MATERIALS TESTING EQUIPMENT 2020 CATALOG

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GILSON COMPANY, INC.

NEW PRODUCTS!

Gilson Silent Testing Screen
with 7 Tray Slots, p.41

Los Angeles
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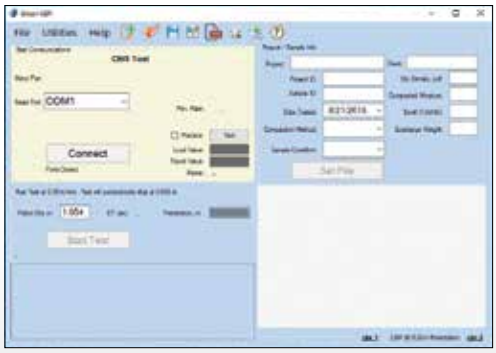

Geotechnical Data Acquisition Software, p.196, 199, 215, 217, 218, 224

For more **New Products** look for the NEW symbol!

About Gilson

In 1939 Gilson introduced the first industrial testing screen, but we didn't stop there. We remained committed to providing the materials testing industry with rugged and efficient products that deliver accurate and reliable test results. And today, after 80-plus years of responding to the needs of the construction professional and a commitment to industry involvement, Gilson has established itself as a worldwide authority and trusted source for materials testing equipment.

Proud to be in our 3rd generation of family ownership, we remain steadfast in providing innovative products of uncompromising quality with an emphasis on exceptional technical support and customer service.

Facilities – Growth for The Future

In 2019 Gilson completed a new 15,900 square foot expansion, significantly growing our design engineering and manufacturing capabilities and allowing us to be more responsive to your growing needs. With quicker prototyping, more efficient manufacturing and streamlined delivery, you get the industry's newest and most innovative products exactly when you need them – now. Combined with our existing facilities, experienced technical support staff and our already comprehensive product offerings, Gilson is poised to be the source for materials testing equipment well into the future.

Customer Service – The Gilson Difference

Gilson customer service specialists are not just another voice from a call center, they are an experienced staff with an understanding of your needs and the expertise to help you to choose the best product. Whether you require technical support, education, calibration or repair, our people are trained to be your partner. More importantly, we understand the value of industry involvement and we actively participate in creating and reviewing AASHTO and ASTM standards. There is no better way to understand an industry than to help it move forward.

www.globalgilson.com – Always Here for You

And today, our all-inclusive website has solidified our place as your materials testing authority with 24-hour availability, product videos, 360-degree product images, how-to videos, technical insights, informative blog posts and live chat for instant customer care. From the lab to the job site, you can find everything you need in one convenient location and place your order from your desktop, laptop, tablet, or phone.

Remember, whatever your materials testing needs, Gilson is passionate about contributing to your success.

CONNECT WITH GILSON!

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VIDEO ONLINE

Gilson Test Sieves

GILSON TEST SIEVES
ASTM E11; ISO 565, 3310-1

Throughout this catalog you will find many references to ASTM and ISO test methods and specifications. ASTM International (American Society for Testing and Materials) and ISO (International Organization for Standardization) are two different groups with similar goals of establishing standardized methods and criteria for testing material. ASTM is the predominant specifying organization in the United States and North America and in recent years, has sought to expand their effectiveness around the world. With its global influence, ISO has standards already in place in many countries. In recent years, the two organizations have actively pursued a "Harmonization" program to ensure that documents governing similar procedures are more compatible.

Gilson offers test sieves meeting the most widely used specifications:

- ASTM E11, Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
- ISO 565, Test sieves—Metal Wire Cloth, Perforated Metal Plate and Electroformed Sheet—Nominal Sizes of Openings
- ISO-3310-1, Test Sieves—Technical Requirements and Testing—Part 1: Test Sieves of Metal Wire Cloth

ASTM and ISO sieves are constructed to specifications and tolerances that are very similar, in some cases identical. An ASTM #30 test sieve uses exactly the same cloth as an ISO 600µm sieve for example and ASTM 3/8in and ISO 9.5mm mesh is the same, along with many others. ASTM test sieve frames have 8in (203mm) or 12in (305mm) diameters and most ISO sieves are constructed with either 200mm or 300mm frames, so ASTM and ISO sieves will not nest together in a stack. Gilson 8in or 12in Sieve Shakers are designed to accept stacks of 8", 12", 200mm or 300mm test sieves with no difference in performance. Gilson also stocks all popular sizes of both ASTM and ISO test sieves, so you can be confident that your order will be shipped right away.

Immediate shipment is available for all popular sizes. ASTM and ISO Test Sieves are categorized in three different classes, all serial numbered and supplied with a certificate.

- **Compliance Test Sieves** are manufactured with wire cloth that has been inspected and measured in roll or sheet quantities prior to being cut and mounted in the individual sieve frames. Opening sizes are not measured in individual sieves. Each Compliance sieve is supplied with a certificate of manufacturing compliance, but no statistical documentation is given. Compliance sieves are designed for applications where a basic, reliable degree of accuracy and repeatability are sufficient.

- **Inspection Test Sieves** have a specified number of openings measured using an optical comparator with NIST traceable calibration in each sieve after the cloth is mounted in the frame. There is a 99% confidence level that the standard deviation of these openings is within the maximum allowed by ASTM or ISO. Inspection Sieves are a good choice in applications where accuracy and repeatability are critical. An Inspection Sieve includes documentation that Inspection Level Sieve Verification services were performed.

- **Calibration Test Sieves** have about twice as many openings measured as Inspection Sieves. The higher number of openings measured on each sieve increases the confidence level to 99.73% that the standard deviation of these openings is within the maximum allowed by ASTM or ISO. Calibration Sieves should be used in applications where a very high degree of accuracy is required. A Calibration Sieve includes documentation that Calibration Level Sieve Verification services were performed.

Mesh Opening

Opening Sizes are listed in millimeter (mm) or micrometer (µm) units and ASTM sieves include traditional inch and number designations. Gilson offers all mesh sizes, but not all sizes are available in every frame diameter or height. Common coarse sizes are also listed. Normally, every second or fourth size is used, although precision testing may require consecutive sizes. Additional sieves are often inserted into the sequence to avoid overloading of individual sieves or to better define a particular size range. New ASTM metric alternative sieves add many ISO opening sizes, filling in gaps of the traditional ASTM system while allowing convenient use of 3in, 8in and 12in frame diameters.

Frame and Cloth Material

- Stainless Steel Frame with Stainless Steel Cloth is a popular choice and assures a sieve with the longest possible service life. This is the best choice where extreme wear, contamination, or sanitation is an issue.
- Combination Brass Frame with Stainless Steel Cloth offers adequate service life. The frames of these sieves feature a stainless steel skirt for added durability.
- Brass Frame with Brass Cloth is acceptable for light-duty applications. Coarse-series sieves are not available with brass cloth.

Stainless Steel Test Sieves

Brass Frame/Stainless Cloth Test Sieve

Stainless Steel Pan

Frame Diameter
Frames should accommodate the entire sample volume with enough surface area to avoid overloading individual sieves. The diameter selected must also fit the sieve shaker being used.

Frame Height
Sieve frames are designated as Full-Height or Half-Height. Intermediate-Height sieves are also available for 12in diameters. Half or Intermediate-Height frames allow a greater number of sieves to be used when stack height is limited. Large particles require Full-Height frames for free movement during agitation for more efficient separation. Black rubber O-Rings are included with ISO Test Sieves and also available for ASTM sieves.

Sieve Frame Heights

Sieve		Frame Height Measurements		
Diameter	Frame Designation	Stacked in (mm)	Overall in (mm)	Above Cloth in (mm)
3in (76mm)	FH	1-1/8 (28.6)	1-3/4 (44.5)	1-1/4 (31.8)
	HH	5/8 (15.9)	1-1/4 (31.8)	5/8 (15.9)
6in (152mm)	FH	1-7/8 (47.6)	2-5/8 (66.7)	1-3/4 (44.5)
	HH	1-1/8 (28.6)	1-7/8 (47.6)	1 (25.4)
8in (203mm)	FH	2-1/8 (54)	2-5/8 (66.7)	2 (50.8)
	HH	1-1/8 (28.6)	1-5/8 (41.3)	1 (25.4)
200mm	FH	2-1/8 (54)	2-5/8 (66.7)	1.96 (50)
	HH	1-1/8 (28.6)	1-5/8 (41.3)	0.98 (25)
10in (254mm)	FH	3-1/8 (79.4)	4 (101.6)	3 (76.2)
12in (305mm)	FH	3-3/8 (85.7)	4-1/4 (108)	3-1/4 (82.6)
	IH	2-1/8 (54)	3 (76.2)	2 (50.8)
	HH	1-3/4 (44.5)	2-5/8 (66.7)	1-5/8 (41.3)
300mm	FH	2-1/2 (63.5)	3 (76.2)	1.96 (50)
	HH	1-1/2 (38.1)	2 (50.8)	.98 (25)
18in (457mm)	FH	4-1/4 (108)	5-1/2 (139.7)	4.5 (114.3)

Backing Cloth
Backing Cloth prevents sagging and tearing and improves service life for finer mesh sieves. No. 30 stainless steel mesh reinforcement is located below the primary sieve cloth, increasing the strength of the primary sieve cloth and reducing distortion of the openings during use. Backing Cloth is available at extra cost for sieves with stainless steel mesh finer than ASTM No.70 or ISO 212µm on 8in or 12in diameter frames. To order, add the suffix "BU" to the model number of the sieve. These sieves are made-to-order and are non-returnable.

Pans and Covers

- Pans are positioned at the bottom of the sieve stack to collect fines. Extended-Rim Pans insert into the middle of a stack, allowing two samples to be tested at once.
- Covers are not necessary with most sieve shakers, but are needed for rotary sifters, or shaking by hand. The Cover-with-Ring model has a wire finger loop in the center to facilitate removal.

Gilson Sieve Verification Services
Gilson Verification can be performed on any test sieve or Gilson screen tray, used or new. An optical comparator with NIST traceable calibration measures opening sizes and wire diameters on each sieve and a statistical analysis ensures the standard deviations are within ASTM or ISO requirements for Inspection or Calibration grades. Sieves, trays, or wire cloth units are not included in the purchase price of the verification services. These services are ordered separately by specifying the appropriate model number given in our listing for Test Sieve and Screen Tray Verification and Services. Because wire cloth stretches, sags, or tears and abrasive materials can reduce wire diameters, a verification process should also be set up to regularly verify that working sieves still meet desired specifications. To reverify used sieves, contact a customer service representative for Reverification Services. Sieves with backing cloth installed cannot be reverified.

Standard Reference Materials (SRM's)
Sieve Reference Materials are precisely-sized glass beads or powders for performance testing of sieves. They are traceable to the National Institute of Standards and Technology (NIST), or European Community Bureau of Reference (BCR). SRM's fit easily into internal quality programs following guidelines in ASTM E2427, Sieve Acceptance by Performance Testing. User-prepared reference materials can also be utilized under E2427 in the same manner as SRM's. Because user materials are non-standard, they are not traceable and require more handling. In addition, the user must determine acceptable tolerances for statistical analysis.

Sieve Shakers
Mechanical sieve shakers save considerable time and effort and yield superior accuracy, consistency and repeatability compared to manual shaking or hand sieving methods for particle sizing. Effective mechanical agitation lifts all particles off the sieve cloth, reorients them and allows them to be repeatedly "tried" to different openings at different angles. Careful review of Gilson's extensive line of sieve shakers details optimal choices for different materials and applications. Greater sample volumes and large particle topsize may require selection of Gilson Testing Screen, Test-Master® or Porta-Screen® models for efficient particle size determinations.

VIDEO ONLINE

GV-65 Calibration Verification shown with Sieve

GV-66 Calibration Verification shown with Screen Tray

E11 Certificate of Compliance for all Sieves

TEST SIEVE & SCREEN TRAY VERIFICATION SERVICES

ASTM E11, E2427; ISO 565, 3310-1

The latest revisions to ASTM standard E11, *Specification for Wire Cloth and Sieves for Testing Purposes* have changed the way the mesh openings are evaluated by looking at the statistical distribution of aperture sizes, rather than just the average opening sizes. In addition to a more accurate and reliable system of evaluation, this allows greater compatibility with ISO 565 and 3310-1 requirements. There are now three grades, or classes of ASTM or ISO test sieves available: Compliance, Inspection and Calibration.

- **Compliance Test Sieves** are manufactured with wire cloth that has been inspected and measured in roll or sheet quantities prior to being cut and mounted in the individual sieve frames. Opening sizes are not measured in individual sieves. Each Compliance sieve is supplied with a certificate of manufacturing compliance, but no statistical documentation is given. Compliance sieves are designed for applications where a basic, reliable degree of accuracy and repeatability are sufficient.

- **Inspection Test Sieves** have a specified number of openings measured using an optical comparitor with NIST traceable calibration in each sieve after the cloth is mounted in the frame. There is a 99% confidence level that the standard deviation of these openings is within the maximum allowed by ASTM or ISO. Inspection Sieves are a good choice in applications where accuracy and repeatability are critical. An Inspection Sieve includes documentation that Inspection Level Sieve Verification services were performed.

- **Calibration Test Sieves** have about twice as many openings measured as Inspection Sieves. The higher number of openings measured on each sieve increases the confidence level to 99.73% that the standard deviation of these openings is within the maximum allowed by ASTM or ISO. Calibration Sieves should be used in applications where a very high degree of accuracy is required. A Calibration Sieve includes documentation that calibration level Sieve Verification services were performed.

Verification of New Sieves New Gilson Test Sieves are guaranteed to meet the requirements of ASTM or ISO for Compliance, Inspection or Calibration grades as ordered, but for continued assurance of performance, procedures should be in place to regularly check working sieves as they age. Wire cloth stretches, sags, or even tears and abrasive materials reduce wire diameter, causing increased opening sizes and loss of accuracy over time.

Gilson Reverification Services can be performed on used ASTM or ISO Test Sieves or Screen Trays. Simply add "R" suffix to the model number of the desired verification grade. An optical comparator with NIST traceable calibration measures opening and wire diameter sizes on each test sieve. Certification reports are produced for the appropriate grade. These services are available for all ASTM and ISO test sieve sizes and types and are ordered by specifying model numbers for Inspection Sieve Verification, or Calibration Sieve Verification. Sieves are not included in the verification purchase price. When reverifying used sieves, contact a Gilson customer service representative.

Master-Matched Sieves are ASTM E11 8in diameter stainless steel or combination test sieves from No.8 (2.36mm) to No.325 (45µm) with openings closely matched to a master set of sieves in Gilson's reference laboratory. Master-Matched Sieves are verified to meet ASTM E11, then performance-selected using NIST traceable Standard Reference Materials to correlate with the master set. Each sieve is performance tested to ensure it yields ±2.5% by weight of the value of the master sieve.

Test Sieve & Screen Tray Verification Services[1]	
Inspection Test Sieve Verification, ASTM E11	GV-60
Calibration Test Sieve Verification, ASTM E11	GV-65
Inspection Test Sieve Verification, ISO 565 and 3310-1	GV-62
Calibration Test Sieve Verification, ISO 565 and 3310-1	GV-63
Inspection Screen Tray Verification, ASTM E11	GV-61
Calibration Screen Tray Verification, ASTM E11	GV-66
Inspection Screen Tray Verification, ISO 565 and 3310-1	GV-64
Calibration Screen Tray Verification, ISO 565 and 3310-1	GV-67
Master-Matched Sieves	MM-70

[1]*To specify Reverified Sieves, add "R" suffix to model number of desired Verification grade.*

HOW TO REVERIFY YOUR TEST SIEVES AND SCREEN TRAYS

EMAIL
Email sieveservices@gilsonco.com to obtain the necessary return authorization form.

CLEAN
Clean your sieves or screen trays, removing all debris or potentially hazardous materials.

PACK
Pack sieves or screen trays in a cardboard box with packing materials and authorization form inside.

SHIP
Ship sieves or screen trays to 7975 North Central Drive, Lewis Center, OH 43035.

EXPECT
Expect to receive reverified sieves or screen trays back within 2-3 weeks.

QUALITY CONTROL FOR SIEVING OPERATIONS

Establishing a "Master" set of new Inspection or Calibration grade test sieves is a good way to set up a sieving quality control program for ISO 9001 or other quality control/quality assurance plans. Each Verified Inspection or Calibration test sieve is supplied with documentation assuring compliance with ASTM or ISO requirements and can be used to correlate accuracy and ongoing performance of working sieves. Percent retained values from any number of working sieves are periodically compared to the equivalent Master sieve to check for loss of accuracy and results are tracked over time. Acceptable tolerances are established by the user, but quality control programs looking for the highest accuracy accept up to a 1% variation. It is important to maintain the verification status of the Master set, preferably by periodically returning the sieves to the sieve manufacturer for re-verification

Frequent use and abrasive materials eventually reduce wire diameters and cause an increase in opening sizes that cannot be detected visually. Scheduled correlation testing ensures working test sieves are used to their maximum service life, yet still removed from use as soon as accuracy has degraded further than standards allow. Disruption caused by sending test sieves off-site for verification is minimized.

Materials with known properties are required for correlation testing. Standard Reference Materials (SRMs) are prepared in specific size ranges under carefully controlled manufacturing processes. These precisely-sized glass beads or powders are supplied with certificates of compliance traceable to established standards, such as National Institute of Standards and Technology (NIST) or the European Community Bureau of Reference (BCR). User-prepared reference materials can also be formulated from actual production materials using methods in ASTM E2427. User materials are non-standard, are not traceable and require more effort to prepare. The correlation tests should be performed on a scheduled basis and results for each serial numbered test sieve should be recorded and filed.

INITIAL SETUP

Master Sieves

Master Sieves % Retained	Sieve	Working Sieves % Retained
15.0	Sieve 1	15.5
8.7	Sieve 2	9.0
32.2	Sieve 3	31.6
17.1	Sieve 4	16.7
25.2	Sieve 5	24.6
1.8	Pan	2.6

Working Sieves

SCHEDULED RECHECK

Master Sieves

Master Sieves % Retained	Sieve	Working Sieves % Retained
15.0	Sieve 1	15.2
8.7	Sieve 2	7.6
32.2	Sieve 3	31.4
17.1	Sieve 4	15.8
25.2	Sieve 5	24.2
1.8	Pan	5.8

Working Sieves

Brass Frame/Stainless Cloth Test Sieve

Stainless Steel Test Sieves

SS-8R Gilson Tapping Sieve Shaker shown with Stainless Steel Test Sieves

8in Diameter ASTM E11 Test Sieves

	Sieve Designation		Stainless Cloth Stainless Frame		Stainless Cloth Brass Frame		Brass Cloth Brass Frame	
	Alt.	Std.	Full Ht.	Half Ht.	Full Ht.	Half Ht.	Full Ht.	Half Ht.
COARSE SERIES	4in	100.0mm	V8SF 4"	V8SH 4"	V8CF 4"	—	—	—
	3-1/2in	90.0mm	V8SF 3-1/2"	V8SH 3-1/2"	V8CF 3-1/2"	—	—	—
	3in	75.0mm	V8SF 3"	V8SH 3"	V8CF 3"	—	—	—
	2-1/2in	63.0mm	V8SF 2-1/2"	V8SH 2-1/2"	V8CF 2-1/2"	—	—	—
	2.12in	53.0mm	V8SF 2.12"	V8SH 2.12"	V8CF 2.12"	—	—	—
	2in	50.0mm	V8SF 2"	V8SH 2"	V8CF 2"	—	—	—
	1-3/4in	45.0mm	V8SF 1-3/4"	V8SH 1-3/4"	V8CF 1-3/4"	—	—	—
	1-1/2in	37.5mm	V8SF 1-1/2"	V8SH 1-1/2"	V8CF 1-1/2"	—	—	—
	1-1/4in	31.5mm	V8SF 1-1/4"	V8SH 1-1/4"	V8CF 1-1/4"	—	—	—
	1.06in	26.5mm	V8SF 1.06"	V8SH 1.06"	V8CF 1.06"	—	—	—
	1in	25.0mm	V8SF 1"	V8SH 1"	V8CF 1"	—	—	—
	7/8in	22.4mm	V8SF 7/8"	V8SH 7/8"	V8CF 7/8"	V8CH 7/8"	—	—
	3/4in	19.0mm	V8SF 3/4"	V8SH 3/4"	V8CF 3/4"	V8CH 3/4"	—	—
	5/8in	16.0mm	V8SF 5/8"	V8SH 5/8"	V8CF 5/8"	V8CH 5/8"	—	—
	0.530in	13.2mm	V8SF .530"	V8SH .530"	V8CF .530"	V8CH .530"	—	—
	1/2in	12.5mm	V8SF 1/2"	V8SH 1/2"	V8CF 1/2"	V8CH 1/2"	—	—
	7/16in	11.2mm	V8SF 7/16"	V8SH 7/16"	V8CF 7/16"	V8CH 7/16"	—	—
	3/8in	9.5mm	V8SF 3/8"	V8SH 3/8"	V8CF 3/8"	V8CH 3/8"	—	—
	5/16in	8.0mm	V8SF 5/16"	V8SH 5/16"	V8CF 5/16"	V8CH 5/16"	—	—
	0.265in	6.7mm	V8SF .265"	V8SH .265"	V8CF .265"	V8CH .265"	—	—
	1/4in	6.3mm	V8SF 1/4"	V8SH 1/4"	V8CF 1/4"	V8CH 1/4"	—	—
	No.3-1/2	5.6mm	V8SF #3-1/2	V8SH #3-1/2	V8CF #3-1/2	V8CH #3-1/2	—	—
	No.4	4.75mm	V8SF #4	V8SH #4	V8CF #4	V8CH #4	—	—
FINE SERIES	No.5	4.0mm	V8SF #5	V8SH #5	V8CF #5	V8CH #5	—	—
	No.6	3.35mm	V8SF #6	V8SH #6	V8CF #6	V8CH #6	—	—
	1/8in[1]	3.18mm	V8SF 1/8"	V8SH 1/8"	V8CF 1/8"	V8CH 1/8"	—	—
	No.7	2.8mm	V8SF #7	V8SH #7	V8CF #7	V8CH #7	—	—
	No.8	2.36mm	V8SF #8	V8SH #8	V8CF #8	V8CH #8	V8BF #8	V8BH #8
	No.10	2.0mm	V8SF #10	V8SH #10	V8CF #10	V8CH #10	V8BF #10	V8BH #10
	No.12	1.7mm	V8SF #12	V8SH #12	V8CF #12	V8CH #12	V8BF #12	V8BH #12
	No.14	1.4mm	V8SF #14	V8SH #14	V8CF #14	V8CH #14	V8BF #14	V8BH #14
	No.16	1.18mm	V8SF #16	V8SH #16	V8CF #16	V8CH #16	V8BF #16	V8BH #16
	No.18	1.0mm	V8SF #18	V8SH #18	V8CF #18	V8CH #18	V8BF #18	V8BH #18
	No.20	850µm	V8SF #20	V8SH #20	V8CF #20	V8CH #20	V8BF #20	V8BH #20
	No.25	710µm	V8SF #25	V8SH #25	V8CF #25	V8CH #25	V8BF #25	V8BH #25
	No.30	600µm	V8SF #30	V8SH #30	V8CF #30	V8CH #30	V8BF #30	V8BH #30
	No.35	500µm	V8SF #35	V8SH #35	V8CF #35	V8CH #35	V8BF #35	V8BH #35
	No.40	425µm	V8SF #40	V8SH #40	V8CF #40	V8CH #40	V8BF #40	V8BH #40
	No.45	355µm	V8SF #45	V8SH #45	V8CF #45	V8CH #45	V8BF #45	V8BH #45
	No.50	300µm	V8SF #50	V8SH #50	V8CF #50	V8CH #50	V8BF #50	V8BH #50
	No.60	250µm	V8SF #60	V8SH #60	V8CF #60	V8CH #60	V8BF #60	V8BH #60
	No.70	212µm	V8SF #70	V8SH #70	V8CF #70	V8CH #70	V8BF #70	V8BH #70
	No.80	180µm	V8SF #80	V8SH #80	V8CF #80	V8CH #80	V8BF #80	V8BH #80
	No.100	150µm	V8SF #100	V8SH #100	V8CF #100	V8CH #100	V8BF #100	V8BH #100
	No.120	125µm	V8SF #120	V8SH #120	V8CF #120	V8CH #120	V8BF #120	V8BH #120
	No.140	106µm	V8SF #140	V8SH #140	V8CF #140	V8CH #140	V8BF #140	V8BH #140
	No.170	90µm	V8SF #170	V8SH #170	V8CF #170	V8CH #170	V8BF #170	V8BH #170
	No.200	75µm	V8SF #200	V8SH #200	V8CF #200	V8CH #200	V8BF #200	V8BH #200
	No.230	63µm	V8SF #230	V8SH #230	V8CF #230	V8CH #230	V8BF #230	V8BH #230
	No.270	53µm	V8SF #270	V8SH #270	V8CF #270	V8CH #270	V8BF #270	V8BH #270
	No.325	45µm	V8SF #325	V8SH #325	V8CF #325	V8CH #325	V8BF #325	V8BH #325
	No.400	38µm	V8SF #400	V8SH #400	V8CF #400	V8CH #400	—	—
	No.450	32µm	V8SF #450	V8SH #450	V8CF #450	V8CH #450	—	—
	No.500	25µm	V8SF #500	V8SH #500	V8CF #500	V8CH #500	—	—
	No.635	20µm	V8SF #635	V8SH #635	V8CF #635	V8CH #635	—	—
	Regular Pan		V8SFXPN	V8SHXPN	V8BFXPN	V8BHXPN	V8BFXPN	V8BHXPN
	Extended Rim Pan		V8SFXPE	V8SHXPE	V8BFXPE	V8BHXPE	V8BFXPE	V8BHXPE
	Regular Cover		V8SFXCV		V8BFXCV			
	Cover with Ring		V8SFXCR		V8BFXCR			

[1]*Not a standard ASTM size.*

12in Diameter ASTM E11 Test Sieves

	Sieve Designation		Stainless Cloth Stainless Frame			Stainless Cloth Brass Frame			Brass Cloth Brass Frame		
	Alt.	Std.	Full Ht.	Inter. Ht.	Half Ht.	Full Ht.	Inter. Ht.	Half Ht.	Full Ht.	Inter. Ht.	Half Ht.
COARSE SERIES	4in	100.0mm	V12SF 4"	V12SI 4"	—	V12CF 4"	V12CI 4"	—	—	—	—
	3-1/2in	90.0mm	V12SF 3-1/2"	V12SI 3-1/2"	—	V12CF 3-1/2"	V12CI 3-1/2"	—	—	—	—
	3in	75.0mm	V12SF 3"	V12SI 3"	—	V12CF 3"	V12CI 3"	—	—	—	—
	2-1/2in	63.0mm	V12SF 2-1/2"	V12SI 2-1/2"	—	V12CF 2-1/2"	V12CI 2-1/2"	—	—	—	—
	2.12in	53.0mm	V12SF 2.12"	V12SI 2.12"	—	V12CF 2.12"	V12CI 2.12"	—	—	—	—
	2in	50.0mm	V12SF 2"	V12SI 2"	—	V12CF 2"	V12CI 2"	—	—	—	—
	1-3/4in	45.0mm	V12SF 1-3/4"	V12SI 1-3/4"	—	V12CF 1-3/4"	V12CI 1-3/4"	—	—	—	—
	1-1/2in	37.5mm	V12SF 1-1/2"	V12SI 1-1/2"	—	V12CF 1-1/2"	V12CI 1-1/2"	—	—	—	—
	1-1/4in	31.5mm	V12SF 1-1/4"	V12SI 1-1/4"	—	V12CF 1-1/4"	V12CI 1-1/4"	—	—	—	—
	1.06in	26.5mm	V12SF 1.06"	V12SI 1.06"	—	V12CF 1.06"	V12CI 1.06"	—	—	—	—
	1in	25.0mm	V12SF 1"	V12SI 1"	V12SH 1"	V12CF 1"	V12CI 1"	V12CH 1"	—	—	—
	7/8in	22.4mm	V12SF 7/8"	V12SI 7/8"	V12SH 7/8"	V12CF 7/8"	V12CI 7/8"	V12CH 7/8"	—	—	—
	3/4in	19.0mm	V12SF 3/4"	V12SI 3/4"	V12SH 3/4"	V12CF 3/4"	V12CI 3/4"	V12CH 3/4"	—	—	—
	5/8in	16.0mm	V12SF 5/8"	V12SI 5/8"	V12SH 5/8"	V12CF 5/8"	V12CI 5/8"	V12CH 5/8"	—	—	—
	0.530in	13.2mm	V12SF .530"	V12SI .530"	V12SH .530"	V12CF .530"	V12CI .530"	V12CH .530"	—	—	—
	1/2in	12.5mm	V12SF 1/2"	V12SI 1/2"	V12SH 1/2"	V12CF 1/2"	V12CI 1/2"	V12CH 1/2"	—	—	—
	7/16in	11.2mm	V12SF 7/16"	V12SI 7/16"	V12SH 7/16"	V12CF 7/16"	V12CI 7/16"	V12CH 7/16"	—	—	—
	3/8in	9.5mm	V12SF 3/8"	V12SI 3/8"	V12SH 3/8"	V12CF 3/8"	V12CI 3/8"	V12CH 3/8"	—	—	—
	5/16in	8.0mm	V12SF 5/16"	V12SI 5/16"	V12SH 5/16"	V12CF 5/16"	V12CI 5/16"	V12CH 5/16"	—	—	—
	0.265in	6.7mm	V12SF .265"	V12SI .265"	V12SH .265"	V12CF .265"	V12CI .265"	V12CH .265"	—	—	—
	1/4in	6.3mm	V12SF 1/4"	V12SI 1/4"	V12SH 1/4"	V12CF 1/4"	V12CI 1/4"	V12CH 1/4"	—	—	—
	No.3-1/2	5.6mm	V12SF #3-1/2	V12SI #3-1/2	V12SH #3-1/2	V12CF #3-1/2	V12CI #3-1/2	V12CH #3-1/2	—	—	—
	No.4	4.75mm	V12SF #4	V12SI #4	V12SH #4	V12CF #4	V12CI #4	V12CH #4	—	—	—
FINE SERIES	No.5	4.0mm	V12SF #5	V12SI #5	V12SH #5	V12CF #5	V12CI #5	V12CH #5	—	—	—
	No.6	3.35mm	V12SF #6	V12SI #6	V12SH #6	V12CF #6	V12CI #6	V12CH #6	—	—	—
	1/8in[1]	3.18mm	V12SF 1/8"	V12SI 1/8"	V12SH 1/8"	V12CF 1/8"	V12CI 1/8"	V12CH 1/8"	—	—	—
	No.7	2.8mm	V12SF #7	V12SI #7	V12SH #7	V12CF #7	V12CI #7	V12CH #7	—	—	—
	No.8	2.36mm	V12SF #8	V12SI #8	V12SH #8	V12CF #8	V12CI #8	V12CH #8	V12BF #8	V12BI #8	V12BH #8
	No.10	2.0mm	V12SF #10	V12SI #10	V12SH #10	V12CF #10	V12CI #10	V12CH #10	V12BF #10	V12BI #10	V12BH #10
	No.12	1.7mm	V12SF #12	V12SI #12	V12SH #12	V12CF #12	V12CI #12	V12CH #12	V12BF #12	V12BI #12	V12BH #12
	No.14	1.4mm	V12SF #14	V12SI #14	V12SH #14	V12CF #14	V12CI #14	V12CH #14	V12BF #14	V12BI #14	V12BH #14
	No.16	1.18mm	V12SF #16	V12SI #16	V12SH #16	V12CF #16	V12CI #16	V12CH #16	V12BF #16	V12BI #16	V12BH #16
	No.18	1.0mm	V12SF #18	V12SI #18	V12SH #18	V12CF #18	V12CI #18	V12CH #18	V12BF #18	V12BI #18	V12BH #18
	No.20	850µm	V12SF #20	V12SI #20	V12SH #20	V12CF #20	V12CI #20	V12CH #20	V12BF #20	V12BI #20	V12BH #20
	No.25	710µm	V12SF #25	V12SI #25	V12SH #25	V12CF #25	V12CI #25	V12CH #25	V12BF #25	V12BI #25	V12BH #25
	No.30	600µm	V12SF #30	V12SI #30	V12SH #30	V12CF #30	V12CI #30	V12CH #30	V12BF #30	V12BI #30	V12BH #30
	No.35	500µm	V12SF #35	V12SI #35	V12SH #35	V12CF #35	V12CI #35	V12CH #35	V12BF #35	V12BI #35	V12BH #35
	No.40	425µm	V12SF #40	V12SI #40	V12SH #40	V12CF #40	V12CI #40	V12CH #40	V12BF #40	V12BI #40	V12BH #40
	No.45	355µm	V12SF #45	V12SI #45	V12SH #45	V12CF #45	V12CI #45	V12CH #45	V12BF #45	V12BI #45	V12BH #45
	No.50	300µm	V12SF #50	V12SI #50	V12SH #50	V12CF #50	V12CI #50	V12CH #50	V12BF #50	V12BI #50	V12BH #50
	No.60	250µm	V12SF #60	V12SI #60	V12SH #60	V12CF #60	V12CI #60	V12CH #60	V12BF #60	V12BI #60	V12BH #60
	No.70	212µm	V12SF #70	V12SI #70	V12SH #70	V12CF #70	V12CI #70	V12CH #70	V12BF #70	V12BI #70	V12BH #70
	No.80	180µm	V12SF #80	V12SI #80	V12SH #80	V12CF #80	V12CI #80	V12CH #80	V12BF #80	V12BI #80	V12BH #80
	No.100	150µm	V12SF #100	V12SI #100	V12SH #100	V12CF #100	V12CI #100	V12CH #100	V12BF #100	V12BI #100	V12BH #100
	No.120	125µm	V12SF #120	V12SI #120	V12SH #120	V12CF #120	V12CI #120	V12CH #120	V12BF #120	V12BI #120	V12BH #120
	No.140	106µm	V12SF #140	V12SI #140	V12SH #140	V12CF #140	V12CI #140	V12CH #140	V12BF #140	V12BI #140	V12BH #140
	No.170	90µm	V12SF #170	V12SI #170	V12SH #170	V12CF #170	V12CI #170	V12CH #170	V12BF #170	V12BI #170	V12BH #170
	No.200	75µm	V12SF #200	V12SI #200	V12SH #200	V12CF #200	V12CI #200	V12CH #200	V12BF #200	V12BI #200	V12BH #200
	No.230	63µm	V12SF #230	V12SI #230	V12SH #230	V12CF #230	V12CI #230	V12CH #230	V12BF #230	V12BI #230	V12BH #230
	No.270	53µm	V12SF #270	V12SI #270	V12SH #270	V12CF #270	V12CI #270	V12CH #270	V12BF #270	V12BI #270	V12BH #270
	No.325	45µm	V12SF #325	V12SI #325	V12SH #325	V12CF #325	V12CI #325	V12CH #325	V12BF #325	V12BI #325	V12BH #325
	No.400	38µm	V12SF #400	V12SI #400	V12SH #400	V12CF #400	V12CI #400	V12CH #400	—	—	—
	No.450	32µm	V12SF #450	V12SI #450	V12SH #450	V12CF #450	V12CI #450	V12CH #450	—	—	—
	No.500	25µm	V12SF #500	V12SI #500	V12SH #500	V12CF #500	V12CI #500	V12CH #500	—	—	—
	No.635	20µm	V12SF #635	V12SI #635	V12SH #635	V12CF #635	V12CI #635	V12CH #635	—	—	—
	Regular Pan		V12SFXPN	—	V12SHXPN	V12BFXPN	V12BIXPN	V12BHXPN	V12BFXPN	V12BIXPN	V12BHXPN
	Extended Rim Pan		V12SFXPE	V12SIXPE	V12SHXPE	V12BFXPE	V12BIXPE	V12BHXPE	V12BFXPE	V12BIXPE	V12BHXPE
	Regular Cover		V12SFXCV			V12BFXCV					
	Cover with Ring		V12SFXCR			V12BFXCR					

[1]*Not a standard ASTM size.*

NEW

8in Diameter Stainless Steel
Full Height Test Sieves and Pan

8in Diameter Stainless Steel
Half Height Test Sieve

12in Diameter Stainless Steel
Full Height Test Sieves

12in Diameter Stainless Steel
Half Height Test Sieve

8IN & 12IN DIAMETER ASTM E11 SUPPLEMENTAL SIEVE SIZES

The latest edition of ASTM E11 incorporates a new range of opening sizes for metric supplemental test sieves that are designed to supplement existing sizes. Gilson is offering these Metric Alternative test sieve sizes with stainless steel cloth installed in conventional 8in and 12in diameter stainless steel frames.

8in & 12in Diameter ASTM E11 Supplemental Sieve Sizes

Metric Supplemental Sizes	8in Diameter		12in Diameter		
	Stainless Cloth Stainless Frame		Stainless Cloth Stainless Frame		
	Full Ht.	Half Ht.	Full Ht.	Int. Ht.	Half Ht.
56.0mm	V8SF 56M	V8SH 56M	V12SF 56M	V12SI 56M	V12SH 56M
40.0mm	V8SF 40M	V8SH 40M	V12SF 40M	V12SI 40M	V12SH 40M
35.5mm	V8SF 35.5M	V8SH 35.5M	V12SF 35.5M	V12SI 35.5M	V12SH 35.5M
28.0mm	V8SF 28M	V8SH 28M	V12SF 28M	V12SI 28M	V12SH 28M
20.0mm	V8SF 20M	V8SH 20M	V12SF 20M	V12SI 20M	V12SH 20M
18.0mm	V8SF 18M	V8SH 18M	V12SF 18M	V12SI 18M	V12SH 18M
14.0mm	V8SF 14M	V8SH 14M	V12SF 14M	V12SI 14M	V12SH 14M
10.0mm	V8SF 10M	V8SH 10M	V12SF 10M	V12SI 10M	V12SH 10M
9.0mm	V8SF 9M	V8SH 9M	V12SF 9M	V12SI 9M	V12SH 9M
7.1mm	V8SF 7.1M	V8SH 7.1M	V12SF 7.1M	V12SI 7.1M	V12SH 7.1M
5.0mm	V8SF 5M	V8SH 5M	V12SF 5M	V12SI 5M	V12SH 5M
4.5mm	V8SF 4.5M	V8SH 4.5M	V12SF 4.5M	V12SI 4.5M	V12SH 4.5M
3.55mm	V8SF 3.55M	V8SH 3.55M	V12SF 3.55M	V12SI 3.55M	V12SH 3.55M
3.15mm	V8SF 3.15M	V8SH 3.15M	V12SF 3.15M	V12SI 3.15M	V12SH 3.15M
2.5mm	V8SF 2.5M	V8SH 2.5M	V12SF 2.5M	V12SI 2.5M	V12SH 2.5M
2.24mm	V8SF 2.24M	V8SH 2.24M	V12SF 2.24M	V12SI 2.24M	V12SH 2.24M
1.80mm	V8SF 1.80M	V8SH 1.80M	V12SF 1.80M	V12SI 1.80M	V12SH 1.80M
1.60mm	V8SF 1.60M	V8SH 1.60M	V12SF 1.60M	V12SI 1.60M	V12SH 1.60M
1.25mm	V8SF 1.25M	V8SH 1.25M	V12SF 1.25M	V12SI 1.25M	V12SH 1.25M
1.12mm	V8SF 1.12M	V8SH 1.12M	V12SF 1.12M	V12SI 1.12M	V12SH 1.12M
900µm	V8SF 900U	V8SH 900U	V12SF 900U	V12SI 900U	V12SH 900U
800µm	V8SF 800U	V8SH 800U	V12SF 800U	V12SI 800U	V12SH 800U
630µm	V8SF 630U	V8SH 630U	V12SF 630U	V12SI 630U	V12SH 630U
560µm	V8SF 560U	V8SH 560U	V12SF 560U	V12SI 560U	V12SH 560U
450µm	V8SF 450U	V8SH 450U	V12SF 450U	V12SI 450U	V12SH 450U
400µm	V8SF 400U	V8SH 400U	V12SF 400U	V12SI 400U	V12SH 400U
315µm	V8SF 315U	V8SH 315U	V12SF 315U	V12SI 315U	V12SH 315U
280µm	V8SF 280U	V8SH 280U	V12SF 280U	V12SI 280U	V12SH 280U
224µm	V8SF 224U	V8SH 224U	V12SF 224U	V12SI 224U	V12SH 224U
200µm	V8SF 200U	V8SH 200U	V12SF 200U	V12SI 200U	V12SH 200U
160µm	V8SF 160U	V8SH 160U	V12SF 160U	V12SI 160U	V12SH 160U
140µm	V8SF 140U	V8SH 140U	V12SF 140U	V12SI 140U	V12SH 140U
112µm	V8SF 112U	V8SH 112U	V12SF 112U	V12SI 112U	V12SH 112U
100µm	V8SF 100U	V8SH 100U	V12SF 100U	V12SI 100U	V12SH 100U
80µm	V8SF 80U	V8SH 80U	V12SF 80U	V12SI 80U	V12SH 80U
71µm	V8SF 71U	V8SH 71U	V12SF 71U	V12SI 71U	V12SH 71U
56µm	V8SF 56U	V8SH 56U	V12SF 56U	V12SI 56U	V12SH 56U
50µm	V8SF 50U	V8SH 50U	V12SF 50U	V12SI 50U	V12SH 50U
40µm	V8SF 40U	V8SH 40U	V12SF 40U	V12SI 40U	V12SH 40U
36µm	V8SF 36U	V8SH 36U	V12SF 36U	V12SI 36U	V12SH 36U

3in Diameter Stainless Steel Test Sieves

SS-3 shown with 3in Stainless Steel Test Sieves

3in Diameter ASTM E11 Test Sieves

	Sieve Designation			Stainless Cloth Stainless Frame		Stainless Cloth Brass Frame	
	US Alternative	Std.	Metric Supplemental	Full Ht.	Half Ht.	Full Ht.	Half Ht.
COARSE SERIES	3/8in	9.5mm	—	V3SF 3/8"	—	—	—
	—	—	9.0mm	V3SF 9M	—	—	—
	5/16in	8.0mm	—	V3SF 5/16"	—	—	—
	—	—	7.1mm	V3SF 7.1M	—	—	—
	0.265in	6.7mm	—	V3SF .265"	—	—	—
	1/4in	6.3mm	—	V3SF 1/4"	—	—	—
	No.3-1/2in	5.6mm	—	V3SF #3-1/2	V3SH #3-1/2	V3CF #3-1/2	V3CH #3-1/2
	—	—	5.0mm	V3SF 5M	V3SH 5M	V3CF 5M	V3CH 5M
	No.4	4.75mm	—	V3SF #4	V3SH #4	V3CF #4	V3CH #4
	—	—	4.5mm	V3SF 4.5M	V3SH 4.5M	V3CF 4.5M	V3CH 4.5M
FINE SERIES	No.5	4.0mm	—	V3SF #5	V3SH #5	V3CF #5	V3CH #5
	—	—	3.55mm	V3SF 3.55M	V3SH 3.55M	V3CF 3.55M	V3CH 3.55M
	No.6	3.35mm	—	V3SF #6	V3SH #6	V3CF #6	V3CH #6
	—	—	3.15mm	V3SF 3.15M	V3SH 3.15M	V3CF 3.15M	V3CH 3.15M
	No.7	2.8mm	—	V3SF #7	V3SH #7	V3CF #7	V3CH #7
	—	—	2.5mm	V3SF 2.5M	V3SH 2.5M	V3CF 2.5M	V3CH 2.5M
	No.8	2.36mm	—	V3SF #8	V3SH #8	V3CF #8	V3CH #8
	—	—	2.24mm	V3SF 2.24M	V3SH 2.24M	V3CF 2.24M	V3CH 2.24M
	No.10	2.0mm	—	V3SF #10	V3SH #10	V3CF #10	V3CH #10
	—	—	1.80mm	V3SF 1.8M	V3SH 1.8M	V3CF 1.8M	V3CH 1.8M
	No.12	1.7mm	—	V3SF #12	V3SH #12	V3CF #12	V3CH #12
	—	—	1.60mm	V3SF 1.6M	V3SH 1.6M	V3CF 1.6M	V3CH 1.6M
	No.14	1.4mm	—	V3SF #14	V3SH #14	V3CF #14	V3CH #14
	—	—	1.25mm	V3SF 1.25M	V3SH 1.25M	V3CF 1.25M	V3CH 1.25M
	No.16	1.18mm	—	V3SF #16	V3SH #16	V3CF #16	V3CH #16
	—	—	1.12mm	V3SF 1.12M	V3SH 1.12M	V3CF 1.12M	V3CH 1.12M
	No.18	1.0mm	—	V3SF #18	V3SH #18	V3CF #18	V3CH #18
	—	—	900µm	V3SF 900U	V3SH 900U	V3CF 900U	V3CH 900U
	No.20	850µm	—	V3SF #20	V3SH #20	V3CF #20	V3CH #20
	—	—	800µm	V3SF 800U	V3SH 800U	V3CF 800U	V3CH 800U
	No.25	710µm	—	V3SF #25	V3SH #25	V3CF #25	V3CH #25
	—	—	630µm	V3SF 630U	V3SH 630U	V3CF 630U	V3CH 630U
	No.30	600µm	—	V3SF #30	V3SH #30	V3CF #30	V3CH #30
	—	—	560µm	V3SF 560U	V3SH 560U	V3CF 560U	V3CH 560U
	No.35	500µm	—	V3SF #35	V3SH #35	V3CF #35	V3CH #35
	—	—	450µm	V3SF 450U	V3SH 450U	V3CF 450U	V3CH 450U
	No.40	425µm	—	V3SF #40	V3SH #40	V3CF #40	V3CH #40
	—	—	400µm	V3SF 450U	V3SH 450U	V3CF 450U	V3CH 450U
	No.45	355µm	—	V3SF #45	V3SH #45	V3CF #45	V3CH #45
	—	—	315µm	V3SF 315U	V3SH 315U	V3CF 315U	V3CH 315U
	No.50	300µm	—	V3SF #50	V3SH #50	V3CF #50	V3CH #50
	—	—	280µm	V3SF 280U	V3SH 280U	V3CF 280U	V3CH 280U
	No.60	250µm	—	V3SF #60	V3SH #60	V3CF #60	V3CH #60
	—	—	224µm	V3SF 224U	V3SH 224U	V3CF 224U	V3CH 224U
	No.70	212µm	—	V3SF #70	V3SH #70	V3CF #70	V3CH #70
	—	—	200µm	V3SF 200U	V3SH 200U	V3CF 200U	V3CH 200U
	No.80	180µm	—	V3SF #80	V3SH #80	V3CF #80	V3CH #80
	—	—	160µm	V3SF 160U	V3SH 160U	V3CF 160U	V3CH 160U
	No.100	150µm	—	V3SF #100	V3SH #100	V3CF #100	V3CH #100
	—	—	140µm	V3SF 140U	V3SF 140U	V3CF 140U	V3CH 140U
	No.120	125µm	—	V3SF #120	V3SH #120	V3CF #120	V3CH #120
	—	—	112µm	V3SF 112U	V3SH 112U	V3CF 112U	V3CH 112U
	No.140	106µm	—	V3SF #140	V3SH #140	V3CF #140	V3CH #140
	—	—	100µm	V3SF 100U	V3SH 100U	V3CF 100U	V3CH 100U
	No.170	90µm	—	V3SF #170	V3SH #170	V3CF #170	V3CH #170
	—	—	80µm	V3SF 80U	V3SH 80U	V3CF 80U	V3CH 80U
	No.200	75µm	—	V3SF #200	V3SH #200	V3CF #200	V3CH #200
	—	—	71µm	V3SF 71U	V3SH 71U	V3CF 71U	V3CH 71U
	No.230	63µm	—	V3SF #230	V3SH #230	V3CF #230	V3CH #230
	—	—	56µm	V3SF 56U	V3SH 56U	V3CF 56U	V3CH 56U
	No.270	53µm	—	V3SF #270	V3SH #270	V3CF #270	V3CH #270
	—	—	50µm	V3SF 50U	V3SH 50U	V3CF 50U	V3CH 50U
	No.325	45µm	—	V3SF #325	V3SH #325	V3CF #325	V3CH #325
	—	—	40µm	V3SF 40U	V3SH 40U	V3CF 40U	V3CH 40U
	No.400	38µm	—	V3SF #400	V3SH #400	V3CF #400	V3CH #400
	—	—	36µm	V3SF 36U	V3SH 36U	V3CF 36U	V3CH 36U
	No.450	32µm	—	V3SF #450	V3SH #450	V3CF #450	V3CH #450
	No.500	25µm	—	V3SF #500	V3SH #500	V3CF #500	V3CH #500
	No.635	20µm	—	V3SF #635	V3SH #635	V3CF #635	V3CH #635
	Regular Pan			V3SFXPN	V3SHXPN	V3BFXPN	V3BHXPN
	Extended Rim Pan			V3SFXPE	V3SHXPE	V3BFXPE	V3BHXPE
	Regular Cover			V3SFXCV		V3BFXCV	
	Cover with Ring			V3SFXCVR		V3BFXCVR	

alsoavailable.....

Test Sieves can be verified to Inspection or Calibration grades under ASTM E11 or ISO 565 and 3310-01 specifications. See our separate listings for Test Sieve and Screen Tray Verification and Services.

VIDEO ONLINE

Acrylic Frame Sieves with Stainless Steel Wire Cloth

Acrylic Frame Precision Sieves with Electroformed Mesh

3IN ACRYLIC FRAME TEST SIEVES
ASTM E11, E161; ISO 565, 3310-1, 3310-3

3in (76mm) diameter sieves have clear acrylic frames for enhanced sample visibility during testing and are machined for improved fit and reduced sample loss. Frames are available fitted with conventional ASTM E11 stainless steel woven-wire cloth or ASTM E161 Precision Electroformed nickel mesh. Each sieve is supplied with a Certificate of Compliance to the appropriate ASTM Standard. GAA-88 Clear Acrylic Spacers are available if fewer sieves are used in the stack.

Wire cloth sieves are available in sizes from 5.60mm (No. 3 ½) to 20µm (No. 635) in ASTM E11 Compliance Grade and can be Verified or Reverified to Inspection or Calibration grades using Gilson Verification Services. Stack height relative to metal-frame sieves allows up to twice as many sieves in a stack. Acrylic frame woven wire sieve heights are approximately 0.8in (20.3mm).

3in Acrylic Frame Sieves are required for the GA-6 Gilsonic Autosiever and a recommended alternative to metal-frame sieves for the SS-3 Gilson Performer III Sieve Shaker, where the reduced height of the acrylic frames allows up to fourteen sieves in a stack. SSA-17 Acrylic Sieve Adapter allows 3in stainless steel sieve pans to be used with 3in Acrylic Sieves.

Precision Electroformed Sieves feature greater accuracy and opening size selection, making them a better solution for precision particle sizing operations. Opening sizes are available from 150µm (No.100) to 5µm and include sizes meeting ASTM E161 and ISO 565 requirements. E161 Precision Electroformed Sieves have tolerances to ±2µm, two to ten times lower than ASTM E11 woven-wire sieves and some openings are equivalent to E11 sizes. When calibrated with Standard Reference Materials (SRM's), electroformed sieves can serve as a reliable reference standard. Their increased height limits the number that can be used in a stack. Acrylic frame electroformed sieve heights are approximately 1.4in (36.8mm).

3in Diameter Acrylic Frame ASTM E11 Test Sieves[1]

Sieve Designation		Stainless Steel Mesh	ASTM E161 Precision Electroformed
Alt.	Std.		
No.3-1/2	5.60mm	GAA-20	—
No.4	4.75mm	GAA-21	—
No.5	4.00mm	GAA-22	—
No.6	3.35mm	GAA-23	—
No.7	2.80mm	GAA-24	—
No.8	2.36mm	GAA-25	—
No.10	2.00mm	GAA-26	—
No.12	1.70mm	GAA-27	—
No.14	1.40mm	GAA-28	—
No.16	1.18mm	GAA-29	—
No.18	1.00mm	GAA-30	—
No.20	850µm	GAA-31	—
No.25	710µm	GAA-32	—
No.30	600µm	GAA-33	—
No.35	500µm	GAA-34	—
No.40	425µm	GAA-35	—
No.45	355µm	GAA-36	—
No.50	300µm	GAA-37	—
No.60	250µm	GAA-38	—
No.70	212µm	GAA-39	—
No.80	180µm	GAA-40	—
No.100	150µm	GAA-41	GAA-62
No.120	125µm	GAA-42	GAA-63
No.140	106µm	GAA-43	GAA-63A
—	105µm	—	GAA-64
—	100µm	—	GAA-65
—	95µm	—	GAA-66
No.170	90µm	GAA-44	GAA-67
—	85µm	—	GAA-68
—	80µm	—	GAA-69
No.200	75µm	GAA-45	GAA-70
—	70µm	—	GAA-71
—	65µm	—	GAA-72
No.230	63µm	GAA-46	GAA-72A
—	60µm	—	GAA-73
—	55µm	—	GAA-74
No.270	53µm	GAA-47	GAA-74A
—	50µm	—	GAA-75
No.325	45µm	GAA-48	GAA-76
—	40µm	—	GAA-77
No.400	38µm	GAA-49	GAA-77A
—	35µm	—	GAA-78
No.450	32µm	GAA-50	GAA-78A
—	30µm	—	GAA-79
No.500	25µm	GAA-51	GAA-80
No.635	20µm	GAA-52	GAA-81
—	15µm	—	GAA-82
—	10µm	—	GAA-83
—	5µm	—	GAA-84

[1]*Inquire for sizes not listed.*

alsoavailable

3in Acrylic Frame Stainless Steel Test sieves can be verified to Inspection or Calibration grades under ASTM E11 or ISO 565 and 3310-1 specifications. See our separate listing for Test Sieve and Screen Tray Verification and other Services.

6in Stainless Steel Test Sieves

10in Stainless Steel Test Sieves

18in Stainless Steel Test Sieves

6in, 10in, and 18in Test Sieves are non-returnable

6in, 10in & 18in Diameter ASTM E11 Test Sieves

	Sieve Designation		6in Diameter		10in Diameter	18in Diameter
			Stainless Cloth Stainless Frame		Stainless Cloth Stainless Frame	Stainless Cloth Stainless Frame
	Alt.	Std.	Full Ht.	Half Ht.	Full Ht.	Full Ht.
COARSE SERIES	4in	100.0mm	_	_	V10SF 4"	V18SF 4"
	3-1/2in	90.0mm	_	_	V10SF 3-1/2"	V18SF 3-1/2"
	3in	75.0mm	_	_	V10SF 3"	V18SF 3"
	2-1/2in	63.0mm	_	_	V10SF 2-1/2"	V18SF 2-1/2"
	2.12in	53.0mm	_	_	V10SF 2.12"	V18SF 2.12"
	2in	50.0mm	_	_	V10SF 2"	V18SF 2"
	1-3/4in	45.0mm	_	_	V10SF 1-3/4"	V18SF 1-3/4"
	1-1/2in	37.5mm	_	_	V10SF 1-1/2"	V18SF 1-1/2"
	1-1/4in	31.5mm	_	_	V10SF 1-1/4"	V18SF 1-1/4"
	1.06in	26.5mm	_	_	V10SF 1.06"	V18SF 1.06"
	1in	25.0mm	V6SF 1"	_	V10SF 1"	V18SF 1"
	7/8in	22.4mm	V6SF 7/8"	_	V10SF 7/8"	V18SF 7/8"
	3/4in	19.0mm	V6SF 3/4"	_	V10SF 3/4"	V18SF 3/4"
	5/8in	16.0mm	V6SF 5/8"	_	V10SF 5/8"	V18SF 5/8"
	0.530in	13.2mm	V6SF .530"	_	V10SF .530"	V18SF .530"
	1/2in	12.5mm	V6SF 1/2"	_	V10SF 1/2"	V18SF 1/2"
	7/16in	11.2mm	V6SF 7/16"	_	V10SF 7/16"	V18SF 7/16"
	3/8in	9.5mm	V6SF 3/8"	_	V10SF 3/8"	V18SF 3/8"
	5/16in	8.0mm	V6SF 5/16"	_	V10SF 5/16"	V18SF 5/16"
	0.265in	6.7mm	V6SF .265"	_	V10SF .265"	V18SF .265"
	1/4in	6.3mm	V6SF 1/4"	_	V10SF 1/4"	V18SF 1/4"
	No.3-1/2	5.6mm	V6SF #3-1/2	V6SH #3-1/2	V10SF #3-1/2	V18SF #3-1/2
	No.4	4.75mm	V6SF #4	V6SH #4	V10SF #4	V18SF #4
FINE SERIES	No.5	4.0mm	V6SF #5	V6SH #5	V10SF #5	V18SF #5
	No.6	3.35mm	V6SF #6	V6SH #6	V10SF #6	V18SF #6
	1/8in[1]	3.18mm	V6SF 1/8"	V6SH 1/8"	V10SF 1/8"	V18SF 1/8"
	No.7	2.8mm	V6SF #7	V6SH #7	V10SF #7	V18SF #7
	No.8	2.36mm	V6SF #8	V6SH #8	V10SF #8	V18SF #8
	No.10	2.0mm	V6SF #10	V6SH #10	V10SF #10	V18SF #10
	No.12	1.7mm	V6SF #12	V6SH #12	V10SF #12	V18SF #12
	No.14	1.4mm	V6SF #14	V6SH #14	V10SF #14	V18SF #14
	No.16	1.18mm	V6SF #16	V6SH #16	V10SF #16	V18SF #16
	No.18	1.0mm	V6SF #18	V6SH #18	V10SF #18	V18SF #18
	No.20	850µm	V6SF #20	V6SH #20	V10SF #20	V18SF #20
	No.25	710µm	V6SF #25	V6SH #25	V10SF #25	V18SF #25
	No.30	600µm	V6SF #30	V6SH #30	V10SF #30	V18SF #30
	No.35	500µm	V6SF #35	V6SH #35	V10SF #35	V18SF #35
	No.40	425µm	V6SF #40	V6SH #40	V10SF #40	V18SF #40
	No.45	355µm	V6SF #45	V6SH #45	V10SF #45	V18SF #45
	No.50	300µm	V6SF #50	V6SH #50	V10SF #50	V18SF #50
	No.60	250µm	V6SF #60	V6SH #60	V10SF #60	V18SF #60
	No.70	212µm	V6SF #70	V6SH #70	V10SF #70	V18SF #70
	No.80	180µm	V6SF #80	V6SH #80	V10SF #80	V18SF #80
	No.100	150µm	V6SF #100	V6SH #100	V10SF #100	V18SF #100
	No.120	125µm	V6SF #120	V6SH #120	V10SF #120	V18SF #120
	No.140	106µm	V6SF #140	V6SH #140	V10SF #140	V18SF #140
	No.170	90µm	V6SF #170	V6SH #170	V10SF #170	V18SF #170
	No.200	75µm	V6SF #200	V6SH #200	V10SF #200	V18SF #200
	No.230	63µm	V6SF #230	V6SH #230	V10SF #230	V18SF #230
	No.270	53µm	V6SF #270	V6SH #270	V10SF #270	_
	No.325	45µm	V6SF #325	V6SH #325	V10SF #325	_
	No.400	38µm	V6SF #400	V6SH #400	V10SF #400	_
	No.450	32µm	V6SF #450	V6SH #450	V10SF #450	_
	No.500	25µm	V6SF #500	V6SH #500	V10SF #500	_
	No.635	20µm	V6SF #635	V6SH #635	V10SF #635	_
	Regular Pan		V6SFXPN	V6SHXPN	V10SFXPN	V18SFXPN
	Extended Rim Pan		V6SFXPE	V6SHXPE	V10SFXPE	_
	Regular Cover		V6SFXCV	V6SFXCV	V10SFXCV	V18SFXCV
	Cover with Ring		V6SFXCR	V6SFXCR	V10SFXCR	_

[1]*Not a standard ASTM Size*

200mm ISO Test Sieves

helpfulhint

- Many ISO sizes are available with 8in (203mm) or 12in (305mm) diameter frames in ASTM E11 supplemental sizes listed separately.
- ISO Sieves with 200mm or 300mm diameter frames do not stack with ASTM 8in (203mm) or 12in (305mm) sieves.
- ISO Test Sieves are available with opening sizes up to 125mm (5in). Please inquire for openings larger than 63mm.
- ISO Test Sieves are supplied with sieve seal gasket to prevent loss of fines.
- Sieve Verification Services for ISO Test Sieves can be found in a separate listing within this section.

300mm ISO Test Sieves

ISO 200 and 300mm Diameter Test Sieves

	ISO 565, 3310-1	200mm diameter				300mm diameter	
		Stainless Cloth Stainless Frame		Stainless Cloth Brass Frame		Stainless Cloth Stainless Frame	
		Full Ht.	Half Ht.	Full Ht.	Half Ht.	Full Ht.	Half Ht.
COARSE SERIES	63.0mm	V200SF 63M	V200SH 63M	V200CF 63M	V200CH 63M	V300SF 63M	V300SH 63M
	56.0mm	V200SF 56M	V200SH 56M	V200CF 56M	V200CH 56M	V300SF 56M	V300SH 56M
	53.0mm	V200SF 53M	V200SH 53M	V200CF 53M	V200CH 53M	V300SF 53M	V300SH 53M
	50.0mm	V200SF 50M	V200SH 50M	V200CF 50M	V200CH 50M	V300SF 50M	V300SH 50M
	45.0mm	V200SF 45M	V200SH 45M	V200CF 45M	V200CH 45M	V300SF 45M	V300SH 45M
	40.0mm	V200SF 40M	V200SH 40M	V200CF 40M	V200CH 40M	V300SF 40M	V300SH 40M
	37.5mm	V200SF 37.5M	V200SH 37.5M	V200CF 37.5M	V200CH 37.5M	V300SF 37.5M	V300SH 37.5M
	35.5mm	V200SF 35.5M	V200SH 35.5M	V200CF 35.5M	V200CH 35.5M	V300SF 35.5M	V300SH 35.5M
	31.5mm	V200SF 31.5M	V200SH 31.5M	V200CF 31.5M	V200CH 31.5M	V300SF 31.5M	V300SH 31.5M
	28.0mm	V200SF 28M	V200SH 28M	V200CF 28M	V200CH 28M	V300SF 28M	V300SH 28M
	26.5mm	V200SF 26.5M	V200SH 26.5M	V200CF 26.5M	V200CH 26.5M	V300SF 26.5M	V300SH 26.5M
	25.0mm	V200SF 25M	V200SH 25M	V200CF 25M	V200CH 25M	V300SF 25M	V300SH 25M
	22.4mm	V200SF 22.4M	V200SH 22.4M	V200CF 22.4M	V200CH 22.4M	V300SF 22.4M	V300SH 22.4M
	20.0mm	V200SF 20M	V200SH 20M	V200CF 20M	V200CH 20M	V300SF 20M	V300SH 20M
	19.0mm	V200SF 19M	V200SH 19M	V200CF 19M	V200CH 19M	V300SF 19M	V300SH 19M
	18.0mm	V200SF 18M	V200SH 18M	V200CF 18M	V200CH 18M	V300SF 18M	V300SH 18M
	16.0mm	V200SF 16M	V200SH 16M	V200CF 16M	V200CH 16M	V300SF 16M	V300SH 16M
	14.0mm	V200SF 14M	V200SH 14M	V200CF 14M	V200CH 14M	V300SF 14M	V300SH 14M
	13.2mm	V200SF 13.2M	V200SH 13.2M	V200CF 13.2M	V200CH 13.2M	V300SF 13.2M	V300SH 13.2M
	12.5mm	V200SF 12.5M	V200SH 12.5M	V200CF 12.5M	V200CH 12.5M	V300SF 12.5M	V300SH 12.5M
	11.2mm	V200SF 11.2M	V200SH 11.2M	V200CF 11.2M	V200CH 11.2M	V300SF 11.2M	V300SH 11.2M
	10.0mm	V200SF 10M	V200SH 10M	V200CF 10M	V200CH 10M	V300SF 10M	V300SH 10M
	9.5mm	V200SF 9.5M	V200SH 9.5M	V200CF 9.5M	V200CH 9.5M	V300SF 9.5M	V300SH 9.5M
	9.0mm	V200SF 9M	V200SH 9M	V200CF 9M	V200CH 9M	V300SF 9M	V300SH 9M
	8.0mm	V200SF 8M	V200SH 8M	V200CF 8M	V200CH 8M	V300SF 8M	V300SH 8M
	7.1mm	V200SF 7.1M	V200SH 7.1M	V200CF 7.1M	V200CH 7.1M	V300SF 7.1M	V300SH 7.1M
	6.7mm	V200SF 6.7M	V200SH 6.7M	V200CF 6.7M	V200CH 6.7M	V300SF 6.7M	V300SH 6.7M
	6.3mm	V200SF 6.3M	V200SH 6.3M	V200CF 6.3M	V200CH 6.3M	V300SF 6.3M	V300SH 6.3M
	5.6mm	V200SF 5.6M	V200SH 5.6M	V200CF 5.6M	V200CH 5.6M	V300SF 5.6M	V300SH 5.6M
	5.0mm	V200SF 5M	V200SH 5M	V200CF 5M	V200CH 5M	V300SF 5M	V300SH 5M
	4.75mm	V200SF 4.75M	V200SH 4.75M	V200CF 4.75M	V200CH 4.75M	V300SF 4.75M	V300SH 4.75M
FINE SERIES	4.50mm	V200SF 4.5M	V200SH 4.5M	V200CF 4.5M	V200CH 4.5M	V300SF 4.5M	V300SH 4.5M
	4.00mm	V200SF 4M	V200SH 4M	V200CF 4M	V200CH 4M	V300SF 4M	V300SH 4M
	3.55mm	V200SF 3.55M	V200SH 3.55M	V200CF 3.55M	V200CH 3.55M	V300SF 3.55M	V300SH 3.55M
	3.35mm	V200SF 3.35M	V200SH 3.35M	V200CF 3.35M	V200CH 3.35M	V300SF 3.35M	V300SH 3.35M
	3.15mm	V200SF 3.15M	V200SH 3.15M	V200CF 3.15M	V200CH 3.15M	V300SF 3.15M	V300SH 3.15M
	2.80mm	V200SF 2.8M	V200SH 2.8M	V200CF 2.8M	V200CH 2.8M	V300SF 2.8M	V300SH 2.8M
	2.50mm	V200SF 2.5M	V200SH 2.5M	V200CF 2.5M	V200CH 2.5M	V300SF 2.5M	V300SH 2.5M
	2.36mm	V200SF 2.36M	V200SH 2.36M	V200CF 2.36M	V200CH 2.36M	V300SF 2.36M	V300SH 2.36M
	2.24mm	V200SF 2.24M	V200SH 2.24M	V200CF 2.24M	V200CH 2.24M	V300SF 2.24M	V300SH 2.24M
	2.00mm	V200SF 2M	V200SH 2M	V200CF 2M	V200CH 2M	V300SF 2M	V300SH 2M
	1.80mm	V200SF 1.8M	V200SH 1.8M	V200CF 1.8M	V200CH 1.8M	V300SF 1.8M	V300SH 1.8M
	1.70mm	V200SF 1.7M	V200SH 1.7M	V200CF 1.7M	V200CH 1.7M	V300SF 1.7M	V300SH 1.7M
	1.60mm	V200SF 1.6M	V200SH 1.6M	V200CF 1.6M	V200CH 1.6M	V300SF 1.6M	V300SH 1.6M
	1.40mm	V200SF 1.4M	V200SH 1.4M	V200CF 1.4M	V200CH 1.4M	V300SF 1.4M	V300SH 1.4M
	1.25mm	V200SF 1.25M	V200SH 1.25M	V200CF 1.25M	V200CH 1.25M	V300SF 1.25M	V300SH 1.25M
	1.18mm	V200SF 1.18M	V200SH 1.18M	V200CF 1.18M	V200CH 1.18M	V300SF 1.18M	V300SH 1.18M
	1.12mm	V200SF 1.12M	V200SH 1.12M	V200CF 1.12M	V200CH 1.12M	V300SF 1.12M	V300SH 1.12M
	1.00mm	V200SF 1M	V200SH 1M	V200CF 1M	V200CH 1M	V300SF 1M	V300SH 1M
	900µm	V200SF 900U	V200SH 900U	V200CF 900U	V200CH 900U	V300SF 900U	V300SH 900U
	850µm	V200SF 850U	V200SH 850U	V200CF 850U	V200CH 850U	V300SF 850U	V300SH 850U
	800µm	V200SF 800U	V200SH 800U	V200CF 800U	V200CH 800U	V300SF 800U	V300SH 800U
	710µm	V200SF 710U	V200SH 710U	V200CF 710U	V200CH 710U	V300SF 710U	V300SH 710U
	630µm	V200SF 630U	V200SH 630U	V200CF 630U	V200CH 630U	V300SF 630U	V300SH 630U
	600µm	V200SF 600U	V200SH 600U	V200CF 600U	V200CH 600U	V300SF 600U	V300SH 600U
	560µm	V200SF 560U	V200SH 560U	V200CF 560U	V200CH 560U	V300SF 560U	V300SH 560U
	500µm	V200SF 500U	V200SH 500U	V200CF 500U	V200CH 500U	V300SF 500U	V300SH 500U
	450µm	V200SF 450U	V200SH 450U	V200CF 450U	V200CH 450U	V300SF 450U	V300SH 450U
	425µm	V200SF 425U	V200SH 425U	V200CF 425U	V200CH 425U	V300SF 425U	V300SH 425U
	400µm	V200SF 400U	V200SH 400U	V200CF 400U	V200CH 400U	V300SF 400U	V300SH 400U
	355µm	V200SF 355U	V200SH 355U	V200CF 355U	V200CH 355U	V300SF 355U	V300SH 355U
	315µm	V200SF 315U	V200SH 315U	V200CF 315U	V200CH 315U	V300SF 315U	V300SH 315U
	300µm	V200SF 300U	V200SH 300U	V200CF 300U	V200CH 300U	V300SF 300U	V300SH 300U
	280µm	V200SF 280U	V200SH 280U	V200CF 280U	V200CH 280U	V300SF 280U	V300SH 280U
	250µm	V200SF 250U	V200SH 250U	V200CF 250U	V200CH 250U	V300SF 250U	V300SH 250U
	224µm	V200SF 224U	V200SH 224U	V200CF 224U	V200CH 224U	V300SF 224U	V300SH 224U
	212µm	V200SF 212U	V200SH 212U	V200CF 212U	V200CH 212U	V300SF 212U	V300SH 212U
	200µm	V200SF 200U	V200SH 200U	V200CF 200U	V200CH 200U	V300SF 200U	V300SH 200U
	180µm	V200SF 180U	V200SH 180U	V200CF 180U	V200CH 180U	V300SF 180U	V300SH 180U
	160µm	V200SF 160U	V200SH 160U	V200CF 160U	V200CH 160U	V300SF 160U	V300SH 160U
	150µm	V200SF 150U	V200SH 150U	V200CF 150U	V200CH 150U	V300SF 150U	V300SH 150U
	140µm	V200SF 140U	V200SH 140U	V200CF 140U	V200CH 140U	V300SF 140U	V300SH 140U
	125µm	V200SF 125U	V200SH 125U	V200CF 125U	V200CH 125U	V300SF 125U	V300SH 125U
	112µm	V200SF 112U	V200SH 112U	V200CF 112U	V200CH 112U	V300SF 112U	V300SH 112U
	106µm	V200SF 106U	V200SH 106U	V200CF 106U	V200CH 106U	V300SF 106U	V300SH 106U
	100µm	V200SF 100U	V200SH 100U	V200CF 100U	V200CH 100U	V300SF 100U	V300SH 100U
	90µm	V200SF 90U	V200SH 90U	V200CF 90U	V200CH 90U	V300SF 90U	V300SH 90U
	80µm	V200SF 80U	V200SH 80U	V200CF 80U	V200CH 80U	V300SF 80U	V300SH 80U
	75µm	V200SF 75U	V200SH 75U	V200CF 75U	V200CH 75U	V300SF 75U	V300SH 75U
	71µm	V200SF 71U	V200SH 71U	V200CF 71U	V200CH 71U	V300SF 71U	V300SH 71U
	63µm	V200SF 63U	V200SH 63U	V200CF 63U	V200CH 63U	V300SF 63U	V300SH 63U
	56µm	V200SF 56U	V200SH 56U	V200CF 56U	V200CH 56U	V300SF 56U	V300SH 56U
	53µm	V200SF 53U	V200SH 53U	V200CF 53U	V200CH 53U	V300SF 53U	V300SH 53U
	50µm	V200SF 50U	V200SH 50U	V200CF 50U	V200CH 50U	V300SF 50U	V300SH 50U
	45µm	V200SF 45U	V200SH 45U	V200CF 45U	V200CH 45U	V300SF 45U	V300SH 45U
	40µm	V200SF 40U	V200SH 40U	V200CF 40U	V200CH 40U	V300SF 40U	V300SH 40U
	38µm	V200SF 38U	V200SH 38U	V200CF 38U	V200CH 38U	V300SF 38U	V300SH 38U
	36µm	V200SF 36U	V200SH 36U	V200CF 36U	V200CH 36U	V300SF 36U	V300SH 36U
	32µm	V200SF 32U	V200SH 32U	V200CF 32U	V200CH 32U	V300SF 32U	V300SH 32U
	25µm	V200SF 25U	V200SH 25U	V200CF 25U	V200CH 25U	V300SF 25U	V300SH 25U
	20µm	V200SF 20U	V200SH 20U	V200CF 20U	V200CH 20U	V300SF 20U	V300SH 20U
	Pan	V200SF XPN	V200SH XPN	V200BF XPN	V200BH XPN	V300SF XPN	V300SH XPN
	Cover	V200S XCV	V200S XCV	V200B XCV	V200B XCV	V300S XCV	V300S XCV

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Micron Air Jet Sieve

Precision Electroformed Sieves

MICRON AIR JET SIEVES

These 200mm diameter sieves are made exclusively for the old-style Micron Air Jet Sieve® instrument. They are supplied in ASTM E11 Compliance Grade, but may be upgraded to Inspection or Calibration Grade. See separate Gilson Test Sieve Verification Service listing for details. Sieves are constructed with stainless steel frame and mesh and fitted with special sealing gaskets.

Micron Air Jet Sieves®

Sieve Designation		Stainless Steel Mesh
Alt.	Std.	
No.4	4.75mm	AJA-245
No.5	4.00mm	AJA-244
No.6	3.35mm	AJA-243
No.7	2.80mm	AJA-242
No.8	2.36mm	AJA-241
No.10	2.00mm	AJA-240
No.12	1.70mm	AJA-239
No.14	1.40mm	AJA-238
No.16	1.18mm	AJA-237
No.18	1.00mm	AJA-236
No.20	850µm	AJA-235
No.25	710µm	AJA-234
No.30	600µm	AJA-233
No.35	500µm	AJA-232
No.40	425µm	AJA-231
No.45	355µm	AJA-230
No.50	300µm	AJA-229
No.60	250µm	AJA-228
No.70	212µm	AJA-227
No.80	180µm	AJA-226
No.100	150µm	AJA-224
No.120	125µm	AJA-223
No.140	106µm	AJA-222
No.170	90µm	AJA-220
No.200	75µm	AJA-218
No.230	63µm	AJA-217
No.270	53µm	AJA-216
No.325	45µm	AJA-214
No.400	38µm	AJA-213
No.450	32µm	AJA-212
No.500	25µm	AJA-211
No.635	20µm	AJA-210

technote

The new-style AJ-103 and AJ-105 Mikro Air Jet do not require special Micron Air Jet Sieves with the large sealing gasket. They will accept either 200mm or standard 8in sieves fitted with the SSA-10 Sieve Seal Gasket.

ASTM PRECISION ELECTROFORMED SIEVES

ASTM E161; ISO 565, 3310-3

The ±2µm opening tolerances of Precision Electroformed Sieves are consistently more accurate than woven-wire sieves, and sizes are available to 5µm. Electroformed sieve cloth is formed using electrodeposition of nickel, producing a planar mesh with very consistent square openings. Each sieve is measured at over 100 random openings and supplied with a Certificate of Compliance to meet listed standards. The accuracy, efficiency and size range of Electroformed Sieves make them a better solution for precision particle sizing operations below 75µm. When used with precision vibratory or sonic shakers, Electroformed Sieves are often more productive than woven wire sieves with standard mechanical shakers. They perform well for dry or wet sieving conditions and can be used with dispersing or wetting agents. When calibrated with glass beads or other reference materials, electroformed sieves can serve as a reliable reference standard.

Electroformed sieves have stainless steel 8in (203.2mm) or 3in (76.2mm) diameter full or half-height frames. Stacking heights for eight inch diameter frames are 2in (50.8mm) and 1in (25.4mm). For three inch frames, stacking heights are 3in (76.2mm) and 1in (25.4mm). The Lines Per Inch (LPI) value indicates the number of openings of the specified size occurring in one linear inch (25.4mm). Higher LPIs are more fragile while low LPIs have thicker metal, but fewer openings. Standard electroformed cloth has a support grid that increases strength and durability, but blocks some openings and reduces sieving efficiency. To order electroform sieves without this support grid, add a "U" suffix to model numbers. Cloth is bonded to the frame with an epoxy ring. Frames stack with ASTM E11 woven-wire sieves.

Electroformed sieves are precision instruments and ultrasonic cleaning is recommended for normal maintenance. Gilson assumes no responsibility for damage in use and electroformed sieves are nonreturnable when supplied as ordered. Sieves with larger openings or other LPIs can be quoted on request. Special frames in 200mm or 12in (305mm) diameter (20µm mesh and larger only) can also be quoted.

Precision Electroformed Sieves[1]

Sieve Designation		8in Diameter		3in Diameter	
Opening Size	LPI	Full Ht.	Half Ht.	Full Ht.	Half Ht.
75µm	150	V8EF-075	V8EH-075	V3EF-075	V3EH-075
70µm	181	V8EF-070	V8EH-070	V3EF-070	V3EH-070
63µm	181	V8EF-063	V8EH-063	V3EF-063	V3EH-063
60µm	181	V8EF-060	V8EH-060	V3EF-060	V3EH-060
53µm	250	V8EF-053	V8EH-053	V3EF-053	V3EH-053
50µm	250	V8EF-050	V8EH-050	V3EF-050	V3EH-050
45µm	250	V8EF-045	V8EH-045	V3EF-045	V3EH-045
40µm	300	V8EF-040	V8EH-040	V3EF-040	V3EH-040
38µm	300	V8EF-038	V8EH-038	V3EF-038	V3EH-038
32µm	300	V8EF-032	V8EH-032	V3EF-032	V3EH-032
30µm	300	V8EF-030	V8EH-030	V3EF-030	V3EH-030
25µm	400	V8EF-025	V8EH-025	V3EF-025	V3EH-025
20µm	400	V8EF-020	V8EH-020	V3EF-020	V3EH-020
15µm	400	V8EF-015	V8EH-015	V3EF-015	V3EH-015
10µm	500	V8EF-010	V8EH-010	V3EF-010	V3EH-010
5µm	500	V8EF-005	V8EH-005	V3EF-005	V3EH-005
Pan		V8SFXPN	V8SHXPN	V3SFXPN	V3SHXPN
Cover		V8SFXCV	V8SHXCV	V3SFXCV	V3SHXCV
Extended Rim Pan		V8SFXPE	V8SHXPE	V3SFXPE	V3SHXPE

[1]*The chart shows our most popular Precision Electroformed Sieve sizes. Please contact us if your size is not listed.*

WT-34C #325

VIDEO ONLINE

WT-88S #200

WT-128S #200

WT-86S #200

WT-84C #200

WET-WASH SIEVES

ASTM C117, D1140, E11; AASHTO T 11

Wet-wash sieves are used for fines content determinations, or to wash away excessive fines when preparing specimens for particle size testing. All wet-wash sieves have extra-deep frames above the wire cloth to contain wash water, but will also nest with standard pans, covers and other ASTM sieves. Gilson's all-stainless steel Wet-Wash Sieves offer great value, better durability and much longer service life than brass models. Popular models listed are in stock and feature stainless steel cloth in ASTM No.100 (150µm), No.200 (75µm) and No.325 (45µm) sizes, with stainless steel or brass frames in 12in (305mm), 8in (203mm), or 3in (76mm) diameters.

Inquire for additional mesh sizes. Reinforced No.30 Backing Cloth is recommended for extended service life when using the finer mesh sizes. This can be specified by adding the suffix, "BU" to the model number. Sieves ordered with Backing Cloth are non-returnable. Deep Frame Wet Wash Sieves have holes in the lower flange for water drainage.

Sieves ship with ASTM E11 Compliance Grade certification. Gilson Sieve Verification Services are available for certification to Inspection or Calibration Grade requirements.

Deep Frame Wet-Wash Sieves

Frame Diameter x Depth in (mm)	Sieve Designation Alt. (Std.)	Stainless Steel Cloth Stainless Steel Frame	Stainless Steel Cloth Brass Frame
12x8 (305x203)	No. 100 (150µm)	WT-128S #100	WT-128C #100
	No. 200 (75µm)	WT-128S #200	WT-128C #200
	No. 325 (45µm)	WT-128S #325	WT-128C #325
8x8 (203x203)	No. 100 (150µm)	WT-88S #100	WT-88C #100
	No. 200 (75µm)	WT-88S #200	WT-88C #200
	No. 325 (45µm)	WT-88S #325	WT-88C #325
8x6 (203x152)	No. 100 (150µm)	WT-86S #100	–
	No. 200 (75µm)	WT-86S #200	–
	No. 325 (45µm)	WT-86S #325	–
8x4 (203x102)	No. 100 (150µm)	WT-84S #100	WT-84C #100
	No. 200 (75µm)	WT-84S #200	WT-84C #200
	No. 325 (45µm)	WT-84S #325	WT-84C #325
3x4 (76x102)	No. 100 (150µm)	WT-34S #100	WT-34C #100
	No. 200 (75µm)	WT-34S #200	WT-34C #200
	No. 325 (45µm)	WT-34S #325	WT-34C #325

technote

Extend the working life of your wet-wash sieves by adding Back-up Cloth ("BU") when you order! Verification services are not available for sieves with back-up cloth.

REPLACEABLE MESH WET-WASH SIEVES

Replacement Screen includes stainless steel backing cloth to reinforce the testing grade mesh.

Top Frame

Replacement Screen

Rubber Gasket

Bottom Skirt

WT-206

WTA-54

REPLACEABLE MESH WET-WASH SIEVES

ASTM C117, D1140, E11; AASHTO T 11

Replaceable Mesh Sieves for wet-wash sieving save significant expense. Interchangeable screens change out quickly when worn beyond acceptable limits. Unique cartridge assemblies combine ASTM E11 testing-grade stainless steel wire cloth with sturdy back-up cloth for long life and replacement convenience. Replacement screens are held securely in place using a rubber gasket and stainless steel fasteners. The 8in (203mm) diameter brass frames nest with conventional sieves and pans. Available in 4in (102mm) or 6in (152mm) heights. Replaceable Screens include back-up cloth and are available in No.200 (75µm) or No.325 (45µm) mesh.

Replaceable Mesh Wet-Wash Sieves	
No.200, 4in height	WT-204
No.200, 6in height	WT-206
No.325, 4in height	WT-324
No.325, 6in height	WT-326
Accessories	
No.200 Replacement Screen	WTA-53
No.325 Replacement Screen	WTA-54

SV-125 shown with Polyester Cloth

SV8-2F shown with Sieve Cloth

SV8-2C

TWO-PART REPLACEABLE MESH SIEVES

Non-Metallic Two-Part 8in (203mm) Transparent Polycarbonate Frames are designed for use with disposable Polyester or Nylon monofilament mesh sieve squares. Two-part frames have 1/4in (6.4mm) wall and press together to tension mesh between them. Inexpensive mesh may be replaced when contaminated or blinded. Assembled sieves nest with each other but not with standard metallic sieves. Sieves have approximately a 2in (51mm) stacking height, 2.75in (70mm) overall height and 2in (51mm) depth to cloth. Frames are not autoclavable.

Brass Two-Part 8in (203mm) Frames can be fitted with 10in (255mm) polyester or nylon monofilament mesh squares. Cloth is placed between the sieve frame and skirt and the two parts are pressed together. Using a fresh cloth eliminates sample contamination from previous tests. Frames are available for fine or coarse cloth. Frames nest with each other or with conventional 8in (203mm) diameter standard sieves.

Polyester or Nylon Mesh Sieve Squares are specially designed to fit in either a non-metallic or brass two part frame. Cloth of either Nylon or Polyester is cut into 10in squares. Polyester is recommended for most applications. Each square has a resilient material embedded in the mesh in a circular shape. This material helps the cloth to seal with the accompanying two part frame.

Two-Part Replaceable Mesh Sieves		
Non-metallic Sieve for No.100 & Finer Mesh		SV-125
Non-metallic Sieve for No.20—No.80 Mesh		SV-126
Brass Sieve for No.100 & Finer Mesh		SV8-2F
Brass Sieve for No.20—No.80 Mesh		SV8-2C
Accessories		
Description	**Polyester**	**Nylon**
No.20–No.80 (850–180µm)	PM-1	NM-1
No.100–No.230 (150–63µm)	PM-2	NM-2
No.270, No.325, No.400 (53µm, 45µm, 38µm)	PM-3	NM-3
No.450, No.500, No.635 (32µm, 25µm, 20µm)	PM-4	NM-4
Nominal 15, 10, 7µm	PM-5	NM-5
Polyethylene Film Square for Pan	PM-10	—

3in Non-Metallic Sieves

SSA-820 shown with Sieves

VIDEO ONLINE

SSA-803 shown with 8in full-height Sieves

3IN NON-METALLIC SIEVES

3" (76mm) diameter polycarbonate sieves are manufactured and assembled by Gilson for special applications. Polyester mesh is available in opening sizes from (300µm) to (20µm), as well as 15, 10 and 7µm. Mesh and frame assembly is secured with heat-cured acrylic cement and silicone sealant. An elastic polyolefin band covers the frame joint and provides an effective seal when nesting.

Clear transparent frames make it easy to visually monitor particle action during dry separation or liquid levels during wet-sieving operations. Sieves are approximately 1.75in (45mm) overall height, 1.25in (32mm) stacked and 2.9in (73mm) inside diameter. These sieves nest with each other but not with other sieve types. Special SV-217 Wet-Test Pan is 2.5in (64mm) deep and has drain for 3/8in (9.5mm) tube connection. SV-218 Extended-Rim Pan can be inserted in the middle of a sieve stack, allowing more than one specimen to be tested at a time. Specify opening size when ordering.

3in Non-Metallic Sieves	
No.35–No.45 (500–355µm)	SV-135
No.50–No.80 (300–180µm)	SV-155
No.100–No.200 (150–75µm)	SV-165
No.230–No.400 (63–38µm)	SV-185
No.450–No.635 (32–20µm)	SV-205
Nominal 15, 10, 7µm	SV-206
Accessories	
Sieve Cover	SV-215
Regular Pan	SV-216
Wet-Test Pan	SV-217
Extended-Rim Pan	SV-218
3/8in (9.5mm) Vinyl Tubing, per foot	WT-4

SIEVE STORAGE RACKS

Wall-Mount Sieve Racks feature all stainless steel construction. Compartment bottoms are neoprene lined and inclined to keep sieves in place. Holes are provided for mounting on 16in (406mm) centers and for bolting racks together vertically and/or horizontally. The bottom front flange has a 1.25in (32mm) high area to label slots for sieve sizes. Non-skid rubber feet allow for stable desk or countertop use.

SSA-820 Wall-Mount Sieve Rack is designed for 8in (203mm) or 200mm diameter sieves. Sieves are held on edge in eleven individual 3in (76mm) wide compartments, each holding one full-height or two half-height sieves. **Product Dimensions:** 34.25x9x11in (870x229x279mm), WxDxH.

SSA-822 Adjustable Wall-Mount Sieve Rack for 12in (305mm) or 300mm diameter sieves is similar in design to SSA-820, but has slots every 0.5in (13mm) for variable placement of the eight supplied dividers. Capacity is eight full-height or fourteen half-height sieves. Additional dividers are available in sets of five as SSA-823. Sieve Rack Units are shipped with instructions for simple assembly. **Product Dimensions:** 36.25x13x15.75in (921x330x400mm), WxDxH.

SSA-803 Adjustable Bench Sieve Rack holds all sieves up to 12in (305mm) diameter properly, preventing damage and optimizing organization and efficiency. Stainless steel rack has non-skid rubber feet and is supplied with two permanent and two adjustable rubber-coated sieve support rods. Unit accommodates twenty full-height (forty half-height) 8in or 200mm sieves, twelve full-height (twenty four half-height) 12in or 300mm sieves, or forty full-height 3in sieves. SSA-804 Support Rod Set contains two rubber-covered rods and may be used to increase the capacity for 3in full-height sieves to eighty. **Product Dimensions:** 26x13x13in (660x330x330mm), WxDxH.

Sieve Storage Racks	
Wall-Mount Sieve Rack	SSA-820
Adjustable Wall-Mount Sieve Rack	SSA-822
Adjustable Bench Sieve Rack	SSA-803
Accessories	
Dividers for SSA-822	SSA-823
Support Rod Set for SSA-803	SSA-804

UB-1 shown with 8in Sieves

UB-5

UB-15

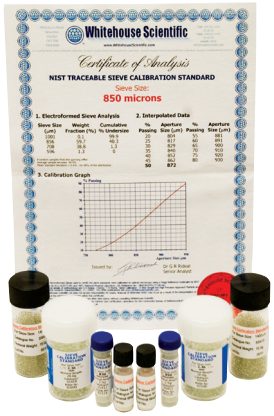
UB-18 shown with 8in Sieves

ULTRASONIC SIEVE CLEANERS

Gilson Ultrasonic Sieve Cleaners are ideal for safe and efficient cleaning of fine-mesh sieves with 3 to 12in (75 to 305mm) diameters, including electroformed cloth sieves. Ultrasonic energy waves create rapid cavitation, agitating and freeing lodged particles. Most meshes are cleaned in one to five minutes.

Ultrasonic Sieve Cleaners

Description	Model	Tank Capacity, qt (L)	Tank Dimensions, WxDxH, in (mm)	External Dimensions, WxDxH, in (mm)
Ultrasonic 8in Sieve Cleaner is sized for full immersion cleaning of up to four 8in (203mm) full-height sieves. Generating unit is housed separately from the stainless steel liquid tank for safe and convenient use. Threaded inlet and outlet drain connections are provided. Generator has On/Off push button. Ultrasonic frequency is 80kHz. A UBA-1 Sieve Holder Rack is included. Extra Racks can be ordered separately to increase productivity.		16 (15.1)	9x10x12 (229x254x305)	13x13x15 (330x330x381)
Ultrasonic 8in Sieve Cleaner 115V/60Hz	UB-1			
Ultrasonic 8in Sieve Cleaner 220V/50–60Hz	UB-1A			
Sieve Holder Rack for 8in Sieves	UBA-1			
Ultrasonic 12in Sieve Cleaner has identical performance features to UB-1, but the tank is sized for full-immersion of two 12in (305mm) diameter full-height sieves.		55 (52)	14x12x20 (356x305x508)	20.5x14x22 (521x356x559)
Ultrasonic 12in Sieve Cleaner 115V/50–60Hz	UB-5			
Ultrasonic 12in Sieve Cleaner 220V/50–60Hz	UB-5A			
Ultrasonic 3in Sieve Cleaner is ideal for full-immersion cleaning of 3in (76mm) diameter sieves, including electroformed meshes as fine as 5µm. It is recommended for Gilson 3in Acrylic Frame Sieves. The 320 Watt output generator features microprocessor circuitry and 0 to 30min timer. Stainless steel tank is equipped with drain valve. 115V, 50/60Hz, 1 amp. UBA-100 stainless steel Sieve Holder is purchased separately.		3.4 (3.2)	4x5.4x9.4 (102x137x239)	9x8.1x12.5 (229x206x318)
Ultrasonic 3in Sieve Cleaner 120V/50–60Hz	UB-15			
Sieve Holder rack for 3in Sieves	UBA-100			
Ultrasonic Multi-Sieve Cleaner can perform full immersion cleaning of four full-height, or six half-height 8in (203mm) sieves, or partial-immersion cleaning of two full or intermediate height or three half height 12in (305mm) sieves. 1,500 Watt output, microprocessor circuitry, 0 to 30min timer and cooling fan. Vinyl clad stainless steel tank is equipped with drain valve. Sieve Rack is included.		40 (37.9)	10x16x14 (254x406x356)	19x17x20 (406x330x381)
Ultrasonic Multi-Sieve Cleaner 120V/50–60Hz	UB-18			
Ultrasonic Multi-Sieve Cleaner 220V/50–60Hz	UB-18A			
Ultrasonic Multi-Sieve Cleaner 240V/50–60Hz	UB-18B			
Special Detergent Concentrate liquid expedites cleaning for all sizes of sieves. A small amount in each tank cleans quickly and effectively and is safe for all meshes. The one gallon (3.8L) bottle of concentrate yields 16 gallons (60.6L) of cleaning solution.	UBA-4	–	–	–



Whitehouse Sieve Standards

NIST Glass Beads

WHITEHOUSE SIEVE STANDARDS

Whitehouse Sieve Standards provide a unique method of verifying No.6 (3.35mm) and finer sieve openings with traceability to NIST. Periodic checks serve as an indicator of when to replace sieves. Each Whitehouse Standard comes as five single-use vials of glass beads for use with a single sieve size. A single vial is used for 8in or 200mm sieves, while two to five vials are used for sieves up to 18in or 450mm in diameter. After processing, the average aperture is quickly read from the calibration graph provided.

Whitehouse has been selected by the Community Bureau of Reference (BCR) to produce standards for the European Community. Whitehouse Sieve Standards are traceable to NIST and NPL as well as to BCR. The spherical beads are made from 2.45 specific gravity soda-lime glass and certified for size using electroformed sieves and image analysis.

Whitehouse Sieve Standards

Sieve Size	Nominal Wt. per Vial, g	Number of Vials	Model
No.6 (3.35mm)	25.0	5	BS-420
No.7 (2.80mm)	25.0	5	BS-419
No.8 (2.36mm)	20.0	5	BS-418
No.10 (2.00mm)	20.0	5	BS-417
No.12 (1.70mm)	15.0	5	BS-416
No.14 (1.40mm)	15.0	5	BS-415
No.16 (1.18mm)	10.0	5	BS-414
No.18 (1.00mm)	7.0	5	BS-413
No.20 (850µm)	3.0	5	BS-412
No.25 (710µm)	2.5	5	BS-411
No.30 (600µm)	2.5	5	BS-410
No.35 (500µm)	2.5	5	BS-409
No.40 (425µm)	2.5	5	BS-408
No.45 (355µm)	2.5	5	BS-407
No.50 (300µm)	2.5	5	BS-406
No.60 (250µm)	2.5	5	BS-405
No.70 (212µm)	1.5	5	BS-404
No.80 (180µm)	1.5	5	BS-403
No.100 (150µm)	1.5	5	BS-402
No.120 (125µm)	1.0	5	BS-401
No.140 (106µm)	1.0	5	BS-400
No.170 (90µm)	1.0	5	BS-399
No.200 (75µm)	1.0	5	BS-398
No.230 (63µm)	1.0	5	BS-397
No.270 (53µm)	1.0	5	BS-396
No.325 (45µm)	1.0	5	BS-395
No.400 (38µm)	1.0	5	BS-394
No.450 (32µm)	1.0	5	BS-393
No.500 (25µm)	0.8	5	BS-392
No.635 (20µm)	0.8	5	BS-391

NIST REFERENCE MATERIALS

Gilson stocks Standard Reference Materials, (SRM's) issued by the US National Institute of Standards and Technology (NIST) for calibration of sieves, sedimentation instruments, particle counters and other instruments.

NIST Glass Beads are produced for determination of effective sieve opening sizes. They are also useful for calibration of electroformed sieves. The entire sample is placed on clean sieves and shaken in the same manner as a sample test. Percent of glass beads retained on each sieve is calculated and effective openings are determined from calibration data on the supplied NIST Certificate. NIST Glass Beads do not verify sieves to ASTM E11 or ISO certification.

BS-42 NIST Sand No. 8010 is a set of three 130g bottles of different sands for use in sieving. Material A is for testing coarser sieves from No.30–No.100. Material C is for No.70–No.200 sieves, and Material D is for finer sieves, No.100–No.325.

BS-46 NIST Portland Cement, No. 46h validates sieve opening sizes for ASTM C430/AASHTO T 192 fineness test. It is also certified as an alternative to the BS-50 (NIST 114q) SRM for use in other applications. Supplied with NIST certificate of analysis in 10 sealed vials, each approximately 5g of cement.

BS-50 NIST Portland Cement No.114q is used in the verification and calibration of equipment for the ASTM C115 Wagner turbidimeter, C1891 fineness by air jet sieve, and C204 Blaine apparatus, as well as the C430 fineness by sieve test. (AASHTO T 98, T 153, and T 192 test methods). This standard reference material is supplied with NIST certificate of analysis in 20 vials of approximately 5g each of cement.

NIST Reference Materials

Material	Model	NIST Model	Range	Qty.	Sample Size, ea.
NIST Glass Beads	BS-5	1019B	No.10–No.20 (2450–750µm)	1	200g
	BS-10	1018B	No.25–No.60 (750–220µm)	1	87g
	BS-20	1017B	No.45–No.140 (400–100µm)	1	70g
	BS-30A	1004B	No.120–No.270 (150–40µm)	1	43g
	BS-40B	1003C	No.325–No.635 (45–20µm)	1	28g
NIST Sand	BS-42	8010	No.30–No.325 (600–45µm)	3	130g
NIST Portland Cement[1]	BS-46	46H	-	10	5g
	BS-50	114Q	-	20	5g

[1]*Inquire for other NIST Portland cement SRMs for testing to ASTM C114/AASHTO T 105.*

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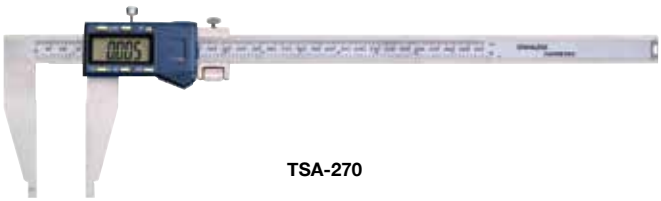
TSA-271



TSA-270

SSA-58

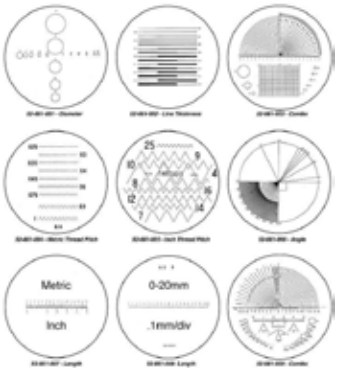
Sieving Accessories

Description	Model
6in Digital Caliper accurately measures inside, outside and depth in inches or mm over a range of 0–6in or 0–150mm. Readability is 0.0005in or 0.01mm on LCD display. Stainless steel caliper has smooth-moving head with locking knob, zero calibration and On/Off switch. Battery is easily replaceable. Supplied with protective carrying case. **Product Dimensions:** 9.5x3in (241x76mm), LxW.	TSA-271
12in Heavy Duty Digital Caliper has a stainless steel frame and accurately measures inside and outside dimensions in inches or mm from 0–12in or 0–300mm. Resolution of 0.0005in or 0.01mm on LCD display is accurate for precise dimensional checks of most asphalt, concrete and soil specimens up to 6x12in (152x305mm) dia.xL. Large 3.5in (89mm) jaw depth easily reaches center of 6in diameter specimens. Includes protective carrying case. **Product Dimensions:** 14.5x4.1in (368x104mm), LxW.	TSA-270
Sieving Aid is a very fine (5–7µm), high purity silicon dioxide powder. When mixed with fine samples (2% by weight is typical), Sieving Aid keeps material free-flowing and prevents agglomeration from static attraction or high humidity. It also acts as a dehydrating agent for samples. Addition does not affect sieving results because of its extremely low bulk density of 7lb/ft^3 (112kg/m^3). 1L is sufficient for over 100 sieving tests. Typical dry purity is 99.6% SiO_2. Available as individual 1 liter bottles or convenient and economical 5-packs. **Product Dimensions:** 3x3.5x8in (76x89x203mm), WxDxH.	
Sieving Aid, 1L Bottle	SSA-58
Sieving Aid, 5-Pack of 1L Bottles	SSA-58C
Pocket Magnifier is ten-power (10x) and useful for examination of wire cloth for damage or for appropriate mesh size. Not for acceptance testing or verification. Viewing area is 0.5x0.5in (12.7x12.7mm). Size is 1.25x1.375x0.95in (32x35x22mm), WxDxH. open; folds flat to 0.375in (9.5mm) thickness.	TSA-175
Screen Opening Gauge is a useful tool when examining test sieves and screen trays as a quick check for wire cloth opening sizes. Marked from 0.125 to 1.125in on one side and 3 to 28mm on the other, the gauge is simply placed in an opening and read where the mesh contacts the side. Durable 22ga stainless steel body has laser-engraved graduations. Not for acceptance or verification. **Product Dimensions:** 1.5x5.5in (38x140mm), WxH.	TSA-265
10X Optical Comparator helps in identification of sieve opening sizes and close examinations of wire cloth condition. Precision scales in inch and millimeter units are photo-etched on 1.2in (30.5mm) diameter interchangeable glass reticles with threaded mounting to eyepiece. Ten-power magnified images are sharp, undistorted and free of aberrations. The Comparator is packed in a wooden case with nine reticles included to measure distance, radii, diameters, angles, hole sizes, pitch and thicknesses. An illuminating attachment for low-light conditions is included and requires two C-size batteries for operation. Not effective for acceptance verification of wire cloth openings. **Product Case Dimensions:** 8.25x4.5x2.25in (210x114x57mm), WxDxH.	TSA-222

TSA-175

TSA-265

TSA-222



VIDEO ONLINE

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TSA-168 TSA-170 TSA-179 TSA-173

TSA-172

TSA-171

TSA-174

TSA-176

Brushes

Description	Model
Small Fine Sieve Cleaning Brush has soft bristles tapered for use with fine mesh sieves in round 0.75in (19mm) ferrule. Overall length is 5in (127mm) with wood handle.	TSA-168
Fine Sieve Cleaning Brush is ideal for cleaning No.16 and finer sieves. Soft bristles, nickeled steel ferrule, lacquered wood handle, 1.25in (31.8mm) diameter and 5.75in (146mm) long.	TSA-170
Nylon Sieve Cleaning Brush is a hardwood block brush with nylon bristles, optimal for cleaning No. 120 mesh and finer sieves. 1.875in (47.8mm) diameter and 0.875in (22.4mm) thick with 3.75in (95.3mm) straight wood handle. Overall brush length is 5.88in.	TSA-179
Wire Loop Brush is a 1.25in (31.8mm) wide fan type brush with 1.625in (295mm) long metal bristles and a wire loop handle. The 4.75in long brush is designed for use on #16 and coarser wire cloth.	TSA-173
Coarse Sieve Cleaning Brush has an 8.5in (216mm) curved plastic handle with 1.5in x 1.75in (38 x 44mm) of slanted brass wire bristles—perfect for No.30 and coarser wire cloth in round sieves.	TSA-172
Coarse Screen Tray Brush is recommended for No.30 and coarser wire cloth in screen trays. The 13in curved wooden handle has 5.5in x 0.75in (140 x 19mm) of fine (0.005) brass wire bristles, which slant toward the tip for cleaning corners of screen trays. Also useful for cleaning molds.	TSA-171
Table Brush has 9x3in of horsehair bristles. This 14in (356mm) long brush comes with a plastic or wood handle, depending on availability. A general purpose brush suitable for clean up of lab equipment.	TSA-174
Wire Scratch Brush has flat wire bristles that are grouped in 5x10 rows. Sturdy wood block handle is 7.75in (197mm) long x 2.625in wide. The 2in bristles, are acceptable for use on soil-cement specimens to meet ASTM D559, D560, 2.63in (67mm) AASHTO T 135 and T 136.	TSA-176
Scrub Brushes are available in 20in (508mm) long-handled, or 8in (203mm) short-handled versions and stand up to heavy everyday use in the field. Both feature durable, solid plastic handles and sturdy, acid-resistant synthetic fibers.	
Short Scrub Brush, 8in (203mm)	TSA-232
Long Scrub Brush, 20in (508mm)	TSA-233
Camel Hair Brush Set for delicate sieve meshes includes two flat-tip and two round-tip brushes.	WT-6

WT-6

TSA-232

TSA-233

TSA-177 & TSA-178

TSA-182 & TSA-183

TSA-184, TSA-186 & TSA-188

TSA-198

TSA-205, TSA-207 & TSA-208

Scoops

Type	Model	Capacity oz (L)	Bottom Type	Bowl LxW, in	Overall Length in (mm)
Plastic	TSA-177	32 (0.95)	Flat	6.5x 5.0	11.5 (292)
	TSA-178	82 (2.4)	Flat	9.0x 6.0	14.5 (368)
Aluminum	TSA-182	38 (1.12)	Flat	8.8x5.3	14.0 (355)
	TSA-183	3.5 (0.10)	Flat	4.8x2.8	8.5 (216)
	TSA-193	2 (0.05)	Round	4.5x2.0	7.8 (198)
	TSA-184	5 (0.15)	Round	4.8x2.5	7.3 (185)
	TSA-185	12 (0.36)	Round	5.8x3.3	8.8 (223)
	TSA-186	24 (0.71)	Round	7.0x3.8	10.5 (267)
	TSA-187	85 (2.37)	Round	11.8x6.3	16.0 (406)
	TSA-188	38 (1.12)	Round	8.8x4.6	12.3 (312)
	TSA-189	58 (1.71)	Round	10.0x5.3	14.3 (363)
Stainless Steel	TSA-198	4 (0.11)	Round	3.0x5.0	9.0 (229)
	TSA-205	12 (0.36)	Flat	5.5x3.0	9.0 (229)
	TSA-206	24 (0.71)	Flat	7.0x4.5	12.0 (305)
	TSA-207	45 (1.33)	Flat	8.0x5.5	13.5 (343)
	TSA-208	63 (1.86)	Flat	10x7.0	15.0 (381)

SP-90

GAA-19

WT-7

WT-5

WT-13S

WT-3

WT-4

WT-10

BK-447R

Sieving Accessories

Description	Model
Automagnet Separator with simple spring plunger has hold-and-release action and permits extraction of magnetic material dry or partially immersed in liquids. Powerful Sealed Alnico V-six Pole Permanent magnet in lightweight aluminum case. **Product Dimensions:** 2.5inx6.5in (64x165mm), dia.xH.	SP-90
Clear Acrylic Spacers for Test Sieves take the place of one test sieve in any sieve shaker and allow observation of sample materials during wet or dry sieving operations. Visual observation of sieving action makes it easy to judge effectiveness and adjust settings of sieve shakers.	
Clear Acrylic Spacer for 8in (203mm) Test Sieves	GAA-19
Clear Acrylic Spacer for 200mm Test Sieves	GAA-19M
Clear Acrylic Spacer for 3in (76mm) Test Sieves	SSA-15
Spray Fitting attaches to standard lab faucet with threaded fitting. Adapter for small, unthreaded faucets is included. Superfine conical spray pattern brass fitting is rated at 2gal (7.6L) per minute.	WT-7
Spray Bottle has a 32oz (946ml) capacity and an adjustable nozzle.	WT-5
Sieve Pan With Drain is available in 8in (203mm) diameter by 2-5/8in (67mm) or 3in (76mm) diameter by 1.25in (31.75mm) height, with 1/4in barbed fitting for vinyl tubing.	
8in (203mm) Brass	WT-3
8in (203mm) Stainless Steel	WT-3S
3in (76mm) Brass	WT-13
3in (76mm) Stainless Steel	WT-13S
Sieve Pan with Drain is full height, with drain for connection to flexible WT-4 Clear Vinyl Tubing.	
12in (305mm) Brass	WT-10
12in (305mm) Stainless Steel	WT-10S
Sieve Seal Gaskets seal between stacked Test Sieves or pan to prevent loss of fines during wet or dry sieving operations.	
3in (76mm)	SSA-14
8in (203mm)	SSA-10
12in (305mm)	SSA-11
Vinyl Tubing is quality material for Sieve Pans with Drains and useful for other lab applications. 3/8in ID fits drains for 8in diameter pans, 1/4in ID tubing fits 3in diameter pan drains. Priced per foot or in bulk 100ft (30.5M) rolls.	
3/8in ID, per foot	WT-4
3/8in ID, 100ft Roll	WT-4R
1/4in ID, per foot	WT-8
1/4in ID, 100ft Roll	WT-8R
ASTM Manual On Test Sieving Methods new 5th edition ASTM publication supplements current ASTM sieving standards. Subject matter covers sieve types, sampling methods, sieving procedures, calculation and graphing. Appendices include reference tables and charts. 66 pp. soft cover. **Product Dimensions:** 6x9in (152x229mm), WxDxH.	BK-447R

SS-20

SS-3
shown with Sieves

SS-12R
shown with Sieves

Sieve Shaker Comparison

		Test Sieve Capacity, Full Height/Half Height						Particle Size Range												
Model	Description	3in	8in	12in	200mm	300mm	Type	2in/50mm	1 in /25mm	1/2in/12.5mm	No.4/4.75mm	N0.10/2.0mm	No. 20/850µm	N0.40/425µm	No. 100/150µm	N0.200/75µm	N0.325/45µm	No. 500/25µm	No.635/20µm	5µm
SS-8R	Gilson 8in Tapping Shaker	–	10/20	–	10/20	–	Circular/Tapping		■	■	■	■	■	■	■	■	■	■	■	
SS-12R	Gilson 12in Tapping Shaker	–	10/20	6/13	10/20	6/13	Circular/Tapping	■	■	■	■	■	■	■	■	■	■	■	■	
SS-30	W.S. Tyler® 8in Ro-Tap® Sieve Shaker	–	6/13	–	6/13	–	Circular/Tapping				■	■	■	■	■	■	■	■	■	
SS-31	W.S. Tyler® 12in Ro-Tap® Sieve Shaker	–	–	4/8	–	4/8	Circular/Tapping			■	■	■	■	■	■	■	■	■		
SS-33	W.S. Tyler® 8in Ro-Tap® II Sieve Shaker	–	6x2/ 13x2	–	6x2/ 13x2	–	Circular/Tapping				■	■	■	■	■	■	■	■	■	
SS-20	Gilson Rotary Sifter	–	10/20	6/13	10/20	6/13	Rotary/Tapping		■	■	■	■	■	■	■	■	■	■	■	
SS-21	Gilson Silent Sifter®	–	10/20	6/13	10/20	6/13	Rotary/Tapping		■	■	■	■	■	■	■	■	■	■	■	
SS-22	Gilson Silent Sifter® II	–	10/20	6/13	10/20	6/13	Rotary/Tapping		■	■	■	■	■	■	■	■	■	■	■	
SS-15	Gilson 8in Sieve Shaker	–	6/12	–	6/12	–	Orbital				■	■	■	■	■	■				
SS-15D	Gilson 8in Sieve Shaker, Digital	–	6/12	–	6/12	–	Orbital				■	■	■	■	■	■				
SS-14	Gilson 8in/12in Sieve Shaker	–	10/21	6/14	10/21	6/14	Orbital				■	■	■	■	■	■				
SS-14D	Gilson 8in/12in Sieve Shaker, Digital	–	10/21	6/14	10/21	6/14	Orbital				■	■	■	■	■	■				
SS-3	Gilson 3” Sieve Shaker	7/14	–	–	–	–	Vibratory/Tapping				■	■	■	■	■	■	■	■	■	
SS-10	Gilson 1-Touch	–	8/16	–	8/16	–	Vibratory/Tapping					■	■	■	■	■	■	■	■	
SS-34	W.S. Tyler® Ro-Tap® E, 8in Sieve Shaker	–	8/16	–	8/16	–	Vibratory					■	■	■	■	■	■	■	■	
SS-36	W.S. Tyler® Ro-Tap® E, 12in Sieve Shaker	–	–	7/14	–	7/14	Vibratory					■	■	■	■	■	■	■	■	
GA-6	Gilson AutoSiever	7	–	–	–	–	Sonic/Tapping						■	■	■	■	■	■	■	■
GA-8	Gilson UltraSiever	–	7	–	7	–	Sonic/Tapping				■	■	■	■	■	■	■	■	■	■
AJ-103	Mikro Air Jet, Basic	–	1	–	1	–	Air Jet				■	■	■	■	■	■	■	■	■	
AJ-105	Mikro Air Jet Advanced	–	1	–	1	–	Air Jet				■	■	■	■	■	■	■	■	■	
SS-82	W. S. Tyler® Coarse Sieve Shaker	–	6/13	4/8	6/13	4/8	Circular				■	■	■	■	■					
SS-25	Mary Ann Sifter	–	10/20	6/13	10/20	6/13	Rotary/Tapping				■	■	■	■	■	■	■	■	■	
SS-23	Wet/Dry Sieve Vibrator	–	2	–	–	–	Vibratory		■	■	■	■	■	■	■	■				
SS-28	Vibra-Pad	3	–	–	–	–	Vibratory					■	■	■	■	■				

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SIEVE SHAKER SELECTION

Matching a sieve shaker to material characteristics saves time and money and ensures superior accuracy and repeatability.

ROTARY

Rotary Sifters hold a sieve stack in an enclosed cabinet tilted at an angle while rollers rotate the sieves to continuously reorient particles. Individual hammers tap sieves to enhance passage of near-size particles. Rotary sifters do not have exposed moving parts and are relatively quiet and dust-free. Clamping systems are not required. Rotary Sifters work well for mineral aggregates and other materials from No. 4 to No. 635 (4.75mm to 20µm).

CIRCULAR

Circular Sieve Shakers move the sieve stack on a flat, circular plane. Particles are evenly distributed around most of the sieve surfaces and randomly fall through openings. Units with circular action alone are adequate for coarser free-flowing materials between No.4 (4.75mm) and No.100 (150µm). Addition of a tapping mechanism enhances performance and allows efficient separation over a wider range of materials from 1 or 2in (25 to 50mm) to No.635 (20µm).

ORBITAL

Orbital Sieve Shakers mimic the motion of hand sieving and are an economical choice for free-flowing materials. The particles are essentially rolled around on the mesh surface until they fall through an opening. The sieve stack is suspended from a single point at the top while the base is moved in an orbital motion. A bumping action is sometimes introduced as the sieve stack oscillates. Orbital shakers work well for most materials between No.4 (4.75mm) and No.200 (75µm).

VIBRATORY

Vibratory Sieve Shakers use electromagnetic energy to agitate particles. An ideal setting creates a fluid bed of material moving across the mesh. This optimizes the number of openings tried by the sample material. Adjustments for vibration amplitude and frequency on some shakers allow optimization for a wider range of materials. Vibratory Shakers perform well on most materials between No.10 (2mm) to No.635 (20µm).

SONIC

Sonic Sieve Shakers use up to 3,600 sonic energy pulses per minute to oscillate an air column enclosed within the sieve stack. This continuous agitation excites the particles and continuously reorients particles to the mesh surface. Programmable horizontal and vertical tapping clears the sieves and allows accurate separations down to 5µm.

TAPPING

Tapping is a performance-enhancing feature included on many premium sieve shakers with vibratory, circular, orbital, or other primary actions. Repetitive mechanical tapping of the sieve stack reorients particles, aids passage and prevents blinding. Tapping sieve shakers improve the passage of fines for nearly any material.

PAUSE

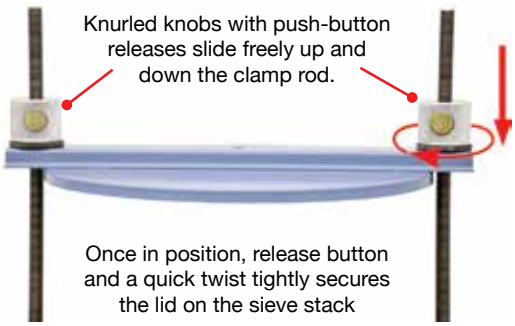
Pause is a function on better quality Vibratory Shakers with an effect similar to tapping. Programming a pause into the test cycle causes particles to briefly stop and then reorient themselves when agitation resumes.

