><br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT | <b>Additional Options</b><br>Omit = None<br>N = No-Element Indicator (not available w/ KFN30/KFN50/GKF30/GKF50 or housings w/ indicator in cap)<br>C = Electrical indicator in cap vs. in base standard<br>G509 = Dirt Alarm and drain opposite standard<br>G588 = Electric Switch and drain opposite standard |
| BOX 9                                                                                                                                                                                                                                                                                                                 | BOX 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BOX 11                                                                                                                                                                                                                                                                                                         |
| <b>Test Point</b><br>Omit = None<br>L = Two 1/4" NPTF inlet & outlet female test ports<br>U = Series 1215 3/4 UNF Schroeder Check Test Point installed in cap (upstream)<br>UU = Series 1215 3/4 UNF Schroeder Check Test Point installed in block (upstream and downstream)                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                |

# Base-Ported Pressure Filter

## TF50



### Features and Benefits

- Base-ported pressure filter
- Can be installed in vertical or horizontal position
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting

40 gpm  
150 L/min  
5000 psi  
345 bar

Model No. of filter in photograph is TF502A10P.

|                           |                                                                                                        |
|---------------------------|--------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 40 gpm (150 L/min) for 150 SUS (32 cSt) fluids                                                   |
| Max. Operating Pressure:  | 5000 psi (345 bar)                                                                                     |
| Min. Yield Pressure:      | 15,000 psi (1035 bar), per NFPA T2.6.1                                                                 |
| Rated Fatigue Pressure:   | 3500 psi (240 bar), per NFPA T2.6.1-2005                                                               |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                        |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 69 psi (4.8 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Base:             | Ductile Iron                                                                                           |
| Element Case & Cap:       | Steel                                                                                                  |
| Weight of TF50-1A:        | 24.4 lbs. (11.1 kg)                                                                                    |
| Weight of TF50-2A:        | 29.8 lbs. (13.5 kg)                                                                                    |
| Element Change Clearance: | 8.50" (215 mm)                                                                                         |

### Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media* (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media* (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media* (synthetic) with H (EPR) seal designation                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media* (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RF50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

**TF50**

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

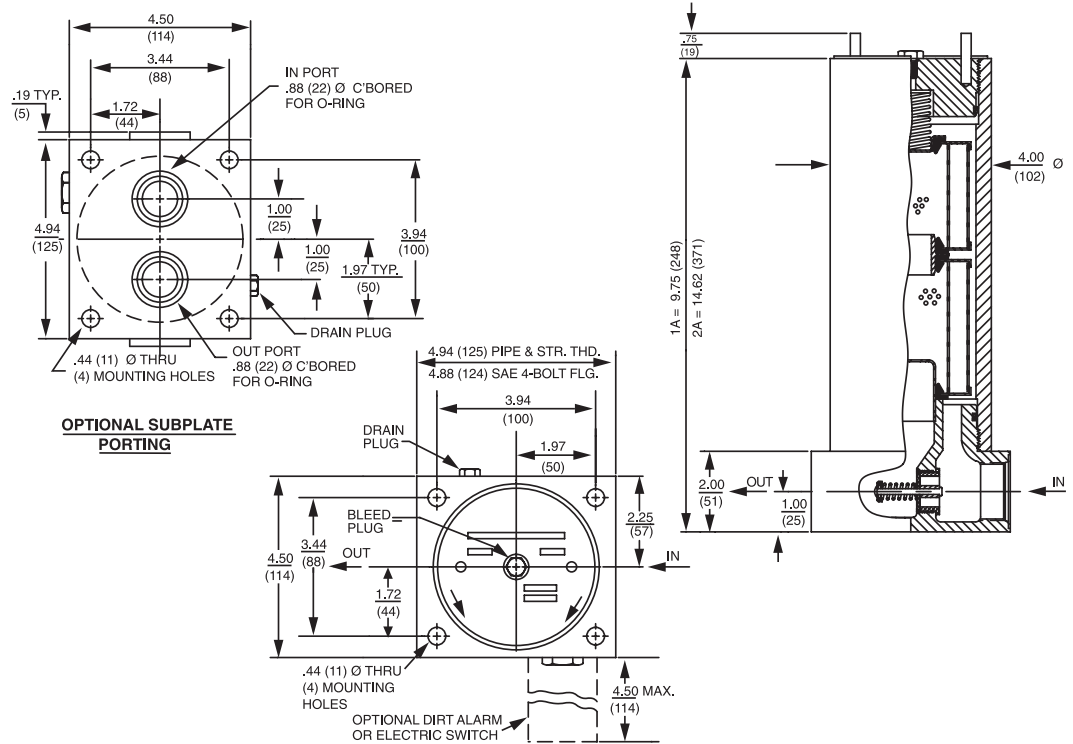
NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| AZ1     | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| AZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| AZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| AZ10    | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| AZ25    | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| CCZX3   | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |
| CCZX10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |

Element DHC (gm)

AZ1 25

AZ3 26

AZ5 30

AZ10 28

AZ25 28

CCZX3 26\*

CCZX10 28\*

Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

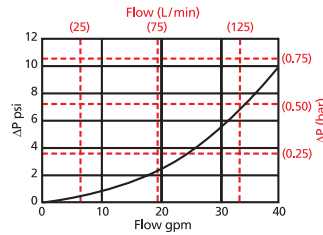
\* Based on 100 psi terminal pressure

Element Nominal Dimensions: A: 3.0" (75 mm) O.D. x 4.5" (115 mm) long  
CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long



$\Delta P_{\text{housing}}$

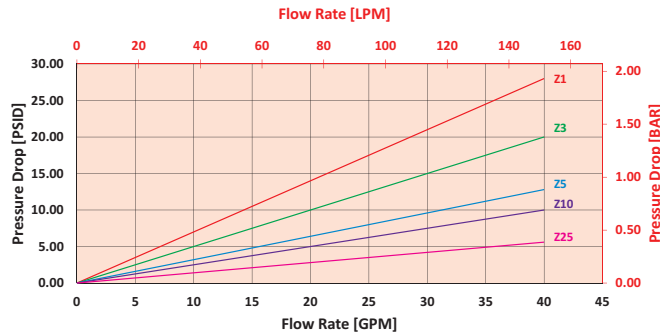
TF50  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

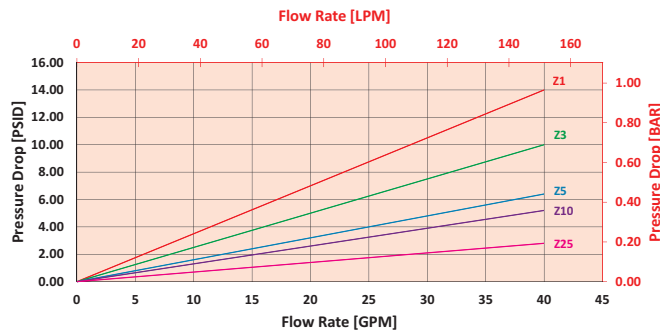
1AZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2AZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for TF501AZ10SD5 using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 1.8 psi (.12 bar) on the graph for the TF50 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 3.8 psi (.26 bar) according to the graph for the AZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 1.8 \text{ psi [.12 bar]} \quad | \quad \Delta P_{\text{element}} = 3.8 \text{ psi [.26 bar]}$$

$$V_f = 175 \text{ SUS (37.2 cSt)} / 150 \text{ SUS (32 cSt)} = 1.2$$

$$\Delta P_{\text{filter}} = 1.8 \text{ psi} + (3.8 \text{ psi} * 1.2) = 6.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .12 \text{ bar} + (.26 \text{ bar} * 1.2) = .43 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.   | ΔP   | Ele. | ΔP   |
|--------|------|------|------|
| A3     | 0.53 | AA3  | 0.16 |
| A10    | 0.36 | AA10 | 0.18 |
| A25    | 0.05 | AA25 | 0.03 |
| CCZX3  | 0.29 |      |      |
| CCZX10 | 0.26 |      |      |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder TF50:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| TF50  |       |       |       |       |       |       |       |       |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| TF50  | 1     | AZ5   |       |       | S     |       | D5    |       |        |

= TF501AZ5SD5

| BOX 1                                               | BOX 2              | BOX 3                                                           |
|-----------------------------------------------------|--------------------|-----------------------------------------------------------------|
| Filter Series                                       | Number             | Media Type                                                      |
| TF50                                                | 1                  | AZ1 = 1 µ Excellement® Z-Media® (synthetic)                     |
|                                                     | 2                  | AZ3 = 3 µ Excellement® Z-Media® (synthetic)                     |
|                                                     | (AZ elements only) | AZ5 = 5 µ Excellement® Z-Media® (synthetic)                     |
| TFN50                                               |                    | AZ10 = 10 µ Excellement® Z-Media® (synthetic)                   |
| (Non-bypassing; requires ZX high collapse elements) |                    | AZ25 = 25 µ Excellement® Z-Media® (synthetic)                   |
|                                                     |                    | CCZX1 = 1 µ Excellement® Z-Media® (high collapse center tube)   |
|                                                     |                    | CCZX3 = 3 µ Excellement® Z-Media® (high collapse center tube)   |
|                                                     |                    | CCZX5 = 5 µ Excellement® Z-Media® (high collapse center tube)   |
|                                                     |                    | CCZX10 = 10 µ Excellement® Z-Media® (high collapse center tube) |
|                                                     |                    | CCZX25 = 25 µ Excellement® Z-Media® (high collapse center tube) |

| BOX 4                        | BOX 5                                                           | BOX 6                            |
|------------------------------|-----------------------------------------------------------------|----------------------------------|
| Seal Material                | Magnet option                                                   | Porting                          |
| Omit = Buna N                | Omit = None                                                     | P = 1" NPTF                      |
| V = Viton®                   | M = Magnet inserts (not available w/ indicator in cap or TFN50) | S = SAE-16                       |
| H = EPR                      |                                                                 | F = 1" SAE 4-bolt flange Code 61 |
| H.S = Skydrol® compatibility |                                                                 | O = Subplate                     |
|                              |                                                                 | B = ISO 228 G-1"                 |

| BOX 7                      |
|----------------------------|
| Bypass                     |
| Omit = 40 PSI Bypass       |
| X = Blocked bypass         |
| 50 = 50 psi bypass setting |
| 60 = 60 psi bypass setting |

| BOX 8                                                                                                |
|------------------------------------------------------------------------------------------------------|
| Test Points                                                                                          |
| L = Two 1/4" NPTF inlet and outlet female test ports                                                 |
| U = Series 1215 7/16 UNF Schroeder Check Test Point installation in cap (upstream)                   |
| UU = Series 1215 7/16 UNF Schroeder Check Test Point installation in block (upstream and downstream) |

| BOX 10                                               |
|------------------------------------------------------|
| Additional Options                                   |
| Omit = None                                          |
| N = No-Element indicator (not available with TFN50)  |
| G509 = Dirt alarm and drain opposite standard        |
| G588 = Electrical switch and drain opposite standard |

BOX 9

| Dirt Alarm® Options                                       |                                                                     |
|-----------------------------------------------------------|---------------------------------------------------------------------|
| None                                                      | Omit = None                                                         |
| Visual                                                    | D = Pointer                                                         |
|                                                           | D5 = Visual pop-up                                                  |
|                                                           | D5C = D5 in cap                                                     |
|                                                           | D9 = All stainless D5                                               |
| Visual with Thermal Lockout                               | D8 = Visual w/ thermal lockout                                      |
|                                                           | D8C = D8 in cap                                                     |
| Electrical                                                | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable               |
|                                                           | MS5LC = Low current MS5                                             |
|                                                           | MS10 = Electrical w/ DIN connector (male end only)                  |
|                                                           | MS10LC = Low current MS10                                           |
|                                                           | MS11 = Electrical w/ 12 ft. 4-conductor wire                        |
|                                                           | MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)  |
|                                                           | MS12LC = Low current MS12                                           |
|                                                           | MS16 = Electrical w/ weather-packed sealed connector                |
|                                                           | MS16LC = Low current MS16                                           |
| MS17LC = Electrical w/ 4 pin Brad Harrison male connector |                                                                     |
| Electrical with Thermal Lockout                           | MS5T = MS5 (see above) w/ thermal lockout                           |
|                                                           | MS5LCT = Low current MS5T                                           |
|                                                           | MS10T = MS10 (see above) w/ thermal lockout                         |
|                                                           | MS10LCT = Low current MS10T                                         |
|                                                           | MS12T = MS12 (see above) w/ thermal lockout                         |
|                                                           | MS12LCT = Low current MS12T                                         |
|                                                           | MS16T = MS16 (see above) w/ thermal lockout                         |
|                                                           | MS16LCT = Low current MS16T                                         |
|                                                           | MS17LCT = Low current MS17T                                         |
| Electrical Visual                                         | MS = Cam operated switch w/ 1/2" conduit female connection          |
|                                                           | MS13 = Supplied w/ threaded connector & light                       |
|                                                           | MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end) |
| Electrical Visual with Thermal Lockout                    | MS13DCT = MS13 (see above), direct current, w/ thermal lockout      |
|                                                           | MS13DCLCT = Low current MS13DCT                                     |
|                                                           | MS14DCT = MS14 (see above), direct current, w/ thermal lockout      |
|                                                           | MS14DCLCT = Low current MS14DCT                                     |

## NOTES:

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

# Base-Ported Pressure Filter

**KC50**



## Features and Benefits

- Base-ported pressure filter
- Patented dirt-tolerant cap design
- Can be installed in vertical or horizontal position
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements
- Available with quality-protected GeoSeal® Elements (GKC50)

**100/150 gpm**  
**380/570 L/min**  
**5000 psi**  
**345 bar**

Model No. of filter in photograph is KC501KZ10PD.

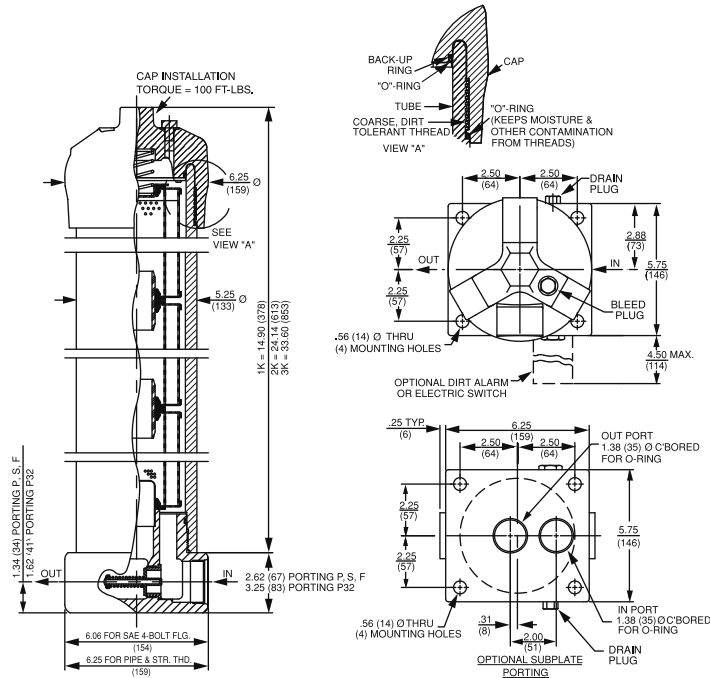
|                           |                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids<br>With 2" porting only, up to 150 gpm (570 L/min)<br>for 150 SUS (32 cSt) fluids    |
| Max. Operating Pressure:  | 5000 psi (345 bar)                                                                                                                         |
| Min. Yield Pressure:      | 15,000 psi (1035 bar), per NFPA T2.6.1                                                                                                     |
| Rated Fatigue Pressure:   | 3500 psi (240 bar), per NFPA T2.6.1-2005                                                                                                   |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                                                            |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar) Optional Cracking: 50 psi (3.5 bar)<br>Full Flow: 61 psi (4.2 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Base & Cap:       | Ductile Iron                                                                                                                               |
| Element Case:             | Steel                                                                                                                                      |
| Weight of KF30-1K:        | 66.8 lbs. (30.3 kg)                                                                                                                        |
| Weight of KF30-2K:        | 87.8 lbs. (39.8 kg)                                                                                                                        |
| Weight of KF30-3K:        | 109.6 lbs. (49.7 kg)                                                                                                                       |
| Element Change Clearance: | 8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K                                                                      |

## Filter Housing Specifications

|                        |                                                                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                      |
| Petroleum Based Fluids | All E-Media (cellulose) and Z-Media® and ASP® Media (synthetic)                                                                                                                                  |
| High Water Content     | All Z-Media® and ASP® Media (synthetic)                                                                                                                                                          |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® Media (synthetic)                                                                                                                                    |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic), and all ASP® Media                                                                                                                                       |
| Phosphate Esters       | All Z-Media® and ASP® Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic), and all ASP® Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

## Fluid Compatibility

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
**KC50**  
MKF50  
MKC50  
KC65  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
LC50  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element              | Filtration Ratio Per<br>ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC)<br>calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|----------------------|----------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                      | $\beta_x \geq 75$                                                                                                    | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1       | <1.0                                                                                                                 | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KKZ3/27KZ3       | <1.0                                                                                                                 | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KKZ5/27KZ5       | 2.5                                                                                                                  | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KKZ10/27KZ10    | 7.4                                                                                                                  | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25/27KZ25    | 18.0                                                                                                                 | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1                 | N/A                                                                                                                  | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3           | N/A                                                                                                                  | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5           | N/A                                                                                                                  | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10         | N/A                                                                                                                  | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25         | N/A                                                                                                                  | N/A                | N/A                | 15.4                                                                 | 18.5                   |
| KZX3/KKZX3/27KZX3    | <1.0                                                                                                                 | <1.0               | <2.0               | 4.7                                                                  | 5.8                    |
| KZX10/KKZX10/27KZX10 | 7.4                                                                                                                  | 8.2                | 10.0               | 8.0                                                                  | 9.8                    |

| Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) |
|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|
| KZ1     | 112         | KKZ1    | 224         | 27KZ1   | 336         | KZW1    | 61          | KKZW3   | 128         |
| KZ3     | 115         | KKZ3    | 230         | 27KZ3   | 345         | KZW3    | 64          | KKZW5   | 126         |
| KZ5     | 119         | KKZ5    | 238         | 27KZ5   | 357         | KZW5    | 63          | KKZW10  | 114         |
| KZ10    | 108         | KKZ10   | 216         | 27KZ10  | 324         | KZW10   | 57          | KKZW25  | 158         |
| KZ25    | 93          | KKZ25   | 186         | 27KZ25  | 279         | KZW25   | 79          |         |             |
| KZX3    | 81*         | KKZX3   | 163*        | 27KZX3  | 249*        |         |             |         |             |
| KZX10   | 90*         | KKZX10  | 182*        | 27KZX10 | 279*        |         |             |         |             |

\* Based on 100 psi terminal pressure

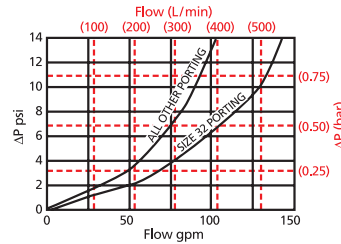
Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

$\Delta P_{\text{housing}}$

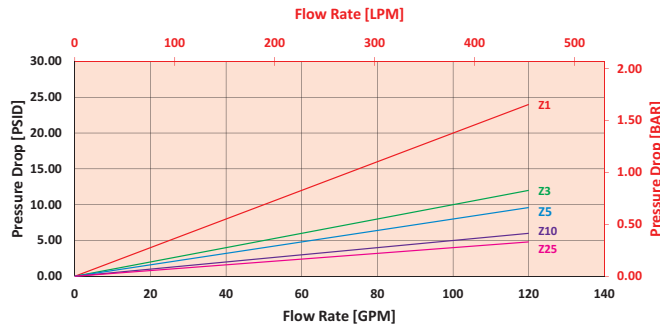
KC50  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

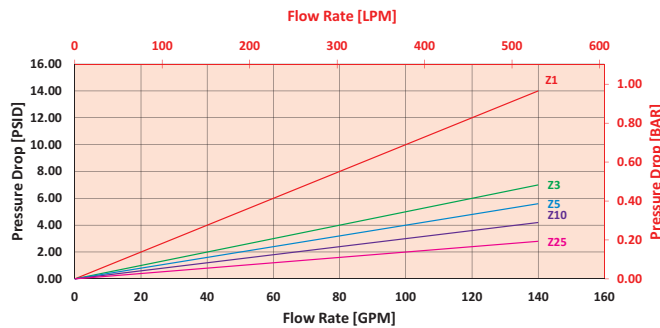
KZ/KGZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKGZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 50 gpm (189.5 L/min) for KC501KZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the KC50 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm. In this case,  $\Delta P_{\text{element}}$  is 2.5 psi (.17 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 2.5 \text{ psi } [.17 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (2.5 \text{ psi} * 1.1) = 5.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.17 \text{ bar} * 1.1) = .40 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.              | $\Delta P$ | Ele.               | $\Delta P$ |
|-------|------------|-------------------|------------|--------------------|------------|
| K3    | 0.25       | 2K3/<br>KK3       | 0.12       | 3KZ1/<br>27KZ1     | 0.05       |
| K10   | 0.09       | 2K10/<br>KK10     | 0.05       | 3KZ3/<br>27KZ3     | 0.03       |
| K25   | 0.02       | 2K25/<br>KK25     | 0.01       | 3KZ5/<br>27KZ5     | 0.02       |
| KAS3  | 0.10       | 2KAS3/<br>KKAS3   | 0.05       | 3KZ10/<br>27KZ10   | 0.02       |
| KAS5  | 0.08       | 2KAS5/<br>KKAS5   | 0.04       | 3KZ25/<br>27KZ25   | 0.01       |
| KAS10 | 0.05       | 2KAS10/<br>KKAS10 | 0.03       | 3K3                | 0.08       |
| KZX10 | 0.22       | 2KZX10/<br>KKZX10 | 0.11       | 3K10               | 0.03       |
| KZW1  | 0.43       | 2KZW1             | -          | 3K25               | 0.01       |
| KZW3  | 0.32       | 2KZW3/<br>KKZW3   | 0.16       | 3KAS3/<br>27KAS3   | 0.03       |
| KZW5  | 0.28       | 2KZW5/<br>KKZW5   | 0.14       | 3KAS5/<br>27KAS5   | 0.02       |
| KZW10 | 0.23       | 2KZW10/<br>KKZW10 | 0.12       | 3KAS10/<br>27KAS10 | 0.02       |
| KZW25 | 0.14       | 2KZW25/<br>KKZW25 | 0.07       | 3KAS25/<br>27KAS25 | 0.07       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder KC50:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| KC50  |       |       |       |       |       |       |       |       |        |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| KC50  | 1K    | Z     | 10    |       |       | S     |       |       | D5     |        |

= KC501KZ10SD5

| BOX 1                                               | BOX 2                     | BOX 3                                                              |
|-----------------------------------------------------|---------------------------|--------------------------------------------------------------------|
| Filter Series                                       | Number & Size of Elements | Media Type                                                         |
| KC50                                                | 1 K, KK, 27K              | Omit = E Media (Cellulose) (KC50 only)                             |
| KCN50                                               | 2 K                       | AS = Anti-Stat Media (synthetic)                                   |
| (Non-bypassing: requires ZX high collapse elements) | 3 K                       | Z = Excellement® Z-Media® (synthetic)                              |
|                                                     | GeoSeal® Options          | ZX = Excellement® Z-Media® (High Collapse centertube) (KCN50 Only) |
|                                                     | 1 KG, KKG, 27KG           | ZW = Aqua-Excellement ZW Media (KC50 Only)                         |
|                                                     | 2 KG                      | W = W Media (water removal)                                        |
|                                                     | 3 KG                      | M = Media (reusable metal mesh) (KC50 & KCN50 Only)                |

GKC50  
(GeoSeal®)WKC50  
(Water)

| BOX 4                                      | BOX 5                        | BOX 6                                                  | BOX 7                                |
|--------------------------------------------|------------------------------|--------------------------------------------------------|--------------------------------------|
| Micron Rating                              | Seal Material                | Magnet Option                                          | Porting                              |
| 1 = 1 Micron (Z, ZW, ZX media)             | Omit = Buna N                | Omit = None                                            | P = 1 1/2" NPTF                      |
| 3 = 3 Micron (AS, E, Z, ZW, ZX media)      | V = Viton®                   | M = Magnet inserts (not available w/ indicator in cap) | P32 = 2" NPTF                        |
| 5 = 5 Micron (AS, Z, ZW, ZX media)         | H = EPR                      |                                                        | S = SAE-24                           |
| 10 = 10 Micron (AS, E, M, Z, ZW, ZX media) | H.5 = Skydrol® compatibility |                                                        | F = 1 1/2" SAE 4-bolt flange Code 62 |
| 25 = 25 Micron (E, M, Z, ZW, ZX media)     |                              |                                                        | O = Subplate                         |
| 60 = 60 Micron (M media)                   |                              |                                                        | B24 = ISO 228 G-1 1/2"               |
| 150 = 150 Micron (M media)                 |                              |                                                        |                                      |
| 260 = 260 Micron (M media)                 |                              |                                                        |                                      |

| BOX 8                      | BOX 9                                                                                             | BOX 10                                                                | BOX 11                                                                                  |
|----------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Bypass                     | Test Points                                                                                       | Dirt Alarm® Options                                                   | Additional Options                                                                      |
| Omit = 40 PSI Bypass       | Omit = None                                                                                       | None                                                                  | Omit = None                                                                             |
| X = Blocked bypass         | L = Two 1/4" NPTF inlet & outlet female test ports                                                | Omit = None                                                           | N = No-Element Indicator (not available w/ KCN50 or GKC50 housings w/ indicator in cap) |
| 50 = 50 psi bypass setting | U = Series 1215 3/16 UNF Schroeder Check Test Point installed in cap (upstream)                   | D = Pointer                                                           | G509 = Dirt Alarm and drain opposite standard                                           |
| (Omit Box 8 if KCN50)      | UU = Series 1215 3/16 UNF Schroeder Check Test Point installed in block (upstream and downstream) | D5 = Visual pop-up                                                    | G588 = Electric Switch and drain opposite standard                                      |
|                            |                                                                                                   | D5C = D5 in cap                                                       |                                                                                         |
|                            |                                                                                                   | D9 = All stainless D5                                                 |                                                                                         |
|                            |                                                                                                   | D8 = Visual w/ thermal lockout                                        |                                                                                         |
|                            |                                                                                                   | D8C = D8 in cap                                                       |                                                                                         |
|                            |                                                                                                   | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable                 |                                                                                         |
|                            |                                                                                                   | MS5LC = Low current MS5                                               |                                                                                         |
|                            |                                                                                                   | MS10 = Electrical w/ DIN connector (male end only)                    |                                                                                         |
|                            |                                                                                                   | MS10LC = Low current MS10                                             |                                                                                         |
|                            |                                                                                                   | MS11 = Electrical w/ 12 ft. 4-conductor wire                          |                                                                                         |
|                            |                                                                                                   | MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)    |                                                                                         |
|                            |                                                                                                   | MS12LC = Low current MS12                                             |                                                                                         |
|                            |                                                                                                   | MS16 = Electrical w/ weather-packed sealed connector                  |                                                                                         |
|                            |                                                                                                   | MS16LC = Low current MS16                                             |                                                                                         |
|                            |                                                                                                   | MS17LC = Electrical w/ 4 pin Brad Harrison male connector             |                                                                                         |
|                            |                                                                                                   | MS5T = MS5 (see above) w/ thermal lockout                             |                                                                                         |
|                            |                                                                                                   | MS5LCT = Low current MS5T                                             |                                                                                         |
|                            |                                                                                                   | MS10T = MS10 (see above) w/ thermal lockout                           |                                                                                         |
|                            |                                                                                                   | MS10LCT = Low current MS10T                                           |                                                                                         |
|                            |                                                                                                   | MS12T = MS12 (see above) w/ thermal lockout                           |                                                                                         |
|                            |                                                                                                   | MS12LCT = Low current MS12T                                           |                                                                                         |
|                            |                                                                                                   | MS16T = MS16 (see above) w/ thermal lockout                           |                                                                                         |
|                            |                                                                                                   | MS16LCT = Low current MS16T                                           |                                                                                         |
|                            |                                                                                                   | MS17LCT = Low current MS17T                                           |                                                                                         |
|                            |                                                                                                   | MS = Cam operated switch w/ 1/2" conduit female connection            |                                                                                         |
|                            |                                                                                                   | MS13DC = Supplied w/ threaded connector & light                       |                                                                                         |
|                            |                                                                                                   | MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end) |                                                                                         |
|                            |                                                                                                   | MS13DCT = MS13 (see above), direct current, w/ thermal lockout        |                                                                                         |
|                            |                                                                                                   | MS13DCLCT = Low current MS13DCT                                       |                                                                                         |
|                            |                                                                                                   | MS14DCT = MS14 (see above), direct current, w/ thermal lockout        |                                                                                         |
|                            |                                                                                                   | MS14DCLCT = Low current MS14DCT                                       |                                                                                         |

## NOTES:

Box 2. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900 (LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-3255C).

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 7. For option F, bolt depth .75" (19 mm). For option O, O-rings included; hardware not included.

Box 8. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 10. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

Box 11. Option N, are not available with KCN50/ GKC50. N option should be used in conjunction with dirt alarm.

# Base-Ported Pressure Filter

**MKF50/  
MKC50**

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

**MKF50**

**MKC50**

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



## Features and Benefits

- Base-ported high pressure dual filter manifold mounted
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe porting (contact factory for other porting options)
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements
- **G** Available with quality-protected GeoSeal® Elements (GMKF50)

**200 gpm**

**760 L/min**

**5000 psi**

**345 bar**

Model No. of filter in photograph are MKF504K10PD5 and MKC504K10PD5.

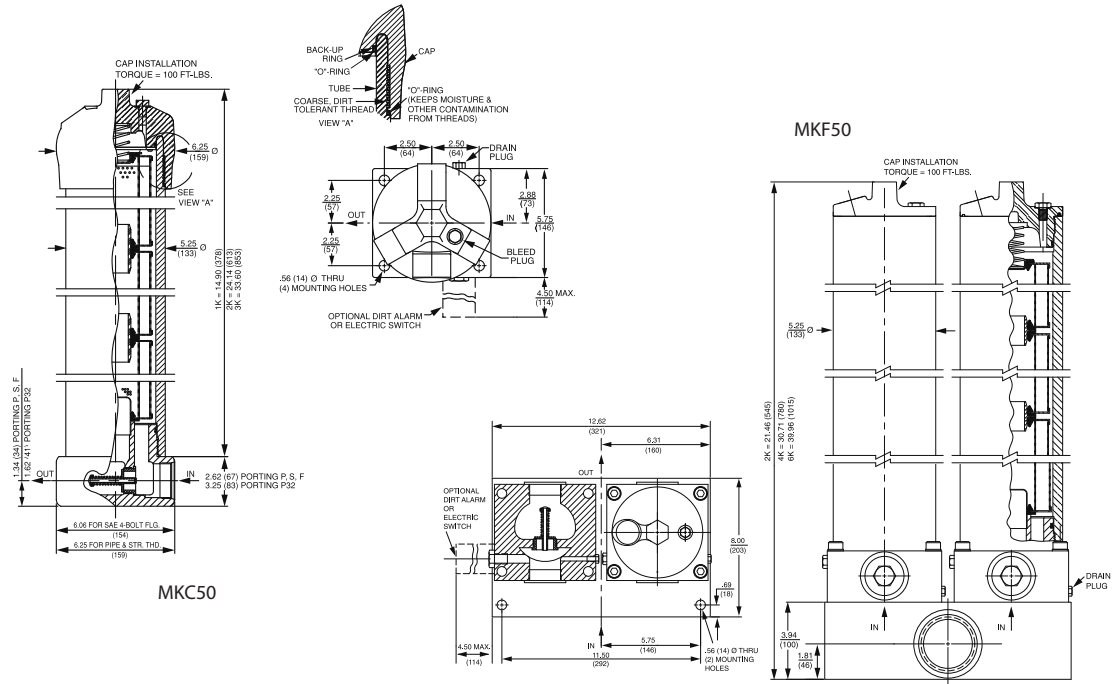
|                           |                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 200 gpm (760 L/min) for 150 SUS (32 cSt) fluids                                                                                      |
| Max. Operating Pressure:  | 5000 psi (345 bar)                                                                                                                         |
| Min. Yield Pressure:      | 15,000 psi (1035 bar), per NFPA T2.6.1                                                                                                     |
| Rated Fatigue Pressure:   | 3500 psi (240 bar), per NFPA T2.6.1-2005                                                                                                   |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                                                            |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar) Optional Cracking: 50 psi (3.5 bar)<br>Full Flow: 61 psi (4.2 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Base & Cap:       | Ductile Iron                                                                                                                               |
| Element Case:             | Steel                                                                                                                                      |
| Weight of MKF50-2K:       | 214.0 lbs. (97.3 kg)                                                                                                                       |
| Weight of MKF50-4K:       | 243.0 lbs. (110.2 kg)                                                                                                                      |
| Weight of MKF50-6K:       | 284.4 lbs. (129.0 kg)                                                                                                                      |
| Weight of MKC50-2K:       | 216.0 lbs. (98.0 kg)                                                                                                                       |
| Weight of MKC50-4K:       | 245.0 lbs. (111.1 kg)                                                                                                                      |
| Weight of MKC50-6K:       | 286.4 lbs. (129.9 kg)                                                                                                                      |
| Element Change Clearance: | 8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K                                                                      |

## Filter Housing Specifications

|                        |                                                                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                      |
| Petroleum Based Fluids | All E-Media (cellulose) and Z-Media* and ASP* Media (synthetic)                                                                                                                                  |
| High Water Content     | All Z-Media* and ASP* Media (synthetic)                                                                                                                                                          |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic), 10 µ ASP* Media (synthetic)                                                                                                                                    |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic), and all ASP* Media                                                                                                                                       |
| Phosphate Esters       | All Z-Media* and ASP* Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media* (synthetic), and all ASP* Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

## Fluid Compatibility





Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element              | Filtration Ratio Per<br>ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC)<br>calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|----------------------|----------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                      | $\beta_x \geq 75$                                                                                                    | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1       | <1.0                                                                                                                 | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KKZ3/27KZ3       | <1.0                                                                                                                 | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KKZ5/27KZ5       | 2.5                                                                                                                  | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KKZ10/27KZ10    | 7.4                                                                                                                  | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25/27KZ25    | 18.0                                                                                                                 | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1                 | N/A                                                                                                                  | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3           | N/A                                                                                                                  | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5           | N/A                                                                                                                  | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10         | N/A                                                                                                                  | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25         | N/A                                                                                                                  | N/A                | N/A                | 15.4                                                                 | 18.5                   |
| KZX3/KKZX3/27KZX3    | <1.0                                                                                                                 | <1.0               | <2.0               | 4.7                                                                  | 5.8                    |
| KZX10/KKZX10/27KZX10 | 7.4                                                                                                                  | 8.2                | 10.0               | 8.0                                                                  | 9.8                    |

| Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) |
|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|
| KZ1     | 112         | KKZ1    | 224         | 27KZ1   | 336         | KZW1    | 61          |         |             |
| KZ3     | 115         | KKZ3    | 230         | 27KZ3   | 345         | KZW3    | 64          | KKZW3   | 128         |
| KZ5     | 119         | KKZ5    | 238         | 27KZ5   | 357         | KZW5    | 63          | KKZW5   | 126         |
| KZ10    | 108         | KKZ10   | 216         | 27KZ10  | 324         | KZW10   | 57          | KKZW10  | 114         |
| KZ25    | 93          | KKZ25   | 186         | 27KZ25  | 279         | KZW25   | 79          | KKZW25  | 158         |
| KZX3    | 81*         | KKZX3   | 163*        | 27KZX3  | 249*        |         |             |         |             |
| KZX10   | 90*         | KKZX10  | 182*        | 27KZX10 | 279*        |         |             |         |             |

\* Based on 100 psi terminal pressure

Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

# Base-Ported Pressure Filter

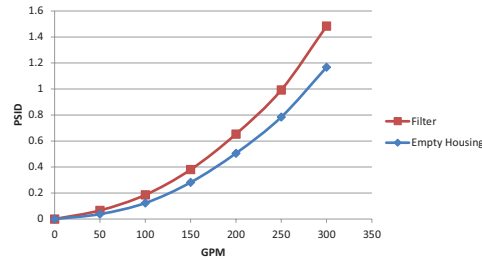
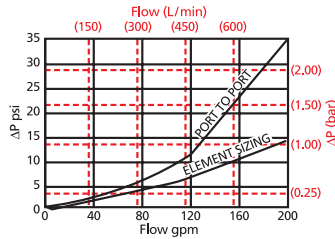
## MKF50/ MKC50

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

$\Delta P_{\text{housing}}$

MKF50/MKC50  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:

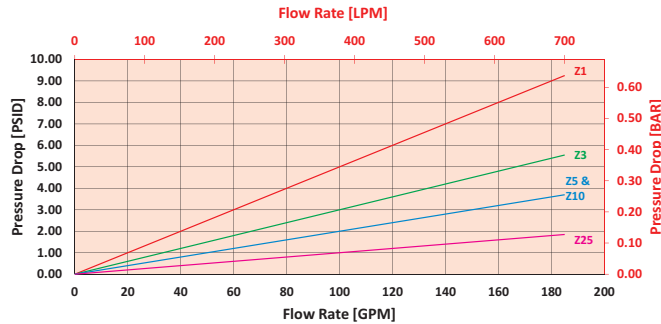
95-5 @ 40C



$\Delta P_{\text{element}}$

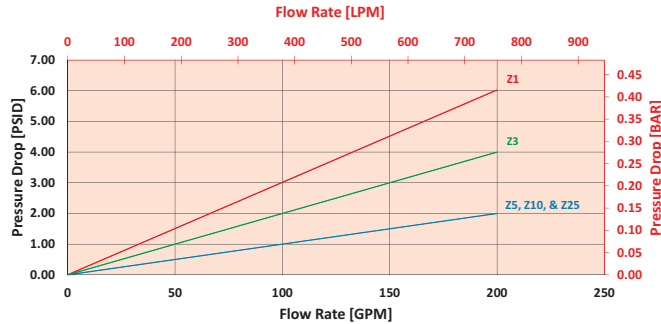
4KZ/2KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



6KZ/2-27KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 100 gpm (379 L/min) for MKF504KZ10PD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 100 gpm. In this case,  $\Delta P_{\text{housing}}$  is 8 psi (.55 bar) on the graph for the MKF50 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 100 gpm. In this case,  $\Delta P_{\text{element}}$  is 8 psi (.14 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 8 \text{ psi } [.55 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 2 \text{ psi } [.14 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 8 \text{ psi} + (2 \text{ psi} * 1.1) = 10.2 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .55 \text{ bar} + (.14 \text{ bar} * 1.1) = .70 \text{ bar}$$

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.   | $\Delta P$ | Ele.           | $\Delta P$ |
|-------|------------|--------|------------|----------------|------------|
| 2KZ1  | 0.10       | 2K3    | 0.12       | 4K3/KK3        | 0.06       |
| 2KZ3  | 0.05       | 2K10   | 0.05       | 4K10/KK10      | 0.02       |
| 2KZ5  | 0.04       | 2K25   | 0.01       | 4K25/KK25      | 0.01       |
| 2KZ10 | 0.03       | 2KAS3  | 0.05       | 4KAS3/KKAS3    | 0.03       |
| 2KZ25 | 0.02       | 2KAS5  | 0.04       | 4KAS5/KKAS5    | 0.02       |
| KZW1  | 0.43       | 2KAS10 | 0.03       | 4KAS10/KKAS10  | 0.02       |
| KZW3  | 0.32       | 2KZX10 | 0.11       | 4KZX10         | 0.06       |
| KZX5  | 0.28       | 2KZW3  | 0.16       | 6KAS3/27KAS3   | 0.02       |
| KZW10 | 0.23       | 2KZW5  | 0.14       | 6KAS5/27KAS5   | 0.01       |
| KZW25 | 0.14       | 2KZW10 | 0.12       | 6KAS10/27KAS10 | 0.01       |
|       |            | 2KZW25 | 0.07       | 6KZX10         | 0.04       |

# MKF50/ MKC50

## Filter Model Number Selection

# Base-Ported Pressure Filter

How to Build a Valid Model Number for a Schroeder MFK50:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| MKF50 |       |       |       |       |       |       |       |       |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| MKF50 | 2K    | Z     | 10    |       | P     |       |       | D5    |        |

= MKF502KZ10PD5

| BOX 1                                                               | BOX 2                     | BOX 3                                                               |
|---------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------|
| Filter Series                                                       | Number & Size of Elements | Media Type                                                          |
| MKF50                                                               | 2 K, KK, 27K              | Omit = E Media (Cellulose) (MKF50 only)                             |
| MKFN50<br>(Non-bypassing:<br>requires ZX high<br>collapse elements) | 4 K                       | AS = Anti-Stat Media (synthetic)                                    |
| GMKF50<br>(GeoSeal®)                                                | 6 K                       | Z = Excellement® Z-Media® (synthetic)                               |
|                                                                     | GeoSeal® Options          | ZX = Excellement® Z-Media® (High Collapse centertube) (MKFN50 Only) |
|                                                                     | 2 KG, KKG, 27KG           | ZW = Aqua-Excellement ZW Media (MKF50 Only)                         |
|                                                                     | 4 KG                      | W = W Media (water removal)                                         |
|                                                                     | 6 KG                      | M = Media (reusable metal mesh) (MKF50 & MKFN50 Only)               |

### NOTES:

Box 2. Number of elements must equal 2 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900 (LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-3255C).

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

Box 10. N option should be used in conjunction with dirt alarm.

| BOX 4                                          | BOX 5                        | BOX 6                               | BOX 7                                                                |
|------------------------------------------------|------------------------------|-------------------------------------|----------------------------------------------------------------------|
| Micron Rating                                  | Seal Material                | Porting                             | Bypass                                                               |
| 1 = 1 Micron (DZ, Z, ZW, ZX media)             | Omit = Buna N                | P = 2½" NPTF                        | Omit = None                                                          |
| 3 = 3 Micron (AS, DZ, E, Z, ZW, ZX media)      | V = Viton®                   | F40 = 2½" SAE 4-bolt flange Code 61 | X = Blocked bypass                                                   |
| 5 = 5 Micron (AS, DZ, Z, ZW, ZX media)         | H = EPR                      | F32 = 2" 4 SAE bolt flange Code 61  | 50 = 50 PSI Bypass<br>(Omit Box 7 if a non-bypassing filter is used) |
| 10 = 10 Micron (AS, DZ, E, M, Z, ZW, ZX media) | H.5 = Skydrol® compatibility | P32 = 2" NPTF                       |                                                                      |
| 25 = 25 Micron (E, DZ, M, Z, ZW, ZX media)     |                              | B32 = ISO 228 G-2"                  |                                                                      |
| 60 = 60 Micron (M media)                       |                              |                                     |                                                                      |
| 150 = 150 Micron (M media)                     |                              |                                     |                                                                      |
| 260 = 260 Micron (M media)                     |                              |                                     |                                                                      |

| BOX 8                                                                           | BOX 9                                                               | BOX 10                                                                                     |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Test points                                                                     | Dirt Alarm® Options                                                 | Additional Options                                                                         |
| Omit = None                                                                     | None                                                                | Omit = None                                                                                |
| L = Two ¼" NPTF inlet and outlet female test ports                              | Omit = None                                                         | N = No-Element Indicator (not available w/ MKFN30/ MKCN50 or housings w/ indicator in cap) |
| U = Series 1215 7/16 UNF Schroeder Check Test Point installed in cap (upstream) | D = Pointer                                                         |                                                                                            |
|                                                                                 | D5 = Visual pop-up                                                  |                                                                                            |
|                                                                                 | D5C = D5 in cap                                                     |                                                                                            |
|                                                                                 | D9 = All stainless D5                                               |                                                                                            |
|                                                                                 | D8 = Visual w/ thermal lockout                                      |                                                                                            |
|                                                                                 | D8C = D8 in cap                                                     |                                                                                            |
|                                                                                 | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable               |                                                                                            |
|                                                                                 | MS5LC = Low current MS5                                             |                                                                                            |
|                                                                                 | MS10 = Electrical w/ DIN connector (male end only)                  |                                                                                            |
|                                                                                 | MS10LC = Low current MS10                                           |                                                                                            |
|                                                                                 | MS11 = Electrical w/ 12 ft. 4-conductor wire                        |                                                                                            |
|                                                                                 | MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)  |                                                                                            |
|                                                                                 | MS12LC = Low current MS12                                           |                                                                                            |
|                                                                                 | MS16 = Electrical w/ weather-packed sealed connector                |                                                                                            |
|                                                                                 | MS16LC = Low current MS16                                           |                                                                                            |
|                                                                                 | MS17LC = Electrical w/ 4 pin Brad Harrison connector                |                                                                                            |
|                                                                                 | MS5T = MS5 (see above) w/ thermal lockout                           |                                                                                            |
|                                                                                 | MS5LCT = Low current MS5T                                           |                                                                                            |
|                                                                                 | MS10T = MS10 (see above) w/ thermal lockout                         |                                                                                            |
|                                                                                 | MS10LCT = Low current MS10T                                         |                                                                                            |
|                                                                                 | MS12T = MS12 (see above) w/ thermal lockout                         |                                                                                            |
|                                                                                 | MS12LCT = Low current MS12T                                         |                                                                                            |
|                                                                                 | MS16T = MS16 (see above) w/ thermal lockout                         |                                                                                            |
|                                                                                 | MS16LCT = Low current MS16T                                         |                                                                                            |
|                                                                                 | MS17LCT = Low current MS17T                                         |                                                                                            |
|                                                                                 | MS = Cam operated switch w/ ½" conduit female connection            |                                                                                            |
|                                                                                 | MS13 = Supplied w/ threaded connector & light                       |                                                                                            |
|                                                                                 | MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end) |                                                                                            |
|                                                                                 | MS13DCT = MS13 (see above), direct current, w/ thermal lockout      |                                                                                            |
|                                                                                 | MS13DCLCT = Low current MS13DCT                                     |                                                                                            |
|                                                                                 | MS14DCT = MS14 (see above), direct current, w/ thermal lockout      |                                                                                            |
|                                                                                 | MS14DCLCT = Low current MS14DCT                                     |                                                                                            |

# Base-Ported Pressure Filter

## KC65



### Features and Benefits

- Base-ported high pressure filter
- Patented dirt-tolerant cap design
- Can be installed in vertical or horizontal position
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in flanged porting
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Double and triple stacking of K-size element can be replaced by single KK or 27K-size element
- Available with quality-protected GeoSeal® Elements (GKC65)

**100 gpm**  
**380 L/min**  
**6500 psi**  
**450 bar**

Model No. of filter in photograph is KC651K10FD9.

|                           |                                                                                                        |
|---------------------------|--------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids                                                  |
| Max. Operating Pressure:  | 6500 psi (450 bar)                                                                                     |
| Min. Yield Pressure:      | 19,500 psi (1345 bar), per NFPA T2.6.1                                                                 |
| Rated Fatigue Pressure:   | 5000 psi (345 bar), per NFPA T2.6.1-2005                                                               |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                        |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 75 psi (5.2 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Base & Cap:       | Ductile Iron                                                                                           |
| Element Case:             | Steel                                                                                                  |
| Weight of KC65-1K:        | 80 lbs. (36.3 kg)                                                                                      |
| Weight of KC65-2K:        | 102 lbs. (46.3 kg)                                                                                     |
| Weight of KC65-3K:        | 124 lbs. (56.3 kg)                                                                                     |
| Element Change Clearance: | 8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K                                  |

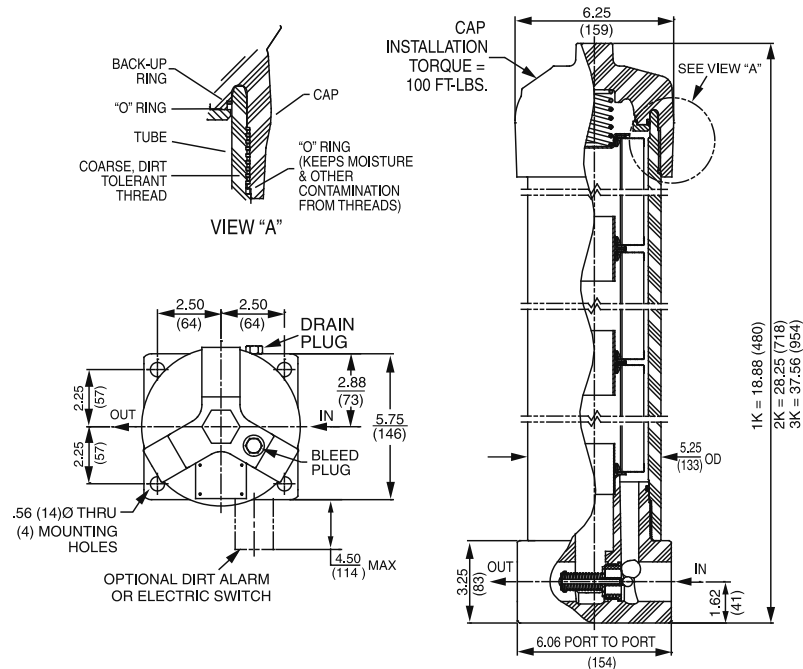
### Filter Housing Specifications

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
**KC65**  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
LC50

|                        |                                                                                                                                                                                             |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                 |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media* (synthetic)                                                                                                                                            |
| High Water Content     | All Z-Media* and ASP* Media (synthetic)                                                                                                                                                     |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic), 10 µ ASP* Media (synthetic)                                                                                                                               |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic) and all ASP* Media (synthetic)                                                                                                                       |
| Phosphate Esters       | All Z-Media* and ASP* Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                                      |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media* (synthetic) and ASP* Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element              | Filtration Ratio Per ISO 4572/<br>NFPA T3.10.8.8               |                    |                    | Filtration Ratio per<br>ISO 16889  |                        |
|----------------------|----------------------------------------------------------------|--------------------|--------------------|------------------------------------|------------------------|
|                      | Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Using APC calibrated per ISO 11171 |                        |
|                      | $\beta_x \geq 75$                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$              | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1       | <1.0                                                           | <1.0               | <1.0               | <4.0                               | 4.2                    |
| KZ3/KKZ3/27KZ3       | <1.0                                                           | <1.0               | <2.0               | <4.0                               | 4.8                    |
| KZ5/KKZ5/27KZ5       | 2.5                                                            | 3.0                | 4.0                | 4.8                                | 6.3                    |
| KZ10/KKZ10/27KZ10    | 7.4                                                            | 8.2                | 10.0               | 8.0                                | 10.0                   |
| KZ25/KKZ25/27KZ25    | 18.0                                                           | 20.0               | 22.5               | 19.0                               | 24.0                   |
| KZW1                 | N/A                                                            | N/A                | N/A                | <4.0                               | <4.0                   |
| KZW3/KKZW3           | N/A                                                            | N/A                | N/A                | 4.0                                | 4.8                    |
| KZW5/KKZW5           | N/A                                                            | N/A                | N/A                | 5.1                                | 6.4                    |
| KZW10/KKZW10         | N/A                                                            | N/A                | N/A                | 6.9                                | 8.6                    |
| KZW25/KKZW25         | N/A                                                            | N/A                | N/A                | 15.4                               | 18.5                   |
| KZX3/KKZX3/27KZX3    | <1.0                                                           | <1.0               | <2.0               | 4.7                                | 5.8                    |
| KZX10/KKZX10/27KZX10 | 7.4                                                            | 8.2                | 10.0               | 8.0                                | 9.8                    |

| Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) |
|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|
| KZ1     | 112         | KKZ1    | 224         | 27KZ1   | 336         | KZW1    | 61          |         |             |
| KZ3     | 115         | KKZ3    | 230         | 27KZ3   | 345         | KZW3    | 64          | KKZW3   | 128         |
| KZ5     | 119         | KKZ5    | 238         | 27KZ5   | 357         | KZW5    | 63          | KKZW5   | 126         |
| KZ10    | 108         | KKZ10   | 216         | 27KZ10  | 324         | KZW10   | 57          | KKZW10  | 114         |
| KZ25    | 93          | KKZ25   | 186         | 27KZ25  | 279         | KZW25   | 79          | KKZW25  | 158         |
| KZX3    | 81*         | KKZX3   | 163*        | 27KZX3  | 249*        |         |             |         |             |
| KZX10   | 90*         | KKZX10  | 182*        | 27KZX10 | 279*        |         |             |         |             |

\* Based on 100 psi terminal pressure

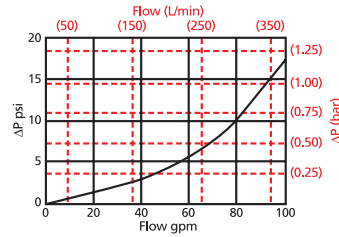
Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

$\Delta P_{\text{housing}}$

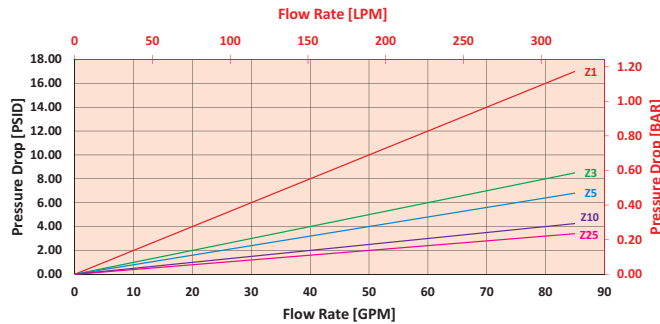
KC65  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

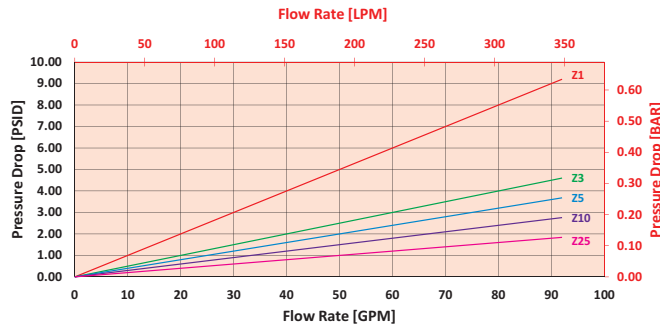
KZ/KGZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 50 gpm (189.5 L/min) for KC651KZ10FD9 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 4 psi (.27 bar) on the graph for the KC65 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm. In this case,  $\Delta P_{\text{element}}$  is 2.5 psi (.17 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 4 \text{ psi } [.27 \text{ bar}] \mid \Delta P_{\text{element}} = 2.5 \text{ psi } [.17 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 4 \text{ psi} + (2.5 \text{ psi} * 1.1) = 6.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .27 \text{ bar} + (.17 \text{ bar} * 1.1) = .46 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.              | $\Delta P$ | Ele.               | $\Delta P$ |
|-------|------------|-------------------|------------|--------------------|------------|
| K3    | 0.25       | 2K3/<br>KK3       | 0.12       | 3KZ1/<br>27KZ1     | 0.05       |
| K10   | 0.09       | 2K10/<br>KK10     | 0.05       | 3KZ3/<br>27KZ3     | 0.03       |
| K25   | 0.02       | 2K25/<br>KK25     | 0.01       | 3KZ5/<br>27KZ5     | 0.02       |
| KAS3  | 0.10       | 2KAS3/<br>KKAS3   | 0.05       | 3KZ10/<br>27KZ10   | 0.02       |
| KAS5  | 0.08       | 2KAS5/<br>KKAS5   | 0.04       | 3KZ25/<br>27KZ25   | 0.01       |
| KAS10 | 0.05       | 2KAS10/<br>KKAS10 | 0.03       | 3K3                | 0.08       |
| KZX10 | 0.22       | 2KZX10/<br>KKZX10 | 0.11       | 3K10               | 0.03       |
| KZW1  | 0.43       | 2KZW1             | -          | 3K25               | 0.01       |
| KZW3  | 0.32       | 2KZW3/<br>KKZX3   | 0.16       | 3KAS3/<br>27KAS3   | 0.03       |
| KZW5  | 0.28       | 2KZW5/<br>KKZX5   | 0.14       | 3KAS5/<br>27KAS5   | 0.02       |
| KZW10 | 0.23       | 2KZW10/<br>KKZX10 | 0.12       | 3KAS10/<br>27KAS10 | 0.02       |
| KZW25 | 0.14       | 2KZW25/<br>KKZX25 | 0.07       | 3KZX10/<br>27KZX10 | 0.07       |

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder KC65:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| KC65  |       |       |       |       |       |       |       |       |        |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| KC65  | 1K    | Z     | 10    |       |       | F     |       |       | D5     |        |

| BOX 1                                                        | BOX 2                     | BOX 3                                                              |
|--------------------------------------------------------------|---------------------------|--------------------------------------------------------------------|
| Filter Series                                                | Number & Size of Elements | Media Type                                                         |
| KC65                                                         | 1 K, KK, 27K              | Omit = E Media (Cellulose)                                         |
| KCN65<br>(Non-bypassing: requires ZX high collapse elements) | 2 K                       | AS = Anti-Stat Media (synthetic)                                   |
|                                                              | GeoSeal® Options          | Z = Excellement® Z-Media® (synthetic)                              |
|                                                              | 1 KG, KKG, 27KG           | ZX = Excellement® Z-Media® (High Collapse centertube) (KCN65 Only) |
|                                                              | 2 KG                      | ZW = Aqua-Excellement ZW Media (KC65 Only)                         |
|                                                              | 3 KG                      | W = W Media (water removal)                                        |
| GKC65<br>(GeoSeal®)                                          |                           | M = Media (reusable metal mesh) (KC65 & KCN65 Only)                |

#### NOTES:

Box 2. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900 (LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-3255C).

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 7. For option F, bolt depth 1.12" (30 mm).

Box 8. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 10. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

Box 11. Option N is not available with KCN65. N option should be used in conjunction with dirt alarm.

| BOX 4                                      | BOX 5                        | BOX 6                                                  | BOX 7                                |
|--------------------------------------------|------------------------------|--------------------------------------------------------|--------------------------------------|
| Micron Rating                              | Seal Material                | Magnet Option                                          | Porting                              |
| 1 = 1 Micron (Z, ZW, ZX media)             | Omit = Buna N                | Omit = None                                            | F = 1 1/2" SAE 4-bolt flange Code 62 |
| 3 = 3 Micron (AS, E, Z, ZW, ZX media)      | V = Viton®                   | M = Magnet inserts (not available w/ indicator in cap) |                                      |
| 5 = 5 Micron (AS, Z, ZW, ZX media)         | H = EPR                      |                                                        |                                      |
| 10 = 10 Micron (AS, E, M, Z, ZW, ZX media) | H.5 = Skydrol® compatibility |                                                        |                                      |
| 25 = 25 Micron (E, M, Z, ZW, ZX media)     |                              |                                                        |                                      |
| 60 = 60 Micron (M media)                   |                              |                                                        |                                      |
| 150 = 150 Micron (M media)                 |                              |                                                        |                                      |
| 260 = 260 Micron (M media)                 |                              |                                                        |                                      |

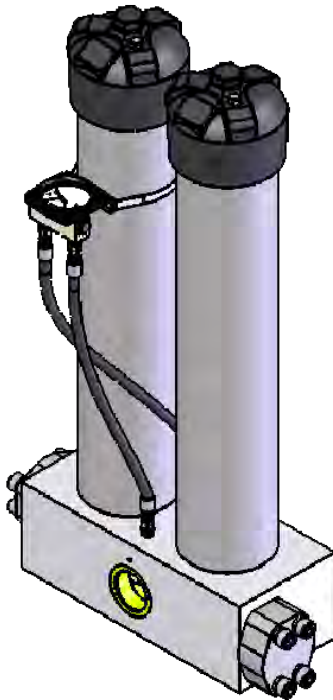
| BOX 8                               | BOX 10                                                                | BOX 11                                                                            |
|-------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Bypass                              | Dirt Alarm® Options                                                   | Additional Options                                                                |
| Omit = 40 PSI Bypass                | None Omit = None                                                      | Omit = None                                                                       |
| X = Blocked bypass                  | Visual D9 = All stainless D5                                          | N = No-Element Indicator (not available w/ KFN65 or housings w/ indicator in cap) |
| 50 = 50 psi bypass setting          | MS5SS = Electrical w/ 12 in. 18 gauge 4-conductor cable               | G509 = Dirt Alarm and drain opposite standard                                     |
| (Omit Box 8 if a KCN65 is selected) | MS5SSL = Low current MS5                                              |                                                                                   |
|                                     | MS10SS = Electrical w/ DIN connector (male end only)                  |                                                                                   |
|                                     | MS10SSL = Low current MS10                                            |                                                                                   |
|                                     | MS11SS = Electrical w/ 12 ft. 4-conductor wire                        |                                                                                   |
|                                     | MS12SS = Electrical w/ 5 pin Brad Harrison connector (male end only)  |                                                                                   |
|                                     | MS12SSL = Low current MS12                                            |                                                                                   |
|                                     | MS16SS = Electrical w/ weather-packed sealed connector                |                                                                                   |
|                                     | MS16SSL = Low current MS16                                            |                                                                                   |
|                                     | MS17SSL = Electrical w/ 4 pin Brad Harrison male connector            |                                                                                   |
|                                     | MS5T = MS5 (see above) w/ thermal lockout                             |                                                                                   |
|                                     | MS5LCT = Low current MS5T                                             |                                                                                   |
|                                     | MS10T = MS10 (see above) w/ thermal lockout                           |                                                                                   |
|                                     | MS10LCT = Low current MS10T                                           |                                                                                   |
|                                     | MS12T = MS12 (see above) w/ thermal lockout                           |                                                                                   |
|                                     | MS12LCT = Low current MS12T                                           |                                                                                   |
|                                     | MS16T = MS16 (see above) w/ thermal lockout                           |                                                                                   |
|                                     | MS16LCT = Low current MS16T                                           |                                                                                   |
|                                     | MS17LCT = Low current MS17T                                           |                                                                                   |
|                                     | MS = Cam operated switch w/ 1/2" conduit female connection            |                                                                                   |
|                                     | MS13DC = Supplied w/ threaded connector & light                       |                                                                                   |
|                                     | MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end) |                                                                                   |
|                                     | MS13DCT = MS13 (see above), direct current, w/ thermal lockout        |                                                                                   |
|                                     | MS13DCLCT = Low current MS13DCT                                       |                                                                                   |
|                                     | MS14DCT = MS14 (see above), direct current, w/ thermal lockout        |                                                                                   |
|                                     | MS14DCLCT = Low current MS14DCT                                       |                                                                                   |

| BOX 9                                                                                            |
|--------------------------------------------------------------------------------------------------|
| Test Points                                                                                      |
| Omit = None                                                                                      |
| L = Two 1/4" NPTF inlet & outlet female test ports                                               |
| U = Series 1215 3/8 UNF Schroeder Check Test Point installed in cap (upstream)                   |
| UU = Series 1215 3/8 UNF Schroeder Check Test Point installed in block (upstream and downstream) |



# Base-Ported Pressure Filter

## MKC65



### Features and Benefits

- Base-ported high pressure dual filter manifold mounted
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe porting (contact factory for other porting options)
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements

200 gpm

**760 L/min**

300 gpm\*

**1,136 L/min\***

6000 psi

**413 bar**

Model No. of filter in photograph is MKC654K10BD5.

|                           |                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 200 gpm (760 L/min) for 150 SUS (32 cSt) fluids<br>Up to 300 gpm (1,136 L/min) for Water/Oil Emulsions                               |
| Max. Operating Pressure:  | 6000 psi (413 bar)                                                                                                                         |
| Min. Yield Pressure:      | 18,000 psi (1240 bar), per NFPA T2.6.1                                                                                                     |
| Rated Fatigue Pressure:   | 4500 psi (310 bar), per NFPA T2.6.1-2005                                                                                                   |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                                                            |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar) Optional Cracking: 50 psi (3.5 bar)<br>Full Flow: 61 psi (4.2 bar)<br>Non-bypassing model has a blocked bypass. |
| Porting Base & Cap:       | Ductile Iron                                                                                                                               |
| Element Case:             | Steel                                                                                                                                      |
| Weight of MKC65-2K:       | 216.0 lbs. (98.0 kg)                                                                                                                       |
| Weight of MKC65-4K:       | 245.0 lbs. (111.1 kg)                                                                                                                      |
| Weight of MKC65-6K:       | 286.4 lbs. (129.9 kg)                                                                                                                      |
| Element Change Clearance: | 8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K                                                                      |

### Filter Housing Specifications

|                        |                                                                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                      |
| Petroleum Based Fluids | All E-Media (cellulose) and Z-Media* and ASP* Media (synthetic)                                                                                                                                  |
| High Water Content     | All Z-Media* and ASP* Media (synthetic)                                                                                                                                                          |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic), 10 µ ASP* Media (synthetic)                                                                                                                                    |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* (synthetic), and all ASP* Media                                                                                                                                       |
| Phosphate Esters       | All Z-Media* and ASP* Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media* (synthetic), and all ASP* Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

\*Rated for Water/Oil Emulsions

SCHROEDER INDUSTRIES 119

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RF50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

**MKC65**

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

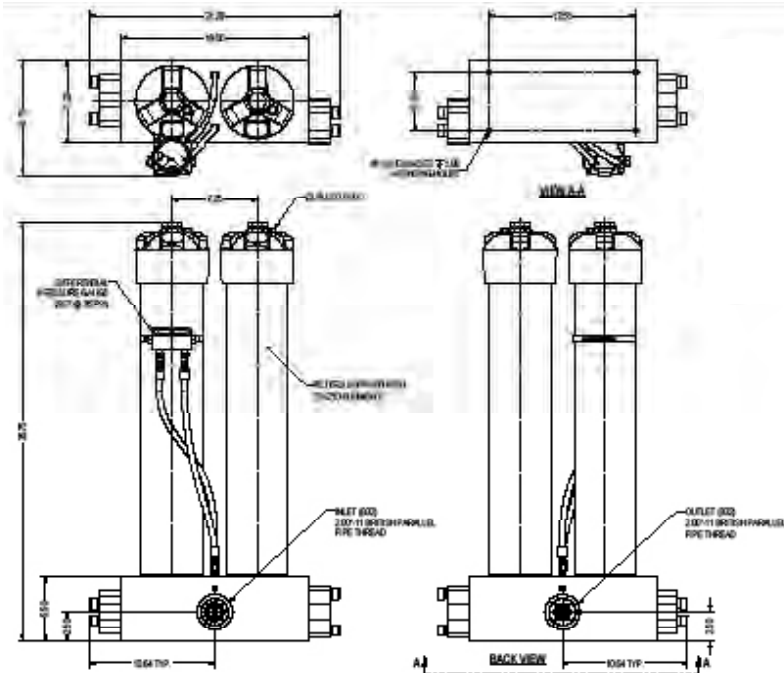
NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element              | Filtration Ratio Per<br>ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC)<br>calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|----------------------|----------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                      | $\beta_x \geq 75$                                                                                                    | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1       | <1.0                                                                                                                 | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KKZ3/27KZ3       | <1.0                                                                                                                 | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KKZ5/27KZ5       | 2.5                                                                                                                  | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KKZ10/27KZ10    | 7.4                                                                                                                  | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25/27KZ25    | 18.0                                                                                                                 | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1                 | N/A                                                                                                                  | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3           | N/A                                                                                                                  | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5           | N/A                                                                                                                  | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10         | N/A                                                                                                                  | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25         | N/A                                                                                                                  | N/A                | N/A                | 15.4                                                                 | 18.5                   |
| KZX3/KKZX3/27KZX3    | <1.0                                                                                                                 | <1.0               | <2.0               | 4.7                                                                  | 5.8                    |
| KZX10/KKZX10/27KZX10 | 7.4                                                                                                                  | 8.2                | 10.0               | 8.0                                                                  | 9.8                    |

| Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element | DHC<br>(gm) | Element                              | DHC<br>(gm) | Element | DHC<br>(gm) |
|---------|-------------|---------|-------------|---------|-------------|--------------------------------------|-------------|---------|-------------|
| KZ1     | 112         | KKZ1    | 224         | 27KZ1   | 336         | KZW1                                 | 61          |         |             |
| KZ3     | 115         | KKZ3    | 230         | 27KZ3   | 345         | KZW3                                 | 64          | KKZW3   | 128         |
| KZ5     | 119         | KKZ5    | 238         | 27KZ5   | 357         | KZW5                                 | 63          | KKZW5   | 126         |
| KZ10    | 108         | KKZ10   | 216         | 27KZ10  | 324         | KZW10                                | 57          | KKZW10  | 114         |
| KZ25    | 93          | KKZ25   | 186         | 27KZ25  | 279         | KZW25                                | 79          | KKZW25  | 158         |
| KZX3    | 81*         | KKZX3   | 163*        | 27KZX3  | 249*        | * Based on 100 psi terminal pressure |             |         |             |
| KZX10   | 90*         | KKZX10  | 182*        | 27KZX10 | 279*        |                                      |             |         |             |

Element Collapse Rating: 150 psid (10 bar) for standard elements

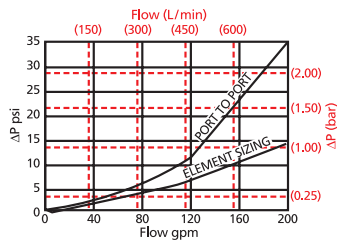
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

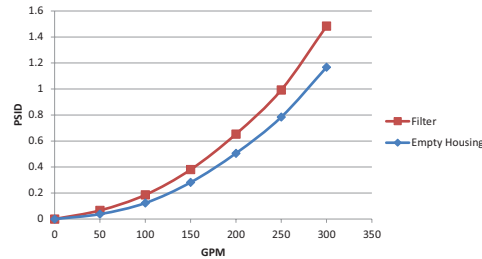
Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
 KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
 27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

$\Delta P_{\text{housing}}$

MKC65  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



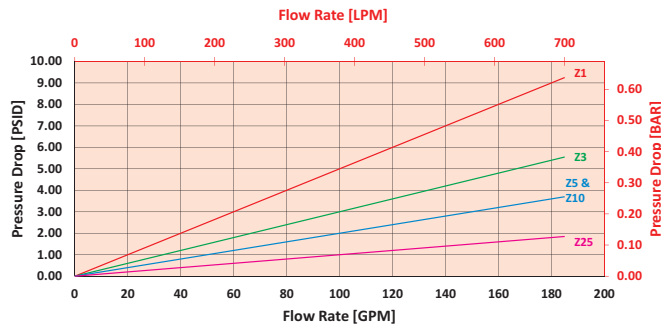
98-2 Water/Oil Emulsion A 40C



$\Delta P_{\text{element}}$

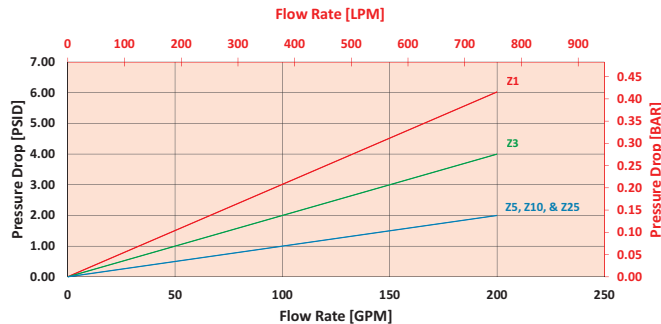
4KZ/2KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



6KZ/2-27KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 100 gpm (379 L/min) for MKC654KZ10PD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 100 gpm. In this case,  $\Delta P_{\text{housing}}$  is 8 psi (.55 bar) on the graph for the MKC65 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 100 gpm. In this case,  $\Delta P_{\text{element}}$  is 8 psi (.14 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 8 \text{ psi } [.55 \text{ bar}] \mid \Delta P_{\text{element}} = 2 \text{ psi } [.14 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 8 \text{ psi} + (2 \text{ psi} * 1.1) = 10.2 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .55 \text{ bar} + (.14 \text{ bar} * 1.1) = .70 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.   | $\Delta P$ | Ele.           | $\Delta P$ |
|-------|------------|--------|------------|----------------|------------|
| 2KZ1  | 0.10       | 2K3    | 0.12       | 4K3/KK3        | 0.06       |
| 2KZ3  | 0.05       | 2K10   | 0.05       | 4K10/KK10      | 0.02       |
| 2KZ5  | 0.04       | 2K25   | 0.01       | 4K25/KK25      | 0.01       |
| 2KZ10 | 0.03       | 2KAS3  | 0.05       | 4KAS3/KKAS3    | 0.03       |
| 2KZ25 | 0.02       | 2KAS5  | 0.04       | 4KAS5/KKAS5    | 0.02       |
| KZW1  | 0.43       | 2KAS10 | 0.03       | 4KAS10/KKAS10  | 0.02       |
| KZW3  | 0.32       | 2KZX10 | 0.11       | 4KZX10         | 0.06       |
| KZX5  | 0.28       | 2KZW3  | 0.16       | 6KAS3/27KAS3   | 0.02       |
| KZW10 | 0.23       | 2KZW5  | 0.14       | 6KAS5/27KAS5   | 0.01       |
| KZW25 | 0.14       | 2KZW10 | 0.12       | 6KAS10/27KAS10 | 0.01       |
|       |            | 2KZW25 | 0.07       | 6KZX10         | 0.04       |

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder MKC65:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| MKC65 |       |       |       |       |       |       |       |       |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| MKC65 | 2K    | Z     | 10    |       | B     |       |       | D5    |        |

= MKC652KZ10BD5

| BOX 1         | BOX 2                                                                                    | BOX 3                                                                                                                                                                                                                                                                |
|---------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series | Number & Size of Elements                                                                | Media Type                                                                                                                                                                                                                                                           |
| MKC65         | 2 K, KK, 27K<br>4 K<br>6 K<br><b>GeoSeal® Options</b><br>2 KG, KKG, 27KG<br>4 KG<br>6 KG | Omit = E Media (Cellulose)<br>AS = Anti-Stat Media (synthetic)<br>Z = Excellement® Z-Media® (synthetic)<br>ZX = Excellement® Z-Media® (High Collapse centertube)<br>ZW = Aqua-Excellement ZW Media<br>W = W Media (water removal)<br>M = Media (reusable metal mesh) |

| BOX 4                                                                                                                                                                                                                                                                                                            | BOX 5                                                                  | BOX 6          | BOX 7                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------|
| Micron Rating                                                                                                                                                                                                                                                                                                    | Seal Material                                                          | Porting Option | Bypass                                                                                                 |
| 1 = 1 Micron (DZ, Z, ZW, ZX media)<br>3 = 3 Micron (AS,DZ, E, Z, ZW, ZX media)<br>5 = 5 Micron (AS, DZ, Z, ZW, ZX media)<br>10 = 10 Micron (AS, DZ, E, M, Z, ZW, ZX media)<br>25 = 25 Micron (E, DZ, M, Z, ZW, ZX media)<br>60 = 60 Micron (M media)<br>150 = 150 Micron (M media)<br>260 = 260 Micron (M media) | Omit = Buna N<br>V = Viton®<br>H = EPR<br>H.5 = Skydrol® compatibility | B = 2" BSPP    | Omit = 40 PSI Bypass<br>X = Blocked bypass<br>50 = 50 PSI Bypass<br>(Omit Box 7 if non bypassing unit) |

BOX 8

BOX 9

BOX 10

| Test Points                                                                                                                            | Dirt Alarm® Options                                                 |                                                       | Additional Options       |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------|--------------------------|
| L = Two ¼" NPTF inlet and outlet female test ports<br><br>U = Series 1215 ⅝ UNF Schroeder Check Test Point installed in cap (upstream) | None                                                                | Omit = None                                           | Omit = None              |
|                                                                                                                                        | Visual                                                              | D = Pointer                                           | N = No-Element Indicator |
|                                                                                                                                        |                                                                     | D5 = Visual pop-up                                    |                          |
|                                                                                                                                        |                                                                     | D5C = D5 in cap                                       |                          |
|                                                                                                                                        |                                                                     | D9 = All stainless D5                                 |                          |
|                                                                                                                                        | Visual with Thermal Lockout                                         | DPG = Differential pressure gauge                     |                          |
|                                                                                                                                        |                                                                     | D8 = Visual w/ thermal lockout                        |                          |
|                                                                                                                                        | Electrical                                                          | D8C = D8 in cap                                       |                          |
|                                                                                                                                        |                                                                     | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable |                          |
|                                                                                                                                        |                                                                     | MS5LC = Low current MS5                               |                          |
| MS10 = Electrical w/ DIN connector (male end only)                                                                                     |                                                                     |                                                       |                          |
| MS10LC = Low current MS10                                                                                                              |                                                                     |                                                       |                          |
| MS11 = Electrical w/ 12 ft. 4-conductor wire                                                                                           |                                                                     |                                                       |                          |
| MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)                                                                     |                                                                     |                                                       |                          |
| MS12LC = Low current MS12                                                                                                              |                                                                     |                                                       |                          |
| MS16 = Electrical w/ weather-packed sealed connector                                                                                   |                                                                     |                                                       |                          |
| MS16LC = Low current MS16                                                                                                              |                                                                     |                                                       |                          |
| Electrical with Thermal Lockout                                                                                                        | MS17LC = Electrical w/ 4 pin Brad Harrison male connector           |                                                       |                          |
|                                                                                                                                        | MS5T = MS5 (see above) w/ thermal lockout                           |                                                       |                          |
|                                                                                                                                        | MS5LCT = Low current MS5T                                           |                                                       |                          |
|                                                                                                                                        | MS10T = MS10 (see above) w/ thermal lockout                         |                                                       |                          |
|                                                                                                                                        | MS10LCT = Low current MS10T                                         |                                                       |                          |
|                                                                                                                                        | MS12T = MS12 (see above) w/ thermal lockout                         |                                                       |                          |
|                                                                                                                                        | MS12LCT = Low current MS12T                                         |                                                       |                          |
|                                                                                                                                        | MS16T = MS16 (see above) w/ thermal lockout                         |                                                       |                          |
|                                                                                                                                        | MS16LCT = Low current MS16T                                         |                                                       |                          |
|                                                                                                                                        | MS17LCT = Low current MS17T                                         |                                                       |                          |
| Electrical Visual                                                                                                                      | MS = Cam operated switch w/ ½" conduit female connection            |                                                       |                          |
|                                                                                                                                        | MS13 = Supplied w/ threaded connector & light                       |                                                       |                          |
|                                                                                                                                        | MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end) |                                                       |                          |
| Electrical Visual with Thermal Lockout                                                                                                 | MS13DCT = MS13 (see above), direct current, w/ thermal lockout      |                                                       |                          |
|                                                                                                                                        | MS13DCLCT = Low current MS13DCT                                     |                                                       |                          |
|                                                                                                                                        | MS14DCT = MS14 (see above), direct current, w/ thermal lockout      |                                                       |                          |
|                                                                                                                                        | MS14DCLCT = Low current MS14DCT                                     |                                                       |                          |

#### NOTES:

Box 2. Number of elements must equal 2 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900 (LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-3255C).

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

Box 10. N option should be used in conjunction with dirt alarm.

# Hydrostatic Top-Ported Pressure Filter

**HS60/  
MHS60**



## Features and Benefits

- Full flow reverse flow check valve diverts flow past the element in hydrostatic applications
- Top-ported design capable of handling 100 gpm flow
- Offered in SAE straight thread and flange porting
- Thread on bowl with drain plug for easy element service
- 6000 psi cyclic
- Certified for Offshore Standard DNVGL-OS-D101 "Marine and Machinery Systems and Equipment"
- Contact factory for higher flow applications

**120 gpm**  
**450 L/min**  
**6000 psi**  
**415 bar**

Model No. of filters in photograph are HS6013HZ3F24 and MHS6013HZ3F24.

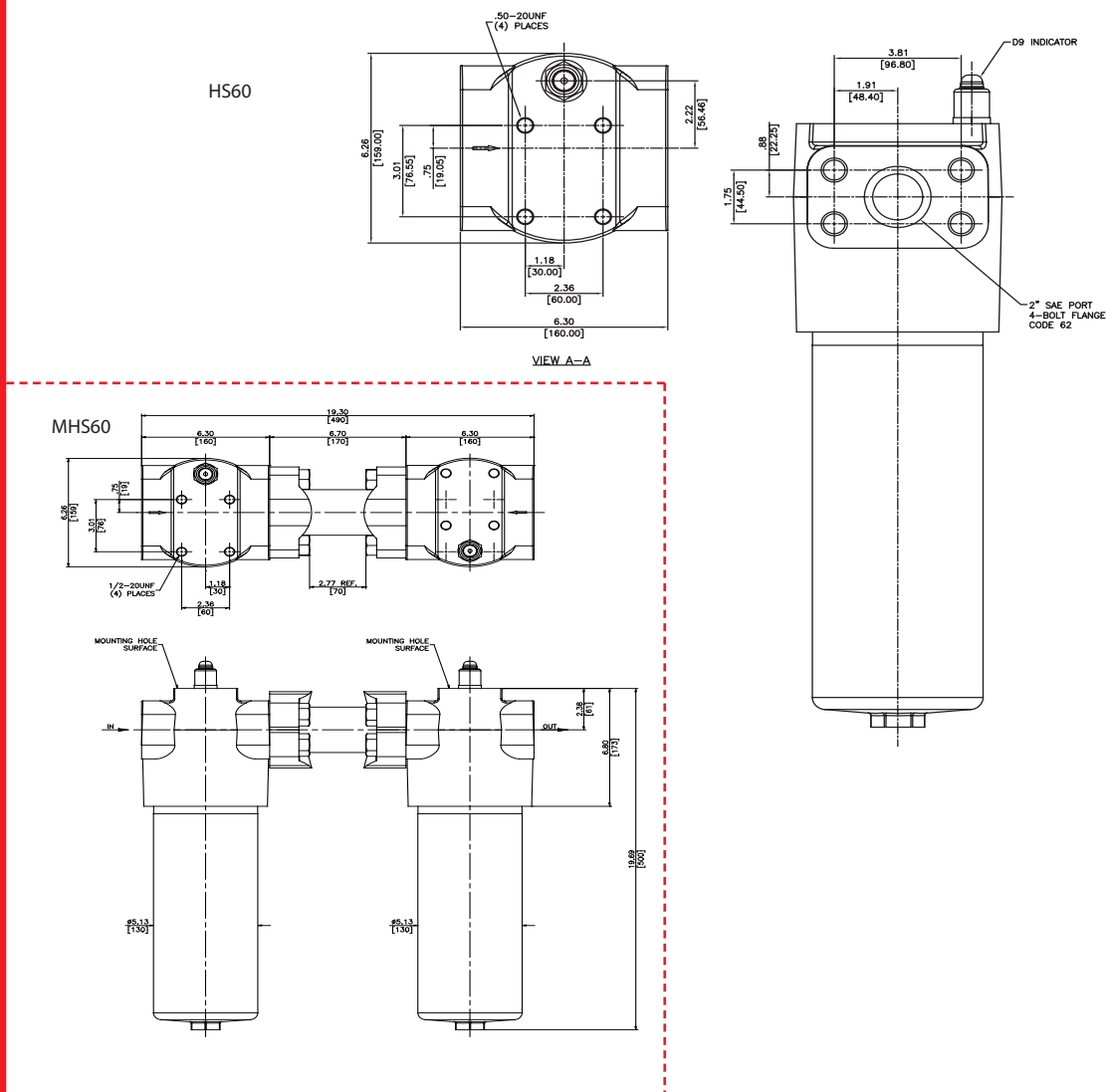
|                           |                                                         |
|---------------------------|---------------------------------------------------------|
| Flow Rating:              | Up to 120 gpm (450 L/min)                               |
| Max. Operating Pressure:  | 6000 psi (415 bar) only for flange ported models        |
| Min. Yield Pressure:      | Contact factory                                         |
| Rated Fatigue Pressure:   | 6000 psi (415 bar)<br>(only with 4-bolt flange porting) |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                         |
| Bypass Setting:           | Cracking: 87 psi (5.9 bar)                              |
| Porting Head:             | Ductile Iron                                            |
| Element Case:             | Steel                                                   |
| Weight of HS60-13H:       | 75 lbs. (34.2 kg)                                       |
| Weight of MHS60:          | 160 lbs. (72.6 kg)                                      |
| Element Change Clearance: | 4.0" (103 mm)                                           |

## Filter Housing Specifications

|                    |                                                        |
|--------------------|--------------------------------------------------------|
| Type Fluid         | Appropriate Schroeder Media                            |
| High Water Content | All Z-Media® (synthetic)                               |
| Invert Emulsions   | 10 and 25 µ Z-Media® (synthetic)                       |
| Water Glycols      | 3, 5, 10 and 25 µ Z-Media® (synthetic)                 |
| Phosphate Esters   | All Z-Media® (synthetic) with H (EPR) seal designation |

## Fluid Compatibility

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
KC65  
MKC65  
**HS60**  
**MHS60**  
KFH50  
LC60  
LC35  
LI50  
LC50  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element        | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|----------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|                | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 13HZ3/13HZX3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 13HZ5/13HZX5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 13HZ10/13HZX10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 13HZ25/13HZX25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 13HZ3   | 100.7    | 13HZX3  | 75.7     |
| 13HZ5   | 113.2    | 13HZX5  | 74.1     |
| 13HZ10  | 119.7    | 13HZX10 | 81.4     |
| 13HZ25  | 123.5    | 13HZX25 | 92.9     |

Element Collapse Rating: 290 psi (20 bar) for standard elements  
3045 psi (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

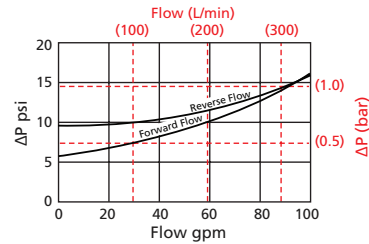
Element Nominal Dimensions: 13HZ: 3.5" (90 mm) O.D. x 13" (325 mm) long

# Hydrostatic Top-Ported Pressure Filter

HS60/  
MHS60

$\Delta P_{\text{housing}}$

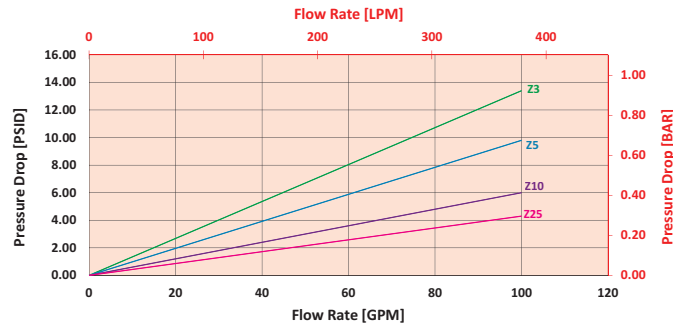
HS60/MHS60  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

13HZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 30 gpm (113.7 L/min) for HS6013HZ10S24D13 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 30 gpm. In this case,  $\Delta P_{\text{housing}}$  is 7 psi (.48 bar) on the graph for the HS60 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 30 gpm. In this case,  $\Delta P_{\text{element}}$  is 2 psi (.14 bar) according to the graph for the 13HZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 7 \text{ psi [.48 bar]} \quad | \quad \Delta P_{\text{element}} = 2 \text{ psi [.14 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 7 \text{ psi} + (2 \text{ psi} * 1.1) = 9.2 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .48 \text{ bar} + (.14 \text{ bar} * 1.1) = .63 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.    | ΔP    |
|---------|-------|
| 13HZX3  | 0.176 |
| 13HZX5  | 0.104 |
| 13HZX10 | 0.054 |
| 13HZX25 | 0.048 |



## Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder HS60:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| HS60  |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |                   |
|-------|-------|-------|-------|-------|-------------------|
| HS60  | 13HZ3 |       | F24   | D13   | = HS6013HZ3F24D13 |

| BOX 1                                                               | BOX 2                                                            | BOX 3         |
|---------------------------------------------------------------------|------------------------------------------------------------------|---------------|
| Filter Series                                                       | Element Part Number                                              | Seal Material |
| HS60                                                                | 13HZ3 = 3 µ Excellement® Z-Media® (synthetic)                    | Omit = Buna N |
| HSN60<br>(Non-bypassing:<br>requires ZX high<br>collapse elements)  | 13HZ5 = 5 µ Excellement® Z-Media® (synthetic)                    | V = Viton®    |
| MHS60                                                               | 13HZ10 = 10 µ Excellement® Z-Media® (synthetic)                  | H = EPR       |
| MHSN60<br>(Non-bypassing:<br>requires ZX high<br>collapse elements) | 13HZ25 = 25 µ Excellement® Z-Media® (synthetic)                  |               |
|                                                                     | 13HZX3 = 3 µ Excellement® Z-Media® (high collapse center tube)   |               |
|                                                                     | 13HZX5 = 5 µ Excellement® Z-Media® (high collapse center tube)   |               |
|                                                                     | 13HZX10 = 10 µ Excellement® Z-Media® (high collapse center tube) |               |
|                                                                     | 13HZX25 = 25 µ Excellement® Z-Media® (high collapse center tube) |               |

| BOX 4                                     | BOX 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Porting Options                           | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| S24 = SAE-24                              | None Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| F24 = 1½" SAE<br>4-bolt flange<br>Code 62 | Visual D13 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| F32 = 2" SAE 4-bolt<br>flange Code<br>62  | Electrical <ul style="list-style-type: none"> <li>MS5SS = Electrical w/ 12 in. 18 gauge 4-conductor cable</li> <li>MS5SSLC = Low current MS5</li> <li>MS10SS = Electrical w/ DIN connector (male end only)</li> <li>MS10SSLC = Low current MS10</li> <li>MS11SS = Electrical w/ 12 ft. 4-conductor wire</li> <li>MS12SS = Electrical w/ 5 pin Brad Harrison connector (male end only)</li> <li>MS12SSLC = Low current MS12</li> <li>MS16SS = Electrical w/ weather-packed sealed connector</li> <li>MS16SSLC = Low current MS16</li> <li>MS17SSLC = Electrical w/ 4 pin Brad Harrison male connector</li> </ul> |
|                                           | Electrical with Thermal Lockout <ul style="list-style-type: none"> <li>MS5SST = MS5 (see above) w/ thermal lockout</li> <li>MS5SSLC = Low current MS5T</li> <li>MS10SST = MS10 (see above) w/ thermal lockout</li> <li>MS10SSLC = Low current MS10T</li> <li>MS12SST = MS12 (see above) w/ thermal lockout</li> <li>MS12SSLC = Low current MS12T</li> <li>MS16SST = MS16 (see above) w/ thermal lockout</li> <li>MS16SSLC = Low current MS16T</li> <li>MS17SSLC = Low current MS17T</li> </ul>                                                                                                                  |
|                                           | Electrical Visual <ul style="list-style-type: none"> <li>MS13SS = Supplied w/ threaded connector &amp; light</li> <li>MS14SS = Supplied w/ 5 pin Brad Harrison connector &amp; light (male end)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                           | Electrical Visual with Thermal Lockout <ul style="list-style-type: none"> <li>MS13SSDCT = MS13 (see above), direct current, w/ thermal lockout</li> <li>MS13SSDCLCT = Low current MS13DCT</li> <li>MS14SSDCT = MS14 (see above), direct current, w/ thermal lockout</li> <li>MS14SSDCLCT = Low current MS14DCT</li> </ul>                                                                                                                                                                                                                                                                                       |

### NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2 and 3.

Box 3. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. All Dirt Alarm® Indicators must be Stainless Steel. Standard indicator setting is 75 psi. For replacement indicators, contact the factory.

# Hydrostatic Base-Ported Filter

## KFH50



### Features and Benefits

- Base-ported Hydrostatic high pressure filter
- Hydrostatic transmission filter for reversing loop systems
- Filters in the "in to out" direction, bypasses in reverse direction
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting
- Completion of application questionnaire a requirement L-2549 (contact factory)
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements

70 gpm  
265 L/min  
5000 psi  
345 bar

Model No. of filter in photograph is KFH501K10SD5.

