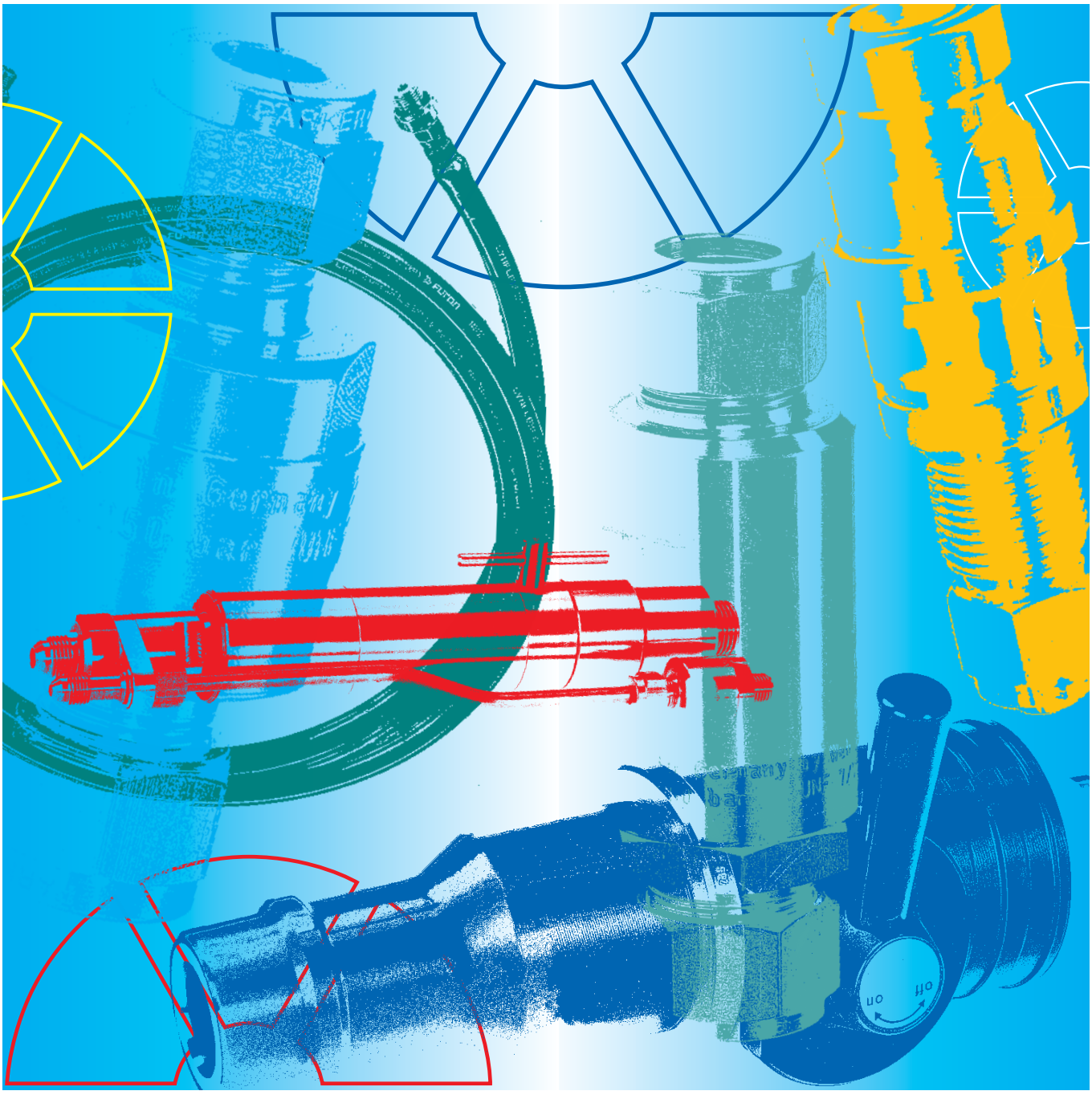
WEH GAS TECHNOLOGY -Hydrogen-Products



Fuelling Nozzles · Receptacles · Check Valves · Breakaway couplings · Filter

The complete refuelling system for hydrogen vehicles

50

Catalogue 50 / Date 08/09

H_2 – Products

Rev.: 2004/02/00163-3-3

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Technology for the future H_2

WEH has extended its product range by developing fuelling systems for gaseous hydrogen. This was made possible by having extensive experience in NGV refuelling systems. Hydrogen fuel cell test vehicles being developed by the major German car manufacturers have been using WEH hydrogen refuelling nozzles since 1995. Having laid the foundation for the world-wide NGV1-standard, WEH have now developed a new hydrogen refuelling profile for various pressure ranges. WEH-Products are presently used in the latest fuel cell vehicles of DaimlerChrysler, FORD, Hyundai, NISSAN and HONDA. The first hydrogen refuelling stations in Germany are being re-fuelled using WEH-Components, specifically, hydrogen buses at Munich Airport, pick-ups in Hamburg and a fuel cell bus in Oberstdorf.

Fuelling nozzle TK17 H_2 70 MPa for fast-filling at self-serve fuelling stations

Fuelling Nozzle TN1 H_2 for cars

WEH will continue to develop refuelling systems for alternative fuels in the future, e.g. for liquid natural gas (LNG), liquid hydrogen or methanol. WEH has developed a self-service nozzle for liquid natural gas in cooperation with Messer Griesheim, already used in Wolfratshausen near Munich.

An advanced product for a high performance application

WEH's H_2 product line has been designed expressly for the demanding applications of hydrogen high-pressure refuelling systems. All products suit the extreme flow and temperature conditions found in practical operation.

Naturally all WEH products are designed of high-quality materials. Throughout many years of experience and numerous tests special seal designs and sealing materials have been developed, which meet the demands of the medium and the application.

A strong connection...

is ensured by the specially developed WEH-Jaw locking mechanism. The clamping jaws tolerate harsh environmental conditions, e.g. dirt, ice ... Compared to ball-type locking mechanism, the load per unit area is lower, thus allowing the nozzle to be connected to the receptacle without damaging its surface.

Fuelling nozzle TN5 H_2 for buses and trucks

'Technically advanced safety features'

Hydrogen refuelling can be dangerous if unsuitable products are used. WEH Products have a very high safety standard to reduce risk areas.

Effective safety systems in all WEH products, especially in the fuelling nozzles, achieve the necessary safety standard for the use of filling devices at self-serve fuelling stations.

Fuelling nozzle TK25 for buses and trucks

Set type TK17 H_2 70 MPa with data interface + protection hose + breakaway coupling

WEH GAS TECHNOLOGY

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Fuelling Nozzle

Type TK17 H_2 70 MPa

Patented fuelling nozzle TK17 H_2 70 MPa for fast filling with hydrogen at self-serve fuelling stations (DN 4 mm)

The first WEH fuelling nozzle for 700 bar with single-handed operation is now available. Type TK17 H_2 70 MPa was developed for refuelling cars with hydrogen (CGH_2). The nozzle-jaws have a code specifically for pressure range and gas type and thus the jaw coding will not allow connection to natural gas vehicles or other alternative fuel connections. The integrated swivel joint can easily be turned into the optimal actuating position despite the rigid fuel hoses.

Features:

- Super light
- WEH-EASY-TURN® swivel joint about 300° for operating handle
- Extremely high flow rate → short filling times
- WEH-Jaw locking mechanism
- Integrated shut-off valve
- Compact design
- Jaw coding will not allow connection to natural gas vehicles or other alternative fuel connections
- Two different versions available:
  – acc. to SAE J2600 Draft WEH
  – acc. to SAE TIR J2799 interface + SAE J2600

Pressure range / coding

Pressure range / coding: Receptacle	Nozzle 250 bar	Nozzle 350 bar	Nozzle 700 bar
Receptacle 250 bar	X		
Receptacle 350 bar	X	X	
Receptacle 700 bar	X	X	X

X = Connection is possible

Safety

The TK17 H_2 70 MPa offers optimum safety to the operator. The fuelling nozzle remains connected to the receptacle until the gas between inlet valve and receptacle is depressurized. Type TK17 H_2 70 MPa works best with the WEH-TN1 H_2 70 MPa receptacle.

A mounting for the TK17 H_2 70 MPa nozzle is available on request, please contact WEH directly.

For further information on the filling hoses refer to page 36 of catalogue No. 50.

TK17 H_2 70 MPa + mounting

Fuelling Nozzle

Type TK17 H_2 70 MPa

Technical Data:

Application:
H_2 fast filling of cars at self-serve fuelling stations. Fuelling nozzle type TK17 H_2 70 MPa designed to be used with receptacle WEH-TN1 H_2 70 MPa.

Temperature range:
-40°C up to +85°C

Pressure ranges:
PN = 700 bar
PS = 875 bar
PT = 1255 bar

Registration:
PED97/23/EC: CE 0036
SAE J2600
SAE TIR J2799

Design:
All parts corrosion-resistant, with plastic thermal protection, without vent pipe and dispenser mounting with hose venting. Seals hydrogen compatible.

Dimensions (mm):

Type TK17 H_2 70 MPa

Ordering:

Inlet port 'B' available with other thread sizes on request.

Description	Inlet B	Part No.
TK17 H_2 70 MPa (Registration acc. to SAE TIR J2799 interface and SAE J2600)	UNF 9/16"-18* external thread	C1-84044
TK17 H_2 70 MPa (Registration acc. to SAE 2600 Draft WEH)	UNF 9/16"-18* external thread	C1-58353
Mounting (switch actuated)	———	C1-79830

* 60° inner cone (please contact us!)

Type TK17 H_2 70 MPa
with data interface

Patented fuelling nozzle TK17 H_2 70 MPa with data interface for H_2 fast filling at self-serve fuelling stations (DN 4 mm)

The first WEH fuelling nozzle for 700 bar with single-handed operation is now available. Type TK17 H_2 70 MPa was developed for refuelling cars with hydrogen (CGH_2). The nozzle-jaws have a code specifically for pressure range and gas type and thus the jaw coding will not allow connection to natural gas vehicles or other alternative fuel connections. Furthermore type TK17 H_2 70 MPa has an interface for data transfer between vehicle and fuelling station.

The integrated swivel joint can easily be turned into the optimal actuating position despite the rigid fuel hoses.