SS-8R shown with Sieves

SS-15 shown with Sieves

SS-30 shown with Sieves

SS-14D shown with Sieves



EZ-Clamp System

EZ-Clamp close-up

Close-up of Digital Timer; available with SS-14D or SS-15D

SSA-806

GILSON SIEVE SHAKERS

Gilson portable Sieve Shakers outperform comparably priced sieving equipment. These cost effective 1/4hp units are widely accepted by state transportation departments for highway materials testing. Both units feature a back-and-forth lateral motion combined with up/down and tilting actions. The test specimen travels in an orbit on the sieve surfaces, assuring full use of sieve mesh area. These Sieve Shakers are recommended primarily for No.4 to No.200 (4.75mm to 75µm) size range, but may be used with larger material sizes when specifications for sieve loading and sample quantities permit.

Both models feature Gilson's exclusive EZ-Clamp system to quickly and securely lock in sieves for testing. The easy to operate clamping system with integral sieve cover slides freely up and down the clamp rods with the push of a button. Once in position, a quick twist secures the stack. When the test is complete, raise just enough to remove the stack and the clamps stay in place, ready for the next test without readjustment. The "D" digital models control test times with Gilson's exclusive digital countdown timer. The large LED display shows precisely timed operation up to 99 minutes at ±1 second. A pause function and user-selectable modes offer greater versatility. Settings are saved between cycles for precise repeatability and easy, one-button operation. Standard models use a classic 15-minute spring wound mechanical-electrical timer with manually adjustable knob-stop for improved repeatability and a "Hold" feature for continuous running.

All mechanical and electrical parts are enclosed in a rugged painted steel case with rubber feet. Free-standing operation is normal, but they may be securely mounted via holes provided in bottom end flanges. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug.

VIDEO ONLINE

SS-15 shown with Sieves

SSA-802 shown with sieve

OBA-15R shown with Sieve

: Product spotlight

SIEVE CAPACITIES (PLUS PAN)

Sieve Type	SS-14	SS-15
8in Full-Height	10	6
8in Half-Height	21	12
12in Full-Height	6	—
12in Intermediate Height	10	—
12in Half-Height	14	—

SS-14 Gilson 8in/12in Sieve Shakers accept sieves in 8in, 12in, 200mm or 300mm diameters for maximum versatility. Extended stack height allows more sieves in a single stack for efficient processing. Sieve capacity ranges from six 12in full-height to twenty-one 8in half-height sieves plus pan. **Product Dimensions:** 26x20x40in (660x508x1016mm), WxDxH.

SS-15 Gilson 8in Sieve Shakers have a stack capacity of six full-height sieves with pan or twelve half-height sieves with pan and also accept 200mm sieves. The SSA-806 EZ Clamp Upgrade kit is available to update older SS-15 shakers for more efficient performance and easier operation. **Product Dimensions:** 17x11x30in (432x279x762mm), WxDxH.

SSA-802 and OBA-15R Clean-N-Stor units are fast and efficient for collection, cleaning and weighing operations when sieving.

Gilson Sieve Shakers	
Gilson 8in Sieve Shaker, 115V/60Hz	SS-15
230V/50Hz	SS-15F
Gilson 8in Sieve Shaker, Digital Timer, 115V/60Hz	SS-15D
230V/50Hz	SS-15DF
Gilson 8in/12in Sieve Shaker, 115V/60Hz	SS-14
230V/50Hz	SS-14F
Gilson 8in/12in Sieve Shaker, Digital Timer, 115V/60Hz	SS-14D
230V/50Hz	SS-14DF
Accessories	
EZ-Clamp Upgrade Kit for SS-15	SSA-806
Stand Alone Clean-N-Stor	SSA-802
Adjustable Height Clean-N-Stor	OBA-15R

SS-20

SS-20 inside view shown with Sieves

SS-21

GILSON ROTARY SIFTERS

- **Built by Gilson, backed by Gilson**
- **Accurate results**
- **Simple and efficient**
- **New Silent Sifter® and Silent Sifter® II: "The quietest in the industry"**

Rotary Sifters by Gilson bring innovative performance updates and Gilson-guaranteed quality and reliability to a long-proven design favored by many state DOT's. Our newest Silent Sifter® models reflect today's emphasis on noise reduction and worker protection in the laboratory environment.

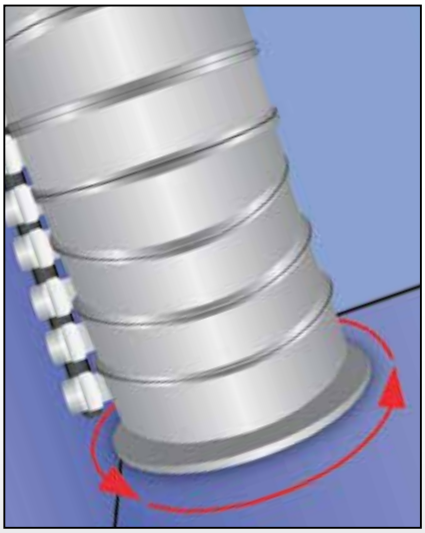
The totally enclosed cabinet is CNC-machined, high-quality MDF board, precisely fitted to reduce dust and help confine and control the airborne respirable quartz, silica or crystalline particles. An ergonomically-positioned side knob allows easy rotation of the cabinet between the loading and testing positions. The full-width door swings open on heavy-duty commercial grade hinges for full access to the interior. No clamping is required; assembled sieve stacks are simply placed inside and the cabinet is rotated back to the testing position. Faster set up, safe and efficient functionality and much quieter operation all reflect the improved design and materials.

Adjustment between 8 to 12in or 200 to 300mm diameter sieves is a simple turn of a spring-loaded knob and repositioning of the turntable. Sieve stack capacity ranges from six 12in diameter full-height sieves with pan, or up to twenty 8in diameter half-height sieves with pan. Rubber-covered drive rollers continuously rotate the sieve stack and particle separation is aided by individual tapping hammers. The digital countdown timer with large LED display precisely times operation up to 99 minutes 59 seconds at ±1 second for precise repeatability. The timer features easy, one-button operation and settings are saved between cycles.

The cabinet is mounted on a sturdy, powder-coated ASTM A513 heavy steel tubing stand. Hammer assemblies are 6061 aluminum alloy with Ultra High Molecular Weight (UHMW) Polyethylene heads. The system is driven by a dependable 1/4hp continuous-duty motor. Users of other Rotary Sifters can still take advantage of Gilson's advances in design, along with better pricing and availability by upgrading commonly replaced parts with Gilson components. Gilson Hammer Assemblies, Hammer Heads and Timers fit all current rotary sifter brands and are designed for efficient operation and long service life. Inquire for other quality replacement components. **Product Dimensions:** 19x24x58in (483x610x1,473mm), WxDxH.

SS-22 shown with Sieves

GILSON ROTARY SIFTERS



As the sieve stack rotates, hammers tap the sieves to re-orient and redistribute particles across the sieve surface.

Close-Up of Hammers

Close-Up of Handle

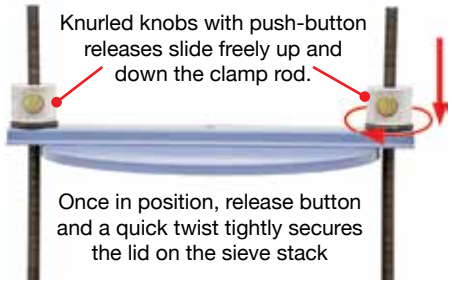
SS-21 Silent Sifter® significantly reduces operational noise levels with no loss of performance. Design modifications made using Gilson's proprietary silencing technology have resulted in a unit with noise levels 7–10dB lower than other rotary sifters. The floor stand of the SS-21 is equipped with 4in diameter hard rubber Locking Swivel Casters for easy mobility in the lab. The Silent Sifter makes a significant contribution to the reduction of noise levels in your lab.

SS-22 Silent Sifter® II offers the highest level of noise reduction and much lower dust levels. Specially engineered with advanced soundproofing materials and techniques, this sifter is 16–18dB quieter than standard rotary sifters and 8–10dB quieter than even our SS-21 Silent Sifter®. A heavy-duty, over-center lever latch pulls the door tightly against the case gasket, ensuring a tight, dustproof seal that enhances noise control. This is your first choice for enhanced worker protection and reduction of nuisance noise levels while maintaining a high level of accuracy and repeatability. The Silent Sifter® II includes durable 4in hard rubber locking casters on the frame.

SS-20 Rotary Sifter offers classic design and efficient operation in an economic package. Advanced design, upgraded materials and efficient operation put the SS-20 a step above ordinary rotary sifters, while maintaining compliance with specification requirements. For ease of mobility, SSA-77 4in hard rubber Locking Swivel Casters may be purchased separately for installation on the SS-20 Floor Stand.

Gilson Rotary Sifters	
Gilson Rotary Sifter, 115V/60Hz	SS-20
230V/50Hz	SS-20F
Gilson Silent Sifter®, 115V/60Hz	SS-21
230V/50Hz	SS-21F
Gilson Silent Sifter® II, 115V/60Hz	SS-22
230V/50Hz	SS-22F
Accessories	
Rotary Sifter Hammer Assembly	SSA-72
Rotary Sifter Hammer Head	SSA-74
Rotary Sifter Timer/Controller	SSA-76
Rotary Sifter 4in Locking Swivel Casters	SSA-77

SS-8R shown with Sieves



EZ-Clamp System

Close-Up of Digital Timer

SS-12R shown with Sieves

SSA-809 shown on SS-12R with Sieves

GILSON TAPPING SIEVE SHAKERS

- **Two-way tapping**
- **Gilson exclusive EZ-Clamp System**
- **No permanent mounting required**
- **Precision digital controller**
- **Capacities of up to twenty sieves**

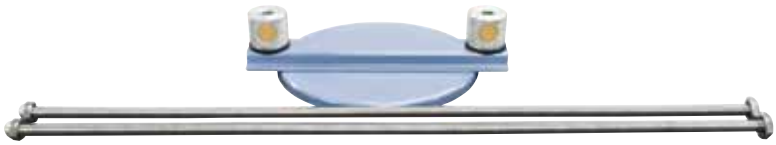
Research-based sieving action of Gilson SS-8R and SS-12R Tapping Sieve Shakers produces sharp, repeatable separations quickly over a broad range of particle sizes and material types. The Gilson-engineered sieving action results from perfect circular rotation of the sieve stack plus vertical two-way tapping at 48 taps per minute. Superior circular rotation prevents “dead spots” on the sieve surfaces that prevent complete separation. Particles roll in all directions relative to the pattern of woven sieve mesh. “Up” taps mix, reorient and redistribute particles to present new orientations to sieve surfaces. “Down” taps assist in passing near-size particles to clear the mesh. These high-capacity shakers can hold as many as twenty sieves, depending on model and sieve frame dimensions.

Gilson’s exclusive digital controller provides precise test times for exact repeatability up to 99 minutes, at ±1 second. Settings are saved between cycles for easy, one-button operation. A pause function allows the cycle to be suspended and resumed with no loss of test time and a five-second audible alarm sounds at completion of the interval. The controller is simple to program and the large, bright 0.5in (12.6mm) LED display is easy to read.

Easy to operate new EZ-Clamp system with integral sieve cover slides freely up and down the clamp rods with the push of a button. Once in position, simply release, then a quick twist secures the cover on the sieve stack. Once the test is complete, raise just enough to remove the stack. The clamps stay in place, ready for the next test without readjustment. The EZ-Clamp system is also available as an accessory to retrofit older SS-8R and SS-12R shakers.

Gilson’s internal counterbalance system promotes stability during operation without the need for permanent mounting. The unit can easily be relocated, using the adjustable footpads for leveling. Gilson Sieve Shakers are housed in sturdy painted steel cases and powered by 1/3hp electric motors. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. Sieves and accessories are ordered separately. **Product Dimensions:** 22.5x13x41in (572x330x1.041mm), WxDxH.

VIDEO ONLINE



SSA-807

SSA-801 shown with Sieve on SS-8R

SSA-805R shown with SS-12R and Sieves

SSA-802 shown with TSA-170 Sieve

: Product spotlight

SIEVE CAPACITIES (PLUS PAN)

Sieve Type	SS-8R	SS-12R
8in Full-Height	10	10
8in Half-Height	20	20
12in Full-Height	—	6
12in Intermediate Height	—	10
12in Half-Height	—	13

Gilson SSA-805R Sound Enclosure accessory controls noise and dust associated with Sieve Shakers and other lab equipment. Sturdy painted steel case with full-width hinged doors is lined with 1in (25.4mm) of sound-attenuating foam. **Product Dimensions:** 31x19x46in (800x500x1,200mm), WxDxH.

Clean-N-Stor accessories streamline collection, cleaning and weighing functions for sieving operations. Inverting an 8in or 200mm sieve on the stainless-steel funnel empties contents into a receiving scoop or pan. A scoop and soft-bristle brush are included with all models. SSA-801 attaches to the top of the SS-8R case. SSA-802 is a stand-alone model that can be positioned directly over an electronic balance. OBA-15R features adjustable height to fit over taller balances. **Product Dimensions:** OBA-15R 8.4x11x6.8in (213x279x173mm), SSA-801 8.5x11.6x5.5in (216x295x140mm), SSA-802 8.5x11.6x5.5in (216x295x140mm), WxDxH.

Gilson Tapping Sieve Shakers	
Gilson Tapping Sieve Shaker 8in, 115V/60Hz	SS-8R
230V/50Hz	SS-8RF
Gilson Tapping Sieve Shaker 12in, 115V/60Hz	SS-12R
230V/50Hz	SS-12RF
Accessories	
EZ-Clamp Upgrade Kit for SS-8R	SSA-807
EZ-Clamp Upgrade Kit for SS-12R	SSA-809
Sound Enclosure	SSA-805R
Clean-N-Stor Attachment for SS-8R	SSA-801
Stand-Alone Clean-N-Stor	SSA-802
Adjustable-Height Clean-N-Stor	OBA-15R

SS-31 shown with Sieves

SS-30 shown with Sieves

VIDEO ONLINE

DESIGNED FOR THESE 8in 200mm SIEVE DIAMETERS

DESIGNED FOR THESE 12in 300mm SIEVE DIAMETERS

SS-30K shown with Sieves

SS-33 shown with Sieves

W.S. TYLER® RO-TAP® SIEVE SHAKERS

W.S. Tyler® Ro-Tap® Sieve Shakers have 278 oscillations and 150 taps per minute as specified in some ASTM and other sieving applications. Horizontal, circular action combined with vertical tapping assures accurate and consistent results.

These shakers are designed for heavy-duty use and bolt easily to a solid table or sturdy bench top. All models feature an adjustable-plate sieve support and built-in 99 minute x 0.1 second digital timer. Powerful 1/4hp motors provide plenty of action for efficient separations. For models operating on 230V/60Hz power, add "S" to the model number. Sieves are ordered separately and a sieve cover is required.

SS-30 8in W.S. Tyler® Ro-Tap® Sieve Shaker holds up to six full-height 8in (203mm) sieves with a full-height pan, or thirteen half-height sieves with a half-height pan. Recommended particle size range is No.4 (4.75mm) to No.635 (20µm). Add "K" to model number to specify our Lab Kit, which includes the Sieve Shaker, SSA-320A Sound Enclosure and SSA-325 Test Stand. **Product Dimensions:** 28x21x25in (711x533x635mm), WxDxH.

SS-31 12in W.S. Tyler® Ro-Tap® Sieve Shaker holds up to four 12in (305mm) full-height sieves and pan, six intermediate height and pan, or eight half-height sieves and pan. Recommended particle size range is 1/2in (12.5mm) to No.500 (25µm). Add "K" to model number to specify our Lab Kit, which includes the Sieve Shaker, SSA-320A Sound Enclosure and SSA-325 Test Stand. **Product Dimensions:** 28x21x25in (711x533x635mm), WxDxH.

SS-33 8in W.S. Tyler® Ro-Tap® II Sieve Shaker performs two 8in (203mm) sieve tests simultaneously with exactly the same action as the single-stack models. Recommended particle size range is from No.4 (4.75mm) to No.635 (20µm). **Product Dimensions:** 30x27x26in (762x686x660mm), WxDxH.

SSA-320A Sound Enclosure for SS-30 or SS-31 W.S. Tyler® Ro-Tap® Sieve Shakers has a steel cabinet lined with 1in (25.4mm) thick acoustic foam. Two front doors and a top-opening panel allow easy access. A small access port is built-in to the rear of each unit. **Product Dimensions:** 35x24x29in (889x610x737mm), WxDxH.

SSA-321 Sound Enclosure has all of the same features as the SSA-320A, but it is dimensioned to fit the larger SS-33 W.S. Tyler® Ro-Tap® II Sieve Shaker. **Product Dimensions:** 34x33x31in (864x838x787mm), WxDxH.

SSA-325 Test Stand for SS-30 and SS-31 can be used with or without the SSA-320A. The sturdy aluminum frame includes hardware for assembly and floor anchoring. **Product Dimensions:** 20x32x28in (508x813x711mm), WxDxH.

W.S. Tyler® Ro-Tap® Sieve Shakers	
W.S. Tyler® Ro-Tap® 8in Sieve Shaker, 115V/60Hz	SS-30
230V/50Hz	SS-30F
W.S. Tyler® Ro-Tap® 12in Sieve Shaker, 115V/60Hz	SS-31
230V/50Hz	SS-31F
W.S. Tyler® Ro-Tap® II 8in Sieve Shaker, 115V/60Hz	SS-33
230V/50Hz	SS-33F
Accessories	
Sound Enclosure for SS-30 & SS-31	SSA-320A
Test Stand for SS-30 & SS-31	SSA-325
Sound Enclosure for SS-33	SSA-321

W.S. Tyler® and Ro-Tap® are registered trademarks of Haver Tyler, Inc.

SS-82 shown with Sieves

SS-34 shown with Sieves

W.S. TYLER® COARSE SIEVE SHAKER

Designed for materials in the No.4 (4.75mm) to No.100 (150µm) size range, this rugged W.S. Tyler® sieve shaker is portable enough for field applications. An effective circular sifting motion is imparted to sieves via the 1/4hp motor. Built-in digital timer with 99 minute range is accurate to 0.1 second.

SS-82 accommodates both 8in (203mm) and 12in (305mm) sieves with included adapter. Shaker will accept from 6 to 13 eight inch sieves and from 4 to 8 twelve inch sieves, dependent upon use of full, intermediate or half-height sieve frames. Mounting holes are provided in the frame for securing the unit to a table or bench-top. **Product Dimensions:** 28x22x34in (711x559x864mm), WxDxH.

W.S. Tyler® Coarse Sieve Shaker	
W.S. Tyler® Coarse Sieve Shaker, 115V/60Hz	SS-82
220V/50Hz	SS-82F

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VIDEO ONLINE

Watch video tutorials for our products online at www.globalgilson.com!

W.S. TYLER® RO-TAP® E SIEVE SHAKERS

W.S. Tyler® Ro-Tap® E Sieve Shakers designed for 8in (203 mm) or 12in (305mm) test sieves are intended for light to medium duty applications in the size range of No.10 (2mm) to No.635 (20µm). Electromagnetic vibration produces constant amplitude and three-dimensional sieving action to ensure complete separations. Controls allow customized settings for analyses of fine or coarse materials. Digital controls, quick-release clamping, quiet operation and a see-through cover are featured on both models. Heavy construction and cast iron parts assure a long service life.

SS-34 8in W.S. Tyler® Ro-Tap® E is compact and requires minimal counter space. The shaker will accept eight full-height or sixteen half-height sieves, plus pan. Units automatically adjust to 110V/60Hz or 220V/50Hz power supplies. **Product Dimensions:** 18x18x30in (460x460x760mm), WxDxH.

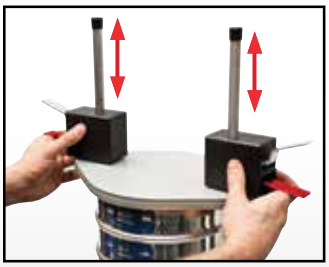
SS-36 12in W.S. Tyler® Ro-Tap® E is a larger floor unit. The digital control panel can be remotely mounted. Sieve capacity is seven full-height or ten half-height sieves with pan. Units operate on 110V/60Hz or 220V/50Hz power supplies. **Product Dimensions:** 15x17x38in (380x430x960mm), WxDxH.

W.S. Tyler® Ro-Tap® E Sieve Shakers	
8in W.S. Tyler® Ro-Tap® E Sieve Shaker, 110V/60Hz or 220V/50Hz	SS-34
12in W.S. Tyler® Ro-Tap® E Sieve Shaker, 110V/60Hz or 220V/50Hz	SS-36

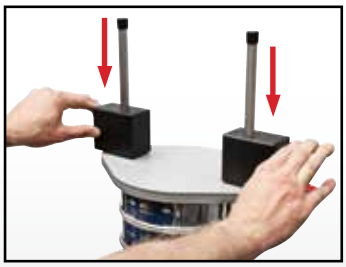
W.S. Tyler® and Ro-Tap® are registered trademarks of Haver Tyler, Inc.

SS-10 shown with Sieves

SS-10 CLAMPING SYSTEM



Apply light upward pressure on both bottom levers to move sieve cover up or down.



Press downward on both top levers several times for a tight clamp on sieves.

SS-10
Touch Screen

GILSON VIBRATORY SIEVE SHAKER

- **Quiet, efficient operation with a compact bench-top footprint**
- **Three-dimensional agitation for maximum efficiency**
- **Menu-guided touch-screen controls for easy set up**
- **Wide range of control settings for performance customized to materials**
- **Fast, accurate separations for materials from No. 10 to No. 635 (2.00mm to 20µm)**

Gilson's 1-Touch Vibratory Shaker for 8in and 200mm sieves combines the latest in electronic control with proven separation technology for fast, accurate separations of materials 2mm and finer. The touch-screen programmable controller allows selection of vibration level, time and pauses. Once operating parameters are set, just tap "Start" on the display screen to begin each new test. Up to 99 testing profiles can be stored in non-volatile memory to ensure exact repeatability. Quiet, compact bench-top unit offers complete control of multi-directional agitation for optimum performance based on material type.

The wide range of user-controlled performance options means the SS-10 is suitable for a variety of materials. Pharmaceuticals, powders and many other granular materials are efficiently sized on this programmable sieving system. The three-dimensional sieving action evenly distributes the specimen across sieve surfaces and continuously reorients particles to ensure the maximum number of passing opportunities. Optimal size range is dependant on material type, but typically, particles between No.10 and No.635 sieve sizes are easily processed. GAA-19 Clear Acrylic Spacer for 8in sieves can be used in place of one sieve to visually observe specimen action when optimizing vibration settings. The 5.6in (142.2mm) diagonally measured screen offers a bright, clear view of controls and operating information. Fast acting stack clamps adjust quickly, hold their position and tighten with little effort. Sieves are securely locked down, assuring efficient transfer of vibration energy during operation.

The shaker accepts eight full-height, or sixteen half-height 8in (203mm) diameter sieves plus pan. 200mm sieves can also be used. Times can be set up to 99 minutes, 59 seconds. Ten levels of vibration power are selectable for optimum separation efficiency with different materials.

The sturdy housing is powder coated steel and has adjustable leveling feet with non-skid rubber pads. Electrical requirements are 115V/60Hz. **Product Dimensions:** 12x16.5x28in (305x419x711mm), WxDxH.

1-Touch Vibratory Sieve Shaker	
1-Touch Vibratory Sieve Shaker	SS-10
Accessories	
Clear Acrylic Sieve Spacer	GAA-19

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SS-3 shown with Stainless Steel Sieves

SS-3 control panel

EZ-Clamp knob

SSA-15

GILSON 3IN SIEVE SHAKER

- **Efficient electromagnetic vibratory action**
- **0—100% amplitude control**
- **Accepts metal or acrylic frame sieves**
- **Switchable tapping action**
- **Exclusive Gilson EZ-Clamp System quickly secures sieves**

The Gilson 3in Sieve Shaker compact size and efficient operation make it ideal for dry powder separations of small samples. The 3in (76mm) Sieve Shaker is designed for chemicals, minerals, pharmaceuticals, powdered metals, cosmetics, abrasives, ores, foods and other fine powders. Effective size range is No.4–No.635 (4.75mm–20µm) with woven-wire sieves. Extended sizes are possible with some materials.

High frequency 3,600vpm electromagnetic vibratory action with 0–100% amplitude control allows optimal settings for fine particle separations. In-line solenoid actuated tapping action (60 taps/min) redistributes the sample on the sieves and breaks static blinding, helping to rapidly clear undersize particles.

The SS-3 accepts 3in (76mm) test sieves or Gilson clear acrylic frame sieves. Sieve capacity is seven full-height or fourteen half-height metal sieves, or fourteen acrylic sieves, plus pans. The unique Gilson EZ-Clamp sieve clamping mechanism makes insertion and removal of the sieve stack simple and convenient. The knobs on the clamping mechanism allow the stack to be released with a quick twist. The mechanism remains at this height until the knobs are tightened to secure the sieves in place.

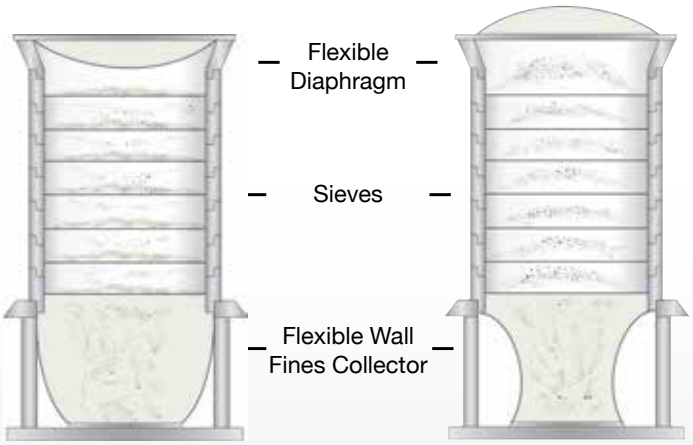
SS-3 features include a rugged powder-coated steel case, variable control for vibration intensity and a manual/timed mode switch. A sieve cover is included. The digital count-down timer controls operation to 99 min., 59 sec. and has pause feature. SSA-15 Stackable acrylic 3in (76mm) see-through cylinder is helpful for observing sample action while leveling platform or for setting vibration. SSA-17 clear acrylic Adapter allows 3in acrylic sieves to be used with 3in stainless steel pan. Power requirements are 115V/50–60Hz. For 230V operation, order TR-502 Transformer. **Product Dimensions:** 8x11x22in (203x279x559mm), WxDxH.

Gilson 3in Sieve Shaker	
Gilson 3in Sieve Shaker[1]	SS-3
Accessories	
Adapter for Acrylic Sieves to Stainless Steel Pan	SSA-17
Acrylic Spacer for Metal Sieves	SSA-15
Acrylic Spacer for Acrylic Sieves	GAA-88

[1]For 230V operations order TR-502 Transformer

GA-6 shown with Sieves

GA-6 SONIC SIEVING ACTION



The diagram represents one pulse. The GA-6 generates 3,600 sonic pulses per minute.

Tapping is controlled by the user and can be set for horizontal and vertical, vertical only or turned off completely.

GILSONIC AUTOSIEVER SONIC SIFTER

- **Fast, efficient and proven dry separations of fine powders**
- **Size range from 850µm (No.20) to 5µm**
- **Programmable vertical and horizontal tapping clears sieve openings and reduces clumping**
- **3in (76mm) acrylic-frame sieves are available in standard woven wire cloth or precision electroformed mesh**

The GilSonic AutoSiever is the most accurate and reliable sieve shaker available for particle sizing of dry powders and fine granular materials. Testing profiles are fully customizable, assuring consistent, repeatable values for even the most difficult materials. Only minimal training is required for proper operation.

3,600 sonic energy pulses per minute oscillate the air column enclosed within the sieve stack. This agitation continuously excites and reorients the particles to the mesh surface. Programmable tapping clears the sieves and prevents clumping of materials. Controls for intensity, ramp and dwell and total test time assure fully customizable profiles for many different material types. Up to ten profiles can be saved to memory, assuring repeatability for similar materials. The AutoSiever is designed and manufactured in the USA to meet CE requirements.

Test times vary depending on material type and particle size. Five minutes is typical, but some samples may be complete in as little as thirty seconds. Operating time can be set for up to 99.9 minutes. Sieving intensity (amplitude) is selected with a proportional power controller. Ramping function automatically increases power at a programmed rate for optimum separation of difficult materials. Programmable tapping is built into each unit and can be programmed for horizontal and vertical, vertical only, or turned off completely.

Sample capacity is a function of particle size and material type. Larger particle samples may range up to 20g or about 7cc. Samples with maximum particle sizes of 38µm (No.400) should be about 10g or 4cc. For precision sieving with electroformed sieves down to 5µm, some samples may be as small as 1g. The 3in (76mm) diameter clear acrylic-framed sieves are available with ASTM E11 woven-wire cloth or ASTM E161 precision electroformed mesh. The AutoSiever holds seven woven-wire cloth or three precision electroformed sieves in the fixed-height stack assembly. Clear acrylic spacers are available if fewer sieves are desired.

Fines are retained in a flexible-walled latex fines collector. A latex diaphragm on top of the stack seals the air column and confines the sample during testing. The complete stack assembly is held together with a column lock, inserted into the backlit testing chamber and quickly secured in place for testing.

The cabinet is powder coated steel with a sliding acrylic door. The AutoSiever is supplied with one GAA-2 stack assembly, consisting of seven clear acrylic spacers, a fines collector with collector holder, top cone, diaphragm and column lock. Sieves are purchased separately. Operates on 115/230V, 50 or 60Hz (selectable) power supplies, 40 Watts maximum. **Product Dimensions:** 10x10x20in (254x254x508mm), WxDxH.

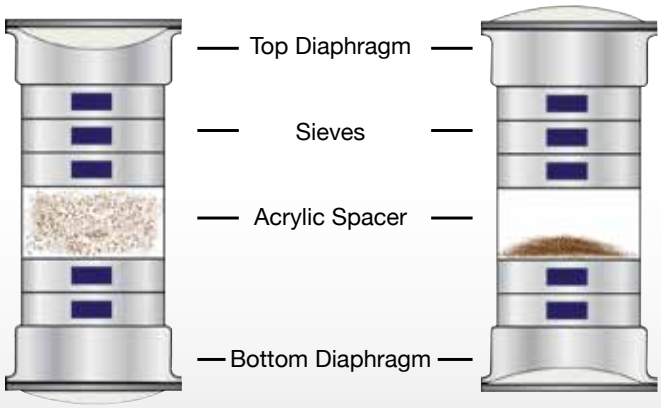
GilSonic AutoSiever Sonic Sifter	
GilSonic AutoSiever Sonic Sifter	GA-6
Accessories	
Stack Assembly	GAA-2
Replacement Diaphragm	GAA-3
Replacement Fines Collector	GAA-4
Standard Acrylic Spacer	GAA-88

also available

See the separate listing for 3in Acrylic Frame Test Sieves on page 12 .

GA-8 shown with Sieves

GA-8 SONIC SIEVING ACTION



The diagram represents one pulse. The GA-8 generates 3,600 sonic pulses per minute.

GAA-5 shown with Sieves

GAA-19

GAA-10

GILSONIC ULTRASIEVER® SONIC SIFTER

- **Sonic sieving for samples up to 100g**
- **Accepts up to seven full-height 8in or 200mm diameter sieves**
- **Fully programmable time, amplitude and vertical or horizontal tapping sequences**

The GilSonic UltraSiever® sample capacity is more than seven times that of our GA-6 AutoSiever and it accepts up to seven 8in (203mm) diameter full-height test sieves. ASTM E11 woven wire sieves from 1/4in to No.635 (6.3mm to 20µm) or ASTM E161 sieves with unsupported precision electroformed mesh from 150 to 5µm with tolerances of ±2µm can be used. ISO 565-3310 200mm sieves can also be used when paired with the GAA-10 adapter set. Sample size for materials up to 1/4in (6.3mm) may be 100g or more. 10g or less is typical when using precision electroformed sieves below 20µm.

Sieving action is created by 3,600 sonic pulses per minute oscillating inside the sieve stack. Sieving intensity (amplitude) is set through a proportional controller, based on observation of particles during agitation. A programmable ramping function incrementally increases amplitude to the maximum rate and holds it, then steps it back down for optimum separation. There are additional controls for selectable horizontal and vertical tappers. The horizontal tappers can be positioned to tap on selected sieves. Four vertical tappers can be operated as one pair for most materials or two pairs for difficult samples. Up to ten programs with specific amplitude, ramping, tapping and test duration settings for specific materials can be stored in the memory. Test times vary depending on material type and particle size. Typical sieving time is 1 to 5 minutes, but operating time can be set for up to 99.9 minutes.

The powder-coated steel case has vertically-hinged Lexan™ doors enclosing the sieve chamber. Sample material is contained by flexible top and bottom diaphragms. The stack is sealed when the upper enclosure is lowered. Upon test completion, fines are recovered from the bottom diaphragm. Acrylic spacers are required when using less than seven sieves or for viewing sieving action.

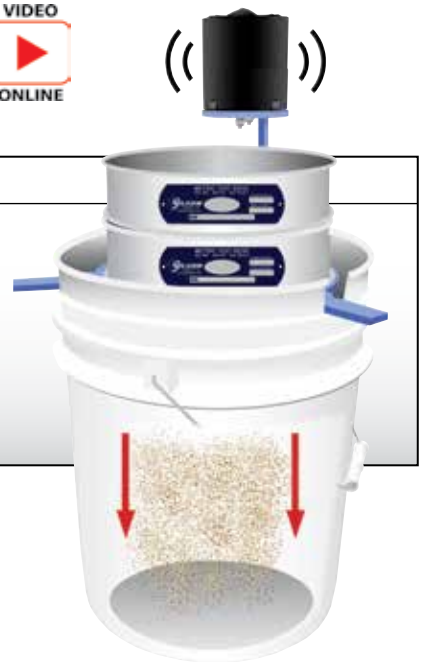
The GA-8 UltraSiever includes top and bottom sieve stack adapters, four diaphragms for top or bottom use, two acrylic spacers, one double-height acrylic sieve spacer and twelve polyurethane sieve Seal Gaskets. The GAA-5 Extra Sieve Stack Assembly includes top and bottom sieve adapters, handle plate, bottom diaphragm and sieve seal gaskets to assemble a second sieve stack for faster processing. Sieves are ordered separately. Operates on 115/230V, 50 or 60Hz (selectable) power supplies, 100 Watts maximum. **Product Dimensions:** 19x23x45in (483x584x1,143mm), WxDxH.

GilSonic UltraSiever® Sonic Sifter	
GilSonic UltraSiever® Sonic Sifter, 115/230V, 50–60Hz	GA-8
Accessories	
Replacement Top/Bottom Diaphragm	GAA-15
8in Sieve Seal Gasket	SSA-10
Diaphragm Seal Gasket	GAA-18
Spacer, 8in	GAA-19
Double-Height Spacer	GAA-16
Sieve Stack Assembly	GAA-5
Adapter Set for 200mm Sieves	GAA-10
Spacer, 200mm	GAA-19M
Double-Height Spacer, 200mm	GAA-16M

VIDEO ONLINE

WET/DRY SIEVE VIBRATOR

The vibration energy of the SS-23 is transferred directly to the sieve frames, promoting passage of finer particles from wet or dry material. The powder-coated steel frame is designed for use with a notched plastic bucket to collect fines.



SS-25 shown with Sieves

SS-23 shown with SSA-20 & Sieves

SS-23 shown with sieve

WET/DRY SIEVE VIBRATOR

Economical electric sieve vibrator is helpful for fast separations of wet or dry materials using one or two 8in diameter, full-height sieves.

For wet samples, WT-7 Spray Fitting, WT-5 Spray Mist Dispenser, or other wet sieving accessories can be used to assist processing. Use SSA-20 Notched Bucket or one sieve and an extended-rim sieve pan to catch undersize material.

Vibrating unit is mounted on a durable, powder-coated steel frame. Includes 3-wire cord and plug for 115V/60Hz operation. **Product Dimensions:** 13.5x12x10in (343x305x254mm), WxDxH.

Wet/Dry Sieve Vibrator	
Wet/Dry Sieve Vibrator, 115V, 60Hz[1]	SS-23
Accessories	
Notched Bucket	SSA-20

[1]For 230V operations order TR-502 Transformer

"MARY ANN®" SIFTER

The original "Mary Ann®" Sifter has been popular in testing labs for many years. Sieve stacks up to 26in (660mm) in height are set into place, with no clamping required. The door of the cabinet can be mounted to open from either the right or left. The enclosed operation reduces dust and helps confine and control the airborne respirable quartz, silica or crystalline particles in the breathing zone of personnel. The SS-25 accommodates either 8in (203mm) or 12in (305mm) diameter testing sieves. Testing cycles are controlled to ±1 second with a 99 minute digital timer. Sieve stack angled at 45 degrees and allows rotation of sieves. This rotation, aided by tapping from hardwood faced cast aluminum hammers, promotes many orientations of particle to mesh. The support stand also doubles as a sieve storage rack. Assembled Sifter requires 18x40in (457x1,016mm) of floor space. **Product Dimensions:** 18x26x58in (457x660x1,473mm), WxDxH.

"Mary Ann®" Sifter	
"Mary Ann®" 8/12in Sifter, 115V/60Hz	SS-25

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AJ-103 shown with AJA-4 and AJA-8

AJ-103 screen

AJA-8

technote

The new-style AJ-103 and AJ-105 Mikro Air Jet do not require special Micron Air Jet Sieves with the large sealing gasket. They will accept either 200mm or standard 8in sieves fitted with the SSA-10 Sieve Seal Gasket.

MIKRO AIR JET SIEVE™

The Mikro Air Jet Sieve™ is an accurate and reliable single-sieve system for 10 to 100g samples of dry powders from No. 4 to No. 635 (4.75mm to 20µm). Operation is clean and quiet. A rotating slotted nozzle supplies positive air pressure to gently fluidize the sample in a covered test sieve. Exiting air is drawn downward with an external vacuum system, creating a negative pressure to carry undersize particles to a collection canister. Air Jet sieving action is gentle, effective, and especially useful for fragile or low specific gravity materials. Vacuum pressure can be programmed in multiple units. Test times and vacuum/pressure settings are controlled through the integrated computer, with a capacitive touch screen controls and display. USB ports are provided for external keyboard and mouse use. The unit has 20 GB of internal storage. Basic or Advanced versions are offered, each with separate models configured for use with ISO 200mm and older style Air Jet Test Sieves, or with ASTM 8in diameter Test Sieves. Inquire for parts to adapt either model to use alternate sieve sizes. The SSA-10 Sieve Seal Gasket is required for all sieves and replaces the original sealing gasket of original Air Jet Test Sieves. CE certified. Made in the U.S.A. **Product Dimensions:** 16.5x10.5x7.5in (419x267x191mm), WxDxH.

Basic Mikro Air Jet Sieve™ Basic Mikro Air Jet Sieve™ is suitable for specific micron size evaluation. It consists of the base unit with a clear acrylic sieve cover, slotted brass air nozzle, electronic controls and integrated computer and touch screen display. The 15-Watt bevel-gear motor has lifetime lubricated bearings. The cast aluminum instrument housing features a built-in pressure differential gauge and has a baked enamel finish. An integral electrical outlet provides a convenient connection for the vacuum system, which is purchased separately. Vacuum is monitored at the housing outlet and has a control valve for adjustment. AJ-103 accepts 200mm ISO Test Sieves or old-style Air Jet Test Sieves. AJ-103B model is configured for ASTM E11 8in (203mm) diameter Test Sieves.

Advanced Mikro Air Jet Sieve™ consists of the Basic model with advanced menu-driven software. The software collects and calculates particle sizes from a number of test sieve screens then generates a distribution. The advanced model can connect to a compatible printer via USB, WIFI or CAT 5 cable and a compatible balance via a RS-232 connection. Additional Advanced model functionality includes comparative overlay of analyses, USB data backup, speed boost feature for deagglomeration of difficult samples, and Data transfer to CSV file formatting for LIMS systems. This model can be ordered directly or by purchasing a simple AJA-111 upgrade to unlock these features on an existing Basic unit. AJ-105 accepts 200mm ISO Test Sieves or old-style Air Jet Test Sieves. AJ-105B model is configured for ASTM E11 8in (203mm) diameter Test Sieves. AJ-105 models or upgrades require an AJA-135 Electronic Balance, purchased separately. The Balance has a capacity of 4,200g with a readability of 0.01g, and is supplied with an interface cable.

Mikro Air Jet Sieve™	
Mikro Air Jet Sieve™ Basic for 200mm Sieves, 100-230V/50–60Hz	AJ-103
Mikro Air Jet Sieve™ Basic for 8in Sieves, 100-230V/50–60Hz	AJ-103B
Mikro Air Jet Sieve™ Advanced for 200mm Sieves, 100-230V/50–60Hz	AJ-105
Mikro Air Jet Sieve™ Advanced for 8in Sieves, 100-230V/50–60Hz	AJ-105B
Accessories	
Advanced Upgrade: AJ-103 to AJ-105	AJ-111
Electronic Balance w/Serial Cable, 4,200 x 0.01g, 110 or 220V/50–60Hz	AJA-135
Sieve Seal Gasket	SSA-10
Universal Clear Acrylic Cover for 8in Diameter Sieves	AJA-8
Universal Clear Acrylic Cover for 200mm Diameter Sieves	AJA-8M
Vacuum System, 110V/50–60Hz For Fines	AJA-131
Vacuum System, 220V/50–60Hz For Fines	AJA-131F
Standard Vacuum System, 110V/50–60Hz	AJA-133
High-Efficiency Cyclone Collector	AJA-4
Non-Woven Bag for AJA-134	AJA-141
Dacron HEPA Pre-Filter Bag	AJA-142
HEPA Filter Assembly w/Gasket	AJA-143
Primary Bag Filter (Disposable)	AJA-144
Disposable Paper Bags for AJA-133 Vacuum, pkg. of 10	AJA-139
HEPA Replacement Cartridge for AJA-133 Vacuum	AJA-140

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TS-2 shown with Screen Trays

VIDEO ONLINE

TS-1 shown with Screen Trays and TSA-169R Digital Timer

NEW

TS-3 shown with Screen Trays

GILSON TESTING SCREENS

Gilson Testing Screens are ideal for particle size determinations on large samples of aggregate, slag, ores and many other coarse materials. Batch sizes up to one cubic foot (0.028m³) or more can be processed in as little as three to five minutes, depending on material type. Vibration and amplitude characteristics are fixed at optimum for mineral aggregates in the 4in (101mm) to No.4 (4.75mm) size range, but Testing Screens can process material down to No.200 (75µm) with some loss in separation efficiency. Several models are available with different features and Screen Tray capacities, but all have the same performance specifications.

Removable Screen Trays to fit both Testing Screen and Test-Master models are purchased separately in a wide range of opening sizes with ASTM E11, ISO 565 specification wire cloth or punched steel plate. Each tray features a generous 14.75x22.75in (375x578mm), 2.33ft² (0.22m²) clear screen area. Testing screen wire cloth is replaceable, ensuring long life and inexpensive maintenance of trays. Available Screen Trays, Dust Pans and Replacement Wire Colth sizes are listed in the screen tray selection guide. Dust Pans are available in configurations for increased capacity, reduced dust output, or dispensing of fines directly into outside bag or container.

Standard vibration characteristics are designed to separate coarse mineral aggregates. Separation of fine, sensitive or low-density materials such as wood chips, coal or coke can be improved by adding optional Vibration Speed Variation accessory or an optional factory-installed Low-Amplitude Drive Shaft. These options reduce degradation of material and allow the user to optimize screening profiles for specific materials. Accessories such as Clean-N-Weigh and Tray Racks enhance overall efficiency and other accessories facilitate sample handling, dust and noise control and separation performance.

Gilson Testing Screens are proven economical performers, designed for mounting to a solid, rigid floor system. Securing with anchor bolts to a concrete floor is recommended. Models are available with clamping activated by a manual hydraulic pump or by threaded cranks. Top-mounted drive mechanisms are enclosed for safety and operated by powerful 1/2hp capacitor-type motors with built in overload protection. Simple on/off switching controls operation, but accuracy, repeatability and convenience can be improved by connecting the optional TSA-169R Digital Timer/Controller. Dust Pans are normally placed in the bottom tray slot of the Testing Screens, but can be placed on the bottom shelf, freeing up a slot for an additional screen tray. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug.

- TS-1 Gilson Testing Screen has a quick-acting hydraulic pump system to clamp the screen trays in place. Trays are quickly released using the same handle. This more efficient model is recommended for labs with a steady workload of particle size testing. A total of six tray slots hold five Screen Trays plus a Dust Pan. **Product Dimensions:** 23x31x43in (584x787x1,092mm), WxDxH.

- TS-2 Gilson Testing Screen uses manually operated threaded clamping handles to secure the screen trays. This model is more economical, but also more labor-intensive during use. A total of six tray slots hold five Screen Trays plus a Dust Pan. TSA-155 or TSA-159 Hydraulic Clamping Conversion Kits are available to convert existing TS-2 models to hydraulic clamping TS-1 units. **Product Dimensions:** 23x31x43in (584x787x1,092mm), WxDxH.

- TS-3 Gilson Testing Screen features an additional tray slot for samples requiring additional fractions. Hydraulic clamping system is the same as TS-1 with a reinforced top frame for the increased screen tray loads. Seven tray slots hold six Screen Trays plus a Dust Pan. **Product Dimensions:** 23.4x31.4x47.4in (594x798x1,204mm), WxDxH.

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

TS-4 Silent Testing Screen

TS-4 shown with lid closed

TS-4 shown with lid open

TS-4 shown with front door open

GILSON SILENT TESTING SCREEN

The Gilson Silent Testing Screen is our newest model and offers all the functionality of the TS-3 Testing Screen with additional operational convenience and safety features.

- Fully-enclosed operation
- Fully lined with sound-dampening material
- Sealed door with heavy-duty latch
- Sealed access lid magnetically secures in open or closed positions
- Integrated electronic digital timer/controller
- Total of 7 Tray slots hold six trays plus a dust pan
- Reinforced top frame

The door of the TS-4 is fitted with an adjustable, heavy-duty, over-center lever latch that pulls the door tightly against the frame. The wear-resistant seals on the door and lid help confine and control the airborne particles.

Strong ferrite magnets hold the lid securely in either the open or closed position. The door, lid and interior surfaces of the Silent Testing Screen are lined with sound-dampening material to significantly reduce operational noise.

A built-in electronic LED digital controller displays time remaining and sounds an audible tone at the end of the test cycle. Test cycles lasting up to 99 minutes, 59 seconds may be programmed and cycles can be interrupted without loss of test time.

The TS-4 features hydraulic clamping, seven tray slots, and a reinforced top frame. Standard model operates on 115V/60Hz electrical supplies. Unit ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. **Product Dimensions:** 23.4x31.4x47.4in (594x798x1,204mm), WxDxH.

Product spotlight

GILSON TESTING SCREEN COMPARISON

	TS-1	TS-2	TS-3	TS-4	TM-5	TM-6
TRAY CAPACITY (+PAN)	5	5	6	6	6	7
ACCURATE SEPARATION OF COARSE MATERIALS	✓	✓	✓	✓	✓	✓
LARGE SAMPLE CAPACITY	✓	✓	✓	✓	✓	✓
HYDRAULIC CLAMPING	✓	✗	✓	✓	✓	✓
COUNTERBALANCED MECHANISM	✗	✗	✗	✗	✓	✓
INTEGRATED TIMER	✗	✗	✗	✓	✓	✓
ENCLOSURE	OPTIONAL	OPTIONAL	OPTIONAL	✓	✓	✓
SAMPLE FEED HOPPER	✗	✗	✗	✗	✓	✓

Gilson Testing Screens	
Gilson Testing Screen, 6-Tray Capacity, Hydraulic Clamping, 115V/60Hz	TS-1
Gilson Testing Screen, 6-Tray Capacity, Manual Clamping, 115V/60Hz	TS-2
Gilson Testing Screen, 7-Tray Capacity, Hydraulic Clamping, 115V/60Hz	TS-3
Gilson Testing Screen, 7-Tray Capacity, Hydraulic Clamping, 115V/60Hz	TS-4
Accessories	
Sound Enclosure	TSA-180
Clean-N-Weigh	TSA-167
Screen Tray Rack	TSA-156
Digital Timer/Controller for TS-1, TS-2 & TS-3	TSA-169R
Door Enclosure for TS-1 & TS-2	TSA-157
Door Enclosure for TS-3	TSA-157R
Speed Variation Accessory for TS-1 & TS-2, 115V/60Hz	TSA-154R
Low-Amplitude Drive Shaft for TS-1 & TS-2 (factory-installed)	TSA-200
Hydraulic Clamping Conversion for TS-2; s/n 13824 and Lower	TSA-155
Hydraulic Clamping Conversion for TS-2; s/n 13825 and Higher	TSA-159

VIDEO
ONLINE

TM-6 shown with Screen Trays and Doors open

Foot-operated Tray Clamping

Feed Hopper elevated

TM-5 shown with Screen Trays and Doors open

Test-Master® Testing Screens feature a counter-balanced drive assembly with internal rotating counterweights to equalize the vertical screening action and assure smooth, quiet operation. The Test-Master® can be placed anywhere with no need for permanent bolting to the floor. Sample vibration characteristics are identical to our TS-1 and TS-2 models.

Test-Master models have a full enclosure covering all moving parts that lessens operational noise and confines and controls airborne respirable quartz, silica, crystalline particles in the breathing zone of personnel.

The panel doors open flat across the front and feature a safety interlock to prevent operation when open. A 1.6ft³ (45.3L) integrated hopper allows incremental introduction of sample material during operation. The hopper is hinged at the rear and has a panel to block dust when closed.

A built-in electronic LED digital controller displays time remaining and sounds an audible tone at the end of the test cycle. Test cycles lasting up to 99 minutes, 59 seconds may be programmed and cycles can be interrupted without loss of test time. An ergonomic foot-pedal easily operates the hydraulic clamping and pressure release system for the screen trays. Both operate with powerful, capacitor-start 1/3hp motor. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and re shipped without an electrical plug. **Product Dimensions:** 28x35x50in (711x889x1,270mm).

- TM-5 Test-Master® has a capacity of six Screen Trays plus a Dust Pan.
- TM-5 Test-Master® has a capacity of six Screen Trays plus Dust Pan.The wider tray spacing of the TM-5 allows more efficient separation of samples with higher fractions of coarse aggregates.
- TM-6 Test-Master® holds up to seven Screen Trays plus Dust Pan. An extra tray increases efficiency when separating samples into multiple size fractions.

Gilson® Test-Master Testing Screens	
Gilson Test-Master®, 6-Tray Capacity, 115V/60Hz	TM-5
Gilson Test-Master®, 7-Tray Capacity, 115V/60Hz	TM-6
Accessories	
Sound Enclosure	TSA-180
Clean-N-Weigh	TSA-167
Screen Tray Rack	TSA-156
Speed Variation Accessory for Test-Master, 115V/60Hz	TSA-153
Low-Amplitude Drive Shaft for Test-Master (factory-installed)	TSA-201

contactus

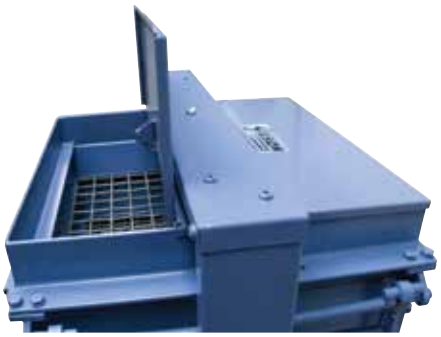
Contact a Gilson Technical Support Specialist to discuss optimizing Testing Screen Performance for special materials.

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

PS-4 shown with Screen Trays

VIDEO ONLINE

PSA-367



PSA-312 on PS-3

PSA-356 shown with Screen Trays

Foot-Tab leveling

GILSON PORTA-SCREEN®

- **Counterbalanced mechanism for smooth operation**
- **Portable for mobile applications**
- **Smaller screens are easier to handle**

Gilson's Porta-Screen® has long been the accepted standard portable screen for quality control of construction aggregates at asphalt and ready-mix plants. Porta-Screen® models are designed for performance durability, yet are light enough to be portable. Designed for best separation in the 2in (50.8mm) to No.16 (1.18mm) range, it is often used to sieve materials to No.200 (75µm). Porta-Screens are also useful for separations of many other materials. Capacity depends on test material characteristics but may range up to 60lb (27.3kg) per test. PS-3 holds five screen trays and pan. PS-4 holds seven screen trays and pan to permit two added mesh sizes per test. Both the PS-3 and PS-4 fit inside the TSA-180 sound enclosure. Vibration of both models is mechanically counterbalanced for smooth, stable operation; no mounting is required. A built-in electronic digital timer has an LED display of remaining test time and issues a 5 second audible alarm at zero. Timer resets to repeat times which can be programmed up to 99 minutes, 59 seconds. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. **PS-3 Product Dimensions:** 21x15x42in (533x381x1,219mm), WxDxH. **PS-4 Product Dimensions:** 21x15x48in (533x381x1,067mm), WxDxH.

Screen Trays and Dust Pans for the Porta-Screen® units are ordered separately. Trays have 14x14in (356x356mm) screen area and are quickly secured for operation by dual hand clamp levers. When levers are released, trays are individually-removable for convenient emptying, cleaning and weighing operations. Wire cloth sizes No.4 and larger have metal shields around edges to cover partial openings for accuracy of separations. Porta-Screen® trays with wire cloth in the No.16 to No.80 (1mm to 180µm) range have three added support ribs. No.100 (150µm) and finer trays are supplied with backup cloth. Replaceable stainless steel wire cloth is available in all sizes. **Tray Dimensions:** 16x16.5x3in (406x419x76mm), WxDxH.

The vibrating assembly is mounted on hardened guide pins. The 1/3hp motor, drive shaft and connecting rod are synchronized with a rotating weight counterbalance system. All are enclosed by the enameled steel case. The machine is quickly leveled by foot tab adjustment of the three support legs while watching an indicator bubble on the top frame.

PSA-114 Porta Wheels can be attached for added mobility. Ball-bearing wheel assemblies with rubber tires quickly attach to the frame of the Porta-Screen®.

PSA-312 Porta Cover bolts to the top flange to enclose the sample chamber. It has a latch and hinged to open for introduction of samples.

PSA-367 Porta Sample Pan is helpful in emptying and cleaning trays and in weighing operations. This chute-end pan fits inverted trays and holds entire samples for cumulative weighing. Handling is easy with the top swing-away handle and end handle grip. **Product Dimensions:** 17x30x4in (432x762x102mm), WxDxH.

PSA-356 Porta-Screen® Tray Rack organizes up to eight Porta-Screen trays for storage and to protect frames and wire cloth from possible damage. Sturdy painted steel sections can be bolted together for stacking. Assembly required. **Product Dimensions:** 18.9x17.4x30.2in (480x442x767mm), WxDxH.

Gilson Porta-Screen®	
Gilson Porta-Screen®, 5 Trays capacity, 115V/60Hz	PS-3
230V/50Hz	PS-3F
Gilson Porta-Screen®, 7 Trays capacity, 115V/60Hz	PS-4
230V/50Hz	PS-4F
Accessories	
Sound Enclosure	TSA-180
Porta Wheels	PSA-114
Porta Cover	PSA-312
Porta Sample Pan	PSA-367
Porta-Screen® Tray Rack	PSA-356

Testing Screen & Test-Master® Trays

Porta-Screen® Trays

ASTM SCREEN TRAYS
ASTM E11, E323

Gilson Screen Trays for Testing Screen, Test-Master® and Porta-Screen® units have stainless steel cloth and meet ASTM E11 specifications of Non-ASTM sizes of 1/8in and 1/16in are available as TSA-101 and TSA-126A or PSA-301 and PSA-326A for Porta-Screen®.

Testing Screen and Test-Master Trays with No.16 (1.18mm) and finer wire cloth include metal ribs installed to support mesh. No.4 stainless steel backing cloth reinforcement is included in Testing Screen Trays with No. 230 and finer cloth and may be added to other trays with or without support ribs. Backing Cloth is intended for use as reinforcement and features flat-rolled surfaces to prevent abrasion of finer cloth. Porta-Screen trays with cloth from No.16 to No.100 use metal support ribs and No.4 stainless steel backing cloth is included on these trays with mesh from No.100 to No.400 opening sizes. Dust Pans for testing screens are 1.6in (40mm) deep and Porta-Screen Dust Pans are 2.9in deep. Both have a capacity of approximately 0.4ft³ (11L). Testing Screen and Test-Master® (cloth only) is 16x24in (406x609mm). Porta-Screen® (cloth only) is 15x15in (381x381mm).

Blank trays (with no wire cloth) for Testing Screen and Test-Master models are available as TSA-136 to accept No.4 and coarser mesh and TSA-137 for cloth No.5 and finer. For Porta-Screen models, order PSA-336 Blank Tray. Round Hole Perforated Plate Sizes for Testing Screen and Test-Master machines are punched openings in steel plate as used for coal testing and other special materials and meet ASTM D4749 and E323. Verification services to ASTM E11 Inspection or Calibration Grades are available for Screen Trays. For details, see listing for Test Sieve Verification Services.

ASTM E11 Screen Trays

Screen Designation		Testing Screen & Test-Master®		Porta-Screen	
Alternate	Standard	Full Tray	Cloth Only	Full Tray	Cloth Only
–	125.0mm	TSA-99 5"	TSA-124 5"	n/a	n/a
–	106.0mm	TSA-110 4.24"	TSA-132 4.24"	n/a	n/a
–	100.0mm	TSA-100 4"	TSA-125 4"	n/a	n/a
3-1/2in	90.0mm	TSA-100 3-1/2"	TSA-125 3-1/2"	n/a	n/a
3in	75.0mm	TSA-100 3"	TSA-125 3"	Inquire	Inquire
2-1/2in	63.0mm	TSA-100 2-1/2"	TSA-125 2-1/2"	Inquire	Inquire
2.12in	53.0mm	TSA-110 2.12"	TSA-132 2.12"	Inquire	Inquire
2in	50.0mm	TSA-100 2"	TSA-125 2"	PSA-300 2"	PSA-325 2"
1-3/4in	45.0mm	TSA-100 1-3/4"	TSA-125 1-3/4"	PSA-300 1-3/4"	PSA-325 1-3/4"
1-1/2in	37.5mm	TSA-100 1-1/2"	TSA-125 1-1/2"	PSA-300 1-1/2"	PSA-325 1-1/2"
1-1/4in	31.5mm	TSA-100 1-1/4"	TSA-125 1-1/4"	PSA-300 1-1/4"	PSA-325 1-1/4"
1.06in	26.5mm	TSA-110 1.06"	TSA-132 1.06"	PSA-299 1.06"	PSA-324 1.06"
1in	25.0mm	TSA-100 1"	TSA-125 1"	PSA-300 1"	PSA-325 1"
7/8in	22.4mm	TSA-100 7/8"	TSA-125 7/8"	PSA-300 7/8"	PSA-325 7/8"
3/4in	19.0mm	TSA-100 3/4"	TSA-125 3/4"	PSA-300 3/4"	PSA-325 3/4"
5/8in	16.0mm	TSA-100 5/8"	TSA-125 5/8"	PSA-300 5/8"	PSA-325 5/8"
.530in	13.2mm	TSA-110 .530"	TSA-132 .530"	PSA-299 .530"	PSA-324 .530"
1/2in	12.5mm	TSA-100 1/2"	TSA-125 1/2"	PSA-300 1/2"	PSA-325 1/2"
7/16in	11.2mm	TSA-100 7/16"	TSA-125 7/16"	PSA-300 7/16"	PSA-325 7/16"
3/8in	9.5mm	TSA-100 3/8"	TSA-125 3/8"	PSA-300 3/8"	PSA-325 3/8"
5/16in	8.0mm	TSA-100 5/16"	TSA-125 5/16"	PSA-300 5/16"	PSA-325 5/16"
.265in	6.7mm	TSA-110 .265"	TSA-132 .265"	PSA-299 .265"	PSA-324 .265"
1/4in	6.3mm	TSA-100 1/4"	TSA-125 1/4"	PSA-300 1/4"	PSA-325 1/4"
No.3-1/2	5.6mm	TSA-110 #3-1/2	TSA-132 #3-1/2	PSA-299 #3-1/2	PSA-324 #3-1/2
No.4	4.75mm	TSA-100 #4	TSA-125 #4	PSA-300 #4	PSA-325 #4
No.5	4.00mm	TSA-101 #5	TSA-126A #5	PSA-301 #5	PSA-326A #5
No.6	3.35mm	TSA-101 #6	TSA-126A #6	PSA-301 #6	PSA-326A #6
No.7	2.80mm	TSA-101 #7	TSA-126A #7	PSA-301 #7	PSA-326A #7
No.8	2.36mm	TSA-101 #8	TSA-126A #8	PSA-301 #8	PSA-326A #8
No.10	2.00mm	TSA-101 #10	TSA-126A #10	PSA-301 #10	PSA-326A #10
No.12	1.70mm	TSA-101 #12	TSA-126A #12	PSA-301 #12	PSA-326A #12
No.14	1.40mm	TSA-101 #14	TSA-126A #14	PSA-301 #14	PSA-326A #14
No.16	1.18mm	TSA-102 #16	TSA-126B #16	PSA-302 #16	PSA-326B #16
No.18	1.00mm	TSA-102 #18	TSA-126B #18	PSA-302 #18	PSA-326B #18
No.20	850µm	TSA-102 #20	TSA-126B #20	PSA-302 #20	PSA-326B #20
No.25	710µm	TSA-102 #25	TSA-126B #25	PSA-302 #25	PSA-326B #25
No.30	600µm	TSA-102 #30	TSA-126B #30	PSA-302 #30	PSA-326B #30
No.35	500µm	TSA-102 #35	TSA-126B #35	PSA-302 #35	PSA-326B #35
No.40	425µm	TSA-102 #40	TSA-126B #40	PSA-302 #40	PSA-326B #40
No.45	355µm	TSA-102 #45	TSA-126B #45	PSA-302 #45	PSA-326B #45
No.50	300µm	TSA-102 #50	TSA-126B #50	PSA-302 #50	PSA-326B #50
No.60	250µm	TSA-102 #60	TSA-126B #60	PSA-302 #60	PSA-326B #60
No.70	212µm	TSA-102 #70	TSA-126B #70	PSA-302 #70	PSA-326B #70
No.80	180µm	TSA-102 #80	TSA-126B #80	PSA-302 #80	PSA-326B #80
No.100	150µm	TSA-102 #100	TSA-126B #100	PSA-302 #100	PSA-326B #100
No.120	125µm	TSA-103 #120	TSA-140 #120	PSA-303 #120	PSA-328 #120
No.140	106µm	TSA-103 #140	TSA-140 #140	PSA-303 #140	PSA-328 #140
No.170	90µm	TSA-103 #170	TSA-140 #170	PSA-303 #170	PSA-328 #170
No.200	75µm	TSA-103 #200	TSA-140 #200	PSA-303 #200	PSA-328 #200
No.230	63µm	TSA-103 #230	TSA-140 #230	PSA-303 #230	PSA-328 #230
No.270	53µm	TSA-103 #270	TSA-140 #270	PSA-303 #270	PSA-328 #270
No.325	45µm	TSA-103 #325	TSA-140 #325	PSA-303 #325	PSA-328 #325
No.400	38µm	TSA-103 #400	TSA-140 #400	PSA-303 #400	PSA-328 #400
No.4 Backing Cloth		–	TSA-135	–	PSA-335
Blank Tray, No.4 & Coarser		TSA-136	–	PSA-336	–
Blank Tray, No.5 & Finer		TSA-137	–	PSA-336	–
Dust Pan		TSA-112	–	PSA-310	–

ASTM E323 Round-Hole Perforated Plate Trays

Screen Designation		Testing Screen & Test-Master®	
Alternate	Standard	Full Tray	Plate Only
4.0in	101.6mm	TSA-115 4"	TSA-130 4"
3.5in	88.9mm	TSA-115 3-1/2"	TSA-130 3-1/2"
3.0in	76.2mm	TSA-115 3"	TSA-130 3"
2.5in	63.5mm	TSA-115 2-1/2"	TSA-130 2-1/2"
2.25in	57.2mm	TSA-115 2-1/4"	TSA-130 2-1/4"
2.0in	50.8mm	TSA-115 2"	TSA-130 2"
1.75in	44.5mm	TSA-115 1-3/4"	TSA-130 1-3/4"
1.5in	38.1mm	TSA-115 1-1/2"	TSA-130 1-1/2"
1.375in	34.9mm	TSA-115 1-3/8"	TSA-130 1-3/8"
1.25in	31.8mm	TSA-115 1-1/4"	TSA-130 1-1/4"
1.0in	25.4mm	TSA-115 1"	TSA-130 1"
.875in	22.2mm	TSA-115 7/8"	TSA-130 7/8"
.75in	19.1mm	TSA-115 3/4"	TSA-130 3/4"
.625in	15.9mm	TSA-115 5/8"	TSA-130 5/8"
.5in	12.7mm	TSA-115 1-2"	TSA-130 1-2"
.375in	9.5mm	TSA-115 3/8"	TSA-130 3/8"
.312in	8.0mm	TSA-115 5/16"	TSA-130 5/16"
.25in	6.4mm	TSA-115 1/4"	TSA-130 1/4"
.187in	4.75mm	TSA-115 #4	TSA-130 #4
.125in	3.2mm	TSA-115 1/8"	TSA-130 1/8"

[1]*Perforated Plate sections fit TSA-136 Blank Tray for Coarse Wire Cloth.*

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ISO SCREEN TRAYS
ISO 565, 3310-1

ISO Screen Trays for Gilson Testing Screen, Test-Master® and Porta-Screen® units are fitted with ISO series stainless steel wire cloth.

Testing Screen and Test-Master Trays with wire cloth 1.18mm and finer have metal support ribs under the mesh. No.4 (4.75mm) stainless steel backing cloth reinforces Testing Screen Trays with cloth openings of 63µm and finer and can be added to other trays with or without support ribs as an option. Special built Backing Cloth features flat-rolled surfaces to prevent abrasion of the primary mesh. Porta-Screen trays with 1.18mm to 150µm openings use metal support ribs and No.4 (4.75mm) stainless steel backing cloth is included on these trays with mesh from 150µm to 38µm opening sizes.

Blank trays (with no wire cloth) for Testing Screen and Test-Master models are available as TSA-136 for 4.75mm and coarser mesh and TSA-137 for 4.00mm and finer. For Porta-Screen models, order PSA-336 Blank Tray.

helpfulhint

Gilson Screen Trays can be verified to ASTM E11 or ISO 565 and 3310-1 Inspection or Calibration grades.

Screen Tray Verification

ASTM E11	Inspection	GV-61
ASTM E11	Calibration	GV-66
ISO 565/3310-1	Inspection	GV-64
ISO 565/3310-1	Calibration	GV-67

See separate listing for Gilson Test Sieve and Screen Tray Verification Services.

technote

Wire cloth in sizes 4.25in and larger or 112mm and larger is welded rather than woven, so does not strictly meet ASTM E11 or ISO 656/3310-1 specifications.

ISO Screen Trays

Screen Designation	Testing Screen & Test-Master®		Porta-Screen®	
	Full Tray	Cloth Only	Full Tray	Cloth Only
125mm	TSA-103 125M	TSA-140 125M	–	–
106mm	TSA-100 106M	TSA-125 106M	–	–
100mm	TSA-100 100M	TSA-125 100M	–	–
90.0mm	TSA-100 90M	TSA-125 90M	–	–
75.0mm	TSA-100 75M	TSA-125 75M	–	–
63.0mm	TSA-100 63M	TSA-125 63M	–	–
56.0mm	TSA-100 56M	TSA-125 56M	–	–
53.0mm	TSA-100 53M	TSA-125 53M	–	–
50.0mm	TSA-100 50M	TSA-125 50M	PSA-300 50M	PSA-325 50M
45.0mm	TSA-100 45M	TSA-125 45M	PSA-300 45M	PSA-325 45M
40.0mm	TSA-100 40M	TSA-125 40M	PSA-300 40M	PSA-325 40M
37.5mm	TSA-100 37.5M	TSA-125 37.5M	PSA-300 37.5M	PSA-325 37.5M
35.5mm	TSA-100 35.5M	TSA-125 35.5M	PSA-300 35.5M	PSA-325 35.5M
31.5mm	TSA-100 31.5M	TSA-125 31.5M	PSA-300 31.5M	PSA-325 31.5M
28.0mm	TSA-100 28M	TSA-125 28M	PSA-300 28M	PSA-325 28M
26.5mm	TSA-100 26.5M	TSA-125 26.5M	PSA-300 26.5M	PSA-325 26.5M
25.0mm	TSA-100 25M	TSA-125 25M	PSA-300 25M	PSA-325 25M
22.4mm	TSA-100 22.4M	TSA-125 22.4M	PSA-300 22.4M	PSA-325 22.4M
20.0mm	TSA-100 20M	TSA-125 20M	PSA-300 20M	PSA-325 20M
19.0mm	TSA-100 19M	TSA-125 19M	PSA-300 19M	PSA-325 19M
18.0mm	TSA-100 18M	TSA-125 18M	PSA-300 18M	PSA-325 18M
16.0mm	TSA-100 16M	TSA-125 16M	PSA-300 16M	PSA-325 16M
14.0mm	TSA-100 14M	TSA-125 14M	PSA-300 14M	PSA-325 14M
13.2mm	TSA-100 13.2M	TSA-125 13.2M	PSA-300 13.2M	PSA-325 13.2M
12.5mm	TSA-100 12.5M	TSA-125 12.5M	PSA-300 12.5M	PSA-325 12.5M
11.2mm	TSA-100 11.2M	TSA-125 11.2M	PSA-300 11.2M	PSA-325 11.2M
10.0mm	TSA-100 10M	TSA-125 10M	PSA-300 10M	PSA-325 10M
9.5mm	TSA-100 9.5M	TSA-125 9.5M	PSA-300 9.5M	PSA-325 9.5M
9.0mm	TSA-100 9M	TSA-125 9M	PSA-300 9M	PSA-325 9M
8.0mm	TSA-100 8M	TSA-125 8M	PSA-300 8M	PSA-325 8M
7.1mm	TSA-100 7.1M	TSA-125 7.1M	PSA-300 7.1M	PSA-325 7.1M
6.7mm	TSA-100 6.7M	TSA-125 6.7M	PSA-300 6.7M	PSA-325 6.7M
6.3mm	TSA-100 6.3M	TSA-125 6.3M	PSA-300 6.3M	PSA-325 6.3M
5.6mm	TSA-100 5.6M	TSA-125 5.6M	PSA-300 5.6M	PSA-325 5.6M
5.0mm	TSA-100 5M	TSA-125 5M	PSA-300 5M	PSA-325 5M
4.75mm	TSA-100 4.75M	TSA-125 4.75M	PSA-300 4.75M	PSA-325 4.75M
4.50mm	TSA-100 4.5M	TSA-125 4.5M	PSA-300 4.5M	PSA-325 4.5M
4.00mm	TSA-101 4M	TSA-126A 4M	PSA-301 4M	PSA-326A 4M
3.55mm	TSA-101 3.55M	TSA-126A 3.55M	PSA-301 3.55M	PSA-326A 3.55M
3.35mm	TSA-101 3.35M	TSA-126A 3.35M	PSA-301 3.35M	PSA-326A 3.35M
3.15mm	TSA-101 3.15M	TSA-126A 3.15M	PSA-301 3.15M	PSA-326A 3.15M
2.80mm	TSA-101 2.8M	TSA-126A 2.8M	PSA-301 2.8M	PSA-326A 2.8M
2.50mm	TSA-101 2.5M	TSA-126A 2.5M	PSA-301 2.5M	PSA-326A 2.5M
2.36mm	TSA-101 2.36M	TSA-126A 2.36M	PSA-301 2.36M	PSA-326A 2.36M
2.00mm	TSA-101 2M	TSA-126A 2M	PSA-301 2M	PSA-326A 2M
1.80mm	TSA-101 1.8M	TSA-126A 1.8M	PSA-301 1.8M	PSA-326A 1.8M
1.70mm	TSA-101 1.7M	TSA-126A 1.7M	PSA-301 1.7M	PSA-326A 1.7M
1.60mm	TSA-101 1.6M	TSA-126A 1.6M	PSA-301 1.6M	PSA-326A 1.6M
1.40mm	TSA-101 1.4M	TSA-126A 1.4M	PSA-301 1.4M	PSA-326A 1.4M
1.25mm	TSA-101 1.25M	TSA-126A 1.25M	PSA-301 1.25M	PSA-326A 1.25M
1.18mm	TSA-102 1.18M	TSA-126B 1.18M	PSA-302 1.18M	PSA-326B 1.18M
1.12mm	TSA-102 1.12M	TSA-126B 1.12M	PSA-302 1.12M	PSA-326B 1.12M
1.00mm	TSA-102 1M	TSA-126B 1M	PSA-302 1M	PSA-326B 1M
900µm	TSA-102 900U	TSA-126B 900U	PSA-302 900U	PSA-326B 900U
850µm	TSA-102 850U	TSA-126B 850U	PSA-302 850U	PSA-326B 850U
800µm	TSA-102 800U	TSA-126B 800U	PSA-302 800U	PSA-326B 800U
710µm	TSA-102 710U	TSA-126B 710U	PSA-302 710U	PSA-326B 710U
630µm	TSA-102 630U	TSA-126B 630U	PSA-302 630U	PSA-326B 630U
600µm	TSA-102 600U	TSA-126B 600U	PSA-302 600U	PSA-326B 600U
560µm	TSA-102 560U	TSA-126B 560U	PSA-302 560U	PSA-326B 560U
500µm	TSA-102 500U	TSA-126B 500U	PSA-302 500U	PSA-326B 500U
450µm	TSA-102 450U	TSA-126B 450U	PSA-302 450U	PSA-326B 450U
425µm	TSA-102 425U	TSA-126B 425U	PSA-302 425U	PSA-326B 425U
400µm	TSA-102 400U	TSA-126B 400U	PSA-302 400U	PSA-326B 400U
355µm	TSA-102 355U	TSA-126B 355U	PSA-302 355U	PSA-326B 355U
315µm	TSA-102 315U	TSA-126B 315U	PSA-302 315U	PSA-326B 315U
300µm	TSA-102 300U	TSA-126B 300U	PSA-302 300U	PSA-326B 300U
280µm	TSA-102 280U	TSA-126B 280U	PSA-302 280U	PSA-326B 280U
250µm	TSA-102 250U	TSA-126B 250U	PSA-302 250U	PSA-326B 250U
224µm	TSA-102 224U	TSA-126B 224U	PSA-302 224U	PSA-326B 224U
212µm	TSA-102 212U	TSA-126B 212U	PSA-302 212U	PSA-326B 212U
200µm	TSA-102 200U	TSA-126B 200U	PSA-302 200U	PSA-326B 200U
180µm	TSA-102 180U	TSA-126B 180U	PSA-302 180U	PSA-326B 180U
160µm	TSA-102 160U	TSA-126B 160U	PSA-302 160U	PSA-326B 160U
150µm	TSA-102 150U	TSA-126B 150U	PSA-302 150U	PSA-326B 150U
140µm	TSA-102 140U	TSA-126B 140U	PSA-302 140U	PSA-326B 140U
125µm	TSA-103 125U	TSA-140 125U	PSA-303 125U	PSA-328 125U
112µm	TSA-103 112U	TSA-140 112U	PSA-303 112U	PSA-328 112U
106µm	TSA-103 106U	TSA-140 106U	PSA-303 106U	PSA-328 106U
100µm	TSA-103 100U	TSA-140 100U	PSA-303 100U	PSA-328 100U
90µm	TSA-103 90U	TSA-140 90U	PSA-303 90U	PSA-328 90U
80µm	TSA-103 80U	TSA-140 80U	PSA-303 80U	PSA-328 80U
75µm	TSA-103 75U	TSA-140 75U	PSA-303 75U	PSA-328 75U
71µm	TSA-103 71U	TSA-140 71U	PSA-303 71U	PSA-328 71U
63µm	TSA-103 63U	TSA-140 63U	PSA-303 63U	PSA-328 63U
56µm	TSA-103 56U	TSA-140 56U	PSA-303 56U	PSA-328 56U
53µm	TSA-103 53U	TSA-140 53U	PSA-303 53U	PSA-328 53U
50µm	TSA-103 50U	TSA-140 50U	PSA-303 50U	PSA-328 50U
45µm	TSA-103 45U	TSA-140 45U	PSA-303 45U	PSA-328 45U
40µm	TSA-103 40U	TSA-140 40U	PSA-303 40U	PSA-328 40U
38µm	TSA-103 38U	TSA-140 38U	PSA-303 38U	PSA-328 38U

VIDEO ONLINE

TSA-157

Testing Screen & Test-Master® Accessories

Description	Model
Low-Amplitude Drive Shaft is a factory-installed option often used in conjunction with the Speed Variation Accessory for gentle separations of fragile, sensitive, or lightweight materials. The special drive shaft has a shorter stroke than the original design. For Testing Screen or Continuous-Flow Screen models order TSA-200 and for Test-Master® order TSA-201.	TSA-200 TSA-201
Door Enclosure is a lightweight, easily removable door panel for TS-1 and TS-2 Testing Screens, designed to minimize dust and noise. Sturdy fiberboard door has a full-width hinge and sound-deadening liner to cover the top and front openings. It is held in place with permanent magnets. Specify Testing Screen model and serial number when ordering to ensure proper fit. Door Enclosure for TS-1 & TS-2 Door Enclosure for TS-3	 TSA-157 TSA-157R
Sound Enclosure is a sturdy, painted-steel cabinet lined with 1in (25.4mm) thick sound attenuating foam. The enclosure is designed for use with Testing Screen and Test-Master® units, but can also be used with Porta-Screen® and other laboratory equipment. Full-width doors and top are hinged for easy access to equipment. When used with TS-1 or TS-2 Testing Screens, use of the TSA-157 Door Enclosure is recommended. **Outside Product Dimensions:** 36.5x38.5x57in (927x978x1,448mm), WxDxH.	TSA-180
Clean-N-Weigh Accessory provides a fast, convenient method of cleaning and collecting contents of Testing Screen, Test-Master® or Porta-Screen® screen trays for weighing of separated fractions. Loaded screen trays are inverted and cleaned on top of the unit and specimen is collected in the included TSA-162 Chute-End Handling Pan below. The pan can also be positioned on an electronic balance for instant display or data collection of cumulative weights. Sturdy, painted-steel construction, adjustable shelf and leveling feet. TSA-171 Coarse Screen Tray Brush is included. **Product Dimensions:** 30.5x19.5x30.5in (775x495x775mm), WxDxH.	TSA-167

VIDEO ONLINE

TSA-180 Shown with TS-1 and Screen Trays

VIDEO ONLINE

TSA-167 Shown with Screen Tray

CLEAN-N-WEIGH ACCESSORY

Step 1: Place the Chute-End Handling Pan under the hopper of the Clean-N-Weigh, then invert a Screen Tray on the hopper support bars.

Step 2: Brush all particles from the Screen Tray through the hopper.

Step 3: Weigh the sample fraction in either the Chute-End Handling Pan or separate container.

Note: A high-capacity electronic balance can be positioned under the Handling Pan for immediate display of accumulated fraction weights or to transfer data to user's PC.

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TSA-154R

TSA-169R

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TSA-155

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TSA-156 Shown with Screen Trays

Testing Screen & Test-Master® Accessories

Description	Model
Speed Variation Accessory is factory-installed to allow precise control of vibration speed on Testing Screen and Test-Master® machines. Control of vibration speed assures reliable separations of materials with specific gravities different from common mineral aggregates or for materials finer than No.4 (4.75mm). The TSA-154R for Testing Screens and TSA-153 for Test-Master® both feature a remotely-mounted digital controller that displays stroke values between 240 and 635 strokes per minute. Please inquire for retrofitting existing units. **Controller Product Dimensions:** 6.1x4.3x7.5in (159x108x191mm), WxDxH.	
Speed Variation Accessory for Testing Screen	TSA-154R
Speed Variation Accessory for Test Master	TSA-153
Digital Lab Timer controls up to 1hp single-phase motors or 20 amp loads. Bright 1/2in (12.6mm) LED display shows remaining time, stops machine at zero, then resets to programmed time for next use. Test times are set with tactile panel buttons. When stopped and restarted, countdown resumes from paused time. Timer operates in four modes with capacities of: 9,999 sec, 9,999 min, 99:59 min:sec or 99:59 hr/min. Electronics are mounted in a stainless steel case. The timer has a three-wire receptacle for timed devices operating on 115V/60Hz power. TSA-169RF has two 6ft (3m) three-wire cords without plugs for connection to mains and machine. **Overall Product Dimensions:** 4.5x5x5.5in (114x127x140mm), WxDxH.	
Digital Lab Timer with 3-Wire Receptacle	TSA-169R
Digital Lab Timer with no Plugs	TSA-169RF
Hydraulic Clamping Conversion converts the threaded manual clamping of the TS-2 to the fast-acting hydraulic system of the TS-1. Time and effort for each test cycle are reduced and clamping pressure is automatically equalized between the two sides. For serial numbers lower than 13825 order TSA-155 and higher than 13825 order TSA-159. Kit includes pump, cylinders, rods, bearings and other necessary parts, along with a drilling template and instructions.	
Hydraulic Clamping Conversion Kit, S/N 13825 and Lower	TSA-155
Hydraulic Clamping Conversion Kit, S/N 13826 and Higher	TSA-159
Screen Tray Rack provides organized storage for up to seven screen trays while protecting tray flanges and wire cloth from possible damage. Enameled steel sections fit on top of or below most lab bench tops and can be bolted together for stacking. Assembly required. **Product Dimensions:** 20.3x27.7x23.1in (516x704 587mm), WxDxH.	TSA-156
Dust Pans for collection of fines are available to fit Testing Screens and Test-Master® models. ➤ TSA-112 Standard Dust Pan for TS and TM models is 1.6in deep. ➤ TSA-112S 4in (100mm) deep pan has extra capacity for samples with high fines content and can be used with all TS and TM models. One screen tray space will be lost in all machines. ➤ TSA-114 3in (76mm) deep pan also makes room for additional fines and can be used in TS models without losing a screen tray space. It can be used in the TM-5 with the loss of a tray space but will not fit the TM-6. ➤ TSA-116 Two-Piece Stationary Dust Pan is designed for use with TM models only and has a flexible sleeve and adapter providing a dust seal to the pan below. Nuisance dust generated by fines separation is reduced. This pan takes the place of one screen tray. ➤ TSA-117 Inclined Chute pan allows passing fines to be continuously directed into an external pan or bag. TSA-117 is for use with TS models only. The Inclined Chute Pan will take the place of one screen tray.	
1.6in Deep Dust Pan (Standard)	TSA-112
4in Deep Dust Pan	TSA-112S
3in Deep Dust Pan	TSA-114
Two-Piece Stationary Dust Pan	TSA-116
Inclined Chute Pan	TSA-117

TSA-112S

VIDEO ONLINE

TSA-114

TSA-116

TSA-117

: Product spotlight ::::::::::::::::::::

DUST PAN COMPATIBILITY

	TS-1	TS-2	TS-3	TS-4	TM-5	TM-6
TSA-112	✔	✔	✔	✔	✔	✔
TSA-112S	✔	✔	✔	✔	✔	✔
TSA-114	✔	✔	✔	✔	✔	✖
TSA-116	✖	✖	✖	✖	✔	✔
TSA-117	✔	✔	✔	✖	✖	✖

CF-1

SS-35 shown with Wire Cloth Squares

CFA-100

CONTINUOUS-FLOW SCREEN

Gilson's CF-1 Continuous-Flow Screen is extremely versatile, ideal for the laboratory where many different separation jobs are encountered. For small-scale scalping, mass separation and continuous-feed production applications with coarse sized materials, CF-1 does the job practically and efficiently.

The unit can be used with one or two screen trays with screening area approximately 16x24in (406x610mm) per tray. The trays are vibrated in inclined position, with incline angle adjustable in a range of 4°–10° and speed is digitally controlled up to 650 cycles per minute. Inclined Screen Trays are available with stainless steel wire cloth in ASTM E11 sizes 4in to No.100, or may be specified with round openings, slotted openings, or other special wire cloth.

Discharge pans are provided in two styles, for either front or bottom discharge. The trays and pan are secured by clamp rods readily accessible on top of the unit. The CF-1 is powered by a 1/2hp, fan cooled, completely enclosed motor.

The vertical-throw action of the CF-1 is designed primarily for coarse materials (2in to No.4), but adjustable incline and frequency allow use with a wide range of materials. A special low amplitude drive shaft may also be specified to improve separations in sizes finer than No.4.

Continuous-flow screening is not recommended for testing applications. The versatile CF-1 may be adapted for some testing work by setting at lowest incline angle and replacing Inclined Screen Trays and pan with trays and pan Models TSA-100 to TSA-112 described elsewhere for use with the Model TS-1 Testing Screen. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. **Product Dimensions:** 26x34x31in (660x864x787mm), WxDxH. Tray length is 41in (1041mm).

Continuous-Flow Screen	
Continuous-Flow Screen, 110V/60Hz	CF-1
230V/50Hz	CF-1F
Accessories	
Inclined Screen Tray 4in–No.4	CFA-100
Inclined Screen Tray No.5–No.14	CFA-101
Inclined Screen Tray No.16–No.100	CFA-102
Discharge Pan Inclined (for front discharge)	CFA-112
Discharge Pan Chute (for bottom discharge)	CFA-113
Replacement Cloth only 4in–No.4	TSA-125
Replacement Cloth only No.5–No.14	TSA-126A
Replacement Cloth only No.16–No.100	TSA-126B
Special Low Amplitude Drive Shaft Option	TSA-200

ROCKER SCREEN SET

Set consists of a 12in (305mm) square steel frame designed for interchangeable wire cloth and bottom pan. Stainless Steel Wire Cloth squares are held in place by two bolted side clamps with wing nuts. Order required squares separately in mesh sizes desired. When not in use, all squares can be clamped into the frame for carrying or storing. Frame and rocker bottom have handles for rocking and carrying. Frame height above cloth is 5in (13cm). Not recommended for use with sizes below No.20. **Product Dimensions:** 12x15x10in (305x381x254mm), WxDxH.

Rocker Screen Set	
Rocker Screen Set	SS-35
Accessories	
No.7 & Coarser Wire Cloth Squares	SSA-351
No.8–No.20 Wire Cloth Squares	SSA-355

GILSO-MATIC® SCREENING ASSEMBLIES

- **Automated in-plant quality control**
- **Research and pilot plant production**
- **Samples up to 10.5ft³ (0.5m³)**
- **Particle size to 4in (102mm)**

Effective quality control of coarse aggregate production requires testing large-volume samples. Gilso-Matic® Screening Assemblies equipped with Hopper/Feeders can test total sample volumes up to 10.5ft³ (0.3m³) (152mm), in batch sizes from 1–3ft³ (0.03–0.08m³). Operating principles are similar to our proven Testing Screen and Test Master laboratory models. The mechanism of the screening assembly is internally counter-balanced for smooth operation and to minimize transfer of vibration. Capacities are considerably greater and automated material handling features have been added. These are powerful, reliable units designed for integration into an automated, total quality control system.

For greatest accuracy, these large samples are screened in smaller batches and weights are added together for total fractions. The 18ft³ (0.5m³) Hopper/Feeder assembly can dispense samples to the Gilso-Matic® in successive cycles of feeding, screening and discharge. After each batch is screened, air-actuated cylinders tilt the screen decks and fines collection pan to discharge fractions into individual collection chutes. Screen decks and pan remain mounted in the machine during testing and discharge operations, but can be unbolted and dismounted for cleaning and maintenance. At completion of the batch-testing cycles, contents of each chute can be discharged directly to a platform scale for cumulative analysis. Electronic scales, purchased separately, can be connected to a PC to allow automated data collection, analysis and reporting. Sized fractions can also be collected individually in pans and dollies and moved away for further processing.

Holding capacity of each collection chute is about 1.5ft³ (0.04m³) for a total capacity of 10.5ft³ (0.3m³) from the six screen decks and the fines collection pan. Each chute has an individually powered gate for controlled release of accumulated material. Replaceable ASTM E11 stainless steel wire cloth units are 24in (610mm) square and mounted in metal frames for clamping in screen decks. Six GXA-99 or GXA-100 wire cloth units are required and must be ordered separately.

Gilso-Matic® Screening Assemblies have 4in (102mm) topsize capacity. Inquire for models to process materials up to 6in (152mm). Minimum recommended material size is No.8 (2.36mm). The basic Gilso-Matic® unit is supplied with a 3hp electric motor, air-actuated cylinders, collection chutes, a control box and mounting rails. Models can also be ordered with 18ft³ (0.5m³) Hopper-Feeder included. Special factory-installed low-amplitude vibration and speed variation accessories are available to optimize performance and match characteristics of different materials.

Gilso-Matic® Screening Assemblies[1]	
Gilso-Matic®, 230 or 460V/60Hz	GX-4A2
230 or 460V/50Hz	GX-4A2F
Gilso-Matic® with 18ft³ Hopper, 230 or 460V/60Hz	GX-4A1
230 or 460V/50Hz	GX-4A1F
Accessories	
Wire Cloth Units, Larger than 4in	GXA-99
Wire Cloth Units, 4in—No.4	GXA-100
Wire Cloth Units, No.5—No.14	GXA-101
Speed Variation Accessory	GXA-153
Low-Amplitude Vibration Option	GXA-200

[1] Specify electrical configuration when ordering.

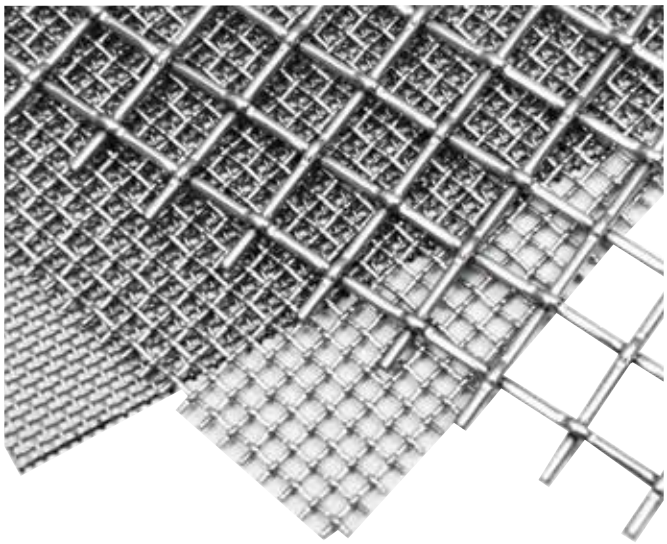
GX-4A1 (Safety guards removed)

An additional 9in (230mm) of vertical clearance is required for tilt-discharge operation. An additional 60in (1.52m) of horizontal clearance is required in front of the unit for maintenance and repair. The Gilso-Matic® requires a 230 or 460V, three phase electrical supply and a minimum air supply of 80psi (533kPa). **Product Dimensions:** 86x48x85in (2.18x1.22x2.16m), WxDxH. **Dimensions with Hopper-Feeder Assembly:** 107x48x106in (2.72x1.22x2.69m), WxDxH.

helpfulhint

Gilso-Matic® Screening Assemblies in combination with Split-O-Matic Splitters can be a major part of an in-plant quality control system for automated production monitoring. Automated sampling devices can sample directly from the production stream. Electronic scales and data collection software allows real-time analysis of output for on-the-spot changes.

Inquire for assistance developing a custom-designed system.



ASTM Testing Grade Wire Cloth

Polyester Screen Cloth

ASTM TESTING GRADE WIRE CLOTH

ASTM E11; AASHTO M 92

Quality stainless steel or brass ASTM woven-wire sieve cloth can be cut to order for special applications. Wire cloth meets ASTM E11 and AASHTO M 92 opening requirements and is the same quality used in Gilson Test Sieves and Screen Trays. Stainless Steel cloth is available in all E11 including metric alternative sizes and offers the longest possible service life. It's the recommended choice if contamination or wear are issues. Brass cloth is available in openings from 2.36mm to 45µm (No.8 to No. 325) and is suitable for less demanding applications.

Most popular sizes are in stock in 36x36in (914x914mm) pieces and widths up to 52in (1,320mm) are available. Prices shown are for square or rectangular pieces cut to customer's specified dimensions. Each cut piece is priced per whole square foot, so one 10x10in cut piece will be priced at one square foot. Inquire for pricing if multiple small pieces or special shapes are required. Wire Cloth cut to order is nonreturnable.

ASTM Testing Grade Wire Cloth		
Mesh Size	Stainless Steel	Brass
4in–1/4in (100–6.3mm)	WC-3S	—
No.8–No.170 (2.36mm–90µm)	WC-5S	WC-5
No.200 (75µm)	WC-200S	WC-200
No.230 (63µm)	WC-230S	WC-230
No.270 (53µm)	WC-270S	WC-270
No.325 (45µm)	WC-325S	WC-325
No.400 (38µm)	WC-400S	WC-400
No.450 (32µm)	WC-450S	—
No.500 (25µm)	WC-500S	—
No.635 (20µm)	WC-635S	—

POLYESTER OR NYLON SCREEN CLOTH FABRIC

For special applications where metallic wire cloth cannot be used, choose Polyester or Nylon cloth fabric with openings equivalent to No.6 (3.35mm) to No.635 (20µm). Both materials have very consistent opening sizes, but average openings and thread diameter may vary substantially from ASTM E11 tolerances for metallic woven wire cloth.

Polyester has good abrasion resistance and is very resistant to most acids and alkalis up to pH of 9–10. It has very good wet stability. Nylon has excellent abrasion resistance, high tensile strength and is resistant at high pH conditions, but tends to stretch in water.

Screen Cloth Fabric is supplied cut within the limitations of standard 46in (1,168mm) roll width. Each piece of cloth cut is priced by full square foot, so one 10x10in cut piece will be priced as a full square foot. Inquire for pricing if multiple small pieces, special shapes or wider pieces are required. Polyester or nylon cloth cut to order is nonreturnable.

Polyester or Nylon Screen Cloth Fabric		
Mesh Size	Polyester	Nylon
No.6–No.18 (3.35–1.00mm)	PM-A	NM-A
No.20–No.80 (850–180µm)	PM-B	NM-B
No.100–No.230 (150–63µm)	PM-C	NM-C
No.270–No.400 (53–38µm)	PM-D	NM-D
No.450–No.635 (32–20µm)	PM-E	NM-E
15, 10, or 7µm	PM-F	NM-F

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VIDEO ONLINE

SP-1

VIDEO ONLINE

SP-0

SP-1 close-up of universal splitter chutes

GILSON UNIVERSAL SPLITTERS

ASTM C702, C778; AASHTO T 27, T 248

- **Adjustable-width chutes**
- **Lever-release hoppers**
- **Four capacities for up to 4in topsize**

Gilson's family of Universal Splitters features our exclusive adjustable chute system and lever-release hoppers, assuring top accuracy when reducing bulk materials. Each of these agile workhorses takes the place of two or more conventional splitters with just a few quick adjustments. Selecting the optimum chute width for each material yields accurate representative sample splits without bridging. The lever-release hoppers allow level placement of the bulk sample for even, consistent flow over the chutes as the gate is opened. The largest SP-0 and SP-1 models allow representative splitting of sample volumes and particle sizes not available anywhere else.

Universal Splitter chutes are formed by a series of aluminum bars pivoting on a rod through their lower ends. The operator arranges the precision-ground bars equally on alternate sides, creating V-shaped chutes of the desired width. Once set, the bars are drawn together by tightening wing nuts on threaded ends of the rod. Chutes for SP-1 and SP-2 are sloped at 45°. Other models have standard 60° chute slopes to improve material flow of lighter and finer materials and to meet certain coal or coke testing specifications. All splitters are supplied with two pans (four pans for SP-0). Additional pans are available for faster, more efficient processing.

SP-0 is built for large-volume bulk aggregate or raw coal samples. Each split is evenly distributed to four pans; two on each side. The SPA-450 Lift Cart is recommended for handling fully loaded pans. **Product Dimensions:** 56x26x41in (1,422x660x1,041mm), WxDxH.

SP-1 is a rugged, large-capacity floor model for laboratory or field use for materials with particle sizes up to 2in (51mm). The convenient size and a wide range of available accessories make the SP-1 our most versatile splitter. The SPA-114 Fixed Chute Accessory converts the SP-1 into a SP-1C fixed-chute splitter with ten 2.25in wide chutes. SPA-7 converts the SP-1 into a totally enclosed sample splitter, reducing dust. The SPA-102 Chute Attachment replaces one pan to permit direct loading of material into a bag or container. PSA-114 Porta Wheels easily bolt to splitter legs for added mobility. **Product Dimensions:** 29x19x39in (737x483x991mm), WxDxH.

SP-2 is compact and more durable than conventional portable splitters. Lightweight with ample hopper capacity for materials up to 1.5in (38mm), the SP-2 is convenient for use from floor or bench-top positions. This splitter provides accurate and representative samples for a wide range of materials. **Product Dimensions:** 22x14.5x20.5in (559x368x521mm), WxDxH.

SP-2.5 for sizes up to 1in (25mm) is widely used for fine aggregates and is rugged enough for field or laboratory use. The frame is painted steel and most contact parts are stainless steel except for the anodized aluminum chute bars. The SPA-109 Dust Enclosure Accessory installs easily and has hinged flaps that hold in the open position for easy pan access. **Product Dimensions:** 15.5x12.5x17.5in (394x318x445mm), WxDxH.

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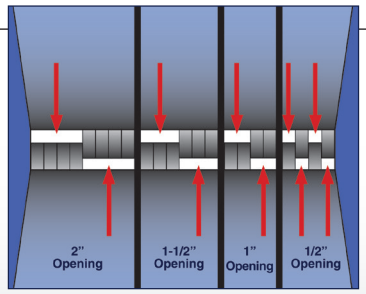
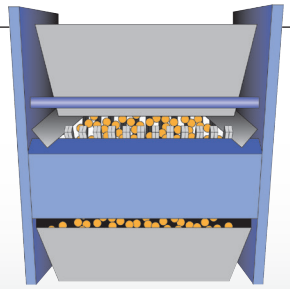
GILSON UNIVERSAL SPLITTERS

Gilson's adjustable chute bars make the Universal Splitter Series the most versatile available. All of these unique splitters have a row of precision-machined aluminum bars, easily positioned by the operator to direct material into one of two sample pans. Using the adjustable bars, chute size is quickly adjusted to the optimum width of 2 to 3 times the largest particle size. One splitter does the work of several.

Our proprietary gated hopper holds the entire sample in place, allowing proper sample leveling and distribution prior to splitting. One pull of the lever releases the material to flow freely across the entire width of the chutes, not just a portion. This method results in the most accurate and precise sample reduction possible using traditional splitters or rifflers.



SP-1 Chute bars can be positioned to create 0.5" to 4" chute openings.



Material released from the gated Universal Splitter Hopper flows evenly across the entire width of the chutes.

SP-2

VIDEO ONLINE

SP-2.5

technote

ASTM C702 requires the chute widths of mechanical splitters to be at least 50% larger than the maximum nominal particle size of the aggregate sample. A minimum of eight chutes for coarse aggregate and twelve chutes for fine aggregate samples is also specified. To assure accurate splits with best performance and minimal opportunities for "bridging", or blockages, Gilson recommends chute widths 2 to 3 times larger than maximum particle size.

Gilson Universal Splitters

Model	Recommended Maximum Particle Size in (mm)	Hopper Capacity ft³ (L)	Chute Bar Size in (mm)	Chute Slope
SP-0	4 (102)	3.5 (99.1)	1 (25)	60°
SP-1	2 (51)	1.0 (28.3)	0.5 (13)	45°
SP-2	1.5 (38)	0.55 (15.6)	0.5 (13)	45°
SP-2.5	1 (25)	0.28 (7.9)	0.25 (6)	60°

Accessories	
Lift Cart Accessory for SP-0	SPA-450
Fixed-Chute Accessory for SP-1	SPA-114
Chute Attachment for SP-1	SPA-102
Porta Wheels for SP-1	PSA-114
Dust Enclosure Adapter Set for SP-1	SPA-7
Dust Enclosure Kit for SP-2.5	SPA-109
SP-0 Sample Pan, Painted Steel 25x9x8in (635x229x203mm)	SPA-400
SP-1 Sample Pan, Painted Steel 25x9x6in (660x229x152mm)	SPA-100
SP-2 Sample Pan, Painted Steel 20x7x6in (508x178x152mm)	SPA-101
SP-2.5 Sample Pan, Stainless Steel 12x6x4in (317x159x102mm)	SPA-108

Universal Splitter Chute Specifications

	SP-2.5	SP-2	SP-1	SP-0
Hopper/Pans Capacity, ft³ (liters)	0.28 (7.9)	0.55 (15.6)	1.0 (28.3)	3.5 (99.1)
Chute Slope	60°	45°	45°	60°
Chute Bar Width, in	0.25	0.5	0.5	1
No. of Chute Bars	48	36	48	48
Chute Bar Width, in (mm)	**Total Openings Based on Chute Bar Width**			
0.25 (6.4)	48	—	—	—
0.5 (12.7)	24	36	48	—
0.75 (19.1)	16	—	—	—
1 (25.4)	12	18	24	48
1.5 (38.1)	8	12	16	—
2 (51)	6	—	12	24
3 (76)	4	6	8	16
4 (102)	—	—	6	12
6 (152)	—	—	4	8
8 (203)	—	—	—	6
12 (305)	—	—	—	4

SP-1C

SP-12CA

GILSON FIXED-CHUTE SPLITTER
ASTM C702; AASHTO R 76, AASHTO T 248; CTM 201

The Fixed-Chute Splitter is based on our original SP-1 Universal Splitter design, featuring ten fixed-width chutes, each 2.25in (57.2mm) wide and a gated material hopper for equal sample distribution. The original Gilson-designed lever-release hopper with 1ft³ (28.3L) capacity assists in rapid and accurate splitting and mixing of granular materials up to 1.125in (28.6mm) topsize.

This steel frame, floor model splitter has a painted and baked finish. Two Collection Pans are included. Extra SPA-100 Sample Pans may be ordered for more efficient sample processing. The SP-1C uses the same accessories as the SP-1, the SPA-102 Chute Attachment replaces one pan to direct loading of material into a bag or container. PSA-114 Porta-Wheels bolt to splitter legs for added mobility. SPA-7 dust enclosure converts the splitter into a totally enclosed sample splitter, reducing dust to help confine and control airborne respirable quartz, silica or crystalline particles. An existing SP-1 Universal Splitter can be converted to a Fixed-Chute Splitter with the SPA-114 Fixed Chute Adapter. **Product Dimensions:** 29x19x39in (737x483x991mm), WxDxH.

Gilson Fixed-Chute Splitter	
Gilson Fixed-Chute Splitter	SP-1C
Accessories	
Sample Pan	SPA-100
Chute Attachment	SPA-102
Porta-Wheels, Set of 2	PSA-114
Dust Enclosure Adapter Set	SPA-7
Fixed-Chute Adapter for SP-1	SPA-114

GILSON CALIFORNIA FIXED CHUTE SAMPLE SPLITTER
ASTM C702; AASHTO R 76, AASHTO T 248; CTM 201

Designed by and constructed for the California Department of Transportation, the SP-12CA Splitter meets CalTrans 201 Test Method for coarse aggregate splitters. Large capacity 1.9ft³ (53.8L) gate release hopper assures accuracy when mixing and dividing bulk aggregate into representative samples. Ten 2.25in (57.2mm) fixed chutes process particle sizes up to 1.125in (28.6mm). Sturdy, heavy-gauge steel frame with painted, baked finish is built for extended service life with heavy use. Swivel casters permit mobility and easy storage.

SP-12CA includes two 1.2ft³ (34L) capacity, welded steel sample pans. SP-12CG includes same size sample pans, but fabricated of lightweight aluminum. These reinforced aluminum pans have sturdy handles for durable and easier to grasp handling of materials. Order extra Steel Sample Pans as SPA-120 or lightweight Aluminum Pans as SPA-122. **Product Dimensions:** 29x28x46in (737x711x1,169mm), WxDxH.

Gilson California Splitter	
Gilson California Fixed Chute Sample Splitter with Steel Pans	SP-12CA
Gilson California Fixed Chute Sample Splitter with Aluminum Pans	SP-12CG
Accessories	
Steel Sample Pan	SPA-120
Aluminum Sample Pan	SPA-122

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SP-10

SP-6 tilt-feeding mechanism at loading position

SP-6

GILSON ENCLOSED SPLITTER
ASTM C702, C778; AASHTO T 248

Gilson's Enclosed Splitter can be loaded and operated through a complete splitting cycle without releasing dust into the room or losing sample material. Dust-tight hinged panels enclose the hopper and pans during operation and are easily opened at completion to retrieve divided sample material.

The SP-10 is an adaptation of the top-selling SP-1 Universal Splitter, but designed so that all in-lab sample splitting operations are done inside the splitter. This significantly reduces dust and helps confine and control the airborne respirable quartz, silica or crystalline particles. Samples in an SPA-100 pan are placed in a slot inside the top of the splitter through a hinged door. After closing the door, the pan is dumped into the hopper by external lever. When internal dust settles, the door may be opened momentarily to level the sample material in the hopper before using a second lever to release sample through the adjustable chutes and into two lower pans enclosed by spring-held covers. To continue splitting sample into smaller fractions, the bottom pan is switched with the feed pan, covers closed and the process repeated until the desired sample fraction is obtained in the bottom pan. **Product Dimensions:** 33x21x51.3in (838x533x1303mm), WxDxH.

GILSON QUADRI-SPLITTER
ASTM C702, D346, D2013, E276, E389, E877

The Gilson Quadri-Splitter yields four equal representative samples of up to 0.4ft^3 (11.3L) for total sample capacity of 1.6ft^3 (45.3L). Unit is totally enclosed including feed inlet and sample outlets. Fully enclosed construction reduces dust to confine and control airborne respirable quartz, silica or crystalline particles. Gilson's unique tilt-feeding mechanism lifts and rotates the removable feed pan to the hopper opening using the feed lever. The pan seals to the hopper inlet as the material is dumped, preventing the release of dust into the room and avoiding sample loss. Sample pans seal to splitter body, yet easily slide out using pan handles. Body has hinge-mounted doors on both sides for inspection and cleaning of chute sections. The three chute decks each have fourteen chutes of 1in (25.4mm) width and 60° slope for smooth sample flow.

The Quadri-Splitter divides any free-flowing material and is ideally suited for coal and coke since dust and moisture loss are minimized by fewer passes and less handling. Two passes yields a 1/16th split and three passes yields a 1/64th split each with a set of four representative samples.

The SP-6 Quadri-Splitter has stainless steel contact parts (chutes and pans); other parts fabricated from galvanized steel, spot welded, riveted and painted for long life and durability. Four Sample Pans of 0.4ft^3 (11.3L) and one Feed Pan of 0.7ft^3 (19.8L) are included. **Product Dimensions:** 24x34x55in (610x864x1,398mm), WxDxH.

Gilson Totally-Enclosed Splitter	
Gilson Enclosed Splitter	SP-10
Accessories	
Sample Pan	SPA-100
Porta-Wheels, Set of 2	PSA-114
Fixed-Chute Adapter	SPA-114

Gilson Quadri-Splitter	
Gilson Quadri-Splitter	SP-6
Accessories	
Sample Pan	SPA-110
Feed Pan	SPA-111

VIDEO ONLINE

SP-55

SPA-22 shown with SPA-23 and SPA-24

SPA-21

HMA-68

GILSON QUARTERMASTER ASPHALT SAMPLE DIVIDER

ASTM D979; AASHTO R 47

- **Quickly and safely divides bulk asphalt and aggregate samples**
- **Rugged construction built for field use**
- **Proven history of accurate performance**
- **Bucket Liner Sample Bags streamline sample handling**

Gilson's SP-55 Quartermaster quickly and accurately divides the large bulk samples required in Superpave specifications for quality control analysis. Asphalt and aggregate samples of 120lb (55kg) or more are easily quartered, ensuring representative samples for consistent laboratory results. The Quartermaster is versatile and has a proven history of significantly reducing bias in sample reduction.

The bulk asphalt or aggregate sample is loaded into the hopper, the handle is released and the sample falls through the divider and is distributed into four included galvanized steel buckets. SPA-22 Bucket Liner Sample Bags may be used for collection and handling of divided specimens and reduce sample loss and cleaning of the sample buckets. Fabric and thread of the durable cotton Bucket Liner bags are temperature-rated to 400°F (204°C). SPA-23 Double loop Wire Ties and Wire Tie Twister allow bag openings to be quickly and securely closed. Occasional clean-up to prevent buildup on the exposed splitting sur-faces is recommended.

The Quartermaster's rugged two-part steel construction stands up to field conditions and allows portability between job sites. The SPA-21 Quick-Funnel Insert drops into the top of the Quartermaster to reduce hopper volume and allow accurate reduction of smaller samples.

Four Galvanized Steel Sample Buckets and four Bucket Liner Sample Bags are included with Quartermaster. Additional buckets can be ordered to increase efficiency. Liner bags in quantities of 10, 100, or 1,000 are available. HMA-68 Material Handling Chute allows fast and easy loading of hopper. **Product Dimensions:** 17x14x48in (432x356x1,219mm), WxDxH.

Gilson Quartermaster Asphalt Sample Divider	
Gilson Quartermaster Asphalt Sample Divider	SP-55
Accessories	
Quick-Funnel Insert	SPA-21
Bucket Liner Sample Bags, qty. of 10	SPA-22
Bucket Liner Sample Bags, qty. of 100	SPA-22C
Bucket Liner Sample Bags, qty. of 1,000	SPA-22K
8in Double-Loop Wire Ties, qty. of 50	SPA-23
Wire Tie Twister	SPA-24
Galvanized Steel Sample Buckets	MA-950
Material Handling Chute	HMA-68

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VIDEO ONLINE

NEW

SP-52 shown with SC-20

SP-50 shown with SPA-51

GILSON HEAVY-DUTY 1/16 SAMPLE REDUCER

ISO 13503-2-2006; API STD 19C

The Heavy Duty 1/16 Sample Reducer by Gilson has four times more bulk sample capacity than traditional 1/16th sample reducer models. Suitable for any free-flowing granular material with particle sizes up to 0.5in (12.7mm), the SP-52 is especially useful in sample preparation and dividing of frac sand proppant materials for hydraulic fracturing operations. Final yield is a 1/16th representative specimen of the bulk sample in a single pass.

The Reducer quickly adjusts to either 45° or 60° dividing positions using a spring-loaded positive-locking knob. The fully-adjustable sliding gate of the large 1.0ft³ (28L) capacity hopper allows precise control of flow rate, or can be locked fully open for continuous flow-through of large samples. The fixed-height integral frame/floor stand is optimal for ergonomic loading and operation. A sturdy welded steel pan is included to collect the waste fraction and the divided specimen can be collected in the optional SC-20 12qt Polyethylene Sample Container with Lid, or in a container supplied by the user. An additional SPA-115 Steel Waste Pan can be ordered for greater efficiency in sample processing.

The Sample Reducer features sturdy painted-steel welded construction and the flow table is designed to leave minimal sample residue behind after use. **Product Dimensions:** 22x28.5x41in (559x724x1041mm), WxDxH.

Gilson Heavy Duty 1/16 Sample Reducer	
Gilson Heavy Duty 1/16 Sample Reducer	SP-52
Accessories	
Steel Waste Pan	SPA-115
Polyethylene Sample Container w/lid, 12qt	SC-20

1/16 SAMPLE REDUCER

The Sample Reducer cuts a representative 1/16 fraction from feed material by systematically rejecting segments of material flowing down the adjustable 45° or 60° cast aluminum incline. Adjustable 0.25ft³ (7.1L) hopper can be used batch-wise or locked in open position for pouring larger samples. Use for up to 0.5in (12.7mm) particle sizes.

Reducer adjusts about 10in (254mm) vertically on removable legs. Main components are aluminum. **Product Dimensions:** 27x18x36in (686x457x914mm), WxDxH.

SP-50 is supplied without pans, but SPA-51 Pan Set can be ordered separately. The Pan Set includes heavy painted steel reject pan 22x13x11in (559x330x-279mm), WxDxH and lightweight 12qt (11L) polyethylene sample container, 10x11.5in (254x292), dia.xH with lid.

1/16 Sample Reducer	
1/16 Sample Reducer	SP-50
Accessories	
Pan Set	SPA-51
Polyethylene Sample Container w/lid, 12qt	SC-20

VIDEO ONLINE

SP-3

SP-33

SP-306

SP-302

GILSON UNIVERSAL MINI-SPLITTERS
ASTM B215, C702; AASHTO R 76, T 248

The Mini-Splitters are the smallest of Gilson's exclusive Universal Splitter design and are suited for powders and granular materials with top sizes less than 0.25in (6.4mm). The portable benchtop models are identical in size and design and can easily be positioned anywhere. Both feature 48 adjustable 0.125in (3mm) wide chute bars for maximum versatility and are built with stainless steel hoppers and frames. 60° chute angles ensure fast, accurate splitting of powders and lightweight materials. The spring-loaded gate release hoppers allow proper placement of bulk sample and controlled, even release of material over the chutes for accurate, repeatable splits. Hopper capacity is 103.7in³ (1.7L). Two sample pans are included for proper operation and additional pans are available for more efficient sample processing.

SP-3 Gilson Universal Mini-Splitter has a stainless steel hopper and frame, with adjustable chute bars and sample pans fabricated from economical anodized aluminum. **Product Dimensions:** 9.5x8.5x13.5in (241x216x343mm), WxDxH.

SP-33 Gilson Universal All Stainless Steel Mini-Splitter is constructed of quality stainless steel throughout, including chute bars and sample pans. The 100% stainless steel construction enhances durability and reduces the risk of sample contamination. This model is a good choice for sensitive materials, food-grade samples, or abrasives. **Product Dimensions:** 9.5x8.5x13.5in (241x216x-343mm), WxDxH.

The optional SPA-302 Dust Enclosure Kit controls nuisance dust during operation and prevents the loss of fines. The kit consists of two stainless steel panels that secure via spring attachment to either Mini-Splitter model. The panels slide up for easy access to the pans and quickly detach when not in use.

Gilson Universal Mini-Splitters	
Gilson Universal Mini-Splitter	SP-3
Gilson Universal All Stainless Steel Mini-Splitter	SP-33
Accessories	
Sample Pan for SP-3, Aluminum	SPA-301
Sample Pan for SP-33, Stainless Steel	SPA-303
Dust Enclosure Kit	SPA-302

GILSON PRECISION SPLITTERS
ASTM B215, C702; AASHTO R 76, T 248

Gilson Precision Splitters quickly divide granular materials and fine powders. These riffle-type splitters feature precision fixed-width chutes and a gate-controlled hopper to produce greater accuracy. The Precision Spiltters are completely constructed of heavy-gauge, type 304 stainless steel throughout to avoid potential sample contamination, resist corrosion and stand up to rugged daily use. The easy-flip gate hopper control allows the sample to be loaded completely and distributed evenly before opening. Side panels control dust, reducing the loss of fines during processing. The unit quickly and easily disassembles for cleaning and all parts can be autoclaved. Two 304 stainless steel sample pans are included. Additional sample pans are ordered separately.

SP-300 Gilson Precision Splitter hopper capacity is 132in³ (2.2L) and the sixteen 0.5in (12.7mm) chutes have a discharge angle of 45°. Suitable top size is 4 to 5mm. **Product Dimensions:** 11.5x9x12in (292x228x305mm), WxDxH.

SP-302 Gilson Precision Splitter has a hopper capacity of 61in³ (1L) and the discharge angle from the sixteen 0.25in (6.3mm) fixed chutes is 45°. The SP-302 is suitable for materials finer than 2.2mm top size. **Product Dimensions:** 8.8x7.4x12in (223x188x305mm), WxDxH.

SP-304 Gilson Precision Splitter has a hopper capacity of 61in³ (1L) and the thirty 0.125in (3.2mm) fixed chutes have a discharge angle of 45°. Suitable for materials finer than 1mm top size. **Product Dimensions:** 8.8x7.4x12in (223x188x305mm), WxDxH.

SP-306 Gilson Precision Splitter is more compact for smaller samples of fine powders. Hopper capacity is 8.8in³ (0.14L). The thirty fixed chutes are 0.0625in (1.6mm) wide and have a 60° discharge angle. Suitable for materials up to 0.6mm top size. **Product Dimensions:** 5.3x5.3x7in (135x135x178mm), WxDxH.