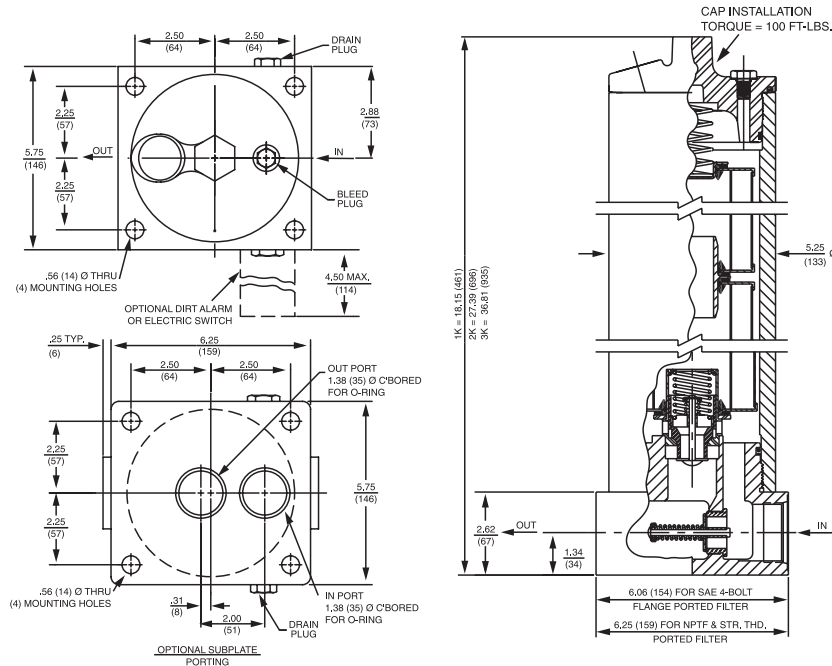
|                                                                   |                                                                       |
|-------------------------------------------------------------------|-----------------------------------------------------------------------|
| Flow Rating:                                                      | Up to 70 gpm (265 L/min) for 150 SUS (32 cSt) fluids                  |
| Max. Operating Pressure:                                          | 5000 psi (345 bar)                                                    |
| Min. Yield Pressure:                                              | 15,000 psi (1035 bar), per NFPA T2.6.1                                |
| Rated Fatigue Pressure:                                           | 3500 psi (240 bar), per NFPA T2.6.1-2005                              |
| Temp. Range:                                                      | -20°F to 225°F (-29°C to 107°C)                                       |
| Bypass Setting:                                                   | Cracking: 40 psi (2.8 bar)<br>Full Flow: 61 psi (4.2 bar)             |
| Porting Base & Cap:<br>Element Case:                              | Ductile Iron<br>Steel                                                 |
| Weight of KFH50-1K:<br>Weight of KFH50-2K:<br>Weight of KFH50-3K: | 60.0 lbs. (27.2 kg)<br>80.3 lbs. (36.4 kg)<br>100.5 lbs. (45.6 kg)    |
| Element Change Clearance:                                         | 8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K |

### Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® Media (synthetic)                                                                                                     |
| High Water Content     | All Z-Media® (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                          |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
KC65  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
LC50  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element              | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                      |                      | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|----------------------|----------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------------------------------------------------------|--------------------------|
|                      | $\beta_{x \geq 75}$                                                                                            | $\beta_{x \geq 100}$ | $\beta_{x \geq 200}$ | $\beta_{x(c) \geq 200}$                                              | $\beta_{x(c) \geq 1000}$ |
| KZ1/KKZ1/27KZ1       | <1.0                                                                                                           | <1.0                 | <1.0                 | <4.0                                                                 | 4.2                      |
| KZ3/KKZ3/27KZ3       | <1.0                                                                                                           | <1.0                 | <2.0                 | <4.0                                                                 | 4.8                      |
| KZ5/KKZ5/27KZ5       | 2.5                                                                                                            | 3.0                  | 4.0                  | 4.8                                                                  | 6.3                      |
| KZ10/KKZ10/27KZ10    | 7.4                                                                                                            | 8.2                  | 10.0                 | 8.0                                                                  | 10.0                     |
| KZ25/KKZ25/27KZ25    | 18.0                                                                                                           | 20.0                 | 22.5                 | 19.0                                                                 | 24.0                     |
| KZW1                 | N/A                                                                                                            | N/A                  | N/A                  | <4.0                                                                 | <4.0                     |
| KZW3/KKZW3           | N/A                                                                                                            | N/A                  | N/A                  | 4.0                                                                  | 4.8                      |
| KZW5/KKZW5           | N/A                                                                                                            | N/A                  | N/A                  | 5.1                                                                  | 6.4                      |
| KZW10/KKZW10         | N/A                                                                                                            | N/A                  | N/A                  | 6.9                                                                  | 8.6                      |
| KZW25/KKZW25         | N/A                                                                                                            | N/A                  | N/A                  | 15.4                                                                 | 18.5                     |
| KZX3/KKZX3/27KZX3    | <1.0                                                                                                           | <1.0                 | <2.0                 | 4.7                                                                  | 5.8                      |
| KZX10/KKZX10/27KZX10 | 7.4                                                                                                            | 8.2                  | 10.0                 | 8.0                                                                  | 9.8                      |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
| KZ1     | 112      | KKZ1    | 224      | 27KZ1   | 336      | KZW1    | 61       |         |          |
| KZ3     | 115      | KKZ3    | 230      | 27KZ3   | 345      | KZW3    | 64       | KKZW3   | 128      |
| KZ5     | 119      | KKZ5    | 238      | 27KZ5   | 357      | KZW5    | 63       | KKZW5   | 126      |
| KZ10    | 108      | KKZ10   | 216      | 27KZ10  | 324      | KZW10   | 57       | KKZW10  | 114      |
| KZ25    | 93       | KKZ25   | 186      | 27KZ25  | 279      | KZW25   | 79       | KKZW25  | 158      |
| KZX3    | 81*      | KKZX3   | 163*     | 27KZX3  | 249*     |         |          |         |          |
| KZX10   | 90*      | KKZX10  | 182*     | 27KZX10 | 279*     |         |          |         |          |

\* Based on 100 psi terminal pressure

Element Collapse Rating: 150 psid (10 bar) for standard elements  
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

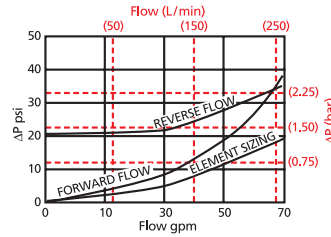
Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

# Hydrostatic Base-Ported Filter

## KFH50

$\Delta P_{\text{housing}}$

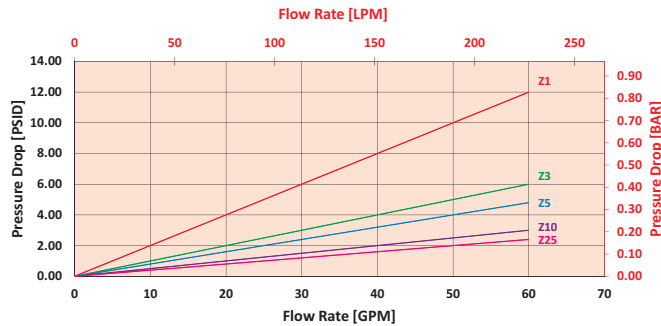
KFH50  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

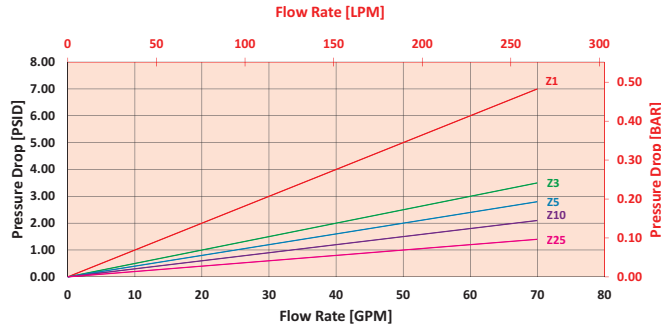
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 30 gpm (113.7 L/min) for KFH501KZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 30 gpm. In this case,  $\Delta P_{\text{housing}}$  is 9 psi (.62 bar) on the graph for the KFH50 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 30 gpm. In this case,  $\Delta P_{\text{element}}$  is 1.5 psi (.10 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 9 \text{ psi } [.62 \text{ bar}] \mid \Delta P_{\text{element}} = 1.5 \text{ psi } [.10 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 9 \text{ psi} + (1.5 \text{ psi} * 1.1) = 10.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .62 \text{ bar} + (.10 \text{ bar} * 1.1) = .73 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.              | $\Delta P$ | Ele.               | $\Delta P$ |
|-------|------------|-------------------|------------|--------------------|------------|
| K3    | 0.25       | 2K3/<br>KK3       | 0.12       | 3KZ1/<br>27KZ1     | 0.05       |
| K10   | 0.09       | 2K10/<br>KK10     | 0.05       | 3KZ3/<br>27KZ3     | 0.03       |
| K25   | 0.02       | 2K25/<br>KK25     | 0.01       | 3KZ5/<br>27KZ5     | 0.02       |
| KAS3  | 0.10       | 2KAS3/<br>KKAS3   | 0.05       | 3KZ10/<br>27KZ10   | 0.02       |
| KAS5  | 0.08       | 2KAS5/<br>KKAS5   | 0.04       | 3KZ25/<br>27KZ25   | 0.01       |
| KAS10 | 0.05       | 2KAS10/<br>KKAS10 | 0.03       | 3K3                | 0.08       |
| KZX10 | 0.22       | 2KZX10/<br>KKZX10 | 0.11       | 3K10               | 0.03       |
| KZW1  | 0.43       | 2KZW1             | -          | 3K25               | 0.01       |
| KZW3  | 0.32       | 2KZW3/<br>KKZW3   | 0.16       | 3KAS3/<br>27KAS3   | 0.03       |
| KZW5  | 0.28       | 2KZW5/<br>KKZW5   | 0.14       | 3KAS5/<br>27KAS5   | 0.02       |
| KZW10 | 0.23       | 2KZW10/<br>KKZW10 | 0.12       | 3KAS10/<br>27KAS10 | 0.02       |
| KZW25 | 0.14       | 2KZW25/<br>KKZW25 | 0.07       | 3KAS25/<br>27KAS25 | 0.07       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder KFH50:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| KFH50 |       |       |       |       |       |       |       |       |

Example: NOTE: Only box 6 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| KFH50 | 1     | KZ5   |       | S     |       |       | D5    | G509  |

= KFH501KZ5SD5G509

| BOX 1         | BOX 2              | BOX 3               |              |                                                 | BOX 4                                                                 |
|---------------|--------------------|---------------------|--------------|-------------------------------------------------|-----------------------------------------------------------------------|
| Filter Series | Number of Elements | Element Part Number |              |                                                 | Seal Material                                                         |
| KFH50         | 1<br>2<br>3        | K<br>Length         | KK<br>Length | 27K<br>Length                                   | Omit = Buna N<br>V = Viton®<br>H = EPR<br>H5 = Skydrol® compatibility |
|               |                    | K3                  | KK3          | 27K3 = 3 µ E media (cellulose)                  |                                                                       |
|               |                    | K10                 | KK10         | 27K10 = 10 µ E media (cellulose)                |                                                                       |
|               |                    | K25                 |              | = 25 µ E media (cellulose)                      |                                                                       |
|               |                    | KZ1                 | KKZ1         | 27KZ1 = 1 µ Excellement® Z-Media® (synthetic)   |                                                                       |
|               |                    | KZ3                 | KKZ3         | 27KZ3 = 3 µ Excellement® Z-Media® (synthetic)   |                                                                       |
|               |                    | KZ5                 | KKZ5         | 27KZ5 = 5 µ Excellement® Z-Media® (synthetic)   |                                                                       |
|               |                    | KZ10                | KKZ10        | 27KZ10 = 10 µ Excellement® Z-Media® (synthetic) |                                                                       |
|               |                    | KZ25                | KKZ25        | 27KZ25 = 25 µ Excellement® Z-Media® (synthetic) |                                                                       |
|               |                    | KZW1                |              | = 1 µ Aqua-Excellement™ ZW media                |                                                                       |
|               |                    | KZW3                | KKZW3        | = 3 µ Aqua-Excellement™ ZW media                |                                                                       |
|               |                    | KZW5                | KKZW5        | = 5 µ Aqua-Excellement™ ZW media                |                                                                       |
|               |                    | KZW10               | KKZW10       | = 10 µ Aqua-Excellement™ ZW media               |                                                                       |
|               |                    | KZW25               | KKZW25       | = 25 µ Aqua-Excellement™ ZW media               |                                                                       |
|               |                    | KW                  | KKW          | 27KW = W media (water removal)                  |                                                                       |
|               |                    | KM10                |              | = K size 10 µ M media (reusable metal)          |                                                                       |
|               |                    | KM25                |              | = K size 25 µ M media (reusable metal)          |                                                                       |
|               |                    | KM60                |              | = K size 60 µ M media (reusable metal)          |                                                                       |
|               |                    | KM150               |              | = K size 150 µ M media (reusable metal)         |                                                                       |
|               |                    | KM260               |              | = K size 260 µ M media (reusable metal)         |                                                                       |

## BOX 5

## Porting

P = 1½" NPTF  
S = SAE-24  
F = 1½" SAE  
4-bolt flange  
Code 62  
O = Subplate  
B = ISO 228 G-1½"

## BOX 6

## Bypass

Omit = 40 PSI Bypass  
50 = 50 PSI Bypass

## BOX 7

## Test Points

Omit = None  
L = Two ¼" NPTF inlet and outlet female test ports  
U = Series 1215 ¾ UNF Schroeder Check Test Point installation in cap (upstream)  
UU = Series 1215 ¾ UNF Schroeder Check Test Point installation in block (upstream and downstream)

## BOX 9

## Additional Options

Omit = None  
G509 = Dirt alarm and drain opposite standard

## BOX 8

## Dirt Alarm® Options

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| None                                   | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Visual                                 | D = Pointer<br>D5 = Visual pop-up<br>D5C = D5 in cap<br>D9 = All stainless D5                                                                                                                                                                                                                                                                                                                                                                                            |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout<br>D8C = D8 in cap                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS = Cam operated switch w/ ½" conduit female connection<br>MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                     |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

## NOTES:

- Box 2. Number of elements must equal 1 when using KK or 27K elements.
- Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length.
- Box 4. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.
- Box 5. For option F, bolt depth .75" (19 mm). For option O, O-rings included; hardware not included.



Features and Benefits (LC60)

- Compact design allows for in-line installation.
- Small profile allows filter to be mounted in tight areas.
- Quick and easy cartridge element change outs.
- Durable, compact design.
- Uses 10 micron stainless steel wire mesh filtration.
- Perfect for pilot pressure circuits and pressure compensated pump protection.

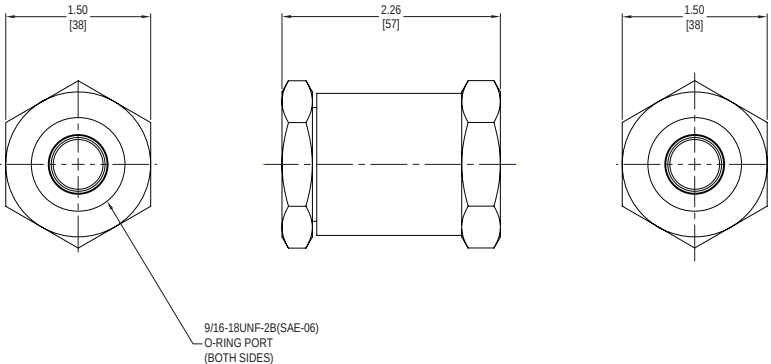
8 gpm  
30 L/min  
6000 psi  
415 bar

Model No. of filter in photograph is LC601SSD10S.

|                           |                                                    |
|---------------------------|----------------------------------------------------|
| Flow Rating:              | Up to 8 gpm (30 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 6000 psi (414 bar)                                 |
| Min. Yield Pressure:      | 18000 psi (1241 bar), per NFPA T2.6.1              |
| Rated Fatigue Pressure:   | 6000 psi (414 bar), per NFPA T2.6.1                |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                    |
| Porting Head:             | Steel                                              |
| Element Case:             | Steel                                              |
| Weight:                   | 0.93 lbs. (0.42 kg)                                |
| Element Change Clearance: | 2.50" (63.5 mm)                                    |
| Type Fluid                | Appropriate Schroeder Media                        |
| Petroleum Based Fluids    | All Stainless Steel Wire Mesh                      |
| Invert Emulsions          | 10 µ Stainless Steel Wire Mesh                     |
| Water Glycols             | 10 µ Stainless Steel Wire Mesh                     |

Filter  
Housing  
Specifications

Fluid  
Compatibility



Metric dimensions in ( ).  
Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
For complete dimensions please contact Schroeder Industries to request a certified print.

- NF30
- NFS30
- YF30
- CFX30
- PLD
- CF40
- DF40
- PF40
- RF50
- RF60
- CF60
- CTF60
- VF60
- LW60
- KF30
- KF50
- TF50
- KC50
- MKF50
- MKC50
- KC65
- MKC65
- HS60
- MHS60
- KFH50
- LC60
- LC35
- LI50
- LC50
- NOF30-05
- NOF-50-760
- FOF60-03
- NMF30
- RMF60
- 14-CRZX10

## Element Performance Information & Dirt Holding Capacity

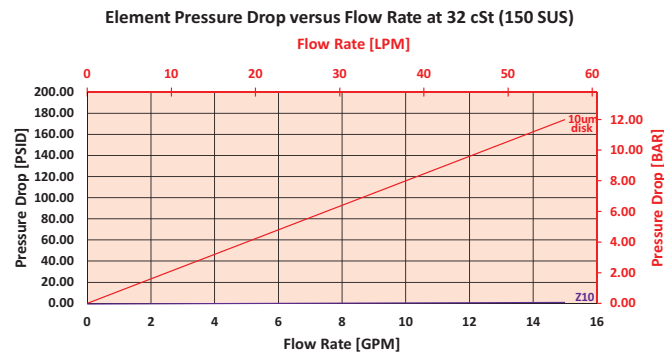
| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |

\*Please contact manufacture for more details\*

## Pressure Drop Information Based on Flow Rate and Viscosity

$\Delta P_{\text{housing}}$

LC60  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



## Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder LC60:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LC60  |       |       |       |       |

Example:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LC60  | 1     | SSD10 |       | S     |

= LC601SSD10S

| BOX 1         |  | BOX 2              |  | BOX 3                                      |  |
|---------------|--|--------------------|--|--------------------------------------------|--|
| Filter Series |  | Number of Elements |  | Element Part Number                        |  |
| LC60          |  | 1                  |  | SSD10 = 10 $\mu$ Stainless Steel Wire Mesh |  |
| BOX 4         |  | BOX 5              |  |                                            |  |
| Seal Material |  | Porting            |  |                                            |  |
| Omit = Buna N |  | S = SAE-6          |  |                                            |  |





Features and Benefits (LC35)

- Compact design allows for in-line installation.
- Small profile allows filter to be mounted in tight areas.
- Quick and easy cartridge element change outs.
- Durable, compact design.
- Uses 10 or 40 micron Sintered Bronze filtration.
- Perfect for pilot pressure circuits and pressure compensated pump protection.

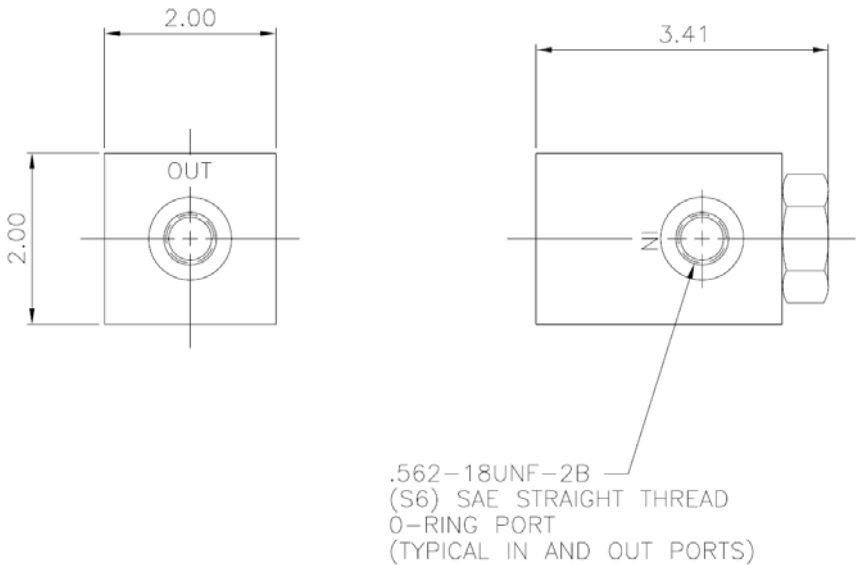
15 gpm  
57 L/min  
3500 psi  
241 bar

Model No. of filter in photograph is LC351BS10S.

|                           |                                                     |
|---------------------------|-----------------------------------------------------|
| Flow Rating:              | Up to 15 gpm (57 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 3500 psi (241 bar)                                  |
| Min. Yield Pressure:      | 10500 psi (724 bar), per NFPA T2.6.1                |
| Rated Fatigue Pressure:   | 2200 psi (152 bar), per NFPA T2.6.1                 |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                     |
| Porting Head:             | Steel                                               |
| Element Case:             | Steel                                               |
| Weight:                   | 1.32 lbs. (0.60 kg)                                 |
| Element Change Clearance: | 3.25" (82.6 mm)                                     |
| Type Fluid                | Appropriate Schroeder Media                         |
| Petroleum Based Fluids    | All Sintered Bronze                                 |
| Invert Emulsions          | 10 and 40 µ Sintered Bronze                         |
| Water Glycols             | 10 and 40 µ Sintered Bronze                         |

Filter Housing Specifications

Fluid Compatibility



Metric dimensions in ( ).  
Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
For complete dimensions please contact Schroeder Industries to request a certified print.

- NF30
- NFS30
- YF30
- CFX30
- PLD
- CF40
- DF40
- PF40
- RF50
- RF60
- CF60
- CTF60
- VF60
- LW60
- KF30
- KF50
- TF50
- KC50
- MKF50
- MKC50
- KC65
- MKC65
- HS60
- MHS60
- KFH50
- LC60
- LC35**
- LI50
- LC50
- NOF30-05
- NOF-50-760
- FOF60-03
- NMF30
- RMF60
- 14-CRZX10

## Element Performance Information & Dirt Holding Capacity

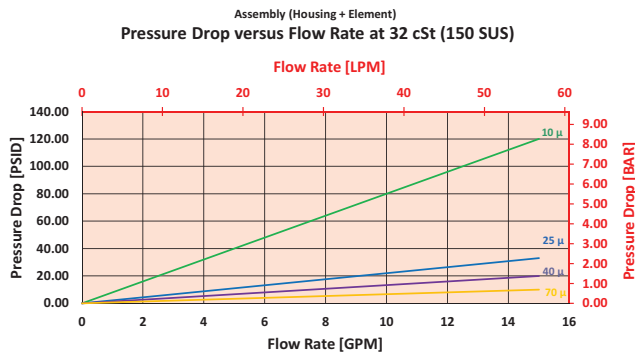
| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |

\*Please contact manufacturer for more details\*

## Pressure Drop Information Based on Flow Rate and Viscosity

$\Delta P_{\text{housing}}$

LC35  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



## Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder LC35:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LC35  |       |       |       |       |

Example:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LC35  | 1     | BS10  |       | S     |

= LC351BS10S

| BOX 1         | BOX 2              | BOX 3                                                                                                                    | BOX 4         |
|---------------|--------------------|--------------------------------------------------------------------------------------------------------------------------|---------------|
| Filter Series | Number of Elements | Element Part Number                                                                                                      | Seal Material |
| LC35          | 1                  | BS10 = 10 μ Sintered Bronze<br>BS25 = 25 μ Sintered Bronze<br>BS40 = 40 μ Sintered Bronze<br>BS70 = 70 μ Sintered Bronze | Omit = Buna N |
| BOX 5         |                    |                                                                                                                          |               |
| Porting       |                    |                                                                                                                          |               |
| S = SAE-6     |                    |                                                                                                                          |               |



## Features and Benefits

- In-line pressure filter
- Designed for high pressure last chance protection
- Available with indicator, which is unique for in-line filters of this kind.
- Cap handles provide for easy element changeout

35 gpm  
**130 L/min**  
 5000 psi  
**345 bar**

Model No. of filter in photograph is LI50IZ10SMS13DC.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | 35 gpm (130 L/min)                                        |
| Max. Operating Pressure:  | 5000 psi (345 bar)                                        |
| Min. Yield Pressure:      | 300 psi (21 bar), per NFPA T2.6.1                         |
| Rated Fatigue Pressure:   | Contact Factory                                           |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 50 psi (3.4 bar)<br>Full Flow: 55 psi (3.8 bar) |
| Housing:                  | Ductile Iron                                              |
| Cap:                      | Steel                                                     |
| Weight:                   | 10.0 lbs. (4.5 kg)                                        |
| Element Change Clearance: | 7.1 (178 mm)                                              |

## Filter Housing Specifications

|                        |                                                                                       |
|------------------------|---------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                           |
| Petroleum Based Fluids | Z-Media® and ASP® media (synthetic)                                                   |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                               |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                  |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)                             |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic) |

## Fluid Compatibility

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

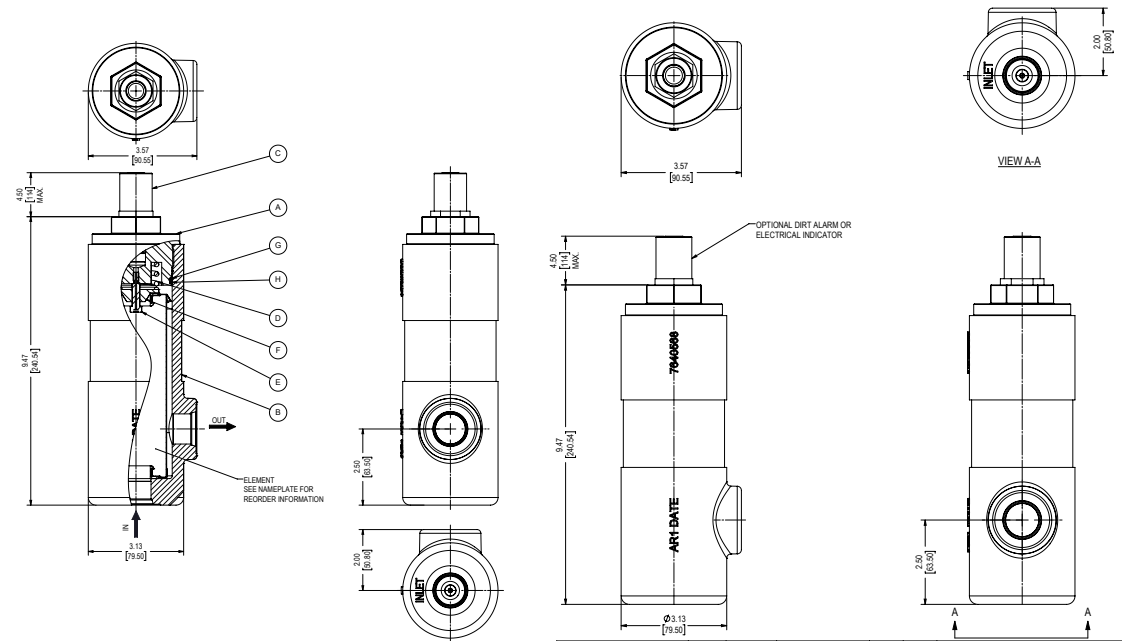
NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



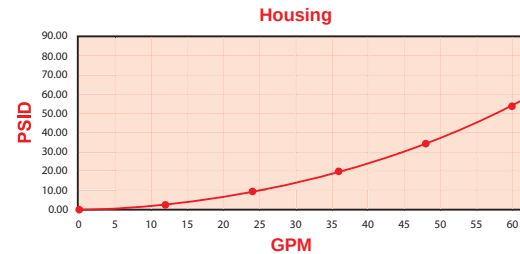
Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

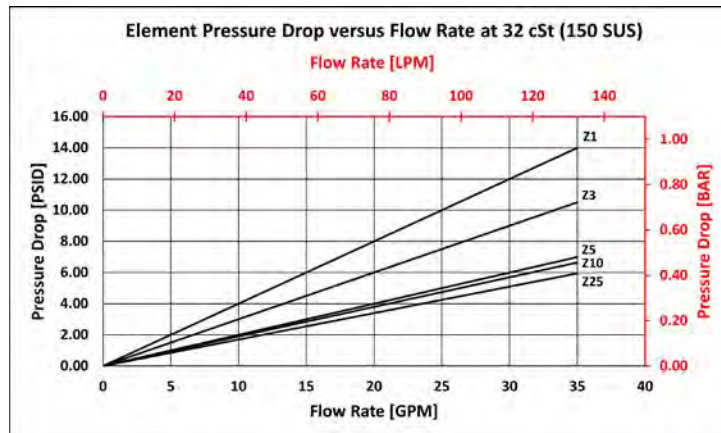
| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| IZ1     | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| IZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| IZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| IZ10    | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| IZ25    | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| IZ1     | 8.3      |
| IZ3     | 7.1      |
| IZ5     | 7.9      |
| IZ10    | 7.0      |
| IZ25    |          |

Element Collapse Rating: 290 psid  
 Flow Direction: Inside Out  
 Element Nominal Dimensions: 2.04" OD x  
 (52mm OD x 155 mm long)  
 6.12" long

$\Delta P_{\text{housing}}$  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$ 

IZ



Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:

Determine  $\Delta P_{\text{filter}}$  at 200 gpm (758 L/min) for LI50IZ10SMS13DC using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 35 gpm. In this case,  $\Delta P_{\text{housing}}$  is 19 psi (1.31 bar) on the graph for the LI50 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 35 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the IZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:

$$\Delta P_{\text{housing}} = 19 \text{ psi [1.31 bar]} \mid \Delta P_{\text{element}} = 7 \text{ psi [.48 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 19 \text{ psi} + (7 \text{ psi} * 1.1) = 17.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 1.31 \text{ bar} + (.48 \text{ bar} * 1.1) = 1.84 \text{ bar}$$

Filter  
Model  
Number  
Selection

How to Build a Valid Model Number for a Schroeder QT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LI50  |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5  |
|-------|-------|-------|-------|--------|
| LI50  | IZ10  |       | S     | MS13DC |

= LI50IZ10SMS13DC

| BOX 1         | BOX 2                             | BOX 3         | BOX 4     | BOX 5                     |
|---------------|-----------------------------------|---------------|-----------|---------------------------|
| Filter Series | Element Part Number               | Seal Material | Porting   | Indicator                 |
| LI50          | IZ1<br>IZ3<br>IZ5<br>IZ10<br>IZ25 | Omit = Buna   | S = SAE12 | MS13DC = MS13DC indicator |



### Features and Benefits

- Compact design allows for in-line installation on hose reels
- High quality synthetic ZX-Media high collapse elements ensure all fluid is filtered
- Available with SAE or NPT threading
- Convenient 2 1/4" Hex for easy service

9 gpm  
**35 L/min**  
5000 psi  
**345 bar**

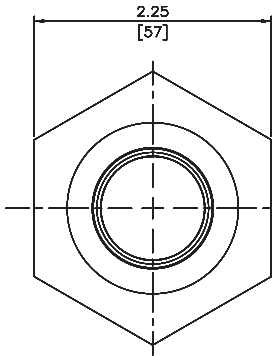
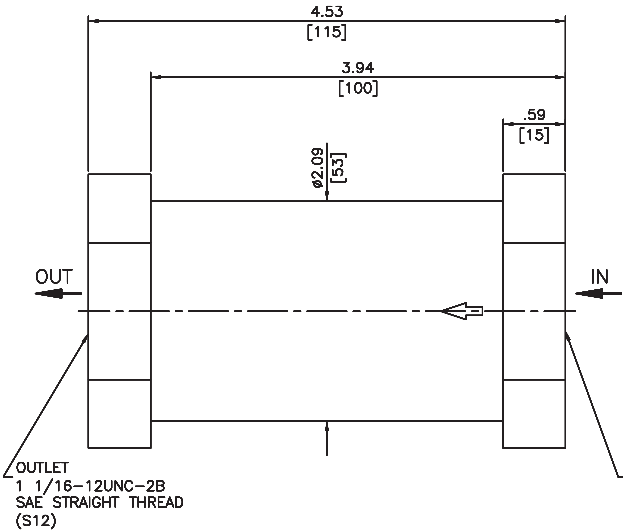
Model No. of filter in photograph is LC501LZX10S.

|                           |                                                    |
|---------------------------|----------------------------------------------------|
| Flow Rating:              | Up to 9 gpm (35 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 5000 psi (350 bar)                                 |
| Min. Yield Pressure:      | 15,000 psi (1050 bar)                              |
| Rated Fatigue Pressure:   | 5000 psi (350 bar), per NFPA T2.6.1-R1-2005        |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                    |
| Body and Cap:             | Steel                                              |
| Element Case:             | Steel                                              |
| Weight of LC50:           | 3.63 lbs. (1.65 kg)                                |
| Element Change Clearance: | 3.25" (83 mm)                                      |

### Filter Housing Specifications

|                        |                                  |
|------------------------|----------------------------------|
| Type Fluid             | Appropriate Schroeder Media      |
| Petroleum Based Fluids | All Z-Media® (synthetic)         |
| High Water Content     | All Z-Media® (synthetic)         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic) |
| Water Glycols          | 10 and 25 µ Z-Media® (synthetic) |

### Fluid Compatibility



Metric dimensions in ( ).  
Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
For complete dimensions please contact Schroeder Industries to request a certified print.

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
KC65  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
**LC50**  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10



### Element Performance Information & Dirt Holding Capacity

Element

Filtration Ratio per ISO 16889  
Using APC calibrated per ISO 11171

 $\beta_{x(c)} \geq 200$  $\beta_{x(c)} \geq 1000$ 

|       |      |      |
|-------|------|------|
| LZX3  | <4.0 | 4.8  |
| LZX10 | 8.0  | 10.0 |
| LZX25 | 19.0 | 24.0 |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| LZX3    | 1.1      | LZX25   | 1.0      |
| LZX10   | 1.0      | LZX40   | 0.9      |

Element Collapse Rating: 3000 psi (207 bar)

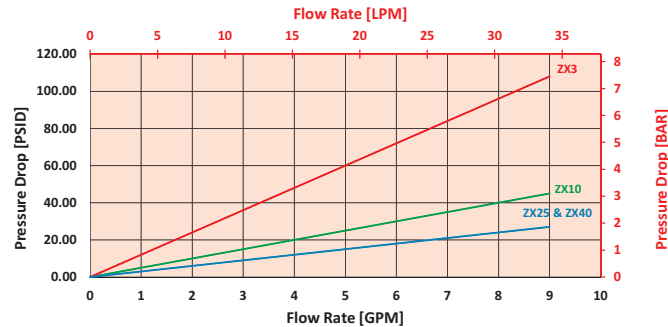
Flow Direction: Outside In

Element Nominal Dimensions: 1.4" (43 mm) O.D. x 1.7" (35 mm) long

 $\Delta P_{\text{housing}}$ LC50  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:

### Pressure Drop Information Based on Flow Rate and Viscosity

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



### Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder LC50:

BOX 1 BOX 2 BOX 3 BOX 4 BOX 5  
LC50 - - - -

BOX 1 BOX 2 BOX 3 BOX 4 BOX 5  
LC50 - 1 - LZX10 - S = LC501LZX10S

| BOX 1<br>Filter Series       | BOX 2<br>Number of Elements | BOX 3<br>Element Part Number                                                                                                                                                                                                                                                       | BOX 4<br>Seal Material      |
|------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| LC50<br>(non-bypassing only) | 1                           | LZX3 = 3 $\mu$ Excellement® Z-Media® (high collapse center tube)<br>LZX10 = 10 $\mu$ Excellement® Z-Media® (high collapse center tube)<br>LZX25 = 25 $\mu$ Excellement® Z-Media® (high collapse center tube)<br>LZX40 = 40 $\mu$ Excellement® Z-Media® (high collapse center tube) | Omit = Buna N<br>V = Viton® |
| BOX 5<br>Porting             |                             |                                                                                                                                                                                                                                                                                    |                             |
| S = SAE-12<br>P = 3/4"NPT    |                             |                                                                                                                                                                                                                                                                                    |                             |

# High-Pressure Sandwich Filter

NOF30-05



## Features and Benefits

- Sandwich filter configured for D05 subplate
- Withstands high pressure surges, high static pressure loads
- 3000 psi collapse elements

12 gpm  
45 L/min  
3000 psi  
210 bar

Model No. of filter in photograph is NOF301NNZX305D5.

|                           |                                                     |
|---------------------------|-----------------------------------------------------|
| Flow Rating:              | Up to 12 gpm (45 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 3000 psi (210 bar)                                  |
| Min. Yield Pressure:      | 10,000 psi (690 bar), per NFPA T2.6.1               |
| Rated Fatigue Pressure:   | Contact Factory                                     |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                     |
| Bypass Setting:           | High collapse elements are standard                 |
| Porting Base & Cap:       | Aluminum                                            |
| Element Case:             | Aluminum                                            |
| Weight of NOF30-1NN:      | 6.6 lbs. (3.0 kg)                                   |
| Element Change Clearance: | 4.50" (115 mm)                                      |

## Filter Housing Specifications

|                        |                                     |
|------------------------|-------------------------------------|
| Type Fluid             | Appropriate Schroeder Media         |
| Petroleum Based Fluids | All Z-Media* (synthetic)            |
| High Water Content     | 3, 10 and 25 µ Z-Media* (synthetic) |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic)    |
| Water Glycols          | 3, 10 and 25 µ Z-Media* (synthetic) |

## Fluid Compatibility

NOF30-05

NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

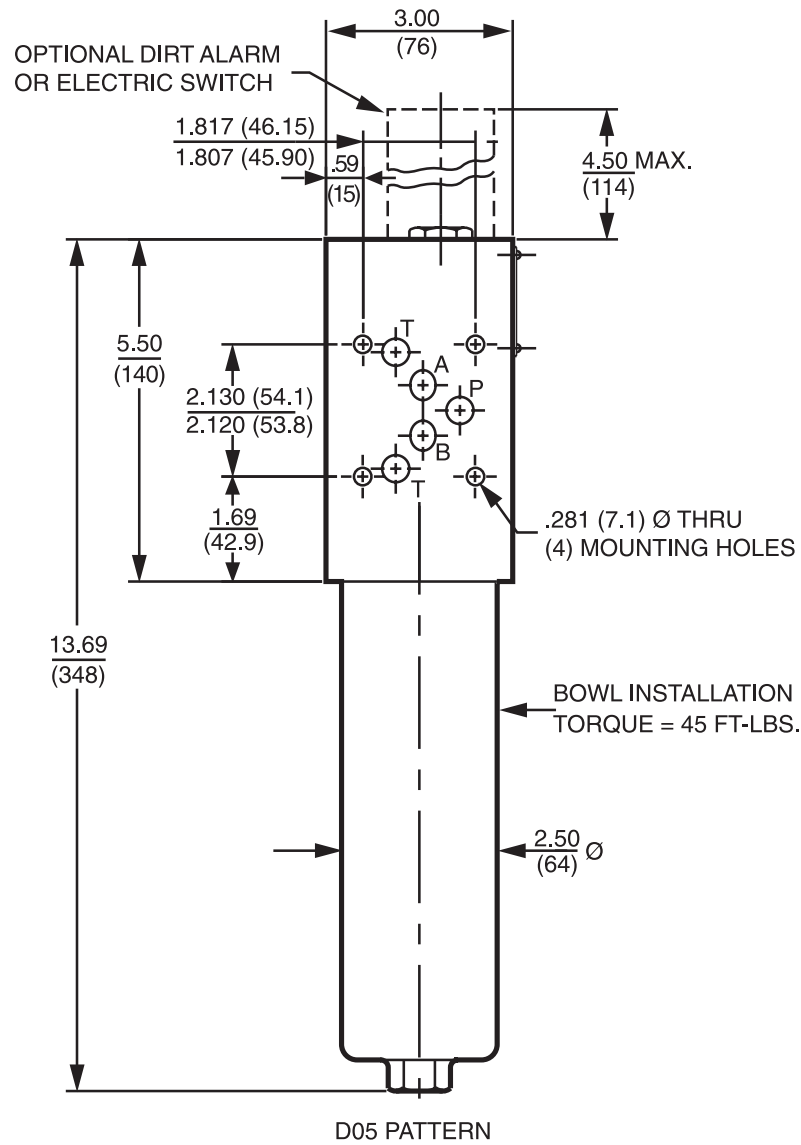
KFH50

LC60

LC35

LI50

LC50



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| NNZX3   | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |
| NNZX10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                      |

| Element | DHC (gm) |
|---------|----------|
| NNZX3   | 11*      |
| NNZX10  | 13*      |

Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions

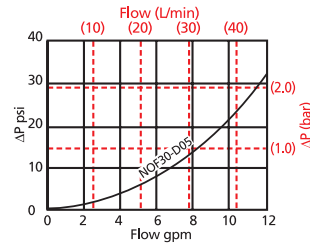
Flow Direction: Outside In

Element Nominal Dimensions: 1.75" (45 mm) O.D. x 8.00" (200 mm) long

\*Based on 100 psi terminal pressure

$\Delta P_{\text{housing}}$

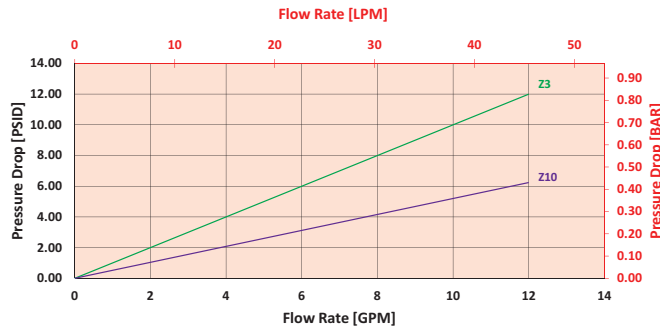
NOF30-05  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

1NNZX

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 5 gpm (19 L/min) for NOF301NNZX1005D5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 5 gpm. In this case,  $\Delta P_{\text{housing}}$  is 5 psi (.34 bar) on the graph for the NOF30 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 5 gpm. In this case,  $\Delta P_{\text{element}}$  is 3 psi (.21 bar) according to the graph for the NNZX10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 5 \text{ psi } [.34 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 3 \text{ psi } [.21 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 5 \text{ psi} + (3 \text{ psi} * 1.1) = 8.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .34 \text{ bar} + (.21 \text{ bar} * 1.1) = .57 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Filter  
Model  
Number  
Selection

How to Build a Valid Model Number for a Schroeder NOF30-05:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| NOF30 |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| NOF30 | 1     | NNZX3 |       | 05    |       | D5    |

= NOF301NNZX305D5

| BOX 1         | BOX 2                     | BOX 3                                                                                                                                         | BOX 4                                     | BOX 5                     |
|---------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------|
| Filter Series | Number & Size of Elements | Element Part Number                                                                                                                           | Seal Material                             | Porting                   |
| NOF30         | 1                         | NNZX3 = NN size 3 $\mu$ high collapse media<br>NNZX10 = NN size 10 $\mu$ high collapse media<br>NNZX25 = NN size 25 $\mu$ high collapse media | Omit = Buna N<br>V = Viton®<br>W = Buna N | 05 = D05 subplate pattern |

| BOX 6       | BOX 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Options     | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Omit = None | None      Omit = None<br>Visual      D5 = Visual pop-up<br>Visual with Thermal Lockout      D8 = Visual w/ thermal lockout<br>Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector<br>Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T<br>Electrical Visual with Thermal Lockout<br>MS13DC = Supplied w/ threaded connector & light<br>MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT |

## NOTES:

- Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4.
- Box 4. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

# High-Pressure Servo Sandwich Filter

## NOF50



### Features and Benefits

- Localized protection at the servo helps to eliminate downtime and protect critical applications from contamination-related servo valve failures
- Sandwich style 4-bolt design – no additional lines to connect
- Designed to protect these commonly installed servo valves: Moog 761 & 62, Vickers SM4-20 and Parker BD15
- High collapse elements, rated to 3000 psi (210 bar)
- Easily applied to new and existing systems
- All steel construction

**15 gpm**  
**57 L/min**  
**5000 psi**  
**345 bar**

Model No. of filter in photograph is NOF501SVZX3760.

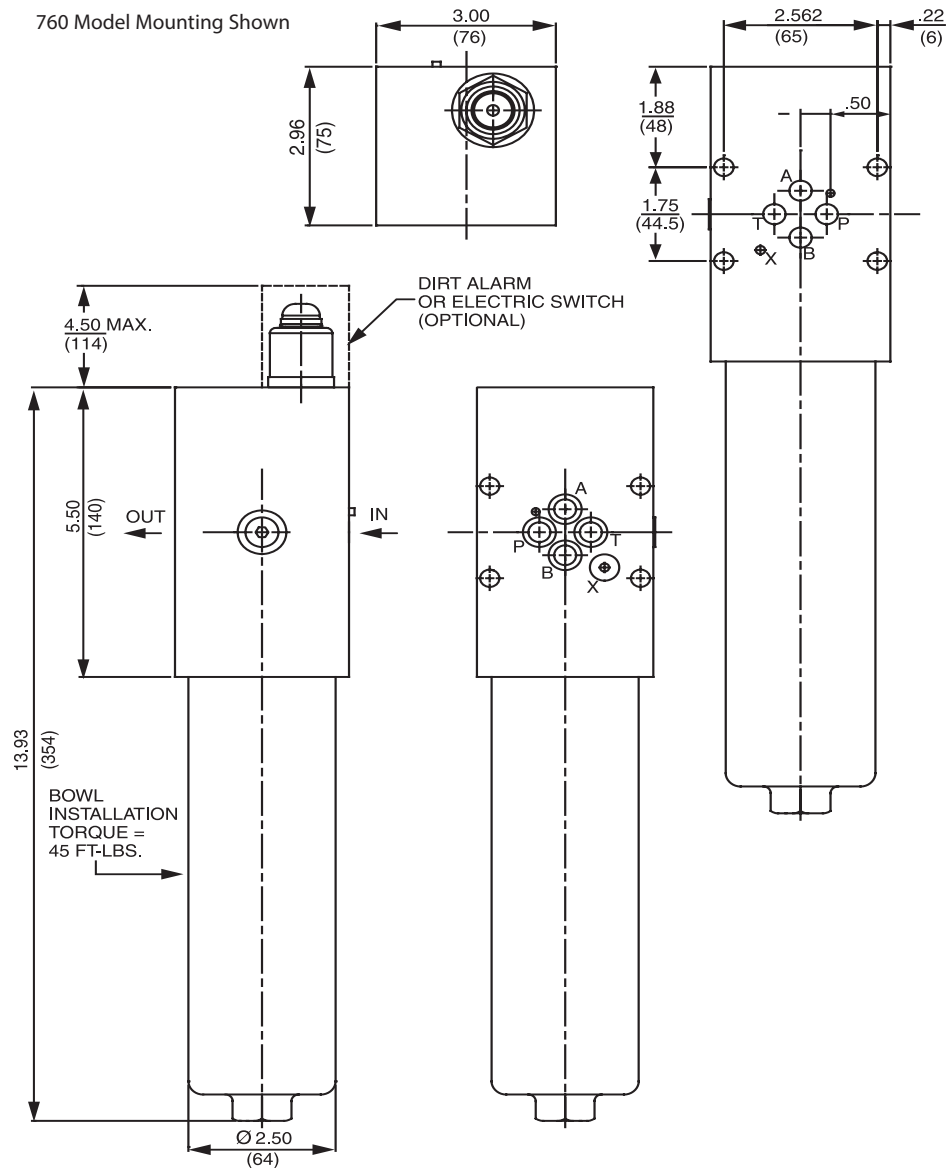
|                           |                                                     |
|---------------------------|-----------------------------------------------------|
| Flow Rating:              | Up to 15 gpm (57 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 5000 psi (345 bar)                                  |
| Min. Yield Pressure:      | 15,000 psi (1034 bar), per NFPA T2.6.1              |
| Rated Fatigue Pressure:   | 4000 psi (276 bar) per NFPA T2-6.1 R2-2005          |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                     |
| Non-Bypass Model:         | Standard with high collapse elements                |
| Porting Head:             | Steel                                               |
| Element Case:             | Steel                                               |
| Weight of NOF50-1SV:      | 17 lb. (7.7 kg)                                     |
| Element Change Clearance: | 4.50" (115 mm)                                      |

### Filter Housing Specifications

|                        |                                     |
|------------------------|-------------------------------------|
| Type Fluid             | Appropriate Schroeder Media         |
| Petroleum Based Fluids | All Z-Media* (synthetic)            |
| High Water Content     | 3, 10 and 25 µ Z-Media* (synthetic) |
| Invert Emulsions       | 10 and 25 µ Z-Media* (synthetic)    |
| Water Glycols          | 3, 10 and 25 µ Z-Media* (synthetic) |

### Fluid Compatibility

NF30  
 NFS30  
 YF30  
 CFX30  
 PLD  
 CF40  
 DF40  
 PF40  
 RFS50  
 RF60  
 CF60  
 CTF60  
 VF60  
 LW60  
 KF30  
 KF50  
 TF50  
 KC50  
 MKF50  
 MKC50  
 KC65  
 MKC65  
 HS60  
 MHS60  
 KFH50  
 LC60  
 LC35  
 LI50  
 LC50  
 NOF30-05  
**NOF-50-760**  
 FOF60-03  
 NMF30  
 RMF60  
 14-CRZX10



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| SVZX3   | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |
| SVZX10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.7                      |

| Element | DHC (gm) |
|---------|----------|
| SVZX3   | 11*      |
| SVZX10  | 13*      |

Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

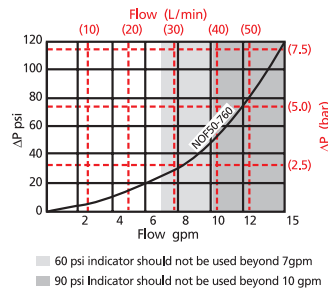
Element Nominal Dimensions: 1.75" (45 mm) O.D. x 8.0" (200 mm) long

\*Based on 100 psi terminal pressure



$\Delta P_{\text{housing}}$

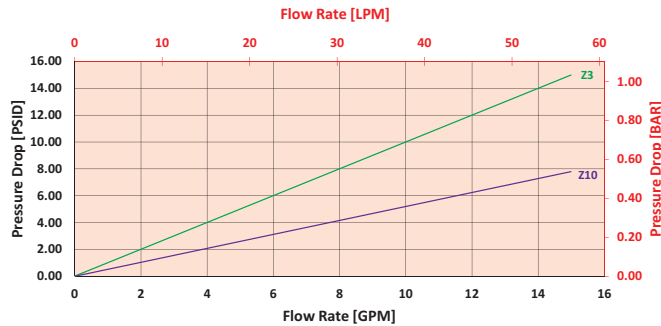
NOF50  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

1SVZX

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 5 gpm (19 L/min) for NOF501SVZX10760D5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 5 gpm. In this case,  $\Delta P_{\text{housing}}$  is 15 psi (1 bar) on the graph for the NOF30 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 5 gpm. In this case,  $\Delta P_{\text{element}}$  is 3 psi (.21 bar) according to the graph for the SVZX10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 15 \text{ psi [1 bar]} \quad | \quad \Delta P_{\text{element}} = 3 \text{ psi [.21 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 15 \text{ psi} + (3 \text{ psi} * 1.1) = 18.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 1 \text{ bar} + (.21 \text{ bar} * 1.1) = 1.2 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder NOF50:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| NOF50 |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| NOF50 | 1     | SVZX3 |       | 760   |       |       | D5    |

= NOF501SVZX3760D5

| BOX 1         | BOX 2              | BOX 3                                                                                                                          | BOX 4                       | BOX 5                                                            |
|---------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------|
| Filter Series | Number of Elements | Element Part Number                                                                                                            | Seal Material               | Porting                                                          |
| NOF50         | 1                  | SVZX3 = S size 3 µ high collapse media<br>SVZX10 = S size 10 µ high collapse media<br>SVZX25 = S size 25 µ high collapse media | Omit = Buna N<br>V = Viton* | 760 = Moog servo configuration<br>761 = Moog servo configuration |

| BOX 6                          | BOX 7                                                                                                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Options                        | Optional Test Point                                                                                             |
| Omit = 60 psid<br>90 = 90 psid | Omit = None<br>U = Series 1215 <sup>7</sup> / <sub>16</sub> "-20 UNF<br>Schroeder Check Test Point installation |

| BOX 8                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Options                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| None                                   | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Visual                                 | D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                         |
| Electrical Visual                      | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                    |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                  |

## NOTES:

Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 6. Please note indicator flow limitations on pressure drop graph, previous page.

# High-Pressure Sandwich Filter

FOF60-03



### Features and Benefits

- Sandwich filter configured for D03 subplate pattern
- Withstands high pressure surges, high static pressure loads
- 3000 psi collapse elements

12 gpm  
45 L/min  
6000 psi  
415 bar

NF30  
NFS30  
YF30  
CFX30  
PLD  
CF40  
DF40  
PF40  
RFS50  
RF60  
CF60  
CTF60  
VF60  
LW60  
KF30  
KF50  
TF50  
KC50  
MKF50  
MKC50  
KC65  
MKC65  
HS60  
MHS60  
KFH50  
LC60  
LC35  
LI50  
LC50  
NOF30-05  
NOF-50-760  
FOF60-03  
NMF30  
RMF60  
14-CRZX10

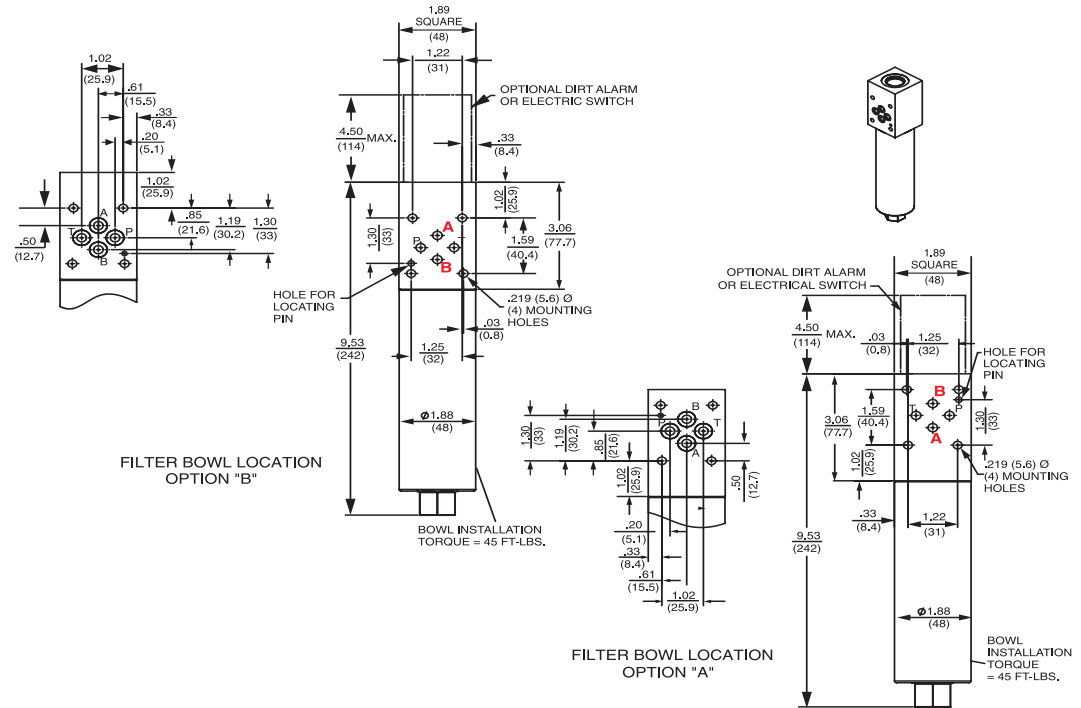
Model No. of filter in photograph is FOF601FZX303BD5.

|                           |                                                     |
|---------------------------|-----------------------------------------------------|
| Flow Rating:              | Up to 12 gpm (45 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 6000 psi (415 bar)                                  |
| Min. Yield Pressure:      | 26,000 psi (1790 bar), per NFPA T2.6.1              |
| Rated Fatigue Pressure:   | 4000 psi (275 bar), per NFPA T2.6.1                 |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                     |
| Non-Bypass Model:         | Available with high collapse elements               |
| Porting Head:             | Steel                                               |
| Element Case:             | Steel                                               |
| Weight:                   | 7.3 lbs. (3.3 kg)                                   |
| Element Change Clearance: | 4.50" (115 mm)                                      |

### Filter Housing Specifications

|                        |                                 |
|------------------------|---------------------------------|
| Type Fluid             | Appropriate Schroeder Media     |
| Petroleum Based Fluids | All Z-Media® (synthetic)        |
| High Water Content     | 3 and 10 µ Z-Media® (synthetic) |

### Fluid Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| FZX3    | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                    |
| FZX10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                    |

| Element | DHC (gm) |
|---------|----------|
| FZX3    | 3*       |
| FZX10   | 5.1      |

Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions

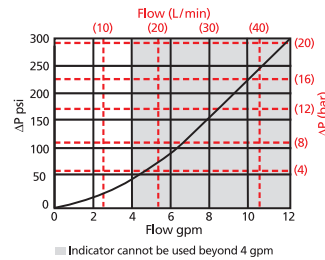
Flow Direction: Outside In

Element Nominal Dimensions: 1.25" (30 mm) O.D. x 3.25" (85 mm) long

\*Based on 100 psi terminal pressure

$\Delta P_{\text{housing}}$

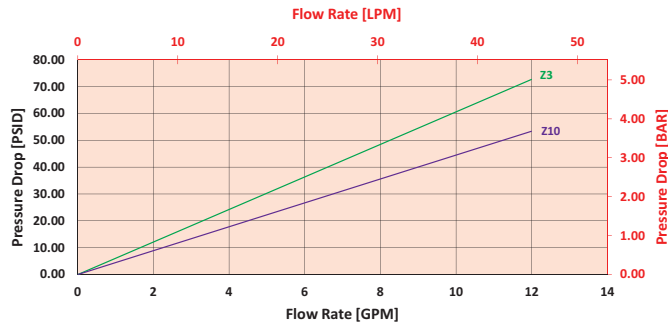
FOF60-03  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

FXZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 5 gpm (19 L/min) for FOF601FZX1003BD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 5 gpm. In this case,  $\Delta P_{\text{housing}}$  is 60 psi (4.1 bar) on the graph for the FOF60 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 5 gpm. In this case,  $\Delta P_{\text{element}}$  is 22 psi (1.5 bar) according to the graph for the FZX10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 60 \text{ psi [4.1 bar]} \mid \Delta P_{\text{element}} = 22 \text{ psi [1.5 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 60 \text{ psi} + (22 \text{ psi} * 1.1) = 64.2 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 4.1 \text{ bar} + (1.5 \text{ bar} * 1.1) = 5.8 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Filter  
Model  
Number  
Selection

How to Build a Valid Model Number for a Schroeder FOF60-03:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| FOF60 |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| FOF60 | 1     | FZX3  |       | 03    | A     | D5    |

= FOF601FZX303AD5

| BOX 1         | BOX 2              | BOX 3                                                                                    | BOX 4                       | BOX 5                     |
|---------------|--------------------|------------------------------------------------------------------------------------------|-----------------------------|---------------------------|
| Filter Series | Number of Elements | Element Part Number                                                                      | Seal Material               | Porting                   |
| FOF60         | 1                  | FZX3 = F size 3 $\mu$ high collapse media<br>FZX10 = F size 10 $\mu$ high collapse media | Omit = Buna N<br>V = Viton* | 03 = D03 subplate pattern |

| BOX 6                           | BOX 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Bowl Location            | Dirt Alarm* Options                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| A = Bowl adjacent to Port "A"   | None      Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| B = Bowl adjacent to Port "B"   | Visual      D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (Refer to drawing on page 140.) | Visual with Thermal Lockout      D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                 | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
|                                 | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                         |
|                                 | Electrical Visual      MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                             |
|                                 | Electrical Visual with Thermal Lockout      MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                      |

## NOTES:

Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4.

Box 4. Viton\* is a registered trademark of DuPont Dow Elastomers.

Box 7. Dirt Alarm\* cannot be used beyond 4 gpm. Filters ordered without a Dirt Alarm do not include a machined indicator port. Therefore, one cannot be added at a later date.

# Manifold Filter Kit

## NMF30



### Features and Benefits

- Allows for effective filtration in customer's manifold

20 gpm  
75 L/min  
3000 psi  
210 bar

Model No. of filter in photograph is NMF301NNZX10.

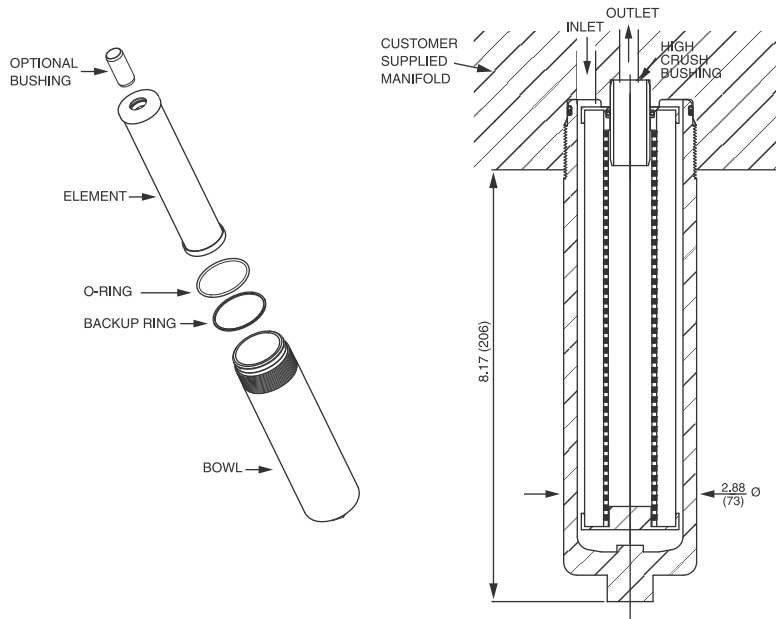
|                           |                                                     |
|---------------------------|-----------------------------------------------------|
| Flow Rating:              | Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 3000 psi (210 bar)*                                 |
| Min. Yield Pressure:      | 10,000 psi (690 bar)*, per NFPA T2.6.1              |
| Rated Fatigue Pressure:   | 2400 psi (185 bar)*, per NFPA T2.6.1                |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                     |
| Element Case:             | Aluminum                                            |
| Element Change Clearance: | 4.50" (115 mm)                                      |

\*Only with manifold material properties equivalent to aluminum 6061-T651.

### Filter Housing Specifications

|                        |
|------------------------|
| Type Fluid             |
| Petroleum Based Fluids |
| High Water Content     |

### Fluid Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10



## Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          | Dirt Holding Capacity<br>gm |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|-----------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |                             |
| NNZX3   | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      | 11*                         |
| NNZX10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                      | 13*                         |

| Element | DHC (gm) |
|---------|----------|
| NNZX3   | 11*      |
| NNZX10  | 13*      |

Element Collapse Rating: 3000 psid (210 bar)  
 Flow Direction: Outside In  
 Element Nominal Dimensions: 1.75" (45 mm) O.D. x 8.00" (200 mm) long

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder NMF30:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| NMF30 |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| NMF30 | 1     | NNZX3 |       |       |

= NMF301NNZX3

| BOX 1         | BOX 2              | BOX 3                                                                                                                                         | BOX 4                                     | BOX 5                               |
|---------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------|
| Filter Series | Number of Elements | Element Part Number                                                                                                                           | Seal Material                             | Bushing                             |
| NMF30         | 1                  | NNZX3 = NN size 3 $\mu$ high collapse media<br>NNZX10 = NN size 10 $\mu$ high collapse media<br>NNZX25 = NN size 25 $\mu$ high collapse media | Omit = Buna N<br>V = Viton®<br>W = Buna N | Omit = Included<br>N = Not included |

### NOTES:

- Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4.
- Box 4. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

# Manifold Filter Kit

## RMF60



### Features and Benefits

- Allows for effective filtration in customer's manifold

30 gpm  
115 L/min  
6000 psi  
415 bar

Model No. of filter in photograph is RMF608RZX10.

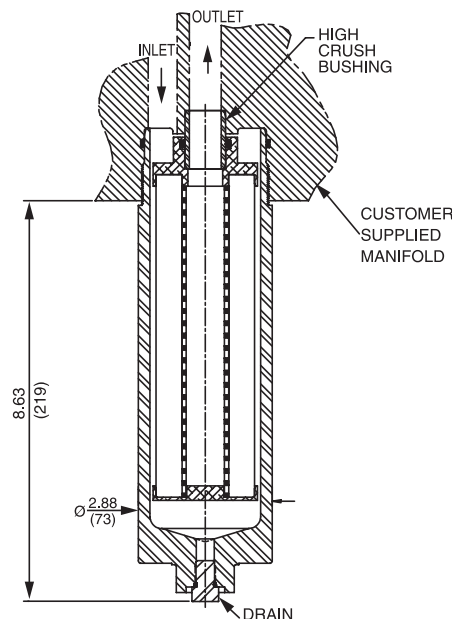
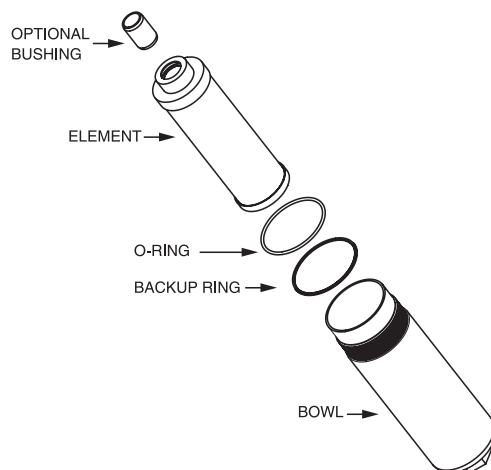
|                           |                                                      |
|---------------------------|------------------------------------------------------|
| Flow Rating:              | Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 6000 psi (415 bar)*                                  |
| Min. Yield Pressure:      | 18,000 psi (1240 bar)*                               |
| Rated Fatigue Pressure:   | 2300 psi (159 bar)*                                  |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                      |
| Element Case:             | Steel                                                |
| Element Change Clearance: | 3.0" (75 mm)                                         |

\*Only with manifold material properties equivalent to AISI 1018 C.R.S.

### Filter Housing Specifications

|                        |
|------------------------|
| Type Fluid             |
| Petroleum Based Fluids |
| High Water Content     |

### Fluid Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print of drawing 7638211

NF30

NFS30

YF30

CFX30

PLD

CF40

DF40

PF40

RFS50

RF60

CF60

CTF60

VF60

LW60

KF30

KF50

TF50

KC50

MKF50

MKC50

KC65

MKC65

HS60

MHS60

KFH50

LC60

LC35

LI50

LC50

NOF30-05

NOF-50-760

FOF60-03

NMF30

RMF60

14-CRZX10

## Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| NNZX3   | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |
| NNZX10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                      |

| Element | DHC (gm) |
|---------|----------|
|         |          |

Element Collapse Rating: 3000 psid (210 bar)  
 Flow Direction: Outside In  
 Element Nominal Dimensions: 2.18" (55mm) O.D. x 8.15" (206 mm) long

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder RMF60:

|       |       |       |       |       |
|-------|-------|-------|-------|-------|
| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
| RMF60 |       |       |       |       |

Example: NOTE: One option per box

|       |       |       |       |       |              |
|-------|-------|-------|-------|-------|--------------|
| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |              |
| RMF60 | 8     | RZX3  |       |       | = RMF608RZX3 |

| BOX 1         | BOX 2          | BOX 3                                                                                                                                                                                                                                                                                                     | BOX 4                                              | BOX 5                               |
|---------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------|
| Filter Series | Element Length | Element Size and Media                                                                                                                                                                                                                                                                                    | Seal Material                                      | Bushing                             |
| RMF60         | 8              | RZX3 = E size 3 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (high collapse center tube)<br>RZX10 = E size 10 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (high collapse center tube)<br>RZX25 = E size 25 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (high collapse center tube) | Omit = Buna N<br>V = Viton <sup>®</sup><br>H = EPR | Omit = Included<br>N = Not included |

#### NOTES:

Box 2: Replacement element part numbers are a combination of Boxes 2, 3, and 4. Example: 8RZX3V

Box 4: Viton<sup>®</sup> is a registered trademark of DuPont Dow Elastomers.

## Features and Benefits (14-CRZX10)

- Cartridge filters are designed to be mounted directly in the manifold
- Withstands high pressure surges—3000 psi (210 bar) collapse rating

**6 gpm**  
**23 L/min**  
**3000 psi**  
**210 bar**

Max. Operating Pressure: 3000 psi (210 bar)

Temp. Range: -20°F to 225°F (-29°C to 107°C)

Element Change Clearance: 14-CRZX10: 4.50" (115 mm)

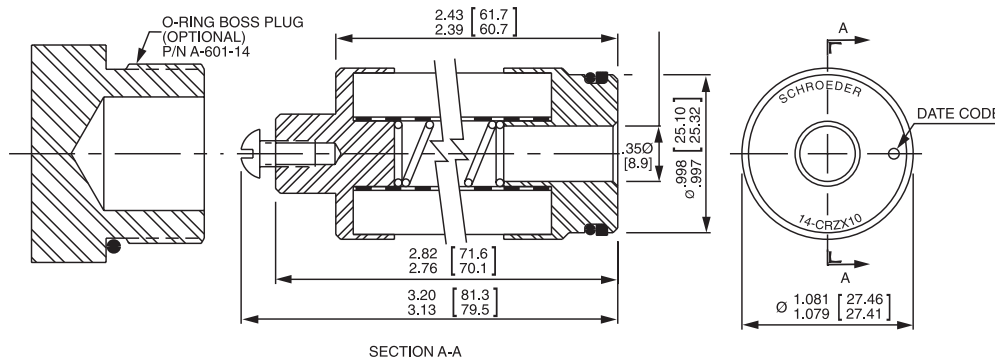
Filter  
Housing  
Specifications

Type Fluid Appropriate Schroeder Media

Petroleum Based Fluids All Z-Media\* (synthetic)

High Water Content 3 and 10 μ Z-Media\* (synthetic)

Fluid  
Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| ZX10    | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                      |

Contact factory for other media options.

| Element | DHC (gm) |
|---------|----------|
|---------|----------|

Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions:

Element  
Performance  
Information &  
Dirt Holding  
Capacity

## How to Build a Valid Model Number for a Schroeder 14-CRZX10:

BOX 1: 14-CRZX10    BOX 2:

Example: NOTE: One option per box

BOX 1: 14-CRZX10    BOX 2: P    = 14-CRZX10P

| BOX 1<br>Filter Series | BOX 2<br>Number of Elements |
|------------------------|-----------------------------|
| 14-CRZX10              | Omit = No Plug<br>P = Plug  |

NOTES:

Box 2: Replacement element part numbers are a combination of Boxes 2, 3, and 4. Example: 8RZX3V

Box 4: Viton® is a registered trademark of DuPont Dow Elastomers.

Filter  
Model  
Number  
Selection

14-CRZX10

12 gpm  
45 L/min  
3000 psi  
210 bar

## Features and Benefits (20-CRZX10)

- Cartridge filters are designed to be mounted directly in the manifold
- Withstands high pressure surges—3000 psi (210 bar) collapse rating

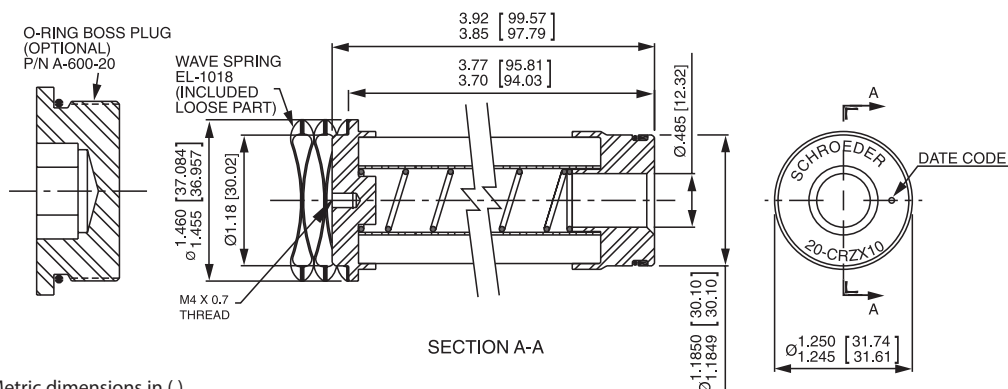
## Filter Housing Specifications

|                           |                                 |
|---------------------------|---------------------------------|
| Max. Operating Pressure:  | 3000 psi (210 bar)              |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C) |
| Element Change Clearance: | 20-CRZX10: 3.50" (90 mm)        |

## Fluid Compatibility

|                        |                                 |
|------------------------|---------------------------------|
| Type Fluid             | Appropriate Schroeder Media     |
| Petroleum Based Fluids | All Z-Media® (synthetic)        |
| High Water Content     | 3 and 10 µ Z-Media® (synthetic) |

## Element Performance Information &amp; Dirt Holding Capacity



## Element Performance Information &amp; Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| ZX10    | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                    |

Contact factory for other media options.

Element DHC (gm)

Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

\*Based on 100 psi terminal pressure

Element Nominal Dimensions:

## Filter Model Number Selection

## How to Build a Valid Model Number for a Schroeder 20-CRZX10:

|                    |           |
|--------------------|-----------|
| BOX 1<br>20-CRZX10 | BOX 2<br> |
|--------------------|-----------|

Example: NOTE: One option per box

|                    |            |              |
|--------------------|------------|--------------|
| BOX 1<br>20-CRZX10 | BOX 2<br>P | = 20-CRZX10P |
|--------------------|------------|--------------|

## NOTES:

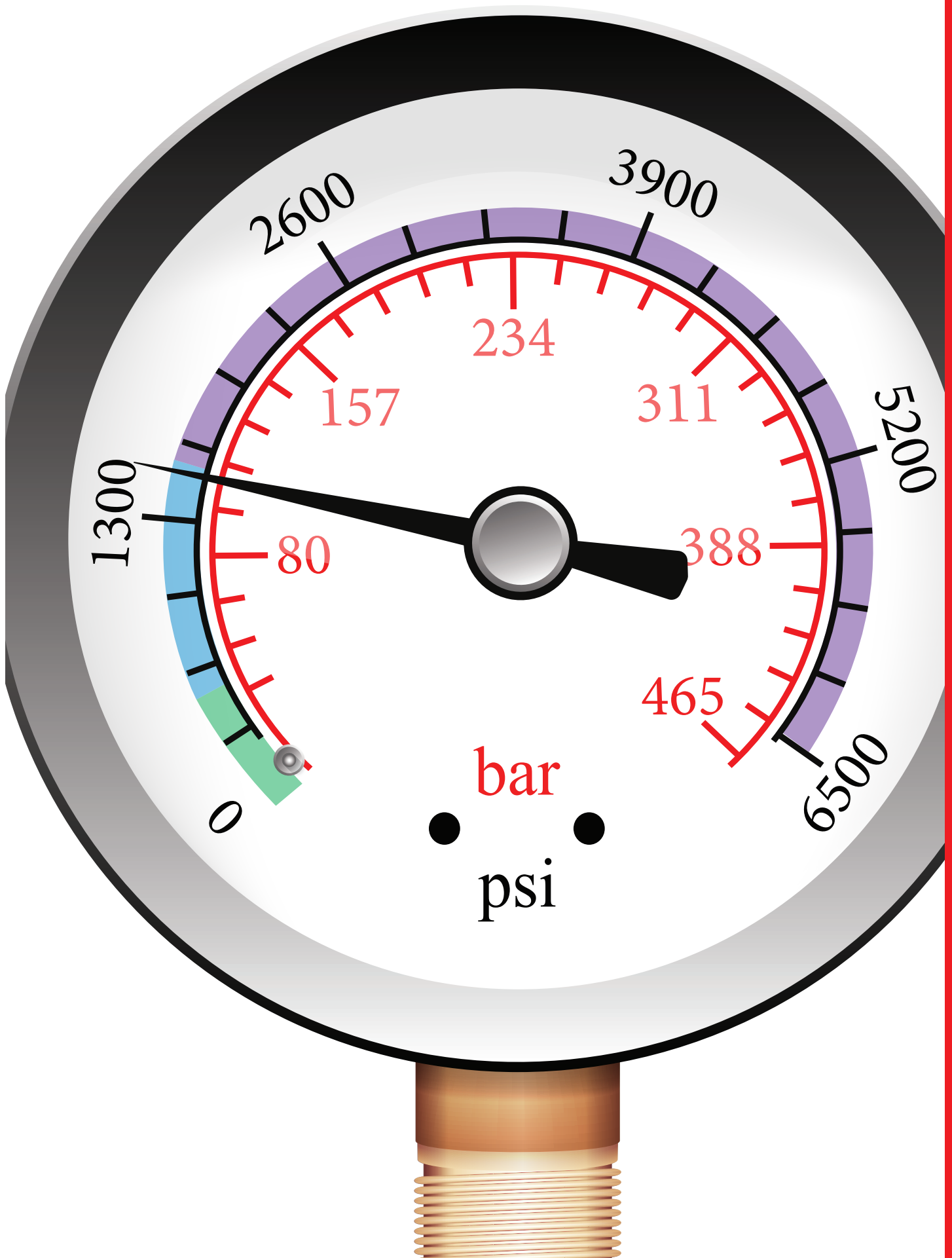
Box 2: Replacement element part numbers are a combination of Boxes 2, 3, and 4. Example: 8RZX3V

Box 4: Viton® is a registered trademark of DuPont Dow Elastomers.

| BOX 1         | BOX 2                      |
|---------------|----------------------------|
| Filter Series | Number of Elements         |
| 20-CRZX10     | Omit = No Plug<br>P = Plug |

Section 4:  
up to 1500 psi

# MEDIUM PRESSURE FILTERS



# Section 4

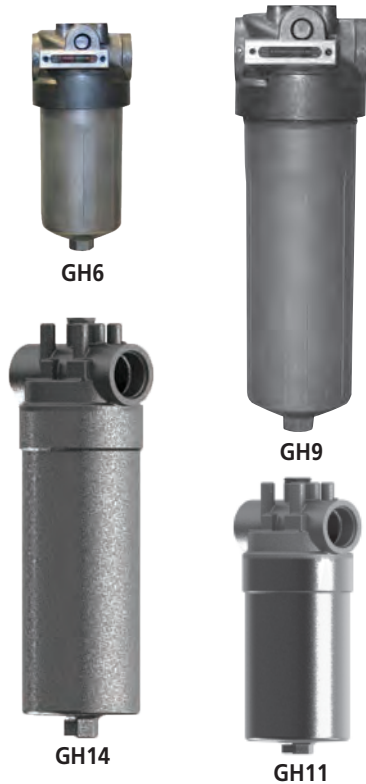
## Medium Pressure Filters Selection Guide

|                                          |                                                                                                       | Pressure<br>psi (bar) | Flow<br>gpm (L/min) | Element<br>Length/Size                     | Page |
|------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------|---------------------|--------------------------------------------|------|
| Medium Pressure Filters (up to 1500 psi) | Top-Ported Medium Pressure Return Line Filters                                                        |                       |                     |                                            |      |
|                                          | <a href="#">GH</a>   | 725 (50)              | 35 (130)            | 6G, 9G                                     | 161  |
|                                          | <a href="#">RLT</a>                                                                                   | 1400 (97)             | 70 (265)            | 9V, 14V                                    | 167  |
|                                          | <a href="#">KF5</a>  | 500 (35)              | 100 (380)           | K                                          | 171  |
|                                          | <a href="#">SRLT</a>                                                                                  | 1400 (100)            | 25 (100)            | 6R                                         | 175  |
|                                          | Base-Ported Medium Pressure Filters                                                                   |                       |                     |                                            |      |
|                                          | <a href="#">K9</a>   | 900 (60)              | 100 (380)           | K, KK, 27K                                 | 179  |
|                                          | <a href="#">2K9</a>  | 900 (60)              | 100 (380)           | K, KK, 27K                                 | 183  |
|                                          | <a href="#">3K9</a>  | 900 (60)              | 100 (380)           | K, KK, 27K                                 | 183  |
|                                          | <a href="#">QF5</a>                                                                                   | 500 (35)              | 300 (1135)          | 16Q, 16QCLQF, 16QPML, 39Q, 39QCLQF, 39QPML | 187  |
|                                          | <a href="#">QF5i</a>                                                                                  | 500 (35)              | 120 (454)           | 16QCLQF, 39QCLQF                           | 191  |
|                                          | <a href="#">2QF5</a>                                                                                  | 500 (35)              | 300 (1135)          | 16Q, 16QCLQF, 16QPML, 39Q, 39QCLQF, 39QPML | 195  |
|                                          | <a href="#">3QF5</a>                                                                                  | 500 (35)              | 300 (1135)          | 16Q, 16QCLQF, 16QPML, 39Q, 39QCLQF, 39QPML | 195  |
|                                          | <a href="#">QFD5</a>                                                                                  | 500 (35)              | 350 (1325)          | 16Q, 16QCLQF, 16QPML, 39Q, 39QCLQF, 39QPML | 199  |
|                                          | <a href="#">QF15</a>                                                                                  | 1500 (100)            | 450 (1700)          | 16Q, 16QCLQF, 16QPML, 39Q, 39QCLQF, 39QPML | 203  |
|                                          | <a href="#">QLF15</a>                                                                                 | 1500 (100)            | 500 (1900)          | 16Q, 16QCLQF, 16QPML, 39Q, 39QCLQF, 39QPML | 207  |
|                                          | <a href="#">SSQLF15</a>                                                                               | 1500 (100)            | 500 (1900)          | 16Q, 16QPML, 39Q, 39QPML                   | 211  |



# HydraSPIN Filter Series

**GH**



Model No. of filters in photograph are GH6, GH9, GH11, and GH14.

## Features and Benefits

- Variety of differential indicator port options (visual and electrical indicators)
- Leak proof bar indicator, rugged visual indicator with protective aluminum shield is standard
- Proprietary bowl to element seal - minimizes potential leakage point by use of one seal on element
- Cartridge style element (non spin-on) that is proprietary and patented with integrated bypass valve features
- Wide variety of media grades that can be application specific
- Light weight bowl design with replaceable element minimizes landfill waste
- Mounting interchangeability with competitor's filter head
- The inherent capability to pre-print the perforated outer element wrap provides a branding solution that helps to capture after-market replacement element sales
- GH6 – Bolt up cartridge element replacement for the Donaldson DURAMAX HMK04 w/ 5.9" Spin-On Can
- GH9 – Bolt up cartridge element replacement for the Donaldson DURAMAX HMK04 w/ 9.4" Spin-On Can
- GH11 – Bolt up cartridge element replacement for the Donaldson DURAMAX HMK05 w/ 11.6" Spin-On Can
- GH14 – Bolt up cartridge element replacement for the Donaldson DURAMAX HMK05 w/ 14.3" Spin-On Can
- Same day shipment model available (GH6 & GH9)



Part of Schroeder Industries Energy Savings Initiative

**35-112 gpm** **GH**  
**130-425 L/min** **RLT**  
**500-725 psi**  
**35-50 bar** **KF5**

**SRLT**

**K9**

**2K9**

**3K9**

**QF5**

**QF5i**

**2QF5/3QF5**

**QFD5**

**QF15**

**QLF15**

**SSQLF15**

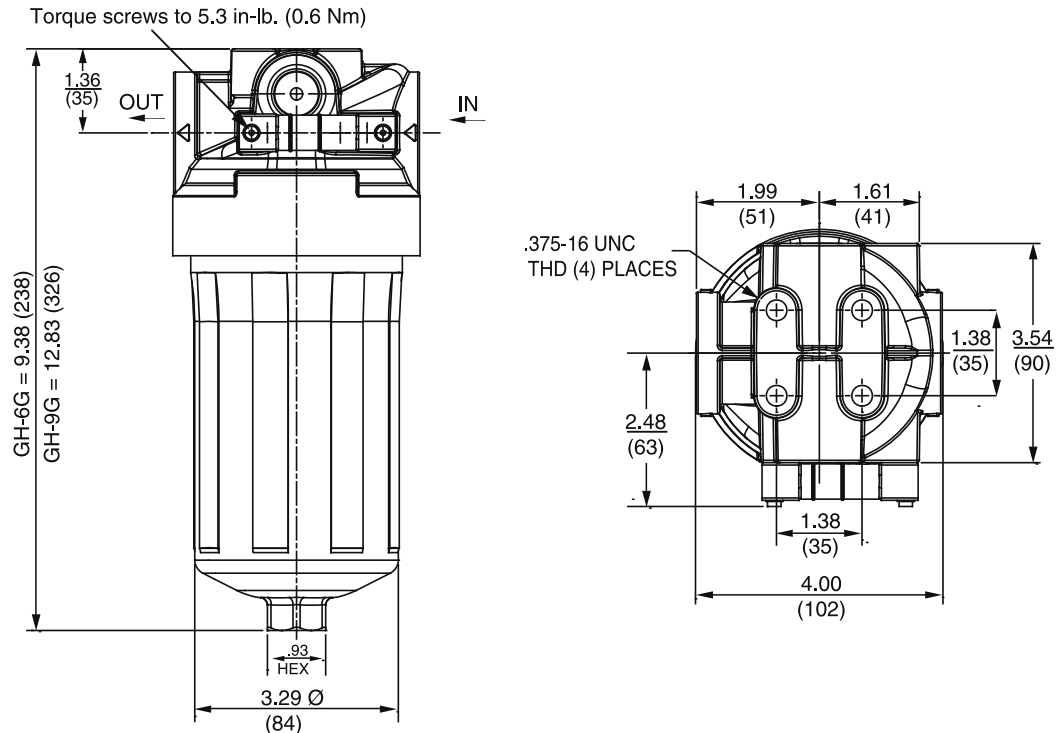
|                                           | GH6                                                                     | GH9                                                                     | GH11                                                                | GH14                                                                |
|-------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|
| Flow Rating:<br>(150 SUS (32 cSt) fluids) | Up to 35 gpm<br>(130 L/min)                                             | Up to 35 gpm<br>(130 L/min)                                             | Up to 87 gpm<br>(325 L/min)                                         | Up to 112 gpm<br>(425 L/min)                                        |
| Max. Operating Pressure:                  | 725 psi (50 bar)                                                        | 725 psi (50 bar)                                                        | 500 psi (35 bar)                                                    | 500 psi (35 bar)                                                    |
| Min. Yield Pressure:                      | 2600 psi (179 bar)                                                      | 2600 psi (179 bar)                                                      | 2700 psi (186 bar)                                                  | 2700 psi (186 bar)                                                  |
| Rated Fatigue Pressure:                   | 725 psi (50 bar)                                                        | 725 psi (50 bar)                                                        | 500 psi (35 bar)                                                    | 500 psi (35 bar)                                                    |
| Temp. Range:                              | -20°F to 225°F<br>(-29°C to 107°C)                                      | -20°F to 225°F<br>(-29°C to 107°C)                                      | -22°F to 212°F<br>(-30°C to 100°C)                                  | -22°F to 212°F<br>(-30°C to 100°C)                                  |
| Bypass Setting:                           | 25 psi (1.7 bar) standard<br>50 psi (3.5 bar) optional<br>Non-Bypassing | 25 psi (1.7 bar) standard<br>50 psi (3.5 bar) optional<br>Non-Bypassing | 43 psi (3 bar) standard<br>87 psi (6 bar) optional<br>Non-Bypassing | 43 psi (3 bar) standard<br>87 psi (6 bar) optional<br>Non-Bypassing |
| Porting Head:                             | Cast Aluminum                                                           | Cast Aluminum                                                           | Cast Aluminum                                                       | Cast Aluminum                                                       |
| Element Case:                             | Aluminum                                                                | Aluminum                                                                | Aluminum                                                            | Aluminum                                                            |
| Weight:                                   | 3.2 lbs (1.4 kg)                                                        | 3.8 lbs (1.7 kg)                                                        | 8.0 lbs (3.6 kg)                                                    | 10.0 lbs (4.5 kg)                                                   |
| Element Change Clearance:                 | 2" (50 mm)                                                              | 2" (50 mm)                                                              | 7.4" (187 mm)                                                       | 7.4" (187 mm)                                                       |

## Filter Housing Specifications

|                        |                                               |
|------------------------|-----------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                   |
| Petroleum Based Fluids | All media (synthetic) and H media (Hydraspin) |

## Fluid Compatibility

### Dimensions (GH6 & GH9)



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Media Type                                                                       | Element         | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|----------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|                                                                                  |                 | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| Resin Impregnated<br>Cellulose Media                                             | 6G3/9G3         | 6.8                                                                                                            | 7.5                | 10.0               | N/A                                                                  | N/A                      |
|                                                                                  | 6G10/9G10       | 15.5                                                                                                           | 16.2               | 18.0               | N/A                                                                  | N/A                      |
| Traditional<br>Excellement®<br>Z-Media®                                          | 6GZ3 / 9GZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
|                                                                                  | 6GZ5 / 9GZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
|                                                                                  | 6GZ10 / 9GZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
|                                                                                  | 6GZ25 / 9GZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| Hydraspin H<br>Media, designed to<br>specifically reduce<br>filter pressure drop | 6GH10/<br>9GH10 | N/A                                                                                                            | N/A                | N/A                | 10.6                                                                 | 13.0                     |

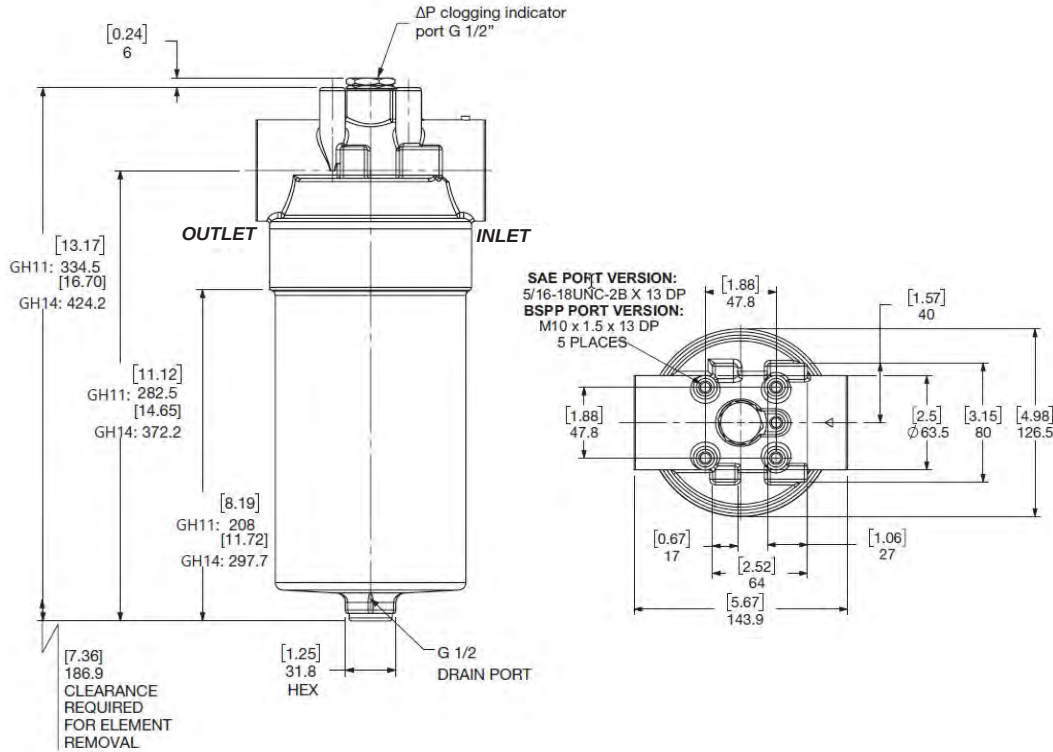
| Media Type                                                                       | Element       | DHC (gm) |
|----------------------------------------------------------------------------------|---------------|----------|
| Resin Impregnated<br>Cellulose Media                                             | 6G3/9G3       | 18/30    |
|                                                                                  | 6G10/9G10     | 15/25    |
| Traditional<br>Excellement®<br>Z-Media®                                          | 6GZ3 / 9GZ3   | 30/51    |
|                                                                                  | 6GZ5 / 9GZ5   | 24.5/42  |
|                                                                                  | 6GZ10 / 9GZ10 | 31/49    |
|                                                                                  | 6GZ25 / 9GZ25 | 34/58    |
| Hydraspin H<br>Media, designed to<br>specifically reduce<br>filter pressure drop | 6GH10/9GH10   | 12/20    |

Element Collapse Rating: 250 psid (17.2 bar) for standard and non-bypassing elements

Flow Direction: Outside In

Element Nominal 6G: 3.25" (82 mm) O.D. x 5.7" (144 mm) long

Dimensions: 9G: 3.25" (82 mm) O.D. x 9.0" (229 mm) long



## Dimensions (GH11 & GH14)

Metric dimensions in ( ).

| Media Type                              | Element       | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|-----------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                                         |               | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| Traditional<br>Excellement®<br>Z-Media® | 11GZ3/14GZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
|                                         | 11GZ5/14GZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
|                                         | 11GZ10/14GZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
|                                         | 11GZ25/14GZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

## Element Performance Information & Dirt Holding Capacity

| Media Type                              | Element       | DHC (gm) |
|-----------------------------------------|---------------|----------|
| Traditional<br>Excellement®<br>Z-Media® | 11GZ3/14GZ3   | 53/75    |
|                                         | 11GZ5/14GZ5   | 75/105   |
|                                         | 11GZ10/14GZ10 | 60/84    |
|                                         | 11GZ25/14GZ25 | 61/85    |

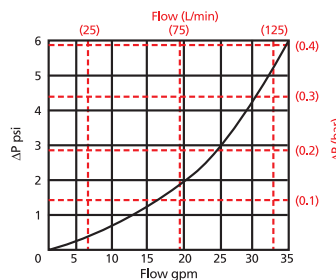
Element Collapse Rating: 290 psid (17.2 bar) for standard and non-bypassing elements

Flow Direction: Outside In

Element Nominal 11G: 3.7" (94 mm) O.D. x 7.6" (193 mm) long

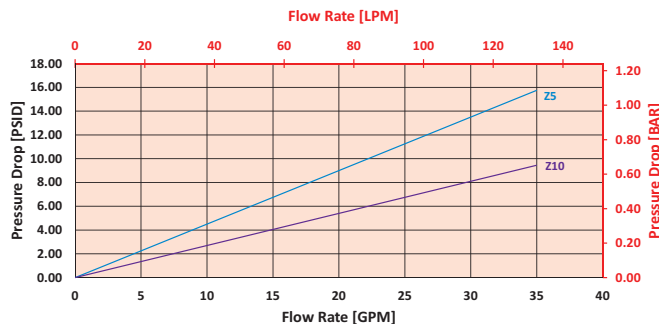
Dimensions: 14G: 3.7" (94 mm) O.D. x 11.1" (282 mm) long

**Pressure Drop Information (GH6 & GH9)**  
Based on Flow Rate and Viscosity

 $\Delta P_{\text{housing}}$ 
 $\text{GH } \Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:

 $\Delta P_{\text{element}}$ 

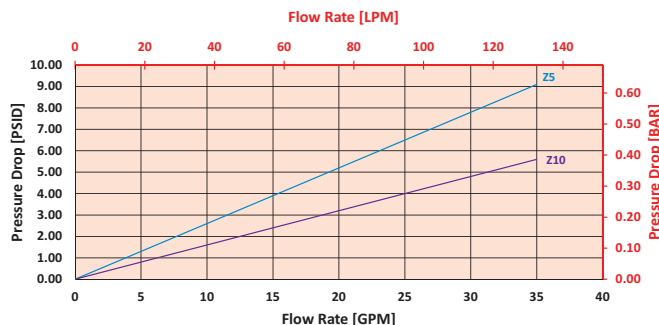
6GZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



9GZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

**Exercise:**

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for GH6GZ10S12L using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 1.5 psi (0.10 bar) on the graph for the GH housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 4 psi (0.27 bar) according to the graph for the 6GZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

$$\Delta P_{\text{housing}} = 1.5 \text{ psi [0.10 bar]} \quad | \quad \Delta P_{\text{element}} = 4 \text{ psi [0.27 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 1.5 \text{ psi} + (4 \text{ psi} * 1.1) = 5.9 \text{ psi}$$

**OR**

$$\Delta P_{\text{filter}} = 0.10 \text{ bar} + (0.27 \text{ bar} * 1.1) = 0.40 \text{ bar}$$

Note:

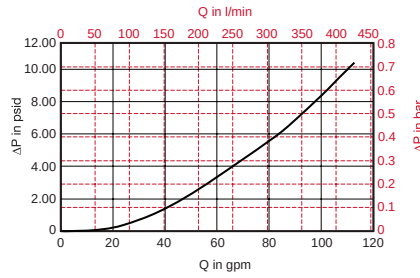
If your element is not graphed, you can obtain your  $\Delta P_{\text{element}}$  by multiplying the flow rate by the following:  $\Delta P_{\text{element}} \text{ Factors} \times V_f$  (Visc. Factor)

$\Delta P_{\text{element}} \text{ Factors @ 150 SUS (32 cSt)}$

| Ele.  | $\Delta P$ | Ele.  | $\Delta P$ |
|-------|------------|-------|------------|
| 6G3   | 0.60       | 9G3   | 0.35       |
| 6G10  | 0.40       | 9G10  | 0.24       |
| 6G25  | 0.08       | 9G25  | 0.05       |
| 6GH10 | C/F        | 9GH10 | C/F        |
| 6GZ3  | 0.60       | 9GZ3  | 0.35       |
| 6GZ25 | C/F        | 9GZ25 | C/F        |

$\Delta P_{\text{housing}}$

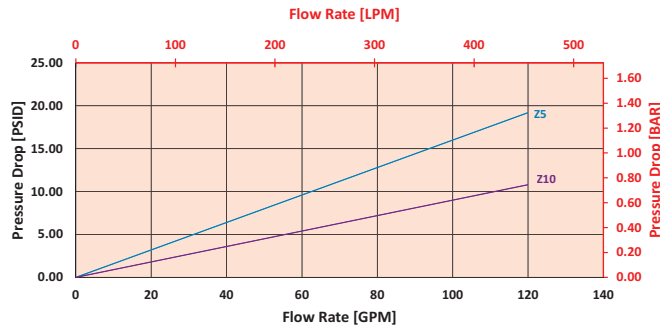
GH  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

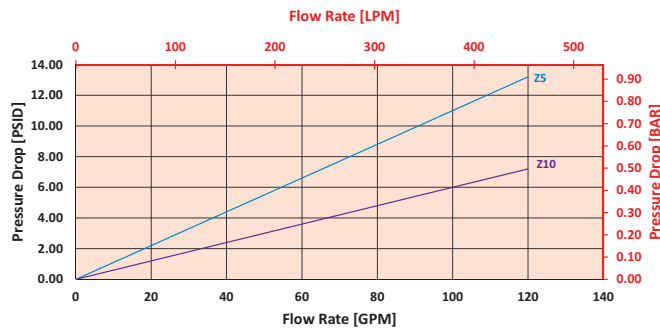
11GZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



14GZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 60 gpm (227.4 L/min) for GH11GZ10S24VA using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 60 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (0.21 bar) on the graph for the GH housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 60 gpm. In this case,  $\Delta P_{\text{element}}$  is 5 psi (0.34 bar) according to the graph for the 11GZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi [0.21 bar]} \mid \Delta P_{\text{element}} = 5 \text{ psi [0.34 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (5 \text{ psi} * 1.1) = 8.5 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 0.21 \text{ bar} + (0.34 \text{ bar} * 1.1) = 0.58 \text{ bar}$$

## Pressure Drop Information (GH11 & GH14)

Based on Flow Rate and Viscosity

Note:

If your element is not graphed, you can obtain your  $\Delta P_{\text{element}}$  by multiplying the flow rate by the following:  $\Delta P_{\text{element}} \text{ Factors} \times V_f$  (Visc. Factor)

| Ele.   | $\Delta P$ |
|--------|------------|
| 11GZ3  | 0.21       |
| 11GZ25 | 0.06       |
| 14GZ3  | 0.14       |
| 14GZ25 | 0.04       |

# Filter Model Number Selection (GH6 & GH9)

Highlighted product eligible for **QuickDelivery**

## How to Build a Valid Model Number for a Schroeder GH6/GH9:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| GH    |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| GH    | 6     | GZ10  |       |       | S16   | L     |

= GH6GZ10S16L

| BOX 1         | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                   | BOX 4                                               |
|---------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Filter Series | Element Length (in) | Element Part Number                                                                                                                                                                                                                                                                                                                                     | Bypass Setting                                      |
| GH            | 6<br>9              | G3 = 3 µ E media (cellulose)<br>G10 = 10 µ E media (cellulose)<br>G25 = 25 µ E media (cellulose)<br><br>GZ3 = 3 µ Excellement® Z-Media® (synthetic)<br>GZ5 = 5 µ Excellement® Z-Media® (synthetic)<br><b>GZ10 = 10 µ Excellement® Z-Media® (synthetic)</b><br>GZ25 = 25 µ Excellement® Z-Media® (synthetic)<br>GH10 = 10 µ Excellement® Hydraspin media | Omit = 25 psid<br>50 = 50 psid<br>N = Non-bypassing |

| BOX 5                 | BOX 6                                                                      | BOX 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Element Seal Material | Inlet Port                                                                 | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Omit = Buna N         | S12 = SAE-12<br>S16 = SAE-16<br>B12 = ISO 228 G-3/4"<br>B16 = ISO 228 G-1" | <div> <div>Omit = None</div> <div>           L = Bar indicator, left side std<br/>           R = Bar indicator, right side std<br/>           B = Bar indicators, left and right side<br/>           VA = Visual pop-up w/auto reset<br/>           VM = Visual pop-up w/manual reset         </div> <div>           Omit = None<br/>           M = Drilled, tapped, plugged<br/>           DTC = DC 2 wire, normally closed (NC)<br/>           DTO = DC 2 wire, normally open (NO)<br/>           DW = AC/DC 3-wire (NO or NC)         </div> </div> <div>           Indicator Location Option L<br/> </div> |

# Filter Model Number Selection (GH11 & GH14)

## How to Build a Valid Model Number for a Schroeder GH11/GH14:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| GH    |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| GH    | 11    | GZ10  | 87    |       | S24   | VA    |

= GH11GZ1087S24VA

| BOX 1         | BOX 2               | BOX 3                                                                                                                                                                                        | BOX 4                                               |
|---------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Filter Series | Element Length (in) | Element Part Number                                                                                                                                                                          | Bypass Setting                                      |
| GH            | 11<br>14            | GZ3 = 3 µ Excellement® Z-Media® (synthetic)<br>GZ5 = 5 µ Excellement® Z-Media® (synthetic)<br>GZ10 = 10 µ Excellement® Z-Media® (synthetic)<br>GZ25 = 25 µ Excellement® Z-Media® (synthetic) | Omit = 47 psid<br>87 = 87 psid<br>N = Non-bypassing |

| BOX 5                          | BOX 6                                                        | BOX 7                                                                                                                                                                                                                                                                                                         |
|--------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Element Seal Material          | Inlet Port                                                   | Dirt Alarm® Options                                                                                                                                                                                                                                                                                           |
| Omit = Buna N<br><br>V = Viton | B24 = ISO 228 G-1 1/2"<br>S24 = SAE 24 Straight Thread Ports | <div> <div>Omit = None</div> <div>           VA = Visual pop-up w/auto reset<br/>           VM = Visual pop-up w/manual reset<br/>           VF = Visual analog         </div> <div>           EC = Electrical switch - SPDT<br/>           ED = Electrical switch and LED light - SPDT         </div> </div> |

### NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Replacement elements contain bypass. For 50 psid setting or non-bypassing version, element part number includes suffix. Examples: 11GZ10S0, 14GZ10N.