Features:

- Super light
- WEH-EASY-TURN® swivel joint about 300° for operating handle
- Extremely high flow rate → short filling times
- WEH-Jaw locking mechanism
- Integrated shut-off valve
- Compact design
- Jaw coding will not allow connection to natural gas vehicles or other alternative fuel connections
- Integrated interface for data transfer acc. to SAE J2601
- Two different versions available:
  – acc. to SAE J2600 Draft WEH
  – acc. to SAE TIR J2799 interface + SAE J2600

Pressure range / coding

Pressure range / coding: Receptacle	Nozzle 250 bar	Nozzle 350 bar	Nozzle 700 bar
250 bar	X		
350 bar	X	X	
700 bar	X	X	X

X = Connection is possible

Safety

The TK17 H_2 70 MPa offers optimum safety to the operator. The fuelling nozzle remains connected to the receptacle until the gas between inlet valve and receptacle is depressurized. Type TK17 H_2 70 MPa works best with the WEH-TN1 H_2 70 MPa receptacle.

A mounting for the TK17 H_2 70 MPa nozzle is available on request, please contact WEH directly.

For further information on the filling hoses refer to page 36 of catalogue No. 50.

TK17 H_2 70 MPa + mounting

Type TK17 H_2 70 MPa with data interface

Technical Data:

Application:
H_2 fast filling of cars at self-serve fuelling stations.
Fuelling nozzle type TK17 H_2 70 MPa designed to be used with receptacle WEH-TN1 H_2 70 MPa.

Temperature range:
-40°C up to +85°C

Pressure ranges:
PN = 700 bar
PS = 875 bar
PT = 1255 bar

Registration:
PED97/23/EC: CE 0036
SAE J2600
SAE TIR J2799
SAE J2601

Design:
All parts corrosion-resistant, with plastic thermal protection, without vent pipe and dispenser mounting with hose venting.
Seals hydrogen compatible.

Dimensions (mm):

Type TK17 H_2 70 MPa with data interface

Ordering:

Inlet port 'B' available with other thread sizes on request.

Description	Inlet B	Part No.
TK17 H_2 70 MPa with data interface (Registration acc. to SAE TIR J2799 interface and SAE J2600)	UNF 9/16"-18* external thread	C1-84107
TK17 H_2 70 MPa with data interface (Registration acc. to SAE 2600 Draft WEH)	UNF 9/16"-18* external thread	C1-73570
Mounting (switch actuated)	————	C1-79830

* 60° inner cone (Please contact us!)

Fuelling Nozzle

Type TK16 H_2

Patented fuelling nozzle TK16 H_2 for fast filling of gaseous hydrogen at self-serve fuelling stations (DN 8 mm)

The new WEH TK16 H_2 is now available to make hydrogen refuelling of cars even easier. Weighing in at only 1750 g, the TK16 H_2 incor-porates a guide bush and a 360° swivel to aid engagement.

The new WEH TK16 H_2 is coded to accept either 250 bar or 350 bar coded receptacles.

Features:

- Super light → only 1750 grammes
- Compatible with the WEH-TN1 H_2 receptacle profile **(acc. to SAE J2600)**
- WEH-EASY-TURN® swivel joint 360° for operating handle
- Extremely high flow rate → short filling times
- Plastic thermal protection
- WEH-Jaw locking mechanism
- High-grade materials
- Integrated shut-off valve
- Compact design

Pressure range / coding

Pressure range / coding		Nozzle 250 bar	Nozzle 350 bar
Receptacle	250 bar	X	
Receptacle	350 bar	X	X

X = Connection is possible

TK16 H_2 + mounting

Safety

TK16 H_2 offers high safety standards for the operator. The nozzle remains connected to the receptacle until the gas between inlet valve and receptacle is depressurized.

To achieve optimum performance it is recommended that the TK16 H_2 fuelling nozzle be used with the WEH-TN1 receptacle.

For further information on the filling hoses (filling and venting hoses) refer to page 36 of catalogue No. 50.

Type TK16 H_2

Technical Data:

Application:
H_2 fast filling of cars at self-serve fuelling stations.
Fuelling nozzle TK16 H_2 designed to be used with WEH-TN1 H_2 receptacle.

Temperature range:
-40°C up to +85°C

Pressure ranges:
According to the coding

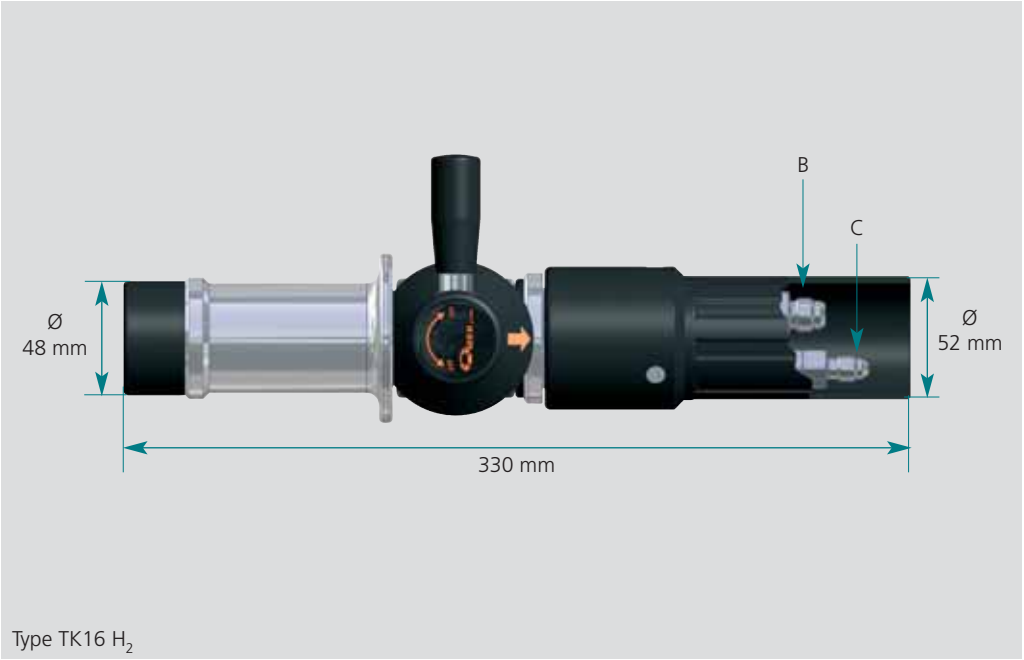
Pressure range 250 bar:
PN = 250
PS = 350
PT = 525

Pressure range 350 bar:
PN = 350 bar
PS = 450 bar
PT = 675 bar

Design:
All parts corrosion-resistant, with plastic thermal protection, vent pipe and dispenser mounting. Seals hydrogen compatible.

Registration:
PED97/23EC: CE 0036
SAE J2600

Dimensions (mm):



Type TK16 H_2

Ordering:

Inlet port 'B' available with other thread sizes on request.

Description	Inlet B	Gas recirculation C	Part No.
TK16 H_2 - 250 bar	UNF 9/16"-18*	UNF 7/16"-20*	C1-45695
TK16 H_2 - 350 bar	UNF 9/16"-18*	UNF 7/16"-20*	C1-45696
Mounting (switch actuated)	———	———	C1-55209
Mounting (switch actuated) with weather protection	———	———	C1-82152
Mounting (not switch actuated)	———	———	C1-55212

* acc. to SAE J514, 37°

Receptacle

Type TN1 H_2

Receptacle with coding for hydrogen (DN 8 mm)

Type TN1 is available for two different pressure ranges (250 bar and 350 bar) to be differentiated by the coding. Due to the sleek, internal aerodynamic design of the TN1 receptacle, chatter caused during the filling process is greatly reduced and maximum flow rate achieved. The WEH TN1 has an integrated check valve system designed to minimize the effect that dirt particles have on sealing components within the receptacle. Therefore, the TN1 receptacle is a very durable unit, minimising maintenance and downtime.

There is no high frequency chatter during refuelling with the TN1 receptacle when used with WEH nozzles!

Features:

- One-piece construction without additional sealing surface
- Integrated non-contact high-flow check valve
- Sealing-friendly design
- Reduces chatter during refuelling
- Two different pressure ranges 250 bar or 350 bar
- Receptacle coding will not allow connection to natural gas refuelling stations or other alternative fuel station
- For testing purposes operating pressure up to max. 450 bar
- TÜV-Approval for hydrogen
- Optional, integrated particle filter (50 micron)

Type TN1 for 250 bar

Type TN1 for 350 bar

Pressure range / coding

Pressure range / coding	Nozzle 250 bar	Nozzle 350 bar
Receptacle 250 bar	X	
Receptacle 350 bar	X	X

X = Connection is possible

Option:

Integrated particle filter

Technical Data:

Application:
Receptacle for refuelling cars with gaseous hydrogen.

Temperature range:
-40°C up to +85°C

Function tested:
100,000 cycles

Pressure ranges:
According to the coding

Pressure range 250 bar:
PN = 250
PS = 350
PT = 525

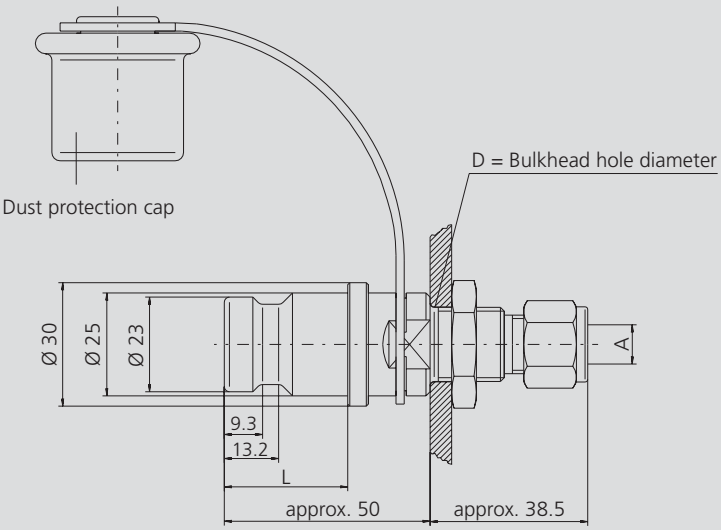
Pressure range 350 bar:
PN = 350 bar
PS = 450 bar
PT = 675 bar

Design:
All parts corrosion-resistant steel with dust protection cap. Seals hydrogen compatible.