Gilson Precision Splitters					
Model	Recommended Maximum Particle Size (mm)	Chute Width in (mm)	Number of Chutes	Hopper in³ (L)	Extra Pan
SP-300	5	0.5 (12.7)	16	132 (2.2)	SPA-129
SP-302	2.2	0.25 (6.4)	16	61 (1)	SPA-130
SP-304	1.0	0.125 (3.2)	30	61 (1)	SPA-130
SP-306	0.6	0.0625 (1.6)	30	8.8 (0.14)	SPA-132

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SP-171X

SP-177

SP-1015FX

SP-1070

JONES SPLITTERS
ASTM B215, C702; AASHTO R 76, T 248

Jones Splitters are ruggedly constructed for long service life. The stainless steel feeder guides material directly past fixed-width chutes and into two sample pans. SP-171 chutes and pans are both made of hardened aluminum. The 0.125in (3.2mm) chutes are designed for materials with 1.0 to 1.5mm top size. Four standard SPA-241 pans are included and have an extended back to prevent spillage. SPA-242 0.5L High-Volume Pans are available for handling larger samples volumes. Special SP-171X model features all stainless steel contact parts to avoid sample contamination and includes three stainless steel pans.

SP-173, SP-174, SP-175 and SP-177 have gated hoppers that hold material until released. The gated hopper permits easy mixing and distribution of samples prior to splitting and requires only the two included pans for processing. Frames and hoppers are stainless steel, while riffle plates and pans are hardened aluminum. Pans for SP-174 are stainless steel. Models with 0.25, 0.375, or 0.5in (6.4, 9.5, or 12.7mm) chute openings are offered.

Product Dimensions:
SP-171: 4.25x2.25x6.5in (108x57x165mm), WxDxH.
SP-171X: 4x2.25x6.5in (102x57x165mm), WxDxH.
SP-173 & 177: 11.5x11x12.5in (292x279x318mm), WxDxH.
SP-174: 20.5x11x12.75in (521x279x324mm), WxDxH.
SP-175: 12x11x12.5in (305x279x318mm), WxDxH.

Jones Splitters

Model	Description	Hopper Capacity in³ (L)	No. of Chutes	Extra Pan
SP-171	0.125in Jones Splitter	—	14	SPA-241 SPA-242
SP-171X	0.125in SS Chute Jones Splitter	—	14	SPA-240X
SP-173	0.25in Chute Jones Splitter	160 (2.6)	32	SPA-244
SP-174	0.25in Chute Jones Splitter	325 (5.3)	64	SPA-245X
SP-175	0.375in Chute Jones Splitter	100 (1.6)	22	SPA-244
SP-177	0.5in Chute Jones Splitter	150 (2.5)	16	SPA-244

HOLMES ENCLOSED SAMPLE SPLITTERS
ASTM B215, C702, D346, D2013; AASHTO R 76, T 248

Enclosed splitters are suggested for samples of fine, dusty powders, or where moisture retention is important. Holmes splitters have 60° chute slopes, feed guide and enclosure, as preferred for coal and coke applications to meet ASTM D2013 and D346.

Small Enclosed FX Series Splitters have twenty-four chutes, 0.375in (9.5mm), 0.5in (12mm) or 0.75in (19mm) wide, depending on model. SP-1017FX and SP-1018FX models have a built-in feed guide to introduce sample evenly across chutes through an open vertical slot. Model SP-1015FX has no feed guide and sample is poured directly into chutes. Riffle chutes, sample pans and feed guide are stainless steel.

Large Enclosed SP-1050, SP-1060 and SP-1070 Splitters are manufactured with fixed chute widths of 0.5in (12mm), 0.75in (19mm) or 1in (25mm), all with a built-in feed guide. Lugs on pan top-ends fit slotted brackets on feed guides for pour feeding. Models with stainless steel contact surfaces are designated with an "X" suffix on the model number. Other models have galvanized surfaces. Dolly accessory SPA-502 has four 2.25in (63mm) diameter casters on the mounting base for mobility in the lab.

Enameled steel enclosure reduces dust to help confine and control the airborne respirable quartz, silica or crystalline particles. Two sample pans are included; extras are suggested for pouring to feed guide for repetitive splits.

Holmes Enclosed Sample Splitters

Model	Chute Width in (mm)	No. of Chutes	Capacity ft³ (L)	Product Dimension WxDxH, in	Extra Pan
SP-1015FX	0.375 (9.5)	24	0.24 (6.8)	11x15x22	SPA-151
SP-1017FX	0.5 (12.7)	24	0.36 (10.2)	15x15x22	SPA-171
SP-1018FX	0.75 (19.1)	24	0.48 (13.6)	21x15x22	SPA-181
SP-1060	0.5 (12.7)	28	1.40 (39.6)	17x31x34	SPA-501
SP-1070	0.75 (19.1)	18	1.40 (39.6)	17x31x34	SPA-501
SP-1050	1 (25.4)	14	1.40 (39.6)	17x31x34	SPA-501
SP-1060X	0.5 (12.7)	28	1.40 (39.6)	17x31x34	SPA-501X
SP-1070X	0.75 (19.1)	18	1.40 (39.6)	17x31x34	SPA-501X
SP-1050X	1 (25.4)	14	1.40 (39.6)	17x31x34	SPA-501X

SP-230

SPA-260

SPA-261

SPA-262

SPA-267

SPA-268

SPA-264

GILSON SPINNING RIFFLER
ASTM B215

Gilson Spinning Riffler is the most accurate and reliable means of obtaining representative samples of dry materials. Gilson's expertise in sampling and analyses of powders and granular material is utilized to produce this next-generation Spinning Riffler. The SP-230 features a custom designed touch-screen controller/display, minimal moving parts and an outer case designed for easy clean-up and maintenance. Operation is quieter and safer thanks to an isolated motor and vibrator, automatic belt-drive system and sample vessel enclosure. Rotation speed and vibration level are displayed and precisely controlled on the touch screen.

A built-in vibratory feeder provides a constant flow of material from a stainless steel hopper with 1L capacity. A durable urethane-based resin dividing head sharply separates flowing material into as many as sixteen 60ml glass sample vessels. Standard Test Tube vessels may be used, or vials with screw-top caps in different sizes of amber or clear glass are available. The vials enable freshly divided samples to be capped and stored immediately, with minimal handling and little chance for contamination. Either type of vessel is contained within the drum during operation to minimize exposure of moving parts and contain spillage. The number of final fractions can be controlled by simply leaving tubes or vials out of the drum. Excess material will then flow directly into the drum. Rotation speed is continuously variable between 0–20rpm and the vibration amplitude of the feeder is variable as well. All adjustments are controlled and displayed on the touch screen. The unique, digitally controlled stepper motor turns a toothed belt and cogged drive wheel for accurate speed control with no slippage. A digitally controlled variable amplitude feeder ensures a constant and steady feed rate. A "sleep" mode conserves power when the unit is not operating. A power cord is supplied for use with standard North-American outlet configurations. Power cords for other configurations are readily available locally.

The SP-230 includes a sixteen-port Dividing Head, a set of sixteen Standard Tube Sample Vessels, a Sample Drum to contain the vessels and a Holder Plate for positioning the vessels in the drum. All are listed below as separate accessories for more efficient sample processing or as replacements. Threaded Glass Sample Vials with plastic cap are available by the dozen. **Product Dimensions:** 13x20.5x23in (330x521x584mm), WxDxH.

technote

The Gilson Spinning Riffler virtually eliminates operator error and bias associated with other types of sample dividing. The accuracy of spin riffling has been demonstrated in the 1968 M.Sc. thesis of A. A. Khan, Bradford University. Sampling tests based on a 60/40% mixture of coarse and fine sands produced the following comparisons:

Method	Std. Dev. of Samples (%) σ	Var. (P_n)	Est. Max. Sample Error (%) E
Cone & Quartering	6.81	46.4	22.7
Scoop Sampling	5.14	26.4	17.1
Table Sampling	2.09	4.37	7.0
Chute Riffling	1.01	1.02	3.4
Spinning Riffling	0.125	0.016	0.42
Random Variation	0.076	0.0058	0.25

Gilson Spinning Riffler	
Gilson Spinning Riffler, 90–277V, 47–63Hz	SP-230
Accessories	
Standard Test Tube, qty. 12	SPA-260
60ml, Clear Sample Vials with Screw Caps, qty. 12	SPA-261
40ml, Clear Sample Vials with Screw Caps, qty. 12	SPA-267
40ml, Amber Sample Vials with Screw Caps, qty. 12	SPA-268
20ml, Clear Sample Vials with Screw Caps, qty. 12	SPA-265
20ml, Amber Sample Vials with Screw Caps, qty. 12	SPA-266
Sample Vessel Holder Plate	SPA-262
Sample Drum	SPA-263
Dividing Head	SPA-264

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VIDEO ONLINE

SP-245

SP-48R shown with SC-108 Sample Jars

GILSON ACCU-MAX SPINNING RIFFLER
ASTM D2013

Gilson's Accu-Max Spinning Riffler scales up precision dividing and sample preparation for large bulk samples. Aggregates, coal, or ores with particle topsize to 2in (50.8mm) are quickly and accurately split to 1/8 or 1/4 fractions with less handling and risk of sample loss. The unit works equally well for finer granular materials or powders with large volumes. Samples that do not flow well through fixed-chute type gravity splitters process more effectively with the Accu-Max vibratory feeder. The high power vibratory feeder enhances accuracy and efficiency, as well as improves sampling accuracy. All contact parts are stainless steel for long service life and low contamination.

Total capacity of the hopper is 1.8ft³ (51L). Feed rate through the 6.5in (165mm) wide hopper discharge is controlled by a sliding gate that adjusts for openings from 0–4in (0–102mm) and by power settings of the variable-amplitude vibratory feeder. Adjustable angle of the vibratory feeder and feed trough assembly assures a constant, controlled flow of material. Eight precise sample fractions are divided into special stainless steel collection pans rotating at a constant 14rpm (12rpm at 50Hz) on the turntable. A precision 1/3hp gear motor assembly drives the turntable and the 0.32ft³ (9L) collection pans lock together with unique overlapping cutting edges to prevent loss of fines. Lifting bars in the pans are positioned for easy and convenient handling.

Working components are mounted in a durable, painted steel frame. Eight Collection Pans for 1/8 fractions are included. Additional pans are available: SPA-30 for 1/8 fractions or SPA-31 double-sized pans for 1/4 fractions. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. **Product Dimensions:** 50x35x58in (1,270x890x1,473mm), WxDxH.

Gilson Accu-Max Spinning Riffler	
Accu-Max Spinning Riffler, 115V/60Hz	SP-245
230V/50Hz	SP-245F
Accessories	
Collection Pan, 1/8 Fraction	SPA-30
Collection Pan, 1/4 Fraction	SPA-31

GILSON MIXING WHEEL
ASTM D2013

Proper sample preparation for materials such as coal or ores requires careful and thorough mixing to assure consistent and accurate results. Gilson offers floor-mounted Mixing Wheels for a wide range of sample quantities.

SP-48R Floor Mount Mixing Wheel has ten sample stations to mount large 0.5gal (2L) sample containers at a 45° angle. Rotation speed is variable from 0–25rpm. Numbered sample stations secure sample jars with spring-loaded clamping. SC-108 Wide-mouth polyethylene sample containers with screw-top lids are 4.7x9.4in (119x239mm), dia.xH and ordered separately in cases of 12. The wheel is mounted on a rugged, welded steel heavy-duty painted floor stand. When permissible, SPA-64 metallic Jack Rocks may be added to speed the mixing process. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. **Product Dimensions:** 48x40x50in (1,220x1,020x1,270mm), WxDxH.

Gilson Mixing Wheel	
Floor Mount Mixing Wheel, 115V/60Hz	SP-48R
230V/50Hz	SP-48RF
Accessories	
Sample Jar for SP-48R, 0.5gal (2L), case/12	SC-108
Jack Rocks, case/500	SPA-64

LABORATORY SPLIT-O-MATIC SPLITTERS
ASTM C702, C778; AASHTO T 248

- **1/2, 1/4, or 1/8 fractions in a single pass**
- **High-capacity hoppers with gate-release**
- **Fixed-width chutes**
- **Particle topsize up to 2in**

Laboratory Split-O-Matic Splitters are the best choice for large samples that must be quickly and accurately reduced. With a single pass, these higher-capacity units process bulk samples of granular materials into small fractions for efficient preparation of test specimens. Exclusive Gilson three-stage design allows the user to select sample fractions of 1/2, 1/4, or 1/8 of bulk sample. A selection lever sets internal sample fraction positions, directing selected fraction to the sample pan and the balance to the reject pan. V-bottom chutes precisely align material flow for more accurate divisions. Laboratory Splitters are well-suited for aggregates, sand, gravel, ores, coal and coke or other free-flowing granular materials up to 2in (51mm) topsize.

Laboratory Splitters have heavy, welded-steel construction with painted and baked finish. Sample hoppers have a gate-release mechanism for greater control of sample dividing. Front panel doors latch shut for superior dust control and open wide for easy cleaning. Sample pans are included and are size-matched to hopper capacity. Bottom flange is suitable for anchored or freestanding lab use. Standard models feature three stages of 45° chute slopes, suitable for most materials. Steeper 60° chute slope models are recommended for low specific gravity materials such as coal or coke, or materials with a large fraction of fines. The 60° Laboratory Splitters are approximately 20% taller, slightly heavier and are ordered by adding a "C" suffix to model numbers.

For best results, choose a splitter with chute width at least twice that of the material's topsize to avoid bridging over chute openings. For coal or coke, or for materials with oblong pieces, 3 to 4 times topsize is recommended. Any Laboratory Splitter can be custom-ordered with special larger hopper and sample pans if needed. Custom models may also be ordered with four or more chute stages for sample fractions smaller than 1/8.

VIDEO ONLINE

SM-4L

technote

ASTM C702 requires chute widths of mechanical splitters to be at least 50% larger than the maximum nominal particle size of the aggregate sample being divided. A minimum of eight for coarse aggregate and twelve chutes for fine aggregate samples is also specified. To assure accurate splits with best performance and minimal opportunities for "bridging", or blockages, Gilson recommends chute widths 2 to 3 times larger than maximum particle size.

Laboratory Split-O-Matic Splitters

Model	Chutes per Stage	Sample Fractions	Chute Width in (mm)	Chute Angle	Maximum Particle Size in (mm)	Dimensions without Hopper WxDxH, in (mm)	Hopper Capacity ft³ (L)
SM-3L	8	1/2, 1/4, 1/8	4 (102)	45°	2 (51)	42x25x79 (1,067x635x2,007)	3.0 (85)
SM-4L	8	1/2, 1/4, 1/8	2 (51)	45°	1 (25)	25x16x53 (635x406x1,346)	1.6 (45)
SM-4XL	12	1/2, 1/4, 1/8	2 (51)	45°	1 (25)	34x16x53 (864x406x1,346)	2.4 (68)
SM-5L	24	1/2, 1/4, 1/8	1 (25)	45°	0.5 (13)	32x17x47 (813x432x1,194)	1.8 (51)
SM-6L	36	1/2, 1/4, 1/8	0.5 (13)	45°	0.25 (6)	33x13x40 (838x330x1,016)	1.6 (45)
SM-6SL	18	1/2, 1/4, 1/8	0.5 (13)	45°	0.25 (6)	22x13x40 (559x330x1,016)	0.8 (23)
SM-3LC	8	1/2, 1/4, 1/8	4 (102)	60°	2 (51)	42x25x99 (1,067x635x2,515)	3.0 (85)
SM-4LC	8	1/2, 1/4, 1/8	2 (51)	60°	1 (25)	25x16x67 (635x406x1,702)	1.6 (45)
SM-4XLC	12	1/2, 1/4, 1/8	2 (51)	60°	1 (25)	34x16x67 (864x406x1,702)	2.4 (68)
SM-5LC	24	1/2, 1/4, 1/8	1 (25)	60°	0.5 (13)	32x17x60 (813x432x1,524)	1.8 (51)
SM-6LC	36	1/2, 1/4, 1/8	0.5 (13)	60°	0.25 (6)	33x13x49 (838x330x1,245)	1.6 (45)
SM-6SLC	18	1/2, 1/4, 1/8	0.5 (13)	60°	0.25 (6)	22x13x49 (559x330x1,245)	0.8 (23)

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SM-5 and MH-5 shown with Pneumatic Release Option

helpfulhint

Gilson designs and manufactures complete automated sample splitting and screening solutions for quality control or can integrate Gilson components into your exsisting system. Contact us to discuss how Gilson can increase your QC efficiency.

PRODUCTION SPLIT-O-MATIC SPLITTERS

Production Split-O-Matic Splitters accurately divide large amounts of material through multiple stages in a single pass. The Production series allows this unique Gilson design to be adapted to different applications and sampling environments. These units frequently feature custom design or special fabrication for installation in production or pilot-plant facilities. Our most popular Production Split-O-Matic configurations are listed in the accompanying chart.

Production Split-O-Matics have three to six stages of riffles and chute widths from 0.5–12in (13–305mm). Standard chutes are sloped at 45°. Three-position fraction control gates allow a choice of three final sample fractions, ranging from 1/2 to 1/32. Non-adjustable, single-fraction models are also available. V-bottom chutes precisely align material flow for more accurate divisions. Rugged, heavy steel construction throughout assures long service life.

Custom options include chutes with 60° slopes for low-density materials, fabrication with all stainless steel contact parts, specially-sized material hoppers, pneumatic operation for hopper gates and/or fraction gates, fixed-fraction models, mounting or positioning fixtures and special collection pans.

Material Hoppers and sample pans are sold separately for design flexibility. Bulk material is accumulated in hoppers before the chutes, assuring even divisions. Capacities from 1.6–12ft³ (45–340L) are available. Recommended standard hopper sizes for the Split-O-Matic assemblies are indicated in the chart.

Production Split-O-Matics have a useful range for material particle sizes from 5in (127mm) to fine sand. Chute widths should be specified at more than twice as wide as the largest particle to avoid bridging over chute openings. For oblong shapes, or low density materials such as coal or coke, three to four times topsize is recommended.

Contact Gilson to discuss custom design requirements best suited for your application.

Production Split-O-Matic Splitters[1]

Model	Chutes per Stage	Number of Stages	Sample Fractions	Chute Width in (mm)	Dimensions without Hopper WxDxH, in (mm)	Recommended Material Hopper Model	Hopper Capacity ft³ (L)
SM-1	4	3	1/2, 1/4, 1/8	12 (305)	68x60x112 (1,727x1,524x2,845)	MH-1	12.0 (340)
SM-2	6		1/2, 1/4, 1/8	8 (203)	64x49x82 (1,626x1,245x2,082)	MH-2	8.0 (227)
SM-3	8		1/2, 1/4, 1/8	4 (102)	42x25x47 (1,067x635x1,194)	MH-3	3.0 (85)
SM-4	8		1/2, 1/4, 1/8	2 (51)	25x16x26 (635x406x660)	MH-4	1.6 (45)
SM-4X	12		1/2, 1/4, 1/8	2 (51)	34x16x26 (864x406x660)	MH-4X	2.4 (68)
SM-5	24		1/2, 1/4, 1/8	1 (25)	32x17x24 (813x432x610)	MH-5	1.8 (51)
SM-6	36		1/2, 1/4, 1/8	0.5 (13)	33x10x18 (838x254x457)	MH-6	1.6 (45)
SM-31	8	5	1/32	4 (102)	45x22x63 (1,143x559x1,600)	MH-3	3.0 (85)
SM-41	12		1/32	2 (51)	31x15x38 (787x381x965)	MH-4X	2.4 (68)
SM-51	24		1/32	1 (25)	32x16x35 (813x406x889)	MH-5	1.8 (51)
SM-61	36		1/32	0.5 (13)	27x9x21 (686x229x533)	MH-6	1.6 (45)

[1]*Most popular basic models shown. Contact Gilson to discuss specific requirements.*

VIDEO ONLINE

SPA-400

HM-275

TSA-162

HMA-68

QUARTERING CLOTH KIT
ASTM C702; AASHTO R 76, T 248

The HM-275 Quartering Cloth Kit includes required cloth, broom and shovel specified in the standard procedures for sampling and splitting aggregates and asphalt mixes.

HMA-591 Quartering Cloth is a 6x8ft, heavy-duty, finished canvas. The HMA-592 Square-point Shovel has a 9.75x12in (248x305mm) blade and a 30in (762mm) D-handle. The HMA-593 Broom is a 16in (406mm) wide Prolene plastic brush head and a 4ft (1.2m) long wooden handle.

Quartering Cloth Kit	
Quartering Cloth Kit	HM-275
Accessories	
Quartering Cloth, 6x8ft	HMA-591
Square-point Shovel	HMA-592
Prolene Broom	HMA-593

MULTI-PURPOSE SAMPLE PANS

These rugged pans handle heavy loads in lab and field conditions and are suitable for use in drying ovens. They are durable heavy gauge steel, welded and painted for long service life.

Material Handling Pans have a swinging handle mounted at the balance point and a flanged end for safe, easy lifting. The chute end allows efficient emptying and distribution. Handling Pans can be cross-stacked for storage.

Sample Pans have lifting flanges at both ends and will nest together for storage.

Multi-Purpose Sample Pans			
Type	Model	Size, WxDxH in (mm)	Capacity qt (L)
Material Handling Pans	TSA-162	30x15x4 (762x381x102)	39 (37)
	TSA-163	12x20.5x4 (521x305x102)	17 (16)
Sample Pans	SPA-105	29x12x9 (737x305x229)	48 (45)
	SPA-104	22x13x11 (559x330x279)	49 (46)
	SPA-400	25x9x8 (635x229x203)	31 (29)
	SPA-100	29x9x6 (660x229x152)	24 (23)
	SPA-101	20x7x6 (508x178x152)	14 (13)

MATERIAL HANDLING CHUTE

- **Safe and efficient handling of asphalt, aggregate and soil samples**
- **Fills large Gyratory compaction molds in a single lift**
- **Useful as a weighing scoop**

HMA-68 Material Handling Chute is an all-purpose chute that allows loading, filling and handling of any bulk material, including asphalt, aggregates and soils. It quickly and uniformly fills Gyratory, Marshall, Proctor, CBR, Relative Density molds, Quartermaster™ or Universal splitters. The Handling Chute conforms to mold loading procedures in ASTM D4013 and AASHTO T 312.

The flat bottom and integral feet make weighing convenient. The two sturdy aluminum bar handles reinforce the unit and enable balanced handling for easy and accurate placement of sample materials. Material Handling Chute is constructed of 24-gauge stainless steel with rolled edges. The open end is formed with a 2in (51mm) radius to fit most mold openings. The unit stands horizontally or vertically. **Product Dimensions:** 22x11.5x10.5 (559x292x-267mm), WxDxH.

Material Handling Chute	
Material Handling Chute	HMA-68

also available.....

See our Pans, Tools & Glassware section for a complete selection of Material Pans.

GP-12 GP-6S

GPA-11

GP-82 GP-8 GP-118 GP-112

Sampling Probes

Description	Model	Length in (mm)	O.D. in	Material	Openings/ Partitions
Double-Tube Probes feature seamless construction with durable points. Inner tube is rotated to open/close sampling holes. Probes with partitions between holes have a closed-end handle and pockets are emptied individually. Those without partitions have an open-ended handle for convenience of emptying total sample. Partition type is USDA approved for grain sampling. GP-16 meets ASTM C183 and AASHTO T 127 for bulk sampling of hydraulic cement. GP-25 Spiral Probe has offset inner tube openings that open in sequence from bottom to top as the probe is rotated. Smaller diameters may be used for in-bag sampling. The stainless steel probe is suitable for foods, pharmaceuticals, fertilizers.	GP-12 GP-14 GP-16 GP-22 GP-24 GP-25 GP-29 GP-29A GP-68A GP-70A	40 (1,020) 51 (1,295) 63 (1,600) 63 (1,600) 63 (1,600) 62 (1,575) 72 (1,829) 72 (1,829) 96 (2,438) 120 (3,048)	1.375 1.375 1.375 1.375 1.375 1.375 1.375 1.375 1.375 1.375	Extruded Brass with Cast Bronze Point	6/No 8/No 10/No 10/Yes 11/Yes 10/No 12/Yes 12/No 16/No 20/No
	GP-4 GP-5 GP-6	18 (457) 30 (762) 39 (991)	0.5 0.5 0.875	Nickel/Brass Nickel/Brass Nickel/Brass	5/No 9/No 6/No
	GP-6S	39 (991)	0.875	Stainless	6/No
T-Handle accessory grips the outside of 1.375in (35mm) diameter Double-Tube Sample Probes for better leverage and control during sampling operations. Handle is detachable. Each end has a handle grip for comfortable use. **Product Dimensions:** 21x15x11in (533x381x279mm), WxDxH.	GPA-11	-	-	-	-
Single-Tube, Single-Slot Probes are useful for fertilizers, foods, pharmaceuticals, etc. GP-80 for flour and similar materials has solid wooden handle and the outside diameter tapers from 1.0 to 0.7in (24.5–17.5mm) at the end. Slot width is 0.5in (12.7mm). GP-82 fertilizer tube has an open-end handle with score marks at 28 and 31in (711 and 787mm) from the tip.	GP-80 GP-82	34 (864) 36.5 (927)	0.7 0.875	Stainless Stainless	1/No 1/No
Triple-Zone Sampler has three partitioned cells to collect 9cc samples of powders, pellets and other bulk granular materials from drums, bags, bins, or stockpiles. The sampler is inserted and the "T" handle is rotated one-half turn to collect samples through the 3x0.4in (76x10mm) openings. After closing the ports, samples representing three separate zones are easily recovered for inspection. Made of anodized aluminum with sharp stainless steel point.	GP-8	22 (559)	0.75	Aluminum & Stainless	3/Yes
Keystone Carbon Sampling Probe is designed especially to sample fine powders that tend to compact. Ideal for powdered metals and chemicals. Double-tube construction, 1in O.D.x39in (25.4x991mm). Thirteen openings with partitions; inner tube rotates to close openings for removal. An 2.675in auger vane on bottom 13in (330mm) of outer tube and a "T" handle on top aids augering.	GP-118	40.5 (1,029)	1	Chrome-Plated Steel	13/Yes
Bag Triers are nickel-plated steel, tapered to a point with a single large opening for sampling granular material through bags. Sample can be poured through hollow handle.	GP-106 GP-112	6 (152) 12 (305)	0.5 1	Nickel Plated Steel	1/No 1/No

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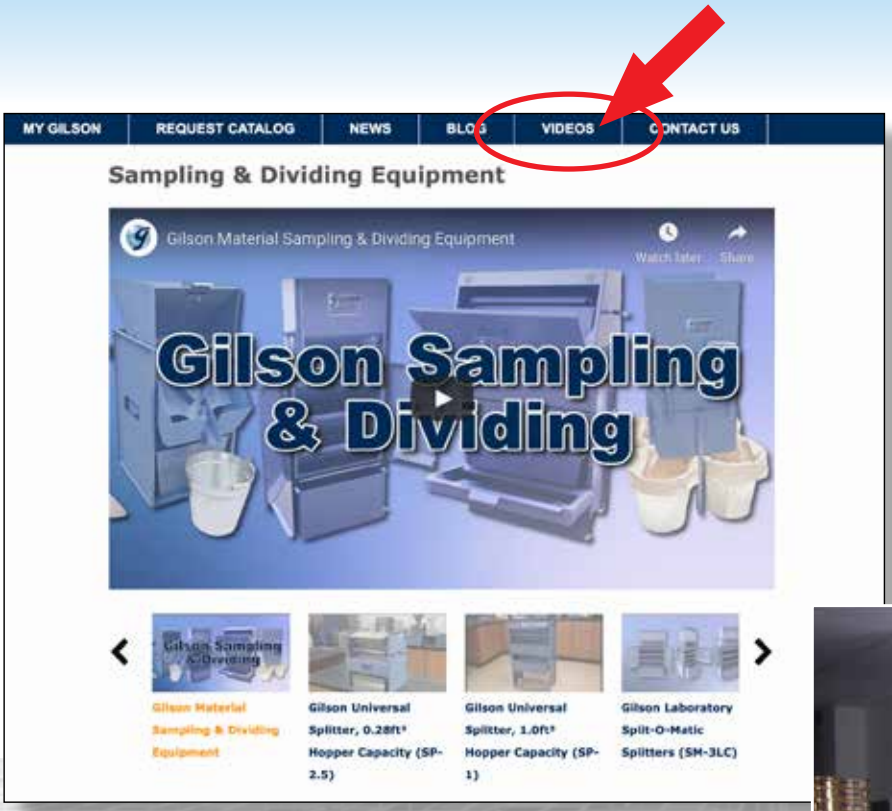

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- Answers to your installation, set-up and maintenance questions
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Gilson Spinning Riffler (SP-230)

Gilson Universal Splitter, 0.28ft Hopper Capacity (SP-2.5)

Gilson Universal Sample Splitter w 3.5ft Hopper (SP-0)

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MD-2000

HMA-920 shown with HMA-922

MICRO-DEVAL

ASTM D6928, D7428; AASHTO T 327; TxDOT: 845-49-40; Ontario LS-618

- **Multi-function electronic controller tracks time, speed and total revolutions**
- **Safe, efficient and easy operation**
- **Lexan doors with safety interlocks enclose all moving parts**

The increasingly popular Micro-Deval test measures abrasion resistance and durability of fine and coarse mineral aggregates. An aggregate sample with an abrasive charge of up to 5,000g of 9.5mm diameter stainless steel balls and water, is placed in a sealed stainless steel jar then rotated at 100rpm for two hours. Aggregate quality is determined by percentage loss in gradation results at completion. Smaller equipment size, lower sample quantities and a simpler procedure make the Micro-Deval method easier and less costly to perform than other test methods.

The MD-2000 meets current ASTM, AASHTO and Canadian test methods, as well as more stringent Texas DOT requirements. This contemporary version of the Micro-Deval test should not be confused with older versions originating in Europe which use different equipment and test protocol. A sophisticated electronic controller with optical sensing system accurately tracks test time, total revolutions and rpm of jars. Test duration is controlled by either elapsed time or total revolutions. Jars stop within a fraction of one revolution at test termination. Jar revolution and speed data may also be used as a verification of machine performance.

The jars revolve behind Lexan™ doors with safety interlocks. No moving parts are exposed during operation. Other manufacturers use separate timers to control test duration, which does not permit tracking of jar revolutions or speed and allows variations up to ±6% of the optimum number of revolutions. In addition, other machines rotate the jars on unguarded open rollers, creating a potential safety hazard. The Micro-Deval is a two-tier unit with sturdy steel frame. Each tier rotates one stainless steel 5L jar, 194mm ID, 170mm internal height with locking cover. Power to the rubber-covered rollers is supplied by a thermally protected 3/4hp, electric motor through a gear transmission and chain drive. The unit is supplied with two jars and two sets of 5,500g abrasive charges. A magnet is included to assist in removing the abrasive charge after test completion. For additional sample preparation and increased sample testing capacities, order additional Jars HMA-920 and Abrasive Charge HMA-922. Add "F" to model number for operation on 230V/50Hz or "V" for 230V/60Hz power supply. Units ordered with "F" or "V" model number suffix are shipped without an electrical plug. **Product Dimensions:** 20.5x13.5x38in (521x343x965mm), WxDxH.

helpfulhint

SIEVES TO MEET ASTM & AASHTO SPECIFICATIONS

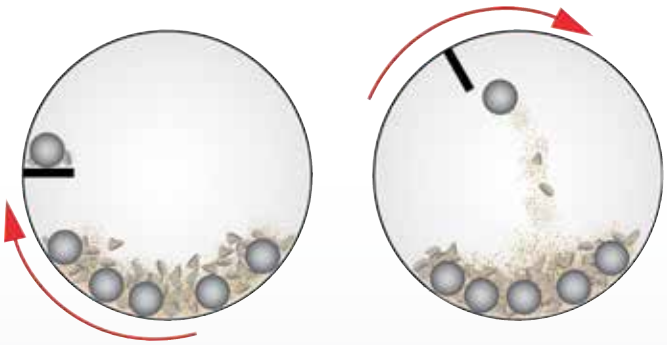
Coarse Aggregate		Fine Aggregate	
3/4"	19.0mm	No.4	4.75mm
5/8"	16.0mm	No.8	2.36mm
1/2"	12.5mm	No.16	1.18mm
3/8"	9.5mm	No.30	600mm
1/4"	6.3mm	No.50	300mm
No.4	4.75mm	No.100	155mm
No.16	1.18mm	No.200	75mm

Micro-Deval	
Micro-Deval, 115V/60Hz	MD-2000
230V/50Hz	MD-2000F
230V/60Hz	MD-2000V
Accessories	
Stainless Steel Micro-Deval Jar with Locking Cover	HMA-920
Abrasive Charge	HMA-922
Magnet	HMA-924

VIDEO ONLINE

HM-70A

LOS ANGELES ABRASION MACHINE



The Los Angeles Abrasion machine rotates at 30-33rpm. The shelf plate catches and drops the aggregate sample and abrasive charge to the other side of the drum, creating an impact-crushing effect. Aggregate sample and abrasive charge then roll within the drum creating additional abrasion and grinding actions. Degradation is determined as a percent loss of mass after 500 revolutions.

LOS ANGELES ABRASION MACHINE

ASTM C131, C535; AASHTO T 96

- **Enclosure is lined with sound attenuating foam**
- **Electronic safety interlocks allow operation only with doors secured**
- **Powerful 1hp motor rotates drum through slip-clutch protected chain drive**

The Los Angeles Abrasion test is widely used as an indicator of relative quality of aggregates. Test measures degradation of aggregates when subjected to abrasion and impact in a rotating steel drum containing an abrasive charge of steel balls. Up to twelve balls are used, depending on gradation of test sample.

Gilson's design has built-in safety features with user controls on the outside of the integral sound enclosure. Safety interlocks allow the machine to operate only when the double lid and doors are . Drum is positioned for loading and unloading using a jog button while watching through a viewing window in the enclosure. Noise is reduced by the heavy, painted steel enclosure lined with sound attenuating foam.

The 0.5in (12.7mm) thick welded steel drum has inside dimensions of 28x20in (711x508mm) IDxW and is mounted on a rigid, welded steel support frame. The bolted cover with dust-tight gasket for the 6x20in (152x508mm) opening fits flush with the inside contour of the drum. The 20x3.5x1in (508x89x25mm) WxDxH steel shelf is securely fastened with five 3/4in bolts, allowing easy replacement when worn. The opening cover and shelf are fabricated and positioned following the "preferred design" noted in ASTM C131. Optional HMA-132WR Wear-Resistant steel shelf features extended service life.

A 1hp electronically controlled gear-motor rotates the drum at 30—33rpm via enclosed chain drive. Drum assembly rotates in flanged ball bearings with dust seals and grease fittings. Controller console with overload protection has large JOG and On/Off push button controls and automatic counter stops rotation after a preset number of revolutions. Abrasive charge of twelve hardened steel balls are included. Heavy-duty catch pan measures 24x26x2.5in (610x660x63mm), WxDxH. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. **Product Dimensions:** 38x40x46.5in (965x1,016x1,181mm), WxDxH.

Los Angeles Abrasion Machine	
Los Angeles Abrasion Machine, 220V/60Hz, 1 phase	HM-70A
230V/50Hz, 1 phase	HM-70AF
Accessories	
Los Angeles Abrasive Charge, set of 12 Balls	HMA-130
Catch-Pan	HMA-131
Replacement Steel Shelf	HMA-132
Replacement Wear-Resistant Steel Shelf	HMA-132WR

SULFATE SOUNDNESS TEST

ASTM C88; AASHTO T 104; CTM 214; PTM 510

The Sulfate Soundness test subjects aggregate samples to alternate cycles of immersion in sodium or magnesium sulfate solution and oven drying. Aggregates are placed into sample sieves, stacked into the sieve holder, then lowered into the sulfate solution buckets. The solution buckets can be placed inside the water bath tank, to regulate temperature.

HM-447 shown with sieves

HM-444

HM-452

MA-168 & MA-169

HM-442

MA-246

Sulfate Soundness Test	
Description	**Model**
Aggregate Sample Sieves hold sample materials for immersion in sulfate solution. Sieves for coarse aggregate are 8in (203mm) diameter, full-height stainless steel No.5 or No.10. Blank frame sieves are full height, 8in (203mm) diameter sieve frames with no mesh and extend the overall height for coarse aggregate samples when stacked. Fine Aggregate Sieves are Full or Half-Height, 8in stainless steel No. 70 sieves.	
8in Full-Height, No.5	V8SF #5
8in Full-Height, No.10	V8SF #10
8in Full Height, No. 70	V8SF #70
8in Half-height, No. 70	V8SH #70
8in Full-Height Blank Frame	SV-800
8in Sample Sieve Holders hold up to seven stacked sample sieves, depending on sieve heights utilized. Stainless steel holders are designed to allow optimum fluid circulation. Handles lock upright, but fold for easy loading into drying ovens. **Product Dimensions:** 8x9x11in (203x229x279mm), WxDxH.	HM-447
Solution Buckets hold sulfate solution for immersion of samples. One Bucket is required for each Sieve Holder. 6gal (22L) Buckets are thick-wall, high-density polyethylene with bail handles. **Product Dimensions:** 11.5x11.5x16.5in (292x292x419mm), WxDxH.	HM-452
Washing Buckets are used to rinse sulfates out of specimens after immersion cycles. Water flows in through bottom and out through top overflow. 0.25in (6.4mm) thick, white polyethylene. Each Washing Bucket holds one Sample Sieve Holder. **Interior Product Dimensions:** 12x12x18in (305x305x457mm), LxWxH.	HM-444
Solution Hydrometers measure specific gravity of sulfate solutions to ±0.001 SG. Choose hydrometer for use in Sodium Sulfate or Magnesium Sulfate solutions. **MA-168 Product Dimensions:** 1x14x1in (25x356x25mm), WxDxH. **MA-169 Product Dimensions:** 1x13.5x1in (25x343x25mm), WxDxH.	
Sodium Sulfate Hydrometer, 1.120—1.190	MA-168
Magnesium Sulfate Hydrometer, 1.240—1.310	MA-169
Water Bath Tank allows circulation of warmer or cooler tap water around the outside of the solution buckets when additional temperature regulation is required. The tank accepts up to four HM-452 Solution Buckets. The included fitted cover reduces temperature fluctuations and prevents evaporative loss. A thermometer to monitor water bath temperature is purchased separately. The tanks is 0.188in (4.5mm) thick white polyethylene and includes circulation and drain fittings. **Interior Product Dimensions:** 36x24x18in (914x610x457mm), LxWxH.	HM-442
Platinum RTD Datalogging Thermometer is highly accurate and allows direct transfer of recorded data (CSV files) to PC or Mac using a USB flash drive (not included) — no need for additional software. Temperature range is –130° to 221°F (–90° to 105°C) with 0.01° resolution and accuracy of ±0.2°C across the entire range. Rolling datalogging memory captures temperatures at user-defined intervals from 1 minute to 24 hours with capacity for a year of recorded data using 1-minute intervals. Smart-Alarm™ visual and audible indicators signal continuously until acknowledged. Up to ten alarm events are stored and time-stamped in memory. Also features max/min, difference and average functions. This two-channel unit is available supplied with one or two 316 stainless steel factory-calibrated probes for connection to high-impact, chemical-resistant ABS plastic case with 10ft (3M) leads. Replacement probes must be factory-installed and calibrated. Each CE marked thermometer features NIST Traceable calibration from an A2LA lab and has a unique ID for identification. Includes AAA batteries, AC adaptor, built in stand and wall-mount accessories. **Product Dimensions:** 2.75 x 0.75 x 4.25in (70x19x108mm), WxDxH.	
Platinum RTD Datalogging Thermometer, w/1 Probe	MA-246
Platinum RTD Datalogging Thermometer, w/2 Probes	MA-247
ASTM S63F Thermometer is used to check temperatures while mixing solution and for periodic checks of water bath temperatures. Total immersion, 18°—89°F range, 0.2°F readability. Blue spirit-filled, white-backed glass with permanent graduations.	MA-531F

MA-531F

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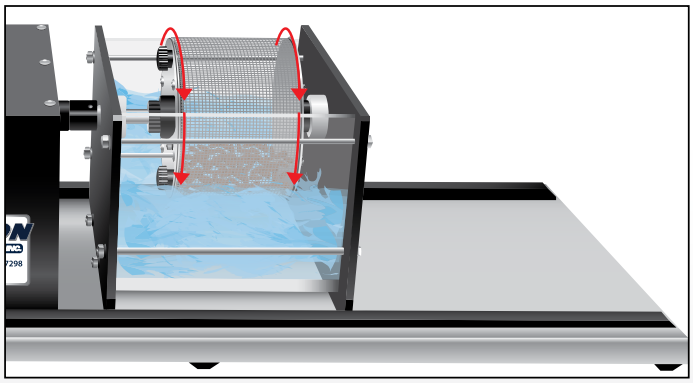
SS-18 shown with SSA-22

SLAKE DURABILITY INDEX



A pre-weighed sample is placed in a partially submerged wire mesh drum, tumbled for 10 minutes, then oven dried and weighed. Retained mass is calculated and recorded for each of two cycles.

SA-80

DURABILITY INDEX AGITATOR
ASTM D3744; AASHTO T 210; CTM 227, 229

Durability Index measures the relative resistance of aggregates to producing clay-like fines when mechanically agitated in a special washing vessel. Resulting fines material is evaluated using sand equivalent apparatus, listed separately. The versatile Gilson SS-18 Agitator runs at 285 cycles per minute and may also be used as a sieve shaker for up to six full-height 8in or 200mm diameter sieves and pan.

SSA-22 Stainless Steel Wash Vessel is 8in (203mm) diameter x 9.5in (241mm) high and is supplied with lid, gasket and clamps. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. Gilson TSA-169R Digital timer can be purchased separately to precisely control test times. SSA-22 Stainless Steel Wash Vessel is ordered separately.

Holes are provided in case flanges for securing to floor or bench. **Product Dimensions:** 16x14x30in (406x356x762mm), WxDxH.

Durability Index Agitator	
Durability Index Agitator, 115V/60Hz	SS-18
230V/50Hz	SS-18F
Accessories	
Stainless Steel Washing Vessel	SSA-22
Gilson Digital Timer	TSA-169R
Sand Equivalent Test Set	SEA-100

SLAKE DURABILITY DEVICE
ASTM D4644

Slake durability is a simulated weathering test to determine abrasion resistance during wetting and drying cycles of shale and similar soft rocks. Samples in mesh drums are alternately tumbled through a water medium and oven-dried for two cycles. The percent loss of mass is referred to as the slake durability index.

The SA-80 Slake Durability Device consists of a base-mounted drive unit, two mesh drums and two water tank assemblies with quick release drive couplers. The 5.5x3.9in (140x100mm) drums rotate at a speed of 20 revolutions per minute and are constructed of corrosion-resistant stainless steel mesh with 2mm openings and solid end plates. The 4ft (1,219mm) base of the unit can accommodate up to four tank/drum assemblies to allow additional samples to be tested simultaneously. For increased sample testing add two water tank assemblies (SAA-30) and two wire mesh drums (SAA-31). **Product Dimensions:** 48x14x9.25in (1,219x355x235mm), WxDxH.

Slake Durability Device	
Slake Durability Device, 115V/60Hz	SA-80
230V/50Hz	SA-80F
Accessories	
Water Tank Assembly, qty. 2	SAA-30
Wire Mesh Drums, qty. 2	SAA-31

VIDEO ONLINE

SEA-100

SEA-100E

SEA-101

SAND EQUIVALENT TESTING

ASTM D2419, D3744; AASHTO T 176, T 210; CTM 217, 229

The Sand Equivalent Test indicates the portion of undesirable clay-like fines in granular soils and fine aggregates. It is used in conjunction with the Durability Index Test, measuring the resistance of aggregates to producing clay-like fines when subjected to degradation. The sample is placed in a clear plastic cylinder with sand equivalent solution, consisting of calcium chloride, formaldehyde and glycerine. After agitating the cylinder, it is allowed to stand for a sedimentation period. Readings are taken for the clay suspension and sand level. "Sand Equivalent" is the sand reading divided by the clay reading x 100.

Sand Equivalent Testing

Description	Model
Sand Equivalent Test Set includes four Clear Plastic Graduated Cylinders, Siphon Assembly, Irrigator Tube, Weighted Foot, Funnel, Measuring Tin, Solid Stopper and 8oz of Stock Solution. All items are packed in a convenient, plastic case with foam lining with carrying handle and latch. **Product Dimensions:** 26x8x16in (660x203x406mm), WxDxH.	SEA-100
Basic Sand Equivalent Test Set includes all components of the SEA-100 Set, without carrying case.	SEA-99
Clear Plastic Graduated Cylinder is transparent acrylic with 0.1in graduations from bottom of cylinder to 15in height. **Product Dimensions:** 17x1.25in (432x31.8mm), HxID	SEA-101
Stock Solution is a calcium chloride solution available in 8oz (237ml) or 1gal (3.8L) containers. Stock solution is diluted to prepare working solution for testing and has a limited shelf life of 3 months after opened.	
Stock Solution, 8oz	SEA-102
Stock Solution, 1gal	SEA-103
Weighted Foot Assembly consists of a steel weight, brass foot and sand reading indicator mounted on a brass rod. The assembly weighs 1,000g.	SEA-100A
Siphon Assembly includes a siphon tube, blow tube and stopper is used to transfer the working calcium chloride solution into the graduated cylinder. The Irrigation Tube is purchased separately.	
Siphon Assembly	SEA-100B
Irrigation Tube	SEA-100G
Sand Equivalent Funnel has wide mouth and is used to transfer test specimens into the Graduated Cylinder.	SEA-100C
Sand Equivalent Carrying Case is a plastic case with foam lining with handle and latch and holds all required accessories. **Product Dimensions:** 26x8x16in (660x203x406mm), WxDxH.	SEA-100E
Solid Stopper is a #7 rubber stopper, seals the graduated cylinder during agitation.	SEA-100F
Measuring Tin is used to measure Stock Solution when preparing working solution, as well as for sampling and measuring specimen material. Round metal, approximately 2.25in (57mm) diameter with 85ml (3oz) capacity.	SC-500-1

SEA-102

SEA-100A

SEA-100B

SEA-100C

SEA-100F

SE-6

technote

SE-2B Sand Equivalent Shaker is precise, repeatable and safe.

SE-2B shown with SEA-101

SE-5

SAND EQUIVALENT SHAKERS

ASTM D2419; AASHTO T 176, T 210; CTM 217, 229

Sand Equivalent Shakers are proven to increase accuracy and repeatability while reducing operator variability when compared to hand agitation. Both motorized and manually operated mechanisms ensure proper regulation of speed and stroke for more consistent results. Motorized models free technicians to perform other tasks.

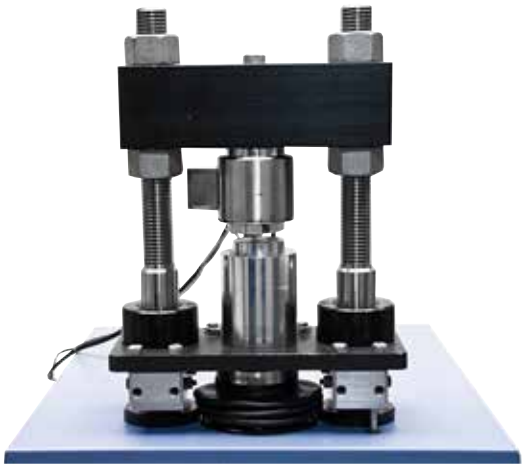
SE-2B Motorized Sand Equivalent Shaker is recommended for labs performing sand equivalent tests on a regular basis. Sand Equivalent Shakers drive assures precise speed and stroke and eliminates operator error. A selection switch gives options of precise fixed times of 45 seconds and 10 minutes. The 8in (203mm) throw at 175cpm is smooth, quiet and efficient. The 1/8hp DC sealed gear motor is housed in a sturdy metal case. The hinged safety cover with top viewing windows must be closed to operate the shaker. Test cylinder is held secured by base pin and spring-loaded holder on stoppered end. Standard models operate on 115V/60Hz power. Units ordered with "F" model number suffix operate on 230V/50Hz and are shipped without an electrical plug. **Product Dimensions:** 35x14x20in (889x356x508mm), WxDxH; allow 10in (254mm) additional height for opening of safety cover.

SE-6 Manual Sand Equivalent Shaker has 3 cycles per revolution of crank. Operator cranks at one turn per second until the digital counter reaches 131 cycles. Cylinder mounts to fixed-travel guide rod by base pin and threaded clamp holder on stoppered end. Base has holes for mounting. **Product Dimensions:** 30x14x10in (762x356x254mm), WxDxH.

SE-5 Economy Sand Equivalent Shaker has a cylinder mounting bracket suspended by two steel straps. Operator manually oscillates cylinder to a preset mark on the case at proper rate. A mechanical counter records stroke counts. Components are mounted in a clear-coated, plywood case with removable front and a top handle. **Product Dimensions:** 24x6x25in (610x152x635mm), WxDxH.

Sand Equivalent Shakers	
Motorized Sand Equivalent Shaker, 115V/60Hz	SE-2B
230V/50Hz	SE-2BF
Manual Sand Equivalent Shaker	SE-6
Economy Sand Equivalent Shaker	SE-5

PR-10 shown with PRA-14



PR-10 Load Frame shown with PRA-14

PRA-14

PROPPANT CRUSH TEST SYSTEM

API RP 19C; ISO 13503-2

Sand and engineered ceramic particles (proppants) used for hydraulic fracturing operations in oil and gas production are subjected to tremendous pressures thousands of feet beneath the Earth's surface. To assure top performance in the harshest of conditions, tests are performed to determine resistance to crushing and degradation of the materials.

Collaborative efforts between Gilson and Karol-Warner combine over a century of knowledge and experience to produce our Proppant Crush Test Load Frame. This sophisticated and efficient unit is compact and has a total rated capacity of 22,000lbf (98kN). A unique hybrid motor system drives test pressures over 7,000psi (48.3mPa), with the included 2in inside diameter Crush Cell and piston. The Crush Test Systems meets API requirements as well as ISO standards.

Front panel controls regulate settings for crush cell diameter, load rate, maximum load and hold time through the menu-driven four-line, backlit LCD display. Tare and peak hold buttons are provided and status is displayed during testing. A jog switch provides rapid positioning of the loading platform and a large emergency stop button improves operator safety and protects the system from damage. LED indicators are provided for maximum travel limit and home position of the platform. Travel distance is 1.5in (38mm) and tracked by the LVDT flow sensor. Solid steel crosshead adjusts easily for a total daylight opening of up to 4.5x8.5in (114x216mm) WxH. A precision machined 3in (76mm) diameter Crush Cell with piston dimensions of 2.0x3.5in (50.8x89mm) dia.xL is included; inquire for other sizes. Adjustable centering cams on the loading platform allow precise and repeatable positioning of Crush Cells with outside diameters up to 3.5in (89mm).

The default loading rate of 2000psi (13.8mPa) per minute and is adjustable up to 4000psi (27.6mPa) per minute. Load hold time is pre-set at two minutes, but is adjustable for up to five minutes. There is an automatic rapid release of the load at completion of the hold time. Load, rate and time values are displayed in real time and documented through the custom software installed on the included laptop computer. A serial port connection is provided. Enclosure is rugged powder coated steel. The Crush Test Frame is mounted on a sturdy rolling cart for optimum positioning in the lab. Operates on 120V/60Hz electrical supplies. **Product Dimensions:** 22x27x54in (559x686x1.372mm), WxDxH.

Proppant Crush Test System	
Proppant Crush Test System, 120V/60Hz	PR-10
Accessories	
Proppant Crush Cell with Piston	PRA-14

technote

A Crush Test System with a 50,000lbf (222kN) capacity for testing high-strength proppants is currently under development. Inquire for details.

AUTOMATIC AGGREGATE WASHERS

Gilson Aggregate Washers efficiently wash away fines from aggregate or soil materials. Both Aggregate Washers connect to a standard water line or faucet with user supplied adapter. Water continuously flows into the revolving drum and washes the aggregate sample. The fines and water mixture overflows from the wash drum over a sieve with desired mesh size.

VIDEO ONLINE

HM-57R

HM-52

Vacuum Lid for HM-52 Aggregate Washer

AUTOMATIC AGGREGATE WASHERS
ASTM C117, D1140; AASHTO T 11

Gilson's Automatic Aggregate Washers remove minus No.200 fines from soil and aggregate samples, eliminating inconsistencies and the high cost of manual washing methods.

Water is continuously fed into the revolving, inclined stainless steel drum via a permanent regulated connection. The sample is gently agitated and overflow water is directed onto sieves to prevent loss of oversize material.

Models are equipped with completely enclosed gear motors for drum rotation and 6ft (1.8M) power cords with GFCI plugs. The fixed-angle removable drum can be used as a weighing container. Gooseneck water tube swivels aside to allow drum removal. Both models are portable and convenient for placement on a counter top adjacent to a sink.

HM-57R Large Aggregate Washer allows processing of large aggregate samples up to 15lb (7kg). Stainless steel drum is 11in diameter x 13in high (279x330mm). Extra drums can be ordered as HMA-261 to improve sample processing efficiency. **Product Dimensions:** 24x20x27in (610x508x686mm), WxDxH.

HM-52 Small Aggregate Washer is useful for washing geotechnical or small aggregate samples of up to 6—8lb (2.7—3.6kg). Order extra drums as HMA-260 to improve sample processing efficiency. Stainless steel drum is 9in diameter x 10.75in high (229x273mm). **Product Dimensions:** 19x16x22in (482x406x559mm), WxDxH.

When determining an amount of material finer than a No. 200 (75µm) sieve by washing, the following Automatic Aggregate Washer accessories are recommended: 8in (203mm) and 12in (305mm) stainless steel wet-wash sieves (Select from table), 8in (203mm) and 12in (305mm) brass or stainless stell sieve pans with drains. 3/8in Clear Vinyl Tubing and hose clamps can be used to connect pan to drain, if desired.

Other recommended accessories include: HMA-262 Vacuum Lid, purchased separately, fits 1/4in Clear Vinyl Tubing and allows the wash drum to function both as a deairing device and vacuum pycnometer for asphalt rice test or other specific gravity specimens. The unique action of the rotating drum allows the sample to tumble under water during the removal of entrapped air. The lid is made from clear acrylic and fitted with a rotating vacuum seal, a port for connection to a vacuum source and locking tabs. **Product Dimensions:** 13x3in (330x76mm), dia.xH.

Automatic Aggregate Washers	
Large Automatic Aggregate Washer, 115V/60Hz	HM-57R
230V/50Hz	HM-57RF
Small Automatic Aggregate Washer, 115V/60Hz	HM-52
230V/50Hz	HM-52F
Accessories	
Wash Drum for HM-52	HMA-260
Wash Drum for HM-57R	HMA-261
Vacuum Lid for HM-52	HMA-262
8in Stainless Steel Sieve Pan with Drain	WT-3S
8in Brass Sieve Pan with Drain	WT-3
12in Stainless Steel Sieve Pan with Drain	WT-10S
12in Brass Sieve Pan with Drain	WT-10
Clear Vinyl Tubing, 1/4in ID, per foot	WT-8
Clear Vinyl Tubing, 3/8in ID, per foot	WT-4
Hose Clamp	MA-198

No. 200 (75µm) Deep Frame Wet-Wash Sieves

Frame Diameter x Depth in (mm)	Stainless Steel Cloth Stainless Steel Frame	Stainless Steel Cloth Brass Frame
12x8 (305x203)	WT-128S #200	WT-128C #200
8x8 (203x203)	WT-88S #200	WT-88C #200
8x6 (203x152)	WT-86S #200	—
8x4 (203x102)	WT-84S #200	WT-84C #200
3x4 (76x102)	WT-34S #200	WT-34C #200

Add BU suffix to Wet-Wash sieve model number to include backing cloth.

SG-40 shown with HMA-11A & SC-74

SG-40A shown with Strike-Off Guide

SG-42

FINE AGGREGATE ANGULARITY APPARATUS
ASTM C1252; AASHTO T 304

The Fine Aggregate Angularity Apparatus measures the uncompacted void content of fine aggregates and determine angularity and sphericity properties that affect workability of mix designs. Gilson offers two models for this popular test. Each sample is mixed with a spatula until homogeneous and transferred to the hopper while the discharge opening is blocked with a finger. After mixing and leveling, the sample is allowed to flow into the 100ml copper cylindrical measure. The bottom of the measure has a recess to fit a locating pin on the funnel stand to ensure precision and repeatability. The HMA-11A Spatula is purchased separately and meets specification requirements to strike off excess material. The specimen mass is determined, then void content is computed. Gilson recommends SC-74 Stainless Steel Pan to retain sample material.

SG-40 includes a 100ml copper Cylindrical Measure, funnel with specified hopper, funnel stand and a glass plate for calibration. **Product Dimensions:** 8x8x14.5in (203x203x368mm), WxDxH.

SG-40A features a strike-off guide for exact alignment of the spatula blade to the top of the Cylindrical Measure. The strike off guide improves repeatability of test results between operators. A 100ml copper Cylindrical Measure, Funnel, Funnel Stand and a Glass Plate for calibration are included. **Product Dimensions:** 8x8x14.5in (203x203x 368mm), WxDxH.

Fine Aggregate Angularity Apparatus	
Fine Aggregate Angularity Apparatus	SG-40
Fine Aggregate Angularity Apparatus w/Strike-Off Guide	SG-40A
Accessories	
Glass Plate	SGA-91
100ml Copper Measure	SGA-92
Pan, Stainless Steel 12.5x2in, Dia.xH	SC-74
Spatula	HMA-11A

COARSE AGGREGATE ANGULARITY APPARATUS
AASHTO T 326

Coarse Aggregate Angularity Apparatus determines uncompacted void content of coarse aggregate. Gradation and void content data provide an indication of angularity, sphericity and surface texture. NCAT research correlates test results to permanent deformation and fatigue cracking of asphalt and the test is recommended for evaluation of aggregates for asphalt pavement.

Coarse aggregate is placed and distributed evenly in the hopper. The cylindrical measure is centered below the hopper using the inscribed circle and locating pin on the base. The aggregate is released from the hopper using a spring loaded gate release that allows the aggregate to free fall without interference. The excess aggregate is leveled off with the top of the measure, the weight recorded and coarse aggregate void content calculated.

SC-4 galvanized iron pan is 24x24x3in (607x607x76mm), WxDxH and recommended for containment of particles during testing. The TSA-163 Chute-end Aggregate Handling Pan is useful for weighing and loading of aggregate test material. **Product Dimensions:** 10x10x27in (254x254x686mm), WxDxH.

Coarse Aggregate Angularity Apparatus	
Coarse Aggregate Angularity Apparatus	SG-42
Accessories	
Overflow Pan	SC-4
Chute-end Aggregate Handling Pan	TSA-163
Glass Plate	SGA-94
Stainless Steel Measure for Coarse Aggregate Void Content	SGA-95

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HM-38R

HM-38B

HM-925

HM-924

HM-926

AGGREGATE SHAPE
ASTM D4791; BS 812-105

Aggregate Shape		
Description	Model	Test Method
Proportional Calipers are used for rapid determination of percentages of flat and elongated particles in coarse aggregate fractions of 0.375in (9.5mm) or larger. Both units are constructed of durable plated steel, precision tooled for accuracy. Flat particles are identified by setting the width at the large end of the caliper, then checking thickness of the same aggregate at the smaller end. The aggregate is considered flat if it fits within the smaller gap. Tests for elongated aggregates are performed in a similar manner, comparing length. Consists of a base plate with fixed posts and a 13in (330mm) pivoting arm with posts at each end to measure opening ratios of 1:2, 1:3, 1:4 and 1:5. Posts are easily removed and replaced as necessary. **HM-38R Budget Caliper** adjusts by securing a pivot arm screw at one of four threaded positions to provide end opening ratios one at a time. **Product Dimensions:** 16x6x3in (406x173x76mm), WxDxH. **HM-38B Four Station Caliper** is similar, but provides openings for all four ratios simultaneously, without the need to reposition the pivot screw. **Product Dimensions:** 16x8x3in (406x203x76mm), WxDxH.		ASTM D4791
Budget Proportional Caliper Four-Station Proportional Caliper	HM-38R HM-38B	
Flakiness Index Gauges characterize particle shape of aggregates used in asphalt and concrete paving mixes and for pavement base courses. Aggerate particles are manually tried against labeled slots. Aggregates not passing are identified as flaky and their percent of the total sample by weight is the flakiness index. Gauges are rugged laser-cut stainless steel with clearly labeled fraction ranges for each slot. **Product Dimensions:** 15x6x0.375in (381x152x9mm), WxDxH. **HM-925 Standard Flakiness Index Gauge** meets BS 812-105 and has seven labeled slots for each of the seven sieve cuts from 2.5 to 0.25in (63 to 6.3mm). **HM-924 Indiana Flakiness Index Gauge** meets Indiana Department of Transportation standard ITM No. 224-18 and requirements for several other state agencies for flakiness index testing. This gauge has five slots ranging from 0.25 to 1in (6.35 to 25.4m for manual checking of particles.		BS 812-105 ITM-224-18
Standard Flakiness Index Gauge Indiana Flakiness Index Gauge.	HM-925 HM-924	
Length Gauge has six labeled openings between pairs of metal pins for measuring length of aggregate from each of the six sieve cuts from 2 to 0.25in (50 to 6.3mm). The aggregate is elongated when its longest dimension is more than 1.8 times the midsize of the sieve fraction. The mass of all elongated aggregates as percent of the total sample is the elongation index. The Length Gauge has stainless pins set in an anodized brushed aluminum base, stamped with sieve fraction ranges between pins. **Product Dimensions:** 12.75x2x2.5 (324x51x64mm), WxDxH.	HM-926	BS 812-105

HM-137

ORGANIC IMPURITIES TEST SET
ASTM C40; AASHTO T 21

Deleterious organic materials in fine aggregates are easily be detected with this simple, widely-used test. Samples are mixed in a special graduated colorless glass bottle with a 3% sodium hydroxide solution, then allowed to stand for 24 hours. If the color of the supernatant liquid above the test sample is darker than a standard reference color, organic compounds may be present and further testing should be done before approval.

The complete HM-137 Gilson Organic Impurities Test Set includes six 8oz (240ml) graduated Impurities Test Bottles, 1lb (454g) of Sodium Hydroxide (NaOH) Pellets and a circular Color Reference Disk with five standard reference colors. The sodium hydroxide pellets make enough 3% solution to perform over 150 tests. For areas with shipping restrictions, this set is available without sodium hydroxide as HM-137F. For strict compliance to ASTM and AASHTO Standards, Reagent Grade Sodium Hydroxide Pellets (HM-818) can be ordered separately. Impurities Test Bottles are graduated to 8oz and 240ml and have watertight screw-on caps. All individual set components can be purchased separately.

The Color Reference Disk has five permanent, fade-free solid-glass reference colors of 5, 8, 11, 14 and 16 on the Gardner color scale mounted in a protective plastic frame. Individual Gardner Liquid Color Standards are also available for the same reference colors and meet ASTM/AASHTO requirements. The liquid is securely sealed in glass tubes marked with the Gardner number and packaged in a protective case. Shelf life of each liquid standard color is five years.

Organic Impurities Test Set	
Organic Impurities Test Set	HM-137
Organic Impurities Test Set w/o NaOH	HM-137F
Accessories	
Color Reference Chart	HM-815
Sodium Hydroxide Pellets, 1lb	HM-816
Sodium Hydroxide Pellets, Reagent Grade, 1lb	HM-818
Impurities Test Bottle	HM-817
Gardner No. 5 Liquid Color Standard	HM-810
Gardner No. 8 Liquid Color Standard	HM-811
Gardner No. 11 Liquid Color Standard	HM-812
Gardner No. 14 Liquid Color Standard	HM-813
Gardner No. 16 Liquid Color Standard	HM-814

HM-58R

METHYLENE BLUE VALUE SET
ASTM C837; AASHTO T 330

The Methylene Blue Value (MBV) estimates of the amount of potentially harmful fine material present such as clay and organic material present in fine aggregate. Material passing the No.200 (75µm) sieve is maintained in dispersion with distilled water by mixing with a magnetic stirrer. Methylene Blue solution is titrated into the stirred dispersion in increments until a drop of the mixture on filter paper shows a blue ring, indicating that the sample can absorb no more reagent. The MBV is a measure of the amount of reagent absorbed and is proportional to the amount of clay or organic material present.

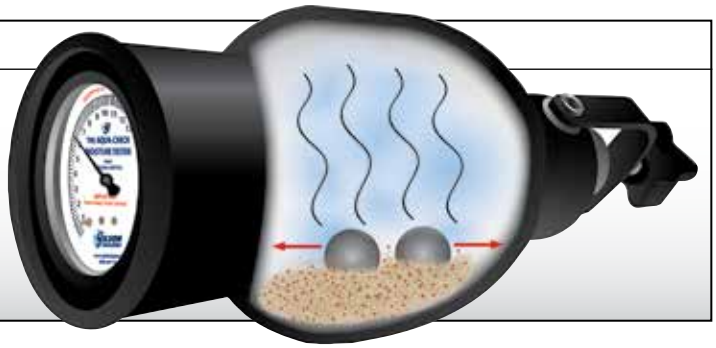
Methylene Blue Reagent solution is light sensitive. The solution shelf life is 4-6 months maximum, when stored in a dark cabinet in foil-wrapped amber bottles. The HM-58R Set includes 25g of methylene blue reagent in stable powder form, a 50 x 0.1ml special amber glass burette, a burette clamp and stand, two amber 500ml solution storage bottles, three glass 600ml beakers, two glass dropping rods, a 1L volumetric flask and a 100 sheet pack of 24cm diameter filter paper. Instructions for preparation and storage of solution are provided along with details of the test procedure. The 25g of powder reagent provided in the set is sufficient to prepare solution for over 500 tests. Other required accessories should be ordered if not available in the lab.

Methylene Blue Value Set	
Methylene Blue Value Set	HM-58R
Accessories	
Powder Reagent, 25g	HMA-78
Filter Paper, pkg. 100	HMA-79

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

AQUA-CHECK MOISTURE TESTER

The gas-pressure method for moisture determination has long been in use and is widely accepted for accurate field testing of soils, aggregates, coal, abrasives and other materials. These devices are essentially pressure vessels and depend on the formation of gas when calcium carbide reacts with moisture in the sample. A precision gauge in the sealed chamber measures pressure for relative readings and results are easily correlated to laboratory results for enhanced accuracy.



VIDEO ONLINE

MA-26X

MAA-45

MA-26X additional views

GILSON AQUA-CHECK MOISTURE TESTER
ASTM D4944; AASHTO T 217; FLORIDA FM 5-507

Gilson Aqua-Check is made in the USA and an affordable choice for rapid, accurate and reliable moisture tests on sand, aggregates, ores, coal, soils and other materials with particle size up to 20mm (0.8in). Samples are quickly tested on-site, eliminating risk of moisture loss during transport. Portable units are easy to use and meet ASTM, AASHTO and Florida DOT requirements. The Gilson Aqua-Check was evaluated by the Florida DOT and verified to meet FM5-507 DOT requirements.

A pre-weighed 20g sample is placed in the test chamber, along with a measured quantity of calcium carbide reagent. When the chamber is sealed and agitated for one to three minutes, free moisture in the test sample reacts with the reagent to produce acetylene gas. The integral pressure gauge registers 0—20% moisture by weight in 0.2% graduations. Moisture range can be doubled by halving the pre-weighed sample weight.

MA-26X Aqua-Check has a rugged, die-cast aluminum body with a tough, wear-resistant coating and includes a 0—20x0.2% pressure gauge, with certificate of calibration. Also included are an electronic digital balance, two 1.25in (32mm) dia. steel pulverizing balls, reagent measuring scoop, brush and instructions in a heavy-duty, waterproof plastic case. Approximate pressure chamber dimensions: 14x5.5in (356x140mm), Lxdia. Recalibration of existing Aqua-Check gauges is available as MAA-53. Calcium Carbide Reagent is available separately in 10lb (4.5kg) cans as MAA-44. The pressure gauge and all accessories are compatible with both Aqua-Check and Speedy-brand Moisture Testers.

MAA-45 Aqua-Check 0—20% Replacement Pressure Gauge includes a certificate of calibration. Due to shipping restrictions, reagent is sold in 10lb (4.5kg) cans only. Reagent from these larger cans can be used to replenish smaller containers, MAA-43 or SC-116, for field use. **Product Dimensions:** 20x17x9in (508x431x228mm), WxDxH.

Gilson Aqua-Check Moisture Tester	
Gilson Aqua-Check Moisture Tester	MA-26X
Accessories	
Calcium Carbide Reagent, 10lb can	MAA-44
Empty 1lb Metal Can for Reagent (can only)	MAA-43
Aqua-Check 0—20% Pressure Gauge	MAA-45
Recalibration of MAA-45 Pressure Gauge	MAA-53
Electronic Balance, 220 x 0.1g	OB-205
1.25in (32mm) Steel Balls, pkg. 2	MAA-47
Sample Cup	MAA-52
Long-Handle Reagent Scoop	MAA-48
Large, Coarse Clean-Out Brush	MAA-51
Small, Fine-Bristle Brush	MAA-50
Heavy-Duty Waterproof Plastic Case	MAA-46
Round Plastic Sample Jars, pkg 12	SC-116

technote

Gilson Company, Inc. offers repair and pressure gauge calibration services for the MA-26X Aqua-Check and speedy moisture testers. Please call 800.444.1508 for pricing.

VIDEO ONLINE

HM-602W

PENDULUM SKID TESTER

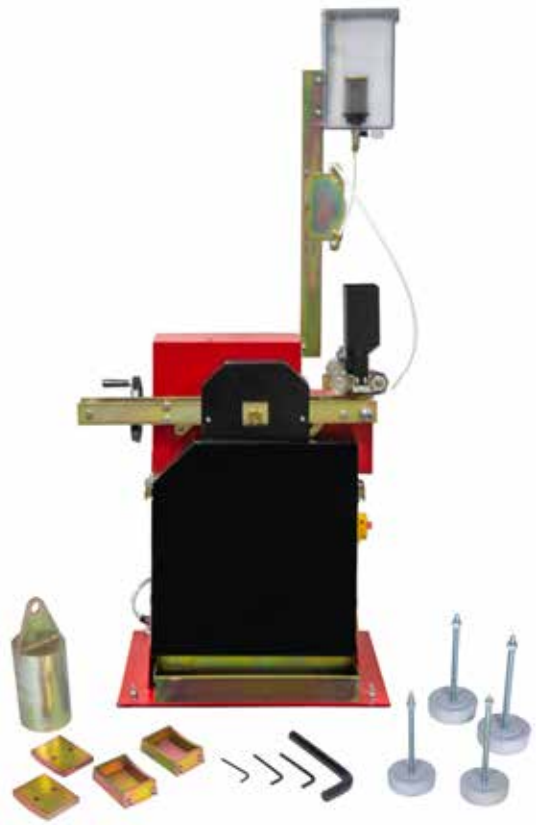
ASTM D3319, E303; AASHTO T 278, T 279; BS 812-114; BS EN 1097-8, 13036

The Pendulum Skid Tester measures skid resistance when a rubber slider on a 20in (508mm) pendulum arm contacts a test surface. A drag pointer on a 0—150 scale measures friction. The unit quantifies the potential of automotive tire skidding and also evaluates skid resistance of surfaces and polishing tendencies of aggregates. A supplementary 0—10 scale is provided for work using smaller sliders. Adjustments to the arm position and base maintain a true circular path when operated on sloping road surfaces. Sliders are made with a graded rubber strip bonded to an aluminum backing plate.

Gilson supplies large or small rubber sliders either mounted to aluminum plates or as unmounted replacement pads. Order 3in (76mm) wide Large Sliders for testing road surfaces or 1.25in (32mm) wide Small Sliders for testing polishing wheel specimens.

The Tester includes a setting gauge, three wrenches, water bottle, instrument case, traceable calibration certificate and instructions. Large or Small Sliders are ordered separately. When evaluating specimens from Accelerated Polishing Machines, order Laboratory Base Plate HMA-204W and HMA-207 Small Sliders separately. Base Plate is 25x19x2in (635x480x50mm), LxWxH, including a specimen mounting block. Order HMA-208 6x24in (152x610mm) No.60 grade silicon carbide Slider Conditioning Cloth in packs of ten to condition sliders per ASTM E303. Molds to form Accelerated Polishing Machine specimens are also available. **Product Dimensions:** 28.3x28.7x8.7in (720x730x220), WxDxH.

Pendulum Skid Tester	
Pendulum Skid Tester	HM-602W
Accessories	
Slider Conditioning Cloth, pkg. of 10	HMA-208P
Laboratory Base Plate	HMA-204W
Large Slider, Mounted	HMA-203
Large Pad, Unmounted	HMA-228
Small Slider, Mounted	HMA-207
Small Pad, Unmounted	HMA-229
Accelerated Polishing Specimen Mold	HMA-258
Mold Plate	HMA-259



HM-614

ACCELERATED POLISHING MACHINE

ASTM D3319, AASHTO T 279, BS EN 1097-8

The Accelerated Polishing Machine simulates aggregate wear on asphalt pavements caused by action of vehicle tires. Specimens are prepared by securing aggregate pieces into special curved molds with bonding agent. Fourteen curved segments of specimens are clamped around a "road wheel" to form a continuous aggregate surface 1.75in (44.5mm) wide and 16in (406mm) in diameter. The road wheel is driven in loaded contact with a rubber-tired wheel while an abrasive and water are fed to the contact area. After polishing, friction values are determined using a Pendulum Skid Tester.

The road wheel is driven by an electric motor at 320 ±5rpm through an adjustable timing belt. The Goodyear 8in (203mm) diameter pneumatic-tire assembly maintains an 88lbf (391N) load on the road wheel while HMA-240 Silicon Carbide Grit abrasive and water is distributed onto the test surface at a prescribed rate. Water is gravity fed from a tank through a calibrated flow meter and is collected with used abrasive in a removable tray. Pneumatic tire assembly loads are controlled by a mechanical lifting device. Tests are automatically terminated by a preset revolution counter. The HM-614 meets ASTM/AASHTO test method requirements and consists of a welded steel frame on adjustable leveling feet. Units are supplied with two specimen molds, two mold plates, required feeders, wheel assemblies, wrenches, mounting pads and operating instructions. Order abrasives separately. Each ASTM/AASHTO test requires about 10lb (4.5kg) of silicon carbide grit. Inquire for a version of this machine meeting BS812/EN 1097-8, available as HM-615. **Product Dimensions:** 32x31x48in (810x790x1,230mm), WxDxH.

Accelerated Polishing Machine	
Accelerated Polishing Machine, 115V/60Hz	HM-614
230V/50Hz	HM-614F
Accessories	
Abrasive Silicon Carbide Grit, 50lb (23kg) box	HMA-240
Tired Wheel Assembly ASTM (for Silicon Carbide)	HMA-250
Replacement Tire (Pneumatic) with Tube	HMA-251
Accelerated Polishing Specimen Mold	HMA-258
Mold Plate	HMA-259

VIDEO ONLINE

SG-20 shown with SGA-120, OBX-512 & SG-7A

HM-649

SGA-125

MA-170C

SPECIFIC GRAVITY BENCH

ASTM C20, C127, C642, C830, D1188, D2041, D2726; AASHTO T 85, T 166, T 209, T 275

The Specific Gravity Bench allows easy weighing of suspended samples in water for relative density determinations of aggregates, hardened concrete, bituminous mixtures, refractory brick and similar materials. Bench is sturdy painted steel and features three 2in (51mm) diameter holes in the top for suspension of samples and thermometer. The lower support doubles as a shelf that adjusts to fit Gilson 30gal (114L) or 44gal (170L) Plastic Water Tanks. **Product Dimensions:** 31x25x46in (787x635x1,168mm), WxDxH.

Heavy-duty polyethylene water tanks are ordered separately. The 0.25in (6.4mm) thick molded tanks are seamless and translucent for water level visibility and equipped with drain and overflow outlets. Maximum operating temperature is 140°F (60°C). SGA-120 has 30gal (114L) capacity with dimensions of 24x18x18in (610x457x457mm) LxWxD. SGA-122 has 44gal (170L) capacity and 24x18x24in (610x457x610mm) LxWxD and is preferred for ASTM D2041, AASHTO T 209 and similar tests.

HM-651 Heater and HM-655 Circulator or alternate HM-649 Portable Heater/Circulator accessories for temperature control are ordered separately. Use SGA-130 Locking Caster Set for portability of the bench. SGA-135 Mega Density Weighing Cradle holds large pycnometers and solid specimens for weighing. Stainless Steel SGA-125 Large Density Weighing Cradle allows for samples to tilt backward to prevent specimen loss. SGA-119 Small Density Weighing Cradle, shaped from heavy stainless steel wire, is useful for weighing odd-shaped specimens. Additional accessories and scales are described elsewhere. SGA-135, SGA-125 and SGA-119 dimensions are; 10x6x17in (254x152x432mm), 10x6x12in (254x152x305mm) and 4x4x6.5in (102x102x165mm) respectively.

Specific Gravity Bench	
Specific Gravity Bench (without Tank)	SG-20
Accessories	
Water Tank 30 gallon, 18in deep	SGA-120
Water Tank 44 gallon, 24in deep	SGA-122
Small Density Weighing Cradle	SGA-119
Large Density Weighing Cradle	SGA-125
Mega Density Weighing Cradle	SGA-135
Tank Heater	HM-651
Tank Circulator	HM-655
EZ Mount Heater/Circulator	HM-649
Locking Caster Set	SGA-130
Wire Basket for ASTM C127	SG-7A

DIGITAL ABSOLUTE PRESSURE MANOMETERS

ASTM D2041; AASHTO T 209

Digital Absolute Pressure Manometers are a safe, accurate and environmentally friendly alternative for precise measurement of vacuum levels. These models meet the requirements of ASTM D2041 and AASHTO T 209 to measure specific gravity and density of asphalt mixtures, often called the Rice Test. The mercury-free gauge uses an absolute pressure transducer for instant digital display of applied vacuum from 0–1,000mm Hg. Accuracy is ±0.5% of full scale. Resolution is 0.1mm. A 0.25in hose barb connection with a needle valve is supplied for vacuum tubing.

The MA-170C version is supplied with a certificate of NIST calibration to meet requirements of AASHTO T 209. This model undergoes multi-point calibration at 25, 30 and 35mm Hg on NIST traceable equipment. The same NIST calibration or recalibration is available for existing MA-170 Digital Manometers by ordering MAA-25 and sending the units in. Contact Gilson customer service for shipping instructions.

Both models are powered by a 9V battery or AC adapter, both included. Automatic shut-off saves power in battery mode. Adapter included with MA-170F and MA-170FC operates on 230V/50Hz. **Product Dimensions:** 3.1x6.5x1.18in (78.7x165.1x30mm), WxDxH.

Digital Absolute Pressure Manometers	
Digital Manometer, 115V/60Hz	MA-170
230V/50Hz	MA-170F
Digital Manometer, NIST Calibration, 115V/60Hz	MA-170C
230V/50Hz	MA-170FC
Digital Manometer Recalibration	MAA-25

VIDEO ONLINE

SS-28 shown with SG-2

BK-36

SG-1

SG-6

SG-450 SG-24 SG-250

SG-28

SG-62 SG-63

Specific Gravity Accessories

Description	Model	Test Method
Vibra Pad assists with agitation of specific gravity specimens during deairing operations and is specified by the Kentucky Transportation Cabinet for fine aggregate specific gravity testing. The plastic coated 5.25in (133mm) square platform has two wing nut fasteners and corner pillars with springs for holding flasks and pycnometers up to 6in (152mm) diameter in place. **Product Dimensions:** 6x7x6.5in (152x178x165mm), WxDxH.		KM 64-605
Vibra Pad, 115V, 50/60Hz	SS-28	
Vibra Pad, 230V, 50/60Hz	SS-28F	
The Aggregates Handbook is a compilation of articles and a comprehensive reference for anyone dealing with aggregates. Discusses basic properties, aggregate as a component of Portland cement and asphalt concrete, sampling and testing principles and more. New second edition features expanded coverage of many industry topics.	BK-36	–
Specific Gravity & Absorption of Fine Aggregate Set includes a pycnometer, conical mold and tamper. Pycnometer is 1qt (0.95L) threaded glass jar with a rubber gasketed brass top tapered to 0.125in (10mm) hole at top. Mold is 40mm ID at top, 90mm at bottom, 75mm H. The 340g tamper has 25mm diameter face.		ASTM C128 AASHTO T 84
Complete Set	SG-1	
Jar & Top	SG-2	
Mold & Tamper	SG-3	
Mold Only	SGA-15	
Tamper Only	SGA-16	
Specific Gravity & Absorption of Coarse Aggregate Set includes a Stainless Steel Wire Mesh Basket with handle and a polyethylene 24qt Water Container for weighing coarse aggregate samples while suspended in water. Wire Basket is No.8 stainless steel mesh, 8x8in (203x203mm), dia.xH. Inquire for baskets with No.4, No.6, No.12, or No.16 mesh sizes. 14qt Galvanized Pail is available as a container.		ASTM C127 AASHTO T 85
#8 Wire Mesh Basket and Polyethylene Container Set	SG-6	
#8 Wire Mesh Basket	SG-7A	
Polyethylene Container	SG-8	
14qt Galvanized Pail	MA-950	
Chapman Specific Gravity Flask is used to determine approximate percentage of surface moisture and voids in fine aggregates. Upper and lower bulbs contain 175ml and 200ml, respectively. Stem is graduated above the bulbs from 375 to 450ml.	SG-450	ASTM C70
LeChatelier Specific Gravity Flask is used to obtain specific gravity of hydraulic cement, dust, sand and other fine materials. Body holds about 250ml, bulb in neck holds 17ml. Below the bulb are graduations from 0 to 1ml. Above the bulb, the neck is graduated from 18 to 24ml. Complete with stopper. Inquire for Gay-Lussac type SG bottles.	SG-24	ASTM C188 AASHTO T 133
Volumetric Flasks are calibrated to contain indicated capacity at 20°C when filled to mark. Supplied with plastic snap cap.		ASTM D854 AASHTO T 100
Volumetric Flask, 100ml	SG-100	
Volumetric Flask, 250ml	SG-250	
Volumetric Flask, 500ml	SG-500	
Volumetric Flask, 1,000ml	SG-1000	
Hubbard & Hubbard-Carmick Specific Gravity Bottles determine specific gravity of semi-solid bituminous materials, asphalt cements and soft tar pitches. Included stopper is concave on lower surface and has 1.6mm center hole for air evacuation. Hubbard bottle is 1.06x2.75in (27x70mm) dia.xH with 24ml capacity. Conical Hubbard-Carmick bottle is 1.54x1.7in (39x43mm), dia. (at bottom) xH (without stopper) with 25ml capacity.		ASTM D70 AASHTO T 43
Hubbard Specific Gravity Bottle	SG-62	
Hubbard-Carmick Specific Gravity Bottle	SG-63	
Phunque Flasks are a fast and reliable method to determine specific gravity/absorption of fine, coarse, or blended fine and coarse aggregate. Simple procedures are ideal for tracking values without the complexity and delay of traditional lab tests. SG-26 for fine aggregate has 2,500ml capacity and 1in (25mm) diameter neck. **Product Dimensions:** 7x39in (178x991mm) dia.xH. SG-27 for coarse and blended fine and coarse aggregate has 5,000ml overall capacity. a 2in (51mm) diameter neck. **Product Dimensions:** 8.5x48in (216x1,219mm) dia.xH Scale on both are readable to 0.1 grams. Both Flasks can be purchased together as SG-28 Set. Quality laboratory-grade glassware includes Excel calculation sheet and a swabbing utensil.		ASTM PENDING; AASHTO T 354
Phunque Flask for Fine Aggregate	SG-26	
Phunque Flask for Coarse or Blended Aggregate	SG-27	
Phunque Flask Set, for Fine & Coarse Aggregate	SG-28	

RICE TEST SET-UP

The SGA-5R Rice Shaker agitates the pycnometer containing an asphalt sample under vacuum. Vibratory action dislodges entrapped air, which is evacuated by the vacuum pump. The MA-170 Digital Absolute Pressure Manometer measures vacuum applied to the sample and the SG-70 Air/Gas Dryer Tube with indicating Drierite prevents water from entering the vacuum pump.

VIDEO ONLINE

SGA-5R shown with SG-16A

Close up of EZ Clamp

MA-170C

SGA-5R shown with GW-76 & SGA-8

RICE SHAKER

ASTM C128, D854, D204, D4867; AASHTO T 84, T 100, T 209; TxDOT Tex-227-F

- **Consistent, repeatable agitation for Asphalt Rice Test and other specific gravity determinations**
- **Variable vibration control allows for setting optimum agitation**
- **Automatic operation minimizes operator error**

The Gilson Rice Shaker performs consistent, automatic agitation of Asphalt Rice Test vacuum pycnometers, freeing lab technicians for other duties. It is also a useful deairing device for specific gravity tests of fine aggregates (ASTM C128) and soils (ASTM D854), as well as sample preconditioning per ASTM D4867 and AASHTO T 209.

The Rice Shaker features built-in 0—99 min. digital timer with 1 second accuracy, a vibration speed controller and a three position switch for manual or timed operation. Variable speed settings closely control agitation to avoid stripping of asphalt. Gilson's exclusive EZ Clamp system quickly secures the pycnometers. Push the buttons, slide into place and a quick twist secures the container. The powder coated steel case has non-slip rubber feet so no mounting is required.

The SGA-5R includes fitted top and bottom plates for exact fit with SG-16A or SG-18A Aluminum Pycnometers. Order SGA-7 Adapter Set for use with high-capacity plastic SG-15 Pycnometer. SGA-8 Adapter Set is required for use with GW-75 or GW-76 filter Flasks, SG-500 Volumetric Flasks, SG-24 LeChatelier Flask, or SG-2 Mason Jar Pycnometer. MA-170 Digital Residual Pressure Manometer precisely measures applied vacuum during testing. NIST certified model is available as MA-170C. SGA-5RT has modified vibration characteristics to meet Texas DOT requirements. To upgrade Rice Shaker from old style knobs to new EZ Clamp system order SGA-12. **Product Dimensions:** 13x14x19in (330x356x483mm), WxDxH.

Rice Shaker	
Rice Shaker, 115V, 50/60Hz	SGA-5R
Rice Shaker, Texas, 115V, 50/60Hz	SGA-5RT
Accessories	
Adapter Set for SG-15	SGA-7
Adapter Set for GW-75 or GW-76	SGA-8
Digital Absolute Pressure Manometer, 115v/60Hz	MA-170
230v/50Hz	MA-170F
Digital Absolute Pressure Manometer, NIST Calibrated, 115v/60Hz	MA-170C
Digital Absolute Pressure Manometer, NIST Calibrated, 230v/50Hz	MA-170FC
E.Z. Clamp Upgrade	SGA-12

SG-16A

SG-15

SG-18A

SG-70

SGA-105

WT-4B

MA-198

Specific Gravity Pycnometers and Accessories

Description	Model	Test Method
2,000g Aluminum Pycnometer is 7.5x6in (191x152mm) dia.xD and tests a maximum 2,000g sample with aggregates up to 0.75in (19.1mm). A transparent vacuum lid and a second tapered aluminum lid with capillary bore are included to allow use as a volumeter for specific gravity of compacted mixes. Vacuum hose, quick-disconnect and a 3/8in (9.5mm) threaded aspirator vacuum source are included. **Product Dimensions:** 8.125x6.375in (206x162mm), dia.xH.	SG-16A	ASTM D2041 AASHTO T 209
4,000g Aluminum Pycnometer with higher capacity is 7.5x9in (191x229mm) dia.xD with enough volume for specimens up to 4,000g. Included transparent acrylic Vacuum Lid and Aluminum Lid with capillary bore are identical to SG-16A lids for use in specific gravity of compacted mixtures. Vacuum hose, quick-disconnect and a 3/8in (9.5mm) threaded aspirator vacuum source are also included. **Product Dimensions:** 8.125x9.375in (206x238mm), dia.xH.	SG-18A	ASTM D2041 AASHTO T 209
6,000g Pycnometer has large, 10L capacity for mixes with aggregates up to 2in (51mm). High strength plastic vessel with O-ring seal is 9.38in (238mm) I.D. An adjustable valve controls water level and a perforated plastic shelf is included. The shelf supports three 4in (102mm) dia. specimens. Vacuum hose, quick-disconnect and a 3/8in (9.5mm) threaded aspirator vacuum source are included. **Product Dimensions:** 10.75x13.3in (273x338mm), dia.xH. Order SGA-7 adapter set for use with SGA-5R Rice Shaker.	SG-15	ASTM D2041 AASHTO T 209
Filter Flasks have side tubulation for 0.375in ID tubing. Heavy-duty 2,000/4,000ml sizes are thick walled for maximum strength. Order SGA-8 adapter set for use with SGA-5R Rice Shaker. 2,000ml 4,000ml	 GW-75 GW-76	
Laboratory Air/Gas Dryer works in vacuum or pressure applications and protects vacuum pumps from harmful moisture during operations. Water capacity is 50 grams. Molded polycarbonate column has a threaded cap and stainless steel springs hold the included Indicating Drierite Granules between two felt filters. Hose barbs accept 1/4in (6.4mm) or 3/8in (9.5mm) ID tubing. Recommended Flow Rate: 0.1scfm (200lph) at 90psi (6.2bar). **Product Dimensions:** 2.6x11.4in (67x289mm), dia.xL.	SG-70	
Indicating Drierite Granules rapidly absorb water vapor from air and gases. Blue desiccant crystals turn pink when exhausted and can be regenerated in an oven for longer life, or replaced as needed. Use #8 size for SG-70 Laboratory Air/Gas Dryer and #4 size GW-74 Filter Flasks. #4 Indicating Drierite Granules, 5lb (2.3kg) Jar #8 Indicating Drierite Granules, 5lb (2.3kg) Jar	 SGA-105 SGA-106	
Accessories for specific gravity determinations includes 3/8in Reinforced Vinyl Tubing priced per foot, Tubing Clamp and #12 Rubber Stopper with 0.375in (9.5mm) hole for GW-76 Flask. 3/8in ID Reinforced Vinyl Tubing, per foot Tubing Clamp #12 Rubber Stopper	 WT-4B MA-198 GWA-3	

NEW! Ship Weight Index
The Estimated Ship Weight for every product is easy to find in the NEW Ship Weight Index!

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MA-23

MA-24

MA-27A

MA-28

MA-29

MA-32

MA-31

MA-33

VACUUM PUMPS

ASTM C128, C830, D2041, D217, D4867; AASHTO T 84, T 100, T 164, T 209; others

MA-23 Vacuum Pump is a large oilless pump that allows multiple specific gravity tests to be performed simultaneously. This heavy-duty unit combines large capacity with maintenance free operation. The 1/3hp motor pulls 29.6in Hg (759.46mm), with free air displacement up to 99L/min (3.5cfm) and ultimate pressure of 5.0Torr and includes a NEMA guarded switch and grounded electric cord. **Product Dimensions:** 11.1x9.2x11.0in (282x234x279mm), WxDxH.

MA-24 Vacuum Pump offers the same vacuum capacity as some oil systems in an economical oilless pump package. The 1/3hp motor pulls a vacuum to 29.6in Hg (759.46mm), with free air displacement up to 45L/min (1.6cfm) and ultimate pressure of 5.0Torr and includes a NEMA guarded switch and grounded electric cord. **Product Dimensions:** 11.7x7.2x9.5in (296x183x240mm), WxDxH.

MA-27A Vacuum Pump is a two-stage, direct drive, rotary vane pump that provides good performance to cost ratio. This lightweight 1/2hp pump features 0.001Torr ultimate vacuum pressure and 3.0cfm free air capacity. The compact design reduces space requirements and a 2.5in (64mm) diameter Bourdon-style 0–30in (0–762mm) vacuum gauge is mounted on the intake side. A gas ballast valve permits purging of water vapor. The handy plastic grip handle allows easy portability. **Product Dimensions:** 14x5.25x11in (355x133x279mm), WxDxH.

MA-28 Vacuum Pump is a two-stage, belt drive, rotary vane pump with fast recovery time and good durability. This quiet, reliable pump has standard 0.375in intake fittings for quick connection or adaptation to other equipment. It also features a drain cock and sight glass for easy maintenance and monitoring of oil levels, an approved belt guard and On/Off switch. A one-year manufacturer parts and labor guarantee is standard. The exhaust dome and baffle condense oil spray for cleaner operation. **Product Dimensions:** 18.5x10x10.75in (470x254x273mm), WxDxH.

MA-29 Vacuum Pump is a two-stage, belt drive, rotary vane pump with high vacuum capacity and good free air capacity for higher volume applications. The heavy-duty unit features cast-iron construction, quiet operation and long service life. Pump is supplied with motor, pulley and belt with guard mounted on a sturdy steel base. An oil sight gauge, drain cock and standard 0.875in intake fitting are also included. The initial fill and an extra quart of oil are provided. A gas ballast valve is fitted for purging water vapor and other condensates. Pump recovers from atmospheric exposure to guaranteed 0.0001Torr in one to three minutes. **Product Dimensions:** 17.3x11.5x13in (438x292x330mm), WxDxH.

MA-31 Economy Chemical Resistant Vacuum Pump is a smaller, affordable, oilless pump optimized for ultimate protection against corrosive solvents. This quiet model exhibits noise levels as low as 54dB and is optimized for vacuum filtration and degassing applications. The low-maintenance MA-31 is equipped with a 1/7hp motor that pulls a vacuum to 22in Hg (559mm), with free air displacement up to 20L/min (0.7cfm) and ultimate pressure of 203.2Torr. The pump includes a regulator gauge to adjust and monitor vacuum levels and the inlet catch-pot protects from accidental intake of fluids and particulates. **Product Dimensions:** 6.8x7.3x8.3in (173x185x211mm), LxWxH.

MA-32 Vacuum Pump is a budget oilless diaphragm pump that is ideal for use with light-to-medium duty lab applications. This popular unit comes complete with gauges, connections and relief valves for vacuum and pressure applications and has built-in On/Off switch and carrying handle. Pump has free air capacity of 1.1cfm (31.2L/min) and can produce vacuum to 25.5in Hg (648mm), or up to 60psi (414kPa) pressure as a compressor. It is quiet, portable and maintenance free. The pump has 1/8hp, 115V, 60Hz shaded pole motor with thermal protection and is UL listed and CSA approved. **Product Dimensions:** 5.3x7.6x10.5in (133x194x267mm), WxDxH.

MA-33 Chemical Resistant Vacuum Pump is a durable, corrosion and bleach-resistant pump ideal for mid-range vacuum applications and safe for use with cell culture contamination protocols. The included liquid inlet trap and vacuum regulator are suitable for organic aqueous solvents and light acid/base solutions. The 1/5hp motor pulls a 24in Hg (607mm) vacuum, with free air displacement up to 37L/min (1.3cfm) and ultimate pressure of 152.4Torr. The unit is supplied with an electrical line cord, plug and power switch. **Product Dimensions:** 8.75x5x8.75in (222x147x222mm), WxDxH.

Vacuum Pumps

Model	Electrical	hp (kW)	Ultimate Vacuum Torr	Free Air Capacity cfm (L/min)	Intake Nipple OD in (mm)
MA-23 MA-23F	115V/60Hz 230V/50Hz	1/3 (0.25) 1/3 (0.25)	5.0 5.0	3.5 (99) 3.5 (99)	0.375 (9.5) 0.375 (9.5)
MA-24 MA-24F	115V/60Hz 230V/50Hz	1/3 (0.25) 1/3 (0.25)	5.0 5.0	1.6 (45) 1.6 (45)	0.375 (9.5) 0.375 (9.5)
MA-27A MA-27AF	115V/60Hz 230V/50Hz	1/2 (0.37) 1/2 (0.37)	0.001 0.001	3.0 (85) 3.0 (85)	0.375 (9.5) 0.375 (9.5)
MA-28 MA-28F	115V/60Hz 230V/50Hz	1/3 (0.25) 1/3 (0.25)	0.0003 0.0003	0.35 (10) 0.35 (10)	0.375 (9.5) 0.375 (9.5)
MA-29 MA-29F	115V/60Hz 230V/50Hz	1/2 (0.37) 1/2 (0.37)	0.0001 0.0001	2.79 (79) 2.79 (79)	0.875 (22) 0.875 (22)
MA-31	115V/60Hz	1/7 (0.14)	190	0.7 (20)	0.25 (6.3)
MA-32	115V/60Hz	1/8 (0.10)	152	1.1 (32)	0.25 (6.3)
MA-33 MA-33F	115V/60Hz 230V/50Hz	1/5 (0.20) 1/5 (0.20)	150 150	1.3 (37) 1.3 (37)	0.25 (6.3) 0.25 (6.3)

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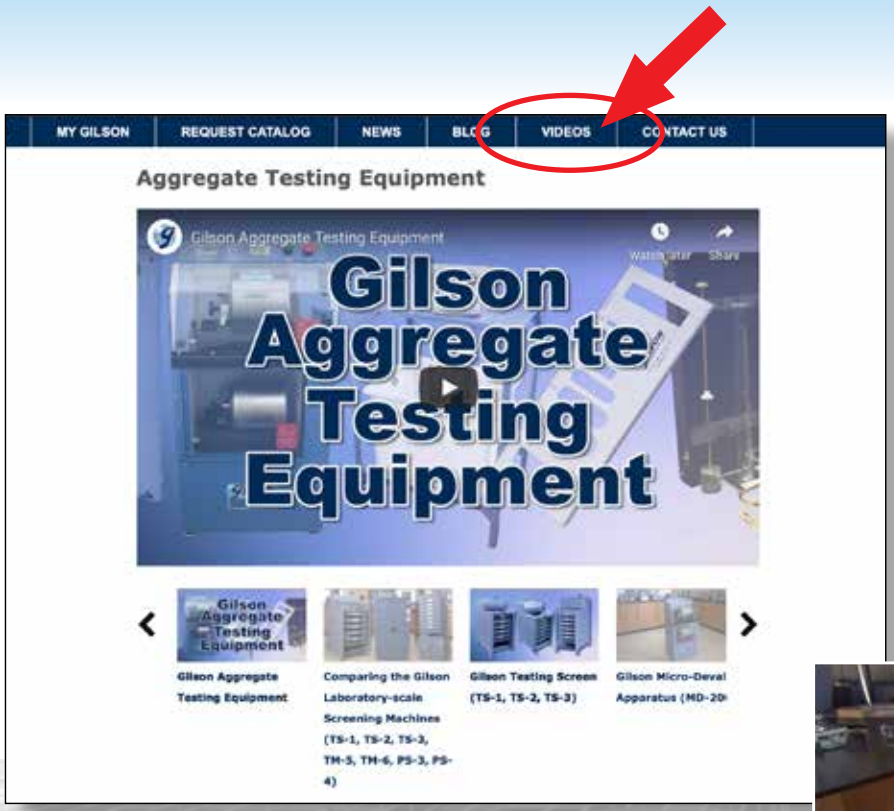

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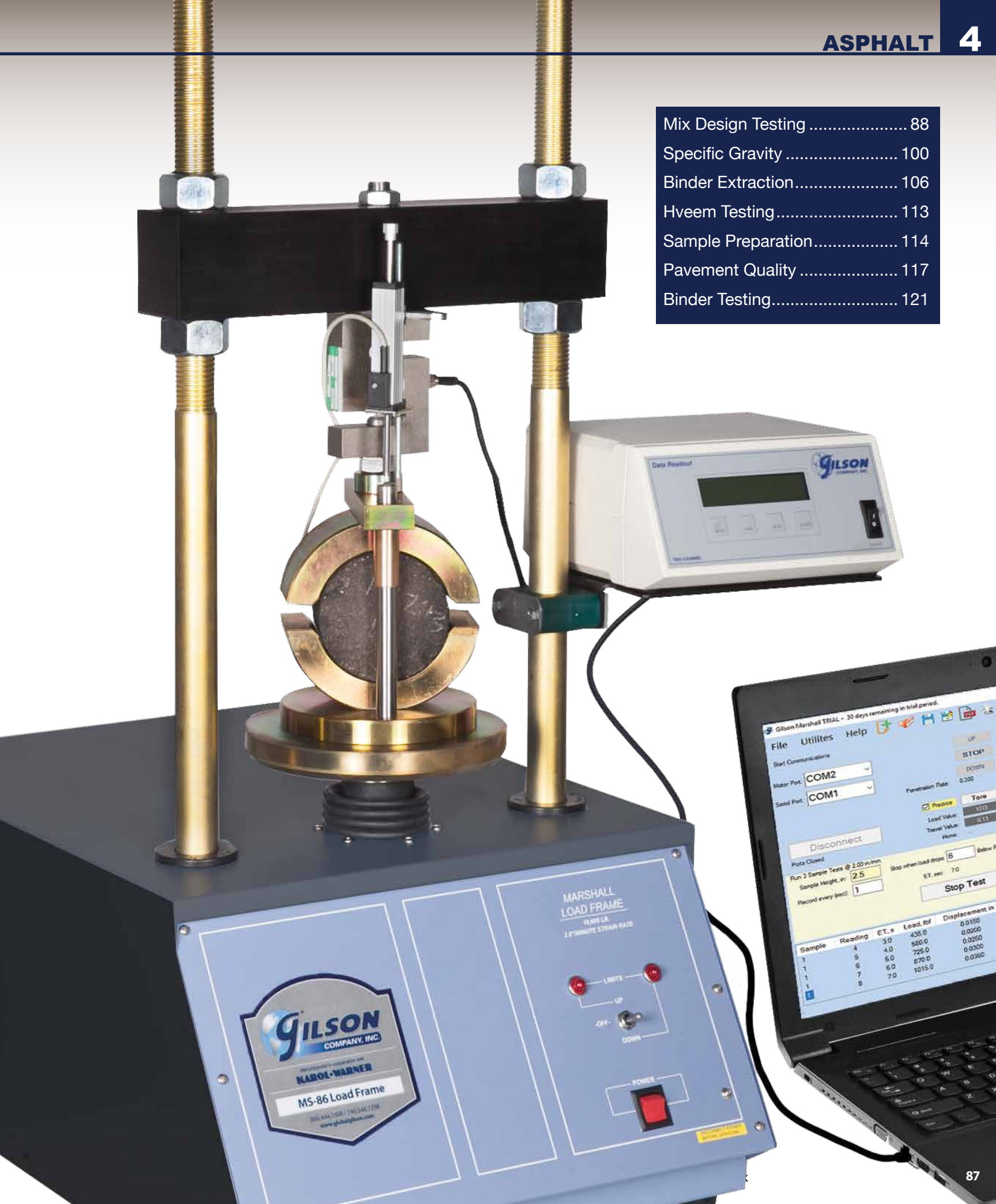

MARSHALL STABILITY AND ASPHALT LOAD FRAMES

ASTM D4867, D5581, D6927, D6931, D8044; AASHTO T 245, T 283, TP 114, TP 124

Karol-Warner Asphalt Load Frames from Gilson are designed to perform more than just the popular Marshall stability and flow test for asphalt mix designs. Many other asphalt test methods take advantage of the specific strain rate and load capacity of these load frames to perform other important strength tests. These tests are typically performed at a strain rate of 2in (50.8mm) per minute, although some variations of the Semi-Circular Bend (SCB) and Interlayer Shear Strength (ISS) tests are performed at a slower rate of loading.

- **Marshall stability and flow is a popular and established test to measure plastic flow of asphalt paving mixtures**
- **Indirect Tensile Strength, (IDT) or Lottman Test for evaluating moisture susceptibility of a mix which also allows the calculation of tensile strength ratios (TSR) by comparing stress levels between conditioned and unconditioned specimens**
- **ISS, or tack bond shear test, measures the shear strength of tack coats between asphalt layers**
- **SCB determines resistance to cracking and fracture energy of asphalt mixtures**

All Asphalt Load Frames are powered by heavy-duty direct drive motors with over-limit switches to prevent movement beyond the 3in (76mm) range. Large 8in (203mm) diameter test platens and threaded adjustable cross heads easily accommodate a variety of test fixtures. Sturdy 14-gauge powder coated steel cabinets stand up to rugged use in lab environments. An optional sturdy steel Rolling Cart allows easy positioning of the load frames.

MS-398 Load Frame operates at a variable strain rate from 0.02 to 2.0in/min (0.508 to 50.8mm/min), precisely regulated to ±1% of set point by a 3/4hp DC motor and controller. The variable rate of strain allows flexibility to perform a wide range of asphalt test variations as well as geotechnical/soil mechanics applications like CBR, Unconfined Compression, Triaxial and Soil Cement tests. The frame has a 10,000lbf (44.5kN) capacity, a daylight opening of 11.9x37.3in (302x947mm). **Product Dimensions:** 18x29x54.5in (457x737x1384mm), WxDxH.

MS-86 Load Frame has a fixed strain rate of 2.0in/min (50.8mm/min) and 10,000lbf (44.5kN) capacity. This model is powered by a 1hp DC motor and controller to precisely control strain rates and has a daylight opening of 11.9x19.5in (302x495mm) to accommodate a wide range of asphalt test fixtures. **Product Dimensions:** 18x29x37.5in (457x737x953mm), WxDxH.

MS-87 Load Frame has a capacity of 20,000lbf (89kN), but is otherwise identical to MS-86.

Analog or Digital Asphalt Component Sets feature high-quality instrumentation to measure load and deformation. MSA-860 Analog Asphalt Component Set includes a 10,000lbf capacity high-strength aluminum alloy Load Ring supplied with a factory calibration chart. A 1x0.001in Mechanical Dial Indicator with low friction mechanism and steel indicator bracket are also included.

Manufactured in cooperation with Karol•Warner

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MS-398 shown with MSA-860 and MS-26

MS-86 shown with MSA-860D, MS-26 and HMA-94

MSA-860D Digital Asphalt Component Set includes a HM-418 Two-Channel Data Readout, HM-430D 10,000lbf Load Cell and HM-740 2in travel Linear Variable Displacement Transducer (LVDT) with mounting bracket. The Readout features a large, bright display and panel keys allow instant taring and data entry. A mini USB connection provides data communication for included GetData 5 software to download data to common spreadsheets for development of graphs and reports. MSA-134 Marshall Data Acquisition Software, listed separately, works with MSA-860D to record specimen and real-time test data, calculate results and prepare reports meeting ASTM and AASHTO requirements.

Marshall Stability and Asphalt Load Frames

Model	Capacity	Strain Rate	Electrical
MS-398	10,000lbf	0.02-2.0in/min	115V/60Hz
MS-398F	10,000lbf	0.02-2.0in/min	230V/60Hz
MS-86	10,000lbf	2.0in/min	115V/60Hz
MS-86F	10,000lbf	2.0in/min	230V/60Hz
MS-87	20,000lbf	2.0in/min	230V/60Hz

Accessories	
Analog Asphalt Stability Component Set	MSA-860
Digital Asphalt Stability Component Set	MSA-860D
4in Marshall Breaking Head, Base Diameter: 6in, Height: 7.5in	MS-26
6in Marshall Breaking Head, Base Diameter: 8in, Height: 9.5in	MS-29
4in Lottman Breaking Head, Base Diameter: 6in, Height: 8.2in	MS-35
6in Lottman Breaking Head, Base Diameter: 8in, Height: 10.2in	MS-36
Semi-Circular Bend (SCB) Fixture	MS-45
4in/6in ISS Tack Bond Shear Apparatus	MS-43
100mm/150mm ISS Tack Bond Shear Apparatus	MS-43F
Load Frame Cart	HMA-94
Marshall Data Acquisition Software	MSA-134

MS-26

MS-29

MS-35

MS-36

MS-43

MS-25D

MS-45

MS-48

Asphalt Load Frame Accessories

Description	Model	Size, in (mm)	ASTM/ AASHTO
Marshall Breaking Heads fixtures have machined upper/lower segments to accommodate 4in (102mm) or 6in (152mm) asphalt specimens. Segments are connected by two vertical guide rods with precisely machined sleeves to reduce friction and assure nonbinding movement.			D5581 D6927/ R 68 T 245
Base Diameter: 6in, Height: 7.5in	MS-26	4 (102)	
Base Diameter: 8in, Height: 9.5in	MS-29	6 (152)	
Lottman Breaking Head (Indirect Tensile IDT) fixtures are used with conventional Marshall load frames to determine Indirect Tensile (IDT), (also known as Lottman) values of asphalt mixes. TSR, tensile strength ratio can also be determined using the Lottman breaking head by compounding stress levels between conditioned and unconditioned specimens. Each fixture consists of a base with upright guide rods and top with mating guide sleeves. The upper and lower stainless steel loading strips have concave contact surfaces. Available for 4in (102mm) or 6in (152mm) specimens.			D4867 D6931/ T 283
Base Diameter: 6in, Height: 8.2in	MS-35	4 (102)	
Base Diameter: 8in, Height: 10.2in	MS-36	6 (152)	
Asphalt Tack Bond Shear Strength Apparatus is used in a Marshall Test Load Frame to measure shear strength of tack coat material between two asphalt layers. The heavy steel frame holds a fixed and a moveable shear plate. The moveable plate is centered over the shear plane and features roller bearings to minimize drag. Lateral load on the specimen is controlled by a calibrated spring and a dial indicator displays force. The shear plane gap is 0.5in (12.5mm) and maximum shear travel is also 0.5in (12.5 mm). Adapters are included for testing either 4in (102mm) or 6in (152mm) diameter cores. A version for 100mm or 150mm specimens is available as MS-43F. The Tack Bond Shear Strength Apparatus is compatible with Gilson asphalt load frames and most Marshall Load Frames with daylight openings of at least 10in (254mm). **Product Dimensions:** 9x22x9.5in (229x559x241mm), WxDxH.			TP 114
Tack Bond Shear Strength Apparatus, 4in and 6in	MS-43	4/6 (102/152)	
Tack Bond Shear Strength Apparatus, 100mm and 150mm	MS-43F	100/150	
Dial Flow Meters are used for manual measurement of flow in Marshall load frames. Dial indicator with maximum position brake is attached to a sleeve for hand holding over guide rod of the Breaking Head during testing.			D5581 D6927/ R 68 T 245
Graduated 1x0.001in	MS-25	—	
Graduated 25x0.01mm	MS-25F	—	
Digital 1x0.0001in	MS-25D	—	
Semi-Circular Bend (SCB) Test Fixture is used to calculate the fracture energy of asphalt mixtures from a load-displacement curve. Semicircular samples are cut from Superpave Gyratory compacted cylinders or 150mm field cores. The Fixture consists of a 0.5in (12.7mm) thick steel base plate, two L-shaped roller support steel blocks, two steel rollers and a U-shaped frame. The test fixture is mounted in a Marshall Stability Load Frame such as the MS-86, MS-87 or MS-398 for loading. A specimen is positioned with the flat side on two rollers and a load is applied along the vertical diameter of the specimen. Load and displacement are measured to calculate test results. Initial roller position is maintained by springs and backstops that establish the test span dimension. **Product Dimensions:** 6.25x5x8.4in (159x127x215mm), WxDxH.	MS-45	6 (150)	D8044/ TP 124
Asphalt Sample Preparation Saw prepares asphalt samples for Semi Circular Bend (SCB) Testing and cuts samples for Disk-Shaped Compact Tension (DCT) Tests in accordance with ASTM D7313. A spring-clamp fixture quickly secures the specimen for required notch cuts with no need to adjust the saw blade. Just change out the spacer blocks to switch between specimen types and notch depths. The saw also makes the required half-cuts and flat-cuts for these samples. The 10in (254mm) diameter blade is 0.050in (1.27mm) thick is included and meets specified cut-width requirements. Each saw includes an alignment block to verify proper blade alignment. MSA-220 Spacer Block Set for ASTM D8044 (Louisiana) SCB specimens is purchased separately. The MS-48 features a fully enclosed high torque, fan-cooled motor and permanently lubricated heavy-duty shaft bearings. The aluminum table has a non-slip molded neoprene surface. Sturdy steel folding stand is included. **Product Dimensions:** 48x21.5x35in (1219x546x889mm), WxDxH.			D8044, D7313/ TP 124
Asphalt Sample Preparation Saw, 115V/60Hz	MS-48	—	
Spacer Block Set for ASTM D8044 (Louisiana) SCB Samples	MSA-220	—	
Replacement Blade, 10in diameter x 0.05in Thick	MSA-222		

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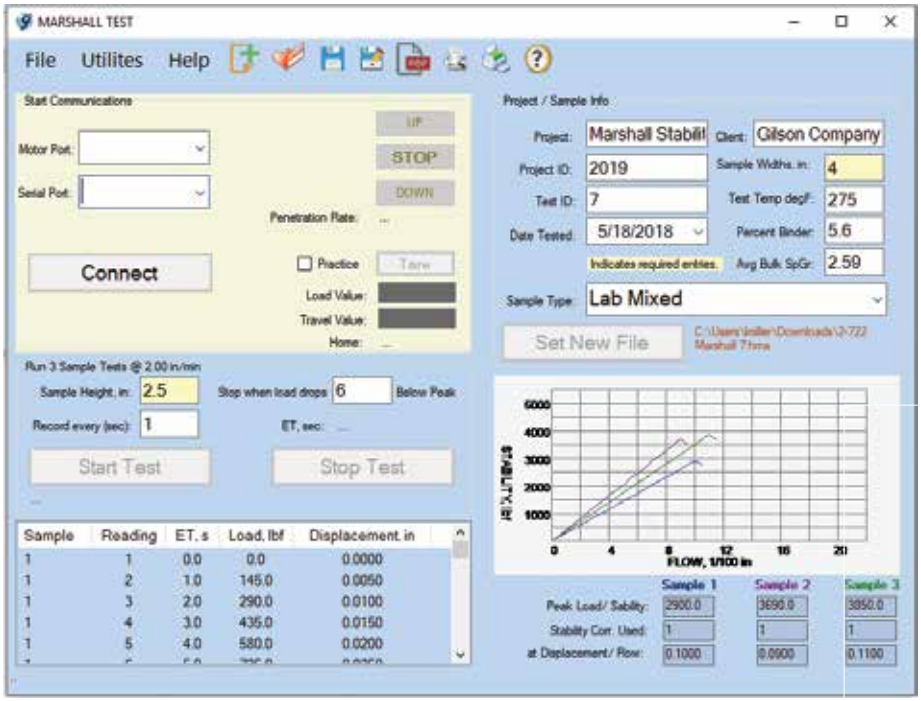
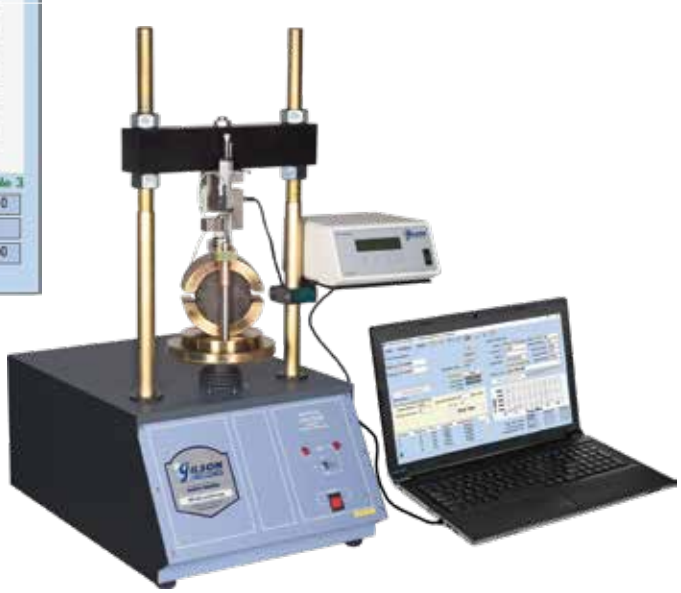


MSA-134 Screen Shot

MSA-860D
Marshall Stability Digital Component Test Set



MSA-860D Marshall Stability Digital Component Test Set
Shown with MS-86, MS-26 and MSA-134

MARSHALL DATA ACQUISITION SOFTWARE
ASTM D6927, D5581; AASTHO T 245

Gilson's Marshall Data Acquisition Software automatically records and graphs load and displacement data to determine peak stability and flow of asphalt pavement mixtures. This intuitive software utilizes clear data entry fields and testing prompts to reduce user error and increase repeatability.

Marshall Software runs on computers with Windows XP or newer operating systems and is designed for convenient use on tablets and laptops. Large pop-up keyboards can be enabled for touchscreen computers or disabled when a desktop PC with a mouse and keyboard are used. Testing agency information, company logo and equipment information can also be entered into the program settings to be included on final testing reports.

Real-time graphing and calculations are shown throughout the test procedure and saved automatically at test completion in accordance with ASTM and AASHTO specifications. The testing agency information, company logo, sample data, peak stability and flow and corresponding graph are included in the final testing report. Test report data and information can be exported to a spreadsheet application or converted into a PDF document.