Box 7. VA and VM indicators are available with 50 psid bypass element only.

# Medium Pressure Filter

RLT



### Features and Benefits

- Durable, compact design
- Quick and easy cartridge element changeouts
- Available in 9" and 14" element lengths
- Lightweight at 8 pounds
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- Available with NPTF inlet and outlet female test ports
- Various Dirt Alarm® options
- Same day shipment model available

70 gpm  
**265 L/min**  
1400 psi  
**97 bar**

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

2QF5/3QF5

QFD5

QF15

QLF15

SSQLF15

Model No. of filter in photograph is RLT9VZ10P20D5.

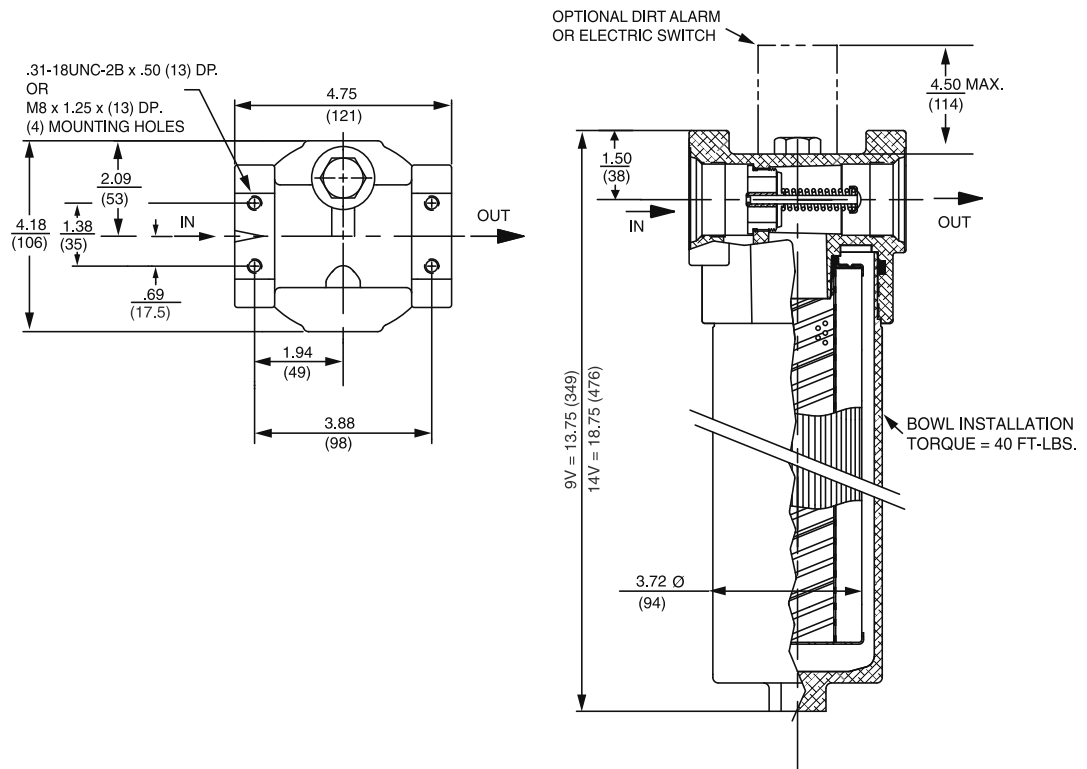
|                           |                                                                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 70 gpm (265 L/min) for 150 SUS (32 cSt) fluids for P20, S20, & B20 porting<br>Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids for P16, S16, F16, F20 & B16 porting |
| Max. Operating Pressure:  | 1400 psi (97 bar)                                                                                                                                                             |
| Min. Yield Pressure:      | 4200 psi (290 bar) , per NFPA T2.6.1                                                                                                                                          |
| Rated Fatigue Pressure:   | 415 psi (29 bar), per NFPA T2.6.1-R1-2005                                                                                                                                     |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                                                                                               |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar) for all porting<br>Full Flow: 57 psi (3.9 bar) for P20 & S20 porting<br>Full Flow: 75 psi (5.2 bar) for P16, S16, F16 & F20 porting                |
| Porting Head:             | Aluminum                                                                                                                                                                      |
| Element Case:             | Aluminum                                                                                                                                                                      |
| Weight of RLT-9V:         | 6.7 lbs. (3.0 kg)                                                                                                                                                             |
| Weight of RLT-14V:        | 8.0 lbs. (3.6 kg)                                                                                                                                                             |
| Element Change Clearance: | 9V & 14V: 2.75" (70 mm)                                                                                                                                                       |

### Filter Housing Specifications

| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media® (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility





Metric dimensions in ( ).  
 Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
 For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element      | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|--------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|              | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 9VZ1/14VZ1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| 9VZ3/14VZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| 9VZ5/14VZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| 9VZ10/14VZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| 9VZ25/14VZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 9VZ1    | 55       | 14VZ1   | 102      |
| 9VZ3    | 57       | 14VZ3   | 105      |
| 9VZ5    | 62       | 14VZ5   | 115      |
| 9VZ10   | 52       | 14VZ10  | 104      |
| 9VZ25   | 48       | 14VZ25  | 94       |

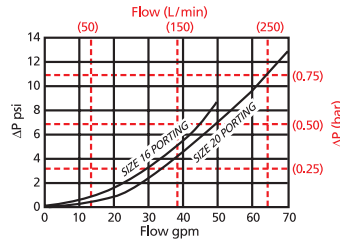
Element Collapse Rating: 150 psid (10 bar)  
 500 psid (34.5 bar) for hydrostatic high collapse (9V5Z and 14V5Z) version

Flow Direction: Outside In

Element Nominal Dimensions: 9V: 3.0" (75 mm) O.D. x 9.5" (240 mm) long  
 14V: 3.0" (75 mm) O.D. x 14.5" (370 mm) long

$\Delta P_{\text{housing}}$

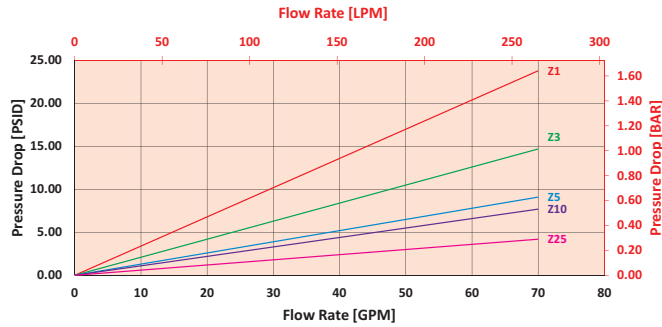
RLT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

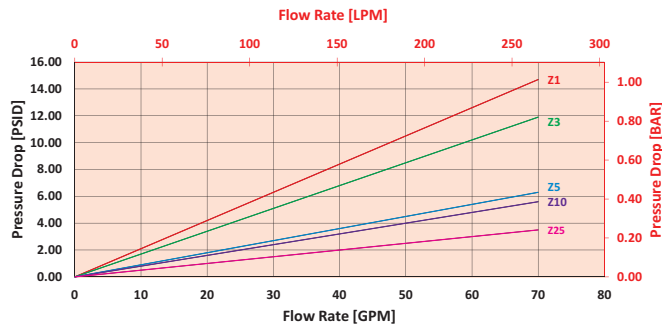
9VZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



14VZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 40 gpm (151.6 L/min) for RLT9VZ10S20D5 using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 40 gpm. In this case,  $\Delta P_{\text{housing}}$  is 4.5 psi (.31 bar) on the graph for the RLT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 40 gpm. In this case,  $\Delta P_{\text{element}}$  is 6 psi (.415 bar) according to the graph for the 9VZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 4.5 \text{ psi } [.31 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 6 \text{ psi } [.415 \text{ bar}]$$

$$V_f = 175 \text{ SUS } (37.2 \text{ cSt}) / 150 \text{ SUS } (32 \text{ cSt}) = 1.2$$

$$\Delta P_{\text{filter}} = 4.5 \text{ psi } + (6 \text{ psi } * 1.2) = 9.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .31 \text{ bar } + (.415 \text{ bar } * 1.2) = .63 \text{ bar}$$

**Pressure Drop Information**  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele. | $\Delta P$ | Ele.  | $\Delta P$ |
|------|------------|-------|------------|
| 9V3  | 0.32       | 14V3  | 0.19       |
| 9V10 | 0.24       | 14V10 | 0.15       |

Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## How to Build a Valid Model Number for a Schroeder RLT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| RLT   |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| RLT   | 9     | VZ10  |       | S20   |       | D5    |       |

= RLT9VZ10S20D5

| BOX 1                                                                 | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | BOX 4                                                                  |
|-----------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Filter Series                                                         | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Seal Material                                                          |
| RLT                                                                   | 9                   | VZ1 = V size 1 µ Excellement® Z-Media® (synthetic)<br>VZ3 = V size 3 µ Excellement® Z-Media® (synthetic)<br>VZ5 = V size 5 µ Excellement® Z-Media® (synthetic)<br>VZ10 = V size 10 µ Excellement® Z-Media® (synthetic)<br>VZ25 = V size 25 µ Excellement® Z-Media® (synthetic)<br>VW = V size W media (water removal)<br>V5Z3 = V size 3 µ Excellement® media, 500 psid collapse<br>V5Z5 = V size 5 µ Excellement® media, 500 psid collapse<br>V5Z10 = V size 10 µ Excellement® media, 500 psid collapse<br>V5Z25 = V size 25 µ Excellement® media, 500 psid collapse | Omit = Buna N<br>H = EPR<br>V = Viton®<br>H.5 = Skydrol® Compatibility |
| RLTN<br>(Non-bypassing:<br>requires V5Z<br>high collapse<br>elements) | 14                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                        |
| WRLT<br>(Water)                                                       |                     | <b>Water Service Element Options</b><br>VM60 = V size 60 µ M media (reusable metal)<br>VM150 = V size 150 µ M media ( reusable metal)<br>VM260 = V size 260 µ M media (reusable metal)                                                                                                                                                                                                                                                                                                                                                                                |                                                                        |

| BOX 5                                                                                                                                                     | BOX 6                                                                                                                                    | BOX 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | BOX 8                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Porting Options                                                                                                                                           | Bypass                                                                                                                                   | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Additional Options                                                   |
| P16 = 1" NPTF<br>P20 = 1¼" NPTF<br>S16 = SAE-16<br>S20 = SAE-20<br>F20 = 1¼" SAE<br>4-bolt flange<br>Code 61<br>B16 = ISO 228 G-1"<br>B20 = ISO 228 G-1¼" | Omit = 40 PSI<br>Bypass<br>50 = 50 PSI<br>Bypass<br>60 = 60 PSI<br>Bypass<br>X = Blocked<br>Bypass<br>(Omit box 6 if a RLTN is selected) | None<br>Visual<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector<br>MS5T = MS5 (see above) w/ thermal lockdown<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockdown<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockdown<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockdown<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T<br>MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockdown<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockdown<br>MS14DCLCT = Low current MS14DCT | Omit = None<br>L = Two ¼"<br>NPTF inlet and outlet female test ports |
| Electrical                                                                                                                                                |                                                                                                                                          | Electrical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                      |
|                                                                                                                                                           |                                                                                                                                          | Electrical with Thermal Lockout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                      |
|                                                                                                                                                           |                                                                                                                                          | Electrical Visual                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |
|                                                                                                                                                           |                                                                                                                                          | Electrical Visual with Thermal Lockout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                      |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.  
Example: 9VZ10V

Box 3. E media elements are only available with Buna N seals.  
V5Z10 and V5Z25 are only available with RLTN 9".

Box 4. For options H, V, and H.5, all aluminum parts are anodized.  
H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior.  
Viton® is a registered trademark of DuPont Dow Elastomers.  
Skydrol® is a registered trademark of Solutia Inc.

Box 5. 8 porting supplied with metric mounting holes.

Box 6. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

# Medium Pressure Filter

KF5



Model No. of filter in photograph is KF51KZ10SD5.

### Features and Benefits

- Meets HF4 automotive standard
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- Available with NPTF inlet and outlet female test ports
- KFN5 non-bypass version with high collapse elements also available
- Various Dirt Alarm® options
- Allows consolidation of inventoried replacement elements by using K-size elements
- Also available with DirtCatcher® elements (KD & KKD)
- G** Available with quality-protected GeoSeal® Elements (GKF5)

100 gpm  
**380 L/min**  
500 psi  
**35 bar**

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

2QF5/3QF5

QFD5

QF15

QLF15

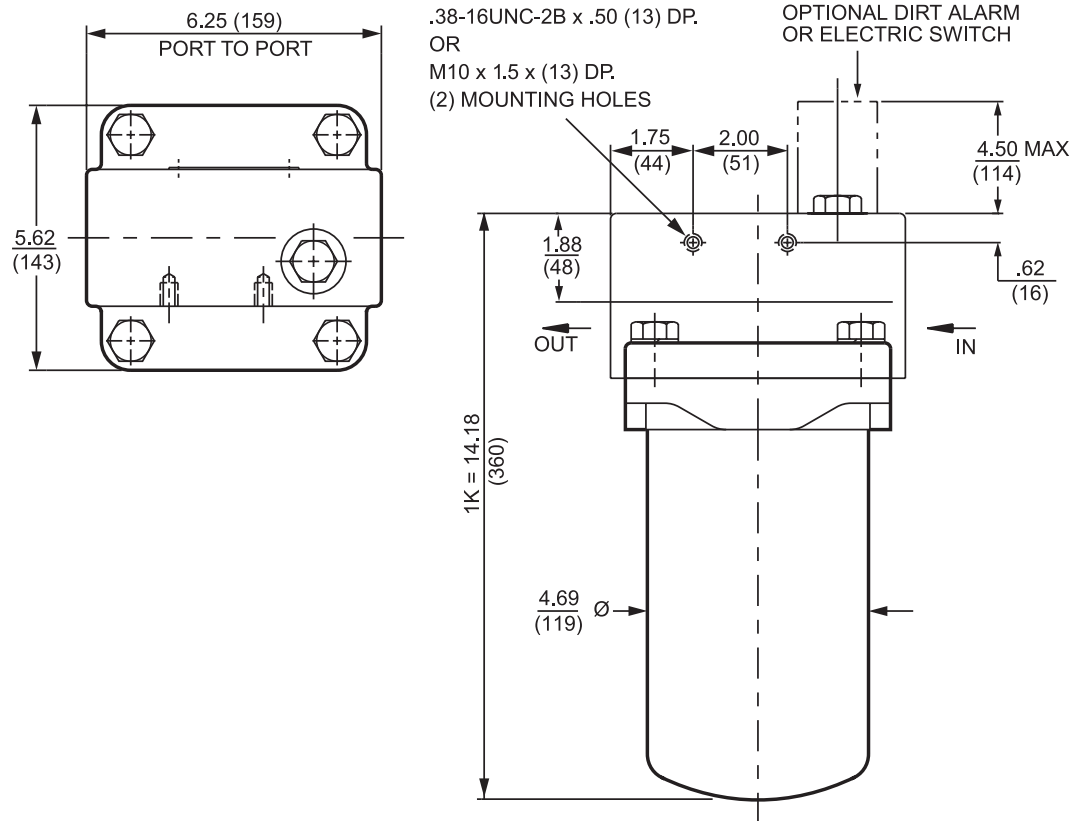
SSQLF15

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids     |
| Max. Operating Pressure:  | 500 psi (35 bar)                                          |
| Min. Yield Pressure:      | 1500 psi (100 bar) , per NFPA T2.6.1                      |
| Rated Fatigue Pressure:   | 300 psi (35 bar), per NFPA T2.6.1-2005                    |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 61 psi (4.2 bar) |
| Porting Head:             | Grey Cast Iron                                            |
| Element Case:             | Steel                                                     |
| Weight of KF5-1K:         | 23.2 lbs. (10.5 kg)                                       |
| Element Change Clearance: | 2.0" (51 mm)                                              |

### Filter Housing Specifications

|                        |                                                                                                                                                                                                      |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                          |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                                                                                                                                         |
| High Water Content     | All Z-Media® (synthetic), 3, 5 and 10 µ ASP® media (synthetic)                                                                                                                                       |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® media (synthetic)                                                                                                                                        |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic), 3, 5 and 10 µ ASP® media (synthetic)                                                                                                                         |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation, 3, 5 and 10 µ ASP® media (synthetic)                                        |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals & stainless steel wire mesh in element, and light oil coating on housing exterior), 3, 5 and 10 µ ASP® media (synthetic) |

### Fluid Compatibility



Metric dimensions in ( ).  
 Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
 For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1     | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10    | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25    | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1    | N/A                                                                                                            | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3    | N/A                                                                                                            | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5    | N/A                                                                                                            | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10   | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25   | N/A                                                                                                            | N/A                | N/A                | 15.4                                                                 | 18.5                   |

| Element    | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|------------|----------|---------|----------|---------|----------|
| KZ1        | 112      | KZW1    | 61       | KDZ1    | 89       |
| KZ3/KAS3   | 115      | KZW3    | 64       | KDZ3    | 71       |
| KZ5/KAS5   | 119      | KZW5    | 63       | KDZ5    | 100      |
| KZ10/KAS10 | 108      | KZW10   | 67       | KDZ10   | 80       |
| KZ25       | 93       | KZW25   | 79       | KDZ25   | 81       |

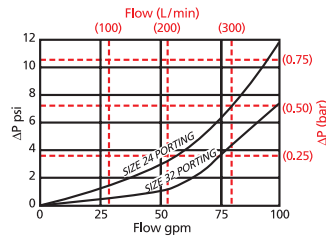
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

$\Delta P_{\text{housing}}$

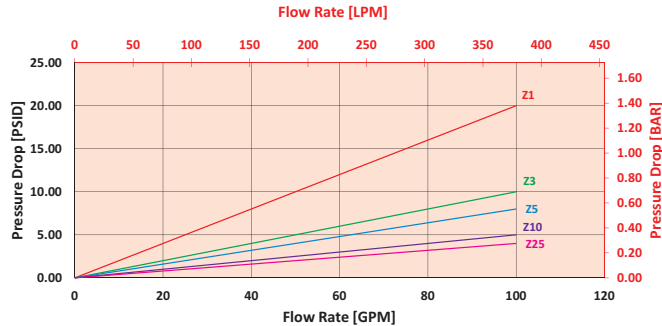
KF5  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 50 gpm (189.5 L/min) for KF51KZ10S24D5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the KF5 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm. In this case,  $\Delta P_{\text{element}}$  is 2 psi (.14 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 2 \text{ psi } [.14 \text{ bar}]$$

$$V_f = 200 \text{ SUS (42.6 cSt)} / 150 \text{ SUS (32 cSt)} = 1.3$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (2 \text{ psi} * 1.3) = 5.6 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.14 \text{ bar} * 1.3) = .40 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ |
|-------|------------|
| K3    | 0.25       |
| K10   | 0.09       |
| K25   | 0.02       |
| KAS3  | 0.10       |
| KAS5  | 0.08       |
| KAS10 | 0.05       |
| KDZ1  | 0.24       |
| KDZ3  | 0.12       |
| KDZ5  | 0.10       |
| KDZ10 | 0.06       |
| KDZ25 | 0.04       |
| KZW1  | 0.43       |
| KZW3  | 0.32       |
| KZW5  | 0.28       |
| KZW10 | 0.23       |
| KZW25 | 0.14       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder KF5:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| KF5   |       |       |       |       |       |       |       |       |        |

Example: NOTE: One option per box

| BOX 1           | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| KF5             | 1K    | Z     | 10    |       |       | P32   |       |       | D5     |
| = KF51KZ10P32D5 |       |       |       |       |       |       |       |       |        |

| BOX 1                                                     | BOX 2                                                                              | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | BOX 4                                                                                                                                                                                                                                      |
|-----------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Filter Series</b>                                      | <b>Number &amp; Size of Elements</b>                                               | <b>Media Type</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Micron Rating</b>                                                                                                                                                                                                                       |
| KF5                                                       | 1 K<br>GeoSeal® Options<br>1 KG                                                    | Omit = E media (Cellulose)<br>AS = Anti-Static Pleated media<br>Z = Excellement® Z-Media® (Synthetic)<br>ZW = Aqua-Excellement® ZW media<br>ZX = Excellement® Z-Media® (High Collapse Centertube)<br>W = Water Removal media<br>M = M media (Reusable Metal)<br>MXX = M media (reusable metal mesh; high collapse centertube)<br>DZ = DirtCatcher® Excellement® Z-Media®                                                                                                               | 1 = 1 μ (Z, ZW, ZX and DZ media)<br>3 = 3 μ (E, AS, Z, ZW, ZX and DZ media)<br>5 = 5 μ (AS, Z, ZW, ZX and DZ media)<br>10 = 10 μ (E, AS, Z, ZW,ZX, M and DZ media)<br>25 = 25 μ (E, Z, ZW, ZX, M, MXX and DZ media)<br>60 = 60 μ (M media) |
| KFN5<br>(Non-bypass;<br>req. ZX/MXX hi-collapse elements) |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                            |
| WKF5<br>(Water)                                           |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                            |
| WKF5<br>(Water)                                           |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                            |
| WKFN5<br>(Water)                                          |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                            |
| KGK5<br>(GeoSeal)                                         |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                            |
|                                                           | BOX 5                                                                              | BOX 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | BOX 7                                                                                                                                                                                                                                      |
|                                                           | <b>Seal Material</b>                                                               | <b>Magnetic Option</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Porting Options</b>                                                                                                                                                                                                                     |
|                                                           | Omit = Buna N<br><br>H = EPR<br><br>V = Viton®<br><br>H.5 = Skydrol® Compatibility | Omit = None<br><br>M = Magnet Inserts                                                                                                                                                                                                                                                                                                                                                                                                                                                  | P24 = 1½" NPTF<br>P32 = 2" NPTF<br>S24 = SAE-24<br>S32 = SAE-32<br>F24 = 1½" SAE split 4-bolt flange Code 61<br>B24 = ISO 228 G-1½"                                                                                                        |
|                                                           |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | BOX 8                                                                                                                                                                                                                                      |
|                                                           |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Bypass</b>                                                                                                                                                                                                                              |
|                                                           |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Omit = 40 PSI Bypass<br>50 = 50 PSI Bypass<br><br>(Omit Box 8 if a Non-bypassing filter is used)                                                                                                                                           |
|                                                           | BOX 9                                                                              | BOX 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                            |
|                                                           | <b>Test Port Options</b>                                                           | <b>Dirt Alarm® Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                            |
|                                                           | Omit = None<br>L = Two ¼" NPTF inlet and outlet female test ports                  | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                            |
|                                                           |                                                                                    | Visual<br>D = Pointer<br>D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                            |
|                                                           |                                                                                    | Visual with Thermal Lockout<br>D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                            |
|                                                           |                                                                                    | Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |                                                                                                                                                                                                                                            |
|                                                           |                                                                                    | Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                     |                                                                                                                                                                                                                                            |
|                                                           |                                                                                    | Electrical Visual<br>MS = Cam operated switch w/ ½" conduit female connection<br>MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                            |
|                                                           |                                                                                    | Electrical Visual with Thermal Lockout<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                            |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4 and 5.  
Example: KZ10V  
High collapse media only available with KFN5.

Box 5. For options H, V, and H.5, all aluminum parts are anodized.  
H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior.  
Viton® is a registered trademark of DuPont Dow Elastomers.  
Skydrol® is a registered trademark of Solutia Inc.

Box 7. B porting supplied with metric mounting holes.



# Medium Pressure Filter

**SRLT**



### Features and Benefits

- Smaller, compact version of the RLT
- Quick and easy cartridge element changeouts
- Lightweight at 3 pounds
- Offered in pipe, SAE straight thread and ISO 228 porting
- Available with NPTF inlet and outlet female test ports
- Various Dirt Alarm® options
- Same day shipment model available

**25 gpm**  
**100 L/min**  
**1400 psi**  
**100 bar**

GH

RLT

KF5

**SRLT**

K9

2K9

3K9

QF5

QF5i

2QF5/3QF5

QFD5

QF15

QLF15

SSQLF15

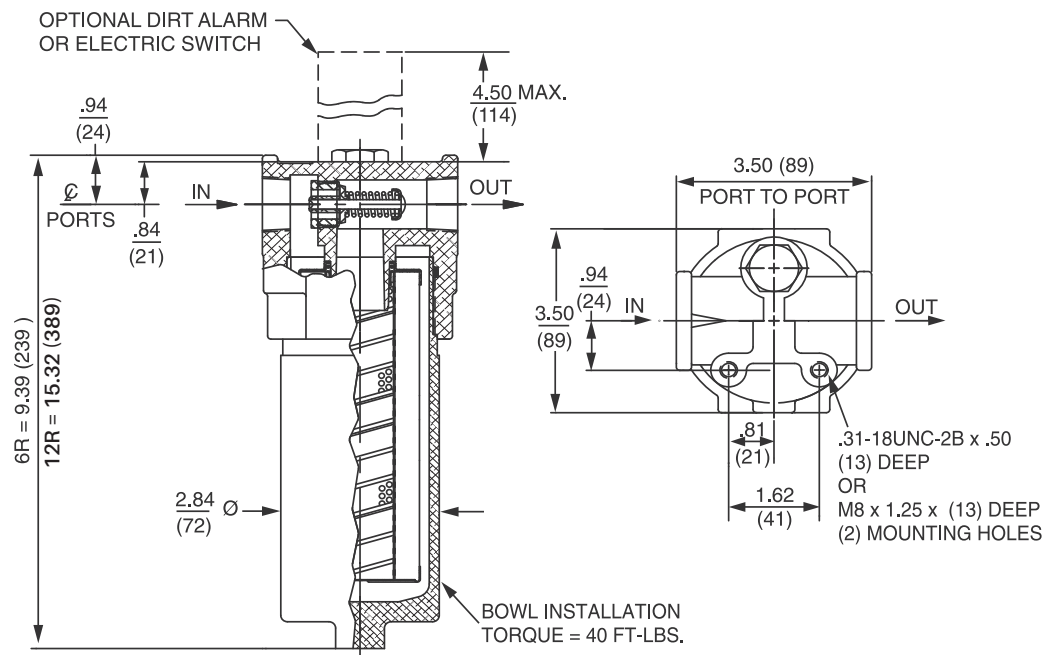
Model No. of filter in photograph is SRLT6RZ10S12D5.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 25 gpm (100 L/min) for 150 SUS (32 cSt) fluids      |
| Max. Operating Pressure:  | 1400 psi (100 bar)                                        |
| Min. Yield Pressure:      | 4000 psi (276 bar), per NFPA T2.6.1                       |
| Rated Fatigue Pressure:   | 750 psi (52 bar) per NFPA T2.6.1-R1-2005                  |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 55 psi (3.8 bar) |
| Porting Head:             | Aluminum                                                  |
| Element Case:             | Aluminum                                                  |
| Weight of SRLT-6R:        | 3.0 lbs. (1.4 kg)                                         |
| Weight of SRLT-12R:       | 4.5 lbs. (2 kg)                                           |
| Element Change Clearance: | 2.75" (70 mm)                                             |

### Filter Housing Specifications

| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media® (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility



Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 6RZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| 6RZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| 6RZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| 6RZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| 6RZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 6RZ1    | 15       | 12RZ1   | 30       |
| 6RZ3    | 15       | 12RZ3   | 30       |
| 6RZ5    | 17       | 12RZ5   | 34       |
| 6RZ10   | 14       | 12RZ10  | 28       |
| 6RZ25   | 25       | 12RZ25  | 50       |

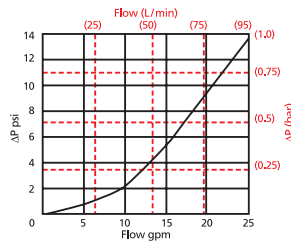
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 2.0" (50 mm) O.D. x 6.0" (150 mm) long

$\Delta P_{\text{housing}}$

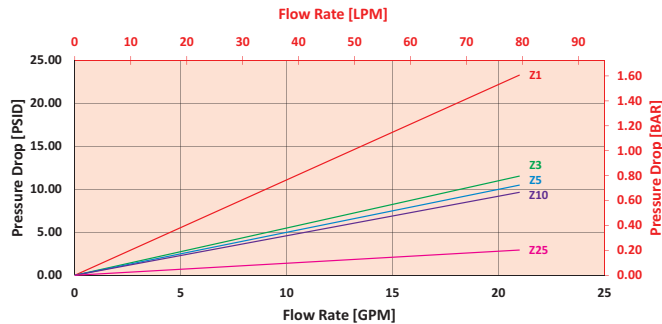
SRLT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

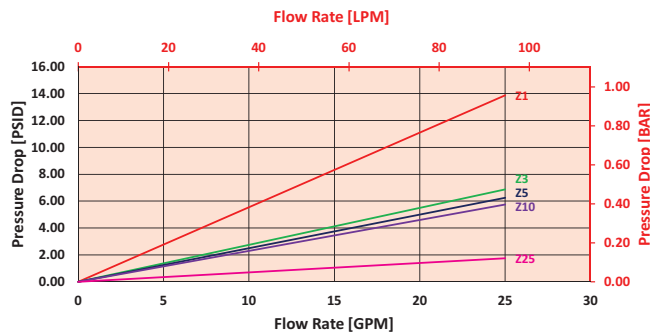
6RZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



12RZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for SRLT6RZ10S12D5 using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 5 psi (.34 bar) on the graph for the SRLT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the 6RZ10 element.

Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 5 \text{ psi } [.34 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 7 \text{ psi } [.48 \text{ bar}]$$

$$V_f = 100 \text{ SUS (21.3 cSt)} / 150 \text{ SUS (32 cSt)} = .67$$

$$\Delta P_{\text{filter}} = 5 \text{ psi} + (7 \text{ psi} * .67) = 9.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .34 \text{ bar} + (.48 \text{ bar} * .67) = .66 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele. | $\Delta P$ |
|------|------------|
| 6R3  | 0.45       |
| 6R10 | 0.38       |

Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## How to Build a Valid Model Number for a Schroeder SRLT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| SRLT  |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| SRLT  | 6     | RZ10  |       | S12   |       |       | D5    |

= SRLT6RZ10S12D5

| BOX 1                                               | BOX 2                  | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series                                       | Length of Element (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SRLT<br>(requires RZ elements only)                 | 6                      | RZ1 = R size 1 µ Excellement® Z-Media® (synthetic)<br>RZ3 = R size 3 µ Excellement® Z-Media® (synthetic)<br>RZ5 = R size 5 µ Excellement® Z-Media® (synthetic)<br>RZ10 = R size 10 µ Excellement® Z-Media® (synthetic)<br>RZ25 = R size 25 µ Excellement® Z-Media® (synthetic)<br>RW = R size W media (water removal)<br>R5Z1 = R size 1 µ Excellement® Z-Media® 500 psid collapse<br>R5Z3 = R size 3 µ Excellement® Z-Media® 500 psid collapse<br>R5Z5 = R size 5 µ Excellement® Z-Media® 500 psid collapse<br>R5Z10 = R size 10 µ Excellement® Z-Media® 500 psid collapse<br>R5Z25 = R size 25 µ Excellement® Z-Media® 500 psid collapse |
| SRLTN<br>(Non-bypassing requires R5Z elements only) | 12                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| BOX 4                        | BOX 5              |
|------------------------------|--------------------|
| Seal Material                | Porting            |
| Omit = Buna N                | P12 = ¾" NPTF      |
| H = EPR                      | S12 = SAE-12       |
| V = Viton®                   | B12 = ISO 228 G-¾" |
| H.5 = Skydrol® Compatibility |                    |

| BOX 6                        | BOX 7                                              |
|------------------------------|----------------------------------------------------|
| Bypass                       | Test Points                                        |
| Omit = 40 psi bypass setting | Omit = None                                        |
| 30 = 30 psi bypass setting   | L = Two ⅛" NPTF inlet and outlet female test ports |
| 50 = 50 psi bypass setting   |                                                    |
| 60 = 60 psi bypass setting   |                                                    |

| BOX 8                                  |                                                                     |
|----------------------------------------|---------------------------------------------------------------------|
| Dirt Alarm® Options                    |                                                                     |
| Omit = None                            |                                                                     |
| Visual                                 | D5 = Visual pop-up                                                  |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout                                      |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable               |
|                                        | MS5LC = Low current MS5                                             |
|                                        | MS10 = Electrical w/ DIN connector (male end only)                  |
|                                        | MS10LC = Low current MS10                                           |
|                                        | MS11 = Electrical w/ 12 ft. 4-conductor wire                        |
|                                        | MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)  |
|                                        | MS12LC = Low current MS12                                           |
|                                        | MS16 = Electrical w/ weather packed sealed connector                |
|                                        | MS16LC = Low current MS16                                           |
|                                        | MS17LC = Electrical w/ 4 pin Brad Harrison male connector           |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout                           |
|                                        | MS5LCT = Low current MS5T                                           |
|                                        | MS10T = MS10 (see above) w/ thermal lockout                         |
|                                        | MS10LCT = Low current MS10T                                         |
|                                        | MS12T = MS12 (see above) w/ thermal lockout                         |
|                                        | MS12LCT = Low current MS12T                                         |
| Electrical Visual                      | MS16T = MS16 (see above) w/ thermal lockout                         |
|                                        | MS16LCT = Low current MS16T                                         |
|                                        | MS17LCT = Low current MS17T                                         |
|                                        | MS13 = Supplied w/ threaded connector & light                       |
| Electrical Visual with Thermal Lockout | MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end) |
|                                        | MS13DCT = MS13 (see above), direct current, w/ thermal lockout      |
|                                        | MS13DCLCT = Low current MS13DCT                                     |
|                                        | MS14DCT = MS14 (see above), direct current, w/ thermal lockout      |
|                                        | MS14DCLCT = Low current MS14DCT                                     |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.  
Example: 6R3V

Box 3. E media elements are only available with Buna N seals.

Box 4. For options H, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 5. B porting option supplied with metric mounting holes.

# Medium Pressure Filter

**K9**



## Features and Benefits (K9)

- Extremely versatile multiple inlet and outlet ports; can be used alone or in series with another K9
- Top loading for easy access for element change-out
- Allows consolidation of inventoried replacement elements by using K-size elements
- Multiple inlet and outlet porting options reduce the need for additional adaptors on installation
- Can be fitted with test ports for oil sampling
- Small profile allows filter to be mounted in tight areas
- Various Dirt Alarm® options
- Meets HF4 automotive standard



Part of Schroeder Industries Energy Savings Initiative

**100 gpm**  
**380 L/min**  
**900 psi**  
**60 bar**

GH

RLT

KF5

SRLT

**K9**

2K9

3K9

QF5

QF5i

2QF5/3QF5

QFD5

QF15

QLF15

SSQLF15

Model No. of filter in photograph is K91KZ5BP20NP20ND5C.

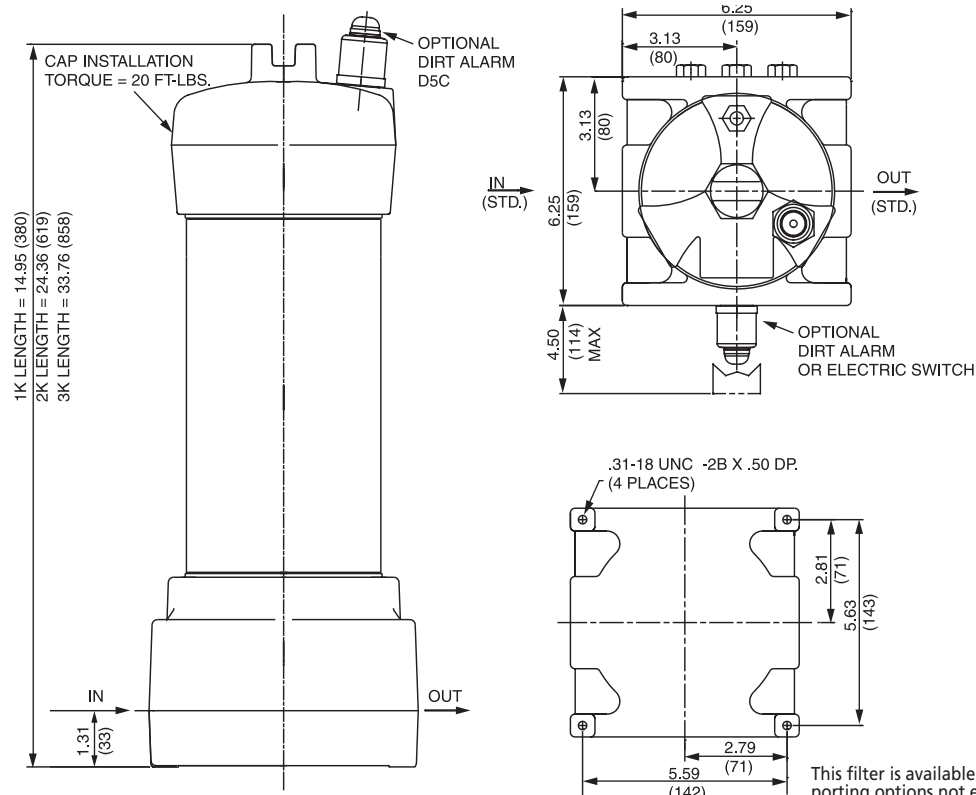
|                           |                                                                       |
|---------------------------|-----------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids                 |
| Max. Operating Pressure:  | 900 psi (60 bar)                                                      |
| Min. Yield Pressure:      | 3200 psi (220 bar), per NFPA T2.6.1                                   |
| Rated Fatigue Pressure:   | 750 psi (52 bar) per NFPA T2.6.1-R1-2005                              |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                       |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)<br>Full Flow: 80 psi (5.5 bar)             |
| Porting Head & Cap:       | Cast Aluminum                                                         |
| Element Case:             | Steel                                                                 |
| Weight of K9-1K:          | 19 lbs. (8.6 kg)                                                      |
| Weight of K9-2K:          | 30 lbs. (13.6 kg)                                                     |
| Weight of K9-3K:          | 41 lbs. (18.6 kg)                                                     |
| Element Change Clearance: | 8.50" (215 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K |

## Filter Housing Specifications

| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                            |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                                                                                                                                           |
| High Water Content     | All Z-Media® (synthetic), 3, 5 and 10 µ ASP® media (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® media (synthetic)                                                                                                                                          |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic), 3, 5 and 10 µ ASP® media (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation, 3, 5 and 10 µ ASP® media (synthetic)                                          |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior), 3, 5 and 10 µ ASP® Media (synthetic) |

## Fluid Compatibility

# K9 Medium Pressure Filter



Metric dimensions in ( ).  
 Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
 For complete dimensions please contact Schroeder Industries to request a certified print.

## Element Performance Information & Dirt Holding Capacity

| Element           | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|-------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                   | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KAS3/KKZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KAS5/KKZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KAS10/KKZ10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25/27KZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1              | N/A                                                                                                            | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3        | N/A                                                                                                            | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5        | N/A                                                                                                            | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10      | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25      | N/A                                                                                                            | N/A                | N/A                | 15.4                                                                 | 18.5                   |

### Dirt Holding Capacity

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|---------|----------|
| KZ1     | 112      | KKZ1    | 224      | 27KZ1   | 336      | KZW1    | 61       |
| KZ3     | 115      | KKZ3    | 230      | 27KZ3   | 345      | KZW3    | 64       |
| KZ5     | 119      | KKZ5    | 238      | 27KZ5   | 357      | KZW5    | 63       |
| KZ10    | 108      | KKZ10   | 216      | 27KZ10  | 324      | KZW10   | 57       |
| KZ25    | 93       | KKZ25   | 186      | 27KZ25  | 279      | KZW25   | 79       |
|         |          |         |          |         |          | KKZW3   | 128      |
|         |          |         |          |         |          | KKZW5   | 126      |
|         |          |         |          |         |          | KKZW10  | 114      |
|         |          |         |          |         |          | KKZW25  | 158      |

Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

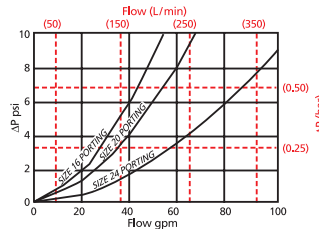
Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
 KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
 27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

# Medium Pressure Filter

**K9**

$\Delta P_{\text{housing}}$

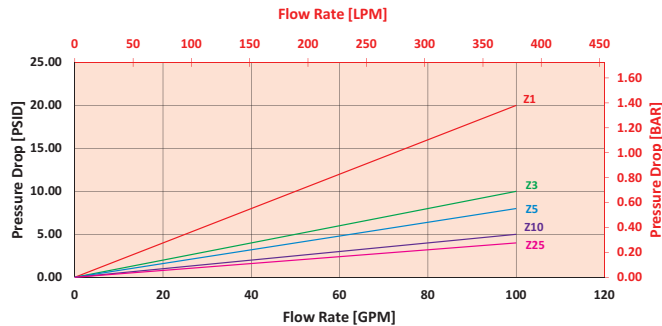
K9  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

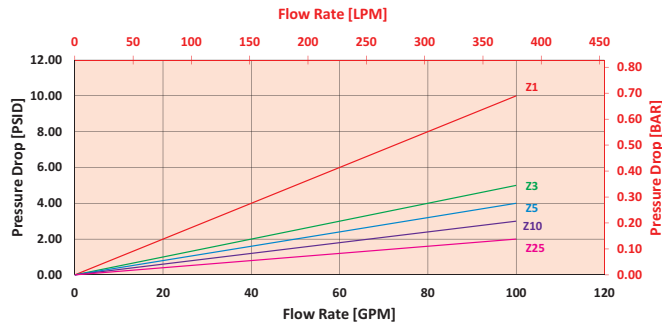
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 50 gpm (189.5 L/min) for K91KZ10BP16NP16ND5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 8 psi (.55 bar) on the graph for the K9 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm. In this case,  $\Delta P_{\text{element}}$  is 2 psi (.14 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 8 \text{ psi } [.55 \text{ bar}] \mid \Delta P_{\text{element}} = 2 \text{ psi } [.14 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 8 \text{ psi} + (2 \text{ psi} * 1.1) = 10.2 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .55 \text{ bar} + (.14 \text{ bar} * 1.1) = .70 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

Note:

If your element is not graphed, use the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.    | $\Delta P$ | Ele.    | $\Delta P$ |
|-------|------------|---------|------------|---------|------------|
| K3    | 0.25       | 2K3/    | 0.12       | 3KZ1/   | 0.05       |
|       |            | KK3     |            | 27KZ1   |            |
| K10   | 0.09       | 2K10/   | 0.05       | 3KZ3/   | 0.03       |
|       |            | KK10    |            | 27KZ3   |            |
| K25   | 0.02       | 2K25/   | 0.01       | 3KZ5/   | 0.02       |
|       |            | KK25    |            | 27KZ5   |            |
| KAS3  | 0.10       | 2KAS3/  | 0.05       | 3KZ10/  | 0.02       |
|       |            | KKAS3   |            | 27KZ10  |            |
| KAS5  | 0.08       | 2KAS5/  | 0.04       | 3KZ25/  | 0.01       |
|       |            | KKAS5   |            | 27KZ25  |            |
| KAS10 | 0.05       | 2KAS10/ | 0.03       | 3K3     | 0.08       |
|       |            | KKAS10  |            |         |            |
| KZX10 | 0.22       | 2KZX10/ | 0.11       | 3K10    | 0.03       |
|       |            | KKZX10  |            |         |            |
| KZW1  | 0.43       | 2KZW1   | -          | 3K25    | 0.01       |
| KZW3  | 0.32       | 2KZW3/  | 0.16       | 3KAS3/  | 0.03       |
|       |            | KKZW3   |            | 27KAS3  |            |
| KZW5  | 0.28       | 2KZW5/  | 0.14       | 3KAS5/  | 0.02       |
|       |            | KKZW5   |            | 27KAS5  |            |
| KZW10 | 0.23       | 2KZW10/ | 0.12       | 3KAS10/ | 0.02       |
|       |            | KKZW10  |            | 27KAS10 |            |
| KZW25 | 0.14       | 2KZW25/ | 0.07       | 3KZX10/ | 0.07       |
|       |            | KKZW25  |            | 27KZX10 |            |



Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder K9:

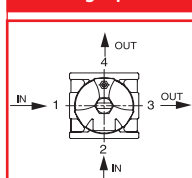
| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| K9    |       |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1                | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6       | BOX 7 | BOX 8 | BOX 9 |
|----------------------|-------|-------|-------|-------|-------------|-------|-------|-------|
| K9                   | 1K    | Z     | 10    | B     | P16 N P16 N |       |       | D5    |
|                      |       |       |       |       |             |       |       |       |
| = K91KZ10BP16NP16ND5 |       |       |       |       |             |       |       |       |

| BOX 1         | BOX 2                      | BOX 3                                                                                                                                                                                                                                                            | BOX 4                                                                                                                                                                                                                                 | BOX 5                                                               |
|---------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Filter Series | Number & Size of Elements  | Media Type                                                                                                                                                                                                                                                       | Micron Rating                                                                                                                                                                                                                         | Seal Material                                                       |
| K9            | 1 K, KK, 27K<br>2 K<br>3 K | Omit = E-media (cellulose)<br>Z = Excellement® Z-Media®<br>AS = Anti-Stat Pleat media (synthetic)<br>ZW = Aqua-Excellement® ZW media<br>ZX = Excellement® Z-Media® (high collapse center tube)<br>W = W media (water removal)<br>M = media (reusable metal mesh) | 1 = 1 µ Z, ZW, ZX media<br>3 = 3 µ AS, E, Z, ZW, ZX media<br>5 = 5 µ AS, Z, ZW, ZX media<br>10 = 10 µ AS, E, M, Z, ZW, ZX media<br>25 = 25 µ E, M, Z, ZW, ZX media<br>60 = 60 µ M media<br>150 = 150 µ M media<br>260 = 260 µ M media | B = Buna N<br>V = Viton®<br>H = EPR<br>H.5 = Skydrol® Compatibility |

## Porting Options



## BOX 6 Specification of all 4 ports is required

| Porting                                                                                                                                                                                       |                                                                                                                                                                                                                                                              |                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         | Bypass                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port 1 (standard)                                                                                                                                                                             | Port 2                                                                                                                                                                                                                                                       | Port 3                                                                                                                                                                                        | Port 4                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                    |
| N = None<br>P16 = 1" NPTF<br>P20 = 1 1/4" NPTF<br>P24 = 1 1/2" NPTF<br>S16 = SAE-16<br>S20 = SAE-20<br>S24 = SAE-24<br>B16 = ISO 228 G-1"<br>B20 = ISO 228 G-1 1/4"<br>B24 = ISO 228 G-1 1/2" | N = None<br>F16 = 1" SAE 4-bolt flange Code 61<br>F20 = 1 1/4" SAE 4-bolt flange Code 61<br>F24 = 1 1/2" SAE 4-bolt flange Code 61<br>S16 = SAE-16<br>S20 = SAE-20<br>S24 = SAE-24<br>B16 = ISO 228 G-1"<br>B20 = ISO 228 G-1 1/4"<br>B24 = ISO 228 G-1 1/2" | N = None<br>P16 = 1" NPTF<br>P20 = 1 1/4" NPTF<br>P24 = 1 1/2" NPTF<br>S16 = SAE-16<br>S20 = SAE-20<br>S24 = SAE-24<br>B16 = ISO 228 G-1"<br>B20 = ISO 228 G-1 1/4"<br>B24 = ISO 228 G-1 1/2" | N = None<br>P16 = 1" NPTF<br>P20 = 1 1/4" NPTF<br>P24 = 1 1/2" NPTF<br>F16 = 1" SAE 4-bolt flange Code 61<br>F20 = 1 1/4" SAE 4-bolt flange Code 61<br>F24 = 1 1/2" SAE 4-bolt flange Code 61<br>S16 = SAE-16<br>S20 = SAE-20<br>S24 = SAE-24<br>B16 = ISO 228 G-1"<br>B20 = ISO 228 G-1 1/4"<br>B24 = ISO 228 G-1 1/2" | Omit=40 PSI Bypass<br>X=Blocked bypass<br>10=10 psi bypass setting<br>20=20 psi bypass setting<br>25=25 psi bypass setting<br>30=30 psi bypass setting<br>60=60 psi bypass setting |

## BOX 8

| Test Points                                                                                      |
|--------------------------------------------------------------------------------------------------|
| Omit=None<br>U=Test point in cap (upstream)<br>UU=Test points in block (upstream and downstream) |

## BOX 9

| Dirt Alarm® Options                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Omit = None                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Visual                                 | D5 = Visual pop-up<br>D5C = D5 in cap                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout<br>D8C = D8 in cap                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                     |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

## NOTES:

Box 2. Double and triple stacking of K-size elements can be replaced by KK and 27K elements, respectively. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5.

Box 5. For options H, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 9. If location 1 is used as inlet port, dirt alarm will occupy location 2. If location 2 is used as inlet port, dirt alarm will occupy location 1. If dual inlet ports are specified, the only dirt alarm option is pop-up indicator in cap (D5C).

# Single Pass Filter Kit

## 2K9/3K9



### Features and Benefits

- Two or three patented-pending K9 filters supplied in series as a single filter assembly providing in-line single pass particulate and water filtration
- Meets HF4 automotive standard
- 900 psi rating covers almost all transfer line pressure specs including air driven transfer systems
- Top loading for easy access for element change out
- Allows consolidation of inventoried elements by using K-size elements
- Can be fitted with test points for oil sampling

**100 gpm**  
**380 L/min**  
**900 psi**  
**60 bar**

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

2QF5/3QF5

QFD5

QF15

QLF15

SSQLF15

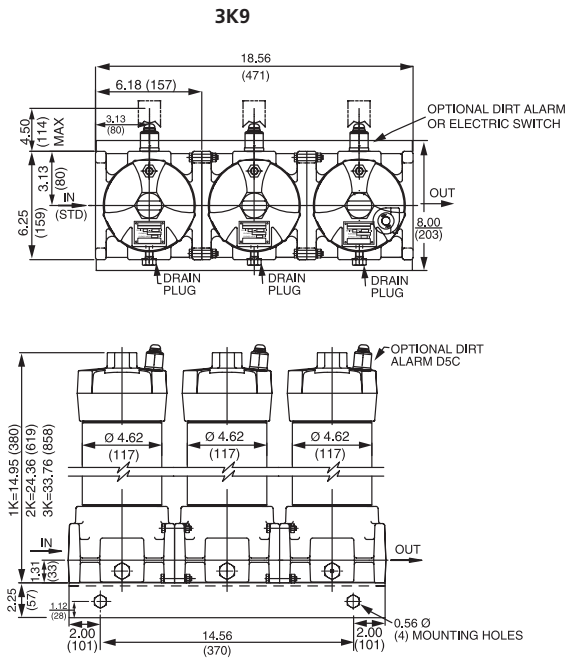
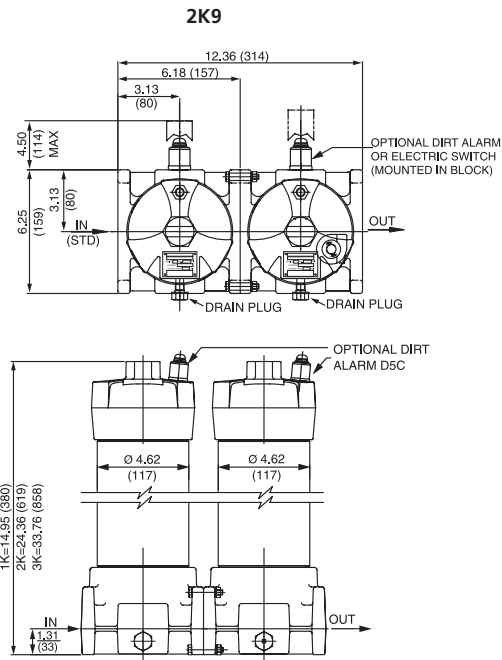
Model No. of filters in photograph are 3K9127EDBBP20P20UUD5C and Custom 2K9.

|                           |                                                                         |
|---------------------------|-------------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids                   |
| Max. Operating Pressure:  | 900 psi (60 bar)                                                        |
| Min. Yield Pressure:      | 3200 psi (220 bar), per NFPA T2.6.1                                     |
| Rated Fatigue Pressure:   | 750 psi (52 bar) per NFPA T2.6.1-R1-2005                                |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                         |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar) each filter housing                          |
| Porting Base & Cap:       | Cast Aluminum                                                           |
| Element Case:             | Steel                                                                   |
| Element Change Clearance: | 8.50" (215 mm) for 1K; 17.5" (445 mm) for KK;<br>26.5" (673 mm) for 27K |

### Filter Housing Specifications

| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                            |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All Z-Media® and ASP® media (synthetic)                                                                                                                                                                |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                                                                                                                                                |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                                                                                                                                   |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media®, 3, 5 and 10 µ ASP® media (synthetic)                                                                                                                                       |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                                                                |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior), 3, 5 and 10 µ ASP® Media (synthetic) |

### Fluid Compatibility



Metric dimensions in ( ).  
Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
For complete dimensions please contact Schroeder Industries to request a certified print.

## Element Performance Information & Dirt Holding Capacity

| Element           | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|-------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                   | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KKZ3/27KZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KKZ5/27KZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KKZ10/27KZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25/27KZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1              | N/A                                                                                                            | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3        | N/A                                                                                                            | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5        | N/A                                                                                                            | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10      | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25      | N/A                                                                                                            | N/A                | N/A                | 15.4                                                                 | 18.5                   |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
| KZ1     | 112      | KKZ1    | 224      | 27KZ1   | 336      | KZW1    | 61       | KKZW3   | 128      |
| KZ3     | 115      | KKZ3/   | 230      | 27KZ3   | 345      | KZW3    | 64       | KKZW5   | 126      |
| KZ5     | 119      | KKZ5    | 238      | 27KZ5   | 357      | KZW5    | 63       | KKZW10  | 114      |
| KZ10    | 108      | KKZ10   | 216      | 27KZ10  | 324      | KZW10   | 57       | KKZW25  | 158      |
| KZ25    | 93       | KKZ25   | 186      | 27KZ25  | 279      | KZW25   | 79       |         |          |

Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

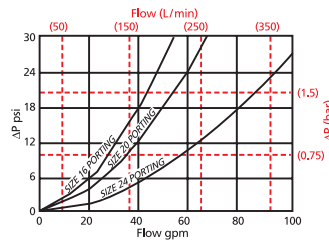
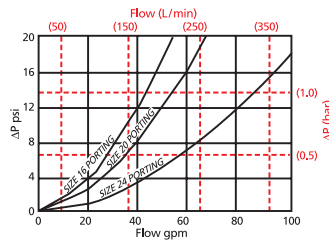
Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

# Single Pass Filter Kit

## 2K9/3K9

$\Delta P_{\text{housing}}$

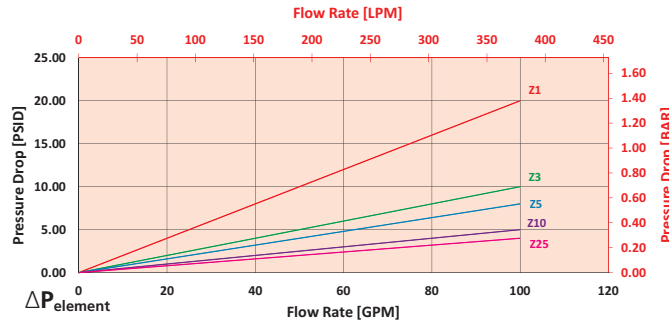
2K9/3K9  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

KZ

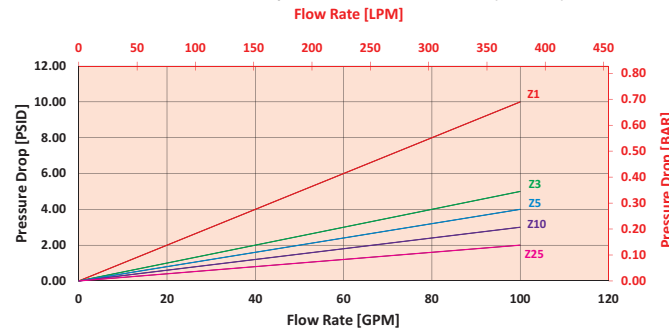
Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$\Delta P_{\text{element}}$

2KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 50 gpm (189.5 L/min) for 2K9109DBBP16P16D5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 50 gpm. In this case,  $\Delta P_{\text{housing}}$  is 16 psi (1.1 bar) on the graph for the 2K9 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 50 gpm for the first element. In this case,  $\Delta P_{\text{element}}$  is 2 psi (.14 bar) according to the graph for the KZ10 element.

Use the element pressure curve to determine  $\Delta P_{\text{element}^2}$  at 50 gpm for the first element. In this case,  $\Delta P_{\text{element}}$  is 5 psi (.34 bar) according to the graph for the KZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 16 \text{ psi [1.1 bar]} \mid \Delta P_{\text{element}^1} = 2 \text{ psi [.14 bar]} \mid \Delta P_{\text{element}^2} = 5 \text{ psi [.34 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 16 \text{ psi} + (2 \text{ psi} * 1.1) + (5 \text{ psi} * 1.1) = 23.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 1.1 \text{ bar} + (.14 \text{ bar} * 1.1) + (.34 * 1.1) = 1.6 \text{ bar}$$

**Pressure Drop Information**  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.           | $\Delta P$ | Ele.            | $\Delta P$ |
|-------|------------|----------------|------------|-----------------|------------|
| K3    | 0.25       | 2K3/ KK3       | 0.12       | 3K21/ 27K21     | 0.05       |
| K10   | 0.09       | 2K10/ KK10     | 0.05       | 3K23/ 27K23     | 0.03       |
| K25   | 0.02       | 2K25/ KK25     | 0.01       | 3K25/ 27K25     | 0.02       |
| KAS3  | 0.10       | 2KAS3/ KKAS3   | 0.05       | 3K210/ 27K210   | 0.02       |
| KAS5  | 0.08       | 2KAS5/ KKAS5   | 0.04       | 3K225/ 27K225   | 0.01       |
| KAS10 | 0.05       | 2KAS10/ KKAS10 | 0.03       | 3K3             | 0.08       |
| KZX10 | 0.22       | 2KZX10/ KKZX10 | 0.11       | 3K10            | 0.03       |
| KZW1  | 0.43       | 2KZW1          | -          | 3K25            | 0.01       |
| KZW3  | 0.32       | 2KZW3/ KKZW3   | 0.16       | 3KAS3/ 27KAS3   | 0.03       |
| KZW5  | 0.28       | 2KZW5/ KKZW5   | 0.14       | 3KAS5/ 27KAS5   | 0.02       |
| KZW10 | 0.23       | 2KZW10/ KKZW10 | 0.12       | 3KAS10/ 27KAS10 | 0.02       |
| KZW25 | 0.14       | 2KZW25/ KKZW25 | 0.07       | 3KZX10/ 27KZX10 | 0.07       |

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder 2K9:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 | BOX 12 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| 2K9   |       |       |       |       |       |       |       |       |        |        |        |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 | BOX 12 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| 2K9   | 1     | 09    | D     | B     | B     | B     | P16   | P16   |        | D5     |        |

= 2K9109DBBBP16P16D5

| BOX 1  | BOX 2              | BOX 3                                         | BOX 4                                                                                                                                                                                                                            | BOX 5                                                                                                                                                                                                                            | BOX 6                                                                                                                                                                                                                                                                                        |
|--------|--------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter | Number of Elements | Length of Elements                            | First Housing Element Micron Rating                                                                                                                                                                                              | Second Housing Element Micron Rating                                                                                                                                                                                             | Third Housing                                                                                                                                                                                                                                                                                |
| 2K9    | 1                  | 09 = K-Size Element                           | A = 1 µ Z-Media®<br>B = 3 µ Z-Media®<br>C = 5 µ Z-Media®                                                                                                                                                                         | A = 1 µ Z-Media®<br>B = 3 µ Z-Media®<br>C = 5 µ Z-Media®                                                                                                                                                                         | A = 1 µ Z-Media®<br>B = 3 µ Z-Media®<br>C = 5 µ Z-Media®<br>D = 10 µ Z-Media®<br>E = 25 µ Z-Media®<br>F = W Water Removal<br>G = 1 µ ZW-media<br>H = 3 µ ZW-media<br>J = 5 µ ZW-media<br>K = 10 µ ZW-media<br>L = 25 µ ZW-media<br>M = 3 µ AS-media<br>N = 5 µ AS-media<br>O = 10 µ AS-media |
| 3K9    | 2<br>3             | 18 = KK Size Element<br>27 = 27K Size Element | D = 10 µ Z-Media®<br>E = 25 µ Z-Media®<br>F = W Water Removal<br>G = 1 µ ZW-media<br>H = 3 µ ZW-media<br>J = 5 µ ZW-media<br>K = 10 µ ZW-media<br>L = 25 µ ZW-media<br>M = 3 µ AS-media<br>N = 5 µ AS-media<br>O = 10 µ AS-media | D = 10 µ Z-Media®<br>E = 25 µ Z-Media®<br>F = W Water Removal<br>G = 1 µ ZW-media<br>H = 3 µ ZW-media<br>J = 5 µ ZW-media<br>K = 10 µ ZW-media<br>L = 25 µ ZW-media<br>M = 3 µ AS-media<br>N = 5 µ AS-media<br>O = 10 µ AS-media | D = 10 µ Z-Media®<br>E = 25 µ Z-Media®<br>F = W Water Removal<br>G = 1 µ ZW-media<br>H = 3 µ ZW-media<br>J = 5 µ ZW-media<br>K = 10 µ ZW-media<br>L = 25 µ ZW-media<br>M = 3 µ AS-media<br>N = 5 µ AS-media<br>O = 10 µ AS-media                                                             |

| BOX 7                                                            | BOX 8                                                                                                                                                                                                                                                                                                                   | BOX 9                                                                                                                                                                                                                                                                                                                   | BOX 10                                                     |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Seal Material                                                    | "In" Porting                                                                                                                                                                                                                                                                                                            | "Out" Porting                                                                                                                                                                                                                                                                                                           | Bypass                                                     |
| B = Buna N<br>V = Viton®<br>H = EPR<br>H.5 = Skydrol® Compatible | P16 = 1" NPTF<br>P20 = 1 1/4" NPTF<br>P24 = 1 1/2" NPTF<br><br>B16 = ISO 228 G-1"<br>B20 = ISO 228 G-1 1/4"<br>B24 = ISO 228 G-1 1/2"<br><br>F16 = 1" SAE 4-bolt flange Code 61<br>F20 = 1 1/4" SAE 4-bolt flange Code 61<br>F24 = 1 1/2" SAE 4-bolt flange Code 61<br><br>S16 = SAE-16<br>S20 = SAE-20<br>S24 = SAE-24 | P16 = 1" NPTF<br>P20 = 1 1/4" NPTF<br>P24 = 1 1/2" NPTF<br><br>B16 = ISO 228 G-1"<br>B20 = ISO 228 G-1 1/4"<br>B24 = ISO 228 G-1 1/2"<br><br>F16 = 1" SAE 4-bolt flange Code 61<br>F20 = 1 1/4" SAE 4-bolt flange Code 61<br>F24 = 1 1/2" SAE 4-bolt flange Code 61<br><br>S16 = SAE-16<br>S20 = SAE-20<br>S24 = SAE-24 | Omit=40 PSI Bypass<br>30=30 psi bypass<br>50=50 psi bypass |

| BOX 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | BOX 12                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Test Points                                         |
| Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Omit = None                                         |
| Visual<br>D5 = Visual pop-up<br>D5C = D5 in cap                                                                                                                                                                                                                                                                                                                                                                                                                                        | U = Test point in cap (upstream)                    |
| Visual with Thermal Lockout<br>D8 = Visual w/ thermal lockout<br>D8C = D8 in cap                                                                                                                                                                                                                                                                                                                                                                                                       | UU = Test points in block (upstream and downstream) |
| Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |                                                     |
| Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                     |                                                     |
| Electrical Visual<br>MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                              |                                                     |
| Electrical Visual with Thermal Lockout<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                       |                                                     |

#### NOTES:

Box 2. Double and triple stacking of K-size elements can be replaced by KK and 27K elements, respectively. Number of elements must equal 1 when using KK or 27K elements. ZW media not available in 27K length.

Box 4 & 5. Replacement element part numbers are identical to K9 replacement parts. Please reference page 184.

Box 6. For options H, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 12. Option UU not available in combination with indicator in block.



Model No. of filter in photograph is QF539QZ10P32.

Features and Benefits

- Element changeout from the top minimizes oil spillage
- Available with optional core assembly to accommodate coreless elements
- Offered with standard Q, QPML deep-pleated and QCLQF coreless elements in 16" and 39" lengths with standard Viton® seals
- Offered in pipe, SAE straight thread, and flange porting
- Optional inlet and outlet test points
- WQF5 model for water service also available
- Various Dirt Alarm® options

300 gpm  
*1135 L/min*  
500 psi  
*35 bar*

GH  
RLT  
KF5  
SRLT  
K9  
2K9  
3K9  
QF5  
QF5i  
2QF5/3QF5

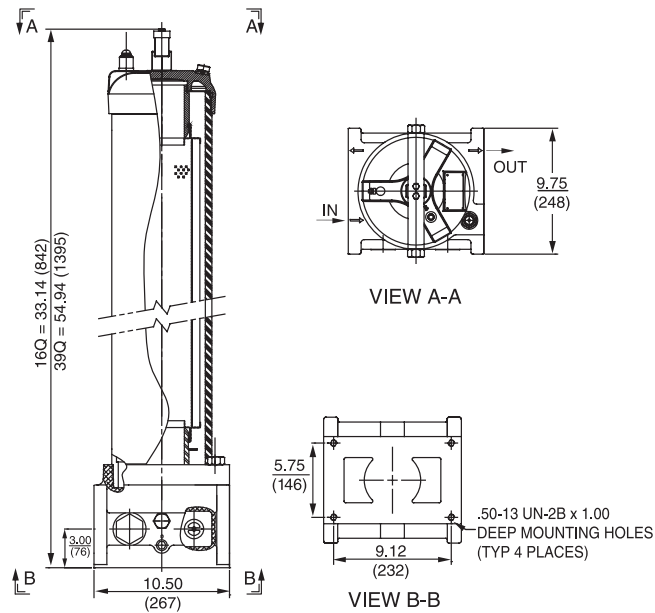
|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 300 gpm (1135 L/min) for 150 SUS (32 cSt) fluids    |
| Max. Operating Pressure:  | 500 psi (35 bar)                                          |
| Min. Yield Pressure:      | 2500 psi (172 bar), per NFPA T2.6.1-R1-2005               |
| Rated Fatigue Pressure:   | Contact Factory                                           |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 30 psi (2.1 bar)<br>Full Flow: 55 psi (3.8 bar) |
| Porting Base:             | Cast Aluminum                                             |
| Element Case:             | Steel                                                     |
| Cap:                      | Ductile Iron                                              |
| Weight of QF516:          | 85 lbs. (39 kg)                                           |
| Weight of QF539:          | 120 lbs. (55 kg)                                          |
| Element Change Clearance: | 16Q 12.0" (205 mm)<br>39Q 33.8" (859 mm)                  |

Filter Housing Specifications

QFD5  
QF15  
QLF15  
SSQLF15

| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All Z-Media® and ASP® media (synthetic)                                                                                                                                                         |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                                                                                                                            |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® Media (synthetic)                                                                                                                                       |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic)                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP® media (synthetic) |

Fluid Compatibility



Metric dimensions in ( ).  
 Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
 For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated<br>per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|-------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                                 | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 16Q     | Z1/CLQFZ1/PMLZ1                                                                                                   | <1.0               | <1.0               | <1.0                                                                 | <4.0 4.2                 |
|         | Z3/CLQFZ3/PMLZ3                                                                                                   | <1.0               | <1.0               | <2.0                                                                 | <4.0 4.8                 |
|         | Z5/CLQFZ5/PMLZ5                                                                                                   | 2.5                | 3.0                | 4.0                                                                  | 4.8 6.3                  |
|         | Z10/CLQFZ10/PMLZ10                                                                                                | 7.4                | 8.2                | 10.0                                                                 | 8.0 10.0                 |
|         | Z25/CLQFZ25/PMLZ25                                                                                                | 18.0               | 20.0               | 22.5                                                                 | 19.0 24.0                |
| 39Q     | Z1/CLQFZ1/PMLZ1                                                                                                   | <1.0               | <1.0               | <1.0                                                                 | <4.0 4.2                 |
|         | Z3/CLQFZ3/PMLZ3                                                                                                   | <1.0               | <1.0               | <2.0                                                                 | <4.0 4.8                 |
|         | Z5/CLQFZ5/PMLZ5                                                                                                   | 2.5                | 3.0                | 4.0                                                                  | 4.8 6.3                  |
|         | Z10/CLQFZ10/PMLZ10                                                                                                | 7.4                | 8.2                | 10.0                                                                 | 8.0 10.0                 |

| Element |     | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|-----|----------|---------|----------|---------|----------|
| 16Q     | Z1  | 276      | CLQFZ1  | 307      | PMLZ1   | 307      |
|         | Z3  | 283      | CLQFZ3  | 315      | PMLZ3   | 315      |
|         | Z5  | 351      | CLQFZ5  | 364      | PMLZ5   | 364      |
|         | Z10 | 280      | CLQFZ10 | 306      | PMLZ10  | 330      |
|         | Z25 | 254      | CLQFZ25 | 278      | PMLZ25  | 299      |
| 39Q     | Z1  | 974      | CLQFZ1  | 1259     | PMLZ1   | 1485     |
|         | Z3  | 1001     | CLQFZ3  | 1293     | PMLZ3   | 1525     |
|         | Z5  | 954      | CLQFZ5  | 1302     | PMLZ5   | 1235     |
|         | Z10 | 940      | CLQFZ10 | 1214     | PMLZ10  | 1432     |
|         | Z25 | 853      | CLQFZ25 | 1102     | PMLZ25  | 1299     |

Element Collapse Rating: Q and QPML: 150 psid (10 bar), QCLQF: 100 psid (7 bar)

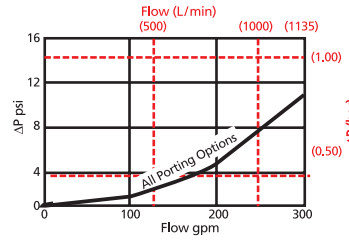
Flow Direction: Outside In

Element Nominal Dimensions: 16Q: 6.0" (150 mm) O.D. x 16.85" (430 mm) long  
 16QCLQF: 6.0" (150 mm) O.D. x 18.21" (463 mm) long  
 16QPML: 6.0" (150 mm) O.D. x 16.00" (405 mm) long  
 39QCLQF: 6.0" (150 mm) O.D. x 40.01" (1016 mm) long  
 39QPML: 6.0" (150 mm) O.D. x 37.80" (960 mm) long



$\Delta P_{\text{housing}}$

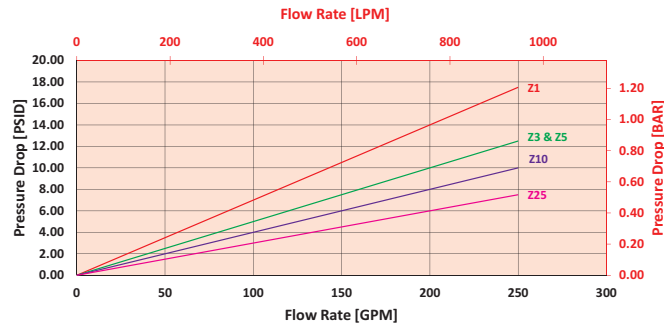
QF5  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

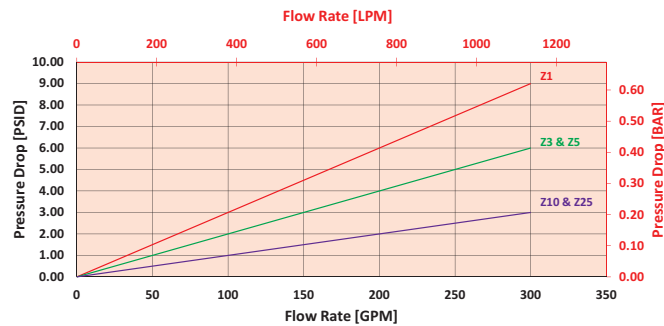
16QCLQFZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



39QCLQFZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 100 gpm (379 L/min) for QF539QZ3P32UDPG using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 100 gpm. In this case,  $\Delta P_{\text{housing}}$  is 2 psi (.14 bar) on the graph for the QF5 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 100 gpm. In this case,  $\Delta P_{\text{element}}$  is 1 psi (.07 bar) according to the graph for the 39QZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 2 \text{ psi [.14 bar]} \mid \Delta P_{\text{element}} = 1 \text{ psi [.07 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 2 \text{ psi} + (1 \text{ psi} * 1.1) = 3.1 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .14 \text{ bar} + (.07 \text{ bar} * 1.1) = .22 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

Note:

If your element is not graphed, use the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.        | $\Delta P$ | Ele.        | $\Delta P$ | Ele.      | $\Delta P$ |
|-------------|------------|-------------|------------|-----------|------------|
| 16QAS3V     | 0.04       | 16QPMLZ1    | 0.08       | 39QZ1     | 0.03       |
| 16QAS5V     | 0.04       | 16QPMLZ3    | 0.05       | 39QZ3     | 0.01       |
| 16QAS10V    | 0.03       | 16QPMLZ5    | 0.05       | 39QZ5     | 0.01       |
| 16QPMLAS3V  | 0.05       | 16QPMLZ10   | 0.04       | 39QZ10    | 0.01       |
| 16QPMLAS5V  | 0.05       | 16QPMLZ25   | 0.02       | 39QZ25    | 0.01       |
| 16QPMLAS10V | 0.04       | 39QAS3V     | 0.01       | 39QPMLZ1  | 0.03       |
| 16QZ1       | 0.09       | 39QAS5V     | 0.01       | 39QPMLZ3  | 0.02       |
| 16QZ3       | 0.04       | 39QAS10V    | 0.01       | 39QPMLZ5  | 0.02       |
| 16QZ5       | 0.04       | 39QPMLAS3V  | 0.02       | 39QPMLZ10 | 0.01       |
| 16QZ10      | 0.03       | 39QPMLAS5V  | 0.02       | 39QPMLZ25 | 0.01       |
| 16QZ25      | 0.01       | 39QPMLAS10V | 0.01       |           |            |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder QF5:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| QF5   |       |       |       |       |       |       |       |       |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| QF5   | 39    | Q     | Z     | 3     |       | P32   |       | U     | DPG    |

=QF539QZ3P32UDPG

| BOX 1         | BOX 2               | BOX 3         | BOX 4                                                                                                                                                                                                                                    | BOX 5                     |
|---------------|---------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Filter Series | Element Length (in) | Element Style | Media Type                                                                                                                                                                                                                               | Micron Rating             |
| QF5           | 16                  | Q             | Z = Excellement® Z-Media® (synthetic)                                                                                                                                                                                                    | 1 = 1 µ Z-Media®          |
|               | 39                  | QCLQF         | AS = Anti-Stat Pleat media (synthetic)                                                                                                                                                                                                   | 3 = 3 µ AS and Z-Media®   |
| WQF5 (Water)  |                     | QPML          | W = W Media (water removal)                                                                                                                                                                                                              | 5 = 5 µ AS and Z-Media®   |
|               |                     |               |                                                                                                                                                                                                                                          | 10 = 10 µ AS and Z-Media® |
|               |                     |               |                                                                                                                                                                                                                                          | 25 = 25 µ Z-Media®        |
|               |                     |               | <b>Water System Element Options</b><br>QM25 = Q size 25 µ M media (resuable metal)<br>QM60 = Q size 60 µ M media (resuable metal)<br>QM150 = Q size 150 µ M media (resuable metal)<br>(Omit box 3 and 5 if water system element is used) |                           |

| BOX 6                 |
|-----------------------|
| Housing Seal Material |
| Omit = Buna N         |
| H = EPR               |
| V = Viton®            |

| BOX 7                                                 |
|-------------------------------------------------------|
| Porting                                               |
| P32 = 2" NPTF    F32 = 2" SAE 4-bolt flange Code 61   |
| P40 = 2½" NPTF    F40 = 2½" SAE 4-bolt flange Code 61 |
| P48 = 3" NPTF    F48 = 3" SAE 4-bolt flange Code 61   |
| S32 = SAE-32    F48 = 3" SAE 4-bolt flange Code 61    |

| BOX 8                  |
|------------------------|
| Bypass Setting         |
| Omit = 30 psi cracking |
| 50 = 50 psi cracking   |
| X = Blocked bypass     |

| BOX 9                                               |
|-----------------------------------------------------|
| Test Points                                         |
| Omit = None                                         |
| U = Test point in cap (upstream)                    |
| UU = Test points in block (upstream and downstream) |

BOX 10

| Dirt Alarm® Options                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| None                                   | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Visual                                 | DPG = Standard differential pressure gauge<br>D5 = Visual pop-up<br>D5C = D5 in cap<br>D5R = D5 mounted opposite standard location                                                                                                                                                                                                                                                                                                                                       |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout<br>D8C = D8 in cap<br>D8R = D8 mounted opposite standard location                                                                                                                                                                                                                                                                                                                                                                         |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                     |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4 and 5 plus the letter V.  
Example: 39QZ10V

Box 3. QCLQF are CoreCentric® coreless elements – housing includes rigid metal core. QPML are deep-pleated elements with more media and higher dirt holding capacity.

Box 4. For option W, Box 3 must equal Q.

Box 6. All elements for this filter are supplied with Viton® seals. Seal designation in Box 6 applies to housing only. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 8. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

# Cold Start Protection Inside-Out Flow Filter

**QF5i**



## Features and Benefits (QF5i)

- Magnetic filtration protection while filter is in cold start bypass
- Coreless QCL element with inside-out flow for eco-friendly easy disposal
- Efficient means to remove both ferromagnetic and non-ferromagnetic parts from the fluid
- Designed for inside-out flow
- Element changeout from the top minimizes oil spillage
- Offered in pipe, SAE straight thread, and flange porting
- Optional inlet and outlet test points
- Various Dirt Alarm<sup>®</sup> options

Model No. of filter in photograph is QF5i16QCLIZ10F3260M.

**120 gpm**  
**454 L/min**  
**500 psi**  
**35 bar**

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

**QF5i**

2QF5/3QF5

QFD5

QF15

QLF15

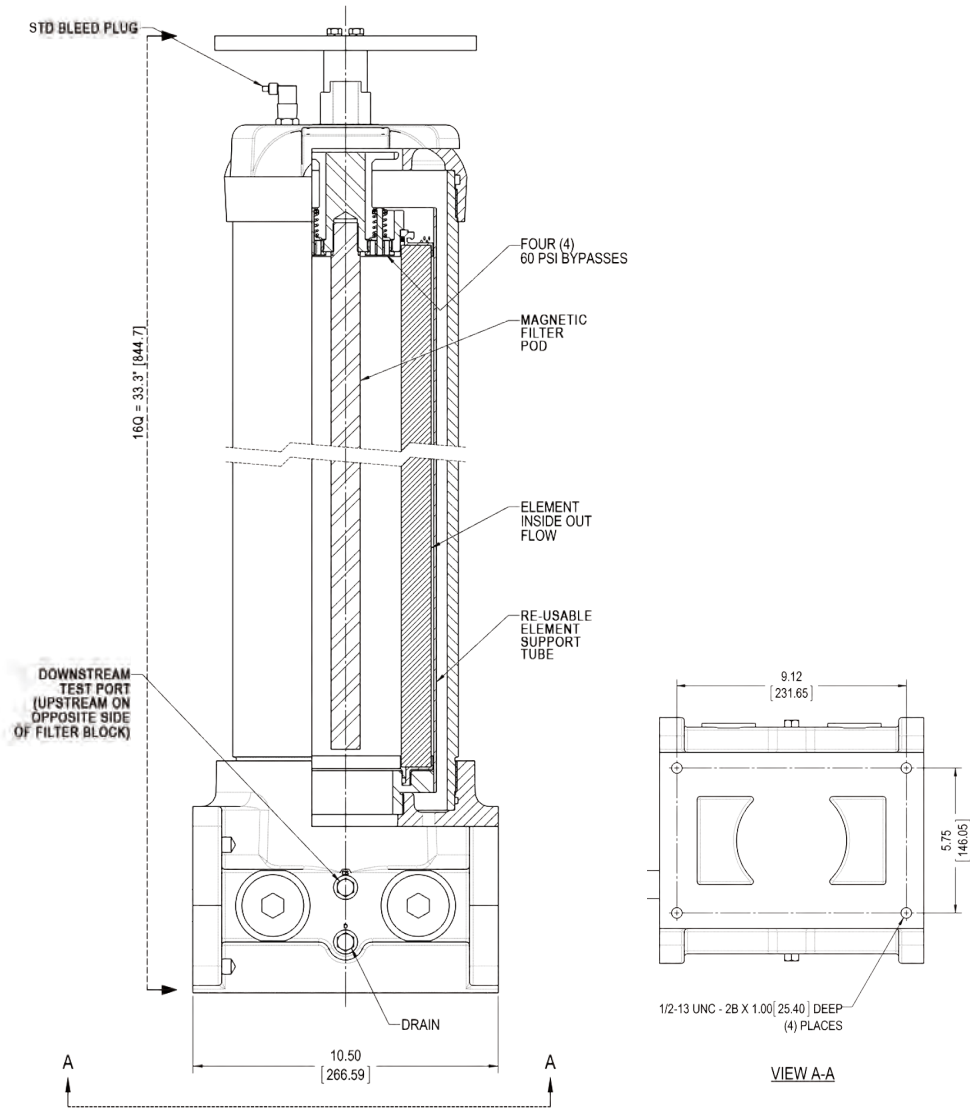
SSQLF15

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 120 gpm (454 L/min) for 150 SUS (32 cSt) fluids     |
| Max. Operating Pressure:  | 500 psi (35 bar)                                          |
| Min. Yield Pressure:      | 2500 psi (172 bar), per NFPA T2.6.1-R1-2005               |
| Rated Fatigue Pressure:   | Contact Factory                                           |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 60 psi (4.1 bar)<br>Full Flow: 95 psi (6.6 bar) |
| Porting Base:             | Cast Aluminum                                             |
| Element Case:             | Steel                                                     |
| Cap:                      | Ductile Iron                                              |
| Weight of QF5i16:         | 85 lbs. (39 kg)                                           |
| Weight of QF5i39:         | 120 lbs. (55 kg)                                          |
| Element Change Clearance: | 16QCLI 16.0" (407 mm)                                     |

## Filter Housing Specifications

| Type Fluid             | Appropriate Schroeder Media                                                       |
|------------------------|-----------------------------------------------------------------------------------|
| Petroleum Based Fluids | All Z-Media <sup>®</sup> and ASP <sup>®</sup> media (synthetic)                   |
| High Water Content     | All Z-Media <sup>®</sup> and ASP <sup>®</sup> media (synthetic)                   |
| Invert Emulsions       | 10 and 25 µ Z-Media <sup>®</sup> and 10 µ ASP <sup>®</sup> media (synthetic)      |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media <sup>®</sup> and all ASP <sup>®</sup> Media (synthetic) |

## Fluid Compatibility



Metric dimensions in ( ).

## Element Performance Information & Dirt Holding Capacity

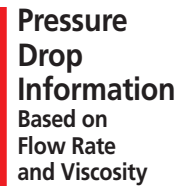
| Element |        | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        | Dirt Holding Capacity |          |
|---------|--------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|-----------------------|----------|
|         |        | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(d) \geq 1000$ | Element               | DHC (gm) |
| 16Q     | CLIZ1  | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    | CLIZ1                 | 307      |
|         | CLIZ3  | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    | CLIZ3                 | 315      |
|         | CLIZ5  | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    | CLIZ5                 | 364      |
|         | CLIZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   | CLIZ10                | 306      |
|         | CLIZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   | CLIZ25                | 278      |

**Flow Direction:** Inside-Out

**Element Nominal Dimensions:** 16QCLI: 6.0" (150 mm) O.D. x 17.81" (452 mm) long

# QF5i

QF5i  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



16QCLIZ

The graph displays the pressure drop characteristics for four different components (Z1, Z3 & Z5, Z10, and Z25) as a function of flow rate. The primary X-axis represents Flow Rate in GPM (0 to 140), and the primary Y-axis represents Pressure Drop in PSID (0.00 to 9.00). A secondary top X-axis shows Flow Rate in LPM (0 to 500), and a secondary right Y-axis shows Pressure Drop in BARI (0.00 to 0.60).

| Flow Rate [GPM] | Flow Rate [LPM] | Z1 [PSID] | Z3 & Z5 [PSID] | Z10 [PSID] | Z25 [PSID] |
|-----------------|-----------------|-----------|----------------|------------|------------|
| 0               | 0               | 0.00      | 0.00           | 0.00       | 0.00       |
| 20              | 80              | 1.00      | 0.60           | 0.40       | 0.30       |
| 40              | 160             | 2.00      | 1.20           | 0.80       | 0.60       |
| 60              | 240             | 3.00      | 1.80           | 1.20       | 0.90       |
| 80              | 320             | 4.00      | 2.40           | 1.60       | 1.20       |
| 100             | 400             | 5.00      | 3.00           | 2.00       | 1.50       |
| 120             | 480             | 6.00      | 3.60           | 2.40       | 1.80       |

$$\Delta \mathbf{P}_{\text{filter}} = \Delta \mathbf{P}_{\text{housing}} + (\Delta \mathbf{P}_{\text{element}} * V_f)$$

Determine  $\Delta P_{\text{filter}}$  at 120 gpm (455 L/min) for QF5i16QCLIZ3P32 using 200 SUS (44 cSt) fluid.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 120 gpm. In this case,  $\Delta P_{\text{element}}$  is 6 psi (.415 bar) according to the graph for the 16QCLIZ3 element.

Because the viscosity in this sample is 200 SUS (44 cSt), we determine the **Viscosity Factor** ( $V_F$ ) by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

**Solution:**

$$V_f = 200 \text{ SUS (42.4 cSt)} / 150 \text{ SUS (32 cSt)} = 1.333$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (6 \text{ psi} * 1.333) = 11 \text{ psi}$$

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.415 \text{ bar} * 1.333) = .76 \text{ bar}$$

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder QF5i:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| QF5i  |       |       |       |       |       |       |       |       |        |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| QF5i  | 16    | QCLI  | Z     | 3     |       | P32   | 60    | M     | U      | DPG    |

**=QF5i16QCLIZ3-P3260MUDPG**

| BOX 1         | BOX 2               | BOX 3         | BOX 4                                 | BOX 5                                                                                                     |
|---------------|---------------------|---------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Filter Series | Element Length (in) | Element Style | Media Type                            | Micron Rating                                                                                             |
| QF5i          | 16                  | QCLI          | Z = Excellerent® Z-Media® (synthetic) | 1 = 1 µm Z-Media®<br>3 = 3 µm Z-Media®<br>5 = 5 µm Z-Media®<br>10 = 10 µm Z-Media®<br>25 = 25 µm Z-Media® |

| BOX 6                       | BOX 7                                                                                                                                                                                       | BOX 8                | BOX 9                                           |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------|
| Housing Seal Material       | Porting                                                                                                                                                                                     | Bypass Setting       | Magnet                                          |
| Omit = Buna N<br>V = Viton® | P32 = 2" NPTF    F32 = 2" SAE 4-bolt flange Code 61<br><br>P40 = 2½" NPTF    F40 = 2½" SAE 4-bolt flange Code 61<br>P48 = 3" NPTF<br><br>S32 = SAE-32    F48 = 3" SAE 4-bolt flange Code 61 | 60 = 60 psi cracking | Omit = No Magnet<br><br>M = Magnetic Filter Rod |

| BOX 10                                                                                                                  | BOX 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Points                                                                                                             | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Omit = No Test point<br><br>U = Test point in cap (upstream)<br><br>UU = Test points in block (upstream and downstream) | Omit = None<br><br>Visual    DPG = Standard differential pressure gauge<br>D5 = Visual pop-up<br><br>Visual with Thermal Lockout    D8 = Visual w/ thermal lockout<br><br>Electrical              MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector<br><br>Electrical with Thermal Lockout              MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T<br><br>Electrical Visual              MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)<br><br>Electrical Visual with Thermal Lockout              MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT |

#### NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4 and 5 plus the letter V.  
Example: 16QCLIZ10V

Box 6. All elements for this filter are supplied with Viton® seals. Seal designation in Box 6 applies to housing only. Viton® is a registered trademark of DuPont Dow Elastomers.