Registration:
PED 97/23/EC: CE 0036

Dimensions (mm):

Dust protection cap



Type TN1 H_2

Ordering:

Other inlet threads and versions on request.

Description	Pressure range	Inlet A* (mm)	L (mm)	D (mm)	Part No.
TN1	250 bar	Tube Ø 3/8"	25	17	C1-18480
TN1	350 bar	Tube Ø 3/8"	30	18	C1-18481
TN1	350 bar	Tube Ø 10	30	17	C1-32456
TN1 incl. particle filter	250 bar	Tube Ø 3/8"	25	18	C1-31315
TN1 incl. particle filter	350 bar	Tube Ø 3/8"	30	18	C1-31316
TN1 incl. particle filter	350 bar	Tube Ø 10	30	18	C1-35426

* Twin ferrule fitting unless other wise specified!

Type TN1 H_2 70 MPa

Receptacle with coding for hydrogen (DN 4 mm)

A receptacle for the pressure range of 700 bar is now available for refuelling of cars with hydrogen. Due to the sleek, internal aerodynamic design of the TN1 receptacle, chatter caused during the filling process is greatly reduced and maximum flow rate achieved.

The WEH TN1 H_2 70 MPa has an integrated check valve system designed to minimize the effect that dirt particles have on sealing components within the receptacle. Therefore, the TN1 H_2 70 MPa receptacle is a very durable unit, minimizing maintenance and downtime.

There is no high frequency chatter during refuelling with the TN1 receptacle when used with WEH nozzles!

Features:

- Integrated non-contact high-flow check valve
- Sealing-friendly design
- Reduces chatter during refuelling
- Receptacle coding will not allow connection to natural gas refuelling stations or other alternative fuel station
- Approvals for draft SAE J2600 Draft WEH+ SAE TIR J2799 interface
- Integrated particle filter (20 Micron)

Pressure range / coding

Pressure range / coding: Receptacle	Nozzle 250 bar	Nozzle 350 bar	Nozzle 700 bar
Receptacle 250 bar	X		
Receptacle 350 bar	X	X	
Receptacle 700 bar	X	X	X

X = Connection is possible

WEH TN1 H_2 70 MPa receptacle works best with the WEH fuelling nozzle TK17 H_2 70 MPa.

With WEH one step ahead

Using an integrated particle filter avoids dirt ingress and therefore leakage at the receptacle which gives enhanced safety and reliability - essential features for hydrogen products.

Type TN1 H_2 70 MPa

Technical Data:

Application:
Receptacle for refuelling cars with hydrogen.

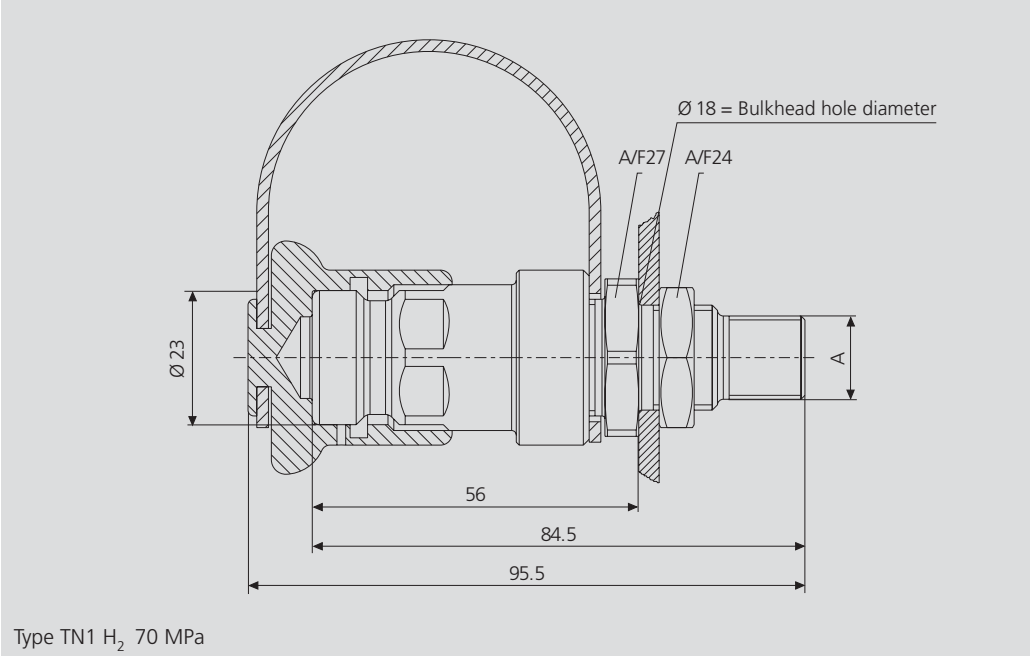
Temperature range:
-40°C up to +85°C

Pressure range:
PN = 700 bar
PS = 875 bar
PT = 1255 bar

Registration:
PED 97/23/EC: CE 0036
corresponds to EIHP
(version 12b)
SAE J2600
SAE TIR J2799

Design:
All parts corrosion-resistant steel, with filter, integrated check valve and dust protection cap. Seals hydrogen compatible.

Dimensions (mm):



Type TN1 H_2 70 MPa

Dust protection cap

Ordering:

Other inlet threads and versions on request.
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Description	Inlet A	Part No.
TN1 H_2 70 MPa	O-lok Face Seal* for 6 mm (1/4") tube	C1-75560
TN1 H_2 70 MPa	O-lok Face Seal* for 6 mm (1/4") tube	C1-75622
TN1 H_2 70 MPa	O-lok Face Seal* for 10 mm (3/8") tube	C1-75092
TN1 H_2 70 MPa**	O-lok Face Seal* for 6 mm (1/4") tube	C1-84087
TN1 H_2 70 MPa** prepared for IR-Part	O-lok Face Seal* for 6 mm (1/4") tube	C1-84883

* Face Seal acc. to SAE J1453
** acc. to SAE TIR J2799

Check Valve

Type TVR1 H_2

Check valve (DN 8 mm)

With this product WEH offers an advanced, high performance check valve for use with gaseous hydrogen. The check valve system is designed to minimize the effect that dirt particles have on the sealing components within the unit.

The WEH-TVR1 Check Valve is designed of high-grade corrosion-resistant steel achieving a very durable unit (see TN1 receptacle).

Check Valve

Type TVR1 H_2

Technical Data:

Application:
Check valve for cars.

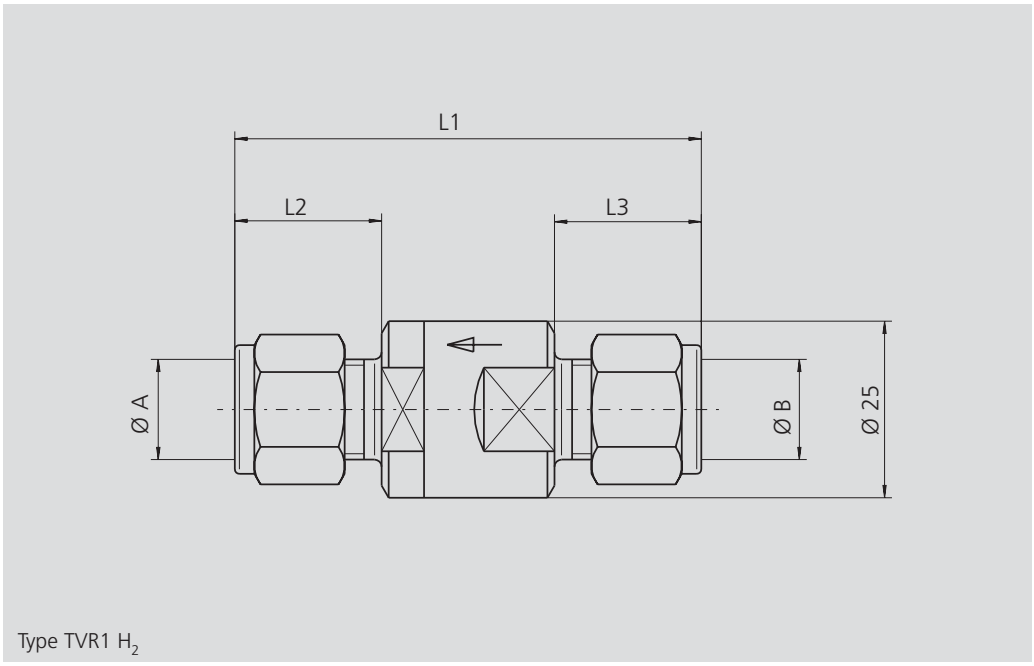
Temperature range:
-40°C up to +85°C

Registration:
PED 97/23/EC: CE 0036

Pressure ranges:
350 bar, settled pressure at an uniform gas temperature of 15 °C.
PN = 350 bar
PS = 450 bar
PT = 675 bar

Design:
Corrosion-resistant steel, brass; When enquiring for the WEH-TVR1 check valve please specify size and type of your connection. Seals hydrogen compatible.

Dimensions (mm):



Type TVR1 H_2

Ordering:

Description	Inlet B* (mm)	Outlet A* (mm)	L1 (mm)	L2 (mm)	◊ L3 (mm)	Part No.
TVR1	Tube 3/8"	Tube 3/8"	approx. 66	20.8	20.8	C1-18485
TVR1	Tube Ø 6	Tube Ø 6	approx. 63	17.5	17.5	C1-33824
TVR1	Tube Ø 8	Tube Ø 8	approx. 63	17.5	17.5	Please request!
TVR1	Tube Ø 10	Tube Ø 10	approx. 66	20.6	20.6	Please request!
TVR1	9/16"-18 internal thread SAE O-Ring Boss	9/16"-18 external thread SAE O-Ring Boss	Please request!			C1-34575

* Twin ferrule fitting unless other wise specified!

Check Valve

Type TVR1 H_2 70 MPa

High-Performance Check Valve for hydrogen for use with cars (DN 4 mm)

With this product WEH offers a high performance check valve for use with hydrogen cars of the latest generation. The check valve system is designed to minimize the effect that dirt particles have on the sealing components within the unit.

The WEH-TVR1 H_2 70 MPa Check Valve is designed of high-grade corrosion-resistant steel achieving a very durable unit (see TN1 H_2 70 MPa receptacle).