Marshall Data Acquisition Software requires a HM-418 Two-Channel or HM-419 Four-Channel Data Readout for operation. The MSA-860D Marshall Stability Digital Component Set is optimized for use with the software and includes the HM-418 two channel readout, along with a HM-430D 10,000lbf load cell 1 HMA-401 Bracket and HM-740 2in displacement transducer. All digital components and sets are purchased separately.

Marshall Stability and Flow Software is available as a fully operational free download from our website for a 30-day trial. A security key and licensing information to unlock the software for permanent operation will be sent upon purchase. Visit globalgilson.com to view our video with complete details on ease of use, intuitive operation and features of the software.

Marshall Data Acquisition Software	
Marshall Data Acquisition Software	MSA-134
Accessories	
Marshall Stability Digital Component Test Set	MSA-860D

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MSA-130

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MSA-131

MSA-125

ASPHALT WATER BATHS

ASTM D5581, D6927, D8044; AASHTO R 68, T 245, T 283, TP 124

Asphalt Water Baths			
Description	Model	Capacity	Tank Dimensions, in (mm), LxWxD
Asphalt Water Baths accept five 6in (152mm) or twelve 4in (102mm) diameter specimens. Accurate electronic temperature controls regulate fluid temperatures from ambient to 212°F (100°C) to within ±1% of set point using Type K thermocouples. Digital display shows temperatures in °F or °C. Built-in variable speed magnetic stirrer assures even heat distribution and uniformity. The fully insulated baths include a perforated 14-gauge bottom support shelf to maintain 2in (51mm) water below specimens. Sturdy, all-stainless steel construction with 14-gauge tanks and covers with 20-gauge cases and also includes external drain valve. MSA-130S version is fitted with a gas strut-assisted cover and drip shield. **Product Dimensions:** 24.5x16.5x15in (622x419x381mm), WxDxH.		8.3gal (31.4L)	20x12x8in (508x305x203mm)
Asphalt Water Bath, 120V/60Hz	MSA-130		
Asphalt Water Bath, 220V/50–60Hz	MSA-130F		
Asphalt Water Bath with Gas Strut Assist, 120V/60Hz	MSA-130S		
Asphalt Water Bath with Gas Strut Assist, 220V/50-60Hz	MSA-130SF		
Large Asphalt Water Bath holds nine 6in (152mm) or sixteen 4in (102mm) diameter specimens. Accurate electronic controls regulate water bath temperature to 140°F (60°C) to ±1% of set-point, well within specified Marshall water bath tolerances. Higher water temperatures can be achieved up to 212°F (100°C). A built-in variable speed magnetic stirrer assures even heat distribution and uniformity. Long-lasting all-stainless steel construction features 14-gauge tank and cover and fully insulated 20-gauge cases with external drain valve. The perforated 14-gauge bottom support shelf assures 2in (51mm) water level below specimens. The cover has a built-in drip shield and operates on gas-assist struts for easy lifting. **Product Dimensions:** 24.5x24.5x17in (622x622x432mm), WxDxH.		17.3gal (65.5L)	20x20x10in (508x508x254mm)
Large Asphalt Water Bath, 120V/60Hz	MSA-131		
Large Asphalt Water Bath, 220V/50–60Hz	MSA-131F		
Budget Water Bath is an efficient, economical 1,440 Watt unit with 4.5gal (17L) capacity. An automatic thermostat controls temperature from 200°–500°F (93°–260°C). Specimens are supported above the bottom on a perforated stainless steel bottom shelf to permit circulation. This model does not strictly meet ASTM/AASHTO guidelines, but is often used in this application for non-specification testing. **Product Dimensions:** 23.5x15.5x13in (597x394x330mm), WxDxH.		4.5gal (17L)	17x12x4.8in (432x305x122mm)
Budget Water Bath, 115V/60Hz	MSA-125		
Budget Water Bath, 230V/50Hz	MSA-125F		

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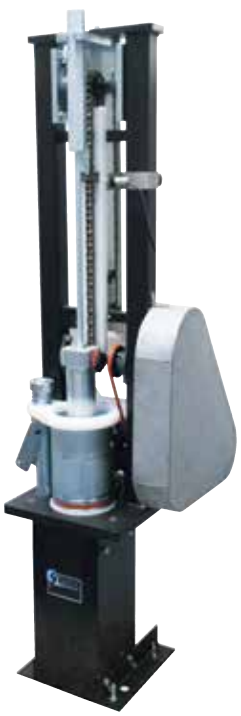
MS-10

MS-1

MS-2



MS-6

MARSHALL COMPACTORS

ASTM D5581, D6926; AASHTO R 68, T 245; PTM 705

Marshall Compactors are used to prepare molded test specimens for marshall stability load testing. Compacted, 4in (102mm) diameter specimens are suitable for mixes containing aggregates up to 1in (25.4mm) and compacted 6in (152mm) diameter specimens are preferred for maximum aggregate sizes up to 1.5in (38.1mm). All automatic Marshall Compactor models operate on 115V/60Hz power supplies. Add “F” suffix to specify models for 230V/50Hz operation.

Marshall Compactors

Description	Model
Manual Marshall Compactor allows manual compaction of a single 4in (102mm) Marshall asphalt specimen in a stationary mold. Included is an oak pedestal, hammer support and guide rod, 10lb (4.5kg) flat-face hammer, a MSA-100 4in (102mm) mold, base and collar assembly and a mold holder. **Product Dimensions:** 12x12x64in (305x305x1,626mm), WxDxH.	
Manual Marshall Compactor	MS-10
4in Mold, Base & Collar Assembly	MSA-100
Automatic Standard-Duty 4in (102mm) Compactor compacts Marshall specimens in a stationary 4in (102mm) mold. Automatic counter is set to the specified number of blows and stops at completion. MS-1 meets ASTM D6926 and provides 64 blows per minute. MS-1B operates at 55 blows per minute. The unit includes a painted oak pedestal with steel plate, a 10lb (4.5kg) flat-face hammer and a MSA-100 4in (102mm) mold, base and collar assembly. **Product Dimensions:** 20x12x66in (508x305x1,676mm), WxDxH. Specify compactor to deliver 55 or 64 blows per minute when ordering.	
Automatic Standard Duty 4in Compactor, 64 blows per minute	MS-1
Automatic Standard Duty 4in Compactor, 55 blows per minute	MS-1B
Additional Hammer Assembly	MSA-111
4in Mold, Base & Collar Assembly	MSA-100
Double or Triple Automatic Standard-Duty 4in (102mm) Rotating Compactors compact two or three Marshall asphalt specimens simultaneously in rotating molds. The bevel-face hammers and rotating base plates produce a consistent kneading action during compaction. Larger painted oak pedestals with steel plates accommodate compacting of multiple specimens. A single motor and counter controls the number of blows on multiple specimens and shuts off at completion. 10lb (4.54kg) bevel-face hammers and MSA-101 4in (102mm) mold, base and collar assemblies are included. **MS-2 Product Dimensions:** 25x20x64in (635x508x1625mm), WxDxH. **MS-3 Product Dimensions:** 33x17x49in (838x432x1246mm), WxDxH.	
Double Automatic Standard-Duty 4in Rotating Compactor	MS-2
Triple Automatic Standard-Duty 4in Rotating Compactor	MS-3
Additional Hammer Assembly	MSA-112
4in Mold, Base & Collar Assembly	MSA-101
Automatic Heavy-Duty Rotating 4in (102mm) Compactor compacts one 4in (102mm) diameter Marshall specimen in a rotating mold. Heavy-duty frames reduce structural and mechanical wear and tear during operation. The bevel-face hammer and rotating base plate produce a consistent kneading action during compaction. Molds are secured with a cam-action lever assembly. An automatic counter shuts off the unit at completion of the compaction process. Painted oak pedestal with steel plate, 10lb (4.5kg) bevel-face hammer and MSA-101 4in (102mm) mold, base and collar assembly are included. The MS-5 Automatic Compactor converts to compact 6in (152mm) Marshall specimens by adding the MSA-113 22.5lb (10.2kg) bevel-face hammer and MSA-106 6in (152mm) mold. **Product Dimensions:** 20x12x66in (508x350x1676mm), WxDxH.	
Automatic Heavy-Duty Rotating 4in Compactor	MS-5
Additional 4in Hammer Assembly	MSA-114
4in Mold, Base & Collar Assembly	MSA-101
Hammer Assembly for 6in Conversion	MSA-113
6in Mold, Base & Collar Assembly	MSA-106
Automatic Heavy-Duty Rotating 6in (152mm) Compactor compacts one 6in (152mm) diameter Marshall specimen in a rotating mold. Heavy-duty frame reduces structural and mechanical wear and tear during operation. The bevel-face hammer and rotating base plate produce a consistent kneading action during compaction. Molds are secured with a cam-action lever assembly. An automatic counter shuts off the unit at completion of the compaction process. Painted oak pedestal with steel plate, 22.5lb (10.2kg) bevel-face hammer and MSA-106 6in (152mm) mold, base and collar assembly are included. The MS-6 Automatic Compactor converts to compact 4in (102mm) specimens by adding the MSA-114 10lb (4.54 kg) bevel-face hammer and MSA-101 4in (102mm) mold. **Product Dimensions:** 24x21x65in (609x533x1651mm), WxDxH.	
Automatic Heavy-Duty Rotating 6in Compactor	MS-6
Additional 6in Hammer Assembly	MSA-113
6in Mold, Base & Collar Assembly	MSA-106
Hammer Assembly for 4in Conversion	MSA-114
4in Mold, Base & Collar Assembly	MSA-101

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MSA-100

MSA-106

MSA-100M

MSA-106M

MSA-101B

MSA-120

HM-514

MS-27

Marshall Compaction Accessories

Description	Model	Size, in (mm)	ASTM/ AASHTO
Marshall Mold Assemblies are three-part assemblies consisting of mold, base plate and collar constructed of sturdy, rust-resistant plated steel. 4in (102mm) or 6in (152mm) I.D. diameter molds are available for stationary or rotating Marshall Compactors as noted. Stationary molds are used with the MS-1 and MS-10 Marshall Compactors. Rotating molds are used with the MS-2, MS-3, MS-5 and MS-6 Marshall Compactors.			D5581 D6926/ R 68
4in Stationary Mold Assembly, Complete	MSA-100	4 (102)	
4in Rotating Mold Assembly, Complete	MSA-101	4 (102)	
6in Rotating Mold Assembly, Complete	MSA-106	6 (152)	
Marshall Mold Components are available as individual components for 4in (102mm) or 6in (152mm) Marshall Stability Molds for more efficient sample processing or as economical replacements. Sturdy, rust-resistant plated steel. Mold, Collar and Base components of 4in (102mm) diameter molds fit stationary or rotating Marshall Compactors as noted.			D5581 D6926/ R 68
4in Stationary Mold Only	MSA-100M	4 (102)	
4in Stationary Base Only	MSA-100B	4 (102)	
4in Rotating Mold Only	MSA-101M	4 (102)	
4in Rotating Base Only	MSA-101B	4 (102)	
4in Collar only, fits Stationary or Rotating Molds	MSA-100C	4 (102)	
6in Rotating Mold Only	MSA-106M	6 (152)	
6in Rotating Base Only	MSA-106B	6 (152)	
6in Collar only	MSA-106C	6 (152)	
Circular Paper Discs by Gilson are strong and tear-resistant with smooth edges. Choose between the MSA-120 designed for both 4in and 100mm or the MSA-121 for 6in and 150mm Marshall and Gyratory Molds. The Discs are 0.007–0.008in thick and made of 100lb paper stock.			D5581 D6925 D6926/ T 312
Paper Discs, 4in (100mm), pkg. of 1,000	MSA-120	3.875in	
Paper Discs, 6in (150mm), pkg. of 500	MSA-121	5.875in	
Sample Ejectors extract specimens from molds. HM-514 Ejector extracts specimens from 4in (102mm) asphalt or soil molds. HM-516 Combination Ejector extrudes either 4in or 6in (102 and 152mm) asphalt or soil samples. Adapter sets are purchased separately for 2, 2.5, or 3in (51, 64, or 76mm) diameter molds. These ejectors are 12,000lbf (53.4kN) manually-operated hydraulic jack frames. **Product Dimensions:** 9.5x10x24in (241x254x610mm).			D5581 D6926/ R 68
Sample Ejector, 4in	HM-514		
Sample Ejector, Combination 4in & 6in	HM-516	–	
Adapter Set, 2in	HMA-219	–	
Adapter Set, 2.5in	HMA-220	–	
Adapter Set, 3in	HMA-221	–	
Budget Sample Ejector MS-27 is a 3.95in (100mm) dia. x 0.5in (12.7mm) thick disc with a pedestal for 4in (102mm) specimen removal using a separate laboratory load frame.	MS-27	3.95 (100)	D5581 D6926/ R 68

VIDEO ONLINE

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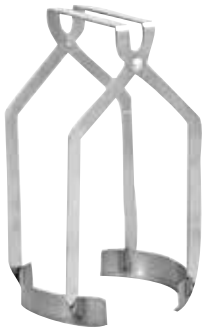
HM-687

HMA-696

HMA-694



HMA-697

BROVOLD SUPERPAVE GYRATORY COMPACTOR

ASTM D6925, D7229; AASHTO T 312

The rugged and proven Brovold Gyratory Compactor is unmatched for portability and ease of use when compacting hot mix asphalt specimens. This reliable self-contained model is built by Pine Instruments and is ideal for both mix design and QC/QA applications. The self-contained unit weighs only 304lb (138kg) and is easily transported to remote sites or mobile labs. An integrated industrial computer controls the entire specimen compaction cycle. After compaction parameters are entered through the simple, menu-driven controller and the prepared mold is set in place, just secure the gyratory head and press start. The system automatically applies consolidation pressure, induces the angle and gyrates the mold to the specified settings. At completion, the specimen is extruded with the same hydraulic ram used for compaction, eliminating handling of hot, heavy molds. Rigid tubular frame design and patented gyratory mechanism assure accurate, repeatable results.

The HM-687 Brovold Gyratory includes integrated data logging functionality designed by Pine to save or export data to a portable USB flash drive, or output directly to optional HMA-626 PCL Laser Printer. Up to ten completed tests are stored in the compactor's internal memory and data is also output to the two USB ports for flash drive and printer as well as a RS232 serial port. Test data can also be viewed in real time on the four-line digital display. Default settings of the HM-687 control compaction of specimens to the height, number of gyrations, compaction force and speed required by the standard test method. All of these parameters can be reset by the user for special applications and different materials. Default internal angle of gyration is 1.16° and 1.25° external. The angle can also be factory set to 0.82° internal if specified when ordering.

Compaction forces are supplied through a hydraulic/electro-mechanical system. Precision machined steel 150mm Mold Assemblies for the HM-687 are ordered separately. Each mold is 280mm overall height for maximum specimen heights of 200mm and include both top and bottom platens. Preparation, processing and handling efficiencies are improved by having extra molds on hand. A Mold Funnel Cap is included for proper placement of sample material in the mold. The user can select a specimen squaring function to specify the amount of time pressure is applied to a specimen after squaring, from 0 to 16 seconds in 2-second intervals. A magnet for lifting mold plates, Specimen Lifting Handle for 150mm specimens and Mold Tongs for handling 150mm molds are all included. The HMA-696 Complete Calibration Kit is available to verify height, force and external angle measurements. (see complete description in gyratory compactory accessories chart) Electrical requirements are 115V/60Hz for the HM-687 and 230V/50–60Hz for the HM-687F. **Product Dimensions:** 30x21.3x55.4in (760x540x1,410mm), WxDxH.

Brovold Superpave Gyratory Compactor	
Brovold Superpave Gyratory Compactor, 115V/60Hz	HM-687
230V/50–60Hz	HM-687F
Accessories	
150mm Gyratory Compactor Mold Assembly	HMA-694
Specimen Lift Handles, 150mm	HMA-697
Complete Calibration Kit	HMA-696
Rapid Angle Measurement (RAM) Device	HMA-621
Laser Printer	HMA-626

technote

Brovold Superpave Gyratory Compactor Specifications

Number of Gyrations	0 to 299
Speed of Gyrations	20–40 gpm (Default is 30±0.5)
Compaction Force	300 to 600kPa (Default is 600±18.0kPa)
Angle of Gyration[1]	1.16° Internal, 1.25° External
Specimen Squaring	0 to 16 seconds, 2 second intervals
Mold Dimensions	150x280mm, ID dia. x H
Specimen Ht.	10 to 200mm
Dimensions	30x21.3x55.4in (760x540x1,410mm), WxDxH
Power Requirements HM-687 HM-687F	 115V/60Hz, 15 A, 1ph 230V/50–60Hz, 10A, 1ph

([1]Can be factory set to 0.82° if specified at time of order.)

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HM-685

HMA-624

HMA-616

technote

Superpave Gyratory Compactor Specifications

Number of Gyrations	0 to 999
Speed of Gyrations	30 gpm
Compaction Force	200 to 999kPa
Angle of Gyration	0.00 to 1.50° (Selectable internal or external)
Mold Dimensions	150x250mm, dia. x H 100x250mm, dia. x H
Specimen Ht.	0 to 200mm
Dimensions	34.5x35.5x54in (876x902x1,372mm), WxDxH
Power Requirements HM-685 HM-685F HM-685S HM-685SF	 115V/60Hz, 12 A, 1ph 230V/50–60Hz, 6 A, 1ph 115V/60Hz, 12 A, 1ph 230V/50–60Hz, 6 A, 1ph

SUPERPAVE GYRATORY COMPACTOR

ASTM D6925, D7229; AASHTO T 312

The Superpave Gyratory Compactor is made in the USA by Pine Instruments and meets all Superpave requirements for preparation of hot mix asphalt specimens. User-controlled settings for compaction pressure, angle adjustment, gyrations and adaptability for different size molds make this a versatile and reliable unit. An integrated computer with two USB ports and an Ethernet port controls settings through a simple menu interface. A four-button control panel simplifies machine operation. The computer also controls the angle of gyration and allows the user to switch between internal and external angle settings with little effort. The control system is network compatible for complete data management. Number and angle of gyrations, specimen height and consolidation pressure can be sent to a network or stand-alone PC, stored on a flash drive, or printed directly with the optional HMA-626 PCL Laser Printer.

Operation modes can be set to a specified number of gyrations, specified sample height, or a locking point, all at a selected internal or external angle. Total gyrations can be selected from 0 to 999 at 30 ±0.5 gyrations per minute and 0° to 1.50° internal or external angle, with compaction pressure selectable from 200 to 999kPa. Final specimen height is user-controlled to 200mm. A built-in specimen extruder and a completely enclosed compacting chamber are convenience and safety features, minimizing lifting of hot, heavy molds and shielding moving parts.

The HM-685 is equipped for 150mm diameter specimen sizes, but can be configured to use 100mm or 4.0in molds with the optional Conversion Kit. Precision machined steel Mold Assemblies are ordered separately in 150mm, 100mm and 4.0in (101.6mm) inside diameters. Order extra molds for more efficient sample preparation and processing. Overall mold height is 250mm for all diameters and compacted specimen height is 200mm. A bottom platen is supplied with each mold. A Mold Funnel and Specimen Lift handle are optional accessories for each machine. Internal angle of gyration and gyratory shear force measurement are confirmed using the HMA-621 Rapid Angle Measurement Device, purchased separately. A 5,000lbf (22.2kN) Load Ring and Gage Blocks are available to verify force and spacing requirements. Both are certified and NIST traceable. Optional HMA-629 Cooling Door for the compaction chamber reduces waiting times for specimen cooling and extrusion for asphalt mixtures containing rubber.

A specimen squaring function resists specimen expansion issues when testing hot mix asphalt with ground tire rubber content. Power requirements are 115V/50-60Hz, or 230V/50-60Hz for the HM-685F. Inquire for other electrical configurations. Machine weight is approximately 880lb (400kg). **Product Dimensions:** 34.5x35.5x54in (875x900x1,375mm), WxDxH.

The HM-685S is an identical Superpave Gyratory Compactor, which has been factory-equipped to measure and graph gyratory shear, the force required to gyrate the specimen. The data can be depicted as gyratory shear force vs. gyrations or as shear force vs. percent air voids. This information provides insight into the workability and compactability of a mix.

Superpave Gyratory Compactor	
Superpave Gyratory Compactor, 115V/60Hz	HM-685
230V/50–60Hz	HM-685F
Superpave Gyratory Compactor w/Shear Measurement, 115V/60Hz	HM-685S
230V/50–60Hz	HM-685SF
Accessories	
150mm Gyratory Compactor Mold Assembly	HMA-615
100mm Gyratory Compactor Mold Assembly	HMA-616
4.0in Gyratory Compactor Mold Assembly	HMA-617
Gyratory Compaction Mold Funnel, 150mm	HMA-618
Conversion Kit for 100mm and 4.0in Molds	HMA-619
Specimen Cooling Door	HMA-629
Specimen Lift Handles, 150mm	HMA-624
Specimen Lift Handles, 100mm and 4.0in	HMA-630
External Angle Measurement Jig	HMA-628
Laser Printer	HMA-626
Rapid Angle Measurement Device	HMA-621

HMA-621

HMA-696

HMA-694

HMA-622

HMA-628

MSA-120

MSA-121

HMA-626

SUPERPAVE™ GYRATORY COMPACTOR ACCESSORIES

ASTM D6925, D7229; AASHTO T 312, T 344

Superpave™ Gyratory Compactor Accessories

Description	Model
Rapid Angle Measurement (RAM) Device verifies internal angle of gyration for any superpave gyratory compactor. It takes only a few minutes to safely and efficiently complete the angle measurements in 150mm diameter gyratory molds as required by AASHTO T 344. Measurements are taken at room temperature, avoiding the handling of hot molds. The self-contained instrument is simply placed inside the mold after set-up with the push-button controls. The compactor is briefly operated, then the ram is removed, and the result is read on the led display. No computer interface is required, no asphalt mix is needed, and no test data is stored. A NIST traceable certified calibration tube is included to verify operation of the ram device. Certification is valid for one year. Contact gilson for recertification. **Product Dimensions:** 0.875X6in (22x152mm), WxH.	HMA-621
Complete Calibration Kit For HM-687 has everything required to calibrate the height, force, and gyratory angle of the brovold gyratory compactor. A load cell w/digital display, a height tube, and an external angle calibration device are all nist traceable and packed in the included plastic carrying case. Inquire for the same kit with ISO 17025 certification.	HMA-696
Superpave Gyratory Mold Assemblies for HM-687 have 150mm inside diameter, 280mm overall height and produce specimens up to 200mm in height. The machined stainless-steel molds fit Brovold gyratory compactors only and include top and bottom platens.	HMA-694
Calibration Accessories for HM-685 are certified and NIST traceable. Models are purchased separately to verify applied loads and height measurements for the Superpave Gyratory Compactor. The Load Ring has 5,000lbf (22.2kN) capacity and is supplied with a dial gauge. Gage Blocks are supplied individually, and a total of four are required for verification. The Gyratory should be verified semi-annually. External Angle Measurement Jig includes a sturdy frame with two digital dial indicators so that the external angle can be verified. HMA-622 **Product Dimensions:** 10.25x7.25in (260x184mm), WxH. HMA-623 **Product Dimensions:** 3x1in (76x25mm), WxH.	
Load Ring, 5,000lbf, Certified	HMA-622
Gage Block, Certified	HMA-623
External Angle Measurement Jig	HMA-628
Superpave Gyratory Mold Assemblies for HM-685 Gyratory Compactor are available with 150mm, 100mm and 4.0in inside diameters. A Conversion Kit is required to use 100mm or 4.0in molds. All molds are machined stainless-steel, have 250mm overall height and produce maximum 200mm height specimens. A bottom platen is included with each mold.	
150mm Gyratory Compactor Mold	HMA-615
100mm Gyratory Compactor Mold	HMA-616
4.0in Gyratory Compactor Mold	HMA-617
Large Display Digital Stopwatch is convenient for measuring gyration speed of gyratory compactors during verification. Click-stop controls with positive tactile feedback and large LCD display with split interval, clock and calendar functions. Timer measures to 30min x 0.1sec, or 24hr x 1sec. Housed in a rugged ABS plastic case. A vinyl case is included. **Product Dimensions:** 3x2.5x0.75in (76x64x19mm), WxDxH.	MA-30
Circular Paper Discs are strong and tear-resistant with smooth edges. Choose between the MSA-120 designed for both 4in and 100mm or the MSA-121 for all 6in and 150mm Marshall and Gyratory Molds.	
4in (100mm) Paper Discs, pkg. of 1,000	MSA-120
6in (150mm) Paper Discs, pkg. of 500	MSA-121
Laser Printer with USB port is a wide format using Printer Command Language (PCL). Data will automatically be printed during a test if a printer is connected and turned on. Data can also be printed from saved test data files. Type A-B USB cable in 10ft (3M) length is included. **Product Dimensions:** 14.25x7in (362x178mm), WxH.	HMA-626

SP-55

SPA-22 shown with SPA-23 and SPA-24

HMA-68

SPA-21

GILSON QUARTERMASTER ASPHALT SAMPLE DIVIDER

ASTM D979; AASHTO R 47

- **Quickly and safely divides bulk asphalt and aggregate samples**
- **Rugged construction stands up to field use**
- **New Bucket Liner sample bags streamline sample handling**
- **Proven history of accurate performance**

Gilson's SP-55 Quartermaster quickly and accurately divides the large bulk samples required in Superpave® specifications for quality control analysis. Hot-mix asphalt samples of 120lb (55kg) or more are easily reduced, ensuring representative samples for consistent laboratory results. The large hopper reduces handling of hot material during preparation of laboratory specimens. Quartermaster has a proven history of significantly reducing bias in sample reduction.

Once a bulk hot-mix asphalt sample is loaded evenly into the hopper, the handle is released and the sample falls through the divider and distributed into the four included galvanized steel buckets. SPA-22 Bucket Liner Sample Bags simplify collection and handling of divided specimens and eliminate cleaning of the sample buckets. One person can easily collect and secure samples. Fabric and thread of the durable cotton Bucket-Liner bags are temperature-rated to 400°F (204°C). Double loop Wire Ties and Wire Tie Twister allows bag openings to be quickly and securely closed. Only occasional clean-up is required to prevent buildup on the exposed splitting surfaces.

Rugged two-part steel construction stands up to field conditions and allows portability between jobsites. The SPA-21 Quick-Funnel Hopper Insert drops into the top of the Quartermaster to significantly reduce hopper volume and allow accurate reduction of smaller samples. Four Galvanized Steel Sample Buckets are included. Extras can be ordered to increase sampling efficiency. Four Bucket Liner Sample Bags are also included. Order additional liner bags in quantities of 10, 100, or 1,000. SPA-23 8in Double-Loop 16 gauge Wire Ties securely close bag openings when used with the SPA-24 Wire Twister. HMA-68 Material Handling Chute allows fast and easy loading of hopper. **Product Dimensions:** 17x14x48in (356x432x1,219mm), WxDxH.

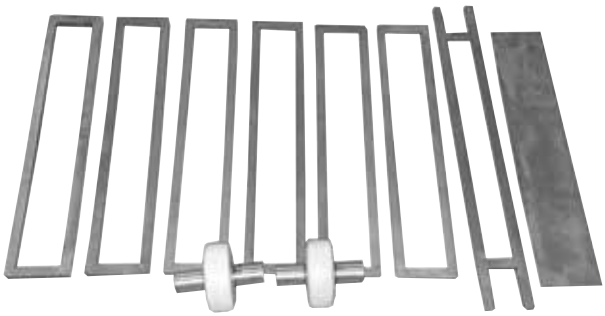
technote

Bucket Liner Sample Bags optimize sample collection efficiency. When inserted as a liner in a standard bucket with 3 to 6 gallon (11 to 22L) capacity, the sturdy cotton cloth bag stays wide open for easy collection of bulk soil, aggregate or asphalt samples. Opening is secured using optional Double-Loop Wire Ties and Wire Tie Twister. Fabric and thread of the bags is temperature-rated to 400°F (204°C).

Gilson Quartermaster Asphalt Sample Divider	
Gilson Quartermaster Asphalt Sample Divider	SP-55
Accessories	
Quick-Funnel Insert	SPA-21
Bucket Liner Sample Bags, qty. of 10	SPA-22
Bucket Liner Sample Bags, qty. of 100	SPA-22C
Bucket Liner Sample Bags, qty. of 1,000	SPA-22K
8in Double-Loop Wire Ties, qty. of 50	SPA-23
Wire Tie Twister w/Plastic Grip	SPA-24
Galvanized Steel Sample Buckets	MA-950
Material Handling Chute	HMA-68

HM-457

Inside view of HM-457



HMA-821

ASPHALT PAVEMENT ANALYZER JUNIOR (APA JR.)

AASHTO T 324, T 340; TEX 242-F; FAA/P401

The APA Jr. is a multi-functional two-wheel Loaded Wheel Tester (LWT) to determine rutting, fatigue cracking and moisture susceptibility of hot, warm or cold asphalt paving mixes in dry or submerged conditions. This versatile CE Approved model from Pavement Technology has a small footprint and meets all requirements for the AASHTO T 324 Hamburg wheel tracking test and AASHTO T 340 rut test. The HM-457 can also be equipped to perform a variety of other tests including high contact pressure (250psi) testing for airport runways and taxiways, in accordance with FAA/P401 test method, microsurfacing/slurry seal testing and low-temperature fatigue and studded wheel tests with the optional chiller. The unique frequency drive of the APA Jr. allows mixes to be tested at multiple speeds and multiple rates of loading.

A sample holding assembly positions the specimens in molds under the wheels for testing. Heating and cooling of the main chamber is accomplished by a series of heating elements and the optional HMA-820 chiller. With the chiller, temperature can be controlled from -9° to 80°C (-15° to 176°F). A 15gal (57L) stainless steel water tank circulates temperature controlled water to the reservoir, which maintains water levels about 0.5in over specimens during the test. Temperature can be maintained up to 80°C (176°F). Vertical measurements are determined using linear position transducers and rut depth is monitored with transducers mounted inside the pneumatic cylinders.

The APA Jr. is equipped with a PLC based control system, operated through the included laptop computer, pre-loaded with Gen 5 software. All calibration and operation is performed through the laptop computer. Data is plotted and displayed in numeric and graphical format. Five or more measurements on a beam and three or more on a cylindrical specimen are collected in each pass and the data is calculated to 0.00001mm. The wheel tracking assembly operates from 0 to 60 cycles (120 passes) per minute, with stroke and speed adjustable for Hamburg Testing. Wheel loading is applied through independent pneumatic cylinders and can be changed during a test cycle.

Four cylindrical molds of ultra-high molecular weight (UHMW) plastic are provided with the APA Jr., two 150x62mm dia.xH for Hamburg tests and two 150x75mm dia.xH for rut and moisture damage tests. The molds can accommodate gyratory, Marshall, Hveem or core specimens. Two Hamburg-type solid wheels and two APA concave wheels with high-pressure hoses are also included. Both are solid stainless steel construction. Additional beam-type molds and wheels for studded wheel, slurry seal and fatigue tests are also available. Equipment for microsurfacing/slurry seal testing is an optional set that includes molds, rubber wheels and software and is available as HMA-821. An optional equipment set for studded wheel and fatigue testing at temperatures to -5°C includes cold plate, molds, studded wheels and Software and is available as HMA-822. A source of clean, dry compressed air at 120psi (8.3bar) and 8CFM (226LPM) is required. Model HM-457N is an APA Jr. configured to perform only AASHTO T 324 (Hamburg) wheel tracking testing. Electrical requirements are 208 or 230V/50–60Hz, 40A single phase. Unit weight is approximately 1,300lb (590kg). **Product Dimensions:** 27x45x61in (69x114x155cm), WxDxH.

Asphalt Pavement Analyzer Junior (APA Jr.)	
APA Jr., 208 or 230V/1ph/50–60Hz	HM-457
APA Jr., Hamburg Wheel Test Only, 208 or 249V/50–60Hz/1ph	HM-457B
Accessories	
Low-Temperature Studded Wheel Testing Kit	HMA-822
Microsurfacing/Slurry Seal Testing Kit	HMA-821
Chiller for APA Jr., 208V/50–60Hz	HMA-820
Wheel Tracker Sample Trimming Jig	HMA-815

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ASPHALT PAVEMENT ANALYZER (APA)
AASHTO T 324, T 340; TEX 242-F; FAA/P401

The Asphalt Pavement Analyzer (APA) by Pavement Technology is a three-wheel, multi-function Loaded Wheel Tester (LWT) for evaluating rutting, fatigue cracking and moisture susceptibility of both hot and cold asphalt mixes. Samples can be tested in dry or submerged conditions in the environmentally controlled chamber. An exclusive High-Pressure feature can performs rut testing at contact pressures of 250psi or more on mix designs for airport runways and taxiways in accordance with FAA/P401 test methods. The APA also conforms to AASHTO methods T 324 Hamburg test with solid steel wheels and T 340 APA rut test with concave wheels loading high-pressure rubber hoses.

This versatile model has a unique drive system allowing multiple speeds and load rates to be applied simultaneously to separate samples. Samples can be tested from gyratory, Marshall, or vibratory beam specimens molded in the laboratory, or from field cores cut from existing pavement. Three rectangular slab or beam specimens or six cylindrical specimens can be tested at the same time. A built-in chiller for low temperature fatigue testing on beam specimens is included. Optional equipment for studded wheel and fatigue testing at temperatures to -5°C includes cold plate, molds, studded wheels and software and is available as HMA-826. Optional equipment to perform microsurfacing/slurry seal testing includes molds, rubber wheels and software and is available as HMA-828.

Operation is controlled through a PLC-based system with new Gen 5 Software and data is collected on a PC. Measurements are plotted and data is displayed in numeric and graphical format. In a single pass, five or more measurements can be collected on a beam specimen and three or more on a cylindrical specimen. This extremely accurate system calculates the data to 0.00001mm. The drive system operates the wheel tracking assembly from 0 to 60 cycles (120 passes) per minute. Both speed and stroke are adjustable for Hamburg testing. Wheel loading is applied with controlled contact pressure on beam or cylindrical samples for rutting, fatigue and moisture damage testing. Independent pneumatic cylinders generate adjustable loads to each of the three wheels applying contact pressure on the specimens.

The Sample Holding Assembly locates the sample molds properly under the loading wheels for testing. A sliding tray makes it easy to load and position the samples and is locked against the frame by two toggle clamps. Temperature control of the main chamber from 5° to 80°C ±1.5°C (41° to 176°F) is accomplished by a series of heating strips and a cooling unit, regulated by a microprocessor-based controller. The 30gal reservoir can be raised with a pneumatic cylinder and flooded to a constant water level over the top of the test specimen for submerged testing. A weir valve allows water to drain back to the 35gal stainless steel storage tank where water temperature is maintained from ambient to 80°C (176°F). Sample pre-conditioning shelves are located in the base of the APA to bring three beam or six cylindrical specimens up to desired test temperature.

HM-459

HMA-815

The Asphalt Pavement Analyzer is supplied fully equipped to run a variety of loaded wheel tests. Concave wheels to perform rut and moisture testing, solid wheels for fatigue and Hamburg testing are included in sets of three each. Wheels are stainless steel and comply with requirements for each test. Four sets of High Density Polyethylene Molds, 300x125x75mm LxWxH for rut testing, 150x75mm dia.xH for rut and moisture testing, 300x125x75mm LxWxH for fatigue testing and 300x150x62mm LxWxH for Hamburg tests are also included, each as a set of three. The Wheel Tracker Sample Trimming Jig prepares asphalt specimens or cores in a sample saw with a single straight cut. The cut ends of two specimens fit together in the sample fixture for rut and moisture testing. This Jig fits most popular sample saws and mounts quickly with slotted holes, bolts and nuts. Sturdy aluminum construction.

Three 3/4in (19mm) high-pressure rubber hoses are used in conjunction with concave wheels for the AASHTO T 340 Rut Test and with the high pressure loading feature for airport runway and taxiway design. A source of clean, dry compressed air at 120psi (8.3bar) and 8CFM (226LPM) is required. Electrical Requirements are 208V/60Hz, 40A Single Phase. Unit weight is approximately 3,000lb (1357kg). **Product Dimensions:** 35x70x80in (889x1778x2032mm), WxDxH.

Asphalt Pavement Analyzer (APA)	
Asphalt Pavement Analyzer (APA), 208V/60Hz/1ph	HM-459
Accessories	
Low-Temperature Studded Wheel Testing Kit	HMA-826
Microsurfacing/Slurry Seal Testing Kit	HMA-828
Wheel Tracker Sample Trimming Jig	HMA-815

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RICE TEST SET-UP

The SGA-5R Rice Shaker agitates the pycnometer containing an asphalt sample under vacuum. Vibratory action dislodges entrapped air, which is evacuated by the vacuum pump. The MA-170 Digital Absolute Pressure Manometer measures vacuum applied to the sample and the SG-70 Air/Gas Dryer Tube and indicating Drierite prevents water from entering the vacuum pump.

VIDEO ONLINE

SGA-5R shown with SG-16A

Close up of EZ Clamp

Close up of Alternate Clamp

MA-170

SGA-5R shown with GW-76 & SGA-8

RICE SHAKER

ASTM C128, D854, D2041, D4867; AASHTO T 84, T 100, T 209; TXDOT TEX-227-F

- **Consistent, repeatable agitation for Asphalt Rice Test and other specific gravity determinations**
- **Variable vibration control allows for setting optimum agitation**
- **Automatic operation eliminates manual agitation and operator error**

The Gilson Rice Shaker performs consistent, automatic agitation of Asphalt Rice Test vacuum pycnometers, freeing lab technicians for other duties. It is also a useful deairing device for fine aggregate and soil specific gravity tests described in ASTM C128 and ASTM D854, as well as sample preconditioning for ASTM D4867 and AASHTO T 209 test methods.

The Rice Shaker features built-in 0–99 min. digital timer with 1 second accuracy, a vibration speed controller and a three-position switch for manual or timed operation–all front panel mounted for easy use. Variable speed settings closely control agitation to avoid stripping of asphalt. The painted steel case has non-slip rubber feet so no mounting is required.

The SGA-5R includes fitted top and bottom plates for exact fit with SG-16A or SG-18A Aluminum Pycnometers. Adapter Sets are available for other Pycnometers and Flasks. Inquire for fitting other containers.

Gilson's exclusive EZ-Clamp system quickly secures the pycnometers or flasks. Push the buttons, slide into place and a quick twist secures the container. The SGA-12 EZ-Clamp Upgrade Kit is available to retrofit older Gilson Rice Shakers. The optional SGA-11 Alternate Clamping System has two threaded steel knobs that tilt to slide freely on the clamping rods, then tighten with a few turns for secure clamping.

Optional MA-170 Digital Residual Pressure Manometer accessory precisely measures applied vacuum during testing. NIST certified model is available as MA-170C. SGA-5RT has modified vibration characteristics to meet Texas DOT requirements. **Product Dimensions:** 13x14x19in (330x356x483mm), WxDxH.

Rice Shaker	
Rice Shaker, 115V, 50/60Hz	SGA-5R
Rice Shaker, Texas, 115V, 50–60Hz	SGA-5RT
Accessories	
Adapter Set for SG-15 Pycnometer	SGA-7
Adapter Set for GW-74, GW-75, GW-76, SG-500, SG-24, SG-2 Pycnometer(s)	SGA-8
Digital Absolute Pressure Manometer, 115V/60Hz	MA-170
230V/50Hz	MA-170F
Digital Absolute Pressure Manometer, NIST Calibrated, 115V/60Hz	MA-170C
Alternate Clamping System	SGA-11
EZ-Clamp Upgrade Kit	SGA-12

RICE TEST WITH AUTORICE™ CONTROLLER SYSTEM SET-UP

The new AutoRice™ Controller System allows precise control of vacuum pressure and time while monitoring SGA-5R Rice Shaker vibration energy for deairing of samples. Accuracy and repeatability is increased, while decreasing the need for constant attention to the procedure.

NEW

SG-35 AutoRice™ Controller

SG-36 AutoRice™ Controller and PumpSaver™

AUTORICE™ DIGITAL MANOMETER AND CONTROLLER

ASTM D2041; AASHTO T 209, T 283

The AutoRice™ Digital Manometer and Controller precisely measures vacuum and regulates the vacuum pressure setting and time. The device can also be equipped to monitor shaker vibration energy during theoretical maximum specific gravity testing (Rice Test) of hot-mix asphalt samples. Careful control of these three important factors can mean dramatic improvements in inter-laboratory repeatability and accuracy. Variations in acceleration and frequency energy produced by rice shakers can create repeatability issues and may cause stripping of the sample. Actual shaker energy profiles help establish parameters for adjustment of settings between different shakers.

With the push of a button, the AutoRice™ Controller starts the vacuum pump, regulates vacuum pressure, controls vacuum time and displays vacuum pressure. The optional SGA-126 Shaker Sensor attaches to the pycnometer and is connected to the controller's USB port to measure vibration acceleration and frequency. Data from the sensor can be used to calculate a "shaker factor" to establish proper vibration levels. The Controller is easy to setup with menu-driven software and replaces traditional analog or digital manometers. Sample weights can be entered and the system calculates maximum specific gravity results. Data from each test cycle can be downloaded to a PC via the USB port for review to assure adherence to test specifications. Documented test data can be stored and shared or emailed. The Controller and Shaker Sensor work well with Gilson's SGA-5R Rice Shaker and are compatible with glass, metal or plastic pycnometers. Compact design allows benchtop placement or easy wall-mounting of the controller. The SG-35 also automates the saturation process for AASHTO T 283 Moisture-Induced Damage specimens. The Controller is equipped with a 3/8in (10mm) hose barb connection and controls vacuum pumps up to 3/4hp to ±0.4mm at 27.5mm Hg. **Controller Dimensions**: 12x4x9in (305x102x229mm), WxDxH.

Gilson recommends use of the SGA-128 PumpSaver™ with the SG-35 AutoRice™ or with any laboratory vacuum pump. PumpSaver™ is an air drier to protect vacuum pumps and optimize efficiency. The high-performance thermoelectric (Peltier) chamber chills incoming air, condensing moisture and removing it before it reaches the vacuum pump, eliminating the need for elaborate moisture traps and desiccant cartridges. It also reduces resistance to air flow, maximizing pump efficiency and increasing service life. The pump reaches the desired vacuum immediately, enhancing accuracy and repeatability. The unit has one inlet and one outlet port for connection between the vacuum pump and pycnometer, using 3/8, 7/16 or 1/2in (10, 11, or 13.5mm) ID tubing, purchased separately. The AutoRice™ and PumpSaver™ devices can be purchased together as model SG-36. Both models operate on nominal 120 to 240V/ 50 or 60Hz electrical supplies. **PumpSaver Dimensions:** 11x8x8in (280x203x203mm), WxDxH.

AutoRice™ Digital Manometer and Controller System	
AutoRice™ Digital Manometer and Controller, 120–240V/50–60Hz	SG-35
AutoRice™ Digital Manometer and Controller w/ PumpSaver™, 120–240V/50–60Hz	SG-36
Accessories	
Shaker Sensor	SGA-126
PumpSaver™ Air Drier, 120–240V/50–60Hz	SGA-128
3/8in ID Reinforced Vinyl Tubing, per foot	WT-4B

VIDEO ONLINE

SG-20 shown with SGA-120, OBX-512 & SG-7A

HM-649

SGA-125

NEW

MA-170

SPECIFIC GRAVITY BENCH

ASTM C20, C127, C642, C830, D1188, D2041, D2726; AASHTO T 85, T 166, T 209, T 275

The SG-20 Specific Gravity Bench allows easy weighing of suspended samples in water for relative density determinations of aggregates, hardened concrete, bituminous mixtures, refractory brick and similar materials. Bench is sturdy painted steel and features three 2in (51mm) diameter holes in the top for suspension of samples. The lower support doubles as a shelf that can be adjusted to fit Gilson 30gal (114L) or 44gal (170L) Plastic Water Tanks. Requires assembly. **Product Dimensions:** 31x25x46in (787x635x1,168mm), WxDxH.

Heavy-duty polyethylene water tanks are ordered separately. Both 0.25in (6.4mm) thick molded tanks are seamless and translucent for water level visibility and equipped with drain and overflow outlets. Maximum operating temperature is 140°F (60°C). SGA-120 has 30gal (114L) capacity with dimensions of 24x18x18in (610x457x457mm), LxWxD. SGA-122 has 44gal (170L) capacity and 24x18x24in (610x457x610mm) WxDxH and is preferred for ASTM D2041, AASHTO T 209 and similar tests.

HM-651 Heater and HM-655 Circulator or alternate HM-649 Portable Heater/Circulator are accessories for temperature control. Use SGA-130 Locking Caster Set for portability of the bench. SGA-135 Mega Weighing Cradle holds 4,000 gram pycnometers and solid specimens for weighing. Stainless steel SGA-125 Large Weighing Cradle holds 2,000 gram, SG-16A pyconmeters. SGA-119 Small Weighing Cradle is useful for weighing Marshall and field core specimens. SGA-135, SGA-125 and SGA-119 dimensions are: 10x6x17in (254x152x432mm), 10x6x12in (254x152x305mm) and 4x4x6.5in (102x102x165mm) respectively.

Specific Gravity Bench	
Specific Gravity Bench & Tank Shelf (without Tank), 115V/60Hz	SG-20
Accessories	
Water Tank 30 gallon, 18in deep	SGA-120
Water Tank 44 gallon, 24in deep	SGA-122
Small Density Weighing Cradle	SGA-119
Large Density Weighing Cradle	SGA-125
Mega Density Weighing Cradle	SGA-135
Tank Heater	HM-651
Tank Circulator	HM-655
EZ Mount Heater/Circulator	HM-649
Locking Caster Set	SGA-130
Wire Basket for ASTM C127	SG-7A

DIGITAL ABSOLUTE PRESSURE MANOMETERS

ASTM D2041; AASHTO T 209

MA-170 Digital Absolute Pressure Manometer is a safe, accurate and environmentally friendly alternative for precise measurement of vacuum levels. These models meet the requirements of ASTM D2041 and AASHTO T 209 to measure specific gravity and density of asphalt mixtures, often called the Rice Test. The mercury-free gauge uses an absolute pressure transducer for instant digital display of applied vacuum from 0—1,000mm Hg. Resolution is 0.1mm. Accuracy is ±0.5% of full scale. A 0.25in hose barb connection with a needle valve is supplied for vacuum tubing.

The MA-170C version is supplied with a certificate of NIST calibration to meet requirements of AASHTO T 209. This model undergoes multi-point calibration at 25, 30 and 35mm Hg on NIST traceable equip-ment. The same NIST calibration or recalibration is available for existing MA-170 Digital Manometers by ordering MAA-25 and sending the units in. Contact Gilson customer service for shipping instructions.

Both models are powered by a 9V battery or AC adapter, both included. Automatic shut-off saves power in battery mode. Adapter included with MA-170F and MA-170FC operates on 230V/50Hz. **Product Dimensions:** 3.1x6.5x1.18in (78.7x165.1x30mm), WxDxH.

Digital Absolute Pressure Manometers	
Digital Manometer, 115V/60Hz	MA-170
230V/50Hz	MA-170F
Digital Manometer, NIST Calibration, 115V/60Hz	MA-170C
230V/50Hz	MA-170FC
Digital Manometer Recalibration	MAA-25

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SG-16A

SG-15

SG-18A

Specific Gravity Pycnometers

Description	Model	Test Method
2,000g Aluminum Pycnometer is 7.5x6in (191x152mm) dia.xD and tests a maximum 2,000g sample with aggregates up to 0.75in (19.1mm). A transparent vacuum lid and a second tapered aluminum lid with capillary bore are included to allow use as a volumeter for specific gravity of compacted mixes. Vacuum hose, quick-disconnect and a 3/8in (9.5mm) threaded aspirator vacuum source are included. **Product Dimensions:** 8.125x6.375in (206x162mm), dia.xH.	SG-16A	ASTM D2041 AASHTO T 209
4,000g Aluminum Pycnometer with higher capacity is 7.5x9in (191x229mm) dia.xD with enough volume for specimens up to 4,000g. Included transparent acrylic Vacuum Lid and Aluminum Lid with capillary bore are identical to SG-16A lids for use in specific gravity of compacted mixtures. Vacuum hose, quick-disconnect and a 3/8in (9.5mm) threaded aspirator vacuum source are also included. **Product Dimensions:** 8.125x9.375in (206x238mm), dia.xH.	SG-18A	ASTM D2041 AASHTO T 209
6,000g Pycnometer has large, 10L capacity for mixes with aggregates up to 2in (51mm). High strength plastic vessel with O-ring seal is 9.38in (238mm) I.D. An adjustable valve controls water level and a perforated plastic shelf is included. The shelf supports three 4in (102mm) dia. specimens. Vacuum hose, quick-disconnect and a 3/8in (9.5mm) threaded aspirator vacuum source are included. **Product Dimensions:** 10.75x13.3in (273x338mm), dia.xH.	SG-15	ASTM D2041 AASHTO T 209
Hubbard & Hubbard-Carmick Specific Gravity Bottles determine specific gravity of semi-solid bituminous materials, asphalt cements and soft tar pitches. Included stopper is concave on lower surface and has 1.6mm center hole for air evacuation. Hubbard bottle is 1.06x2.75in (27x70mm), dia.xH with 24ml capacity. Conical Hubbard-Carmick bottle is 1.54x1.7in (39x43mm), dia. (at bottom) xH (without stopper) with 25ml capacity.		ASTM D70 AASHTO T 43
Hubbard Specific Gravity Bottle	SG-62	
Hubbard-Carmick Specific Gravity Bottle	SG-63	
Filter Flasks are thick-walled glass with side tubulations for 3/8in (9.5mm) ID vacuum tubing. 2L and 4L sizes are often used as pycnometers and GW-76 4L Flask meets ASTM and AASHTO specifications for use as a vacuum container for weighing in air only. 1L flasks can be used in line with SGA-105 #4 Drierite granules as a moisture trap for vacuum pump protection. Neoprene stoppers have 3/8in (9.5mm) hole.		ASTM D2041 AASHTO T 209, T 283
1L Heavy-Wall Flask	GW-74	
2L Heavy-Wall Flask	GW-75	
4L Heavy-Wall Flask	GW-76	
#8 Stopper for GW-74 Flask	GWA-1	
#9 Stopper for GW-75 Flask	GWA-2	
#12 Stopper for GW-76 Flask	GWA-3	

SG-62 SG-63

GW-76, GW-75 & GW-74
shown with Stopper Fittings

NEW! Ship Weight Index
The Estimated Ship Weight for every product is easy to find in the NEW Ship Weight Index!

www.globalgilson.com
Now Mobile Friendly!

HM-649

SGA-125

SGA-135

SGA-119

SGA-105

SG-70

MA-198

WT-4B

SGA-128

Specific Gravity Accessories

Description	Model	Test Method
EZ Mount Heater/Circulator for laboratory water bath tanks combines circulation and temperature functionality into a compact and portable unit. Mounts securely to straight or curved tank walls with an adjustable clamp and dismounts quickly for use on other tanks. Compact Design features convenient sliding control to adjust flow rate and easy to read 3.25" LCD backlit display with onscreen prompts. Tough plastic protective housing is easy to keep clean. Over temperature and low-liquid level shut-offs are set manually to assure safe operation. HM-649 has 1,100-Watt heat output and adjustable pump flow up to 3.4gpm (12.8Lpm) to heat and maintain water in SGA-120 and SGA-122 tanks to the required temperature ranges. Smaller tanks up to 7.4gal (28L), temperatures are controlled to ±0.13° from ambient + 20° to 275°F (±0.07° from ambient + 10° to 135°C). Maximum flow rate for model HM-649F is 2.8gpm (10.6Lpm). Suitable for tanks with a working depth of 7.25in (18.4 cm) or more using tap or distilled water only. Two-year manufacturer's warranty. Supplied with a 5ft power cord with grounded plug. **Product Dimensions:** 4.3x3.8x14.1in (109x97x358mm), WxDxH.		ASTM C20, C127, D1188, D2041 AASHTO T 85, T 166, T 209, T 275
EZ Mount Heater/Circulator, 115V/60Hz	HM-649	
EZ Mount Heater/Circulator, 230V/50Hz	HM-649F	
Density Weighing Cradles are fabricated of heavy stainless steel rod to hold various size samples and containers for suspension weighing. SGA-135 Mega Weighing Cradle for large specimens and pycnometers accepts the HMA-260 Small Aggra-Washer Drum when used with the HMA-262 Vacuum Lid for Rice tests, the SG-18A Vacuum Pycnometer and other large samples. Vertical clearance is 12.5in (318mm). **Product Dimensions:** 10x6x17in (254x152x-432mm), WxDxH. SGA-125 Large Weighing Cradle accepts SG-16A Vacuum Pycnometer Canisters, Aggregate Density Baskets, Marshall or Gyratory Compaction Specimens, cores up to 6in (152mm) and other large samples. The Cradle tilts back when loaded to prevent specimen loss. **Product Dimensions:** 10x6x12.5in (254x152x318mm), WxDxH. SGA-119 Small Weighing Cradle holds various Marshall, Gyratory, or other material specimens for suspension weighing. **Product Dimensions:** 4x4x6.5in (102x102x165mm), WxDxH.		ASTM C20, C127, D1188, D2041 AASHTO T 85, T 166, T 209, T 275
Mega Weighing Cradle	SGA-135	
Large Density Weighing Cradle	SGA-125	
Small Density Weighing Cradle	SGA-119	
Laboratory Air/Gas Dryer protects vacuum pumps from harmful moisture while deairing specific gravity specimens and works in vacuum or pressure applications. Water capacity 50 grams. Molded polycarbonate column has a threaded cap and stainless steel springs hold the included Indicated Drierite Granules between two felt filters. Hose barbs accept 1/4in (6.4mm) or 3/8in (9.5mm) ID tubing. Recommended Flow Rate: 0.1scfm (200lph) at 90psi (6.2bar). **Product Dimensions:** 2.6x11.4in (67x289mm), dia.xL.	SG-70	
Indicating Drierite Granules rapidly absorb water vapor from air and gases. Blue desiccant crystals turn pink when exhausted and can be regenerated in an oven for longer life, or replaced as needed. Use #8 size for SG-70 Laboratory Air/Gas Dryer and #4 size in GW-74 Filter Flasks.		
#4 Indicating Drierite Granules, 5lb (2.3kg) Jar	SGA-105	
#8 Indicating Drierite Granules, 5lb (2.3kg) Jar	SGA-106	
Reinforced Vinyl Tubing has 3/8in (9.5mm) ID and will not collapse under vacuum. Priced per foot.	WT-4B	
Adjustable Hose Clamp has adjustment screw for vacuum regulation in vinyl tubing. Nickle-plated brass with pivoting lower jaw.	MA-198	
PumpSaver™ Air Drier for SG-35 AutoRice™ Digital Manometer & Controller is an air drier to protect vacuum pumps and optimize efficiency. The high-performance thermoelectric (Peltier) chamber chills incoming air, condensing and removing moisture before it reaches the vacuum pump. This eliminates the need for elaborate moisture traps and desiccant cartridges. It also reduces resistance to air flow while maximizing pump efficiency and increasing service life. The vacuum pump can reach the desired vacuum immediately, increasing accuracy and repeatability. The unit has one inlet and one outlet port for connection between the vacuum pump and pycnometer, using 3/8, 7/16 or 1/2in (10, 11 or 13.5mm) ID tubing, purchased separately. The drier unit operates at 120–240V/50–60Hz. The SGA-128 PumpSaver™ is sold as a single unit and is also available together in a set with the AutoRice™ Controller as Gilson Product SG-36.	SGA-128	—

MA-23

MA-24

MA-27A

MA-28

MA-29

MA-32

MA-31

MA-33

VACUUM PUMPS

ASTM C128, C830, D2041, D2172, D4867; AASHTO T 100, T 164, T 209; OTHERS

MA-23 Vacuum Pump is a large oilless pump that allows multiple specific gravity tests to be performed simultaneously. This heavy-duty unit combines large capacity with maintenance free operation. The 1/3hp motor pulls 29.6in Hg (759.46mm), with free air displacement up to 99L/min (3.5cfm) and ultimate pressure of 5.0Torr and includes a NEMA guarded switch and grounded electric cord. **Product Dimensions:** 11.1x9.2x11.0in (282x234x279mm), WxDxH.

MA-24 Vacuum Pump offers the same vacuum capacity as some oil systems in an economical oilless pump package. The 1/3hp motor pulls a vacuum to 29.6in Hg (759.46mm), with free-air displacement up to 45L/min (1.6cfm) and ultimate pressure of 5.0Torr and includes a NEMA guarded switch and grounded electric cord. **Product Dimensions:** 11.7x7.2x9.5in (296x183x240mm), WxDxH.

MA-27A Vacuum Pump is a two-stage, direct drive, rotary vane pump that provides good performance to cost ratio. This lightweight 1/2hp pump features 0.001Torr ultimate vacuum pressure and 3.0cfm free air capacity. The compact design reduces space requirements and a 2.5in (64mm) diameter Bourdon-style 0–30in (0–762mm) vacuum gauge is mounted on the intake side. A gas ballast valve permits purging of water vapor. The handy plastic grip handle allows easy portability. **Product Dimensions:** 14x5.25x11in (355x133x279mm), WxDxH.

MA-28 Vacuum Pump is a durable two-stage, belt drive, rotary vane pump that has fast recovery time. This quiet, reliable pump has standard 0.375in intake fittings for quick connection or adaptation to other equipment. It also features a drain cock and sight glass for easy maintenance and monitoring of oil levels, an approved belt guard and On/Off switch. A one-year manufacturer parts and labor guarantee is standard. The exhaust dome and baffle condense oil spray for cleaner operation. **Product Dimensions:** 18.5x10x10.75in (470x254x273mm), WxDxH.

MA-29 Vacuum Pump is a two-stage, belt drive, rotary vane pump with high vacuum capacity and good free air capacity for higher volume applications. The heavy-duty unit features cast-iron construction, quiet operation and long service life. Pump is supplied with motor, pulley and belt with guard mounted on a sturdy steel base. An oil sight gauge, drain cock and standard 0.875in intake fitting are also included. The initial fill and an extra quart of oil are provided. A gas ballast valve is fitted for purging water vapor and other condensates. Pump recovers from atmospheric exposure to guaranteed 0.0001Torr in one to three minutes. **Product Dimensions:** 17.3x11.5x13in (438x292x330mm), WxDxH.

MA-31 Economy Chemical Resistant Vacuum Pump is a smaller, affordable, oilless pump optimized for ultimate protection against corrosive solvents. This quiet model exhibits noise levels as low as 54dB and is optimized for vacuum filtration and degassing applications. The low-maintenance MA-31 is equipped with a 1/7hp motor that pulls a vacuum to 22in Hg (559mm), with free air displacement up to 20L/min (0.7cfm) and ultimate pressure of 190 Torr. The pump includes a regulator gauge to adjust and monitor vacuum levels and the inlet catch-pot protects from accidental intake of fluids and particulates. **Product Dimensions:** 6.8x7.3x8.3in (173x185x211mm), WxDxH.

MA-32 Vacuum Pump is a budget oilless diaphragm pump that is ideal for use with light-to-medium duty lab applications. This popular unit comes complete with gauges, connections and relief valves for vacuum and pressure applications and has built-in On/Off switch and carrying handle. Pump has free air capacity of 1.1cfm (31.2L/min) and can produce vacuum to 25.5in Hg (648mm), or up to 60psi (414kPa) pressure as a compressor. It is quiet, portable and maintenance free. The pump has 1/8hp, 115V/60Hz shaded pole motor with thermal protection and is UL listed and CSA approved. **Product Dimensions:** 5.3x7.6x10.5in (133x194x267mm), WxDxH.

MA-33 Chemical Resistant Vacuum Pump is a durable, corrosion and bleach-resistant pump ideal for mid-range vacuum applications and safe for use with cell culture contamination protocols. The included liquid inlet trap and vacuum regulator are suitable for organic aqueous solvents and light acid/base solutions. The 1/5hp motor pulls a 24in Hg (607mm) vacuum, with free air displacement up to 37L/min (1.3cfm) and ultimate pressure of 150 Torr. The unit is supplied with a power cord, plug and power switch. **Product Dimensions:** 8.75x5x8.75in (222x147x222mm), WxDxH.

Vacuum Pumps

Model	Electrical	hp (kW)	Ultimate Vacuum Torr	Free Air Capacity cfm (L/min)	Intake Nipple OD in (mm)
MA-23 MA-23F	115V/60Hz 230V/50Hz	1/3 (0.25) 1/3 (0.25)	5.0 5.0	3.5 (99) 3.5 (99)	0.375 (9.5) 0.375 (9.5)
MA-24 MA-24F	115V/60Hz 230V/50Hz	1/3 (0.25) 1/3 (0.25)	5.0 5.0	1.6 (45) 1.6 (45)	0.375 (9.5) 0.375 (9.5)
MA-27A MA-27AF	115V/60Hz 230V/50Hz	1/2 (0.37) 1/2 (0.37)	0.001 0.001	3.0 (85) 3.0 (85)	0.375 (9.5) 0.375 (9.5)
MA-28 MA-28F	115V/60Hz 230V/50Hz	1/3 (0.25) 1/3 (0.25)	0.0003 0.0003	0.35 (10) 0.35 (10)	0.375 (9.5) 0.375 (9.5)
MA-29 MA-29F	115V/60Hz 230V/50Hz	1/2 (0.37) 1/2 (0.37)	0.0001 0.0001	2.79 (79) 2.79 (79)	0.875 (22) 0.875 (22)
MA-31	115V/60Hz	1/7 (0.14)	190	0.7 (20)	0.25 (6.3)
MA-32	115V/60Hz	1/8 (0.10)	152	1.1 (32)	0.25 (6.3)
MA-33 MA-33F	115V/60Hz 230V/50Hz	1/5 (0.20) 1/5 (0.20)	150 150	1.3 (37) 1.3 (37)	0.25 (6.3) 0.25 (6.3)

Elapsed Time:			36:12
Sample Weight:			1274g
Weight Loss:			80.8g
Percent Loss:			6.34%
Temp Comp:			0.22%
Calib. Factor:			0.00%
Bitumen Ratio:			6.55%
Calibrated Asphalt Ctnt			6.12%
34	531	80.8	6.34
33	533	80.8	6.34
32	537	80.6	6.34
31	540	80.8	6.32
30	545	80.3	6.29
29	549	79.6	6.24
28	552	78.5	6.16
27	555	77.3	6.06
26	558	75.8	5.94
3	444	1.7	0.13
3	441	1.2	0.09
3	445	0.7	0.05
T	Temp	Wt. LOSS	%LOSS
Chamber Set Pt:			540°C
Sample Weight:			1274g
Tested by			
Mix Type			
Sample ID			
Sample ID			
Time:			15:02:10
Date:			2-14-10

AP-20 Print-Out of Test Completion

AP-20 shown with APA-31 sample basket assembly

THERMOLYNE® NCAT ASPHALT CONTENT FURNACE
ASTM D6307; AASHTO T 308

Asphalt binder ignition testing is an environmentally friendly and cost effective test to determine asphalt content of paving mixtures. Testing time is reduced compared to solvent extraction. A 1,200–1,800g sample of asphalt can be tested in 30–45 minutes with the NCAT Furnace. The unit accommodates samples up to 5,000g at extended testing times. The method also eliminates the cost of solvent, solvent disposal and safety concerns when handling solvent in the lab.

The NCAT Asphalt Furnace automatically monitors sample weight throughout the ignition process, saving valuable technician time and increasing productivity in the lab. Simply enter the sample weight and calibration factor, place the sample in the furnace chamber and press "start." The system automatically ends the test and prints the results with and audible tone. Pressing "stop" unlocks the chamber door and the sample can be removed and allowed to cool for gradation analysis.

The NCAT Furnace features automatic or manual test modes. In the automatic mode, the software ends the test when the endpoint is detected and prints out the results. In the manual mode, an audible tone signals when the endpoint is detected, but continues to test until "stop" is pressed, unlocking the door and printing the results. Positive or negative correction factors can be entered and weight change due to sample and basket assembly temperature change is automatically compensated. The automatically detected endpoint of the test cycle is reached when weight loss from the sample is less than a user-established setpoint between 0.01% and 0.5% for three consecutive readings. Test results are computed as asphalt content per total weight of HMA sample or bitumen ratio per weight of dry aggregate to an accuracy of ±0.11%.

The furnace is pre-heated to a setpoint temperature within the range of 450°–650°C (842°–1,202°F). The default setting is 538°C (1,000°F). The hot-mix asphalt sample is weighed and divided into two screened baskets on a tray assembly and placed in the furnace chamber. Once the door is closed and the test initiated, the door remains locked until completion. During the test, volatiles are oxidized in a high-temperature afterburner. This system has been shown to reduce process emissions by up to 95%.

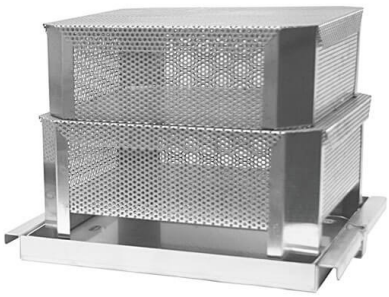
The 24 hour/7 day timing function can be programmed to preheat the furnace to any time set by the operator. The modular, refractory embedded heating elements provide extended service life and easy, inexpensive replacement. An RS-232 port provides data interface with a personal computer for graphical data analysis.

Included with the NCAT furnace are the Electronic Balance, Hearth Tray, six replacement Fuses and an operation manual. Purchased separately, the APA-25 Starter Kit is required and includes four Sample Basket, two Trays, two Tray Covers, Transport Handle, Cool Down Safety Cage, Insulated Plate, four rolls of Printer Paper and Motor Lubricant. For increased safety, the kit includes a Face Shield and Heat Resistant Gloves. Order additional APA-31 Sample Basket Assemblies for quicker and more efficient sample preparation and more sample throughput.

Test Chamber Dimensions are 14x14x14in (35.5x35.5x35.5mm), WxDxH. NCAT Furnaces are not supplied with power cords and must be hard-wired directly to a suitable electrical supply or supplied with a cord and plug by the user. **Product Dimensions:** 25.75x21.75x36.75in (65.4x55.2x99.3mm), WxDxH.

Thermolyne® NCAT Asphalt Content Furnace	
NCAT Asphalt Content Furnace, 240V/60Hz, 1 phase, 20/27 amp	AP-20
NCAT Asphalt Content Furnace, 208V/60Hz, 1 phase, 28 amp	AP-20L
NCAT Asphalt Content Furnace, 220–240V/50–60Hz, 1 phase, 20/27 amp	AP-20F

APA-25



APA-31

APA-40

Thermolyne® NCAT Asphalt Content Furnace Accessories

Description	Model
Starter Kit for NCAT Asphalt Content Furnace is required for initial start-up and operation of the AP-20 NCAT Asphalt Content Furnace. Kit includes four sample baskets, two basket covers, two trays, two basket retainer brackets, transport handle, aluminum cooldown plate, cooldown safety cage, fan motor lubricant, stainless steel basket brush and four rolls of printer paper. For increased safety, the kit includes a face shield and heat resistant gloves.	APA-25
Retriever™ Data Collector automatically collects and stores up to 1,000 tests from any NCAT Asphalt Furnace model on a USB flash drive. The system mounts on the side of the furnace and connects directly to the electronics. Installation is quick and easy. The Retriever can be used instead of the existing printer or in conjunction with it. Allows complete and secure test data to be cataloged, saved on a separate server, or easily emailed to clients or agencies. The included EZ Retrieve™ PC software is required to open files and allows on-screen viewing and printing. The encrypted data cannot be altered by the operator.	APA-40
Sample Basket Assembly for AP-20 series NCAT Asphalt Content Furnace holds two screened baskets for hot-mix asphalt specimens in the furnace chamber during ignition testing. Additional Sample Basket Assemblies allow efficient sample preparation and higher productivity.	APA-31
Sample Basket Transport Handle for NCAT Asphalt Content Furnace enhances safe operation in temperatures up to 650°C (1,202°F). Extended handles allows for easy and safer positioning of sample baskets going in and out of NCAT Asphalt Content Furnace chambers.	APA-32
Cool-Down Plate provides an added measure of protection from extreme heat after testing in the NCAT Asphalt Content Furnace. The sturdy aluminum construction provides a secure base for cooling sample baskets.	APA-33
Cool-Down Safety Cage is designed to protect users from the extreme heat of sample baskets removed from the NCAT Asphalt Content Furnace. The slotted steel Cool-Down Safety Cage is placed over sample baskets during the cool-down process.	APA-34
Thermal Printer Paper for AP-20 NCAT Asphalt Content Furnace comes in rolls and is used by the internal printer of the furnace. The paper's thermal design withstands high heat. Test results are printed when the furnace is set to automatic mode for testing hot-mix asphalt samples.	
Thermal Printer Paper for NCAT Asphalt Content Furnace, 5 rolls/package	APA-35
Thermal Printer Paper for NCAT Asphalt Content Furnace, case of 25 rolls	APA-37
Exhaust Tubing for NCAT Asphalt Content Furnace has durable stainless steel construction and is designed to reduce and redirect fumes and gases from the furnace during operations. Product Dimensions: 3inx10ft (76mmx3m), WxL.	APA-36
SE-33 Heat Resistant Gloves are made from long-lasting, genuine suede leather and protect hands from thermal heat up to 200°C (392°F). A cut and puncture-resistant layer provides protection from sharp edges and abrasions. The palm areas are reinforced with an extra layer of leather for additional durability. Soft, 100% cotton fleece lining adds extra insulation and comfort. 100% Kevlar® stitching provides improved flexibility, longevity and is flame resistant. Ideal for asphalt hot mix testing. One-size-fits-all.	SE-33

APA-33

APA-34

SE-33

HM-378

HMA-69

HMA-813

GILSON ASPHALT CONTENT FURNACE
ASTM D6307; AASHTO T 308

Gilson's Asphalt Content Furnace meets ASTM and AASHTO standards and features accurate, simple operation. Extensive testing has shown that process times and accuracy are comparable to automatic-weighing units. Standard 1,200–1,800g samples are processed in as little as 30–45 minutes. Larger samples over 3,000g require longer test times.

During a test, an asphalt sample is heated until the binder ignites. Temperature in the main chamber rises above setpoint, peaks, then returns to setpoint as coke-type products are burned off. This decoking period is based on user experience with similar mixes or specification requirements. When determining the decoking period to program for a new mix, the sample is simply returned to the furnace for additional 5–10 minute periods until completion is confirmed by stable total weight.

As the asphalt burns, volatile components are carried into the high-temperature afterburner chamber, where they are completely oxidized. Room temperature air is drawn in to quickly cool the exhaust for safe discharge to the outside. Any remaining particulate matter is captured in the disposable in-line filter. The Furnace remains locked during operation until a safe temperature is reached during the cool-down period.

The easy to operate controller features a large, bright display showing operating temperatures, times, setpoints and menu functions. Up to ten timed programs with chamber and afterburner time and temperature setpoints can be stored. A pre-set function allows starting of the furnace at a specific time of day, to eliminate warm-up wait time. The controller can also be used for custom programs with multiple ramps and dwells for glassware cleaning or other applications. The stainless steel case has a drop door to serve as a shelf for ease of sample tray handling. Heating elements are quality Kanthal A-1 and easily accessible for inexpensive replacement as necessary.

The Asphalt Content Furnace includes two Sample Baskets, a Basket Cover, Sample Tray and Tray-Handling fork, two-piece ceramic Hearth Plate, Exhaust Filter and Filter Holder for more efficient sample processing. Extra sets of sample tray, basket and cover may be ordered as HMA-69. SE-33 Heat Resistant Gloves are purchased separately. The HMA-810 all-steel Furnace Support Stand with locking casters and two shelves allows safe positioning of the furnace in the lab. Available HMA-813 Sample Cooling Cage protects personnel from hot surfaces as sample is cooling. HMA-814 Exhaust Vent Kit is easy to install for routing warm exhaust gases to the outside. A reliable bench scale of 12kg capacity or more, readable to 0.1g is required; Gilson recommends our AD-12KA, listed separately.

The furnace ships configured to operate on 240V/60Hz, single phase power supplies and a NEMA 6-50 Cord Set is supplied. It is easily converted during installation to operate on a number of different single or three phase electrical supplies, from 208–380V at 50 or 60Hz, with current draw ranging from 16–45 amps. Chamber dimensions are 21x21x9in (533x533x229mm). **Product Dimensions:** 43x30x43in (1,092x762x1,092mm), WxDxH.

Gilson Asphalt Content Furnace	
Gilson Asphalt Content Furnace	HM-378
Accessories	
Replacement Filters, box of 12	HMA-812
Sample Tray, Screen & Lid Set	HMA-69
Furnace Support Stand	HMA-810
Sample Cooling Cage	HMA-813
Exhaust Vent Kit	HMA-814
Heat Resistant Gloves	SE-33
Recommended Scale (12kg x 0.1g)	AD-12KA

: Product spotlight ::::::::::::::::

GILSON ASPHALT CONTENT FURNACE

Optional Wiring Configurations:

Electrical	kW	Amps
240V, 1 phase, 50–60Hz	10.8	45
208V, 1 phase, 50–60Hz	8.1	39
240V, 3 phase, 50–60Hz	10.8	34.6
208V, 3 phase, 50–60Hz	8.1	29.9
380V, 3 phase, 50–60Hz	7.5	16

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

HMA-68

MATERIAL HANDLING CHUTE

- **Fills large Gyratory compaction molds in a single lift**
- **Makes handling of hot-mix asphalt samples safe and efficient**
- **Works equally well for aggregate and soil samples**
- **Stable for use as a weighing scoop**

HMA-68 Material Handling Chute is an all-purpose chute for loading, filling and handling any bulk material, including Asphalt, Aggregates and Soils. It quickly and uniformly fills gyratory, Marshall, Proctor, CBR, relative density molds, Quartermaster or Universal splitters. The Handling Chute conforms to mold loading procedures in ASTM D4013 and AASHTO T 312.

The flat bottom and integral feet make weighing convenient. Two sturdy aluminum handles reinforce the unit and enable balanced handling for easy and accurate placement of sample materials. Material Handling Chute is constructed of 24-gauge stainless steel with rolled edges. The open end is formed with a 2in (51mm) radius to fit most mold openings. The unit stands horizontally or vertically. **Product Dimensions:** 22x11.5x10.5in (559x292x267mm), WxDxH.

Material Handling Chute	
Material Handling Chute	HMA-68

SG-4

ASPHALT BULK SPECIFIC GRAVITY DEVICE

Gilson's SG-4 Asphalt Bulk Specific Gravity Device is the quickest and most accurate method for bulk specific gravity determinations of 4in (102mm) and 6in (151mm) asphalt cores and gyratory specimens. The SG-4 uses a precision, computer-controlled system (patent pending) to measure water displacement with superior resolution and accuracy. This improved method uses no consumable products, allows the user to perform more than twice as many tests in the same time and greatly improves repeatability between operators.

The SG-4 is easy to use and operator error is significantly reduced from other methods. Enter the sample information and weight of the dry asphalt specimen into the proprietary software program (preloaded in the included computer) and lower the sample into the water-filled measuring chamber. The system is capable of accurately measuring water displacement with 0.5cc resolution and repeatability of ±1cc. Within seconds, the bulk specific gravity is displayed directly on the computer screen, saving time, improving accuracy and eliminating potential inconsistencies created by the subjective SSD drying process in other methods. Test data is saved in a format suitable for export to a spreadsheet or printer.

Primary components included with the SG-4 are the Measuring Chamber, Computer, Specimen Holder and Calibration Specimen. **Product Dimensions:** 6.1x9x11in (156x229x279mm), WxDxH.

Asphalt Bulk Specific Gravity Device	
Asphalt Bulk Specific Gravity Device, 120–240V, 50–60Hz	SG-4

helpfulhint

Gilson's Material Handling Chute is the easiest way to handle bulk samples of aggregate, asphalt or soils.

video online

Watch video tutorials for our products online at www.globalgilson.com

HM-807

GILSON CENTRIFUGE EXTRACTORS
ASTM D2172; AASHTO T 164

- **Electrical braking system**
- **1,500 or 3,000g sample capacities**
- **Explosion-proof motors available**

Gilson's popular Centrifuge Extractors provide efficient and reliable quantitative determinations of bitumen content in hot-mix asphalt specimens. Models with explosion-proof rated motors and safe transformers are available with 1,500 or 3,000g capacities. A standard version with 1,500g capacity is also offered. All models feature rugged, welded tubular steel frame, safe, simple operation and long service life.

For each model, the precision machined and balanced inner aluminum bowl assembly quickly lifts out of the sealed housing for efficient specimen handling. Rotation speeds up to 3,600rpm are easily set using the speed control knob. The built-in electric brake stops the centrifuge in seconds when extraction is complete. The heavy cast aluminum outer cover latches securely in place and features an integral solvent dispensing cup. Paper filter rings prevent loss of fines during processing.

All models are powered by a reliable 1/8hp DC motor equipped with an electrical braking system. Additional centrifuge bowl assemblies may be ordered for faster sample processing. HMA-263 1,500g capacity Bowls may also be used on HM-807 3,000g Extractors. Twenty-five paper Filter Rings are included. 1,500g models use 9.75in diameter rings with 2.5in center holes. 3,000g model rings are 11.63in diameter with 2.5in diameter holes. **Product Dimensions for 1,500g units:** 12x20x22in (305x508x559mm), WxDxH. **Product Dimensions for 3,000g units:** 14x20x22in (356x508x559mm), WxDxH.

Gilson Centrifuge Extractors	
1,500g Standard Extractor, 120V/60Hz	HM-808
230V/50Hz	HM-808F
1,500g Explosion-Proof Extractor, 120V/60Hz	HM-806
230V/50Hz	HM-806F
3,000g Explosion-Proof Extractor, 120V/60Hz	HM-807
230V/50Hz	HM-807F
Accessories	
Centrifuge Bowl Assembly 1,500g	HMA-263
Centrifuge Bowl Assembly 3,000g	HMA-264
Filter Rings for 1,500g Models, pkg. of 100	HMA-265
Filter Rings for 3,000g Models, pkg. of 100	HMA-266

HM-750R

FILTERLESS CENTRIFUGE
ASTM D1856, D2172; AASHTO R 59, T 164

The American made Continuous-Flow Filterless Centrifuge is effective for recovery of mineral filler fines from bitumen-laden nonflammable solvents from asphalt mix extraction tests. Analysis is simplified and accuracy is improved by eliminating the filter. Solvent suspension is fed through a top funnel into a special 526ml, 7x2.5in (178x64mm) HxI.D. aluminum beaker (included) rotating at 11,000rpm. Under high centrifugal force, the liquid moves up the beaker wall and out through the overflow tubing while solids remain for easy removal. Continuous feeding is possible until the solids-retaining capacity of the beaker is reached.

No.18 (1mm) and No.200 (75µm) stainless steel full height sieves are included for fitting to the top of the inlet funnel. A No.230 (63µm) sieve may be substituted for the No.200; please specify. When using the sieves, the extraction process can be run by pre-dissolving the mix sample with solvent, then pouring into the sieves.

The electric motor and rotating spindle of the centrifuge are enclosed in a sturdy cast aluminum case. Two aluminum beakers are included with each unit. **Product Dimensions:** 20x15x33in (508x380x840mm), WxDxH.

Filterless Centrifuge	
Filterless Centrifuge, 115V/60Hz	HM-750R
230V/50Hz	HM-750RF
Accessories	
Aluminum Beaker	HMA-308R

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HM-8

HMA-54

HMA-56

HM-15

VACUUM EXTRACTOR
ASTM D2172; AASHTO T 164

Gilson HM-8 Vacuum Extractor with 3,000g capacity has superior design features for quantitative determination of bitumen in hot-mixed paving mixtures using the vacuum method. Extractor base is a 16in (407mm) dia. x 8in (203mm) high painted aluminum extract collection tank with carrying handles, a gauge-fitted vacuum source connection and an extract drain valve. Two sight-glass gauges are provided to monitor solvent level and color of extract during operation. A 12.25x4.5in (311x114mm), I.D.xH removable funnel ring clamps filter paper and the perforated aluminum support plate to the base with a Viton O-Ring seal. Sample and solvent are placed on paper inside the ring.

Improved design features anodized aluminum funnel ring for protection from corrosive solvents. Quick-action wing bolt fasteners between ring and base have no exposed threads to damage. Filter paper support plate has disc spacers to prevent collapse under vacuum.

HM-8 Vacuum Extractor includes Vacuum Gauge, 25 Filter Papers, Filter Support, O-Ring Seal, 4ft (1.2m) Vacuum Hose Connection and instructions. For best results Gilson recommends using biodegradable terpene-based solvents and HMA-54-2 filter papers. Both the HMA-54 and HMA-54-2 are sold in packages of 100. Vacuum source is required; order vacuum pumps separately. The HMA-56, 2lb jar (package of 2) of Diatomaceous Silica Filtering Aid for slow filtering samples is sufficient for 36 tests. **Product Dimensions:** 16x12.5 (406x317mm) dia.xH.

Vacuum Extractor	
Vacuum Extractor	HM-8
Accessories	
Filter Paper, Grade 613	HMA-54
Filter Paper Terpene Solvents, Grade 627	HMA-54-2
Viton O-Ring Seal	HMA-55V
Diatomaceous Silica Filter, 2lb jar (pkg. of 2)	HMA-56
Diatomaceous Silica Filter, 50lb bag	HMA-56B

BASIC VACUUM EXTRACTOR
ASTM D2172; AASHTO T 164

Basic Vacuum Extractor has a 12.25x4.5in (311x114mm), IDxH aluminum funnel ring, perforated stainless steel filter support and an O-Ring seal, supported by three legs. Instead of a solvent collection tank, the assembly uses a vacuum filter flask such as GW-76. The Hose and Stopper Assembly has a 6ft (1.8m) rubber vacuum hose to fit to the 3/8in (9.5mm) OD drain connection and a No.12 neoprene stopper with glass tubing to fit GW-76. Order filter flask, hose and stopper assembly, diatomaceous silica filter aid, filter paper and vacuum pump separately. Side tubulation on GW-76 flask is 3/8in (10mm), OD. **Product Dimensions:** 16.0x12.5in (406x317mm) dia,xH.

Basic Vacuum Extractor	
Basic Vacuum Extractor	HM-15
Accessories	
4L Filter Flask	GW-76
Hose & Stopper Assembly	HMA-58
Filter Paper, Grade 613	HMA-54
Filter Paper Terpene Solvents, Grade 627	HMA-54-2
Viton O-Ring Seal	HMA-55V
Diatomaceous Silica Filter, 4lb carton	HMA-56
Diatomaceous Silica Filter, 50lb bag	HMA-56B

technote

FILTER PAPER SELECTION GUIDE

Model	Outside dia. in (cm)	Hole dia. in (cm)	Grade	Flow Rate ml/min	Filter Speed	Micron Retention
HMA-265	9.75 (24.8)	2.5 (6.4)	923	200	Fast	20
HMA-266	11.75 (29.8)	2.5 (6.4)	923	200	Fast	20
HMA-34	10 (25.4)	5 (12.7)	627	85	Medium	4
HMA-44	12.25 (31.1)	5 (12.7)	627	85	Medium	4
HMA-44B	12.25 (31.1)	5 (12.7)	904	70	Medium	2
HMA-54-2	13 (33)	-	627	85	Medium	4
HMA-54-5	13 (33)	-	633	435	Fast	31
HMA-64-1	15.7 (40)	-	617	360	Fast	6
HMA-54	13 (33)	-	613	60	Medium	6

HM-124E

HM-6

HM-56

ASPHALT EXTRACTION SOLVENTS

Gilson asphalt extraction solvents are available in 5gal (18.9L) Pails with Est. Ship Wt. of 40lb (18kg), or 55gal (208L) Drums with Est. Ship Wt. of 440lb (200kg).

Excel Clean HD and Hisol Plus both contain 100% natural orange and citrus terpenes. They are nontoxic, biodegradable, ozone-friendly and rinse freely with no clumping. Not for use with reflux or other heated methods, but ideal for use in vacuum extractors or centrifuges for gradations. Flash point is 125°F for Excel Clean HD and 145°F for Hisol Plus.

Power-Solv contains citrus terpenes and petroleum solvent, is non-rinsable and can be used in vacuum extractors or centrifuges for gradations only. Flash point is 115°F.

Asphalt Extraction Solvents		
Description	Flash Point	Model
Excel Clean HD, 5gal Pail	125°F	HM-124E
Excel Clean HD, 55gal Drum	125°F	HM-125E
Hisol Plus, 5gal Pail	145°F	HM-124H
Hisol Plus, 55gal Drum	145°F	HM-125H
Power-Solv, 5gal Pail	115°F	HM-124P
Power-Solv, 55gal Drum	115°F	HM-125P

REFLUX EXTRACTORS
ASTM D2172; AASHTO T 164

Reflux extraction is the least expensive method for determining asphalt content in bituminous paving mixtures. Solvent vapor generated by hot plate passes around and through sample contained in two wire mesh cones lined with filter paper. Reflux solvent from the water-cooled condenser percolates through the sample repeatedly until the bitumen is extracted.

Extractors are offered in nominal capacities of 1,000g and 2,000g. Models HM-5 and HM-6 include Hot Plate, Extraction Jar, two interlocking wire mesh Cones with bail handles, copper Condenser with water inlet/outlet tubes, Filter Paper and instructions. Model HM-5 has 6in (152mm) diameter jar and 6in (152mm) hot plate; Model HM-6 has 8.75in (222mm) diameter jar and 9in (228mm) hot plate. Both jars are 18in (457mm) high with ground tops for tight condenser fit. Included insulating pad is used for protection next to hot plate surface. HMA-54 and HMA-64 Grade 613 Filter Papers are supplied in packages of 100.

Reflux Extractors	
1,000g Reflux Extractor, 115V/50–60Hz	HM-5
230V/50–60Hz	HM-5F
2,000g Reflux Extractor, 115V/50–60Hz	HM-6
230V/50–60Hz	HM-6F
Accessories	
Extraction Jar for HM-5	HMA-51
Extraction Jar for HM-6	HMA-61
Wire Mesh Cone Set for HM-5	HMA-52
Wire Mesh Cone Set for HM-6	HMA-62
Condenser for HM-5	HMA-53
Condenser for HM-6	HMA-63
1,000g Filter Paper for HM-5, pkg of 100	HMA-54
2,000g Filter Paper for HM-6, pkg of 50	HMA-64-1
Insulating Pad	HM-5-1

DRAINDOWN BASKETS
ASTM D6390; AASHTO T 305

The draindown test for uncompacted bituminous mixes measures the amount of asphalt binder that separates from a sample held at the elevated temperatures encountered in production, transport and placement. The test is particularly applicable to stone matrix asphalt (SMA) or open-graded porous asphalt mixtures. The sample is placed in the special Draindown Basket in a forced-air oven on a pre-weighed paper plate for one hour. The amount of draindown is measured as that portion that separates itself from the sample and is deposited onto the plate outside the basket. Paper plates are obtained locally.

ASTM E11 quality stainless steel mesh is used for HM-56 1/4in (6.3mm), HM-56A No.8 (2.36mm) and No.16 (1.18mm) baskets. Each measure 4.25x5.5in (108x140mm), dia.xH and have a 1in (25mm) bottom skirt. A convenient bail-type handle is provided.

Draindown Baskets	
Draindown Basket, 1/4in Mesh	HM-56
Draindown Basket, No.8 Mesh	HM-56A
Draindown Basket, No.16 Mesh	HM-56B

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Call our Technical Support staff to find the right equipment for your application. 800.444.1508!

HVEEM TESTING MACHINE

ASTM C78, C109, C293, D1560, D1561, D2844; AASHTO T 97, T 106, T 177, T 190, T 246, T 247; CTM 301, 366

- **Designed for Hveem stability testing of asphalt samples, R-Value testing of soil samples and flexural testing of concrete beams**
- **Useful for a variety of mid-range compression testing applications**
- **Digital controller has memory for 1,000 tests and downloads to printer or PC**
- **60,000lbf capacity**

Gilson's versatile mid-range 60,000lbf (267kN) digital compression tester is suited for a variety of tests, but it is specially designed for Hveem asphalt stability testing, R-Value testing of soil samples, or (with attachments) recorded flexural testing of 6x6in (152x152mm) concrete beams. A test set for 2in (51mm) cube testing is also available. Inquire about sets for other applications.

The display shows live load, peak load, peak stress and load rate with 0.5% accuracy from 1%–100% of capacity in 0.44in digits. Load may be displayed in lbf, N, or kgf and memory is provided for up to 1,000 tests. USB interface allows transfer of data to PC. The 2.5in (64mm) working stroke hydraulic ram has control positions for rapid advance, metered advance at constant loading rate, hold and retract. The two-stage hydraulic system is powered by a 1/2hp motor and safety features limit pressure within load frame capacity, protect against piston overextension and guard against flying specimen fragments. The rigid one-piece solid steel load frame is supplied with an 8in (203mm) diameter 1in (25mm) thick hardened steel lower platen and a 6.5in (165mm) diameter spherically-seated upper platen. Both are plated and scribed with concentric circles. A support stand is included.

The MC-60 is set up for Hveem and R-Value testing as supplied. Upper platen shim locks are included to eliminate swivel action during mold compaction. The unit has a special Hveem valve that is manually activated to drop to 1,000lbf and automatically hold within ±20lbf as required in the test procedure. The 14in (356mm) wide and 21.5in (546mm) high (16in high with platens) daylight openings and included support stand permit easy placement and use of the Hveem stabilometer. HMA-118 R-Value Molds are plated steel and meet specification requirements with prescribed 25 micron rough inside finish. HMA-118S R-Value Molds are stainless steel and meet dimensional requirements but without the final boring tool bit grooving required to achive the 25µm finish.

The MCA-4 Flexural Attachment is required for testing 6x6in (152x152mm) and 4x4in (102x102mm) beams of 12–30in (305–762mm) span in either center or third-point loading. MCA-22 software allows plotting of Modulus of Rupture (MOR) in lbf/in^2 vs. time. Data Collection Reporting Software installs on user's PC connected to MC-60. Data and reports can be printed by user's printer. The plot is automatically scaled to fit 8.5x11in plain paper and the peak MOR is printed on the plot to ±0.5% machine accuracy along with specimen and operator IDs, test date and time. The versatile MC-60 can be adapted to suit a variety of other mid-range test procedures. A 2in (51mm) Cube Test Set is available as MCA-6. Inquire for other possible applications including compressive strength of 6x12in soil cement cylinders, 3x6in grout or concrete cylinders and for molding and strength of 2in, 3in, or 4in diameter bituminous concrete specimens. **Product Dimensions:** 31.8x17x61in (806x432x1549mm),

MCA-4

HMA-118

MC-60

Hveem Testing Machine	
Hveem Testing Machine, 115V/50–60Hz	MC-60
230V/50–60Hz	MC-60F
Accessories	
Concrete Beam Flexural Attachment[1]	MCA-4
2in Cube Test Set	MCA-6
Spacer, 4in (102mm) thick	MCA-14
Data Collection and Reporting Software	MCA-22
R-Value Mold, 4inx5in (dia.xH) with 25µm micron finish (rough)	HMA-118
R-Value Mold, 4inx5in (dia.xH) without 25µm finish	HMA-118S

[1] MCA-15 required for use with MC-60

helpfulhint

Gilson's exclusive Hveem Testing Machine is designed for multiple applications in laboratories that routinely test both asphalt and concrete products.

Accuracy is 0.5% from 600–60,000lbf. (2.7–267kN), making the MC-60 a versatile machine for many types of tests.

MA-66

MA-67

MA-52

PORTABLE MIXERS

Portable Asphalt/Concrete Mixers are ideal for sample or small batch mixing in just about any setting. The enameled-steel mixer holds a utility bucket securely in place. As the bucket rotates at 60rpm, a stationary Mixing Paddle scrapes sides and bottom of the bucket to ensure thorough mixing. All 115V/60Hz mixers are supplied with a 1/2hp motor, On/Off switch, fuse protection and an 8ft cord with three-prong plug. For 230V/50Hz mixer, add "F" to model number suffix. The 10 gallon "F" model is supplied with a 1hp motor.

MA-66 Light-Duty Stationary Mixer includes a removable 5gal Utility Bucket and Standard Mixing Paddle. A Deluxe Mixing Paddle with extra fins is available for heavy loads. MA-66 is powered by a constant speed motor and belt pulley. Other heavy-duty models are recommended for asphalt mixes. **Product Dimensions:** 12x18x24in (305x457x610mm), WxDxH.

MA-67 and MA-68 Heavy-Duty Portable Mixers use 5gal and 10gal Utility Buckets, respectively and are equipped with 8in wheels for maximum mobility. By using a direct drive motor more power is generated for mixing. Mixing paddles not included. Gilson recommends MA-67 Mixer with either MAA-146 Paddle for asphalt or MAA-148 Paddle for concrete applications. The 5gal bucket can be preheated in ovens if necessary. Inquire for other available paddles. **Product Dimensions:** 24x21x35in (610x533x889mm), WxDxH.

Portable Mixers	
Light-Duty Stationary Mixer, 5gal	MA-66
Heavy-Duty Portable Mixer, 5gal	MA-67
Heavy-Duty Portable Mixer, 10gal	MA-68
Accessories	
Bucket & Cover for MA-66, 5 gal	MAA-141
Replacement Paddle for MA-66	MAA-142
Deluxe Paddle for MA-66	MAA-143
Utility Bucket for MA-67, 5gal	MAA-144
Utility Bucket for MA-68, 10gal	MAA-145
Asphalt Paddle for MA-67, 5gal	MAA-146
Asphalt Paddle for MA-68, 10gal	MAA-147
Concrete Paddle for MA-67, 5gal	MAA-148
Concrete Paddle for MA-68, 10gal	MAA-149

LABORATORY MIXERS

ASTM C109, C227, C305; AASHTO T 106, T 162

Industrial-grade Laboratory Mixers have planetary action for thorough mixing and blending of materials. Direct gear drives and heavy-duty motors assure constant mixing speeds under load. Locking hand-lever raises and lowers bowl. All mixers are supplied with stainless steel bowl, wire whip, dough hook and aluminum flat beater. MA-52 and MA-52X include an MAA-266 stainless steel flat beater. MA-52X includes modifications to meet ASTM and AASHTO specifications. Add “F” suffix to any mixer or heating adapter model number for similar unit that operates on 230V/50Hz power supply.

MA-52 Laboratory Mixer has 5qt (4.7L) capacity and a 1/6hp motor with selectable operating speeds of 139, 285 and 591rpm. Additional heavy-duty Stainless Steel Flat Beater is included, as well as a 6ft (1.8m) power cord. The MAA-30A Clearance Adjustment Bracket can be purchased separately to meet ASTM and AASHTO requirements. MAA-31 Acrylic Bowl Lid is also available for all 5qt (4.7L) bowls. **Product Dimensions:** 10.5x15x17in (267x381x432mm), WxDxH.

MA-52X Laboratory Mixer with clearance bracket has the same specifications as MA-52, but has been modified to meet the requirements of ASTM C305, C227 C109 AASHTO T 162 and T 106 for and certain other tests for mortar and cement. **Product Dimensions:** 10.5x15x17in (267x381x432mm), WxDxH.

MA-54A Laboratory Mixer is a 12qt (11.4L) capacity benchtop mixer for larger batch requirements. This unit is supplied with a 1/2hp motor for selectable mixing speeds of 107, 198 and 365rpm. A 6ft (1.8m) power cord is included. **Product Dimensions:** 19x23x29in (483x580x750mm), WxDxH.

Heating Adapter Kits maintain elevated temperatures when preparing hot-mix asphalt specimens in Laboratory Mixers. Heating mantles mount under mixing bowls with hook and loop fasteners. Electronic proportional controller with built-in circuit breaker attaches with a twist-lock connector on 4ft (1.2m) cable.

Laboratory Mixers	
5qt Laboratory Mixer, 115V/60Hz	MA-52
5qt Laboratory Mixer with clearance bracket, 115V/60Hz	MA-52X
12qt Laboratory Mixer, 115V/60Hz	MA-54A
Accessories	
Wire Whip for MA-52	MAA-260
Heavy-Duty Stainless Steel Flat Beater for MA-52	MAA-266
Bowl for MA-52	MAA-32
Bowl for MA-54A	MAA-34A
Clearance Adjustment Bracket for MA-52	MAA-30A
Heating Adapter for MA-52, 250 Watts	MAA-28[1]
Heating Adapter for MA-54A, 600 Watts	MAA-64[1]

CD-1 shown with CDA-141

CD-6 shown with CDA-141

CDA-50

CDA-142

CDA-243

CORE DRILLING MACHINES
ASTM C42; AASHTO T 24, R 67

Gasoline or electric-powered core drilling machines offer easy set up, fast drilling and low bit wear to give low cost per core. The gasoline-powered unit has a 6in (152mm) diameter bit capacity, while the electric models have a bit capacity of up to 12in (305mm). Inquire for larger, trailer-mounted rigs for bits up to 16in (406mm). Quick-disconnect fittings for water supply are provided. Diamond coring bits are ordered separately.

CD-1 Gasoline-Powered Core Drill is designed for vertical coring of pavements and slabs. Stable platform base with leveling screws, a heavy-duty column and smooth, precision-feed system combine to make this model the ideal choice for large projects. Gasoline-powered drill allows operation independent of power supplies for minimal set up time and faster drilling. The unit easily adapts to mount to a pickup truck bed and has a 6.5hp four-cycle manual start engine. Carriage travel is 24in (610mm).

CD-6 Electric Core Drill adapts to a wide range of drilling jobs in addition to pavement coring. The column rotates 180° horizontally, allowing precise placement of drill bit. The super-duty two-speed (450/900rpm) 3.5hp motor and carriage can be removed or reattached without changing location for ease in swapping cores and adding extension rods. The 10in (254mm) wide wheeled base has a vacuum anchor to solidly grip smooth pavement or floors. Unit includes oilless vacuum pump, filter, hose and quick connections.

Accessories for the Core Drilling Machines are purchased separately. CDA-20 is a 4gal (15L) manually-pressurized portable water tank and CDA-22 is a trap-ring and electric pump to recirculate drilling water. CDA-24 9in (229mm) extension allows drilling to extended depth and CDA-26 18in (457mm) strap wrench is for attaching and removing coring bits without damage. CDA-32 is a replacement gasket with mastic for the CD-6 vacuum base. **CD-1 Product Dimensions:** 14x32x46in (356x813x1168mm), WxDxH. **CD-6 Product Dimensions:** 12x34x36in (305x864x914mm), WxDxH.

Core Drilling Machines	
Gasoline-Powered Core Drill	CD-1
Electric Core Drill, 115V/60Hz	CD-6
230V/50–60Hz	CD-6F
Accessories	
Pressurized Water Tank, 4gal (15L)	CDA-20
Water Recirculator	CDA-22
Extension Rod, 9in (229mm)	CDA-24
Strap Wrench, 18in (457mm)	CDA-26
Replacement Vacuum Gasket	CDA-32
Long-Handle Core Retrieval Tongs, 4in Cores	CDA-15
Long-Handle Core Retrieval Tongs, 6in Cores	CDA-16
Core Extractors, 4in Cores	CDA-18
Core Extractors, 6in Cores	CDA-19

DIAMOND CORING BITS
ASTM C42; AASHTO T 24, R 67

Open-Head Coring Bits require Expander Sets listed for attachment to drills. These bits are slightly less expensive and the expander sets can be reused many times as the core barrels wear out and are replaced. They are an economical choice for high-output and heavy-use applications.

Closed-Head Coring Bits are one piece construction for convenience and easy, direct attachment to drills. There are no extra parts to buy or lose. These are best suited for light to medium duty, or for occasional use.

Both bit styles are available in designs optimized for asphalt pavements, or for reinforced concrete and other hard materials. All bits are constructed for wet use and are fast-cutting when used according to design applications. Standard length is 14in (356mm) for cutting cores up to 12in long. Our most popular bit sizes are listed here. Please inquire for sizes not shown. All bits may be refurbished when worn.

Diamond Coring Bits

Nominal Bit Size OD, in (mm)	Open-Head Bits			Closed-Head Bits	
	Concrete	Asphalt	Expander Sets	Concrete	Asphalt
2 (50.8)	CDA-120	CDA-220	CDA-40	CDA-121	CDA-221
2-1/4 (57.2)	CDA-122	CDA-222	CDA-41	CDA-123	CDA-223
3 (76.2)	CDA-130	CDA-230	CDA-43	CDA-131	CDA-231
3-1/4 (82.6)	CDA-132	CDA-232	CDA-55	CDA-133	CDA-233
4 (101.6)	CDA-140	CDA-240	CDA-45	CDA-141	CDA-241
4-1/4 (108)	CDA-142	CDA-242	CDA-46	CDA-143	CDA-243
6 (152.4)	CDA-160	CDA-260	CDA-50	CDA-161	CDA-261
6-1/4 (158.8)	CDA-162	CDA-262	CDA-51	CDA-163	CDA-263

CDA-18 and CDA-19

HM-60 shown with HMA-226

HM-62 shown with HMA-234

CORE EXTRACTORS

Gilson Core Extractors are efficient and easy-to-use for the removal of drilled cores from asphalt or concrete pavements. To operate, simply insert the curved blades into the cut area around the core. Adjust the top screw, enabling the blades to grasp the core and lock the device into place by squeezing the handles. Push sharply to break off the core bottom and lift the specimen out. Release lever to free the core.

The lock feature protects cores from damage during extraction and assures laboratory acceptance for testing without repeat drilling. Models for 4in (102mm) or 6in (152mm) core sizes have identical features and operation. Extractors are welded, painted steel with sturdy handle grips. **Product Dimensions:** 12x10x 10in (305x254 x254mm), WxDxH.

Core Extractors	
Core Extractors, 4in	CDA-18
Core Extractors, 6in	CDA-19

CDA-15

LONG-HANDLE CORE RETRIEVAL TONGS

Fast, easy-to-use patented Core Retrieval Tongs remove cores from asphalt or concrete surfaces. Simply insert blades into space from core drill bit, grasp the core with the tongs and lift. Recovered cores are free of damage that may occur from use of improper tools. Laboratory acceptance for testing is assured without repeat drilling. Models are available for 4in (102mm) or 6in (152mm) core sizes. Tongs are welded, painted steel with plastic handle grips. **Product Dimensions:** 3x4.5x35in (76x114x889mm), WxDxH.

Long-Handle Core Retrieval Tongs	
Core Retrieval Tongs, 4in	CDA-15
Core Retrieval Tongs, 6in	CDA-16

HUSQVARNA® MASONRY SAWS

Masonry Saws from Husqvarna® are ideal for trimming concrete, asphalt and masonry specimens to size for testing. Models include a lightweight 1.5hp Portable unit and a larger 5hp Heavy-duty version for high-production applications. Both include reliable high-torque motors and heavy-duty shafts mounted on quality ball bearings. Water distribution by submersible pumps permits wet cutting.

HM-60 Portable Masonry Saw has 2,330 blade rpm from the 1.5hp electric motor. The HM-60 uses 14in (356mm) diameter blades for up to 5in (127mm) cut depth. This saw features a unique, patented water distribution system designed to keep both the work piece and the work area cleaner and drier. The optional HMA-226 Portable Rolling Stand is quickly set up, easily relocated by one person and has fast adjustment for proper height. The stand folds flat for easy portability. Lightweight, economical HMA-224 Fixed-Leg Stand is also available. A 14in (356mm) Vari-Cut™ blade is included with the saw. **Product Dimensions:** 27.5x39.8x27.5in (699x1,011x699mm), WxDxH. Height with Fixed leg stand is approximately 54in (1372mm).

HM-62 Heavy-Duty Masonry Saw is equipped with a powerful 5hp high-torque motor with 2,317 blade rpm to assure high-production performance. A convenient crank on the foot pedal sets table height and the patented Sta-level® blade guard controls blade orientation to assure the most accurate cuts possible. The painted integral rigid steel support stand resists flexing. The 20in (508mm) blade capacity permits cutting of 6in (152mm) cylinders or 8in (203mm) blocks in a single pass. Blades are purchased separately. **Product Dimensions:** 22x47.8x57.5in (559x1213x1461mm), WxDxH.

High-quality Diamond Blades are ordered separately. Premium grade blades for medium-sized jobs feature fast cutting and long life. Super Premium Blades allow maximum production for the largest jobs and have the lowest cost per cut. All blades listed below can be used wet or dry and cost less in quantities of five.

Husqvarna® Masonry Saws	
Portable Masonry Saw, including blade, 1.5hp, 115V/60Hz	HM-60
Heavy-Duty Masonry Saw, without blade, 5hp, 208–230V/60Hz	HM-62
Accessories	
Portable Rolling Stand for HM-60	HMA-226
Fixed-Leg Stand for HM-60	HMA-224
14in Super Premium Blade	HMA-234
14in Super Premium Blade, price each for qty. 5 or more	HMA-234D
20in Premium Blade	HMA-232
20in Premium Blade, price each for qty. 5 or more	HMA-232D
20in Super Premium Blade	HMA-236
20in Super Premium Blade, price each for qty. 5 or more	HMA-236D

AP-1B

APA-166

AP-16

NCAT ASPHALT FIELD PERMEAMETER

The NCAT Field Permeameter is a falling-head permeameter using Darcy's Law to determine rate of water flow through asphalt pavement. This design was selected by the National Center for Asphalt Technology (NCAT) for its close correlation with laboratory test results. Studies show that some asphalt mixes can be permeable to water even when compacted to an acceptable air void ratio. Field testing permits accurate estimation of permeability, eliminating the need for coring, patching and laboratory testing. Corrections to mix and placement procedures can be implemented right away. Testing and subsequent calculations can usually be completed in 10—15 minutes by one technician.

The APA-11B Permeameter is a 4-tiered, graduated standpipe supplied in two sections and constructed of rugged plastic. A sealing material is placed on the base plate. The unit is then positioned on the test site and seated against the pavement using gentle foot pressure and included base weights. After filling with water, outflow is observed against the clearly marked graduations and timed. The smallest, uppermost tier allows rapid determinations in low-porosity pavements. The larger diameter tiers permit enough time to accurately read flow on more porous pavements. An alternate top section is included to replace the two top tiers with one larger diameter tier. This allows for extended test times on moderately permeable mats or for rapid filling when testing highly permeable mixes.

The AP-1B Kit includes the 4-tiered graduated Permeameter, Alternate top section, Filling Tube, 5lb (2.3kg) tub of Moldable Sealant material, Whisk Broom for test site preparation and four 5lb (2.3kg) Base Weights. Kit is packaged in a durable carrying case, with wheels for easy transporting. **Product Dimensions:** 3x3x12.5in (76x76x318mm), WxDxH.

NCAT Asphalt Field Permeameter	
NCAT Asphalt Field Permeameter Kit	AP-1B
Accessories	
Permeameter	APA-11B
Standard Top Tier, Replacement	APA-17
Alternate Top Tier, Replacement	APA-18
Moldable Sealant, 5lb (2.3kg)	APA-22

LABORATORY ASPHALT PERMEAMETERS

Florida FM 5-565

Laboratory Asphalt Permeameters utilize the falling head method to determine hydraulic conductivity of saturated 4in (102mm) and 6in (152mm) diameter asphalt cores or laboratory compacted specimens.

This simple, easy-to-use Permeameter design is based on test procedures developed at Florida DOT. The asphalt sample is placed inside a metal cylinder and held in place by expanding discs. A replaceable latex membrane inside the latex membrane lined metal cylinder is pressurized to fill voids and eliminate flow down the outside of the core. Permeability of the prepared specimen is determined by timing flow from the included 500cc Manometer through the sample. Both models include a self-contained hand pump which provides vacuum to hold the membrane out against the metal cylinder during assembly as well as confining pressure to push the membrane against the core during testing. A dial gauge displays pressure applied by the hand pump. Included with each Permeameter are two 4in (102mm) or two 6in (152mm) Latex Membranes. Replacement 500cc Manometers are available as APA-105. 2,000cc capacity Manometers are available as APA-120 for more permeable samples. **Product Dimensions:** 8x13x45in (203x330x1,143mm), WxDxH.

Laboratory Asphalt Permeameters	
Permeameter for 4in (102mm) dia.	AP-14
Permeameter for 6in (152mm) dia.	AP-16
Accessories	
Replacement 500cc Manometer	APA-105
Large Capacity 2,000cc Manometer	APA-120
4in (102mm) Latex Membranes, both pkg. of 12	APA-144
6in (152mm) Latex Membranes, both pkg. of 12	APA-166

VIDEO ONLINE

MA-771

VIDEO ONLINE

MA-769

FLIR® INFRARED THERMAL IMAGING CAMERAS

Thermal Imaging Cameras by FLIR® were selected by Gilson as the best values for instant detection of temperature gradients in many different materials. The color LCD displays highlight problem areas fast, something that can't be done with standard infrared thermometers. Paving operations, bridge deck and floor slab inspections, location of delaminations, cavities and moisture problems in concrete and masonry prism walls are just a few of the applications for these sophisticated instruments.

FLIR® Cameras are light and compact, with focus-free lenses and simple navigation for easy one-handed operation, yet are tough enough for rugged field conditions and rated to withstand shock values to 25g. Rechargeable Lithium-Ion batteries yield two to four hours or more of operating time and are quickly charged on the included AC charger. The unmatched manufacturer's warranty offers 10-year coverage on the detector and 2 years parts and labor.

Exclusive MSX® thermal image enhancement on most models adds key details from the visible spectrum camera to the entire infrared image on the color LCD display. Text becomes clearly visible, making it easy to read a label or identifier in the image. The all-in-one image shows accurate thermal gradients along with visible details. Higher-end models feature enhanced infrared resolution, selectable measurement modes and picture-in-picture displays, which superimpose a thermal image over a visible spectrum photo.

FLIR® Infrared Thermal Imaging Cameras

Description	Model	Temperature Range F° (C°)	Accuracy	Thermal Sensitivity C°	IR Sensor Resolution (Pixels)	Field of View
FLIR® C2 Thermal Imaging Camera This pocket-sized, full-featured thermal camera is the first designed for construction applications. The C2 saves thermal, visible and MSX®-enhanced JPEG still images, as well as non-radiometric streaming thermal video. Fully radiometric images allow measurement at any point during on-screen analysis and the included FLIR® Tools software for PC or Mac allows easy reporting and analysis down to the pixel level. The large, 3in (76mm) LCD intuitive touch screen display features auto-orientation and wide field of view. Internal memory stores at least 500 images in standard JPEG format. A built-in digital camera captures visible images. Also included are a lanyard, USB Memory Stick and USB cable with Micro-B connector for data transfer to and from PC, iOS and Android devices. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-771	14°—302° (-10°—150°)	±2°C or 2%	<0.10	80x60 (4,800)	41°x31°
FLIR® Spot Thermal Camera The affordable new Imaging IR Thermometer bridges the gap between ordinary infrared thermometers and FLIR® infrared Thermal Imaging Cameras. The MA-769 lets you easily visualize heat patterns instead of relying on spot temperatures. Up to 75,000 surface temperatures and images are saved to an included 8Gb Micro SD card or to a PC over a USB connection. Memory can be expanded up to 32Gb with user-supplied micro SD card. The measurement field is framed by dual-laser pointers and has a 24:1 spot ratio for accurate measurements at a safe distance. The 2in (50mm) display has gray-scale or hot iron color palettes and adjustable auto power-off. A lanyard, USB Cable and international AC charger are included. Analysis Software is not included. MAA-14 Protective Vinyl Case and a convenient Belt Holster are available as options. **Product Dimensions:** 2.2x3.7x7.3in (55x94x186mm), WxDxH.	MA-769	-13°—716° (-25°—380°)	±2°C or 2%	<0.15	80x60 (4,800)	50°x39°

MA-774

MA-775

MA-776

MA-778

FLIR® Infrared Thermal Imaging Cameras

Description	Model	Temperature Range F° (C°)	Accuracy	Thermal Sensitivity C°	IR Sensor Resolution (Pixels)	Field of View
E4 Thermal Imaging Camera is economical and features infrared, visual and MSX image modes on 3in (76mm) color display. Sensor operates only in center-spot measurement mode. Comes with FLIR Tools software and a sturdy plastic case. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-774	-4°—482° (-20°—250°)	±2°C or 2%	<0.15	80x60 (4,800)	45°x34°
E5 Thermal Imaging Camera measurement modes include center-spot or area box. Automatic hot/cold detection marks maximum and minimum temperatures within the 3in (76mm) color display. Image modes are infrared, visual and MSX. A plastic carrying case and FLIR® Tools software are included. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-775	-4°—482° (-20°—250°)	±2°C or 2%	<0.10	120x90 (10,800)	45°x34°
E6 Thermal Imaging Camera with higher infrared resolution and thermal sensitivity rating of less than 0.06°C. Measurement modes include center-spot or area box. Automatic hot/cold detection marks maximum and minimum temperatures within the display area. Image modes are infrared, visual, MSX and picture-in-picture mode on the 3in (76mm) color display. FLIR® Tools analytical software and a plastic case are included. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-776	-4°—482° (-20°—250°)	±2°C or 2%	<0.06	160x120 (19,200)	45°x34°
E8 Thermal Imaging Camera features full, sharp 76,800 Infrared pixel infared resolution with thermal sensitivity rating of less than 0.06°C. Measurement modes include center-spot or area box. Automatic hot/cold detection marks maximum and minimum temperatures within the display area. Image modes are infrared, visual, MSX and picture-in-picture on the 3in (76mm) color display. A plastic case and FLIR® Tools software for analysis are included. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-778	-4°—482° (-20°—250°)	±2°C or 2%	<0.06	320x240 (76,800)	45°x34°

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VIDEO ONLINE
Watch video tutorials for our products online at www.globalgilson.com!

HM-574

MA-366

MA-334

HM-591

BENKELMAN BEAM
ASTM D4695; AASHTO T 256

The Benkelman Beam is a simple lever-arm device to measures deflection of flexible pavements or base surfaces under the action of moving wheel loads. The rigid reference beam at one end supports a proble beam, where movement is measured by a dial indicator.

The probe beam is placed between the tires of a test vehicle and deflection is measured as the vehicle passes over the test area. The reference beam has a leveling adjustment to zero the dial indicator. A switchable battery-operated vibrator serves as a personnel alert and assures free movement of beam parts during measurements.

The three-piece, anodized, lightweight aluminum assembly is 33lb (15kg) net weight for easy portability and the longest piece is 6.5ft (1.99m). Mechanical Dial Indicator MA-334 or Digital Dial Indicator MA-366 must be ordered separately. **Product Dimensions:** Body 55in (1397mm) Long; Overall Length with probe 144in (3657mm).

Benkelman Beam	
Benkelman Beam	HM-574
Accessories	
Mechanical Dial Indicator	MA-334
Mechanical Dial Indicator w/certificate of calibration	MA-334C
Digital Dial Indicator	MA-366

ASPHALT DEPTH GAUGE

The Asphalt Depth Gauge makes accurate pavement thickness determinations quickly and easily. Depth measurements up to 11.75in (298mm) in 0.25in (6.35mm) increments may be made from back of paver or from curbside with no need to step directly on hot asphalt. Depth rod will not pull on asphalt when retracted and leaves a small hole easily closed by roller. Storage bracket may be mounted directly to paver or pickup truck bed and holds the gauge securely in place with a spring clamp and PVC cup.

Gauge body is all-aluminum construction with 38in (965mm) total length, 1.25in (32mm) dia. anodized barrel is 25in (635mm) long. 3in (76mm) diameter foot ensures steady, accurate measurements. Depth probe is 0.25in (6.3mm) steel. Hole for lubricating oil is in barrel. Gauge weight is 2lb (1kg). **Product Dimensions:** 1.25x38in (32x465mm) dia.xH.

Asphalt Depth Gauge	
Asphalt Depth Gauge	HM-591

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

HM-320

HM-322

HM-322D

HMA-180

HMA-183

HMA-188

UNIVERSAL PENETROMETERS

ASTM D5, D217, D937, D1168, D1321, D1403, D1831, D2884, D5329; AASHTO T 49

Universal Penetrometers test a wide variety of materials by penetration of weighted needles or cones. Main applications are for bituminous materials, but waxes, greases, foods and pharmaceuticals are among other products tested. Penetration is read from a digital display or a 5in (127mm) diameter indicator dial of 400 divisions, each representing 0.1mm of penetration. Gilson offers heavy-duty units for manual and automatic use and a lighter portable model for field work or users with a limited work load or budget. All meet ASTM and AASHTO standards when fitted with proper needle or cone.