In-Line Filter

2QF5/3QF5



Features and Benefits

- Two or three QF5 filters supplied in series as a single filter assembly providing in-line single pass particulate and water filtration
- Element changeout from the top minimizes oil spillage
- Available with optional core assembly to accommodate coreless elements
- Offered with standard Q, QPML deep-plated and QCLQF coreless elements in 16" and 39" lengths with standard Viton® seals
- Offered in pipe, SAE straight thread, and flange porting
- Inlet and outlet test points
- Various Dirt Alarm® options

Model No. of filter in photograph is 2QF539QEDBP40P40 and 3QF539QEDBP40P40

300 gpm

1135 L/min

500 psi

35 bar

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

2QF5/3QF5

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 300 gpm (1135 L/min) for 150 SUS (32 cSt) fluids    |
| Max. Operating Pressure:  | 500 psi (35 bar)                                          |
| Min. Yield Pressure:      | 2500 psi (172 bar), per NFPA T2.6.1-R1-2005               |
| Rated Fatigue Pressure:   | Contact Factory                                           |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 30 psi (2.1 bar)<br>Full Flow: 55 psi (3.8 bar) |
| Porting Base:             | Cast Aluminum                                             |
| Element Case:             | Steel                                                     |
| Cap:                      | Ductile Iron                                              |
| Element Change Clearance: | 33.8" (859 mm)                                            |

Filter Housing Specifications

QFD5

QF15

QLF15

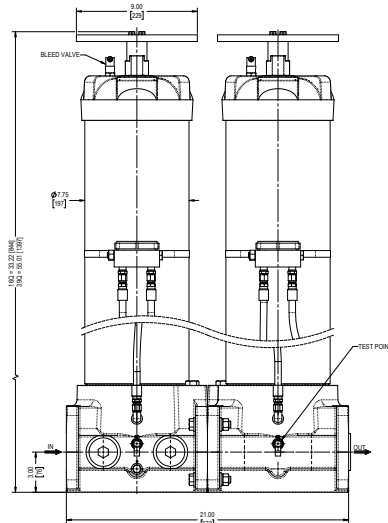
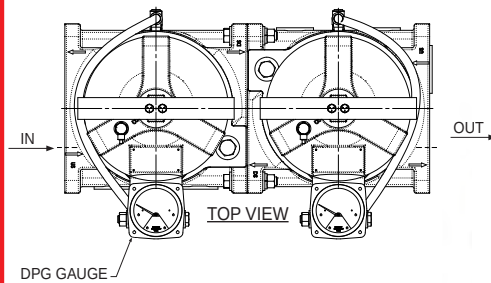
SSQLF15

| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All Z-Media® and ASP® media (synthetic)                                                                                                                                                         |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                                                                                                                            |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® Media (synthetic)                                                                                                                                       |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic)                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP® media (synthetic) |

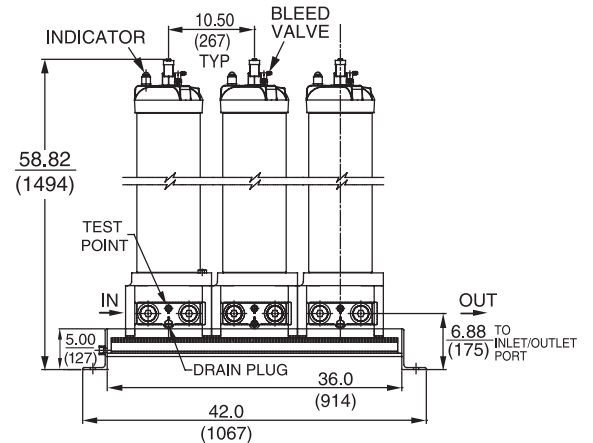
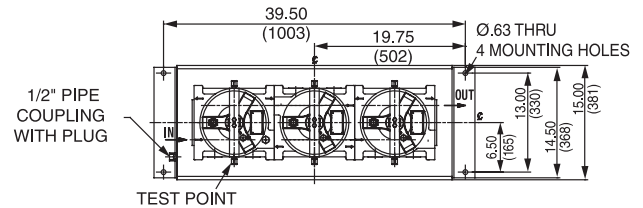
Fluid Compatibility



2QF5



3QF5



Metric dimensions in ( ).  
Dimensions shown are inches (millimeters) for general information and overall envelope size only.  
For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

| Element |                    | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated<br>per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|--------------------|-------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         |                    | $\beta_x \geq 75$                                                                                                 | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 39Q     | Z1/CLQFZ1/PMLZ1    | <1.0                                                                                                              | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
|         | Z3/CLQFZ3/PMLZ3    | <1.0                                                                                                              | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
|         | Z5/CLQFZ5/PMLZ5    | 2.5                                                                                                               | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
|         | Z10/CLQFZ10/PMLZ10 | 7.4                                                                                                               | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
|         | Z25/CLQFZ25/PMLZ25 | 18.0                                                                                                              | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |      |
|---------|----------|---------|----------|---------|----------|------|
| 39Q     | Z1       | 974     | CLQFZ1   | 1259    | PMLZ1    | 1485 |
|         | Z3       | 1001    | CLQFZ3   | 1293    | PMLZ3    | 1525 |
|         | Z5       | 954     | CLQFZ5   | 1302    | PMLZ5    | 1235 |
|         | Z10      | 940     | CLQFZ10  | 1214    | PMLZ10   | 1432 |
|         | Z25      | 853     | CLQFZ25  | 1102    | PMLZ25   | 1299 |

Element Collapse Rating: Q and QPML: 150 psid (10 bar), QCLQF: 100 psid (7 bar)

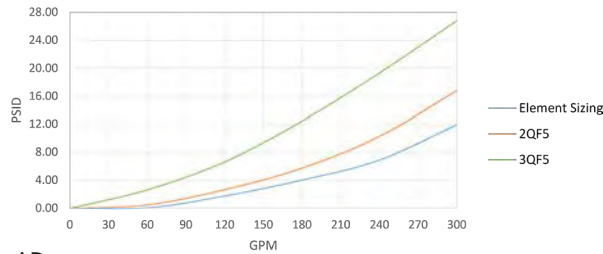
Flow Direction: Outside In

Element Nominal Dimensions: 39Q: 6.0" (150 mm) O.D. x 38.70" (985 mm) long  
39QCLQF: 6.0" (150 mm) O.D. x 40.01" (1016 mm) long  
39QPML: 6.0" (150 mm) O.D. x 37.80" (960 mm) long

## $\Delta P_{\text{housing}}$

2QF5/3QF5  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:

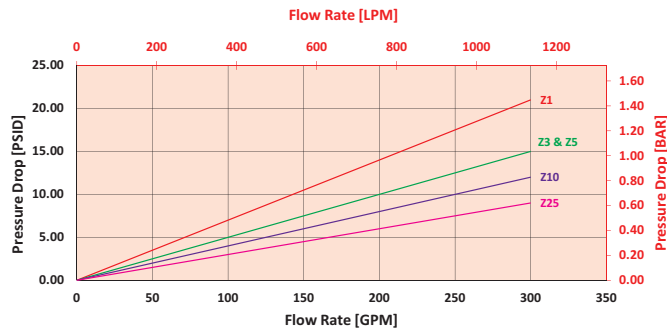
Housing Pressure Drop



## $\Delta P_{\text{element}}$

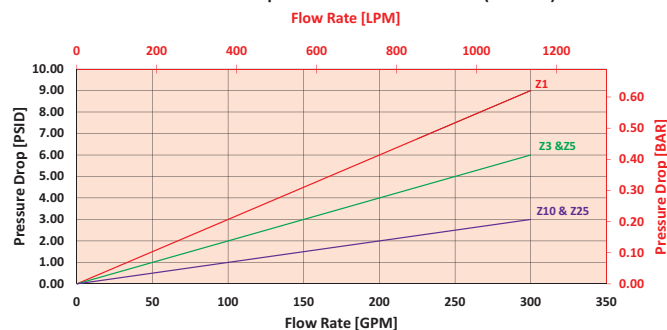
16QCLQF

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



39QCLQF

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 100 gpm (379 L/min) for 3QF539QEDBVP32P3250DPG using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 100 gpm. In this case,  $\Delta P_{\text{housing}}$  is 5.5 psi (.39 bar) on the graph for the 3QF5 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 100 gpm for the first element. In this case,  $\Delta P_{\text{element}}$  is 1 psi (.07 bar) according to the graph for the 39QZ25 element.

Use the element pressure curve to determine  $\Delta P_{\text{element}^2}$  at 100 gpm for the first element. In this case,  $\Delta P_{\text{element}}$  is 1 psi (.07 bar) according to the graph for the 39QZ10 element.

Use the element pressure curve to determine  $\Delta P_{\text{element}^3}$  at 100 gpm for the first element. In this case,  $\Delta P_{\text{element}}$  is 1 psi (.07 bar) according to the graph for the 39QZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 5.5 \text{ psi [.39 bar]} \mid \Delta P_{\text{element}^1} = 1 \text{ psi [.07 bar]} \mid \Delta P_{\text{element}^2} = 1 \text{ psi [.07 bar]} \mid \Delta P_{\text{element}^3} = 1 \text{ psi [.07 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 5.5 \text{ psi} + (1 \text{ psi} * 1.1) + (1 \text{ psi} * 1.1) + (1 \text{ psi} * 1.1) = 8.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .39 \text{ bar} + (.07 \text{ bar} * 1.1) + (.07 * 1.1) + (.07 * 1.1) = .62 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

### Note:

If your element is not graphed, use the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.        | $\Delta P$ | Ele.        | $\Delta P$ | Ele.      | $\Delta P$ |
|-------------|------------|-------------|------------|-----------|------------|
| 16QAS3V     | 0.04       | 16QPMLZ1    | 0.08       | 39QZ1     | 0.03       |
| 16QAS5V     | 0.04       | 16QPMLZ3    | 0.05       | 39QZ3     | 0.01       |
| 16QAS10V    | 0.03       | 16QPMLZ5    | 0.05       | 39QZ5     | 0.01       |
| 16QPMLAS3V  | 0.05       | 16QPMLZ10   | 0.04       | 39QZ10    | 0.01       |
| 16QPMLAS5V  | 0.05       | 16QPMLZ25   | 0.02       | 39QZ25    | 0.01       |
| 16QPMLAS10V | 0.04       | 39QAS3V     | 0.01       | 39QPMLZ1  | 0.03       |
| 16QZ1       | 0.09       | 39QAS5V     | 0.01       | 39QPMLZ3  | 0.02       |
| 16QZ3       | 0.04       | 39QAS10V    | 0.01       | 39QPMLZ5  | 0.02       |
| 16QZ5       | 0.04       | 39QPMLAS3V  | 0.02       | 39QPMLZ10 | 0.01       |
| 16QZ10      | 0.03       | 39QPMLAS5V  | 0.02       | 39QPMLZ25 | 0.01       |
| 16QZ25      | 0.01       | 39QPMLAS10V | 0.01       |           |            |

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder 2QF5:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 | BOX 12 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| 2QF5  |       |       |       |       |       |       |       |       |        |        |        |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 | BOX 11 | BOX 12 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| 2QF5  | 39    | Q     | D     | D     |       | V     | P32   | P32   | X      | U      | DPG    |

= 2QF539QDDVP32P32XUDPG

| BOX 1                                  | BOX 2               | BOX 3         | BOX 4                                                                                                                                                                               | BOX 5                                                                                                                                                                               | BOX 6                                                                                       |
|----------------------------------------|---------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Filter Series                          | Element Length (in) | Element Style | 1st Housing Element Media                                                                                                                                                           | 2nd Housing Element Media (2QF5 & 3QF5)                                                                                                                                             | 3rd Housing Element Media (3QF5 only)                                                       |
| 2QF5                                   | 16                  | Q             | A = Z1<br>B = Z3<br>C = Z5<br>D = Z10<br>E = Z25<br>F = W<br>G = AS3<br>H = AS5<br>J = AS10                                                                                         | A = Z1<br>B = Z3<br>C = Z5<br>D = Z10<br>E = Z25<br>F = W<br>G = AS3<br>H = AS5<br>J = AS10                                                                                         | A = Z1<br>B = Z3<br>C = Z5<br>D = Z10<br>E = Z25<br>F = W<br>G = AS3<br>H = AS5<br>J = AS10 |
| 3QF5                                   | 39                  | QCLQF<br>QPML |                                                                                                                                                                                     |                                                                                                                                                                                     |                                                                                             |
| BOX 7                                  |                     |               | BOX 8                                                                                                                                                                               |                                                                                                                                                                                     |                                                                                             |
| Housing Seal Material                  |                     |               | BOX 9                                                                                                                                                                               |                                                                                                                                                                                     |                                                                                             |
| Omit = Buna N<br>H = EPR<br>V = Viton® |                     |               | BOX 10                                                                                                                                                                              |                                                                                                                                                                                     |                                                                                             |
|                                        |                     |               | "IN" Porting                                                                                                                                                                        | "OUT" Porting                                                                                                                                                                       | Bypass Setting                                                                              |
|                                        |                     |               | P32 = 2" NPTF<br>P40 = 2½" NPTF<br>P48 = 3" NPTF<br>S32 = SAE-32<br>F32 = 2" SAE 4-bolt flange Code 61<br>F40 = 2½" SAE 4-bolt flange Code 61<br>F48 = 3" SAE 4-bolt flange Code 61 | P32 = 2" NPTF<br>P40 = 2½" NPTF<br>P48 = 3" NPTF<br>S32 = SAE-32<br>F32 = 2" SAE 4-bolt flange Code 61<br>F40 = 2½" SAE 4-bolt flange Code 61<br>F48 = 3" SAE 4-bolt flange Code 61 | Omit = 30 psi cracking<br>50 = 50 psi cracking<br>X = Blocked bypass                        |
|                                        |                     |               | BOX 11                                                                                                                                                                              |                                                                                                                                                                                     |                                                                                             |
|                                        |                     |               | Test Points                                                                                                                                                                         |                                                                                                                                                                                     |                                                                                             |
|                                        |                     |               | Omit = None<br>U = Test point in cap (upstream)                                                                                                                                     |                                                                                                                                                                                     |                                                                                             |

#### NOTES:

- Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4, plus the letter V.  
Example: 39QZ10V
- Box 3. QCLQF are CoreCentric® coreless elements – housing includes rigid metal core. QPML are deep-pleated elements with more media and higher dirt holding capacity.
- Box 4. For option F, Box 3 must equal Q.
- Box 7. All elements for this filter are supplied with Viton® seals. Seal designation in Box 5 applies to housing only. Viton® is a registered trademark of DuPont Dow Elastomers.
- Box 10. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

| BOX 12                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Dirt Alarm® Options |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| None                                   | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     |
| Visual                                 | DPG = Standard differential pressure gauge<br>D5 = Visual pop-up<br>D5C = D5 in cap<br>D5R = D5 mounted opposite standard location                                                                                                                                                                                                                                                                                                                                       |                     |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout<br>D8C = D8 in cap<br>D8R = D8 mounted opposite standard location                                                                                                                                                                                                                                                                                                                                                                         |                     |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |                     |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |                     |
| Electrical Visual                      | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                     |                     |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |                     |

**Features and Benefits**

- Duplex filter design
- Approved for API 5L use
- Element changeout from the top minimizes oil spillage
- Available with optional core assembly to accommodate coreless elements
- Offered with standard Q, QPML deep-pleated and QCLQF coreless elements in 16" and 39" lengths with Viton® seals as the standard
- Offered in 2" and 3" SAE J518 4-bolt flange Code 61 and ANSI 300# flange porting
- Integral inlet and outlet test points are standard on all models
- Various Dirt Alarm® options
- Also available in 4, 6 or 8 housing modular designs (contact factory)

Model No. of filter in photograph is QFD516QZ10F48DPG.

**350 gpm**  
**1325 L/min**  
**500 psi**  
**35 bar**

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

2QF5/3QF5

QFD5

|                                |                                                                                              |
|--------------------------------|----------------------------------------------------------------------------------------------|
| Flow Rating:                   | Up to 175 gpm (675 L/min) for 2";<br>350 gpm (1325 L/min) for 3" for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:       | 500 psi (35 bar)                                                                             |
| Min. Yield Pressure:           | Contact Factory                                                                              |
| Rated Fatigue Pressure:        | Contact Factory                                                                              |
| Temp. Range:                   | -15°F to 200°F (-26°C to 93°C)                                                               |
| Bypass Setting:                | Cracking: 30 psi (2.1 bar)<br>Full Flow: 33 psi (2.3 bar) for 2"; 38 psi (2.6 bar) for 3"    |
| Porting Base & Cap:            | Ductile Iron                                                                                 |
| Element Case & Transfer Valve: | Steel                                                                                        |
| Weight of QFD5-16Q:            | 410.0 lbs. (186.0 kg) for 2"; 455.0 (206.0 kg) for 3"                                        |
| Weight of QFD5-39Q:            | 562.0 lbs. (255.0 kg) for 2"; 607.0 (275.0 kg) for 3"                                        |
| Element Change Clearance:      | 16Q 12.00" (305 mm)<br>39Q 33.80" (859 mm)                                                   |

**Filter Housing Specifications**

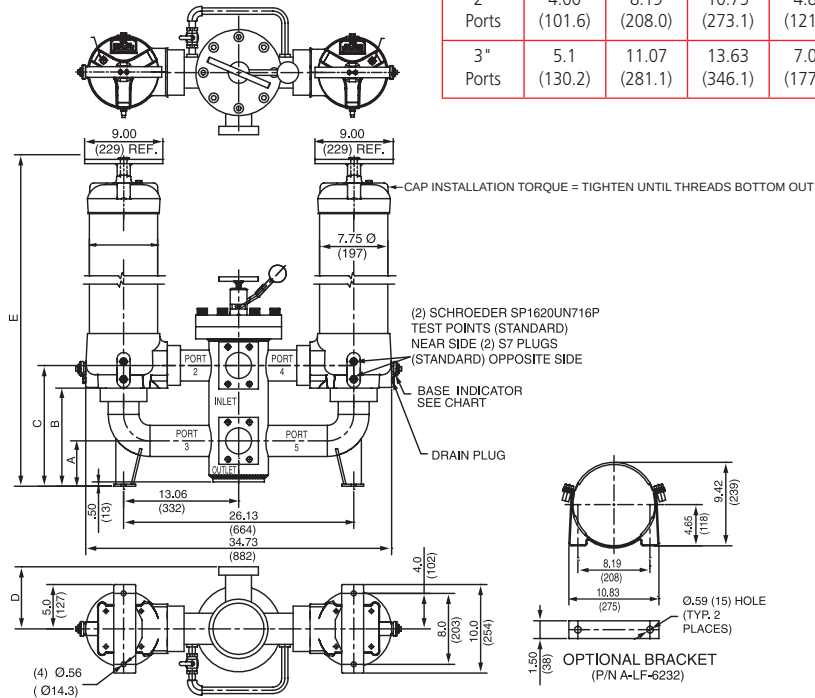
QF15

QLF15

SSQLF15

| Type Fluid             | Appropriate Schroeder Media                                                           |
|------------------------|---------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                          |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                               |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                  |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)                             |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic) |

**Fluid Compatibility**



| PORT SIZE | DIM A        | DIM B         | DIM C         | DIM D        | DIM E        |              |
|-----------|--------------|---------------|---------------|--------------|--------------|--------------|
|           |              |               |               |              | 16Q          | 39Q          |
| 2" Ports  | 4.00 (101.6) | 8.19 (208.0)  | 10.75 (273.1) | 4.80 (121.9) | 36.50 (927)  | 58.31 (1481) |
| 3" Ports  | 5.1 (130.2)  | 11.07 (281.1) | 13.63 (346.1) | 7.00 (177.8) | 39.38 (1000) | 61.19 (1559) |

Metric dimensions in ( ).

## Element Performance Information & Dirt Holding Capacity

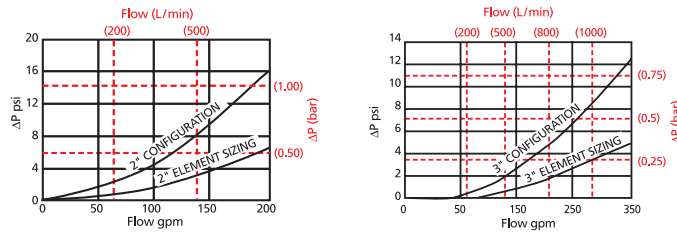
| Element |                    | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|--------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         |                    | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 16Q     | Z1/CLQFZ1/PMLZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
|         | Z3/CLQFZ3/PMLZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
|         | Z5/CLQFZ5/PMLZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
|         | Z10/CLQFZ10/PMLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
|         | Z25/CLQFZ25/PMLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| 39Q     | Z1/CLQFZ1/PMLZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
|         | Z3/CLQFZ3/PMLZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
|         | Z5/CLQFZ5/PMLZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
|         | Z10/CLQFZ10/PMLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
|         | Z25/CLQFZ25/PMLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element |     | DHC (gm) | Element |      | DHC (gm) | Element |  | DHC (gm) |
|---------|-----|----------|---------|------|----------|---------|--|----------|
| 16Q     | Z1  | 276      | CLQFZ1  | 307  | PMLZ1    | 307     |  |          |
|         | Z3  | 283      | CLQFZ3  | 315  | PMLZ3    | 315     |  |          |
|         | Z5  | 351      | CLQFZ5  | 364  | PMLZ5    | 364     |  |          |
|         | Z10 | 280      | CLQFZ10 | 306  | PMLZ10   | 330     |  |          |
|         | Z25 | 254      | CLQFZ25 | 278  | PMLZ25   | 299     |  |          |
| 39Q     | Z1  | 974      | CLQFZ1  | 1259 | PMLZ1    | 1485    |  |          |
|         | Z3  | 1001     | CLQFZ3  | 1293 | PMLZ3    | 1525    |  |          |
|         | Z5  | 954      | CLQFZ5  | 1302 | PMLZ5    | 1235    |  |          |
|         | Z10 | 940      | CLQFZ10 | 1214 | PMLZ10   | 1432    |  |          |
|         | Z25 | 853      | CLQFZ25 | 1102 | PMLZ25   | 1299    |  |          |

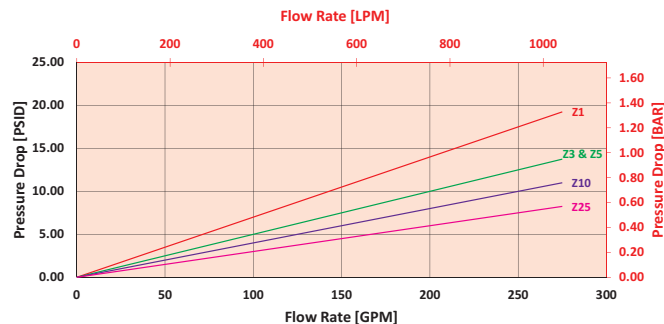
Element Collapse Rating: Q and QPML: 150 psid (10 bar), QCLQF: 100 psid (7 bar)

Flow Direction: Outside In

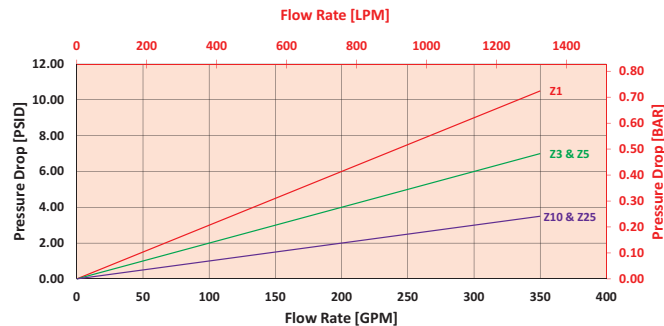
Element Nominal Dimensions: 39Q: 6.0" (150 mm) O.D. x 38.70" (985 mm) long  
 39QCLQF: 6.0" (150 mm) O.D. x 40.01" (1016 mm) long  
 39QPML: 6.0" (150 mm) O.D. x 37.80" (960 mm) long

$\Delta P_{\text{housing}}$ QFD5  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$ 

16QCLQFZ Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



39QCLQFZ Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

**Exercise:**Determine  $\Delta P_{\text{filter}}$  at 200 gpm (758 L/min) for QFD516QZ3F48D5C using 100 SUS (21.3 cSt) fluid.Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 200 gpm. In this case,  $\Delta P_{\text{housing}}$  is 5 psi (.34 bar) on the graph for the QFD5 housing.Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 200 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the 16QCZ3 element.Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.**Solution:**

$$\Delta P_{\text{housing}} = 5 \text{ psi } [.34 \text{ bar}] \mid \Delta P_{\text{element}} = 7 \text{ psi } [.48 \text{ bar}]$$

$$V_f = 100 \text{ SUS (21.3 cSt)} / 150 \text{ SUS (32 cSt)} = .67$$

$$\Delta P_{\text{filter}} = 5 \text{ psi} + (7 \text{ psi} * .67) = 9.7 \text{ psi}$$

**OR**

$$\Delta P_{\text{filter}} = .34 \text{ bar} + (.48 \text{ bar} * .67) = .66 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

**Note:**

If your element is not graphed, use the following equation:

$$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$$

Plug this variable into the overall pressure drop equation.

| Ele.        | $\Delta P$ | Ele.        | $\Delta P$ | Ele.      | $\Delta P$ |
|-------------|------------|-------------|------------|-----------|------------|
| 16QAS3V     | 0.04       | 16QPMLZ1    | 0.08       | 39QZ1     | 0.03       |
| 16QAS5V     | 0.04       | 16QPMLZ3    | 0.05       | 39QZ3     | 0.01       |
| 16QAS10V    | 0.03       | 16QPMLZ5    | 0.05       | 39QZ5     | 0.01       |
| 16QPMLAS3V  | 0.05       | 16QPMLZ10   | 0.04       | 39QZ10    | 0.01       |
| 16QPMLAS5V  | 0.05       | 16QPMLZ25   | 0.02       | 39QZ25    | 0.01       |
| 16QPMLAS10V | 0.04       | 39QAS3V     | 0.01       | 39QPMLZ1  | 0.03       |
| 16QZ1       | 0.09       | 39QAS5V     | 0.01       | 39QPMLZ3  | 0.02       |
| 16QZ3       | 0.04       | 39QAS10V    | 0.01       | 39QPMLZ5  | 0.02       |
| 16QZ5       | 0.04       | 39QPMLAS3V  | 0.02       | 39QPMLZ10 | 0.01       |
| 16QZ10      | 0.03       | 39QPMLAS5V  | 0.02       | 39QPMLZ25 | 0.01       |
| 16QZ25      | 0.01       | 39QPMLAS10V | 0.01       |           |            |

### Filter Model Number Selection

#### How to Build a Valid Model Number for a Schroeder QF5:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| QFD5  |       |       |       |       |       |       |       |       |        |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |                  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------|
| QFD5  | 16    | Q     | Z     | 3     |       | F48   |       | D5C   | =QFD516QZ3F48D5C |

| BOX 1         | BOX 2               | BOX 3              | BOX 4                                                                                                          | BOX 5                                                                                                     |
|---------------|---------------------|--------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Filter Series | Element Length (in) | Element Style      | Media Type                                                                                                     | Micron Rating                                                                                             |
| QFD5          | 16<br>39            | Q<br>QCLQF<br>QPML | Z = Excellement® Z-Media® (synthetic)<br>AS = Anti-Stat Pleat media (synthetic)<br>W = W media (water removal) | 1 = 1 µm Z-Media®<br>3 = 3 µm Z-Media®<br>5 = 5 µm Z-Media®<br>10 = 10 µm Z-Media®<br>25 = 25 µm Z-Media® |

| BOX 6                       | BOX 7                                                                                                                                                                                                              | BOX 8                                                                |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Housing Seal Material       | Porting                                                                                                                                                                                                            | Bypass Setting                                                       |
| Omit = Buna N<br>V = Viton® | F32 = 2" SAE 4-bolt flange Code 61<br>F32M = 2" SAE 4-bolt flange Code 61<br>FA32 = 2" ANSI 300# flange<br>F48 = 3" SAE 4-bolt flange Code 61<br>F48M = 3" SAE 4-bolt flange Code 61<br>FA48 = 3" ANSI 300# flange | Omit = 30 psi cracking<br>50 = 50 psi cracking<br>X = Blocked bypass |

| BOX 9                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Options                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                        | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Visual                                 | DPG = Standard differential pressure gauge<br>D5 = Visual pop-up<br>D5C = D5 in cap                                                                                                                                                                                                                                                                                                                                                                                      |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout<br>D8C = D8 in cap                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                     |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

#### NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4 and 5 plus the letter V.  
*Example: 39QZ10V*

Box 3. QCLQF are CoreCentric® coreless elements – housing includes rigid metal core. QPML are deep-pleated elements with more media and higher dirt holding capacity.

Box 4. For option W, Box 3 must equal Q.

Box 6. All elements for this filter are supplied with Viton® seals. Seal designation in Box 6 applies to housing only. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 8. When X is paired with a standard filter series, a standard bushing and spring plate will be used.



In-Line Filter

QF15



Model No. of filter in photograph is QF1516QZ10P24MS10AC.

Features and Benefits

- Also available in L-ported version
- Element changeout from the top minimizes oil spillage
- Available with optional core assembly to accommodate coreless elements
- Offered with standard Q, QPML deep-pleated and QCLQF coreless elements in 16" and 39" lengths with Viton® seals as the standard
- Offered in pipe, SAE straight thread, and flange porting
- Integral inlet and outlet test points are standard on all models
- Various Dirt Alarm® options

450 gpm

1700 L/min

1500 psi

100 bar

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

2QF5/3QF5

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 450 gpm (1700 L/min) for 150 SUS (32 cSt) fluids    |
| Max. Operating Pressure:  | 1500 psi (100 bar)                                        |
| Min. Yield Pressure:      | 4900 psi (340 bar), per NFPA T2.6.1                       |
| Rated Fatigue Pressure:   | 800 psi (55 bar), per NFPA T2.6.1-R1-2005                 |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 30 psi (2.1 bar)<br>Full Flow: 55 psi (3.8 bar) |
| Porting Base & Cap:       | Ductile Iron                                              |
| Element Case:             | Steel                                                     |
| Weight of QF15-16Q:       | 139.0 lbs. (63.0 kg)                                      |
| Weight of QF15-39Q:       | 198.0 lbs. (90.0 kg)                                      |
| Element Change Clearance: | 16Q 12.0" (305 mm)<br>39Q 33.8" (859 mm)                  |

Filter Housing Specifications

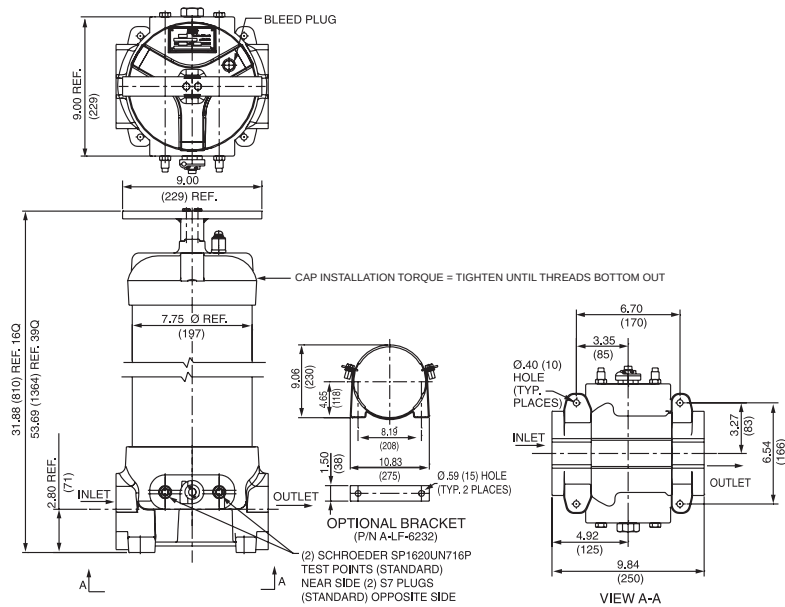
QF15

QLF15

SSQLF15

| Type Fluid             | Appropriate Schroeder Media                                                           |
|------------------------|---------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® Media (synthetic)                          |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                               |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                  |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)                             |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic) |

Fluid Compatibility



Metric dimensions in ( ).

## Element Performance Information & Dirt Holding Capacity

| Element |                    | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|--------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         |                    | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 16Q     | Z1/CLQFZ1/PMLZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
|         | Z3/CLQFZ3/PMLZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
|         | Z5/CLQFZ5/PMLZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
|         | Z10/CLQFZ10/PMLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
|         | Z25/CLQFZ25/PMLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| 39Q     | Z1/CLQFZ1/PMLZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
|         | Z3/CLQFZ3/PMLZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
|         | Z5/CLQFZ5/PMLZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
|         | Z10/CLQFZ10/PMLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
|         | Z25/CLQFZ25/PMLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

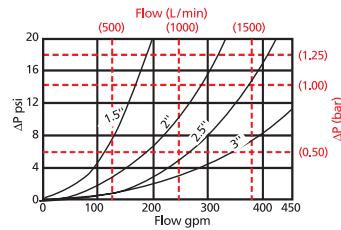
| Element |           | DHC (gm) | Element |      | DHC (gm)        | Element |  | DHC (gm) |
|---------|-----------|----------|---------|------|-----------------|---------|--|----------|
| 16Q     | Z1        | 276      | CLQFZ1  | 307  | PMLZ1           | 307     |  |          |
|         | Z3/AS3V   | 283      | CLQFZ3  | 315  | PMLZ3/PMLAS3V   | 315     |  |          |
|         | Z5/AS5V   | 351      | CLQFZ5  | 364  | PMLZ5/PMLAS5V   | 364     |  |          |
|         | Z10/AS10V | 280      | CLQFZ10 | 306  | PMLZ10/PMLAS10V | 330     |  |          |
|         | Z25       | 254      | CLQFZ25 | 278  | PMLZ25          | 299     |  |          |
| 39Q     | Z1        | 974      | CLQFZ1  | 1259 | PMLZ1           | 1485    |  |          |
|         | Z3/AS3V   | 1001     | CLQFZ3  | 1293 | PMLZ3/PMLAS3V   | 1525    |  |          |
|         | Z5/AS5V   | 954      | CLQFZ5  | 1302 | PMLZ5/PMLAS5V   | 1235    |  |          |
|         | Z10/AS10V | 940      | CLQFZ10 | 1214 | PMLZ10/PMLAS10V | 1432    |  |          |
|         | Z25       | 853      | CLQFZ25 | 1102 | PMLZ25          | 1299    |  |          |

Element Collapse Rating: Q and QPML: 150 psid (10 bar), QCLQF: 100 psid (7 bar)

Flow Direction: Outside In

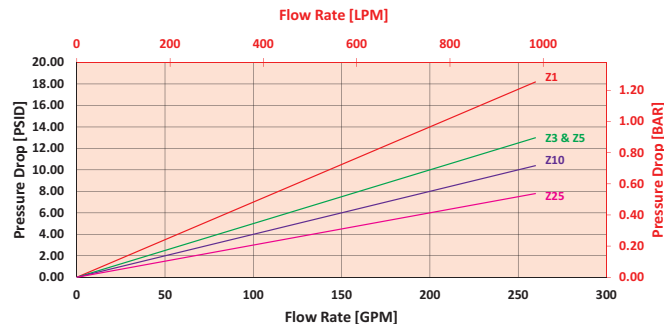
Element Nominal Dimensions:

|          |                                            |
|----------|--------------------------------------------|
| 16Q:     | 6.0" (150 mm) O.D. x 16.85" (430 mm) long  |
| 16QCLQF: | 6.0" (150 mm) O.D. x 18.21" (463 mm) long  |
| 16QPML:  | 6.0" (150 mm) O.D. x 16.00" (405 mm) long  |
| 39Q:     | 6.0" (150 mm) O.D. x 38.70" (985 mm) long  |
| 39QCLQF: | 6.0" (150 mm) O.D. x 40.01" (1016 mm) long |
| 39QPML:  | 6.0" (150 mm) O.D. x 37.80" (960 mm) long  |

$\Delta P_{\text{housing}}$ QF15  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$ 

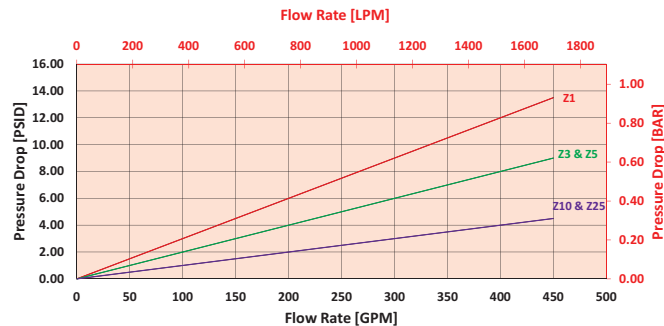
16QCLQFZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



39QCLQFZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

**Exercise:**Determine  $\Delta P_{\text{filter}}$  at 200 gpm (758 L/min) for QF1516QZ3D5C using 100 SUS (21.3 cSt) fluid.Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 200 gpm. In this case,  $\Delta P_{\text{housing}}$  is 2 psi (.14 bar) on the graph for the QF15 housing.Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 200 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the 16QZ3 element.Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.**Solution:**

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.14 \text{ bar}] \mid \Delta P_{\text{element}} = 7 \text{ psi } [.48 \text{ bar}]$$

$$V_f = 100 \text{ SUS (21.3 cSt)} / 150 \text{ SUS (32 cSt)} = .67$$

$$\Delta P_{\text{filter}} = 2 \text{ psi} + (7 \text{ psi} * .67) = 6.7 \text{ psi}$$

**OR**

$$\Delta P_{\text{filter}} = .14 \text{ bar} + (.48 \text{ bar} * .67) = .46 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

Note:

If your element is not graphed, use the following equation:

$$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$$

Plug this variable into the overall pressure drop equation.

| Ele.        | $\Delta P$ | Ele.        | $\Delta P$ | Ele.      | $\Delta P$ |
|-------------|------------|-------------|------------|-----------|------------|
| 16QAS3V     | 0.04       | 16QPMLZ1    | 0.08       | 39QZ1     | 0.03       |
| 16QAS5V     | 0.04       | 16QPMLZ3    | 0.05       | 39QZ3     | 0.01       |
| 16QAS10V    | 0.03       | 16QPMLZ5    | 0.05       | 39QZ5     | 0.01       |
| 16QPMLAS3V  | 0.05       | 16QPMLZ10   | 0.04       | 39QZ10    | 0.01       |
| 16QPMLAS5V  | 0.05       | 16QPMLZ25   | 0.02       | 39QZ25    | 0.01       |
| 16QPMLAS10V | 0.04       | 39QAS3V     | 0.01       | 39QPMLZ1  | 0.03       |
| 16QZ1       | 0.09       | 39QAS5V     | 0.01       | 39QPMLZ3  | 0.02       |
| 16QZ3       | 0.04       | 39QAS10V    | 0.01       | 39QPMLZ5  | 0.02       |
| 16QZ5       | 0.04       | 39QPMLAS3V  | 0.02       | 39QPMLZ10 | 0.01       |
| 16QZ10      | 0.03       | 39QPMLAS5V  | 0.02       | 39QPMLZ25 | 0.01       |
| 16QZ25      | 0.01       | 39QPMLAS10V | 0.01       |           |            |

### Filter Model Number Selection

#### How to Build a Valid Model Number for a Schroeder QF15:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| QF15  |       |       |       |       |       |       |       |       |

**Example:** NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| QF15  | 16    | Q     | Z     | 3     |       |       |       | D5C   |

**= QF1516QZ3D5C**

| BOX 1         | BOX 2               | BOX 3              | BOX 4                                                                                                                               | BOX 5                                                                                                                                                                                 |
|---------------|---------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series | Element Length (in) | Element Style      | Media Type                                                                                                                          | Micron Rating                                                                                                                                                                         |
| QF15          | 16<br>39            | Q<br>QCLQF<br>QPML | Z = Excellen <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>AS = Anti-Stat Pleat media (synthetic)<br>W = W media (water removal) | 1 = 1 μ Z-Media <sup>®</sup><br>3 = 3 μ AS and Z-Media <sup>®</sup><br>5 = 5 μ AS and Z-Media <sup>®</sup><br>10 = 10 μ AS and Z-Media <sup>®</sup><br>25 = 25 μ Z-Media <sup>®</sup> |

| BOX 6                       | BOX 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BOX 8          |
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| Housing Seal Material       | Porting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Bypass Setting |
| Omit = Buna N<br>V = Viton® | P24 = 1½" NPTF<br>P32 = 2" NPTF<br>P40 = 2½" NPTF<br>P48 = 3" NPTF<br><br>S32 = SAE-32<br><br>B24 = ISO 228 G-1½"<br>B32 = ISO 228 G-2"<br>B40 = ISO 228 G-2½"<br>B48 = ISO 228 G-3"<br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br>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| BOX 9                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm <sup>®</sup> Options        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                        | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Visual                                 | DPG = Standard differential pressure gauge<br>D5 = Visual pop-up<br>D5C = D5 in cap<br>D5R = D5 mounted opposite standard location                                                                                                                                                                                                                                                                                                                                       |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout<br>D8C = D8 in cap<br>D8R = D8 mounted opposite standard location                                                                                                                                                                                                                                                                                                                                                                         |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                     |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

#### NOTES:

- Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4 and 5, plus the letter V.  
Example: 16QZ1V
- Box 3. QCLQF are CoreCentric<sup>®</sup> coreless elements – housing includes rigid metal core. QPML are deep-pleated elements with more media and higher dirt holding capacity.
- Box 4. For option W, Box 3 must equal Q.
- Box 6. All elements for this filter are supplied with Viton<sup>®</sup> seals. Seal designation in Box 6 applies to housing only. Viton<sup>®</sup> is a registered trademark of DuPont Dow Elastomers.
- Box 7. F24M, F32M, F40M and F48M are supplied with metric flange mounting holes.
- Box 8. When X is paired with a standard filter series, a standard bushing and spring plate will be used.
- Integral inlet and outlet test points are standard on all models.

Base-Ported Filter

QLF15



Features and Benefits

- In-line version also available
- Element changeout from the top minimizes oil spillage
- Available with optional core assembly to accommodate coreless elements
- Offered with standard Q, QPML deep-pleated and QCLQF coreless elements in 16" and 39" lengths with Viton® seals as the standard
- Offered in pipe, SAE straight thread, and flange porting
- Integral inlet and outlet test points are standard on all models
- Various Dirt Alarm® options

Model No. of filter in photograph is QLF1539QZ5F4850D5.

500 gpm

1900 L/min

1500 psi

100 bar

GH

RLT

KF5

SRLT

K9

2K9

3K9

QF5

QF5i

2QF5/3QF5

|                           |                                                        |
|---------------------------|--------------------------------------------------------|
| Flow Rating:              | Up to 500 gpm (1900 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 1500 psi (100 bar)                                     |
| Min. Yield Pressure:      | 4900 psi (340 bar), per NFPA T2.6.1                    |
| Rated Fatigue Pressure:   | 800 psi (55 bar), per NFPA T2.6.1-R1-2005              |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                        |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 55 psi (4 bar)  |
| Porting Base & Cap:       | Ductile Iron                                           |
| Element Case:             | Steel                                                  |
| Weight of QLF15-16Q:      | 121.0 lbs. (55.0 kg)                                   |
| Weight of QLF15-39Q:      | 180.0 lbs. (82.0 kg)                                   |
| Element Change Clearance: | 16Q 12.00" (305 mm)<br>39Q 33.80" (859 mm)             |

Filter Housing Specifications

QFD5

QF15

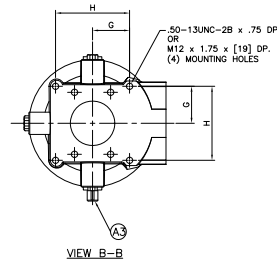
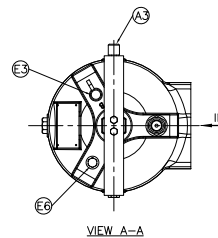
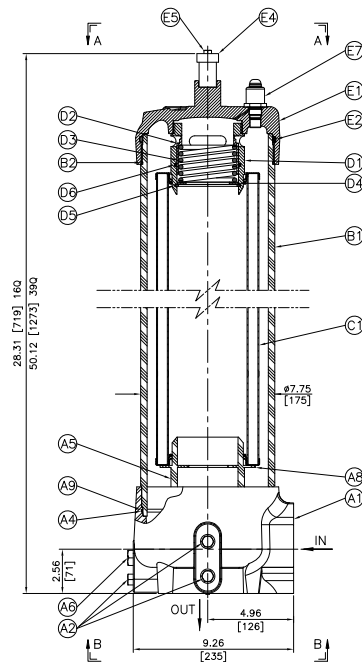
QLF15

SSQLF15

| Type Fluid             | Appropriate Schroeder Media                                               |
|------------------------|---------------------------------------------------------------------------|
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)              |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                   |
| Invert Emulsions       | 10 µ and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                    |
| Water Glycols          | 3, 5, 10, and 25 µ Z-Media® and all ASP® media (synthetic)                |
| Phosphate Esters       | All Z-Media® with H (EPR) seal designation and all ASP® media (synthetic) |

Fluid Compatibility

### Element Performance Information & Dirt Holding Capacity



- A-LF-6232

#### DIMENSIONAL DATA

| PORT SIZE | DIM G       | DIM H      |
|-----------|-------------|------------|
| 1½" (38)  | 2.00 (51)   | 4.00 (102) |
| 2" (51)   | 2.00 (51)   | 4.00 (102) |
| 2½" (64)  | 2.00 (51)   | 4.00 (102) |
| 3" (76)   | 2.50 (63.5) | 4.00 (102) |

Metric dimensions in ( ).

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 16Q     | Z1/CLQFZ1/PMLZ1                                                                                                | <1.0               | <1.0               | <1.0                                                                 | <4.0 4.2               |
|         | Z3/CLQFZ3/PMLZ3                                                                                                | <1.0               | <1.0               | <2.0                                                                 | <4.0 4.8               |
|         | Z5/CLQFZ5/PMLZ5                                                                                                | 2.5                | 3.0                | 4.0                                                                  | 4.8 6.3                |
|         | Z10/CLQFZ10/PMLZ10                                                                                             | 7.4                | 8.2                | 10.0                                                                 | 8.0 10.0               |
|         | Z25/CLQFZ25/PMLZ25                                                                                             | 18.0               | 20.0               | 22.5                                                                 | 19.0 24.0              |
| 39Q     | Z1/CLQFZ1/PMLZ1                                                                                                | <1.0               | <1.0               | <1.0                                                                 | <4.0 4.2               |
|         | Z3/CLQFZ3/PMLZ3                                                                                                | <1.0               | <1.0               | <2.0                                                                 | <4.0 4.8               |
|         | Z5/CLQFZ5/PMLZ5                                                                                                | 2.5                | 3.0                | 4.0                                                                  | 4.8 6.3                |
|         | Z10/CLQFZ10/PMLZ10                                                                                             | 7.4                | 8.2                | 10.0                                                                 | 8.0 10.0               |
|         | Z25/CLQFZ25/PMLZ25                                                                                             | 18.0               | 20.0               | 22.5                                                                 | 19.0 24.0              |

| Element | DHC (gm) | Element      | DHC (gm)    | Element | DHC (gm) |
|---------|----------|--------------|-------------|---------|----------|
| 16Q     | Z1 276   | CLQFZ1 307   | PMLZ1 307   |         |          |
|         | Z3 283   | CLQFZ3 315   | PMLZ3 315   |         |          |
|         | Z5 351   | CLQFZ5 364   | PMLZ5 364   |         |          |
|         | Z10 280  | CLQFZ10 306  | PMLZ10 330  |         |          |
|         | Z25 254  | CLQFZ25 278  | PMLZ25 299  |         |          |
| 39Q     | Z1 974   | CLQFZ1 1259  | PMLZ1 1485  |         |          |
|         | Z3 1001  | CLQFZ3 1293  | PMLZ3 1525  |         |          |
|         | Z5 954   | CLQFZ5 1302  | PMLZ5 1235  |         |          |
|         | Z10 940  | CLQFZ10 1214 | PMLZ10 1432 |         |          |
|         | Z25 853  | CLQFZ25 1102 | PMLZ25 1299 |         |          |

Element Collapse Rating: Q and QPML: 150 psid (10 bar), QCLQF: 100 psid (7 bar)

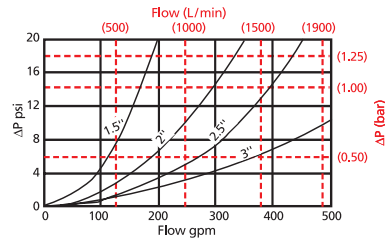
Flow Direction: Outside In

Element Nominal Dimensions:

|          |                                            |
|----------|--------------------------------------------|
| 16Q:     | 6.0" (150 mm) O.D. x 16.85" (430 mm) long  |
| 16QCLQF: | 6.0" (150 mm) O.D. x 18.21" (463 mm) long  |
| 16QPML:  | 6.0" (150 mm) O.D. x 16.00" (405 mm) long  |
| 39Q:     | 6.0" (150 mm) O.D. x 38.70" (985 mm) long  |
| 39QCLQF: | 6.0" (150 mm) O.D. x 40.01" (1016 mm) long |
| 39QPML:  | 6.0" (150 mm) O.D. x 37.80" (960 mm) long  |

$\Delta P_{\text{housing}}$

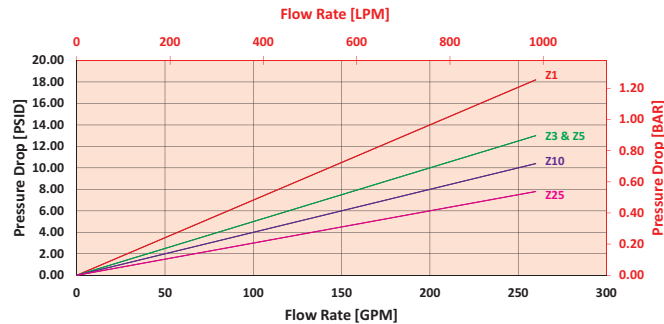
QLF15  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

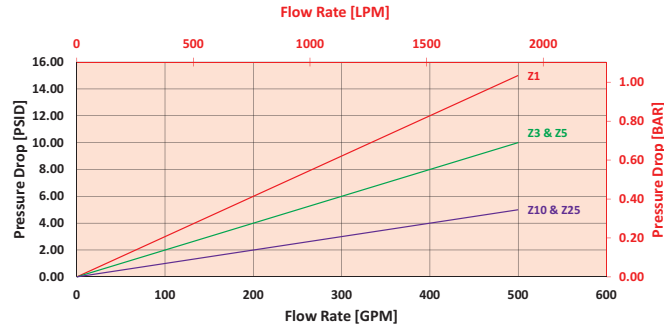
16QCLQFZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



39QCLQFZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 200 gpm (758 L/min) for QLF1516QZ3D5C using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 200 gpm. In this case,  $\Delta P_{\text{housing}}$  is 2 psi (.14 bar) on the graph for the QLF15 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 200 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the 16QZ3 element.

Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 2 \text{ psi } [.14 \text{ bar}] \mid \Delta P_{\text{element}} = 7 \text{ psi } [.48 \text{ bar}]$$

$$V_f = 100 \text{ SUS (21.3 cSt)} / 150 \text{ SUS (32 cSt)} = .67$$

$$\Delta P_{\text{filter}} = 2 \text{ psi} + (7 \text{ psi} * .67) = 6.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 14 \text{ bar} + (.48 \text{ bar} * .67) = .46 \text{ bar}$$

## Pressure Drop Information Based on Flow Rate and Viscosity

Note:

If your element is not graphed, use the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.        | $\Delta P$ | Ele.        | $\Delta P$ | Ele.      | $\Delta P$ |
|-------------|------------|-------------|------------|-----------|------------|
| 16QAS3V     | 0.04       | 16QPMLZ1    | 0.08       | 39QZ1     | 0.03       |
| 16QAS5V     | 0.04       | 16QPMLZ3    | 0.05       | 39QZ3     | 0.01       |
| 16QAS10V    | 0.03       | 16QPMLZ5    | 0.05       | 39QZ5     | 0.01       |
| 16QPMLAS3V  | 0.05       | 16QPMLZ10   | 0.04       | 39QZ10    | 0.01       |
| 16QPMLAS5V  | 0.05       | 16QPMLZ25   | 0.02       | 39QZ25    | 0.01       |
| 16QPMLAS10V | 0.04       | 39QAS3V     | 0.01       | 39QPMLZ1  | 0.03       |
| 16QZ1       | 0.09       | 39QAS5V     | 0.01       | 39QPMLZ3  | 0.02       |
| 16QZ3       | 0.04       | 39QAS10V    | 0.01       | 39QPMLZ5  | 0.02       |
| 16QZ5       | 0.04       | 39QPMLAS3V  | 0.02       | 39QPMLZ10 | 0.01       |
| 16QZ10      | 0.03       | 39QPMLAS5V  | 0.02       | 39QPMLZ25 | 0.01       |
| 16QZ25      | 0.01       | 39QPMLAS10V | 0.01       |           |            |



Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder QLF15:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| QLF15 |       |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| QLF15 | 16    | Q     | Z     | 3     |       |       |       | D5C   |

= QF1516QZ3D5C

| BOX 1            | BOX 2               | BOX 3         | BOX 4                                         | BOX 5                     |
|------------------|---------------------|---------------|-----------------------------------------------|---------------------------|
| Filter Series    | Element Length (in) | Element Style | Media Type                                    | Micron Rating             |
| QLF15            | 16                  | Q             | Z = Excellement® Z-Media® (synthetic)         | 1 = 1 µ Z-Media®          |
|                  | 39                  | QCLQF         | AS = Anti-Stat Pleat media (synthetic)        | 3 = 3 µ AS and Z-Media®   |
| WQLF5<br>(Water) |                     | QPML          | W = W media (water removal)                   | 5 = 5 µ AS and Z-Media®   |
|                  |                     |               | <b>Water System Element Options</b>           | 10 = 10 µ AS and Z-Media® |
|                  |                     |               | QM60 = Q size 60 µ M media (reusable metal)   | 25 = 25 µ Z-Media®        |
|                  |                     |               | QM150 = Q size 150 µ M media (reusable metal) |                           |

| BOX 6                       | BOX 7                                                                                                                                                                                | BOX 8                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Housing Seal Material       | Porting                                                                                                                                                                              | Bypass Setting                                                                                                                                                                                                                                                                                                                                   |
| Omit = Buna N<br>V = Viton® | P24 = 1½" NPTF<br>P32 = 2" NPTF<br>P40 = 2½" NPTF<br>P48 = 3" NPTF<br><br>S32 = SAE-32<br><br>B24 = ISO 228 G-1½"<br>B32 = ISO 228 G-2"<br>B40 = ISO 228 G-2½"<br>B48 = ISO 228 G-3" | F24 = 1½" SAE 4-bolt flange<br>Code 61<br>F32 = 2" SAE 4-bolt flange<br>Code 61<br>F40 = 2½" SAE 4-bolt flange<br>Code 61<br>F48 = 3" SAE 4-bolt flange<br>Code 61<br><br>F24M = 1½" SAE 4-bolt flange<br>Code 61<br>F32M = 2" SAE 4-bolt flange<br>Code 61<br>F40M = 2½" SAE 4-bolt flange<br>Code 61<br>F48M = 3" SAE 4-bolt flange<br>Code 61 |
|                             |                                                                                                                                                                                      | Omit = 30 psi cracking<br>40 = 40 psi cracking<br>50 = 50 psi cracking<br>X = Blocked bypass                                                                                                                                                                                                                                                     |

BOX 9

| Dirt Alarm® Options                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                        | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Visual                                 | DPG = Standard differential pressure gauge<br>D5 = Visual pop-up<br>D5C = D5 in cap                                                                                                                                                                                                                                                                                                                                                                                      |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout<br>D8C = D8 in cap                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                     |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4, and 5 plus the letter V.  
Example: 16QZ1V

Box 3. QCLQF are CoreCentric® coreless elements – housing includes rigid metal core. QPML are deep-pleated elements with more media and higher dirt holding capacity.

Box 4. For option W, Box 3 must equal Q.

Box 6. All elements for this filter are supplied with Viton® seals. Seal designation in Box 6 applies to housing only. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 7. B24, B32 and B40 are supplied with metric mounting holes. F24M, F32M, F40M and F48M are supplied with metric flange mounting holes.

Box 8: When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Integral inlet and outlet test points are standard on all models.

Stainless Steel Base-Ported Filter

SSQLF15



Features and Benefits

- In-line version also available
- Element changeout from the top minimizes oil spillage
- Offered with standard Q and QPML deep-pleated coreless elements in 16" and 39" lengths with Viton® seals as the standard
- Offered in pipe, SAE straight thread, and flange porting
- Integral inlet and outlet test points are standard on all models
- Various Dirt Alarm® options
- All stainless steel provides compatibility with water-based fluids

Model No. of filter in photograph is SSQLF1539QZ5F4850D5.

500 gpm  
1900 L/min  
1500 psi  
100 bar

GH  
RLT  
KF5  
SRLT  
K9  
2K9  
3K9  
QF5  
QF5i  
2QF5/3QF5

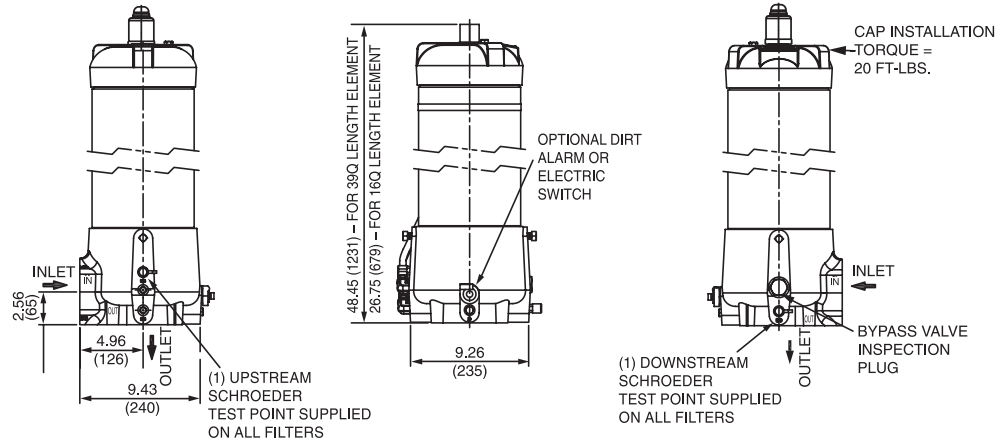
|                           |                                                        |
|---------------------------|--------------------------------------------------------|
| Flow Rating:              | Up to 500 gpm (1900 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 1500 psi (100 bar)                                     |
| Min. Yield Pressure:      | 4500 psi (310 bar), per NFPA T2.6.1                    |
| Rated Fatigue Pressure:   | Contact Factory                                        |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                        |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 55 psi (4 bar)  |
| Porting Base & Cap:       | Stainless Steel                                        |
| Element Case:             | Stainless Steel                                        |
| Weight of SSQLF15-16Q:    | 163.0 lbs. (74.0 kg)                                   |
| Weight of SSQLF15-39Q:    | 240.0 lbs. (109.0 kg)                                  |
| Element Change Clearance: | 16Q 12.00" (305 mm)<br>39Q 33.80" (859 mm)             |

Filter Housing Specifications

QFD5  
QF15  
QLF15  
SSQLF15

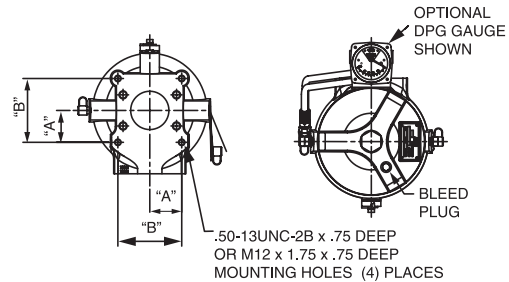
| Type Fluid             | Appropriate Schroeder Media                                                           |
|------------------------|---------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                          |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                               |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                  |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)                             |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic) |

Fluid Compatibility



| DIMENSIONAL DATA      |           |            |
|-----------------------|-----------|------------|
| PORT SIZE             | DIM A     | DIM B      |
| 1½" (38)              | 2.00 (51) | 4.00 (102) |
| 2" (51)               | 2.00 (51) | 4.00 (102) |
| 2½" (64)              | 2.00 (51) | 4.00 (102) |
| 3" (76)               | 2.00 (51) | 4.00 (102) |
| 3" (4 bolt port only) | 2.50 (64) | 5.00 (127) |

Metric dimensions in ( ).



## Element Performance Information & Dirt Holding Capacity

| Element |                    | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|--------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         |                    | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 16Q     | Z1/CLQFZ1/PMLZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
|         | Z3/CLQFZ3/PMLZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
|         | Z5/CLQFZ5/PMLZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
|         | Z10/CLQFZ10/PMLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
|         | Z25/CLQFZ25/PMLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| 39Q     | Z1/CLQFZ1/PMLZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
|         | Z3/CLQFZ3/PMLZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
|         | Z5/CLQFZ5/PMLZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
|         | Z10/CLQFZ10/PMLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
|         | Z25/CLQFZ25/PMLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element | DHC (gm) | Element     | DHC (gm) |
|---------|----------|-------------|----------|
| 16Q     | Z1 276   | PMLZ1 307   |          |
|         | Z3 283   | PMLZ3 315   |          |
|         | Z5 351   | PMLZ5 364   |          |
|         | Z10 280  | PMLZ10 330  |          |
|         | Z25 254  | PMLZ25 299  |          |
| 39Q     | Z1 974   | PMLZ1 1485  |          |
|         | Z3 1001  | PMLZ3 1525  |          |
|         | Z5 954   | PMLZ5 1235  |          |
|         | Z10 940  | PMLZ10 1432 |          |
|         | Z25 853  | PMLZ25 1299 |          |

Element Collapse Rating: Q and QPML: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions:

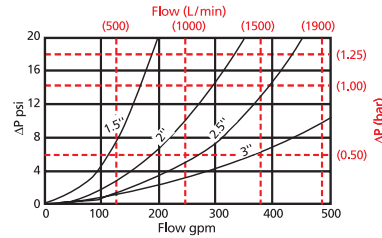
- 16Q: 6.0" (150 mm) O.D. x 16.85" (430 mm) long
- 16QPML: 6.0" (150 mm) O.D. x 16.00" (405 mm) long
- 39Q: 6.0" (150 mm) O.D. x 38.70" (985 mm) long
- 39QPML: 6.0" (150 mm) O.D. x 37.80" (960 mm) long

# Stainless Steel Base-Ported Filter

# SSQLF15

$\Delta P_{\text{housing}}$

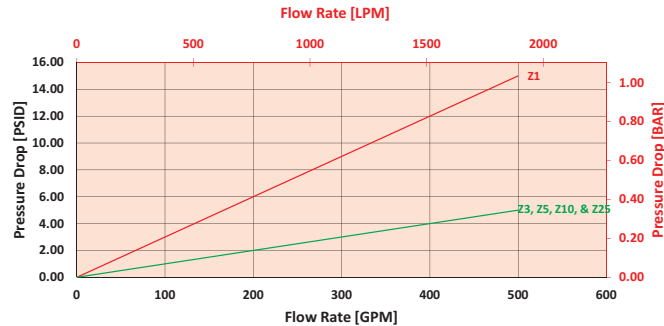
SSQLF15  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

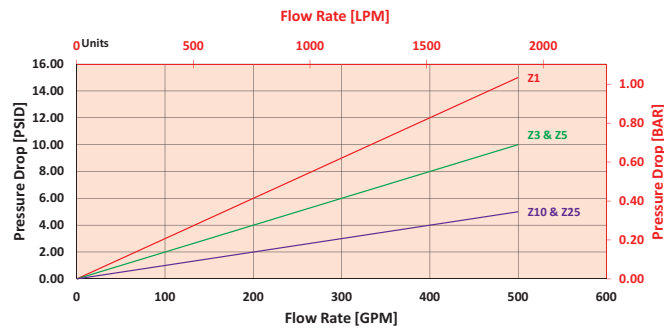
39QZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



39QFMLZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 200 gpm (758 L/min) for SSQLF1516QZ3P48D9C using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 200 gpm. In this case,  $\Delta P_{\text{housing}}$  is 2 psi (.14 bar) on the graph for the SSQLF housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 200 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the 16QZ3 element.

Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the **Viscosity Factor ( $V_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 2 \text{ psi } [.14 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 7 \text{ psi } [.48 \text{ bar}]$$

$$V_f = 100 \text{ SUS (21.3 cSt)} / 150 \text{ SUS (32 cSt)} = .67$$

$$\Delta P_{\text{filter}} = 2 \text{ psi} + (7 \text{ psi} * .67) = 6.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .14 \text{ bar} + (.48 \text{ bar} * .67) = .46 \text{ bar}$$

**Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity**

Note:

If your element is not graphed, use the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.        | $\Delta P$ | Ele.        | $\Delta P$ |
|-------------|------------|-------------|------------|
| 16QAS3V     | 0.04       | 16QPMLZ1    | 0.08       |
| 16QAS5V     | 0.04       | 16QPMLZ3    | 0.05       |
| 16QAS10V    | 0.03       | 16QPMLZ5    | 0.05       |
| 16QPMLAS3V  | 0.05       | 16QPMLZ10   | 0.04       |
| 16QPMLAS5V  | 0.05       | 16QPMLZ25   | 0.02       |
| 16QPMLAS10V | 0.04       | 39QAS3V     | 0.01       |
| 16QZ1       | 0.09       | 39QAS5V     | 0.01       |
| 16QZ3       | 0.04       | 39QAS10V    | 0.01       |
| 16QZ5       | 0.04       | 39QPMLAS3V  | 0.02       |
| 16QZ10      | 0.03       | 39QPMLAS5V  | 0.02       |
| 16QZ25      | 0.01       | 39QPMLAS10V | 0.01       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder SSQLF15:

| BOX 1   | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| SSQLF15 |       |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1   | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| SSQLF15 | 16    | Q     | Z     | 3     |       | P48   |       | D9C   |

=SSQLF1516QZ3P48D9C

| BOX 1         | BOX 2               | BOX 3              | BOX 4                                                                                                                                                                                                            |
|---------------|---------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series | Element Length (in) | Element Style      | Media Type                                                                                                                                                                                                       |
| SSQLF15       | 16<br>39            | Q<br>QCLQF<br>QPML | Z = Excellement® Z-Media® (synthetic)<br>AS = Anti-Stat Pleat media (synthetic)<br>M = M media (reusable metal)<br>W = W media (water removal)<br>150PSV = 150 µ nominal synthetic media with plastic outer wrap |

| BOX 5                                                                                                                                                                                                             | BOX 6                                  | BOX 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Micron Rating                                                                                                                                                                                                     | Housing Seal Material                  | Porting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1 = 1 µ Z-Media®<br>3 = 3 µ AS and Z-Media®<br>5 = 5 µ AS and Z-Media®<br>10 = 10 µ AS and Z-Media®<br>25 = 25 µ M and Z-Media®<br>60 = 60 µ M media<br>150 = 150 µ M-media or 150 PSV<br>W = water removal media | Omit = Buna N<br>H = EPR<br>V = Viton® | P24 = 1½" NPTF<br>P32 = 2" NPTF<br>P40 = 2½" NPTF<br>P48 = 3" NPTF<br>S32 = SAE-32<br>B24 = ISO 228 G-1½"<br>B32 = ISO 228 G-2"<br>B40 = ISO 228 G-2½"<br>B48 = ISO 228 G-3"<br><br>F24 = 1½" SAE 4-bolt flange Code 61<br>F32 = 2" SAE 4-bolt flange Code 61<br>F40 = 2½" SAE 4-bolt flange Code 61<br>F48 = 3" SAE 4-bolt flange Code 61<br>F24M = 1½" SAE 4-bolt flange Code 61<br>F32M = 2" SAE 4-bolt flange Code 61<br>F40M = 2½" SAE 4-bolt flange Code 61<br>F48M = 3" SAE 4-bolt flange Code 61 |

| BOX 8                                                                | BOX 9                                                                                                                                                    |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bypass Setting                                                       | Dirt Alarm® Options                                                                                                                                      |
| Omit = 30 psi cracking<br>50 = 50 psi cracking<br>X = Blocked bypass | Omit = None<br>Visual<br>DPG = Standard differential pressure gauge<br>D9 = Visual pop-up in base (stainless steel)<br>D9C = D9 in cap (stainless steel) |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4 and 5 plus the letter V.

Example: 16QZ1V

Box 4. For options W, 150PSV, M25, M60, and M150, Box 3 must equal Q.

Box 6. All elements for this filter are supplied with Viton® seals. Seal designation in Box 6 applies to housing only. Viton® is a registered trademark of DuPont Dow Elastomers.

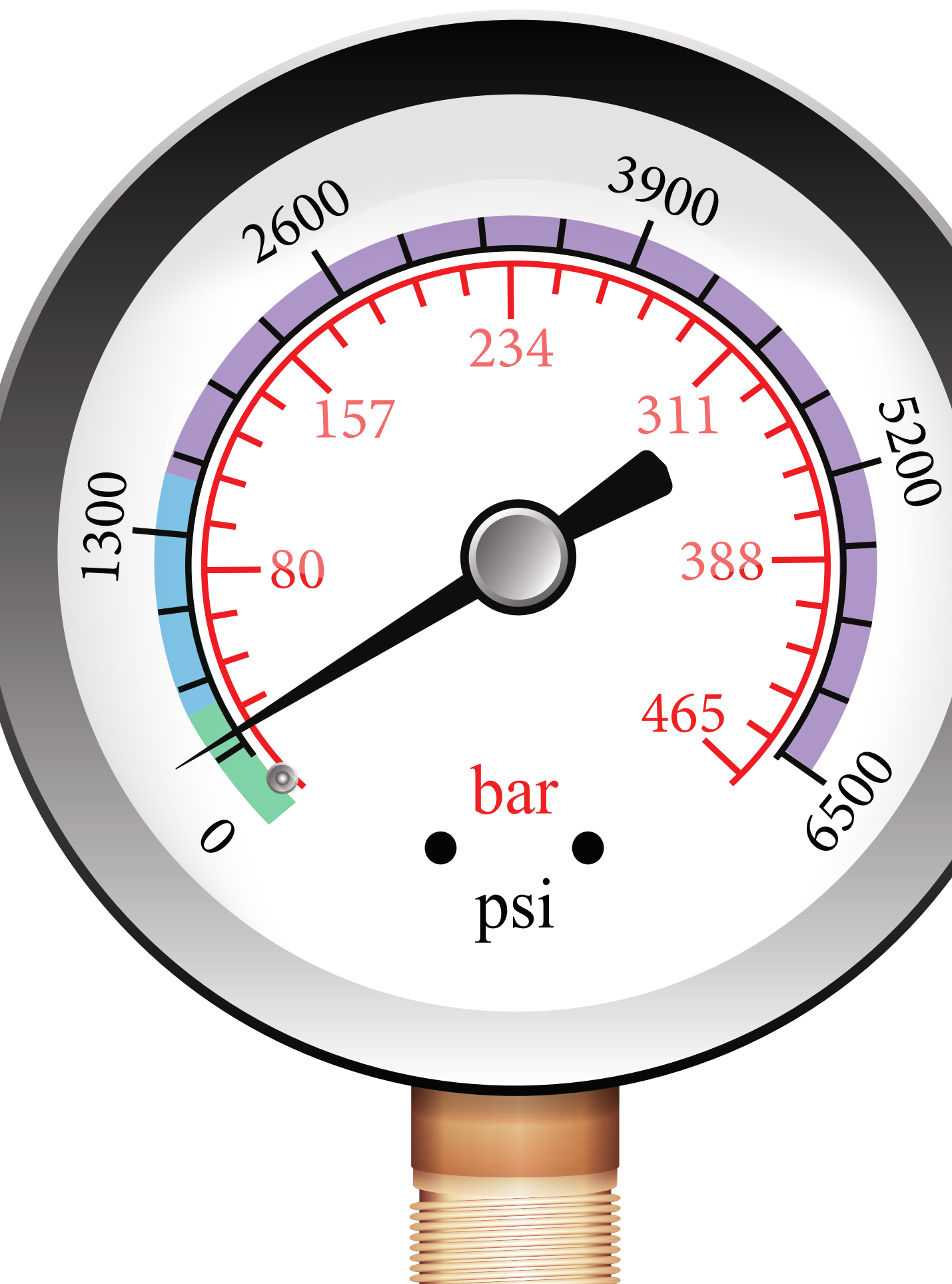
Box 7. B24, B32 and B40 are supplied with metric mounting holes. F24M, F32M, F40M and F48M are supplied with metric flange mounting holes.

Box 8: When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Integral inlet and outlet test points are standard on all models.

Section 5:  
up to 500 psi

# LOW PRESSURE FILTERS



## Section 5

## Low Pressure Filters Selection Guide

|                                      |                                                                                                                  | Pressure<br>psi (bar) | Flow<br>gpm (L/<br>min) | Element<br>Length/Size                     | Page |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------|--------------------------------------------|------|
| Low Pressure Filters (up to 500 psi) | Top-Ported Low Pressure Filters                                                                                  |                       |                         |                                            |      |
|                                      | <a href="#">IRF</a>                                                                                              | 100 (7)               | 100 (380)               | K, KK, KD, KKD                             | 217  |
|                                      | <a href="#">TF1</a>                                                                                              | 300 (20)              | 30 (120)                | A                                          | 221  |
|                                      | <a href="#">KF3</a>             | 300 (20)              | 100 (380)               | K, KK, 27K                                 | 225  |
|                                      | <a href="#">KL3</a>             | 300 (20)              | 120 (455)               | K, KK, 27K, 18LC                           | 229  |
|                                      | <a href="#">LF1-2"</a>                                                                                           | 300 (20)              | 120 (455)               | 18LC                                       | 233  |
|                                      | <a href="#">MLF1</a>            | 300 (20)              | 200 (760)               | K                                          | 237  |
|                                      | <a href="#">RLD</a>                                                                                              | 350 (24)              | 100 (380)               | 25DN, 40D                                  | 241  |
|                                      | Tank-Mounted (In-Tank/Tank Top) Low Pressure Filters                                                             |                       |                         |                                            |      |
|                                      | <a href="#">GRTB</a>            | 100 (7)               | 100 (380)               | KBG                                        | 245  |
|                                      | <a href="#">MTA</a>                                                                                              | 100 (7)               | 15 (55)                 | 3TA                                        | 249  |
|                                      | <a href="#">MTB</a>                                                                                              | 100 (7)               | 35 (135)                | 3TB, 5TB                                   | 253  |
|                                      | <a href="#">ZI</a>              | 100 (7)               | 40 (150)                | 8Z                                         | 257  |
|                                      | <a href="#">AFT</a>             | 100 (7)               | 40 (151)                | 4LK, 8LK                                   | 261  |
|                                      | <a href="#">KFT</a>             | 100 (7)               | 100 (380)               | K, KK, KD, KKD, 27K                        | 265  |
|                                      | <a href="#">RT</a>              | 100 (7)               | 100 (380)               | K, KK, KD, KKD, 27K                        | 269  |
|                                      | <a href="#">RTI</a>                                                                                              | 100 (7)               | 120 (455)               | KI, KKI, 27KI                              | 273  |
|                                      | <a href="#">LRT</a>             | 100 (7)               | 150 (570)               | 18L, 18LD                                  | 277  |
|                                      | <a href="#">ART</a>                                                                                              | 145 (10)              | 225 (850)               | 85Z1, 85Z3, 85Z5, 85Z10, 85Z25             | 281  |
|                                      | <a href="#">BRT</a>           | 145 (10)              | 160 (600)               | 2RBZ10/25, 3RBZ10/25, 4RBZ10/25, 6RBZ10/25 | 285  |
|                                      | <a href="#">TRT</a>           | 145 (10)              | 634 (2400)              | 2RTZ10/25, 3RTZ10/25, 4RTZ10/25, 6RTZ10/25 | 291  |
|                                      | <a href="#">BFT</a>                                                                                              | 100 (7)               | 300 (1135)              | BB                                         | 297  |
|                                      | <a href="#">QT</a>                                                                                               | 100 (7)               | 450 (1700)              | 16Q, 16QPML, 39Q, 39QPML                   | 301  |
|                                      | Special Feature Tank-Mounted Low Pressure Filters                                                                |                       |                         |                                            |      |
|                                      | Internal <a href="#">KTK</a>  | 100 (7)               | 100 (380)               | K, KK, 27K                                 | 305  |
|                                      | Internal <a href="#">LTK</a>                                                                                     | 100 (7)               | 150 (570)               | 18L                                        | 309  |
|                                      | Severe Duty Tank-Mounted                                                                                         |                       |                         |                                            |      |
|                                      | <a href="#">MRT</a>                                                                                              | 900 (62)              | 150 (570)               | 18L                                        | 313  |
|                                      | Spin-On Low Pressure Filters                                                                                     |                       |                         |                                            |      |
|                                      | <a href="#">PAF1</a>                                                                                             | 100 (7)               | 20 (75)                 | 6P                                         | 319  |
|                                      | <a href="#">MAF1</a>                                                                                             | 100 (7)               | 50 (190)                | M, 10M                                     | 323  |
|                                      | <a href="#">MF2</a>                                                                                              | 150 (10)              | 60 (230)                | M, 10M                                     | 327  |





## Features and Benefits

- Low pressure top servicing in-line filter
- Meets HF4 automotive standard
- Unique side mounting flange provides reliable seal arrangement between head and bowl
- The use of K-size elements allows consolidation of inventoried replacement elements
- Single and double length options provide optimal size for specific applications
- Also available with new DirtCatcher® elements (KDZ and KKDZ)
- Various Dirt Alarm® options

100 gpm  
**380 L/min**  
 100 psi  
**7 bar**

Model No. of filter in photograph is IRF2KZ10S20Y2.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids     |
| Max. Operating Pressure:  | 100 psi (7 bar)                                           |
| Min. Yield Pressure:      | 400 psi (28 bar), per NFPA T2.6.1                         |
| Rated Fatigue Pressure:   | 90 psi (6 bar), per NFPA T2.6.1-2005                      |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 25 psi (1.7 bar)<br>Full Flow: 48 psi (3.3 bar) |
| Porting Head:             | Sand Cast Aluminum                                        |
| Element Case:             | Steel                                                     |
| Weight of IRF-1K:         | 13.5 lbs. (6.12 kg)                                       |
| Weight of IRF-2K:         | 17.0 lbs. (7.71 kg)                                       |
| Element Change Clearance: | 8.0" (205 mm) for 1K; 17.50" (445 mm) for KK              |

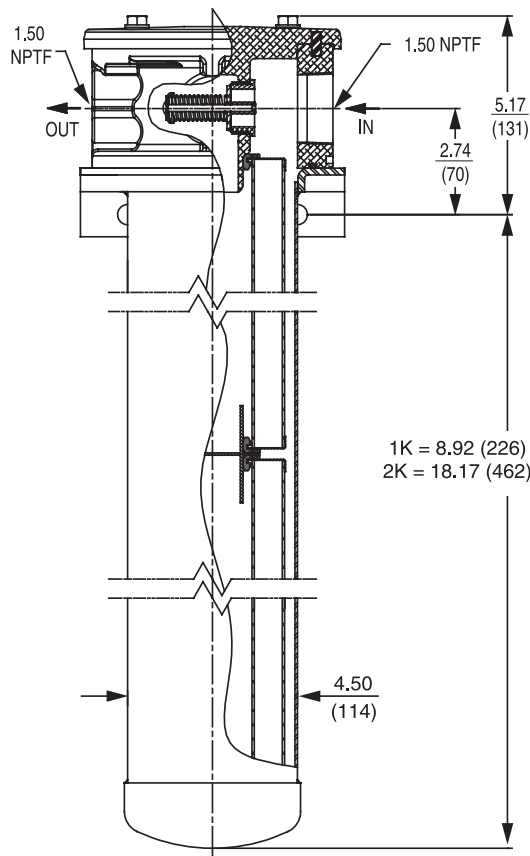
## Filter Housing Specifications

|                        |                                                                                                                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                     |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                                                                                                                                    |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® media (synthetic)                                                                                                                                   |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic), 3, 5, and 10 µ ASP® media (synthetic)                                                                                                                   |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation and all ASP® Media (synthetic)                                          |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP® media (synthetic) |

## Fluid Compatibility

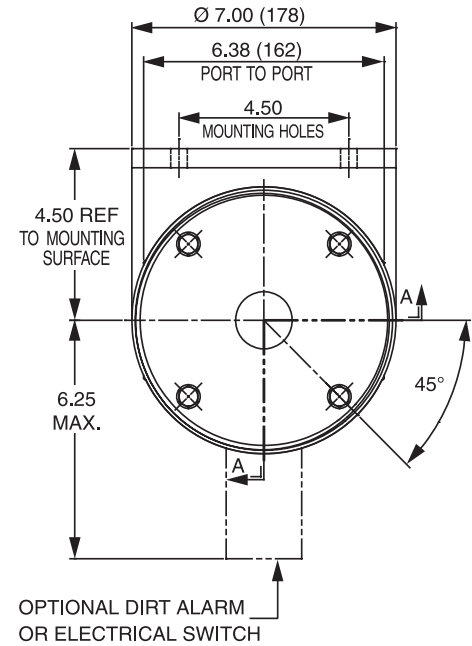
## Accessories For Tank-Mounted Filters

TF1  
 KF3  
 KL3  
 LF1  
 MLF1  
 RLD  
 GRTB  
 MTA  
 MTB  
 ZT  
 AFT  
 KFT  
 RT  
 RTI  
 LRT  
 ART  
 BRT  
 TRT  
 BFT  
 QT  
 KTK  
 LTK  
 MRT  
 PAF1  
 MAF1  
 MF2



SECTION A-A

Metric dimensions in ( ).



### Element Performance Information & Dirt Holding Capacity

| Element           | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|-------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                   | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KKZ3          | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KKZ5          | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KKZ10        | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25/27KZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1              | N/A                                                                                                            | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3        | N/A                                                                                                            | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5        | N/A                                                                                                            | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10      | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25      | N/A                                                                                                            | N/A                | N/A                | 15.4                                                                 | 18.5                   |

| Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| KZ1     | 112     | KKZ1    | 224     | 27KZ1   | 336     | KDZ1    | 89      | KKDZ1   | 188     | KZW1    | 61      |
| KZ3     | 115     | KKZ3    | 230     | 27KZ3   | 345     | KDZ3    | 71      | KKDZ3   | 150     | KZW3    | 64      |
| KZ5     | 119     | KKZ5    | 238     | 27KZ5   | 357     | KDZ5    | 100     | KKDZ5   | 210     | KZW5    | 63      |
| KZ10    | 108     | KKZ10   | 216     | 27KZ10  | 324     | KDZ10   | 80      | KKDZ10  | 168     | KZW10   | 57      |
| KZ25    | 93      | KKZ25   | 186     | 27KZ25  | 279     | KDZ25   | 81      | KKDZ25  | 171     | KZW25   | 79      |
|         |         |         |         |         |         |         |         |         |         | KKZW3   | 128     |
|         |         |         |         |         |         |         |         |         |         | KKZW5   | 126     |
|         |         |         |         |         |         |         |         |         |         | KKZW10  | 114     |
|         |         |         |         |         |         |         |         |         |         | KKZW25  | 158     |

Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

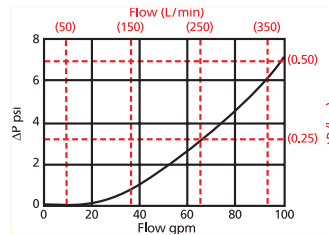
Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long

27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

$\Delta P_{\text{housing}}$

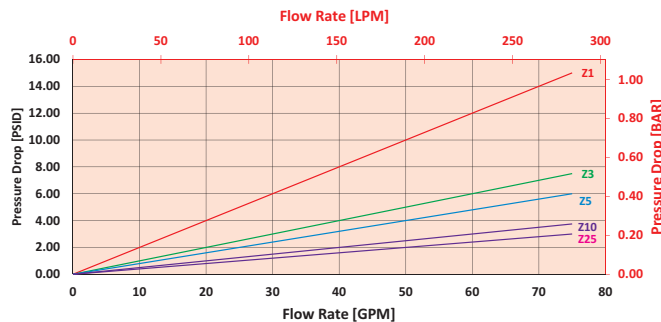
IRF  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

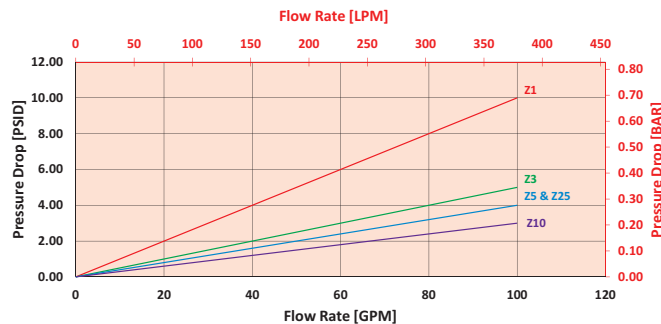
1KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 70 gpm (265.3 L/min) for IRF2KZ10S20Y2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 70 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3.5 psi (.24 bar) on the graph for the IRF housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 70 gpm. In this case,  $\Delta P_{\text{element}}$  is 2 psi (.14 bar) according to the graph for the 2KZ10 element.

Because the viscosity in this sample is 160 SUS (24 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 3.5 \text{ psi } [.24 \text{ bar}] \mid \Delta P_{\text{element}} = 2 \text{ psi } [.14 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3.5 \text{ psi} + (2 \text{ psi} * 1.1) = 5.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .24 \text{ bar} + (.14 \text{ bar} * 1.1) = .39 \text{ bar}$$

Pressure Drop Information  
Based on Flow Rate and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.   | $\Delta P$ |
|-------|------------|--------|------------|
| K3    | 0.25       | 2K3    | 0.12       |
| K10   | 0.09       | 2K10   | 0.05       |
| K25   | 0.02       | 2K25   | 0.01       |
| KAS3  | 0.10       | 2KAS3  | 0.05       |
| KAS5  | 0.08       | 2KAS5  | 0.04       |
| KAS10 | 0.05       | 2KAS10 | 0.03       |
| KDZ1  | 0.24       | 2KDZ1  | 0.12       |
| KDZ3  | 0.12       | 2KDZ3  | .06        |
| KDZ5  | 0.10       | 2KDZ5  | 0.05       |
| KDZ10 | 0.06       | 2KDZ10 | 0.03       |
| KDZ25 | 0.04       | 2KDZ25 | 0.02       |
| KZW1  | 0.43       | 2KZW1  | -          |
| KZW3  | 0.32       | 2KZW3  | 0.16       |
| KZW5  | 0.28       | 2KZW5  | 0.14       |
| KZW10 | 0.23       | 2KZW10 | 0.12       |
| KZW25 | 0.14       | 2KZW25 | 0.07       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder IRF:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| IRF   |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| IRF   | 2K    | Z     | 10    |       | S20   |       | Y2    |

= IRF2KZ10S20Y2

| BOX 1         | BOX 2                       | BOX 3                                                                                                                                                                                                                                        |
|---------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series | Number and Size of Elements | Element Type                                                                                                                                                                                                                                 |
| IRF           | 1 = K, KK<br>2 = K          | Omit = E media (cellulose)<br>AS = Anti-Static Pleat Media<br>Z = Excellement® Z-Media® (synthetic)<br>ZW = Aqua-Excellement® ZW media<br>W = Water Removal media<br>M = M media (reusable metal)<br>DZ = DirtCatcher® Excellement® Z-Media® |

| BOX 4                                                                                                                                                                                                            | BOX 5                                   | BOX 6                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Micron Rating                                                                                                                                                                                                    | Seal Material                           | Inlet Porting                                                                                                                                                        |
| 1 = 1 μ (Z, ZW and DZ media)<br>3 = 3 μ (E, AS, Z, ZW and DZ media)<br>5 = 5 μ (AS, Z, ZW and DZ media)<br>10 = 10 μ (E, AS, Z, ZW and DZ media)<br>25 = 25 μ (E, AS, Z, ZW and DZ media)<br>60 = 60 μ (M media) | Omit = Buna N<br>H = EPDM<br>V = Viton® | P16 = 1" NPTF<br>P20 = 1¼" NPTF<br>S16 = SAE-16<br>S20 = SAE-20<br>F20 = 1¼" SAE 4-bolt flange Code 61<br>F24 = 1½" SAE 4-bolt flange Code 61<br>B24 = ISO 228 G-1½" |

BOX 7

BOX 8

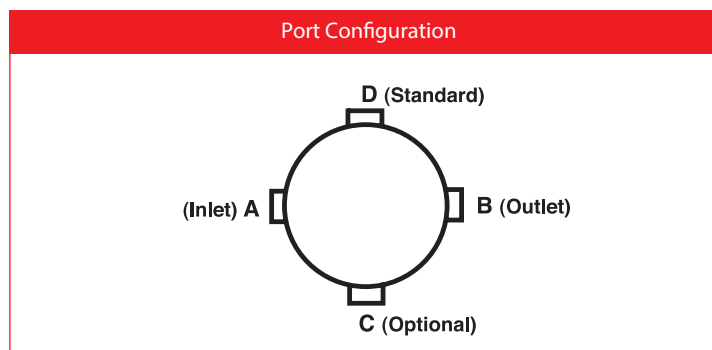
| Bypass Setting       | Dirt Alarm* Options         |            |                                                                        |
|----------------------|-----------------------------|------------|------------------------------------------------------------------------|
| Omit = 25 PSI Bypass | Omit = None                 |            |                                                                        |
| 40 = 40 PSI Bypass   | Located @ Port D (Standard) | Visual     | Y2 = Back-mounted tri-color gauge                                      |
|                      |                             | Electrical | ES = Electrical switch                                                 |
|                      |                             |            | ES1 = Heavy-duty electrical switch with conduit connector              |
|                      |                             |            | ES2= Electrical Switch with Deutsch Connector                          |
|                      | Located @ Port C (Optional) | Visual     | Y2R = Back-mounted gauge mounted on opposite side of standard location |
|                      |                             | Electrical | ESR = Electrical switch mounted on opposite side of standard location  |
|                      |                             |            | ES1R = Heavy-duty electrical switch with conduit connector             |

## NOTES:

Box 2. Number of elements must equal 1 when using KK elements.

Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. Double stacking of K-size elements can be replaced by single KK elements.

Box 5. Viton® is a registered trademark of DuPont Dow Elastomers.