Check Valve

Type TVR1 H_2 70 MPa

Technical Data:

Application:
H_2-check valve for cars.

Pressure range:
PN = 700 bar
PS = 875 bar
PT = 1255 bar

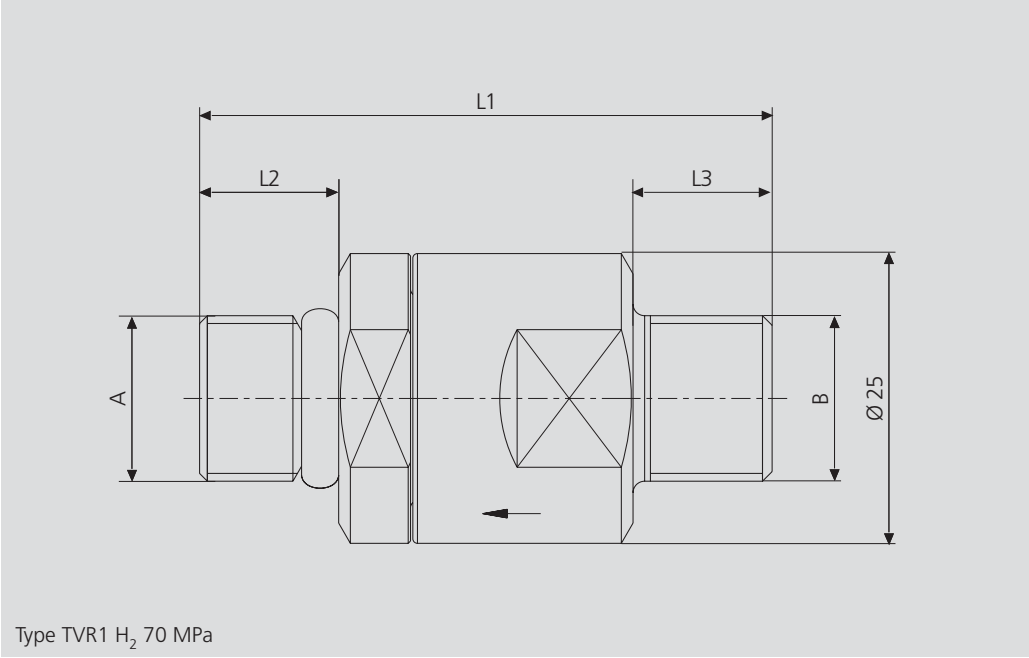
Temperature range:
-40°C bis +85°C

Registration:
PED 97/23/EU: CE 0036
corresponds to EIHP
(version 12b)

Design:
All parts corrosion-resistant steel. Seals hydrogen compatible.

When enquiring for this check valve please specify the requested connection.

Dimensions (mm):



Type TVR1 H_2 70 MPa

Ordering:

Description	Inlet B (mm)	Outlet A (mm)	L1 (mm)	L2 (mm)	L3 (mm)	Part No.
TVR1 H_2 70 MPa	O-lok Face Seal** for tube Ø 6 mm (1/4")	UNF 9/16"-18* external thread	49.4	12.0	12.0	C1-75561
TVR1 H_2 70 MPa	UNF 9/16"-18* external thread	O-lok Face Seal** for tube Ø 6 mm (1/4")	51.4	12.0	12.0	C1-76958
TVR1 H_2 70 MPa	O-lok Face Seal** for tube Ø 10 mm (3/8")	O-lok Face Seal** für tube Ø 6 mm (1/4")	49.4	12.0	12.0	C1-76959

* acc. to SAE J1926
** O-lok acc. to SAE J1453

Service Receptacle

Type TN10 H_2

Service receptacle for discharging hydrogen tanks

Vehicles running on hydrogen have to be serviced and checked regularly. To achieve this, it is necessary to discharge all pressure vessels. The new service receptacle has been designed for this specific purpose. It is mounted on the underside of the vehicle and provides simple discharging of the fuel vessel. The TW110 service nozzle needs only to be placed onto the service receptacle and discharging can commence. After discharging, disconnect the service nozzle and refit the dust protection cap in order to protect the service receptacle from dirt and damage whilst not in use.

Features:

- Integrated shut-off valve
- Sealing-friendly design
- Reduces chatter during discharging
- Dust protection cap

TW110

We recommend that the WEH-TN10 H_2 service receptacle is used with the TW110 service nozzle. This is specially designed to work with the service receptacle. Please contact us for further information!

Service Receptacle

Type TN10 H_2

Technical Data:

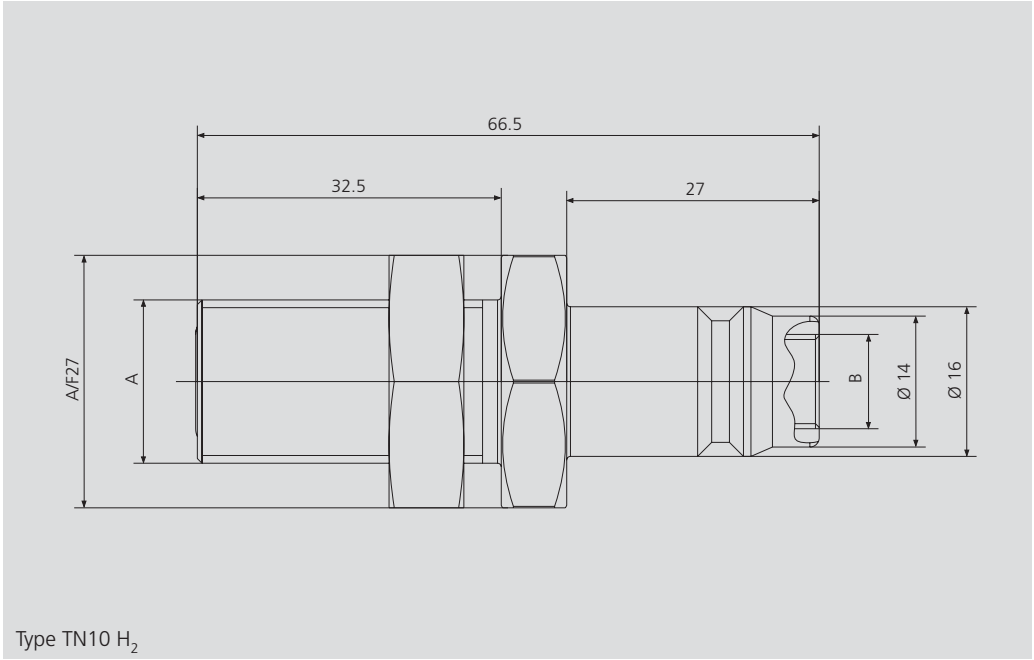
Application:
Service receptacle for discharging hydrogen tanks.

Temperature range:
-40 °C up to +85 °C

Pressure range:
PN = 16 bar
PS = 20 bar
PT = 30 bar

Design:
All parts corrosion-resistant steel, with integrated shut-off valve and dust protection cap. Seals hydrogen compatible.

Dimensions (mm):



Type TN10 H_2

Dust protection cap

Ordering:

Other inlet threads and versions on request.

Description	Inlet A	B	Part No.
TN10 H_2	UNF 11/16"-16 external thread for sealing with Face Seal* for 10 mm tube	M10x1	C1-77677

* Face Seal acc. to SAE J1453

Fuelling Nozzle

Type TK25 H_2

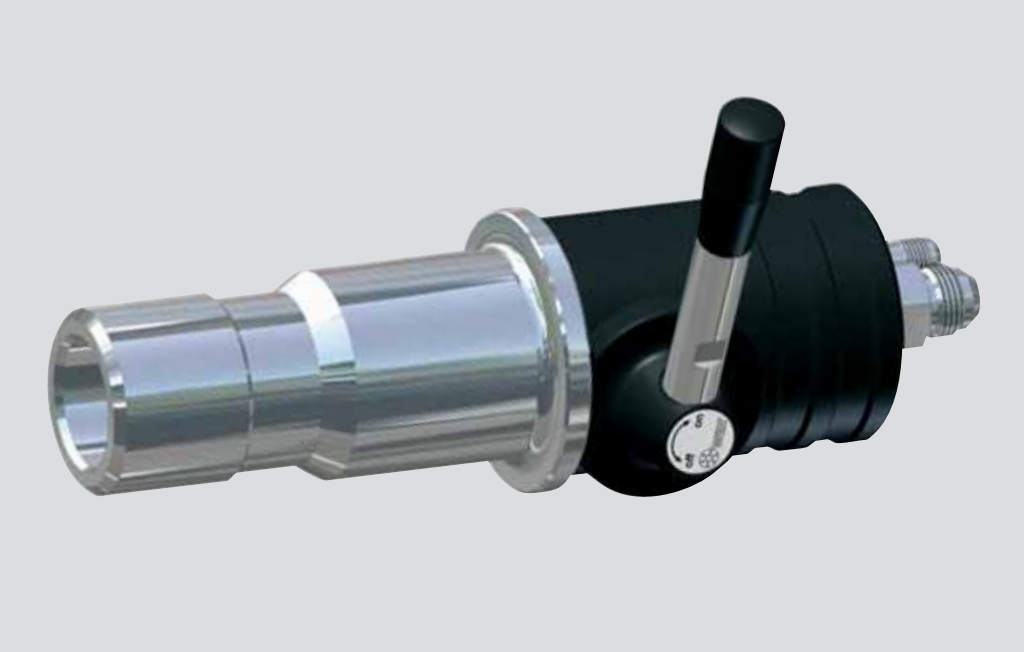
Patented fuelling nozzle for refuelling of gaseous hydrogen to be connected and disconnected under pressure (DN 12 mm)

Type TK25 meets all requirements placed on a fuelling nozzle for bus and truck refuelling. Thus making hydrogen refuelling as easy as diesel / gasoline refuelling.

Connecting procedure:
Place the nozzle onto the receptacle with a 180° turn of the handle, the filling procedure can start.

Features:

- Fuelling nozzle for fast filling at self-serve fuel ling stations
- Extremely high flow rate → short filling times
- Recirculation of vented gas
- Safety features when not connected
- WEH-Jaw locking mechanism
- High-grade materials
- Two different pressure ranges 250 bar or 350 bar
- Jaw coding will not allow connection to natural gas vehicles
- For testing purposes operating pressure up to max. 450 bar
- TÜV-Approval for hydrogen
- Electrical conductivity



Safety
TK25 offers state of the art safety features for the operator even in the case of a malfunction of the receptacle (e.g. leakage).