HM-320 Manual Penetrometer is ruggedly constructed for accurate, sensitive measurements. The aluminum base has a machined, grooved table with leveling screws and rubber inserts to protect tips of needles and cones. Two stainless steel rods act as support guides for a cast aluminum head with coarse/fine adjustments and a calibrated friction-free plunger mechanism. Indicator dial has instant zero reset. Any needle or cone with standard 0.125in (3mm) diameter stem may be mounted to the 47.5g plunger assembly. A standard 2.5g ASTM D5 Needle (HMA-180) and two additional loading Weights (50g and 100g) are included. Order needles or cones for other tests separately as needed. **Product Dimensions:** 10.5x13x22in (267x330x559mm), WxDxH.

HM-322 Automatic Penetrometer is the same as the HM-320, but has a button release mechanism with digital timer to automatically stop the plunger when the preset time from 0.1—9.9 seconds expires. **Product Dimensions:** 10.5x13x22in (267x330x559mm), WxDxH.

HM-322D Digital Automatic Penetrometer is based on the HM-320 and HM-322 Penetrometers but uses a digital penetration gauge for precise readings. This model will also start the test with a single button push and stop it after a preset duration. **Product Dimensions:** 10.5x13x22in (267x330x559mm), WxDxH.

HMA-180 Penetration Needle for bituminous materials is smooth, hardened, tempered stainless steel with brass ferrule and weighs 2.5g to give 50g total when mounted with plunger assembly. Stainless steel wax penetration needle HMA-181 is also 2.5g but has truncated cone-shaped tip with approximately 4mm maximum diameter tapered to 0.15mm diameter end. Several types of grease cones detailed in ASTM D217 have polished 90° cone with 30° removable hardened steel tip. Other types of Needles and Cones are available. Transfer Dish HMA-188 is clear plastic, 3.75in diameter x 3.25in deep (95x82mm), suitable for holding 3oz or 6oz sample containers for transferring samples from bath to penetration testing. Flat bottom of dish has metal centering lugs and a magnet cemented to the bottom to secure sample boxes.

Universal Penetrometers	
Manual Universal Penetrometer	HM-320
Automatic Universal Penetrometer, 110V/60Hz	HM-322
220V/50–60Hz	HM-322F
Digital Automatic Universal Penetrometer, 110V/60Hz	HM-322D
220V/50–60Hz	HM-322DF
Accessories	
Bituminous Materials Needle[1]	HMA-180
Bituminous Materials Needle with Certification	HMA-180C
Wax Penetration Needle	HMA-181
Wax Penetration Needle with NIST Certifications	HMA-181C
Standard Grease Penetration Cone, Solid Magnesium	HMA-182
Grease Penetration Cone, Hollow Brass	HMA-183
Grease Penetration Cone, Hollow Stainless	HMA-183S
Transfer Dish	HMA-188
Tinned Sample Boxes, 3oz, 55x35mm dia.xH, carton of 12	SC-500
Tinned Sample Boxes, 6oz, 70x45mm dia.xH, carton of 12	SC-504

[1] Inquire for other needles and cones.

MO-39

PYROLYTIC OVEN

This second-generation high-temperature Pyrolytic Oven replaces the obsolete Pyro-Clean™ model and performs safe, solvent-free cleaning of asphalt and other organic residues from laboratory equipment and glassware. This cost-effective, fully automatic method saves time and creates a safer, more efficient lab environment. Costs and risks of hazardous waste handling and disposal, glass breakage and labor are reduced or eliminated. Even trace residues of organic contaminants from asphalt, injection molding and organic chemistry applications are removed, leaving lab equipment ultra clean for critical testing.

Chamber temperatures up to 900°F (482°C) burn off organic contaminants, leaving behind only carbonized residues. Catalyst-filled shelves reduce oxygen in the chamber to below the level needed to support combustion. Surfaces are then cleaned safely by the pyrolysis reaction. After a programmed soak period, air is introduced into the chamber to quickly oxidize residue. Exhaust smoke and gases are consumed in the downstream oxidizer at 1300° to 1500°F (704° to 816°C) assuring odorless, smoke-free emissions.

The MO-39 incorporates a state of the art touch screen controller. User friendly, menu-driven programming allows completely automatic operation and system monitoring diagnostics alert operators when maintenance is required. Pre-programmed language options include English, German, French, Italian, Chinese, Spanish and Arabic. The clean, matte-black design fits the physical footprint and exhaust connection point of older Pyro-Clean models.

Chamber construction is welded stainless steel and features a pressure-release door with dual gasket system. Fully insulated chambers mean exterior walls remain cool during operation and the automatic door lock and over-temperature switch combine to ensure safe operation. The chamber holds up to 70 RTFO bottles on the two catalyst-filled shelves. MO-39 ovens are shipped fully assembled and must be vented during installation with user-supplied 6in (152mm) diameter double-walled vent pipe. 2.5ft³ (71L) oven chamber measures 14.9x18.5x16in (378x470x406), WxDxH. Weight: 380lb (172kg) Electrical: 240V/60Hz, single-phase. **Product Dimensions:** 37.9x32.8x59.3in (963x833x1,506mm), WxDxH.

Pyrolytic Oven	
Pyrolytic Oven, 240V/60Hz	MO-39

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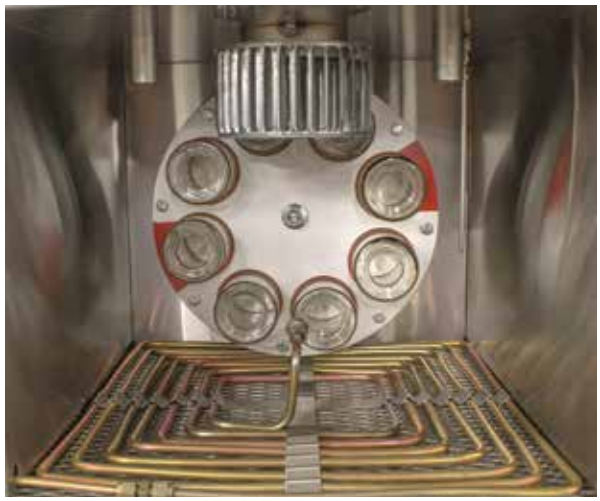
MO-36



Inside of MO-36

MOA-6

GILSON ROLLING THIN FILM OVEN (RTFO)

ASTM D2872; AASHTO T 240; CTM 346

- **Quick 5-8 minute temperature recovery time after loading samples, exceeds ASTM and AASHTO requirements**
- **Easy to remove bottom tray allows for quick change of elements or spill clean-up**
- **High-temperature silicone compression-fit gaskets securely grip RTFO Bottles**
- **Double-walled stainless steel oven maintains temperature to 200°C ± 1°C (392°F ± 1.8°F)**
- **Platinum Resistance Temperature Detector (RTD) ±0.1°C from 0°-215°C (±0.18°F from 0°-419°F)**

The Gilson Rolling Thin Film Oven by ATS features advanced design, solid construction and reliable accuracy. Precision components are paired with basic controls to ensure accurate, repeatable results and straightforward operation. Set-up and operational procedures are fast and easy with minimal training required. A built-in timer controls test times. Precision temperature control is easily programmed for test temperature of 163°C (325°F), with maximum temperature rated up to 200°C (392°F). The exclusive Gilson MO-36 is made in the USA, meeting all test method specifications and exceeding requirements for recovery time, a requirement other manufacturers have been unable to meet.

Temperature is precisely controlled to ±0.1°C with a built-in NIST Traceable Platinum RTD temperature sensor, assuring an overall temperature uniformity of ±1°C and safe, mercury-free operation. Time from ambient to 163°C (325°F) set point is 20 minutes and full heat recovery is 5 to 8 minutes after loading of specimens. A thermal shutdown switch provides over-temperature protection at 215°C (419°F). Operating air flow of 0–5,000 mL/m is indicated on the included flow meter with a range of 200 to 14,000 ml per minute. A source of clean, dry compressed air at 100psi (6.9bar) is required for operation. Soft, high-temperature silicone compression gaskets in the rotating carousel grip RTFO Bottles securely, yet allow quick and easy insertion and removal with no scratching. Cleaning and access for maintenance of the elements is easy with the removable tray at the bottom of the case.

The double-wall stainless steel case has a durable black powder-coated finish and is designed with leveling legs for convenient bench-top operation. A set of eight serial numbered RTFO Sample Bottles is included. Additional Gilson serial-numbered bottles are ordered as MOA-6. The MOA-5 Bottle Scraper is optionally available and is shaped to fit RTFO bottles for quickly removing testing residue. Other optional accessories include special stainless steel MOA-3 Bottle Tongs with synthetic gripper pads for handling of hot bottles and the stainless steel MOA-10 Cooling Rack, constructed to meet ASTM requirements holds nine specimen bottles. Electrical requirements: 230V-50/60Hz, single phase, 15 amps, 3500 watts. **Product Dimensions:** 37.25x28.75x36in (946x730x914mm), WxDxH.

Gilson Rolling Thin Film Oven	
Gilson Rolling Thin Film Oven, 240V/50–60Hz	MO-36
Accessories	
RTFO Sample Bottle, Serial-Numbered	MOA-6
RTFO Bottle Cooling Rack	MOA-10
RTFO Bottle Scraper	MOA-5
RTFO Bottle Tongs	MOA-3

also available

MO-38 Touch Screen RTFO by ATS is also available. See the complete listing at www.globalgilson.com.

HM-923

HM-74

ATS VACUUM DEGASSING OVEN (VDO)
ASTM D6521; AASHTO R 28; BS EN 14769

Vacuum Degassing Ovens (VDO) remove entrapped air bubbles from asphalt specimens after aging in a Pressure Aging Vessel. The VDO Touch by ATS is a completely automated tabletop degassing oven with a self-contained vacuum system to rapidly evacuate the chamber to the required 15 ±1.0kPa (25.5Hg). The network-ready 7in (178mm) industrial grade touch-screen controller features easy menu-driven operation in multiple language options for fast programming of vacuum, temperature values and soak times. When connected to a network via the Ethernet connection, the VDO Touch can be operated remotely using widely available remote access applications on smart phones, tablets, or PC's. USB ports allow easy software upgrades. The controller display indicates time, temperature and current process stage. Audible and visual alarms alert the user at end of each process.

Temperatures in the VDO Touch vacuum chamber are measured by a platinum RTD probe from ambient to 200°C with accuracy to ±5°C. Soak time and degass times are both programmable up to 4,320 minutes. The rugged stainless steel cabinet, chamber and cover are easy to maintain and the removable cover features a heat-resistant glass viewing window for observation during the vacuum degassing process. The chamber accommodates eight 4oz (118ml) or four 8oz (236ml) sample containers. The HM-923 includes four 8oz (236ml) sample tins and a specimen removal tool for easy loading and unloading of samples. Additional sample tins are available. The VDO Verification Kit is purchased separately and used periodically to confirm that the oven is producing specified temperature and vacuum values. The kit includes a 201° to 1,210°C digital thermometer with accuracy of ± 0.03°C, an insulated vessel cap and temperature calibration block for temperature verification and a 0 to 30in Hg digital vacuum gauge with 0.01 resolution. The kit is also available with NIST Certification. HM-923 Electrical Requirements: 115V/60Hz, 10A, or 230V/50–60Hz. **Product Dimensions:** 24x16x12in (610x406x304mm), WxDxH.

ATS Vacuum Degassing Oven (VDO)	
ATS Vacuum Degassing Oven, 115V/60Hz	HM-923
230V/50–60Hz	HM-923F
Accessories	
VDO Verification Kit	HMA-674
VDO Verification Kit w/NIST Certification	HMA-674C
Sample Tins, 4oz, pkg. of 12	SC-502
Sample Tins, 8oz, pkg. of 12	SC-506

ATS PRESSURE AGING VESSEL (PAV4)
ASTM D6521; AASHTO R 28; BS EN 14769

Pressure Aging Vessels (PAV's) use heated, pressurized air to simulate long-term oxidative aging of asphalt binders. PAV's consist of an ASME-code and CE certified stainless steel pressure vessel, powder coated, stainless steel cabinet with encased band heaters, and integral pressure measurement control.

The new PAV4 features a recovery time of less than 20min, meets ASTM, AASHTO, and EN 14769 requirements and includes a platinum RTD device to ensure accurate temperature resolution and uniformity. A pressure relief valve and high-temperature thermal shut-down are included as standard safety features. A USB port located on the front of the unit allows the user to easily store test data and upgrade software if necessary.

The HM-74 ATS Pressure Aging Vessel (PAV4) uses an industrial grade touch-screen controller for complete control and monitoring of all test processes. The system has an operating pressure of 2.1mPa (304psi) and temperature range programmable from 50°—150°C, with resolution of 0.1°C. This easy-to-use system completes a test in three easy steps: press the heat button, insert specimens when prompted, and press the age button. The stainless steel cabinet measures 28x18x30in (710x460x760mm), WxDxH. The ATS PAV includes a set of ten stainless steel Specimen Pans, an anodized aluminum sample holder with lifting handle, and a Specimen Handling Tool. The included MOA-2 Stainless Steel Specimen TFOT Pans are the type formerly used in the Thin Film Oven Test (TFOT) procedure. Additional TFOT Pans can be ordered as single units or complete sets of 10 as required. Bottled compressed air with a pressure of at least 340psi (2.34mPa) is required. Model is supplied with a regulator and NIST Traceable Certificate; compressed air is user-supplied. **Product Dimensions:** 25x18x30in (710x460x760mm), WxDXH.

ATS Pressure Aging Vessel (PAV4)	
ATS Pressure Aging Vessel (PAV4), 208–240V/50–60Hz	HM-74
Accessories	
Stainless Steel Specimen TFOT Pan	MOA-2
Stainless Steel Specimen TFOT Pans, pkg. of 10	MOA-2C

HM-59

HM-73

ATS BENDING BEAM RHEOMETERS (BBR)

ASTM D6648; AASHTO T 313

Bending Beam Rheometers measure the flexural creep stiffness of asphalt binder at cold temperatures (ambient to -40°C) to predict low-temperature thermal cracking of asphalt pavements. Special molds are used to form small asphalt beam samples for testing. The three point bend apparatus is easily removed and reinstalled in the base unit for convenient sample preparation and loading. Deflection of the beam specimen is measured and recorded as a constant load is applied. Load, displacement and bath temperature are displayed in tabular and graphic form in real time. The stiffness value is calculated at the lowest temperature anticipated for the region. A fluid bath controls the temperature of the Ethylene Glycol/Water/Methanol mixture down to -40°C (-40°F). Process temperature is controlled and monitored by two independent platinum RTD temperature transducers to maintain temperature stability. Both BBR models fully comply with ASTM/AASHTO requirements. A source of clean, dry, compressed air at 50 PSIG minimum must be provided by the user.

HM-59 ATS Bending Beam Rheometer is a proven and reliable model constructed of stainless steel and durable, high-strength polymer components. The unit uses an air bearing system to assure reliable loading with accurate and repeatable results. A linear variable displacement transducer (LVDT) with a range of 6.35mm and accuracy to ±2µm measures deflection. The temperature-compensating 500g load cell with mechanical overload protection ensures accurate load results. Safe, rapid cooling of the test fluid is provided by the mechanical refrigeration system.

The HM-59 includes a desktop computer with monitor, keyboard and mouse, pre-loaded control, acquisition and analysis software, five aluminum Specimen Molds with mylar strips, a Calibration Kit with required weights and Confidence Beam. Calibrated test weights and a certified LVDT NIST-traceable standard are provided with each system. The easy-to-use software allows daily verification and periodic calibration of load cell, LVDT and RTD transducers. **Product Dimensions:** 49x49x41in (1,245x1,245x1,040mm), WxDxH.

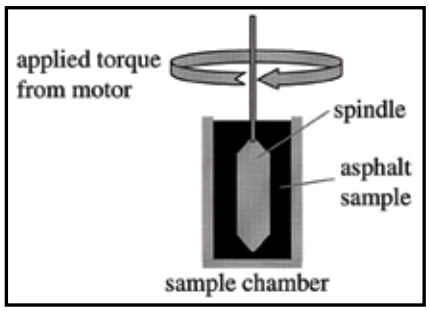
HM-73 ATS BBR3 Touch Screen incorporates state of the art design features but retains all of the accuracy, quality and performance characteristics of the HM-59. Its built-in computer makes test set up and operation easier than ever. The industrial grade touch-screen controller also has intuitive step through menus for guidance. This model can also be started, stopped and monitored remotely using an App installed on a smartphone, iPad, or tablet.

The HM-73 is ruggedly built with integral stainless steel construction. The unit uses an air bearing system to assure reliable loading with accurate and repeatable results. A linear variable displacement transducer (LVDT) with a range of 6.35mm and accuracy to ±2µm measures deflection. The temperature-compensating 500g load cell with mechanical overload protection ensures accurate load results. The complete system consists of a fluid bath base unit with removable three-point bend test apparatus, a cooling unit with temperature controller, five aluminum Specimen Molds with mylar strips, a Calibration Kit with required weights, Confidence Beam, calibrated test weights and a certified LVDT NIST-traceable standard. The easy-to-use control, acquisition and analysis software is preloaded on the internal computer and allows daily verification and periodic calibration of load cell, LVDT and RTD transducers. A USB port is located on the front of the unit for software upgrades and data storage. **Product Dimensions:** 49x49x41in (1,245x1,245x1,041mm), WxDxH.

ATS Bending Beam Rheometers (BBR)	
Bending Beam Rheometer, 115V/60Hz	HM-59
230V/50Hz	HM-59F
BBR3 Touch Screen, 115V/60Hz	HM-73
230V/50Hz	HM-73F
Accessories	
Aluminum Beam Specimen Molds, set of 5	HMA-348R
Mylar Strips for BBR Molds	HMA-347

LP-22

Close-up of LP-22 Touch Screen



Source: FHWA-NATC

Principle of Operation

LP-23

AMETEK BROOKFIELD ROTATIONAL VISCOMETER AND RHEOMETER

ASTM D4402; AASHTO T 316

Brookfield Rotational Viscometers and Rheometers provide rapid, reproducible, high-temperature viscosity measurements correlating closely with the time consuming AASHTO T 201 glass capillary method. Asphalt binder products are characterized and temperature/viscosity charts developed to estimate mixing and compaction temperatures in hot-mix design. Torque required to rotate a spindle immersed in the specimen is measured and yields a dynamic viscosity value.

Gilson offers two Brookfield systems to measure viscosities from 100cP to 40 million cP. Both are accurate to ±1% and reproducible to ±0.2%. The units measure at sample temperatures from 9°–260°C (48°–500°F) and are compatible with a variety of spindles. Viscosity in cP or mPa/s, temperature in °C or °F, shear rate and shear stress in dynes/cm², percent torque, spindle number and speed and step program status are displayed during operation on the color touch-screen displays. Stand-alone programming of test parameters can be performed directly on the screen and built-in RTD probes accurately monitor sample temperature. Auto range feature shows maximum viscosity measured with any spindle/speed combination. The new user interface provides enhanced security with customizable user levels, date/time stamp files and password access. User instructions with multi-step test protocols can be created using the new PG Flash Software and uploaded to the Viscometer through a USB Flash Drive (both included with instrument). USB PC interface provides computer control and automatic data gathering capability using Rheocalc T software, purchased separately. Each instrument can save all test data internally, or to a flash drive in Excel format. Data can then be exported, further analyzed, graphed and reported in Excel. Three USB ports are provided. Standard models operate on 115V, 60Hz power supplies. Other voltage configurations are available, Contact Gilson about Brookfield Viscometers and Rheometers for other applications.

LP-22 DV2T Viscometer features a 5.7in touch screen display that supports multiple languages to guide users through test creation and data collection. The LP-22 also offers powerful new programming capabilities and results analysis, including data averaging and QC limits with alarms. Built-In options include timed tests, data averaging, programmable QC limits/alarms, customizable speed/spindle lists and on-screen data comparison. Test Data can be sent directly to a local printer or transferred to Excel on a PC, using the flash drive. A lab stand, RTD temperature probe, spindle guard leg, PG Flash software, flash drive and a carrying case are included. **Product Dimensions:** 10x10x6in (254x254x152mm), WxDxH.

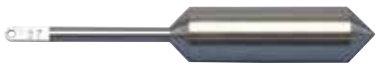
LP-23 DV3T Rheometer with a 7in touch screen, features real-time graphing of data that can be captured in stand-alone mode, sent to a printer, or saved on the flash drive in Excel format and opened on a PC for further analysis and reporting. The display supports multiple languages and displays all test parameters and measured values for yield stress, viscosity and temperature. Built-in math models provide rapid data analyses for flow index, yield stress, flow curves, leveling and recovery. Other functions included are yield tests, timed tests, data averaging, programmable limits and alarms, customizable speed and spindle lists and on-screen data comparison. Fast, straight-forward, single-point viscosity is also easily accomplished with the LP-23, making it the ideal "all-in-one" instrument for both busy QC labs and demanding R&D applications modeling comprehensive flow behavior. Inquire for Integrated temperature control with connection to other Brookfield accessories. A lab stand, RTD temperature probe, spindle guard leg, PG Flash software, flash drive and a carrying case are included. **Product Dimensions:** 10x10x6in (254x254x152mm), WxDxH.

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

LPA-52

LPA-55

LPA-158



LPA-127

LPA-121

LPA-10, 11 and 12

technote

Recommended products for ASTM D4402 and AASHTO T 316

Rotational Viscometer	LP-22
Programmable Thermosel	LPA-52
Platinum RTD	MA-270

LPA-52 Programmable Thermosel Set is required with both LP-22 and LP-23 systems for compliance with AASHTO T 316 and ASTM D4402 specifications. The Thermosel set allows measurement of accurate viscosities at elevated temperatures and consists of a programmable temperature controller, reusable stainless steel sample chamber, five disposable aluminum sample chambers, extracting tools, one SC4-27 stainless steel Spindle and a manual. The LPA-52 can be synchronized with the LP-23 Rheometer to provide viscosity data as a function of temperature over any time interval with up to twenty five temperature set points and hold times.

LPA-62 RHEOCALC T Software automates data collection for both models and allows complete computer control. The user can collect and analyze data, run math models for yield stress calculations and plastic index and perform time-saving routines. Rheocalc software requires user-supplied PC and LPA-63 cable.

Thermosel Spindles are designated from SC4-21 (lower viscosity) to SC4-29 (higher viscosity). Order extra Spindles for wider viscosity range. One SC4-27 Spindle is supplied with Thermosel systems. Extra LPA-55 stainless steel Thermosel Chambers are recommended for labs running multiple samples. Cleaning time can be eliminated by using aluminum LPA-56 Disposable Thermosel Sample Chambers and Disposable Thermosel Spindles, both sold in packages of 100. The Chuck Closure Assembly is required for use with disposable spindles and must be ordered separately. High-temperature Silicone Viscosity Standard Fluids verify performance of Brookfield Thermosel Systems. **Product Dimensions:** 8x8x7in (203x203x178mm), WxDxH.

Ametek Brookfield Rotational Viscometer	
DV2T Viscometer, 115V/60Hz	LP-22
DV3T Rheometer, 115V/60Hz	LP-23
Programmable Thermosel, 115V/60Hz	LPA-52
Accessories	
Thermosel Chamber	LPA-55
Disposable Thermosel Chambers	LPA-56
SC4-21 Thermosel Spindle	LPA-121
SC4-27 Thermosel Spindle[1]	LPA-127
SC4-28 Thermosel Spindle	LPA-128
SC4-29 Thermosel Spindle	LPA-129
Disposable SC4-27 Thermosel Spindles	LPA-127D
Replacement Spindle Extension Link	LPA-118
Chuck Closure Assembly[2]	LPA-58
Standard Fluid; 4,500—30,000cP	LPA-10
Standard Fluid; 9,000—60,000cP	LPA-11
Standard Fluid; 15,000—100,000cP	LPA-12
Rheocalc T Software	LPA-62
Cable for Rheocalc Software	LPA-63
Computer System[3], 115V/60Hz	HMA-354

[1] One included with Thermosel Set. [2] Required when using Disposable Spindles. [3] Inquire for computer specifications.

LP-35

LP-35 with LPA-42

technote

To perform ASTM D4402 and AASHTO T 316 Gilson recommends the following equipment:

Rotational Viscometer, LP-35
Thermosphere Set, LPA-42
Platinum RTD Thermometer, MA-270
Additional Thermosphere Spindles, LPA-130

FUNGILAB ROTATIONAL VISCOMETERS

ASTM D4402; AASHTO T 316

Fungilab Rotational Viscometers are advanced, multifunctional instruments that provide accurate and precise binder viscosity measurements of Asphalt binder. Liquefied binder is placed in a sample chamber, thermostatically heated, and torque is applied by a rotating spindle. The ratio between the shear resistance of the spindle and the applied shear rate provides the dynamic viscosity value of the sample. The viscosity values are used to accurately estimate asphalt handling, mixing, and compaction characteristics at application temperatures.

Glison offers two Fungilab medium viscosity, R-range systems to measure viscosity from 100cP to 40 million cP. Both are accurate to ±1% and reproducible to ±0.2%. The units measure temperature ranges from -40°C to 300°C with an included RTD probe and are compatible with multiple spindles, purchased separately.

Displayed data includes selected speed, selected spindle, viscosity reading in cP or mPa/s, percentage of full scale, sample temperature in °C or °F, shear rate, and shear stress (with coaxial spindles), and user-defined density. Auto range feature shows maximum viscosity measured with any spindle/speed combination. Both systems offer intuitive operation and meet ASTM and AASHTO standards for asphalt viscosity determinations. For multi-purpose labs or those requiring advanced research capabilities beyond standard test methods, the V-PAD's fully remote operation and additional programming capabilities provide increased versatility. The LPA-42 Thermosphere Set is required for full compliance to ASTM/AASHTO requirements, and is purchases separately.

LP-35 EVO Expert Rotational Viscometer features a 4.5x2.5in (114x63.5mm) color LCD touchscreen display that allows for fast data recognition and precise, one-touch control. User interface supports 10 language options.

The included Data Boss Software for Windows provides complete computer control of the EVO Expert via Bluetooth or the USB cable, allowing for the fast design of experiments. Additional versatility is offered with the EVO App, which allows control of the unit via an Android tablet. Data Boss software provides plug and play viscometer support and an intuitive, customizable interface. Users can quickly define test parameters, view real-time graphical and numeric data, and export data in multiple formats. Built-in math models quickly analyze test data for comparison to common equations.

User-defined step, ramp, and multi-step curves can be programmed, and a powerful graph key helps the user to design the flow curves needed. Up to four flow curves can be compared simultaneously, and more than twelve different charts can be produced. The software also allows the documentation of each experiment with a name, date/time stamp, user, and notes for performing follow-up experiments. The datalogger function allows data to be transferred in spreadsheet format to a PC or sent directly to a local printer via the USB drive.

Included with the EVO Expert are a PT100 RTD temperature probe, viscometer stand with leveling feet, USB cable, carrying case, calibration certificate, and external power supply. The EVO operates on 100–240V/50–60Hz. **Product Dimensions:** 6x6x9in (152x152x229mm), WxDxH.

LP-37

V-PAD Tablet with Fungilab App

LPA-130

LP-37 V-PAD Rotational Viscometer is controlled with the supplied 8-inch Android tablet and Fungilab App. Real-time graphing of data is saved in a comprehensive database and can be exported in PDF or .csv format for later analysis and reporting. The Fungilab App supports multiple languages and displays all test parameters and measured values for yield stress, viscosity, and temperature. The tablet and V-PAD feature both WiFi and Bluetooth connectivity for optimal control of all unit functions and data transfer.

User-defined programs include time to torque, time to stop, step, and ramp. Multiple programs can be created and saved for later use. Additional program parameters include a customizable speed list between 0.01–250rpm, spindle type, sample density, quality control limit alarms, graphing axis and temperature offset values, and the frequency of data collection. Automatic calibration and quality control limit functions use audible alarms to indicate a startup malfunction or out of range limit.

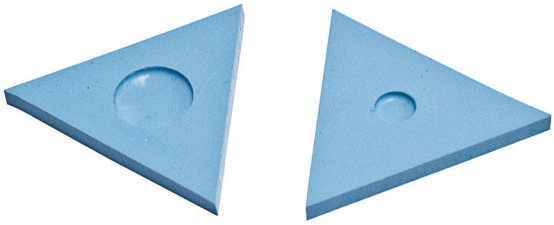
Included with the LP-37 viscometer are an adjustable base, viscometer head, PT100 RTD temperature probe, 8in tablet with Fungilab App, spindle protector and rack, carrying case, calibration certificate, and power supply. The V-PAD operates on 100–240V/50–60Hz. **Product Dimensions:** 9x7x23in (229x178x584mm), WxDxH.

LPA-42 Thermosphere Set is required with the LP-35 EVO or LP-37 V-PAD for compliance with ASTM D4402 and AASHTO T 316. The precision-temperature controller provides stable temperatures up to 300°C for consistent, high-temperature viscosity measurements. Additional LPA-44 stainless steel Thermosphere Chambers are recommended for labs running multiple samples. Cleaning time can be eliminated by using aluminum LPA-47 Disposable Thermosphere Sample Chambers, sold in packages of 50. The Thermosphere Set consists of a programmable temperature controller, reusable stainless steel sample chamber, chamber support, Thermosphere Spindle TR8, and instruction manual. Add "F" suffix for unit operating on 230V/50Hz. **Product Dimensions:** 10x7x3in (254x178x76mm), WxDxH.

Thermosphere Spindles are designated from TR8 (lower viscosity) to TR11 (higher viscosity). Order extra Spindles for wider viscosity range. One LPA-131 TR8 Spindle is supplied with the Thermosphere Set. High-temperature Silicone Viscosity Standard Oils verify performance of the Fungilab EVO Expert and V-PAD Viscometers.

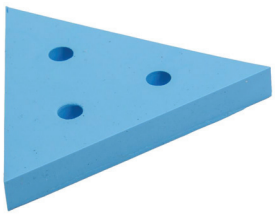
Fungilab Rotational Viscometers	
EVO Expert Rotational Viscometer	LP-35
V-PAD Rotational Viscometer	LP-37
Accessories	
Replacement Thermosphere Stainless Steel Chamber	LPA-44
Disposable Thermosphere Chambers, Aluminum, pkg. of 50	LPA-47
Thermosphere Spindle Set, TR8, TR9, TR10, TR11	LPA-130
Thermosphere Spindle TR8	LPA-131
Thermosphere Spindle TR9	LPA-132
Thermosphere Spindle TR10	LPA-133
Thermosphere Spindle TR11	LPA-134
Viscosity Standard Oil, RT30000, 600ml	LPA-32
Viscosity Standard Oil, RT60000, 600ml	LPA-33
Viscosity Standard Oil, RT100000, 600ml	LPA-34
Thermosphere Set, 115V/50–60Hz	LPA-42
Thermosphere Set, 230V/50–60Hz	LPA-42F

HM-91



HMA-356

HMA-355



HMA-356C

ANTON PAAR DYNAMIC SHEAR RHEOMETERS
ASTM D7175, D7405; AASHTO T 315, T 350

Dynamic Shear Rheometers (DSR) classify asphalt binders based on their resistance to damage from age, temperature and mechanical forces over a wide temperature range. DSR's are particularly important in characterizations of polymer-modified, performance graded (PG) binders used in modern Superpave mix designs. A disc-shaped binder sample is confined between two parallel plates and subjected to horizontal oscillation to determine dynamic shear properties. Anton Paar SmartPave Dynamic Shear Rheometers are configured to meet the demands of everyday quality control testing of 4mm, 8mm and 25mm samples in asphalt production facilities. These models are ideal for classification of SHRP/SuperPave PG binders.

The synchronous, brushless DC motor drives a rotor mounted on a frictionless air bearing to allow the most precise movement and sensitive measurements. Maximum torque is 125 mNm (milliNewtons-meter) and minimum oscillation torque is 1µNm. Speed range is from 6-3 to 1,500rpm. A clean, dry and oil-free supply of compressed air is required for operation. Operating air pressures are from 58 to 101psi (4 to 7bar) with optimum pressure of 87psi (6bar). User-friendly RheoCompass™ software is included and designed specifically for the needs of the asphalt industry. Intuitive, step-by-step instructions guide user through predefined standard test procedures and temperature calibration and verification routines are fully automated. Simplified data retrieval and report generation make the software easy to use. Toolmaster™ automatic tool recognition and configuration instantly recognizes testing components and temperature control units, eliminating the need to enter data manually when changing components. Quick-Connect coupling allows one-handed connection of key components and ensures fast, convenient changes. TruRay LED lighting feature provides a clear view of the sample and measurement surface for easy set up and precise filling of the measuring gap. A sliding rail design allows easy access to the sample during trimming and set up operations. Upper and lower measuring plates and fittings for 8mm and 25mm samples are included. Installation and training costs quoted separately. **Product Dimensions:** 15x21x26in (380x530x660mm), WxDxH.

HM-90 SmartPave I DSR is designed for everyday QC testing and is supplied without the Peltier temperature controlled hood. This cost-effective model does not fully meet ASTM and AASHTO requirements for total temperature control. The Peltier system in the base provides temperature control for the lower plate.

HM-91 SmartPave II DSR is also configured for routine QC testing, but fully complies with current ASTM and AASHTO requirements for temperature control of the testing environment. The patented active 8 and 25mm plates and fittings included. Peltier temperature hood controls temperatures both above and below the sample, eliminating temperature gradients and making heating and cooling rates much faster. Test times are reduced, while reproducibility is improved. With no water flow around the sample, set up and testing takes place in a completely dry environment. Temperature range is -5° to 200°C, with temperature gradients less than 0.1°C.

Silicone Rubber Specimen Molds are purchased separately. HMA-355 2.7 million centipoise Viscosity Standard fluid in 55ml bottles is NIST traceable and designed specifically for the DSR.

Anton Paar Dynamic Shear Rheometers	
SmartPave I DSR, 115 or 230V/50–60Hz	HM-90
SmartPave II DSR, 115 or 230V/50–60Hz	HM-91
Accessories	
Silicone Specimen Mold, 25mm	HMA-356A
Silicone Specimen Mold, 8mm	HMA-356B
Silicone Specimen Mold, 4mm	HMA-356C
Silicone Specimen Mold, Set of one each, 25mm and 8mm Molds	HMA-356
Viscosity Standard Fluid, 55ml	HMA-355

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

LP-10

LPA-20

LPA-21

LPA-24

LPA-26

LPA-31

LPA-30

DUCTILITY TESTER

ASTM D113, D6084; AASHTO T 51, T 300, T 301

Ductility tests of bituminous materials measure elongation of a binder specimen before failure. The ends of a molded specimen are pulled apart in a liquid-filled trough at specified speed and temperature. The Ductility Tester features a heating and cooling circulator for complete temperature control. Tensile strength and ductility of specimens can be measured concurrently with addition of the Force Ductility Kits.

Ductility Tester

Description	Model
Temperature Controlled Ductility Tester is mounted in a stainless steel water bath to precisely control test temperatures and can test three standard ductility specimens simultaneously. The heating/cooling fluid circulation system uses an immersion heater and refrigerating unit to digitally regulate temperatures from 5° to 25°C ±0.5° (41° to 77°F ±0.9°). Temperature set points are programmed through the digital controller/display. Dual safety thermostats prevent temperature over-runs. Operation is vibration-free with a maximum stroke of 1,500mm and constant travel speed of 50mm per minute maintained via a direct-drive motor. Maximum force is 300 ±0.1N (67 ±0.02lbf) A traveling pointer indicates exact position of the carriage on a fixed scale. LPA-20 Standard Ductility Molds and LPA-24 Standard Base Plates are purchased separately. Painted enamel outer steel case and fiberglass insulated interior stainless steel walls. **Product Dimensions:** 74x14x27in (1880x360x680mm), LxWxH. The unit also accommodates components to conduct force ductility testing.	
Temperature-Controlled Ductility Tester, 115V/60Hz	LP-10
230V/50Hz	LP-10F
LPA-20 Standard Ductility Mold meets ASTM D113 requirements and is precision-machined brass consisting of two side pieces and two end clips with mounting holes. LPA-24 Base Plate is purchased separately for each mold. LPA-26 Large Base Plate is 5x8x0.1in (127x203x3mm) and allows placing three molds on same base. LPA-21 Force Ductility Molds are also machined brass, include two end clips and two sides designed to meet AASHTO T 300 Force Ductility, ASTM D6084 and AASHTO T 301 Elastic Recovery requirements. Order additional molds and base plates to save set-up time with high-volume testing.	
Standard Ductility Mold	LPA-20
Standard Base Plate	LPA-24
Large Base Plate	LPA-26
Force Ductility Mold	LPA-21
Force Ductility Kit adapts most standard ductility machines for single-specimen force measurement. Components fit easily without tools or modifications. The kit consists of a load measuring adapter, 0.01lbf two-channel digital display, RS-232 interface, cables and software. Three pairs of straight-side mold pieces are also provided to convert standard ductility molds to force ductility molds. A calibration stand, weight hanger assembly and six weights (30lb total) for calibration in English or metric units are also included. For testing two force measurement specimens simultaneously, order an additional LPA-31 Load Measuring Adapter. Single-channel Chart Recorder is a multiple-range flatbed unit for 200mm (7.9in) paper that accepts analog data input.	
Force Ductility Kit	LPA-30
Load Measuring Adapter	LPA-31
Chart Recorder	LPA-182

PT-82

SAYBOLT VISCOMETER BATH
ASTM D88, D7496; AASHTO T 72

The Saybolt Viscometer Bath determines viscosity of petroleum liquids at temperatures from ambient to 464°F (240°C). PID controller maintains ±0.05°F (±0.03°C) temperature uniformity throughout operating range and provides quick temperature stabilization with protection of an over-temperature control. Set-point temperatures are displayed in °F/°C. Circulate tap water or refrigerated coolant through the built-in cooling coil for operation at near-ambient temperatures.

The enameled steel cabinet has specimen-area backlighting, leveling feet and sliding draft shields. Insulated stainless steel bath with 5gal (19L) capacity has overflow pipe and drain valve to simplify filling to required level. Flasks for the 60ml samples are easily centered on the removable, chemical-resistant alignment plate. The unit comes with four thermometer supports, four chained corks, withdrawal tube, tube nut and orifice wrenches, two port closures and four port covers and oil strainer. Saybolt tubes, flasks, orifices and withdrawal pipettes must be selected based on specimen properties.

Order Regular Bath Oil separately for use up to 275°F (135°C), or Hi-Temperature Silicone Fluid with 621°F (327°C) flash point. **Product Dimensions:** 29x25x34in (737x635x864mm), WxDxH.

Saybolt Viscometer Bath	
Saybolt Viscometer Bath, 115V/50–60Hz	PT-82
220–240V/50–60Hz	PT-82F
Accessories	
Brass Saybolt Tube	PTA-176
Stainless Steel Saybolt Tube	PTA-177
Universal Orifice	PTA-178
Furol Orifice	PTA-179
Road Oil Orifice	PTA-180
Wrench for Universal & Furol Orifices	PTA-162
Wrench for Road Oil Orifices	PTA-163
Socket Wrench	PTA-166
Bath Oil Hi-Temperature Silicone, 1gal	PTA-165
Saybolt 60ml Receiving Flask	PTA-168
Saybolt 60ml Withdrawal Pipette	PTA-169

PT-103

PT-114

ZEITFUCHS® CROSS-ARM VISCOMETERS
ASTM D445, D446, D2170; AASHTO T 201; ISO 3104, 3105

These viscometers measure kinematic viscosity of bitumens and road oils at 140°F (60°C) and asphalt cements at 275°F (135°C). Precision is ±0.2%. Using only a 1—3ml charge, the viscometer can be filled and cleaned while immersed in a constant temperature bath. Instrument requires a liquid depth of 9in (230mm). Each unit is supplied with permanently attached 2in (51mm) round metal holder and certificate of calibration. Viscometers with rectangular metal holders or without holder are also available. **Product Dimensions:** 12x2x2in (305x51x51mm), WxDxH.

Zeitfuchs® Cross-Arm Viscometers			
Size	Viscosity Range Centistokes	Approx. Constant, cSt/s	Model
1	0.6—3	0.003	PT-101
2	2—10	0.01	PT-102
3	6—30	0.03	PT-103
4	20—100	0.1	PT-104
5	60—300	0.3	PT-105
6	200—1,000	1.0	PT-106
7	600—3,000	3.0	PT-107
8	2,000—10,000	10	PT-108
9	6,000—30,000	30	PT-109
10	20,000—100,000	100	PT-110

ASPHALT INSTITUTE VACUUM VISCOMETERS
ASTM D2171; AASHTO T 202

Gilson offers five sizes of Asphalt Institute Viscometers to determine viscosity of highly viscous materials such as bitumen at 140°F (60°C). The user measures elapsed time for a fixed volume of liquid to be drawn by vacuum through the graduated capillary tube. Time is multiplied by the viscometer constant to obtain absolute viscosity. Measurement requires a minimum sample size of 3ml and a bath depth of 7in (180mm). Certificate of calibration is supplied with each viscometer. PTA-100 Neoprene rubber holders to fit a 2in (51mm) diameter hole are ordered separately. Inquire if fixed metal holders preferred. **PT-111, 114 & 115 Product Dimensions:** 12x2x2in (305x51x51mm), WxDxH. **PT-112 & 113 Product Dimensions:** 10.25x1.625in (260x41mm), WxH.

Asphalt Institute Vacuum Viscometers		
Size	Viscosity Range, Poise	Model
25	42—800	PT-111
50	108—3,200	PT-112
100	600—12,800	PT-113
200	2,400—52,000	PT-114
400	9,600—200,000	PT-115

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PT-62

VACUUM REGULATORS
ASTM D 2171; AASHTO T 202

Solid state mercury-free digital regulators are designed for precise measurement and control for a range of laboratory vacuum applications. As needed for viscous asphalt testing with Asphalt Institute, Cannon-Manning and Modified Koppers vacuum viscometers, the Vacuum Regulators are preset to control at 300mm below atmospheric pressure; they may also be user reset to control anywhere in the range from 1—410mm below atmospheric pressure. An LCD screen displays vacuum in mm Hg or any of nine other units. The vertical configuration is designed for convenient display and keypad access while minimal counter space is used.

Two models are available. Model PT-61 100 Watt is for regulation of user's existing vacuum system. Model PT-62 175 Watt is equipped with an internal vacuum pump and requires no external vacuum source. Both have housings of enameled steel supported with rubber feet. **Product Dimensions:** 6.75x18x18.5in (172x458x470mm), WxDxH.

Vacuum Regulators	
Vacuum Regulator, 115V/50–60Hz	PT-61
230V/50–60Hz	PT-61F
Vacuum Regulator, 115V/50–60Hz	PT-62
230V/50–60Hz	PT-62F

PT-53

CONSTANT TEMPERATURE VISCOSITY BATH
ASTM D445, D2170, D2171; AASHTO T 201, T 202

The Constant Temperature Viscosity Bath is designed for use with capillary viscometers, but is well-suited for general laboratory work requiring precise temperature control. The Bath uses 12x12in (305x305mm), DxH Pyrex bath jars for easy visibility.

The PT-53 Viscosity Bath conforms to ASTM D445 temperature stability requirements and has selectable temperature presets and a variable control to set temperature at any point within their ranges. Temperature can be adjusted precisely within hundredths of a degree. A stainless steel encased thermistor in the baths senses temperature. Bath Covers have seven 2in (51mm) diameter holes for viscometers and two 0.375in (10mm) holes for ASTM thermometers. A white-coated stainless steel baffle plate aids viewing of viscometers. Lighting is by fluorescent lamps. The circuitry is in base platform drawer on ball-bearing glides for easy access. Temperature range is 20°—100°C. Control is proportional ±0.01°C. Mixing features a motor-driven stirrer. Unit has several over-temperature protection standards, two heating elements and is 900 Watts. PT-53 also boasts a baffle background for viewing. **Product Dimensions:** 16x14.25x24in (406x362x610mm), WxDxH.

The Viscosity Bath includes three safety features: A second thermistor provides fault protection for over-temperature condition and shuts off until user resets limit circuit. Heater power is shut off if control thermistor is disconnected. Power is shut off if bath liquid falls below safe operating level. PTA-70 Drawer fits under unit for storing viscometers and accessories.

PTA-61 Bath Oil is recommended when testing to 100°C (212°F). Bath jars hold about 5gal (19L).

Order viscometers and thermometers separately. See separate listing for Pressure Regulators. ASTM 9C Pensky Martens and Tag Closed High Thermometer has range of -5° to 110°C with 0.5°C divisions and is ordered separately.

Constant Temperature Viscosity Baths	
Viscosity Bath, 115V/50–60Hz	PT-53
230V/50–60Hz	PT-53F
Accessories	
Drawer Unit	PTA-70
Bath Oil, 5gal	PTA-61
ASTM 9C Thermometer	MA-210C
ASTM Equivalent S9C Non-Mercury Thermometer	MA-510C

PT-6A

CLEVELAND FLASH TESTER
ASTM D92; AASHTO T 48

The Cleveland Flash Point Tester is used in the Cleveland Open Cup method to measure the flash point of asphalt binder between 175°F (80°C) and 752°F (400°C). The variable control 10 amp, 1250 watt nickel-chromium heater ensures accurate rate-of-rise temperature settings. A separate gas supply is required to connect to the pivoting test-flame burner. The thermometer positioning bracket is adjustable and can be raised for clearance to remove and install the included flash cup. A rugged stainless steel housing with cooling vents encloses the heater and the open flash cup rests on an insulated platform. An ASTM 11C Thermometer is required and is ordered separately as MA-212C. **Product Dimensions:** 12x5x4in (305x127x102mm), WxDxH.

Cleveland Flash Tester	
Cleveland Flash Tester, 115V/60Hz	PT-6A
230V/50–60Hz	PT-6AF

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LP-16

MS-66

MS-62

SOFTENING POINT RING & BALL APPARATUS

ASTM D36; AASHTO T 53

Ring and Ball Apparatus is used for determining the softening point of asphalt, coal tar pitch and other viscoelastic bitumens in the range of 30°—157°C (86°—315°F). Steel balls are placed on top of bitumen specimen discs in test rings in a bath. Temperature of the bath is increased gradually until the specimens soften and fall under the ball weight to the shelf 1in (25.4mm) below. The assembly provides for simultaneous testing of two specimens as suggested in standard test procedures and includes two square-shouldered brass test rings, two 0.375in (9.5mm) steel balls, two brass ball-centering guide rings, an 800ml heat-resistant beaker (bath) and a brass ring holder suspension assembly with cover and shelf to fit beaker. ASTM Softening Point Thermometers and a Beaker Stand Assembly should also be purchased. The Beaker Stand Assembly includes metal support stand, ring clamp, wire gauze and thermometer clamp. **Product Dimensions:** 4x6in (102x152mm), dia.xH.

Softening Point Ring & Ball Apparatus	
Softening Point Assembly	LP-16
Accessories	
Beaker Stand Assembly	LP-18
800ml Beaker	LPA-43
Steel Balls, set of 15	SSA-44

also available.....

For ASTM Bituminous Softening Point Thermometers, see our Thermometers and Timers section.

STAINLESS STEEL MELTING POTS

Stainless Steel Melting Pots are designed for performance in harsh lab environments and include precise, long-lasting digital controllers. Increasingly popular in asphalt labs, these units can also be used for dispensing of other materials like waxes or adhesives. The rugged melting pots are fitted with heated, no-drip ball dispenser valves to aid material flow and prevent clogs. Sturdy powder-coated steel stands are included and have adjustable height. Stands bolt securely to the bench-top, raising the pots up to 16in (406mm) over bench.

The Electronic digital controller regulates independent temperature settings for pot and dispenser valve. The menu-driven controller is easy to set up and has pass code-actuated lockout settings to guard against accidental changes. The controller can be field calibrated by user if needed. Readout is selectable for °F or °C display. The 18-gauge crucible is housed in a 20-gauge stainless steel shell and insulated with 3in (76mm) of fiberglass. The multi-circuit blanket heater assures uniform temperatures. Maximum operating temperature is 350°F (177°C). The loose aluminum cover has a heat resistant knob. The pots are supplied with a 6ft (1.8m) power cord.

MS-66 Stainless Steel Melting Pot has 4qt (3.8L) capacity and crucible is 6.75x7.25in (171x184mm), dia.xH. **Product Dimensions:** 10.375x12in (264 x305mm), dia.xH. Heating Element is 600 Watts.

MS-67 Stainless Steel Melting Pot has 12qt (11.4L) capacity and crucible is 10.9x9.75in (277x248mm), dia.xH. **Product Dimensions:** 15x17in (381x482mm), dia.xH. Heating Element is 1,200 Watts.

Stainless Steel Melting Pots	
Melting Pot, 4qt, 110V/60Hz	MS-66
220V/50Hz	MS-66F
Melting Pot, 12qt, 110V/60Hz	MS-67
220V/50Hz	MS-67F

DISPENSING MELTING POTS

Timesaving melting pots simplify dispensing of asphalt binder for laboratory testing and mix-design applications. Pots are available in 4qt or 10qt (3.8L or 9.5L) capacities and are also useful for dispensing waxes, adhesives and other compounds. A heavy pipe single-column support mounts easily to a bench top. Height and angle are quickly adjusted with set screws on the sliding boss attached to the column. A manual dispensing lever operates a needle valve that is adjusted to obtain desired flow rate. The dial thermostat controls heating range from 150°–550°F (66°–288°C).

The heavy painted-steel housing is insulated from the cast-aluminum inner pot by thick thermal insulation. Blanket-type heating element uniformly heats the pot across the bottom and for 75% of the wall height. An aluminum cover is provided to retain heat and control fumes.

MS-62 Dispensing Melting Pot has 4qt (3.8L) capacity and 880 Watt heating element. Footprint is 10x15in (254x381mm) and maximum height is 18in (457mm). Maximum clearance below dispensing valve is about 7in (178mm). Product Dimensions: 10x18in (254x457mm), dia.xH.

MS-64 Dispensing Melting Pot has 10qt (9.5L) capacity and 1,540 Watt heating element. Footprint is 14x19in (356x483mm) and maximum height is 19in (483mm). Maximum clearance below dispensing valve is about 7in (178mm). Product Dimensions: 14x19in (356x483mm), dia.xH.

Dispensing Melting Pots	
Melting Pot, 4qt, 120V/60Hz	MS-62
240V/50Hz	MS-62F
Melting Pot, 10qt, 120V/60Hz	MS-64
240V/50Hz	MS-64F

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CONCRETE COMPRESSION TESTING MACHINES

ASTM C39, C78, C109, C293, E4; AASHTO T 22; BS 1610, 1881

VIDEO ONLINE

MC-250P

Gilson makes it easy to configure a machine that best fits your application. Select a load frame from our 250, 300, 400 or 500 Series with capacities from 250,000—500,000lbf (1,112–2,224kN) and equip it with a state-of-the-art electronic controller. Our Pro and Pro-Plus Controllers cover application needs from basic to sophisticated. We will also help you design a custom machine with capacity up to 1,000,000lbf (4,448kN) for testing a wide range of sample types and sizes.

With solid steel cross-heads from 3–6in (76–152mm) thick on our standard frames, Gilson compression machines meet the stringent ACI 363 rigidity recommendations. Standard frames are equipped for testing 6x12in (152x305mm) cylinders, but may be outfitted with accessories to accommodate testing of other size cylinders as well as different sized cubes, cores, and beams. The 400P and 500P Series frames can also accommodate two-block masonry prisms. Mounting stands place the lower platen at the correct height for safe, efficient handling of specimens and are included with 400 series and higher. All frames include latchable steel Fragment Guard Doors and side mounted controller.

Bottom mounted hydraulic rams apply compression force upward, except for the 250 Series, which are mounted in the top crosshead. Precision ground pistons with O-Ring sealing and Teflon back-up rings rest in a polished steel cylinder. Spherically-seated upper platen assemblies are ground, hardened, nickel plated and scribed with concentric circles. Lower platens for 250 Series are 6.5in (165mm) diameter and other series have oversized rectangular compression tables. Locking stems hold upper platen assemblies securely in place, yet allow for quick substitution of accessory components.

Two-stage, oil-immersed pumps drive hydraulic systems on all frames. The first high volume, low-pressure stage rapidly advances the piston. The pump automatically switches at 135psi of pressure to the second stage of low volume, high pressure flow used during testing to maintain a continuous rate of loading from 2,000–200,000lbf per minute with the value set in its Metered Advance Position. Hold feature pauses pressure advance indefinitely and Retract feature releases pressure to allow return of piston to starting position. A high-pressure hydraulic safety valve prevents use beyond maximum machine capacity. A pressure bleed hole in the piston helps avoid overextension of the ram. Our unique 1/2hp system on the 250 and 300 Series runs cooler, offers better load control and is the quietest available. The 400 and 500 Series use a more powerful 3/4hp motor. Both systems operate on 115V/60Hz power supply. Specify 230V/50Hz operation by adding an "F" suffix to the model number.

Piston Over-Extension Limit Switch is an accessory for Gilson's Concrete Compression Machines and provide additional safety by preventing over-extension of the hydraulic ram. The limit switch can be user-installed on an existing concrete compression machine or factory-installed at time of new purchase. MCA-61 is designed for use with 250 Series concrete compression machines, MCA-62 is for 300 Series, MCA-63 for the 400 Series and MCA-64 is for use with 500 Series concrete compression machines.

Pro Controllers have practical designs with high-end features. These units simultaneously display both live load and rate of load during testing. Peak load and average rate of load are displayed automatically at test conclusion and held until reset. Up to 600 tests can be stored in memory with date and time, sample I.D., peak load and average rate of load data.

A high sampling rate and digital filtering result in smooth, uniform control of load pacing. Accuracy is better than ±0.5% of indicated load from 1-100% capacity, exceeding ASTM C39 and E 4 requirements. The 5.3in (135mm) wide backlit VGA liquid crystal screen has a 240x64 pixel display area and adjustable contrast settings. Test data is displayed in user-selectable engineering units of lbs, kN, kg, or N and rate of load is shown in force units per second. MCA-29 Able Cable® allows direct transfer of test data in memory to user's computer via a USB port. The Pro Controller can also be configured to output data from memory to a serial printer.

The Pro Controller is made in the USA, features a two-year manufacturer's warranty and is housed in a sturdy stainless steel, NEMA-4 rated moisture and dust-proof enclosure to resist the harshest environments. The Pro is UL, CUL, CE and Measurement Canada listed.

Inquire for Pro Controller as a field-installed retrofit package on your existing compression machine. **Product Dimensions:** 10.5x3.3x7.3in (267x84x184mm), WxDxH.

Pro-Plus Controllers offer the most accurate and advanced system available today for the testing and documentation of concrete strengths. Ease of operation and dependability are two important features of this new system. All information is clearly displayed on the 4.6x3.4in (116x86mm), WxH back-lit VGA graphic panel. The large 320x240 pixel screen with large alphanumeric characters has adjustable contrast to make it easily readable under any lighting conditions.

Soft-key menus allow fast and easy set up. A sample type menu lists six common specimen and test types: cylinder, cube, third-point and center-point beams, cylinder-split and cross-sectional area. Test results are automatically stored for hard-copy documentation. In case of accidental data loss, a calibration restore feature allows the original factory calibration to be uploaded to the controller via a communication port. The original calibration data file is maintained at the factory.

During a test cycle, load, stress and rate of load in the time units selected are displayed simultaneously. At test completion, peak stress, load and if activated, the

MC-300P

MC-400PR

average loading rate during the test, are automatically displayed. Selectable display units include Force: lb, kN, kg and N; Stress: psi, mPa, kg/cm² and kPa; Size: in, mm and cm; and Time in seconds or minutes.

The controller automatically stores test results to memory for later downloading to a computer. Up to 500 tests can be stored to memory and printed in a spreadsheet format listing test date and time, sample ID number, sample type, specimen area and length, peak load and peak stress. Data includes average rate of load, C39 cylinder correction factor, break type, cylinder cap type, sample age, weight and operator ID number. Spanish or English language menus can be toggled in the settings. Inquire for other options to store and download test data.

The Pro-Plus has a two-year warranty and is built for harsh laboratory environments and features a stainless steel NEMA-4 enclosure that is both moisture and dust proof. Heavy-duty tactile keys are tested to over five million actuations. Accuracy is achieved through a five-point linear calibration program to exceed ASTM C39 and E 4 requirements and in general, is better than ±0.5% of indicated load from 1-100% capacity. The Pro-Plus Controller is also UL, CUL, CE and Measurement Canada listed. **Product Dimensions:** 10.5x4.5x8.5in (267x114x216mm), WxDxH.

helpfulhint

Gilson offers custom compression machines with capacity up to 1,000,000lbf (4448kN), multiple load cells, specially-sized frames and console-mounted controllers and displays.

Concrete Compression Testing Machines

Controller	Model[2]	Total Capacity lbf (kN)	Maximum psi, 6x12in Cylinder	Overall Size with Stand WxDxH, in	Opening with Platens WxH, in	Lower Platen Dimensions, WxDxH, in
Pro	MC-250P	250,000 (1,112)	7,000	27 x 14 x 58	9.3 x 13.4	6.5 dia. x 1.9
	MC-300P	300,000 (1,335)	8,500	29 x 16 x 60	9.5 x 14.4	9 x 11 x 1.9
	MC-400P	400,000 (1,780)	11,300	39 x 20 x 61	13.3 x 14.3	12 x 18 x 2
	MC-500P	500,000 (2,224)	14,100	31 x 24 x 61	14 x 14.3	13 x 18 x 2
Pro-Plus	MC-250PR	250,000 (1,112)	7,000	27 x 17 x 57	9.3 x 13.4	6.5 dia. x 1.9
	MC-300PR	300,000 (1,335)	8,500	32 x 17 x 59	9.5 x 14.4	9 x 11 x 1.9
	MC-400PR	400,000 (1,780)	11,300	39 x 20 x 61	13.3 x 14.3	12 x 18 x 2
	MC-500PRP[1]	500,000 (2,224)	14,000	30 x 24 x 69	14 x 26.8	13 x 18 x 2
	MC-500PR	500,000 (2,224)	14,100	31 x 24 x 61	14 x 14.3	13 x 18 x 2

[1] Frames configured for 2-Block masonry prisms. [2] Specify 230V/50Hz operation by adding an "F" suffix to the model number.

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NEW

Pro Controller

Pro-Plus Controller

Concrete Compression Machine Controller Comparison

	Pro Controller	Pro-Plus Controller
Accuracy	Exceeds ASTM C39 and E4 requirements through a calibration program with seven linearization points. Accuracy is better than ±0.5% of indicated load from 1-100% capacity.	Exceeds ASTM C39 and E4 requirements through a calibration program with five linearization points. Accuracy is better than ±0.5% of indicated load from 1-100% capacity.
Features	➤ Simultaneously displays both live load and rate of load during a test ➤ Automatically displays peak load and average rate of load at the end of a test ➤ Available as a field-installed retrofit package for an existing compression machine	➤ Simultaneously displays live load, rate of load, sample stress, sample size and type during a test ➤ Menu selection for six common specimen types: cylinder, cube, beam third point, beam center point, cylinder split tensile and cross-sectional area. ➤ English or Spanish language menus ➤ Calibration restore feature allows uploading of factory calibration in case of accidental data loss ➤ Automatically calculates and displays peak stress at the end of a test ➤ Can be used with multiple transducer/load cell combinations with one or more load frames ➤ Available as a field-installed retrofit package for an existing compression machine
Display	5.3in (135 mm) wide, 240 x 64 pixel backlit VGA liquid crystal display with adjustable contrast settings.	4.6x3.4in (116x86 mm) back-lit VGA graphic panel display with 320 x 240 pixel screen and adjustable contrast settings.
Test Documentation	Transfer data from memory to a computer using the optional MCA-29 USB Able Cable, or print tests stored in memory to the optional MCA-28 serial printer.	Tests stored in memory can be downloaded to a computer using optional MCA-29 Able Cable, or printed to optional MCA-28 Serial Printer. Load and time data can be sent directly to a PC during a test using the Able Cable for later analysis on a spreadsheet and X-Y plotting of load vs. time.
Memory	600 tests with test date and time, sample ID number, peak load and average rate of load.	500 tests with test date and time, sample ID, sample type, sample area and length, peak load, peak stress, average rate of load in lbs and psi, cylinder correction factor, cylinder break type, cylinder cap type, sample age and weight and operator ID number.
Engineering Units	lbs, kN, kg and N	lbs, kN, kg and N, psi, MPa, kg/cm² and Kpa
Housing	Stainless steel NEMA-4 rated housing is dust and moisture proof	Stainless steel NEMA-4 rated housing is dust and moisture proof
Housing Size, without Bracket	10.5x3.3x7.3in (267x84x184mm), WxDxH	10.5x4.5x8.5in (267x114x216mm), WxDxH
Ratings	UL, CUL, CE and Measurement Canada listed	UL, CUL, CE and Measurement Canada listed

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MCA-4

MCA-7

MCA-11

MCA-52

MCA-55

MCA-13R

MCA-14

MCA-16

MCA-24

MCA-29

ACCESSORIES FOR CONCRETE COMPRESSION MACHINES

Accessories are compatible with concrete compression machines and comply with test standards indicated. Upper components are attached to machines by a locking stem system. Additional spacers for special testing are available.

Accessories for Concrete Compression Machines

Item	250 lbf Frame	300 lbf Frame	400/500 lbf Frame	ASTM	AASHTO
Universal Flexural Set attachment for compression machines measures flexural strength and determines modulus of rupture for 6x6in and 4x4in concrete beams with 12 to 30in (305 to 762mm) span for center or third-point loading. Includes head assembly with locking stem and base with fixed bearing points on 18in or 12in centers.	MCA-4	MCA-34	MCA-4	C78 C293	T 97 T 177
2in Cube Test Set includes pedestal for cubes and spherically-seated upper platen assembly. Upper platen assembly attaches to compression machine with locking stem system and can also be used to test 3x6in cylinders.	MCA-6	MCA-5	MCA-7	C109 C109M	T 106M T 106
6in Cube Test Set includes spherically-seated upper platen and spacer for compressive strength testing of 6in or 150mm cubes. Models for 250 and 300 series machines also include lower platen.	MCA-8	MCA-3	MCA-9	—	—
Cylinder Splitting Set includes 2x12in WxL steel bearing bar head for loading of horizontally positioned 6x12in concrete cylinders. Models for 250 and 300 series machines also include lower platen.	MCA-10	MCA-30	MCA-11	C496	T 198
Masonry Test Set for 400/500 series compression machines includes upper platen assembly and tests up to 12in wide block. Set for 250/300 series machines includes lower platen and tests 8in block.	MCA-12R	MCA-32	MCA-13R	C1314 C140 (MCA-13R Only)	—
Carrier Bracket allows safe handling and positioning of the heavy upper platen used for masonry block testing. The heavy-duty bracket is mounted on the rear of the load frame and pivots on two hinged joints, allowing the complete assembly to rotate smoothly into and out of the load frame. When not in use, the block platen and bracket stow out of the way at the rear of machine.	—	—	MCA-51 400 frame MCA-52 500 frame	C39	T 22
Draw Rod allows easy and safe adjustment of the vertical working height of compression machines for testing multiple sample sizes and types. The steel hand wheel with internal ball bearings raises and lowers a threaded rod to adjust height of platens, breaking heads and other accessories. Once at the desired height with proper spacers in place, the assembly is simply tightened up against the cross-head.	—	—	MCA-55	C39	T 22
4in Spacer is installed between the upper platen and cross head and allows testing of 4x8in cylinders in compression machines set up for 6x12in cylinders. The machined steel spacer maintains parallel alignment between test platens and is painted to resist corrosion.	MCA-14	MCA-19	MCA-15	C39	T22
3x6in Cylinder Test Set includes spherically-seated upper platen and spacer, properly sized for testing 3x6in cylinders. Upper platen is the same used in the 2in Cube Test Set.	MCA-16	MCA-18	MCA-17	C39	T22
Concrete Compression Machine Mounting Stand positions lower platens of compression machines at optimal specimen loading height. Mounting stands are recommended for all compression machines and are included on all 400 Series and above frames.	MCA-24	MCA-27	Included	—	—
Serial Printer prints data directly from Pro or Pro-Plus controller memory.	MCA-28	MCA-28	MCA-28	—	—
USB Able Cable is a serial/USB cable to transfer data from Pro or Pro-Plus controllers into a computer spreadsheet or Word document.	MCA-29	MCA-29	MCA-29	—	—

HM-130

HM-131D

MAA-82

MCA-44

MCA-41

HM-239

Accessories for Concrete Compression Machines

Item	Model	ASTM	AASHTO
Compressometers measure deformation and strain of concrete cylinders during compression for determination of modulus of elasticity. The units consist of two yokes mounted around the specimen. The bottom is rigidly attached and the upper yoke is hinged to permit pivoting. A fixed rod connects the two. Yokes are aluminum alloy; other parts are cadmium plated steel. A mechanical dial or digital indicator measures specimen deformation. Indicators have 0.2in (5.08mm) range and 0.0001in (.0025mm) divisions. Models with either mechanical dial or digital indicators fit standard 4in (102mm) or 6in (152mm) concrete cylinders.		C469	—
4x8in Compressometer with Dial Indicator	HM-203		
4x8in Compressometer with Digital Indicator	HM-203D		
6x12in Compressometer with Dial Indicator	HM-130		
6x12in Compressometer with Digital Indicator	HM-130D		
Compressometer/Extensometers are similar to compressometers, but a third center yoke attaches to the specimen to measure horizontal extension. This allows a combined determination of both modulus of elasticity and Poisson's ratio. A second indicator between yoke segments measures the transverse deformation simultaneously. Models are available with either mechanical dial or digital indicators to fit standard 4in (102mm) or 6in (152mm) concrete cylinders.		C469	—
4x8in Compressometer/Extensometer with Dial	HM-207		
4x8in Compressometer/Extensometer with Digital	HM-207D		
6x12in Compressometer/Extensometer with Dial	HM-131		
6x12in Compressometer/Extensometer with Digital	HM-131D		
Digital Dial Indicator Data Collection System allows the simultaneous measurement and logging of compressometer/extensometer deformation data. The system consists of a multiplexer unit and a 7in remote display tablet with an Android application for measurement monitoring and collection. Data input connectors are compatible with the digital indicators supplied with the HM-131D and HM-207D Compressometer/Extensometers. A USB port allows data transfer to a PC. Saved data is stored as a .csv file and can be transferred via microSD card, USB connection to a PC and to email/cloud storage if the tablet is connected to the internet. Powered by USB connection or the included power adapter. The MAA-82 Tablet comes with data collection software, multiplexer box with cable and power adapter.	MAA-82	—	—
Perpendicularity Verification Devices (PVD) verify proper perpendicular alignment of concrete cylinders during compressive strength testing. The latest revisions to ASTM C39 require verification that alignment is within ±0.5° of vertical when using Unbonded Caps. The PVD is held on the lower platen and manually positioned against the cylinder. The included MCA-41 Gap Measurement Tool is used to check the gap between the MCA-44 device and cylinder for compliance. Included MCA-42 gap measurement too measures the gap between the MCA-46 and the cylinder. Models feature unique designs for use with 4x8in or 6x12in cylinders and are simple, lightweight and easy to use. A recess cut at the bottom eliminates interference from Retaining Rings and spacers during use. Sturdy machined aluminum construction. **Product Dimensions:** 4.5x11.75 (121x298mm), WxH.		C39	—
PVD for 4x8in cylinders when 4in spacer blocks are used	MCA-44		
PVD for 4x8in cylinders when no spacer block is used	MCA-44N		
PVD for 6x12in cylinders	MCA-46		
4x8in gap measurement tool	MCA-41		
6x12in gap measurement tool	MCA-42		
Piston Over-Extension Limit Switch provides additional safety and minimizes operational errors by preventing the over-extension of the hydraulic ram on Concrete Compression Machines. Factory-installed if purchased with a Concrete Compression Machine.		—	—
For 250 Series	MCA-61		
For 300 Series	MCA-62		
For 400 Series	MCA-63		
For 500 Series	MCA-64		
Portable Beam Tester transports and sets up easily for non-specification field testing of 6x6in (152x152mm) concrete beam specimens with minimum length of 20in (508mm). Test results compare favorably with standard laboratory tests. Components are provided for both center-point and third-point loading and conversion is quick and easy. Bearing points for third-point testing are 6in (152mm) center-to-center. Lower bearing points on the load frame are 18in (457mm) on-center and pivot as the test beam deflects. The manually operated pump assembly with 6in (152mm) diameter gauge is attached by a 4ft (1.2m) quick-disconnect hose to the hydraulic cylinder and load frame. The high-quality, direct-reading gauge features ±0.25% accuracy and is graduated from 0-1500 psi. **Product Dimensions:** 22x8x14in (559x203x356mm), WxDxH.	HM-239	—	—

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HM-716A

HMA-1054

CONCRETE CYLINDER END GRINDERS

ASTM C39; CSA A23.1-04, A23.2-04 AASHTO PP 89, T 22

- **Four to six specimens can be prepared at once; as many as 100 per day**
- **Preferred end preparation method for high-strength concrete**
- **Eliminates qualification testing of capping materials**
- **Reduces health and safety concerns and is much less labor intensive**

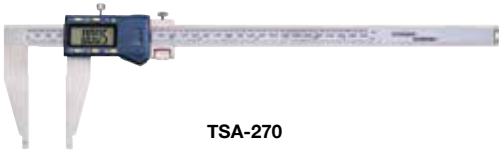
The Concrete Cylinder End Grinder is an essential tool for modern concrete laboratories. This multi-sample preparation unit eliminates the need for qualification testing or documentation of common capping methods, especially when testing design strengths exceeding 7,000psi (48.3mPa). It eliminates time consuming and labor intensive sulfur-capping and reduces health hazards and safety concerns. It can also "save" samples with damaged or poorly finished ends that would otherwise be unusable for testing. Large laboratories with heavy sample volumes will find this machine cost-effective for processing their regular concrete samples on a daily basis. 100 or more cylinders can be processed in a typical workday and can be tested immediately. No plumbing or drains are required and dust hazards are eliminated. Technicians are free to perform other duties during grinding cycles.

After the cylinders are mounted in the carousel and the grinding cycle is started, the operation is entirely automated until a preset 4mm of material has been removed from each sample. The machine then polishes the cylinder ends and automatically shuts down. The included water tank and pump circulate water to the diamond grinding head for cooling and flushing of cuttings. Replacement Diamond Grinding Heads are available as HMA-1050. Other accessories include HMA-1051 Mobile Cart for Water Tank, HMA-1052 Tool Set for measuring planeness of sample ends and HMA-1053 Inspection Jig for checking perpendicularity and alignment. The Cylinder End Grinders require 30A power supply at 208–220V/60Hz single phase. Inquire for units wired for 50Hz power supply. **Product Dimensions:** 48x48x60in (1,219x1,219x1,524mm), WxDxH.

HM-714A Concrete Cylinder End Grinder is designed for 4in (102mm) cylinders and is equipped to handle up to six 4in (102mm) samples in each cycle.

HM-716A Concrete Cylinder End Grinder accommodates four 6in (152mm) diameter test cylinders and includes adaptors to accept four 4in (102mm) cylinders. The unit is capable of grinding one size cylinder at a time and is recommended in labs where both 4in (102mm) and 6in (152mm) sample sizes are to be tested. The HMA-1054 Carousel can be fitted to this unit to allow grinding of six 4in diameter cylinders only.

Concrete Cylinder End Grinders	
Concrete Cylinder End Grinder, for 4in Cylinders	HM-714A
Concrete Cylinder End Grinder, for 4in or 6in Cylinders	HM-716A
Accessories	
Replacement Grinding Head	HMA-1050
Water Tank Cart with Wheels	HMA-1051
Planeness Tool Set	HMA-1052
Alignment Inspection Jig	HMA-1053
Carousel for Six 4in Cylinders	HMA-1054



TSA-270

12IN HEAVY DUTY DIGITAL CALIPERS

Large stainless steel Digital Calipers accurately measure concrete, asphalt and soil specimens. LCD digital displays show inch or metric measurements with resolution of 0.0005in or 0.01mm. Locking knob, push-button zeroing and on/off switch. Includes battery and protective carrying case.

TSA-270 12in Heavy-Duty Digital Caliper features heavy, durable stainless steel construction. Large 3.5in (89mm) depth jaws easily reach center of 6in (152mm) diameter specimens and have inside diameter function. **Product Dimensions:** 14.5x4.1in (368x104mm), LxW.

TSA-268 12in Digital Caliper is stainless steel with jaw depth of 2.5in (63.5mm) and precision construction. When fitted with the offset points found in the optional TSA-292 Caliper Accessory Kit, this caliper can be used to measure length of drilled concrete cores by the ASTM C1542 method. The TSA-292 Kit only fits TSA-270. **Product Dimensions:** 16x4.25in (406x108mm), LxW.

12in Digital Caliper	
12in Heavy Duty Digital Caliper	TSA-270
12in Digital Caliper	TSA-268
Accessories	
Caliper Accessory Kit for TSA-268	TSA-292

HM-162

DIAMETER MEASURING TAPES

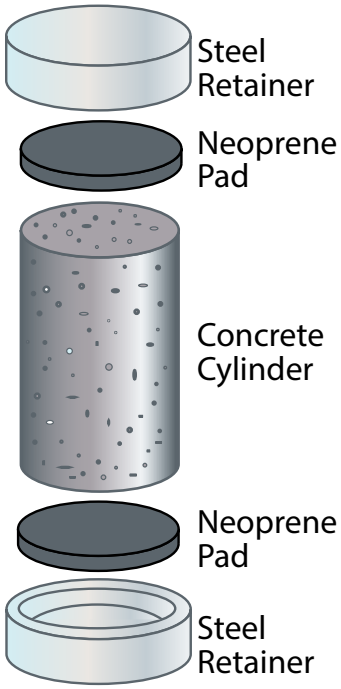
The Pi Tape brand measuring tapes quickly give direct readings of average diameter with micrometer accuracy simply by placing tape around circumference of the specimen. The 0.10in (2.5mm) thick spring steel tape has graduations etched on a ground surface. Vernier scale reads to .001in (.025mm) diameter. Furnished with certificate of calibration traceable to NIST. Graduated in English units, for measuring diameters from 2–12in. Metric Pi Tape reads from 50–300mm with 0.01mm accuracy.

Diameter Measuring Tape	
Diameter Measuring Tape, Inches	HM-162
Diameter Measuring Tape, Metric	HM-162M

HM-180

HM-183

Neoprene Pads



Unbonded Capping Set

UNBONDED CAPPING PADS & RETAINERS

ASTM C1231; AASHTO T 22

Unbonded capping of concrete cylinders saves time, labor and expense for compression testing. Choose capping pads and retainers for 6in, 4in, 3in and 2in diameter cylinders. Retainers and pads for 2in specimens are also suitable for use on 2.125in diameter rock cores.

A steel retainer ring holding a tough 0.5in (12.7mm) thick neoprene pad is placed at each end of the cylindrical specimen. Retainers last for years with proper care and Neoprene Pads are reusable for up to 100 tests. Retainers and Pads are ordered separately.

Steel Retainers are alloy steel, precisely machined to specified dimensions and plated inside and out to resist corrosion. All bearing surfaces are plane to within 0.002in (0.05mm). The Retainers meet ASTM and AASHTO requirements and do not require acceptance testing. Retainers are sold in sets of two.

Neoprene pads flow during compression to fill irregularities in cylinder ends and assure load uniformity. Pads comply with the latest version of ASTM C1231 and are precisely sized to fit Gilson Steel Retainers.

- 50 Durometer Pads meet tensile strength and durometer requirements of AASHTO T 22 and are appropriate for compressive strengths from 1,500–6,000psi (10–40mPa).
- 60 Durometer Pads are used for strengths from 2,500–7,000psi (17–50mPa)
- 70 Durometer Pads are used for strengths from 4,000–7,000psi (28–50mPa)

These pads may be used for concrete strengths up to 12,000 psi (80mPa) with additional qualification testing by owner. Neoprene Pads are sold individually. Two are required for compression testing of concrete cylinders. Add "CS" to model numbers of 4in and 6in Neoprene Pads to specify case quantities of 12 pads.

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Unbonded Capping Sets & Pads

Diameter	Steel Retainers (Sets of 2)	Neoprene Pads (Sold Individually)		
		50 Durometer	60 Durometer	70 Durometer
6in	HM-180	HM-363	HM-364	HM-365
4in	HM-181	HM-360	HM-361	HM-362
3in	HM-182	HM-366	HM-367	HM-368
2in	HM-183	HM-369	—	HM-370

VIDEO ONLINE

HM-186

GILSON GRAY IRON 9000 CAPPING COMPOUND
ASTM C287, C617; AASHTO T 231

Gilson Gray Iron 9000 is a new and improved sulfur mortar capping compound blended especially for concrete strength testing. Ultra-thin flakes are carefully formulated from sulfur and mineral filler for guaranteed consistency and faster melting times. Gray Iron melts quickly at 230° to 240°F (110° to 115°C), with a wide optimum pouring range of 265° to 290°F (129° to 143°C) and low odor. Set time is about one minute and shrinkage is minimal. If accidental overheating occurs, the compound remains usable after cooling and solidified material can be remelted with no loss of properties. Compressive strength exceeds 8,000psi at two hours for ASTM C617 tests of 2in cubes and bond strength is 150psi or more. Strength and bond properties of capped specimens does not degrade over time, even when stored in humid condtions. Special plasticizer additives ensure even load distribution during testing. Gray Iron can be used for testing of much higher strength concretes with additional aging. Gray Iron 9000 is supplied in 50lb moisture-resistant bags. Order 40 or more bags for best pricing at pallet shipping quantity.

Gilson Gray Iron 9000 Capping Compound	
Gilson Gray Iron 9000, 1—39 bags	HM-186
Gilson Gray Iron 9000, 40+ bags	HM-187

HM-189

VITROBOND INGOT CAPPING COMPOUND
ASTM C287, C617; AASHTO T 231

Vitrobond Ingot Capping Compound is sometimes preferred for ease of storage and handling. Dark grey compound is carbon filled, sulfur based and melts and pours smoothly for consistent results. Compressive strength exceeds 5,000psi (34.4kPa) at two hours and increases to 7,000psi (48.3kPa) at 7 days. Ingots come in 50lb (23kg) cartons, each with ten 5lb ingots. Pieces break easily for melting to pouring temperature of 280°–300°F (138°–140°C). Physical strength ratings are 600psi tensile strength and 1,300psi modulus of rupture by ASTM C307 methods. The compound must not be heated above 320°F (160°C). Using excessive release oil may affect cap strength.

Vitrobond Ingot Capping Compound	
Vitrobond Ingot, 1–4 cartons	HM-189
Vitrobond Ingot, 5+	HM-190

HM-166

VERTICAL CYLINDER CAPPERS
ASTM C617; AASHTO T 231

Popular vertical design for capping concrete test cylinders assures smooth, perpendicular end surfaces. Cylinder is placed into mold against upright guide after filling recess with molten capping compound.

Capper bottom plate is 1in (25.4mm) thick steel and ground to 0.002in (0.05mm) planeness with separate ring to form recess. Ring and vertical guide are removable to permit regrinding to proper planeness after extended use. Corner mounting holes are provided. HM-166 has a spring-loaded hand cam lever that tilts cylinder forward to release it from capper. HM-164 and HM-163 for smaller cylinders are similar to HM-166, but do not have the lever release. **HM-166 Product Dimensions:** 8x9.5x15in (203x241x381mm), WxDxH. **HM-163 and HM-164 Product Dimensions:** 8x6x5in (203x152x127mm), WxDxH.

Vertical Cylinder Cappers	
6x12in Cylinder Capper	HM-166
4x8in Cylinder Capper	HM-164
3x6in Cylinder Capper	HM-163
Accessories	
Replacement Ring for HM-166	HMA-21

HM-200

HM-202

HM-210

HM-204

HM-205

HM-678

MELTING POTS
ASTM C617; AASHTO T 231

Melting pots are useful for preparing capping compounds, wax, tars, asphalt and other materials in the lab. Each has precision temperature control for 38°–160°C (100°–320°F) range that holds to set point. A high limit control turns pots off at 182°C (360°F). The cast aluminum inner liner is contacted from top to bottom by a unique helically wound element to give even heat distribution. Durable polished stainless steel outer case assures long, dependable service. Molten capping compound is placed into capping fixture with 8oz (237ml) stainless steel HM-210 Ladle.

Melting Pots				
Model	Capacity qt (L)	Dimensions IDxDepth, in (mm)	Electrical V/Hz	Amps
HM-200	4	7.5 x 7	115/60	6
HM-200F	(3.8)	(191x178)	230/50-60	3
HM-201	8	10 x 6	115/60	10
HM-201F	(7.6)	(254x152)	230/50-60	5
HM-202	12	10 x 9	115/60	11
HM-202F	(11.4)	(254x229)	230/50-60	5.5
HM-205	20	14 x 7	115/60	13
HM-205F	(18.9)	(356x178)	230/50-60	6.5
HM-206	24	14 x 9	115/60	14
HM-206F	(22.7)	(356x229)	230/50-60	7
HM-204	28	14 x 11	115/60	15
HM-204F	(26.5)	(356x279)	230/50-60	7.5
Accessories				
Ladle, 0.25qt (0.24L)				HM-210

MASONRY BLOCK CAPS

Masonry Block Caps offer a unique unbonded capping method for compressive strength testing of masonry units. This cost-effective alternative to sulfur capping reduces time, labor, expense and equipment such as ladles and melting pots. A fibrous composite is laminated to tough plastic sheeting, providing rigidity, proper load distribution and protection of the machine platens. Composite material flows during compression to fill irregularities in the concrete masonry unit, distributing test loads uniformly.

This method is comparable in accuracy to capping with hydrocal gypsum but is not accepted in the ASTM C140 method. Block Caps are ideal for internal QC testing applications and eliminate the need for mixing, cutting or measuring. Sizes available for 8x16in and 12x16in masonry block. Each set of caps is designed for a single use. Each carton contains ten sets of caps.

Masonry Block Caps	
Masonry Block Caps, 8x16in (203x406mm)	HM-678
Masonry Block Caps, 12x16in (305x406mm)	HM-679

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HMA-108

HMA-108S

HMA-107R

HM-24

HM-27

HM-25

CONCRETE AIR METER REPLACEMENT GAUGES

ASTM C231; AASHTO T 152

Replacement Gauges from Gilson fit most Type B Concrete Pressure Meters on the market today. Rugged precision gauges are a step up in quality and help restore accuracy and dependability to used Air Meters.

HMA-108 Gilson *Gorilla Gauge* is a durable, accurate and long-lasting upgrade for most popular Type B Concrete Air Meters. Features not found on lower quality gauges include a wide-profile phosphor bronze Bourdon tube and a rugged German-engineered precision mechanism for dependable accuracy. Fine adjustment screws on the dial face are micro-adjustable for easy "tweaks" during calibration, saving time and making calibration and maintenance easier. Accuracy is ±1/2% of full scale.

The high-strength Polymid B housing is waterproof, rustproof and resists impact forces. Threaded bezel has an O-ring gasket, sealing the gauge from moisture and dust. Durable dual-layer safety glass lens resists scratches and breakage and is easily replaceable. 1/4in NPT brass threads fit most concrete air meters. **Product Dimensions:** 4.25 x 2in (108x51mm) dia.xH, with a 3.5in (89mm) dial face.

HMA-108S Stainless Steel Gauge is a dependable and accurate replacement gauge. This American-made gauge has a stainless steel housing and sturdy industrial grade rack and pinion mechanism. Accuracy is ±1% at full scale. The acrylic lens is break-resistant and sealed behind the gasketed bezel to protect from moisture and dust. 1/4in NPT brass threads fit most concrete air meters. **Product Dimensions:** 4x1.5in (102x38mm) dia.xH, with a 3.5in (89mm) dial face.

Concrete Air Meter Replacement Gauges	
Gorilla Gauge	HMA-108
Stainless Steel	HMA-108S

GILSON AIR METER PUMP

Gilson Air Meter Pump is the same pump supplied on our popular Concrete Pressure Meters it's designed to fit most other popular brands of Type B Concrete Air Meters as an upgraded replacement part. Sturdy brass construction uses quality components throughout for dependability and long service life. Large rubber ball-shaped handle is easier to grip and the smooth operation is less tiring to use. The long, effortless stroke pressurizes faster for more efficient testing. A built-in protective shield around the shaft keeps dirt out and a reliable, long-lasting check valve means fewer maintenance issues.

Gilson Air Meter Pump	
Gilson Air Meter Pump	HMA-107R

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CONCRETE AIR METER CALIBRATORS

ASTM C231; AASHTO T 152

Calibrators quickly field-check accuracy of concrete pressure meters. With a calibrator in the 0.25 ft" water-filled base, the air meter gauge should read 5%. Two calibrators can be used to verify 10% air content accuracy.

HM-24 Brass Calibrator is of precisely machined brass. 7.5x2.125in (191x54mm), dia.xH with 0.5in (13mm) thick base.

HM-25 Plastic Calibrator is rugged plastic with metal weighted ring. 3.75x4in (95x102mm), dia.xH.

HM-27 Lightweight Aluminum Calibrator is accurately machined to exact dimensions. They are sturdier than plastic, less expensive than brass models. 5.63x3.25in (143x83mm), dia.xH.

Pressure Meter Calibrators	
Brass Calibrator	HM-24
Plastic Calibrator	HM-25
Lightweight Aluminum Calibrator	HM-27

HM-30

HMA-108

HMA-108S

HM-30 Air Meter Only

GILSON CONCRETE AIR METERS

ASTM C231; AASHTO T 152

- **High-quality, accurate and easy to use**
- **New *Gorilla Gauge* features rugged plastic housing and safety glass**
- **Sturdy plastic carrying case is fitted to carry all required components**

Gilson's high-quality Type B Air Meters measure concrete air content and include many value-added improvements. Our standard HM-30 model now features the exclusive Gilson Gorilla Gauge. The new, more affordable HM-30S offers an American-made stainless steel gauge. Other features of the two units are identical. Long-lasting, easy-operating stainless steel clamps adjust quickly and are less expensive to replace. The Gilson Air Pump with large, easy-grip handle builds pressure quickly and is shielded to keep dirt and water out of the piston area. Quality check-valve lasts longer for fewer maintenance issues. Brass petcocks use stainless steel ball valves for accuracy and durability. Petcock handles are vinyl coated for more comfortable operation.

Dimensions and accuracy of the Gilson meters meet ASTM requirements. Calibration Vessel, Calibration Tubes, 24in (610mm) Tamping Rod, Aluminum Straightedge, Syringe for water, Carrying Case and operating instructions are all included. Cast aluminum chamber volume is 1/4ft³ and can also be used for unit weight and yield determinations. Sturdy plastic carrying case holds meter with all accessories securely in die-cut foam padding. **Product Dimensions:** 27x14x14in (686x356x356mm), WxDxH.

HM-30 Concrete Air Meter features our exclusive Gorilla Gauge, a rugged German-engineered gauge with precision jeweled movement and a high-strength Polymid B molded housing that is waterproof and rustproof. Micro-Adjustable calibration screws ensure superior accuracy and save time during calibration and maintenance procedures. The Gorilla Gauge is ANSI rated B40 Grade 2A with accuracy ±1/2% of full scale. The dual-layer safety glass lens is sealed behind a threaded bezel with O-ring.

HM-30S Concrete Air Meter uses an American-made gauge with stainless steel housing. The sturdy industrial rack and pinion mechanism is accurate to ±1% of full scale. A threaded bezel with gasket seals the safety glass lens.

The Gorilla Gauge, Stainless Steel Gauge and Gilson Air Pump are all available separately as replacement parts or upgraded retrofit parts for Gilson and other popular brand Type B concrete pressure meters.

Gilson Concrete Air Meters	
Gilson Concrete Air Meter w/*Gorilla Gauge*	HM-30
Gilson Concrete Air Meter w/Stainless Steel Gauge	HM-30S
Accessories	
Gilson Gorilla Gauge	HMA-108
Gilson Stainless Steel Gauge	HMA-108S
Gilson Air Meter Pump	HMA-107R

technote

Calibration and repair services are available from Gilson for the HM-30 and HM-30S Concrete Pressure Meter. Please call 800.444.1508 for pricing and scheduling.

HMA-309

HMA-305

HMA-303

HMA-301

TSA-188

TSA-189

TSA-233

HMA-368

TSA-275

FRESH CONCRETE ACCESSORIES
ASTM C143, C143M; AASHTO T 119, T119M; BS 1881

Fresh Concrete Accessories	
Item	Model
Redwood Hand Float is an economical solution for finishing tops of concrete beam molds or cylinder samples. Made of 0.625in (16mm) thick clear heart redwood. Made in the USA. **Product Dimensions:** 12x4in (305x102mm)	HMA-309
Magnesium Hand Float is lightweight and provides a precise, smooth finish to ensure even sample loading during compressive strength testing. The extruded magnesium blade is corrosion-resistent and has a painted finish for increased durability. Beveled edges and smooth rounded corners allow precise maneuverability. Texured soft-grip handle increases grip and reduces hand fatigue. Made in the USA. **Product Dimensions:** 12x3.25in (305x83mm)	HMA-305
Finishing Trowel features a durable, ground carbon steel blade for smooth finishing after repeated use. Sturdy aluminum mounting with wood handle. Soft grip handle covering for extended use. **Product Dimensions:** 11x4.25in (279x108mm)	HMA-303
Carbon Steel Hand Trowel features a high quality, cross ground, carbon steel blade for precision finishing work. A high-strength, lightweight aluminum mounting stand is secured with compression fit, stainless steel rivets ensuring a no-turn handle. An oversized toe rivet ensures rigidity and durability. The soft-grip handle reduced hand strain and the texured ribbing ensures dexterity even when wet. Made in the USA. **Product Dimensions:** 12x4in (305x102mm)	HMA-301
Round Bowl Scoops are die-cast and polished aluminum with integral handles for filling slump cones, air meters or cylinder molds.	
Round Bowl Scoop, 38oz (1,124ml) Capacity	TSA-188
Round Bowl Scoop, 58oz (1,715ml) Capacity	TSA-189
Scrub Brushes are available in 21.5in (546mm) long-handled, or 10in (254mm) short-handled versions and stand up to heavy everyday field use. Both feature durable, solid plastic handles and sturdy, acid-resistant synthetic fibers.	
Scrub Brush, 10in (254mm) Handle	TSA-232
Scrub Brush, 21.5in (546mm) Handle	TSA-233
Mortar Trowel has wooden handle and flat steel blade. **Product Dimensions:** 4.5x3in (114x76mm)	HMA-306
Measuring Tapes have retractable blades in sturdy cases, belt clips and offer a choice of measuring scales in feet and inches or millimeters. Tapes have 0.75in (19mm) blade widths.	
16ft/5m Measuring Tape in Inches and Millimeters	TSA-275
12ft Measuring Tape in Feet and Inches	TSA-279
Slump Cone Filling Funnel is a convenient accessory for fast and easy filling of slump cones. **Product Dimensions:** 12x12x12in (305x305x305mm)	HM-53
Strike-Off Bar is used to remove excess material from a concrete cylinder mold, air meter vessel, slump cone or unit weight measure. Made from 304 stainless steel. **Product Dimensions:** 3x0.5in (76.2x12.7mm) dia.xH	HMA-368

HMA-306

HM-53

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HM-345 shown with case and accessories

HM-345 Super Air Meter Only

HMA-482

SUPER AIR METER

ASTM C231; AASHTO T 152, TP 118

- **Total air content and air void spacing factor determinations**
- **Eliminates wait time of conventional air void testing**
- **Preprogrammed user prompts**

The HM-345 Super Air Meter (SAM) determines both total air content and air void spacing factor in fresh concrete specimens. The test takes less than 10 minutes to run and the meter provides both the conventional air content as noted in ASTM C231/AASHTO T 152 and a new value called the SAM number that correlates with air void spacing. Overall quality of the air void system is built on the presence of small and well dispersed bubbles. Spacing of the voids has proven to be a better indicator of freeze-thaw durability than total air content alone and SAM measurements make durability much easier to predict. This rapid test can be performed in the field at the point of placement of the fresh concrete, eliminating the need to wait weeks for results of traditional tests on hardened concrete.

The Super Air Meter is a modified version of a conventional Type B Concrete Pressure Meter. For the SAM procedure, two sequential pressurizations are applied to the concrete sample. For each sequence, increments of 14.5, 30 and 45psi (1, 2.1 and 3.1bar) are applied to the concrete and a deformation value is obtained. The SAM number is the difference between these values and correlates to the average size and spacing between air voids. A higher SAM number indicates increased susceptibility to freeze-thaw deterioration. Extensive research during development shows that a SAM value of 0.20 indicates 90% certainty that the spacing meets ACI durability recommendations. Optimum spacing of air voids can also reduce the overall air content required for the concrete to resist freeze-thaw damage.

The optional HMA-482 CAPE Tank accessory can be pre-filled with compressed air to reduce the effort required to pressurize the SAM to higher testing pressures. Three attached inflation chucks with regulators are easily attached to the pressurization valve of the SAM.

HM-345 Super Air Meter is constructed of rugged cast aluminum and features a 1/4ft³ (7.1L) chamber and reinforced cover with six stainless steel clamps. The unique electronic digital gauge is highly accurate and pre-programmed to prompt the user through the required steps. Also included are a 5/8x16in (16x400mm) dia.x L tamping rod, brass calibration vessel, 12x12in (305x305mm) chemical resistant plastic strike-off plate, 16oz (454g) rubber mallet and water syringe. All components are packed in a heavy duty water-tight molded resin case with fitted foam insert. The case features secure latches, built-in wheels and telescoping handle. **Product Dimensions:** 14x14x27in (356x356x686mm), WxDxH.

Super Air Meter	
Super Air Meter	HM-345
Accessories	
CAPE Tank	HMA-482

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VIDEO ONLINE

HM-32L

HM-33

LIGHTWEIGHT CONCRETE ROLL-A-METER
ASTM C173; AASHTO T 196/196M

- **Volumetric Air Meters test any concrete mix, but are required for lightweight mixes**
- **Anodized aluminum model is less than half the weight of original bronze unit**

The popular Roll-A-Meter is a simple and accurate device for measuring air content of concrete mixes containing lightweight aggregates. The anodized aluminum version is less than half the weight of earlier bronze models. Hard-anodized aluminum bowl and neck are highly scratch and wear resistant.

The base and top are fastened with quick acting stainless steel clamps after concrete sample is placed in base. Water and isopropyl alcohol are added to zero mark on neck and meter is inverted, rolled and rocked until air is removed from concrete. Percent of air is read directly from liquid level on scale.

HM-32L Lightweight Roll-A-Meter may also be used as a pycnometer for determining specific gravity of sand, gravel and cement. Unit is supplied in foam-lined plastic carrying case with straight edge, tamping rod, syringe, baffle-bottom funnel and instructions. Volume of base is 130in³ (2,130ml). Overall height: 22in (559mm); Maximum diameter: 8in (203mm).

Lightweight Concrete Roll-A-Meter	
Lightweight Concrete Roll-A-Meter	HM-32L

VOLUMETAIR AIR METER
ASTM C173; AASHTO T 196/196M

- **Lightest Volumetric Air Meter**
- **Best for occasional use**

Volumetair Concrete Air Meter accurately and economically measures volumetric air content in any type of concrete, including lightweight aggregate concrete mixes. The unit weighs only 5.5lb (2.5kg) and is made of dimensionally stable PVC and fiberglass-reinforced plastic. The Volumetair is much lighter than brass or aluminum units.

Base and top housing fit together with a leakproof O-Ring seal and stainless steel over-center clamp assembly. Parts clean up easily with water. Base volume is 134in³ (2,200ml) and sight tube is graduated from 0 to 9.5in with 0.25% increments. The meter comes complete with Funnel, Syringe, Tamper, Strike-Off Bar, Calibrated Cup and Mallet in a plastic Case. **Product Dimensions:** 27x7.25in (686x184mm), Hxdia.

Volumetair Air Meter	
Volumetair Air Meter	HM-33

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also available....

Compact Field Scales for determining concrete unit weight and yield are listed in this section and our Ovens & Balances section.

CP-75 shown with
HM-30 Air Meter Base (Not Included)

OB-165

COMPACT FIELD SCALES

- Portable, affordable solution for field weights of soil, concrete and asphalt specimens
- kg, lb, oz and lb:oz selectable weighing units
- Large, easy-to-read LCD display
- Wall mount bracket for display
- Large 11.8x11.8in (300x300mm) stainless steel weighing platform
- RS232 interface
- Aluminum carrying case with fitted foam interior
- Compliant with ASTM C29, C138 and AASHTO T 19 and T 121 for field unit weights and yield tests
- Hold function allows continuous display of weight readings
- Operates on six AA batteries or included AC adapter
- 1-year warranty
- Outside Case Dimensions: 18.63x14.25x6in (473.08x361.95x152.4mm), WxDxH
- **Product Dimensions:** 11.8x11.8x2in (300x300x50mm), WxDxH

Compact Field Scales		
Model	Capacity x Readability, kg (lb)	Repeatability, g
CP-6	6x0.002 (13x0.005)	2.0
CP-15	15x0.005 (33x0.01)	5.0
CP-35	35x0.01 (75x0.02)	10.0
CP-75	75x0.02 (165x0.05)	20.0
CP-150A	150x0.05 (330x0.1)	50.0
CP-200	200x0.05 (440x0.1)	50.0

OHAUS DIGITAL FIELD TEST SCALE

- Portable, precision field weighing of concrete, asphalt, aggregate and soil samples
- 165lb (75kg) capacity with 20g readability
- 3-second stablization time
- Selectable weighing units of lb, oz, lb:oz, kg and g
- Large, easy-to-read LCD display with backlight
- Selectable auto-shutoff
- Large 11x12.4x1.8in painted diamond plate steel platform
- RS-232 interface
- Aluminum carrying case with fitted foam interior for all components
- Meets ASTM C29, ASTM C138, AASHTO T 19 and AASHTO T 121 for field weights and yield test
- Flexible coiled cable (extendable up to 9 ft.)
- Operates on 70-hour rechargeable battery or included AC adapter
- 1-year warranty
- Outside Case Dimensions: 15x13.5x7in (381x343x178mm), WxDxH
- **Product Dimensions:** 11x12.4x1.77in (280x316x45mm), WxDxH

Ohaus Digital Field Test Scale	
Ohaus Digital Field Test Scale	OB-165

technote

ASTM C31 now requires a unit weight determination (C138) for each set of concrete strength test specimens.

contactus

Call our technical support specialists to find the right equipment for your application at 800.444.1508.

VIDEO ONLINE

HM-12

HM-28

HMA-491

HM-34

UNIT WEIGHT MEASURES

ASTM C29, C138; AASHTO T 19, T19 M, T121, T121 M

Cylindrical measures are used for determining unit weight of concrete or aggregates. Measures can also be used to determine void content of aggregates. All measures are watertight with top and bottom true and even and constructed to retain shape under rough usage.

Cast Aluminum Measures meet ASTM C29, C138, AASHTO T 19, T 121 specifications and are machined for superior accuracy. Integral handles are formed into the castings. The measures resist corrosion from cement paste and are preferred in unit weight and yield testing of fresh concrete.

Steel Measures with bail handles are roll-formed, seam-welded and painted. They are suitable for non-specification checks for unit weight and void content of aggregates when calibrated for volume by end-user.

Square Strike-Off Plates are rugged 0.25in (6.4mm) thick corrosion-proof aluminum and useful for various volume and mass determinations in aggregate and concrete testing. ASTM and AASHTO standards typically require dimensions 2in (50.8mm) greater than diameters of unit weight measures. Model HMA-491 is popular for use with concrete air meter base. HM-48 Tamping Rod meets requirements for consolidation of concrete with slump greater than 3in.

HMA-1A

Unit Weight Measures

Model	Description	Inside Dimensions dia. x H, in (mm)	Capacity ft³ (L)	Aluminum Strike-Off Plate
HM-10	Cast Aluminum	14x11.2 (356x284)	1 (28.3)	HMA-493
HM-11		10x11 (254x279)	1/2 (14.2)	HMA-492
HM-12		8x11.5 (203x292)	1/3 (9.4)	HMA-491
HM-29		8x8.8 (203x224)	1/4 (7.1)	HMA-491
HM-13		6x6.1 (152x155)	1/10 (2.8)	HMA-490
HM-20	Steel	14x11.2 (356x284)	1 (28.3)	HMA-493
HM-21		10x11 (254x279)	1/2 (14.2)	HMA-492
HM-22		8x11.5 (203x292)	1/3 (9.4)	HMA-491
HM-28		8x8.8 (203x224)	1/4 (7.1)	HMA-491
HM-23		6x6.1 (152x155)	1/10 (2.8)	HMA-490

CHACE AIR INDICATOR KIT

The inexpensive Chace Air Indicator is used for quick estimations of air content in fresh concrete. Method is ideal for rapid field checks to supplement air meter tests. A sample of cement paste and fine aggregate is placed in the measuring cup, then inserted into the glass tube and the tube is filled with isopropyl alcohol. Percent air is determined by number of lines the alcohol drops in the stem of the vial after agitation. Kit includes vial, rubber stopper, cup, cleaning brush, alcohol squeeze bottle, instructions and Plastic Case. **Product Dimensions:** 6.25x1.125in (159x29mm), Lxdia.

Chace Air Indicator Kit

Chace Air Indicator Kit	HM-34
Accessories	
Glass Vial, Brass Cup with Stopper	HMA-1A
Glass Vial	HMA-2

technote

STRIKE-OFF PLATES

Model	Fits Unit Weight Measures	Size in (mm)
HMA-490	HM-13, HM-23	8x8 (203x203)
HMA-491	HM-12, HM-28, HM-29	10x10 (254x254)
HMA-492	HM-11, HM-21	12x12 (305x305)
HMA-493	HM-10, HM-20	16x16 (406x406)

HM-40

HM-403

SLUMP TEST SETS

ASTM C143, C143M; AASHTO T 119, T 119M; BS 1881

Concrete slump is a basic test of fresh concrete to measure workability and indirectly indicate water/cement ratio. The slump test is often used for acceptance. Gilson Slump Test Sets combine all the required components into convenient field kits. Individual components are also available separately.

Slump Test Sets	
Slump Test Set includes a heavy-gauge spun steel Slump Cone, cast aluminum Base Plate and 5/8x24in (16x610mm) stainless steel Tamping Rod. Clamps on the base swivel to hold foot tabs of slump cone securely. The Carrying Handle can be rotated over the specimen as a measuring reference. Test Set components assemble compactly for easy transport.	HM-40
EZ-Clean Slump Cone, Base and Rod Set includes a Slump Cone, a high-density polyethylene Base Plate and 5/8x24in (16x610mm) steel Tamping Rod. HM-403 set features our heavy-gauge spun steel Slump Cone and HM-403P is supplied with the easy to clean Plastic Slump Cone. Adjustable clamps secure Slump Cone and spring-loaded rod clamps allow easy transport of set components. Concrete is easily cleaned off of plastic base plate.	
EZ-Clean Slump Cone, Base and Rod Set, Steel Slump Cone	HM-403
EZ-Clean Slump Cone, Base and Rod Set, Plastic Slump Cone	HM-403P
Deluxe Slump Test Set includes all components from HM-40 Set, plus a 58oz (1,715ml) capacity polished aluminum Round-Bowl Scoop, aluminum Filling Funnel, a 12ft (3.6m) measuring tape and a sturdy, acid-resistant scrub brush with 10in (254mm) handle.	HM-401
Deluxe EZ-Clean Slump Test Set includes all HM-403 components, plus a 58oz (1,715ml) capacity polished aluminum Round-Bowl Scoop, aluminum Filling Funnel, a 12ft (3.6m) measuring tape and a sturdy, acid-resistant scrub brush with 10in (254mm) handle. The plastic base plate is easy to clean-up after use and will not corrode. Components meet specification requirements. Choose from sets with steel or Plastic Slump Cones.	
Deluxe EZ-Clean Slump Test Set, Steel Slump Cone	HM-410
Deluxe EZ-Clean Slump Test Set, Plastic Slump Cone	HM-410P

HM-401

HM-410

VIDEO ONLINE

HM-45

VIDEO ONLINE

HM-39

HM-48 close-up

HM-48, HM-63 & HM-47

SLUMP CONES, RODS AND BASES

ASTM C143, C143M; AASHTO T 119, T 119M; BS 1881

Spun steel or molded plastic concrete slump cones meet all specification requirements. Convenient Slump Bases provide a clean, stable testing surface for slump testing anywhere. Tamping Rods are required for manual consolidation for slump, air content and molding of strength specimens.

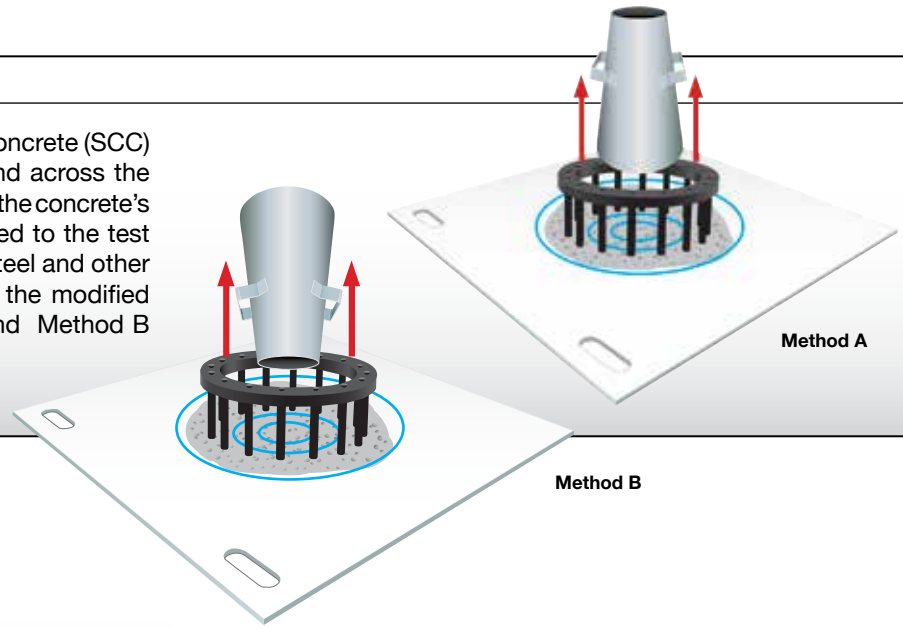
Slump Cones, Rods and Bases	
Steel Slump Cones are seamless, heavy-gauge spun steel, plated for rust resistance with welded foot tabs and handles. Steel Slump Cones are available to meet inch (4x8x12in) or metric (100x200x300mm) dimensional requirements.	
Steel Slump Cone, Inch	HM-45
Steel Slump Cone, Metric	HM-45M
Plastic Slump Cones are constructed of durable, high-density material and comply with current ASTM and AASHTO specifications. These economical inch or metric models are dimensionally stable, easy to clean and will not dent or rust. Plastic Slump Cones are available to meet inch (4x8x12in) or metric (100x200x300mm) dimensional requirements.	
Plastic Slump Cone, Inch	HM-39
Plastic Slump Cone, Metric	HM-39F
Cast Aluminum Slump Base has swivel clamps to secure foot tabs and a carrying handle that rotates up to use as a measuring reference. Use with either steel or plastic slump cones. Rod and cone attach to the base for convenient carrying. **Product Dimensions:** 15x17in (381x432mm), WxH.	HM-68
EZ -Clean Slump Base is High-Density Polyethylene and acceptable for use in the specifications. Adjustable clamps secure slump cone and spring-loaded rod clamps allow easy transport. Base cleans easily and will not corrode. Rod and slump cone purchased separately. Base is 18x18in (457x457mm).	HM-31
5/8in Tamping Rod is stainless steel with hemispherical tips on both ends. HM-48 has engraved measuring scale in 1/4in increments. HM-48A is plain with no markings. 5/8x24in (16x610mm) dia.xL, size is specified for 6x12in concrete cylinders, air content and slump tests.	
5/8x24in Tamping Rod, Engraved Measuring Scale	HM-48
5/8x24in (610x16mm) Tamping Rod, Plain	HM-48A
3/8in Small Tamping Rod is stainless steel and is required for molding of 4x8in concrete cylinder specimens and is 3/8x12in (10x305mm) dia.xL.	HM-47
3/8in Long Tamping Rod is stainless steel and meets both Canadian and ASTM standards for consolidation of 4x8in (102x203mm) concrete cylinders. The rod is 3/8x18in (10x457mm), dia.xL.	HM-63

HM-68

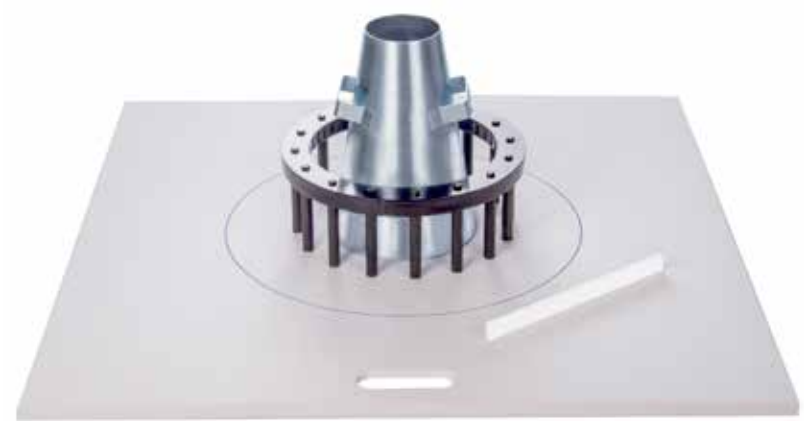
HM-31

SCC PASSING ABILITY SET (J-RING)

For ASTM C1611 slump flow test, self-consolidating concrete (SCC) flows out of the bottom of a modified slump cone and across the baseplate. Its final measured diameter is an indication of the concrete's slump flow. In ASTM C1621, the J-ring fixture is added to the test to measure passability of the mix around reinforcing steel and other obstructions. Each test provides two methods to fill the modified slump cone mold. Method A uses an upright mold and Method B uses an inverted mold.



VIDEO ONLINE



HM-55

HM-42

HMA-145

HM-43

SCC PASSING ABILITY SET (J-RING)

ASTM C1611, C1621; AASHTO T 345, T 347

Structures designed with congested reinforcing steel often require self-consolidating concrete (SCC) mix designs to prevent voids and honeycombing. The J-Ring test, in conjunction with the Slump-Flow test, determines the passing ability of SCC, defined as the ability of the concrete to flow under its own weight.

Depending upon the procedure selected, a modified slump cone is positioned either inverted or upright in the middle of the J-Ring and filled with concrete. The cone is then lifted straight up and the diameter of the resulting circular flow of concrete is measured. A similar test is then run without the J-Ring in place and the difference in the flow diameters is recorded as the passing ability. Additional measurements or visual classifications may also be determined at the conclusion of the test.

Gilson offers this equipment as a set or as individual components. The complete HM-55 set includes the J-Ring assembly, Modified Slump Cone, high-density polyethylene Strike-Off Bar and a plastic Base Plate with convenient cut-out carrying handles. The Base Plate is 36x36x0.5in (914x914x12mm) and is inscribed with concentric circles for use when performing the slump flow procedure described in ASTM C1611. **J-Ring Dimensions:** 12.75x5in (324x127mm), dia.xH, with sixteen 0.625in (16mm) bars around 12in (305mm) circumference of the ring.

SCC Passing Ability Set (J-Ring)	
SCC Passing Ability Set (J-Ring)	HM-55
Accessories	
J-Ring	HM-42
Modified Slump Cone	HM-43
Base Plate	HM-54
Strike-Off Bar	HMA-145

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HMA-368

HM-35

HM-595

L-BOX FOR SELF-CONSOLIDATING CONCRETE

The L-Box offers an alternate method of determining flow and passing ability of self-consolidating concrete (SCC) mixes. This method is in use in Europe and some DOT's in the United States have adopted the procedure or are examining it. An ASTM procedure is still pending.

The HM-35 is constructed of stainless steel with welded joints and consists of a vertical hopper with a sliding gate at the bottom. There are three bars representing reinforcing steel and a horizontal trough in front of the gate. Fresh concrete is placed in the vertical hopper without consolidating. Lifting the slide gate allows the concrete to flow past the bars into the horizontal trough. Final depth of the concrete at the gate and at the end of the trough is measured and the proportional difference expressed as a blocking ratio. Some versions of this procedure require timing the flow with a stopwatch. The HMA-368 12x0.75in (305x19mm) Strike-Off Bar is recommend for striking-off the concrete surface. **Product Dimensions:** 8x24x32.5in (203x610x826mm), WxDxH.

L-Box for Self-Consolidating Concrete	
L-Box for Self-Consolidating Concrete	HM-35
Accessories	
Strike-Off Bar, 12x0.75in	HMA-368

STATIC SEGREGATION COLUMN
ASTM C1610

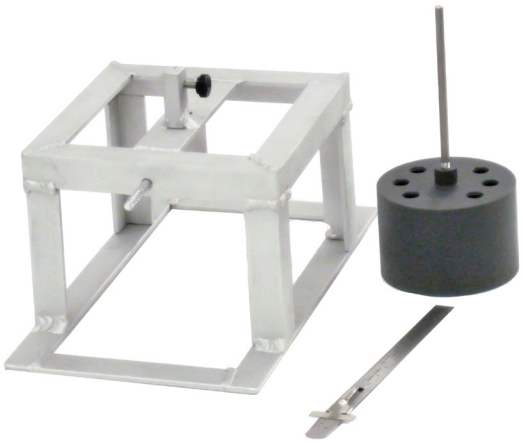
The Static Segregation Column for SCC (Self-Consolidating Concrete) measures the resistance of fresh SCC mixes to static segregation of normal-weight coarse aggregate. With these free-flowing mixes, coarse aggregate segregation can reduce flowability and block the passing ability during placement in vertical columns and wall sections. Voids and flaws form if concrete cannot flow properly around reinforcement and into restricted formwork.

A vertical three-section column mold is filled with concrete and allowed to rest for 15 minutes. Concrete from the top and bottom sections is recovered and washed over a 4.75mm (No. 4) sieve to recover the coarse aggregate fractions. Concrete from the middle section is discarded. The mass of the coarse aggregate for the two sample sections is compared to determine the percent static segregation.

The easy to use clamping and collection system allows convenient, one-person operation. Once the full-height column mold is filled with concrete and struck off, the top tier is rotated onto the collector plate then deposited into a collection vessel. The middle tier is then collected and discarded. The bottom sample remains in the lower tier of the column, ready for retrieval and testing.

The collector plate features durable steel construction and the column mold is schedule 40 PVC, making clean-up fast and easy. **Product Dimensions:** 12x12x26in (305x305x660mm), WxDxH.

Static Segregation Column	
Static Segregation Column	HM-595



HM-64

HM-78

SELF-CONSOLIDATING CONCRETE PENETRATION APPARATUS

ASTM C1712

Self-Consolidating Concrete (SCC) Penetration Apparatus provides a rapid assesses the likelihood of static segregation of SCC. Poor segregation resistance can cause uneven aggregate distribution and blocking of flow around reinforcing bars or other obstacles, making the Penetration Apparatus useful during mixture development and before placing the SCC in the field.

The Apparatus is placed on top of an inverted slump cone filled with normal-weight, freshly mixed SCC. The penetration depth of the hollow cylinder is then used to correlate the degree of static segregation resistance. Apparatus conforms to ASTM C1712 and includes a replaceable measuring scale marked in 1mm increments. **Product Dimensions:** 12x8x8in (305x203x203mm), LxWxH.

Self-Consolidating Concrete Penetration Apparatus	
Self-Consolidating Concrete Penetration Apparatus	HM-64
Accessories	
Strike-Off Bar	HMA-368
Slump Cone	HM-45

HM-65

K-SLUMP TESTER

Approximate concrete slump and workability readings can be determined prior to or after placement with the K-Slump Tester in less than a minute.

The hollow-tube probe has two groups of side openings through which wet concrete enters. The measuring rod is lowered, and an estimate of concrete slump is provided by the reading on the graduated scale. Workability is indicated by the measured height of concrete retained in the tester after removal. Readings are reliable when 6in (152mm) or more of concrete surrounds the tester. Instructions and correlation chart included. **Product Dimensions:** 12x0.75in diameter (305x19mm)

K-Slump Tester	
K-Slump Tester	HM-65

HM-80

CONCRETE PENETROMETERS

Concrete Penetrometers provide an estimate of when concrete mixes have reached initial set. Concrete at initial set can no longer be effectively consolidated and is nearly ready for final finishing operations. ASTM defines the initial set of concrete mortar as when 500psi (3.4mPa) of force is required to embed a penetration probe to a depth of 1in. Both penetrometer models are equipped with 1/20in² (32.3mm²) penetration plungers, which are simply pushed into fresh concrete at a constant rate to the mark scribed at 1in (25mm). Both can also be used in evaluations of mortars for unit masonry when equipped with the 2.7in (68.58mm) diameter HMA-295 Adaptor Foot.