## Features and Benefits

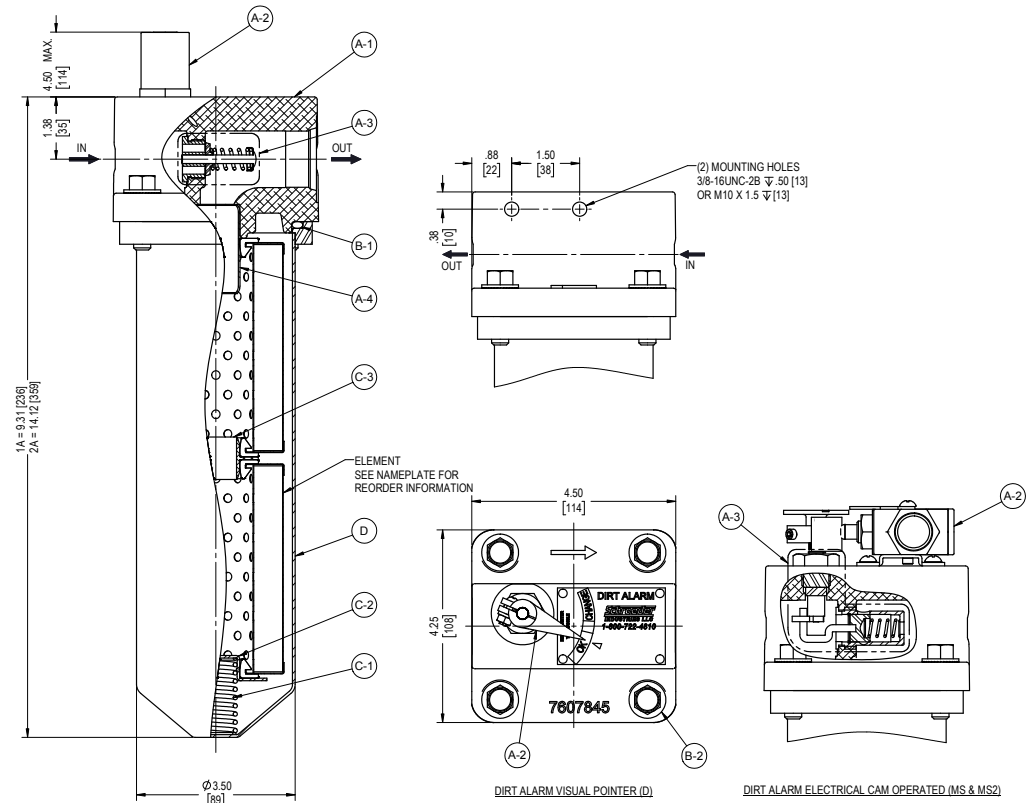
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- Various Dirt Alarm® options
- Available with No-Element indicator
- Available with NPTF inlet and outlet female test ports
- Available with magnet inserts
- Available with housing drain plug

30 gpm  
120 L/min  
 300 psi  
 20 bar

Model No. of filter in photograph is TF11AZ10S.

|                           |                                                       |                                     |
|---------------------------|-------------------------------------------------------|-------------------------------------|
| Flow Rating:              | Up to 30 gpm (120 L/min) for 150 SUS (32 cSt) fluids  | Filter<br>Housing<br>Specifications |
| Max. Operating Pressure:  | 300 psi (20 bar)                                      |                                     |
| Min. Yield Pressure:      | 1200 psi (80 bar), per NFPA T2.6.1                    |                                     |
| Rated Fatigue Pressure:   | 270 psi (19 bar), per NFPA T2.6.1-2005                |                                     |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                       |                                     |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 51 psi (4 bar) |                                     |
| Porting Head:             | Cast Aluminum                                         |                                     |
| Element Case:             | Steel (TF1) or Stainless Steel (WTF1)                 |                                     |
| Weight of TF1-1A:         | 5.1 lbs. (2.3 kg)                                     |                                     |
| Weight of TF1-2A:         | 6.3 lbs. (2.9 kg)                                     |                                     |
| Element Change Clearance: | 3.50" (90 mm)                                         |                                     |

|                        |                                                                                                                                                                  |                        |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      | Fluid<br>Compatibility |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)                                                                                                                 |                        |
| High Water Content     | All Z-Media® (synthetic)                                                                                                                                         |                        |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                 |                        |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                           |                        |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation                                                                                                           |                        |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |                        |



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

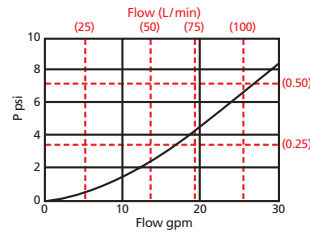
| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| AZ1     | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| AZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| AZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| AZ10    | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| AZ25    | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| A3      | 16       |
| A10     | 13       |
| AZ1     | 25       |
| AZ3     | 26       |
| AZ5     | 30       |
| AZ10    | 28       |
| AZ25    | 28       |

Element Collapse Rating: 150 psid (10 bar)

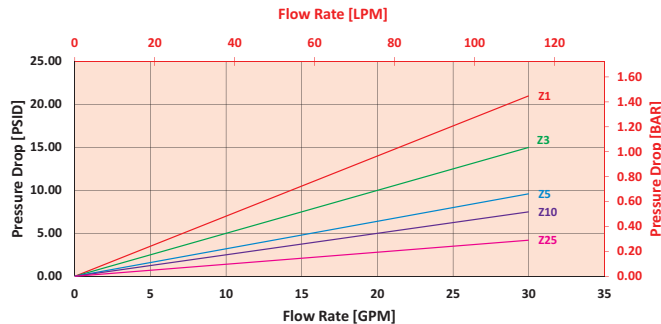
Flow Direction: Outside In

Element Nominal Dimensions: 3.0" (75 mm) O.D. x 4.5" (115 mm) long

$\Delta P_{\text{housing}}$ TF1  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$ 

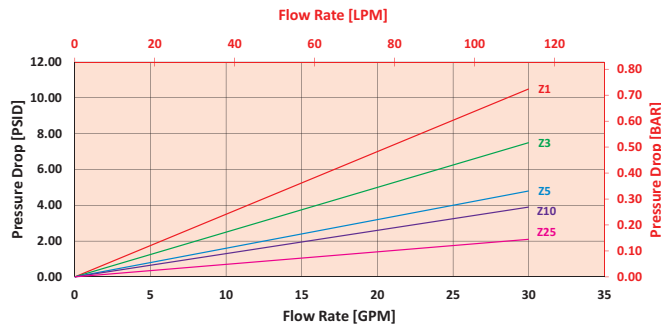
AZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2AZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for TF11AZ3PD5 using 175 SUS (37.2 cSt) fluid.Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the TF1 housing.Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is 7.5 psi (.52 bar) according to the graph for the AZ3 element.Because the viscosity in this sample is 175 SUS (37.2 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 7.5 \text{ psi } [.52 \text{ bar}]$$

$$V_f = 175 \text{ SUS (37.2 cSt)} / 150 \text{ SUS (32 cSt)} = 1.2$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (7.5 \text{ psi} * 1.2) = 12 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.52 \text{ bar} * 1.2) = .83 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

## Note:

If your element is not graphed, use the following equation:

$$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f \text{ Plug this variable into the overall pressure drop equation.}$$

| Ele. | $\Delta P$ | Ele. | $\Delta P$ |
|------|------------|------|------------|
| A3   | 0.53       | AA3  | 0.27       |
| A10  | 0.36       | AA10 | 0.18       |
| A25  | 0.05       | AA25 | 0.03       |



Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder TF1:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TF1   |       |       |       |       |       |       |       |       |

Example: NOTE: Only box 9 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TF1   | 1     | A3    |       |       | P     |       | D5    |       |

= TF11A3PD5

| BOX 1         | BOX 2              | BOX 3                                             | BOX 4                        | BOX 5              |
|---------------|--------------------|---------------------------------------------------|------------------------------|--------------------|
| Filter Series | Number of Elements | Element Part Number                               | Seal Material                | Magnet Option      |
| TF1           | 1                  | A3 = 3 $\mu$ E media (cellulose)                  | Omit = Buna N                | Omit = None        |
|               | 2                  | A10 = 10 $\mu$ E media (cellulose)                | H = EPR                      |                    |
|               |                    | A25 = 25 $\mu$ E media (cellulose)                | V = Viton®                   | M = Magnet inserts |
|               |                    | AZ1 = 1 $\mu$ Excellement® Z-Media® (synthetic)   |                              |                    |
|               |                    | AZ3 = 3 $\mu$ Excellement® Z-Media® (synthetic)   |                              |                    |
|               |                    | AZ5 = 5 $\mu$ Excellement® Z-Media® (synthetic)   |                              |                    |
|               |                    | AZ10 = 10 $\mu$ Excellement® Z-Media® (synthetic) |                              |                    |
|               |                    | AZ25 = 25 $\mu$ Excellement® Z-Media® (synthetic) |                              |                    |
|               |                    | AM10 = 10 $\mu$ M media (reusable metal)          | H.5 = Skydrol® compatibility |                    |
|               |                    | AM25 = 25 $\mu$ M media (reusable metal)          |                              |                    |
|               |                    | AM60 = 60 $\mu$ M media (reusable metal)          |                              |                    |
|               |                    | AM150 = 150 $\mu$ M media (reusable metal)        |                              |                    |

| BOX 6            | BOX 8                                                               | BOX 9                                              |
|------------------|---------------------------------------------------------------------|----------------------------------------------------|
| Porting Options  | Dirt Alarm® Options                                                 | Test Points                                        |
| P = 1" NPTF      | Omit = None                                                         | Omit = None                                        |
| S = SAE-16       | Visual D = Pointer                                                  | L = Two ¼" NPTF inlet and outlet female test ports |
| B = ISO 228 G-1" | Visual with Thermal Lockout D5 = Visual pop-up                      | N = No-Element indicator                           |
|                  | Visual with Thermal Lockout D8 = Visual w/ thermal lockout          | G440 = ½" drain on bottom of housing               |
|                  | Electrical MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable    |                                                    |
|                  | MS5LC = Low current MS5                                             |                                                    |
|                  | MS10 = Electrical w/ DIN connector (male end only)                  |                                                    |
|                  | MS10LC = Low current MS10                                           |                                                    |
|                  | MS11 = Electrical w/ 12 ft. 4-conductor wire                        |                                                    |
|                  | MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)  |                                                    |
|                  | MS12LC = Low current MS12                                           |                                                    |
|                  | MS16 = Electrical w/ weather-packed sealed connector                |                                                    |
|                  | MS16LC = Low current MS16                                           |                                                    |
|                  | MS17LC = Electrical w/ 4 pin Brad Harrison male connector           |                                                    |
|                  | MS5T = MS5 (see above) w/ thermal lockout                           |                                                    |
|                  | MS5LCT = Low current MS5T                                           |                                                    |
|                  | MS10T = MS10 (see above) w/ thermal lockout                         |                                                    |
|                  | MS10LCT = Low current MS10T                                         |                                                    |
|                  | MS12T = MS12 (see above) w/ thermal lockout                         |                                                    |
|                  | MS12LCT = Low current MS12T                                         |                                                    |
|                  | MS16T = MS16 (see above) w/ thermal lockout                         |                                                    |
|                  | MS16LCT = Low current MS16T                                         |                                                    |
|                  | MS17LCT = Low current MS17T                                         |                                                    |
|                  | MS = Cam operated switch w/ ½" conduit female connection            |                                                    |
|                  | MS13 = Supplied w/ threaded connector & light                       |                                                    |
|                  | MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end) |                                                    |
|                  | MS13DCT = MS13 (see above), direct current, w/ thermal lockout      |                                                    |
|                  | MS13DCLCT = Low current MS13DCT                                     |                                                    |
|                  | MS14DCT = MS14 (see above), direct current, w/ thermal lockout      |                                                    |
|                  | MS14DCLCT = Low current MS14DCT                                     |                                                    |

## NOTES:

- Box 1. WTF1 includes a Anodized Head and a Stainless Steel Bowl.
- Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4. E media elements are only available with Buna N seals.
- Box 4. For option V, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.
- Box 6. B porting option supplied with metric mounting holes.

# Return Line Filter

KF3

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

LTK

MRT

Accessories  
For Tank-  
Mounted  
Filters

PAF1

MAF1

MF2



## Features and Benefits

- Meets HF4 automotive standard
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- Various Dirt Alarm® options
- Available with No-Element indicator
- Available with NPTF inlet and outlet female test ports
- Available with magnet inserts
- Available with housing drain plug
- Takes the standard "K" element in K, KK or 27K lengths
- Allows consolidation of inventoried replacement elements by using K-size elements
- Also available with DirtCatcher® elements (KD & KKD)
- G** Available with quality-protected GeoSeal® Elements (GKF3)



Part of the Schroeder Industries 2030 Initiative

100 gpm  
**380 L/min**  
300 psi  
**20 bar**

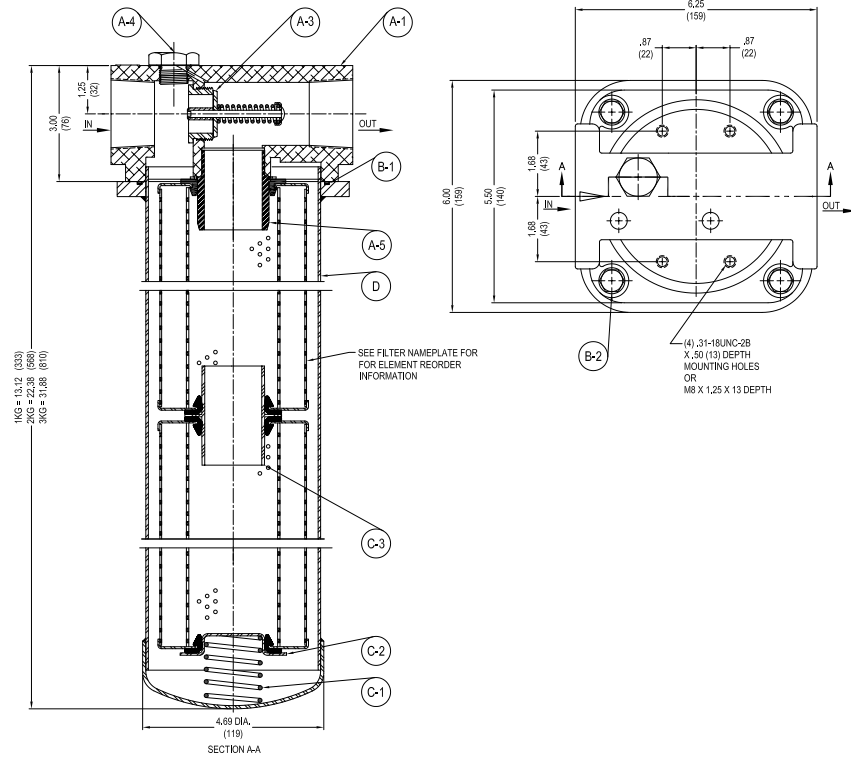
Model No. of filter in photograph is KF31K10SD5.

|                           |                                                       |
|---------------------------|-------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 300 psi (20 bar)                                      |
| Min. Yield Pressure:      | 1000 psi (70 bar), per NFPA T2.6.1                    |
| Rated Fatigue Pressure:   | 290 psi (20 bar), per NFPA T2.6.1-2005                |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                       |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 51 psi (4 bar) |
| Porting Head:             | Die Cast Aluminum                                     |
| Element Case:             | Steel                                                 |
| Weight of KF3-1K:         | 10.5 lbs. (4.8 kg)                                    |
| Weight of KF3-2K:         | 14.2 lbs. (6.4 kg)                                    |
| Weight of KF3-3K:         | 18.5 lbs. (8.4 kg)                                    |
| Element Change Clearance: | 1.50" (40 mm) for all lengths                         |

Filter  
Housing  
Specifications

|                        |                                                                                                                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                     |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                                                                                                                                    |
| High Water Content     | All Z-Media® and ASP® Media (synthetic)                                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® media (synthetic)                                                                                                                                   |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic), 3, 5, and 10 µ ASP® Media (synthetic)                                                                                                                   |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation and all ASP® media (synthetic)                                          |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP® media (synthetic) |

Fluid  
Compatibility



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

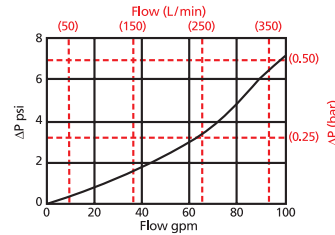
| Element           | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC)<br>calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|-------------------|-------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|                   | $\beta_x \geq 75$                                                                                                 | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| KZ1/KKZ1/27KZ1    | <1.0                                                                                                              | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| KZ3/KKZ3/27KZ3    | <1.0                                                                                                              | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| KZ5/KKZ5/27KZ5    | 2.5                                                                                                               | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| KZ10/KKZ10/27KZ10 | 7.4                                                                                                               | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| KZ25/KKZ25/27KZ25 | 18.0                                                                                                              | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| KZW1              | N/A                                                                                                               | N/A                | N/A                | <4.0                                                                 | <4.0                     |
| KZW3/KKZW3        | N/A                                                                                                               | N/A                | N/A                | 4.0                                                                  | 4.8                      |
| KZW5/KKZW5        | N/A                                                                                                               | N/A                | N/A                | 5.1                                                                  | 6.4                      |
| KZW10/KKZW10      | N/A                                                                                                               | N/A                | N/A                | 6.9                                                                  | 8.6                      |
| KZW25/KKZW25      | N/A                                                                                                               | N/A                | N/A                | 15.4                                                                 | 18.5                     |

| Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| KZ1     | 112     | KKZ1    | 224     | 27KZ1   | 336     | KDZ1    | 89      | KKDZ1   | 188     | KZW1    | 61      |
| KZ3     | 115     | KKZ3    | 230     | 27KZ3   | 345     | KDZ3    | 71      | KKDZ3   | 150     | KZW3    | 64      |
| KZ5     | 119     | KKZ5    | 238     | 27KZ5   | 357     | KDZ5    | 100     | KKDZ5   | 210     | KZW5    | 63      |
| KZ10    | 108     | KKZ10   | 216     | 27KZ10  | 324     | KDZ10   | 80      | KKDZ10  | 168     | KZW10   | 57      |
| KZ25    | 93      | KKZ25   | 186     | 27KZ25  | 279     | KDZ25   | 81      | KKDZ25  | 171     | KZW25   | 79      |
|         |         |         |         |         |         |         |         |         |         | KKZW3   | 128     |
|         |         |         |         |         |         |         |         |         |         | KKZW5   | 126     |
|         |         |         |         |         |         |         |         |         |         | KKZW10  | 114     |
|         |         |         |         |         |         |         |         |         |         | KKZW25  | 158     |

Element Collapse Rating: 150 psid (10 bar) for standard elements

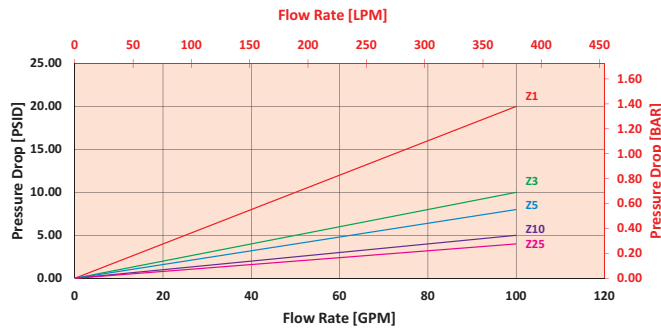
Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
 KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
 27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

$\Delta P_{\text{housing}}$ KF3  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$ 

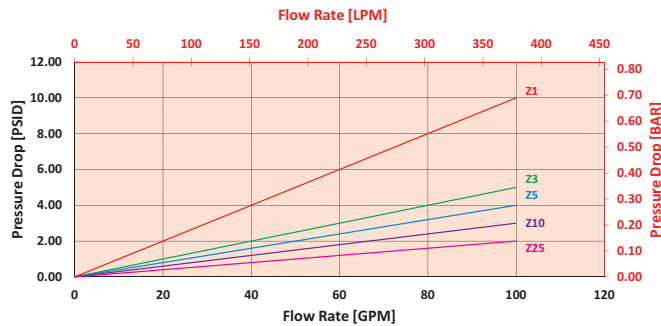
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:Determine  $\Delta P_{\text{filter}}$  at 70 gpm (265.3 L/min) for KF31KZ10SD5 using 160 SUS (34 cSt) fluid.Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 70 gpm. In this case,  $\Delta P_{\text{housing}}$  is 4 psi (.27 bar) on the graph for the KF3 housing.Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 70 gpm. In this case,  $\Delta P_{\text{element}}$  is 3 psi (.21 bar) according to the graph for the KZ10 element.Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.Solution:

$$\Delta P_{\text{housing}} = 4 \text{ psi } [.227 \text{ bar}] \mid \Delta P_{\text{element}} = 3 \text{ psi } [.21 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 4 \text{ psi} + (3 \text{ psi} * 1.1) = 7.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .27 \text{ bar} + (.21 \text{ bar} * 1.1) = .50 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use  
the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug  
this variable into the overall  
pressure drop equation.

| Ele.  | $\Delta P$ | Ele.              | $\Delta P$ | Ele.               | $\Delta P$ |
|-------|------------|-------------------|------------|--------------------|------------|
| K3    | 0.25       | 2K3/<br>KK3       | 0.12       | 3KZ1/<br>27KZ1     | 0.05       |
| K10   | 0.09       | 2K10/<br>KK10     | 0.05       | 3KZ3/<br>27KZ3     | 0.03       |
| K25   | 0.02       | 2K25/<br>KK25     | 0.01       | 3KZ5/<br>27KZ5     | 0.02       |
| KAS3  | 0.10       | 2KAS3/<br>KKAS3   | 0.05       | 3KZ10/<br>27KZ10   | 0.02       |
| KAS5  | 0.08       | 2KAS5/<br>KKAS5   | 0.04       | 3KZ25/<br>27KZ25   | 0.01       |
| KAS10 | 0.05       | 2KAS10/<br>KKAS10 | 0.03       | K3K                | 0.08       |
| KDZ1  | 0.24       | 2KDZ1             | 0.12       | 3K10               | 0.03       |
| KDZ3  | 0.12       | 2KDZ3             | 0.06       | 3K25               | 0.01       |
| KDZ5  | 0.10       | 2KDZ5             | 0.05       | 3KAS3/<br>27KAS3   | 0.03       |
| KDZ10 | 0.06       | 2KDZ10            | 0.03       | 3KAS5/<br>27KAS5   | 0.02       |
| KDZ25 | 0.04       | 2KDZ25            | 0.02       | 3KAS10/<br>27KAS10 | 0.02       |
| KZW1  | 0.43       | 2KZW1             | -          |                    |            |
| KZW3  | 0.32       | 2KZW3/<br>KKZW3   | 0.16       |                    |            |
| KZW5  | 0.28       | 2KZW5/<br>KKZW5   | 0.14       |                    |            |
| KZW10 | 0.23       | 2KZW10/<br>KKZW10 | 0.12       |                    |            |
| KZW25 | 0.14       | 2KZW25/<br>KKZW25 | 0.07       |                    |            |

Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## How to Build a Valid Model Number for a Schroeder KF3:

|       |       |       |       |       |       |       |       |       |        |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
| KF3   |       |       |       |       |       |       |       |       |        |

Example: NOTE: Only box 10 may contain more than one option

|       |       |       |       |       |       |       |       |       |        |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
| KF3   | 1K    | Z     | 10    |       |       | S     |       | D5    |        |

= KF31KZ10SD5

| BOX 1                          | BOX 2                     | BOX 3                                         | BOX 4                                    |
|--------------------------------|---------------------------|-----------------------------------------------|------------------------------------------|
| Filter Series                  | Number & Size of Elements | Media Type                                    | Micron Rating                            |
| KF3                            | 1K, KK,27K                | Omit = E media (cellulose)                    | 1 = 1 μ (Z, ZW and DZ media)             |
| GKF3<br>(GeoSeal®)             | 2K                        | AS = Anti-Static Pleat Media                  | 3 = 3 μ (E, AS, Z, ZW and DZ media)      |
| WKF3<br>(Water)                | 3K                        | Z = Excellement® Z-Media® (synthetic)         | 5 = 5 μ (AS, Z, ZW and DZ media)         |
|                                | GeoSeal®                  | ZW = Aqua-Excellement® ZW media               | 10 = 10 μ (E, AS, Z, ZW, M and DZ media) |
|                                | 1KG, KKG,27KG             | W = Water Removal media                       | 25 = 25 μ (E, Z, ZW, M and DZ media)     |
|                                | 2KG                       | M = M Media (reusable metal)                  | 60 = 60 μ (M media)                      |
|                                | 3KG                       | DZ = DirtCatcher® Excellement® Z-Media®       |                                          |
|                                |                           | Water System Element Options                  |                                          |
|                                |                           | KM10 = K size 25 μ M media (reusable metal)   |                                          |
|                                |                           | KM25 = K size 10 μ M media (reusable metal)   |                                          |
|                                |                           | KM60 = K size 60 μ M media (reusable metal)   |                                          |
|                                |                           | KM150 = K size 150 μ M media (reusable metal) |                                          |
|                                |                           | KM260 = K size 260 μ M media (reusable metal) |                                          |
| BOX 5                          | BOX 6                     | BOX 7                                         | BOX 10                                   |
| Seal Material                  | Magnet Option             | Porting                                       | Bypass Settings                          |
| Omit = Buna N                  | Omit = None               | P = 1½" NPTF                                  | Omit = 30 psi cracking                   |
| H = EPR                        | M = Magnet                | S = SAE-24                                    | 40 = 40 psi bypass                       |
| V = Viton®                     |                           | F = 1½" SAE-4-bolt flange Code 61             | 50 = 50 psi cracking (req. for HF4)      |
| H.5 = Skydrol®                 |                           | B = ISO 228 G-1½"                             | 60 = 60 psi bypass                       |
| W = Buna N with anodized parts |                           |                                               |                                          |

## NOTES:

Box 2. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. Number of elements must equal 1 when using KK or 27K elements. ZW media not available in 27K.

Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5.

Box 5. For options H, W, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 7. For option F, bolt thread depth .63" (16 mm). B porting option supplied with metric mounting holes.

Box 10. Option L not available with MS Dirt Alarm

| BOX 9                                                               | BOX 10                                      |
|---------------------------------------------------------------------|---------------------------------------------|
| Dirt Alarm® Options                                                 | Additional Options                          |
| Omit = None                                                         | Omit = None                                 |
| Visual                                                              | L = Two ¼" NPTF inlet and outlet test ports |
| D = Pointer                                                         | N = No-Element indicator                    |
| D5 = Visual pop-up                                                  | G426 = ¾" drain on bottom of housing        |
| Visual with Thermal Lockout                                         | G440 = ½" drain on bottom of housing        |
| D8 = Visual w/ thermal lockout                                      |                                             |
| Electrical                                                          |                                             |
| MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable               |                                             |
| MS5LC = Low current MS5                                             |                                             |
| MS10 = Electrical w/ DIN connector (male end only)                  |                                             |
| MS10LC = Low current MS10                                           |                                             |
| MS11 = Electrical w/ 12 ft. 4-conductor wire                        |                                             |
| MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)  |                                             |
| MS12LC = Low current MS12                                           |                                             |
| MS16 = Electrical w/ weather-packed sealed connector                |                                             |
| MS16LC = Low current MS16                                           |                                             |
| Electrical with Thermal Lockout                                     |                                             |
| MS17LC = Electrical w/ 4 pin Brad Harrison male connector           |                                             |
| MS5T = MS5 (see above) w/ thermal lockout                           |                                             |
| MS5LC = Low current MS5T                                            |                                             |
| MS10T = MS10 (see above) w/ thermal lockout                         |                                             |
| MS10LC = Low current MS10T                                          |                                             |
| MS12T = MS12 (see above) w/ thermal lockout                         |                                             |
| MS12LC = Low current MS12T                                          |                                             |
| MS16T = MS16 (see above) w/ thermal lockout                         |                                             |
| MS16LC = Low current MS16T                                          |                                             |
| MS17LC = Low current MS17T                                          |                                             |
| Electrical Visual                                                   |                                             |
| MS = Cam operated switch w/ ½" conduit female connection            |                                             |
| MS13 = Supplied w/ threaded connector & light                       |                                             |
| MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end) |                                             |
| Electrical Visual with Thermal Lockout                              |                                             |
| MS13DCT = MS13 (see above), direct current, w/ thermal lockout      |                                             |
| MS13DCLCT = Low current MS13DCT                                     |                                             |
| MS14DCT = MS14 (see above), direct current, w/ thermal lockout      |                                             |
| MS14DCLCT = Low current MS14DCT                                     |                                             |

# Return Line Filter with Threaded Bowl

KL3



## Features and Benefits

- Threaded bowl allows for easier removal and facilitates element changes
- Available with 18LC and K-size elements
- Available with 1½" and 2" porting
- Offered in pipe, SAE straight thread, ISO 228, and flange porting
- Various Dirt Alarm® options
- Available with NPTF inlet and outlet female test ports
- Available with housing drain plug
- G** Available with quality-protected GeoSeal® Elements (GKL3)

120 gpm  
455 L/min  
300 psi  
20 bar

Model No. of filter in photograph is KL31KZ10F24.

|                           |                                                                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids for P24, S24, F24 and B24 porting<br>Up to 120 gpm (455 L/min) for 150 SUS (32 cSt) fluids for P32, S32 and B32 porting |
| Max. Operating Pressure:  | 300 psi (20 bar)                                                                                                                                                              |
| Min. Yield Pressure:      | 1000 psi (70 bar), per NFPA T2.6.1                                                                                                                                            |
| Rated Fatigue Pressure:   | 300 psi (20 bar), per NFPA T2.6.1-2005                                                                                                                                        |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                                                                                               |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 68 psi (4.7 bar)                                                                                                                       |
| Porting Head:             | Cast Aluminum                                                                                                                                                                 |
| Element Case:             | Steel                                                                                                                                                                         |
| Weight of KL3-18LC:       | 20.00 lbs. (9.1 kg)                                                                                                                                                           |
| Weight of KL3-1K:         | 14.75 lbs. (6.7 kg)                                                                                                                                                           |
| Weight of KL3-2K:         | 18.50 lbs. (8.4 kg)                                                                                                                                                           |
| Weight of KL3-3K:         | 22.75 lbs. (10.3 kg)                                                                                                                                                          |
| Element Change Clearance: | 2.50" (64 mm)                                                                                                                                                                 |

## Filter Housing Specifications

|                        |                                                                               |
|------------------------|-------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                   |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                  |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                       |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® media (synthetic)                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic), 3, 5, and 10 µ ASP® media (synthetic) |
| Phosphate Esters       | All Z-Media® with H (EPR) seal designation and all ASP® media (synthetic)     |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

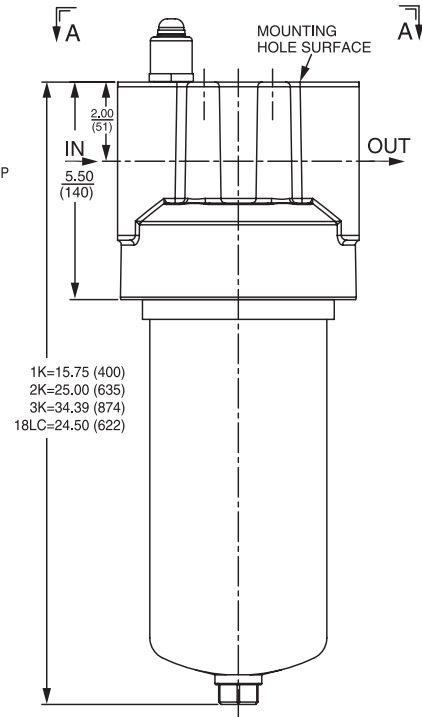
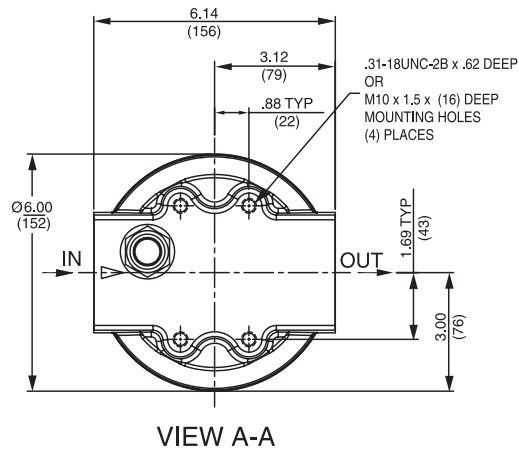
LTK

MRT

PAF1

MAF1

MF2



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element           | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC)<br>calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|-------------------|-------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                   | $\beta_x \geq 75$                                                                                                 | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1/27KZ1    | <1.0                                                                                                              | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KKZ3/27KZ3    | <1.0                                                                                                              | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KKZ5/27KZ5    | 2.5                                                                                                               | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KKZ10/27KZ10 | 7.4                                                                                                               | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25/27KZ25 | 18.0                                                                                                              | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1              | N/A                                                                                                               | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3        | N/A                                                                                                               | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5        | N/A                                                                                                               | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10      | N/A                                                                                                               | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25      | N/A                                                                                                               | N/A                | N/A                | 15.4                                                                 | 18.5                   |
| 18LCZ1            | <1.0                                                                                                              | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| 18LCZ3            | <1.0                                                                                                              | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| 18LCZ5            | 2.5                                                                                                               | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| 18LCZ10           | 7.4                                                                                                               | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| 18LCZ25           | 18.0                                                                                                              | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) | Element | DHC (g) |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| KZ1     | 112     | KKZ1    | 224     | 27KZ1   | 336     | KZW1    | 61      |         | 18LCZ1  | 224     |         |
| KZ3     | 115     | KKZ3    | 230     | 27KZ3   | 345     | KZW3    | 64      | KKZW3   | 128     | 18LCZ3  | 230     |
| KZ5     | 119     | KKZ5    | 238     | 27KZ5   | 357     | KZW5    | 63      | KKZW5   | 126     | 18LCZ5  | 238     |
| KZ10    | 108     | KKZ10   | 216     | 27KZ10  | 324     | KZW10   | 57      | KKZW10  | 114     | 18LCZ10 | 216     |
| KZ25    | 93      | KKZ25   | 186     | 27KZ25  | 279     | KZW25   | 79      | KKZW25  | 158     | 18LCZ25 | 186     |

Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

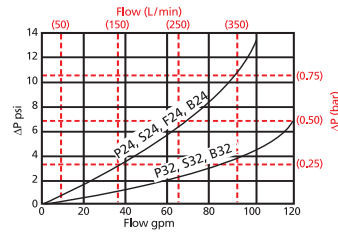
Element Nominal Dimensions:

- K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long
- KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long
- 27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long
- 18LC: 4.0" (100 mm) O.D. x 18.5" (470 mm) long



$\Delta P_{\text{housing}}$

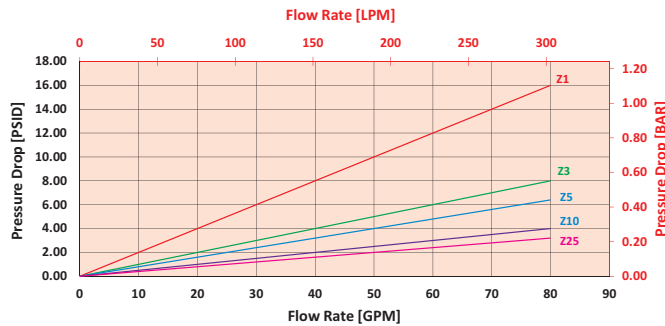
KL3  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

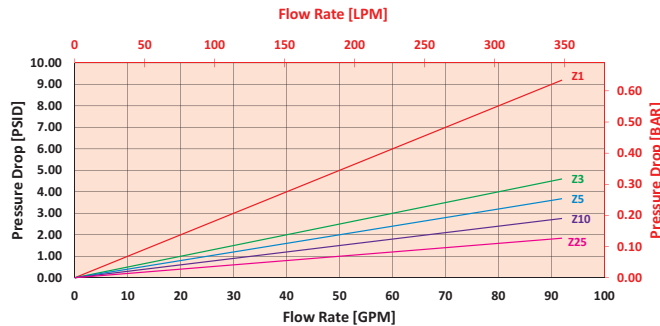
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 70 gpm (265.3 L/min) for KL31KZ10P24D5L using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 70 gpm. In this case,  $\Delta P_{\text{housing}}$  is 7 psi (.48 bar) on the graph for the KL3 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 70 gpm. In this case,  $\Delta P_{\text{element}}$  is 3 psi (.21 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 7 \text{ psi } [.48 \text{ bar}] \mid \Delta P_{\text{element}} = 3 \text{ psi } [.21 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 7 \text{ psi} + (3 \text{ psi} * 1.1) = 10.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .48 \text{ bar} + (.21 \text{ bar} * 1.1) = .71 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.          | $\Delta P$ | Ele.    | $\Delta P$ |
|-------|------------|---------------|------------|---------|------------|
| K3    | 0.25       | 2K3/KK3       | 0.12       | 18LC3   | 0.12       |
| K10   | 0.09       | 2K10/KK10     | 0.05       | 18L10   | 0.05       |
| K25   | 0.02       | 2K25/KK25     | 0.01       | 18LC21  | 0.10       |
| KAS3  | 0.10       | 2KAS3/KKAS3   | 0.05       | 18LCZ3  | 0.05       |
| KAS5  | 0.08       | 2KAS5/KKAS5   | 0.04       | 18LCZ5  | 0.04       |
| KAS10 | 0.05       | 2KAS10/KKAS10 | 0.03       | 18LCZ10 | 0.03       |
| KZW1  | 0.43       | 2KZW1         | -          | 18LCZ25 | 0.02       |
| KZW3  | 0.32       | 2KZW3/KKZW3   | 0.16       |         |            |
| KZW5  | 0.28       | 2KZW5/KKZW5   | 0.14       |         |            |
| KZW10 | 0.23       | 2KZW10/KKZW10 | 0.12       |         |            |
| KZW25 | 0.14       | 2KZW25/KKZW25 | 0.07       |         |            |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder KL3:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| KL3   |       |       |       |       |       |       |       |       |        |

Example: Option 1 NOTE: One option per box

Option 2 NOTE: One option per box

| 1   | 2    | 3 | 4 | 5 | 6   | 7 | 8  | 9 | 10 | 1   | 2  | 3 | 4 | 5 | 6   | 7 | 8  | 9 | 10 |
|-----|------|---|---|---|-----|---|----|---|----|-----|----|---|---|---|-----|---|----|---|----|
| KL3 | 18LC | Z | 1 | H | P24 |   | D5 | L |    | KL3 | 2K | Z | 1 |   | P24 |   | D5 | L |    |

|                                                                                                                                                       |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                           |                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| BOX 1                                                                                                                                                 | BOX 2                                                                                                                                                                                                                                                    | BOX 3                                                                                                                                                                                                                                                                                                     | BOX 4                                                                                                                                    |
| Filter Series                                                                                                                                         | Option 1                                                                                                                                                                                                                                                 | Option 1                                                                                                                                                                                                                                                                                                  | Option 1                                                                                                                                 |
| KL3                                                                                                                                                   | Size                                                                                                                                                                                                                                                     | Media Type                                                                                                                                                                                                                                                                                                | Micron Rating                                                                                                                            |
| GKL3<br>(GeoSeal®)                                                                                                                                    | 18LC                                                                                                                                                                                                                                                     | Omit = E media (cellulose)<br>Z = Excellement® Z-Media® (synthetic)<br>Water System Element Option<br>KM10 = 10 µM media (reusable metal)<br>KM25 = 25 µM media (reusable metal)<br>KM60 = 60 µM media (reusable metal)<br>KM150 = 150 µM media (reusable metal)<br>KM260 = 260 µM media (reusable metal) | 1 = 1 µ (Z-Media®)<br>3 = 3 µ (E and Z-Media®)<br><br>5 = 5 µ (Z-Media®)<br><br>10 = 10 µ (E and Z-Media®)<br>25 = 25 µ (E and Z-Media®) |
| WKL3<br>(Water)                                                                                                                                       |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                           |                                                                                                                                          |
| BOX 2                                                                                                                                                 | BOX 3                                                                                                                                                                                                                                                    | BOX 4                                                                                                                                                                                                                                                                                                     | BOX 5                                                                                                                                    |
| Option 2                                                                                                                                              | Option 2                                                                                                                                                                                                                                                 | Option 2                                                                                                                                                                                                                                                                                                  |                                                                                                                                          |
| Number & Size of Elements                                                                                                                             | Media Type                                                                                                                                                                                                                                               | Micron Rating                                                                                                                                                                                                                                                                                             | Seal Material                                                                                                                            |
| 1K, KK, 27K<br>2K<br>3K                                                                                                                               | Omit = E media (cellulose)<br>Z = Excellement® Z-Media® (synthetic)<br>AS = Anti-Static Pleat Media (synthetic)<br>ZW = Aqua-Excellement® ZW media<br>W = Water Removal media<br>M = M media (reusable metal)<br>DZ = DirtCatcher® Excellement® Z-Media® | 1 = 1 µ (Z, ZW and DZ media)<br>3 = 3 µ (E, AS, Z, ZW and DZ media)<br>5 = 5 µ (AS, Z, ZW and DZ media)<br>10 = 10 µ (E, AS, Z, ZW, M and DZ media)<br>25 = 25 µ (E, Z, ZW, M and DZ media)<br>60 = 60 µ (M media)                                                                                        | Omit = Buna N<br>H = EPR<br>V = Viton®<br>H.5 = Skydrol® Compatibility<br>W = Buna N                                                     |
|                                                                                                                                                       |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                           |                                                                                                                                          |
| BOX 6                                                                                                                                                 | BOX 7                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                           |                                                                                                                                          |
| Porting                                                                                                                                               | Bypass Setting                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                           |                                                                                                                                          |
| P24 = 1½" NPTF<br>S24 = SAE-24<br>F24 = 1½" SAE 4-bolt flange<br>Code 61<br>B24 = ISO 228 G-1½"<br>P32 = 2" NPTF<br>S32 = SAE-32<br>B32 = SO 228 G-2" | Omit = 30 psi cracking<br>40 = 40 PSI Bypass<br>50 = 50 psi cracking (req. for HF4)                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                           |                                                                                                                                          |
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## NOTES:

Box 2. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. ZW media not available in 27K length. Example: 18LCZ3V

Box 5. For options H, W, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 6. B24 and B32 porting options supplied with metric mounting holes. 18LC elements require 2" ports for up to 120 gpm. K size elements require 1½" ports for up to 100 gpm.

# Return Line Filter with 2" Ports

LF1



## Features and Benefits

- Offered in pipe, SAE straight thread and ISO 228 porting
- Available in 18" element lengths only
- Various Dirt Alarm® options
- Available with NPTF inlet and outlet female test ports
- Available with 2" porting with "K" size element
- Available with housing drain plug

120 gpm  
455 L/min  
300 psi  
20 bar

Model No. of filter in photograph is LF118LCZ10P32D.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 120 gpm (455 L/min) for 150 SUS (32 cSt) fluids     |
| Max. Operating Pressure:  | 300 psi (20 bar)                                          |
| Min. Yield Pressure:      | 1000 psi (70 bar), per NFPA T2.6.1                        |
| Rated Fatigue Pressure:   | 250 psi (17 bar), per NFPA T2.6.1-2005                    |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 30 psi (2.1 bar)<br>Full Flow: 60 psi (4.1 bar) |
| Porting Head:             | Cast Aluminum                                             |
| Element Case:             | Steel                                                     |
| Available Porting:        | 2" NPTF, 2½-12 SAE Straight                               |
| Weight of LF1-18LC:       | 17.5 lbs. (7.9 kg)                                        |
| Element Change Clearance: | 2.0" (55 mm)                                              |

## Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media (synthetic)                                                                                                                                          |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

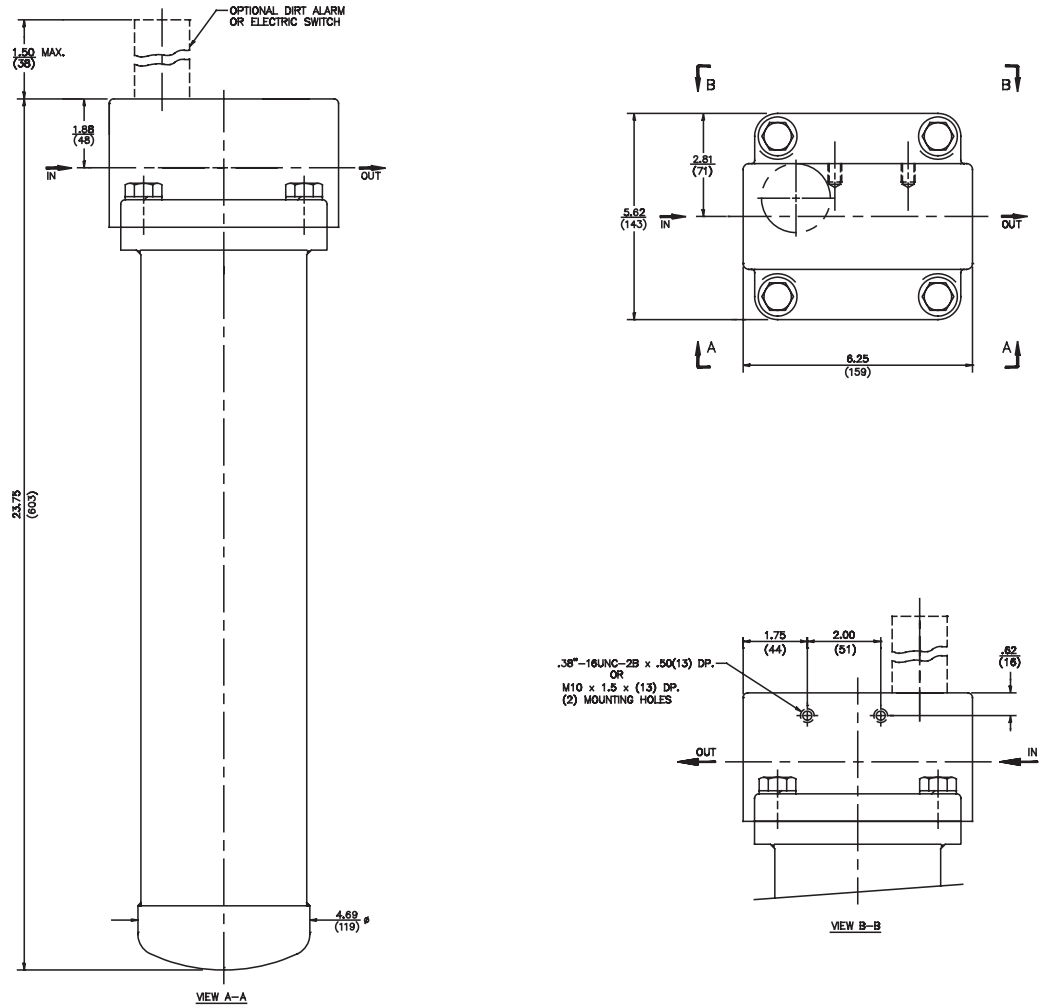
LTK

MRT

PAF1

MAF1

MF2



Metric dimensions in ( ).

## Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 18LCZ1  | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 18LCZ3  | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 18LCZ5  | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 18LCZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 18LCZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| 18LCZ1  | 224      |
| 18LCZ3  | 230      |
| 18LCZ5  | 238      |
| 18LCZ10 | 216      |
| 18LCZ25 | 186      |

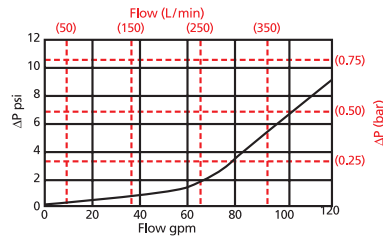
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 4.0" (100 mm) O.D. x 18.5" (470 mm) long

$\Delta P_{\text{housing}}$

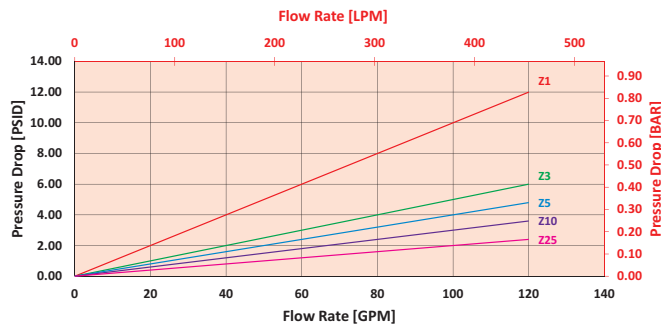
LF1-2"  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

18LCZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 70 gpm (265.3 L/min) for LF118LCZ3P32D5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 70 gpm. In this case,  $\Delta P_{\text{housing}}$  is 2 psi (.14 bar) on the graph for the LF1 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 70 gpm. In this case,  $\Delta P_{\text{element}}$  is 3.5 psi (.24 bar) according to the graph for the 18LCZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 2 \text{ psi } [.14 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 3.5 \text{ psi } [.24 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 2 \text{ psi} + (3.5 \text{ psi} * 1.1) = 5.9 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .14 \text{ bar} + (.24 \text{ bar} * 1.1) = .40 \text{ bar}$$

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder LF1:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| LF1   |       |       |       |       |       |       |       |

Example: NOTE: Only box 8 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| LF1   | 18    | LC3   |       | P32   |       | D5    |       |

= LF118LC3P32D5

| BOX 1           | BOX 2                  | BOX 3                                                                                                                                                                                                                                                                                                                                                                | BOX 4                                                                  |
|-----------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Filter Series   | Length of Element (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                               | Seal Material                                                          |
| LF1             | 18                     | LC3 = LC size 3 μ E media (cellulose)<br>LC10 = LC size 10 μ E media (cellulose)<br>LCZ1 = LC size 1 μ Excellement® Z-Media™ (synthetic)<br>LCZ3 = LC size 3 μ Excellement Z-Media (synthetic)<br>LCZ5 = LC size 5 μ Excellement Z-Media (synthetic)<br>LCZ10 = LC size 10 μ Excellement Z-Media (synthetic)<br>LCZ25 = LC size 25 μ Excellement Z-Media (synthetic) | Omit = Buna N<br>H = EPR<br>V = Viton®<br>H.5 = Skydrol® Compatibility |
| WLF1<br>(Water) |                        |                                                                                                                                                                                                                                                                                                                                                                      |                                                                        |

| BOX 5                                               | BOX 6                                      | BOX 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | BOX 8                                                                                                                                             |
|-----------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Porting                                             | Bypass                                     | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Additional Options                                                                                                                                |
| P32 = 2" NPTF<br>S32 = SAE-32<br>B32 = ISO 228 G-2" | Omit = 30 PSI Bypass<br>50 = 50 PSI Bypass | Omit = None<br>D = Pointer<br>D5 = Visual pop-up<br>D8 = Visual w/ thermal lockout<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T<br>MS = Cam operated switch w/ ½" conduit female connection<br>MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT | Omit = None<br>L = Two ¼" NPTF inlet and outlet female test ports<br>G426 = ¾" drain on bottom of housing<br>G440 = ½" drain on bottom of housing |
| Visual                                              |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                   |
| Visual with Thermal Lockout                         |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                   |
| Electrical                                          |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                   |
| Electrical with Thermal Lockout                     |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                   |
| Electrical Visual                                   |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                   |
| Electrical Visual with Thermal Lockout              |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                   |

#### NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.  
Example: 18LCZ3V

Box 4. For options H, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior.  
Viton® is a registered trademark of DuPont Dow Elastomers.  
Skydrol® is a registered trademark of Solutia Inc.

Box 5. B porting option supplied with metric mounting holes.

# Top-Ported Return Line Filter

**MLF1**



## Features and wBenefits

- Equipped with inlet and outlet manifolds
- Meets HF4 automotive standard
- Offered in pipe and flange porting
- Available in 2, 4 or 6 element configurations
- Various Dirt Alarm® options
- Available with NPTF inlet and outlet female test ports
- Available with housing drain plugs
- **G** Available with quality-protected GeoSeal® Elements (GMLF1)

**200 gpm**  
**760 L/min**  
**300 psi**  
**20 bar**

Model No. of filter in photograph is MLF14K10PD.

|                           |                                                       |
|---------------------------|-------------------------------------------------------|
| Flow Rating:              | Up to 200 gpm (760 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 300 psi (20 bar)                                      |
| Min. Yield Pressure:      | 1000 psi (70 bar), per NFPA T2.6.1                    |
| Rated Fatigue Pressure:   | 250 psi (17 bar), per NFPA T2.6.1-2005                |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                       |
| Bypass Setting:           | Cracking: 25 psi (2 bar)<br>Full Flow: 60 psi (4 bar) |
| Porting Head:             | Anodized Cast Aluminum                                |
| Element Case:             | Steel                                                 |
| Weight of MLF1-2K:        | 44.0 lbs. (20.0 kg)                                   |
| Weight of MLF1-4K:        | 50.0 lbs. (23.0 kg)                                   |
| Weight of MLF1-6K:        | 58.0 lbs. (26.0 kg)                                   |
| Element Change Clearance: | 2.0" (55 mm)                                          |

## Filter Housing Specifications

|                        |                                                                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                      |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                                                                                                                                     |
| High Water Content     | All Z-Media® (synthetic)                                                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation and all ASP® media (synthetic)                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP® media (synthetic). |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

**MLF1**

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

LTK

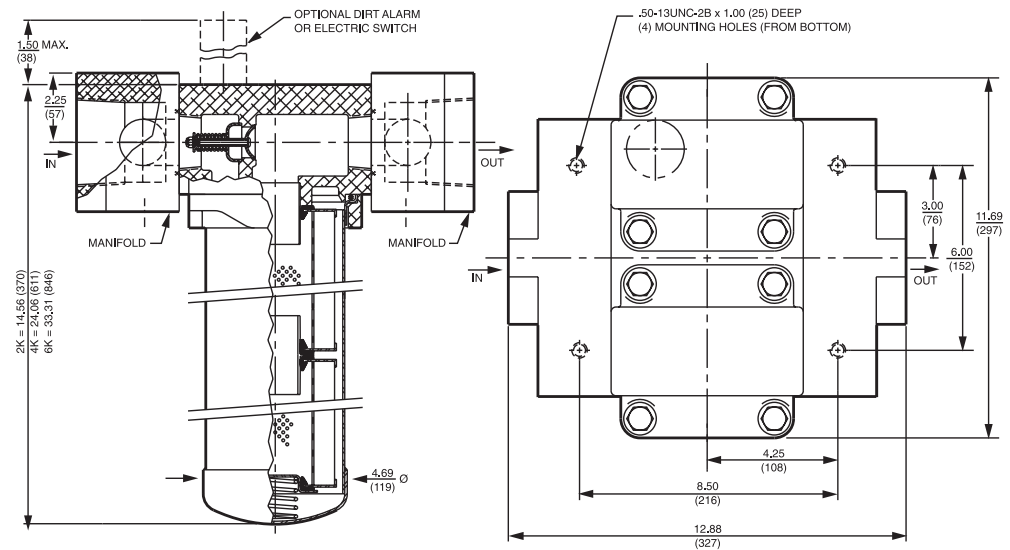
MRT

PAF1

MAF1

MF2





Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| KZ1     | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| KZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| KZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| KZ10    | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| KZ25    | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| KZW3    | N/A                                                                                                            | N/A                | N/A                | <4.0                                                                 | 4.8                      |
| KZW5    | N/A                                                                                                            | N/A                | N/A                | 5.1                                                                  | 6.4                      |
| KZW10   | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                      |
| KZW25   | N/A                                                                                                            | N/A                | N/A                | 15.4                                                                 | 18.5                     |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|---------|----------|
| 2KZ1    | 224      | 4KZ1    | 448      | 6KZ1    | 672      | KZW3    | 64       |
| 2KZ3    | 230      | 4KZ3    | 460      | 6KZ3    | 690      | KZW5    | 63       |
| 2KZ5    | 238      | 4KZ5    | 476      | 6KZ5    | 714      | KZW10   | 67       |
| 2KZ10   | 216      | 4KZ10   | 432      | 6KZ10   | 648      | KZW25   | 79       |
| 2KZ25   | 186      | 4KZ25   | 372      | 6KZ25   | 558      |         |          |

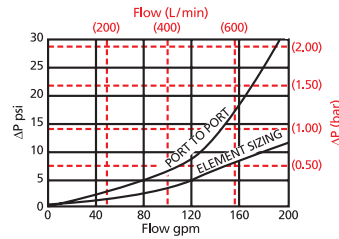
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
 KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
 27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

$\Delta P_{\text{housing}}$

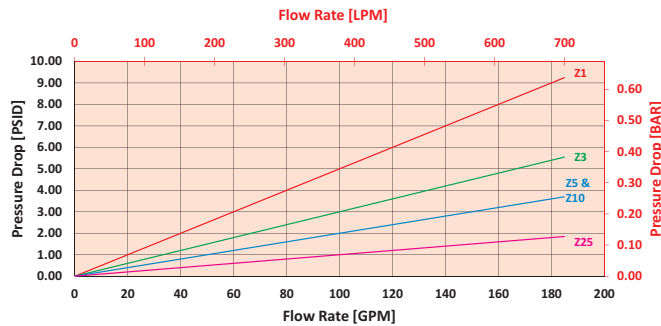
MLF1  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

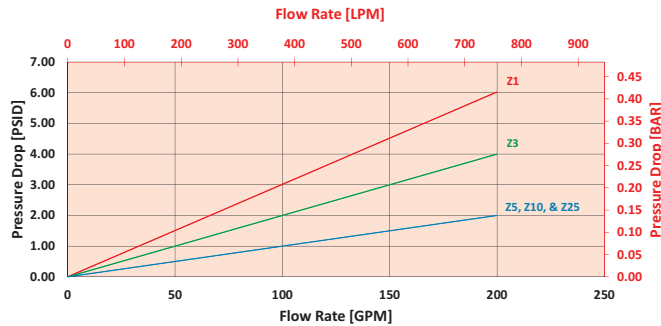
4KZ/2KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



6KZ/2-27KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 150 gpm (568.5 L/min) for MLF14K10PD using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 150 gpm. In this case,  $\Delta P_{\text{housing}}$  is 15 psi (1 bar) on the graph for the MLF1 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 150 gpm. In this case,  $\Delta P_{\text{element}}$  is 3 psi (.21 bar) according to the graph for the KKZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 15 \text{ psi [1 bar]} \mid \Delta P_{\text{element}} = 3 \text{ psi [.21 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 15 \text{ psi} + (3 \text{ psi} * 1.1) = 18.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 1 \text{ bar} + (.21 \text{ bar} * 1.1) = 1.2 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.        | $\Delta P$ | Ele.           | $\Delta P$ |
|-------|------------|-------------|------------|----------------|------------|
| 2KZ1  | 0.10       | 2K3         | 0.12       | 4K3/KK3        | 0.06       |
| 2KZ3  | 0.05       | 2K10        | 0.05       | 4K10/KK10      | 0.02       |
| 2KZ5  | 0.04       | 2K25        | 0.01       | 4K25/KK25      | 0.01       |
| 2KZ10 | 0.03       | 2KAS3       | 0.05       | 4KAS3/KKAS3    | 0.03       |
| 2KZ25 | 0.02       | 2KAS5       | 0.04       | 4KAS5/KKAS5    | 0.02       |
| KZW3  | 0.32       | 2KAS10      | 0.03       | 4KAS10/KKAS10  | 0.02       |
| KZW5  | 0.28       | 2KZW3/KKZW3 | 0.16       | 6KAS3/27KAS3   | 0.02       |
| KZW10 | 0.23       | 2KZW5/KKZW5 | 0.14       | 6KAS5/27KAS5   | 0.01       |
| KZW25 | 0.14       |             |            | 6KAS10/27KAS10 | 0.01       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder MLF1:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| MLF1  |       |       |       |       |       |       |       |       |        |

Example: NOTE: Only box 10 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| MLF1  | 2K    |       | 10    |       |       | P     |       | D5    |        |

= MLF12K10PD5

| BOX 1               | BOX 2                            | BOX 3                                                                                                                                                   | BOX 4                                                                                                                       |
|---------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Filter Series       | Number & Size of Elements        | Media Type                                                                                                                                              | Micron Rating                                                                                                               |
| MLF1                | 2K, KK, 27K                      | Omit = E media (cellulose)<br>Z = Excellement® Z-Media® (synthetic)<br>AS = Anti-Static Pleat Media (synthetic)                                         | 1 = 1 µ Z, ZW, and DZ media<br>3 = 3 µ AS, E, Z, ZW, and DZ media<br>5 = 5 µ AS, Z, ZW, DZ media                            |
| GMLF1<br>(GeoSeal®) | 6K<br>GeoSeal®<br>2KG, KKG, 27KG | ZW = Aqua-Excellement™ ZW media<br><br>DZ = DirtCatcher® with Excellement® Z-Media®<br>W = W media (water removal)<br>M = M media (reusable metal mesh) | 10 = 10 µ AS, E, M, Z, ZW, & DZ media<br><br>25 = 25 µ E, M, Z, ZW and DZ media<br>60 = 60 µ M media<br>150 = 150 µ M media |

| BOX 5                                                                  | BOX 6                             | BOX 7                                             | BOX 8                                      |
|------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------|--------------------------------------------|
| Seal Material                                                          | Magnet Option                     | Porting                                           | Bypass                                     |
| Omit = Buna N<br>H = EPR<br>V = Viton®<br>H.5 = Skydrol® Compatibility | Omit = None<br>M = Magnet inserts | P = 2½" NPTF<br>F = 2½" SAE 4-bolt flange Code 61 | Omit = 25 PSI Bypass<br>50 = 50 PSI Bypass |

| BOX 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | BOX 10                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Additional Options                                                                                                                 |
| Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Omit = None                                                                                                                        |
| Visual<br>D = Pointer<br>D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                            | L = Two ¼" NPTF inlet and outlet female test ports<br>G426 = ¾" drain on bottom of housing<br>G440 = ½" drain on bottom of housing |
| Visual with Thermal Lockout<br>D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                    |
| Electrical<br>MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |                                                                                                                                    |
| Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                     |                                                                                                                                    |
| Electrical Visual<br>MS = Cam operated switch w/ ½" conduit female connection<br>MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                  |                                                                                                                                    |
| Electrical Visual with Thermal Lockout<br>MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                       |                                                                                                                                    |

## NOTES:

Box 2. Double and triple stacking of K-size elements can be replaced by KK and 27K elements, respectively. Number of elements must equal 2 when using KK or 27K elements.

Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. K25 is not available with EPR seals.

Box 5. For options H, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

# Medium Pressure Filter

**RLD**



## Features and Benefits

- Lightweight duplex filter constructed of aluminum
- High chromium content aluminum alloy is water tolerant – anodization is not required for high water-based fluids (HWBF)
- Filter housings are designed to withstand pressure surges as well as high static pressure loads
- Screw-in bowl allows the filter element to be easily removed for replacement or cleaning
- Standard model supplied with drain plugs
- Standard Viton® seal on filter housing
- Filter contains an integrated equalization valve
- Pressure is equalized between filters by raising the change-over lever prior to switching it to the relevant filter side

**100 gpm**  
**380 L/min**  
**350 psi**  
**24 bar**

Model No. of filter in photograph is RLD25DNZ5S24DW.

|                           |                                                         |
|---------------------------|---------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids   |
| Max. Operating Pressure:  | 350 psi (24 bar)                                        |
| Min. Yield Pressure:      | Contact factory                                         |
| Rated Fatigue Pressure:   | 350 psi (24 bar)                                        |
| Temp. Range:              | -22°F to 250°F (-30°C to 121°C)                         |
| Bypass Setting:           | Standard: 102 psi (7 bar)<br>Optional: 43 psi (3.0 bar) |
| Porting Head:             | Aluminum                                                |
| Element Case:             | Aluminum                                                |
| Weight of RLD-25DN:       | 26 lbs. (11.8 kg)                                       |
| Weight of RLD-40DN:       | 29 lbs. (13.0 kg)                                       |
| Element Change Clearance: | 25DN: 3.5" (89 mm)<br>40DN: 3.5" (89 mm)                |

## Filter Housing Specifications

|                        |                                        |
|------------------------|----------------------------------------|
| Type Fluid             | Appropriate Schroeder Media            |
| Petroleum Based Fluids | All Z-Media® (synthetic)               |
| High Water Content     | All Z-Media® (synthetic)               |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)       |
| Water Glycols          | 3, 6, 10 and 25 µ Z-Media® (synthetic) |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

**RLD**

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

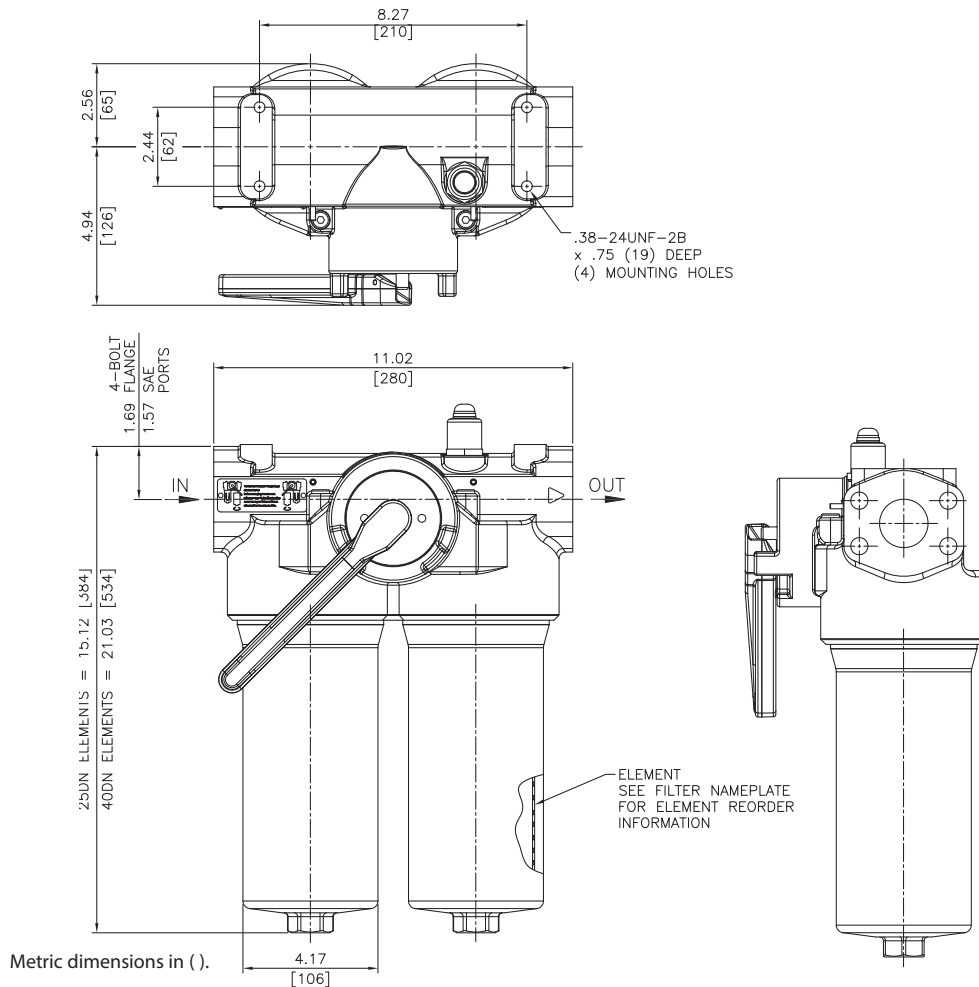
LTK

MRT

PAF1

MAF1

MF2



### Element Performance Information & Dirt Holding Capacity

| Element    | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|            | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 25/40DNZ3  | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 25/40DNZ6  | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 25/40DNZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 25/40DNZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 25DNZ3  | 57       | 40DNZ3  | 105      |
| 25DNZ6  | 62       | 40DNZ6  | 115      |
| 25DNZ10 | 52       | 40DNZ10 | 104      |
| 25DNZ25 | 48       | 40DNZ25 | 94       |

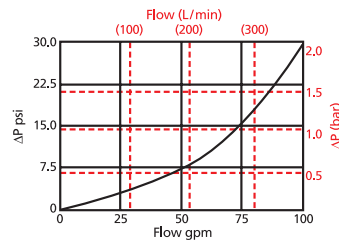
Element Collapse Rating: 290 psid (20 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 3.0" (75 mm) O.D. x 14.5" (370 mm) long

$\Delta P_{\text{housing}}$

RLD  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:

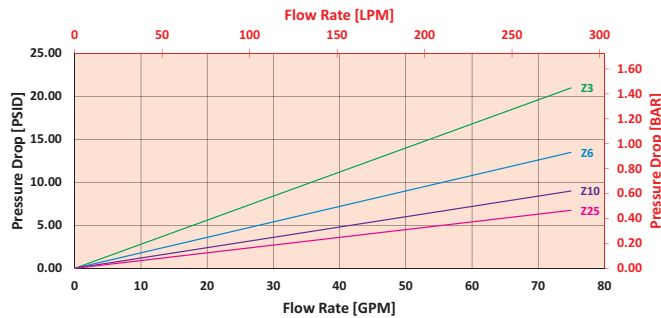


Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

$\Delta P_{\text{element}}$

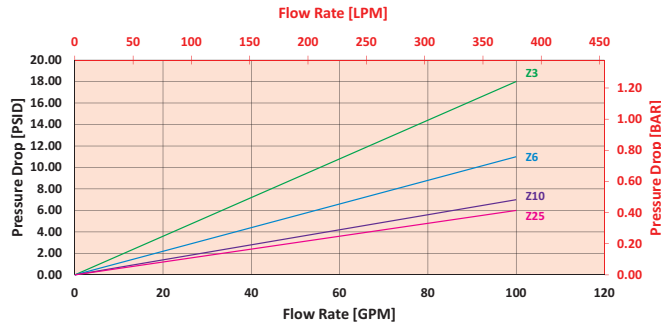
25DNZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



40DNZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 70 gpm (265.3 L/min) for RLD25DNZ5VF2440VM using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 70 gpm. In this case,  $\Delta P_{\text{housing}}$  is 14 psi (.96 bar) on the graph for the RLD housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 70 gpm. In this case,  $\Delta P_{\text{element}}$  is 8 psi (.55 bar) according to the graph for the 25DNZ5V element.

Because the viscosity in this sample is 160 SUS (44 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 14 \text{ psi } [.96 \text{ bar}] \mid \Delta P_{\text{element}} = 8 \text{ psi } [.55 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 14 \text{ psi} + (8 \text{ psi} * 1.1) = 22.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .96 \text{ bar} + (.55 \text{ bar} * 1.1) = 1.6 \text{ bar}$$

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder RLD:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| RLD   |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| RLD   | 25    | DNZ5  | V     | F24   | 40    | VM    |

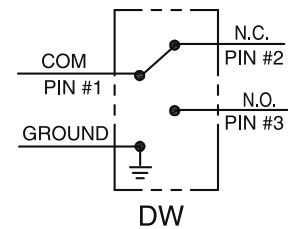
= RLD25DNZ5VF2440VM

| BOX 1         | BOX 2                   | BOX 3                                                                                                                                                                                                                                                                                                                                                      | BOX 4                       |
|---------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Filter Series | Length of Elements (cm) | Element Size and Media                                                                                                                                                                                                                                                                                                                                     | Element Seal Material       |
| RLD           | 25<br>40                | DNZ5 = DN size 5 $\mu$ synthetic media<br>DNZ10 = DN size 10 $\mu$ synthetic media<br>DNZ25 = DN size 25 $\mu$ synthetic media<br>DNM25 = DN size 25 $\mu$ M media (reuseable metal)<br>DNM50 = DN size 50 $\mu$ M media (reuseable metal)<br>DNM100 = DN size 100 $\mu$ M media (reuseable metal)<br>DNM200 = DN size 200 $\mu$ M media (reuseable metal) | Omit = Buna N<br>V = Viton® |

| BOX 5                                                     | BOX 6                                           | BOX 7                                                                                                        |
|-----------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Porting                                                   | Bypass Setting                                  | Dirt Alarm® Options                                                                                          |
| F24 = 1½" SAE 4-bolt flange Code 61<br>S24 = SAE-24 (1½") | Omit = 102 psi cracking<br>40 = 43 psi cracking | Omit = None<br>Visual      VM = Visual pop-up w/manual reset<br>Electrical      DW = AC/DC 3-wire (NO or NC) |



VM = Manual Reset

DW = AC/DC 3-wire  
(NO or NC)

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: 40DNZ10

Box 4. Filter housings are supplied with standard Viton seals. Seal designation in Box 4 applies to element only. Viton® is a registered trademark of DuPont Dow Elastomers.



# Tank-Mounted Return Line Filter

GRTB



### Features and Benefits

- Patented GeoSeal® Elements
- Various Dirt Alarm® options
- Cost optimized for in-tank applications
- Plastic bowl and cap lower cost and minimize weight
- UV resistant cap
- Same day shipment model available



Part of Schroeder Industries'  
Energy Sustainability Initiative

100 gpm  
**380 L/min**  
100 psi  
**7 bar**

Model No. of filter in photograph is GRTB1KBGZ10S.

|                                                                           |  |
|---------------------------------------------------------------------------|--|
| Flow Rating: Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids        |  |
| Max. Operating Pressure: 100 psi (7 bar)                                  |  |
| Min. Yield Pressure: 400 psi (28 bar)                                     |  |
| Rated Fatigue Pressure: 145 psi (10 bar), Per NFPA T2.6.1-2005            |  |
| Temp. Range: -20°F to 200°F (-29°C to 93°C)                               |  |
| Bypass Setting: Cracking: 25 psi (1.7 bar)<br>Full Flow: 42 psi (2.9 bar) |  |
| Cap & Bowl: Nylon<br>Porting Head: Aluminum                               |  |
| Weight of GRTB-1K: 5.2 lbs (2.36 kg)                                      |  |
| Element Change Clearance: 9.5" (240 mm)                                   |  |

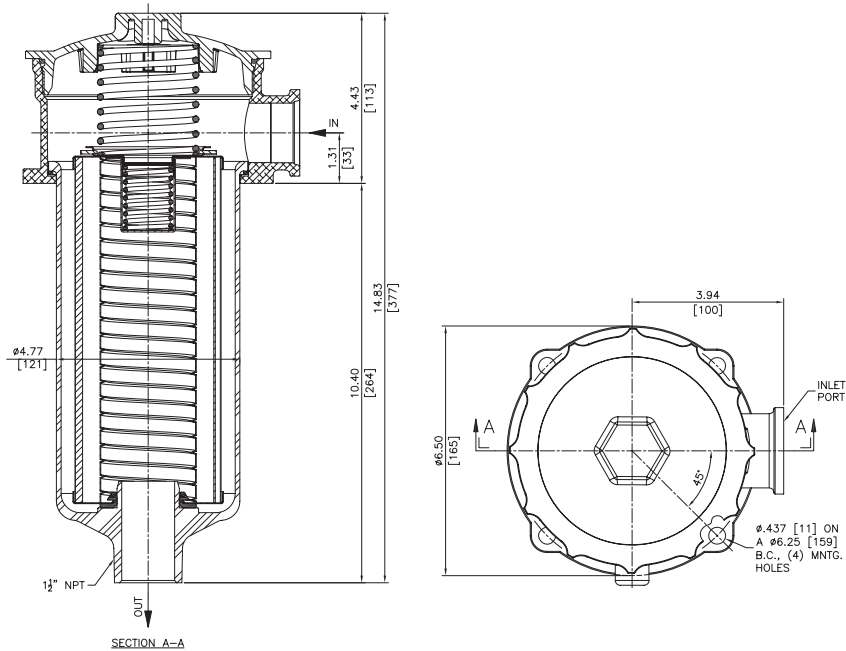
### Filter Housing Specifications

|                        |                                                              |
|------------------------|--------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                  |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic) |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)         |

### Fluid Compatibility

Accessories  
For Tank-Mounted  
Filters

|      |
|------|
| PAF1 |
| MAF1 |
| MF2  |



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KBGZ1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KBGZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KBGZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KBGZ10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KBGZ25  | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element | DHC (gm) |
|---------|----------|
| KBGZ1   | 112      |
| KBGZ3   | 115      |
| KBGZ5   | 119      |
| KBGZ10  | 108      |
| KBGZ25  | 93       |

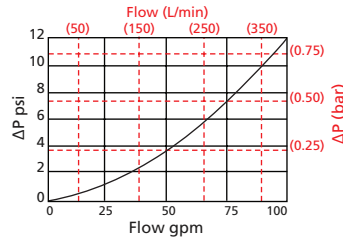
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

$\Delta P_{\text{housing}}$

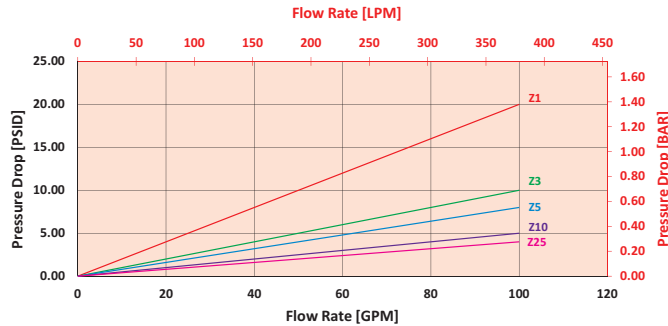
GRTB  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

KBGZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 80 gpm (303.2 L/min) for GRTB1KBGZ10PY2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 80 gpm. In this case,  $\Delta P_{\text{housing}}$  is 8 psi (.55 bar) on the graph for the GRTB housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 80 gpm. In this case,  $\Delta P_{\text{element}}$  is 4 psi (.27 bar) according to the graph for the KBGZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 8 \text{ psi [.55 bar]} \quad | \quad \Delta P_{\text{element}} = 4 \text{ psi [.27 bar]}$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 8 \text{ psi} + (4 \text{ psi} * 1.1) = 12.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .55 \text{ bar} + (.27 \text{ bar} * 1.1) = .85 \text{ bar}$$

Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## How to Build a Valid Model Number for a Schroeder GRTB:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| GRTB  |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| GRTB  | 1KBG  | Z     | 10    |       | P     |       | Y2    |

= GRTB1KBGZ10PY2

| BOX 1           | BOX 2           | BOX 3                      | BOX 4                     |
|-----------------|-----------------|----------------------------|---------------------------|
| Filter Series   | Element Size    | Media Type                 | Micron Rating             |
| GRTB (GeoSeal®) | 1KBG (GeoSeal®) | Omit = E-Media (cellulose) | 1 = 1 µ Z-Media*          |
| RTB             | 1KB             | Z = Excellement® Z-Media*  | 3 = 3 µ Z-Media*          |
|                 |                 |                            | 5 = 5 µ Z-Media*          |
|                 |                 |                            | 10 = 10 µ E, and Z-Media* |
|                 |                 |                            | 25 = 25 µ E, and Z-Media* |

| BOX 5         | BOX 6               | BOX 7                       |
|---------------|---------------------|-----------------------------|
| Seals         | Port                | Outlet Porting Options      |
| Omit = Buna N | P = 1.25" NPT       | Omit = 1 1/2" NPT male      |
|               | S = SAE-20          | C = Check valve             |
|               | B = ISO 228 G-1.25" | D = Diffuser                |
|               |                     | CD = Check valve & diffuser |
|               |                     | T = 13" Tube extension      |

| BOX 8                                                     |
|-----------------------------------------------------------|
| Indicator                                                 |
| Omit = None                                               |
| Y2 = Back-mounted tricolor gauge                          |
| ES = Electric switch                                      |
| ES1 = Heavy-duty electric switch with conduit connections |
| ES2 = Electrical Switch with Deutsch Connector            |
| ES3 = Electric Switch with DIN 43650                      |

## NOTES:

Box 3. Use boxes 2, 3, 4, and 5 to build a replacement element part number.

# MiniMiser™ Tank-Mounted Filter

MTA

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

LTK

MRT

Accessories  
For Tank-  
Mounted  
Filters

PAF1

MAF1

MF2



## Features and Benefits

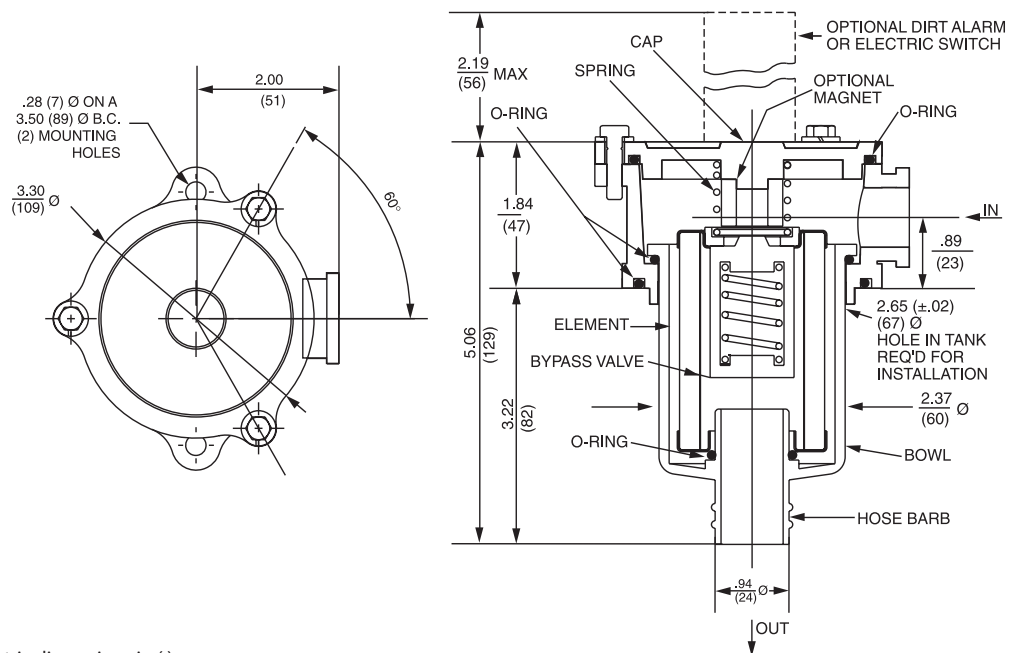
- Low pressure tank-mounted filter
- Compact size minimizes space requirements
- Minimizer is cost-effective alternative to spin-on filters
- Special filter element design provides aftermarket benefits

15 gpm  
55 L/min  
100 psi  
7 bar

Model No. of filter in photograph is MTA3TAZ10P8.

|                           |                                                         |                                     |
|---------------------------|---------------------------------------------------------|-------------------------------------|
| Flow Rating:              | Up to 15 gpm (55 L/min) for 150 SUS (32 cSt) fluids     | Filter<br>Housing<br>Specifications |
| Max. Operating Pressure:  | 100 psi (7 bar)                                         |                                     |
| Min. Yield Pressure:      | 269 psi (18 bar), per NFPA T2.6.1                       |                                     |
| Rated Fatigue Pressure:   | Contact factory                                         |                                     |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                         |                                     |
| Bypass Setting:           | Cracking: 25 psi (2 bar)<br>Full Flow: 48 psi (3.3 bar) |                                     |
| Porting Head & Cap:       | Die Cast Aluminum                                       |                                     |
| Element Case:             | Glass Filled Nylon                                      |                                     |
| Weight of MTA-3:          | 1.0 lbs. (0.5 kg)                                       | Fluid<br>Compatibility              |
| Element Change Clearance: | 3.0" (76 mm)                                            |                                     |

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic) |



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

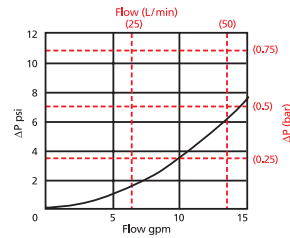
| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 3TAZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 3TAZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 3TAZ10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 3TAZ25  | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| 3TAZ3   | 4        |
| 3TAZ5   | 6        |
| 3TAZ10  | 4        |
| 3TAZ25  | 4        |

Element Collapse Rating: 150 psid (10 bar)  
 Flow Direction: Outside In  
 Element Nominal Dimensions: 2.0" (51 mm) O.D. x 3.0" (76 mm) long

$\Delta P_{\text{housing}}$

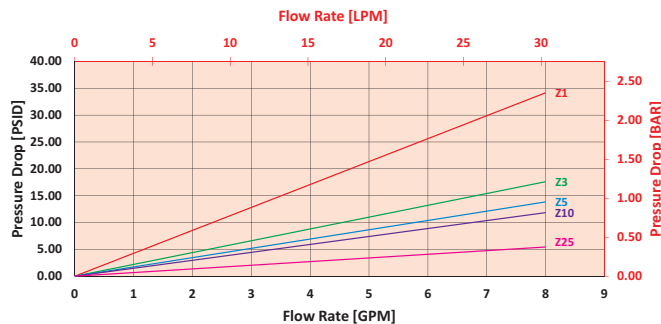
MTA  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

3TAZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 10 gpm (37.9 L/min) for MTA3TAZ25P8Y5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 10 gpm. In this case,  $\Delta P_{\text{housing}}$  is 4 psi (.27 bar) on the graph for the MTA housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 10 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the 3TAZ25 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 4 \text{ psi } [.27 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 7 \text{ psi } [.48 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 4 \text{ psi} + (7 \text{ psi} * 1.1) = 11.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .27 \text{ bar} + (.48 \text{ bar} * 1.1) = .80 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use

the following equation:

$\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug  
this variable into the overall  
pressure drop equation.

| Ele.  | $\Delta P$ |
|-------|------------|
| 3TA10 | 1.40       |
| 3TA25 | 0.33       |



Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder MTA:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| MTA   |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| MTA   | 3     | TA25  | P8    | Y5    |

= MTA3TA25P8Y5

| BOX 1         | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                        |
| MTA           | 3                   | <p>TA10 = TA size 10 μ E media (cellulose)</p> <p>TA25 = TA size 25 μ E media (cellulose)</p> <p>TAZ1 = TA size 1 μ Excellement® Z-Media® (synthetic)</p> <p>TAZ3 = TA size 3 μ Excellement® Z-Media® (synthetic)</p> <p>TAZ5 = TA size 5 μ Excellement® Z-Media® (synthetic)</p> <p>TAZ10 = TA size 10 μ Excellement® Z-Media® (synthetic)</p> <p>TAZ25 = TA size 25 μ Excellement® Z-Media® (synthetic)</p> |

| BOX 4           | BOX 5                                                                                 |
|-----------------|---------------------------------------------------------------------------------------|
| Porting Options | Dirt Alarm® Options                                                                   |
| P8 = ½" NPTF    | Omit = None                                                                           |
| S8 = SAE-8      | <p>Visual Y2C = Bottom-mounted gauge in cap</p> <p>Y5 = Back-mounted gauge in cap</p> |
|                 | <p>Electrical ESC = Electric pressure switch (2 terminals)</p>                        |

# MiniMiser™ Tank-Mounted Filter

MTB



## Features and Benefits

- Low pressure tank-mounted filter
- Compact size minimizes space requirements
- Minimizer is cost-effective alternative to spin-on filters
- Special filter element design provides aftermarket benefits

35 gpm  
135 L/min  
100 psi  
7 bar

Model No. of filter in photograph is MTB5TBZ5P16H.

|                           |                                                                                                                         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 25 gpm (95 L/min) for 150 SUS (32 cSt) fluids–MTB-3<br>Up to 35 gpm (135 L/min) for 150 SUS (32 cSt) fluids–MTB-5 |
| Max. Operating Pressure:  | 100 psi (7 bar)                                                                                                         |
| Min. Yield Pressure:      | 229 psi (15 bar), per NFPA T2.6.1                                                                                       |
| Rated Fatigue Pressure:   | Contact factory                                                                                                         |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                                                         |
| Bypass Setting:           | Cracking: 25 psi (2 bar)<br>Full Flow: 51 psi (3.5 bar)                                                                 |
| Porting Head & Cap:       | Die Cast Aluminum                                                                                                       |
| Element Case:             | Glass Filled Nylon                                                                                                      |
| Weight of MTB-3:          | 1.8 lbs. (0.8 kg)                                                                                                       |
| Weight of MTB-5:          | 2.1 lbs. (1.0 kg)                                                                                                       |
| Element Change Clearance: | 3.0" (76 mm) MTB-3 5.0" (127 mm) MTB-5                                                                                  |

## Filter Housing Specifications

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media* (synthetic) |

## Fluid Compatibility

## Accessories For Tank-Mounted Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

**MTB**

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

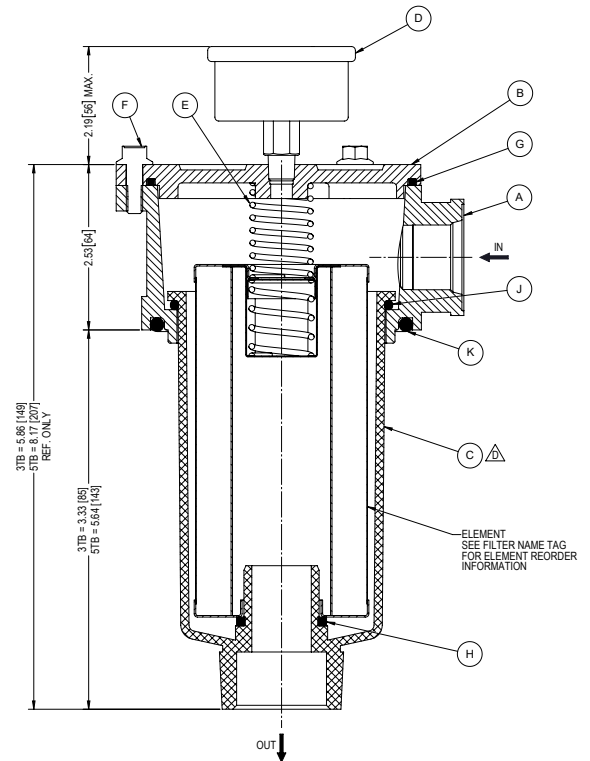
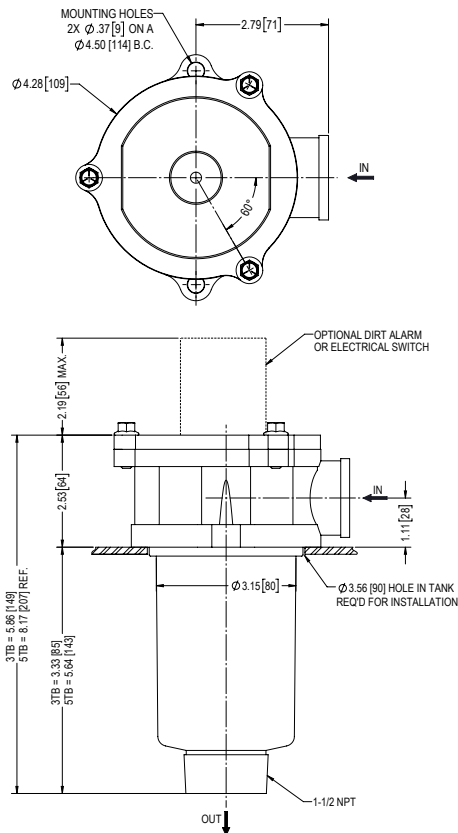
LTK

MRT

PAF1

MAF1

MF2



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 3TBZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 3TBZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 3TBZ10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 3TBZ25  | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| 5TBZ3   | <1.0                                                                                                           | <1.0               | <2.0               | 4.7                                                                  | 5.8                      |
| 5TBZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 5.6                                                                  | 7.2                      |
| 5TBZ10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 9.8                      |
| 5TBZ25  | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| 3TBZ3   | 11       |
| 3TBZ5   | 12       |
| 3TBZ10  | 11       |
| 3TBZ25  | 11       |
| 5TBZ3   | 18       |
| 5TBZ5   | 21       |
| 5TBZ10  | 17       |
| 5TBZ25  | 18       |

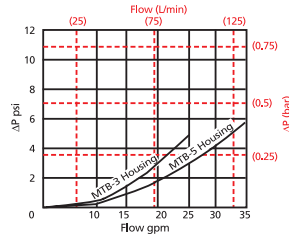
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 3TB: 3.0" (76 mm) O.D. x 3.0" (76 mm) long  
5TB: 3.0" (76 mm) O.D. x 5.0" (127 mm) long

$\Delta P_{\text{housing}}$

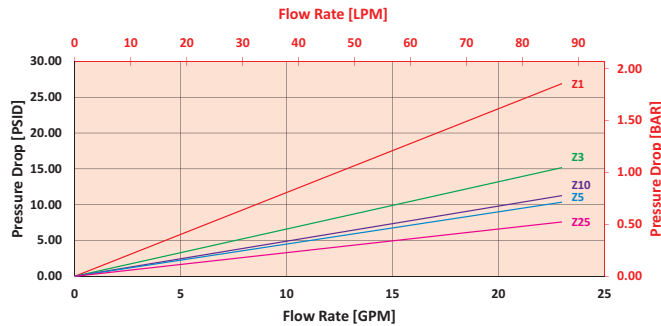
MTB  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

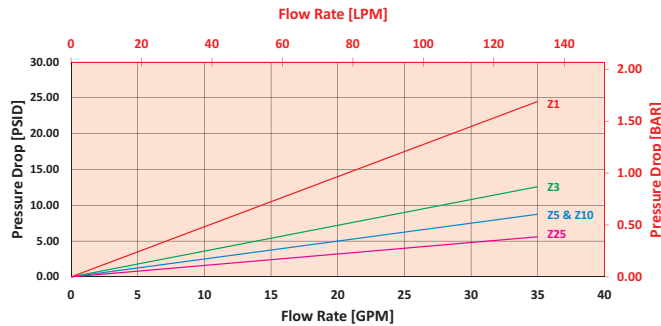
3TBZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



5TBZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 10 gpm (37.9 L/min) for MTB3TBZ25P12Y5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 10 gpm. In this case,  $\Delta P_{\text{housing}}$  is 1 psi (.07 bar) on the graph for the MTB housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 10 gpm. In this case,  $\Delta P_{\text{element}}$  is 3 psi (.21 bar) according to the graph for the 3TBZ25 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 1 \text{ psi } [.07 \text{ bar}] \mid \Delta P_{\text{element}} = 3 \text{ psi } [.21 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 1 \text{ psi} + (3 \text{ psi} * 1.1) = 4.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .07 \text{ bar} + (.21 \text{ bar} * 1.1) = .30 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

### Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.  | $\Delta P$ |
|-------|------------|-------|------------|
| 3TB10 | 1.40       | 5TB10 | 0.40       |
| 3TB25 | 0.10       | 5TB25 | 0.08       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder MTB:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| MTB   |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| MTB   | 3     | TB25  | P12   | H     | Y5    |

= MTB3TB25P12HY5

| BOX 1         | BOX 2               | BOX 3                                                 |
|---------------|---------------------|-------------------------------------------------------|
| Filter Series | Element Length (in) | Element Size and Media                                |
| MTB           | 3                   | TB10 = T size 10 µ E media (cellulose)                |
|               | 5                   | TB25 = T size 25 µ E media (cellulose)                |
|               |                     | TBZ3 = T size 3 µ Excellement® Z-Media® (synthetic)   |
|               |                     | TBZ5 = T size 5 µ Excellement® Z-Media® (synthetic)   |
|               |                     | TBZ10 = T size 10 µ Excellement® Z-Media® (synthetic) |
|               |                     | TBZ25 = T size 25 µ Excellement® Z-Media® (synthetic) |

| BOX 4              | BOX 5                  | BOX 6                                                   |
|--------------------|------------------------|---------------------------------------------------------|
| Porting Options    | Outlet Options         | Dirt Alarm® Options                                     |
| P12 = ¾" NPTF      | Omit = 1.5" NPT Outlet | Omit = None                                             |
| P16 = 1" NPTF      | H = Hose Barb Outlet   | Visual Y2C = Bottom-mounted gauge in cap                |
| S12 = SAE-12       | D = Diffuser           | Y5 = Back-mounted gauge in cap                          |
| S16 = SAE-16       |                        | Electrical ESC = Electric pressure switch (2 terminals) |
| B12 = ISO 228 G-¾" |                        |                                                         |
| B16 = ISO 228 G-1" |                        |                                                         |

# Tank-Mounted Filter

ZT



## Features and Benefits

- Low pressure tank-mounted filter
- Available with dual inlet porting
- Offered in pipe, SAE straight thread and ISO 228 porting
- Various Dirt Alarm® options
- Optional PAB1 breather
- Available with quality-protected GeoSeal® Elements (GZT)
- Same day shipment model available



Part of Schroeder Industries' Energy Sustainability Initiative

40 gpm  
150 L/min  
100 psi  
7 bar

Model No. of filter in photograph is ZT8ZZ10PPESAB.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 40 gpm (150 L/min) for 150 SUS (32 cSt) fluids      |
| Max. Operating Pressure:  | 100 psi (7 bar)                                           |
| Min. Yield Pressure:      | 300 psi (21 bar), per NFPA T2.6.1                         |
| Rated Fatigue Pressure:   | 90 psi (6 bar), per NFPA T2.6.1-R1-2005                   |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 25 psi (1.7 bar)<br>Full Flow: 39 psi (2.7 bar) |
| Cap & Bowl:               | Nylon                                                     |
| Porting Head:             | Aluminum                                                  |
| Weight of ZT-8Z:          | 3.3 lbs. (1.49 kg)                                        |
| Element Change Clearance: | 10.0" (254 mm)                                            |

## Filter Housing Specifications

|                        |                                                        |
|------------------------|--------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                            |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)       |
| High Water Content     | All Z-Media (synthetic)                                |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                       |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                 |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation |

## Fluid Compatibility

Accessories For Tank-Mounted Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

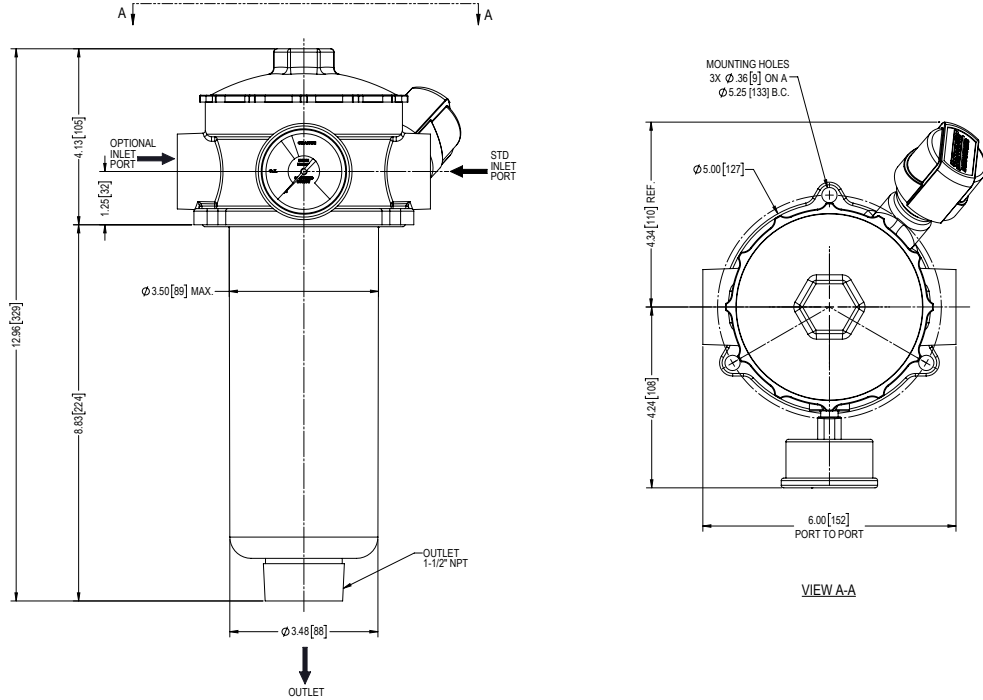
LTK

MRT

PAF1

MAF1

MF2



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio wrt ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 8Z3     | 6.8                                                                                                            | 7.5                | 10.0               | N/A                                                                  | N/A                      |
| 8Z10    | 15.5                                                                                                           | 16.2               | 18.0               | N/A                                                                  | N/A                      |
| 8ZZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 8ZZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 8ZZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 8ZZ10   | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 8ZZ25   | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| 8Z3     | 39       |
| 8Z10    | 32       |
| 8ZZ1    | 51       |
| 8ZZ3    | 52       |
| 8ZZ5    | 59       |
| 8ZZ10   | 55       |
| 8ZZ25   | 77       |

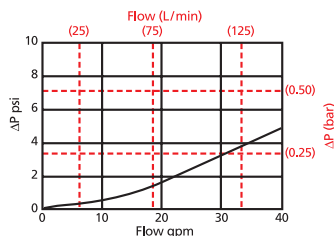
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 3.2" (81 mm) O.D. x 9.25" (235 mm) long

$\Delta P_{\text{housing}}$

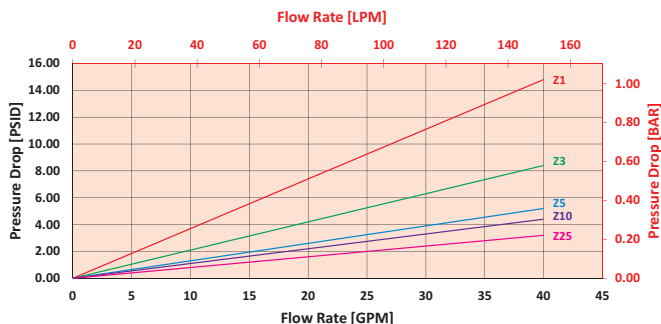
ZT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

8ZZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 30 gpm (119.7 L/min) for ZT8ZZ10SY2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 30 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3.5 psi (.24 bar) on the graph for the ZT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 30 gpm. In this case,  $\Delta P_{\text{element}}$  is 3.5 psi (.24 bar) according to the graph for the 8ZZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 3.5 \text{ psi } [.24 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 3.5 \text{ psi } [.24 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3.5 \text{ psi} + (3.5 \text{ psi} * 1.1) = 7.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .24 \text{ bar} + (.24 \text{ bar} * 1.1) = .50 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele. | ΔP   |
|------|------|
| 8Z3  | 0.25 |
| 8Z10 | 0.09 |
| 8Z25 | 0.02 |



Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## How to Build a Valid Model Number for a Schroeder ZT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| ZT    |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| ZT    | 8     | Z10   |       | S     | Y2    |       |       |

= ZT8Z10SY2

| BOX 1                | BOX 2                      | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | BOX 4                |
|----------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>Filter Series</b> | <b>Element Length (in)</b> | <b>Element Size and Media</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Seal Material</b> |
| ZT                   | 8                          | Z3 = Z size 3 $\mu$ E media (cellulose)<br>Z10 = Z size 10 $\mu$ E media (cellulose)<br>Z25 = Z size 25 $\mu$ E media (cellulose)<br>ZZ1 = Z size 1 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>ZZ3 = Z size 3 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>ZZ5 = Z size 5 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>ZZ10 = Z size 10 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>ZZ25 = Z size 25 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br><br><b>GeoSeal<sup>®</sup> Element Options</b><br>GZ3 = Z size 3 $\mu$ E media (cellulose)<br>GZ10 = Z size 10 $\mu$ E media (cellulose)<br>GZ25 = Z size 25 $\mu$ E media (cellulose)<br>GTZZ1 = Z size 1 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>GTZZ3 = Z size 3 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>GTZZ5 = Z size 5 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>GTZZ10 = Z size 10 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>GTZZ25 = Z size 25 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic) | Omit = Buna N        |

| BOX 5                  | BOX 6                                                                                                                                                                                                       | BOX 7                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Inlet Porting</b>   | <b>Dirt Alarm<sup>®</sup> Options</b>                                                                                                                                                                       | <b>Outlet Porting</b>             |
| P = 1" NPTF            | Omit = None                                                                                                                                                                                                 | Omit = 1 $\frac{1}{2}$ " NPT male |
| PP = Dual 1" NPTF      | Visual <ul style="list-style-type: none"> <li>Y2 = Back-mounted tri-color gauge</li> <li>Y2C = Bottom-mounted gauge in cap</li> <li>Y5 = Back-mounted gauge in cap</li> </ul>                               | D = Diffuser                      |
| S = SAE-16             |                                                                                                                                                                                                             | T = 13" Tube Extension            |
| SS = Dual SAE-16       | Electrical <ul style="list-style-type: none"> <li>ES = Electric switch</li> <li>ES1 = Heavy-duty electric switch with conduit connection</li> <li>ES2 = Electrical Switch with Deutsch Connector</li> </ul> | G3039 = 1.5" NPT outlet removed   |
| B = ISO 228 G-1"       |                                                                                                                                                                                                             |                                   |
| BB = Dual ISO 228 G-1" |                                                                                                                                                                                                             |                                   |

| BOX 8                        |
|------------------------------|
| <b>Options</b>               |
| Omit = None                  |
| B = Breather                 |
| M = Mounting Gasket (Buna N) |



## Features and Benefits

- Patent Pending In-tank filter design
- Lightweight and as part of a tank optimization package can reduce reservoir size
- Lock & Key Quality Protected, OEM Specific Interfaces available
- Superior de-aeration performance
- 360 degree swivel connection. Lines stay connected during element changeouts
- Anti-Drain Check valve option to keep lines from emptying during element change outs
- 135 ft-lb max loading torque on inlet port



Part of Schroeder Industries'  
Energy Sustainability Initiative

40 gpm  
151 L/min  
100 psi  
7 bar

Model No. of filter in photograph is AFT8LKZ10L16N

|                           |                                                                                          |
|---------------------------|------------------------------------------------------------------------------------------|
| Flow Rating:              | 40 gpm (151 L/min)                                                                       |
| Max. Operating Pressure:  | 100 psi (7 bar)                                                                          |
| Min. Yield Pressure:      | 350 psi (24 bar)                                                                         |
| Rated Fatigue Pressure:   | 100 psi (7 bar)                                                                          |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                          |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 45 psi (3 bar)                                    |
| Element Change Clearance: | 4L = 5.28" [134mm]<br>8L = 8.62" [219mm]<br>12L = 11.96" [304mm]<br>16L = 15.30" [389mm] |
| Element Case:             | 12 elements                                                                              |

## Filter Housing Specifications

|                        |                                                                                       |
|------------------------|---------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                           |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                          |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                               |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                  |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)                             |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic) |

## Fluid Compatibility

Accessories  
For Tank-Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

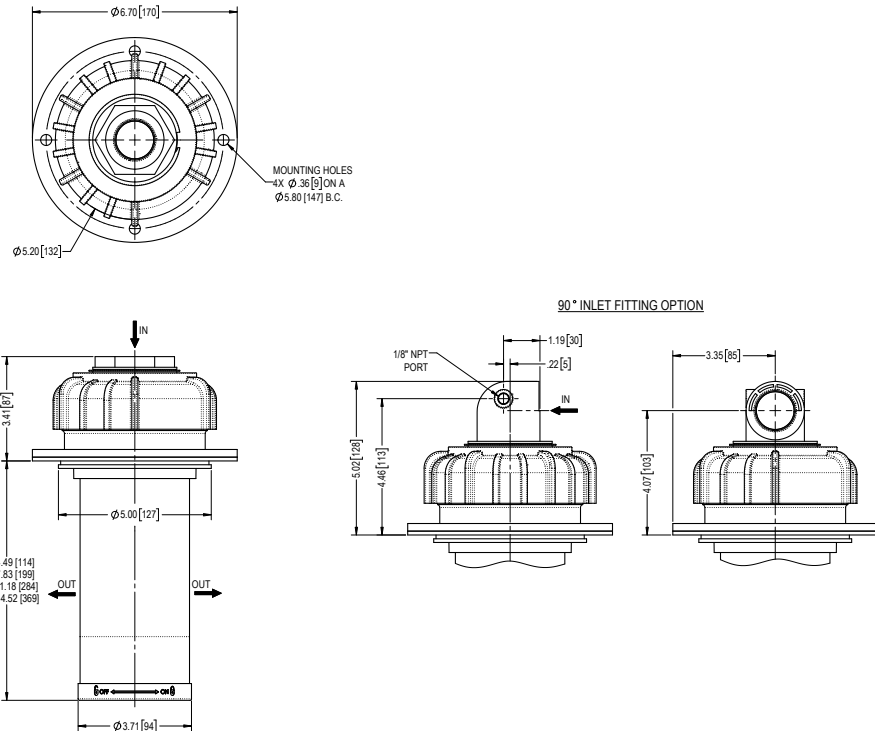
LTK

MRT

PAF1

MAF1

MF2



Metric dimensions in (mm).