The TK25 remains connected to the receptacle until the void between inlet valve and receptacle is depressurized.

To achieve optimum performance it is recommended that the TK25 Fuelling nozzle is used with the WEH-TN5 receptacle.

For further information on the filling hoses (high-pressure and venting hoses) refer to page 36 of catalogue No. 50.

Pressure range / coding

Pressure range / coding		Nozzle 250 bar	Nozzle 350 bar
Receptacle	250 bar	X	
Receptacle	350 bar	X	X

X = Connection is possible

Fuelling Nozzle

Type TK25 H_2

Technical Data:

Application:
Fast filling of buses and trucks with gaseous hydrogen at self-serve fuelling stations.

Temperature range:
-40°C up to +85°C

Flow rate:
Cv 2.2

Function tested:
100,000 cycles

Pressure ranges:
According to the coding

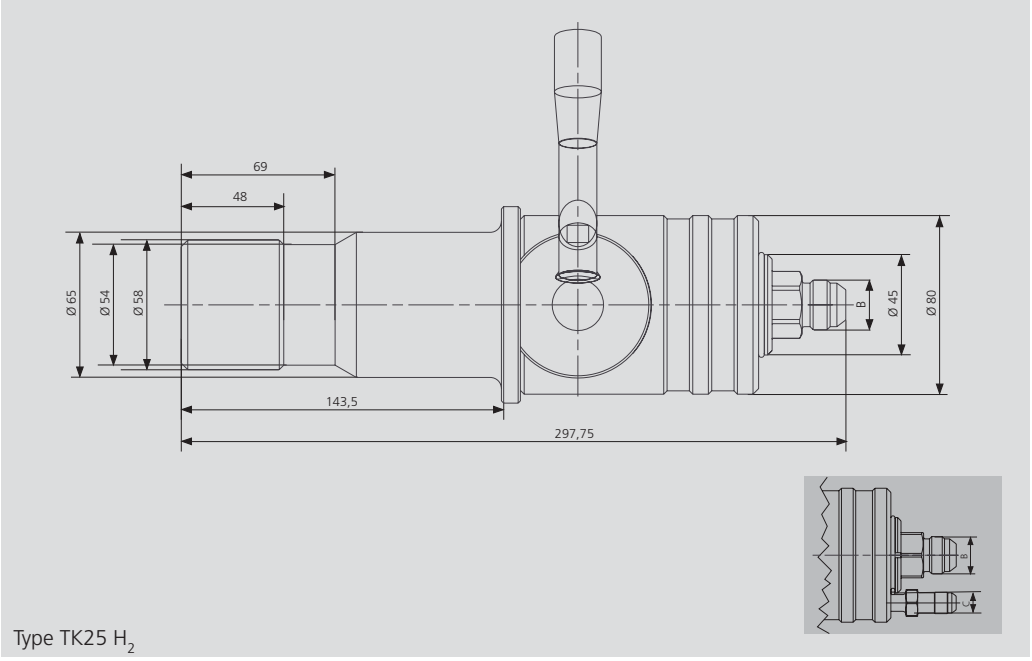
Pressure range 250 bar:
PN = 250
PS = 350
PT = 500

Pressure range 350 bar:
PN = 350 bar
PS = 450 bar
PT = 645 bar

Design:
All parts corrosion-resistant steel with plastic thermal protection, vent pipe and dispenser mounting. Seals hydrogen compatible.

Registration:
PED 97/23/EC: CE 0036

Dimensions (mm):



Type TK25 H_2

Ordering:

Description	Inlet B*	Gas recirculation C* (mm)	Part No.
TK25 - 250 bar	UNF 7/8"-14 external thread	Tube UNF 9/16"-18 external thread	C1-62529
TK25 - 350 bar	UNF 7/8"-14 external thread	Tube UNF 9/16"-18 external thread	C1-62527
Mounting (switch actuated) with weather protection	———	———	C1-82153

* acc. to SAE J514 37°

Receptacle

Type TN5 H_2

Receptacle with coding for hydrogen (DN 12 mm)

The type TN5 receptacle is designed specifically for bus and truck refuelling. Due to the sleek, internal aerodynamic design the TN5 receptacle gives low noise (no high frequency whistle) combined with maximum flow rate and quick filling.

The TN5 receptacle is a very durable unit, minimizing maintenance and downtime. The WEH TN5 receptacle has an integrated check valve system designed to minimize the effect that dirt particles have on the sealing components within the receptacle.

There is no high frequency chatter during refuelling with TN5 receptacle!

Features:

- Integrated non-contact high-flow check valve
- Sealing-friendly design
- Reduces chatter during filling
- Two different pressure ranges 250 bar or 350 bar
- Receptacle coding will not allow connection to natural gas refuelling stations
- For testing purposes operating pressure up to max. 450 bar
- TÜV-Approval for hydrogen
- Optional, integrated particle filter (50 micron)

Type TN5 with 250 bar coding

Pressure range / coding

Pressure range / coding	Nozzle 250 bar	Nozzle 350 bar
Receptacle 250 bar	X	
Receptacle 350 bar	X	X

X = Connection is possible

Technical Data:

Application:
Receptacle for filling of buses and trucks with gaseous hydrogen.

Temperature range:
-40°C up to +85°C

Function tested:
100,000 cycles

Pressure ranges:
According to the coding

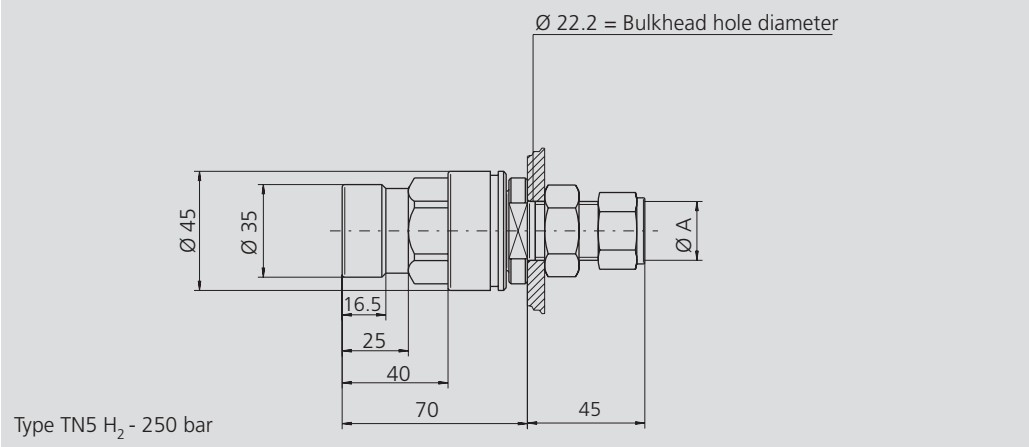
Pressure range 250 bar:
PN = 250
PS = 350
PT = 525

Pressure range 350 bar:
PN = 350 bar
PS = 450 bar
PT = 675 bar

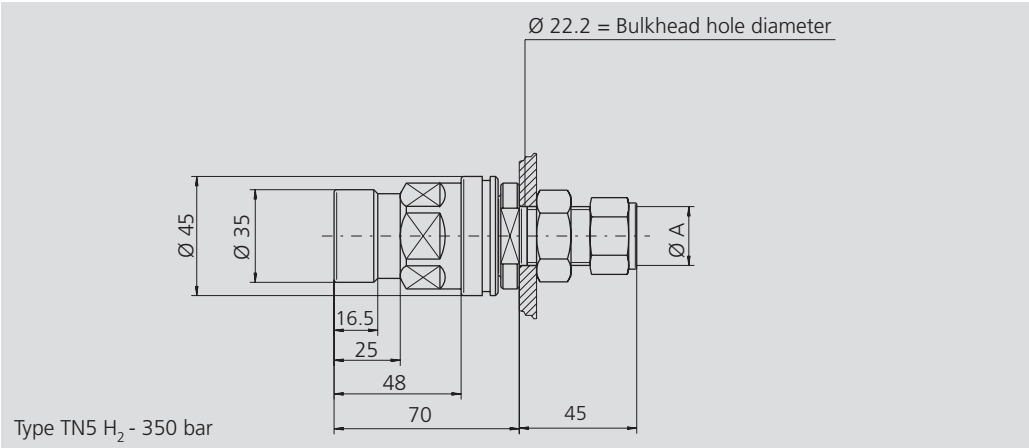
Design:
All parts corrosion-resistant steel, with dust protection cap. Seals hydrogen compatible.

Registration:
PED 97/23/EC: CE 0036

Dimensions (mm):



Type TN5 H_2 - 250 bar



Type TN5 H_2 - 350 bar

Ordering:

Description	Pressure range	Inlet A* (mm)	Part No.
TN5 incl. particle filter	250 bar	Tube Ø 16	C1-19135
TN5 incl. particle filter	350 bar	Tube Ø 16	C1-19136

* Twin ferrule fitting unless other wise specified!

Check Valve

Type TVR5 H_2

Check valve (DN 12 mm)

WEH TVR5 is the largest of our check valves. It is most efficient and developed specifically for hydrogen buses and trucks. The check valve system is designed to minimize the effect that dirt particles have on the sealing components within the unit. The WEH TVR5 check valve is constructed of high-grade corrosion-resistant steel.

Check Valve

Type TVR5 H_2

Technical Data:

Application:
Check valve for buses and trucks.