HM-80 Concrete Pocket Penetrometer is a rugged, lightweight unit using a calibrated reaction spring for resistance. Plated steel construction resists rust and stands up under harsh field conditions. 0 to 700psi scale is etched into barrel of piston. A snug-fitting indicator band slides on the piston to register maximum readings. **Product Dimensions:** 7x0.75in (178x19mm), LxD.

HM-78 Concrete Dial Penetrometer is a compact instrument fitted with an easy to read 2.25in (57mm) diameter dial gauge. Dual scales of 0 to 700psi and 0 to 50kg/cm² indicate resistance. Maximum readings are locked in until released by push button. The instrument can be calibrated using an ordinary platform balance and adding or removing the register plates provided. Plastic case, factory certification and instructions are included. Overall length is 6in (152mm).

Concrete Penetrometers	
Concrete Pocket Penetrometer	HM-80
Concrete Dial Penetrometer	HM-78
Accessories	
Concrete Penetrometer Adaptor Foot	HMA-295

HM-142

HM-143

HM-144

HM-149

HM-169

CONCRETE CYLINDER AND CUBE MOLDS

ASTM C31, C192, C470, C1090; AASHTO M 205/M 205M, T 23, T 126, T 197/T 197M, R 39

Concrete Cylinder and Cube Molds	
Description	**Model**
Steel Concrete Cylinder Molds are heavy-duty and reusable many times over. 0.25in (6.4mm) thick walls are split longitudinally to allow easy specimen removal. When clamps are released, the mold springs apart slightly. Detachable base plate is tight-fitting. All parts are plated for rust resistance and are non-reactive to cement constituents. Steel molds give uniform results and are dimensionally stable under severe use. HM-144 6x12in Mold has a built-in handle for easier handling of specimens. Available in 6x12in (152x305mm) or 4x8in (102x203mm) sizes.	
Steel Concrete Cylinder Mold with Handle, 6x12in	HM-144
Steel Concrete Cylinder Mold, 6x12in	HM-142
Steel Concrete Cylinder Mold, 4x8in	HM-143
Cast-Iron Concrete Cylinder Molds are heavy castings, machined to exact dimensions and serial numbered for long-term repeated use. Sidewalls are approximately 0.25in (6.4mm) thick with molded-in 0.5in (12.7mm) reinforcing ribs to resist any deformation under rough use. Mold is assembled using toggle bolts with large wing nuts to securely fasten pieces. Joints are closely fitted and can be coated with grease for completely waterproof seal. Fast disassembly for stripping and cleaning. Base is 0.75in thick (19mm). **Product Dimensions:** of HM-149 Mold for 4x8in (101.6x203.2mm) specimens are 6.5x6.5x8.75in (165x165 222mm), HM-169 molds for 6x12in (152.4x304.8mm) specimens are 9x9x13in (229x229x330mm), WxDxH.	
4x8in Cast-Iron Concrete Cylinder Mold	HM-149
6x12in Cast-Iron Concrete Cylinder Mold	HM-169
Steel Concrete Cube Mold 6x6x6in (152x152x152mm) ASTM C403; AASHTO T 197, T 197M Steel mold produces specimens for strength testing, or serve as a container for mortar penetration and set-time tests. Sturdy unit construction with sides hinged to base and ends hinged to sides. Features wing-nut fasteners for quick assembly and easy de-molding. **Product Dimensions:** 6x6x6in (152x152x152mm)	HM-290
Plastic Concrete Cube Mold (5.9x5.9inx5.9in) 150x150x150mm ASTM C403; AASHTO T 197, EN 12390-1 Rugged one-piece plastic mold for consistent concrete cube specimens. Specimens are removed by injecting compressed air into the base. **Product Dimensions:** 150x150x150mm (5.9x5.9inx5.9in)	HM-291
Economy Single-Cube Mold (5.9x5.9inx5.9in) 150x150x150mm For concrete compressive strength cube specimens and mortar penetration tests is durable one-piece plastic with reinforcing ribs. A hole in the base with included plug permits quick demolding using a compressed air source. **Product Dimensions:** 150x150x150mm (5.9x5.9inx5.9in).	HM-292
Cylinder Wraps Canvas-nylon Cylinder Wraps for 4in and 6in diameter concrete test cylinders prevent damage to the cylinder in transit and minimize shattering when a cylinder is broken in compression tests. Especially useful with unbonded capping systems. Wraps are secured by velcro strips.	
4in Cylinder Wrap	HM-178
6in Cylinder Wrap	HM-179

HM-290

HM-291

HM-292

HM-179

HM-178

CONCRETE CYLINDER MOLDS

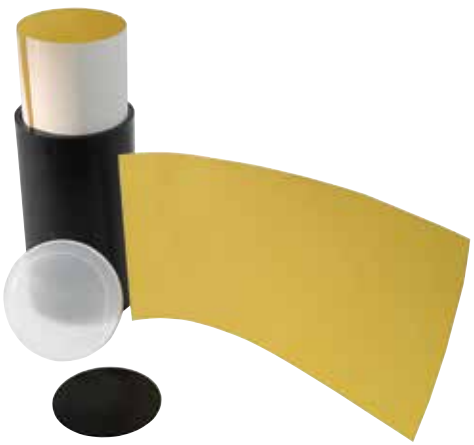
ASTM C31, C192, C470; AASHTO M 205, M 205M, R 39, T 23

VIDEO ONLINE

HM-154, HM-153, HM-151 and HM-152

HM-157

HM-141 shown with 6in cylinder mold



HM-146, HMA-190 and HMA-191

HM-160

Concrete Cylinder Molds

Description	Model	Qty. per Case
Biodegradable Plastic Cylinder Molds for single-use applications are nonabsorptive and molded as single piece units for dimensional uniformity. Rugged molds have unlimited shelf life and are weather-resistant, but contain a unique additive that allows microbes present in landfills and composting facilities to break down plastic. Molds are unaffected by heat, light or cement paste. Built-in lip helps retain round specimen shape. Writable surface allows recording of data. Tight-fitting Plastic Lids are purchased separately. For quantities of 25 cases or more of 4x8in or 6x12in molds, add "D" suffix to model number. These models have price savings and lower per-case shipping charges in 25+ case quantities. Dimensions shown are Diameter x Height in inches.		
Plastic Cylinder Molds, 6x12in	HM-151	20
Plastic Cylinder Molds, 4x8in	HM-152	36
Plastic Cylinder Molds, 3x6in	HM-153	80
Plastic Cylinder Molds, 2x4in	HM-154	520
Biodegradable Plastic Cylinder Mold Lids are purchased separately to fit Gilson Biodegradable Plastic Cylinder Molds. Slight dome shape with internal ridge snaps tightly over lip of molds. Use of tight-fitting lids assures moisture retention.		
Plastic Cylinder Mold Lids, 6in	HM-156	250
Plastic Cylinder Mold Lids, 4in	HM-157	300
Plastic Cylinder Mold Lids, 3in	HM-158	100
Plastic Cylinder Mold Lids, 2in	HM-159	200
Reusable Cylinder Molds are 0.25in (6.3mm) heavy-wall plastic for extended use and significant cost savings over single-use molds. With proper care, these 4x8in (102x203mm) molds can be used dozens of times. Inexpensive multi-use Cylinder Saver Liners and Disc Inserts allow easy removal of molded cylinders, often by just sliding them out. If necessary, a small, user-supplied hand-held air pump will quickly release specimens. The molds meet the requirements of ASTM C470 and produce exceptionally consistent specimens. Supplied in packages of four, each with a domed Plastic Lid, Liner and Insert. Replacement Liners and Disc Inserts are available as accessories.		
Reusable 4in Plastic Cylinder Molds	HM-146	4
Cylinder Saver Liners	HMA-190	36
Disc Inserts	HMA-191	36
Plastic Concrete Cylinder Carrier fits 6in (152mm) diameter plastic cylinder mold with a wide lip and can be used with lids in place. Flexible plastic ring slides onto mold from bottom and is held in place by top lip. When ready to transport, carrier handles are turned up and snap together in the middle. Carriers are packaged in cartons of 50.	HM-141	—
Cylinder Stripping Tool is an easy to use and inexpensive device for removing single-use cylinder molds from all sizes of concrete cylinders.	HM-160	—

HM-114

HM-116

Concrete Sample Handling & Transport

Description	Model
4in Cylinder Transport Rack holds eight 4x8in (102x203mm) concrete cylinders with or without molds for curing and transport. Durable plastic rack resists moisture damage and allows easier handling of multiple cylinder specimens. Two HM-114 Racks will fit in the HM-112 Field Storage Chest. **Product Dimensions:** 19x9.5x5.4in (483x241x138mm), WxDxH.	HM-114
6in Cylinder Transport Rack holds eight 6x12in (152x305mm) concrete cylinders with or without molds for initial curing and transport. This sturdy molded plastic rack is lightweight and waterproof. Fits inside the HM-112 Storage Chest. **Product Dimensions:** 24x24x8in (610x610x203mm), WxDxH.	HM-116
Field Curing Chest is collapsible and easily fits behind a truck seat or in a car trunk until needed. Lightweight folding zippered chest protects concrete specimens from harsh weather conditions and eliminates the time and expense of fabricating wooden curing boxes at each job site. Rigid floor maintains a flat and level surface for specimens and doubles as a slump test base. Holds eight 6x12in (152x305mm) or sixteen 4x8in (102x203mm) concrete cylinders and has 0.5in (12.7mm) of polymer foam insulation. **Product Dimensions:** 24x24x14in (610x610x356mm), WxDxH.	HM-112
Ring Concrete Cylinder Carrier is handy for moving heavy 6x12in (152x305mm) concrete cylinders and loading/unloading curing tanks. Sliding ring lifts to allow easy placement of bottom pad under cylinder, then slides down until locked in position by a locating pin. Fits cylinders in plastic molds with lids or bare cylinders. Constructed of stainless steel with rubber hand grip. **Product Dimensions:** 7.5x8x16in (191x203x406mm), WxDxH.	HM-161
Cylinder Lifting Handle holds concrete cylinders by a hand-grip pincer action for secure carrying and handling. For 4in (102mm) or 6in (152mm) diameter cylinders. **Product Dimensions:** 6in: 16x8.5in (406x216mm) ,LxW. **Product Dimensions:** 4in: 14x6in (356x152mm), LxW.	
6in Cylinder Lifting Handle	HM-188
4in Cylinder Lifting Handle	HM-192

HM-112

HM-161 shown with
6in concrete cylinder

HM-188

NEW! Ship Weight Index
The Estimated Ship Weight for every product is easy to find in the NEW Ship Weight Index!

VIDEO ONLINE

HM-279

NEW

HM-280

HM-287

NEW

HM-331

HM-288

HM-140

CONCRETE BEAM MOLDS

ASTM C31, C78, C192, C403; AASHTO, T 23, T 97, R 39

Concrete Beam Molds		
Description	Model	Sample Size in (mm)
Hinge-Free Steel Molds are lightweight and collapse into individual parts for easy stripping and cleaning. They are compact when broken down and assemble quickly with plated bolts, wing nuts and stainless steel U-bolt carrying handles.	HM-279 HM-281	6x6x20 (152x152x508) 6x6x21 (152x152x533)
One-Piece Hinged Steel Molds are fabricated with the side plates hinged to both the base and end plates. Wing nuts fasten sides and ends. Wide selection of sample lengths available.	HM-280 HM-282 HM-284 HM-286	6x6x21 (152x152x533) 6x6x24 (152x152x610) 6x6x30 (152x152x762) 6x6x36 (152x152x914)
Heavy-Gauge Steel Mold casts 4x4in (102x102mm) specimens. Simple wing nuts secure the sides for ease of stripping, cleaning and assembly. The unique design requires no tools.	HM-287	4x4x14 (101x101x355)
Plastic Interlocking Mold is durable copolymer plastic, one-quarter the weight of steel and easier to strip and clean. Ribbed interlocking parts hold dimensions and shape securely. Assembled with thumb screws for easy stripping, cleaning and set-up. Inside surfaces are smooth and grease or sealant can be used to ensure a watertight seal.	HM-331	6x6x21 (152x152x533)
One-Piece Plastic Mold produces lighter and easier to handle 4x4in (102x102mm) beam samples. Lightweight, durable mold is constructed from heavy-duty plastic and engineered with reinforcing ribs. Specimen removal is simple, fast and easy. Remove the plug from the hole in the bottom of the mold and apply compressed air.	HM-288	4x4x15 (102x102x381)

HM-133

VIBRATING TABLE

ASTM C192; AASHTO R 39, T 23

Vibrating Table consolidates fresh concrete in cylinder and beam molds. Large platform is 20x20x10in (508x508x254mm). Included separate control box has On/Off switch and rheostat knob to adjust amplitude of 3,600 VPM vibration. Power cable supplied by user. Load capacity is up to 300lb (136kg). **Product Dimensions:** 20x20x10in (508x508x254mm) WxDxH.

Vibrating Table	
Vibrating Table, 115V/60Hz	HM-140
230V/50Hz	HM-140F

CONCRETE VIBRATOR

ASTM C31, C138, C192; AASHTO R 39, T 23, T 121, T 121M

Concrete Vibrator consolidates fresh concrete specimens in the lab or field. The 1-1/4hp, 9 amp power unit delivers high-amplitude 10,000+ vibration per minute via a 3ft (0.9m) flexible shaft connected to a 0.75in (19.1mm) diameter x 12in (305mm) long vibrating head. The lightweight aluminum power unit housing and waterproof switch are protected by a wraparound tubular frame. The HM-133 has UL and CSA approval and comes with a heavy-duty grounded cord. **Product Dimensions:** 12x6x6in (305x152x152mm), WxDxH.

Concrete Vibrator	
Concrete Vibrator, 115V/50–60Hz	HM-133
230V/50–60Hz	HM-133F

VIDEO ONLINE

NEW

HM-491

HM-49

PERFA-CURE CONCRETE CURING BOXES

ASTM C31; AASHTO T 23

Lightweight Perfa-Cure Curing Boxes offer storage and protection of concrete test specimens on the job site to meet required initial curing temperature conditions. Users can simply plug in the units and turn the thermostat dial to the desired temperature in degrees Fahrenheit. Models are available with heating or with heating and cooling. A heating panel wired to a thermostat uses a safe, aluminum base to radiate heat. Models with cooling functionality feature a blower fan to circulate cool air inside the box and automatically switch from heating to cooling based on conditions. The green indicator light illuminates when the unit is in operation. Models are compliant with current ASTM C31 and AASHTO T 23 specifications for initial curing of concrete test specimens in the field in most ambient conditions. Sturdy lifting handles on each end make it easy to transport units when not loaded. Drain plugs are readily accessible when curing stage is complete and the Heater Pad and AC Cooling Units on the inner lid are easily replaceable. A max-min registering thermometer is mounted inside the box to monitor curing conditions. Perfa-Cure boxes operate on 110V/60Hz electrical supply.

HM-491 Perfa-Cure Concrete Curing Box provides heat-only and accommodates up to twelve 6x12in cylinders or thirty-three 4x8in cylinders. Empty weight is approximately 40lb (18kg). Inside Dimensions: 33x14x15in (838x356x381mm), WxDxH. **Product Dimensions:** 42x18x20in (1067x457x508mm), WxDxH.

HM-493 Perfa-Cure Mini Concrete Curing Box is heat-only and holds four 6x12in cylinders or twelve 4x8in cylinders. Weight empty is 30lb (13.6kg). **Inside Dimensions:** 24x12x14in (610x305x356mm), WxDxH. **Product Dimensions:** 30x18x20in (762x457x508mm), WxDxH.

HM-495 Perfa-Cure Concrete Curing Box Plus features both heating and cooling functionality and accepts ten 6x12in or thirty-two 4x8in concrete cylinders. Empty weight is approximately 40lb (18kg). **Product Dimensions:** 42x18x20in (1067x457x508mm), WxDxH;

Perfa-Cure Concrete Curing Boxes	
Perfa-Cure Concrete Curing Box, 110V/60Hz	HM-491
Perfa-Cure Concrete Curing Box Mini, 110V/60Hz	HM-493
Perfa-Cure Concrete Curing Box Plus, 110V/60Hz	HM-495

THERMOCURE CONCRETE CURING BOXES

ASTM C31, C192, C511; AASHTO M 201, R 39, T 23

For true field portability and on-the-job convenience, lightweight Thermocure models are unbeatable for storing concrete test specimens within standard humidity/temperature conditions. Up to 22 test specimens of 6x12in (152x302mm) or 46 4x8in (102x203mm) cylinders can be stored at 73° ±3°F (23° ±2°C) over an ambient range of -10°—100°F (-23°—37.8°C).

HM-49 Deluxe Concrete Curing Box has a recirculating heating and cooling temperature control unit for easy use, especially in high ambient temperature applications. Controls for this model include temperature set buttons, digital water temperature readout (°F or °C) and indicator lights to show when heating or cooling modes are on. **Product Dimensions:** 75x25x21in (1,905x635x533mm), WxDxH.

HM-50 Economy Concrete Curing Box has a 1,500 Watt heater (cooling is accomplished by fresh water circulation only), an adjustable temperature control and a 3in (76mm) dial thermometer. **Product Dimensions:** 68x25x21in (1,727x635x533mm), WxDxH.

Both models have the same tough, insulated plastic rustproof box with removable galvanized rack. The cover has a gasket, stainless steel hinges and plated buckles with padlock loops. Lifting handles are provided on each end of the box for transport. Shipped via motor freight only. Interior Dimensions for Both Models: 54x18x17in (1,372x457x432mm), WxDxH.

Thermocure Concrete Curing Boxes	
Deluxe Concrete Curing Box, 115V/60Hz	HM-49
Economy Concrete Curing Box, 115V/60Hz	HM-50

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CURING TANK HEATERS & CIRCULATORS

ASTM C192, C511; AASHTO M 201, T 23

HM-651

HM-648

HM-655

Description	Model	Control	Accuracy	Minimum Immersion
Curing Tank Heater has an Incoloy shielded element attached to a sealed stainless housing. A dial-type proportional controller regulates temperatures to required 73.4°F ±3°F (23°C ±1.7°C)in curing tanks up to 350gal (1,325L) when ambient temperatures are above 53°F (12°C). The 1,000-watt unit operates on 115V/60Hz power supplies and requires a 15-amp circuit. The heater is equipped with a three-prong grounded plug, fuse, run light and mounting bracket. Heating element is 19in (483mm) long. Order TR-3002 Transformer for operation on 230V power supplies. **Product Dimensions**: 9x5x25in (228.6x127x635mm), WxDxH.	HM-651	Analog Dial	±3°F (±1.7°C)	12in (305mm)
Clamp-on Heater/Circulator provides highly accurate temperature control to ±0.09°F (0.05°C) for fluid tanks and baths up to 7.4gal (28L) from ambient + 9° to 302°F (ambient +5° to 150°C). Heating capacity also easily controls temperatures for most larger concrete curing tanks to specified levels. Temperature range and stability for large tanks is dependent upon tank volume, surface area and ambient temperatures. The PID controller features a LED display that reads out in °C or °F, adjustable overtemperature protection and low-liquid level cut-off. A two-speed circulator switches from 2.4 to 4gpm per minute (9 to 15L) to adapt to a wide range of tank sizes and types. All contact parts are stainless steel. The 1,100 Watt, 7.5in (191mm) long coiled heating element requires only 3in (76mm) immersion, ideal for shallower tanks.1/2in ID tubing can be attached to the adjustable flow director for external circulation. The Circulator clamps to tank walls up to 1.2in (30.2mm) thick. Two-year manufacturer's warranty. Supplied with a 6ft power cord with grounded plug. **Product Dimensions:** 5.8x4.6x12.3in (147x117x312mm), WxDxH.				
Heater/Circulator, 120V/60Hz Heater/Circulator, 240V/50Hz	HM-648 HM-648F	PID Micro-processor	±0.09°F (0.05°C)[1]	3in (76mm)
Curing Tank Circulator is a 36 Watt submersion pump with 3 GPM (11.4L/min.) rating. Steady, gentle circulation from the 1/4in (6.4mm) MNPT discharge may be aimed by placing the housing on any of four sides. Two or more HM-655 Circulators are recommended for larger tanks. Working parts are epoxy-encapsulated in the glass-filled nylon housing and a 6ft (1.8m) grounded cord is included. Operates on 115V/60Hz. **Product Dimensions:** 4x4x3in (102x102x76mm), WxDxH.	HM-655	—	—	Total

CONCRETE CURING TANKS

ASTM C192, C511; AASHTO M 201, T 23

HM-621

Gilson offers steel and plastic tanks for lab or field curing of concrete cylinders, beams and other concrete specimens. Curing Tanks filled with lime-saturated water and maintained to proper temperatures meet all field and laboratory curing requirements specified in ASTM and AASHTO with less expense and greater adaptability than full-scale moist curing rooms. Straight sides with round ends make most efficient use of floor space. Curing Tanks are oversized and must be shipped via motor freight.

Steel Tanks have straight sides and a pipe-reinforced top for strength. Sturdy rolled seam with enclosed sealant prevents leaks. Side panels are 22-gauge, zinc-coated galvanized steel with corrugations for additional strength. Bottom is 20-gauge, zinc-coated galvanized steel. All tanks have a drain plug.

Plastic Tanks have heavy, seamless construction and are formed from recycled materials. Tough and flexible tanks are impact and UV resistant, rustproof, leakproof and chemically neutral. Sides are sloped, allowing partial nesting for storage or during transport. Smaller HM-623 is a great solution for 4x8in or smaller cylinders and for cores or mortar and grout samples. All except HM-623 feature a built-in drain plug.

HM-623

Concrete Curing Tanks			
Model	Material	Dimensions, WxDxH in (mm)	Capacity gal (L)
HM-620	Galvanized Steel	24x48x24 (610x1,220x610)	100 (379)
HM-621	Galvanized Steel	24x72x24 (610x1,829x610)	169 (640)
HM-622	Galvanized Steel	30x96x24 (762x2,438x610)	252 (954)
HM-626	Galvanized Steel	36x96x24 (914x2,438x610)	300 (1,136)
HM-623	Heavy Recycled Plastic	38x27x13 (965x686x330)	40 (151)
HM-624	Heavy Recycled Plastic	53x36x20 (1,346x914x508)	110 (416)
HM-625	Heavy Recycled Plastic	58x40x24 (1,473x1,016x610)	180 (681)

HM-630

MOISTURE ROOM CONTROL PANEL
ASTM C192, C511; AASHTO M 201, T 23

This wall-mounted Control Panel automatically blends hot and cold water supplies to keep your concrete specimen curing environment at 73.4 ± 3°F (23 ± 1.7°C) and approximately 100% humidity. The system is a stand-alone device to be used with HMA-298 Atomizing Spray Heads. The panel system does not integrate with other foggers, misting devices, compressed air, or HVAC units. A dedicated hot water tank is recommended to assure constant temperatures.

The easy to read digital controller display allows easy input of temperature set points for automated control. A manual bypass system assures continuous maintenance of specified temperature and humidity levels if power is interrupted. The panel has space for a temperature chart recorder or data logger. Quick-connect water line fittings are fast and easy to install. Inquire for custom design of a closed-loop layout with atomizing spray head pattern for your cure room based on room dimensions and water temperatures and pressures. One-pass water chillers also available as required. **Product Dimensions:** 30x8x20in (762x203x508mm), WxDxH.

Moisture Room Control Panel	
Moisture Room Control Panel, 115V/60Hz	HM-630
Accessories	
Atomizing Spray Head	HMA-298

contactus

Call our technical support staff to find the right equipment for your application. 800.444.1508.

HM-633

technote

ASTM C511 notes that the proper humidity level in a moist room for curing concrete samples occurs when the surfaces of ail specimens both look and feel moist. Proper humidity levels can be influenced by room size and shape, operation of heating and cooling systems, outside temperature and humidity, window and door openings and other factors. Gilson Technical Support staff can help you evaluate your lab environment to choose the most efficient and effective curing system.

AQUAFOG® FOGGING FANS
ASTM C511; AASHTO M 201, T 23

Aquafog® Fogging Fans humidify concrete curing rooms up to 40ft (12m) long. The self-flushing system forces water through the fan blades, atomizing as the liquid exits the blades. High-speed centrifugal force and powerful air flow produce a high quality fog with uniform distribution. The Foggers operate on ordinary water supplies with 10 to 100psi pressures, even well water, without the risk of clogging. Specialized pumps and filtering equipment are not needed.

Aquafog Fans are engineered for extreme conditions of 100% RH in corrosive environments. Units are constructed with stainless steel hardware, polyethylene enclosures and anodized aluminum. NEMA-4 connections are standard and the units are powered by continuous-duty wash-down rated motors.

Flowmeter capacity is adjustable to suit coverage needs and models are available in 1–5, 1–11 and 1–15GPH (4–19, 4–42 and 4–57L) output. Higher capacity flowmeters increase fog output in larger rooms. A fogger with too much output may saturate wall surfaces while humidification remains inadequate. Proper humidification can also be affected by heating and ventilation systems, room air exchange rate and other factors. Contact Gilson for advice on correct sizing for your application.

HM-633 Aquafog® models have a 1–5gal (4–19L) per hour fog output with a coverage area up to 680ft² (63m²). 50Hz "F" model coverage area is up to 581ft² (54m²).

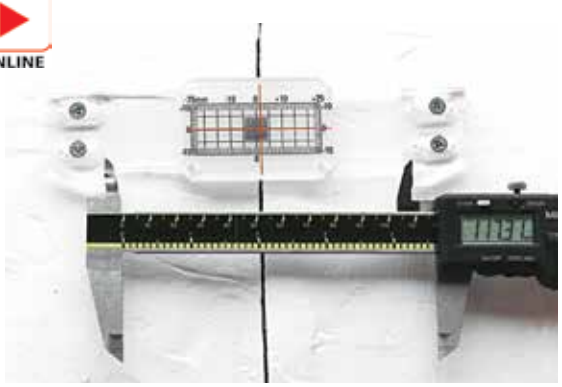
HM-653 Aquafog® models have a 1–11gal (4–42L) per hour fog output with a coverage area up to 1,400ft² (130m²). 50Hz "F" model coverage area is up to 1,163ft² (108m²).

HM-673 Aquafog® models have a 1–15gal (4–57L) per hour fog output with a coverage area up to 1,600ft² (149m²). 50Hz "F" model coverage area is up to 1,324ft² (123m²).

Aquafog® Fogging Fans are available in 115V/60Hz, 230–240V/60Hz "F" models and 230–240V/50Hz "V" models. Fan output for all models is 2,00CFM (57cmm). Each unit is equipped with a hanger and U-bolt, 15ft (4.6m) heavy-duty power cord, 30ft (9m) water line, 16ft (4.9m) drain line and a Visual Flowmeter Panel. Rooms wider than 24ft (6m) will have more uniform humidification with use of the HMA-402 Oscillator, adjustable for up to 360° rotation. **Product Dimensions:** 21x17.5x25in (533x445x635mm), WxDxH.

Aquafog® Fogging Fans				
Model	Motor, HP	Electrical	Flowmeter Capacity, GPH	Coverage
HM-633	1/4	115V/60Hz	1-5	Up to 680ft²
HM-633V	1/4	240V/60Hz	1-5	Up to 680ft²
HM-633F	1/5	240V/50Hz	1-5	Up to 581ft²
HM-653	1/4	115V/60Hz	1-11	Up to 1,400ft²
HM-653V	1/4	240V/60Hz	1-11	Up to 1,400ft²
HM-653F	1/5	240V/50Hz	1-11	Up to 1,163ft²
HM-673	1/4	115V/60Hz	1-15	Up to 1,600ft²
HM-673V	1/4	240V/60Hz	1-15	Up to 1,600ft²
HM-673F	1/5	240V/50Hz	1-15	Up to 1,324ft²
Accessories				
Oscillator		115V/50–60Hz		HMA-402
		240V/50–60Hz		HMA-402F

VIDEO ONLINE



HM-634 shown with TSA-271 calipers

HM-637

HM-635

HM-638

CONCRETE CRACK MONITORS

Monitoring of crack width and movement in concrete roads and structures is easy and reliable with Gilson Concrete Crack Monitors. Opening, closing and differential movement can be continuously monitored and recorded. Monitors are affixed with available screws or two-part epoxy adhesive.

Concrete Crack Monitors

Description	Model
Crack Monitor Plus consists of two overlapping polycarbonate plates. The white bottom plate has a grid graduated in millimeters and the transparent top plate is marked with a crosshair. Movement range is 25mm horizontally and 10mm vertically. The monitor can be installed using user-supplied screws or HMA-804 Rapid Set Epoxy, purchased separately. Temporary pegs are removed after placement so plates move independently. Integral raised points on both plates enable exact measurement to 0.01mm using TSA-271 Caliper, sold separately. A second Crack Monitor may be positioned for monitoring in three dimensions. **Product Dimensions:** 1x3in (25x76mm), WxH.	HM-634
Standard Crack Monitor has a simpler design with white bottom plate graduations of 20mm horizontally and 10mm vertically. There are no integral raised points for use with calipers. Readability is 1mm. **Product Dimensions:** 5.8x1.2 x 0.24in (147x30x6mm) WxDxH	HM-637
Corner Adapter enables Plus or Standard series Crack Monitors to be positioned in internal or external corners with angles from 70° to 180°. **Product Dimensions:** 1x6in (25x152mm), WxH.	HM-635
Displacement Monitor measures differential movement across a crack, such as settling of a floor slab. It also measures opening and closing of the crack itself. White plastic with easy to read divisions. Displacement range is 110mm. Horizontal range is -10–50mm. **Product Dimensions:** 1x7.5in (25x191mm), WxH.	HM-638
Crack Monitoring Kit assembles components necessary to establish a crack monitoring program. Five HM-634 Crack Monitor Plus units, two Corner Crack Monitors and a HM-636 Crack Width Gauge to determine initial crack widths are included. The complete kit also provides twenty-eight 1in (#8) Philips wood fixing screws and a HMA-804 dispenser tube of rapid-set epoxy adhesive. All is packaged in a sturdy carrying bag with shoulder strap with an illustrated instruction booklet and recording sheets. All the components are available as separate items. **Product Dimensions:** 17.7x12.6x4.3in (450x320x110mm), WxDxH.	HM-644
Digital Monitoring Essentials Kit provides basic instrumentation for monitoring of cracks where precise determinations are called for. The TSA-271 Digital Caliper measures movement between established measuring points up to 6in (152mm) with resolution of ±0.0005in or 0.01mm. The Kit contains the Caliper, a HM-640 pack of 100 Stainless Steel Discs, HMA-804 Rapid-Set Epoxy and a HM-636 Crack Width Gauge. Kit contents are packed in a carrying bag with shoulder strap with full instructions and field recording sheets. **Product Dimensions:** 17.7x12.6x4.3in (450x320x110mm), WxDxH.	HM-645
Digital Monitoring Professional Kit includes all the contents of the Essential Kit, plus a pair of Corner Adapter for monitoring corner cracks and a HM-641 100 pack of Plastic Measuring Pegs. All is packed in a sturdy carry bag with shoulder strap with instructions and recording sheets. **Product Dimensions:** 17.7x12.6x4.3in (450x320x110mm), WxDxH.	HM-646

HM-644

HM-645

HM-646

TSA-271

HM-636

HM-639

HM-642 shown with HM-643

Concrete Crack Monitors

Description	Model
Digital Caliper accurately measures inside, outside and depth in inches or mm over a range of 0-6in or 0-152mm. Readability is 0.0005in or 0.01mm on LCD display. Stainless steel caliper has smooth-moving head with locking knob, zero calibration and On/Off switch. Battery is easily replaceable. Supplied with protective carrying case. **Product Dimensions:** 9.5x3in (241x76mm), WxH.	TSA-271
Crack Width Gauge assists those who survey and report on damaged buildings. This durable acrylic Gauge has graduations for direct comparison to cracks from 0.1 to 7mm on one edge and a scale of 0 to 165x1mm increments on the other. The Gauge is very useful for preliminary measurements prior to ongoing monitoring and for quick field measurements. **Product Dimensions:** 6.5x1.4in (165 x 35mm) LxW.	HM-636
Economy Crack Comparator is a handy, credit card-sized field reference that slips easily into your pocket or wallet. Clear plastic card is marked with inch and metric scales as well as a range of crack widths from 0.1—7.0mm. **Product Dimensions:** 2x4in (51x102mm), LxW.	HM-639
Scratch-A-Track Motion Monitor is mounted over a crack or joint to provide continuous tracking of relative movement. The Recording Pad is coated with a white film and is bonded to one surface using HMA-804 Rapid-Set Epoxy (purchased separately). The spring steel Finger assembly is mounted on the opposing surface. A thumb screw adjusts pressure on the Finger so the stainless steel Scriber leaves a thin, well-defined black scratch on the pad for a permanent visual record. The unit is lightweight, inexpensive and weather resistant. The Pad has space for written data such as date, location, etc. The Recording Pads are single-use, but the Finger and Scriber assembly can be used repeatedly. **Product Dimensions:** 1x5.5x1in (25x140x25mm), WxDxH.	
Scratch-A-Track Motion Monitor	HM-642
Recording Pads, pkg. 10	HM-643
Rapid-Set Epoxy is a quick and convenient method of affixing Crack Monitors, Plastic Measuring Pegs and Stainless Steel Monitor Discs. The two-part epoxy adhesive bonds to almost any surface and eliminates the need to drill holes. Handy 0.85oz (25ml) double-tube pack dispenses and mixes at the same time. Working time is about 5 minutes. **Product Dimensions:** 2.8x8.8in (71x224mm), WxH.	HMA-804
Plastic Measuring Pegs provide solid reference points for consistent and accurate measurements. They are quickly and easily affixed to most surfaces on either side of a crack using HMA-804 Rapid-Set Epoxy adhesive. Polycarbonate pegs are supplied in packages of 100. **Product Dimensions:** 0.4x0.3in (10x7mm), dia.xH.	HM-641
Stainless Steel Crack Monitor Discs are easily attached with HMA-804 Epoxy Adhesive to any flat surface on either side of a crack. Small cavities in the center of each disc precisely locate jaws of TSA-271 Digital Calipers for accurate and reliable monitoring measurements. Package of 100 Discs. **Product Dimensions:** 0.265x0.046in (6.7x1.2mm) dia.xThickness.	HM-640

HMA-804

HM-641

HM-640

HM-71

VIDEO ONLINE

HM-75

HM-84

HM-72

CONCRETE TEST HAMMERS

ASTM C805, BS 1881-202, EN 12504-2, 13791

Concrete test hammers are an integral part of a comprehensive strength assessment strategy. Used for fast nondestructive testing (NDT) assessment of in-place concrete strength consistency, test hammers provide a rebound number, or R value, of hardened concrete. Rebound testing reveals areas of inconsistent quality, allows estimates of in-place compressive strength, isolates areas damaged by freezing or fire and indicates areas requiring more advanced NDT applications or coring. This testing method provides a quick, reliable means of correlating rebound measurements with concrete strength. Rock Schmidt Hammers are designed with specific geological and geotechnical capabilities. These hammers are frequently used to assess the workability, boreability and excavatability of rocks, as well as estimating the uniaxial compressive strength of discontinuity walls.

Gilson's line of Schmidt Test Hammers also meet BS 1881-02 and EN 12504-2 and are available in two versions that vary by impact energy. Schmidt Type N Test Hammers provide an impact energy of 1.63ft-lbf (2.207Nm) for non-destructive testing on concrete structures of 3.9in (100mm) or more in thickness. Schmidt Type L Test Hammers have an impact energy of 0.735Nm (0.54ft-lbf) and provide more repeatable values when testing items less than 3.9in (100mm) in thickness. Ideal for thinner sections like precast pipe or early-age concrete for form removal or post-tensioning operations, Type L concrete hammers also reduce both cosmetic and structural damage to concrete with thin cross sections.

Basic Concrete Test Hammer is an economical alternative meeting the same published specifications as the Original Schmidt Type N. The quality, made-in-America hammer gives consistent results and reliable operation. A durable nylon carrying case with loop handle, carborundum stone for surface preparation, instructions and charts are included. HM-76B Concrete Test Hammer Calibration Anvil is recommended to verify calibration after every 1,000 to 2,000 impacts. **Product Dimensions:** 2.1 x14in (53x356mm), dia.xH.

Original Schmidt Concrete Test Hammers are produced by the original manufacturer and have been a trusted solution since the 1950's. Common uses include concrete uniformity determinations, locating variations within the structure, estimating the compressive strength of in-place concrete and assessment of rock hardness. The Type N test hammer has an impact energy of 2.207Nm (1.63ft-lbf). The Type L test hammer also meets ASTM D5873 and has an impact energy of 0.735Nm (0.54ft-lbf) for improved repeatability for thicknesses of 3.9in (100mm) or less. Included with the Original Schmidt Test Hammers are a plastic carrying case, carborundum stone, reference chart and certificate of conformity. HMA-864 Original Schmidt Calibration Anvil is recommened to periodically verify the calibration of Type N and Type L Original Schmidt and Original Schmidt Live test hammers. This calibration anvil has a solid steel hammer guide, 6in (152mm) diameter anvil and hardened alloy steel rebound plate. **Product Dimensions**: 2.1 x14in (53x356mm), dia.xH.

Schmidt Live Concrete Test Hammers makes concrete strength estimation and uniformity assessment more accurate, repeatable and efficient. The Schmidt Live features digital functionality, a rugged, fiber-reinforced shell and cloud-based connectivity for reporting of test results directly from the jobsite in either .pdf or .csv formats. The Schmidt Live significantly increases productivity by eliminating the time required to record measurements and make rebound calculations. Rebound value, number of impacts, impact angle correction and series ID are automatically recorded and calculated. Data management and information sharing is enabled through the free Schmidt Live app for iOS and Android and results can be heard live via text-to-speech. Connecting to a web-based reporting tool via Bluetooth, the app allows real-time sharing of test data with off-site personnel. A logbook feature allows GPS positioning, notes, images and audio comments to be added to the reports. The Schmidt Live hammers can also be used as a stand-alone digital or analog hammer. The Schmidt Live Test Hammers are effective on concrete with compressive strengths from 1,450 to 10,152psi (10 to 70MPa). The Type N test hammer has an impact energy of 2.207Nm (1.63ft-lbf). The Type L test hammer also meets ASTM D5873 and has an impact energy of 0.735Nm (0.54ft-lbf) for improved repeatability for thicknesses of 3.9in (100mm) or less and can be used in ASTM test method D5873 for determination of rock core strengths. Included with the Schmidt Live Test Hammers are a Bluetooth module, carrying bag, carrying strap, Micro USB cable, Rechargeable AAA battery, carborundum stone, conversion curves label and certificate of conformity. HMA-866 Hard Plastic Carrying Case is also available, purchased separately. **Product Dimensions:** 10.8x3.3x2.4in (274.3x83.8x61mm), WxDxH.

Silver Schmidt ST and PC Concrete Test Hammers are advanced versions of the classic rebound hammer and offer intuitive menu-guided operation and high accuracy due to the internal optical velocity encoder. Data logging capabilities and automatic position correction allow more efficient testing and reporting. Rebound and impact velocities for R-value determinations are not affected by internal friction and electronic processing maximizes accuracy and repeatability. Preset statistical programs further enhance accuracy for estimations of compressive strength. The impact plunger is made from lightweight aerospace alloy that is matched to the elastic properties of the concrete and features a hardened steel cap. Estimated battery life allows 5,000 or more impacts between charges. This Silver Schmidt ST models can display the last 20 results and include basic software for selection of preset statistical programs and to allow firmware upgrades. The PC models includes Hammerlink software that extends data logging to 1300 single impacts which can then be downloaded to user's computers for analysis and reporting. The software also allows user-defined conversion curves and statistical methods on PC models.

HMA-866

HM-82

HM-76B

HMA-864

The Silver Schmidt ST and PC Concrete Test Hammers are effective on concrete with compressive strengths from 1,450 to 14,500psi (10 to 100MPa). The Silver Schmidt PC Type L model can accept the HMA-860 Mushroom Plunger attachment which lowers the effective compressive strength range to 725–4,351psi (5 to 30mPa) for use on thin or low strength concrete. The ST and PC Type N test hammers have an impact energy of 2.207Nm (1.63ft-lbf). The Type L test hammers have an impact energy of 0.735Nm (0.54ft-lbf) for improved repeatability for thicknesses of 3.9in (100mm) or less and can be used in ASTM test method D5873 for determination of rock core strengths.

Included with the Schmidt ST and PC Test Hammers are a carrying bag, battery charger with USB cable, carborundum stone, and basic software HM-862 Silver Schmidt Low-Range Calibration Anvil is designed specifically to verify the calibration of the low impact Silver Schmidt and Rock Schmidt Type L Test Hammers. The anvil features a 6in (152mm) solid steel anvil and hammer guide that has been specially modified to fit the exact dimensions of the Silver Schmidt and Rock Schmidt hammers. The hardened alloy steel rebound plate is concave to allow the hammer plunger to seat precisely at impact. (ST models) or Hammerlink software (PC models) and certificate of conformity. **Product Dimensions:** 2.16x10.04in (55x255mm) dia.xH.

Rock Schmidt Test Hammers are designed for geological applications and provides hardness, strength and consistency data for evaluation of engineering properties as well as geomorphology characteristics like age and weathering. Rebound values can be used to predict penetration rates for tunnel boring machines and rotary drum cutters. The Rock Schmidt models also meet ASTM D5873 requirements and features intuitive menu-guided operation, electronic data processing, automatic correction for testing positions and test data storage. The included RockLink software has functionality for downloading to user's computer for analysis, reporting and provides the ability to create custom strength correlation curves for unconfined strength, Rock Schmidt test hammers have a memory capacity for storing up to 400 complete tests. Electronic processing of rebound and impact velocities maximizes accuracy and repeatability. Estimated battery life allows 5,000 or more impacts between charges. The Rock Schmidt Test Hammers are effective on concrete with compressive strengths from 2,900 –21,750psi (20 to 150mPa). The Type N test hammer has an impact energy of 2.207Nm (1.63ft-lbf). The Type L test hammer has an impact energy of 0.735Nm (0.54ft-lbf) for testing rock cores larger than 2.2in (54.7mm) diameter or formations less than 4in (100mm) thickness. A carrying bag, carborundum stone, battery charger with USB cable, Rocklink software and certificate of conformity are included. **Product Dimensions:** 2.16x9.84in (55x250mm) dia.xH.

Concrete Test Hammers

Model	Description	Compressive Strength	Impact Energy
HM-71	Basic Concrete Test Hammer	1,400–9,000psi (10–62mPa)	2.169Nm (1.60ft-lbf)
HM-75	Original Schmidt, Type N	1,450–10,152psi (10–70mPa)	2.207Nm (1.63ft-lbf)
HM-75L	Original Schmidt, Type L	1,450–10,152psi (10–70mPa)	0.735Nm (0.54ft-lbf)
HM-84	Original Schmidt Live, Type N	1,450–10,152psi (10–70mPa)	2.207Nm (1.63ft-lbf)
HM-84L	Original Schmidt Live, Type L	1,450–10,152psi (10–70mPa)	0.735Nm (0.54ft-lbf)
HM-72	Silver Schmidt ST, Type N	1,450–14,500psi (10–100mPa)	2.207Nm (1.63ft-lbf)
HM-72L	Silver Schmidt ST, Type L	1,450–14,500psi (10–100mPa)	0.735Nm (0.54ft-lbf)
HM-79	Silver Schmidt PC, Type N	1,450–14,500psi (10–100mPa)	2.207Nm (1.63ft-lbf)
HM-79L	Silver Schmidt PC, Type L	1,450–14,500psi (10–100mPa) 725–4,351psi (5–30mPa) w/mushroom plunger	0.735Nm (0.54ft-lbf)
HM-82	Rock Schmidt, Type N	2,900–21,750psi (20–150mPa)	2.207Nm (1.63ft-lbf)
HM-82L	Rock Schmidt, Type L	2,900–21,750psi (20–150mPa)	0.735Nm (0.54ft-lbf)

Accessories	Supports Model	Model
Hard Plastic Carrying Case	HM-84, HM-84L	HMA-866
Test Hammer Calibration Anvil	HM-71, HM-75, HM-75L, HM-84	HM-76B
Original Schmidt Calibration Anvil	HM-75, HM-75L, HM-84, HM-84L	HMA-864
Silver Schmidt Calibration Anvil	HM-72, HM-79, HM-82	HMA-861
Silver Schmidt Low-Range Calibration Anvil	HM-72L, HM-79L, HM-82L	HMA-862
Mushroom Plunger	HM-79L	HMA-860

WP-530A

WINDSOR PROBE TEST SYSTEMS

ASTM C803; BS 1881-207

Windsor Probe Systems provide reliable concrete strength information. A powder-actuated driving unit fires steel probes into hardened concrete. The average penetration of three probes is used to confirm laboratory tests results, measure compressive strength and assess uniformity. ASTM recommends compressive strength correlation with the particular mix design tested. A redesigned actuating template ensures more reliable operation. The driver cannot be discharged unless pushed firmly against the actuating template. Systems are supplied with a sturdy carrying case and all accessories for preparation, positioning and measuring. Also included is a kit for determining Moh's Hardness of coarse aggregate. Probes with power loads are purchased separately.

WP-530 Windsor Probe Manual Test System is supplied with a manually operated gauge to measure probe length and a printed chart for estimating concrete strength. This system is an economical choice for users with limited needs. Probe lengths can be measured in either inches or millimeters. Manual systems can be upgraded with WP-700 Electronic Measuring Upgrade.

WP-532A Windsor Probe Electronic Test System features electronic acquisition and calculation of probe data. Readings are automatically stored in memory with date and time. Calculated strengths are displayed in pounds per square inch (psi) or megaPascal (mPa) units. Data can be uploaded to a PC with included software cables. Electronic system measures in either psi or mPa units.

Probes are purchased separately in kits of three probes and three power loads, enough to run one test, or in cases containing 25 kits. Inquire for pricing of case quantities of ten or more.

Silver Probes measure normal weight concrete with strengths from 3,000 to 17,000psi (21 to 117mPa). Probes are high-strength steel alloy hardened to Rockwell C48. An included adapter tool can reposition the probe further down the barrel for low-power testing of concrete with compressive strengths less than 3,000psi (21mPa).

Gold Probes have 56% greater cross-sectional area and are recommended for testing lightweight concrete mixes with densities less than 125lb/ft³ (2,003kg/M³).

Windsor Probe Test Systems	
Windsor Probe Manual Test System	WP-530
Windsor Probe Electronic Test System	WP-532A
Accessories	
Electronic Measuring Upgrade	WP-700
Silver Probes, One Set of Three Probes	WPA-1
Silver Probes, 1–9 Cases of 25 Kits	WPA-1B
Gold Probes, One Set of Three Probes	WPA-3
Gold Probes, 1–9 Cases of 25 Kits	WPA-3B

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HM-680

MA-324

HM-134

CONCRETE MATURITY METERS

ASTM C918, C1074; AASHTO T 276, T 325

Concrete maturity is a widely practiced and effective method for estimating the strength of concrete in place based on its age and temperature history. Accurate strength prediction saves time and money by allowing efficient scheduling for form removal and reshoring or prestressing and post-tensioning operations. Mathematical equations compare a maturity index to previous physical tests of the same mix design. Easy-to use data logging meters log times and temperatures from pre-placed probes and maturity values can be calculated for periods from a few hours to a few months.

Concrete Maturity Meters

Description	Model
COMMAND Center™ 2.0 Concrete Maturity Systems use self-powered sensors to collect, store and upload time and temperature data to Windows-based devices for concrete maturity calculations or thermal monitoring of concrete. 0.625in (16mm) diameter Sensor/loggers are embedded in fresh concrete, leaving exposed wire connectors for later downloading of information. The sensors log up to 2,048 data points and saves newest data on top if capacity is exceeded. Sensors continue to log for up to 10 years and operation of the internal battery is warranted for 2 years. Temperature Range x resolution is -30 to 85 x 0.5°C (-22 to 185 x 1°F) with accuracy to ±1°C (2°F). Logging intervals are factory-set from 1 to 255 minutes and must be specified when ordering. 15 or 30-minute intervals are recommended and typical for maturity applications. These intervals will log continuously for 21 or 42 days. 60-minute intervals are common for temperature monitoring and will hold about 85 days of readings. Accumulated sensor data can be periodically downloaded to monitor longer periods. Sensors are supplied with 4ft, 8ft or 15ft (1.2, 2.4 or 4.6m) leads. Inquire for custom sensors in lengths up to 100ft (30.5m).	
The HM-680 Pocket COMMAND Center 2.0 Kit is recommended for initial maturity testing set up and includes a Trimble® Nomad® 1050 Handheld Computer with pre-installed software and fifty HMA-700 4ft (1.2m) Sensors. The rugged IP68 rated Nomad device features a DB9 serial port, WI-FI connectivity to allow direct emailing of data files and 15-hour battery life. Software for Windows devices is a free download and provides a graphical display and output of temperatures, maturity index and estimated strength using either the Nurse-Saul or Arrhenius maturity equations to satisfy ASTM and AASHTO requirements. The HM-680 kit includes everything required to perform maturity testing, collect sensor data and transfer to a Windows-based PC for viewing, analysis and reporting. The HMA-704 USB Download Cable can also be used independently to download sensor data directly to the user's computer. **Product Dimensions:** 3x5x1in (76x127x25mm), WxDxH.	
Pocket COMMAND™ Center 2.0 Kit	HM-680
Sensor w/ 4ft (1.2m) Cable	HMA-700
Sensor w/ 8ft (2.4m) Cable	HMA-701
Sensor w/15ft (4.6m) Cable	HMA-702
USB Download Cable	HMA-704
4-Channel Data Logging Thermometer displays data from four probes simultaneously on a backlit LCD screen in °C or °F, using standard Type K thermocouples and stores up to 16,000 time-temperature data prints. Features include automatic shut-off, auto ranging, Max/Min and hold functions. Accuracy is ±0.5% of reading +1°C or 2°F, full-scale. Time and temperature data points can be exported to an ASCII format spreadsheet with included USB cable and free downloadable software for calculation. Software supplied does not calculate maturity values but time and temperature data can be used within Excel to do so. Includes foam-lined case, two beaded-wire probes and 9V battery. **Product Dimensions:** 2.5x1.25x7.25in (64x30x184mm), WxDxH.	
4-Channel Data Logging Thermometer	MA-324
Type K Thermocouple Wire, 100ft (30m)	HMA-324
Type K Male Connector	HMA-323
USB Cable	MAA-231
Water-Resistant Instrument Pouch	MAA-228
Four-Channel Concrete Maturity Meters have internal memory for over ten months of continuous recording of half-hour interval readings. Datum temperature and activation energy are user programmable. One to four locations can be monitored at once and all data is accessed via membrane keyboard and alphanumeric display. Maturity can be checked directly from the meter at any time. Standard meter is operated by included 9V lithium battery for three weeks or more. Rechargeable meter has a NiCad battery and charger for more battery life or operation directly from 115V AC. Both meters include Type T thermocouple wire, four connectors, RS-232 cable for downloading to a PC and a plastic carrying case. **Product Dimensions:** 7.8x4.7x2.9in (198x119x74mm), WxDxH.	
Maturity Meter, 4-Channel Standard	HM-136
Maturity Meter, 4-Channel Rechargeable	HM-134
Type T Thermocouple Wire, 100ft Roll	HMA-20
Serial Printer Cable	HMA-82

CT-130

CT-130 field application

PUNDIT ULTRASONIC TESTING INSTRUMENTS

ASTM C597; ISO 1920; EN 12504

Proceq Pundit Ultrasonic Pulse Velocity (UPV) Instruments provide an accurate and reliable means of assessing the quality of concrete. Transmission and receiving transducers send and receive a timed pulse of ultrasonic energy through the concrete to be tested. The time the signal takes to get through the concrete is used to determine its homogeneity and integrity. Pulse velocity measurements measure concrete uniformity, detect cracks and voids, track changes over time and determine dynamic physical properties. Compressive strength can be estimated using the SONREB (SONic-REBound) method, the combined ultrasonic pulse velocity / rebound value from a Schmidt concrete test hammer. Measurement modes include crack depth, pulse velocity, surface velocity, data logging and E-modulus. A range of additional transducers are available to allow more depth of penetration or better resolution.

CT-130 Proceq Pundit PL-200 is designed for harsh environments and features industry-leading components. A rugged housing encloses the 7in color touchscreen, the highest-resolution screen of any UPV tester on the market. A dual-core processor allows the best possible analysis of measured waveforms and the modular, expandable design ensures compatibility with future peripherals and accessories. 8GB of memory stores up to 100,000 Area Scans. Settings are directly accessible on the measurement screen. The PL-200 additionally has Line Scan and Area Scan measurement modes. Area scan mode assesses 2D structural uniformity with an adjustable grid pattern and user-definable color classification by material thickness. E-Modulus can be directly determined on the instrument and Poisson's Ratio is calculated by the PL-Link software. A dual cursor mode measures and displays P- and S-wave velocities simultaneously. Data logging features include an automated countdown timer to the next measurement and graphical pulse velocity development. Included firmware updates throughout the instrument's lifespan extends versatility and service life. The Pundit PL-200 comes with a carrying case, rechargeable batteries, battery charger with USB cable, two 54kHz transducers, two 1.5m BNC cables, couplant, calibration rod and PL-Link software. **Product Dimensions:** 9.8x6.4x2.4in (250x162x62mm), WxDxH.

CT-133 Proceq Pundit Lab+ Ultrasonic Testing Instrument features online data acquisition, waveform analysis and remote control of all transmission parameters and data logging functionality. An integrated gain stage eliminates the need for an external amplifier when using long cables. A real-time measurement stamp captures the precise measurement time and the data review list provides on-site review on the 3in OLED display. On-board data storage captures up to 500 readings. A USB interface and PL-Link software allows analysis or export to speadsheet applications. Power is supplied with rechargeable batteries or by PC via USB cable. The Pundit Lab+ comes with a carrying case, rechargeable batteries, battery charger with USB cable, two 54kHz transducers, two 1.5m BNC cables, couplant, calibration rod, and data carrier with software. **Product Dimensions:** 6.8x2.2x8.7in (172x55x220mm), WxDxH.

CT-135 Proceq Pundit Lab+ has identical features to the CT-133, but does not include transducers.

Pundit Ultrasonic Pulse Velocity Testers	
Pundit PL-200	CT-130
Pundit Lab+	CT-133
Pundit Lab+ (No transducers)	CT-135
Accessories	
24kHz Transducers	CTA-30
54kHz Exponential Transducers with Calibration Rod	CTA-33
150kHz Transducers	CTA-35
250kHz Transducers	CTA-36
500kHz Transducers	CTA-37
Transducer Holder	CTA-38
Pundit Lab Carrying Bag	CTA-39

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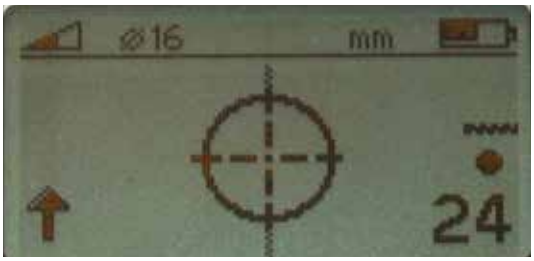
HM-196



Close-up of HM-196 screen

HM-196 in use

PROFOSCOPE REBAR LOCATORS AND COVERMETERS
BS 1881-204

The Profoscope and Profoscope+ by Proceq are versatile, fully-integrated rebar detectors and cover meters with detection capabilities to a maximum depth of 7in (180mm). A single #5 reinforcing bar can be located to a depth of 5.5in (140mm). Both models are designed for one-handed operation and feature rebar-proximity indicators with visual and acoustic locating aids for location and minimum cover alert.

The detector can identify the mid-point between bars as well as their orientation. Rebar diameter can also be estimated within the specified testing range. These unique features and Proceq's intuitive user interface make the task of locating reinforcing steel simple and efficient. The icon-based menu system on the display shows all setting, detection and navigation information. A simple crosshair icon shows relative location of strongest signal beneath the meter. All values are easily switched between metric and imperial units of measure. The display itself has a switchable backlight for low-light environments. 30 second sleep mode and 120 second auto shut-down features extend battery life.

The HM-197 Profoscope+ includes data storage for up to 500 measurements, increasing efficiency and eliminating the need for manual notation. Manual storage mode stores rebar diameter and cover value. Automatic mode is used for surface scans and records cover values. Up to 99 measurements can be assigned to each object. The ProfoLink software included with the Profoscope+ allows data to be transferred to a PC for later analysis.

The start-up test kit is included and consists of two short lengths of rebar in a cardboard box with a lid. The kit allows simple user orientation and training for all functions in a comfortable environment, before use on a job site. A canvas carrying bag, carrying strap, batteries and marking chalk are also included. The Profoscope+ also includes a memory card and the ProfoLink software. The Profoscope units are powered by two AA batteries and have a battery life of up to 50 hours with the display backlight off. **Product Dimensions:** 8x3.6x1.6in (203x92x41mm), WxDxH.

Profoscope Rebar Locators and Covermeters	
Profoscope Rebar Locator and Covermeter	HM-196
Profoscope+ Rebar Locator and Covermeter	HM-197

CT-160

CT-165

CT-163

PROFOMETER® 6 COVER METERS
BS 1881-204

Profometer® 6 Cover Meters by Proceq are the sixth generation in over forty years of quality instruments designed for location and measurement of concrete reinforcing steel. These models offer flexibility, productivity and advanced technology, with high-resolution color touchscreen operation, internal 8GB flash memory, dual-core processors and instant model upgrades through purchase of an activation key.

Profometer models have superior detection range and accuracy. Bar location can be detected and concrete cover measured up to 7.3in (185mm) deep, with cover accuracy of less than ±0.16in (4mm). Shallower depths can produce diameter accuracy of ±1mm. Diameters of #12 (40mm) bars can be identified at depths up to 2.5in (63mm) with accuracy of ±1mm. Detection and measurement limits and accuracy are affected by cover depth and bar diameter. 7in (178mm) IP54 rated color touchscreen display is 800x480 pixels.

All models feature a color touchscreen in a ruggedized housing for harsh field conditions, a universal probe with integrated spot probe and detachable wheeled scanning cart, a 5ft (1.5m) probe cable, power supply, carrying strap and carrying case. Profometer Link software is also included and allows downloading of data and creation of customized reports with detailed charts and graphs. Optional CTA-85 Extension Handle makes data collection on floors or overhead areas more efficient and less tiring. All Profometer 6 units share the same hardware and basic electronics, differing only in available software features. Upgrade Kits are available separately and consist of activation keys to unlock features converting the CT-160 to CT-163 and the CT-163 to CT-165. Each model can also be converted directly to the CT-170 Profometer Corrosion meter (listed separately) with purchase of the CTA-91 Conversion Kit and desired Corrosion Electrode. 3.6V internal battery is rated for up to 8-hour use in standard mode. **Product Dimensions:** 9.8x6.4x2.4in (250x162x62mm), WxDxH.

CT-160 Profometer 600 precisely locates reinforcing steel and provides accurate assessments of cover depths. It is ideal for avoiding damage to the reinforcement matrix when drilling, coring or cutting concrete, as well as determining adequate concrete cover over steel in large areas or for spot checks.

Operation in locate mode detects rebar location and direction, while measuring bar diameter and cover depth. On-screen visual prompts offer control over signal strength and speed. Integral spot probe features increased definition in corners or areas of congested reinforcement. Settings are directly accessible on the measurement screen. Inclined rebars are automatically detected.

Snapshot and statistics views display a comprehensive graphic of measured data on the screen. Cover and diameter for each rebar is shown in snapshot, while statistics view presents a graphical display of cover depth distribution. Measured values are easily assessed directly on the screen. Simply reopen stored files to continue measurements. Stored data is easily exported to a PC through the USB port using the Profometer-Link software.

CT-163 Profometer 630 AI features enhanced functionality over the CT-160 by adding Single-Line, Multi-Line and Area Scan Modes and advanced statistical capabilities. Single-line and multi-line scans allow continuous recorded measurements of cover over long distances with or without bar diameter measurements. Colors indicating cover and bar diameter parameters can be assigned to quickly highlight areas of concern. The area scan feature produces a simplified view of cover data over a large area. This makes it easy to assess conformity of slabs and structural walls to required codes for corrosion protection and fire resistance.

CT-165 Profometer 650 AI offers the full reporting features of the CT-163 and adds Proceq's unique Cross-Line Scan measuring mode and analysis functions. The 2D Cross-Line Scan feature adds the ability to combine linear scans in the X and Y axis into a single representation of first and second layers of reinforcing bars. Details of cover, bar diameter and signal strength are all displayed. Adjustments to signal strength gain and offset can be made to define specific features, for instance; allowing display of only the first layer of rebars.

Profometer® 6 Cover Meters	
Profometer® 600 Cover Meter	CT-160
Profometer® 630 AI Cover Meter	CT-163
Profometer® 650 AI Cover Meter	CT-165
Accessories	
Upgrade Kit, CT-160 to CT-163	CTA-81
Upgrade Kit, CT-163 to CT-165	CTA-82
Telescopic Extension Rod w/Cable, 5.6ft (1.7M)	CTA-85
Conversion Kit converts to Profometer® Corrosion Meter	CTA-91

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CT-170

CTA-95

CTA-96

CTA-97

PROFOMETER® 600 CORROSION METER
ASTM C876; BS 1881

The Profometer® 600 Corrosion Meter uses half-cell electrical measurement technology for detection and mapping of steel reinforcing corrosion in reinforced concrete. A cable is connected to the rebar grid and electrical potential is measured through fluid-saturated copper/copper sulfate electrode probes. Data is collected in the ruggedized touchscreen controller and processed for mapping and reporting with the included Profometer Link software. Extent of active corrosion activity is easily measured and documented and corrosion hot-spots are quickly isolated.

This advanced instrument features a 7in (178mm) 800x480 pixel color touchscreen display with an intuitive user interface, illustrative display and assisted workflow. The dual-core processor and 8GB flash memory for efficient post processing of measured data and storage for later download to user's PC. Customizable graphic screen views and a pre-defined, ASTM compliant layout enable fast, on-site data interpretation. Measurement range is from -1000 to +1000mV with 1mV resolution. Sampling rate is 900Hz and impedance is 100MΩ. The Profometer Corrosion Meter can also be configured to use third-party silver/silver chloride electrodes.

The CT-170 includes the Profometer Touchscreen, interface box, charger, 82ft (25M) cable with clamp, USB cable, software, carrying case and strap. The unit requires a Corrosion Electrode Probe, purchased separately, for operation. The conventional Electrode Rod probe is used for single readings or on a manually-defined grid pattern. Available Single-Wheel and Four-Wheel Electrodes improve data collection accuracy and maximize productivity for assessing large areas. Both wheeled electrodes include a 5.6ft (1.7M) telescopic handle, encoder and required cables.

The Corrosion Meter is designed to be an all-in-one instrument and shares hardware and electronics with the Profometer® 6 series of Covermeter. The CTA-92 Conversion Kit converts the CT-170 Corrosion Meter to a CT-160 Profometer Cover Meter, complete with a universal probe (see separate listing). **Product Dimensions:** 9.8x6.4x2.4in (250x162x62mm), WxDxH.

Profometer® 600 Corrosion Meter	
Profometer® 600 Corrosion Meter	CT-170
Accessories	
Rod Corrosion Electrode	CTA-95
Single-Wheel Corrosion Electrode	CTA-96
Four-Wheel Corrosion Electrode	CTA-97
Conversion Kit to CT-160 Cover Meter	CTA-92

HM-246

CONCRETE CORROSION MAPPING SYSTEM
ASTM C876; BS 1881

The Corrosion Mapping System rapidly scans concrete surfaces for the presence of or tendency for chloride-induced corrosion in reinforcing steel. Operating on the half-cell potential method, this instrument is used for assessment of bridge decks, pavement, walls and other structures.

Steel buried in concrete is normally passive to corrosion until chlorides from the environment permeate the concrete and create anodic and cathodic areas, starting the flow of corrosion currents. Half-cell measurements are an indicator of corrosion activity. The half-cell probe electrically connects to the concrete through a water-saturated foam sponge. A separate cable from the meter is attached to a rebar in the structure, completing the electrical circuit. The resulting potential reading can be correlated to corrosion activity of the steel in the vicinity of the probe. Readings can be plotted on paper or on the structure itself to provide an easy to interpret graphic assessment of the structure. Probable corrosion areas and the total area of the structure subject to corrosion can be determined.

The System includes a specialized voltmeter in a protective pouch, copper/copper sulfate electrode with surfactant reservoir and dispensing sponge, a separate electrode for overhead readings, two 15in (381mm) extensions, reel with 250ft (76M) of wire, surfactant solution, copper sulfate crystals, operating manual, all in a sturdy plastic case. The probe can attach to a long handle for ceilings. A rebar locator is also recommended to reference bar position. **Product Dimensions:** 19.75x15.75x7.5in (502x400x191mm), WxDxH.

Concrete Corrosion Mapping System	
Concrete Corrosion Mapping System	HM-246
Accessories	
Surfactant Reservoir with $CuSO_4$ Electrode	HMA-385
Concrete Surfactant Solution	HMA-386
Replacement Dispensing Sponge	HMA-387

HM-952

RESIPOD CONCRETE RESISTIVITY METER
AASHTO T 358; ASTM Pending

Electrical resistivity of concrete surfaces correlates directly to permeability, the likelihood and rate of reinforcing steel corrosion, as well as chloride diffusion rate. The Resipod meter by Proceq features a four-probe Wenner array fully integrated into an electronic meter with digital display, ready to use for laboratory or field resistivity applications. This simple new test method is based on resistivity readings from standard concrete test cylinders and is a fast, accurate and economical alternative to ASTM C1202 Rapid Chloride Permeability. The same cylinder can be used for compressive strength testing and structural elements in the field can be checked with the same meter for comparative values. Specific mix designs can be evaluated in the lab and areas within an existing structure can be quickly mapped for their susceptibility to chloride induced corrosion of reinforcing steel.

The Resipod meter is available in two versions, HM-952 probe spacing fixed at 38mm (1.5in) as required in AASHTO T 358 and the HM-954 with 50mm (1.97in) probe spacing. The wider spacing allows a greater sampling size, but is still narrow enough to avoid interference from reinforcing steel in most cases. Resistance is measured from 1 to 1000 kΩcm and current is supplied at a variable 10 to 50µA or a full 200µA. The non-volatile memory stores up to 500 measured values for transfer to a PC using the included Resipod Link software.

The one-piece, hand-held Resipod provides instantaneous and reliable readings on the large, 3.5-digit LCD display and is housed in a rugged, IP67 rated waterproof enclosure. Each contact point of the probe array carries a small water reservoir to assure reliable electrical contact with the specimen surface.

HMA-844 Geometric Accessory is a four-probe Wenner array attachment with variable probe spacing from 40 to 70mm (1.57 to 2.76in) for testing of a wide range of concrete sample types and mix designs. HMA-843 Bulk Resistivity Accessory is used to measure resistivity on 4x8in concrete cylinders and includes measurement plates with conductive foam contact pads and an instrument stand with cable connections. Both accessories connect to the Resipod Meter for operation. The Resipod meter kit includes a test strip, foam contact pads, a charger with USB cable, ResipodlLink software, carrying strap, documentation and case. ResipodLink Windows-based software is used to download all measurements from the device to PC for analysis and reporting. User-defined correction factors can also be defined in the software and uploaded to the device. The charger connects to standard USB ports on computers and laptops. **Product Dimensions:** 7.1x2.1x2.7in (180x53x69.7mm), WxDxH.

Resipod Concrete Resistivity Meter	
Resipod Concrete Resistivity Meter, 38mm Probe Spacing	HM-952
Resipod Concrete Resistivity Meter, 50mm Probe Spacing	HM-954
Accessories	
Geometric Accessory	HMA-844
Bulk Resistivity Accessory	HMA-843
Replacement Foam Contact Pads, pkg. of 20	HMA-846
Resipod Test Strip	HMA-847
Bulk Resistivity Contact Pads, pkg. of 10	HMA-848

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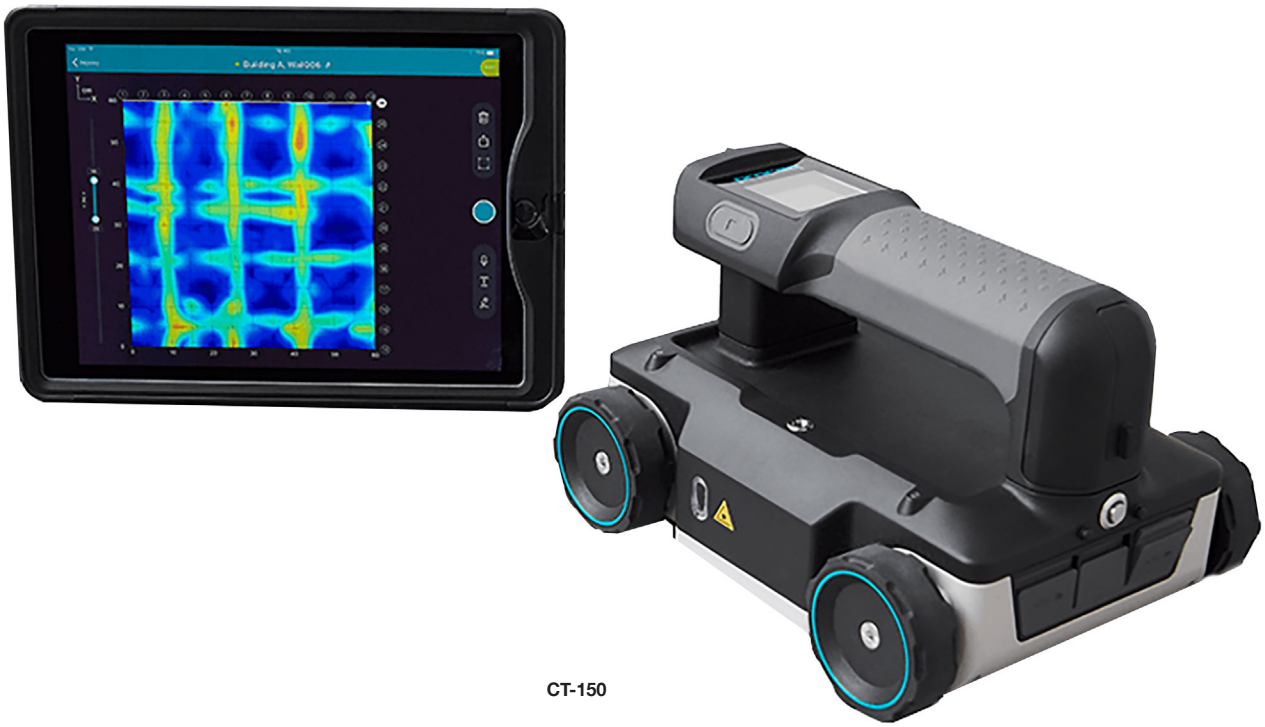

CT-150

PROCEQ GPR LIVE GP8000

ASTM D4748, D6087, D6432; AASHTO R 37-04; EN 302066

Proceq GPR Live GP8000 handheld ground penetrating radar features ultra-wideband detection for unparalleled subsurface evaluation of concrete bridges, buildings, pavements and other concrete construction. Using Stepped Frequency Continuous Wave (SFCW) technology, GPR Live real-time scanning covers all frequencies from 0.2 to 4.0GHz. This versatility allows fast integrity assessment, as-built verification, single-side thickness measurement and hit prevention to accurately mark drilling, cutting and coring locations. Operation modes include line scan and 24x24in (60x60cm) area scan. Review modes include non-migrated scan, migrated heatmap and time-slice/depth-slice.

CT-150 GPR Live GP8000 Basic provides data storage up to 512GB and can be used with any iPad with iOS 9.0 and higher. When connected to an iPad Pro, the GRP Live offers the highest-resolution and largest 12.9in (328mm) display in the industry. The intuitive interface provides sound feedback and object identification when performing area scan, clearly identifying rebars up to a maximum reading depth of 28in (70cm).

The GPR Live probe is housed in a 4-wheel scan car with 8mm of ground clearance and laser guidance for accurate data acquisition. Powered by rechargeable or easily replaceable AA batteries, the unit can operate up to 3.5 hour under continuous use. The Wi-Fi module provides completely independent operation from the iPad and has a wireless range up to 20m.

CT-153 GPR Live GP8000 Pro adds additional functionality including the Live Wire Kit, which detects any electrical lines with live current, pro time-slice view for adjustable surface depth and onsite-3D view and cloud connectivity for live data sharing and reporting. When using iOS 12 or later and an Augmented Reality-capable iPad, the tomographic time-slice and 3D visualization is overlaid on the real-world environment when looking through the iPad to provide real time, in-situ imaging.

GPR Live Pro data is tracked and secured in the cloud using the Proceq Logbook. In addition to live data sharing, this allows post processing and data review from any iPad when signed into the connected Proceq account. All measurements, changes and gain and filter settings are tracked and included with the scan. Geolocation, photos, audio notes and comments can be also be added to the scan for quick reporting of details to off-site personnel.

GP8000 Pro software functionality requires a 2-year subscription. The first year of the Pro Software subscription is included with the purchase of CT-153 or CT-155 Full Package. Year 2 of the subscription and subsequent 2-year subscriptions are purchased directly from Proceq. Basic software functionality is included with all models and can be used for the life of the unit at no additional cost.

CT-155 GPR Live GP8000 Pro Full Package includes the GPR Live GP8000 Pro, Proceq account with Logbook reporting, an on-device tablet holder that allows one-handed use and adjustable screen viewing positions, and a telescopic rod with tablet holder that enables access to hard-to-reach areas. A carrying case, wrist loop, battery pack, chalk and two sizes of grid paper are included with all models. **Product Dimensions:** 8.7x7.1x5.6in (220x180x143mm), WxDxH.

GPR Live	
GPR Live	CT-150
GPR Live Pro	CT-153
GPR Live Pro Full Package	CT-155
Accessories	
Grid Paper 60x60cm, 5cm grid (pkg. of 5)	CTA-50
Grid Paper 60x60cm, 10cm grid (pkg. of 5)	CTA-51
Grid Paper 24x24in, 2in grid (pkg. of 5)	CTA-52
Grid Paper 24x24in, 4in grid (pkg. of 5)	CTA-53
Chalk, Marking, pkg. of 10	CTA-54

CT-140

CT-143 in use

PULL-OFF TESTER

ASTM D4541, D7234, D7522, C1583; ISO 4624; EN 1542, 1015-12, 1348

- Covers a wide range of pull-off applications
- Fully automated operation and constant load rate removes operator influence
- Every test parameter is recorded and verifiable

Proceq Pull-Off Testers produce accurate, repeatable results when testing bond, adhesion or tensile strength of coatings, overlays, and substrate surfaces. The Testers are fully automated, with one touch operation after programming and test disc preparation are complete. Feedback controlled motors provide a constant, verifiable load rate that eliminates operator influence on load measurements.

Every test parameter is verifiable and recorded by the included DY-Link software. The compact size of the Testers allows use in spaces with restricted access and easy operation on walls and overhead surfaces. Applications include the bond and strength assessment of concrete repairs and overlays, pull-off and adhesion strength of coatings bonded to concrete, tensile strength of concrete surfaces, and adhesive strength of asphalt.

Programming is simple and can be performed on a horizontal surface prior to use on walls and overhead. Simply select the units of measure, test disc size, and load rate. To conduct the test, a specialized coring bit is used to cut the substrate material to match the size of the test disc. A standard epoxy-based adhesive adheres the disc to the surface. The Pull-Off Tester is connected and applies perpendicular force until the test disc is pulled off and the maximum force required is recorded. Total testing time is less than 100 seconds for all applicable standards. Up to 80 tests can be performed on a single battery charge. Internal memory can store up to 100 measurements.

The Pull-Off Testers begin to measure as soon as any load is applied, and the load rate can be viewed in real-time when connected to a PC. The Testers provide a complete record of the pull-off test, confirming that the test was carried out in accordance with the applicable standard. Recorded parameters include the time/date of the test, test disc size, maximum load applied, calculation of bond strength, applied load rate, test duration time, and failure mode. Failure modes include failure in the coating layer, between the coating layer and substrate, and failure in the substrate.

CT-140 Pull-Off Tester has a maximum pulling force of 16kN (3597lbf) and is suitable for most pull-off applications.

CT-143 Pull-Off Tester has a maximum pulling force of 25 kN (5620 lbf) for high-strength applications, including the tensile strength of concrete renovation and the bond and tensile strength of cementitious repairs and overlays.

The Test Disc required varies according to material and application. The feet on the Pull-Off Testers are configured differently to accommodate the different sizes of Test Discs. Smaller test discs use a tripod configuration, a two-legged arrangement for larger test discs, and the accessory CTA-56 Adapter Plate is needed to accommodate 75mm and 100mm test discs. Proceq Test Discs require a M10 Draw Bolt. M8 and M12 Draw Bolts are available for Test Discs supplied by other manufacturers.

A comprehensive range of test discs, draw bolts, and an adapter plate are available. Included with both models are a carrying case, battery pack, battery charger with USB cable, 50mm aluminum test disc, M10 draw bolt, Torx screwdriver, DY-Link software, operating instructions, and calibration certificate. **Product Dimensions:** 4.3x9.4x8in (109x240x203mm), WxDxH.

Pull-Off Tester	
DY-216 Pull Off Tester, 16kN (3597lbf)	CT-140
DY-225 Pull Off Tester, 25kN (5620 lbf)	CT-143
Accessories	
Test Disc, Steel, 50mm Diameter, pkg. of 10	CTA-40
Test Disc, Aluminum, 50mm Diameter, pkg. of 10	CTA-41
Test Disc, Aluminum, 20mm Diameter, pkg. of 10	CTA-42
Test Disc, Aluminum, 50x50mm, pkg. of 10	CTA-43
Test Disc, Aluminum, 40x40mm, pkg. of 10	CTA-44
Test Disc, Aluminum, 100mm Diameter, pkg. of 3	CTA-45
Test Disc, Aluminum, 100x100mm, pkg. of 3	CTA-46
Test Disc, Aluminum, 75mm Diameter, pkg. of 5	CTA-47
Draw Bolt, M10 Short	CTA-48
Draw Bolt, M8 Short	CTA-49
Draw Bolt, M12 Short	CTA-55
Adapter Plate for Large Test Discs	CTA-56

HM-723

HMA-283

HMA-287

HMA-284

HMA-278

HMA-286

HMA-279

HMA-299

RAPID CHLORIDE PERMEABILITY TESTER

ASTM C1202; AASHTO T 277

Chloride permeability characteristics of concrete can be reliably determined with the Proove'it system by Germann Instruments. The simple Rapid Chloride Permeability Test (RCPT) is performed on concrete specimens taken from cores or test cylinders. Electrical current flow is measured across a 4x2in (102x51mm) dia.xH specimen positioned in a test cell with fluid reservoirs at each end. The negative end is immersed in a 3% sodium chloride solution and the positive end in a 0.3N sodium hydroxide solution. The specimen is subjected to a 60V DC potential across the ends for six hours. The more permeable the concrete, the higher the total charge or Coulombs passed across the specimen.

The HM-723 Rapid Chloride Permeability Tester includes a microprocessor power supply module that distributes precisely controlled voltage to as many as eight RCPT specimens simultaneously. Windows®-based software installed on the user's PC controls test parameters, stores test data and prepares professional quality reports that can be customized with a company logo. Electrical current readings are updated every 5 seconds and a predicted 6-hour Coulomb value is generated every 5 minutes. Test results can be exported to Excel for comprehensive statistical analyses of the results. Software, power cord, serial cable and manual are included. Testing time and parameters are programmable as required. The system can also be adapted for ASTM C1760 Bulk Electrical Conductivity Testing (inquire) and to determine Chloride Migration Coefficient as described in NordTest Build 492. Voltage settings can be adjusted from 5 to 60V in 5V increments.

HMA-278 Specimen Cells are purchased separately and are ready to use with sealing rings for 4in (102mm) diameter specimens, connecting cables and temperature probe. Each cell consists of two plexiglass end-caps with embedded conductive mesh and required electrical connections. HMA-279 Sealing Rings adapt Specimen Cells for use with 100mm (3.9in) specimens. Inquire for a special cell with cooling fins for testing highly permeable concrete or for tests requiring constant temperatures. For efficient sample conditioning, the HMA-283 Vacuum Chamber saturates 4 to 6 samples at a time. The user can operate with their own vacuum pump, or the HMA-284 Vacuum Pump is available as an option. Larger HMA-286 Vacuum Chamber has capacity for up to 20 specimens, user supplied vacuum pump or the HMA-287 Vacuum Pump is available for use with it. The HMA-299 Verification Unit verifies output from the Proove'it Controller. Each channel of the Controller is set up for a selected voltage and connected to the Verification Unit. Actual current is displayed on the computer screen. **Product Dimensions:** 15 x 11 x 7 inches (381 x 279.4 x 228.6mm) WxDxH

Rapid Chloride Permeability Tester	
Rapid Chloride Permeability Tester, 115V/60Hz	HM-723
230V/50Hz	HM-723F
Accessories	
Rapid Chloride Permeability Measuring Cell for 4in Specimens	HMA-278
Sealing Ring for 100mm Specimens	HMA-279
Verification Unit	HMA-299
Standard Vacuum Chamber (4 to 6 Specimens)	HMA-283
Standard Vacuum Pump	HMA-284
Large Vacuum Chamber (Up to 20 Specimens)	HMA-286
Large Vacuum Pump	HMA-287

CT-51

CT-50B

CT-51B

CONCRETE HUMIDITY MEASUREMENT KITS
ASTM F2170, F2659

Measurement of relative humidity in concrete floors can detect levels that promote mold growth and help prevent future moisture damage to expensive floor coverings and coatings. Relative Humidity (RH) measurement provides a complete profile of moisture content throughout the depth of the concrete slab, not just the surface.

A 0.625in (16mm) borehole is drilled in the concrete to the specified depth and lined with a plastic sleeve. After the boreholes are allowed to reach temperature and moisture equilibrium, a probe is inserted and connected to an electronic meter for periodic measurement of humidity levels. Probes are installed below the floor surface and covered with a cap between readings, so do not interfere with normal construction activities. Systems meet the requirements of ASTM F2170.

Concrete Humidity Measurement Kits by Lignomat meet ASTM F2170 requirements and provide a complete set of equipment for Relative Humidity testing. NIST certified RH BluePeg Probes are easily recovered at completion of testing for reuse. Each kit includes a Relative Humidity Meter with cable, one BluePeg RH Probe for insertion in the borehole and ten plastic sleeves with caps. An RH Adaptor is provided to connect the probe directly to the meter for ambient temperature and humidity readings. Components are packed in a foam-lined, hard plastic carrying case. Optional accessories are purchased separately and include additional Probes and Sleeves for increased efficiency when testing larger areas, Calibration Check Solutions for checking performance and brush and vacuum attachments for borehole cleaning and preparation. **Product Dimensions:** 12x8x3.5in (306x203x89mm), WxDxH.

CT-50 Concrete Humidity Measurement Kit is equipped with the Tec RH meter to read the RH BluePeg Probes using the provided cable or adaptor. The meter features a large LCD display that indicates relative humidity, temperature, dew point and GPP (weight in grains of water per pound of air) with 0.1 resolution for all ranges. Relative humidity accuracy for probe and meter system is ±2% for 10–90% and ±3% for 0–10% or greater than 90%. Temperature accuracy is ±0.5° for 32° to 120°F (0° to 49°C), plus ±1° from 5° to 32°F (-15° to 0°C) and from 120°F to 160°F (49° to 71°C). The meter also functions independently as a thermo-hygrometer to measure ambient conditions and is available separately as CT-50B with an adaptor and one BluePeg Probe.

CT-51 Concrete Humidity Measurement Kit features the versatile DuoTec BW meter to read the RH BluePeg probes as required for ASTM F2170 tests, but doubles as a non-invasive moisture meter to measure near-surface moisture levels on a relative scale when held on a flat surface. The meter has selectable measuring depths of 0.25 and 0.75in (6 and 19mm) for concrete, gypsum and wood materials and meets ASTM F2659. A large LCD display indicates relative humidity, temperature, dew point and GPP (weight in grains of water per pound of air) with 0.1 resolution for all ranges. Relative humidity accuracy for the probe and meter system is ±2% for 10-90% and ±3% for 0–10% or greater than 90%. Temperature accuracy is ±0.5° for 32° to 120°F (0° to 49°C), plus ±1° from 5° to 32°F (-15° to 0°C) and from 120°F to 160°F (49° to 71°C). The meter also functions independently as a thermo-hygrometer to measure ambient conditions by using the RH BluePeg Probe and Adaptor from the kit. The DuoTec BW Meter only is available separately as CT-51B.

Concrete Humidity Measurement Kits	
Concrete Humidity Measurement Kit w/Tec RH Meter	CT-50
Tec RH Meter w/RH BluePeg Probe & Adaptor	CT-50B
Concrete Humidity Measurement Kit w/DuoTec BW Meter	CT-51
DuoTec BW Meter Only	CT-51B

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CTA-22

CTA-19

CTA-20

CTA-21

CTA-27

CTA-29

CTA-32

CTA-34

Concrete Humidity Measurement Kit Accessories

Description	Model
RH BluePeg Probes are made for in-situ concrete relative humidity testing with CT-50 and CT-51 measurement kits. Precision RH Probes have 3.5mm connectors and fit Plastic Hole Liner Sleeves. When connected to kit meters, Probes have relative humidity accuracy of±2% for 10–90% and ±3% for 0–10% or greater than 90%. Temperature accuracy is ±0.5° for 32° to 120°F, plus ±1° from 5° to 32°F and from 120°F to 160°F. Available as single units or in packages of 3, 5 or 10. Additional probes minimize acclimatization time when multiple readings are required over large areas and probes can be left inside Sleeves between readings for even better efficiency. Probes are easily recovered after testing and are reusable.	
RH BluePeg Probe, Single Unit	CTA-22
RH BluePeg Probes, pkg. of 3	CTA-24
RH BluePeg Probes, pkg. of 5	CTA-26
RH BluePeg Probes, pkg. of 10	CTA-28
Plastic Hole Liner Sleeves w/Caps are inserted into 0.625in (16mm) boreholes in concrete floor slabs for concrete humidity measurements. 1.8in (45.7mm) length of Standard Sleeves is designed to position probes properly in conventional 4in (101.6mm) thick floor slabs. Top-Extenders are required when testing at shallow depths and probes stick up above concrete surface. The Extender fits into the lip of the Standard Sleeve for a moisture-tight seal. Extra Long Sleeves are 3in (76mm) long for thicker slabs. Either model can be cut to length as required. Included low-profile caps seal the openings. Ten Standard Sleeves are included with the testing kits.	
Standard Plastic Hole Liner Sleeves w/Caps, pkg. of 20	CTA-18
Liner Sleeve Top Extender, pkg. of 5	CTA-19
Extra Long Plastic Hole Liner Sleeves w/Caps, pkg. of 10	CTA-20
RH Adapter is a double-ended 3.5mm male connector plug that allows the probes to be connected directly to Tec RH or DuoTec BW Meters for use as hand-held thermo-hygrometers. One Adaptor is included in each kit.	CTA-21
RH Depth Adapter is a 3.5mm male/female connector that adds 2in (51mm) to the length of a probe. This allows easy cable connection in holes over 2.4in (61mm) when CTA-20 Extra Long Sleeves are used.	CTA-25
Cleaning Accessories prepare the boreholes for testing by removing cuttings, dust and other debris before inserting the Liner Sleeves. Brush with total length of 7.5in (191mm) has rounded tip and sturdy bristles. Vacuum Attachment fits standard shop-vac style hoses and can reach approximately 3.5in (89mm) deep.	
Clean-Out Brush	CTA-27
Vacuum Attachment	CTA-29
RH Concrete Cable connects RH BluePeg probes to a RH moisture meter. A seal on the 6ft (1.8m) cable is pushed onto the Sleeve Liner during measurement, sealing the borehole to prevent moisture loss. The seal also allows disconnecting the cable without removing the probe. One cable is included in each kit.	CTA-32
Calibration Check Salt Solution in 75% concentration is used to check RH BluePeg Probes for proper operation. Includes a connection cable with sealing plug.	CTA-34

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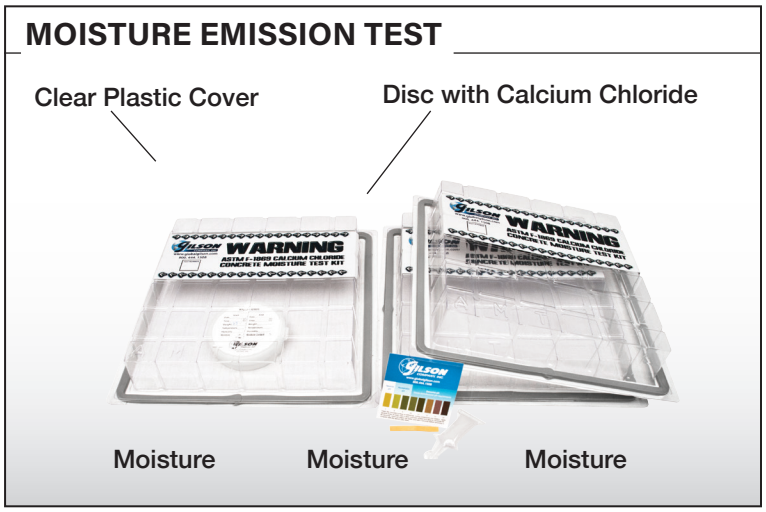


HM-668D HM-669

HM-674D

CONCRETE MOISTURE METER
ASTM F2659

Nondestructive Concrete Moisture Meters measure moisture content instantly on concrete floor surfaces prior to the application of floor coverings. Designed and calibrated specifically for concrete, they can also determine comparative readings on stone, lightweight concrete, gypsum floor screeds, ceramic tiles and other masonry type materials. The meter is simply pressed firmly onto a clean concrete surface and impedance measurements are obtained by electrodes located on the base of the meter. No drilling is required. Both meters are housed in rugged, ABS Plastic cases and are supplied with batteries.

HM-668D Concrete Moisture Encounter 5 has an analog dial to show readings of 0–6% moisture in concrete or 0–10% moisture in gypsum, with a "Hold" button to freeze the display. The unit is user calibrated at the start of each use for accurate repeatable readings. The meter has a low battery LED indicator. **Product Dimensions:** 6.3x3.5x1.5in (160x85x38mm), WxDxH.

HM-669 CMEXpert II Concrete Meter digital meter determines moisture in a concrete surface. It can also be used with Hygro-I Relative Humidity Probes and an electronic interface cable for ambient RH measurements. Humidity accuracy of between 10%–90% is ±1.8% at 25°C (77°F) and ±3% above 90%. It is available individually or as a component of HM-85 Concrete Hygro-i Inspection Kit. **Product Dimensions:** 3x6x2in (76x152x50mm), WxDxH.

HMA-661 Calibration Check Plate is used to monitor proper operation of HM-668A meter. Adjustments or recalibration must be performed by the factory.

MOISTURE EMISSION TEST KITS
ASTM F1869

Gilson's Concrete Moisture Emission Test Kits are the most recognized method to determine moisture emission through concrete floor slabs. Millions of dollars in damage to coatings and flooring systems occurs every year as a result of moisture migration through concrete slabs and structures. Electronic moisture meters indicate the existing degree of saturation but not the rate of moisture emission.

A container of moisture-absorbing calcium chloride is weighed and placed under a plastic "dome" that is sealed to the concrete surface with a self adhering gasket. At the conclusion of the 60—72 hour test cycle, the plastic is cut open and the dish of calcium chloride is removed and immediately weighed. The weight gain and exposure time values are used to compute the test result, expressed in pounds of moisture emitted per 1,000 square feet in 24 hours. Recommended test frequency is three for the first 500 square feet and one test for each additional 500 square feet of total area.

Each test kit consists of a sealed calcium chloride dish and a plastic dome with a pre-installed butyl rubber gasket. Three pH test strips with color chart are also included. Test kits are supplied in 3 or 12 packs. For a complete evaluation of the concrete floor surface, see moisture meters and pH meters listed elsewhere in the catalog. OB-205 Balance is recommended for quick evaluations in the field. **Product Dimensions:** 10x10x2in (254x254x51mm), WxDxH.

Moisture Emission Test Kits	
Moisture Emission Test Kit, pkg. of 3	HM-674D
Moisture Emission Test Kit, pkg. of 12	HM-674B
Accessories	
Electronic Balance, 220x0.1g	OB-205

Concrete Moisture Meter	
Concrete Moisture Encounter 5	HM-668D
CMEXpert II Concrete Meter	HM-669
Accessories	
Calibration Check Plate	HMA-661

HM-271 shown with HMA-104

HMA-113

HMA-115

GILSON CONCRETE CTE SYSTEM
AASHTO T 336

Coefficient of Thermal Expansion (CTE) determinations predict thermally induced expansion and contraction movements in concrete pavement. CTE values help in developing concrete pavement mix designs that maximize service life. The NCHRP 1-37A research program found that these thermal movements have a significant impact on concrete pavement performance and integrated the use of CTE values into the Mechanistic-Empirical Pavement Design Guide (MEPDG). AASHTO T 336 is the standard test method for determination of CTE values and other agencies are evaluating its development.

Once the saturated 4x7in (101.6x177.8mm) dia.xL concrete specimen is mounted in the measuring frame and immersed in the water bath, the test is initiated simply by pressing the start button. Precise length change measurements of the specimen are recorded at specified controlled temperatures over a range of 10°–50°C (50°–122°F). At completion, the CTE value is computed and reported.

Gilson CTE System components all work together to achieve significant improvements in accuracy, repeatability and versatility over currently available systems. Pre-loaded software on the included laptop computer completely automates measuring, recording and calculating of final CTE values in accordance with AASHTO T-336. The portable bench-top stainless steel water bath has capacity for testing with an additional HMS-114 CTE measuring frame, two samples simultaneously. A water circulation unit uses a thermistor with 0.01°C resolution and ±0.05°C accuracy to control and record bath temperatures. Water is recirculated every twenty seconds, ensuring uniform temperature levels. The effects of evaporative loss are eliminated by a water level control device that precisely maintains a constant water level throughout the test. The heavy-duty adjustable specimen measuring frame is constructed of Type 304 stainless steel, assuring uniform expansion characteristics. An LVDT securely mounted to the measuring frame has 1.27mm of travel with a resolution of 3.1×10^{-8}, assuring extremely precise length change measurements of the 4x7in (101.6x177.8mm) specimen.

The HM-271 CTE System includes a laptop computer pre-loaded with CTE software and required computer interfaces, a bench-top stainless steel water bath with 20L (5gal) capacity and dimensions of 25x15x13in (635x381x330mm) WxDxH, one stainless steel measuring frame with LVDT, a stand-alone water circulating unit with thermistor temperature probe and a water level control device.

Calibration and Verification Specimens are purchased separately. HMA-104 Calibration Specimen is 304 Stainless Steel and HMA-115 Verification Specimen is 410 Stainless Steel. Grade 5 Titanium Steel and Nickel Calibration Specimens are available and can be certified to ASTM E228 by an ISO 9001 facility for additional confidence, inquire.

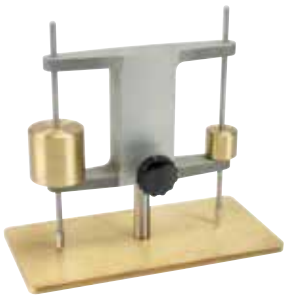
An additional HMA-114 CTE Measuring Frame with LVDT, purchased separately, allows testing of two specimens simultaneously for greater sample efficiency. The frames are supplied ready to connect the LVDT directly to the USB port of the computer. HMA-113 LVDT Calibrator with Digital Micrometer can be purchased separately to verify performance of the LVDT.

Gilson Concrete CTE System	
Gilson Concrete CTE System, 110V/60Hz	HM-271
230V/50Hz	HM-271F
Accessories	
Calibration Specimen, 304 Stainless Steel	HMA-104
Verification Specimen, 410 Stainless Steel	HMA-115
CTE Measuring Frame, 304 Stainless Steel	HMA-114
LVDT Calibrator with Digital Micrometer	HMA-113

HM-300

HMA-290

HMA-296



HM-310

HM-570

PENETROMETERS FOR CEMENT, MORTAR AND GROUT

Vicat, Gillmore Needle and Mortar Penetrometers determine consistency, set times and false set of hydraulic cement, mortar and grout.

Penetrometers for Cement, Mortar and Grout

Description	Model	ASTM	AASHTO
Standard Vicat has a reversible 300g stainless steel rod with a 10mm plunger on one end and a 1mm double-threaded needle at the other. The adjustable indicator on the rod may be set to indicate in either orientation on a 0–50 x 1mm scale. A conical plastic mold, 60/70mm top/base ID x 40mm high and glass plate are included. Threaded Adapter Weight modifies the HM-300 to a HM-302 Modified Vicat. **Product Dimensions:** 12x5x4in (305x127x102mm), WxDxH.		C187 C91 C451 C141 C191 C308	T 129 T 131 T 186
Standard Vicat Apparatus Additional Conical Plastic Mold, 60/70mm top/base ID x 40mm High Additional 1mm SS Needle with reversible, threaded end for HM-300 Threaded Adapter Weight, modifies HM-300 to HM-302	HM-300 HMA-290 HMA-292 HMA-293		
Modified Vicat for False Set is used for false set (early stiffening) determination of Portland cement mortar; this unit has a 400g plunger assembly. A conical plastic mold, 60/70mm top/base ID x 40mm high and glass plate are included. **Product Dimensions:** 12x5x4in (305x127x102mm), WxDxH.		C359	T 185
Modified Vicat Apparatus False-Set Container, 50x50x150mm 400ml Cylindrical Unit Measure Additional Conical Plastic Mold, 60/70mm top/base ID x 40mm high	HM-302 HMA-296 HMA-136 HMA-290		
Gillmore Needle Apparatus determines initial and final set times of portland cement, masonry cement, hydraulic hydrated lime and certain mortars. The adjustable support has horizontal arms guiding two weighted needles with flat-end cylindrical stainless steel tips. The initial-set needle is 1/4lb (113.4g) and 1/12in (2.12mm) diameter; final-set needle is 1lb (453.6g) and 1/24in (1.06mm) diameter. Base has ample flat shelf for positioning specimens. **Product Dimensions:** 6x3.5x4in (152x89x102mm), WxDxH.	HM-310	C266 C414	T 154
Acme Penetrometer measures penetration resistance to determine set times of concrete mixes, mortars and grouts. A 200lb (890N) capacity load cell displays loads on a dial gauge in 1lb divisions. **Product Dimensions:** 10x13x31in (250x330x787mm), WxDxH.	HM-570	C403	T 197M
Manual Mortar Penetrometer is operated with a downward force to penetrate 1in (25mm) into a sample. Pressure is indicated on a scale located on the handle stem with a sliding ring indicator. Unit comes with convenient carrying case and includes six stainless steel penetration needles with 1, 1/2, 1/4, 1/10, 1/20, 1/40 in² (645, 323, 161, 65, 32 and 16mm²) bearing areas. Replacement needles available on request. **Product Dimensions:** 24x9x3in (610x229x76mm), WxDxH.	HM-571	C403	T 197M

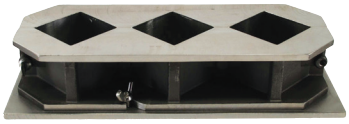
HM-571

CUBE & PRISM MOLDS

Gilson offers a wide selection of cube and prism molds for use with cement, mortar, grout, concrete and capping compound. Metal molds meet ASTM and AASHTO specifications. Lighter, easy to clean, plastic molds are economical for internal QC programs. All molds are 3-gang except for single specimen, 6in (152mm) and 5.9in (150mm) single specimen cube molds and grout sample boxes.

HM-294C

HM-294



HM-296

HM-297

HM-335

HM-340

HM-298

Cube & Prism Molds

Description	Model	Specimen Size	ASTM	AASHTO
Bronze Cube Molds feature rugged quality construction and are available in 2in (51mm) or 50mm sizes. The forged bronze casting is precision machined to produce three cubes diagonally. Several Cover Plates are available for the HM-294 and HM-294M Cube Molds and include: HM-307 Standard Brass Cover Plate, HM-309, 0.5in thick Plastic Cover Plate and HM-299 Brass Cover Plate with Holes for casting sulfur mortar capping compound cubes. The HM-294C Cube Mold with Cover has machined alignment guides on both the top and bottom for accurate positioning of the included 0.25in (96.4mm) thick brass base and cover plates. Wing-nuts and studs secure the mold halves together and clamp the base and cover to the mold body. This mold is ideal for casting expansive grout samples as well as for conventional grouts and mortars and is easily flipped over to compensate for worn top surfaces. Specially machined extra cover plates are available as HM-308C. **Product Dimensions:** 11x4.5x2.5in (279x114x64mm), WxDxH.			C617 C109/109M C87 C91 C141 C311 C472 C579 C942 C1012	T 231 T 106M/106 R 64
Bronze Cube Mold, 2in	HM-294	2x2x2in		
Bronze Cube Mold, 50mm	HM-294M	50x50x50mm		
Brass Standard Cover Plate	HM-307	—		
Brass Cover Plate w/Holes	HM-299	—		
Plastic Cover Plate	HM-309	—		
Bronze Cube Mold w/Cover Plate, 2in	HM-294C	2x2in		
Cover Plate for HM-294C	HM-308C	—		
Stainless Steel Cube Molds are accurately machined for casting 2in (51mm) and 50mm cubes in diagonal position. Stainless steel construction resists corrosion, cleans easily and stands up to rough handling. HM-308 Standard Stainless Steel Cover Plate attaches to the top of the HM-296 and HM-296M Cube Molds with included clamps. HM-296C Stainless Steel Cube Mold with Cover has machined alignment guides on both the top and bottom for accurate positioning of the included 0.25in (6.4mm) thick stainless steel base and cover plates. Wing-nuts and studs secure mold halves together and clamp the base and cover to the mold body. This mold is appropriate for casting expansive grout samples. Precision machined extra cover plates for the HM-296C are available as HM-308C. **Product Dimensions:** 11x4.5x2.5in (279x114x64mm), WxDxH.			C617 C109/109M C87 C91 C141 C311 C472 C579 C942 C1012	T 231 T 106M R 64
Stainless Steel Cube Mold, 2in	HM-296	2x2x2in		
Stainless Steel Cube Mold, 50mm	HM-296M	50x50x50mm		
Stainless Steel Standard Center Plate	HM-308	—		
2in Stainless Steel Cube Mold Set with Cover	HM-296C	2x2in		
Cover Plate for HM-296C	HM-308C	—		
Econ-O-Cube Mold is three-piece plastic. This unit meets size tolerances only for ASTM C109. The molds are held together by self-aligning thumb screws. Include HM-298 Hard Rubber Tamper. **Product Dimensions:** 11x4.5x3.5in (279x114x89mm), WxDxH.				
Econ-O-Cube Molds	HM-297	2x2x2in	—	—
Plastic Cover for HM-297	HMA-143	—	—	—
HDP Plastic Cube Mold is machined of high-density polyethylene strips that assemble easily and are held together with heavy rubber straps. Corrosion-proof, easy to clean and store. The set includes a tamper and mold cover. **Product Dimensions:** 9x4x3in (229x102x76mm), WxDxH.	HM-335	2x2x2in	—	—
Cube Maker System utilizes disposable polypropylene mold liners in a three-gang stainless steel frame. Cured cubes are lifted out of the frame and the liners are stripped away. The reusable frame never needs cleaning. The system includes 27 Poly Liners, four polyurethane unbonded caps and two stainless steel retainers. Two red caps are for strengths up to 4,000psi (27.6mPa) and two amber caps for strengths exceeding 4,000psi. The caps may be re-used up to 300 times. This inexpensive, timesaving system is reliable for in-house quality control and other non-specification applications. Liners, pads and extra mold frames are available as accessories. **Product Dimensions:** 2x2in (51x51mm), WxH.				
Cube Maker System	HM-340	2x2x2in	—	—
Frame for HM-340	HMA-139	—	—	—
Poly Liners for HM-340, case of 196	HMA-140	—	—	—
Polyurethane Caps for HM-340, pkg. 4	HMA-141	—	—	—
Hard Rubber Tamper is required by specification for consolidating mortar or grout specimens into molds. **Product Dimensions:** 5.5x1x0.5in (139.7x25.4x12.7mm), WxDxH.	HM-298	—	C617 C109/109M C87, C91, C141, C311, C472, C579, C942	T 231 T 106M R 64

HM-290

HM-291

HM-292

Cube & Prism Molds

Description	Model	Size	ASTM	AASHTO
Steel Single Cube Mold is all-steel and collapsible 6x6in (152x152mm) mold that produces concrete specimens for compression testing or serves as a container for mortar penetration tests. Sides are hinged to the base and ends are hinged to the sides. Wing nut fasteners secure the assembly in place.	HM-290	6x6x6in	C403	T 197M T 197
Premium Single-Cube Mold is a rugged one-piece plastic 150x150x150mm (5.9x5.9x5.9in) mold for concrete compressive strength specimens and can be used as a container for mortar penetration tests. Reinforced plastic construction is 0.75 to 1.25in (19 to 32mm) thick for added rigidity and long service life. Cured specimens are easily de-molded using compressed air injected through the base.	HM-291	150x150x150mm	C403	T 197M T 197
Economy Single-Cube Mold for concrete compressive strength cube specimens and mortar penetration tests is durable one-piece plastic with reinforcing ribs. A hole in the base with included plug permits quick demolding using a compressed air source. Internal dimensions are 150x150mm (5.9x5.9in).	HM-292	150x150x150mm	C403	T 197M T 197
Grout Sample Box (GSB) meets requirements of ASTM C1019 and UBC 21-18. Field samples are efficiently molded, protected and shipped, all in one container. Cardboard material duplicates absorption characteristics of concrete masonry units and compressive strength values are comparable to traditional molding methods, as well as much more consistent and repeatable. Single-use cardboard boxes ship and store flat, taking only seconds to set up for molding. Each box yields four 3.125x3.125x6.25in (79x79x159mm) mortar samples. 25 boxes per carton. Optional Grout Sample Box Fixture reinforces the sidewalls of the cardboard GSB to maintain square shape, assuring more consistent specimens. Sturdy ventilated steel construction allows excess moisture to escape.				
Grout Sample Box, pkg. of 25	HM-295	3.125x3.125x6.25in	—	—
Grout Sample Box Fixture, Ea.	HMA-349	—	C1019	—
Grout Prism Capping Stand allows easy and accurate end preparation for masonry grout samples up to 3.5in (89mm) square. Designed for capping of specimens molded with HM-295 Grout Sample Box for compressive strength testing. Vertical guides ensure samples are perpendicular when capping with sulfur mortar compound. The capping plate and recess with beveled sides meet ASTM requirements for hardness and depth to produce caps that properly distribute loads for accurate strength results. Solid steel construction.	HMA-359	12x10x12in	C1019	—
ASTM Trowel has straight sides as specified for proper consolidation and strike off of mortar and grout specimens. Regular Trowel is convenient for mixing and handling of samples.				
ASTM Trowel	HMA-307	6in	C109	T 106
Trowel	HMA-306	5.5in	—	—

HM-295

HMA-349

HMA-359

HMA-307

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

HM-252

HM-250D

HM-250

HM-256

HM-257

HM-259

HM-254

HM-270

LENGTH CHANGE APPARATUS

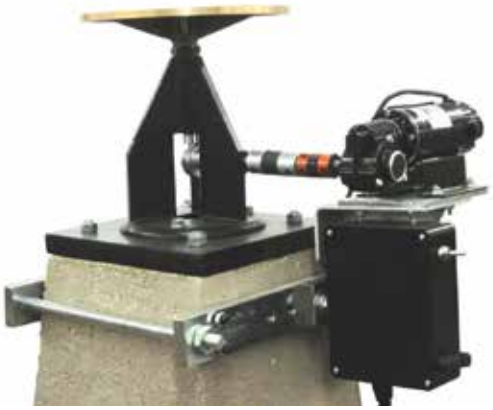
ASTM C151, C157, C227, C490, C1260; AASHTO R 70, T 107M, T 107

Length Change Apparatus measures changes in length of cast prism specimens due to alkali-silica reactivity (ASR), autoclave curing, alkali reactivity and other causes not related to applied load. Methods are applicable to testing of hardened Portland cement paste, mortar, concrete, or evaluation of hydraulic hydrated lime for structural purposes.

Length Change Apparatus

Description	Model	ASTM	AASHTO
Cement Autoclave provides accelerated curing to estimate expansion of hydraulic cement caused by hydration. Test Bars are cured in controlled steam pressure and constant temperature. Vessel is capable of pressures from 60–350psi (0.4–2.4mPa) and includes pressure regulator, gauge (0–600 x 5psi), air vent valve, a Safety Pop Valve set at 350psi, ASTM 2F thermometer, wrench and package of five gaskets. Replacement gaskets and Pop Valves are available as accessories. Safety Pop Valves are set at 350psi and include a certificate of calibration. Autoclave chamber is 6.1x16in (156x407mm) Dia.xH. 115V/50-60Hz/1,800 Watts. For use with 230V service, order TR-3002 transformer. **Product Dimensions:** 17x48x28in (432x1220x711mm), WxDxH.		C151	T 107M
Cement Autoclave, 115V/50–60Hz	HM-252		
Gaskets, pkg. 100	HMA-85		
Safety Pop Valve	HMA-86		
ASTM 2F Thermometer, 20°–580°F	MA-421F		
ASTM 2C Thermometer, -5°–300°C	MA-421C		
Length Comparators with 0.0001in (0.0025mm) divisions determine precise length changes in 10in (254mm) specimens. Recommended HM-250D has a quick-reading 0.5in (12.5mm) range LCD digital indicator with in/mm switch, RS-232 port and replaceable 200 hour battery. Analog HM-250 has a 0.4in dial indicator. Comparators include a heat treated, hardened Invar Reference Bar for periodic calibration. Sturdy upright metal support is attached to a solid base. Specimens up to 4x4x10in (102x102x254mm) may be tested, but 1x1x10in (25x25x254mm) prisms are normal. Inquire for special adapter and shorter Invar Reference Bar if 5in (127mm) long prism samples are tested. **Product Dimensions:** 11x11.5x17in (279x292x432mm), WxDxH.		C151 C157 C227 C490 C1260	T 107M R 70
Digital Length Comparator	HM-250D		
Length Comparator	HM-250		
Prism Molds are corrosion-resistant steel (HM-258 is stainless) with base plate, removable partitions and end plates, to provide required length of 10in (254mm) between innermost ends of HM-268 Gage Studs cast in ends of bars. Dimensions from outside ends of Gage Studs are 11.625in (296mm); specimens are 11.25in (286mm) long. Select molds for specimen cross sections of 1x1in, 2x2in or 3x3in. Inquire for 5in (127mm) length specimen molds.		C151 C157 C227 C490 C1260	T 107M R 70
Prism Mold 1x1x10in (25x25x254mm), Single	HM-256		
Prism Mold 1x1x10in (25x25x254mm), 2-Gang	HM-257		
Stainless Steel Prism Mold 1x1x10in (25x25x254mm), 2-Gang	HM-258		
Prism Mold 2x2x10in (51x51x254mm), 2-Gang	HM-255		
Prism Mold 3x3x10in (76x76x254mm), Single	HM-259		
Gage Studs are knurled stainless steel and threaded to be cast into specimen ends. Gage ends precisely fit contact points in the bottom and top anvils of the Length Comparators. **Product Dimensions:** 0.25x0.8125in (6.35x20.64mm) dia.xL.	HM-268	C151, C157, C227, C490, C1260	T 107M R 70
Test Bar Holder holds up to eight 1x1in (25x25mm) 10in (254mm) bars for suspension inside the Autoclave. Bars are held vertically above water level to expose all specimens to Autoclave steam. pkg. of 10. **Product Dimensions:** 5.75x5.75x11.75in (146.1x146.1x298.5mm), WxDxH.	HM-254	C151	T 107M
Mortar Bar Container is stainless steel with wicking liner and tight fitting cover to seal in water vapor. Vertically supports up to 36 mortar bars in container with lower end above water surface. **Product Dimensions:** 9x11x15.5in (229x279x394mm), WxDxH.	HM-270	C227	

HM-268



HM-273

VIDEO ONLINE

HM-372 shown with MA-48

FLOW TABLES

ASTM C87, C109, C110, C185, C230, C348, C593, C860; AASHTO M 152M, T 71, T 106M, T 137

Flow tables are used for determining consistency (flow) and for preparing mortars of standard consistency for testing. Flow is determined as percent increase in diameter of a conically-molded mortar. The sample is subjected to a required number of cam-actuated 0.5in (12.5mm) table drops at a fixed 100rpm rate.

All flow tables have the 10in (254mm) diameter rigid cast bronze table supported in a cast iron frame. Base and special drive motor bracket are mounted to a concrete pedestal provided by user. A Flow Mold is included with all tables; extras are available as HMA-133. Mold is cast bronze, 2.75/4in (70/102mm) top/bottom ID with collar. The HMA-134 Percent Flow Caliper has special scale to give the average flow directly by adding four readings. A 12in (305mm) long Strike-Off Bar (HMA-368) for striking off specimens in containers, measures or molds is included.

HM-272 and HM-273 Motorized Flow Tables have rates controlled precisely in accordance with ASTM and AASHTO standards. HM-272 **Product Dimensions:** 18x15x20in (457x381x508mm), WxDxH. HM-273 **Product Dimensions:** 19x22x24in (483x559x610mm), WxDxH.

HM-274 Manual Flow Table gives reliable results and is recommended for applications where strict adherence to standards is not essential. **Product Dimensions:** 14x14x14in (356x356x356mm), WxDxH.

Flow Tables	
Motorized Flow Table w/Counter, 115V/60Hz	HM-272
230V/50Hz	HM-272F
Motorized Flow Table, w/o Counter, 115V/60Hz	HM-273
230V/50Hz	HM-273F
Manual Flow Table w/Hand Wheel & Flow Mold	HM-274
Accessories	
Flow Mold	HMA-133
Percent Flow Caliper	HMA-134
Stainless Steel Strike-Off Bar 12x0.75x0.12in	HMA-368
Rubber Tamper, 0.5x1x6in	HM-298

GROUT FLOW CONE SETS

ASTM C939, D6449

Grout Flow Cones measure the flowability of hydraulic grout used in preplaced aggregate concrete. Flowability is measured by time of discharge of a 1.725L sample of grout through the 0.5in (12.7mm) ID discharge tube orifice from the cone. The cast aluminum Flow Cone has 7in (178mm) top ID and comes with an adjustable point gauge assembly to indicate initial sample level. **Product Dimensions of Flow Cone:** 7x12in (178x305mm), IDxH.

HM-372 Grout Flow Cone Set is supplied as a Flow Cone with replaceable 0.5in (12.5mm) Orifice, a 3-legged Steel Stand and a 2L (2.1qt) Stainless Steel Beaker receiving container. Meets ASTM C939.

HM-373 Grout Flow Cone Set is similar to the HM-372, but the Flow Cone is fitted with a special 0.75in (19mm) Orifice for less flowable grouts. Meets ASTM D6449.

Flow Cones, Orifices and other set components can be purchased separately. Flow Cone models include the point gauge measurement assembly and are available with or without 0.5in or 0.75in Orifices. Both Orifice sizes are replaceable and available separately. The sturdy painted Steel Stand is 20.5in (414mm) high. The 2qt (1.9L) Stainless Steel Beaker is sized to receive grout from a single test and graduated in oz and cc. The 6qt (5.7L) Beaker can collect grout from up to three tests.

Grout Flow Cone Sets	
Grout Flow Cone Set, w/0.5in Orifice	HM-372
Grout Flow Cone Set, w/0.75in Orifice	HM-373
Accessories	
Flow Cone Only, No Orifice	HM-371
Flow Cone with 0.5in Orifice	HM-372B
Flow Cone with 0.75in Orifice	HM-373B
Flow Cone Stand Only	HM-372A
0.5in (12.7mm) Orifice Only	HMA-146
0.75in (19.0mm) Orifice Only	HMA-147
Stainless Steel Beaker, 2L	MA-42
Stainless Steel Beaker, 6L	MA-48
Large Display Digital Stop Watch	MA-30

NEW

HM-677

MASONRY GROUT WINDOWS

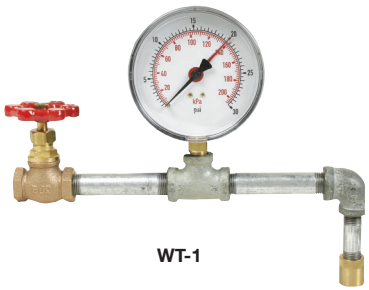
Grout Windows enable debris cleanout while allowing monitoring and visual confirmation of grout placement in masonry structures to ensure block cores are properly filled. Simply open one cell in the bottom course of block to be filled and install the window using the specially designed anchor bolt. After grout placement, the Acrylic Window can be removed by twisting and breaking off the exposed portion of the engineered plastic bolt. Proper use and grout placement assures soundness of the block face and eliminates costly repairs resulting from blow outs. The Acrylic Windows are reusable while the bolt is abandoned in place. Acrylic Grout Windows are supplied in packs of 20 pieces. Bolt and Nut sets are purchased separately in packages of 20. **Product Dimensions:** 5x8in (127x203mm), WxD.