### Element Performance Information & Dirt Holding Capacity

| Element                            | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio wrt ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|                                    | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 4LKZ3, 8LKZ3<br>12LKZ3, 16LKZ3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 4LKZ5, 8LKZ5<br>12LKZ5, 16LKZ5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 4LKZ10, 8LKZ10<br>12LKZ10, 16LKZ10 | 7.4                                                                                                            | 8.2                | 4.0                | 8.0                                                                  | 10.0                     |
| 4LKZ25, 8LKZ25<br>12LKZ25, 16LKZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|---------|----------|
| 4LKZ3   | 8        | 8LKZ3   | 16       | 12LKZ3  | 23       | 16LKZ3  | 30       |
| 4LKZ5   | 9        | 8LKZ5   | 18       | 12LKZ5  | 26       | 16LKZ5  | 33       |
| 4LKZ10  | 11       | 8LKZ10  | 22       | 12LKZ10 | 32       | 16LKZ10 | 41       |
| 4LKZ25  | 18       | 8LKZ25  | 36       | 12LKZ25 | 52       | 16LKZ25 | 69       |

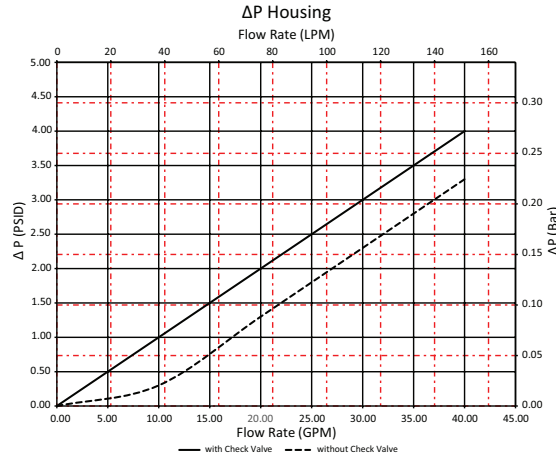
Element Burst Pressure: 86 psi (6 bar)

Flow Direction: Inside Out

Element Nominal Dimensions: 4LKZ: 3.71" (94.23 mm) O.D. x 4.49" (114.05 mm) long  
 8LKZ: 3.71" (94.23 mm) O.D. x 7.84" (199.14 mm) long  
 12LKZ: 3.71" (94.23 mm) O.D. x 11.18" (283.97 mm) long  
 16LKZ: 3.71" (94.23 mm) O.D. x 14.52" (368.81 mm) long

$\Delta P_{\text{housing}}$

AFT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:

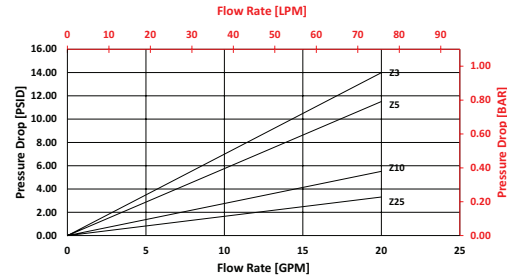


Pressure Drop Information Based on Flow Rate and Viscosity

$\Delta P_{\text{element}}$

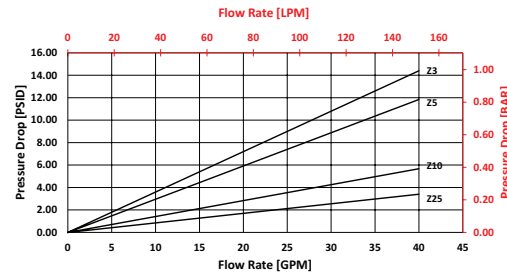
4LKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



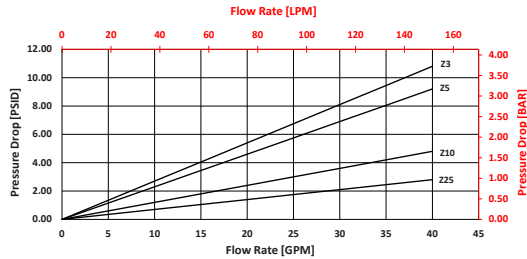
8LKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



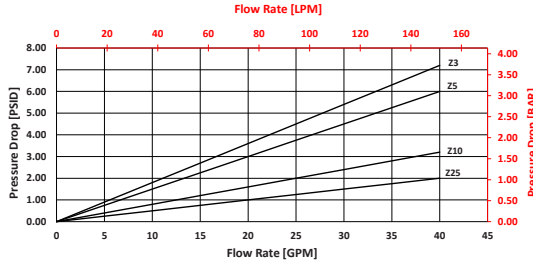
12LKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



16LKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



Note: Additional Pressured Drop information available upon request

$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:

Determine  $\Delta P_{\text{filter}}$  at 10 gpm (37.9 L/min) for AFT8LKZ10L16Y2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 10 gpm. In this case,  $\Delta P_{\text{housing}}$  is 1.5 psi (.10 bar) on the graph for the AFT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 10 gpm. In this case,  $\Delta P_{\text{element}}$  is 1.4 psi (.10 bar) according to the graph for the 8LKZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:

$$\Delta P_{\text{housing}} = 1.5 \text{ psi } [.10 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 1.4 \text{ psi } [.10 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 1.5 \text{ psi} + (1.4 \text{ psi} * 1.1) = 3.0 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .10 \text{ bar} + (.10 \text{ bar} * 1.1) = .21 \text{ bar}$$

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder AFT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| AFT   |       |       |       |       |       |       |

 =

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| AFT   | 8LK   | Z10   |       | L16   |       | Y2    |

 = AFT8LKZ10L16Y2

| BOX 1                            | BOX 2              | BOX 3                   | BOX 4       |
|----------------------------------|--------------------|-------------------------|-------------|
| Filter Series                    | Element            | Media                   | Seal        |
| AFT Air Fusion Technology Filter | 4LK = 4" Element   | Z3 = 3 micron Z media   | Omit = Buna |
|                                  | 8LK = 8" Element   | Z5 = 5 micron Z media   | V = Viton   |
|                                  | 12LK = 12" Element | Z10 = 10 micron Z media | H = EPR     |
|                                  | 16LK = 16" Element | Z25 = 25 micron Z media |             |

| BOX 5               | BOX 6         | BOX 7              |
|---------------------|---------------|--------------------|
| Porting             | Bypass        | Check Valve        |
| S12 = SAE 12        | 25 = 25 psi   | Omit = Check Valve |
| S16 = SAE 16        | Omit = 30 psi | N = No Check Valve |
| L12 = 90 Deg SAE 12 | 40 = 40 psi   |                    |
| L16 = 90 Deg SAE 16 |               |                    |
| HB16 = 1" Hose Barb |               |                    |

| BOX 8                                            |
|--------------------------------------------------|
| Gauge Port Option (Elbow Only)                   |
| N = Plugged                                      |
| Y2 = Tricolor visual indicator (Back Mounted)    |
| Y2C = Tricolor visual indicator (Bottom Mounted) |
| ES = Electric Switch                             |
| ES1 = Heavy Duty Electric Switch                 |
| ES2 = Electrical Switch with Deutsch Connector   |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: 8LKZ25V

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 7. Check valve prevents hydraulic oil to spill when changing out the element and it is recommended. Not including could reduce differential pressure slightly but risks a greater hydraulic oil spill on element change out.



Model No. of filter in  
photograph is  
GPT15DCLKZ25S24S24

## Features and Benefits

- Filter bypass in cap vs base, cleaner cold start
- Patent Pending In-Tank Design
- Lock & Key Quality Protected

## Filter Housing Specifications

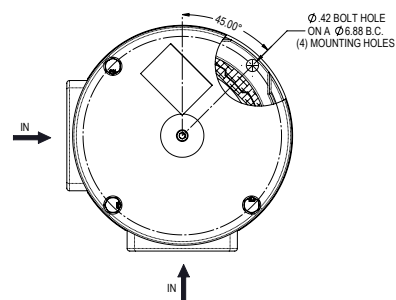
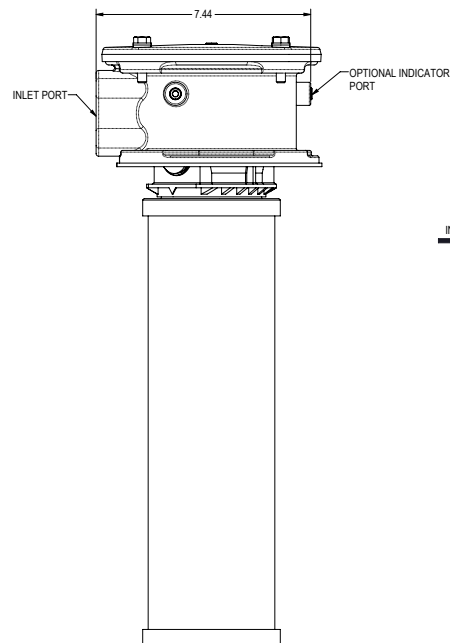
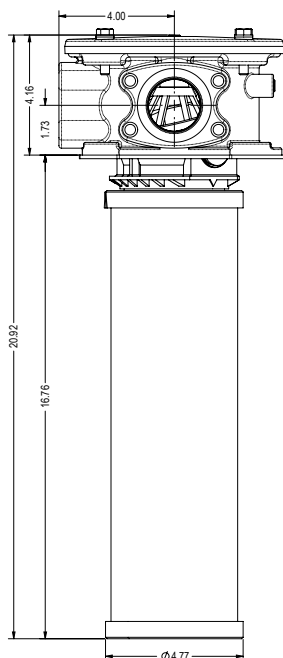
|                           |                                                       |
|---------------------------|-------------------------------------------------------|
| Flow Rating:              | Up to 175 GPM (662 L/min) FOR 150 SUS (32 cSt) Fluids |
| Max. Operating Pressure:  | 150 PSI (10.3 bar)                                    |
| Min. Yield Pressure:      | Consult Factory                                       |
| Rated Fatigue Pressure:   | 89 psi (6 bar)                                        |
| Temp. Range:              | -20 F to 225 F (-29 C to 107 C)                       |
| Bypass Setting:           | Cracking: 35 PSI (2.4 bar)                            |
| Ported Head and Cap:      | Die Cast Aluminum                                     |
| Weight:                   | 7 LBS. (3.18 kg)                                      |
| Element Change Clearance: | 20.0" (508 mm)                                        |

## Fluid Compatibility

|                     |                                                       |
|---------------------|-------------------------------------------------------|
| Type Fluid:         | Appropriate Schroeder Media                           |
| High Water Content: | All Z-Media (synthetic)                               |
| Invert Emulsions:   | 10 and 25 micron Z-Media (synthetic)                  |
| Water Glycols:      | 3, 5, 10, and 25 micron Z-Media (synthetic)           |
| Phosphate Esters:   | All Z-Media (synthetic) with H (EPR) seal designation |

## Element Performance Information

| Element  | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |
|----------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
|          | $\beta_x \geq 75$                                                                                              | $\beta_{x(c)} \geq 1000$                                             |
| 15TLKZ3  | <4.0                                                                                                           | 4.8                                                                  |
| 15TLKZ5  | 4.8                                                                                                            | 6.3                                                                  |
| 15TLKZ10 | 8.0                                                                                                            | 10.0                                                                 |
| 15TLKZ25 | 19.0                                                                                                           | 24.0                                                                 |



# Tank-Mounted Filter

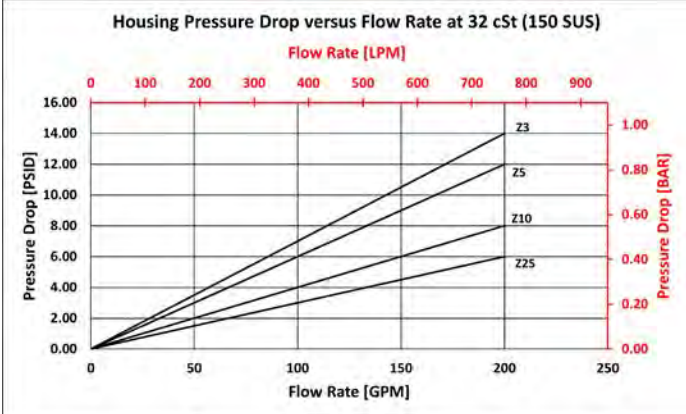
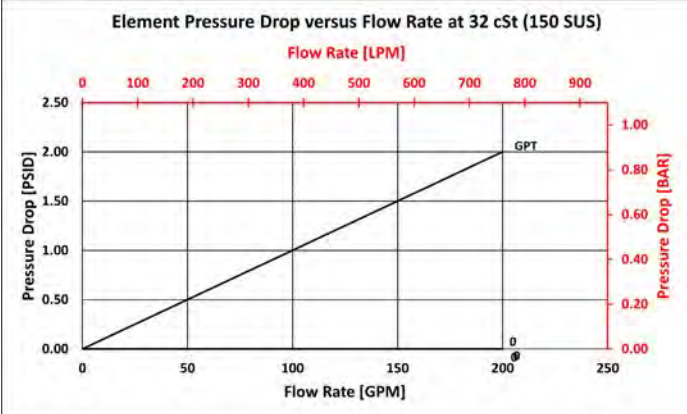
## GPT

### Pressure Drop Information Based on Flow Rate & Viscosity

| Element  | ΔP   | Housing | ΔP  |
|----------|------|---------|-----|
| 15TLKZ3  | 0.09 | 0 GPM   | 0   |
| 15TLKZ5  | 0.08 | 50 GPM  | 0.5 |
| 15TLKZ10 | 0.06 | 100 GPM | 1   |
| 15TLKZ25 | 0.05 | 150 GPM | 1.5 |
|          |      | 200 GPM | 2.0 |

### Element Dirt Holding Capacity

| Element  | DHC (gm) |
|----------|----------|
| 15TLKZ3  | 234      |
| 15TLKZ5  | 259      |
| 15TLKZ10 | 231      |
| 15TLKZ25 | 312      |



### How to Build a Valid Model Number for a Schroeder GPT:



| Element                                                             | Element              | Media                                                                                   | Micron Rating                                                    | Seals                               |
|---------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------|
| Note: Element code can also be used to build a replacement element. | 15DCLK = 15" Element | Z = Excellement Z-Media (synthetic)<br><br>Note: Other media is available upon request. | 3 = 3 Micron<br>5 = 5 Micron<br>10 = 10 Micron<br>25 = 25 Micron | Omit = Buna<br>V = Viton<br>H = EPR |

| Porting | Porting 1                                                       | Porting 2                                                       | Bypass                 |
|---------|-----------------------------------------------------------------|-----------------------------------------------------------------|------------------------|
|         | S24 = SAE-24<br>P24 = 1 1/2" NPT<br>F32 = 2" SAE Code 61 Flange | S24 = SAE-24<br>P24 = 1 1/2" NPT<br>F32 = 2" SAE Code 61 Flange | Omit = 35 PSI Cracking |

| Indicator                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Y2 = Tricolor Visual Indicator (Back Mounted)<br>Y2C= Tricolor Visual Indicator (Bottom Mounted)<br>ES = Electric Switch<br>ES1 = Heavy Duty Electric Switch<br>ES2 = Electric Switch with Deutsch Connector |

The 15DCLK element assembly is made up of the GPT diverter cap and the 15TLK element.  
A list of model code pairings is shown below:

|                                                                   |
|-------------------------------------------------------------------|
| 15DCLKZ10,ELEMENT = DIVERTER, ASSY, GPT, BUNA + 15TLKZ10, ELEMENT |
| 15DCLKZ25,ELEMENT = DIVERTER, ASSY, GPT, BUNA + 15TLKZ25, ELEMENT |
| 15DCLKZ3,ELEMENT = DIVERTER, ASSY, GPT, BUNA + 15TLKZ3, ELEMENT   |
| 15DCLKZ5,ELEMENT = DIVERTER, ASSY, GPT, BUNA + 15TLKZ5, ELEMENT   |

15DCLKZ10    GPT Diverter    15TLKZ10



# Tank-Mounted Filter

KFT



## Features and Benefits

- Low pressure tank-mounted filter
- Meets HF4 automotive standard
- Multiple inlet/outlet porting options
- Top, side or bottom mounting
- Optional check valve prevents reservoir siphoning
- Can also be used in return line application (contact factory)
- Double stacking of K-size element can be replaced by single KK element
- Allows consolidation of inventoried replacement elements by using K-size elements
- Also available with DirtCatcher® elements (KD and KKD)

100 gpm  
**380 L/min**  
100 psi  
**7 bar**

Model No. of filter in photograph is KFT1K10P24P24NB

|                           |                                                                      |
|---------------------------|----------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids                |
| Max. Operating Pressure:  | 100 psi (7 bar)                                                      |
| Min. Yield Pressure:      | 400 psi (28 bar), per NFPA T2.6.1                                    |
| Rated Fatigue Pressure:   | Contact Factory                                                      |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                      |
| Bypass Setting:           | Cracking: 25 psi (1.7 bar)<br>Full Flow: 48 psi (3.3 bar)            |
| Porting Head:             | Steel                                                                |
| Porting Cap:              | Die Cast Aluminum (standard); Steel (optional)                       |
| Element Case:             | Steel                                                                |
| Weight of KFT-1K:         | 10.0 lbs. (4.5 kg)                                                   |
| Weight of KFT-2K:         | 13.6 lbs. (6.2 kg)                                                   |
| Element Change Clearance: | 8.0" (205 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K |

## Filter Housing Specifications

|                        |                                                                                                                                                                                          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                              |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                                                                                                                             |
| High Water Content     | All Z-Media and ASP® media (synthetic)                                                                                                                                                   |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® media (synthetic)                                                                                                                            |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic), 3, 5 and 10 µ ASP® media (synthetic)                                                                                                             |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation, ASP® media (synthetic) and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                          |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation, ASP® media (synthetic) (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

**KFT**

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

LTK

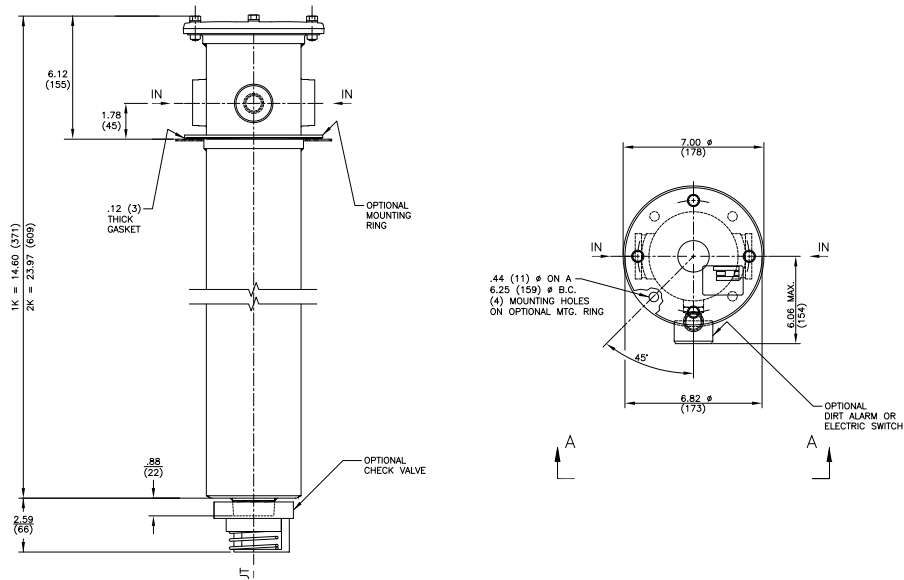
MRT

PAF1

MAF1

MF2





Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element                 | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|-------------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|                         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1/KKZ1                | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3/KKZ3/KAS3/KKAS3     | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5/KKZ5/KAS5/KKAS5     | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10/KKZ10/KAS10/KKAS10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25/KKZ25              | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element    | DHC (gm) | Element      | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|------------|----------|--------------|----------|---------|----------|---------|----------|
| KZ1        | 112      | KKZ1         | 224      | KDZ1    | 89       | KKDZ1   | 188      |
| KZ3/KAS3   | 115      | KKZ3/KKAS3   | 230      | KDZ3    | 71       | KKDZ3   | 150      |
| KZ5/KAS5   | 119      | KKZ5/KKAS5   | 238      | KDZ5    | 100      | KKDZ5   | 210      |
| KZ10/KAS10 | 108      | KKZ10/KKAS10 | 216      | KDZ10   | 80       | KKDZ10  | 168      |
| KZ25       | 93       | KKZ25        | 186      | KDZ25   | 81       | KKDZ25  | 171      |

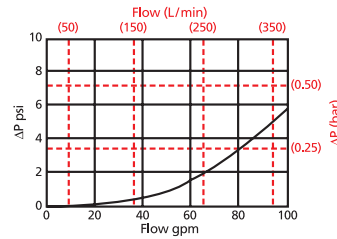
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long

$\Delta P_{\text{housing}}$

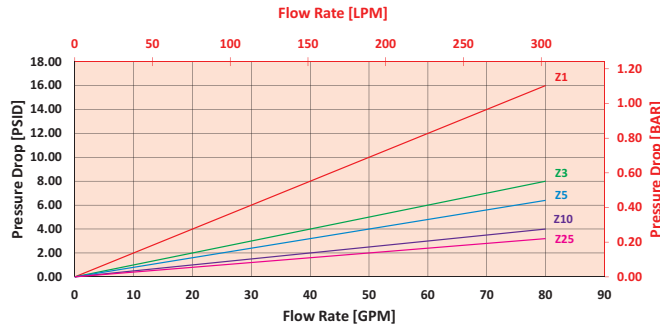
KFT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

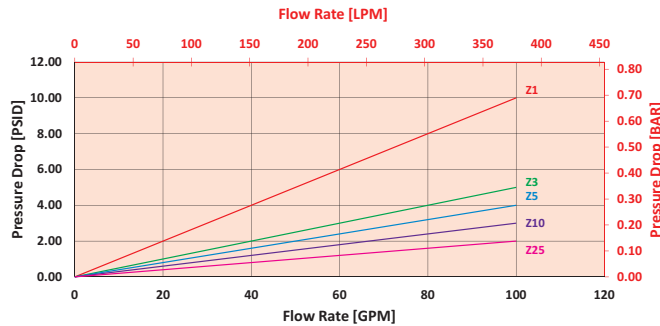
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



KKZ/2KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 80 gpm (303.2 L/min) for KFT1KZ10S24S24NY2G820 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 80 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3.5 psi (.24 bar) on the graph for the KFT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 80 gpm. In this case,  $\Delta P_{\text{element}}$  is 4 psi (.27 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 200 SUS (24 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 3.5 \text{ psi } [.24 \text{ bar}] \mid \Delta P_{\text{element}} = 4 \text{ psi } [.27 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3.5 \text{ psi} + (4 \text{ psi} * 1.1) = 7.9 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .24 \text{ bar} + (.27 \text{ bar} * 1.1) = .54 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.              | $\Delta P$ | Ele.               | $\Delta P$ |
|-------|------------|-------------------|------------|--------------------|------------|
| K3    | 0.25       | 2K3/<br>KK3       | 0.12       | 3KZ1/<br>27KZ1     | 0.05       |
| K10   | 0.09       | 2K10/<br>KK10     | 0.05       | 3KZ3/<br>27KZ3     | 0.03       |
| K25   | 0.02       | 2K25/<br>KK25     | 0.01       | 3KZ5/<br>27KZ5     | 0.02       |
| KAS3  | 0.10       | 2KAS3/<br>KKAS3   | 0.05       | 3KZ10/<br>27KZ10   | 0.02       |
| KAS5  | 0.08       | 2KAS5/<br>KKAS5   | 0.04       | 3KZ25/<br>27KZ25   | 0.01       |
| KAS10 | 0.05       | 2KAS10/<br>KKAS10 | 0.03       | 3K3                | 0.08       |
| KDZ1  | 0.24       | 2KDZ1             | 0.12       | 3K10               | 0.03       |
| KDZ3  | 0.12       | 2KDZ3             | 0.06       | 3K25               | 0.01       |
| KDZ5  | 0.10       | 2KDZ5             | 0.05       | 3KAS3/<br>27KAS3   | 0.03       |
| KDZ10 | 0.06       | 2KDZ10            | 0.03       | 3KAS5/<br>27KAS5   | 0.02       |
| KDZ25 | 0.04       | 2KDZ25            | 0.02       | 3KAS10/<br>27KAS10 | 0.02       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder KFT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| KFT   |       |       |       |       |       |       |       |       |        |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6     | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-----------|-------|-------|-------|--------|
| KFT   | 1K    | Z     | 10    |       | S24 S24 N |       |       | Y2    | G820   |

= KFT1KZ10S24S  
24NY2G820

| BOX 1         | BOX 2                   | BOX 3                                                                                                                                                                                              | BOX 4                                                                                                                                                                                  |
|---------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series | Element Size and Length | Media Type                                                                                                                                                                                         | Element Part Number                                                                                                                                                                    |
| KFT           | 1 K, KK<br>2 K          | Omit = E media (cellulose)<br>Z = Excellement® Z-Media® (synthetic)<br>AS = Anti-Static Pleat Media (synthetic)<br>ZW = Aqua-Excellement™ ZW media<br>DZ = DirtCatcher® with Excellement® Z-Media® | 1 = 1 µ Z, ZW, and DZ media<br>3 = 3 µ AS, E, Z, ZW, and DZ media<br>5 = 5 µ AS, Z, ZW, and DZ media<br>10 = 10 µ AS, E, M, Z, ZW, and DZ media<br>25 = 25 µ E, M, Z, ZW, and DZ media |

| BOX 5                                                     | BOX 6 Specification of all 4 ports is required |                               |                               |                                                                                                                                                                                                                                                | Inlet Porting Location |
|-----------------------------------------------------------|------------------------------------------------|-------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Seal Material                                             | Inlet Porting                                  |                               |                               |                                                                                                                                                                                                                                                |                        |
| Omit = Buna N<br>H = EPDM<br>H.5 = Skydrol® Compatibility | Port 1 (Standard)<br>N = None                  | Port 2 (Optional)<br>N = None | Port 3 (Optional)<br>N = None | Port 4 (Optional)<br>N = None<br>P2 = 1/8" NPTF<br>P8 = 1/2" NPTF<br>P12 = 3/4" NPTF<br>P16 = 1" NPTF<br>P20 = 1 1/4" NPTF<br>P24 = 1 1/2" NPTF<br>P32 = 2" NPTF<br>S8 = SAE-8<br>S12 = SAE-12<br>S16 = SAE-16<br>S20 = SAE-20<br>S24 = SAE-24 |                        |

## NOTES:

- Box 2. Number of elements must equal 1 when using KK elements.
- Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. K specifies one 9" element; KK specifies one 18" element. Example: KKZ10
- Box 5. H.5 seal designation includes the following: EPDM seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Skydrol® is a registered trademark of Solutia Inc. Viton® is a registered trademark of DuPont Dow Elastomers.
- Box 7. See also "Accessories for Tank-Mounted Filters," page 307.
- Box 9. YC2 and Y5 are not available with the G820.

| BOX 7                                                                                                                                                          | BOX 8                                                                       | BOX 9                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Outlet Porting Options                                                                                                                                         | Optional Mounting Flange                                                    | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                          |
| Omit = 1½" NPT male<br><br>C = Check valve<br><br>D = Diffuser<br><br>CD = Check valve & diffuser<br><br>T = 13" Tube extension<br><br>A = Non-threaded outlet | Omit = None<br><br>B = Flange with 4 holes<br><br>BW = Flange with no holes | Omit = None<br><br>Y2 = Back-mounted tri-color gauge (located in Port 4)<br><br>Visual Y2C = Bottom-mounted tri-color gauge in cap<br><br>Y5 = Back-mounted gauge in cap<br><br>ES = Electric switch (located in port 4)<br><br>Electrical ES1 = Heavy-duty electric switch with conduit connector (located in port 4)<br><br>ES2 = Electrical Switch with Deutsch Connector |
| BOX 10                                                                                                                                                         |                                                                             |                                                                                                                                                                                                                                                                                                                                                                              |
| Additional Options                                                                                                                                             |                                                                             |                                                                                                                                                                                                                                                                                                                                                                              |
| Omit = None<br>G2293 = Cork gasket<br>G820 = Steel cap                                                                                                         |                                                                             |                                                                                                                                                                                                                                                                                                                                                                              |

# Tank-Mounted Filter

RT



## Features and Benefits

- Low pressure tank-mounted filter with up to 3 inlet ports
- Meets HF4 automotive standard
- Top, side or bottom mounting
- Optional check valve prevents reservoir siphoning
- RTW model allows filter to be welded to tank, instead of being bolted
- Double and triple stacking of K-size element can be replaced by single KK or 27K-size element
- Also available with new DirtCatcher® elements (KDZ and KKDZ)
- Various Dirt Alarm® options
- Allows consolidation of inventoried replacement elements by using K-size elements
- Available with quality-protected GeoSeal® Elements (GRT)
- Same day shipment model available

100 gpm  
**380 L/min**  
100 psi  
**7 bar**

Model No. of filter in photograph is RT1K10S24NP16Y2.

|                           |                                                                      |
|---------------------------|----------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids                |
| Max. Operating Pressure:  | 100 psi (7 bar)                                                      |
| Min. Yield Pressure:      | 400 psi (28 bar), per NFPA T2.6.1                                    |
| Rated Fatigue Pressure:   | 90 psi (6 bar), per NFPA T2.6.1-2005                                 |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                      |
| Bypass Setting:           | Cracking: 25 psi (1.7 bar)<br>Full Flow: 48 psi (3.3 bar)            |
| Porting Head & Cap:       | Die Cast Aluminum                                                    |
| Element Case:             | Steel                                                                |
| Weight of RT-1K:          | 11.4 lbs. (5.2 kg)                                                   |
| Weight of RT-2K:          | 14.5 lbs. (6.6 kg)                                                   |
| Element Change Clearance: | 8.0" (205 mm) for 1K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K |

## Filter Housing Specifications

|                        |                                                                                                                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                     |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                                                                                                                                    |
| High Water Content     | All Z-Media® and all ASP® media (synthetic)                                                                                                                                                     |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                                                                                                                            |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)                                                                                                                                       |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation and all ASP® Media (synthetic)                                          |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP® media (synthetic) |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

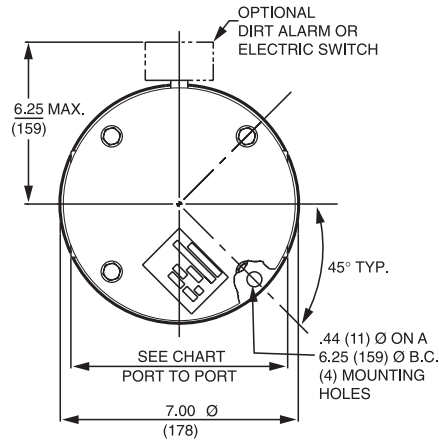
LTK

MRT

PAF1

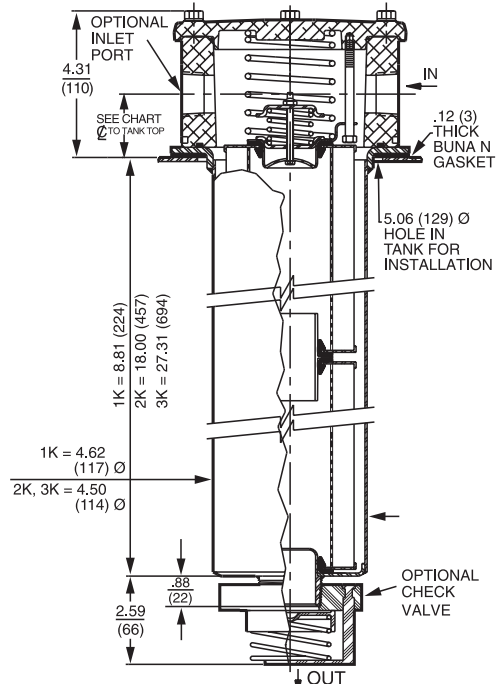
MAF1

MF2



|                    | 1½" Ports 4-Bolt Flange Only | 2" Ports                     | All Other Porting |
|--------------------|------------------------------|------------------------------|-------------------|
| Port to Port       | 7.12"                        | 7.56" (P, S, B)<br>7.38" (F) | 6.38"             |
| CL to Casting Base | 1.75"                        | 1.81"                        | 1.56"             |
| CL to Tank Top     | 2.06"                        | 2.12"                        | 1.88"             |

Optional mounting rings available for tank welding. See page 307, reference part numbers A-LFT-813 and A-LFT-1448.



Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element           | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|-------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|                   | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| KZ1/KKZ1/27KZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| KZ3/KKZ3/27KZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| KZ5/KKZ5/27KZ5    | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| KZ10/KKZ10/27KZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| KZ25/KKZ25/27KZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| KZW1              | N/A                                                                                                            | N/A                | N/A                | <4.0                                                                 | <4.0                     |
| KZW3/KKZW3        | N/A                                                                                                            | N/A                | N/A                | 4.0                                                                  | 4.8                      |
| KZW5/KKZW5        | N/A                                                                                                            | N/A                | N/A                | 5.1                                                                  | 6.4                      |
| KZW10/KKZW10      | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                      |
| KZW25/KKZW25      | N/A                                                                                                            | N/A                | N/A                | 15.4                                                                 | 18.5                     |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
| KZ1     | 112      | KKZ1    | 224      | 27KZ1   | 336      | KDZ1    | 89       | KKDZ1   | 188      | KZW1    | 61       |
| KZ3     | 115      | KKZ3    | 230      | 27KZ3   | 345      | KDZ3    | 71       | KKDZ3   | 150      | KZW3    | 64       |
| KZ5     | 119      | KKZ5    | 238      | 27KZ5   | 357      | KDZ5    | 100      | KKDZ5   | 210      | KZW5    | 63       |
| KZ10    | 108      | KKZ10   | 216      | 27KZ10  | 324      | KDZ10   | 80       | KKDZ10  | 168      | KZW10   | 57       |
| KZ25    | 93       | KKZ25   | 186      | 27KZ25  | 279      | KDZ25   | 81       | KKDZ25  | 171      | KZW25   | 79       |
|         |          |         |          |         |          |         |          |         |          | KKZW3   | 128      |
|         |          |         |          |         |          |         |          |         |          | KKZW5   | 126      |
|         |          |         |          |         |          |         |          |         |          | KKZW10  | 114      |
|         |          |         |          |         |          |         |          |         |          | KKZW25  | 158      |

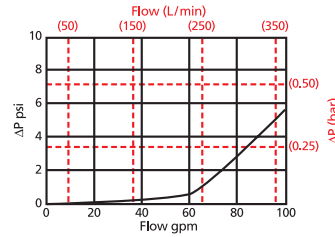
Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In [See RTI, page 275 for inside out flow version.](#)

Element Nominal Dimensions: K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

$\Delta P_{\text{housing}}$

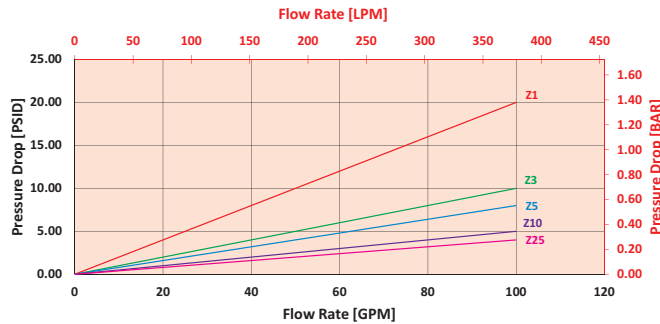
RT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

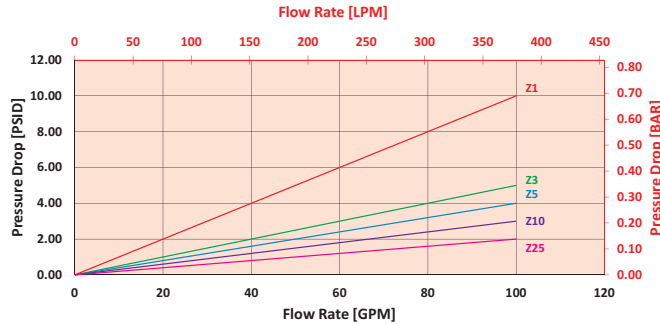
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KZ/KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 80 gpm (303.2 L/min) for RT1KZ10S24S24NY2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 80 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the RT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 80 gpm. In this case,  $\Delta P_{\text{element}}$  is 4 psi (.27 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 4 \text{ psi } [.27 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (4 \text{ psi} * 1.1) = 7.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.27 \text{ bar} * 1.1) = .51 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.              | $\Delta P$ | Ele.               | $\Delta P$ |
|-------|------------|-------------------|------------|--------------------|------------|
| K3    | 0.25       | 2K3/<br>KK3       | 0.12       | 3KZ1/<br>27KZ1     | 0.05       |
| K10   | 0.09       | 2K10/<br>KK10     | 0.05       | 3KZ3/<br>27KZ3     | 0.03       |
| K25   | 0.02       | 2K25/<br>KK25     | 0.01       | 3KZ5/<br>27KZ5     | 0.02       |
| KAS3  | 0.10       | 2KAS3/<br>KKAS3   | 0.05       | 3KZ10/<br>27KZ10   | 0.02       |
| KAS5  | 0.08       | 2KAS5/<br>KKAS5   | 0.04       | 3KZ25/<br>27KZ25   | 0.01       |
| KAS10 | 0.05       | 2KAS10/<br>KKAS10 | 0.03       | 3K3                | 0.08       |
| KDZ1  | 0.24       | 2KDZ1             | 0.12       | 3K10               | 0.03       |
| KDZ3  | 0.12       | 2KDZ3             | 0.06       | 3K25               | 0.01       |
| KDZ5  | 0.10       | 2KDZ5             | 0.05       | 3KAS3/<br>27KAS3   | 0.03       |
| KDZ10 | 0.06       | 2KDZ10            | 0.03       | 3KAS5/<br>27KAS5   | 0.02       |
| KDZ25 | 0.04       | 2KDZ25            | 0.02       | 3KAS10/<br>27KAS10 | 0.02       |
| KZW1  | 0.43       | 2KZW1             | -          |                    |            |
| KZW3  | 0.32       | 2KZW3/<br>KKZW3   | 0.16       |                    |            |
| KZW5  | 0.28       | 2KZW5/<br>KKZW5   | 0.14       |                    |            |
| KZW10 | 0.23       | 2KZW10/<br>KKZW10 | 0.12       |                    |            |
| KZW25 | 0.14       | 2KZW25/<br>KKZW25 | 0.07       |                    |            |

Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## How to Build a Valid Model Number for a Schroeder RT:

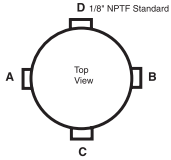
| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 5 | BOX 6A | BOX 6B | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|
| RT    |       |       |       |       |       |        |        |       |       |

Example: NOTE: Only box 9 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6     | BOX 7A | BOX 7B | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-----------|--------|--------|-------|-------|
| RT    | 1K    | Z     | 10    |       | S24 S24 N |        |        | Y2    |       |

= RT1KZ10S24S24Y2

| BOX 1         | BOX 2                 | BOX 3                                        | BOX 4                                   |
|---------------|-----------------------|----------------------------------------------|-----------------------------------------|
| Filter Series | Element Size & Length | Media Type                                   | Element Part Number                     |
| RT            | 1K KK, 27K            | Omit = E media (cellulose)                   | 1 = 1 µ Z, ZW, and DZ media             |
| RTW           | 2K                    | Z = Excellement® Z-Media® (synthetic)        | 3 = 3 µ AS, E, Z, ZW, and DZ media      |
| GRT           | 3K                    | AS = Anti-Static Pleat Media (synthetic)     | 5 = 5 µ AS, Z, ZW, and DZ media         |
|               | GeoSeal®              | ZW = Aqua-Excellement™ ZW media              | 10 = 10 µ AS, E, M, Z, ZW, and DZ media |
|               | 1KBG KKBG, 27KBG      | DZ = Dirtcatcher® with Excellement® Z-Media® | 25 = 25 µ E, M, Z, ZW, and DZ media     |
|               | 2KBG                  | W = W media (water removal)                  | 60 = 60 µ M media                       |
|               | 3KBG                  | M = M media (reusable metal mesh)            |                                         |

| BOX 5                        | BOX 6                                                                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Seal Material                | Specification of all 3 ports is required                                                                                                                          |
| Omit = Buna N                | Inlet Porting                                                                                                                                                     |
| H = EPR                      | Port A                                                                                                                                                            |
| W = Anodized Aluminum Parts  | P16 = 1" NPTF                                                                                                                                                     |
| H.5 = Skydrol® compatibility | P20 = 1 1/4" NPTF                                                                                                                                                 |
|                              | P24 = 1 1/2" NPTF                                                                                                                                                 |
|                              | P32 = 2" NPTF                                                                                                                                                     |
|                              | S16 = SAE-16                                                                                                                                                      |
|                              | S20 = SAE-20                                                                                                                                                      |
|                              | S24 = SAE-24                                                                                                                                                      |
|                              | S32 = SAE-32                                                                                                                                                      |
|                              | F20 = 1 1/4" SAE 4-bolt flange Code 61                                                                                                                            |
|                              | F24 = 1 1/2" SAE 4-bolt flange Code 61                                                                                                                            |
|                              | F32 = 2" SAE 4-bolt flange Code 61                                                                                                                                |
|                              | B24 = ISO 228 G-1 1/2"                                                                                                                                            |
|                              | Flange port option only:                                                                                                                                          |
|                              | M = Metric SAE 4 bolt flange                                                                                                                                      |
|                              | Port B                                                                                                                                                            |
|                              | N = None                                                                                                                                                          |
|                              | P16 = 1" NPTF                                                                                                                                                     |
|                              | P20 = 1 1/4" NPTF                                                                                                                                                 |
|                              | P24 = 1 1/2" NPTF                                                                                                                                                 |
|                              | P32 = 2" NPTF                                                                                                                                                     |
|                              | S16 = SAE-16                                                                                                                                                      |
|                              | S20 = SAE-20                                                                                                                                                      |
|                              | S24 = SAE-24                                                                                                                                                      |
|                              | S32 = SAE-32                                                                                                                                                      |
|                              | F20 = 1 1/4" SAE 4-bolt flange Code 61                                                                                                                            |
|                              | F24 = 1 1/2" SAE 4-bolt flange Code 61                                                                                                                            |
|                              | F32 = 2" SAE 4-bolt flange Code 61                                                                                                                                |
|                              | B24 = ISO 228 G-1 1/2"                                                                                                                                            |
|                              | Port C                                                                                                                                                            |
|                              | N = None                                                                                                                                                          |
|                              | P2 = 1/8" NPTF                                                                                                                                                    |
|                              | P16 = 1" NPTF                                                                                                                                                     |
|                              | S16 = SAE-16                                                                                                                                                      |
|                              | Inlet Porting Location                                                                                                                                            |
|                              |  |

| BOX 7A                       | BOX 7B                      |
|------------------------------|-----------------------------|
| Bypass Option                | Outlet Porting Options      |
| Omit = 25 psi bypass setting | Omit = 1 1/2" NPT male      |
| RT and RTW models only:      | C = Check valve             |
| 40 = 40 psi bypass setting   | D = Diffuser                |
| 50 = 50 psi bypass setting   | CD = Check Valve & Diffuser |
|                              | T = 13" Tube ext.           |
|                              | A = Non-thread outlet       |

| BOX 8                                                                           |
|---------------------------------------------------------------------------------|
| Dirt Alarm® Options                                                             |
| Omit = None                                                                     |
| Visual Y2 = Back-mounted tri-color gauge                                        |
| Electrical ES = Electric Switch                                                 |
| ES1 = Electric Switch with 24" wire leads                                       |
| ES2 = Electrical Switch with Deutsch Connector                                  |
| ES3 = Electric switch with DIN connector                                        |
| ES4 = Skydrol Compatible Electric Switch                                        |
| Visual Y2C = Bottom-mounted tri-color gauge                                     |
| Y5 = Back-mounted gauge in cap                                                  |
| Visual Y2R = Back-mounted gauge mounted on opposite side of standard location   |
| ESR = Electric switch mounted on opposite side of standard location             |
| ES1R = Heavy-duty electric switch mounted on opposite side of standard location |

| BOX 9                       |
|-----------------------------|
| Add. Options                |
| Omit = None                 |
| G2293 = Cork gasket         |
| G547 = Two 1/8" gauge ports |
| G820 = Stamped cap          |

## NOTES:

Box 1. RTW allows filter to be welded to tank instead of bolted.

Box 2. Number of elements must equal 1 when using KK or 27K elements.

Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length.

Box 5. For options H, W, and H.5 all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Skydrol® is a registered trademark of Solutia Inc.

Box 6. If using Port B, Port A &amp; B must always be the same type and size. Example: (A) P20 (B) P20 (C) P16

Box 7B. See also "Accessories for Tank-Mounted Filters," page 307.

# Tank-Mounted Filter (Inside Out Flow)

RTI

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

LTK

MRT



## Features and Benefits

- Tank-mounted "Inside Out" flow filter
- Up to 3 inlet ports available
- Offered in pipe, SAE straight thread and flanged porting
- Various Dirt Alarm\* options

120 gpm  
455 L/min  
100 psi  
7 bar

Model No. of filter in photograph is RTI3KZ10S24NP16Y2.

|                           |                                                                                          |
|---------------------------|------------------------------------------------------------------------------------------|
| Flow Rating:              | Up to 120 gpm (455 L/min) for 150 SUS (32 cSt) fluids                                    |
| Max. Operating Pressure:  | 100 psi (7 bar)                                                                          |
| Min. Yield Pressure:      | 400 psi (28 bar), per NFPA T2.6.1                                                        |
| Rated Fatigue Pressure:   | Contact factory                                                                          |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                                          |
| Bypass Setting:           | Cracking: 25 psi (2 bar)<br>Full Flow: 62 psi (4.3 bar)                                  |
| Porting Head & Cap:       | Die Cast Aluminum                                                                        |
| Element Case:             | Steel                                                                                    |
| Weight of RTI-KI:         | 11.4 lbs. (5.2 kg)                                                                       |
| Weight of RTI-KKI:        | 14.5 lbs. (6.6 kg)                                                                       |
| Element Change Clearance: | KI Element = 9.0 (229 mm)<br>KKI Element = 18.0 (457 mm)<br>27KI Element = 27.0 (686 mm) |

## Filter Housing Specifications

|                        |                                                                                                                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                     |
| Petroleum Based Fluids | All E media (cellulose), Z-Media* and ASP* media (synthetic)                                                                                                                                    |
| High Water Content     | All Z-Media* and ASP* media (synthetic)                                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media* and 10 µ ASP* media (synthetic)                                                                                                                                            |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media* and all ASP* media (synthetic)                                                                                                                                       |
| Phosphate Esters       | All Z-Media* (synthetic) with H (EPR) seal designation and all ASP* media (synthetic)                                                                                                           |
| Skydrol*               | 3, 5, 10 and 25 µ Z-Media* (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP* media (synthetic) |

## Fluid Compatibility

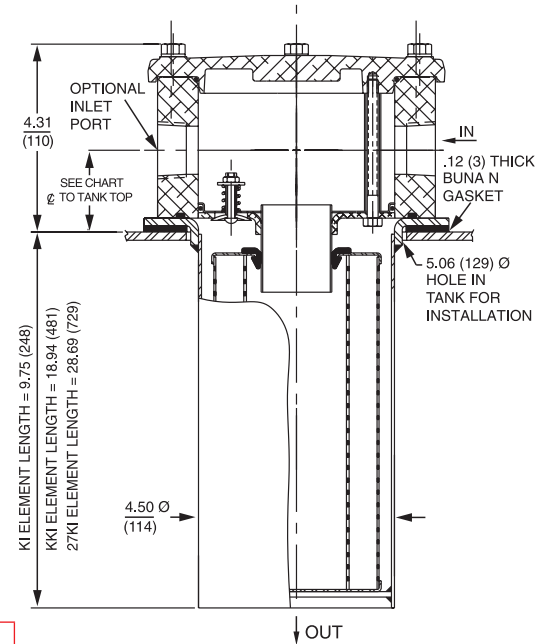
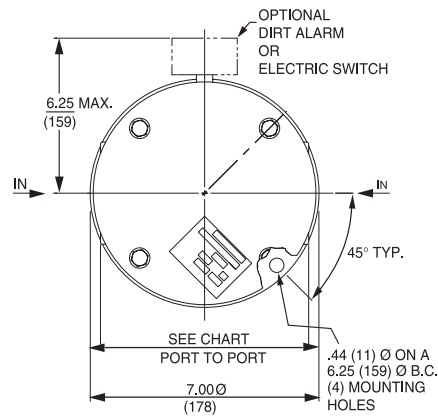
Accessories  
For Tank-  
Mounted  
Filters

PAF1

MAF1

MF2





|                    | 1 1/4", 1 1/2"<br>Standard Ports | 1 1/2" Ports<br>4-Bolt Flange Only |
|--------------------|----------------------------------|------------------------------------|
| Port to Port       | 6.38"                            | 7.12"                              |
| CL to Casting Base | 1.56"                            | 1.75"                              |
| CL to Tank Top     | 1.88"                            | 2.06"                              |

Optional mounting rings available for tank welding. See page 307, reference part numbers A-LFT-813 and A-LFT-1448.

Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| KIZ1    | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| KIZ3    | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| KIZ10   | <7.4                                                                                                           | <8.2               | <10.0              | 8.0                                                                  | 10.0                     |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|
| KIZ1    | 85       | KKIZ1   | 181      | 27KIZ1  | 276      |
| KIZ3    | 88       | KKIZ3   | 185      | 27KIZ3  | 283      |
| KIZ10   | <82      | KKIZ10  | 174      | 27KIZ10 | 266      |

Element Collapse Rating: 100 psid (7 bar)

Flow Direction: Inside Out

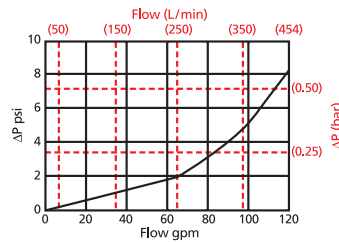
Element Nominal Dimensions: KI: 3.9" (99 mm) O.D. x 9.0" (230 mm) long  
KKI: 3.9" (99 mm) O.D. x 18.0" (460 mm) long  
27KI: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

# Tank-Mounted Filter (Inside Out Flow)

RTI

$\Delta P_{\text{housing}}$

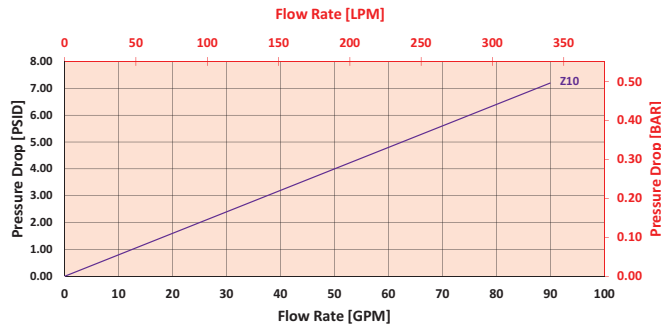
RTI  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

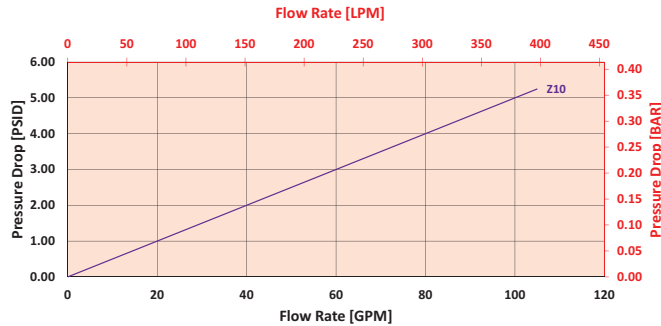
KIZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



KKIZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 80 gpm (303.2 L/min) for RTIKIZ10S20S20NY2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 80 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the RTI housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 80 gpm. In this case,  $\Delta P_{\text{element}}$  is 6.5 psi (.45 bar) according to the graph for the KIZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * V_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 6.5 \text{ psi } [.45 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (6.5 \text{ psi} * 1.1) = 10.2 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.45 \text{ bar} * 1.1) = .71 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.                  | $\Delta P$ |
|-----------------------|------------|
| KIAS10                | 0.08       |
| KKIAS10               | 0.05       |
| 27KIAS10/<br>27KIAS10 | 0.04       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder RTI:

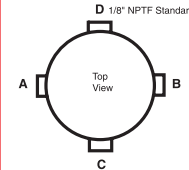
| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| RTI   |       |       |       |       |       |

Example: NOTE: Only box 6 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4     | BOX 5 | BOX 6 |
|-------|-------|-------|-----------|-------|-------|
| RTI   | KIZ10 |       | S20 S20 N | Y2    |       |

= RTIKIZ10S20S20NY2

| BOX 1         | BOX 2               |           |            |                                                         |
|---------------|---------------------|-----------|------------|---------------------------------------------------------|
| Filter Series | Element Part Number |           |            |                                                         |
| RTI           | K Length            | KK Length | 27K Length |                                                         |
|               | KIZ1                | KKIZ1     | 27KIZ1     | = 1 µ Excellement® Z-Media® and ASP® media (synthetic)  |
|               | KIZ3                | KKIZ3     | 27KIZ3     | = 3 µ Excellement® Z-Media® and ASP® media (synthetic)  |
|               | KIZ10               | KKIZ10    | 27KIZ10    | = 10 µ Excellement® Z-Media® and ASP® media (synthetic) |

| BOX 3                        |                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------|
| Seal Material                | Inlet Porting Location                                                                                   |
| Omit = Buna N                |  |
| H = EPR                      |                                                                                                          |
| W = Anodized Aluminum Parts  |                                                                                                          |
| H.5 = Skydrol® Compatibility |                                                                                                          |

BOX 4 Specification of all 3 ports is required

| Inlet Porting                        |                                      |               |
|--------------------------------------|--------------------------------------|---------------|
| Port A                               | Port B                               | Port C        |
| P16 = 1" NPTF                        | N = None                             | N = None      |
| P20 = 1 ¼" NPTF                      | P16 = 1" NPTF                        | P2 = ½" NPTF  |
| P24 = 1 ½" NPTF                      | P20 = 1 ¼" NPTF                      | P16 = 1" NPTF |
| S16 = SAE-16                         | P24 = 1 ½" NPTF                      | S16 = SAE-16  |
| S20 = SAE-20                         | S16 = SAE-16                         |               |
| S24 = SAE-24                         | S20 = SAE-20                         |               |
| F20 = 1 ¼" SAE 4-bolt flange Code 61 | S24 = SAE-24                         |               |
| F24 = 1 ½" SAE 4-bolt flange Code 61 | F20 = 1 ¼" SAE 4-bolt flange Code 61 |               |
|                                      | F24 = 1 ½" SAE 4-bolt flange Code 61 |               |

## NOTES:

- Box 2. Replacement element part numbers are identical to contents of Boxes 2 and 3.
- Box 3. For options H, W, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Skydrol® is a registered trademark of Solutia Inc.
- Box 4. If using Port B, Port A & B must always be the same type and size. Example: (A) P20 (B) P20 (C) P16
- Box 6. See also "Accessories for Tank-Mounted Filters," page 307.

| BOX 5               |            | BOX 6                                                                  |
|---------------------|------------|------------------------------------------------------------------------|
| Dirt Alarm® Options |            | Additional Options                                                     |
| Omit = None         |            | Omit = None                                                            |
| Located @ Port D    | Visual     | Y2 = Back-mounted tri-color gauge                                      |
|                     | Electrical | ES = Electric switch                                                   |
|                     |            | ES1 = Heavy-duty electric switch with conduit connector                |
| Located in cap      | Visual     | ES2 = Electrical Switch with Deutsch Connector                         |
|                     |            | Y2C = Bottom-mounted tri-color gauge                                   |
| Located @ Port C    | Visual     | Y5 = Back-mounted gauge in cap                                         |
|                     |            | Y2R = Back-mounted gauge mounted on opposite side of standard location |
|                     | Electrical | ESR = Electric switch mounted on opposite side of standard location    |
|                     |            | ES1R = Heavy-duty electric switch with conduit connector               |

# Tank-Mounted Filter

LRT



## Features and Benefits

- Low pressure tank-mounted filter
- Multiple inlet/outlet porting options
- Top, side or bottom mounting
- Optional check valve prevents reservoir siphoning
- Can also be used in return line application (contact factory)
- Visual gauge or electrical switch dirt alarms
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- Same day shipment model available
- Also available with DirtCatcher® elements (18LD)
- Available with quality-protected GeoSeal® Elements (GLRT)

150 gpm  
570 L/min  
100 psi  
7 bar

Model No. of filter in photograph is LRT18LZ10S24NP16Y2.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids     |
| Max. Operating Pressure:  | 100 psi (7 bar)                                           |
| Min. Yield Pressure:      | 400 psi (28 bar), per NFPA T2.6.1                         |
| Rated Fatigue Pressure:   | 90 psi (6 bar), per NFPA T2.6.1-2005                      |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 25 psi (1.7 bar)<br>Full Flow: 34 psi (2.3 bar) |
| Porting Head & Cap:       | Die Cast Aluminum                                         |
| Element Case:             | Steel                                                     |
| Weight of LRT-18L:        | 14.6 lbs. (6.6 kg)                                        |
| Element Change Clearance: | 17.0" (432 mm)                                            |

## Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media® (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

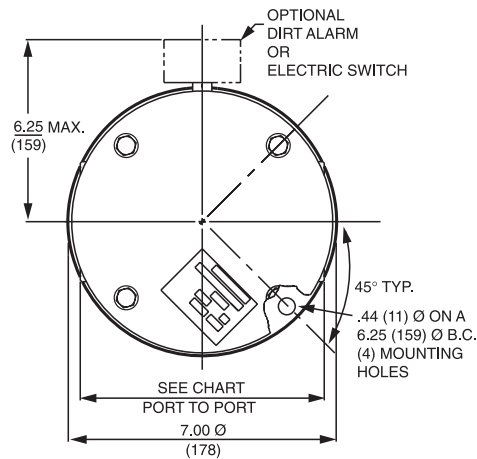
LTK

MRT

PAF1

MAF1

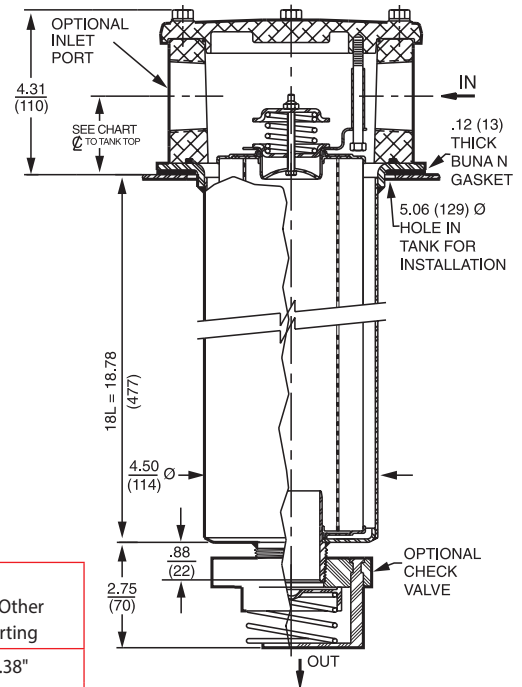
MF2



|                    | 1½" Ports<br>4-Bolt<br>Flange Only | 2" Ports                     | All Other<br>Porting |
|--------------------|------------------------------------|------------------------------|----------------------|
| Port to Port       | 7.12"                              | 7.56" (P, S, B)<br>7.38" (F) | 6.38"                |
| CL to Casting Base | 1.75"                              | 1.81"                        | 1.56"                |
| CL to Tank Top     | 2.06"                              | 2.12"                        | 1.88"                |

Optional mounting ring available to weld to tank.

Metric dimensions in ( ).



### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 18LZ1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| 18LZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| 18LZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| 18LZ10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| 18LZ25  | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 18LZ1   | 224      | 18LDZ1  | 194      |
| 18LZ3   | 230      | 18LDZ3  | 199      |
| 18LZ5   | 238      | 18LDZ5  | 194      |
| 18LZ10  | 216      | 18LDZ10 | 186      |
| 18LZ25  | 186      | 18LDZ25 | 169      |

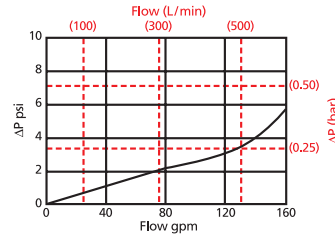
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 4.0" (100 mm) O.D. x 18.5" (470 mm) long

$\Delta P_{\text{housing}}$

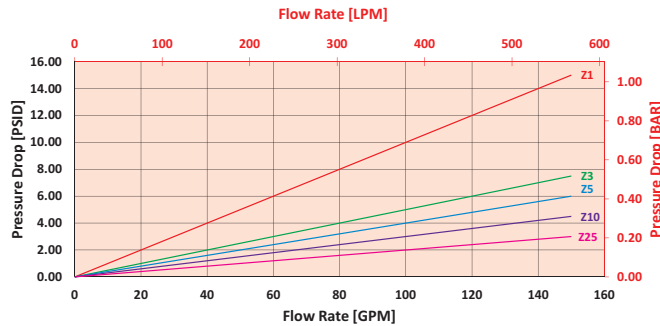
LRT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

18LZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 120 gpm (379 L/min) for LRT18LZ10S24S24NY2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 120 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the LRT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 120 gpm. In this case,  $\Delta P_{\text{element}}$  is 4 psi (.27 bar) according to the graph for the 18LZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 4 \text{ psi } [.27 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (4 \text{ psi} * 1.1) = 7.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.27 \text{ bar} * 1.1) = .51 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.    | $\Delta P$ |
|---------|------------|
| 18LDZ1  | 0.12       |
| 18LDZ3  | 0.06       |
| 18LDZ5  | 0.05       |
| 18LDZ10 | 0.03       |
| 18LDZ25 | 0.02       |

Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## How to Build a Valid Model Number for a Schroeder LRT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6A | BOX 6B | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|--------|--------|-------|-------|
| LRT   |       |       |       |       |        |        |       |       |

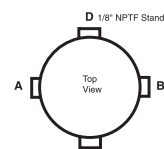
Example: NOTE: Only box 8 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5     | BOX 6A | BOX 6B | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-----------|--------|--------|-------|-------|
| LRT   | 18    | LZ10  |       | S24 S24 N |        |        | Y2    |       |

= LRT18LZ10S24S24NY2

| BOX 1              | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | BOX 4                                                                                      |
|--------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Filter Series      | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Seal Material                                                                              |
| LRT                | 18                  | L3 = L size 3 $\mu$ E media (cellulose)<br>L10 = L size 10 $\mu$ E media (cellulose)<br>LZ1 = L size 1 $\mu$ Excellement® Z-Media® (synthetic)<br>LZ3 = L size 3 $\mu$ Excellement® Z-Media® (synthetic)<br>LZ5 = L size 5 $\mu$ Excellement® Z-Media® (synthetic)<br><b>LZ10 = L size 10 <math>\mu</math> Excellement® Z-Media® (synthetic)</b><br>LZ25 = L size 25 $\mu$ Excellement® Z-Media® (synthetic)<br>LDZ1 = L size DirtCatcher® 1 $\mu$ Excellement® Z-Media®<br>LDZ3 = L size DirtCatcher® 3 $\mu$ Excellement® Z-Media®<br>LDZ5 = L size DirtCatcher® 5 $\mu$ Excellement® Z-Media®<br>LDZ10 = L size DirtCatcher® 10 $\mu$ Excellement® Z-Media®<br>LDZ25 = L size DirtCatcher® 25 $\mu$ Excellement® Z-Media®<br><b>GeoSeal® Element Options</b><br>LGZ1 = L size 1 $\mu$ Excellement® Z-Media® (synthetic)<br>LGZ3 = L size 3 $\mu$ Excellement® Z-Media® (synthetic)<br>LGZ5 = L size 5 $\mu$ Excellement® Z-Media® (synthetic)<br>LGZ10 = L size 10 $\mu$ Excellement® Z-Media® (synthetic)<br>LGZ25 = L size 25 $\mu$ Excellement® Z-Media® (synthetic) | Omit = Buna N<br>H = EPR<br>= Anodized<br>W Aluminum Parts<br>H.5 = Skydrol® compatibility |
| GLRT<br>(GeoSeal®) |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                            |

BOX 5  
Specification of all 3 ports is required

| Inlet Porting                       |                                     |                        | Bypass Option                                                                         |
|-------------------------------------|-------------------------------------|------------------------|---------------------------------------------------------------------------------------|
| Port A                              | Port B                              | Port C                 | Omit = 25 psi bypass setting<br>40 = 40 psi bypass setting                            |
| P16 = 1" NPTF                       | N = None                            | N = None               | BOX 6B                                                                                |
| P20 = 1¼" NPTF                      | P16 = 1" NPTF                       | P2 = ⅛" NPTF           |                                                                                       |
| P24 = 1½" NPTF                      | P20 = 1¼" NPTF                      | P16 = 1" NPTF          | Outlet Porting Options                                                                |
| P32 = 2" NPTF                       | P24 = 1½" NPTF                      | S16 = SAE-16           |                                                                                       |
| S16 = SAE-16                        | P32 = 2" NPTF                       | Inlet Porting Location |  |
| S20 = SAE-20                        | S16 = SAE-16                        |                        |                                                                                       |
| S24 = SAE-24                        | S20 = SAE-20                        |                        |                                                                                       |
| S32 = SAE-32                        | S24 = SAE-24                        |                        |                                                                                       |
| F20 = 1¼" SAE 4-bolt flange Code 61 | S32 = SAE-32                        |                        |                                                                                       |
| F24 = 1½" SAE 4-bolt flange Code 61 | F20 = 1¼" SAE 4-bolt flange Code 61 |                        |                                                                                       |
| F32 = 2" SAE 4-bolt flange Code 61  | F24 = 1½" SAE 4-bolt flange Code 61 |                        |                                                                                       |
| B24 = ISO 228 G-1½"                 | F32 = 2" SAE 4-bolt flange Code 61  |                        |                                                                                       |
| B24 = ISO 228 G-1½"                 |                                     |                        |                                                                                       |
| Flange port option only:            |                                     |                        | A = Non-thread outlet                                                                 |
| M = Metric SAE 4 bolt flange        |                                     |                        |                                                                                       |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.  
Example: 18LZ10

Box 4. For options H, W, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Skydrol® is a registered trademark of Solutia Inc.

Box 5. If using Port B, Port A & B must always be the same type and size.  
Example: (A) P20 (B) P20 (C) P16.

Box 6. See also "Accessories for Tank-Mounted Filters," page 307.

| BOX 7                                                                                                                                                                                                                                     | BOX 8                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Dirt Alarm® Options                                                                                                                                                                                                                       | Add. Options                                                             |
| Omit = None                                                                                                                                                                                                                               | Omit = None                                                              |
| Located @ Port D<br>Visual Y2 = Back-mounted tri-color gauge<br>ES = Electric switch<br>ES1 = Heavy-duty electric switch with conduit connector<br>ES2 = Electrical Switch with Deutsch Connector<br>ES3 = Electric Switch with DIN 43650 | G2293 = Cork gasket<br>G547 = Two 1/8" gauge ports<br>G820 = Stamped cap |
| Located in cap<br>Visual Y2C = Bottom-mounted tri-color gauge<br>Y5 = Back-mounted gauge in cap                                                                                                                                           |                                                                          |
| Located @ Port C<br>Visual Y2R = Back-mounted gauge mounted on opposite side of standard location<br>ESR = Electric switch mounted on opposite side of standard location<br>ES1R = Heavy-duty electric switch with conduit connector      |                                                                          |

# Tank-Mounted Filter

ART



### Features and Benefits

- Compact, lightweight, low pressure tank mounted filter ideal for mobile applications
- Lightweight plastic bowl
- ART aluminum alloy is designed to be water tolerant - anodization is not required for use with water based fluids (HWCF).
- Special filter element design provides aftermarket benefits.
- Various Dirt Alarm<sup>®</sup> options

225 gpm  
850 L/min  
145 psi  
10 bar

Model No. of filter in photograph is ART85Z10F43.

|                           |                                                          |
|---------------------------|----------------------------------------------------------|
| Flow Rating:              | Up to 225 gpm (850 L/min) for 150 SUS (32 cSt) fluids    |
| Max. Operating Pressure:  | 145 psi (10 bar)                                         |
| Min. Yield Pressure:      | 535 psi (37 bar), per NFPA T2.6.1                        |
| Rated Fatigue Pressure:   | 145 psi (10 bar), per NFPA T2.6.1                        |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                          |
| Bypass Setting:           | Cracking: 43 psi (3 bar)<br>Full Flow: 69 psi (4.75 bar) |
| Porting Head & Cap:       | Aluminum                                                 |
| Element Case:             | Plastic                                                  |
| Weight of ART:            | 15 lbs. (7 kg)                                           |
| Element Change Clearance: | 16.39" (340 mm)                                          |

### Filter Housing Specifications

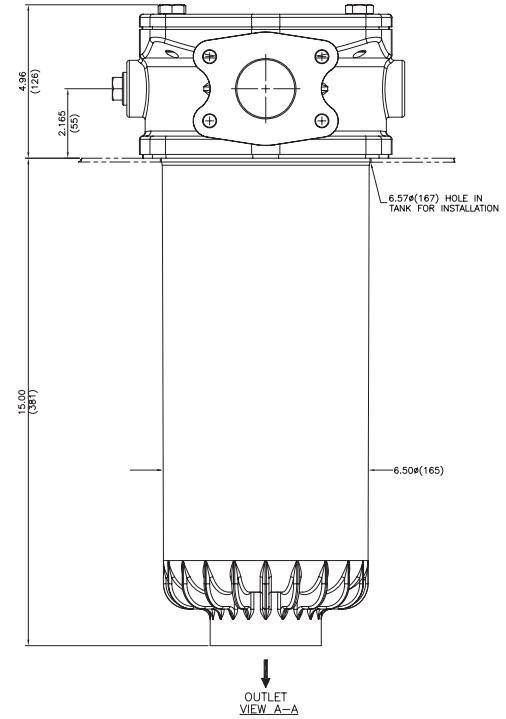
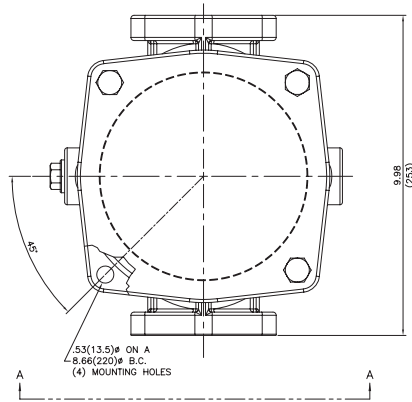
|                        |                                      |
|------------------------|--------------------------------------|
| Type Fluid             | Appropriate Schroeder Media          |
| Petroleum Based Fluids | All Z-Media <sup>®</sup> (synthetic) |
| High Water Content     | All Z-Media <sup>®</sup> (synthetic) |

### Fluid Compatibility

Accessories  
For Tank-Mounted  
Filters

- IRF
- TF1
- KF3
- KL3
- LF1
- MLF1
- RLD
- GRTB
- MTA
- MTB
- ZT
- AFT
- KFT
- RT
- RTI
- LRT
- ART**
- BRT
- TRT
- BFT
- QT
- KTK
- LTK
- MRT
- PAF1
- MAF1
- MF2





Metric dimensions in ( ).

Element  
Performance  
Information & Dirt  
Holding Capacity

| Element | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 85Z1    | <4.0                                                                 | 4.2                      |
| 85Z3    | <4.0                                                                 | 4.8                      |
| 85Z5    | 4.8                                                                  | 6.3                      |
| 85Z10   | 8.0                                                                  | 10.0                     |
| 85Z25   | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) |
|---------|----------|
| 85Z1    | 185      |
| 85Z3    | 147      |
| 85Z5    | 206      |
| 85Z10   | 164      |
| 85Z25   | 167      |

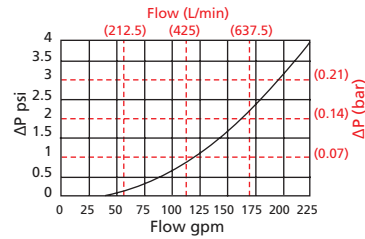
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 4.5" (114.3 mm) O.D. x 13.8" (350.52 mm) long

$\Delta P_{\text{housing}}$

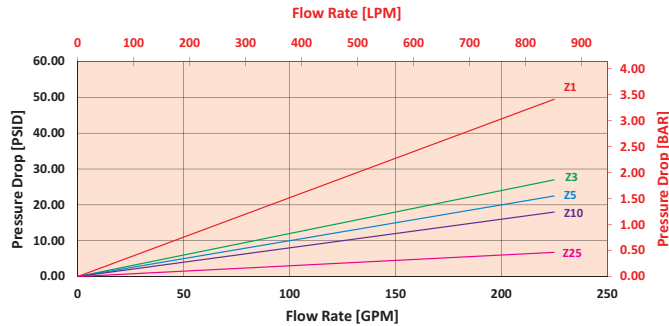
ART  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

85Z

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 120 gpm (379 L/min) for ART85Z10F43Y2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 120 gpm. In this case,  $\Delta P_{\text{housing}}$  is 1 psi (.07 bar) on the graph for the ART housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 120 gpm. In this case,  $\Delta P_{\text{element}}$  is 10 psi (.69 bar) according to the graph for the 85Z10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 1 \text{ psi } [.07 \text{ bar}] \mid \Delta P_{\text{element}} = 10 \text{ psi } [.69 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 1 \text{ psi} + (10 \text{ psi} * 1.1) = 12 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .07 \text{ bar} + (.69 \text{ bar} * 1.1) = .83 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder ART:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| ART   |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| ART   | 85Z10 |       | F     | 43    |       | Y2    |

= ART85Z10F43Y2

| BOX 1                | BOX 2                                                                                                                                                                                                                                            | BOX 3                    |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Filter Series</b> | <b>Element Size and Media</b>                                                                                                                                                                                                                    | <b>Seal Material</b>     |
| ART                  | 85Z1 = 1 μ Excellement® Z-Media® (synthetic)<br>85Z3 = 3 μ Excellement® Z-Media® (synthetic)<br>85Z5 = 5 μ Excellement® Z-Media® (synthetic)<br>85Z10 = 10 μ Excellement® Z-Media® (synthetic)<br>85Z25 = 25 μ Excellement® Z-Media® (synthetic) | Omit = Buna N<br>H = EPR |

| BOX 4                                                                                                                | BOX 5                 | BOX 6                       |
|----------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------|
| <b>Porting</b>                                                                                                       | <b>Bypass Setting</b> | <b>Outlet Options</b>       |
| F = 2½" SAE-40 4-bolt flange Code 61<br>FF = Dual 2½" SAE-40 4-bolt flange Code 61<br>S = SAE-32<br>SS = Dual SAE-32 | 43 = 43 psi Bypass    | Omit = 2" Threadless Outlet |

| BOX 7                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Dirt Alarm® Options</b>                                                                                                                                                                                                                                                                                                                                                                                                   |
| Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Visual</b><br>Y2 = Back-mounted tri-color gauge<br>Y2R = Back-mounted gauge mounted on opposite side of standard location                                                                                                                                                                                                                                                                                                 |
| <b>Electrical</b><br>ES = Electric switch (normally open)<br>ESR = Electric switch mounted on opposite side of standard location<br>ES1 = Heavy-duty electric switch with conduit connector<br>ES1R = Heavy-duty electric switch with conduit connector mounted on opposite side of standard location<br>ES2 = Super duty electric switch with Thermal Lockout and 2 pin Deutsche connector (DT04-2P, SPST, normally closed) |

## NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2 and 3.

Box 3. For option H, all aluminum parts are anodized.



## Features and Benefits

- Filter is mounted in the tank and flow comes to it from a pipe connection below it or from the side
- Optimal flow conditions created by flow from beneath guaranteeing optimal air separation, even tank mixing, and long element service intervals
- Patented de-aeration windows around the housing offer superior air bubble coalescence in a 360 degree discharge
- Quality Protected Inside-Out Flow Element Design



Part of the Schroeder Industries Energy  
Sustainability Initiative



Model No. of filter in photograph is BRT6RBZ102.

to 160 gpm  
to 600 L/min  
to 145 psi  
to 10 bar

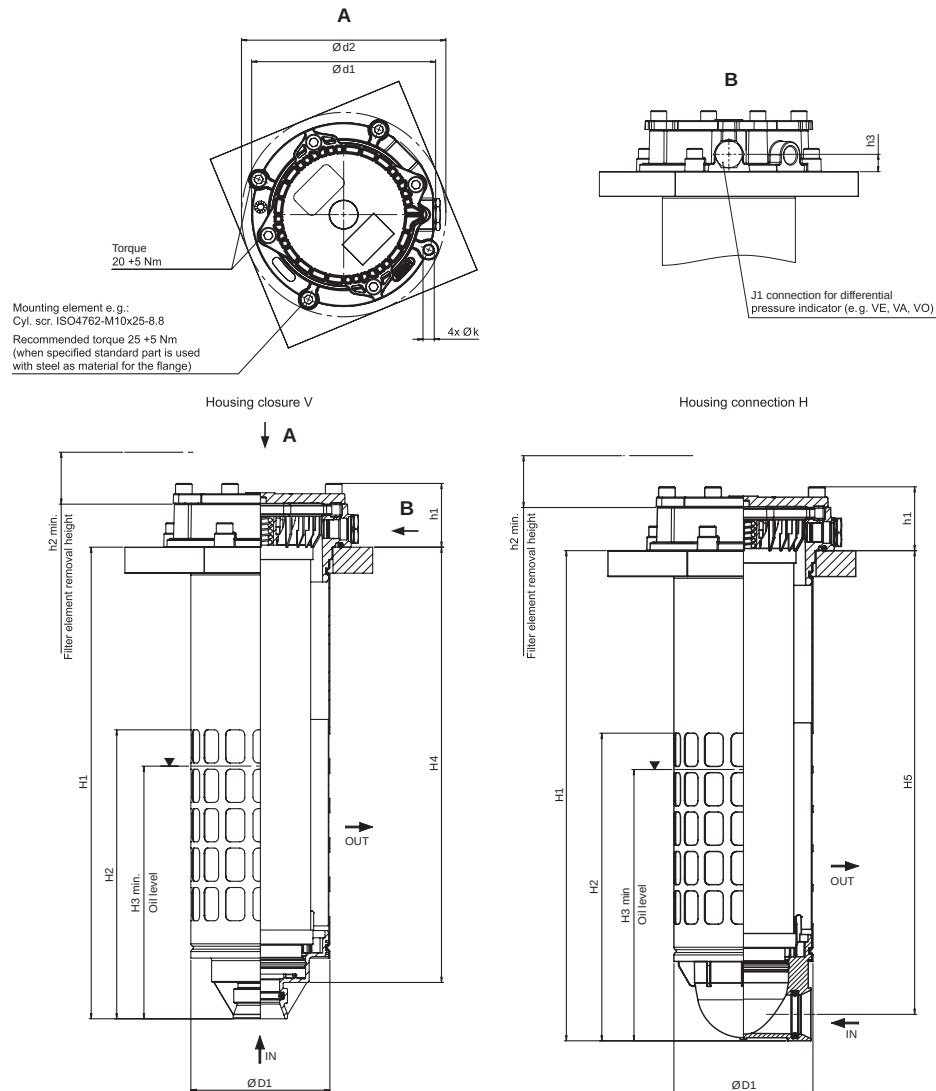
Filter  
Housing  
Specifications

|                          |                                                       |
|--------------------------|-------------------------------------------------------|
| Flow Rating:             | Up to 160 gpm (600 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure: | 145 psi (10 bar)                                      |
| Temp. Range:             | -22°F to 248°F (-30°C to 120°C)                       |
| Bypass Setting:          | Cracking: 36 psi (2.5 bar)                            |
| Filter Head & Cover:     | BRT 2 - 6: Aluminum                                   |
| Inlet Section:           | Nylon (PA66)                                          |
| Seals                    | Buna N                                                |
| Installation:            | As in-tank filter                                     |

Fluid  
Compatibility

|                                |                                |
|--------------------------------|--------------------------------|
| Type Fluid                     | Appropriate Schroeder Media    |
| Hydraulic Oils                 | Schroeder Z-Media® (synthetic) |
| Lubrication Oils               | Schroeder Z-Media® (synthetic) |
| Compressor Oils                | Schroeder Z-Media® (synthetic) |
| Biodegradable Operating Fluids | Schroeder Z-Media® (synthetic) |

### Dimensions BRT2 - BRT3

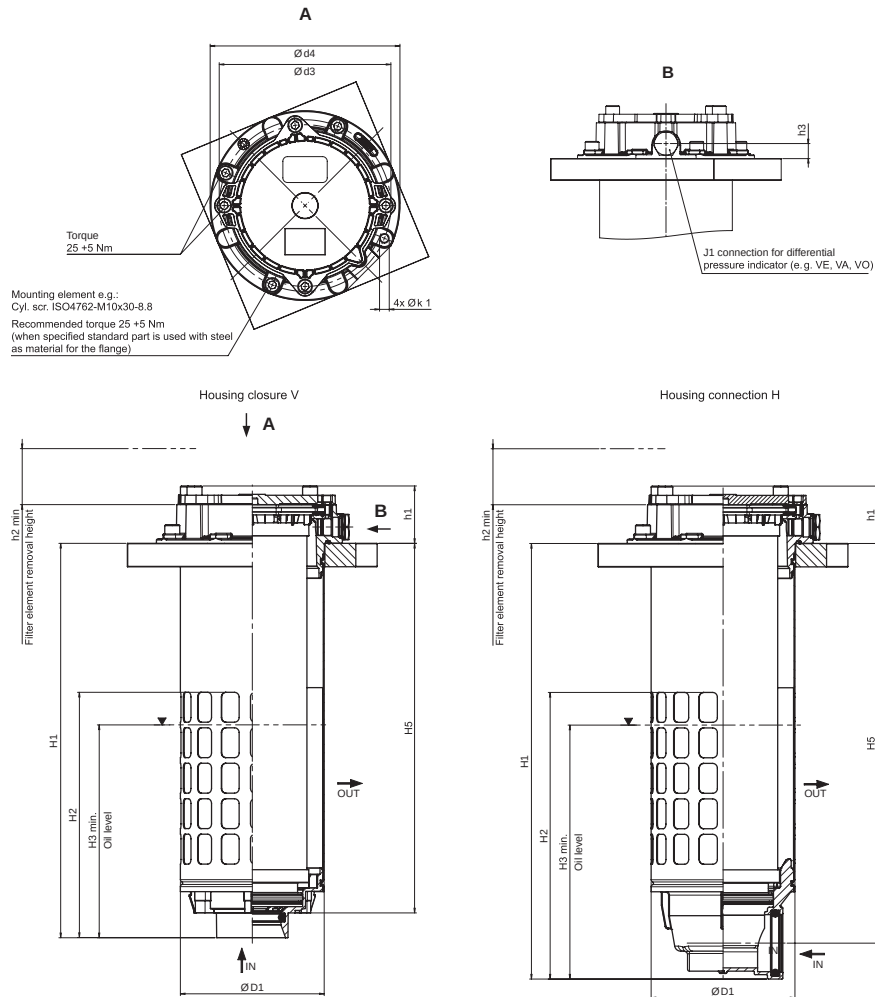


| Type     | Design                | Connection pos. | H1    | H2    | H3  | H4    | H5  | h1   | h2  | h3   | ØD1 | Ød1 | Ød2 | Øk   | Weight [kg] |
|----------|-----------------------|-----------------|-------|-------|-----|-------|-----|------|-----|------|-----|-----|-----|------|-------------|
| RFB 0170 | Diffuser with opening | H               | 322.5 | 220.5 | 186 | –     | 297 | 61.5 | 300 | 17.5 | 134 | 180 | 200 | 10.5 | 3.3         |
|          | Diffuser with opening | V               | 304.5 | 202.5 | 168 | 269.5 | –   |      | 3.2 |      |     |     |     |      |             |
| RFB 0300 | Diffuser with opening | H               | 472.5 | 296.5 | 262 | –     | 447 |      | 450 |      |     |     |     |      | 3.9         |
|          | Diffuser with opening | V               | 454.5 | 278.5 | 244 | 419.5 | –   |      | 4.0 |      |     |     |     |      |             |

### Element Performance Information

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 2RBZ10  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 11.2                     |
| 2RBZ25  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 16.2                     |
| 3RBZ10  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 11.2                     |
| 3RBZ25  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 16.2                     |
| 4RBZ10  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 11.2                     |
| 4RBZ25  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 16.2                     |
| 6RBZ10  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 11.2                     |
| 6RBZ25  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 16.2                     |

Metric dimensions mm ( ).