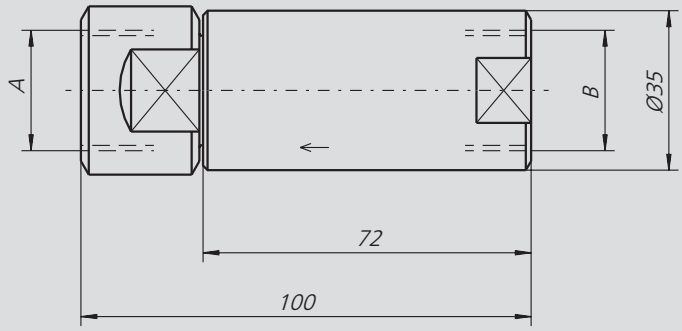
Pressure ranges:
350 bar, settled pressure at an uniform gas temperature of 15 °C.
PN = 350 bar
PS = 450 bar
PT = 675 bar

Temperature range:
-40°C up to +85°C

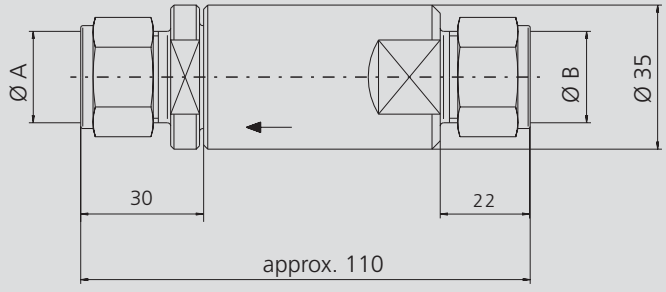
Design:
All parts corrosion-resistant steel. When enquiring for the WEH-TVR5 check valve please specify size and type of your connection. Seals hydrogen compatible.

Registration:
PED 97/23/EC: CE 0036

Dimensions (mm):



Type TVR5 H_2 with G3/4"



Type TVR5 H_2 with tube fitting

Ordering:

Description	Inlet A / B* (mm)	Part No.
TVR5	Tube Ø 12	C1-30216
TVR5	Tube Ø 16	C1-30215
TVR5	G3/4"** internal thread	C1-43326

* Twin ferrule fitting unless other wise specified! ** DIN 3852-2

Type TK6 H_2 and TK21 H_2

Service nozzles for cars and buses

Buses and cars running on hydrogen have to be serviced and checked regularly, e.g. all pressure vessels have to be discharged. WEH's service nozzles type TK6 and TK21 have been designed for this specific purpose. The service nozzle has only to be placed onto the receptacle and all vessels can be discharged via the receptacle.

No additional locking device or ball valve is required when the TK21 service nozzle is used.

Features:

- Discharge via filling receptacle (max. 80 bar)
- No additional locking device required
- Plastic thermal protection
- To fit **only** WEH-TN1 H_2 receptacle (TK6) or WEH-TN5 H_2 receptacle (TK21) (without filter)

Type TK6 H_2 to fit TN1 receptacle

Technical Data:

Pressure ranges:
PN = 50 bar
PS = 80 bar
PT = 120 bar

Temperature range:
-40°C up to +85°C

Design:
All parts corrosion-resistant steel. Seals hydrogen compatible.

Registration:
PED 97/23/EC: CE 0036

Ordering:

Description	Inlet B	Part No.
TK6 (car)	UNF 9/16"-18	C1-18488
TK21 (bus)		Please request!

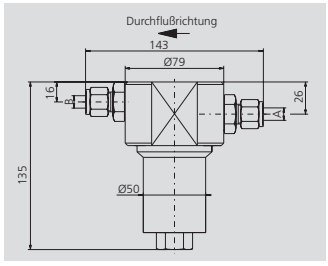
Filter

Type TSF2 H_2 and TSF4 H_2

Filter for the fuelling station and for vehicles

Dirt particles in the hydrogen fuel may cause damage to the sealing components whilst refuelling. The WEH-Filters are designed to capture dirt and gas-borne debris thereby reducing the danger of errosion.

Type **TSF4-SPECIAL** has been designed for use in hydrogen buses. The filter can be removed for cleaning purposes without disconnecting the media lines.



Type TSF4-SPECIAL


Type TSF4 H_2

Technical Data:

Pressure ranges:
350 bar, settled pressure at an uniform gas temperature of 15 °C.
PN = 350 bar
PS = 450 bar
PT = 675 bar

Temperature range:
-40°C up to +85°C

Design:
All parts corrosion-resistant steel; brass. Seals hydrogen compatible.

Registration:
PED 97/23/EC: CE 0036

Ordering:

Description	Inlet A* / B* (mm)	Part No.
TSF2	Tube Ø 3/8	C1-18487
TSF4	Tube Ø 12	C1-30214
TSF4	Tube Ø 16	C1-30213
TSF4-SPECIAL	Tube Ø 16	C1-47886

* Twin ferrule fitting unless other wise specified!

Breakaway Couplings

Type TSA1 H_2 and TSA5 H_2

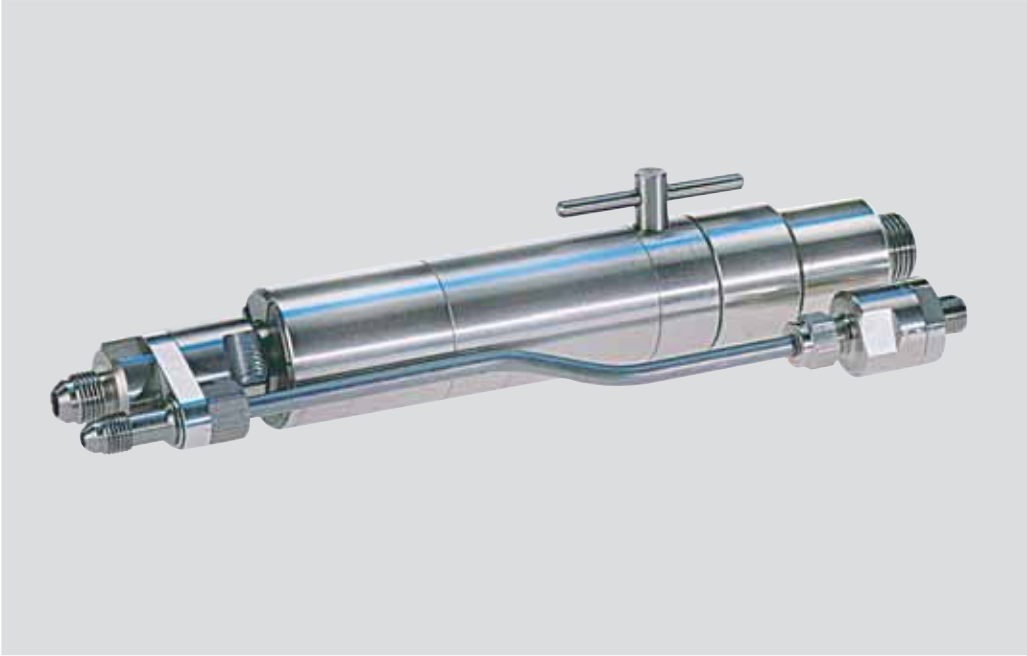
Breakaway coupling for car and bus hydrogen fuelling stations

The breakaway couplings type **TSA1** (car) and **TSA5** (bus/truck) offer additional safety for your fuelling station.
The coupling consists of a breakaway coupling and a receptacle which are installed between the dispenser and the fuelling hose.

In the event of accidental deployment, e.g. driving a vehicle from the dispenser with the nozzle remaining in the vehicle fuel port, the coupling will separate and protect your dispensing equipment against damage. The detached coupling can be easily reattached and placed back in service after having been function tested. The integrated filter system provides clean hydrogen and is easy to maintain.

Features:

- Integrated renewable filter
- Re-usable after a breakaway without factory reservicing
- Installation at the dispenser
- Compact design
- Can be used for two different pressure ranges max. 250 bar or max. 350 bar
- For testing purposes operating pressure up to max. 450 bar



The breakaway device consists of a breakaway coupling, a receptacle and gas recirculation with check valve.

Type TSA1 H_2 and TSA5 H_2

Technical Data:

Application:
Breakaway coupling for car and bus hydrogen refuelling stations.

Temperature range:
-40°C up to +85°C

Nominal bore:
TSA1: 10 mm
TSA5: 12 mm

Pressure ranges:
Pressure range 250 bar:
PN = 250 bar
PS = 350 bar
PT = 525 bar

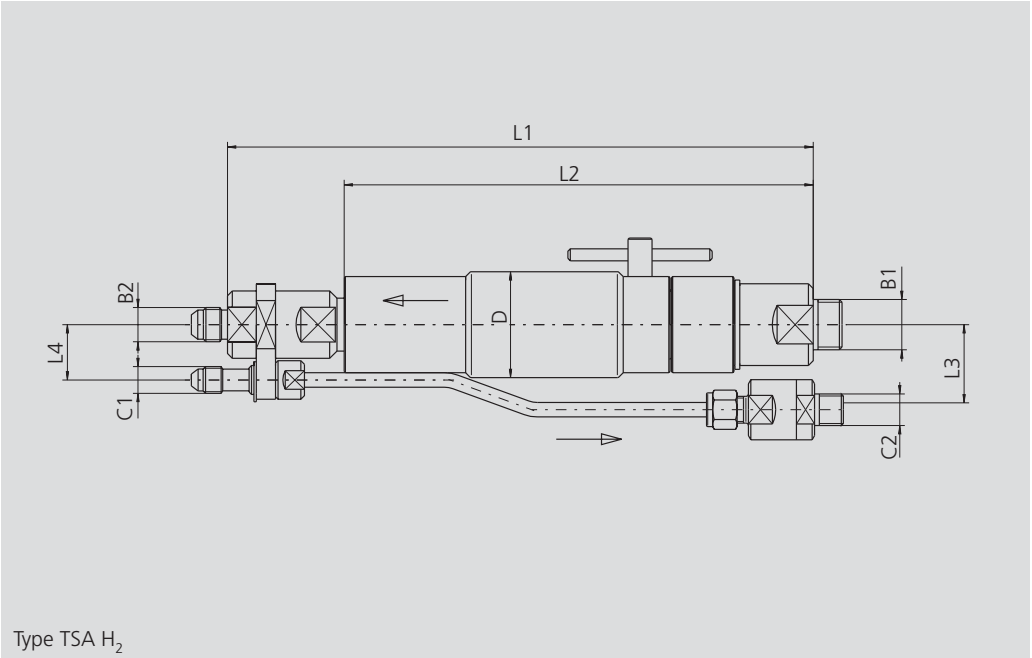
Pressure range 350 bar:
PN = 350 bar
PS = 450 bar
PT = 675 bar

Design:
All parts corrosion-resistant steel and aluminium. Seals hydrogen compatible.