Masonry Grout Windows	
Masonry Grout Windows, pkg. of 20	HM-677
Accessories	
Engineered Plastic Bolt and Nut, 20 sets	HMA-715

technote

Gilson's new flow cone design now allows for you to interchange the 0.5in (12.5mm) and 0.75in (19mm) with each other improving the versatility of your grout testing capabilities.

MA-10



WT-1

WT-23ESB

WT-62 shown with WTA-49

BS-50

CEMENT FINENESS

ASTM C204, C430; AASHTO T 153, T 192

Gilson Cement Fineness Apparatus meets standard test methods for fineness of Portland and other hydraulic cements, fly ash, natural pozzolan, masonry cement and similar materials.

Description	Model	ASTM	AASHTO
Blaine Air Permeability Apparatus determines the fineness of cement by measuring the rate of flow for a quantity of air drawn through a prepared specimen with a known surface area. The characteristics of the pore structure are controlled by the particle size of the sample and determine the rate of air flow. The apparatus consists of a calibrated U-tube manometer, rubber aspirator, and bulb mounted on a sturdy wooden panel and base. The stainless steel test cell includes a plunger and perforated disc. An 8oz bottle of red spirit manometer fluid, package of grade 597 filter paper, and a wood block for holding the cell are also included. Additional filter paper discs and manometer fluid are ordered separately. Order NIST Portland Cement standard reference materials below for calibration. **Product Dimensions:** 16x16x6in (406x406x152mm), WxDxH.		C204	T 153
Blaine Air Permeability Apparatus	MA-10		
12.7mm Filter Paper Discs, Grade597, Pkg of 1,000	MA-11		
Replacement Glass U-Tube	MA-12		
Manometer Fluid, 8oz (236ml)	MA-13		
Fineness Spray Assembly meets ASTM/AASHTO requirements for measuring cement fineness by sieve and is useful for any wet sieving application. Assembly includes valve with 3/4in female threaded inlet, pressure gauge, piping, and specified spray nozzle. 4.5in (114mm) diameter gauge is graduated up to 30psi max. A red pointer indicates maximum reached.	WT-1	C430	T 192
Spray Connector Accessory is a 2ft flexible hose with 3/4in threaded male connection to fit WT-1. The opposite end fits a standard garden hose outlet and includes a clamp fitting for attachment to a sink faucet.	WT-1A	-	-
Cement Fineness Test Sieve is a one-piece brass frame, 2in (50.8mm) diameter and 3in (76.2mm) deep from rim to cloth, with permanently mounted No.325 stainless steel wire cloth. Meets ASTM and AASHTO specifications when user-calibrated with BS-46 or BS-50 NIST Portland cement standard reference materials, purchased separately. Verification to ASTM E11 Inspection Grade or Calibration Grade is optional.			
Cement Fineness Test Sieve	WT-23ESB	C430	T 192
Inspection Test Sieve Verification	GV-60	E11	-
Calibration Test Sieve Verification	GV-65	E11	-
Two-Piece Cement Fineness Sieve Frame meets ASTM/AASHTO test method requirements when fitted with WTA-49 No.325 Mesh Disc, and user-calibrated with BS-46 or BS-50 NIST Portland cement standard reference materials, all purchased separately. The nickel-plated frame is easily disassembled with three screws to replace the disc. Verification of the WTS-49 discs to ASTM E11 Inspection Grade or Calibration Grade is optional.			
Two-Piece Cement Fineness Sieve Frame	WT-62	C430	T192
No. 325 Stainless Steel Mesh Disc for WT-62	WTA-49	C430	T192
Inspection Test Sieve Verification	GV-60	E11	-
Calibration Test Sieve Verification	GV-65	E11	-
NIST Portland Cement, No. 46h standard reference material (SRM) validates 45µm (No.325) sieves for the cement fineness and air jet cement fineness tests. It consists of a coarser cement than 114q and is certified for use as an alternative in Blaine air permeability, Wagner turbidity, and particle size distribution by laser diffraction. Supplied with NIST certificate of analysis in 10 sealed vials, each approximately 5g of cement.	BS-46	C430 C115 C204 C1891	T 192 T 98 T 153
NIST Portland Cement No.114q standard reference material is used in the verification and calibration of equipment for the Blaine air permeability test, cement fineness by sieve test, cement fineness by air jet sieve, and the Wagner turbidimeter test. The material is supplied with NIST certificate of analysis in 20 vials of approximately 5g each of cement.	BS-50	C430 C115 C204 C1891	T 192 T 98 T 153

contactus

Call our technical support staff to find the right equipment for your application. 800.444.1508.

HM-220

HM-223

HM-106

HM-107

HM-108 shown with TSA-198

CONCRETE MIXERS

ASTM C192; AASHTO R 39

Gilson Concrete Mixers have 3ft³ (85L) batch capacity and are powered by 115V/60Hz, 1/2hp electric motors. Mixers have rugged construction for long life and a lightweight design for easy portability. Heavy-gauge steel drums with reinforced rims feature replaceable mixing blades, yielding four mixing actions with each drum revolution. One-piece cast iron ring on drums and tapered roller bearings on drive and drum shafts assure smooth, efficient operation. Total drum volume is 5.5ft³ (156L). The Mixers are equipped with a five position drum lock and tilt bar for discharging mix.

HM-220 Portable Concrete Mixer has handles and wheels for easy manual positioning in the lab or on the jobsite. 10in (254mm) wheels with pneumatic tires are mounted on tapered roller bearings. Drum diameter is 26in (660mm), opening size is 15.25in (387mm), and discharge height is 20in (508mm). **Product Dimensions:** 30x46x48in (762x1168x1219mm), WxDxH.

HM-223 Stationary Concrete Mixer has similar specifications to Portable Mixers, but is designed for stationary use. This newer model also features a replaceable polyethylene Drum Liner (included) for fast, non-stick clean up and extended life for the steel drum. The liner is FDA/NSF/USDA- approved. Drum diameter is 23in (584mm, opening size is 16.75in (425mm), and discharge height of 20in (508mm). **Product Dimensions:** 30x42x46in (762x1067x1168mm), WxDxH.

STANDARD TEST SANDS

Specially graded sands for ASTM tests are naturally rounded silica sands of nearly pure quartz, mined from the Ottawa, Illinois area. Test Sands meet ASTM and AASHTO standards indicated.

HM-106 Sand Cone Density Sand for field density testing of soils is clean, uniform, uncemented and free-flowing. Meets ASTM D1556 and AASHTO T 191. Few particles pass No.200 (75µm) or are retained on No.10 (2.00mm) sieves. Uniformity coefficient less than 2.0 and less than 3% passes No.60 (250µm). Bulk density varies less than 1%. 50lb (22.7kg)

HM-107 20-30 Standard Tensile Test Sand is manufactured to pass No.20 (850µm) sieve and be retained on No.30 (600µm). Meets ASTM C778 requirements. HM-107 sand also met former ASTM C190, now a discontinued standard. 50lb (22.7kg)

HM-108 Graded Standard Cube Test Sand is graded between No.30 (600µm) and No.100 (150µm) sieves. Meets requirements for ASTM C109 and C778, as well as AASHTO T 106. 50lb (22.7kg)

Concrete Mixers	
Concrete Mixer, Hand Tow	HM-220
Stationary Concrete Mixer	HM-223
Accessories	
Replacement Poly Drum Liner for HM-223	HMA-155

Standard Test Sands	
Sand Cone Density Sand	HM-106
20-30 Standard Tensile Test Sand	HM-107
Graded Standard Cube Test Sand	HM-108

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MA-66

MA-67

MA-52

PORTABLE MIXERS

The portable Asphalt/Concrete Mixers are ideal for sample or small batch mixing in just about any setting. The enameled-steel mixer holds a utility bucket securely in place. As the bucket rotates at 60rpm, a stationary Mixing Paddle scrapes sides and bottom of the bucket to ensure thorough mixing. All 115V/60Hz mixers are supplied with a 1/2hp motor, On/Off switch, fuse protection and an 8ft cord with three-prong plug. For 230V/50Hz mixer, add "F" to model number suffix. The 10 gallon "F" model is supplied with a 1hp motor.

MA-66 Light-Duty Stationary Mixer includes a removable 5gal Utility Bucket and Standard Mixing Paddle. A Deluxe Mixing Paddle with extra fins is available for heavy loads. MA-66 is powered by a constant speed motor and belt pulley. Other heavy-duty models are recommended for asphalt mixes. **Product Dimensions:** 12x18x24in (305x457x610mm), WxDxH.

MA-67 and MA-68 Heavy-Duty Portable Mixers use 5gal and 10gal Utility Buckets, respectively and are equipped with 8in wheels for maximum mobility. By using a direct drive motor more power is generated for mixing. Mixing paddles not included. Gilson recommends MA-67 Mixer with either MAA-146 Paddle for asphalt or MAA-148 Paddle for concrete applications. The 5gal buckets can be preheated in ovens if necessary. Inquire for other available paddles. **Product Dimensions:** 24x21x35in (610x533x889mm), WxDxH.

Portable Mixers	
Light-Duty Stationary Mixer, 5gal	MA-66
Heavy-Duty Portable Mixer, 5gal	MA-67
Heavy-Duty Portable Mixer, 10gal	MA-68
Accessories	
Bucket & Cover for MA-66, 5 gal	MAA-141
Replacement Paddle for MA-66	MAA-142
Deluxe Paddle for MA-66	MAA-143
Utility Bucket for MA-67, 5gal	MAA-144
Utility Bucket for MA-68, 10gal	MAA-145
Asphalt Paddle for MA-67, 5gal	MAA-146
Asphalt Paddle for MA-68, 10gal	MAA-147
Concrete Paddle for MA-67, 5gal	MAA-148

LABORATORY MIXERS

ASTM C109, C227, C305; AASHTO T 106, T 162

Industrial-grade Laboratory Mixers have planetary action for thorough mixing and blending of materials. Direct gear drives and heavy-duty motors assure constant mixing speeds under load. Locking hand-lever raises and lowers bowl. All mixers are supplied with stainless steel bowl, wire whip, dough hook and aluminum flat beater. MA-52 and MA-52X include an MAA-266 stainless steel flat beater. MA-52X includes modifications to meet ASTM and AASHTO specifications. Add “F” suffix to any mixer or heating adapter model number for similar unit that operates on 230V/50Hz power supply.

MA-52 Laboratory Mixer has 5qt (4.7L) capacity and a 1/6hp motor with selectable operating speeds of 139, 285 and 591rpm. Additional heavy-duty Stainless Steel Flat Beater is included, as well as a 6ft (1.8m) power cord. The MAA-30A Clearance Adjustment Bracket can be purchased separately to meet ASTM and AASHTO requirements of ASTM C305, C227 and C109. MAA-31 Acrylic Bowl Lid is also available for all 5qt (4.7L) bowls. **Product Dimensions:** 10.5x15x17in (267x381x432mm) WxDxH.

MA-52X Laboratory Mixer has the same specifications as MA-52, but has been modified with a MAA-30A Clearance Bracket to meet the requirements of ASTM C305, C227 and C109 (AASHTO T 162 and T 106) and certain other tests for mortar and cement. **Product Dimensions:** 10.5x15x17in (267x381x432mm) WxDxH.

MA-54A Laboratory Mixer is a 12qt (11.4L) capacity benchtop mixer for larger batch requirements. This unit is supplied with a 1/2hp motor for selectable mixing speeds of 107, 198 and 365rpm. A 6ft (1.8m) power cord is included. **Product Dimensions:** 19x23x29in (483x580x750mm), WxDxH.

Heating Adapter Kits maintain elevated temperatures when preparing hot-mix asphalt specimens in Laboratory Mixers. Heating mantles mount under mixing bowls with hook and loop fasteners. Electronic proportional controller with built-in circuit breaker attaches with a twist-lock connector on 4ft (1.2m) cable.

Laboratory Mixers	
5qt Laboratory Mixer, 115V/60Hz	MA-52
5qt Laboratory Mixer with clearance bracket, 115V/60Hz	MA-52X
12qt Laboratory Mixer, 115V/60Hz	MA-54A
Accessories	
Wire Whip for MA-52	MAA-260
Heavy-Duty Stainless Steel Flat Beater for MA-52	MAA-266
Bowl for MA-52	MAA-32
Bowl for MA-54A	MAA-34A
Clearance Adjustment Bracket for MA-52	MAA-30A
Heating Adapter for MA-52, 250 Watts	MAA-28[1]
Heating Adapter for MA-54A, 600 Watts	MAA-64[1]
Stainless Steel Wire Whip for 12qt Laboratory Mixers	MAA-261A
Aluminum Beater for 12qt Laboratory Mixers	MAA-267A

[1]Add "F" to model number to order Mixers or Heating Adapters with on 230V/50Hz.

CD-1 shown with CDA-141

CD-6 shown with CDA-141

CDA-50

CDA-142

CDA-243

CORE DRILLING MACHINES
ASTM C42; AASHTO T 24, R 67

Gasoline or electric-powered core drilling machines offer easy set up, fast drilling and low bit wear to give low cost per core. The drills have bit capacities up to 8in (203mm) diameter. Inquire for larger, trailer-mounted rigs for bits up to 16in (406mm). Quick disconnect fittings for water supply are provided. Diamond coring bits are ordered separately.

CD-1 Gasoline-Powered Core Drill is designed for vertical coring of pavements and slabs. Stable platform with leveling screws, a heavy-duty column and smooth, precision-feed system combine to make this model the ideal choice for large projects. Gasoline-powered drill allows the operator to operate independently of power supplies and have minimal set up time and faster drilling. The unit easily adapts to mount to a pickup truck and has a 6.5hp four-cycle manual start engine. Carriage travel is 24in (610mm).

CD-6 Electric Core Drill adapts to a wide range of drilling jobs in addition to vertical pavement and slab coring. The column rotates 180°, allowing for coring of wall an floor slabs from underside. The super-duty two-speed (450/900rpm) 3.5hp motor and carriage can be removed or reattached without changing location for ease in swapping cores and adding extension rods. The 10in (254mm) wide wheeled base has a vacuum anchor to solidly grip smooth pavement or floors. Unit includes oilless vacuum pump, filter, hose and quick connections.

Accessories for the Core Drilling Machines are purchased separately. CDA-20 is a 4gal (15L) manually-pressurized portable water tank and CDA-22 is a trap-ring and electric pump to recirculate drilling water. CDA-24 9in (229mm) extension allows drilling to extended depth and CDA-26 18in (457mm) strap wrench is for attaching and removing coring bits without damage. CDA-32 is a replacement gasket with mastic for the CD-6 vacuum base. CD-1 **Product Dimensions:** 14x32x46in (356x813x1168mm), WxDxH. CD-6 **Product Dimensions:** 12x34x36in (305x864x914mm), WxDxH.

Core Drilling Machines	
Gasoline-Powered Core Drill	CD-1
Electric Core Drill, 115V/60Hz	CD-6
230V/50–60Hz	CD-6F
Accessories	
Pressurized Water Tank, 4gal (15L)	CDA-20
Water Recirculator	CDA-22
Extension Rod, 9in (229mm)	CDA-24
Strap Wrench, 18in (457mm)	CDA-26
Replacement Vacuum Gasket	CDA-32
Long-Handle Core Retrieval Tongs, 4in Cores	CDA-15
Long-Handle Core Retrieval Tongs, 6in Cores	CDA-16
Core Extractors, 4in Cores	CDA-18
Core Extractors, 6in Cores	CDA-19

DIAMOND CORING BITS
ASTM C42; AASHTO T 24M, T 24, R 67

Open-Head Coring Bits require Expander Sets listed for attachment to drills. These bits are slightly less expensive and the expander sets can be reused many times as the core barrels wear out and are replaced. They are an economical choice for high-output and heavy use applications.

Closed-Head Coring Bits are one piece construction for convenience and easy, direct attachment to drills. There are no extra parts to buy or lose. These are best suited for light to medium duty, or for occasional use.

Both bit styles are available in designs optimized for asphalt pavements, or for reinforced concrete and other hard materials. All bits are constructed for wet use and are fast-cutting when used according to design applications. Standard length is 14in (356mm) for cutting cores up to 12in long. Our most popular bit sizes are listed here. Please inquire for sizes not shown. All bits may be refurbished when worn.

Diamond Coring Bits

Nominal Bit Size OD, in (mm)	Open-Head Bits			Closed-Head Bits	
	Concrete	Asphalt	Expander Sets	Concrete	Asphalt
2 (50.8)	CDA-120	CDA-220	CDA-40	CDA-121	CDA-221
2-1/4 (57.2)	CDA-122	CDA-222	CDA-41	CDA-123	CDA-223
3 (76.2)	CDA-130	CDA-230	CDA-43	CDA-131	CDA-231
3-1/4 (82.6)	CDA-132	CDA-232	CDA-55	CDA-133	CDA-233
4 (101.6)	CDA-140	CDA-240	CDA-45	CDA-141	CDA-241
4-1/4 (108)	CDA-142	CDA-242	CDA-46	CDA-143	CDA-243
6 (152.4)	CDA-160	CDA-260	CDA-50	CDA-161	CDA-261
6-1/4 (158.8)	CDA-162	CDA-262	CDA-51	CDA-163	CDA-263

CDA-18 and CDA-19

HM-60 shown with HMA-234 & HMA-226

HM-62 shown with HMA-234

CORE EXTRACTORS

Gilson Core Extractors are efficient and easy-to-use for the removal of drilled cores from asphalt or concrete pavements. To operate, simply insert the curved blades into the cut area around the core. Adjust the top screw, enabling the blades to grasp the core and lock the device into place by squeezing the handles. Push sharply to break off the core bottom and lift the specimen out. Release lever to free the core.

The lock feature protects cores from damage during extraction and assures laboratory acceptance for testing without repeat drilling. Models for 4in (102mm) or 6in (152mm) core sizes have identical features and operation. Models are available for 4in (102mm) or 6in (152mm) core sizes. Extractors are welded, painted steel with sturdy handle grips. **Product Dimensions:** 12x10x10in (305x254 x254mm), WxDxH.

Core Extractors	
Core Extractors, 4in	CDA-18
Core Extractors, 6in	CDA-19

CDA-15

CORE RETRIEVAL TONGS

Fast, easy-to-use patented Core Retrieval Tongs remove cores from asphalt or concrete surfaces. Simply insert blades into space from core drill bit, grasp the core with the tongs and lift. Recovered cores are free of damage that may occur from use of improper tools. Laboratory acceptance for testing is assured without repeat drilling. Models are available for 4in (102mm) or 6in (152mm) core sizes. Tongs are welded, painted steel with plastic handle grips. **Product Dimensions:** 3x4.5x35in (76x114x889mm), WxDxH.

Core Retrieval Tongs	
Core Retrieval Tongs, 4in	CDA-15
Core Retrieval Tongs, 6in	CDA-16

HUSQVARNA® MASONRY SAWS

Masonry Saws from Husqvarna® are ideal for trimming concrete, asphalt and masonry specimens to size for testing. Models include a lightweight 1.5hp Portable unit and a larger 5hp Heavy-duty version for high-production applications. Both include reliable high-torque motors and heavy-duty shafts mounted on quality ball bearings. Water distribution by submersible pumps permits wet cutting.

HM-60 Portable Masonry Saw has 2,330 blade rpm from the 1.5hp electric motor. The HM-60 uses 14in (356mm) diameter blades for up to 5in (127mm) cut depth. This saw features a unique, patented water distribution system designed to keep both the work piece and the work area cleaner and drier. The optional HMA-226 Portable Rolling Stand is quickly set up, easily relocated by one person and has fast adjustment for proper height. The stand folds flat for easy portability. Lightweight, economical HMA-224 Fixed-Leg Stand is also available. A 14in (356mm) Vari-Cut™ blade is included with the saw. **Product Dimensions:** 27.5x39.8x27.5in (699x1,011x699mm), WxDxH. Height with Fixed leg stand is approximately 54in (1372mm).

HM-62 Heavy-Duty Masonry Saw is equipped with a powerful 5hp high-torque motor with 2,350 blade rpm to assure high-production performance. A convenient crank on the foot pedal sets table height and the patented Sta-level® blade guard controls blade orientation to assure the most accurate cuts possible. The painted integral rigid steel support stand resists flexing. The 20in (508mm) blade capacity permits cutting of 6in (152mm) cylinders or 8in (203mm) blocks in a single pass. Blades are purchased separately. **Product Dimensions:** 22x47.8x57.5in (559x1213x1461mm), WxDxH.

High-quality Diamond Blades are ordered separately. Premium grade blades for medium-sized jobs feature fast cutting and long life. Super Premium Blades allow maximum production for the largest jobs and have the lowest cost per cut. All blades listed below can be used wet or dry and cost less in quantities of five.

Husqvarna® Masonry Saws	
Portable Masonry Saw, including blade, 1.5hp, 115V/60Hz	HM-60
Heavy-Duty Masonry Saw, without blade, 5hp, 208–230V/60Hz	HM-62
Accessories	
Portable Rolling Stand for HM-60	HMA-226
Fixed-Leg Stand for HM-60	HMA-224
14in Super Premium Blade	HMA-234
14in Super Premium Blade, price each for qty. 5 or more	HMA-234D
20in Premium Blade	HMA-232
20in Premium Blade, price each for qty. 5 or more	HMA-232D
20in Super Premium Blade	HMA-236
20in Super Premium Blade, price each for qty. 5 or more	HMA-236D

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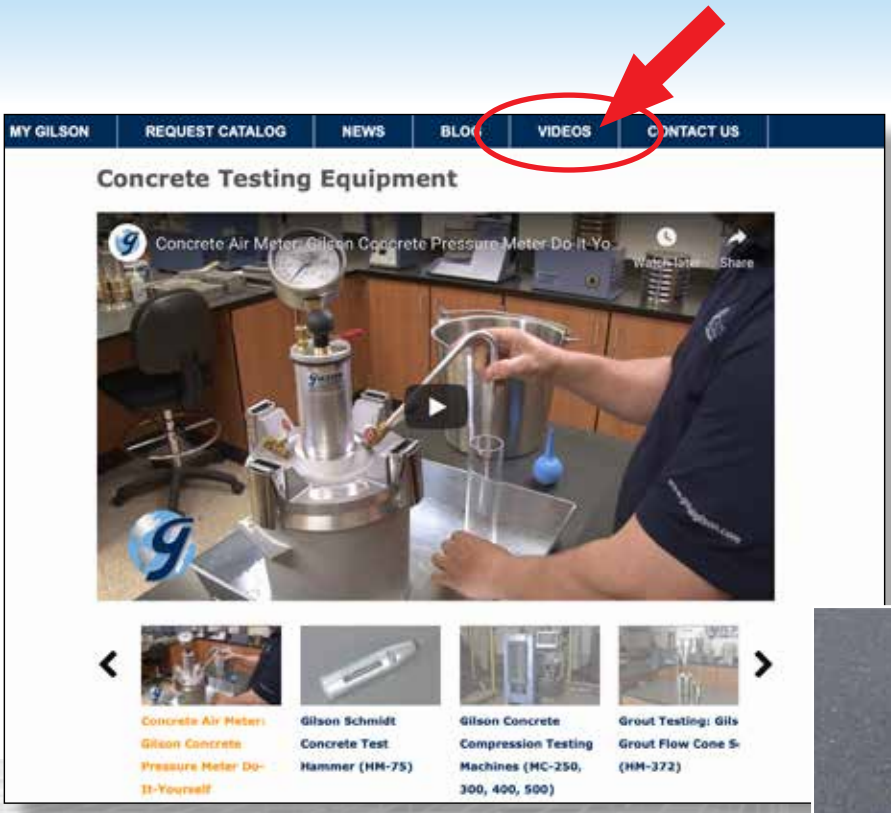

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- Answers to your installation, set-up and maintenance questions
- Step-by-step "how to" guides
- Go to globalgilson.com or YouTube to see more

Gilson Schimdt Concrete Test Hammer (HM-75)

Gilson Concrete Pressure Meter DIY Calibration (HM-30)

Gilson Concrete Compression Testing Machine (MC-250, 300, 400, 500)

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Manufactured in cooperation with Karol•Warner

HM-397 shown with HMA-685 and BRA-60

HM-398 shown with HMA-685D, BRA-60 and HMA-94

HM-396

CALIFORNIA BEARING RATIO (CBR) AND LIMEROCK BEARING RATIO (LBR) LOAD FRAMES

ASTM D1883; AASHTO T 193; FM 5-515

The California Bearing Ratio (CBR) and Limerock Bearing Ratio (LBR) test yields relative strength of laboratory-compacted or in–situ soils and base course materials. This laboratory test is based on penetration resistance to a standard-sized piston.

Karol-Warner Load Frames from Gilson are ideal for Laboratory CBR and LBR testing when outfitted with a CBR/LBR Component Set. Load Frames feature 11.9x37.3in (302x947mm) WxH daylight openings for a variety of test fixtures. Strain rates are precisely regulated to ±1% of set point and the frames have sturdy 14-gauge painted steel enclosures. Adjusting nuts on the 1.25in (32mm) coarse-threaded vertical rods allow quick adjustment of the horizontal cross-head height. Platen Diameter is 8in (203mm). HMA-94 Rolling Cart is sturdy steel and makes positioning of load frames easy. **Product Dimensions:** 18x29x54.5in (457x737x1,384mm), WxDxH.

HM-396 Load Frame is powered by a reliable ⅛ hp motor that accurately produces a range of strain rates from 0.001–0.1in/min (0.0254–2.54mm/min). The strain rate range and frame capacity of 10,000lbf (44.5kN) make it well suited for basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial testing. The load frame's horizontal and vertical opening of 11.9x37.3in (302x947mm) easily accommodates triaxial cells and CBR molds.

HM-397 Load Frame has a reliable ⅛ hp stepper motor producing a wider range of strain rates from 0.0001–0.3in/min (0.00254–7.62mm/min). The strain rate range and frame capacity of 10,000lbf (44.5kN) make it ideal for basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial testing. The load frame's horizontal and vertical opening of 11.9x37.3in (302x947mm) easily accommodates triaxial cells and CBR molds.

HM-397B Load Frame features a ⅛ hp stepper motor with accurate strain rate sensitivity from 0.00001 to 0.29999in/min (0.000254 to 7.62mm/min). This versatile, high strain rate range and 10,000lbf (44.5kN) frame capacity unit is well suited for a wide range of basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial Testing. Its ability to maintain a superior strain rate sensitivity with precise and repeatable positioning make it ideal for consolidated/undrained triaxial tests on sensitive soils. The load frame's horizontal and vertical opening of 11.9x37.3in (302x947mm) easily accommodates triaxial cells and CBR molds.

HM-398 Load Frame with a powerful ¾ hp motor accurately produces strain rates of 0.02-2.0in/min (0.508-50.8mm/min). The strain rate range and frame capacity of 10,000lbf (44.5kN) are optimal for many soil and asphalt applications including; Unconfined Compression, CBR, Soil Cement, Triaxial testing, Marshall, Lottman, Semi-Circular Bend (SCB) and Tack Coat Shear. The load frame's horizontal and vertical opening of 11.9x37.3in (302x947mm) easily accommodates triaxial cells, CBR molds, Marshall, Lottman, SCB and Tack Coat Shear fixtures.

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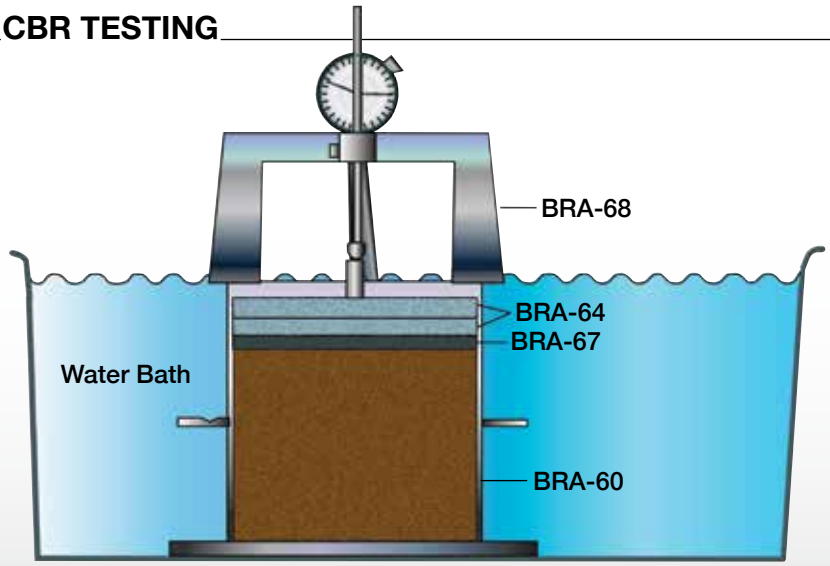
HMA-685D

HMA-685

CBR TESTING



Compacted specimens in the mold are immersed in water for soaking. Surcharge weights are placed on top and the molded specimen is monitored to determine swell.

HM-399 Load Frame has 20,000lbf (89kN) capacity and a stepper motor accurately producing a high strain rate sensitivity with a range of 0.00001 to 0.29999in/min (0.000254 to 7.62mm/min). This versatile, high strain rate range unit is well suited for a wide range of basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial Testing. The superior strain rate sensitivity with precise and repeatable positioning make it ideal for consolidated/undrained triaxial tests on sensitive soils. The higher capacity allows testing of larger diameter or higher strength soil samples. The load frame's horizontal and vertical opening of 11.9x37.3in (302x947mm) easily accommodates triaxial cells and CBR molds.

Component Sets for CBR and LBR testing with the Load Frames feature high-quality instrumentation required to measure load and penetration for bearing ratio tests and quickly install on the load frames. Fixtures and brackets are included with the component sets for direct mounting to the load frames.

HMA-685 Analog CBR and LBR Component Set has a 10,000lbf (44.5kN) capacity Load Ring, CBR Penetration Piston, a 1x0.001in Dial Indicator and Indicator Clamp. Load Ring is machined from high-strength aluminum alloy plate for repeatable compression measurements and is supplied with a calibration graph.

HMA-685D Digital CBR/LBR Component Set includes a HM-418 Two-Channel Data Readout, 10,000lbf (44.5kN) Load Cell, 2in (50.3 mm) travel Linear Variable Displacement Transducer (LVDT) and Penetration Piston. The Digital Readout shows real-time data on a large, bright display. Front panel keys allow instant taring of channel peak reading on either channel and entry of calibration factors during set up. A mini USB connection is included for data communication. Included GetData 5 software easily downloads load and displacement data from the digital readout to spreadsheet applications on user's computer and is compatible with Windows® XP and newer operating systems. HMA-609 CBR/LBR Data Acquisition Software, listed separately, works with the HMA-685D CBR/LBR Component Set to record specimen and real-time test data, calculate results and prepare reports following ASTM and AASHTO requirements.

HMA-94 Rolling Load Frame Cart features sturdy bolted steel construction and positions load frames at the proper working height. Rugged casters allow convenient placement. **Product Dimensions:** 25x21.4x24.5in (635x543x622mm), WxDxH.

CBR and LBR Load Frames

Model	Capacity	Strain Rate	Electrical
HM-396	10,000lbf	0.001–0.1in/min	115V/60Hz
HM-396F	10,000lbf	0.001–0.1in/min	230V/50–60Hz
HM-397	10,000lbf	0.0001–0.3in/min	115V/60Hz
HM-397F	10,000lbf	0.0001–0.3in/min	230V/50–60Hz
HM-397B	10,000lbf	0.00001–0.29999in/min	115V/60Hz
HM-398	10,000lbf	0.02–2.0in/min	115V/60Hz
HM-398F	10,000lbf	0.02–2.0in/min	230V/50–60Hz
HM-399	20,000lbf	0.00001–0.29999in/min	120V/50–60Hz
HM-399F	20,000lbf	0.00001–0.29999in/min	230V/50–60Hz

Accessories

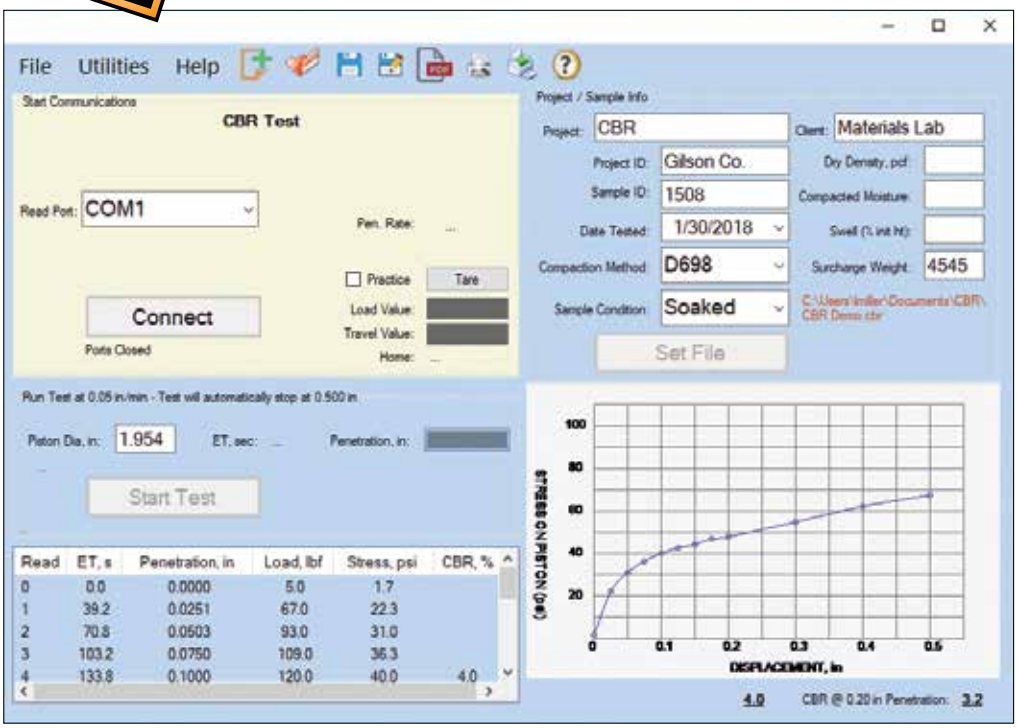
Analog CBR/LBR Component Set, 10,000 lbf (44.5kN) capacity	HMA-685
Digital CBR/LBR Component Set, 10,000 lbf (44.5kN) capacity	HMA-685D
Rolling Load Frame Cart	HMA-94
Gilson CBR/LBR Data Acquisition Software	HMA-609

HMA-685D Digital CBR/LBR Component Set

Typical CBR/LBR Test Set-up

NEW

VIDEO ONLINE



HMA-609 Screen Shot

technote

Free fully functional trial version available for download from www.globalgilson.com

CBR/LBR DATA ACQUISITION SOFTWARE

ASTM D1883; AASHTO T 193; Florida FM 5-515

- **Displays real-time graphing and data throughout test**
- **Automatically saves final reports to computer, network, or cloud**
- **Calculations and reports meet ASTM and AASHTO standards**
- **LBR calculations and reports in accordance with Florida Standards**
- **Optimized for use with desktop, laptop or tablet devices**

Gilson's CBR/LBR Data Acquisition Software automatically records load and displacement data and generates a real time load-penetration curve for California Bearing Ratio and Florida Limerock Bearing Ratio tests. This intuitive software utilizes clear data entry fields and testing prompts to reduce user error and increase repeatability.

CBR/LBR Software runs on computers with Windows XP or newer operating systems and is designed for convenient use on tablets and laptops. Large popup keyboards can be enabled for touchscreen computers or disabled when a PC with mouse and keyboard are used. Testing agency information, company logo and equipment information can also be entered into the program settings to be included on final testing reports.

Real-time graphing and calculations are performed throughout the test procedure and the final load-penetration curve is saved automatically at test completion in accordance with ASTM, AASHTO and Florida DOT specifications. The testing agency information, company logos, sample data, data points and corresponding load-penetration curve are included in the final testing reports. Test report data and information can also be exported to a spreadsheet application or converted into a PDF document.

CBR/LBR Data Acquisition Software requires a HM-418 Two-Channel or HM-419 Four-Channel Data Readout for operation. The HMA-685D Digital CBR/LBR Component Set is optimized for use with the software and includes the HM-418, along with a load cell, displacement transducer and penetration piston. All components and sets are purchased separately.

CBR/LBR Software is available now as a fully operational 30-day trial. Download for free from our website. A USB security key and licensing information to unlock the software for permanent operation will be sent upon purchase. Visit globalgilson.com to view our video with complete details of ease of use, intuitive operation and features of this new software.

CBR/LBR Data Acquisition Software	
CBR/LBR Data Acquisition Software	HMA-609
Accessories	
Digital CBR/LBR Component Set, 10,000 lbf (44.5 kN) capacity	HMA-685D
Two Channel Data Readout	HM-418
Four Channel Data Readout	HM-419

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CALIFORNIA BEARING RATIO (CBR) AND LIMEROCK BEARING RATIO (LBR) ACCESSORIES

ASTM D1883; AASHTO T 193, Florida FM 5-515

BRA-59

BRA-60

BRA-61

BRA-31

BRA-63

BRA-64

BRA-67

BRA-68

BRA-70

BRA-76

BRA-55

CBR and LBR Accessories	
Description	**Model**
CBR Molds and Spacer Discs CBR Compaction Molds are 6x7in (152x178mm) DxH with 2in (51mm) collar and perforated base. CBR Spacer Disc is 5.94x2.416in (151x61mm), dia.xH with threaded opening for insertion and removal. Both are rugged and rust-resistant plated steel.	
CBR Mold, complete	BRA-60
CBR Spacer Disc	BRA-61
CBR Base Only	BRA-609B
CBR Mold Only	BRA-60M
LBR Molds and Spacer Discs LBR Compaction Mold (FM 5-515 Florida Limerock Bearing Ratio test) is 6x6in (152x152mm), IDxH with 2.375in (60.3mm) collar. Spacer Disc for LBR is 5.94x1.41in (151x36mm), dia.xH with threaded opening. Plated steel construction.	
LBR Mold, complete	BRA-59
LBR Spacer Disc	BRA-62
LBR Base Only	BRA-59B
LBR Mold Only	BRA-59M
Penetration Pistons CBR/LBR Penetration Pistons are 7.5x1.954in (191x49.6mm) Lxdia. and fits standard fixtures for use in testing. Choose models with threaded male connectors of 1/2in (12.7mm) for 200 to 2,500lbf load cells and all load rings, or 3/4in (19mm) diameters for load cells with 5,000lbf to 10,000bf capacity.	
CBR/LBR Penetration Piston, 3/4in Threaded Male Connector	BRA-30
CBR/LBR Penetration Piston, 1/2in Threaded Male Connector	BRA-31
Surcharge Weights Annular type has 2.125in (54mm) center hole. Slotted type has 2.125in (54mm) radius slot. Both are 5.875in (149mm) diameter plated steel and weigh 5lb (2.27kg).	
Annular Surcharge Weight	BRA-63
Slotted Surcharge Weight	BRA-64
Swell Plate Perforated Swell Plate is 5.875in (149mm) diameter and has threaded stem for insertion and removal.	BRA-67
Swell Tripod with Dial Indicator Tripod to measure specimen swell includes MA-334 1x0.001in dial indicator. Metric version includes MA-346 25x0.01mm dial indicator. MA-334C Mechanical Dial Indicator with Certificate of Calibration is sold separately.	
Swell Tripod	BRA-68
Metric Swell Tripod	BRA-68F
Mechanical Dial Indicator w/Certificate of Calibration	MA-334C
Filters Stainless steel woven-wire mesh Filter with No.100 (150µm) openings is 5.94in (151mm) diameter. Coarse Filter Paper is same diameter and comes in a package of one hundred pieces.	
No.100 (150µm) Stainless Steel Mesh Filter	BRA-75
Coarse Filter Paper, pkg. 100	BRA-76
Cutting Edge 6x2in (152x51mm) plated steel cutting edge fits on end of BRA-60 mold for field-sampling of in-place soils.	BRA-70
CBR Accessory Set Convenient CBR Accessory Set includes four each of BRA-60 Molds, BRA-63 Surcharge Weights, BRA-64 Surcharge Weights, BRA-67 Swell Plates and BRA-75 Filter Screens. One each BRA-61 Spacer Disc and BRA-68 Swell Tripod are also included for typical CBR lab operation.	BRA-55
LBR Accessory Set Four BRA-59 Molds, BRA-63 CBR Annular Surcharge Weights, BRA-67 Swell Plates and Twelve BRA-64 CBR Surcharge Weights. One BRA-62 LBR Spacer Disc and one BRA-76 Paper Filters are also included.	BRA-57

BR-2

BRA-31, BRA-33, BRA-40, BRA-41 & BRA-42

BRA-32

MA-334

HM-428

CALIFORNIA BEARING RATIO (CBR) FIELD EQUIPMENT

ASTM D4429 ; COE MIL-STD-621A; CRD-C654-95

The California Bearing Ratio (CBR) field test yields in situ strength of soils and some base course materials. The field procedure uses a loading jack to force a piston into the soil, noting the piston load and depth of penetration. The jack is loaded against dead weights or a heavy piece of equipment such as a loaded dump truck. Gilson CBR equipment can be ordered as complete sets or separately as individual components.

California Bearing Ratio (CBR) Field Equipment

Description	Model
California Bearing Ratio Field Sets include all the components required to perform Field CBR tests using either a two-speed or three-speed jack with a manual crank. The two-speed jack has 10,000lbf (44.5kN) capacity with 3.5in (89mm) total travel. The three-speed Jack is similar, with 2in (51mm) of travel. Other components include 2,000lbf and 5,000lbf Load Rings with dial gauges, Swivel Bases for the Jacks, a Penetration Piston with Connector and Extension Sets, two 10lb and two 20lb Surcharge weights, a 10lb, 10in diameter Surcharge Plate, Support Bridge and Dial Indicator with magnetic holder.	
California Bearing Ratio Field Set, Two-Speed Jack	BR-12
California Bearing Ratio Field Set, Three-Speed Jack	BR-13
Two-Speed Field CBR Jack has 10,000lbf (45kN) capacity with 3.5in (89mm) lift. Supplied with a swivel base and manual crank handle.	BR-2
Three-Speed Field CBR Jack has 10,000lbf (45kN) capacity with 2in (51mm) maximum lift. Supplied with a swivel base and manual crank handle.	BR-3
Penetration Piston is 7.5x1.954in (191x49.6mm) Lxdia. It meets requirements for ASTM or COE methods. The Piston Extension Set and Connector Set are required for proper set up and use of the Field Jack, Load Ring and Piston assembly.	
CBR Penetration Piston, 1/2in Threaded Male Connector	BRA-31
Field Piston Extension Set	BRA-32
Field Connector Set	BRA-33
Field Surcharge Plate with circular opening and Surcharge Masses with u-shaped openings simulate loads from base course or pavement which will overlie the test material. U-shaped openings allow addition or removal of masses with penetration piston in place. Additional Surcharge Masses may be needed to simulate large pavement loads.	
10lb Field Surcharge Plate, 10in dia.	BRA-40
10lb Field Surcharge Mass, 8.5in dia.	BRA-41
20lb Field Surcharge Mass, 8.5in dia.	BRA-42
Penetration Dial Gauges are available with inch or metric analog dial faces. The 8ft (2.4m) Dial Support Bridge and Magnetic Gauge Holder position the Penetration Dial Gauges for measuring penetration strain.	
Dial Support Bridge	BRA-45
Penetration Dial Gauge, 1in x 0.001in	MA-334
Penetration Dial Gauge w/Calibration Certificate, 1in x 0.001in	MA-334C
Penetration Dial Gauge, 25mm x 0.01mm	MA-346
Magnetic Gauge Holder	HMA-338
Load Rings are machined from high strength aluminum alloy plate and designed for compression measurement. Loads are measured to ±0.5% on the included mechanical dial indicator (0.0001in resolution). Measurements are plotted on a calibration chart prior to shipment. Ring dimensions are 6.25in high x 1.0in thick. Mounting holes are 1/2in-20 threads per inch.	
Load Ring, 2,000lbf x 1lbf	HM-425
Load Ring, 5,000lbf x 5lbf	HM-427
Load Ring, 6,000	HM-428
Load Ring, 10,000	HM-430

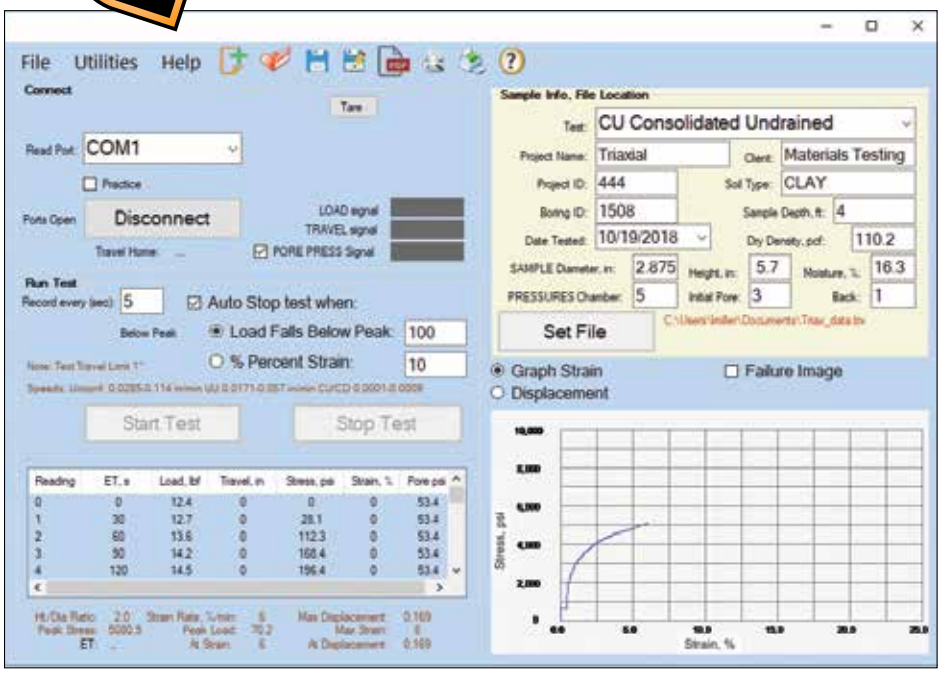
BRA-45

HM-413 Digital Load and Displacement Kit

Typical Triaxial Test Set-up

NEW

VIDEO ONLINE



HM-613 Screen Shot

technote

Free fully functional trial version available for download from www.globalgilson.com

TRIAXIAL DATA ACQUISITION SOFTWARE

ASTM D2850, D4767, D7181, D2166; AASHTO T 296/208

- **Displays strain and displacement graphs in real-time**
- **Automatically saves final reports to computer, network, or cloud**
- **Calculations and reports in accordance with ASTM and AASHTO standards**
- **Optimized for use with desktop, laptop or tablet devices**
- **Allows import of failure images into test reports**

Triaxial Data Acquisition Software automatically records axial load and deformation data of UU, CU, CD, or unconfined soil samples. The user can also manually enter pore pressure values from a stand-alone HMA-521 or HMA-521F Pore Pressure Transducer with Digital Readout, or allow the software to automatically recognize the pore pressure signal from a HMA-525 Pore Pressure Transducer with Deairing Block connected to a HM-419 Four Channel Data Readout. This intuitive software utilizes clear data entry fields and testing prompts to reduce user error and increase repeatability.

Triaxial Data Acquisition Software runs on computers with Windows XP or newer operating systems and is designed for convenient use on tablets and laptops. Large popup keyboards can be enabled for touchscreen computers or disabled when a desktop PC with mouse and keyboard are used. Testing agency information, company logo and equipment information can also be entered into the program settings to be included on final testing reports.

Real-time graphing and calculations are performed throughout the test procedure and saved automatically at test completion in accordance with ASTM and AASHTO specifications. The testing agency information, company logo, sample data, final test results, displacement graph and stress-strain curve are included in the final testing report. Test data and sample information can be exported to a spreadsheet application or converted into a PDF document.

Triaxial Data Acquisition Software requires a HM-418 Two-Channel or HM-419 Four-Channel Data Readout for operation. The HM-413 Digital Load and Displacement Kit is optimized for use with the software and includes the HM-418, along with a 1000 lbf (14.5kN) load cell and 2in (50.8mm) displacement transducer.

Triaxial Data Acquisition Software is available as a fully operational free download from our website for a 30-day trial. A USB security key and licensing information to unlock the software for permanent operation will be sent upon purchase. Visit www.globalgilson.com to view our video with complete details of ease of use, intuitive operation and features of this new software.

Triaxial Data Acquisition Software	
Triaxial Data Acquisition Software	HMA-613
Accessories	
Digital Load and Displacement Kit	HM-413
Two Channel Data Readout	HM-418
Four Channel Data Readout	HM-419
Pore Pressure Transducer with Digital Readout	HMA-521
Pore Pressure Transducer with Digital Readout	HMA-521F
Pore Pressure Transducer with Deairing Block	HMA-525

HM-397 shown with HMA-517, HMA-413 and HMA-521

HM-398

Manufactured in cooperation with Karol•Warner

HMA-686

HM-413

TRIAXIAL LOAD FRAMES

ASTM D2850, D4767; AASHTO T 296, T 297

Soil specimens for triaxial tests are mounted in test cells pressurized with water to create a confining pressure. The cells are loaded axially in a load frame to provide information about shear resistance, strength and cohesion for prediction of slope stability and structural foundation behavior.

Karol-Warner Load Frames can be outfitted with the proper analog or digital component set for accurate and effective unconfined compression testing of soil specimens. Precision drive systems control strain rates to ±1% of set point and the 1.25in (32mm) high-strength threaded rods allow easy, continuous adjustment of the horizontal cross head. Test platen diameter is 8in (203mm) and the frames have sturdy 14-gauge painted steel cabinets. These versatile load frames all have a generous 11.9x37.3in (302x947mm) WxH daylight opening and accept a wide range of sample sizes and test fixtures. HMA-94 Rolling Cart for Load Frame is sturdy steel with casters for easy positioning. **Product Dimensions:** 18x29x54.5in (457x737x1,384mm), WxDxH.

HM-396 Load Frame has a strain rate from 0.001–0.1in/min (0.0254–2.54mm/min) and is powered by a reliable ⅛ hp motor. The strain rate range and 10,000lbf (44.5kN) capacity make it well-suited for basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial testing.

HM-397 Load Frame with 0.0001–0.3in/min (0.00254–7.62mm/min) strain rate is powered by a quiet and efficient ⅛ hp stepper motor. The strain rate range and 10,000lbf (44.5kN) capacity are ideal for basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial testing.

HM-397B Load Frame with its higher strain rate and sensitivity of 0.00001–0.29999in/min (0.000254–7.62mm/min) is powered by an efficient and reliable ⅛ hp stepper motor. This versatile 10,000lbf (44.5kN) capacity unit features a wide strain rate range to suit a wide range of basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial. Its superior sensitivity and precise, repeatable positioning also make it ideal for consolidated/undrained triaxial tests on sensitive soils.

HM-398 Load Frame has a strain rate of 0.02–2.0in/min (0.508–50.8mm/min) and is powered by a powerful ¾ hp motor. The strain rate and 10,000lbf (44.5kN) capacity are well-suited for many soil and asphalt applications including; Unconfined Compression, CBR, Soil Cement, Triaxial testing, Marshall, Lottman, Semi-Circular Bend (SCB) and Tack Coat Shear.

HM-399 Load Frame features a high-range strain rate of 0.00001–0.29999in/min (0.000254–7.62mm/min) and the 20,000lbf (89kN) load-rated unit has double the capacity of our other Load frames. The quiet, efficient stepper motor powers the heavy-duty unit to perform a wide range of basic soil tests in higher strength ranges, including Unconfined Compression, CBR, Soil Cement and Triaxial Testing. Superior sensitivity and precise, repeatable positioning also make it ideal for consolidated/undrained triaxial tests on sensitive soils.

A Triaxial Component Set is required to equip any Load Frame for accurate and reliable triaxial shear testing. The sets measure applied load and sample deformation and feature high-quality instrumentation ready for easy installation and mounting. Other Gilson Component Sets are available for a variety of specific test methods.

HMA-686 Analog Triaxial Load and Displacement Set includes a 1,000lbf capacity Load Ring and a 1x0.001in Dial Indicator. The Load Ring is machined from high-strength aluminum alloy plate for repeatable compression measurements and is supplied with a calibration graph.

HM-413 Digital Load and Displacement Kit includes a HM-418 Two-Channel Data Readout, 1,000lbf (4.5kN) Load Cell and 2in (50.8mm) travel Linear Variable Displacement Transducer (LVDT). The Data Readout shows real-time data on a large, bright display. Front panel keys allow instant taring of channel peak reading on either channel and entry of calibration factors during set up. A mini USB connection is included for data communication. Included GetData 5 software easily downloads displacement data from the HM-418 digital readout to common spreadsheet applications on user's computer with Windows® XP and newer operating system. HMA-613 Triaxial Compression Data Acquisition Software, listed separately, works with the Load and Displacement Kit to record specimen and real-time test data, calculate results and prepare reports following ASTM and AASHTO requirements.

Triaxial Load Frames

Model	Capacity	Strain Rate	Electrical
HM-396	10,000lbf	0.001–0.1in/min	115V/60Hz
HM-396F	10,000lbf	0.001–0.1in/min	230V/50–60Hz
HM-397	10,000lbf	0.0001–0.3in/min	115V/60Hz
HM-397F	10,000lbf	0.0001–0.3in/min	230V/50–60Hz
HM-397B	10,000lbf	0.00001–0.29999in/min	115V/60Hz
HM-398	10,000lbf	0.02–2.0in/min	115V/60Hz
HM-398F	10,000lbf	0.02–2.0in/min	230V/50–60Hz
HM-399	20,000lbf	0.00001–0.29999in/min	120V/50–60Hz
HM-399F	20,000lbf	0.00001–0.29999in/min	230V/50–60Hz

Accessories

Analog Triaxial Load and Displacement Set	HMA-686
Digital Load and Displacement Set	HM-413
Rolling Load Frame Cart	HMA-94
Triaxial Data Acquisition Software	HMA-613

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HM-350M

VIDEO ONLINE

HMA-521

HMA-520

HMA-517

TRIAXIAL CONTROL PANELS

ASTM D2850, D4767; AASHTO T 296, T 297

Control Panels for triaxial shear testing use a system of burettes, valves and regulators to precisely regulate air and fluid pressures in Testing Cells. They provide a central point for supply connections of air, water and drains with a logical layout and are built with quality components.

Cell and burette pressures are individually adjustable and monitored by a single digital pressure gauge in the Master Panel. Precision regulators and zero-displacement ball valves allow accurate setting of critical pressures during saturation, consolidation and testing phases. Effective cell pressure and sample backpressure are controlled through a single regulator. A bias control feature allows the user to set the effective cell pressure and increase both cell and sample back pressure using only one regulator. This minimizes air consumption during saturation and causes no change in effective stress. Two 50cc burettes with 0.1cc graduations for flow measurement and two 4cc pipettes with 0.008cc graduations are included. These are located inside two storage cells which have additional capacity of 400cc each. Cell-water interface utilizes a 20cc burette. The panel and cells are conveniently filled and drained using the front connections. The same Panels are also used for ASTM D5084 hydraulic conductivity/flexible wall permeability testing.

The Control Panels feature sturdy powder-coated aluminum construction, laid out with controls for air pressure located on the upper half and controls for water pressure on the lower half. All connections for the Test Cell are conveniently located on the front of the panel, with air, water, vacuum and drain connections located in the rear.

HM-350M Master Control Panel is required for connection to a single Triaxial or Flex-Wall Permeability Test Cell and is fitted with a digital readout in psi units for setting Test Cell and burette pressures. **Product Dimensions:** 21x6.25x37.25in (533x159x946mm), WxDxH.

HM-350MF Master Control Panel is required for connection to a single Triaxial or Flex-Wall Permeability Test Cell and is fitted with a digital readout in kPa units for setting Test Cell and burette pressures. **Product Dimensions:** 21x6.25x37.25in (533x159x946mm), WxDxH.

HM-350A Auxiliary Control Panel is ideal for adding an additional test cell to the Master Control Panel for simultaneous testing. Once connected to the Master Panel, the Auxiliary Panel uses the Master Panel's digital pressure readout to display confining and cell pressures. Two HM-350A Auxiliary Panels can be connected to each HM-350M or HM-350MF, allowing up to three samples to be tested simultaneously. **Product Dimensions:** 21x6.25x37.25in (533x159x-946mm), WxDxH.

The HMA-520 Deairing Tank prepares water for use in the testing cells. An air compressor is required to generate confining pressures, but not included. Test Cells and other accessories are ordered separately.

To measure soil pore pressure, two portable, stand-alone Pore Pressure Transducers are available. HMA-521 Pore Pressure Transducer with Digital Readout measures in psi units and HMA-521F Pore Pressure Transducer with Digital Readout measures in kPa units. If using a HM-419 Four Channel Data Readout, pore pressure can also be measured with a HMA-525 Pore Pressure Transducer with Deairing Block.

Triaxial Control Panels	
Master Control Panel, psi	HM-350M
Master Control Panel, kPa	HM-350MF
Auxiliary Control Panel	HM-350A
Accessories	
Deairing Tank, 1.5gal (5.7L) capacity	HMA-520
Pore Pressure Transducer with Digital Readout, psi	HMA-521
Pore Pressure Transducer with Digital Readout, kPa	HMA-521F
Pore Pressure Transducer with Deairing Block	HMA-525

TRIAXIAL/PERMEABILITY TYPICAL SETUP

Master and Auxiliary Control Panels monitor and regulate test cell and sample pressures during testing, as well as operations such as filling, draining and saturation. They are the central point for connections from pressure, vacuum and water sources and output to the cells. A Master Panel controls a single test cell and can also be connected to and control (two) Auxiliary Panels allowing for control of up to (three) test cells.

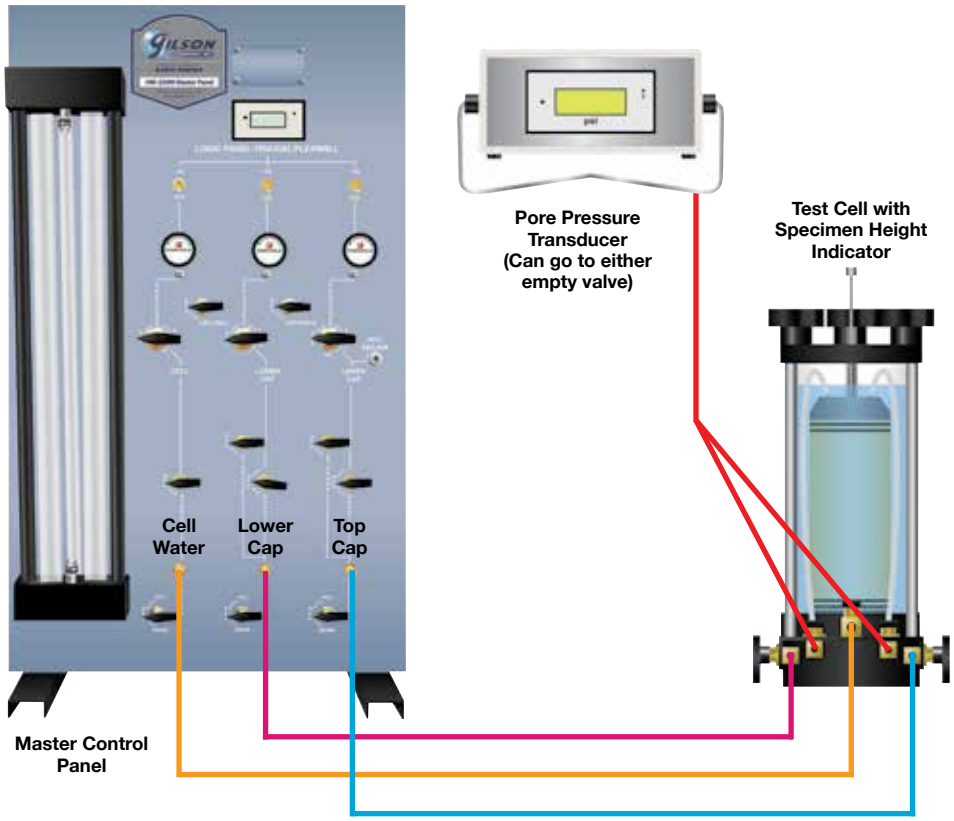
Test Cells act as a pressure chamber to place confining pressures on the sample. Connections between the cells and control panels allow measurement and control of these pressures. Pore pressure transducers may also be connected when required.

A Deairing Tank for water and a vacuum pump are also available as accessories. Clean, dry compressed air is required for use.

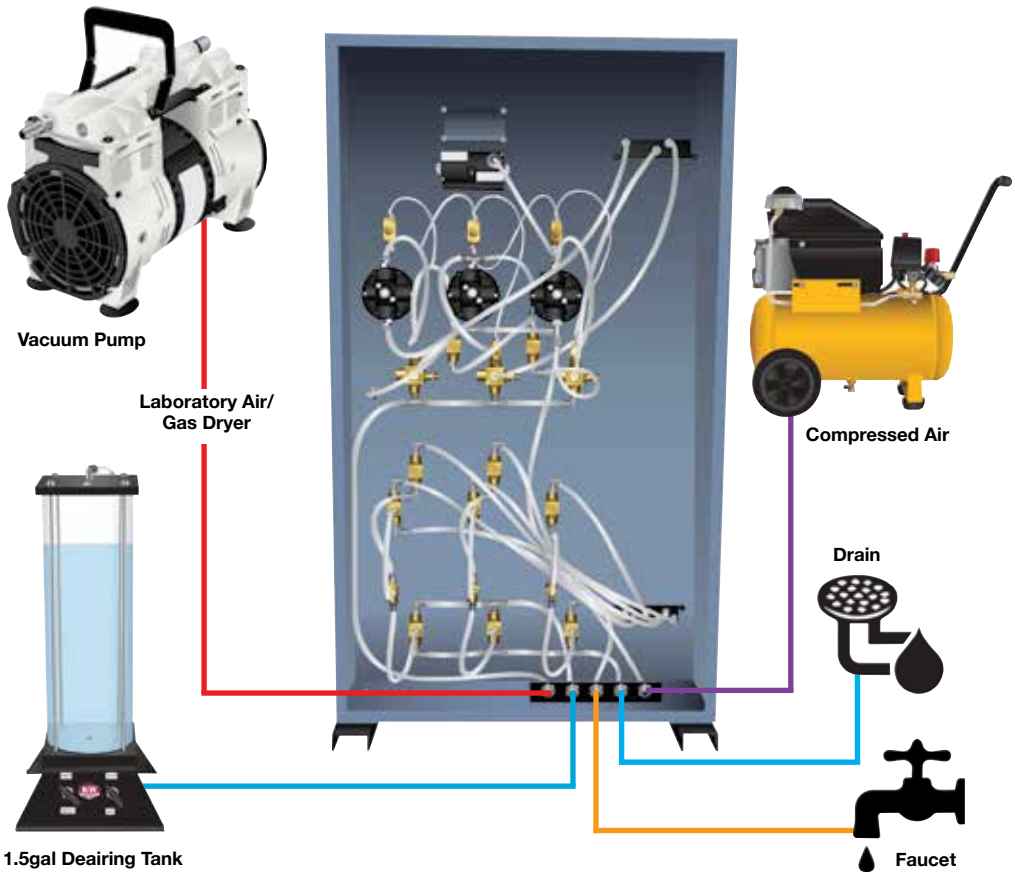
VIDEO ONLINE

Watch video tutorials for our products online at www.globalgilson.com!

TRIAXIAL/PERMEABILITY TYPICAL SETUP (Front Panel View)



(Back Panel View)



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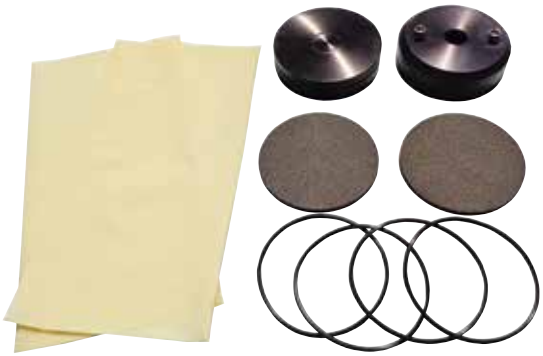
HMA-517S, HMA-518S, HMA-519S, HMA-519 and HMA-519HS
(Sample pedestal not included)



HMA-584

HMA-589A

TRIAXIAL TEST CELLS

ASTM D2850, D4767, D5084; AASHTO T 296, T 297

Gilson Triaxial Test Cells provide optimum performance with Gilson Load Frames and Master or Auxiliary Control Panels, or integrate with other systems. The Test Cells are constructed with heavy-wall clear acrylic chambers and solid, machined aluminum bases designed for heavy loading. The precision-ground and polished stainless steel load piston features internally lubed and sealed linear ball bearings for very low friction. Cells are fitted with precision zero-volume change ball valves and rugged quality brass fittings. Models equipped with stainless steel valves and fittings to resist corrosion and harsh permeant fluids can be ordered by adding "S" to the model number. The 6in (152.4mm) diameter Triaxial Cell is available in both high-pressure and high-pressure/stainless steel valves variations denoted by adding "H" and "HS" to the model number. The high-pressure Triaxial Cell is reinforced to allow safe triaxial shear testing of soil samples at increased pressures. Maximum operating pressure is 150psi (10.3bar) for models HMA-517 and HMA-518, 100psi (6.9bar) for HMA-519 and 250psi (17.2bar) for the high-pressure HMA-519H and HMA-519HS models. Inquire for aluminum chamber units built for higher test pressures.

HMA-517 and HMA-518 Triaxial Test Cells test a range of sample sizes, see available Test Cell Kit chart but must be equipped with Triaxial Test Cell Kits, for specific specimen sizes. HMA-519 Test Cell models test only 6in diameter samples and must be equipped with HMA-586A Test Cell Kit. Kits contain individual components of a single specimen size required to test a soil sample.

Triaxial Test Cells

Model	Inside Chamber Dimensions dia.xH, in (mm)	Maximum Specimen Size Range, in (mm)
HMA-517	4.75x10.75 (121x273)	1.4 to 3.0 (3.56 to 76.2)
HMA-518	5.0x12.125 (127x308)	1.4 to 4.0 (3.56 to 101.6)
HMA-519[1]	9.625x18 (244.5x457)	6.0 (152.4) Only

[1]HMA-519 tests only 6in diameter samples.

Each kit includes an anodized aluminum specimen cap and pedestal, two aluminum oxide Porous Stones, two Latex Membranes and four O-Rings. The anodized aluminum caps have two drain ports and are grooved for O-Rings. Keyed pedestals with flow-through lines prevent pinching of tubing during set up. Other available accessories include HMA-525 Pore Pressure Transducer with Deairing Block and HMA-521/HMA-521F Pore Pressure Transducer with Digital Readout to precisely measure soil pore pressure. Triaxial Test Cells can also be used for ASTM D5084 Flexible Wall Permeability testing.

technote

Gilson Triaxial Test Cells are designed to axial load soil samples, but can also be used for permeability tests where axial loading isn't necessary.

Triaxial Test Cell Kits / Cell Compatibility

Triaxial Cell Kit		Triaxial Cell		
Sample Diameter in (mm)	Model	HMA-517	HMA-518	HMA-519
1.4 (35.6)	HMA-587	✔	✔	—
1.5 (38.1)	HMA-587A	✔	✔	—
1.87 (47.5)	HMA-587B	✔	✔	—
2.0 (50.8)	HMA-588	✔	✔	—
2.36 (59.9)	HMA-588A	✔	✔	—
2.42 (61.5)	HMA-588B	✔	✔	—
2.5 (63.5)	HMA-589	✔	✔	—
2.8 (71.1)	HMA-589A	✔	✔	—
3.0 (76.2)	HMA-583	✔	✔	—
4.0 (101.6)	HMA-584	—	✔	—
6.0 (152.4)	HMA-586A	—	—	✔

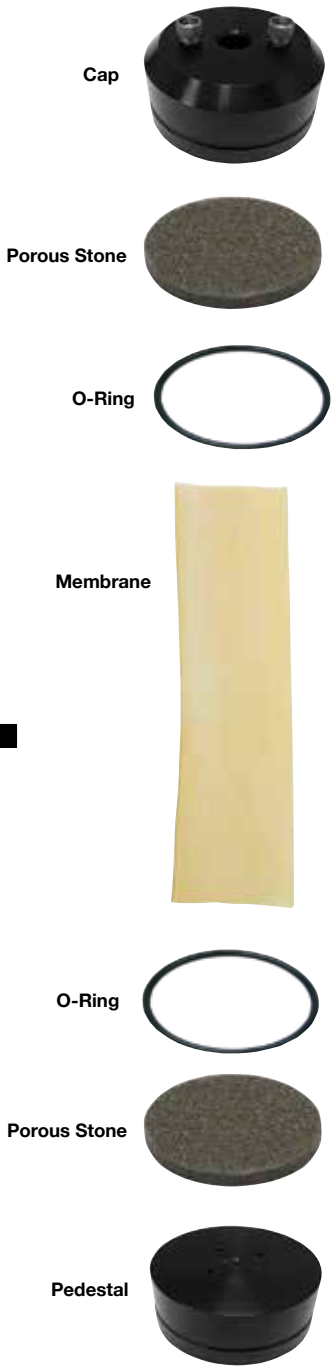
TRIAXIAL & FLEXIBLE WALL PERMEABILITY TEST CELL ACCESSORIES

Test Cell
1.4in—6in Specimens

Triaxial Test Cell

+

Test Cell Components



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Sample Preparation

Membrane Stretcher

Two-Part Compaction Mold Assembly

O-Ring Placement Tool

technote

Gilson Test Cells are available in two unique designs to perform triaxial or flexible-wall permeability testing on soil samples. Triaxial Test Cells are equipped to mount in a Load Frame for application of axial loads, but may also be used in flex-wall permeability testing. Permeability Cells are not designed for axial loading. Triaxial and flex wall permeability cells accommodate soil sample and components for a range of sample sizes.

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TRIAXIAL TEST CELL ACCESSORIES
ASTM D2850, D4767, D5084; AASHTO T 296, T 297

Triaxial Test Cell Accessories											
	Sample Diameter, in (mm)										
Description	1.4 (35.6)	1.5 (38.1)	1.87 (47.5)	2.0 (50.8)	2.36 (60)	2.42 (61.5)	2.5 (63.5)	2.8 (71.1)	3.0 (76.2)	4.0 (101.6)	6.0 (152.4)
Test Cell Kits must be used to outfit Test Cells for specific sample sizes. Kits contain all components of a single size required to perform a test. Each kit includes an anodized aluminum specimen cap and pedestal, two aluminum oxide Porous Stones, two Latex Membranes and four O-Rings. The anodized aluminum caps have two drain ports and are grooved for O-Rings. Keyed pedestals with flow-through lines prevent pinching of tubing during set up.	HMA-587	HMA-587A	HMA-587B	HMA-588	HMA-588A	HMA-588B	HMA-589	HMA-589A	HMA-583	HMA-584	HMA-586A
Cap & Pedestal Sets include only the anodized aluminum fixtures for the top and bottom of samples. Other accessories are purchased separately.	HMA-947	HMA-947A	HMA-947B	HMA-948	HMA-948A	HMA-948B	HMA-949	HMA-949A	HMA-943	HMA-944	HMA-946A
Latex Membranes fit tightly around prepared soil specimens and provide a barrier against chamber fluids during testing. Supplied in packages of 12. Latex Membranes are avaiable in two thicknesses, 0.012in (0.3mm) or 0.025in (0.6mm).											
0.012in Latex Membranes	HMA-527C	HMA-527D	HMA-527E	HMA-528C	HMA-528D	HMA-528E	HMA-529C	HMA-529D	HMA-523C	HMA-524C	HMA-526C
0.025in Latex Membranes	HMA-527	HMA-527A	HMA-527B	HMA-528	HMA-528A	HMA-528B	HMA-529	HMA-529A	HMA-523	HMA-524	HMA-526
Membrane Stretchers are slightly larger than specimen diameters and use vacuum applied through a tubular fitting to expand the membranes for easy placement. Aluminum construction.	HMA-557	HMA-557A	HMA-557B	HMA-558	HMA-558A	HMA-558B	HMA-559	HMA-559A	HMA-553	HMA-554	HMA-556
O-Rings made of neoprene material seal the Latex Membranes tightly around the Specimen Caps and Pedestals to protect specimen from chamber fluid.	HMA-567	HMA-567A	HMA-567B	HMA-568	HMA-568A	HMA-568B	HMA-569	HMA-569A	HMA-563	HMA-564	HMA-566
O-Ring Placing Tool is a simple design for easy placement of O-Rings without disturbing the sample.	HMA-577	HMA-577A	HMA-577B	HMA-578	HMA-578A	HMA-578B	HMA-579	HMA-579A	HMA-573	HMA-574	HMA-576
Porous Stones provide support of sample and allow two-way passage of water or permeant. These 1/4in thick aluminum oxide stones have a permeability range of 15 to 18ft³ of air per minute, per square foot and average pore size of 179µm.	GSA-201	GSA-202	GSA-203	GSA-211	GSA-214	GSA-215	GSA-220	GSA-223	GSA-229	GSA-234	GSA-237
Two-Part Compaction Molds are used to prepare compacted specimens for triaxial or permeability testing. Granular soils are compacted in a Mold with a latex membrane held in place by a vacuum source. Cohesive specimens are compacted in molds with no vacuum capability and later fitted in Latex Membranes. Molds for cohesive soils are available as complete assemblies, or as molds only for increased efficiency in sample preparation.											
Two-Part Compaction Mold w/Vacuum for Granular Soils	HMA-957	HMA-957A	HMA-957B	HMA-958	HMA-958A	HMA-958B	HMA-959	HMA-959A	HMA-953	HMA-954	HMA-956
Two-Part Compaction Mold Assembly for Cohesive Soils	HMA-987	HMA-987A	HMA-987B	HMA-988	HMA-988A	HMA-988B	HMA-989	HMA-989A	HMA-983	HMA-984	HMA-986
Two-Part Compaction Mold only for Cohesive Soils	HMA-967	HMA-967A	HMA-967B	HMA-968	HMA-968A	HMA-968B	HMA-969	HMA-969A	HMA-963	HMA-964	HMA-966
Two-Part Miter Boxes are used to trim soil samples to precise lengths for triaxial, permeability, unconfined compression, shear and other tests.	HMA-977	HM-977A	HMA-977B	HMA-978	HMA-978A	HMA-978B	HMA-979	HMA-979A	HMA-973	HMA-974	HMA-976
Filter Paper prevents migration of soil fines from samples and blockage of pores in applications where porous stones are used. Ahlstrom grade 55 papers are equivalent to Whatman grade 54 as recommended in a number of ASTM and AASHTO soil test methods. They feature increased wet strength and a tough, smooth surface free of loose fibers. This fast-filtering grade has 15µm retention and a filtration speed of 220ml/min. Supplied as convenient pre-cut circles in packages of 100 in 2.0in to 6.0in (50.8 to 152.4mm) diameters.	–	–	–	HMA-772	–	–	–	HMA-773	HMA-774	HMA-775	HMA-776

VIDEO ONLINE

HM-350M

HM-350A

FLEXIBLE-WALL PERMEABILITY CONTROL PANELS
ASTM D5084

Control Panels for flexible-wall permeability testing use a system of burettes, valves and regulators to precisely regulate air and fluid pressures in Testing Cells. They provide a central point for supply connections of air, water and drains with a logical layout and are built with quality components.

Cell and burette pressures are individually adjustable and monitored by a single digital pressure gauge in the Master Panel. Precision regulators and zero-displacement ball valves allow accurate setting of critical pressures during saturation, consolidation and testing phases. Effective cell pressure and cell and sample back-pressure are controlled through a single regulator. A bias control feature allows the user to set the effective cell pressure and increase both cell and sample back pressure using only one regulator. This minimizes air consumption during saturation and causes no change in effective stress. Two 50cc burettes with 0.1cc graduations for flow measurement and two 4cc pipettes with 0.008cc graduations are included. These are located inside two storage cells which have additional capacity of 400cc each. Cell-water interface utilizes a 20cc burette. The panel and cells are conveniently filled and drained using the front connections. The same Panels are also used for ASTM D2850 and D4767 triaxial shear test methods.

The Control Panels feature sturdy powder-coated aluminum construction, laid out with controls for air pressure located on the upper half and controls for water pressure on the lower half. All connections for the Test Cell are conveniently located on the front of the panel, with air, water, vacuum and drain connections located in the rear.

HM-350M Master Control Panel is required for connection to a single Triaxial or Flex-Wall Permeability Test Cell and is fitted with a digital readout in psi units for setting Test Cell and burette pressures. **Product Dimensions:** 21x6.25x37.25in (533x159x946mm), WxDxH.

HM-350MF Master Control Panel is required for connection to a single Triaxial or Flex-Wall Permeability Test Cell and is fitted with a digital readout in kPa units for setting Test Cell and burette pressures. **Product Dimensions:** 21x6.25x37.25in (533x159x946mm), WxDxH.

HM-350A Auxiliary Control Panel is ideal for adding an additional test cell to the Master Control Panel for simultaneous testing. Once connected to the Master Panel, the Auxiliary Panel uses the Master Panel's digital pressure readout to display confining and cell pressures. Two HM-350A Auxiliary Panels can be connected to each HM-350M or HM-350MF, allowing up to three samples to be tested simultaneously. **Product Dimensions:** 21x6.25x37.25in (533x159x946mm), WxDxH.

The HMA-520 Deairing Tank prepares water for use in the testing cells. An air compressor is required to generate confining pressures, but not included. Test Cells and other accessories are ordered separately.

To measure soil pore pressure, two portable, stand-alone Pore Pressure Transducers are available. HMA-521 Pore Pressure Transducer with Digital Readout measures in psi units and HMA-521F Pore Pressure Transducer with Digital Readout measures in kPa units. If using a HM-419 Four Channel Data Readout, pore pressure can also be measured with a HMA-525 Pore Pressure Transducer with Deairing Block.

Flexible-Wall Permeability Control Panels	
Master Control Panel, psi	HM-350M
Master Control Panel, kPa	HM-350MF
Auxiliary Control Panel	HM-350A
Accessories	
Deairing Tank, 1.5gal (5.7L) capacity	HMA-520
Pore Pressure Transducer with Digital Readout, psi	HMA-521
Pore Pressure Transducer with Digital Readout, kPa	HMA-521F
Pore Pressure Transducer with Deairing Block	HMA-525

HMA-514

HMA-516

HMA-589A

FLEXIBLE-WALL PERMEABILITY TEST CELLS
ASTM D5084

Gilson Flexible-Wall Permeability Test Cells are designed for optimum performance with Master and Auxiliary Control Panels, but are also compatible with other systems. The Test Cells are constructed with heavy-wall clear acrylic chambers and solid, machined aluminum bases. Cells are fitted with precision zero-volume change ball valves and rugged quality brass fittings. Models equipped with stainless steel valves and fittings to resist corrosion from harsh permeant fluids can be ordered by adding "S" to the model number. Maximum operating pressure is 150psi (10.3bar). Inquire for units built for higher test pressures.

Permeability Test Cells can test a range of sizes, but must be equipped with Flexible-Wall Permeability Test Cell Kits, purchased separately, for specific specimen sizes. Kits contain individual components of a single specimen size required to test a soil sample. Each kit includes an anodized aluminum specimen cap and pedestal, two Porous Stones, two Latex Membranes and four O-Rings. The anodized aluminum caps have two drain ports and are grooved for O-Rings. Keyed pedestals with flow-through lines prevent pinching of tubing during set up. Optional accessories include the HMA-506 Specimen Height Indicator to track sample deformation and a Pore Pressure Transducer to precisely measure soil pore pressure. The HMA-521 or HM-521F Pore Pressure Transducer with Digital Readout are stand-alone units. The HMA-525 Pore Pressure Transducer with Deairing Block connects to a HM-418 Two-Channel or HM-419 Four-Channel Data Readout.

Flexible-Wall Permeability Test Cells

Model	Inside Chamber Dimensions, dia.xH, in (mm)	Specimen Size, Range, in (mm)
HMA-514	4.75x8.25 (121x273)	1.4 to 4.0 (35.6 to 101.6)
HMA-516	7.5x10.125 (191x343)	1.4 to 6.0 (35.6 to 152.4)

Accessories	
Specimen Height Indicator	HMA-506
Pore Pressure Transducer with Digital Readout, psi	HMA-521
Pore Pressure Transducer with Digital Readout, kPa	HMA-521F
Pore Pressure Transducer with Deairing Block	HMA-525

technote

Flexible-Wall Permeability Test Cell Kits / Cell Compatibility

Permeability Test Cell Kit		Permeability Cell	
Sample Diameter, in (mm)	Model	HMA-514	HMA-516
1.4 (35.6)	HMA-587	✔	✔
1.5 (38.1)	HMA-587A	✔	✔
1.87 (47.5)	HMA-587B	✔	✔
2.0 (50.8)	HMA-588	✔	✔
2.36 (59.9)	HMA-588A	✔	✔
2.42 (61.5)	HMA-588B	✔	✔
2.5 (63.5)	HMA-589	✔	✔
2.8 (71.1)	HMA-589A	✔	✔
3.0 (76.2)	HMA-583	✔	✔
4.0 (101.6)	HMA-584	✔	✔
6.0 (152.4)	HMA-586	—	✔

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TRIAXIAL & FLEXIBLE WALL PERMEABILITY TEST CELL ACCESSORIES

Test Cell
1.4in—6in Specimens

Triaxial Test Cell

Test Cell Components

Cap

Porous Stone

O-Ring

Membrane

O-Ring

Porous Stone

Pedestal

Sample Preparation

Membrane Stretcher

Two-Part Compaction Mold Assembly

O-Ring Placement Tool

technote

Gilson Test Cells are available in two unique designs to perform triaxial or flexible-wall permeability testing on soil samples. Triaxial Test Cells are equipped to mount in a Load Frame for application of axial loads, but may also be used in flex-wall permeability testing. Permeability Cells are not designed for axial loading. Triaxial and flex wall permeability cells accommodate soil sample and components for a range of sample sizes.

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FLEXIBLE-WALL PERMEABILITY TEST CELL ACCESSORIES
ASTM D5084

Flexible-Wall Permeability Test Cell Accessories											
	Sample Diameter, in (mm)										
Description	1.4 (35.6)	1.5 (38.1)	1.87 (47.5)	2.0 (50.8)	2.36 (59.9)	2.42 (61.5)	2.5 (63.5)	2.8 (71.1)	3.0 (76.2)	4.0 (101.6)	6.0 (152.4)
Test Cell Kits must be used to outfit Test Cells for specific sample sizes. Kits contain all components of a single size required to perform a test. Each kit includes an anodized aluminum specimen cap and pedestal, two aluminum oxide Porous Stones, two Latex Membranes and four O-Rings. The anodized aluminum caps have two drain ports and are grooved for O-Rings. Keyed pedestals with flow-through lines prevent pinching of tubing during set up.	HMA-587	HMA-587A	HMA-587B	HMA-588	HMA-588A	HMA-588B	HMA-589	HMA-589A	HMA-583	HMA-584	HMA-586
Cap & Pedestal Sets include only the anodized aluminum fixtures for the top and bottom of samples. Other accessories are purchased separately.	HMA-947	HMA-947A	HMA-947B	HMA-948	HMA-948A	HMA-948B	HMA-949	HMA-949A	HMA-943	HMA-944	HMA-946
Latex Membranes fit tightly around prepared soil specimens and provide a barrier against chamber fluids during testing. Supplied in packages of 12. Standard Latex Membranes are 0.012in thick and Premium Membranes are 0.025in (0.6mm) thick.											
Standard 0.012in Latex Membranes	HMA-527C	HMA-527D	HMA-527E	HMA-528C	HMA-528D	HMA-528E	HMA-529C	HMA-529D	HMA-523C	HMA-524C	HMA-526C
Premium 0.025in Latex Membranes	HMA-527	HMA-527A	HMA-527B	HMA-528	HMA-528A	HMA-528B	HMA-529	HMA-529A	HMA-523	HMA-524	HMA-526
Membrane Stretchers are slightly larger than specimen diameters and use vacuum applied through a tubular fitting to expand the membranes for easy placement. Aluminum construction.	HMA-557	HMA-557A	HMA-557B	HMA-558	HMA-558A	HMA-558B	HMA-559	HMA-559A	HMA-553	HMA-554	HMA-556
O-Rings made of neoprene material seal the Latex Membranes tightly around the Specimen Caps and Pedestals to protect specimen from chamber fluid.	HMA-567	HMA-567A	HMA-567B	HMA-568	HMA-568A	HMA-568B	HMA-569	HMA-569A	HMA-563	HMA-564	HMA-566
O-Ring Placing Tool is a simple design for easy placement of O-Rings without disturbing the sample.	HMA-577	HMA-577A	HMA-577B	HMA-578	HMA-578A	HMA-578B	HMA-579	HMA-579A	HMA-573	HMA-574	HMA-576
Porous Stones provide support of sample and allow two-way passage of water or permeant. These 1/4in thick aluminum oxide stones have a permeability range of 15 to 18ft^3 of air per minute, per square foot and average pore size of 179µm.	GSA-201	GSA-202	GSA-203	GSA-211	GSA-214	GSA-215	GSA-220	GSA-223	GSA-229	GSA-234	GSA-237
Two-Part Compaction Molds are used to prepare compacted specimens for triaxial or permeability testing. Granular soils are compacted in a Mold with a latex membrane held in place by a vacuum source. Cohesive specimens are compacted in molds with no vacuum capability and later fitted in Latex Membranes. Molds for cohesive soils are available as complete assemblies, or as molds only for increased efficiency in sample preparation.											
Two-Part Compaction Mold w/Vacuum for Granular Soils	HMA-957	HMA-957A	HMA-957B	HMA-958	HMA-958A	HMA-958B	HMA-959	HMA-959A	HMA-953	HMA-954	HMA-956
Two-Part Compaction Mold Assembly for Cohesive Soils	HMA-987	HMA-987A	HMA-987B	HMA-988	HMA-988A	HMA-988B	HMA-989	HMA-989A	HMA-983	HMA-984	HMA-986
Two-Part Compaction Mold only for Cohesive Soils	HMA-967	HMA-967A	HMA-967B	HMA-968	HMA-968A	HMA-968B	HMA-969	HMA-969A	HMA-963	HMA-964	HMA-966
Two-Part Miter Boxes are used to trim soil samples to precise lengths for triaxial, permeability, unconfined compression, shear and other tests.	HMA-977	HM-977A	HMA-977B	HMA-978	HMA-978A	HMA-978B	HMA-979	HMA-979A	HMA-973	HMA-974	HMA-976
Filter Paper prevents migration of soil fines from samples and blockage of pores in applications where porous stones are used. Ahlstrom grade 55 papers are equivalent to Whatman grade 54 as recommended in a number of ASTM and AASHTO soil test methods. They feature increased wet strength and a tough, smooth surface free of loose fibers. This fast-filtering grade has 15µm retention and a filtration speed of 220ml/min. Supplied as convenient pre-cut circles in packages of 100 in 2.0in to 6.0in (50.8 to 152.4mm) diameters.	–	–	–	HMA-772	–	–	–	HMA-773	HMA-774	HMA-775	HMA-776

HM-914

HM-916

HM-520

Triaxial and Flex-Wall Permeability Accessories

Description	Model	ASTM	AASHTO
Toxic Interface Units allow safe flexible-wall permeability testing by providing a barrier against toxic or corrosive chemicals in contaminated samples. Two chambers are required between the Control Panel and Permeability Test Chamber to prevent chemicals from entering the panel and venting to the atmosphere. Contaminants are isolated to the sample and the lower half of each interface chamber. The lower section of the chamber consists of a base, a stainless steel tube and a zero-volume change ball valve. The tube and base are sealed with a Viton O-Ring and a Viton diaphragm separates the chemical from the water within the test cell. The position of the diaphragm can be viewed through the clear polycarbonate top section. Models are available with 180cc or 500cc capacity. HM-914 **Product Dimensions:** 5.9x6.3x10.1 (150x160x257mm). HM-916 **Product Dimensions:** 6.5x7.25x10.1in (165x184x257mm), WxDxH.		D2850 D4767 D5084	T 296 T 29
Toxic Interface Unit, 180cc Toxic Interface Unit, 500cc	HM-914 HM-916		
Deairing Tank is used with Triaxial and Permeability Test Systems to remove entrapped air in the water used in the testing process. The 1.5gal (5.7L) Deairing Tank is constructed of clear acrylic and comes with valves, fitting and lines for connection to user's vacuum supply.	HMA-520	—	—
Pore Pressure Transducer with Digital Readout allows precision measurement of soil sample pore water pressure during triaxial and permeability testing and measures to 150psi with 0.01psi resolution. The unit contains a deairing valve and and easy to read 4.5in (114mm) LCD digital display. For use with Triaxial Cells and HM-350M Master Control Panel in triaxial testing of soils. The display is mounted in a wire stand to place on a table or other flat surface.	HMA-521	—	—
Pore Pressure Transducer with Digital Readout allows precision measurement of soil sample pore water pressure during triaxial and permeability testing and measures to 1034kPa with 0.01psi resolution. The unit contains a deairing valve and and easy to read 4.5in (114mm) LCD digital display. For use with Triaxial Cells and HM-350MF Master Control Panel in triaxial testing of soils. The display is mounted in a wire stand to place on a table or other flat surface.	HMA-521F	—	—
Pore Pressure Transducer with Deairing Block connects directly to a HM-418 Two-Channel or HM-419 Four-Channel Data Readout for precise measurement of soil sample pore water pressure during triaxial and permeability testing. Pore pressure is measured to 150psi (1034kPa) with 0.01psi resolution.	HMA-525	—	—

HM-521

HMA-525

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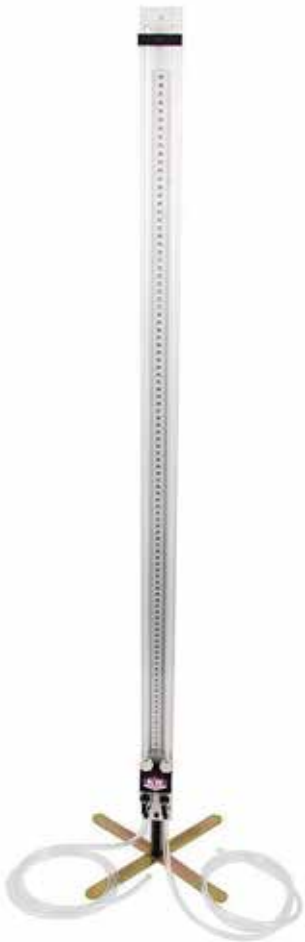
HM-891



HMA-838

technote

See Separate Listing For Filter Paper in the triaxial or permeability test cell accessory charts.

HM-831 through 835

GRANULAR SOIL PERMEAMETERS

ASTM D2434; AASHTO T 215

Permeameters for granular soils are available in versions meeting ASTM/AASHTO constant head requirements, or combination models for use with either constant head or falling-head methods. Both versions feature anodized aluminum end caps and clear acrylic chambers.

ASTM/AASHTO Permeameters determine permeability by constant head method of granular soil samples. Gilson offers permeameters in sizes from 2.5–9.0in (63.5–228.6mm) diameter, which allows the customer to determine permeability of granular soils with a wide range of particle top sizes.

Clear acrylic sample chambers allow easy viewing during test procedure. Two manometer ports are vertically spaced at a distance equal to the chamber diameter. Stainless steel No.100 mesh screen at each port prevents migration of material into the manometer. Porous stones are included with the 2.5in, 3.0in and 4.5in diameter chambers, while the 6 and 9in (152.4 and 228.6mm) diameter chambers are supplied with plastic perforated plates. A compression spring in the top cap applies 5–10lb (2.3–4.5kg) of force to prevent changes in sample density during the test. Anodized aluminum end caps have valves and ports for vacuum and water sources. Tubing is included. Either the HMA-838 Free Standing or HMA-839 Wall Mounted Double-Tube Manometer is required and must be purchased separately. Both feature a 100cm graduated scale and valves. The HMA-836 2in (50.8mm) diameter sliding weight Permeability Compaction Hammer and HMA-837 Acrylic 1000cc Constant head reservoir with mounting brackets are available as accessories.

Combination Permeameters are more economical and allow granular samples to be tested by either the constant-head or falling-head methods, but do not strictly meet ASTM and AASHTO requirements. Chamber sizes are similar to the ASTM/AASHTO Permeameters, but they are not equipped with sidewall manometer ports. Constant-head reservoir, free standing single tube manometer with scale porous stones and all necessary tubing are included.

Granular Soil Permeameters	
ASTM/AASHTO Permeameter, 2.5in dia.	HM-831
ASTM/AASHTO Permeameter, 3.0in dia.	HM-832
ASTM/AASHTO Permeameter, 4.5in dia.	HM-833
ASTM/AASHTO Permeameter, 6.0in dia.	HM-834
ASTM/AASHTO Permeameter, 9.0in dia.	HM-835
Combination Permeameter, 2.5in dia.	HM-891
Combination Permeameter, 3.0in dia.	HM-892
Combination Permeameter, 4.5in dia.	HM-893
Combination Permeameter, 6.0in dia.	HM-894
Combination Permeameter, 9.0in dia.	HM-895
Accessories	
Permeability Compaction Hammer	HMA-836
Constant Head Reservoir	HMA-837
Free Standing Manometer, Double Tube	HMA-838
Wall Mounted Manometer, Double Tube	HMA-839
Free Standing Manometer, Single Tube, included with combination permeameters	HMA-840

HM-81

HMA-840

HM-36

HM-37

SHELBY TUBE PERMEAMETER

The Shelby Tube Permeameter allows tests to be performed on undisturbed soil samples in sections of 3in (76mm) diameter Shelby sampling tubes. Supplied apparatus consists of corrosion-resistant top and bottom plates, valves, two porous stones, two stainless steel screens and three threaded tie rods with tilt nuts for quick repositioning. Inside of top plate is concave for deairing.

Tie rods extend to permit testing in Shelby tubes up to 6in (152mm) long under constant or falling head conditions. Order HMA-840 to Single-Tube Manometer to measure head pressure during permeability testing. Features a 1,000mm graduated scale and necessary valves. HMA-49 Filter Paper is useful for keeping fines from blinding porous stones. Paper is 2.95in (70mm) dia. and comes in a pack of one hundred. **Product Dimensions:** 8x6x9.75in (203x152x248mm), WxDxH.

Shelby Tube Permeameter	
Shelby Tube Permeameter	HM-81
Accessories	
Filter Paper, pkg. 100	HMA-49
Single-Tube Manometer	HMA-840

COMPACTION PERMEAMETERS

ASTM D5856

Compaction Permeameters measure constant or falling-head properties of compacted soils. The 4in and 6in diameter Permeameters are constructed of plated steel for wear resistance and long life. Inside mold dimensions are 4x4.584in (101.6x116.4mm) and 6x4.584in (152.4x116.4mm), dia.xH not including collars. These molds are dimensionally identical to Proctor molds, however the upper and lower plates have inlet/outlet connectors to allow the flow of water through the compacted sample. The overflow valve on the top plate is designed for air removal during the test. A porous stone filter is also provided. HMA-840 single-tube manometer is purchased separately and is required to measure head pressures during permeability testing. Both feature a 100mm graduated scale and necessary valves. **Product Dimensions:** HM-36 7.5x8x10in (191x203x254mm), WxDxH. HM-37 9.5x9x10.5in (241x229x267mm), WxDxH.

Compaction Permeameters	
4in Compaction Permeameter	HM-36
6in Compaction Permeameter	HM-37
Accessories	
Single-Tube Manometer	HMA-840

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HM-524

HM-231 shown with HMA-855

HM-232 shown with HMA-856

HMA-855

HM-267

Soil Sample Preparation

Description	Model	Dimensions in, WxDxH
Hydraulic Sample Extruder ejects undisturbed soil samples from thin-walled Shelby Tubes with up to 5,600lbf (24.9kN) of force. Smooth extrusion action in one continuous stroke prevents damage to sensitive soils and makes it easier to divide and preserve small sections for Consolidation, Triaxial, Direct Shear and other tests. The extruder is set up for 3in (76mm) diameter tubes of 30in (762mm) length, but easily processes 2in (51mm) diameter tubes using the HMA-282 adapter, purchased separately. A sample receiving trough (not shown) is included to support the entire length of the specimen during extrusion. Samples are easily logged, cut to length and prepared for testing in one step. Powerful 1hp electric motor, 1.7gpm (6.4lpm) hydraulic pump and 2.5gal (47L) hydraulic oil reservoir are mounted to a rugged solid steel frame, with the horizontally mounted piston. The Extruder can be bolted to a benchtop or mounted on the optional Extruder Stand to position at a convenient working height. The Stand is rugged bolted steel construction with casters.		
Hydraulic Sample Extruder, 115V/60Hz	HM-524	84x23x18
230V/50Hz	HM-524F	84x23x18
2in Tube Adapter	HMA-282	–
Extruder Stand	HMA-289	84.8x18x34.5
Adjustable Soil Trimmers are vertical soil lathes and guide preparation of cylindrical soil samples to desired diameter from 1 to 4in (25.4 to 101.6mm). Top and bottom platens turn freely on low-friction sealed cartridge bearings with no side play, assuring precise dimensioning. The platens feature short pins to grip the specimen and interchangeable Top Platens are mounted to a height-adjustable steel rod. Top Platens are purchased separately for finished diameters desired. Rigid vertical metal frames are mounted on 6in (150mm) square aluminum bases with non-skid rubber feet and an adjustable trimming guide accurately controls diameter. Cost effective HM-231 Adjustable Soil Trimmer covers the most common soil sample sizes from 1 to 3in (25.4 to 76.2mm) diameter and up to 7.5in (190mm) in length. HM-232 Adjustable Soil Trimmer for larger specimens prepares samples up to 4in (101.6mm) diameter and 9.75in (247.7mm) long.		
1in to 3in Adjustable Soil Trimmer	HM-231	6x6x14
1in to 4in Adjustable Soil Trimmer	HM-232	6x6x16
Top Platens are interchangeable to fit either Soil Trimmer model for precise control of specimen sizes. Units feature sealed cartridge bearings and can be quickly changed out.		dia.xH
Top Platen, 1.0in (25.4mm) dia.	HMA-850	1.0x0.3125
Top Platen, 1.4in (35.6mm) dia.	HMA-851	1.4x0.8
Top Platen, 1.875in (47.6mm) dia.	HMA-852	1.875x0.8
Top Platen, 2.0in (50.8mm) dia.	HMA-853	2.0x0.8
Top Platen, 2.5in (63.5mm) dia.	HMA-854	2.5x0.8
Top Platen, 2.8in (71.1mm) dia.	HMA-855	2.8x0.8
Top Platen, 3.0in (76.2mm) dia.	HMA-856	3.0x0.8
Top Platen, 4.0in (101.6mm) dia.	HMA-857	4.0x0.8
Wire Saws with fine-wire blades is the best choice for trimming fine-grained cohesive samples on Adjustable Soil Trimmers. Open End Wire Saw has a deep throat for increased cut sizes on larger samples. The blade mounts in a steel frame that connects to the handle.	HM-267	1.5x7.5x13.75

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HM-396

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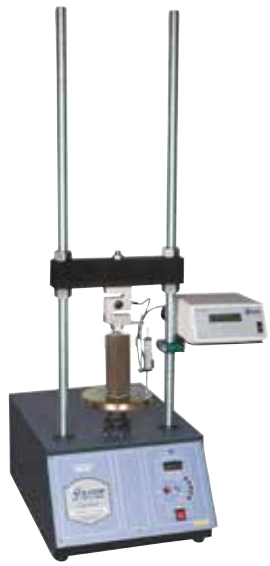

HM-399 shown with HM-683D

HMA-94

UNCONFINED COMPRESSIVE STRENGTH LOAD FRAMES
ASTM D2166; AASHTO T 208

Unconfined compression testing quickly provides simple strength values of cohesive soils. This test can be performed on intact, remolded, or reconstituted soil specimens using strain-controlled application of axial loads.

Karol-Warner Load Frames are ideal for unconfined compression testing when equipped with the appropriate analog or digital component set. The frames have sturdy 14-gauge painted steel cabinets and test platen diameter is 8in (203mm). Precision drive systems control strain rates to ±1% of set point. 1.25in (32mm) high-strength threaded rods allow easy, continuous adjustment of horizontal cross head. These Load Frames all have a generous 11.9x37.3in (302x947mm) WxH daylight opening to accept a wide range of sample sizes and test fixtures. HMA-94 Rolling Cart for Load Frame is sturdy steel with casters for easy positioning. **Product Dimensions:** 18x29x54.5in (457x737x1,384mm), WxDxH.

HM-396 Load Frame has a strain rate from 0.001–0.1in/min (0.0254–2.54mm/min) and is powered by a reliable ⅛ hp motor. The strain rate range and 10,000lbf (44.5kN) capacity make it well suited for basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial testing.

HM-397 Load Frame with 0.0001–0.3in/ min (0.00254–7.62mm/min) strain rate is powered by a quiet and efficient ⅛ hp stepper motor. The strain rate range and 10,000lbf (44.5kN) capacity are ideal for basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial testing.

HM-397B Load Frame with its high strain rate sensitivity of 0.00001–0.29999in/min (0.000254 to 7.62mm/min) is powered by an efficient and reliable ⅛ hp stepper motor. This versatile 10,000lbf (44.5kN) capacity unit features a wide strain rate range to suit a wide range of basic soil tests, including Unconfined Compression, CBR, Soil Cement and Triaxial. Its superior sensitivity and precise, repeatable positioning also make it ideal for consolidated/undrained triaxial tests on sensitive soils.

HM-398 Load Frame has a strain rate of 0.02–2.0in/min (0.508–50.8mm/min) and is powered by a powerful ¾ hp motor. The strain rate and 10,000lbf (44.5kN) capacity are well-suited for many soil and asphalt applications including; Unconfined Compression, CBR, Soil Cement, Triaxial testing, Marshall, Lottman, Semi-Circular Bend (SCB) and Tack Coat Shear.

HM-399 Load Frame features a high-range strain rate of 0.00001–0.29999in/min (0.000254–7.62mm/min) and the 20,000lbf (89kN) load-rated unit has double the capacity of our other Load Frames. The quiet, efficient stepper motor powers the heavy-duty unit to perform a wide range of basic soil tests in higher strength ranges, including Unconfined Compression, CBR, Soil Cement and Triaxial Testing. Superior sensitivity and precise, repeatable positioning also make it ideal for consolidated/undrained triaxial tests on sensitive soils.

Unconfined Compression Component Sets feature high-quality instrumentation to measure load and displacement values and are easily installed on Load Frames. Fixtures and brackets are included with the sets for direct mounting to the frames. Component sets to perform specific test methods are available for all Load Frames.

HMA-683 Analog Unconfined Compression Component Set includes a 1,000lbf (4.5kN) capacity Load Ring, a 1x0.001in Dial Indicator, Indicator Bracket and two 2.8x0.25in dia x thickness Plastic Discs. Load Ring is machined from high-strength aluminum alloy plate for repeatable compression measurements and is supplied with a calibration graph.

HMA-683D Digital Unconfined Compression Component Set includes a HM-418 Two-Channel Data Readout, 1,000lbf (4.5kN) Load Cell and 2in (50.8mm) travel Linear Variable Displacement Transducer (LVDT). A Transducer Bracket and 2.8x0.25in Plastic Discs are also included. The Digital Readout shows real-time data on a large, bright display. Front panel keys allow entry of calibration factors and instant taring on either channel. A mini USB connection is included for data communication. Included GetData 5 software easily downloads load and displacement data from the HM-418 to common spreadsheet applications on user's computer for development of graphs and reports and is compatible with Windows® XP and newer operating systems. HMA-611 Unconfined Compressive Strength Data Acquisition Software, listed separately, works with the HMA-683D Component Set to record specimen and real-time test data, calculate results and prepare reports following ASTM and AASHTO requirements.

Unconfined Compressive Strength Load Frames

Model	Capacity	Strain Rate	Electrical
HM-396	10,000lbf	0.001–0.1in/min	115V/60Hz
HM-396F	10,000lbf	0.001–0.1in/min	230V/50–60Hz
HM-397	10,000lbf	0.0001–0.3in/min	115V/60Hz
HM-397F	10,000lbf	0.0001–0.3in/min	230V/50–60Hz
HM-397B	10,000lbf	0.00001–0.29999in/min	115V/60Hz
HM-397B	10,000lbf	0.02–2.0in/min	115V/60Hz
HM-398F	10,000lbf	0.02–2.0in/min	230V/50–60Hz
HM-399	20,000lbf	0.00001–0.29999in/min	120V/50–60Hz
HM-399F	20,000lbf	0.00001–0.29999in/min	230V/50–60Hz

Accessories

Analog Unconfined Compression Component Set	HMA-683
Digital Unconfined Compression Component Set	HMA-683D
Rolling Load Frame Cart	HMA-94
Gilson Unconfined Compressive Strength Data Acquisition Software	HMA-611

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HMA-683D Digital Unconfined Compression Component Set

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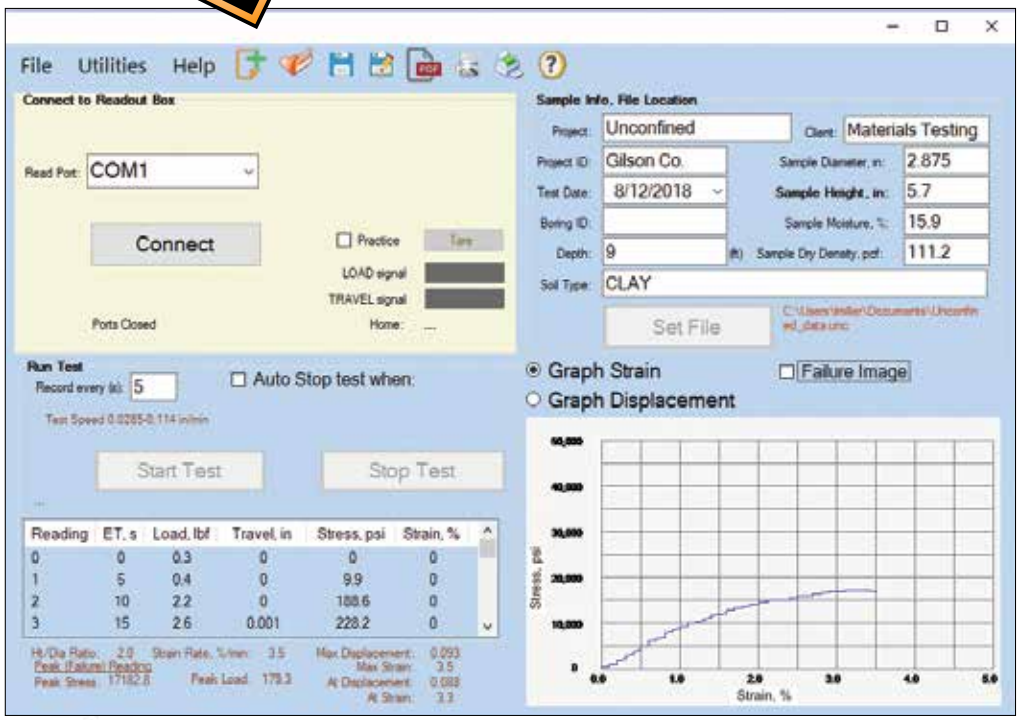

HMA-611 Screen Shot

Typical unconfined compression test set-up

technote

Free fully functional trial version available for download from www.globalgilson.com

UNCONFINED COMPRESSIVE STRENGTH DATA ACQUISITION SOFTWARE

ASTM D2166; AASHTO T 208

- **Displays strain and displacement in real-time**
- **Automatically saves final reports to computer, network, or cloud**
- **Calculations and reports meet ASTM and AASHTO**
- **Optimized for use with desktop, laptop or tablet devices**
- **Allows import of failure images into test reports**

Gilson's Unconfined Compressive Strength Data Acquisition Software automatically records axial load and rate of deformation for cohesive soil samples. This intuitive software takes the guesswork out of testing with clear data entry fields and testing prompts to reduce user error and increase repeatability.

Unconfined Compressive Strength Software runs on computers with Windows XP or newer operating systems and is designed for convenient use on tablets and laptops. Large popup keyboards can be enabled for touchscreen computers or disabled when a desktop PC with conventional mouse and keyboard are used. Testing agency information, company logo and equipment information can also be entered into the program settings to be included on final testing reports.

Real-time graphing and calculations are performed throughout the test procedure and saved automatically at test completion in accordance with ASTM and AASHTO specifications. The testing agency information, company logo, sample data, final test results, displacement graph and strain graph are included in the final testing report. Test data and sample information can be exported to a spreadsheet application or converted into a PDF document.

Unconfined Compressive Strength Data Acquisition Software requires a HM-418 Two-Channel or HM-419 Four-Channel Data Readout for operation. The HMA-683D Digital Unconfined Compression Component Set is optimized for use with the software and includes the HM-418, along with a 1000 lbf (4.5kN) load cell, 2in (50.8mm) displacement transducer and mounting accessories. All components and sets are purchased separately.

Unconfined Compressive Strength Software is available now as a fully operational 30-day trial. Download for free from our website. A USB security key and licensing information to unlock the software for permanent operation will be sent upon purchase. Visit globalgilson.com to view our video with complete details of ease of use, intuitive operation and features of this new software.

Unconfined Compressive Strength Data Acquisition Software	
Unconfined Compressive Strength Data Acquisition Software	HMA-611
Accessories	
Digital Unconfined Compression Component Set	HMA-683D

Manufactured in cooperation with Karol•Warner

HM-397 shown with HMA-687

HM-398 shown with HMA-94

SOIL CEMENT LOAD FRAMES
ASTM D1632, D1633

Soil cement, a compacted mixture of soil and Portland cement, stabilizes poor soils for pavement bases. ASTM compressive strength specimens are prepared by method A, using common soil moisture-density (Proctor) equipment, or method B, with the HM-228 Dropping-Weight Compactor and 2.8in (71mm) diameter molds.

Load Frames accept Analog or Digital Soil Cement Component Sets to test method A or B specimens. Precision drive systems control strain rates to ±1% of set point and 1.25in (32mm) threaded rods allow easy adjustment of horizontal cross heads. Load frames all have sturdy 14-gauge painted steel cabinets, a generous 11.9x37.3in (302x947mm) WxH daylight opening, and an 8in (203mm) diameter platen to accept a wide range of sample sizes and test fixtures. These units are well-suited for unconfined compression, CBR, soil cement and triaxial testing. Optional HMA-94 steel Rolling Cart features casters for easy positioning. 115V/60Hz. Add"F" to model number to order 230V/50Hz units. **Product Dimensions:** 18x29x54.5in (457x737x1,384mm), WxDxH.

HM-396 Load Frame has a strain rate from 0.001—0.1in/min (0.0254—2.54mm/min), 10,000lbf (44.5kN) capacity and a reliable 1/8 hp motor.

HM-397 Load Frame has 0.0001—0.3in/min (0.00254—7.62mm/min) strain rate, 10,000lbf (44.5kN) capacity, and a quiet and efficient 1/8hp stepper motor.

HM-397B Load Frame with its high strain rate of 0.00001 to 0.29999in/min (0.000254 to 7.62mm/min), has 10,000lbf (44.5kN) capacity and an efficient and 1/8hp reliable stepper motor. The wide strain rate range and superior sensitivity of this model also make it ideal for consolidated/ undrained triaxial tests on sensitive soils.

HM-398 Load Frame has a 0.02-2.0in/min (0.508-50.8mm/min) strain rate, 10,000lbf (44.5kN) capacity and a powerful ¾ hp motor. The strain rate works for common soil tests and many asphalt applications such as Marshall, Lottman, semi-circular bend (SCB), and tack coat shear.

HM-399 Load Frame features a high-range strain rate of 0.00001 to 0.29999in/min (0.000254 to 7.62mm/min), 20,000lbf (89kN) capacity for extended testing in higher strength ranges. The 1/8hp stepper motor is quiet and efficient. Superior sensitivity and precise, repeatable positioning also make it ideal for consolidated/undrained triaxial tests on sensitive soils.

Soil Cement Component Sets feature high-quality instrumentation to measure load and deformation. Sets include fixtures and brackets for direct mounting to Pro-Loader Load Frames.

Analog Soil Cement Component Set includes a 10,000lbf capacity aluminum alloy Load Ring with a factory calibration chart. A 1x0.001in Mechanical Dial Indicator with a steel indicator bracket and HMA-129 4.25in (108mm) diameter Swivel Platen.

Digital Soil Cement Component Set includes a 10,000lbf capacity load cell, two-channel digital readout, 2in travel Linear Variable Displacement Transducer (LVDT), transducer bracket and HMA-129B 4.25in (108mm) diameter swivel. Optional HMA-612 Soil Cement Data Acquisition Software records specimen and real-time test data, calculates results and prepares reports following ASTM requirements.

Soil Cement Load Frames

Model	Capacity	Strain Rate	Electrical
HM-396	10,000lbf (44.5kN)	0.001–0.1in/min	115V/60Hz
HM-397	10,000lbf	0.0001–0.3in/min	115V/60Hz
HM-397B	10,000lbf	0.00001–0.29999in/min	115V/60Hz
HM-398	10,000lbf	0.02–2.0in/min	115V/60Hz
HM-399	20,000lbf (90kN)	0.00001–0.29999in/min	120V/50-60Hz

Accessories

Analog Soil Cement Component Set, 10,000lbf capacity (44.5kN), 20K Analog	HMA-687
Digital Soil Cement Component Set, 10,000lbf capacity (44.5kN), 20K Digital	HMA-687D
4.25in Diameter Swivel Platen, ½-20 Threads	HMA-129
4.25in Diameter Swivel Platen, ¾-16 Threads	HMA-129B
6.25in Diameter Swivel Platen, ¾-16 Threads	HMA-129A
Rolling Load Frame Cart	HMA-94
Gilson Soil Cement Data Acquisition Software	HMA-612

HMA-687D Digital Soil Cement Component Set

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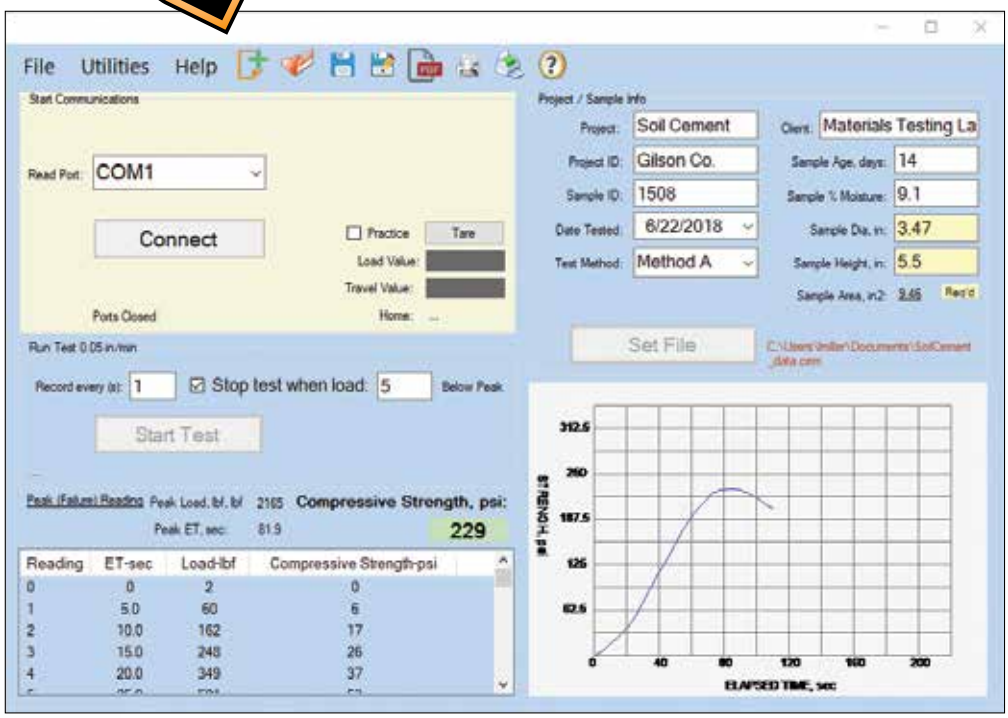

HMA-612 Screen Shot

Typical Soil Cement Test Set-up

technote

Gilson Data Acquistion Software is compatible with any system using Gilson's HM-418 or HM-419 Digital Readout.