Dimensions  
BRT4 - BRT6

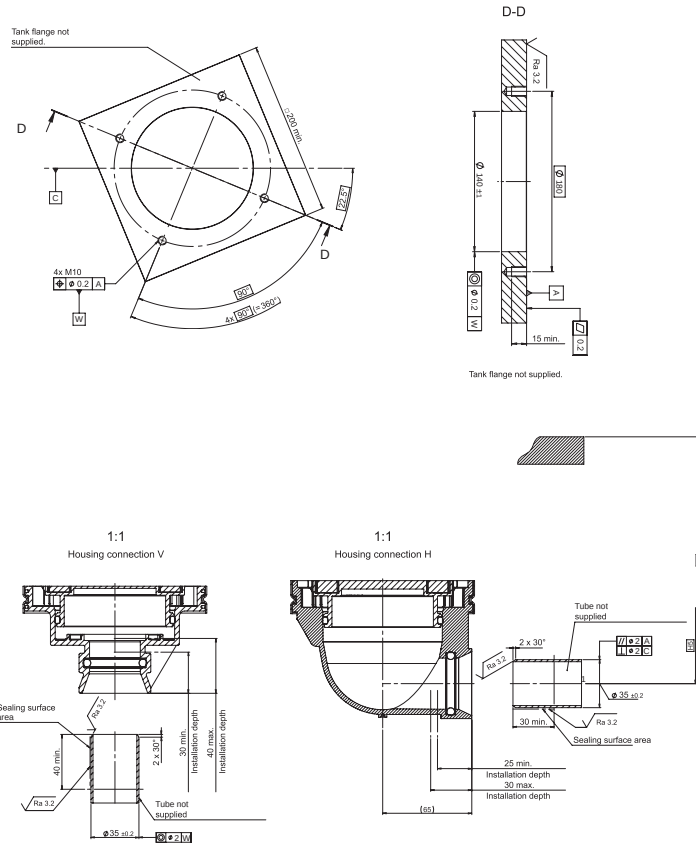
| Type     | Design                | Connection pos. | H1    | H2    | H3  | H4    | H5    | h1   | h2  | h3   | ØD1 | Ød1   | Ød2 | Øk1  | Weight [kg] |
|----------|-----------------------|-----------------|-------|-------|-----|-------|-------|------|-----|------|-----|-------|-----|------|-------------|
| RFB 0400 | Diffuser with opening | H               | 466.5 | 307   | 234 | —     | 428   | 61.5 | 430 | 17.5 | 154 | 185.7 | 205 | 10.5 | 4.5         |
|          | Diffuser with opening | V               | 422.4 | 262.6 | 182 | 393.8 | —     |      | 580 |      |     |       |     |      | 4.3         |
| RFB 0600 | Diffuser with opening | H               | 613.7 | 383.2 | 310 | —     | 575.2 | 61.5 | 430 | 17.5 | 154 | 185.7 | 205 | 10.5 | 5.5         |
|          | Diffuser with opening | V               | 561.6 | 331.1 | 258 | 541   | —     |      | 580 |      |     |       |     |      | 5.3         |

| Element | DHC (g) | Element | DHC (g) |
|---------|---------|---------|---------|
| 2RBZ10  | 70.4    | 4RBZ10  | 152.5   |
| 2RBZ25  | 77.8    | 4RBZ25  | 173.4   |
| 3RBZ10  | 114.3   | 6RBZ10  | 190.4   |
| 3RBZ25  | 128.3   | 6RBZ25  | 231.7   |

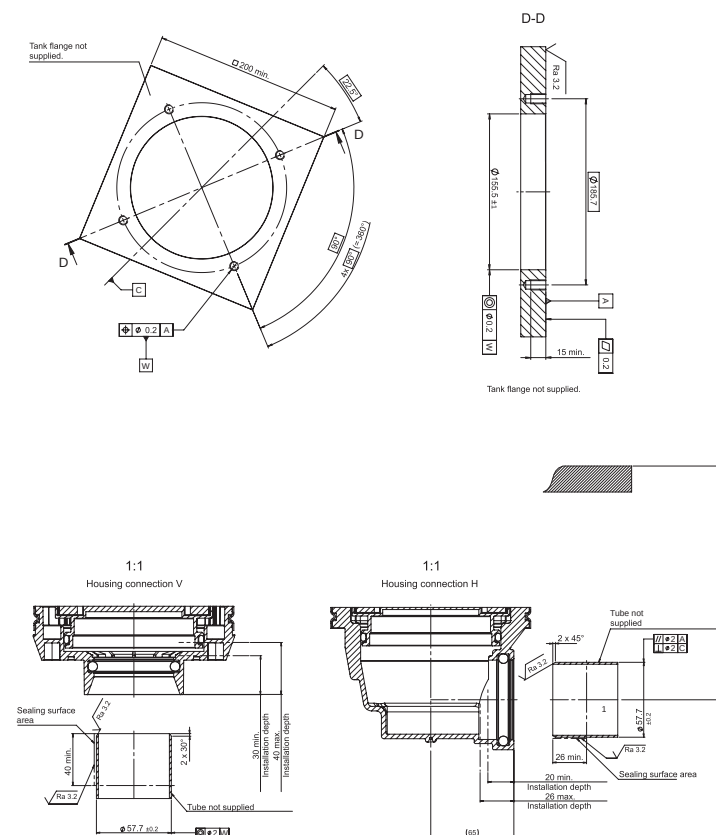
Element Burst Rating: 87 psi (6 bar) for standard elements  
Flow Direction: Inside Out

Element  
Dirt Holding  
Capacity & Burst  
Rating

### Dimensions BRT2 - BRT3

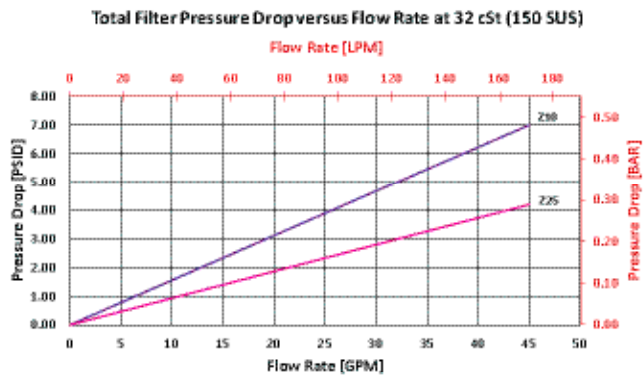


### Dimensions BRT4 - BRT6



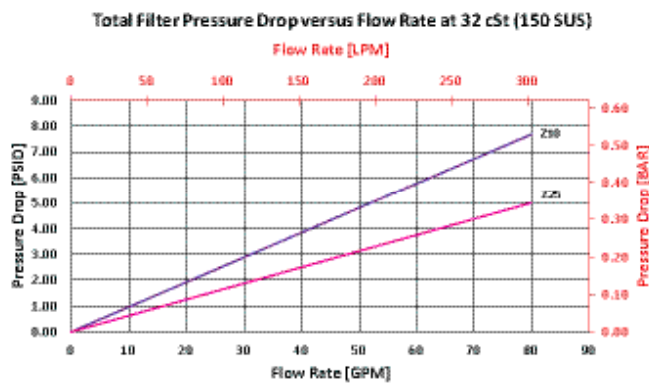
Metric dimensions mm ( ).

$\Delta P_{\text{element}}$   
BRT2

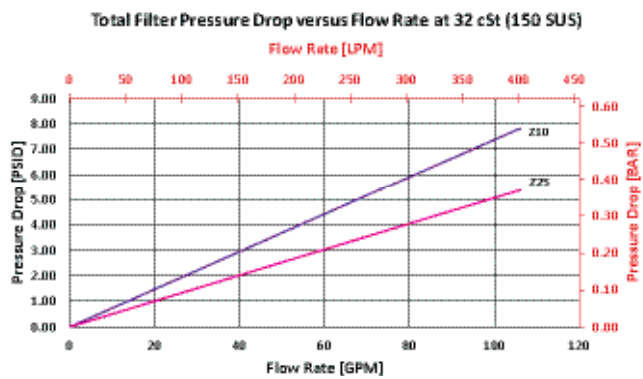


Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

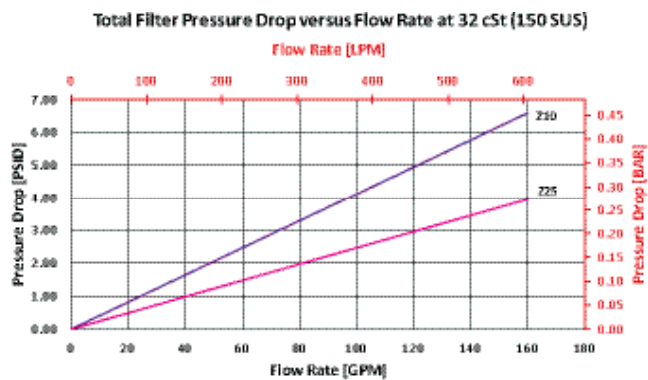
BRT3



BRT4



BRT6





Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder BRT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| BRT   |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| BRT   | 3RB   | Z     | 10    |       | 1     |       |

= BRT3RBZ101Y2

| BOX 1         | BOX 2           | BOX 3                                 | BOX 4         |
|---------------|-----------------|---------------------------------------|---------------|
| Filter Series | Size of Element | Element Media Type                    | Micron Rating |
| BRT           | 2RB             | Z = Excellement® Z-Media® (synthetic) | 10 = 10 µm    |
|               | 3RB             |                                       | 25 = 25 µm    |
|               | 4RB             |                                       |               |
|               | 6RB             |                                       |               |

| BOX 5         | BOX 6            | BOX 7                                        |
|---------------|------------------|----------------------------------------------|
| Seal Material | Inlet Porting    | Dirt Alarm® Options                          |
| Omit = Buna N | 2 = side inlet   | Omit = No Indicator, sealed up w/ screw plug |
| V = Viton®    | 1 = bottom inlet | VA = visual/electrical                       |
|               |                  | VE = electrical                              |
|               |                  | VO = visual                                  |



## Features and Benefits

- Filter head is mounted on the tank like a standard return-line filter solution
- The protective tube can be supplied in various optional versions: 1.) as a closed tube with the outlet opening facing downwards or with a closed base and rows of operating holes at the height of the tank's oil level 2.) with an optional magnetic core connected to the filter element guaranteeing effective magnetic pre-filtration
- Patented de-aeration windows around the housing offer superior air bubble coalescence in a 360 degree discharge
- Quality Protected Element Design



Part of the Schroeder Industries Energy Sustainability Initiative

TRT1 TRT2 TRT3 TRT4



Model No. of filter in photograph is TRT3RTZ10MS.

up to 100 gpm  
up to 380 L/min  
to 145 psi  
to 10 bar

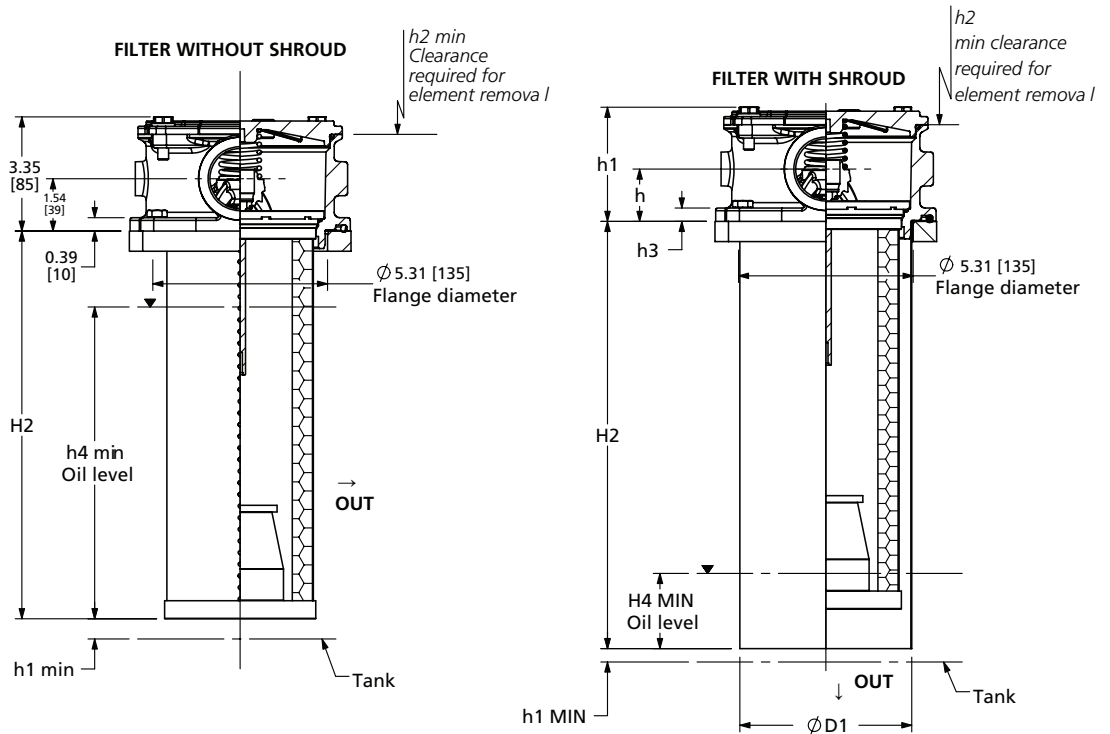
Filter  
Housing  
Specifications

|                          |                                                       |
|--------------------------|-------------------------------------------------------|
| Flow Rating:             | Up to 100 gpm (400 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure: | 145 psi (10 bar)                                      |
| Temp. Range:             | -22°F to 248°F (-30°C to 120°C)                       |
| Bypass Setting:          | Cracking: 36 psi (2.5 bar)                            |
| Filter Head & Cover:     | Aluminum                                              |
| Filter Housing:          | Steel                                                 |
| Inlet Section:           | Nylon (PA66)                                          |
| Seals:                   | Buna N and Viton                                      |
| Installation:            | As in-tank filter                                     |

Fluid  
Compatibility

|                                |                                |
|--------------------------------|--------------------------------|
| Type Fluid                     | Appropriate Schroeder Media    |
| Hydraulic Oils                 | Schroeder Z-Media® (synthetic) |
| Lubrication Oils               | Schroeder Z-Media® (synthetic) |
| Compressor Oils                | Schroeder Z-Media® (synthetic) |
| Biodegradable Operating Fluids | Schroeder Z-Media® (synthetic) |

Dimensions  
TRT1, 2, 3, 4



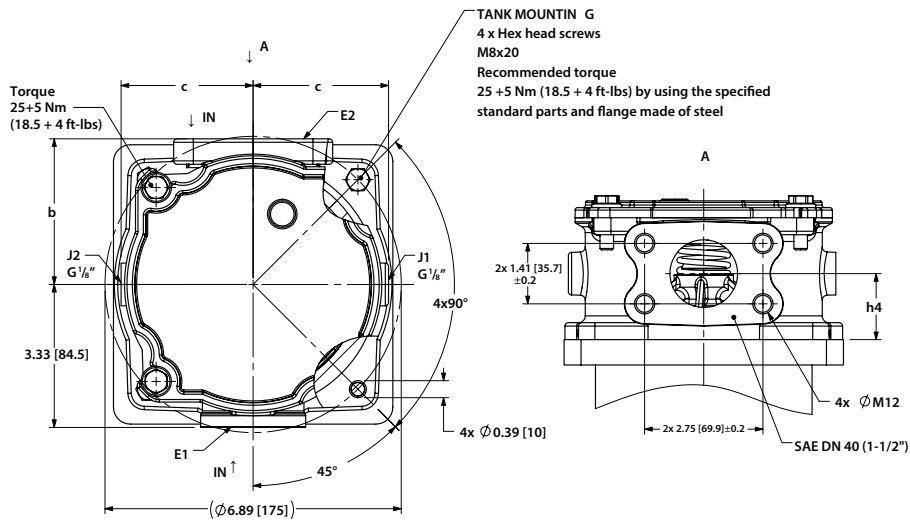
Element  
Performance  
Information

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 1RTZ10  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 12.3                   |
| 1RTZ25  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 16.2                   |
| 2RTZ10  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 12.3                   |
| 2RTZ25  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 18.6                   |
| 3RTZ10  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 12.3                   |
| 3RTZ25  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 18.6                   |
| 4RTZ10  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 12.3                   |
| 4RTZ25  | C/F                                                                                                            | C/F                | C/F                | C/F                                                                  | 18.6                   |

Element  
Dirt Holding  
Capacity & Burst  
Rating

| Element | DHC<br>(g) | Element | DHC<br>(g) |
|---------|------------|---------|------------|
| 1RTZ10  | 81.0       | 3RTZ10  | 199.1      |
| 1RTZ25  | 89.9       | 3RTZ25  | 221.0      |
| 2RTZ10  | 150.5      | 4RTZ10  | 242.8      |
| 2RTZ25  | 167.1      | 4RTZ25  | 269.5      |

Element Burst Rating: 87 psi (6 bar) for standard elements  
Flow Direction: Inside Out



|      |                                | H1           | H2             | H3            | H4             | h2                             | h4 | ØD1           | b                                 | c                               | Weight<br>(lbs [kg]) |
|------|--------------------------------|--------------|----------------|---------------|----------------|--------------------------------|----|---------------|-----------------------------------|---------------------------------|----------------------|
| TRT1 | No housing tube                | 0.39<br>[10] | 8.58<br>[218]  | -             | 6.10<br>[155]  | 10.24<br>[260]                 | -  | -             | 3.39<br>[86.0]*<br>3.33<br>[78]** | 3.14<br>[80]*<br>3.07<br>[78]** | 5.7 [2.6]            |
|      | Standard housing with diffuser | 0.20<br>[5]  | 9.72<br>[247]  | 4.02<br>[102] | 0.39<br>[10]   |                                |    | 5.04<br>[128] |                                   |                                 | 7.04 [3.2]           |
| TRT2 | No housing tube                | 0.39<br>[10] | 11.38<br>[289] | -             | 7.99<br>[203]  | 12.99<br>[330]                 | -  | -             |                                   |                                 | 6.38 [2.9]           |
|      | Standard housing with diffuser | 0.20<br>[5]  | 12.52<br>[318] | 4.02<br>[102] | 0.39<br>[10]   |                                |    | 5.04<br>[128] |                                   |                                 | 8.14 [3.7]           |
| TRT3 | No housing tube                | 0.39<br>[10] | 15.16<br>[385] | -             | 10.51<br>[267] | 16.96<br>[430]<br>1.54<br>[39] | -  | -             |                                   |                                 | 6.82 [3.1]           |
|      | Standard housing with diffuser | 0.20<br>[5]  | 16.30<br>[414] | 4.02<br>[102] | 0.39<br>[10]   |                                |    | 5.04<br>[128] |                                   |                                 | 8.14 [3.7]           |
| TRT4 | No housing tube                | 0.39<br>[10] | 19.65<br>[499] | -             | 13.23<br>[336] |                                |    | -             |                                   |                                 | 7.48 [3.4]           |
|      | Standard housing with diffuser | 0.20<br>[5]  | 20.75<br>[528] | 4.02<br>[102] | 0.39<br>[10]   |                                |    | 5.01<br>[128] |                                   |                                 | 9.46 [4.3]           |

\*unworked port

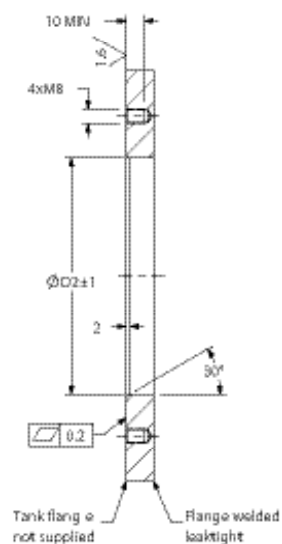
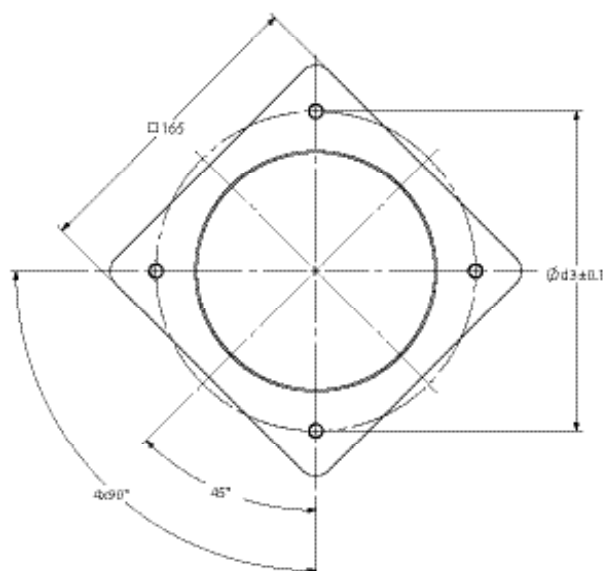
\*\*worked port

### Dimensions TRT1, 2, 3, 4

#### Specifications For The Tank Flange

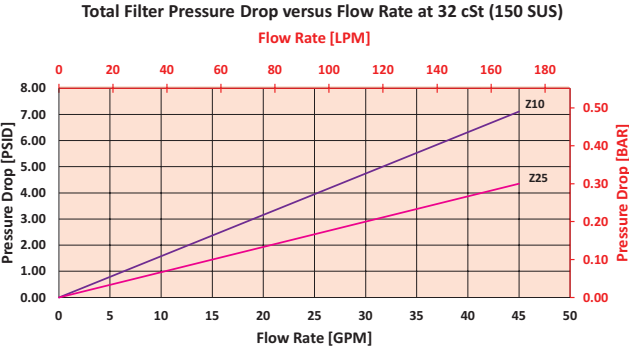
1. In the filter mounting interface, the tank flange should have a maximum flatness of 0.3 mm and maximum roughness of Ra 3.2  $\mu\text{m}$ .
2. In addition, the mounting interface should be free from damage and scratches.
3. The mounting holes of the flange must be blind, or stud bolts. Loctite must be used to mount the filter. As an alternative, the tank flange can be continuously welded from the inside.
4. Both the tank sheet metal and the filter mounting flange must be sufficiently robust so that neither deform when the seal is compressed during tightening.

#### TRT1, 2, 3, 4

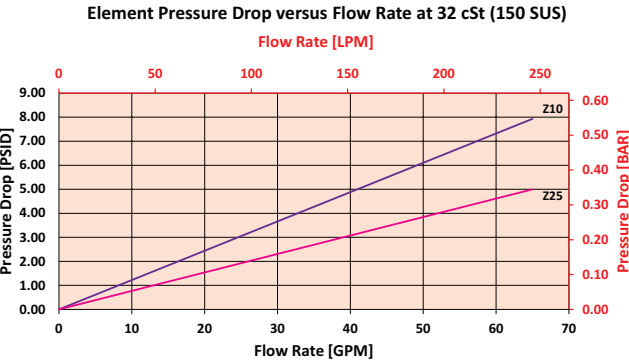


$\Delta P_{\text{element}}$   
TRT1

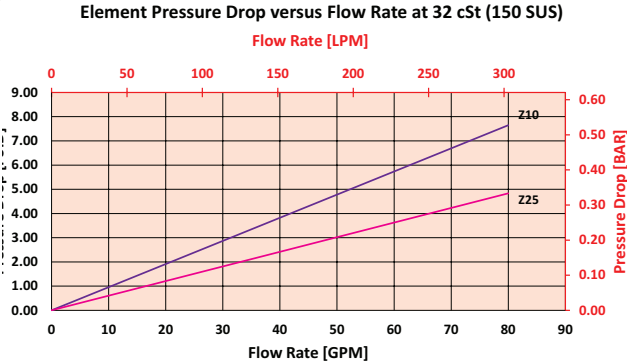
Pressure Drop Information  
Based on Flow Rate and Viscosity



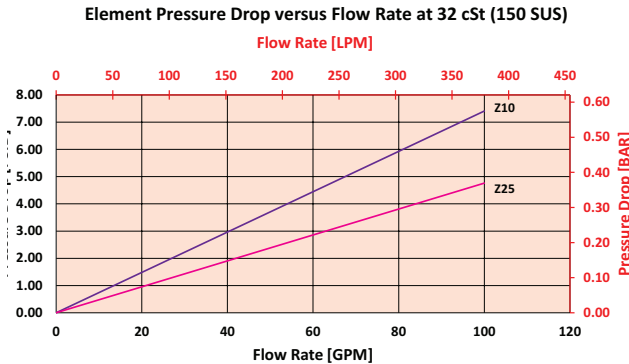
TRT2



TRT3



TRT4



Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder TRT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TRT   |       |       |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TRT   | 1RTZ  | 10    |       |       | G     |       |       |       |

= TRT1RTZ10G

| BOX 1         | BOX 2           | BOX 3         | BOX 4                         |
|---------------|-----------------|---------------|-------------------------------|
| Filter Series | Size of Element | Micron Rating | Bypass                        |
| TRT           | 1RTZ            | 5 = 5 µm      | Omit = standard 36 psi bypass |
|               | 2RTZ            | 10 = 10 µm    | 12 = 12 psi bypass            |
|               | 3RTZ            | 25 = 25 µm    |                               |
|               | 4RTZ            |               |                               |

| BOX 5                                        | BOX 6                                                                                                                                              | BOX 7                                 |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Magnet                                       | Porting                                                                                                                                            | Housing Option                        |
| Omit = no magnetic core<br>M = magnetic core | G = 1-1/2" BSPP<br>S = G 1-1/2" BSPP,<br>SAE DN 40 (1-1/2")<br>SAE-24 (requires BSPP to<br>S24 = SAE bushing to extend<br>port to port dimensions) | Omit = standard housing with diffuser |

| BOX 8                       | BOX 9                                        |
|-----------------------------|----------------------------------------------|
| Seal Material               | Dirt Alarm® Options                          |
| Omit = Buna N<br>V = Viton® | Omit = No Indicator, sealed up w/ screw plug |
|                             | VA = visual/electrical                       |
|                             | VE = electrical                              |
|                             | VO = visual                                  |



### Features and Benefits

- Low pressure tank-mounted filter
- Designed for high return line flows
- Dual inlet porting options available
- Top, side or bottom mounting
- Optional check valve prevents reservoir siphoning
- Special filter element design provides aftermarket benefits
- Also available with DirtCatcher® element (BBD)
- Cast iron head available

300 gpm  
1135 L/min  
 100 psi  
 7 bar

Model No. of filter in photograph is BFT1BBZ5F.

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 300 gpm (1135 L/min) for 150 SUS (32 cSt) fluids    |
| Max. Operating Pressure:  | 100 psi (7 bar)                                           |
| Min. Yield Pressure:      | 250 psi (17 bar), per NFPA T2.6.1                         |
| Rated Fatigue Pressure:   | Contact factory, per NFPA T2.6.1                          |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 25 psi (1.7 bar)<br>Full Flow: 52 psi (3.6 bar) |
| Porting Head & Cap:       | Aluminum                                                  |
| Element Case:             | Steel                                                     |
| Weight of BFT-1BB:        | 36.7 lbs. (16.6 kg)                                       |
| Element Change Clearance: | 14.75" (375 mm)                                           |

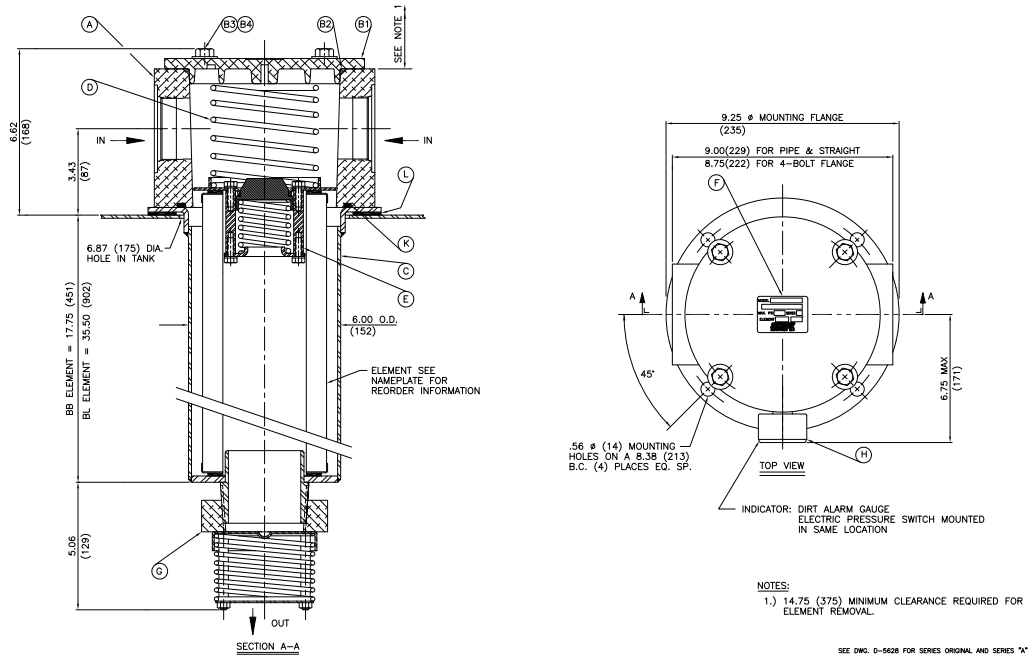
### Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media® (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation                                                                                                           |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

### Accessories For Tank-Mounted Filters





Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element  | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|----------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|          | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| BB/BLZ1  | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| BB/BLZ3  | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| BB/BLZ5  | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| BB/BLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| BB/BLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|
| BBZ1    | 268      | BBDZ1   | 205      | BLZ1    | 536      |
| BBZ3    | 275      | BBDZ3   | 163      | BLZ3    | 550      |
| BBZ5    | 301      | BBDZ5   | 229      | BLZ5    | 550      |
| BBZ10   | 272      | BBDZ10  | 183      | BLZ10   | 550      |
| BBZ25   | 246      | BBDZ25  | 186      | BLZ25   | 550      |

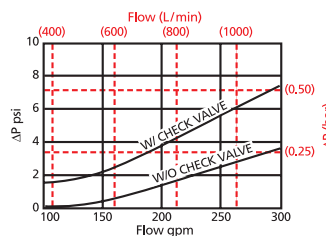
Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: BB: 5.0" (125 mm) O.D. x 18.0" (460 mm) long  
BL: 5.0" (125 mm) O.D. x 36.0" (920 mm) long

$\Delta P_{\text{housing}}$

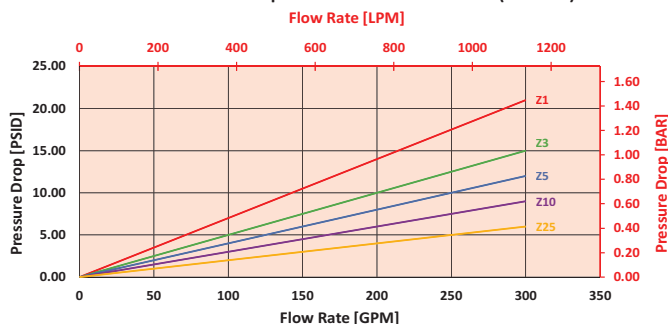
BFT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

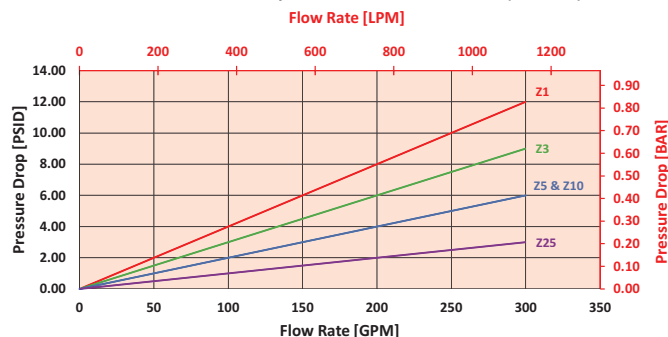
BBZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



BLZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 200 gpm (758 L/min) for BFT1BBZ10PY2 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 200 gpm. In this case,  $\Delta P_{\text{housing}}$  is 1.5 psi (.10 bar) on the graph for the BFT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 200 gpm. In this case,  $\Delta P_{\text{element}}$  is 6 psi (.41 bar) according to the graph for the BBZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 1.5 \text{ psi } [.10 \text{ bar}] \mid \Delta P_{\text{element}} = 6 \text{ psi } [.41 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 1.5 \text{ psi} + (6 \text{ psi} * 1.1) = 8.1 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .10 \text{ bar} + (.41 \text{ bar} * 1.1) = .55 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.   | $\Delta P$ | Ele.   | $\Delta P$ |
|--------|------------|--------|------------|
| BB10   | 0.03       | BL10   | 0.01       |
| BB25   | 0.01       | BL25   | 0.01       |
| BBDZ1  | 0.08       | BLDZ1  | 0.16       |
| BBDZ3  | 0.06       | BLDZ3  | 0.12       |
| BBDZ5  | 0.05       | BLDZ5  | 0.10       |
| BBDZ10 | 0.04       | BLDZ10 | 0.08       |
| BBDZ25 | 0.02       | BLDZ25 | 0.04       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder KF3:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| BFT   |       |       |       |       |       |       |       |       |        |

Example: NOTE: Only box 10 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| BFT   | 1     | BB10  |       | P     |       |       |       | Y2    |        |

= BFT1BB10PY2

| BOX 1         | BOX 2              | BOX 3                  |           |                                                   |  |  |  | BOX 4          |
|---------------|--------------------|------------------------|-----------|---------------------------------------------------|--|--|--|----------------|
| Filter Series | Number of Elements | Element Size and Media |           |                                                   |  |  |  | Seal Material  |
| BFT           | 1                  | BB Length              | BL Length |                                                   |  |  |  | Omit = Buna N  |
|               |                    | BB3                    |           | = 3 µ E media (cellulose)                         |  |  |  | H = EPR        |
|               |                    | BB10                   |           | = 10 µ E media (cellulose)                        |  |  |  | = Anodized     |
|               |                    | BB25                   |           | = 25 µ E media (cellulose)                        |  |  |  | W Aluminum     |
|               |                    | BBZ1                   | BLZ1      | = 1 µ Excellement® Z-Media® (synthetic)           |  |  |  | Parts          |
|               |                    | BBZ3                   | BLZ3      | = 3 µ Excellement® Z-Media® (synthetic)           |  |  |  | H.5 = Skydrol® |
|               |                    | BBZ5                   | BLZ5      | = 5 µ Excellement® Z-Media® (synthetic)           |  |  |  | compatibility  |
|               |                    | BBZ10                  | BLZ10     | = 10 µ Excellement® Z-Media® (synthetic)          |  |  |  |                |
|               |                    | BBZ25                  | BLZ25     | = 25 µ Excellement® Z-Media® (synthetic)          |  |  |  |                |
|               |                    | BBDZ1                  |           | = BB size DirtCatcher® 1 µ Excellement® Z-Media®  |  |  |  |                |
|               |                    | BBDZ3                  |           | = BB size DirtCatcher® 3 µ Excellement® Z-Media®  |  |  |  |                |
|               |                    | BBDZ5                  |           | = BB size DirtCatcher® 5 µ Excellement® Z-Media®  |  |  |  |                |
|               |                    | BBDZ10                 |           | = BB size DirtCatcher® 10 µ Excellement® Z-Media® |  |  |  |                |
|               |                    | BBDZ25                 |           | = BB size DirtCatcher® 25 µ Excellement® Z-Media® |  |  |  |                |

| BOX 5                                  | BOX 6                  | BOX 7                  |
|----------------------------------------|------------------------|------------------------|
| Porting                                | Bypass Setting         | Outlet Porting         |
| P = 2½" NPTF                           | Omit = 25 psi cracking | Omit = 3" NPT male     |
| PP = Dual 2½" NPTF                     | 40 = 40 psi cracking   | T = 13" Tube extension |
| S = SAE-32                             |                        |                        |
| SS = Dual SAE-32                       |                        |                        |
| F = 2½"SAE 4-bolt flange Code 61       |                        |                        |
| FF = Dual 2½"SAE 4-bolt flange Code 61 |                        |                        |
|                                        | BOX 8                  |                        |
|                                        | Optional Check Valve   |                        |
|                                        | Omit = None            |                        |
|                                        | C = Check valve        |                        |

## NOTES:

Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4. E media elements are only available with Buna N seals.

Box 4. For options H, W, and H.5 all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Skydrol® is a registered trademark of Solutia Inc.

Box 8. See also "Accessories for Tank-Mounted Filters," page 307.

| BOX 9                                                                                                  | BOX 10                                                                                       |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Dirt Alarm® Options                                                                                    | Additional Options                                                                           |
| Omit = None                                                                                            | Omit = None                                                                                  |
| Visual Y2 = Back-mounted tri-color gauge                                                               | G547 = Two ½" gauge ports                                                                    |
| Y2R = Back-mounted gauge mounted on opposite side of standard location                                 | G1476 = Three-terminal electric switch                                                       |
| Electrical ES = Electric switch                                                                        | M = Metric thread for SAE 4-bolt flange mounting holes (specify after each port designation) |
| ESR = Electric switch mounted on opposite side of standard location                                    | 40 = 40 psi bypass setting                                                                   |
| ES1 = Heavy-duty electric switch with conduit connector                                                |                                                                                              |
| ES1R = Heavy-duty electric switch with conduit connector mounted on opposite side of standard location |                                                                                              |
| ES2 = Electrical Switch with Deutsch Connector                                                         |                                                                                              |

# Tank-Mounted Filter

QT



### Features and Benefits

- Low pressure tank-mounted filter
- Designed for high return line flows
- Tank-mounted unit saves space, reduces plumbing
- Cap handles provide for easy element changeout
- Offered with standard Q, QW, and QPML deep-pleated elements in 16" and 39" lengths with Viton® seals as the standard seal option

450 gpm  
1700 L/min  
100 psi  
7 bar

Model No. of filter in photograph is QT39QZ10P48D5C.

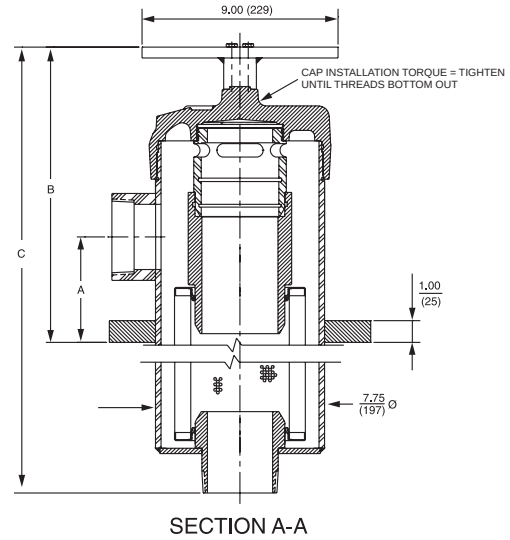
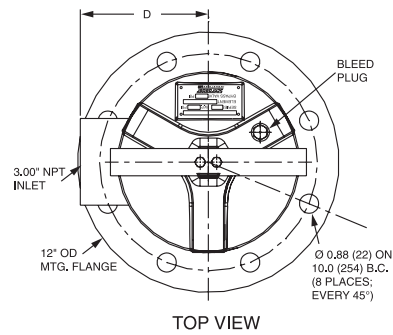
|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 450 gpm (1700 L/min) for 150 SUS (32 cSt) fluids    |
| Max. Operating Pressure:  | 100 psi (7 bar)                                           |
| Min. Yield Pressure:      | 300 psi (21 bar), per NFPA T2.6.1                         |
| Rated Fatigue Pressure:   | 100 psi (7 bar), per NFPA T2.6.1-R1-2005                  |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 30 psi (2.1 bar)<br>Full Flow: 55 psi (3.8 bar) |
| Porting Head:             | Steel                                                     |
| Element Case:             | Steel                                                     |
| Min. Weight of QT-16Q:    | 100.0 lbs. (46 kg)                                        |
| Min. Weight of QT-39Q:    | 158.0 lbs. (72 kg)                                        |
| Element Change Clearance: | 16Q 12.0" (305 mm)<br>39Q 33.8" (859 mm)                  |

### Filter Housing Specifications

|                        |                                                                                       |
|------------------------|---------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                           |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                          |
| High Water Content     | All Z-Media® and ASP® media (synthetic)                                               |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                  |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)                             |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic) |

### Fluid Compatibility

### Accessories For Tank-Mounted Filters



| INLET<br>PORT<br>SIZE* | DIMENSIONS    |                |                                       |               |
|------------------------|---------------|----------------|---------------------------------------|---------------|
|                        | A             | B              | C                                     | D             |
| 3"                     | 4.85<br>(123) | 14.62<br>(371) | 16Q: 30.43 (773)<br>39Q: 52.25 (1327) | 5.88<br>(149) |
|                        | 5.75<br>(146) | 16.12<br>(409) | 16Q: 30.43 (773)<br>39Q: 52.25 (1327) | 6.13<br>(156) |

\*Outlet port is always 3".

Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element |            | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|---------|------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|         |            | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| 16Q     | Z1/PMLZ1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
|         | Z3/PMLZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
|         | Z5/PMLZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
|         | Z10/PMLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
|         | Z25/PMLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| 39Q     | Z1/PMLZ1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
|         | Z3/PMLZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
|         | Z5/PMLZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
|         | Z10/PMLZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
|         | Z25/PMLZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |

| Element |     | DHC (gm) | Element |  | DHC (gm) |
|---------|-----|----------|---------|--|----------|
| 16Q     | Z1  | 276      | PMLZ1   |  | 307      |
|         | Z3  | 283      | PMLZ3   |  | 315      |
|         | Z5  | 351      | PMLZ5   |  | 364      |
|         | Z10 | 280      | PMLZ10  |  | 330      |
|         | Z25 | 254      | PMLZ25  |  | 299      |
| 39Q     | Z1  | 974      | PMLZ1   |  | 1485     |
|         | Z3  | 1001     | PMLZ3   |  | 1525     |
|         | Z5  | 954      | PMLZ5   |  | 1235     |
|         | Z10 | 940      | PMLZ10  |  | 1432     |
|         | Z25 | 853      | PMLZ25  |  | 1299     |

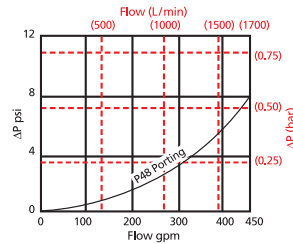
Element Collapse Rating: Q and QPML: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 16Q: 6.0" (150 mm) O.D. x 16.85" (430 mm) long  
 16QPML: 6.0" (150 mm) O.D. x 16.00" (405 mm) long  
 39Q: 6.0" (150 mm) O.D. x 38.70" (985 mm) long  
 39QPML: 6.0" (150 mm) O.D. x 37.80" (960 mm) long

$\Delta P_{\text{housing}}$

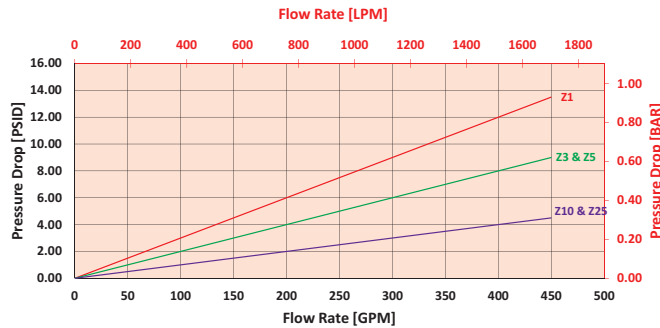
QT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

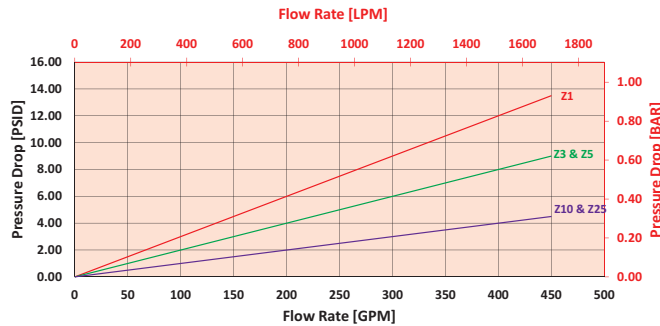
39QZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



39QPMLZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 200 gpm (758 L/min) for QT16QZ3P48D5C using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 200 gpm. In this case,  $\Delta P_{\text{housing}}$  is 2 psi (.14 bar) on the graph for the QT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 200 gpm. In this case,  $\Delta P_{\text{element}}$  is 8 psi (.55 bar) according to the graph for the 16QZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 2 \text{ psi } [.14 \text{ bar}] \mid \Delta P_{\text{element}} = 8 \text{ psi } [.55 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 2 \text{ psi} + (8 \text{ psi} * 1.1) = 10.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .14 \text{ bar} + (.55 \text{ bar} * 1.1) = .75 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.        | $\Delta P$ | Ele.        | $\Delta P$ |
|-------------|------------|-------------|------------|
| 16QAS3V     | 0.04       | 16QPMLZ1    | 0.08       |
| 16QAS5V     | 0.04       | 16QPMLZ3    | 0.05       |
| 16QAS10V    | 0.03       | 16QPMLZ5    | 0.05       |
| 16QPMLAS3V  | 0.05       | 16QPMLZ10   | 0.04       |
| 16QPMLAS5V  | 0.05       | 16QPMLZ25   | 0.02       |
| 16QPMLAS10V | 0.04       | 39QAS3V     | 0.01       |
| 16QZ1       | 0.09       | 39QAS5V     | 0.01       |
| 16QZ3       | 0.04       | 39QAS10V    | 0.01       |
| 16QZ5       | 0.04       | 39QPMLAS3V  | 0.02       |
| 16QZ10      | 0.03       | 39QPMLAS5V  | 0.02       |
| 16QZ25      | 0.01       | 39QPMLAS10V | 0.01       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder QT:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| QT    |       |       |       |       |       |       |       |       |        |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 | BOX 9 | BOX 10 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| QT    | 16    | Q     | Z     | 3     |       | P48   |       |       | D5C    |

= QT16QZ3P48D5C

| BOX 1         | BOX 2               | BOX 3              | BOX 4                                                                                                            | BOX 5                                                                                                                     | BOX 6                                  |
|---------------|---------------------|--------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Filter Series | Element Length (in) | Element Style      | Media Type                                                                                                       | Micron Rating                                                                                                             | Housing Seal Material                  |
| QT            | 16<br>39            | Q<br>QCLQF<br>QPML | Z = Excellement® Z-Media® (synthetic)<br>W = W media (water removal)<br>AS = Anti-Static Pleat Media (synthetic) | 1 = 1 µ Z-Media®<br>3 = 3 µ AS and Z-Media®<br>5 = 5 µ AS and Z-Media®<br>10 = 10 µ AS and Z-Media®<br>25 = 25 µ Z-Media® | Omit = Buna N<br>H = EPR<br>V = Viton® |

| BOX 7                          | BOX 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inlet Porting                  | Dirt Alarm® Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P48 = 3" NPTF<br>P64 = 4" NPTF | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                | Visual D5C = Visual pop-up in cap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                | Visual with Thermal Lockout D8C = Visual w/ thermal lockout in cap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                | Electrical<br>MS5C = Electrical w/ 12 in. 18 gauge 4-conductor cable in cap<br>MS5LCC = Low current MS5 in cap<br>MS10C = Electrical w/ DIN connector (male end only) in cap<br>MS10LCC = Low current MS10 in cap<br>MS11C = Electrical w/ 12 ft. 4-conductor wire in cap<br>MS12C = Electrical w/ 5 pin Brad Harrison connector (male end only) in cap<br>MS12LCC = Low current MS12 in cap<br>MS16C = Electrical w/ weather-packed sealed connector in cap<br>MS16LCC = Low current MS16 in cap<br>MS17LCC = Electrical w/ 4 pin Brad Harrison male connector in cap |
|                                | Electrical with Thermal Lockout<br>MS5T = MS5 (see above) w/ thermal lockout in cap<br>MS5LCT = Low current MS5T in cap<br>MS10TC = MS10 (see above) w/ thermal lockout in cap<br>MS10LCTC = Low current MS10T in cap<br>MS12TC = MS12 (see above) w/ thermal lockout<br>MS12LCTC = Low current MS12T in cap<br>MS16TC = MS16 (see above) w/ thermal lockout in cap<br>MS16LCTC = Low current MS16T in cap<br>MS17LCTC = Low current MS17T in cap                                                                                                                      |
|                                | Electrical Visual<br>MS13C = Supplied w/ threaded connector & light in cap<br>MS14C = Supplied w/ 5 pin Brad Harrison connector & light (male end) in cap                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                | Electrical Visual with Thermal Lockout<br>MS13DCTC = MS13 (see above), direct current, w/ thermal lockout in cap<br>MS13DCLCTC = Low current MS13DCT in cap<br>MS14DCTC = MS14 (see above), direct current, w/ thermal lockout in cap<br>MS14DCLCTC = Low current MS14DCT in cap                                                                                                                                                                                                                                                                                       |

| BOX 8                                                                |
|----------------------------------------------------------------------|
| Bypass Setting                                                       |
| Omit = 30 psi cracking<br>X = Blocked bypass<br>50 = 50 psi cracking |

| BOX 9                                                                                  |
|----------------------------------------------------------------------------------------|
| Outlet Porting                                                                         |
| Omit = 3" NPT Male<br>C = Check valve<br>D = Diffuser<br>CD = Check valve and diffuser |

## NOTES:

- Box 2. Replacement element part numbers are a combination of Boxes 2, 3, 4 and 5, plus the letter V. Example: 16QZ1V
- Box 3. QCLQF element are not available in ASP® media.
- Box 4. E media elements are also available for the QT filter housing. Contact factory for more information.
- Box 4. For Option W, Box 3 must equal Q.
- Box 6. Viton® is a registered trademark of DuPont Dow Elastomers. All elements for this filter are supplied with Viton® seals. Seal designation in Box 6 applies to housing only.

# Tank-Mounted Filter Kit

KTK



### Features and Benefits

- Special tank-mounted filter kit
- Includes: cap assembly, weld ring assembly, element and bushing
- Available with standard K, KK or 27K-size elements
- Bypass valve in cap assembly

100 gpm  
380 L/min  
100 psi  
7 bar

Model No. of filter in photograph is KTKKKZ10.

|                           |                                                                     |
|---------------------------|---------------------------------------------------------------------|
| Flow Rating:              | Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids               |
| Max. Operating Pressure:  | 100 psi (7 bar) exclusive of tank design                            |
| Min. Yield Pressure:      | Contact factory                                                     |
| Rated Fatigue Pressure:   | Contact factory                                                     |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                                     |
| Bypass Setting:           | Cracking: 25 psi (1.7 bar)<br>Full Flow: 40 psi (2.8 bar)           |
| Porting Cap:              | Die Cast Aluminum                                                   |
| Weld Ring:                | Steel                                                               |
| Element Change Clearance: | 8.0" (205 mm) for K; 17.50" (445 mm) for KK; 26.5" (673 mm) for 27K |

### Filter Housing Specifications

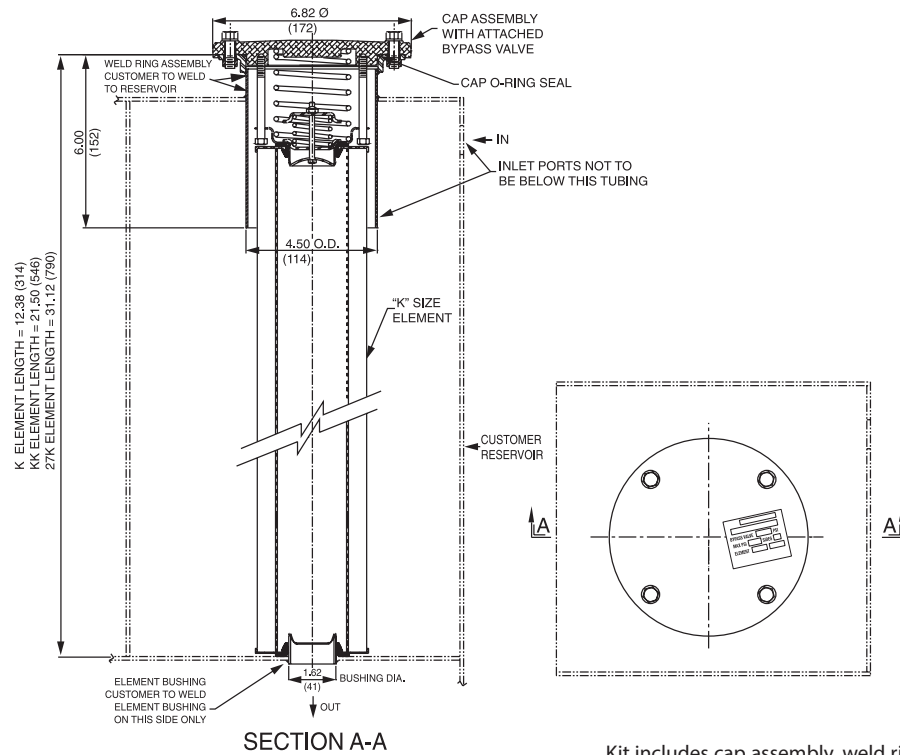
|                        |                                                                                                                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                                                     |
| Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® media (synthetic)                                                                                                                                    |
| High Water Content     | All Z-Media® and all ASP® media (synthetic)                                                                                                                                                     |
| Invert Emulsions       | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)                                                                                                                                            |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)                                                                                                                                       |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation and ASP® media (synthetic)                                              |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) and all ASP® media (synthetic) |

### Fluid Compatibility

### Accessories For Tank-Mounted Filters

|      |
|------|
| PAF1 |
| MAF1 |
| MF2  |





Metric dimensions in ( ).

Kit includes cap assembly, weld ring assembly, element, and bushing.

### Element Performance Information & Dirt Holding Capacity

| Element      | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                        |
|--------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|------------------------|
|              | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_x(c) \geq 200$                                                | $\beta_x(c) \geq 1000$ |
| KZ1          | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                    |
| KZ3          | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                    |
| KZ5          | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                    |
| KZ10         | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                   |
| KZ25         | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                   |
| KZW1         | N/A                                                                                                            | N/A                | N/A                | <4.0                                                                 | <4.0                   |
| KZW3/KKZW3   | N/A                                                                                                            | N/A                | N/A                | 4.0                                                                  | 4.8                    |
| KZW5/KKZW5   | N/A                                                                                                            | N/A                | N/A                | 5.1                                                                  | 6.4                    |
| KZW10/KKZW10 | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                    |
| KZW25/KKZW25 | N/A                                                                                                            | N/A                | N/A                | 15.4                                                                 | 18.5                   |

| Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
| KZ1     | 112      | KKZ1    | 224      | 27KZ1   | 336      | KZW1    | 61       |         |          |
| KZ3     | 115      | KKZ3    | 230      | 27KZ3   | 345      | KZW3    | 64       | KKZW3   | 128      |
| KZ5     | 119      | KKZ5    | 238      | 27KZ5   | 357      | KZW5    | 63       | KKZW5   | 126      |
| KZ10    | 108      | KKZ10   | 216      | 27KZ10  | 324      | KZW10   | 57       | KKZW10  | 114      |
| KZ25    | 93       | KKZ25   | 186      | 27KZ25  | 279      | KZW25   | 79       | KKZW25  | 158      |

Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

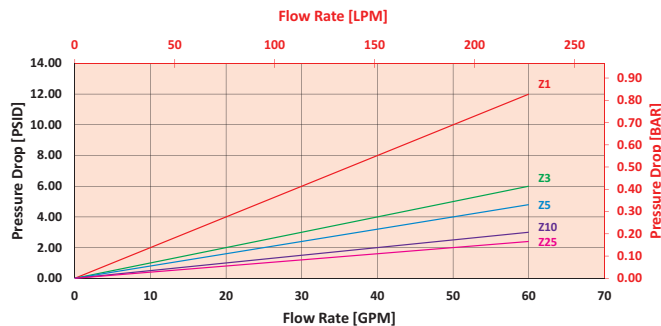
## Pressure Drop Information

Based on Flow Rate and Viscosity

\*KTK Dirty Box Pressure Drop is Customer Tank Design Dependant. Please account for this when designing system.

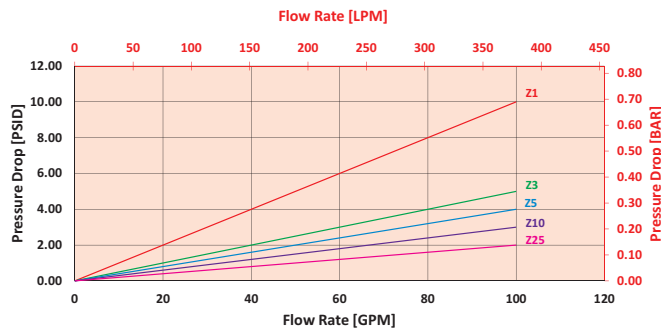
$\Delta P_{\text{element}}$   
KZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



KKZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 80 gpm (303.2 L/min) for KTKKZ3 using 160 SUS (34 cSt) fluid.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 80 gpm. In this case,  $\Delta P_{\text{element}}$  is 8 psi (.55 bar) according to the graph for the KZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{element}} = 8 \text{ psi } [.55 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt) } / 150 \text{ SUS (32 cSt) } = 1.1$$

$$\Delta P_{\text{filter}} = (8 \text{ psi} * 1.1) = 8.8 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = (.55 \text{ bar} * 1.1) = .61 \text{ bar}$$

### Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.              | $\Delta P$ | Ele.               | $\Delta P$ |
|-------|------------|-------------------|------------|--------------------|------------|
| K3    | 0.25       | 2K3/<br>KK3       | 0.12       | 3KZ1/<br>27KZ1     | 0.05       |
| K10   | 0.09       | 2K10/<br>KK10     | 0.05       | 3KZ3/<br>27KZ3     | 0.03       |
| K25   | 0.02       | 2K25/<br>KK25     | 0.01       | 3KZ5/<br>27KZ5     | 0.02       |
| KAS3  | 0.10       | 2KAS3/<br>KKAS3   | 0.05       | 3KZ10/<br>27KZ10   | 0.02       |
| KAS5  | 0.08       | 2KAS5/<br>KKAS5   | 0.04       | 3KZ25/<br>27KZ25   | 0.01       |
| KAS10 | 0.05       | 2KAS10/<br>KKAS10 | 0.03       | 3K3                | 0.08       |
| KZW1  | 0.43       | 2KZW1             | -          | 3K10               | 0.03       |
| KZW3  | 0.32       | 2KZW3/<br>KKZW3   | 0.16       | 3K25               | 0.01       |
| KZW5  | 0.28       | 2KZW5/<br>KKZW5   | 0.14       | 3KAS3/<br>27KAS3   | 0.03       |
| KZW10 | 0.23       | 2KZW10/<br>KKZW10 | 0.12       | 3KAS5/<br>27KAS5   | 0.02       |
| KZW25 | 0.14       | 2KZW25/<br>KKZW25 | 0.07       | 3KAS10/<br>27KAS10 | 0.02       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder KTK:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| KTK   |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| KTK   | K     | Z3    |       |       |

= KTKKZ3

| BOX 1         | BOX 2          | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Series | Element Length | Element Part Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| KTK           | K<br>KK<br>27K | 3 = 3 µ E media (cellulose)<br>10 = 10 µ E media (cellulose)<br>25 = 25 µ E media (cellulose)<br>Z1 = 1 µ Excellement® Z-Media® (synthetic)<br>Z3/AS3 = 3 µ Excellement® Z-Media® (synthetic)<br>Z5/AS5 = 5 µ Excellement® Z-Media® (synthetic)<br>Z10/AS10 = 10 µ Excellement® Z-Media® (synthetic)<br>Z25 = 25 µ Excellement® Z-Media® (synthetic)<br>ZW1 = 1 µ Aqua-Excellement™ ZW media<br>ZW3 = 3 µ Aqua-Excellement™ ZW media<br>ZW5 = 5 µ Aqua-Excellement™ ZW media<br>ZW10 = 10 µ Aqua-Excellement™ ZW media<br>ZW25 = 25 µ Aqua-Excellement™ ZW media<br>ZW1 = 1 µ Aqua-Excellement™ ZW media<br>ZW3 = 3 µ Aqua-Excellement™ ZW media<br>ZW5 = 5 µ Aqua-Excellement™ ZW media<br>ZW10 = 10 µ Aqua-Excellement™ ZW media<br>ZW25 = 25 µ Aqua-Excellement™ ZW media |

| BOX 4                                                                  | BOX 5                                                   |
|------------------------------------------------------------------------|---------------------------------------------------------|
| Seal Material                                                          | Dirt Alarm® Options                                     |
| Omit = Buna N<br>H = EPR<br>W = Buna N<br>H.5 = Skydrol® Compatibility | Omit = None<br>Visual Y2C = Bottom-mounted gauge in cap |

## NOTES:

Box 3. Replacement element part numbers are identical to contents of Boxes 2, 3, and 4.

Box 4. For options H and W, cap is anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Skydrol® is a registered trademark of Solutia Inc.

# Tank-Mounted Filter Kit

LTK



### Features and Benefits

- Special tank-mounted filter kit
- Includes: cap assembly, weld ring assembly, element and bushing
- Available with standard 18L sized element
- Bypass valve in cap assembly

150 gpm  
570 L/min  
100 psi  
7 bar

Model No. of filter in photograph is LTK18LZ3.

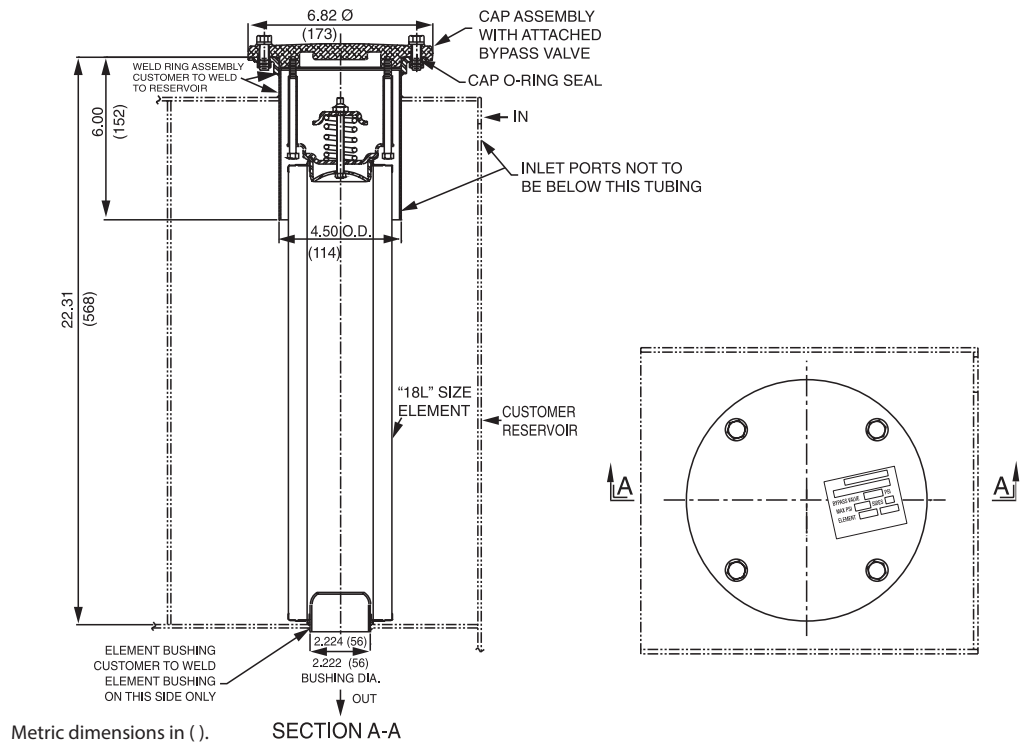
|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids     |
| Max. Operating Pressure:  | 100 psi (7 bar) exclusive of tank design                  |
| Min. Yield Pressure:      | Contact factory                                           |
| Rated Fatigue Pressure:   | Contact factory                                           |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 25 psi (1.7 bar)<br>Full Flow: 47 psi (3.2 bar) |
| Porting Cap:              | Die Cast Aluminum                                         |
| Weld Ring:                | Steel                                                     |
| Element Change Clearance: | 17.0" (435 mm)                                            |

### Filter Housing Specifications

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                                                                                                                                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)                                                                                                                 |
| High Water Content     | All Z-Media® (synthetic)                                                                                                                                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                                                                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                                                           |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation                                          |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |

### Fluid Compatibility

### Accessories For Tank-Mounted Filters



### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 18LZ1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 18LZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 18LZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| 18LZ10  | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 18LZ25  | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

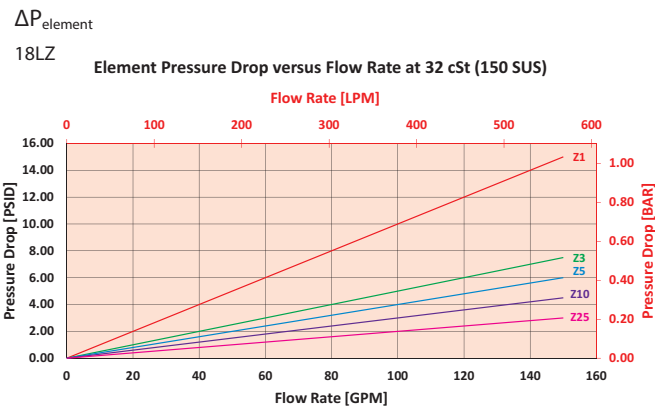
| Element | DHC (gm) |
|---------|----------|
| 18LZ1   | 224      |
| 18LZ3   | 230      |
| 18LZ5   | 238      |
| 18LZ10  | 216      |
| 18LZ25  | 186      |

Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Outside In

Element Nominal Dimensions: 4.0" (100 mm) O.D. x 18.5" (470 mm) long

\*LTK Dirty Box Pressure Drop is Customer Tank Design  
Dependant. Please account for this when designing  
system.



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

### Exercise:

Determine  $\Delta P_{\text{filter}}$  at 80 gpm (303.2 L/min) for LTK18LKZ3 using 160 SUS (34 cSt) fluid.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 80 gpm. In this case,  $\Delta P_{\text{element}}$  is 4 psi (.27 bar) according to the graph for the 18LZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

### Solution:

$$\Delta P_{\text{element}} = 4 \text{ psi } [.27 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = (4 \text{ psi} * 1.1) = 4.4 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = (.27 \text{ bar} * 1.1) = .30 \text{ bar}$$

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder LTK:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LTK   |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|-------|-------|-------|-------|-------|
| LTK   | 18    | LZ3   |       |       |

= LTK18LZ3

| BOX 1         | BOX 2                  | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                   | BOX 4                                                                  |
|---------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Filter Series | Length of Element (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                                                  | Seal Material                                                          |
| LTK           | 18                     | L3 = L size 3 $\mu$ E media (cellulose)<br>L10 = L size 10 $\mu$ E media (cellulose)<br>L25 = L size 25 $\mu$ E media (cellulose)<br>LZ1 = L size 1 $\mu$ Excellement® Z-Media® (synthetic)<br>LZ3 = L size 3 $\mu$ Excellement® Z-Media® (synthetic)<br>LZ5 = L size 5 $\mu$ Excellement® Z-Media® (synthetic)<br>LZ10 = L size 10 $\mu$ Excellement® Z-Media® (synthetic)<br>LZ25 = L size 25 $\mu$ Excellement® Z-Media® (synthetic) | Omit = Buna N<br>H = EPR<br>W = Buna N<br>H.5 = Skydrol® Compatibility |

| BOX 5                                       |
|---------------------------------------------|
| Dirt Alarm® Options                         |
| Omit = None                                 |
| Visual    Y2C = Bottom-mounted gauge in cap |

## NOTES:

- Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.  
Example: 18LZ3H
- Box 4. For options H and W, cap is anodized.  
H.5 seal designation includes the following:  
EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior.  
Skydrol® is a registered trademark of Solutia Inc.

# Medium Pressure In-Tank Filter

MRT



## Features and Benefits

- Medium pressure tank mounted filter ideal for applications with high pressure surge in the return line
- Two possible inlet porting locations
- Various Dirt Alarm® options available
- Also available with DirtCatcher® element
- Optional sampling fitting available upon request

150 gpm  
570 L/min  
900 psi  
62 bar

Model No. of filter in photograph is MRT18LZ10S24S24D5.

|                           |                                                       |
|---------------------------|-------------------------------------------------------|
| Flow Rating:              | Up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | 900 psi (62 bar)                                      |
| Min. Yield Pressure:      | 2700 psi (186 bar), per NFPA T2.6.1                   |
| Rated Fatigue Pressure:   | 750 psi (52 bar), per NFPA T2.6.1-2005                |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                       |
| Bypass Setting:           | Cracking: 40 psi (2.8 bar)                            |
| Porting Head & Cap:       | Cast Aluminum (Anodized)                              |
| Element Case:             | Steel                                                 |
| Weight of MRT:            | 36.0 lbs. (16.4 kg)                                   |
| Element Change Clearance: | 17.0" (432 mm)                                        |

## Filter Housing Specifications

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic) |
| High Water Content     | All Z-Media® (synthetic)                         |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                 |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)           |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

LTK

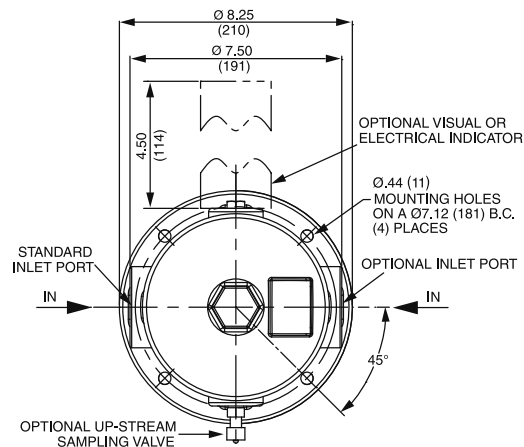
MRT

PAF1

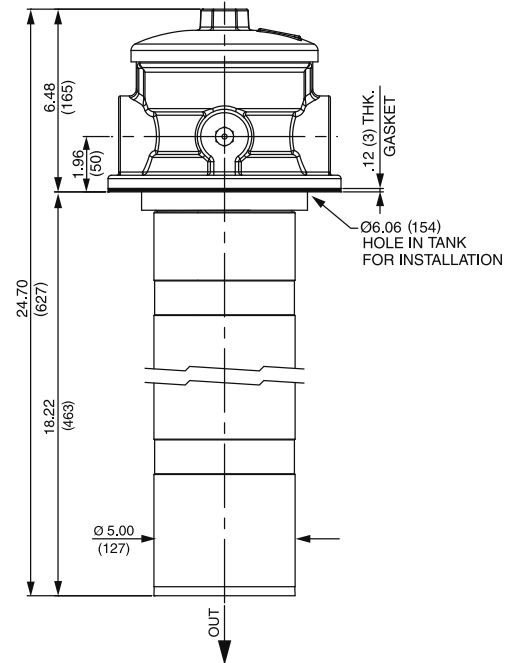
MAF1

MF2





Metric dimensions in ( ).



### Element Performance Information & Dirt Holding Capacity

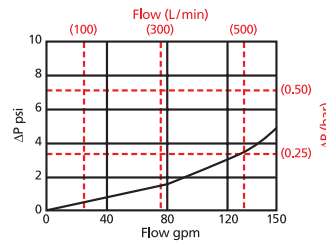
| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 18LZ1   | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 18LZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.7                                                                 | 5.8                      |
| 18LZ5   | 2.5                                                                                                            | 3.0                | 4.0                | 6.5                                                                  | 7.5                      |
| 18LZ10  | 7.4                                                                                                            | 8.2                | 10.0               | 10.0                                                                 | 12.7                     |
| 18LZ25  | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |
| 18LDZ1  | <1.0                                                                                                           | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| 18LDZ3  | <1.0                                                                                                           | <1.0               | <2.0               | <4.7                                                                 | 5.8                      |
| 18LDZ5  | 2.5                                                                                                            | 3.0                | 4.0                | 6.5                                                                  | 7.5                      |
| 18LDZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 10.0                                                                 | 12.7                     |
| 18LDZ25 | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 18LZ1   | 224      | 18LDZ1  | 194      |
| 18LZ3   | 230      | 18LDZ3  | 199      |
| 18LZ5   | 238      | 18LDZ5  | 149      |
| 18LZ10  | 216      | 18LDZ10 | 186      |
| 18LZ25  | 186      | 18LDZ25 | 169      |

Element Collapse Rating: 150 psid (10 bar)  
 Flow Direction: Outside In  
 Element Nominal Dimensions: 4.0" (100 mm) O.D. x 18.5" (470 mm) long

$\Delta P_{\text{housing}}$

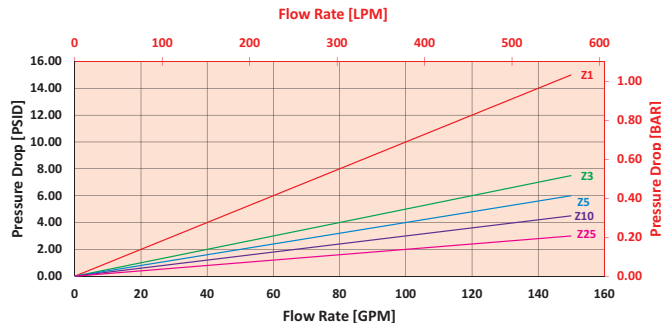
MRT  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

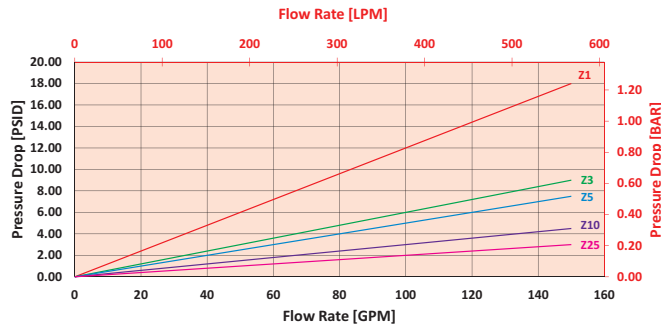
18LZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



18LDZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 80 gpm (303.2 L/min) for MRT18LZ10S24S24 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 80 gpm. In this case,  $\Delta P_{\text{housing}}$  is 1.5 psi (.10 bar) on the graph for the MRT housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 80 gpm. In this case,  $\Delta P_{\text{element}}$  is 2.5 psi (.17 bar) according to the graph for the 18LZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 1.5 \text{ psi } [.10 \text{ bar}] \mid \Delta P_{\text{element}} = 2.5 \text{ psi } [.17 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 1.5 \text{ psi} + (2.5 \text{ psi} * 1.1) = 4.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .10 \text{ bar} + (.17 \text{ bar} * 1.1) = .29 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder MRT:

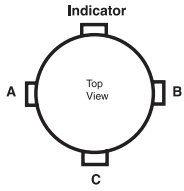
| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| MRT   |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5   | BOX 6 | BOX 7 |
|-------|-------|-------|-------|---------|-------|-------|
| MRT   | 18    | LZ10  |       | S24 S24 |       |       |

= MRT18LZ10S24S24

| BOX 1         | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | BOX 4         |
|---------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Filter Series | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Seal Material |
| MRT           | 18                  | L3 = L size 3 $\mu$ E media (cellulose)<br>L10 = L size 10 $\mu$ E media (cellulose)<br>LZ1 = L size 1 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>LZ3 = L size 3 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>LZ5 = L size 5 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>LZ10 = L size 10 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>LZ25 = L size 25 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> (synthetic)<br>LDZ1 = L size DirtCatcher <sup>®</sup> 1 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup><br>LDZ3 = L size DirtCatcher <sup>®</sup> 3 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup><br>LDZ5 = L size DirtCatcher <sup>®</sup> 5 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup><br>LDZ10 = L size DirtCatcher <sup>®</sup> 10 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup><br>LDZ25 = L size DirtCatcher <sup>®</sup> 25 $\mu$ Excellement <sup>®</sup> Z-Media <sup>®</sup> | Omit = Buna N |

| BOX 5<br>Specification of both ports is required                                    |                     |                        |
|-------------------------------------------------------------------------------------|---------------------|------------------------|
| Inlet Porting                                                                       |                     |                        |
| Port A                                                                              | Port B              | Inlet Porting Location |
| S = S24<br>N = None                                                                 | S = S24<br>N = None |                        |
|  |                     |                        |

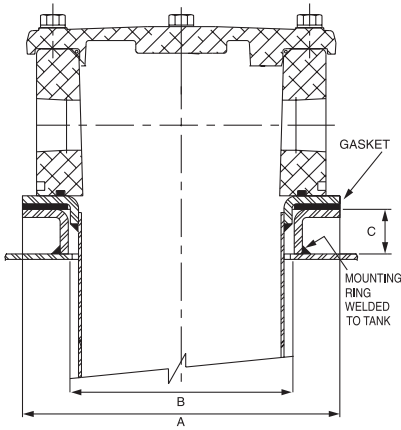
| BOX 6<br>Dirt Alarm <sup>®</sup> Options |                                                                     |
|------------------------------------------|---------------------------------------------------------------------|
| Omit = None                              |                                                                     |
| Visual                                   | D5 = Visual pop-up                                                  |
| Visual with Thermal Lockout              | D8 = Visual w/ thermal lockout                                      |
| Electrical                               | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable               |
|                                          | MS5LC = Low current MS5                                             |
|                                          | MS10 = Electrical w/ DIN connector (male end only)                  |
|                                          | MS10LC = Low current MS10                                           |
|                                          | MS11 = Electrical w/ 12 ft. 4-conductor wire                        |
|                                          | MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)  |
|                                          | MS12LC = Low current MS12                                           |
| Electrical with Thermal Lockout          | MS16 = Electrical w/ weather-packed sealed connector                |
|                                          | MS16LC = Low current MS16                                           |
|                                          | MS17LC = Electrical w/ 4 pin Brad Harrison male connector           |
|                                          | MS5T = MS5 (see above) w/ thermal lockout                           |
|                                          | MS5LCT = Low current MS5T                                           |
|                                          | MS10T = MS10 (see above) w/ thermal lockout                         |
|                                          | MS10LCT = Low current MS10T                                         |
| Electrical Visual                        | MS12T = MS12 (see above) w/ thermal lockout                         |
|                                          | MS12LCT = Low current MS12T                                         |
|                                          | MS16T = MS16 (see above) w/ thermal lockout                         |
|                                          | MS16LCT = Low current MS16T                                         |
|                                          | MS17LCT = Low current MS17T                                         |
|                                          | MS13 = Supplied w/ threaded connector & light                       |
|                                          | MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end) |
| Electrical Visual with Thermal Lockout   | MS13DCT = MS13 (see above), direct current, w/ thermal lockout      |
|                                          | MS13DCLCT = Low current MS13DCT                                     |
|                                          | MS14DCT = MS14 (see above), direct current, w/ thermal lockout      |
|                                          | MS14DCLCT = Low current MS14DCT                                     |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.  
Example: 18L3

| BOX 7<br>Options              |
|-------------------------------|
| Omit = No sampling valve      |
| SV = Up stream sampling valve |

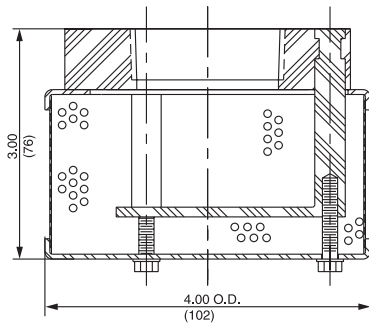
# Accessories for Tank-Mounted Filters



The mounting ring is welded directly to the hydraulic reservoir. The filter is then mounted to the mounting ring with bolts converting the filter to a "weld in" design. The mounting ring eliminates the need to drill and tap the hydraulic reservoir.

**Mounting Ring for ST, ZT, RT, RTI and LRT Models**

| Model Number                  | Part Number | A          | B          | C         |
|-------------------------------|-------------|------------|------------|-----------|
| ST, RT, RTI, LRT              | A-LFT-813   | 7.00 (178) | 5.00 (127) | 1.00 (25) |
| ST, RT, RTI, LRT High Version | A-LFT-1448  | 7.00 (178) | 5.00 (127) | 1.50 (38) |
| ZT                            | A-LFT-1295  | 6.25 (159) | 3.62 (92)  | .88 (22)  |

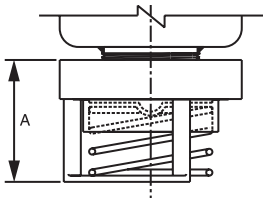


The diffuser option (designated as D for outlet porting option in model number) is threaded to the bushing on the filter bowl below the outlet opening to help decrease turbulent flow in the hydraulic reservoir.

**Diffuser for KFT, RT and LRT Models**

No other outlet port options are available if the diffuser is used.

| Model Number | Part Number | NPTF |
|--------------|-------------|------|
| RT, KFT      | A-LFT-1506  | 1½"  |
| LRT          | A-LFT-1507  | 2"   |



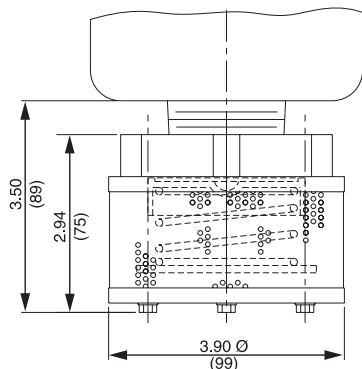
The check valve option (designated as C for outlet porting option in model number) makes it possible to service the filter without draining the oil from the reservoir when the filter is mounted below the oil level. It also prevents reservoir siphoning when system components are serviced.

**Check Valve for ST, KFT, RT, LRT and BFT Models**

The check valve can also be used on other reservoir return flow lines, where components upstream of the check valve can be serviced without the loss of reservoir oil. The spring setting is .75-1.00 psi cracking. Order by part number shown in chart.

No other outlet port options are available if the check valve is used.

| Model Number | Part Number  | NPTF | A          |
|--------------|--------------|------|------------|
| ST, KFT, RT  | A-LFT-158Q-1 | 1½"  | 2.34 (59)  |
| LRT          | A-LFT-880    | 2"   | 2.34 (59)  |
| BFT          | A-BFT-103    | 3"   | 4.50 (114) |



The diffuser/check valve option (designated as CD for outlet porting option in model number) is threaded on to the outlet port and combines the advantages of both separate options in one assembly.

Available as a separate item with 1½" NPT female threads, order part number A-LFT-1208.

No other outlet port options are available if the check valve/diffuser is used.

**Check Valve Diffuser Combination for KFT and RT Models**

**Accessories For Tank-Mounted Filters**

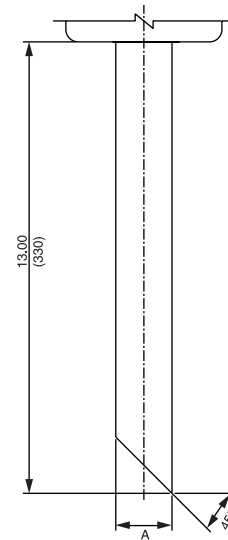
# Accessories for Tank-Mounted Filters

## Tube Adapter Outlet Port for KFT, RT, LRT and BFT Models

The tube adapter outlet port option (designated as T for outlet porting option in model number) provides the means to direct flow to the bottom of the hydraulic reservoir. Other tube lengths are available for quantity purchases. Contact your Schroeder distributor for details.

| Model Number | Dimension A (O.D.)<br>in. (mm) |
|--------------|--------------------------------|
| RT           | 1.62 (41)                      |
| LRT          | 2.25 (57)                      |
| BFT          | 3.50 (89)                      |

Note: No other outlet port options are available if the tube adapter is used.



## Threaded Outlet Port for ZT, KFT, RT, LRT and BFT Models

The threaded male outlet port is standard on the KFT, RT, LRT and BFT models, and is available as an option on the ZT filter by designating OP for the outlet porting options in the model number.

- RT is furnished with 1½" NPT Male (standard)
- BFT is furnished with 3" NPT Male (standard)
- LRT is furnished with 2" NPT Male (standard)
- ZT is furnished with 1½" NPT Male (optional)
- KFT is furnished with 1 1/2" NPT Male (standard)



## Features and Benefits

- Spin-On with full ported die cast aluminum head for minimal pressure drop
- Offered in pipe and SAE straight thread porting
- Spin-On thread = 1.00-12UNF-2B
- Visual gauge or electrical switch dirt alarms
- Small profile for use in limited space
- Same day shipment model available

20 gpm  
**75 L/min**  
 100 psi  
**7 bar**

Model No. of filter in photograph is PAF16PZ10SY2.

|                           |                                                       |                               |
|---------------------------|-------------------------------------------------------|-------------------------------|
| Flow Rating:              | Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids   | Filter Housing Specifications |
| Max. Operating Pressure:  | 100 psi (7 bar)                                       |                               |
| Min. Yield Pressure:      | 150 psi (10 bar), per NFPA T2.6.1                     |                               |
| Rated Fatigue Pressure:   | Contact factory                                       |                               |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                       |                               |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 36 psi (2 bar) |                               |
| Porting Head & Cap:       | Die Cast Aluminum                                     |                               |
| Element Case:             | Steel                                                 |                               |
| Weight of PAF1-6P:        | 1.8 lbs. (0.8 kg)                                     |                               |
| Element Change Clearance: | 2.50" (65 mm)                                         |                               |

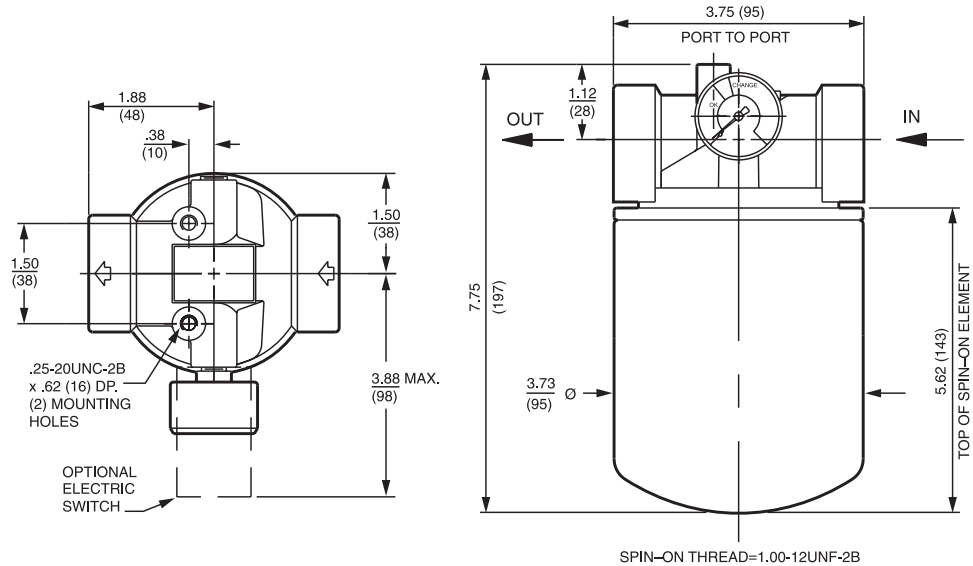
|                        |                                                  |                     |
|------------------------|--------------------------------------------------|---------------------|
| Type Fluid             | Appropriate Schroeder Media                      | Fluid Compatibility |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic) |                     |
| High Water Content     | 3 and 10 μ Z-Media® (synthetic)                  |                     |
| Invert Emulsions       | 10 μ Z-Media® (synthetic)                        |                     |
| Water Glycols          | 3 and 10 μ Z-Media® (synthetic)                  |                     |

Accessories  
For Tank-  
Mounted  
Filters

PAF1

MAF1

MF2



Installation instructions included on element.

Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

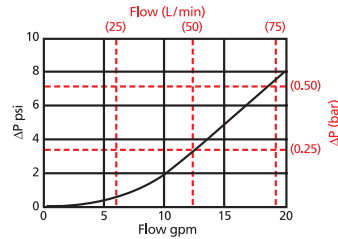
| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| P10     | 15.5                                                                                                           | 16.2               | 18.0               | N/A                                                                  | N/A                      |
| PZ10    | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| PZ25    | 18.0                                                                                                           | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| P10     | 37       | PZ25    | 23.0     |
| PZ10    | 16.8     |         |          |

Element Collapse Rating: 100 psid (7 bar)

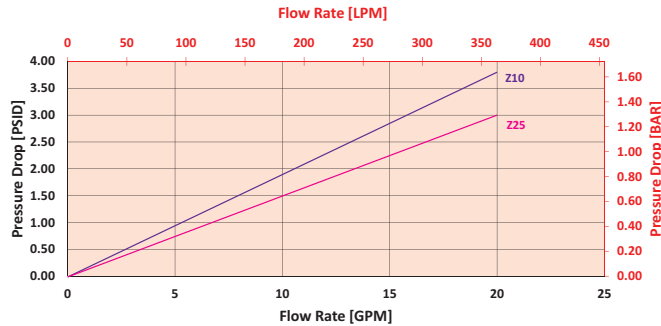
Flow Direction: Outside In

Element Nominal Dimensions: 3.75" (95 mm) O.D. x 5.5" (140 mm) long

$\Delta P_{\text{housing}}$ PAF1  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$ 

PZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:Determine  $\Delta P_{\text{filter}}$  at 10 gpm (37.9 L/min) for PAF16PZ25PY2 using 160 SUS (34 cSt) fluid.Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 10 gpm. In this case,  $\Delta P_{\text{housing}}$  is 2 psi (.14 bar) on the graph for the PAF1 housing.Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 10 gpm. In this case,  $\Delta P_{\text{element}}$  is 1.5 psi (.10 bar) according to the graph for the PZ25 element.Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.Solution:

$$\Delta P_{\text{housing}} = 2 \text{ psi } [.14 \text{ bar}] \mid \Delta P_{\text{element}} = 1.5 \text{ psi } [.10 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 2 \text{ psi} + (1.5 \text{ psi} * 1.1) = 3.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 14 \text{ bar} + (.10 \text{ bar} * 1.1) = .25 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele. | ΔP   |
|------|------|
| P10  | 0.17 |



Filter  
Model  
Number  
SelectionHighlighted  
product eligible for  
**QuickDelivery**

## How to Build a Valid Model Number for a Schroeder PAF1:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| PAF1  |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| PAF1  | 6     | P10   |       | P     | Y2    |

= PAF16P10PY2

| BOX 1         | BOX 2               | BOX 3                                                | BOX 4         |
|---------------|---------------------|------------------------------------------------------|---------------|
| Filter Series | Element Length (in) | Element Size and Media                               | Seal Material |
| PAF1          | 6                   | P10 = P size 10 µ E media (cellulose)                | Omit = Buna N |
|               |                     | PZ10 = P size 10 µ Excellement® Z-Media® (synthetic) |               |
|               |                     | PZ25 = P size 25 µ Excellement® Z-Media® (synthetic) |               |

| BOX 5         | BOX 6                                    |
|---------------|------------------------------------------|
| Inlet Porting | Dirt Alarm® Options                      |
| P = ¾" NPTF   | Omit = None                              |
| S = SAE-12    | Visual Y2 = Back-mounted tri-color gauge |
|               | Electrical ES = Electric switch          |

## NOTE:

Box 2. Replacement element part numbers are a combination of Boxes 3 and 4.  
Example: P10



## Features and Benefits

- Spin-On with full ported die cast aluminum head for minimal pressure drop
- Offered in pipe, SAE straight thread and ISO 228 porting
- Spin-On thread = 1.50-16UN-2B
- Visual gauge or electrical switch dirt alarms
- Small profile for use in limited space
- Available in 7" and 10" element lengths
- Available with NPTF inlet and outlet female test ports

50 gpm  
190 L/min  
 100 psi  
 7 bar

Model No. of filter in photograph is MAF17M10S.

|                           |                                                       |
|---------------------------|-------------------------------------------------------|
| Flow Rating:              | Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids  |
| Max. Operating Pressure:  | 100 psi (7 bar)                                       |
| Min. Yield Pressure:      | 200 psi (10 bar), per NFPA T2.6.1                     |
| Rated Fatigue Pressure:   | Contact factory                                       |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                       |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 48 psi (3 bar) |
| Porting Head & Cap:       | Die Cast Aluminum                                     |
| Element Case:             | Steel                                                 |
| Weight of MAF1-7M:        | 4.2 lbs. (1.9 kg)                                     |
| Weight of MAF1-10M:       | 5.0 lbs. (2.3 kg)                                     |
| Element Change Clearance: | 2.50" (65 mm)                                         |

## Filter Housing Specifications

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic) |
| High Water Content     | 3 and 10 μ Z-Media® (synthetic)                  |
| Invert Emulsions       | 10 μ Z-Media® (synthetic)                        |
| Water Glycols          | 3 and 10 μ Z-Media® (synthetic)                  |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

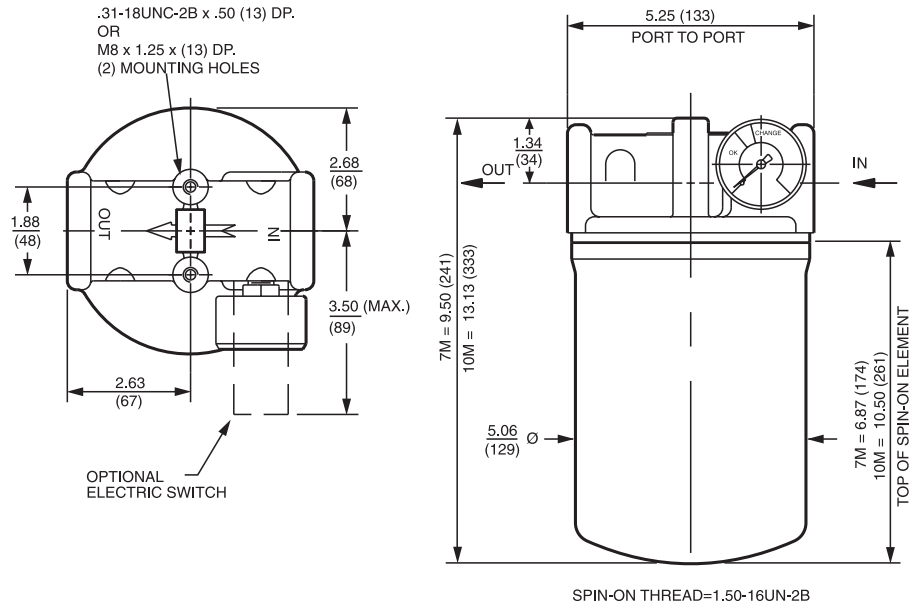
LTK

MRT

PAF1

MAF1

MF2



Installation instructions included on element.

Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

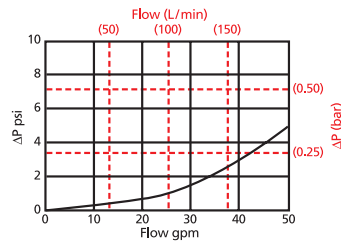
| Element      | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|--------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|              | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 7MZ3/10MZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 7MZ10/10MZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 10MZW10      | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                      |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 7MZ3    | 105      |         |          |
| 7MZ10   | 104      | 10MZW10 | 53       |

Element Collapse Rating: 100 psid (7 bar)

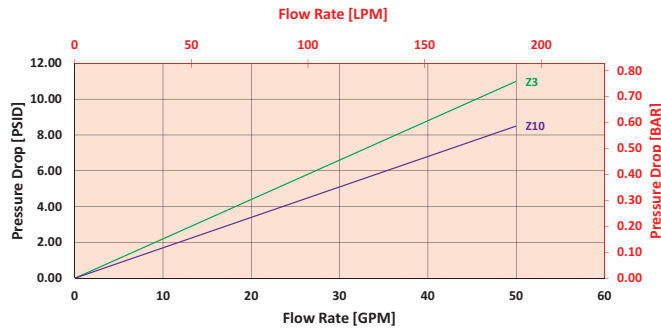
Flow Direction: Outside In

Element Nominal Dimensions: 7M: 5.0" (125 mm) O.D. x 7.0" (180 mm) long  
10M: 5.0" (125 mm) O.D. x 10.5" (261 mm) long

$\Delta P_{\text{housing}}$  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$ 

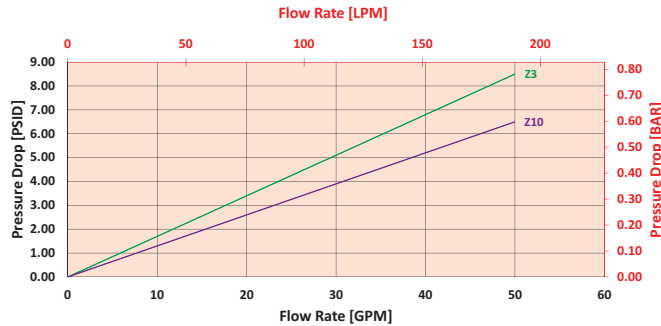
7MZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



10MZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:Determine  $\Delta P_{\text{filter}}$  at 40 gpm (151.6 L/min) for MAF17MZ10PY2 using 160 SUS (34 cSt) fluid.Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 40 gpm. In this case,  $\Delta P_{\text{housing}}$  is 3 psi (.21 bar) on the graph for the MAF1 housing.Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 40 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the 7MZ10 element.Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.Solution:

$$\Delta P_{\text{housing}} = 3 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 7 \text{ psi } [.48 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 3 \text{ psi} + (7 \text{ psi} * 1.1) = 10.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .21 \text{ bar} + (.48 \text{ bar} * 1.1) = .74 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use  
the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug  
this variable into the overall  
pressure drop equation.

| Ele. | $\Delta P$ |
|------|------------|
| 7M3  | 0.23       |
| 7M10 | 0.14       |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder MAF1:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| MAF1  |       |       |       |       |       |       |

Example: NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 |
|-------|-------|-------|-------|-------|-------|-------|
| MAF1  | 7     | M3    |       | P     | Y2    |       |

= MAF17M3PY2

| BOX 1         | BOX 2               | BOX 3                                                                                                                                                                                                                                                                                                   | BOX 4                       |
|---------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Filter Series | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                                                  | Seal Material               |
| MAF1          | 7<br>10             | M3 = M size 3 $\mu$ E media (cellulose)<br>M10 = M size 10 $\mu$ E media (cellulose)<br>MZ3 = M size 3 $\mu$ Excellement® Z-Media® (synthetic)<br>MZ10 = M size 10 $\mu$ Excellement® Z-Media® (synthetic)<br>MZW10 = M size 10 $\mu$ Aqua-Excellement™ ZW media<br>MW = M size W media (water removal) | Omit = Buna N<br>V = Viton® |

| BOX 5                                                 | BOX 6                                                                                      | BOX 7                                                               |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Porting Options                                       | Dirt Alarm® Options                                                                        | Additional Options                                                  |
| P = 1 1/4" NPTF<br>S = SAE-20<br>B = ISO 228 G-1 1/4" | Omit = None<br>Visual Y2 = Back-mounted tri-color gauge<br>Electrical ES = Electric switch | Omit = None<br>L = Two 1/8" NPTF inlet and outlet female test ports |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4. Replacement element part numbers for 7" length begin with M. Replacement element part numbers for 10" length begin with 10M. Examples: M3V; 10MZ3V 10" only available with MZ3 and MZ10.

Box 3. ZW media only available for 10" element.

Box 4. For option V, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. B porting option supplied with metric mounting holes.



## Features and Benefits

- Spin-On with full ported cast iron head for minimal pressure drop
- Offered in pipe, SAE straight thread and ISO 228 porting
- Spin-On thread = 1.50-16UN-2B
- Various Dirt Alarm® options
- Available in 7" and 10" element lengths

60 gpm  
230 L/min  
 150 psi  
 10 bar

Model No. of filter in photograph is MF27M10SD5.

|                           |                                                       |
|---------------------------|-------------------------------------------------------|
| Flow Rating:              | Up to 60 gpm (230 L/min) for 150 SUS (32 cSt) fluids  |
| Max. Operating Pressure:  | 150 psi (10 bar)                                      |
| Min. Yield Pressure:      | 250 psi (17 bar), per NFPA T2.6.1                     |
| Rated Fatigue Pressure:   | Contact factory                                       |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                       |
| Bypass Setting:           | Cracking: 30 psi (2 bar)<br>Full Flow: 48 psi (3 bar) |
| Porting Head:             | Cast Iron                                             |
| Element Case:             | Steel                                                 |
| Weight of MF2-7M:         | 8.6 lbs. (3.9 kg)                                     |
| Element Change Clearance: | 1.50" (40 mm)                                         |

## Filter Housing Specifications

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Type Fluid             | Appropriate Schroeder Media                      |
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic) |
| High Water Content     | 3 and 10 μ Z-Media® (synthetic)                  |
| Invert Emulsions       | 10 μ Z-Media® (synthetic)                        |
| Water Glycols          | 3 and 10 μ Z-Media® (synthetic)                  |

## Fluid Compatibility

Accessories  
For Tank-  
Mounted  
Filters

IRF

TF1

KF3

KL3

LF1

MLF1

RLD

GRTB

MTA

MTB

ZT

AFT

KFT

RT

RTI

LRT

ART

BRT

TRT

BFT

QT

KTK

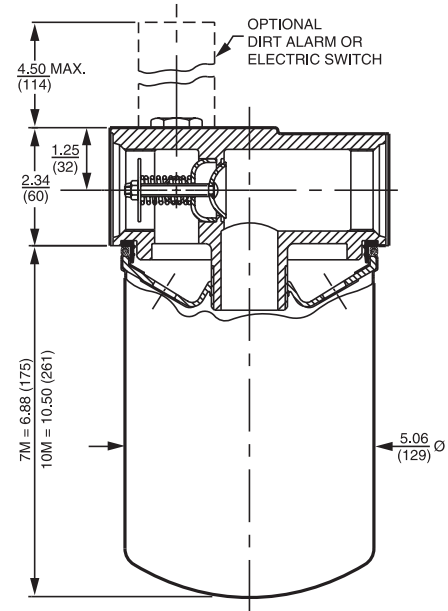
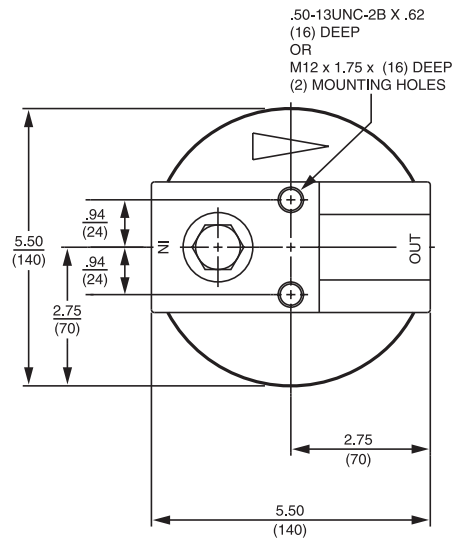
LTK

MRT

PAF1

MAF1

MF2



SPIN-ON THREAD=1.50-16UN-2B

Installation instructions included on element.

Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

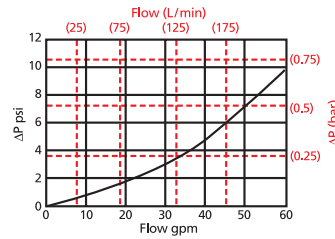
| Element      | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|--------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|              | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| 7MZ3/10MZ3   | <1.0                                                                                                           | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| 7MZ10/10MZ10 | 7.4                                                                                                            | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| 10MZW10      | N/A                                                                                                            | N/A                | N/A                | 6.9                                                                  | 8.6                      |

| Element | DHC (gm) | Element | DHC (gm) |
|---------|----------|---------|----------|
| 7MZ3    | 105      | 10MZW10 | 53       |
| 7MZ10   | 104      |         |          |

Element Collapse Rating: 100 psid (7 bar)

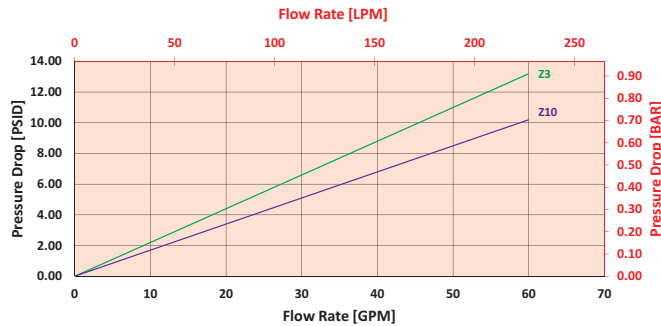
Flow Direction: Outside In

Element Nominal Dimensions: 7M: 5.0" (125 mm) O.D. x 7.0" (180 mm) long  
 10M: 5.0" (125 mm) O.D. x 10.5" (261 mm) long

$\Delta P_{\text{housing}}$ MF2  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86: $\Delta P_{\text{element}}$ 

7MZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * V_f)$$

Exercise:Determine  $\Delta P_{\text{filter}}$  at 40 gpm (151.6 L/min) for MF27MZ10PD5 using 160 SUS (34 cSt) fluid.Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 40 gpm. In this case,  $\Delta P_{\text{housing}}$  is 5 psi (.34 bar) on the graph for the MF2 housing.Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 40 gpm. In this case,  $\Delta P_{\text{element}}$  is 7 psi (.48 bar) according to the graph for the 7MZ10 element.Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ( $V_f$ ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * V_f$ ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.Solution:

$$\Delta P_{\text{housing}} = 5 \text{ psi } [.34 \text{ bar}] \mid \Delta P_{\text{element}} = 7 \text{ psi } [.48 \text{ bar}]$$

$$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$$

$$\Delta P_{\text{filter}} = 5 \text{ psi} + (7 \text{ psi} * 1.1) = 12.7 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .34 \text{ bar} + (.48 \text{ bar} * 1.1) = .87 \text{ bar}$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

Note:  
If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$ . Plug this variable into the overall pressure drop equation.

| Ele. | $\Delta P$ |
|------|------------|
| 7M3  | 0.23       |
| 7M10 | 0.14       |



Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder MF2:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| MF2   |       |       |       |       |       |

Example: Option 1 NOTE: One option per box

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 |
|-------|-------|-------|-------|-------|-------|
| MF2   | 7     | M3    |       | P     | D5    |

= MF27M3PD5

| BOX 1         | BOX 2               | BOX 3                                                                                                                                                                                                                                                                               | BOX 4                       | BOX 5                                           |
|---------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------|
| Filter Series | Element Length (in) | Element Size and Media                                                                                                                                                                                                                                                              | Seal Material               | Porting Options                                 |
| MF2           | 7<br>10             | M3 = M size 3 µ E media (cellulose)<br>M10 = M size 10 µ E media (cellulose)<br>MZ3 = M size 3 µ Excellement® Z-Media® (synthetic)<br>MZ10 = M size 10 µ Excellement® Z-Media® (synthetic)<br>MZW10 = M size 10 µ Aqua-Excellement™ ZW media<br>MW = M size W media (water removal) | Omit = Buna N<br>V = Viton® | P = 1¼" NPTF<br>S = SAE-20<br>B = ISO 228 G-1¼" |

| BOX 6                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Options                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                        | Omit = None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Visual                                 | D5 = Visual pop-up                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Visual with Thermal Lockout            | D8 = Visual w/ thermal lockout                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Electrical                             | MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable<br>MS5LC = Low current MS5<br>MS10 = Electrical w/ DIN connector (male end only)<br>MS10LC = Low current MS10<br>MS11 = Electrical w/ 12 ft. 4-conductor wire<br>MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)<br>MS12LC = Low current MS12<br>MS16 = Electrical w/ weather-packed sealed connector<br>MS16LC = Low current MS16<br>MS17LC = Electrical w/ 4 pin Brad Harrison male connector |
| Electrical with Thermal Lockout        | MS5T = MS5 (see above) w/ thermal lockout<br>MS5LCT = Low current MS5T<br>MS10T = MS10 (see above) w/ thermal lockout<br>MS10LCT = Low current MS10T<br>MS12T = MS12 (see above) w/ thermal lockout<br>MS12LCT = Low current MS12T<br>MS16T = MS16 (see above) w/ thermal lockout<br>MS16LCT = Low current MS16T<br>MS17LCT = Low current MS17T                                                                                                                          |
| Electrical Visual                      | MS13 = Supplied w/ threaded connector & light<br>MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)                                                                                                                                                                                                                                                                                                                                                     |
| Electrical Visual with Thermal Lockout | MS13DCT = MS13 (see above), direct current, w/ thermal lockout<br>MS13DCLCT = Low current MS13DCT<br>MS14DCT = MS14 (see above), direct current, w/ thermal lockout<br>MS14DCLCT = Low current MS14DCT                                                                                                                                                                                                                                                                   |

## NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4. Replacement element part numbers for 7" length begin with M. Replacement element part numbers for 10" length begin with 10M. Example: M3; 10MZ3 10" only available with MZ3 and MZ10.

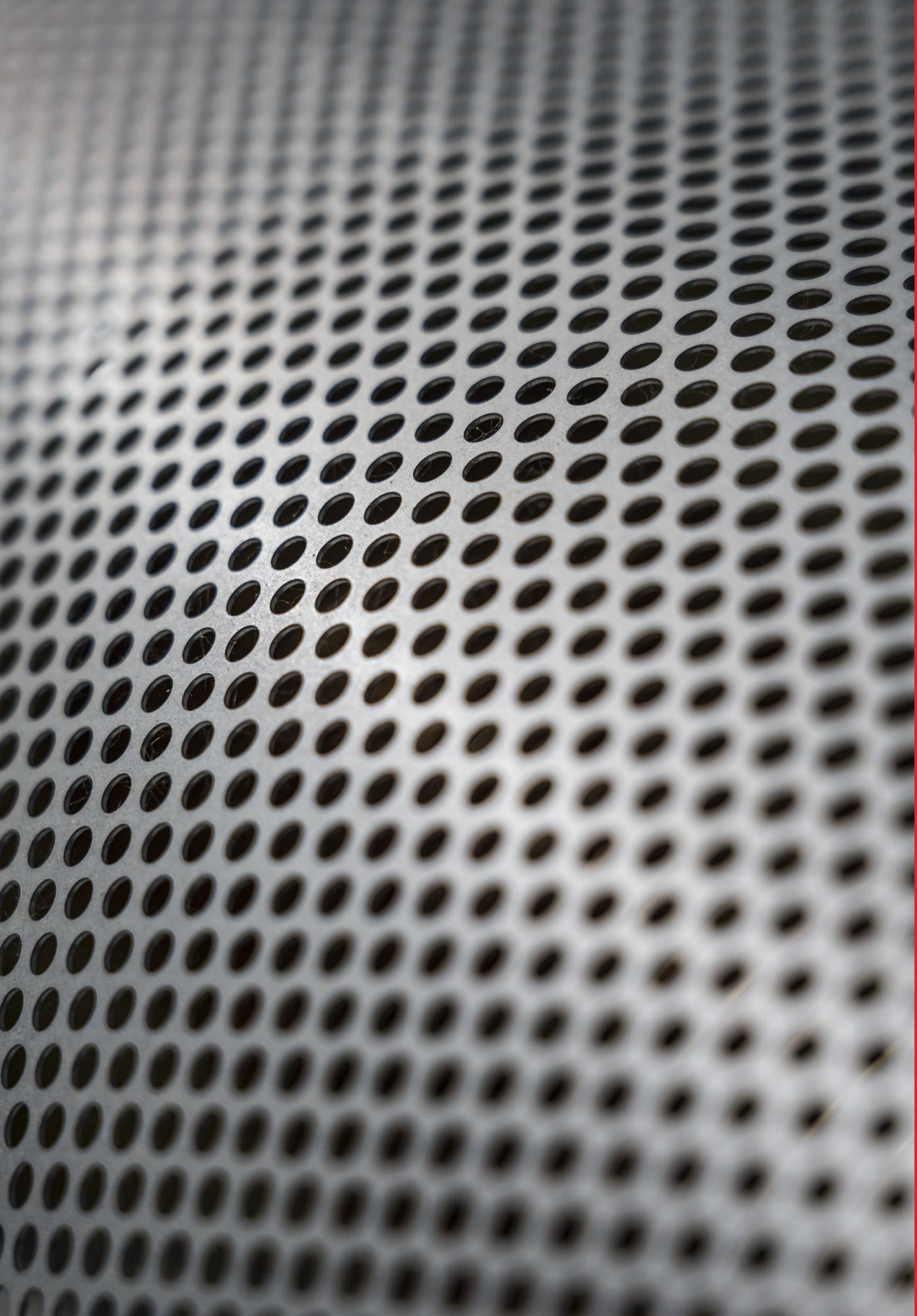
Box 3. ZW media only available for 10" element.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. B porting option supplied with metric mounting holes.

Section 6:

# SUCTION FILTERS



# Section 6

# Suction Filters Selection Guide

|                         |                                         | Pressure<br>psi (bar)                                                             | Flow<br>gpm (L/min) | Element<br>Length/Size | Page |     |
|-------------------------|-----------------------------------------|-----------------------------------------------------------------------------------|---------------------|------------------------|------|-----|
| Suction Filters         | Tank-Mounted Suction Filter             |                                                                                   |                     |                        |      |     |
|                         | <a href="#">ST</a>                      | NA                                                                                | 20 (75)             | K, KT                  | 333  |     |
|                         | Top-Ported Suction Filter               |                                                                                   |                     |                        |      |     |
|                         | <a href="#">SKF3</a>                    | 300 (20)                                                                          | 25 (95)             | KT                     | 337  |     |
|                         | In-Line Magnetic Suction Separators     |                                                                                   |                     |                        |      |     |
|                         | <a href="#">TF-SKB</a>                  | NA                                                                                | 12.5 (47)           | SKB                    | 341  |     |
|                         | <a href="#">KF3-SKB</a>                 |  | NA                  | 35 (130)               | SKB  | 342 |
|                         | Tank-Mounted Magnetic Suction Separator |                                                                                   |                     |                        |      |     |
| <a href="#">BFT-SKB</a> | NA                                      | 75 (285)                                                                          | SKB                 | 343                    |      |     |



# Tank-Mounted Suction Filter

**ST**



## Features and Benefits

- Tank-mounted suction filter for hydrostatic suction service
- Optional check valve prevents reservoir siphoning
- Easy Element changeout
- Inlet filter protects pump, reduces start-up failures

**20 gpm**  
**75 L/min**

**ST**

SKF3

TF-SKB

KF3-SKB

BFT-SKB

Model No. of filter in photograph is ST1K10SY.

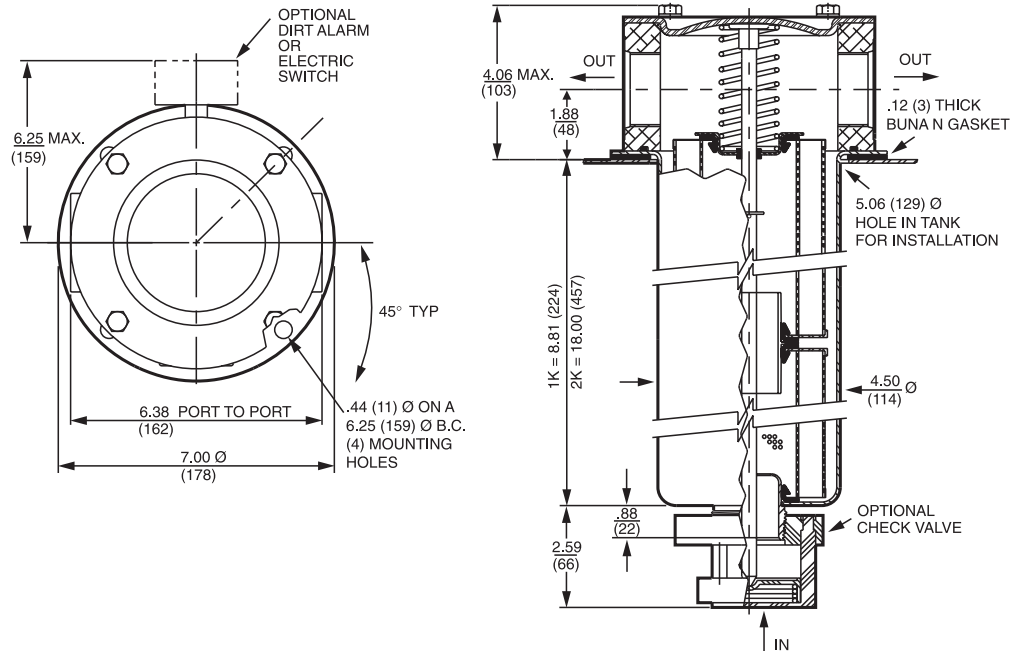
## Filter Housing Specifications

|                           |                                                     |
|---------------------------|-----------------------------------------------------|
| Flow Rating:              | Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids |
| Max. Operating Pressure:  | Suction Filter                                      |
| Min. Yield Pressure:      | Not Applicable                                      |
| Rated Fatigue Pressure:   | Not Applicable                                      |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                     |
| Bypass Setting:           | Non-bypassing                                       |
| Porting Head:             | Die Cast Aluminum                                   |
| Cap:                      | Steel                                               |
| Element Case:             | Steel                                               |
| Weight of ST-1K:          | 11.1 lbs. (5.0 kg)                                  |
| Weight of ST-2K:          | 14.7 lbs. (6.7 kg)                                  |
| Element Change Clearance: | 7.25" (185 mm) for 1K; 17.50" (445 mm) for KK       |

## Fluid Compatibility

| Type Fluid             | Appropriate Schroeder Media                                                                                                                        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All E media (cellulose) and Z-Media® (synthetic)                                                                                                   |
| High Water Content     | 10 µ Z-Media® (synthetic)                                                                                                                          |
| Invert Emulsions       | 10 µ Z-Media® (synthetic)                                                                                                                          |
| Water Glycols          | 10 µ Z-Media® (synthetic)                                                                                                                          |
| Phosphate Esters       | 10 µ Z-Media® (synthetic) with H (EPR) seal designation and 10 µ E media (cellulose) with H (EPR) seal designation                                 |
| Skydrol®               | 10 µ Z-Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior) |





Metric dimensions in ( ).

### Element Performance Information & Dirt Holding Capacity

| Element | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|---------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|         | $\beta_x \geq 75$                                                                                              | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| KTZ10   | 7.4                                                                                                            | 8.0                | 10.0               | 8.0                                                                  | 10.0                     |

| Element | DHC (gm) |
|---------|----------|
| KTZ10   | 56       |

Element Collapse Rating: 150 psid (10 bar)

Flow Direction: Inside Out

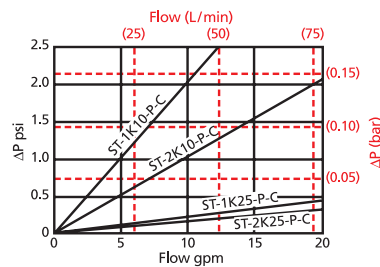
Element Nominal Dimensions: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

# Tank-Mounted Suction Filter

# ST

$\Delta P_{\text{housing}}$

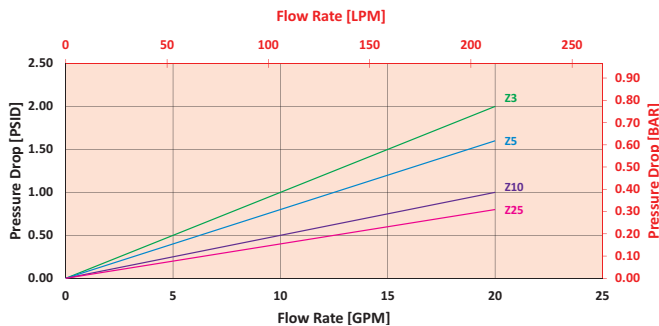
ST  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

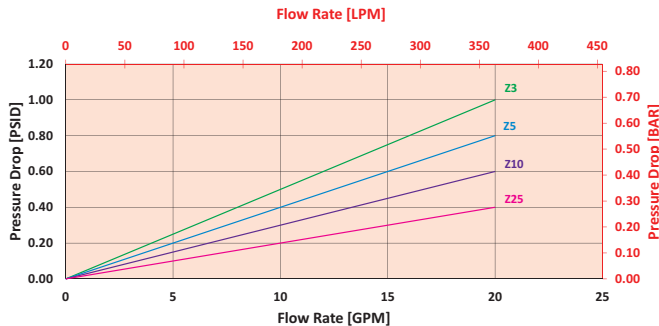
KTZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



2KTZ

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * v_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 15 gpm (57 L/min) for ST1KTZ10PY using 160 SUS (34 cSt) fluid.

Use the element pressure curve to determine  $\Delta P_{\text{housing}}$  at 15 gpm. In this case,  $\Delta P_{\text{housing}}$  is 1.5 psi (.10 bar) according to the graph for the ST element.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 15 gpm. In this case,  $\Delta P_{\text{element}}$  is .75 psi (.05 bar) according to the graph for the KZT10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the **Viscosity Factor ( $v_f$ )** by dividing the **Operating Fluid Viscosity** with the **Standard Viscosity** of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$ , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential,  $(\Delta P_{\text{element}} * v_f)$ . The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 1.5 \text{ psi } [.75 \text{ bar}] \mid \Delta P_{\text{element}} = .75 \text{ psi } [.05 \text{ bar}]$$

$$v_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.07$$

$$\Delta P_{\text{filter}} = 1.5 \text{ psi} + (.75 \text{ psi} * 1.07) = 2.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = .10 \text{ bar} + (.05 \text{ bar} * 1.07) = 0.15 \text{ bar}$$

**Pressure Drop Information**  
Based on  
Flow Rate  
and Viscosity

ST

SKF3

TF-SKB

KF3-SKB

BFT-SKB

Note:

If your element is not graphed, use the following equation:  
 $\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f$  Plug this variable into the overall pressure drop equation.

| Ele.  | $\Delta P$ | Ele.   | $\Delta P$ | Ele.   | $\Delta P$ |
|-------|------------|--------|------------|--------|------------|
| K3    | 0.25       | KZW25  | 0.14       | 2KZW10 | 0.12       |
| K10   | 0.09       | 2K3    | 0.12       | 2KZW25 | 0.07       |
| K25   | 0.02       | 2K10   | 0.05       | 3K3    | 0.08       |
| KAS3  | 0.10       | 2K25   | 0.01       | 3K10   | 0.03       |
| KAS5  | 0.08       | 2KAS3  | 0.05       | 3K25   | 0.01       |
| KAS10 | 0.05       | 2KAS5  | 0.04       | 3KAS3  | 0.03       |
| KZX10 | 0.22       | 2KAS10 | 0.03       | 3KAS5  | 0.02       |
| KZW1  | 0.43       | 2KZX10 | 0.11       | 3KAS10 | 0.02       |
| KZW3  | 0.32       | 2KZW1  | -          | 3KZX10 | 0.07       |
| KZW5  | 0.28       | 2KZW3  | 0.16       |        |            |
| KZW10 | 0.23       | 2KZW5  | 0.14       |        |            |

Filter  
Model  
Number  
Selection

## How to Build a Valid Model Number for a Schroeder ST:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| ST    |       |       |       |       |       |       |       |

**Example:** NOTE: Only box 8 may contain more than one option

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| ST    | 1     | K25   |       | P     |       | Y     |       |

= ST1K25PY

| BOX 1              | BOX 2              | BOX 3                                                                 |                                                                              |  | BOX 4                        |
|--------------------|--------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------|--|------------------------------|
| Filter Series      | Number of Elements | Element Part Number                                                   |                                                                              |  | Seal Material                |
| ST                 | 1                  | K10 = K size 10 µ E media (cellulose)                                 |                                                                              |  | Omit = Buna N                |
|                    | 2                  | K25 = K size 25 µ E media (cellulose)                                 |                                                                              |  | H = EPR                      |
|                    |                    | KTZ3 = K size 3 µ Excellement® Z-Media® (synthetic) inside-out flow   |                                                                              |  | W = Buna N                   |
|                    |                    | KTZ5 = K size 5 µ Excellement® Z-Media® (synthetic) inside-out flow   |                                                                              |  | H.5 = Skydrol® compatibility |
|                    |                    | KTZ10 = K size 10 µ Excellement® Z-Media® (synthetic) inside-out flow |                                                                              |  |                              |
|                    |                    | KTZ25 = K size 25 µ Excellement® Z-Media® (synthetic) inside-out flow |                                                                              |  |                              |
| BOX 5              |                    | BOX 6                                                                 | BOX 7                                                                        |  | BOX 8                        |
| Outlet Port        |                    | Optional Check Valve                                                  | Dirt Alarm® Options                                                          |  | Additional Options           |
| P = 1½" NPTF       |                    | Omit = None                                                           | Omit = None                                                                  |  | Omit = None                  |
| PP = Dual 1½" NPTF |                    | C = Check Valve                                                       | Visual Y = Vacuum gauge                                                      |  | G2293 = Cork Gasket          |
| S = SAE 24         |                    |                                                                       | YR = Vacuum gauge mounted on opposite side of standard location              |  | G547 = Two ⅛" gauge ports    |
| SS = Dual SAE 24   |                    |                                                                       | Electrical VS = Electrical Vacuum Switch                                     |  |                              |
| B = ISO 228 G-1½"  |                    |                                                                       | VSR = Electrical Vacuum Switch mounted on opposite side of standard location |  |                              |
| BB = ISO 228 G-1½" |                    |                                                                       | VSR1 = Heavy-Duty Vacuum Switch                                              |  |                              |

## NOTES:

Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4.

Box 4. For options H and W, all aluminum parts are anodized.  
H.5 seal designation includes the following:  
EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior.  
Skydrol® is a registered trademark of Solutia Inc.

Box 6. See also "Accessories for Tank-Mounted Filters," page 299.

# Top-Ported Suction Filter

**SKF3**



## Features and Benefits

- Top-ported suction filter for hydrostatic suction service
- Easy element changeout
- Inlet filter protects pump, reduces start-up failures
- 2.5 psi suction bypass available

**25 gpm**  
**95 L/min**  
**300 psi**  
**20 bar**

ST

**SKF3**

TF-SKB

KF3-SKB

BFT-SKB

Model No. of filter in photograph is SKF31KTZ25S2.5Y

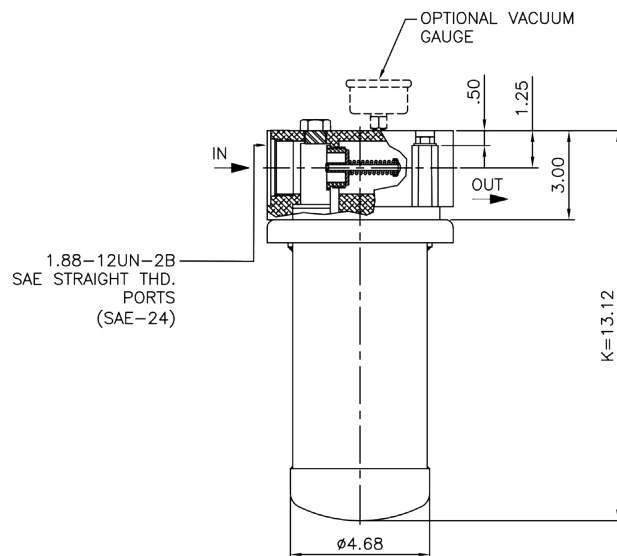
|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| Flow Rating:              | Up to 25 gpm (95 L/min) for 150 SUS (32 cSt) fluids       |
| Max. Operating Pressure:  | 300 psi (20 bar)                                          |
| Min. Yield Pressure:      | 1000 psi (70 bar), per NFPA T2.6.1                        |
| Rated Fatigue Pressure:   | 290 psi (20 bar), per NFPA T2.6.1-2005                    |
| Temp. Range:              | -20°F to 225°F (-29°C to 107°C)                           |
| Bypass Setting:           | Cracking: 2.5 psi (0.2 bar)<br>Full Flow: Contact Factory |
| Porting Base:             | Die Cast Aluminum                                         |
| Element Case:             | Steel                                                     |
| Weight of SKF3:           | 10.5 lbs. (4.8 kg)                                        |
| Element Change Clearance: | 1.50" (40 mm) for all lengths                             |

## Filter Housing Specifications

| Type Fluid             | Appropriate Schroeder Media                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Petroleum Based Fluids | All E-Media (cellulose), Z-Media®                                                                                       |
| High Water Content     | All Z-Media®                                                                                                            |
| Invert Emulsions       | 10 and 25 µ Z-Media® (synthetic)                                                                                        |
| Water Glycols          | 3, 5, 10 and 25 µ Z-Media® (synthetic)                                                                                  |
| Phosphate Esters       | All Z-Media® (synthetic) with H (EPR) seal designation and 3 and 10 µ E-Media (cellulose) with H (EPR) seal designation |
| Skydrol®               | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation                                                        |

## Fluid Compatibility





Metric dimensions in ( ).

## Element Performance Information & Dirt Holding Capacity

| Element      | Filtration Ratio Per ISO 4572/NFPA T3.10.8.8<br>Using automated particle counter (APC) calibrated<br>per ISO 4402 |                    |                    | Filtration Ratio per ISO 16889<br>Using APC calibrated per ISO 11171 |                          |
|--------------|-------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------|--------------------------|
|              | $\beta_x \geq 75$                                                                                                 | $\beta_x \geq 100$ | $\beta_x \geq 200$ | $\beta_{x(c)} \geq 200$                                              | $\beta_{x(c)} \geq 1000$ |
| KTZ1/GKTZ1   | <1.0                                                                                                              | <1.0               | <1.0               | <4.0                                                                 | 4.2                      |
| KTZ3/GKTZ3   | <1.0                                                                                                              | <1.0               | <2.0               | <4.0                                                                 | 4.8                      |
| KTZ5/GKTZ5   | 2.5                                                                                                               | 3.0                | 4.0                | 4.8                                                                  | 6.3                      |
| KTZ10/GKTZ10 | 7.4                                                                                                               | 8.2                | 10.0               | 8.0                                                                  | 10.0                     |
| KTZ25/GKTZ25 | 18.0                                                                                                              | 20.0               | 22.5               | 19.0                                                                 | 24.0                     |

### Dirt Holding Capacity

| Element      | DHC (gm) |
|--------------|----------|
| KTZ1/GKTZ1   | 112      |
| KTZ3/GKTZ3   | 115      |
| KTZ5/GKTZ5   | 119      |
| KTZ10/GKTZ10 | 108      |
| KTZ25/GKTZ25 | 93       |

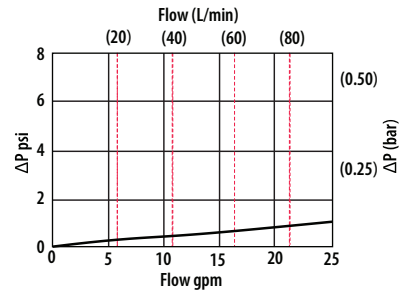
**Element Collapse Rating:** 150 psid (10 bar) for standard elements

**Flow Direction:** Inside Out

**Element Nominal Dimensions:** K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long

$\Delta P_{\text{housing}}$

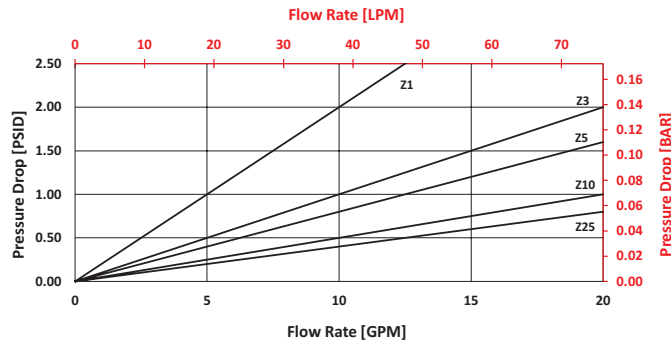
SKF3  $\Delta P_{\text{housing}}$  for fluids with sp gr (specific gravity) = 0.86:



$\Delta P_{\text{element}}$

KTZ1

Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)



Curves Also Available Upon Request

$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} * v_f)$$

## Exercise:

Determine  $\Delta P_{\text{filter}}$  at 20 gpm (76 L/min) for SKF31KTZ25S2.5Y using 200 SUS (44 cSt) fluid.

Use the housing pressure curve to determine  $\Delta P_{\text{housing}}$  at 20 gpm. In this case,  $\Delta P_{\text{housing}}$  is 0.7 psi (.05 bar) on the graph for the SKF3 housing.

Use the element pressure curve to determine  $\Delta P_{\text{element}}$  at 20 gpm. In this case,  $\Delta P_{\text{element}}$  is 0.8 psi (.06 bar) according to the graph for the 1KTZ25 element.

Because the viscosity in this sample is 200 SUS (44 cSt), we determine the Viscosity Factor (  $v_f$  ) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential,  $\Delta P_{\text{filter}}$  , is calculated by adding  $\Delta P_{\text{housing}}$  with the true element pressure differential, ( $\Delta P_{\text{element}} * v_f$  ). The  $\Delta P_{\text{element}}$  from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

## Solution:

$$\Delta P_{\text{housing}} = 0.7 \text{ psi } [.21 \text{ bar}] \mid \Delta P_{\text{element}} = 0.8 \text{ psi } [.415 \text{ bar}]$$

$$v_f = 200 \text{ SUS } (42.4 \text{ cSt}) / 150 \text{ SUS } (32 \text{ cSt}) = 1.333$$

$$\Delta P_{\text{filter}} = 0.7 \text{ psi } + (0.8 \text{ psi } * 1.333) = 1.8 \text{ psi }$$

OR

$$\Delta P_{\text{filter}} = .05 \text{ bar } + (.06 \text{ bar } * 1.333) = .13 \text{ bar }$$

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and Viscosity

ST

SKF3

TF-SKB

KF3-SKB

BFT-SKB

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder SKF3:

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| SKF3  |       |       |       |       |       |       |       |

| BOX 1 | BOX 2 | BOX 3 | BOX 4 | BOX 5 | BOX 6 | BOX 7 | BOX 8 |                  |
|-------|-------|-------|-------|-------|-------|-------|-------|------------------|
| SKF3  | 1K    | Z     | 25    |       | S     | 2.5   | Y     | =SKF31KTZ25S2.5Y |

| BOX 1            | BOX 2                     | BOX 3                                 | BOX 4                       |
|------------------|---------------------------|---------------------------------------|-----------------------------|
| Filter Series    | Number & Size of Elements | Media Type                            | Micron Rating               |
| SKF3             | 1KT                       | Omit = E media (cellulose)            | 1 = 1μ (Z-Media)            |
| GSKF3 (GeoSeal®) | GeoSeal®                  | Z = Excellement® Z-Media® (synthetic) | 3 = 3μ (E, Z-Media)         |
|                  | 1KTG                      | M = M Media (reusable metal)          | 5 = 5μ (Z-Media)            |
|                  |                           |                                       | 10 = 10μ (E, Z and M-Media) |
|                  |                           |                                       | 25 = 25μ (E, Z and M-Media) |
|                  |                           |                                       | 60 = 60μ (M-Media)          |
|                  |                           |                                       | 150 = 150μ (M-Media)        |

| BOX 5                          | BOX 6                   | BOX 7                                |
|--------------------------------|-------------------------|--------------------------------------|
| Seal Material                  | Magnetic Core           | Porting                              |
| Omit = Buna N                  | Omit = No Magnetic Core | P = 1 1/2" NPTF                      |
| H = EPR                        | M = Magnetic Core       | S = SAE 24                           |
| V = Viton®                     |                         | F = 1 1/2" SAE-4-bolt flange Code 61 |
| H.5 = Skydrol® Compatibility   |                         | B = ISO 228 G-1 1/2"                 |
| W = Buna N with anodized parts |                         |                                      |

| BOX 8                        | BOX 9                                    |
|------------------------------|------------------------------------------|
| Bypass                       | Dirt Alarm® Options                      |
| Omit = No Bypass             | Omit = None                              |
| 2.5 = 2.5 psi Suction Bypass | Visual Y = Vacuum guage                  |
|                              | Electrical VS = Electrical Vacuum Switch |
|                              | VS1 = Heavy-Duty Vacuum Switch           |

#### NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.  
Example: KTZ25

Box 5. For options H, W, V, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 7. For option F, bolt thread depth .63" (16 mm). B porting option supplied with metric mounting holes.

## Features and Benefits

- Protects components downstream by capturing potentially harmful ferrous particles

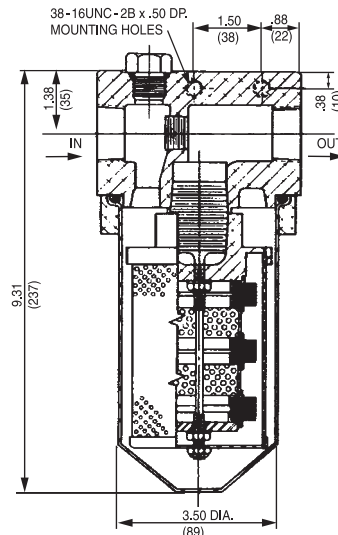
## Specifications

Flow Rating: 12.5 gpm (47 L/min)

Element Replacement Part Number: SKB-1

Element Change Clearance: 2.5" (65 mm)

Weight of TF-SKB: 5.8 lbs (2.6 kg)



Metric dimensions in ( ).

## How to Build a Valid Model Number for a Schroeder TF-SKB:

| BOX 1  | BOX 2 | BOX 3 | BOX 4 |
|--------|-------|-------|-------|
| TF-SKB |       |       |       |

**Example:** NOTE: One option per box

| BOX 1  | BOX 2 | BOX 3 | BOX 4 |
|--------|-------|-------|-------|
| TF-SKB |       | P     | Y     |

= TF-SKBPY

| BOX 1         | BOX 2         | BOX 3       | BOX 4                                                                                                                |
|---------------|---------------|-------------|----------------------------------------------------------------------------------------------------------------------|
| Filter Series | Seal Material | Porting     | Dirt Alarm® Options                                                                                                  |
| TF-SKB        | Omit = Buna N | P = 1" NPTF | Omit = None<br>Visual Y = Vacuum gauge<br>Electrical VS = Electrical Vacuum Switch<br>VS1 = Heavy-Duty Vacuum Switch |

## Filter Model Number Selection

NOTE:

Box 1. Element replacement part number: SKB-1.

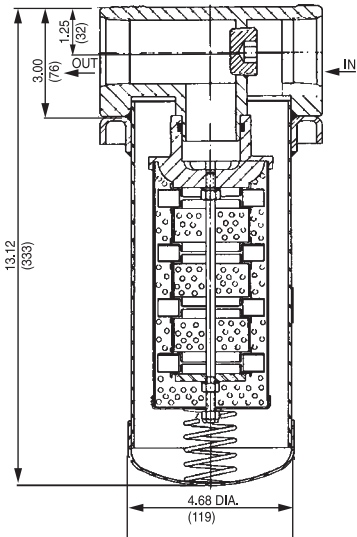
Features and Benefits

- Protects components downstream by capturing potentially harmful ferrous particles

Specifications

|                                  |                    |
|----------------------------------|--------------------|
| Flow Rating:                     | 35 gpm (130 L/min) |
| Element Replacement Part Number: | A-LF-1789          |
| Element Change Clearance:        | 1.5" (40 mm)       |
| Weight of KF3-SKB:               | 11.5 lbs (5.2 kg)  |

Metric dimensions in ( ).



Filter  
Model  
Number  
Selection

How to Build a Valid Model Number for a Schroeder KF3-SKB:

|         |       |       |       |
|---------|-------|-------|-------|
| BOX 1   | BOX 2 | BOX 3 | BOX 4 |
| KF3-SKB |       |       |       |

Example: NOTE: One option per box

|         |       |       |       |             |
|---------|-------|-------|-------|-------------|
| BOX 1   | BOX 2 | BOX 3 | BOX 4 |             |
| KF3-SKB |       | P     | Y     | = KF3-SKBPY |

| BOX 1         | BOX 2         | BOX 3        | BOX 4                                                                                                                |
|---------------|---------------|--------------|----------------------------------------------------------------------------------------------------------------------|
| Filter Series | Seal Material | Porting      | Dirt Alarm® Options                                                                                                  |
| KF3-SKB       | Omit = Buna N | P = 1½" NPTF | Omit = None<br>Visual Y = Vacuum gauge<br>Electrical VS = Electrical Vacuum Switch<br>VS1 = Heavy-Duty Vacuum Switch |

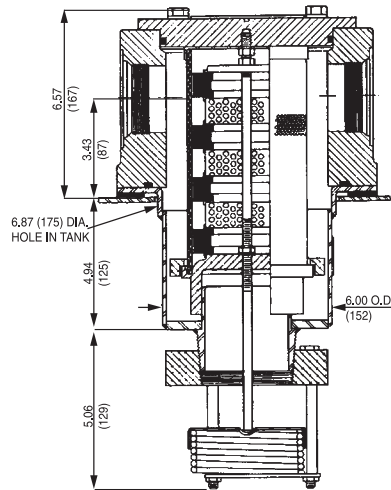
NOTE:  
Box 1. Element replacement part number: A-LF-1789.

# Tank-Mounted Magnetic Suction Separators

**BFT-SKB**

## Features and Benefits

- Protects components downstream by capturing potentially harmful ferrous particles



Metric dimensions in ( ).

ST

SKF3

TF-SKB

KF3-SKB

BFT-SKB

## Specifications

Flow Rating: 75 gpm (285 L/min)

Element Replacement with check valve: A-SKB-3-76  
Part Number: without check valve: SKB-3

Element Change Clearance: 13.5" (345 mm)

Weight of BFT-SKB: 32.0 lbs (14.5 kg)

## How to Build a Valid Model Number for a Schroeder BFT-SKB::

| BOX 1   | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|---------|-------|-------|-------|-------|
| BFT-SKB |       |       |       |       |

**Example:** NOTE: One option per box

| BOX 1   | BOX 2 | BOX 3 | BOX 4 | BOX 5 |
|---------|-------|-------|-------|-------|
| BFT-SKB |       | P     |       | Y     |

= BFT-SKBPY

## Filter Model Number Selection

| BOX 1         | BOX 2         | BOX 3                                                                                                              | Box 4                          |
|---------------|---------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Filter Series | Seal Material | Porting                                                                                                            | Other Options                  |
| BFT-SKB       | Omit = Buna N | P = 2½" NPTF<br>PP = Dual 2½" NPTF<br>F = 2½" SAE 4-bolt flange Code 61<br>FF = Dual 2½" SAE 4-bolt flange Code 61 | Omit = None<br>C = Check Valve |

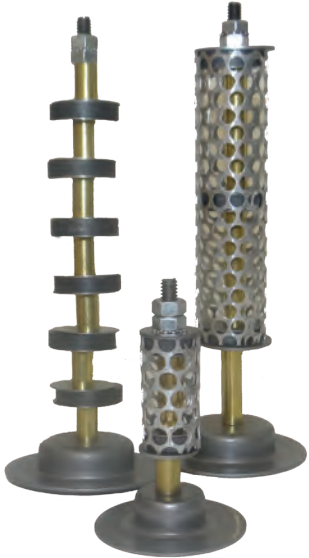
| BOX 5               |                                                                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Dirt Alarm® Options |                                                                                                                                         |
| Omit = None         |                                                                                                                                         |
| Visual              | Y = Vacuum gauge<br>YR = Vacuum gauge mounted on opposite side of standard location                                                     |
| Electrical          | VS = Electrical Vacuum Switch<br>VSR = Electrical Vacuum Switch on opposite side of standard location<br>VS1 = Heavy-Duty Vacuum Switch |

NOTE:

Box 1. See specifications on previous page for element replacement part numbers.

# Magnet Inserts for Filters

## Magnet Inserts for Filters

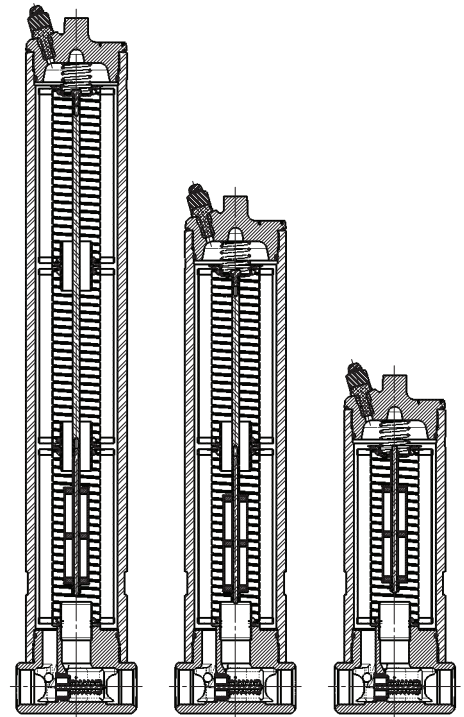
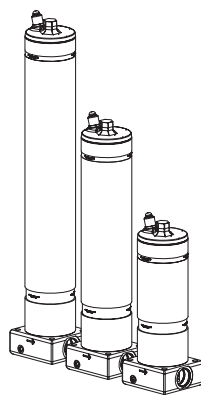
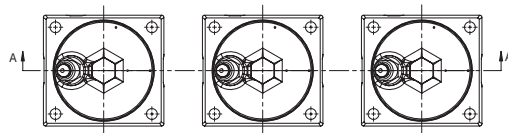


KF30, KF50, KC50, KC65 and TF50 are available with magnet inserts to trap ferrous material that passes through the filter element.

These inserts are removed with the element each time service is performed and cleaned before being reinserted with new elements.

Replacements are available by ordering parts:

|                                        | Single Element | Double Element | Triple Element |
|----------------------------------------|----------------|----------------|----------------|
| KF30, KF50, KC50, KC65, KF3, LF1, MLF1 | A-LF-1592      | A-LF-1593      | A-LF-1594      |
| TF50                                   | A-TF-301-1     | A-TF-302-1     |                |



Visual indicators provide an economical way to know at a glance when a filter element needs to be replaced. A variety of styles are available, ranging from gauges to mechanical pointers and pop-up cartridges.

Schroeder pointers use a tricolor disk to indicate the element condition. The pointer will reach the red section just before bypassing occurs.

In the case of a mechanical magnetic cartridge, a highly visible orange disk springs, or “pops up”, at the pre-defined setting. Once activated, the orange signal continues to indicate a bypass or clogged condition, even following equipment shutdown, until it is manually reset. The pop-up indicator is interchangeable with other cartridge style indicators (electrical and electrical visual) available from Schroeder. A high pressure (>6000 psi working pressure) of the pop-up indicator is available and is noted below.



**D**—Tricolor Pointer Dirt Alarm®  
P/N 7619323 for plastic pointer only.  
For internal linkage and name plate, contact factory.



**D5**—Red Pop Up Visual Indicator

**D5S\***—D5 with Protective Shroud  
\*To order Protective Shroud only, use SAP #7642053

**D5C**—Same as D5 but mounted in cap

**D5R**—Same as D5 but mounted on opposite side of standard location

**D9**—Stainless Steel version of D5

**D9C**—Stainless Steel version of D5 mounted in cap



**Y**—Vacuum Gauge mounted in porting head  
P/N 7631068

**YR**—Same as Y but mounted on opposite side of standard location P/N 7631068



**Y2**—Back mounted 1/8" NPT Tricolor Glycerin-filled Gauge (0-60 psi) P/N 7627463 (0-100 psi) P/N 7631048

**Y2R**—Same as Y2 but mounted on opposite side of standard location P/N 7627463

**Y2C**—Bottom mounted 1/8" NPT Tricolor Gauge (0-60 psi) located in cap P/N 7626647

**Y5**—Same as Y2 but located in cap P/N 7627463



**LF-4209 (G2213): 0 - 30 psid; P/N 7626589**



**DPG**—Standard Differential Pressure Gauge  
P/N 7628635 or 7626554

### Visual

The thermal lockout feature prevents activation of the indicator below temperatures of 90°F (32°C). This is a welcome feature in mobile applications where fluid temperatures may be well below 90°F at equipment start-up, and will prevent the indicator from showing a premature need to change the element.



**D8**—Orange Pop Up Visual Indicator with Thermal Lock-out

**D8C**—Same as D8 but mounted in cap

**D8R**—Same as D8 but mounted on opposite side of standard location

### Visual with Thermal Lockout



## Electrical Visual

In addition to providing an electrical signal to provide a desired action, Schroeder electrical visual indicators also provide a visual indication of when an element needs to be changed. In the case of the MS and MS2 switches, the visual indicator is a color-coded disk, whereas the MS13 and MS14 dirt alarms provide a light.

MS—Cam operated electrical switch P/N 7627458 for switch only.

For cam, color-coded disk, and mounting bracket, order P/N 7604908.

For internal linkage, contact factory.



| Code | Type of Contact | Electrical Rating                        | Connection         |
|------|-----------------|------------------------------------------|--------------------|
| MS   | SPDT            | 15 Amps @ 125/250 vac, 0.5 Amp @ 125 VDC | ½" conduit, female |

## Electrical

The electrical indicators (MS Series) provide an electrical signal for activating various electric alarm systems or complete machine shutdown. These cartridge-style indicators are available on most Schroeder pressure, return line, and medium pressure filters and can be used for working pressures up to 6000 psi (415 bar) and cyclic conditions up to 4000 psi (276 bar).

- The design is modular; all electrical indicators consist of an MS10 indicator with the corresponding mating connector added to convert the MS10 to a MS5, MS11 etc.
- The standard micro switch for high current indicators is good for both AC and DC use. A separate micro switch with "gold" contacts is used for low current applications. This means that specification of AC or DC is no longer required (except for MS13 and MS14) in the indicator code or part number.
- Housings of all electrical indicators are made of aluminum.
- The indicator model tag includes the electrical wiring diagram.
- All of our indicators, with the exception of MS16, have a "ground" terminal.
- We are now able to offer the thermal lockout option to high current indicators.
- All indicators can be installed in a filter cap as the wiring harness can be disconnected at the "DIN" connector in order to remove the filter cap.
- All MS indicators have achieved the NEMA4X and IP65 ratings.

Information on these indicators, including drawing, circuit diagram, and photograph is provided on the following pages.

A different set of electrical pressure switches is available for Schroeder tank-mounted filters, along with heavy duty versions.

Schroeder suction filters (ST and models that house the SKB magnetic suction strainer) can be equipped with a vacuum switch.

VS—Vacuum Switch (1/8" NPT, normally open)  
P/N 7601947

VSR—Same as VS but mounted on opposite side of standard location P/N 7601947

ES—Standard electrical pressure switch (1/8" NPT, normally open) for tank-mounted filters  
P/N 7601943 (40 psi bypass)

ESC—Electrical pressure switch (MTA & MTB only)  
P/N 7601943

ESR—Same as ES but mounted on opposite side of standard location  
P/N 7601943

ES1—Heavy duty electrical pressure switch (1/8" NPT) with conduit connection (25psi bypass) P/N 7626636 (cracking over 25 psi) P/N 7626640 (43 psi bypass) P/N 7626640 (Black = common; Red = N.O.; Blue = N.C.)

ES1R—Same as ES1 but mounted on opposite side of standard location P/N 7626636

VS1—Heavy Duty Vacuum Switch (1/8" NPT)  
P/N 7623755, LF Pressure Switch

ES2— Super duty electric switch (1/8"NPT, normally closed) with thermal lockout P/N 7626564

ES3—Electric pressure switch (1/8"NPT) with DIN connector P/N 7626592 (Black = common; Red = N.O.; Blue = N.C.)



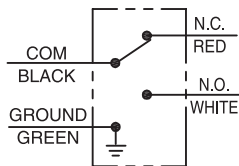
| Code | Type of Contact | Electrical Rating                                                      | Connection                      |
|------|-----------------|------------------------------------------------------------------------|---------------------------------|
| ES   | SPST            | 8 Amps @ 12 VDC, 1 Amp @ 120 VAC<br>4 Amps @ 24 VDC, 0.5 Amp @ 240 VAC | Screw Terminal with Rubber Boot |
| ES1  | SPDT            | 10 Amps @ 115 VAC<br>50mA-5A @ 24 VDC                                  | ½" Conduit, Male                |

### Electrical and Electrical with Thermal Lockout

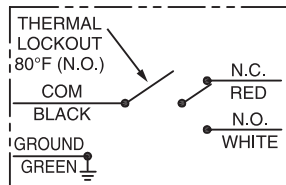


**MS5  
MS5LC  
MS5T  
MS5LCT**

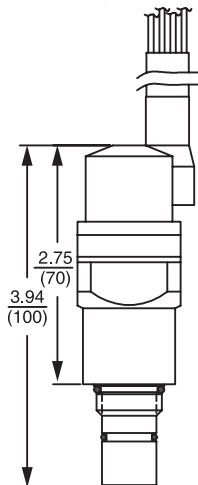
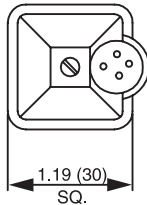
Supplied with 12 inch long  
18 gauge 4-conductor cable



**MS5/MS5LC**

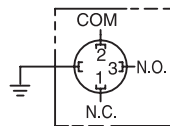


**MS5T/MS5LCT**

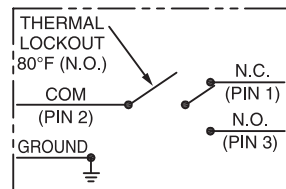


**MS10  
MS10LC  
MS10T  
MS10LCT**

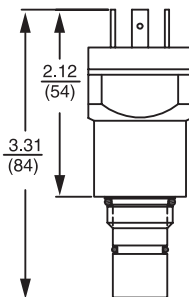
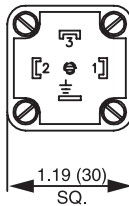
Supplied with DIN connector  
(male end only)  
(conforming to DIN 43650)



**MS10/MS10LC**



**MS10T/MS10LCT**

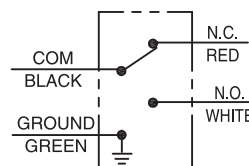


Model Codes of MSHA Version of MS10  
are MS10DCM and MS10DCCM (DC only;  
second C designates cap). For electrical  
and dimensional drawings, contact factory.

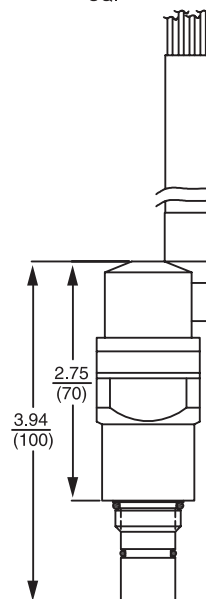
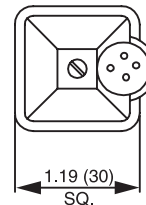


**MS11**

Supplied with 12 inch long  
18 gauge 4-conductor cable



**MS11**



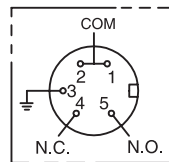
# Appendix A Filter Dirt Alarm® Selection

Electrical and  
Electrical with  
Thermal Lockout  
(cont'd.)

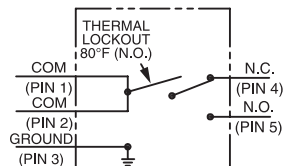


MS12  
MS12LC  
MS12T  
MS12LCT

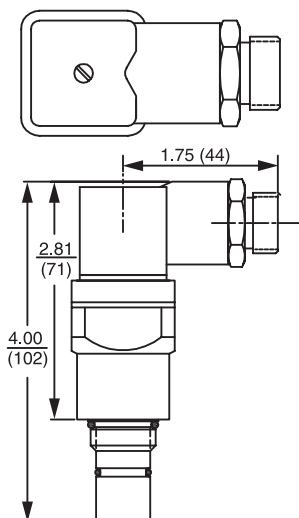
Supplied with 5 pin  
Brad Harrison connector  
(male end only)



MS12/MS12LC



MS12T/MS12LCT

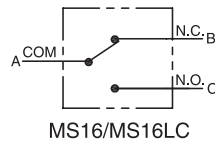


Model Codes of MSHA Version of MS12  
are MS12DCM and MS12DCCM (DC only;  
second C designates cap). For electrical and  
dimensional drawings, contact factory.

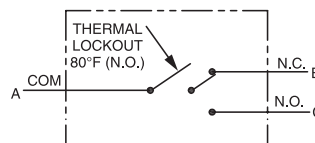


MS16  
MS16LC  
MS16T  
MS16LCT

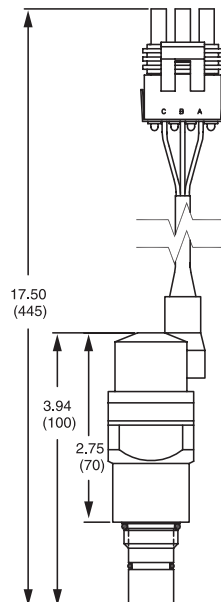
Supplied with a female  
(3) contact weather-packed  
sealed connector supplied with  
DIN connector (male end only)  
(conforming to DIN 43650)



MS16/MS16LC

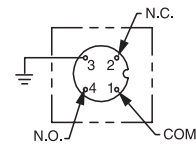


MS16T/MS16LCT

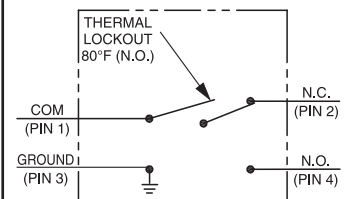


MS17LC  
MS17LCT

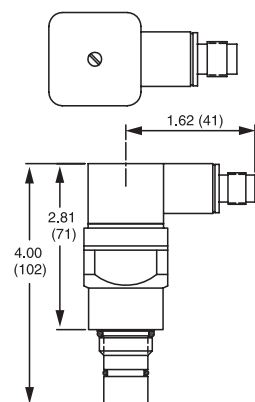
Supplied with a 4 pin  
Brad Harrison "micro" connector  
(male end only)



MS17LC



MS17LCT



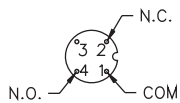
### Electrical and Electrical with Thermal Lockout (cont'd.)



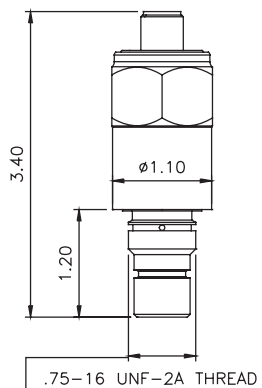
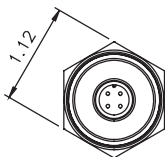
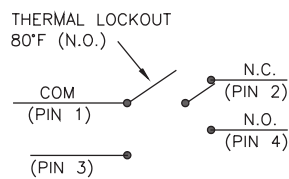
**MS17  
MS17T**

Supplied with a 4 pin M12 "micro" connector (male end only) (confirming to IEC 60947-5-2)

NORMAL OPERATING PRESSURE ELECTRICAL SCHEMATIC



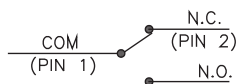
WITH THERMAL LOCKOUT



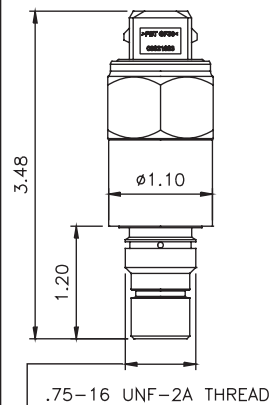
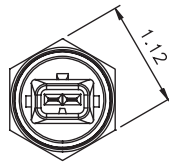
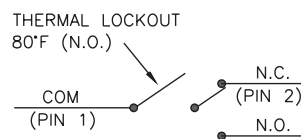
**MS18  
MS18LC  
MS18T  
MS18LCT**

Supplied with a 2 pin amp junior power timer connector (male end only) (must designate N.O. or N.C.)

NORMAL OPERATING PRESSURE ELECTRICAL SCHEMATIC



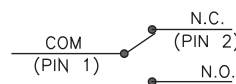
WITH THERMAL LOCKOUT



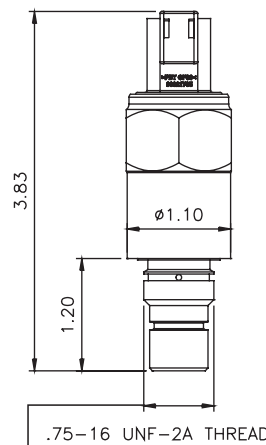
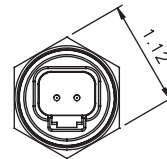
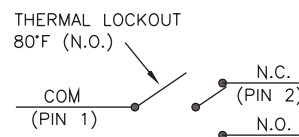
**MS19  
MS19LC  
MS19T  
MS19LCT**

Supplied with a 2 pin deutsch connector (D04-2-P, male end only) (must designate N.O. or N.C.)

NORMAL OPERATING PRESSURE ELECTRICAL SCHEMATIC



WITH THERMAL LOCKOUT



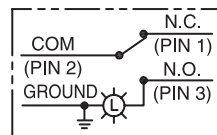
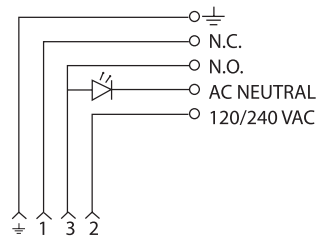
# Appendix A Filter Dirt Alarm® Selection

Electrical Visual  
and  
Electrical Visual  
with  
Thermal Lockout

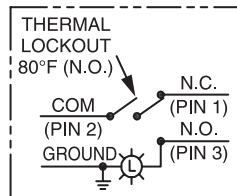


MS13DC, MS13DCLC  
MS13DCT, MS13DCLCT

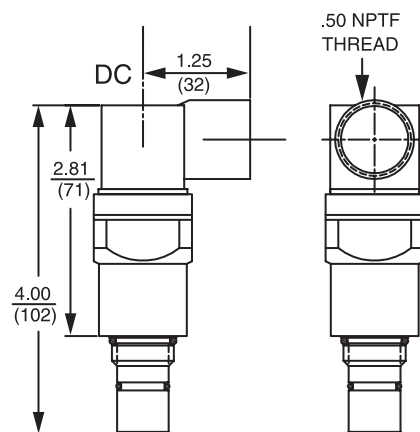
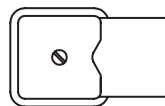
Supplied with  
threaded connector  
with light



MS13DC / MS13DCLC

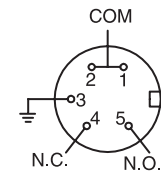
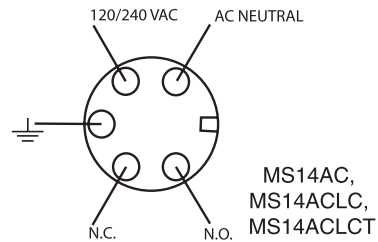


MS13DCT / MS13DCLCT

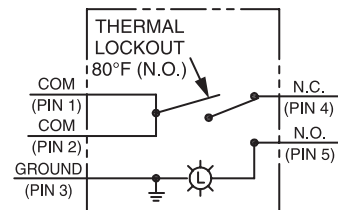


MS14AC, MS14ACLC,  
MS14ACLCT  
MS14DC, MS14DCLC  
MS14DCT, MS14DCLCT

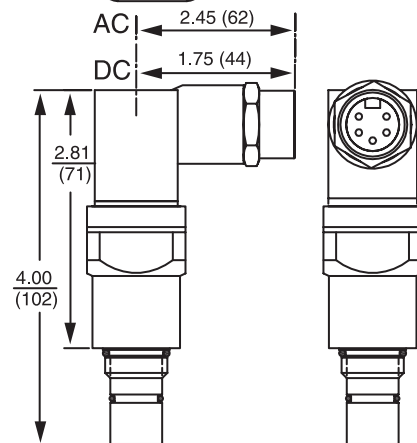
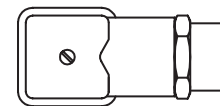
Supplied with  
5 pin  
Brad Harrison connector  
with light  
(male end only)



MS14DC / MS14DCLC



MS14DCT / MS14DCLCT



### CHART 5 Electrical Ratings: Electrical Cartridge Indicators Without Thermal Lockout

| Voltage | Voltage<br>Volts@ Amps | Current Range<br>(amps) | MS5 | MS5LC | MS10 | MS10LC | MS11 | MS12 | MS12LC | MS13DC | MS13DCLC | MS14DC | MS14DCLC | MS15DC | MS16 | MS16LC | MS17 | MS17LC | MS14AC | MS14ACLC | MS18 | MS18LC | MS19 | MS19LC |
|---------|------------------------|-------------------------|-----|-------|------|--------|------|------|--------|--------|----------|--------|----------|--------|------|--------|------|--------|--------|----------|------|--------|------|--------|
| AC      | 240 @ 3                | 0.02 to 3               | ✓   |       | ✓    |        | ✓    | ✓    |        |        |          |        |          |        |      |        |      | ✓      |        |          |      |        |      |        |
| AC      | 220 @ 0.05             | 0.005 to 0.05           |     | ✓     |      | ✓      |      |      | ✓      |        |          |        |          |        |      |        |      |        |        |          |      | ✓      |      | ✓      |
| AC      | 120 @ 5                | 0.02 to 5               | ✓   |       | ✓    |        | ✓    | ✓    |        |        |          |        |          |        |      |        |      |        |        |          |      |        |      |        |
| AC      | 120 @ 0.05             | 0.005 to 0.05           |     | ✓     |      | ✓      |      |      | ✓      |        |          |        |          |        |      |        |      |        |        | ✓        |      | ✓      |      | ✓      |
| AC      | 24 @ 0.10              | 0.005 to 0.010          |     | ✓     |      | ✓      |      |      | ✓      |        |          |        |          |        |      |        |      |        |        | ✓        |      |        |      |        |
| AC      | 12 @ 0.25              | 0.005 to 0.025          |     | ✓     |      | ✓      |      |      | ✓      |        |          |        |          |        |      |        |      |        |        | ✓        |      |        |      |        |
| AC      | 120 @ 4                | 0.05 to 4               |     |       |      |        |      |      |        |        |          |        |          |        |      |        |      |        | ✓      |          |      |        |      |        |
| AC      | 115 @ 0.05             | 0.01 to 0.05            |     |       |      |        |      |      |        |        |          |        |          |        |      |        | ✓    |        |        |          | ✓    |        | ✓    |        |
| DC      | 110 @ 0.3              | 0.02 to 0.3             | ✓   |       | ✓    |        | ✓    | ✓    |        |        |          |        |          |        | ✓    |        | ✓    |        |        |          | ✓    |        | ✓    |        |
| DC      | 110 @ 0.05             | 0.005 to 0.05           |     | ✓     |      | ✓      |      |      | ✓      |        |          |        |          |        |      | ✓      |      | ✓      |        |          |      | ✓      |      | ✓      |
| DC      | 24 @ 3                 | 0.01 to 3               |     |       |      |        |      |      |        |        |          |        |          |        |      |        |      |        |        |          | ✓    |        | ✓    |        |
| DC      | 24 @ 2                 | 0.02 to 2               | ✓   |       | ✓    |        | ✓    | ✓    |        | ✓      |          | ✓      |          |        | ✓    |        |      |        |        |          |      |        |      |        |
| DC      | 24 @ 1                 | 0.01 to 1               |     |       |      |        |      |      |        |        |          |        |          |        |      |        | ✓    |        |        |          |      |        |      |        |
| DC      | 24 @ 0.20              | 0.0 to 0.20             |     |       |      |        |      |      |        |        |          |        |          | ✓      |      |        |      |        |        |          |      |        |      |        |
| DC      | 24 @ 0.10              | 0.005 to 0.10           |     | ✓     |      | ✓      |      |      | ✓      |        | ✓        |        | ✓        |        |      | ✓      |      | ✓      |        |          |      | ✓      |      | ✓      |
| DC      | 12 @ 5                 | 0.01 to 5               |     |       |      |        |      |      |        |        |          |        |          |        |      |        |      |        |        | ✓        |      | ✓      |      |        |
| DC      | 12 @ 2                 | 0.02 to 2               | ✓   |       | ✓    |        | ✓    | ✓    |        | ✓      |          | ✓      |          |        | ✓    |        |      |        |        |          |      |        |      |        |
| DC      | 12 @ 1                 | 0.01 to 1               |     |       |      |        |      |      |        |        |          |        |          |        |      |        | ✓    |        |        |          |      |        |      |        |
| DC      | 12 @ 0.25              | 0.005 to 0.25           |     | ✓     |      | ✓      |      |      | ✓      |        | ✓        |        | ✓        |        |      | ✓      | ✓    | ✓      |        |          |      | ✓      |      | ✓      |

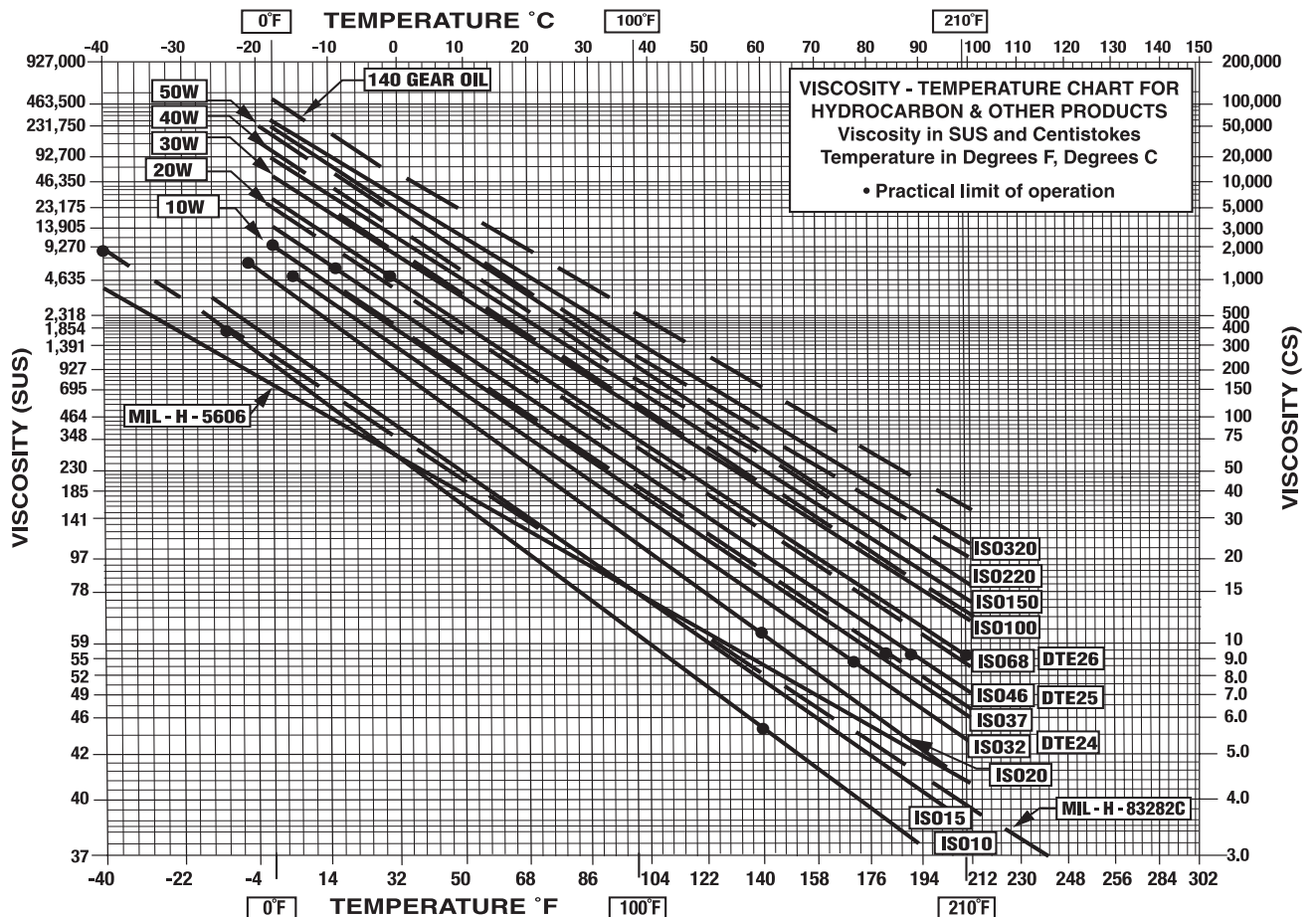
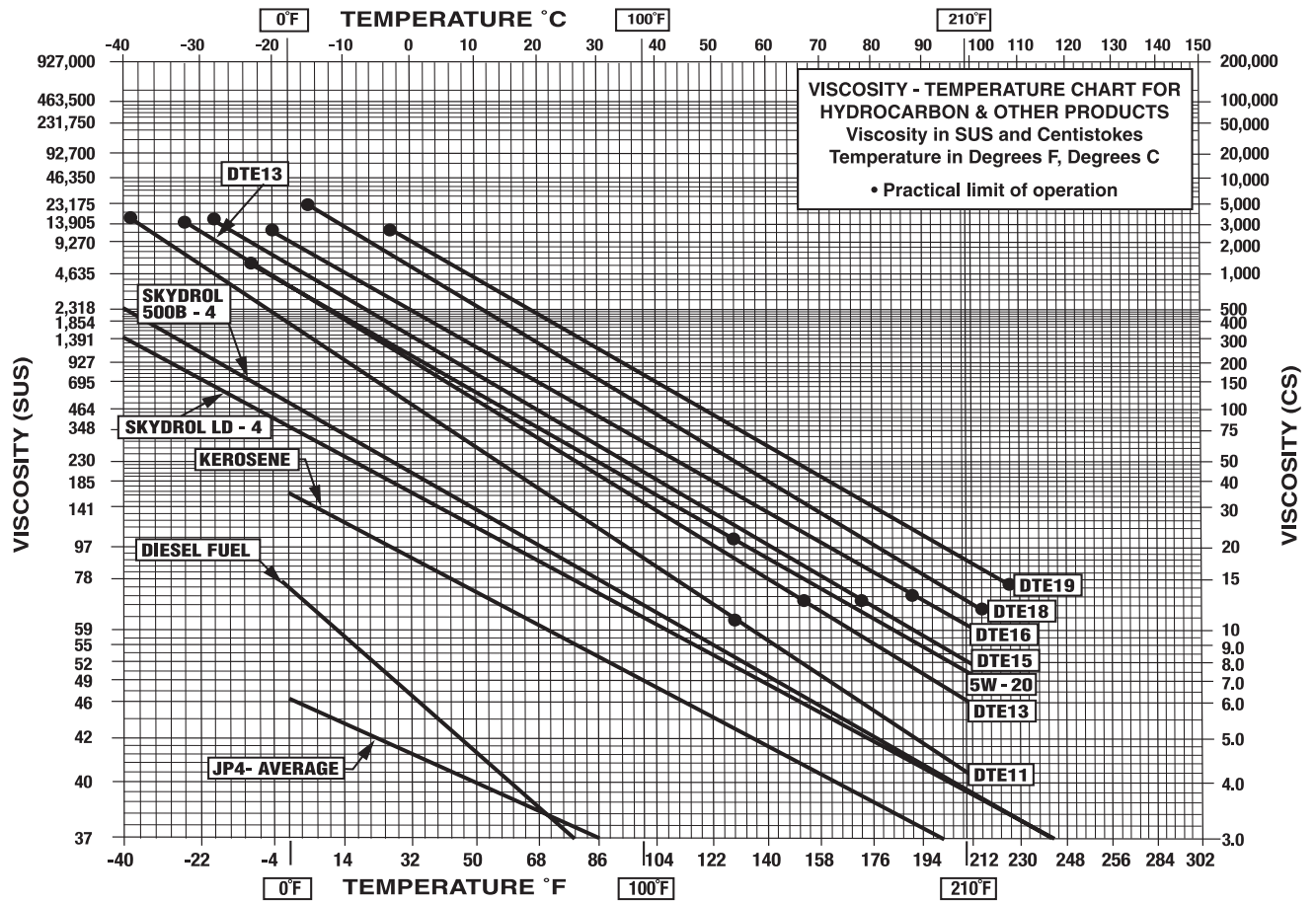
### CHART 6 Electrical Ratings: Electrical Cartridge Indicators With Thermal Lockout\*

|    | Voltage<br>Volts<br>@ Amps | Current<br>Range<br>(amps) | MS5T | MS5LCT | MS10T | MS10LCT | MS12T | MS12LCT | MS13DCT | MS13DCLCT | MS14DCT | MS14DCLCT | MS16T | MS16LCT | MS17 | MS17T | MS17LCT | MS14ACT | MS14ACLCT | MS18 | MS18T | MS18LCT | MS19 | MS19T | MS19LCT |
|----|----------------------------|----------------------------|------|--------|-------|---------|-------|---------|---------|-----------|---------|-----------|-------|---------|------|-------|---------|---------|-----------|------|-------|---------|------|-------|---------|
| AC | 120 @ 5                    | 0.02 to 5                  | ✓    |        | ✓     |         | ✓     |         |         |           |         |           |       |         |      |       |         |         |           |      |       |         |      |       |         |
| AC | 220 @ 0.05                 | 0.005 to 0.05              |      | ✓      |       | ✓       |       | ✓       |         |           |         |           |       |         |      |       |         |         | ✓         |      |       | ✓       |      |       | ✓       |
| AC | 120 @ 5                    | 0.05 to 4                  |      |        |       |         |       |         |         |           |         |           |       |         |      |       |         | ✓       |           |      |       |         |      |       |         |
| AC | 115 @ 0.05                 | 0.01 to 0.05               |      |        |       |         |       |         |         |           |         |           |       |         | ✓    |       |         |         |           |      | ✓     |         |      | ✓     |         |
| DC | 24 @ 2                     | 0.02 to 2                  | ✓    |        | ✓     |         | ✓     |         | ✓       |           | ✓       |           | ✓     |         |      | ✓     |         |         |           |      | ✓     |         |      | ✓     |         |
| DC | 24 @ 0.10                  | 0.005 to 0.10              |      | ✓      |       | ✓       |       | ✓       |         | ✓         |         | ✓         |       | ✓       |      |       | ✓       |         |           |      |       | ✓       |      |       | ✓       |
| DC | 12 @ 2                     | 0.02 to 2                  | ✓    |        | ✓     |         | ✓     |         | ✓       |           | ✓       |           | ✓     |         |      | ✓     |         |         |           |      | ✓     |         |      | ✓     |         |
| DC | 12 @ 0.25                  | 0.005 to 0.25              |      | ✓      |       | ✓       |       | ✓       |         | ✓         |         | ✓         |       | ✓       |      |       | ✓       |         |           |      |       | ✓       |      |       | ✓       |

\*Thermal lockout prevents activation below 80°

Note: All indicators in Charts 4 and 5 above, meet NEMA4X and IP65 specifications.

# Appendix B Viscosity Charts





# Glossary of Standard Terms

**ABSOLUTE FILTRATION RATING:** The diameter of the largest hard spherical particle that will pass through a filter under specified test condition. This is an indication of the largest opening in the filter element. It does not indicate the largest particle that will pass through the element, since particles of greater length than diameter may pass.

**CAVITATION:** A localized condition within a liquid stream causing the rapid implosion of a gaseous bubble.

**CELSIUS:** A temperature scale. 0 Celsius (or 0 Centigrade) is the freezing point of water (32° F).

**CENTIPOISE:** A unit of absolute (dynamic) viscosity.

**CENTISTOKE:** A unit of kinematic viscosity.

**CLEANLINESS LEVEL:** The analog of contamination level.

**COLLAPSE PRESSURE:** The outside-in differential pressure that causes structural failure.

**CONTAMINATION LEVEL:** A quantitative term specifying the degree of contamination.

**CONTAMINANT:** Any material or substance which is unwanted or adversely affects the fluid power system or components, or both.

**CONTAMINANT, BUILT-IN:** Initial residual contamination in a component, fluid, or system. Typical built-in contaminants are burrs, chips, flash, dirt, dust, fiber, sand, moisture, pipe dope, weld spatter, paints and solvents, flushing solutions, incompatible fluids, and operating fluid impurities.

**DEPTH (FILTER):** A filter medium which primarily retains contaminant within tortuous passages.

**DIRT CAPACITY (DUST CAPACITY) (CONTAMINANT CAPACITY):** The weight of a specified artificial contaminant which must be added to the fluid to produce a given differential pressure across a filter at specified conditions. Used as an indication of relative service life.

**EFFICIENCY (FILTER):** The ability, expressed as a percent, of a filter to remove specified artificial contaminant at a given contaminant concentration under specified test conditions.

**ELEMENT (CARTRIDGE):** The porous device which performs the actual process of filtration.

**FLOW, LAMINAR (STREAMLINE):** A flow situation in which fluid moves in parallel lamina or layers. (See Reynold's number.)

**FLOW, TURBULENT:** A flow situation in which the fluid particles move in a random manner. (See Reynold's number.)

**FLUID:** A liquid, gas, or combination thereof.

**FLUID POWER SYSTEM:** A system that transmits and controls power through use of a pressurized fluid within an enclosed circuit.

**INDICATOR:** A device which provides external visual evidence of sensed phenomena.

**INDICATOR, BY-PASS:** An indicator which signals that an alternate flow path is being used.

**INDICATOR, DIFFERENTIAL PRESSURE:** An indicator which signals the difference in pressure between two points.

**MICROMETER (MICRON)\*:** A unit of measurement one millionth of a meter long, or approximately 0.00003937 inch expressed in English Units. \*Deprecated.

**MIGRATION:** Contaminant released downstream.

**PRESSURE, CRACKING:** The pressure at which a pressure-operated valve begins to pass fluid.

**PRESSURE, DIFFERENTIAL (PRESSURE DROP):** The difference in pressure between any two points of a system or a component.

**PRESSURE, OPERATING:** The pressure at which a system is operated.

**PRESSURE, RATED FATIGUE:** A pressure that a pressure-containing component is represented to sustain 10 million times without failure.

**RATED FLOW:** The maximum flow that the power supply system is capable of maintaining at a specific operating pressure.

**REYNOLD'S NUMBER:** A numerical ratio of the dynamic forces of mass flow to the shear stress due to viscosity. Flow usually changes from laminar to turbulent between Reynold's numbers 2,000 and 4,000.

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## Filter CONFIGURATIONS

**Top-Ported Filter:** Also known as a T-Ported or In-Line filter. All porting, the bypass valve, and indicators are located in the head. The head is permanently attached to the plumbing and the element is accessed by removing the bowl.

**Base-Ported Filter:** All porting, the bypass valve, and indicators are located in the base. The base is permanently attached to the plumbing and the element is removed through a cap, instead of removing the entire bowl.

**Manifold Mounted Filter:** Also known as a Sub-Plate filter. Most Base-Ported filters come with a manifold mount option. In some cases, a Top-Ported filter can also have a manifold mounting option. This allows the filter to be mounted directly onto a manifold, eliminating the need for hoses and fittings.

**Cartridge Filter:** Can be inserted directly into the manifold, eliminating the need for a separate housing or plumbing. Element is removed through a plug on the manifold.

**Sandwich Filter:** Is designed to be placed in between and directly interface with a manifold and stacked valves. Eliminates the need for hoses and fittings.

**Duplex Filter:** Made up of two or more filter assemblies. A valve allows the user to switch from one chamber to another. When one element is fully loaded, fluid is redirected through the second element. The loaded element can be changed without an interruption in flow. In the center position, the valve allows the oil to flow through both filters.

## Filter CLASSIFICATIONS Types

**Low Pressure Filter\*:** Filter pressure range from 0 to 500 psi. Mostly applied in return line filtration where system pressure is at a low point.

**Medium Pressure Filter\*:** Filter pressure range from 500 to 1500 psi. Often used in hydrostatic charge pressure applications.

**High Pressure Filter\*:** Filter pressure range is 1500 psi and above. Mostly applied on the pressure side of the system where pressure is highest.

**High Pressure Hydrostatic Filter:** Used in high pressure hydrostatic closed loop systems. Allows for reverse flow through the system.

**Bypass vs. Non-Bypass:** The pressure rises as an element becomes loaded with contaminants. Standard filters are equipped with a bypass valve that redirects hydraulic fluid when the pressure drop reaches a predetermined level, so the element does not lose its structural integrity. The filter element is bypassed and fluid continues on through the system.

In non-bypass filters bypass is not optional. They are used to protect expensive components that are more sensitive to contaminants, and cannot be exposed to unfiltered fluid. The element is exposed to higher pressures, as there is no bypass. For that reason this type of filter requires a high crush element to guarantee its structural integrity.

**Air Breather:** Filters air that is drawn into a reservoir when the fluid level changes.

**Desiccant Air Breather:** In addition to filtering out particle contaminants, this breather also removes water vapor.

Schroeder Industries LLC wishes to thank both the National Fluid Power Association and Penton Publishing for the use of certain generic terms shown in this glossary. Excerpts taken from ANSI B93.2-1986/NFPA T3.10.3. 1967(R1980) and Penton Publishing's Fluid Power Handbook & Directory (2006-2007).

\*These ranges have been determined to provide a quick reference for the purpose of creating our catalog. This is currently no industry standard terminology. These ranges are subject to change.



# Other Product Line Catalogs



Filter Systems

The Filter Systems Catalog is designed to take the reader from the basic foundations of the principles of hydraulics found in the H&L catalog, to the tools required for troubleshooting and addressing the cleanliness or performance demands of any fluid system. We produce portable and permanent-mount pressure, flow and temperature evaluation instruments, oil cleanliness analysis devices, particle monitors and water-in-oil identification tools. We also produce a wide array of fluid conditioning tools — from standard in-line hydraulic filters, to sophisticated microprocessor-based instruments incorporating SMART® technology.



Fuel Filtration

The products contained in the Fuels Catalog, address issues relating to mobile and stationary equipment working in some of the toughest conditions all over the world. Schroeder's Fuel Filtration line ensures the smooth running of equipment and protects both the engine and the whole drive system from damage, which addresses both onboard and bulk tank requirements.



Process Filtration

The keystone product of Schroeder Process Filtration is the RF3 automatic self-cleaning backflush filter. This filter along with bag filters, cartridge filters and custom designed systems allows Schroeder to offer you complete solutions to your process filtration needs. Our process filters are used to remove solid contamination from fluids and protect the integrity of high grade components that depend on low viscosity water or water-based fluids and emulsions. Schroeder offers high performance filters for all industrial sectors. Improvements in operational efficiency, reduced downtime, lower maintenance costs and reduce environmental impact can all be expected.

To view the full version of our catalogs visit our website: [www.schroederindustries.com](http://www.schroederindustries.com)

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## Notes Section Continued:

## Best Filter Delivery Program

Schroeder Industries is pleased to announce the establishment of the Best Filter Delivery Program. We recognize that emergencies arise despite the best planning and forecasting efforts. To be able to offer support and service in these situations, we performed an analysis to determine our top selling filter model numbers. The result is a list of thirteen specific filter assemblies, comprising high pressure, medium pressure, return line, tank-mounted and spin-on models.

For all the models listed, guaranteed shipment is same day, provided we receive the purchase order by 1:00 pm EST. An option to specify element media other than that called for on the web page is available with a 5-day guaranteed ship date after receipt of order. No other substitutions are permitted.

At the onset of this program, a distributor/customer may be limited to a maximum quantity. This may be necessary to enable Schroeder to fulfill its guarantee of adequate inventory to all distributors alike.

The intent of this program is to provide our customers with access to the products they use most often. Therefore, as we witness shifts in filter usage, we will make changes to this list and update the corresponding web page accordingly.

We hope you and your customers find this new program useful in working through unforeseen crisis situations.

| Family                      | Product | Specifications                                                                                | Standard Part Number           | Alternate Elements                     |
|-----------------------------|---------|-----------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------|
| High Pressure, Top-Ported   | NF30    | 20 gpm, 3000 psi, SAE 1-1/16"-12 straight porting, cartridge dirt alarm                       | NF301NZ10SD5                   | N/A                                    |
| High Pressure, Top-Ported   | DF40    | 30 gpm, 4000 psi, SAE 1-5/16"-12 straight porting, cartridge dirt alarm                       | DF401CCZ3SD5                   | CC10, CCZ5                             |
| High Pressure, Base-Ported  | GKF30   | 100 gpm, 3000 psi, 1 element, SAE 1-7/8"-12 straight porting, cartridge dirt alarm            | GKF301KGZ10SD5                 | KG3, KG10, KG25, KGZ1, KGZ3, KGZ25     |
| Low Pressure, Tank-Mounted  | ZT      | 40 gpm, 100 psi, SAE 1-5/16"-12 straight inlet port, rear mounted tricolor visible dirt alarm | ZT8Z10SY2                      | N/A                                    |
| Low Pressure, Tank-Mounted  | GRT     | 100 gpm, 100 psi, 2 SAE 1.5" inlet ports, tricolor visible dirt alarm                         | GRT1KBGZ10S24S24NY2 (GRT-6915) | K3, K10, K25, KZ1, KZ3, KZ25           |
| Low Pressure, Tank-Mounted  | GRT     | 100 gpm, 100 psi, 1 SAE 1.25" straight inlet port, tricolor visible dirt alarm                | GRT1KBGZ10S20NNY2 (GRT-6916)   | KBG3, KBG10, BG25, KBGZ1, BGZ3, KBGZ25 |
| Low Pressure, Tank-Mounted  | LRT     | 150 gpm, 100 psi, 2 SAE 1.5" straight inlet ports, tricolor visible dirt alarm                | LRT18LZ10S24S24NY2 (LRT-1820)  | N/A                                    |
| Low Pressure, Spin-On       | PAF1    | 20 gpm, 100 psi, 3/4" NPTF porting, tricolor visible dirt alarm                               | PAF16PZ10PY2                   | N/A                                    |
| Low Pressure, Top-Ported    | GKF3    | 100 gpm, 300 psi, 1 element, SAE 1-7/8"-12 straight porting, cartridge dirt alarm             | GKF31KGZ25SD5                  | KG3, KG10, KG25, KGZ1, KGZ3, KGZ25     |
| Medium Pressure, Top-Ported | SRLT    | 25 gpm, 1400 psi, SAE 1-1/16"-12 straight porting, cartridge dirt alarm                       | SRLT6RZ10S12D5                 | 6RZ3, 6RZ25                            |
| Medium Pressure, Top-Ported | RLT     | 70 gpm, 1000 psi, 9" element, SAE 1-5/8"-12 straight porting, cartridge dirt alarm            | RLT9VZ10S20D5                  | 9V25, 9VZ25                            |

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