Registration:
PED 97/23/EC: CE 0036

Breakaway force:
approx. 300-600 N

Dimensions (mm):



Type TSA H_2

Type	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	B1	B2	C1	C2	D Ø (mm)
TSA1	243.5	196	35	23	G1/2" external thread	UNF 9/16"-18* external thread	UNF 7/16"-20* external thread	G1/4" external thread	40
TSA5	262	220	40	29	G3/4" external thread	UNF 7/8"-14* external thread	UNF 9/16"-18* external thread	G1/4" external thread	50

* acc. to SAE J514, 37°

Ordering:

Description	Filter size	Part No.
TSA1 with particle filter	40 Micron	C1-18834
TSA1 with particle filter	20 Micron	C1-67741
TSA5 with particle filter	40 Micron	C1-17941

Breakaway Coupling

Type TSA1 H_2 70 MPa

Breakaway coupling for hydrogen refuelling at car fuelling stations (DN 4 mm)

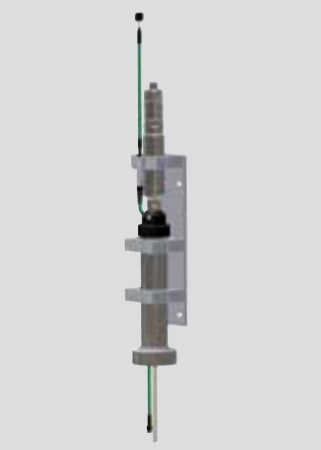
The breakaway coupling type TSA1 H_2 70 MPa offers additional safety for your fuelling station.
The coupling consists of a breakaway coupling and a receptacle which are installed between the dispenser and the fuelling hose. In the event of accidental deployment, e.g. driving a vehicle from the dispenser with the nozzle remaining in the vehicle fuel port, the coupling will separate, sealing both ends and protect your dispensing equipment against damage. The detached coupling can be easily reattached and placed back in service after having been function tested.

The integrated filter system provides clean hydrogen and is easy to maintain.

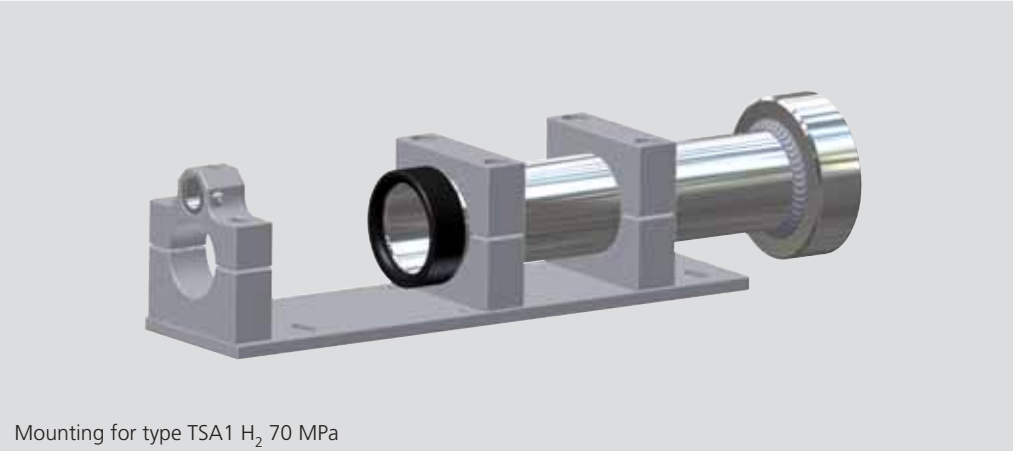
Features:

- Integrated renewable filter (40 Micron)
- Re-usable after a breakaway without factory reservicing
- Installation at the dispenser
- Compact design

Type TSA1 H_2 70 MPa



TSA1 H_2 70 MPa with mounting



Mounting for type TSA1 H_2 70 MPa

The breakaway device consists of a breakaway coupling and a receptacle.

Type TSA1 H_2 70 MPa

Technical Data:

Application:
Breakaway coupling for H_2-car fuelling stations.

Temperature range:
-40°C up to +85°C

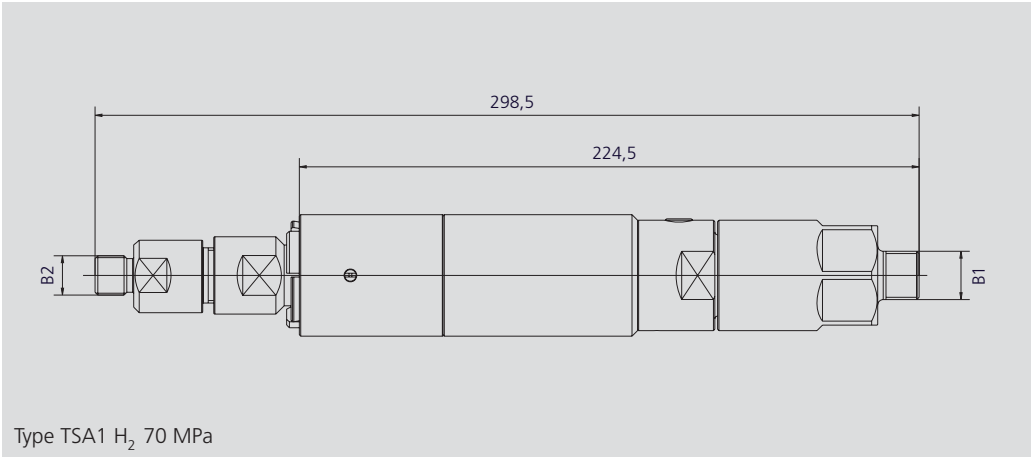
Registration:
PED 97/23/EC: CE 0036

Pressure range
PN = 700 bar
PS = 875 bar
PT = 1255 bar

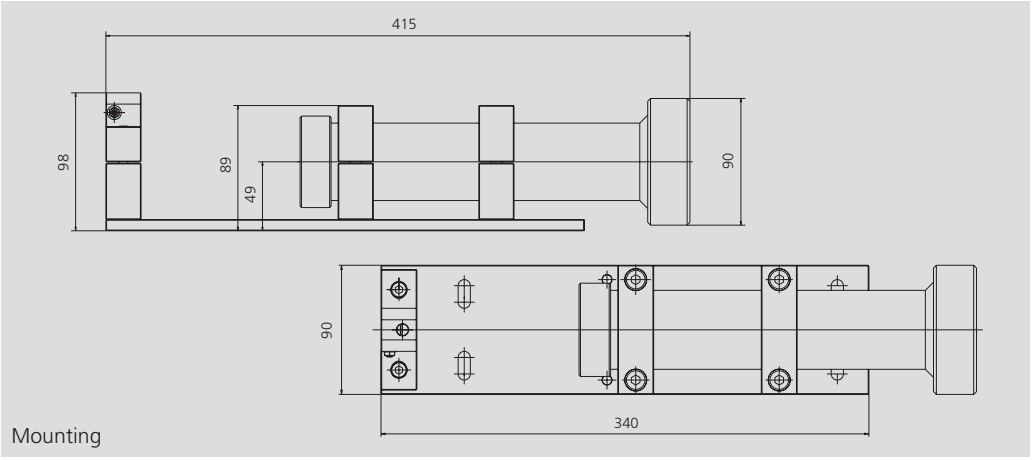
Design:
All parts corrosion-resistant steel and aluminium. Seals hydrogen compatible.

Breakaway force:
approx. 300-600 N

Dimensions (mm):



Type TSA1 H_2 70 MPa



Mounting

Ordering:

Description	Inlet B	Gas recirculation C	Part No.
TSA1 H_2 70 MPa without gas recirculation	O-lok Face Seal for tube Ø 10 mm (3/8") UN 11/16"-16 ** (B1) UNF 9/16"-18* external thread (B2)	————	C1-67980

* 60° inner cone
** O-lok acc. to SAE J1453

Inline Breakaway Coupling

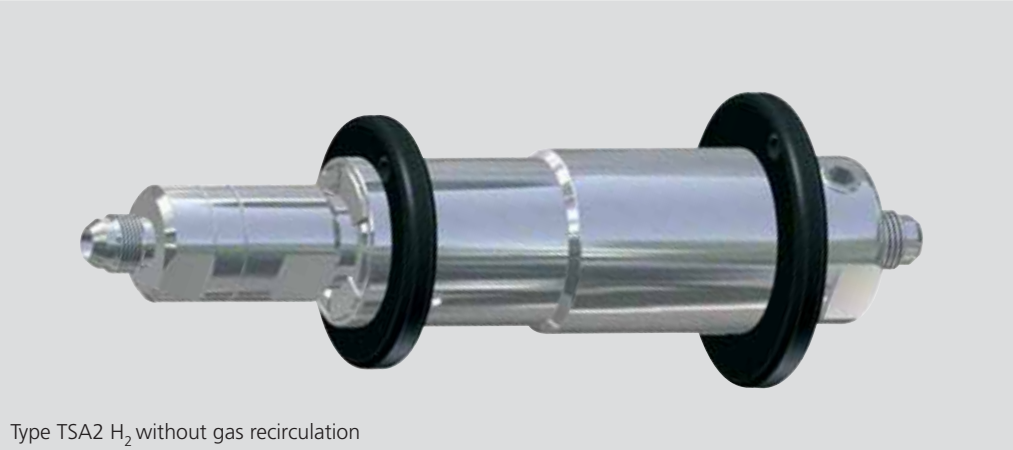
Type TSA2 H_2

Inline breakaway coupling for hydrogen car refuelling stations (DN 8 mm)

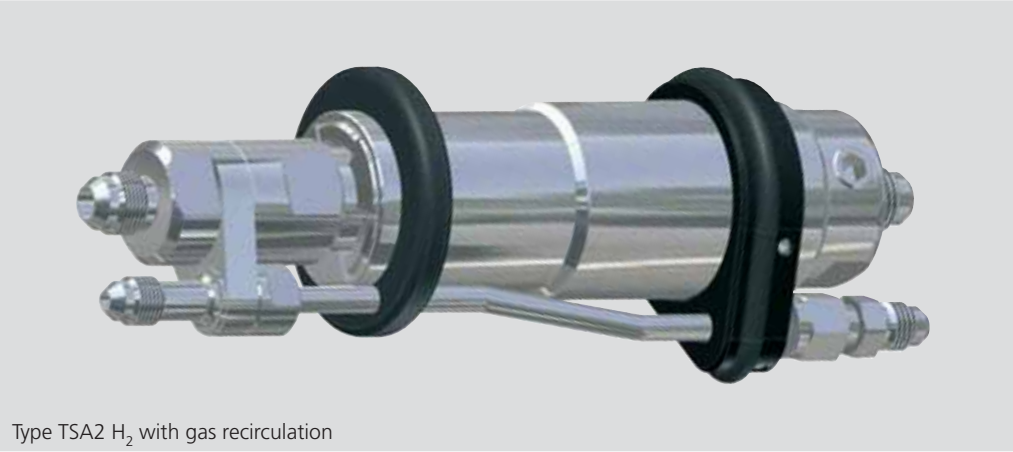
A new Inline breakaway coupling type TSA2 is now available, which is installed inbetween the filling hose. In the event of accidental deployment, e.g. driving a vehicle from the dispenser with the nozzle remaining in the vehicle fuel port, the coupling will separate, sealing both ends and protect your dispensing equipment against damage. The detached coupling can be easily reattached and placed back in service after having been function tested.

Features:

- Re-usable after a breakaway without factory reservicing
- Installation inbetween the filling hose
- Compact design



Type TSA2 H_2 without gas recirculation



Type TSA2 H_2 with gas recirculation

The breakaway device consists of a breakaway coupling, a receptacle and an optional gas recirculation.

Type TSA2 H_2

Technical Data:

Application:
Inline breakaway coupling for hydrogen car refuelling stations.

Temperature range:
-40°C up to +85°C

Breakaway force:
approx. 300-600 N

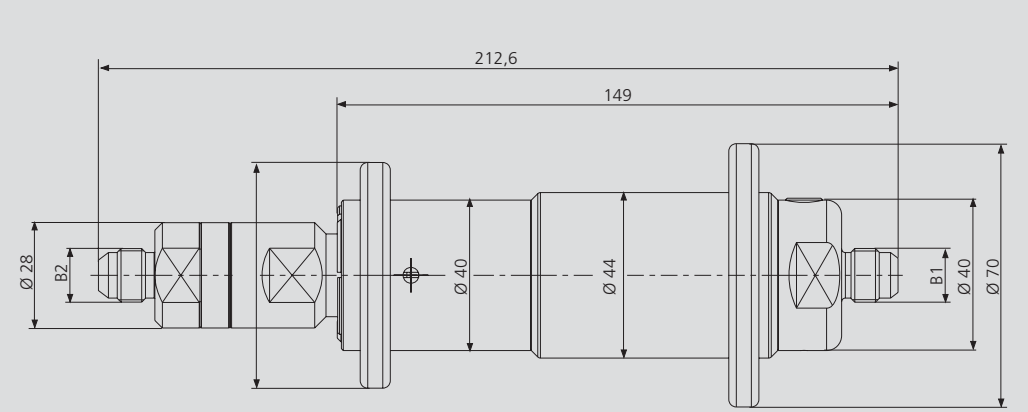
Pressure ranges
Pressure range 250 bar:
PN = 250 bar
PS = 350 bar
PT = 525 bar

Pressure range 350 bar:
PN = 350 bar
PS = 450 bar
PT = 675 bar

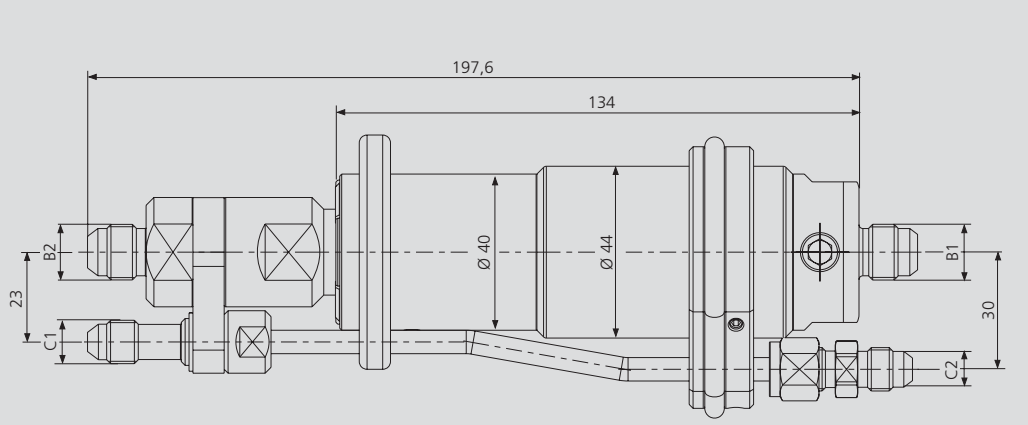
Design:
All parts corrosion-resistant steel and aluminium. Seals hydrogen compatible.

Registration:
PED 97/23/EC: CE 0036

Dimensions (mm):



Type TSA2 H_2 without gas recirculation



Type TSA2 H_2 with gas recirculation

Ordering:

Description	B1/B2	C1/C2	Part No.
TSA2 Inline with gas recirculation	UNF 9/16"-18* exernal thread	UNF 7/16"-20 exernal thread	C1-77240
TSA2 Inline without gas recirculation	UNF 9/16"-18* exernal thread	————	C1-77227

* acc. to SAE J514, 37°

H_2 charging hoses

Charging hoses for WEH-fuelling nozzles for Fast-Fill of cars, buses and trucks

WEH have high-pressure hoses with recirculation lines to suit WEH-fuelling nozzles type TK16, TK17 and TK25. The high-pressure hoses are available with the appropriate fittings.

The high-pressure and venting hoses can be delivered in different standard sizes. Special sizes and terminations are available on request.

Technical Data:

Pressure range:
max. 350 bar or
max. 450 bar

Temperature range:
-40°C up to +65°C

Design:
Hydrogen compatible

Standard sizes:
3m, 4 m, other length on request.

Ordering:

Hoses for	Filling hose	Venting hose
TK16	UNF 9/16"-18 internal thread (DN 6 mm)	UNF 7/16"-20 internal thread (DN 6 mm)
TK17	Designs and lengths on request	Designs and lengths on request
TK25	UNF 7/8"-14 internal thread (DN 12 mm)	UNF 9/16"-18 internal thread (DN 6 mm)

Other products of WEH Gas Technology

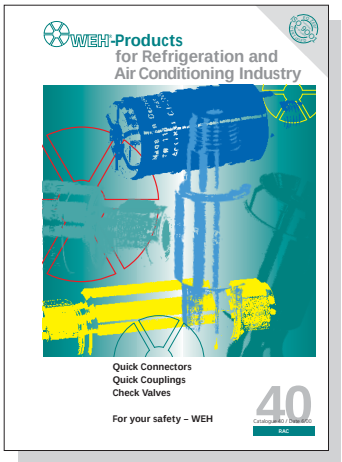
Catalogue 15:
Complete refuelling system for NGVs

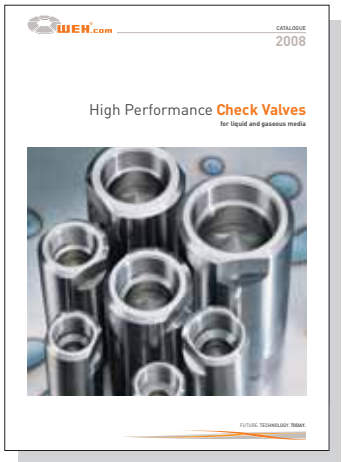
Products of WEH Precision Connectors

Catalogue 35:
Quick connectors for leak-testing on components with threads, tubes, etc.

Catalogue 20:
Quick connectors for the gas industry, Check valves, swivel joints, etc.

Catalogue 40
Quick Connectors and Couplings for refrigerating and air conditioning industry





Catalogue 45:
Complete line of check valves from 3 mm to 50 mm nominal bore

On request WEH will also develop **special connectors** for your specific needs. Describe your application and we will try to solve it. Ask us!

Technical Information

Pressure definition:

Abbreviation	Pressure type	Description/Explanation
PN	Nominal pressure	This is a standardised term
PS	Operating pressure	The max. pressure to which the component is subjected (1.25 x PN)
PT	Test pressure	The pressure to which the component is tested by the manufacturer ('once only' test, 1.43 – 1.5 x PS)
P1, P2, P3	Pilot pressure	For pneumatically actuated connectors. P1 – P3 is normally air pressure.

Admissible operating pressure:

The admissible operating pressure has been determined as follows: 100,000 x cycles impacting the component with 125 % of PN.
The pressure wave is sinusoidal.

Pressure/Temperature:

For higher temperatures the max. operating pressure needs to be reduced dependant on the application.
Possible values therefore are: 50 °C – 5 %, 100 °C – 10 %, 150 °C – 20 %.

Brochure data:

Maximum care has been taken compiling this catalogue based on many years of experience.
However we must point out, that all catalogue data is only valid, if it was expressly confirmed in the individual order. We cannot guarantee the veracity of the data and the introductions in individual cases due to the large variety of applications for WEH products, and the unknown parameters and conditions of use. We have to refer to the individual order.
The limits of use for pressure, temperature etc. in this catalogue are theoretical data calculated on the basis of tests. Because of different operating conditions we cannot guarantee that the data do accord with the special use of the client. It has to be considered, that in the practical use interactive interferences of data parameters can cause the change of the maximum values. Especially if the operating conditions are extreme, the WEH Company must be consulted before the use of the products.
Therefore the requested values should be stated in the individual order, especially for extreme operating conditions.
Furthermore we point out, that we cannot guarantee for misprints, uncompleted data or misinterpretation. The illustration of the products is for demonstration only.
The exact form and design of the product is only defined by the individual order. The brochure is only an integral part of the contract, if it is agreed expressly. Dimensions and other technical data in this catalogue are without obligation.

Fax reply

Hydrogen

Please make a copy of this form and fax it to:

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http://www.weh.com

Originator		Position	
Company		Department	
Address		Phone	
Postcode/City		Fax	
Country		E-Mail	

We are manufacturers of: _____

Yes, I want to have more details:

- ❑ Catalogue 15 (Refuelling system for NGVs)
- ❑ Offer (Please describe your application)
- ❑ Please contact us
- ❑ Visit

I want to have more details about the products of WEH Precision Connectors:

- ❑ Catalogue 35 (Main Catalogue)
- ❑ Catalogue 40 (Refrigerating and Air Conditioning)
- ❑ Catalogue 20 (Connectors for the Gas Industry)
- ❑ Catalogue 45 (High-Performance Check Valves TVR2)
- ❑ Contact us

Remarks _____