SOIL CEMENT DATA ACQUISITION SOFTWARE

ASTM D1633

- **Displays load and displacement graphs in real-time**
- **Automatically saves final reports to computer, network, or cloud**
- **Calculations and reports meet ASTM and AASHTO**
- **Optimized for use with desktop, laptop or tablet devices**

Gilson's Soil Cement Data Acquisition Software automatically records axial load and vertical deformation data and calculates the unconfined compressive strength of soil-cement samples. This intuitive software utilizes clear data entry fields and testing prompts to reduce user error and increase repeatability.

Soil Cement Software runs on computers with Windows XP or newer operating systems and is designed for convenient use on tablets and laptops. Large popup keyboards can be enabled for touchscreen computers or disabled when a PC with mouse and keyboard is used. Testing agency information, company logo and equipment information can also be entered into the program settings to be included on final testing reports.

Real-time graphing and calculations are performed throughout the test procedure and saved automatically at test completion in accordance with ASTM specifications. The testing agency information, company logo, sample data, final test results and time versus compressive strength graph are included in the final testing report. Test data and sample information can also be exported to a spreadsheet application or converted into a PDF document.

Soil Cement Data Acquisition Software requires a HM-418 Two-Channel or HM-419 Four-Channel Data Readout for operation. The HMA-687D Digital Soil Cement Component Set is optimized for use with the software and includes the HM-418, along with a load cell and displacement transducer. All components and sets are purchased separately.

Soil Cement Software is available now as a fully operational 30-day trial. Download for free from our website. A USB security key and licensing information to unlock the software for permanent operation will be sent upon purchase. Visit globalgilson.com to view our video with complete details on ease of use, intuitive operation and features of this new software.

Soil Cement Data Acquisition Software	
Soil Cement Data Acquisition Software	HMA-612
Accessories	
Digital Soil Cement Component Set	HMA-687D

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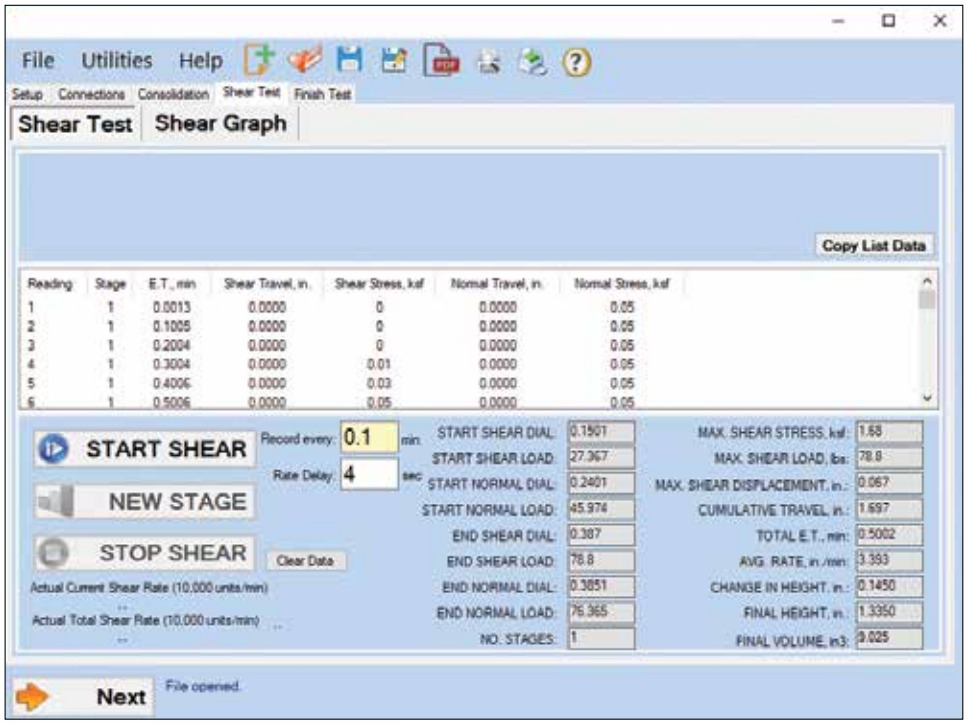


HMA-610 Screen Shot

Typical Direct/Residual Shear Test Set-up

technote

Free fully functional trial version available for download from www.globalgilson.com

DIRECT/RESIDUAL SHEAR DATA ACQUISITION SOFTWARE

ASTM D3080; AASHTO T 236

- **Displays real-time graph and data throughout test**
- **Final report includes calculated friction angle**
- **Automatically saves final reports to computer, network, or cloud**
- **Calculations and reports meet ASTM and AASHTO**
- **Optimized for use with desktop, laptop or tablet devices**

Gilson's Direct/Residual Shear Data Acquisition Software automatically records data during consolidation and shear phases of direct and residual shear testing. This intuitive software utilizes clear data entry fields and testing prompts to reduce user error and increase repeatability.

Direct/Residual Shear Software runs on computers with Windows XP or newer operating systems and is designed for convenient use on tablets and laptops. Large popup keyboards can be enabled for touchscreen computers or disabled when PC with mouse and keyboard is used. Testing agency information, company logo and equipment information can also be entered into the program settings to be included on final testing reports.

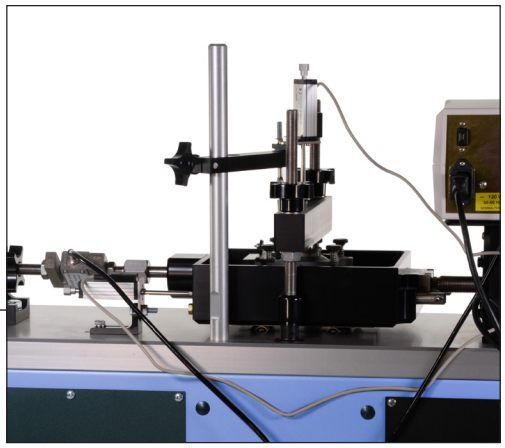
Real-time calculations are performed throughout the test procedure and saved automatically at test completion in accordance with ASTM and AASHTO specifications. In addition, a friction angle tool allows quick determinations of the friction angle (ϕ) and cohesion intercept (c). The testing agency information, company logo, sample data, final test results and corresponding graphs are included in the final testing report. Test data and sample information can also be exported to a spreadsheet application or converted into a PDF document.

Direct/Residual Shear Data Acquisition Software is optimized for use with the HM-382 and HM-380D Direct Shear Machines, which include the required HM-419 Four-Channel Data Readout, two HM-739 1in (25.4mm) Linear Variable Displacement Transducers and HM-424D 1500lbf (6.7kN) Load Cell. These components can also be purchased separately to outfit other direct shear machines.

Direct/Residual Shear Software is available as a fully operational free download from our website for a 30-day trial. A USB security key and licensing information to unlock the software for permanent operation will be sent upon purchase. Visit globalgilson.com to view our video with complete details of ease of use, intuitive operation and features of this new software.

Direct/Residual Shear Data Acquisition Software	
Direct/Residual Shear Data Acquisition Software	HMA-610

Manufactured in cooperation with
Karol•Warner



HM-382

PNEUMATIC DIRECT SHEAR MACHINES
ASTM D3080; AASHTO T 236

The direct shear test measures the force and horizontal displacement of a representative specimen that is sheared along a controlled horizontal plane at a constant rate of deformation. Typically three or more tests make up a series and are combined to determine strength properties such as Mohr strength envelopes.

Gilson Pneumatic Direct Shear Machines are tabletop units manufactured in cooperation with Karol-Warner and provide direct or direct/residual shear values for evaluating the strength and stability of soils. Soil specimens are carefully trimmed into a Direct Shear Box, which is horizontally divided, allowing independent movement of the upper and lower halves. A vertical confining load is applied to the specimen and a horizontal shear force is applied to the lower half of the shear box, while the upper half remains stationary. After direct shear failure has been measured, selected models allow the force direction to be reversed to determine residual shear values.

Pneumatic Direct Shear Machines apply vertical confining pressures to the specimen. Confining loads are applied pneumatically using a small, rolling diaphragm piston for light loads of 4–100lbf (0.018–0.44kN) and a larger diameter piston for loads up to 1,500lbf (6.77kN). This design increases the sensitivity and accuracy of the light load system. Loading is controlled using the precision regulator with included calibration chart. Load settings are displayed digitally and are accurate to ±0.25%. Both pneumatic direct shear machines are completely self-contained and the need for loading weights is eliminated.

A stepper motor controls strain rates to ±1% from 0.0001–0.3in/min (0.0025–7.62mm/ min) and is easily set with digital thumb wheel controls. Total shear capacity is 1,500lbf (6.67kN). The included water chamber with drainage port is constructed of Teflon coated, anodized aluminum for corrosion resistance. Round or Square Direct Shear Boxes are available in a variety of sizes and are purchased separately. HMA-739 Shear Box Counterbalance offsets top-half weight of Shear Boxes with specimen dimensions up to 2.5in (63.5mm) and is also purchased separately. HM-95 Rolling Cart for Pneumatic Shear Machines has sturdy all-steel construction offering easy portability in the lab. HM-739 horizontal and vertical Linear Variable Displacement Transducers with 1in (25.4mm) range and 0.0001in (0.0025mm) resolution are available separately to replace analog Dial Indicators if desired. Product Dimensions: 30x14.5x22in (762x368x559mm), WxDxH.

HM-381 Standard Pneumatic Direct Shear Machine uses a S-Type Load Cell connected to a built-in digital display to measure and display load values. Consolidation and direct shear displacement are measured using analog dial indicators.

HM-382 Digital Pneumatic Direct Shear Machine also includes a S-Type Load Cell to measure shear load but adds Linear Variable Displacement Transducers (LVDT's) to measure horizontal and vertical displacement and functionality to perform residual shear testing. A Four-Channel Data Readout with mini USB data output processes and displays measured values. GetData 5 software is included to transfer data in ASCII format to common spreadsheet applications in user's computer using Windows XP or newer operating system. HMA-610 Direct/ Residual Shear Data Acquisition Software, listed separately, can be purchased to record specimen and real-time test data, calculate results and prepare reports following ASTM and AASHTO requirements.

Pneumatic Direct Shear Machines	
Standard Pneumatic Direct Shear Machine, 110V/60Hz	HM-381
220V/50Hz	HM-381F
Digital Pneumatic Direct Shear Machine, 110V/60Hz	HM-382
220V/50Hz	HM-382F
Accessories	
Rolling Cart for HM-381 and HM-382	HMA-95
Shear Box Counterbalance	HMA-739
1in Linear Digital Displacement Transducer	HM-739
Direct/Residual Shear Data Acquisition Software	HMA-610

HM-380D

Manufactured in cooperation with Karol•Warner

HMA-735, HMA-745 & HMA-765

DEAD-WEIGHT DIRECT SHEAR MACHINES
ASTM D3080; AASHTO T 236

- **Practical, self-contained design uses dead-weight loading**
- **Simple operation and precise controls**
- **Options for computerized data collection**

Dead-Weight Direct Shear Machines by Karol-Warner are motorized units for direct and direct/residual shear testing of soil samples and use a 10:1 dead-weight beam loading system to apply vertical confining pressures. These compact, self-contained units have similar designs, but differ in instrumentation for data measurement and collection. Both are built for harsh laboratory environments and require little floor space.

Strain rate is precisely controlled from 0.0001–0.3in/min (0.0025–7.62mm/min) ±1% by an advanced stepper-motor drive system. Settings are easily adjusted using digital thumb wheel controls. Maximum shear displacement is 0.8in (20.3mm). Vertical load capacity is 1,411lb (640kg) and maximum horizontal shear force is 1,500lbf (6,7N). A solid 1.25in (32mm) base for the Shear Box assembly is mounted on a sturdy painted steel cabinet and stand with heavy-duty casters for easy mobility. Drainage plates, loading block and a water chamber of Teflon coated anodized aluminum are included. Round or Square Direct Shear Boxes are available in a variety of sizes and are purchased separately. HMA-739 Shear Box Counterbalance offsets top-half weight of Shear Boxes with specimen dimensions up to 2.5in (63.5mm) and is also purchased separately. Weight Sets are purchased separately and at least one US or Metric weight set is required for proper operation. **Product Dimensions:** 36x14.5x54in (914x368x137mm), WxDxH.

HM-380R Standard Dead-Weight Direct Shear Machine features an HM-424D 1500lbf (6.7kN) Load Cell with Digital Readout to display shear force and Analog Dial Indicators to measure vertical and shear displacement. Options can be purchased separately to upgrade the HM-380R for partial or complete electronic measurement and data collection. HM-739 Linear Variable Displacement Transducers (LVDT's) have 1in (25.4mm) range with 0.0001in (0.0025mm) resolution to measure horizontal and vertical displacement. The LVDT's must be connected to HM 418 Two-Channel or HM-419 Four-Channel Data Readouts. The Readouts display real-time values on a large bright display and use included GetData 5 software to transfer data to a computer with Windows® operating system. Using the HM-419 Four-Channel Data Readout provides an additional channel to collect force measurements from the Load Cell.

HM-380D Digital Dead-Weight Direct Shear Machine performs both direct and residual shear measurements and is configured for complete electronic measurement and data collection. Using a load cell to measure shear force and LVDT's to measure horizontal and vertical movements which are all processed through a HM-419 Four-Channel Data Readout. The included GetData 5 Software transfers data to the user's Windows-based computer via a mini USB port for analysis from creation of reports and graphs from a spreadsheet application. HMA-610 Direct/Residual Shear Data Acquisition Software, listed separately, works with the Data Readout to record real-time test data, calculate results and prepare reports following ASTM and AASHTO requirements.

Dead-Weight Direct Shear Machines	
Standard Dead-Weight Direct Shear Machine, 115V/60Hz	HM-380R
230V/50Hz	HM-380RF
Digital Dead-Weight Direct Shear Machine, 115V/60Hz	HM-380D
230V/50Hz	HM-380DF
Accessories	
32kg Weight Set, Maximum Load 320kg	HMA-730
64kg Weight Set, Maximum Load 640kg	HMA-725
88kg Weight Set, Maximum Load 880kg	HMA-731
54.5lb Weight Set, Maximum Load 545lb	HMA-727
109.1lb Weight Set, Maximum Load 1,091lb	HMA-732
218.2lb Weight Set, Maximum Load 2,182lb	HMA-729
Shear Box Counterbalance	HMA-739
Linear Variable Displacement Transducer, 1in (25.4mm)	HM-739
Two-Channel Data Readout	HM-418
Four-Channel Data Readout	HM-419
Gilson Direct/Residual Shear Data Acquisition Software	HMA-610

HMA-745

HMA-735

HMA-765

HMA-764S

GSA-219

HMA-725

HMA-727

DIRECT SHEAR BOXES & ACCESSORIES
ASTM D3080; AASHTO T 236

Direct Shear Boxes are designed for use in Karol-Warner and other dead-weight or pneumatic direct shear machines for determining direct shear values. Precision machined shear boxes are horizontally divided to allow opposing shear forces to be applied to soil specimens that have been carefully trimmed to fit. Models are available in a variety of sizes to test round or square specimens and have fine adjustments to maintain required clearances. Shear boxes are constructed of anodized aluminum with Teflon finish for corrosion resistance. HMA-81 Loading Ball and two porous stones are also included with each shear box. These components are also available separately for each size to enhance sample preparation efficiency. Extruders are purchased separately in each size for easy removal of tested samples.

Direct Shear Boxes & Accessories

Description	Shear Box	Cutters	Extruders	Porous Stones
Round Direct Shear Boxes				
50mm (1.97in) Diameter	HMA-733M	HMA-743M	HMA-763M	GSA-208
2.0in (50.8mm) Diameter	HMA-733	HMA-743	HMA-763	GSA-210
60mm (2.36in) Diameter	HMA-734M	HMA-744M	HMA-764M	GSA-213
2.42in (61.4mm) Diameter	HMA-734	HMA-744	HMA-764	GSA-217
2.5in (63.5mm) Diameter	HMA-735	HMA-745	HMA-765	GSA-219
100mm (3.94in) Diameter	HMA-737	HMA-747	HMA-767	GSA-231
4in (101.6mm) Diameter	HMA-736	HMA-746	HMA-766	GSA-232
Square Direct Shear Boxes				
50mm (1.97in) Square	HMA-733MS	HMA-743MS	HMA-763MS	GSA-208S
2.0in (50.8mm) Square	HMA-733S	HMA-743S	HMA-763S	GSA-210S
60mm (2.36in) Square	HMA-734MS	HMA-744MS	HMA-764MS	GSA-213S
2.42in (61.4mm) Square	HMA-734SA	HMA-744SA	HMA-764SA	GSA-217S
2.5in (63.5mm) Square	HMA-735S	HMA-745S	HMA-765S	GSA-219S
100mm (3.94in) Square	HMA-737S	HMA-747S	HMA-767S	GSA-231S
4in (101.6mm) Square	HMA-736S	HMA-746S	HMA-766S	GSA-232S

DIRECT SHEAR DEAD-WEIGHT SETS
ASTM D3080; AASHTO T 236

Weight Sets for the HM-380R Dead-Weight Direct Shear machines apply vertical loads to the specimen through a loading beam with 10:1 ratio and are purchased separately in pound or kilogram versions. The Pound Weight Set is configured for convenient loading in tons/ft² (tsf) units for a 2.5in (63.5mm) specimen when a 10:1 beam ratio is used.

Direct Shear Dead-Weight Sets

Kilogram Weight Sets

Model	Total Mass	Total Load at 10:1 Beam Ratio	Included Weights		
			1kg	4kg	8kg
HMA-730	32kg	320kg	4	3	2
HMA-725	64kg	640kg	4	5	5
HMA-731	88kg	880kg	4	5	8

Direct Shear Dead-Weight Sets

Pound Weight Sets

Model	Total Mass	Maximum Load[1]	Included Weights					
			0.852lb (1/8tsf)	1.704lb (1/4tsf)	3.409lb (1/2tsf)	6.818lb (1tsf)	13.635lb (2tsf)	27.270lb (4tsf)
HMA-727	54.5lb	545lbf (8tsf)	2	1	1	1	1	1
HMA-732	109.1lb	1,091lbf (16tsf)	2	1	1	1	1	3
HMA-729	218.2lb	2,182lbf (32tsf)	2	1	1	1	1	7

[1]tsf values indicate applied load to a 2.50in diameter specimen at a 10:1 beam ratio.

NEW

Manufactured in cooperation with Karol•Warner

HM-384

HIGH-CAPACITY GEOSYNTHETIC DIRECT SHEAR MACHINE
ASTM D5321, D6243

High-Capacity Direct Shear Machines measure the total resistance of large, 12in (305mm) square soil or soil/geosynthetic specimens to horizontal shear forces. The specimens are mounted in a two-piece shear box assembly, divided in half horizontally. The bottom half is held securely in place and a vertical confining force is applied. Horizontal force is then directed against the upper half of the box to shear the specimen.

Loads are applied through pistons driven by a stepper motor and gear box system. Confining loads are applied with smaller diameter pistons for greater accuracy and sensitivity of lighter loads, up to 4.4kN (1,000lbf) of force. One or two larger pistons generate loads up to 45kN (10,000lbf), or 90kN (20,000lbf) depending on model selected. Horizontal shear rate from 0.0508–5.08mm (0.002–0.2in) per minute is easily set with thumbwheels on the control panel. Limit switches control the home position and limit total horizontal displacement to 102mm (4in). Vertical loading is controlled through a precision regulator, using the included calibration chart to set the required pressure. Loads are displayed to two decimal places on the digital readout and are accurate to ±0.25%. Consolidation and shear displacement are measured by linear variable displacement transducers. Shear load is measured from a load cell attached to the water chamber. The four-channel readout displays all these values while directing data in ASCII format through the mini USB serial port to the user's computer. The included software imports data into common spreadsheet applications for analysis and reporting. Displayed values on the readout can be viewed at anytime.

Loading and unloading the specimen and shear box assembly to and from the water chamber is simplified using the compaction table. Pulling the loaded shear box onto the convenient table rollers allows the entire assembly to slide easily into and out of the chamber. Sample compaction, geotextile placement and specimen preparation can be performed on the table, before placing the assembly directly into the water chamber with little effort.

HM-384 and HM-385 High-Capacity Direct Shear Machines are capable of applying maximum piston loads of 45kN (10,000lbf) and 90kN (20,000lbf) respectively. Both are ruggedly designed for harsh lab environments. All steel parts are powder-coated and hard-coat anodized aluminum components resist corrosion. Casters on the machine and compaction table make for easy portability in the lab. Compaction table and top and bottom shear rings are included. Top ring is 12x12x4in (305x305x102mm) and bottom ring is 12x16x4in (305x406x102mm). Software and data cable is also included. A 120psi (827kPa) source of clean, dry, compressed air is required for operation. Inquire for customization options for specimen sizes and operating options. Operates on 110V/60Hz. For units operating on 220-240V/50Hz, add "F" suffix to model number. **Product Dimensions:** 43x23x40in (1,092x584x1,016mm), WxDxH.

High-Capacity Geosynthetic Direct Shear Machine	
High-Capacity Geosynthetic Direct Shear Machine, 45kN, 110V/60Hz	HM-384
High-Capacity Geosynthetic Direct Shear Machine, 90kN, 110V/60Hz	HM-385

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HM-564

BASIC SWELL CONSOLIDOMETERS
ASTM D4546

Self-contained Basic Swell Consolidometers are used for swell and expansion tests on soil specimens of 2.44 or 2.50in (62 or 63.5mm) diameters. The simple method provides rapid results to predict swell potential for soils with no need for a separate loading frame. Specimens are prepared by compacting soil into a stainless steel compaction ring. The ring with specimen is placed in the consolidometer between two porous stones and loaded to 60psf (2.87kPa) with the loading weight. A dial indicator is set to the initial sample height and the consolidometer is filled with water to begin the test.

The compact, all-in-one design includes the stainless steel base, a compaction specimen ring and loading weight, porous stones, an acrylic ring to contain the water and an adjustable dial indicator holder. Loading weights and porous stones are also available separately as replacements. A dial indicator is required and purchased separately. Additional stainless steel compaction rings can be purchased to enhance sample preparation efficiency. The HMA-836 Permeability Compaction Hammer is used to compact soil samples into a compaction ring secured in a compaction base and collar assembly. The drop-hammer is supplied with 100g (0.22lb) and 1kg (2.2lb) sliding weights and a 2in (51mm) diameter tamping foot. Drop height is adjustable from 4 to 8in (102 to 203mm). Compaction base and collar for each specimen size and the compaction hammer are all purchased separately for sample preparation. **Product Dimensions:** 5x2.5in (127x63.5mm), dia.xH.

Basic Swell Consolidometer	
Basic Swell Consolidometer, 2.44in	HM-564
Basic Swell Consolidometer, 2.50in	HM-565
Accessories	
Dial Indicator, 0.5x0.0001in	MA-333
Digital Dial Indicator 0.6x0.0001in	MA-363
Compaction Base & Collar for 2.44in dia. Samples	HMA-834D
Compaction Base & Collar for 2.50in dia. Samples	HMA-834E
60psf Loading Weight, 2.44in diameter	HMA-835D
60psf Loading Weight, 2.50in diameter	HMA-835E
Compaction Ring, 2.44x1.0in dia.xH	HMA-841
Compaction Ring, 2.50x1.0in dia.xH	HMA-842
Permeabilty Compaction Hammer	HMA-836
Top Porous Stone for HM-564, 2.405x0.25in	GSA-217
Top Porous Stone for HM-565, 2.485x0.25in	GSA-219
Bottom Porous Stone for HM-564 or HM-565	GSA-230

HM-567

BACK PRESSURE CONSOLIDOMETER
ASTM D2435; AASHTO T 216

The Back Pressure Consolidometer allows back pressure saturation and pore pressure measurements of soil specimens during one-dimensional consolidation testing. The Consolidometer is mounted in a conventional consolidation device, such as the Karol-Warner CONBEL™ pneumatic load frame for loading and connected to an HM-350M Master Control Panel for regulation of cell pressures. Permeability values can also be determined. The HMA-521/ HMA-521F or HMA-521F Pore Pressure Transducer with Digital Readout or HMA-525 Pore Pressure Transducer with Deairing Block can be used to determine real-time specimen pore pressure values.

The HM-567 Consolidometer transfers loads to the specimen via a stainless steel piston that passes through a top cap with sealed, low-friction linear bearings. Ports with connectors allow for application of confining pressures up to 200psi and a bottom port monitors pressure and flow rate. The unit tests 2.50x1.0in (63.5x25.4mm) diameter specimens and includes a sample ring with built-in cutting edge for efficient sample preparation. Also included are two porous stones, flexible tubing and connectors for pressure and pore pressure lines. Sample rings and porous stones are also available separately for streamlined sample preparation. An optional stainless steel calibration disc is used to measure total system deflection under applied load. **Product Dimensions:** 5.5x6.7in (140x170mm), dia.xH.

Back Pressure Consolidometer	
Back Pressure Consolidometer, 2.5in (63.5mm)	HM-567
Accessories	
Calibration Disc for 2.5in (63.5mm)	HMA-88E
Porous Stone, 2.485x0.25in (63.1x6.4mm)	GSA-219
Cutting Sample Ring, 2.5in (63.5mm) I.D.	HMA-90E
2.8 Filter Paper	HMA773
Digital Pore Pressure Gauge, psi	HMA-521
Digital Pore Pressure Gauge, kPa	HMA-521F

HM-562 shown with MA-333

EXPANSION INDEX CONSOLIDOMETER
ASTM D4829

The Expansion Index test is a simple and effective method for predicting swelling potential of compacted soils. A soil specimen is moisture conditioned to 50% saturation and compacted into a 4in (102mm) diameter mold. After a confining load is applied, the specimen is immersed in water and volumetric swell is recorded for up to 24 hours. The Expansion Index (EI), is calculated from these measurements. A high EI value indicates a need to design structures and pavements for expansive soils.

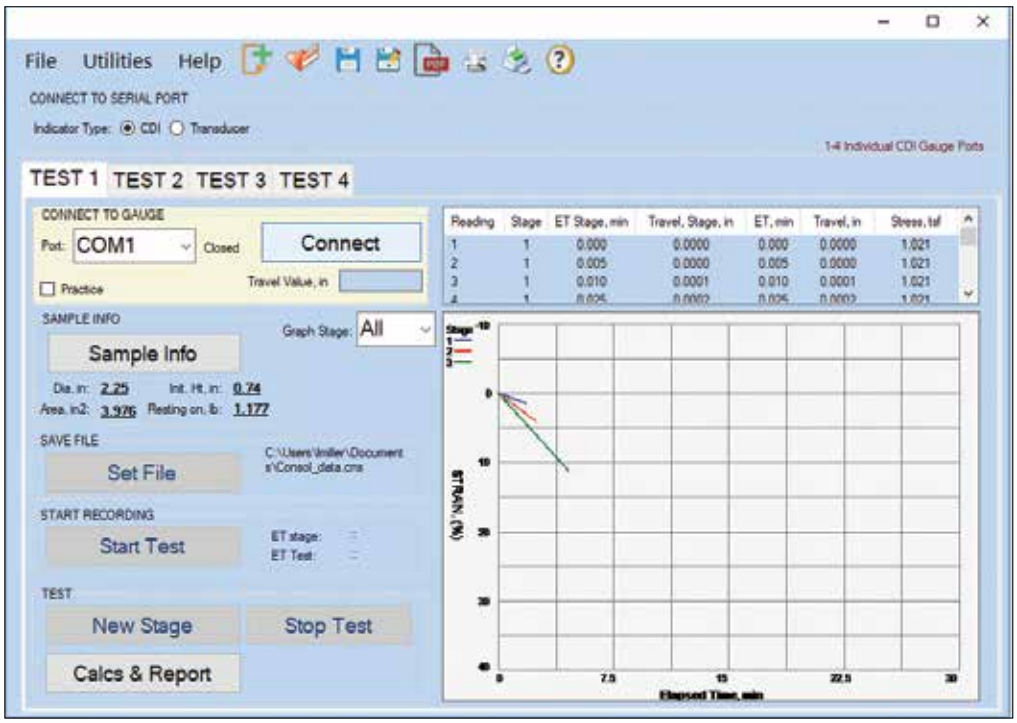
The unique, self-contained design does not require a separate consolidometer loading device to mount, load and saturate the specimen for testing. After compaction into the 4x1in (101.6x25.4mm) IDxH stainless steel ring, the specimen is placed in the HM-562 Consolidometer with a closely fitting, air-dry porous stone at each end and loaded with the stainless steel weight. After consolidating for ten minutes, the assembly is immersed in distilled water to initiate the test.

All immersed parts are either stainless steel or anodized aluminum for durability and corrosion resistance. Included are an anodized aluminum base and collar with stainless steel hold-down rods, stainless steel specimen ring, 12.6lb (5.7kg) loading weight and porous stones. MA-363 0.6inx0.0001in digital dial or MA-333 0.5in range x 0.0001in resolution mechanical dial indicator is required for the test purchased separately. Additional porous stones, stainless steel specimen rings and loading weights can be purchased for more efficient sample preparation. **Product Dimensions:** 6x11in (152x279mm), dia.xH.

Expansion Index Consolidometer	
Expansion Index Consolidometer	HM-562
Accessories	
0.5x0.0001in Dial Indicator	MA-333
Digital Dial Indicator, 0.6inx0.0001in	MA-363
Porous Stone, 3.97x0.5in dia.xH	GSA-331A
Stainless Steel Specimen Ring	HMA-665
Stainless Steel Loading Weight	HMA-667

HM-418 Two Channel Digital Readout

VIDEO ONLINE



HMA-608 Screen Shot

Typical Consolidation Test Set-up

NEW

technote

Free fully functional trial version available for download from www.globalgilson.com

CONSOLIDATION DATA ACQUISITION SOFTWARE

ASTM D2435, D4546, AASHTO T 216

- **Displays real-time graph during each consolidation stage**
- **Allows user to recall previous stages and graph all stages at test completion**
- **Automatically saves final reports to computer, network, or cloud**
- **Calculations and reports meet ASTM and AASHTO**
- **Optimized for use with desktop, laptop or tablet devices**

Gilson's Consolidation Data Acquisition Software automatically records the rate of consolidation during incremental loading of soil samples. This intuitive software utilizes clear data entry fields and testing prompts to reduce user error and increase repeatability.

Consolidation Software runs on computers with Windows XP or newer operating systems and is designed for convenient use on tablets and laptops. Large popup keyboards can be enabled for touchscreen computers or disabled when a PC with mouse and keyboard are used. Testing agency information, company logo and equipment information can also be entered into the program settings to be included on final testing reports.

Real-time graphing and calculations are performed throughout the test procedure and saved automatically at test completion in accordance with ASTM and AASHTO specifications. The testing agency information, company logo, sample data, final test results and corresponding graph are included in the final testing report. Test data and sample information can be exported to a spreadsheet application or converted into a PDF document.

Consolidation Data Acquisition Software requires a HM-418 Two-Channel or HM-419 Four-Channel Data Readout equipped with either a HM-739 1.0in (25.4mm) Linear Variable Displacement Transducer (LVDT) or MA-363 0.6in x0.0001in Digital Dial Indicator. The MAA-81 USB Cable is required when using the MA-363. All components and sets are purchased separately.

Consolidation Software is available as a fully operational free download from our website for a 30-day trial. A USB security key and licensing information to unlock the software for permanent operation will be sent upon purchase. Visit globalgilson.com to view our video for complete details of ease of use, intuitive operation and features of this new software.

Consolidation Data Acquisition Software	
Consolidation Data Acquisition Software	HMA-608
Accessories	
Two-Channel Data Readout	HM-418
Four-Channel Data Readout	HM-419
1in (25.4mm) Linear Variable Displacement Transducer	HM-739
Digital Dial Indicator, 0.6 x 0.0001in (Range x Resolution)	MA-363[1]
USB Cable for Digital Dial Indicators	MAA-81

[1]MAA-81 cable required to transfer data to computer.

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VIDEO ONLINE

HM-354 shown with HMA-83E and MA-363

Manufactured in cooperation with Karol•Warner

HM-739

MA-333

MA-363

CONSOLIDATION LOAD FRAMES

ASTM D2435, D4546; AASHTO T 216

One-dimensional consolidation testing of soils provides information for geotechnical engineers to calculate expected settlement of structures and pavements. Karol-Warner's exclusive CONBEL™ Consolidation Frames with pneumatic loading meet the most stringent demands of soil testing labs.

Load Frames are available in three different load capacities. All instantaneously apply and maintain loads for precision consolidation testing and feature low-load functionality for precision application of small confining loads. Loads are applied pneumatically and maintained by a precision pressure regulator. Small cabinet footprint saves valuable bench space. These self-contained devices display applied loads through digital displays and use precision pressure regulators and pressure transducers with a linearity of ±0.1%.

The 1in (25.4mm) thick aluminum platforms have adjustable centering pads and are designed to hold any consolidation ring up to 7.25in (184mm) diameter. Platform clearance is 8.25x7.75in (210x197mm), WxH. Stainless steel vertical rods support the cross-head and dial gauge. Sturdy, enamel-coated steel cabinets protect the unit. One HMA-81 Loading Ball is included with each load frame. Fixed or floating-ring consolidometers and a dial indicator are required and purchased separately. An air compressor is required for operation and must be supplied by the user. HMA-608 Consolidation Data Acquisition Software is purchased separately and can be used when the Consolidation Load Frame is equipped with either a HM-739 1.0in (25.4mm) Linear Variable Displacement Transducer (LVDT) or MA-363 0.6inx0.0001in Digital Dial Indicator. This unique software records specimen and real-time test data, calculates results and prepares reports following ASTM and AASHTO requirements. **Product Dimensions:** 12x14.5x21in (305x368x533mm), WxDxH.

HM-356 Consolidation Load Frame has capacity of 16tsf (1,532kPa) and requires a minimum of 62psi (4.3bar) of compressed air.

HM-354 Consolidation Load Frame has capacity of 32tsf (3,064.3kPa) and requires a minimum of 123psi (8.5bar) of compressed air.

HM-355 Consolidation Load Frame has capacity of 64tsf (6,128.7kPa) and requires a minimum of 188psi (13bar) of compressed air.

Consolidation Load Frames			
Model	Capacity	Required Air	Electrical
HM-356	16tsf	62psi (4.3bar)	110V/60Hz
HM-356F	16tsf	62psi (4.3bar)	220V/50Hz
HM-354	32tsf	123psi (8.5bar)	110V/60Hz
HM-354F	32tsf	123psi (8.5bar)	220V/50Hz
HM-355	64tsf	188psi (13bar)	110V/60Hz
HM-355F	64tsf	188psi (13bar)	230V/50Hz

Accessories	
Dial Indicator, 0.5in x 0.0001in	MA-333
Digital Dial Indicator, 0.6in (15.25mm) x 0.0001in (0.00254mm)	MA-363
Linear Variable Displacement Transducer, 1in (2.54mm)	HM-739
Two Channel Digital Readouts	HMA-418
Four Channel Digital Readouts	HMA-419
USB Cable for Digital Dial Indicators	MAA-81
Consolidation Data Acquisition Software	HMA-608

Manufactured in cooperation with Karol•Warner

HM-353

MA-363

MA-333

HMA-725

HMA-727

HMA-89

DEAD-WEIGHT CONSOLIDATION LOAD FRAME

ASTM D2435, D4546; AASHTO T 216

The Dead-Weight Consolidation Load Frame from Karol-Warner is a compact table top unit with 48tsf (4597kPa) capacity for application of loads in stress-controlled consolidation testing of soil specimens. Its lever loaded design is simple and efficient to use and the advanced design allows instantaneous loading with minimal impact. A counterbalanced beam assembly can be used at 9:1, 10:1 or 11:1 beam ratios for wider selection of loads with weight sets. Locating pins on the top platform precisely center the consolidometer for loading. The loading platform has vertical x horizontal clearance of 5.25x6.38in (133x162mm) and accepts consolidometers for specimen sizes up to 3in (76.2mm).

The load frame is powder-coated aluminum and the loading table is made from rugged anodized aluminum plate for corrosion resistance in harsh laboratory environments. Beam support rod and vertical rods are made from stainless steel. Weight sets are purchased separately in pound or kilogram versions. The pound weight set is configured for convenient loading in tons/ft² (tsf) for a 2.5in (63.5mm) specimen when a 10:1 beam ratio is used. Consolidometers and analog or digital dial indicators are purchased separately. Order HMA-89 Load Frame Stand if a free-standing unit is desired. **Product Dimensions:** 8x32x20in (203x812x508mm), WxDxH.

Dead-Weight Consolidation Load Frame	
Dead-Weight Consolidation Load Frame	HM-353
Accessories	
Load Frame Stand	HMA-89
Dial Indicator, 0.5in x 0.0001in	MA-333
Digital Dial Indicator, 0.6in x 0.0001in	MA-363
USB Cable for Digital Dial Indicators	MAA-81
1.0in (2.54mm) Linear Variable Displacement Transducer	HM-739
Two-Channel Digital Readout	HM-418
Four-Channel Digital Readout	HM-419
Consolidation Data Acquisition Software	HMA-608

Kilogram Weight Sets

Model	Total Mass	Total Load at 10:1 Beam Ratio	Included Weights		
			1kg	4kg	8kg
HMA-730	32kg	320kg	4	3	2
HMA-725	64kg	640kg	4	5	5
HMA-731	88kg	880kg	4	5	8

Pound Weight Sets

Model	Total Mass	Total Load at 10:1 Beam Ratio[1]	Included Weights					
			0.852lb (1/8tsf)	1.704lb (1/4tsf)	3.409lb (1/2tsf)	6.818lb (1tsf)	13.635lb (2tsf)	27.270lb (4tsf)
HMA-727	54.5lb	545lbf (8tsf)	2	1	1	1	1	1
HMA-732	109.1lb	1,091lbf (16tsf)	2	1	1	1	1	3
HMA-729	218.2lb	2,182lbf (32tsf)	2	1	1	1	1	7

[1]tsf values indicate force applied to a 2.50in diameter specimen using a 10:1 beam ratio.

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HMA-83E

HMA-84E

HMA-90E

HMA-88E

HMA-83E components

HMA-84E components

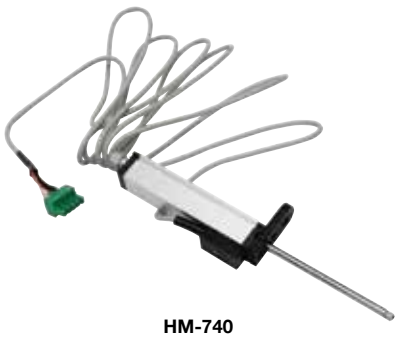
Consolidometers

Description	Consolidometer	Cutting Sample Rings	Calibration Disc	Top Porous Stone	Bottom Porous Stone
Fixed-Ring Consolidometers by Karol Warner load the specimen from the top with the base of the sample ring fixed in place. An acrylic inundation ring is attached to a stainless steel base. Stainless steel sample rings have built-in cutting edges for efficient sample preparation. Cutting rings are 1in (25.4mm) high, except 50mm and 2in diameter rings which are 0.75in (19mm) in height. Clamping rings are fitted with lifting knobs for easy removal after the test. Cutting sample ring, loading pad, attached acrylic inundation ring, top and bottom porous stones and load-bearing ball are included. Components and accessories are also available separately. These consolidometers fit Karol Warner consolidation load frames as well as most other manufacturer's units.					
50.0mm (1.969in)	HMA-83A	HMA-90A	HMA-88A	GSA-207	GSA-230
2.0in (50.8mm)	HMA-83B	HMA-90B	HMA-88B	GSA-210	GSA-230
60.0mm (2.36in)	HMA-83C	HMA-90C	HMA-88C	GSA-212	GSA-230
2.42in (61.5mm)	HMA-83D	HMA-90D	HMA-88D	GSA-216	GSA-230
2.5in (63.5mm)	HMA-83E	HMA-90E	HMA-88E	GSA-219	GSA-230
70.0mm (2.756in)	HMA-83F	HMA-90F	HMA-88F	GSA-222	GSA-230
75.0mm (2.95in)	HMA-83G	HMA-90G	HMA-88G	GSA-226	GSA-230
3.0in (76.2mm)	HMA-83H	HMA-90H	HMA-88H	GSA-228	GSA-230
100.0mm (3.94in)	HMA-83L[1]	HMA-90L	HMA-88L	GSA-231	GSA-231
4.0in (101.6mm)	HMA-83J[1]	HMA-90J	HMA-88J	GSA-232	GSA-232
Floating-Ring Consolidometers by Karol Warner transfer force to the specimen through both the top and bottom. The sample ring is not attached to the base, but supported by the friction of the specimen. Consolidometers have a stainless steel base with attached acrylic see-through inundation ring. The units include a stainless steel sample ring with cutting edge, load pad, load bearing ball and top and bottom porous stones. Models are designed to fit most manufacturer's testing units.					
50.0mm (1.97in)	HMA-84A	HMA-90A	HMA-88A	GSA-207	GSA-207
2.0in (50.8mm)	HMA-84B	HMA-90B	HMA-88B	GSA-210	GSA-210
2.42in (61.47mm)	HMA-84D	HMA-90D	HMA-88D	GSA-216	GSA-216
2.50in (63.5mm)	HMA-84E	HMA-90E	HMA-88E	GSA-219	GSA-219
70.0mm (2.76in)	HMA-84F	HMA-90F	HMA-88F	GSA-222	GSA-222

[1]100.0mm and 4.0in Consolidometers are compatible only with HM-354, HM-355 and HM-356 Consolidation Load Frames

HM-416

HM-430D



HM-740

HM-418

HM-419

Load and Displacement Indicators

Description	Model
Load and Displacement Readout Kits include HM-418 Two-Channel Data Readout, Load Cell and Linear Variable Displacement Transducer. HM-418 transfers load and displacement data via the mini USB port to common spreadsheet applications with included GetData 5 software. Data can be used to create printable graphs. GetData 5 software is compatible with Windows® operating systems. The Readout shows real-time data on the large, bright illuminated (vacuum fluorescent) display. The front panel keys allow instant taring of either channel peak reading on the selected channel and entry of calibration factors during set up.	
1,000lbf (4.5kn) Load, 2in (50.8mm)	HM-413
2,000lbf (9kn) Load, 2in (50.8mm)	HM-414
5,000lbf (22kn) Load, 2in (50.8mm)	HM-415
10,000lbf (44.5kn) Load, 2in (50.8mm)	HM-416
20,000lbf (88.96kn) Load, 2in (50.8mm)	HM-417
Load Cells are machined of stainless or nickel alloy plated steel and measure compression or tension forces. Loads are measured to an accuracy of ±1.0% of full scale. The "S" type load cells are available in seven different capacities ranging from 500–20,000 lbf. Load cell dimensions range from 2.5x2.0in–7x5in (63.5x51mm–178x127mm), WxH depending on capacity of the load cell. Threaded mounting holes on top and bottom of the load cells vary in size; 500–2,000lbf = 1/2inx20tpi, 5,000–10,000lbf = 3/4inx16tpi, 20,000lbf = 1.25inx12tpi.	
500lbf (2kn)	HM-421D
1,000lbf (4.5kn)	HM-422D
1,500lbf (6.7kn)	HM-424D
2,000lbf (9kn)	HM-425D
5,000lbf (22kn)	HM-428D
10,000lbf (44.5kn)	HM-430D
20,000lbf (89kn)	HM-438D
Linear Variable Displacement Transducers are available in two different ranges, 1in and 2in. The linear variable displacement transducers are constructed using anodized aluminum housing, stainless steel actuating shaft with anti-rotation device and includes the industry proven double bearing system on both the actuator shaft and spring to reduce side load errors. Each transducer has a repeatability of 0.002mm and includes two fixing clamps, screws and gauging head with hardened ball point.	
1in (25.4mm) LVDT	HM-739
2in (50.8mm) LVDT	HM-740
Digital Readouts are available with two or four channels. Both units are self-contained with large real-time, illuminated display and may be paired with load cells and digital transducers listed above. A separate analog to digital (A/D) converter for each channel produces simultaneous readings without time-delay errors. The included GetData 5 software exports data via mini USB port to Excel® or similar programs for review, analysis and plotting of graphs. Compatible with Windows® XP operating systems.	
Two-Channel Digital Readout	HM-418
Four-Channel Digital Readout	HM-419
Readout Mounting Bracket allows convenient positioning of Gilson Two-Channel and Four-Channel digital readouts on laboratory load frames. The brackets fit load frames from Gilson and other manufacturers with 1.25in (31.8mm) diameter vertical load rods.	HMA-668
Data Acquisition Software records load and displacement values and displays real-time stress-strain or load-displacement data for a number of soils and asphalt laboratory tests. Separate programs for California bearing ratio, triaxial compression, unconfined compressive strength, soil cement, consolidation, direct/residual shear and Marshall stability follow ASTM/AASHTO requirements for collection and calculation of results. The software is optimized for use with Gilson digital readouts and load and displacement sensors on Windows desktop, laptop or touchscreen devices. Company information, logo and equipment information can be entered for inclusion in final reports. Test data can be exported to common spreadsheet applications. Installation files and security key are provided on two USB flash drives. Software can be installed on multiple devices for users to open, edit and print PDF reports, but the security key must be connected to the USB port for permanent operation.	
Consolidation	HMA-608
California Bearing Ratio	HMA-609
Direct/Residual Shear	HMA-610
Unconfined Compression	HMA-611
Soil Cement	HMA-612
Triaxial Shear	HMA-613
Marshall Data	MSA-134

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MA-334

MA-366

MAA-81

HMA-338

HM-430

Load and Displacement Indicators

Description	Range:	Resolution:	Model
Digital Dial Indicators are in/mm switchable and include a "hold" feature which allows the user to lock peak readings on the digital display. All are supplied with batteries designed to provide 250 hours of use. Order MAA-81 cable for digital output from dial indicator to allow data to be uploaded to computer. Order Extended Contact Points and Magnetic Gauge Holder separately. **Product Dimensions:** 2.5x2.25x5in (64x57x127mm), dia.xDxH.			
	0.25in (6.35mm)	0.0001in (0.0025mm)	MA-360
	0.25in (6.35mm)	0.00005in (0.00125mm)	MA-361
	0.6in (15.25mm)	0.0001in (0.0025mm)	MA-363
	0.6in (15.25mm)	0.00005in (0.00125mm	MA-364
	1.0in (25.4mm)	0.0001in (0.0025mm)	MA-366
	1.0in (25.4mm)	0.00005in (0.00125mm	MA-367
Single-Indicator USB Cable collects and routes output data from one Digital Dial Indicator and routes to a computer when used with Gilson software. Logging intervals and measuring units are selectable and .csv files can be converted to Excel® spread sheets for later analysis and reporting.			MAA-81
Mechanical Dial Indicators have 2.25in diameter, continuous clockwise dial with one hundred divisions per revolution and a revolution counter. Low friction mechanisms react instantly with contact pressure. Backs rotate 90° to adapt to horizontal and vertical mounting. "B" models feature brake to hold maximum position and are recommended for most applications. "C" Model gauge includes certificate of calibration. Order Extended Contact Points and Magnetic Gauge Holder separately. **Product Dimensions:** 2.25x2x5.5in (57x51x140mm), dia.xDxH.			
	0.2in	0.0001in	MA-330
	0.2in	0.0001in	MA-330B
	1.0in	0.001in	MA-334
	1.0in	0.001in	MA-334C
	1.0in	0.001in	MA-334B
	25mm	0.01mm	MA-346
	25mm	0.01mm	MA-346B
Gauge Holder and Contact Points uses a powerful Alnico magnetic base for secure fastening of dial indicators to round and flat surfaces. Thumb screw allows easy zeroing of indicators once positioned. Extended contact points adapt dial indicators to various configurations.			
	Magnetic Gauge Holder		HMA-338
	0.5in (12.7mm) Ext. Contact Points		MAA-70
	1in (25.4mm) Ext. Contact Points		MAA-72
	1.5in (35mm) Ext. Contact Points		MAA-74
	2in (50.8mm) Ext. Contact Points		MAA-76
Load Rings are machined from high strength aluminum alloy plate. Rings are designed for compression measurement only and allow for repeatable elastic deformation under varying loads. Loads are measured with an accuracy of ±0.5% using the included mechanical dial indicator (0.0001in resolution). Measurements are plotted on a calibration chart prior to shipment. The load rings are available in eight different capacities varying in capacity from 250–10,000lbf. Ring dimensions are 6.25in high x 1.0–2.0in thick depending on capacity of the ring. Mounting holes are 1/2in–20 threads per inch.			
	250lbf (1kN)		HM-420
	500lbf (2kN)		HM-421
	1,000lbf (4.5kN)		HM-422
	1,500lbf (6.7kN)		HM-424
	2,000lbf (9kN)		HM-425
	5,000lbf (22kN)		HM-427
	6,000lbf (26kN)		HM-428
	10,000lbf (44.5kN)		HM-430

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HM-536

HM-534

CALCIUM CARBONATE CONTENT CHAMBER
ASTM D4373

Calcium carbonate ($CaCO_3$) content of soils can be determined rapidly with this simple, portable test. The test is often used as an index to the presence and quantity of calcium carbonate in marine soil specimens, expressed as the percent calcite equivalent.

The method involves treating a one gram soil specimen with hydrochloric acid (HCl) in an enclosed reactor vessel. Carbon dioxide gas is generated from the reaction between the acid and carbonates in the specimen when the chamber is tilted and agitated and the resulting pressure is measured. The 10 psi (69kPa) Bourdon-tube pressure gauge is pre-calibrated with reagent grade calcium carbonate. The 2.5x5.5in (63.5x140mm) IDxH clear acrylic chamber assembly is sealed to the anodized aluminum end caps with o-rings and secured by threaded rods and knobs. It is supplied with the pressure gauge, bleed valve and a 20ml cup with handle. **Product Dimensions:** 4x11in (102x279mm), WxH.

Calcium Carbonate Content Chamber	
Calcium Carbonate Content Chamber	HM-536

PIN HOLE DISPERSION DEVICE
ASTM D4647

The pinhole test identifies the dispersive characteristics of clay soils used in construction of earth embankments and dams by modeling the action of flowing water along a crack in a soil mass. Failures of earthen structures have been attributed to colloidal erosion along cracks or other flow channels formed in dispersive clays. This test evaluates clay soils by directing water through a small hole drilled through the compacted specimen.

An evaluation of effluent cloudiness and final size of the pinhole is used to qualitatively classify soils into categories of dispersiveness. Additional computations of water flow rate may also be required. Comparison of results with other tests indicates that the pinhole test has the best correlation with the actual erosion characteristics of clay soils.

The stainless steel mold is held to the base with a unique clamping ring while the specimen is compacted. Chamber and end-caps, screens, base stand, a constant-head reservoir, tubing, pipet and a tool for drilling the pinhole are included. The end cap has a pilot hole for drilling the .040in (1.0 mm) hole through the sample. All aluminum parts are anodized for corrosion resistance. **Product Dimensions:** 3.5x3x5.75in (89x76x146mm), WxDxH (cell); 6.5x9.5x47.5in (165x241x1,207mm), WxDxH (funnel w/stand).

Pin Hole Dispersion Device	
Pin Hole Dispersion Device	HM-534

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HM-550 HM-551

HMA-135

HMA-135A

SOIL COMPACTION HAMMERS

ASTM D558, D559, D560, D698, D1557, D1558; AASHTO T 99, T 134, T 135, T 136, T 180

These sliding drop hammers are used to compact soil samples for moisture-density relationship (Proctor) testing. Gilson Hammers feature 100% stainless steel construction for maximum corrosion resistance and long service life. Both models have a 2in (51mm) circular face. Hammer masses are enclosed in guide sleeves with vent holes to ensure unrestricted free-fall. Knurled, hexagonal top allows a secure, comfortable grip and prevents rolling during storage.

HM-550 Standard Soil Compaction Hammer has 5.5lb (2.5kg) mass with 12in (305mm) drop. **Product Dimensions:** 21x2.2in (533x55mm), Lxdia.

HM-551 Modified Soil Compaction Hammer has 10lb (4.5kg) mass and 18in (457mm) drop. **Product Dimensions:** 31x2.2in (787x55mm), Lxdia.

Inquire for old-style U.S. Army Corps of Engineers compaction hammers.

Manual Compaction Hammers	
Standard Soil Compaction Hammer, 5.5lb	HM-550
Modified Soil Compaction Hammer, 10.0lb	HM-551

STAINLESS STEEL STRAIGHTEDGES

ASTM C173, C185, C231, D558, D698, D1557; AASHTO T 99, T 137, T 180, T 326

Straight edges from Gilson are quality 304 stainless steel and used in many ASTM and AASHTO soil test methods for trimming and leveling specimens. Stainless steel material with electro-polished finish will not corrode and the precision-ground beveled edge remains straight and true after many uses. Unique HMA-135A model features laser engraved graduations at 0.5in intervals from 0 to 6in (0 to 152.4mm) for convenient measurement of approximate lift depths, mold dimensions and other references. Graduations are marked with inch and millimeter equivalents. Standard HM-135 model has no markings. **Product Dimensions:** 11.8x1.6x0.125in (300x40x3.2mm), LxWxD.

Stainless Steel Straightedges	
Stainless Steel Straightedge	HMA-135
Stainless Steel Straightedge with Graduations	HMA-135A

technote

Also available... See the complete line of Gilson soil density and bearing ratio molds for Proctor, CBR and LBR testing. Available as solid or split mold assemblies, or as individual components.

VIDEO ONLINE

HM-530

HMA-410

HMA-110

HMA-120

HMA-111

MECHANICAL SOIL COMPACTOR

ASTM D558, D559, D560, D698, D1557, D1558; AASHTO T 99, T 134, T 135, T 136, T 180, T 220; CTM 216

HM-530 Mechanical Soil Compactor automatically counts the number of hammer blows and shuts off when a preset number is reached. The Mechanical Soil Compactor brings big improvements in functional accuracy, ease of use, reliability and safe operation to your laboratory. The HM-530 Compactor eliminates the repetitive operation of manual compaction hammers. Hammer blows are accurately counted and evenly distributed for each soil lift placed in the compaction mold. Automatic indexing of the turntable positions the mold for each new hammer drop. The simple and efficient chain-drive lift system employs a compensating mechanism to adjust hammer drop for soil thickness in the mold during compaction. Hammer mass is concentrated near the bottom for better transfer of energy to the soil specimen. This unit is a safe and efficient method for processing moisture-density samples, assuring uniform compaction and accurate, repeatable test results.

The Compactor can be used with the 4in (102mm) ID molds, 5.5lb (2.5kg) weight with 12in (305mm) drop. The HM-530 also accomodates the 6in (152mm) ID molds using either the standard 5.5lb (2.5kg) weight with 12in (305mm) drop or the modified 10lb (4.5kg) weight with 18in (457mm) drop. The standard 2in (51mm) round hammer can be replaced by one of the same 3.14in^2 area, but with a pie-shaped face to cover the entire sample surface of 6in molds. The free-fall hammer adjusts easily from 5.5–10lb by addition of a surcharge weight.

The HM-530 includes a 2in (51mm) round, 5.5lb (2.5kg) hammer, a pie-faced hammer for use with 6in molds and a surcharge weight to increase total hammer weight to 10lbs (4.5kg). 4in (102mm) and 6in (152mm) standard compaction molds and a digital automatic counter with start/stop switching are also included. Electronic safety interlock automatically shuts down operation if the door is opened. **Product Dimensions:** 12.5x29.5x56in (318x749x1,422mm), WxDxH.

also available

Gilson's BRA-60 and BRA-59 CBR and LBR Molds are compatible with our HM-530 Mechanical Soil Compactor.

HMA-120 Calibration Kit is ordered separately to comply with ASTM D2168 Method B requirements and includes lead deformation apparatus, a micrometer and fifty lead cylinders. HMA-121 replacement Lead Cylinders are available in packages of one hundred.

HMA-410 Mold Safety Cage is ordered separately to fit new or existing machines. The cage offers additional protection from the rotating mold assembly during operation. Order HMA-411 to specify factory installation of the cage on a new compactor.

Mechanical Soil Compactor	
Mechanical Soil Compactor, 115V/60Hz	HM-530
230V/50Hz	HM-530F
Accessories	
Compaction Mold, 4in (102mm) Std., 1/30ft^3	HMA-110
Compaction Mold, 4in (102mm) Split, 1/30ft^3	HMA-111
Compaction Mold, 6in (152mm) Std., 1/13ft^3	HMA-116
Compaction Mold, 6in (152mm) Split, 1/13ft^3	HMA-117
CBR Mold	BRA-60
LBR Mold	BRA-59
Stainless Steel Straightedge	HMA-135
Stainless Steel Straightedge, Graduated	HMA-135A
Calibration Kit	HMA-120
Lead Calibration Cylinders, pkg.100	HMA-121
Mold Safety Cage	HMA-410
Mold Safety Cage, Factory Installed	HMA-411

SOIL DENSITY AND BEARING RATIO MOLDS

VIDEO ONLINE

Gilson's rugged steel soil molds comply with numerous specifications and are plated for maximum rust resistance. The molds are available as complete assemblies with base, mold and collar, or as separate components.

HMA-110

HMA-111

HMA-116

BRA-60

BRA-59

MSA-120

MSA-121

Soil Density and Bearing Ratio Molds

Description	Model	Mold Size in (mm) I.D.xH	ASTM	AASHTO/ Other
Soil Density Molds are used for various methods of soil moisture-density relationship (Proctor) tests. Split molds partially separate longitudinally for easier sample removal. Solid molds require use of sample ejectors. Compaction molds are 4.584in (116.4mm) in height with detachable extension collar and base and are clear-zinc plated for rust resistance. 4in diameter Molds have volume of 1/30ft³ (941cm³) and 6in diameter molds are 1/13ft³ (2,124cm³) volume. Gilson Soil Density Molds fit our HM-530 Mechanical Soil Compactors and can also be used with manual soil compaction hammers.			D558 D559 D560 D698 D1557 D1558	T 99 T 134 T 135 T 136 T 180
4in Solid Soil Density Mold, Complete	HMA-110			
4in Split Soil Density Mold, Complete	HMA-111			
Mold Only, 4in Solid	HMA-110M			
Mold Only, 4in Split	HMA-111M			
Collar Only for 4in Molds	HMA-110C	4x4.584		
Base Only for 4in Molds	HMA-110B	(116.4x102)		
6in Solid Soil Density Mold, Complete	HMA-116			
6in Split Soil Density Mold, Complete	HMA-117			
Mold Only, 6in Solid	HMA-116M			
Mold Only, 6in Split	HMA-117M			
Collar Only for 6in Molds	HMA-116C	6x4.584		
Base Only for 6in Molds	HMA-116B	(116.4x152)		
California Bearing Ratio (CBR) Molds are 6x7in (152x178mm) clear-zinc plated steel molds with 2in (51mm) collar and a base perforated with twenty-eight 0.0625in (1.59mm) holes. See separate listing for a complete selection of CBR equipment. CBR Molds are designed to fit HM-530 Mechanical Soil Compactors.		7x6 (152x178)	D1883	T 193
California Bearing Ratio Mold, Complete	BRA-60			
CBR Mold Only	BRA-60M			
Collar Only for 6in Molds	BRA-60C			
Base Only for CBR Molds	BRA-60B			
Limerock Bearing Ratio (LBR) Molds for Florida FM 5-515 test are 6x6in (152x152mm) clear-zinc plated steel molds with 2.375in (60mm) collar. Base is perforated with twenty-eight 0.0625in (1.59mm) holes. See separate listing for a complete selection of LBR equipment. LBR Molds are designed to fit HM-530 Mechanical Soil Compactors.		6x6 (152x152)		T 220/ Florida FM 5-515
Limerock Bearing Ratio Mold, Complete	BRA-59			
LBR Mold Only	BRA-59M			
Collar Only for 6in Molds	BRA-60C			
Base Only for LBR Molds	BRA-59B			
Circular Paper Discs by Gilson are strong and tear-resistant with smooth edges. Choose between the MSA-120 designed for both 4in and 100mm or the MSA-121 for 6in and 150mm Marshall and Gyratory Molds. The Discs are 0.007-0.008in thick and made of 100lb paper stock.			D5581 D6925 D6926	T 245 T 312
Paper Discs, 4in/100mm pkg. 1,000	MSA-120	3.875in dia.		
Paper Discs, 6in/150mm pkg. 500	MSA-121	5.875in dia.		

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HM-560

HM-514

HM-516

PROCTOR PENETROMETER SET
ASTM D1558

The Proctor Penetrometer Set measures penetration resistance of fine grained soils. The penetrometer consists of a spring dynamometer with a scale on the stem of the handle graduated from 10–130lbf (45–580N) in increments of 2lbf (9N). A sliding ring on the stem gives shear strength obtained in the test. Model HM-560 basic set includes interchangeable threaded needles with areas in square inches (square centimeters); 1 (6.45), 3/4 (4.84), 1/2 (3.23), 1/3 (2.15), 1/5 (1.29), 1/10 (0.65), 1/20 (0.32), 1/30 (0.22) and 1/40 (0.16). Replacement needles are available. Set comes in attractive foam-lined wooden box with carrying handle. **Product Dimensions:** 24x9x3in (610x229x76mm), WxDxH.

Proctor Penetrometer Set	
Proctor Penetrometer Set	HM-560

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SAMPLE EJECTORS
ASTM D5581, D1552, D6926; AASHTO T 245, R 68

Gilson Sample Ejectors quickly and easily extrude compacted soil or asphalt specimens from 4in and 6in (102mm and 152mm) soil-density or Marshall molds. Adapter ring accessories allow soil samples from short lengths of thin-walled (Shelby) tubes of 2, 2.5, or 3in (51, 64, or 76mm) diameter to also be extruded.

A 12,000lbf (53.4kN) capacity hydraulic jack with 5in (127mm) stroke is mounted in a robust three-column reaction frame constructed of plated steel. Molds are positioned vertically over the piston on a load platform that prevents the emptied mold from falling back over the jack. Daylight opening of the frame is adjustable for mold lengths up to 11.75in (279mm). Specimens longer than 5in are extracted by repositioning the Adapter Ring after maximum piston travel. The spring-loaded piston automatically returns to the start position when the stainless steel knob for the release valve is opened. Adapter Rings are quickly changed with just two wing-nuts and Extruder Discs rest in place on top of the piston. Accessories for smaller-diameter specimens will fit either model. **Product Dimensions:** 9.5x10x24in (241x254x610mm), WxDxH.

HM-514 Sample Ejector is equipped to handle 4in (102mm) soil compaction or Marshall asphalt molds.

HM-516 Combination Sample Ejector extrudes either 4in (102mm) or 6in (152mm) soil or asphalt specimens.

Sample Ejectors	
Sample Ejector, 4in (102mm)	HM-514
Combination Sample Ejector, 4in & 6in (102mm & 152mm)	HM-516
Accessories	
Adapter Ring & Extruder Disc, 2in (51mm) dia.	HMA-219
Adapter Ring & Extruder Disc, 2.5in (64mm) dia.	HMA-220
Adapter Ring & Extruder Disc, 3in (76mm) dia.	HMA-221

HM-375R

RELATIVE COMPACTION TEST SET
CTM 216

Relative Compaction Test Set is used for determination of the maximum wet density of soils and aggregates by the California impact method. Relative compaction is the ratio of in-place wet density to test maximum wet density of the same soil or aggregate. In-place wet density is determined in the field using sand volume apparatus.

A 10lb (4.54kg) tamper is dropped from 18in (457mm) to compact samples to about 10–12in (254–305mm) in a 36in (914mm) long, 2.875in (73mm) diameter split mold. The special steel mold has a removable base and three hinged clamps with quick-release knobs for easy sample removal. Also included in the set are a metal leveling piston and a piston handling rod. Density is easily determined after compaction, based on a reading from the graduated scale on the shaft of the tamper. HM-375R is designed for manual use only.

Relative Compaction Test Set	
Relative Compaction Test Set	HM-375R

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Call our technical support staff to find the right equipment for your application. 800.444.1508!

HM-315

HMA-60

HM-317

RELATIVE DENSITY APPARATUS
ASTM D4253, D4254

Apparatus determines relative density of granular soils which do not respond well to Proctor moisture-density tests. Maximum density is determined by placing granular soil in a 0.1 or 0.5ft^3 (2.83 or 14.2L) mold and densifying with a vibrating table and surcharge weight. Minimum index density is determined by loose placement in the molds using special pouring funnels, scoop, or shovel, depending on size of soil particles.

HM-315 Vibratory Table has a cushioned steel 30x30in (762x762mm) vibrating deck activated by electromagnetic vibrator with over 100lb (45.5kg) actuator. The table has 750lb (341kg) load capacity and requires 800 Watts, 12 amps at 230V. Table height is 21in (533mm). Vibration rate is 3,600VPM (3,000 at 50Hz) and amplitude adjusts in accordance with ASTM requirements. The solid state circuitry allows precise amplitude control even with fluctuating voltage supplies. **Product Dimensions:** 30x30x21in (762x762x533mm), WxDxH.

HM-317 and HM-318 Cylindrical Mold Sets with 0.1 and 0.5ft^3 (2.83 and 14.2L) capacities have attached carrying handles and guide brackets for the Gauge Set. They come complete with detachable guide sleeve with clamp assembly, surcharge base plate with removable handle and surcharge weight with handle. Mold included with HM-317 Set is 6in (152.4mm) ID x 6.112in (155.2mm) IH; surcharge weight plus base plate has 56.5 ±0.5lb (25.5 ±0.2kg) total weight. Larger mold with HM-318 Set is 11in (279.4mm) ID x 9.092in (230.9mm) IH with 190 ±2lb (86.2 ±0.9kg) total weight of base plate with surcharge weight.

HM-319 Gauge Set fits guide brackets of either Mold Set to measure distance from top of mold to top of base plate after densification (to compute volume change). Set includes a Dial Indicator, with 2in (50.8mm) travel and 0.001in (0.025mm) graduations and a special holder to fit molds. A metal 3x12x1/8in (76x305x3.2mm) calibration bar is also included.

HMA-60 Accessory Pouring Funnel Set is required for loose placement of 3/8in (9.5mm) and finer soil in HM-317 mold set. Set includes two 6in (152mm) diameter x 12in (305mm) long metal cylinders, each with funnel and 6in (152mm) long delivery spout attached to one end. Spouts are 1in (25.4mm) and 1/2in (12.7mm) in diameter.

Relative Density Apparatus	
Vibrating Table, 230V/60Hz	HM-315
230V/50Hz	HM-315F
Mold Set, 0.1ft^3 (3L)	HM-317
Mold Set, 0.5ft^3 (14L)	HM-318
Gauge Set, Complete	HM-319
Pouring Funnel Set	HMA-60

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HM-228

HM-229

SOIL CEMENT COMPACTION APPARATUS
ASTM D1632, D1633

Soil Cement Compaction Apparatus prepares soil cement specimens for compressive strength testing using ASTM D1632 Method B. A pre-weighed sample of soil-cement mixture is consolidated into the mold assembly, first using a Tamping Rod, then a Dropping-Weight Compactor until the required length dimension is achieved.

HM-228 Dropping-Weight Compactor uses a 15lb (6.8kg) falling weight on a 0.75in (19mm) shaft guide to strike the top piston of the mold set. The Compactor base features a locating pin, ensuring precise centering of the Test Mold Set. Drop height is controlled by a clip on the compactor shaft guide.

HM-229 Soil Cement Mold Set consists of a 2.8x9in (71x229mm) IDxH seamless steel mold, a 6in (152mm) mold extension collar, top and bottom pistons, a split spacer clip and two aluminum 0.062in (1.54mm) separating discs. Additional HMA-122 Molds are recommended for more efficient specimen preparation and curing.

HMA-125 Tamping Rod is required for initial consolidation and sold separately. Rod dimensions: 20x0.5in (508x12.7mm) Lxdia. HM-516 Gilson Sample Ejector and 2.5in adapter ring and extruder disc set is recommended for extraction of specimens from molds.

Soil Cement Compaction Apparatus	
Dropping-Weight Compactor	HM-228
Accessories	
Soil Cement Mold Set	HM-229
2.8x9in Mold only	HMA-122
2.8x9in Mold w/ 6in Extension Collar	HMA-123
Top & Bottom Piston Set	HMA-124
Tamping Rod, 20in x 0.5in	HMA-125
Sample Ejector	HM-516

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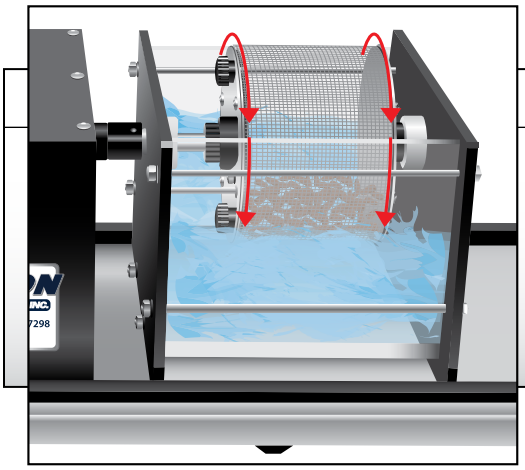

SLAKE DURABILITY INDEX

A pre-weighed sample is placed in a partially submerged wire mesh drum, tumbled for 10 minutes, then oven dried and weighed. Retained mass is calculated and recorded for each of two cycles.

SA-45

SAA-24

SA-80

SLAKE DURABILITY DEVICE
ASTM D4644

Slake durability is a simulated weathering test to determine durability resistance during wetting and drying cycles of shale and similar soft rocks used in embankments and other construction-related applications. Samples are alternately tumbled in mesh drums through a water medium and oven-dried for two cycles. The percent loss of mass is referred to as the slake durability index.

The SA-80 Slake durability apparatus consists of a base-mounted drive unit, two mesh drums and two water tank assemblies with quick release drive couplers. The 5.5x3.9in (140 dia.x100mm) drum rotate at a speed of 20 revolutions per minute and are constructed of corrosion-resistant stainless-steel mesh with 2mm openings and solid end plates. The 4ft (1,219mm) base of the unit can accommodate up to four tank/drum assemblies to allow additional samples to be tested simultaneously. Recommended options for increased sample testing capability include two additional SAA-30 water tank assemblies and two SAA-31 wire mesh drums. **Product Dimensions:** 48x14x9.25in (1,219x355x235mm), LxWxH.

Slake Durability Device	
Slake Durability Device, 115V/60Hz	SA-80
230V/50Hz	SA-80F
Accessories	
Water Tank Assembly with Drum	SAA-30
Wire Mesh Drums, qty. 2	SAA-31

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SOIL GRINDER

The Soil Grinder quickly prepares dry soil samples for Atterberg limits, particle-size analysis and other standard laboratory tests. It is an efficient method for reducing agglomerations of caked soil to individual grains and less labor intensive than manual mortar and pestle operation. The SA-45 Soil Grinder is designed to preserve the true grain size for accurate and repeatable test results. Most soil types are processed completely in less than 30 seconds per pint.

The hopper has a capacity of 1 pint (0.6L) and features a manually operated gate to control feed rate to the grinding chamber. Operation is simple, just load the hopper, start the grinder and use the gate to control material feed. A #10 (2.0mm) perforated stainless steel plate is included to retain oversize particles. #4 and #35 stainless steel perforated plates can be purchased separately.

Rugged stainless steel contact parts reduce sample contamination. The grinding unit is driven by a powerful and reliable 1/3hp direct drive motor and mounted on a sturdy painted steel tripod stand. A stainless steel lid covers the hopper during operation. **Product Dimensions:** 12x15x19in (305x381x483mm), WxDxH.

Soil Grinder	
Soil Grinder, 115V/50–60Hz	SA-45
220V/50–60Hz	SA-45F
Accessories	
#4 Perforated Plate	SAA-22
#10 Perforated Plate	SAA-23
#35 Perforated Plate	SAA-24

SA-60

SA-61

SA-62

SAA-10P

SAA-8

SA-65

ATTERBERG LIMITS
ASTM D4318; AASHTO T 89, T 90

Liquid Limit is the water content at which soil changes from liquid to plastic state. It is arbitrarily defined as that point where two halves of a soil sample flow together when jarred 25 times in a specified manner using a Liquid Limit machine.

Gilson offers motorized or hand-crank operated machines with automatic impact counter and a budget hand-crank model without counter. All models consist of a brass cup and carriage designed to control its drop exactly 1cm onto a hard rubber base. Height of drop is adjusted by a nut at the rear of the cup carriage using the gauge at one end of the plastic Casagrande Grooving Tool (SAA-10P) is included. Order separate SAA-8 Grooving Tool for testing to AASHTO T 89. The cup attaches to the carriage by a pin allowing easy removal for cleaning and inspection. All mechanical parts are machined from solid brass. Rubber feet isolate base from work surface. One SAA-10P included with all Liquid Limit Machines. Additional SAA-10 and SAA-10P Casagrande Metal Grooving Tools are available.

Motorized SA-60 with counter is most accurate with use of a special geared motor assuring proper operating speed of 1.9–2.1 drops per second. An on-off switch is provided. **Product Dimensions:** 12x7.5x6in (305x191x152mm), LxWxH. SA-61 is 6.5x6x5in (165x152x127mm), WxDxH; Hand operated SA-62 with counter is 7x6.5x5in (178x165x127mm), WxDxH.

Plastic Limit is defined as the water content at which a soil can no longer be deformed by hand rolling to 1/8in (3.2mm) diameter threads without crumbling. Main items needed for this test are SA-66 Glass Plate and SC-400 Aluminum Containers, both included in SA-65 Accessory Set, or available separately.

SA-65 Atterberg Limit Accessory Set provides items necessary to perform liquid and plastic limit tests in accordance with ASTM D4318, including MA-278 evaporating/mixing dish, SA-66 ground Glass Plate 12x12x3/8in (305x305x10mm) with seamed edges, 24 aluminum containers 2in dia. x 0.9in H (51x22mm) with snug-fitting lids, SC-77 wash pan, HMA-10 wooden-handled spatula with stainless steel blade 0.75in x4in (19x102mm), WxL and a HMA-24 250ml Polyethylene Squeeze Wash Bottle.

Atterberg Limits	
Liquid Limit Machine Motorized, with Counter, 115V/60Hz	SA-60
230V/50Hz	SA-60F
Liquid Limit Machine Hand Operated	SA-61
Liquid Limit Machine Hand Operated, with Counter	SA-62
Accessories	
Grooving Tool, AASHTO	SAA-8
Grooving Tool Metal, Casagrande ASTM w/gauge block	SAA-10
Grooving Tool Plastic, Casagrande ASTM, pkg. 10	SAA-10P
Brass Cup with Mounting Holes	SAA-11
Brass Cup with Holder	SAA-12
Liquid & Plastic Limits Accessory Set	SA-65
Glass Plate	SA-66

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SA-18

SA-19

SC-74

SAA-15

SA-56

PLASTIC LIMIT ROLLER
ASTM D4318; AASHTO T 90; TEXAS 105-E

Patented Plastic Limit Roller for soils is a unique time saving device designed to produce consistent results by an easily-repeatable manual technique.

Traditional methods call for repetitive rolling by hand between the palm or fingers and a glass plate while visually estimating the 1/8in (3.2mm) diameter stopping point. Results are highly dependent on technique and judgment of individual operators. The SA-18 Plastic Limit Roller device consists of top and bottom roller plates separated by 1/8in (3.2mm) side rails. Contact surfaces of the plates are covered with sheets of special adhesive-backed absorbent paper that adds no fiber to soil samples. Soil samples are rolled by moving the top plate over the fixed bottom plate. Soil thread diameters are reduced by back and forth action until the top plate contacts the 1/8in (3.2mm) side rails, preventing further thread size reduction.

SA-18 includes top plate with integral handle, bottom plate, 50-sheet pad of adhesive paper and instructions. The bottom 0.1875in (4.8mm) and top 0.375in (9.5mm) acrylic plates measure 8x4.5x1.25in (203x114x32mm), WxDxH.

Plastic Limit Roller	
Plastic Limit Roller	SA-18
Accessories	
Adhesive Paper, pad of 50 sheets	SAA-9
Adhesive Paper, case of 20 pads	SAA-9C

NEW! Ship Weight Index
The Estimated Ship Weight for every product is easy to find in the NEW Ship Weight Index!

SHRINKAGE LIMIT SET
ASTM D4943

The shrinkage limit of cohesive soils is defined as the water content at which further loss of moisture will not cause a decrease in volume. ASTM recommends this new method as an alternative to the original D427 test method, which was withdrawn due to its use of mercury for volume determinations. This procedure uses similar apparatus for preparation of a soil pat, but requires coating the pat in melted wax prior to immersion in water for mass determination.

Samples for shrinkage limit tests are usually taken from a larger sample prepared for liquid and plastic limit tests. A soil specimen with moisture content above the liquid limit is placed in the shrinkage dish and struck off with the straightedge. The sample is then oven dried. After coating in wax, volume of the soil pat is computed by weighing in water and noting the difference from its weight in air.

The SA-56 Shrinkage Limit Set includes a special Monel shrinkage dish, a 4.75x0.75in spatula used as a straightedge, fine thread to suspend the soil pat, a glass calibration plate and a tube of petroleum jelly, used when calibrating the dish. The SA-19 Wax Melting Pot is purchased separately. SAA-15 microcrystalline wax is available in 5lb (2.3kg) quantities. The Melting Pot has a 2qt (1.9L) capacity and a thermostat to control temperatures between 50°–250°F (10°–120°C). Electrical requirements are 600 Watts at 115V/60Hz. Other available accessories are the HMA-10 Spatula for mixing and handling and the SC-74 1.3qt Pan for use as a water bath for immersion weighing.

Shrinkage Limit Set	
Shrinkage Limit Set	SA-56
Accessories	
Wax Melting Pot	SA-19
Monel Shrinkage Dish	SA-55A
Microcrystalline Wax, qty. 5lb	SAA-15
Spatula, 4.75x0.75in Blade	HMA-10
Stainless Steel Pan, 1.3qt	SC-74

HMA-25 & HMA-24

HM-109

HM-111

HMA-10, HMA-11, HMA-11A & HMA-12

MA-278

MA-275

Atterberg Limits/Grain Size Accessories

Description	Model	Dimensions	Capacity
Wash Bottles, polyethylene, squeeze dispensing; adjust flow by cutting tip.			**ml**
Wash Bottle	HMA-24	–	250
Wash Bottle	HMA-25	–	500
Mortar & Pestles, heavy porcelain 5in dia. mortar bowl is 320ml, glazed except for sample contact area (small porcelain pestle included). Use rubber tipped wooden pestle to break up agglomerates of soils, etc.		**Diameter**	**ml**
Mortar & Pestle	HM-109	5in (127mm)	275
Rubber Tip Pestle	HM-111		320
Spatulas with mirror-finished stainless steel blades riveted to hardwood handles. HMA-11A meets ASTM C1252 and AASHTO T 304.			
L x W of Blade, in (mm)		**Size, in (mm)**	
6x0.5 (152x13)	HMA-9	11.5 (292)	–
4x0.75 (102x19)	HMA-10	7.8 (197)	–
6x1 (152x25)	HMA-11	10.5 (267)	–
3.9x0.9 (100x23)	HMA-11A	8.25 (210)	–
10x1.5 (254x38)	HMA-12	14.3 (368)	–
Evaporating Dishes, Porcelain, MA-275 and MA-276 are glazed inside and out; MA-277 and MA-278 are glazed inside and around rim, bottom is not glazed.		**Diameter x Height, mm**	**ml**
	MA-275	3.1 (80)x1.3 (34)	80
	MA-276	3.7 (93)x1.6 (40)	120
	MA-277	4.1 (104)x1.6 (40)	150
	MA-278	4.7 (120)x1.7(42)	250
Round Sample Containers, Metal Round aluminum or tin metal containers with tight-fitting lids prevent moisture loss in samples. All have straight sides and flat bottoms. Covers fit bottom of container during drying. Premium aluminum never needs tare adjustment for rusting. Both models are sold in packages of twelve. Add "-1" to model numbers to order single containers.	**Aluminum**	**Dimensions, in**	**oz**
	SC-400	2.0 (50.8)x0.9(22.9)	1.5
	SC-402	2.5 (63.5)x1.8 (45.7)	4
	SC-404	3.0 (76.2x1.0 (25.4)	5
	SC-406	3.5 (88.9)x2.0 (50.8)	11
	Tinned		
	SC-498	1.9 (48.3)x1.3 (33.0)	2
	SC-500	2.2 (55.7)x1.6 (40.6)	3
	SC-502	2.4 (61.0)x1.6 (40.6)	4
	SC-504	2.9 (73.7)x1.9 (48.3)	6
	SC-506	3.0 (76.2)x2.2 (55.9)	8
	SC-508	3.8 (96.5)x2.8 (71.1)	16
Plastic Graduated Cylinders are quality poly-methylpentene (PMP). PMP is highly transparent, rigid, resists impact and handles temperatures of 200°C (180°C continuous). Not recommended for use with chlorinated solvents or strong oxidizing agents. Cylinders have pour spout, stable base and molded-in graduations. Models with "P" suffix are sold in case quantities.			**Capacity x Graduations, ml**
	GW-40	–	10x0.2
	GW-40P, 10/Case	–	10x0.2
	GW-41	–	25x0.5
	GW-41P, 5/Case	–	25x0.5
	GW-42	–	50x1
	GW-42P, 5/Case	–	50x1
	GW-43	–	100x1
	GW-43P, 5/Case	–	100x1
	GW-44	–	250x2
	GW-45	–	500x5
	GW-46	–	1,000x10
	GW-47	–	2,000x20

SC-400 through SC-406

GW-40 through GW-47

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SA-1 & SA-2

HYDROMETER TEST COMPONENTS
ASTM D422, D7928; AASHTO T 88

Tests for complete particle size distribution in soils require sedimentation methods to determine silt and clay fractions. Soil specimens are mixed in a solution of water and sodium hexametaphosphate. Hydrometers are used to measure suspended solids in sedimentation cylinders over time periods of up to twenty-four hours.

Hydrometer Test Components	
Description	**Model**
ASTM 151H Soil Hydrometer is graduated to read specific gravity, with a range of 0.995 to 1.038 in 0.001 divisions at 68°F (20°C). Supplied with a certificate of calibration traceable to NIST.	SA-1
ASTM 152H Soil Hydrometer measures in grams per liter (g/L) of suspension and has a range of -5 to +60 g/L, in 1g/L divisions at 68°F (20°C). (Both models have 280mm total length) Supplied with a certificate of calibration traceable to NIST.	SA-2
1000ml Sedimentation Cylinder (hydrometer jar), is required for each sample. Cylinders are heavy-wall clear glass with a stable base and scribed at 1,000ml mark. An optional #12 Neoprene Stopper is convenient for use during agitation. **Product Dimensions:** 2.5x18in (64x457mm), dia.xH.	
1000ml Sedimentation Cylinder	SA-5
#12 Neoprene Stopper	GWA-512
Stirring Apparatus thoroughly mixes soil samples for hydrometer analysis using a special mixing blade and Dispersion Cup with internal baffles. The 1/3hp motor has selectable 13,000/16,000/18,000rpm speeds as well as a manual pulse switch. Rugged die-cast aluminum housing and durable spindle of the commercial-grade mixer are built to last under repeated use. The Stirring Apparatus Set includes the stainless steel Dispersion Cup with four sets of baffles specified in the test method. Additional Dispersion Cups are available separately to improve sample preparation efficiency. **Product Dimensions:** 6.5x6.75x20.5in (165x171x521mm), WxDxH.	
Stirring Apparatus Set, 115V/60Hz	SA-14
Stirring Apparatus Set, 230V/50-60Hz	SA-14F
Baffled Dispersion Cup only	SA-16
Replacement Blade for SA-14	SAA-2
Sodium Hexametaphosphate is available in dry powder form as a dispersing aid when mixing soil sample solutions. Use is required in the test method and prevents clay platelets from sticking together in the sedimentation solution.	
Sodium Hexametaphosphate, 1lb	SA-20
Sodium Hexametaphosphate, pkg. of 6	SA-20C
Constant Temperature Bath is an option when conducting the Hydrometer Test and maintains temperature at a uniform 68°F (20°C) ±0.5°C with gentle, thorough circulation. Built-in brackets hold eight SA-5 Sedimentation Cylinders. Bath has stainless steel interior parts; exterior is enameled steel. An over-temperature safety cutoff is provided. **Product Dimensions:** 50x12x18in (1,245x356x965mm), LxWxD; **Internal Product Dimensions:** 38x8x15.5in (1,270x305x457mm), WxDxH.	
Constant Temperature Bath, 120V, 50/60Hz	SA-25
230V, 50/60Hz	SA-25F

SA-5

Close-up showing baffles

SA-16

SA-14

SA-20

SA-25

VIDEO ONLINE

HM-500

HM-500 closeup

HMA-15

HM-504A

HM-502

POCKET PENETROMETER
OSHA 29 CFR 1926

Lightweight, direct-reading, hand-held soil penetrometer provides approximate unconfined compressive strength information instantly for classification of fine-grained cohesive soils on-site or in the lab. Use is required by OSHA Publication 29 CFR 1926, Subpart P for trenching and excavation inspection. This simple hand-operated device has a 0.25in (6.4mm) dia. loading piston that is pushed into the soil to a depth of 0.25in.

The permanent, laser-etched scale on the stainless steel piston reads approximate unconfined compressive strength in equivalent values of tons per square foot (tsf) or kilograms per square centimeter (kg/cm^2). An indicator sleeve retains the maximum reading after piston is released. The calibrated loading spring is plated for rust resistance. Knurled stainless steel barrel provides a sure grip in wet and muddy conditions. A protective cloth sleeve is included. Complete penetrometer weighs only 6.8oz (193g). Optional 1in (25.4mm) Adapter Foot Attachment has a loading area of 0.785in^2 (0.32cm^2), sixteen times greater than the standard piston, for enhanced accuracy when testing soft soils. **Product Dimensions:** 0.75x6.6in (19x168mm), dia.xL.

Pocket Penetrometer	
Pocket Penetrometer	HM-500
Accessories	
Adapter Foot Attachment	HMA-15

POCKET SHEAR VANE SET
ASTM D8121

The Pocket Shear Vane (Torvane) rapidly measures approximate shear strength of cohesive soils in the field or lab. Set includes all-metal driver, three vanes of different shear strength ranges and a carrying case with belt loop. In use, the blades of the vane are pressed into the soil and the knob is turned slowly until failure. Maximum reading is retained by the indicator needle. Values using the standard vaned foot are read directly on the dial from 0–1kg/cm^2 in 0.05kg/cm^2 divisions (1 kg/cm^2 is approximately equal to 1tsf). Readings can be interpolated to 0.01kg/cm^2 and are multiplied by 0.2 and 2.5 when using the large (sensitive) and small (high-capacity) vanes. Total range is 0–2.5kg/cm^2. Extensive laboratory testing has indicated close correlation with undrained shear strengths. The tester can be used on any flat 2in (51mm) diameter surface. **Product Dimensions:** 3.5x2.5x1in (89x64x25mm), WxDxH.

Pocket Shear Vane Set	
Pocket Shear Vane Set	HM-504A

POCKET GEOTESTER

The Pocket Geotester dial penetrometer set is ideal for on-site measurement of soil strength. It gives estimated unconfined compressive strength directly in tsf or kg/cm^2 when used with the standard 0.25in dia. plunger. In addition, readings with four other plungers of 10, 15, 20 and 25mm dia. give strengths over a wide range of cohesive soil types.

The plunger is pressed into the soil to the calibration notch. The maximum value is retained on the dial until released by a push button. Inner dial scale is 0–6.0 tsf or kg/cm^2 with 0.1 divisions. Outer scale gives total force over 0–11kg range in 0.1kg divisions and this reading is used with charts provided to estimate bearing capacities depending on plunger used and soil type.

Geotester has large 2.5in (63mm) dial and sturdy noncorrosive construction. Dial is user-calibrated using register plates provided and any reliable scale of 10–15lb capacity. Penetrometer is complete with stainless steel plungers in carrying case with instructions, data tables and register plates. **Product Dimensions:** 6x3x1in (152x76x25mm), WxDxH.

Pocket Geotester	
Pocket Geotester	HM-502

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SF-20

SFA-20

SFA-22

SFA-21

SF-10

SFA-24

SFA-25

HM-559A

DYNAMIC CONE PENETROMETERS (DCP)

ASTM D6951

Dynamic Cone Penetrometers (DCP) provide quick field determinations of soil shear strengths at depths up to 6ft (1.8m), with extensions. This accurate and portable field equipment measures soil properties that can be related to CBR or Resilient Modulus laboratory values. Original design by United States Army Corps of Engineers meets ASTM requirements. The DCP bridges the gap between laboratory pavement design and construction quality assurance.

Penetration resistance from the sliding hammer is measured in blows per millimeter. Cone diameter of the point is larger than the rod to ensure driving energy is not lost to skin friction on the rods. The driven points are available as multi-use Hardened Steel or single-use Disposable Cones. The Disposable Cones are abandoned in place and often used when points would be difficult to extract. Both cones have a maximum diameter of 0.790in (20.1mm) tapering at a 60° angle to a point. Rods assemble easily with quick-connect pin fittings and can be driven to a depth of about 28.25in (71.8cm). Extension rods with threaded connections can be purchased separately for testing to greater depths.

SF-20 Dual-Mass Dynamic Cone Penetrometer is effective in soils with CBR values from 0.5 to 100. Penetration of higher-strength soils is assisted using the exclusive Dual-Mass Hammer Assembly. This 8kg (17.6lb) Hammer assembly is constructed of stainless steel. For better test values in weaker soils with CBR values of ten or less, the hammer quickly converts to a 4.6kg (10.1lb) unit. The kit includes a crush resistant Pelican™ case with transport wheels, the Dual-Mass Hammer assembly, 30in (76.2cm) Drive rod and twenty-five disposable cones with an adapter. Also included are a vertical scale, hardened point, T-handled hex wrench, 3-in-1 oil and Loctite. The user's manual contains software with an Excel® template for use as a DCP data reduction aide. Additional disposable cones, cone adapters and hardened points are available separately. **Product Dimensions:** 17x7x45in (432x178mx1,143), WxDxH.

SF-10 Dynamic Cone Penetrometer measures shear strength in soils with CBR values from 10 to 100. This kit is ideal for occasional use in areas where very weak soils are not common. The single-mass 8kg (17.6lb) structural steel hammer is standard. 2in depth rings are marked on the 37.75in (95.9cm) Drive Rod. Also included is one SFA-22 hardened point, manual & CD and 3-in-1 oil. The Manual provides look-up tables to correlate blow counts with CBR and unit weight values. The SF-10 is not supplied with a field carrying case. Disposable cones, Adapters and additional Hardened Points, are sold separately. **Product Dimensions:** 5x6x42in (127x152x1,067mm), WxDxH.

Dynamic Cone Penetrometers (DCP)	
Dual-Mass Dynamic Cone Penetrometer	SF-20
Dynamic Cone Penetrometer	SF-10
Accessories	
Disposable Cones, pkg. 25	SFA-20
Disposable Cone Adapter	SFA-21
Hardened Steel Cone	SFA-22
Lower Drive Rod, 12in (305mm)	SFA-24
Extension Rod, 24in (610mm)	SFA-25

STATIC CONE PENETROMETER

Designed for evaluating soil consistency, compaction and bearing capacity of foundations and pavement subgrades, the Static Cone Penetrometer yields accurate results, especially from fine-grained, soft soils. Gravel and rocks in the soil can cause misleading readings.

Operation involves pressing the Penetrometer into the soil 6in (152mm), taking a reading, pulling back until the gauge reads zero pressure, advancing another 6in (152mm), taking another reading. Continue in this manner until the entire depth is evaluated.

The Penetrometer is constructed of two rods. The inner rod is connected to the cone tip and is independent of the outer rod. Friction of soil along the shaft of the outer rod does not affect the inner rod's function. The load on the cone is transferred via the inner rod to the hydraulic load cell in the head assembly. The pressure gauge reads the cone stress directly.

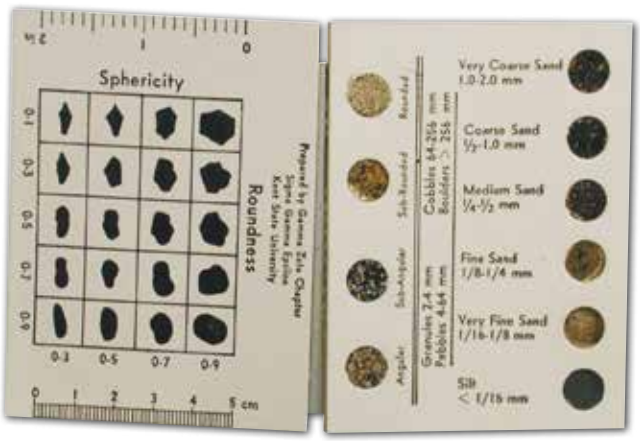
Outer rod is high strength chrome alloy tubing. Inner rod is ground 316 stainless steel. Shaft assembly is designed for a maximum of 250lbf axial force. The Penetrometer includes the 0–70kgf/cm^2 gauge, T-handle and 2ft starter rod. HMA-271A 2ft extension rods can be added as necessary to achieve greater depth capability.

Maximum area of the 60° cone is 1.5cm^2. Halve the readings when the 3cm^2 cone is used. **Product Dimensions:** 24x32in (610x813mm), WxH with starter rod.

Static Cone Penetrometer	
Static Cone Penetrometer	HM-559A
Accessories	
2ft Extension Rod	HMA-271A
2ft Starter Rod	HMA-276A
3cm^2 Cone	HMA-272
1.5cm^2 Cone	HMA-277

VIDEO ONLINE

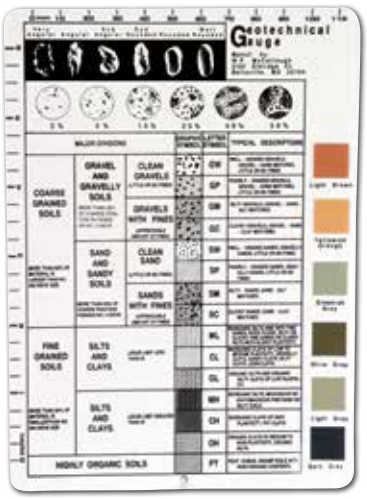
HM-519



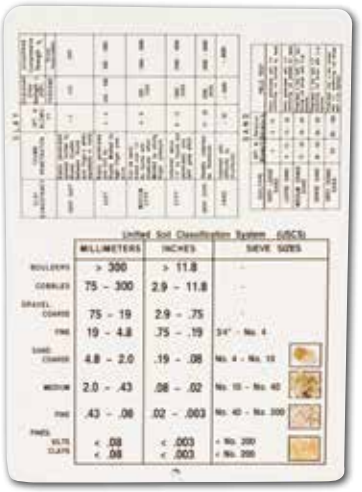
HM-510

Geotechnical Classification Charts

Description	Model
Munsell Soil Color Charts were developed with the U.S. Soil Conservation Service for classifying soil color, but may also be used for rocks, archeological specimens and other natural products. Munsell Charts are a standard tool for geologists, civil engineers and soil scientists. The tabbed charts include 10R, 7.5R, 5R, 2.5YR, 5YR, 7.5YR, 10YR, 2.5Y, 5Y and 10Y-5GY color ranges. Charts for tropical and semitropical soils and for Australia SE Asia are now included. A two page Gley Chart for submerged soils covers weak chromas and neutrals of blue and green hues. A white page is used to describe carbonate, silica, gypsum, soluble salt participates and more. Openings between chips allow easy visual comparison with soil samples. Illustrations of soil grain structures, charts for estimating proportions of mottles and coarse fragments, color name diagrams and instructions are furnished. Color chips are mounted on neutral gray, 7.25x4.25in (184x108mm) water resistant pages in an 8x6in (203x152mm) loose-leaf binder.	HM-519
Grain Size Chart is widely used by field geologists for describing samples. It is handy, economical and pocket-sized with recessed die-cut sample cavities filled with precision sieved sedimentary particles permanently mounted to the chart, classed according to the Wentworth grading system.	HM-510
Geotechnical Gauge is a water-resistant 5x8in (127x203mm) plastic card on a lanyard and has a wealth of information for classification of soils. Six color chips, four patches of sized grains and four tables assist in classifying: • Soils by particle size using the Unified Soils Classification System. • Coarse and fine grained soils into fifteen descriptive categories from gravels and sands to silts and clays. • Sand density from very loose to very dense. • Clay consistency from very soft to hard. Categories are defined by appearance, handling properties, or ranges of field and laboratory test results. Edges of the card have separate 0–6in and 0–110mm scales.	HM-512
Sand Gauge has nine granule patches which are firmly attached to the handy 3.5x2.5in (89x64mm) water-resistant plastic card to assist in defining roundness and size of particles from 2mm very coarse sand to 1/16mm silt. A checklist is included to assist in making field notes and defining bed thickness. Flip side of chart has tables of geologic age and carbonate classification information. Model HM-513 has a 0–50mm scale on one edge and an attached lanyard.	HM-513



HM-512 Front



HM-512 Back

HM-513

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HM-97

HM-930

SOIL CLASSIFICATION KIT

The Soil Classification Kit provides a full range of gauges, charts and instruments for field evaluation and classification of various soil characteristics. The convenient carrying case contains tools for visual classification, particle size estimation and for estimating shear strength, density and bearing capacity.

Kit includes:
- HM-500 Pocket Penetrometer
- HMA-15 Adapter Foot for HM-500
- HM-504A Pocket Shear Vane Set
- HM-930 Soil Density Volumeter
- HM-513 Sand Gauge
- HM-519 Munsell Soil Color Chart Set
- 3in (76mm) Diameter all-stainless steel sieves, 1 ea. #4, #10, #40, #100, #200, Pan and Cover
- Sturdy Plastic Carrying Case

Complete descriptions for individual components can be found under their respective model numbers. **Product Dimensions:** 16x8.4x8in (406x213x203mm), WxDxH.

Soil Classification Kit	
Soil Classification Kit	HM-97

SOIL DENSITY VOLUMETER

The Soil Density Volumeter utilizes a calibrated cylinder to make rapid measurements of density of cohesive soils. With the stem of the piston completely retracted, a 30cm^3 capacity cylinder with cutting edge is pushed into the soil. After squaring off the bottom of the core, soil volume in the Volumeter is read to 0.05cm^3 via a scale on the piston stem and a fine-reading vernier scale on the top face of the cylinder. The sample is then extracted for weighing by screwing in the piston. Density is easily computed. The Volumeter is all stainless steel. **Product Dimensions:** 2x3.75in (51x95mm), dia.xL.

Soil Density Volumeter	
Soil Density Volumeter	HM-930

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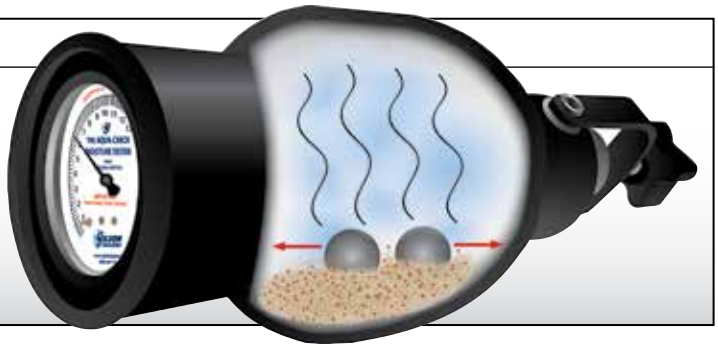
GAS PRESSURE MOISTURE TESTER

The gas-pressure method for moisture determination has long been in use and is widely accepted for accurate field testing of soils, aggregates, coal, abrasives and other materials. These devices are essentially pressure vessels and depend on the formation of gas when the calcium carbide reacts with moisture in the sample. A precision gauge in the sealed chamber measures pressure for relative readings and results are easily correlated to laboratory results for enhanced accuracy.



VIDEO ONLINE

MA-26X

MAA-45

MA-26X additional views

GILSON AQUA-CHECK MOISTURE TESTER
ASTM D4944; AASHTO T 217; FLORIDA FM 5-507

Gilson Aqua-Check is made in the USA and an affordable choice for rapid, accurate and reliable moisture tests on sand, aggregates, ores, coal, soils and other materials with particle size up to 20mm (0.8in). Samples can be quickly tested on-site, eliminating risk of moisture loss during transport. Portable units are easy to use and meet ASTM, AASHTO and Florida DOT requirements. The Gilson Aqua-Check was evaluated by the Florida DOT and verified to meet FM5-507 DOT requirements.

A pre-weighed 20g sample is placed in the test chamber, along with a measured quantity of calcium carbide reagent. When the chamber is sealed and agitated for one to three minutes, free moisture in the test sample reacts with the reagent to produce acetylene gas. The integral pressure gauge registers 0–20% moisture by weight in 0.2% graduations. Moisture range can be doubled by halving the pre-weighed sample weight.

MA-26X Aqua-Check has a rugged, die-cast aluminum body with a tough, wear-resistant coating and includes a 0–20x0.2% pressure gauge, with certificate of calibration. Also included; electronic digital balance, two 1.25in (32mm) dia. steel pulverizing balls, reagent measuring scoop, brush and instructions in a heavy-duty, waterproof plastic case. Approximate pressure chamber dimensions: 14x5.5in (356x140mm), Lxdia. Recalibration of existing Aqua-Check gauges is available as MAA-53. Calcium Carbide Reagent is available separately in 10lb (4.5kg) cans as MAA-44. These bulk containers can be used to refill smaller containers for field use. The pressure gauge and all accessories are compatible with both Aqua-Check and Speedy-brand Moisture Testers.

MAA-45 Aqua-Check, 0–20% Replacement Pressure Gauge includes a certificate of calibration and is also compatible with Speedy-brand MA-21A and MA-25 Moisture Testers. Due to shipping restrictions, additional reagent is sold in 10lb (4.5kg) cans only. Reagent from these larger cans can be used to replenish smaller containers, MAA-43 or SC-116, for field use. **Product Dimensions:** 20x17x9in (508x431x228mm), WxDxH.

Gilson Aqua-Check Moisture Tester	
Gilson Aqua-Check Moisture Tester, without Reagent	MA-26X
Accessories	
10lb (45kg) can, Calcium Carbide Reagent	MAA-44
Empty 1lb Metal Can for Reagent	MAA-43
Aqua-Check 0–20% Pressure Gauge	MAA-45
Recalibration of MAA-45 Pressure Gauge	MAA-53
Electronic Balance, 220 x 0.1g	OB-205
1.25in (32mm) Steel Balls, pkg. 2	MAA-47
Sample Cup	MAA-52
Long-Handle Reagent Scoop	MAA-48
Large, Coarse Clean-Out Brush	MAA-51
Small, Fine-Bristle Brush	MAA-50
Heavy-Duty Waterproof Plastic Case	MAA-46
Round Plastic Sample Jar	SC-116

technote

Gilson Company, Inc. offers repair and calibration services for the Aqua-Check and Speedy Moisture Testers. Please call 800.444.1508 for pricing or to schedule repairs.

VIDEO ONLINE

MA-25C

SPEEDY 2000 MOISTURE TESTERS

ASTM D4944; AASHTO T 217; Florida FM 5-507

The Speedy is widely accepted for rapid, accurate and reliable moisture tests on all kinds of materials–sand, aggregates, ores, coal, soils, ceramics, abrasives and other powders. Units are portable, easy to use and do not require a power supply. Samples can be tested on-site, eliminating risk of moisture loss during transport.

Selection of four available models is based on particle size, percent moisture range and gauge accuracy desired. Standard Models MA-20A and MA-21A are used for sand, grains, clays and fine powders. Large MA-25 and MA-25C handle soils, aggregates, coal and ores. Model MA-25 meets ASTM and AASHTO requirements for soil moisture measurements. Moisture range may be doubled by using 1/2 specimen weight and multiplying gauge reading by two.

All units have tough, die-cast polished aluminum body (pressure chamber) with integral dial. Place weighed sample in the tester with measured quantity of calcium carbide reagent and seal with cap. Upon agitation, free moisture in test sample reacts with calcium carbonate to form acetylene gas. Pressure gauge reads directly in percent moisture by weight within 1–3 minutes.

Each Speedy 2000 Kit includes an electronic digital balance, reagent measuring scoop, brush, cleaning cloth and instructions in a heavy-duty, waterproof plastic case. MA-25 and MA-25C include two steel balls to pulverize samples. Due to shipping restrictions, calcium carbide reagent is sold separately in 10lb (4.5kg) cans. Material from these larger cans can be used to replenish smaller MAA-43 or SC-116 containers for field use.

MA-20A and MA-21A Product Dimensions: 12x4in (305x102mm), Lxdia. **MA-25 and MA-25C Product Dimensions:** 14x 5.5in (356x140mm), Lxdia.

Speedy 2000 Moisture Testers				
Model	Description	Max. Particle Size	Moisture Range[1]	Specimen Weight
MA-20A	Standard Speedy	10mm	0–10 x 0.1%	12g
MA-21A	Standard Speedy	10mm	0–20 x 0.2%	6g
MA-25	Large Speedy	20mm	0–20 x 0.2%	20g
MA-25C	Large Speedy	20mm	0–50 x 0.5%	8g

Accessories	
10lb (45kg) can[1], Calcium Carbide Reagent	MAA-44
Empty 1lb Metal Can for Reagent	MAA-43
Aqua-Check 0–20% Pressure Gauge	MAA-45
Electronic Balance, 220 x 0.1g	OB-205
1.25in (32mm) Steel Balls, pkg. 2	MAA-47
Sample Cup	MAA-52
Long-Handle Reagent Scoop	MAA-48
Large, Coarse Clean-Out Brush	MAA-51
Small, Fine-Bristle Brush	MAA-50
Heavy-Duty Waterproof Plastic Case	MAA-46
Round Sample Jar	SC-116

[1] Due to shipping restrictions, calcium carbide reagent is sold in 10lb (4.5kg) cans. Material from these larger cans can be used to replenish smaller containers for field use.

MA-71

MA-78

KELWAY SOIL ACIDITY/MOISTURE METER AND pH ACIDITY METER

Unique, dual-purpose **Kelway Field Testing Meter** gives accurate soil pH (3.5–8.0 range) and moisture (0–100% relative saturation) measurements in three minutes or less. Simply insert pointed end to achieve good soil contact. Readings from scales on top dial are based on measured electrical potential between two dissimilar metal plates. No batteries, electrodes, or buffer solutions are needed and the meter is durable and insensitive to normal temperatures. Meter is supplied complete with belt-loop carrying case, two 3x4in (76x102mm) conditioning film sheets and instructions. Conditioning film is used to clean electrode plates prior to use. Not for use with liquids. **Product Dimensions:** 1.5x6.5in (38x165mm). dia.xL

Kelway Soil pH Acidity Meter provides a simple, cost-effective method of obtaining accurate soil pH measurements compared to litmus paper or a glass electrode meter. Simply insert the tester 2 inches into moist soil to determine the pH measurement within minutes. The MA-71 is handheld, ideal for periodic use and requires no batteries to operate. The unit generates its own power via a small current between two metal plates. The meter has a pH range of 3 to 8, is accurate to ±0.2pH in acidic soils and has an adjustment screw for calibration. The Meter is supplied with two Conditioning Film sheets and a pH guide chart.

Kelway Soil Acidity/Moisture Meter	
Kelway Soil Acidity/Moisture Meter	MA-78
Kelway pH Soil Acidity Meter	MA-71
Accessories	
Conditioning Film, pkg. 12	MAA-116

HM-66

VIDEO ONLINE

HM-100

HM-104

HM-98

BALLOON DENSITY APPARATUS
ASTM D2167

The Balloon Density Apparatus determines in-place density of soil when testing compacted earth fills. The unit is a water-filled, calibrated vessel fitted with a hand-operated pump to pressurize the chamber. A thin, flexible membrane on the bottom displaces under pressure to fill a void. Using the base plate as a template, a hole is dug in the surface and the excavated soil is retained as a specimen. To determine the volume of the hole, the Balloon Density is mounted on the plate, the membrane (balloon) is pumped into the hole and fluid displacement from the vessel is noted. In-place density is computed easily by dividing weight of the retained soil by the measured volume of the hole. A portion of the retained specimen is used to determine moisture content. This method is not suitable for very soft, easily deformed soils or in a hole which will not maintain constant volume. Water volume is read from the double-graduated scale on the high-strength clear plastic cylinder. Graduations are .00025ft³ or 7cm³.

Selection of Balloon Density model is determined by top-size of soil particles. 1/20ft³ HM-66 model is used for soils with 0.5in (13mm) maximum particle size and 1/13ft³ HM-67 model is for soils with particle size up to 1in (25mm). Each unit includes double-graduated cylinder, base plate, pressure/vacuum pump assembly with quick-coupler, ten balloons and an integral gauge for controlling pressure during calibration and testing. Extra Balloons are available in packs of ten. MA-26X Aqua-Check for moisture determinations and HMA-8 In-Place Density Accessory Kit are recommended accessories. **Product Dimensions:** 9x9x7in (229x229x178mm), WxDxH.

Balloon Density Apparatus	
Balloon Density Apparatus, 1/20ft³	HM-66
Balloon Density Apparatus, 1/13ft³	HM-67
Accessories	
Balloons, pkg. 10	HMA-5

SAND CONE DENSITY APPARATUS 6.5IN
ASTM D1556; AASHTO T 191

The sand cone density test is a proven method to measure in-place density of soils with maximum particle sizes up to 2in (51mm) using test hole volumes of approximately 0.1ft³ (2.8L).

HM-100 Sand Cone Density Apparatus is a 1gal (3.8L) threaded plastic jar with detachable cone fitting. The metal cone is flanged to 6.5in (165mm), with a cylindrical valve of 0.5in (12.7mm) dia. orifice. Valve has stops to prevent rotating past completely open or closed positions.

HM-104 Density Plate is 12x12in (305x305mm) aluminum alloy with 0.5in (12.7mm) high edge walls to contain soil sample that is dug using 6.5in (165mm) center hole of plate as a guide. After test hole is prepared, flange of cone fits plate opening for filling hole with special Density Sand.

HM-106 Density Sand is clean, dry, uniform, uncemented, durable and free-flowing. Few particles pass No.200 (75µm) or are retained on No.10 (2mm) sieves. Bulk density varies less than 1%. 50lb (22.7kg) packing bag is heavy and reinforced. MA-26X Aqua-Check for moisture determinations and HMA-8 In-Place Density Accessory Kit are recommended accessories.

Sand Cone Density Apparatus 6.5in	
Sand Cone Density Apparatus	HM-100
Accessories	
Replacement Plastic Jar	HM-102
Density Plate	HM-104
Density Sand	HM-106

SAND CONE DENSITY APPARATUS 12IN

Large 12in (305mm) diameter sand cone apparatus is used for density determinations in gravels and coarse soils where a larger hole is necessary for accurate results. The unit has two identical cones with a valve in the center. A metal cylinder attached to the top cone has a clear plastic end for viewing sand flow and handles for carrying. A circular density plate is included.

Sand Cone Density Apparatus 12in	
Sand Cone Density	HM-98

HMA-8

IN-PLACE DENSITY ACCESSORY KIT

In-Place Density Accessory Kit has all items necessary for field tests with either the Ballon Density or Sand Cone Density apparatus. Kit includes SC-103 poly sample bags qty. 100, MA-102 25°–125°F pocket dial thermometer, TSA-170 bristle brush, HMA-302 1in steel chisel, HMA-304 stainless steel spoon and HMA-300 rubber mallet. See individual listings elsewhere for full descriptions.

In-Place Density Accessory Kit	
In-Place Density Accessory Kit	HMA-8

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HM-128

HMA-635

DOUBLE-RING INFILTROMETER
ASTM D3385

The Double-Ring Infiltrometer is used for field measurement of infiltration rate of water or other liquid into fine-grained surface soils for geotechnical and environmental studies. Infiltration rates give important data for studies of liquid waste disposal, leaching, drainage, irrigation requirements, canal or reservoir leakage, etc. This proven method produces reliable field test results.

Two galvanized steel rings, 12in and 24in (305mm and 610mm) in diameter and 20in (508mm) high, are driven into the soil in a concentric arrangement using the special driving cap provided. The rings are filled with water and the level is maintained by constant-head Mariotte reservoir cylinders. Velocity of liquid passing to the soil from the inner ring is equivalent to the infiltration rate. Water between the two rings promotes one-dimensional vertical flow beneath the inner ring. The Double-Ring Infiltrometer meets ASTM D3385 requirements.

Both rings are constructed with a double-thick, reinforced top edge and beveled bottom edge for easy driving in stiff soils. The hard-alloy aluminum driving cap is 0.5in (12.7mm) thick and fitted with centering pins. The galvanized steel construction stands up to harsh field conditions. A sealed adjusting tube is used to raise or lower the head inside the Infiltrometer ring. A bleed valve is located next to the adjusting tube seal.

The graduated plastic Mariotte Cylinders have 3,000ml and 10,000ml volume capacity and are equipped with support stands, flexible tubing and rubber splash guards. These cylinders provide a constant head of water for the test. Also available individually as an additional or replacement item.

Gilson's optional HMA-635 Infiltrometer Field Set provides essential tools for setting-up and running the test. The set includes a small sledge hammer, rubber mallet, water bucket, carpenter's level, dial thermometer, pH paper, 2x4in (54x102mm) wooden driving block and shovel.

Double-Ring Infiltrometer	
Double-Ring Infiltrometer	HM-128
Accessories	
Infiltrometer Field Set	HMA-635
Mariotte Tube, 3000ml	HMA-632
Mariotte Tube, 10,000ml	HMA-633

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HM-940

HM-942

HM-944

HMA-670

HMA-673

HMA-672

HMA-671

SOIL RESISTIVITY APPARATUS

ASTM G57, G187; AASHTO T 288

This Soil Resistivity equipment utilizes the four electrode method developed by the National Bureau of Standards known as the Wenner 4-pin Method. The test determines the average resistivity of the soil to a depth equal to the spacing between electrodes (soil pins). This kit is designed for the maximum pin spacing of 20ft (6.1m) recommended for a standard survey.

HM-940 Soil Resistivity Kit consists of the Soil Resistivity Reel with ground anchors and four color-coded lead wires harnessed together, four Heavy Duty Soil Pins and a Soil Box with leads for laboratory testing, housed in a sturdy, foam-lined plastic case. Lead wires plug into the reel hub and terminate with spring-loaded clamps at the opposite end. Soil Pins are 18x0.375in (457x9.5mm) stainless steel with T-handles. The plexiglas HM-672 Soil Box for laboratory testing has removable potential pins of brass and current plates of stainless steel and can be used for 4-pin or 2-pin methods. Inside dimensions are 9x2.5x1.5in (229x64x38mm), LxWxD. Set of 4 Soil Box Lead wires are 4ft (1.2m) in length. HM-942 or HM-944 Soil Resistance Meters are purchased separately. **Product Dimensions:** 25x20x9in (635x508x229mm), WxDxH.

HM-942 Analog Soil Resistance Meter is used together with the HM-940 kit and allows soil resistance values to be read directly from the analog dial without performing additional calculations. The wide-range, high-sensitivity meter has a large dial for easy readability and 8 ranges from 0.1 Ohms to 1.1 Mega-Ohms. Powered by conventional C-cell alkaline batteries. Supplied with a NIST Traceable Certificate of Calibration. Rugged, weatherproof plastic case is IP67 rated. **Product Dimensions:** 12x10x5in (310x250x125mm), WxDxH.

HM-944 Digital Soil Resistance Meter is used with the HM-940 Resistivity Kit. There is no need to select ranges or adjust dials when using this meter. Resistance readings display instantly with the push of a button, or log them directly to a Bluetooth-enabled PC or Android mobile device (not included) using the included ProCP Soil Resistivity software. Logged readings can be automatically date/time stamped with positioning when integrated with GPS feature in user's handheld device. The HM-944 has a total range from 0.01 Ohms to 10 Mega-Ohms. Powered by conventional D-cell replaceable alkaline batteries. Supplied with a NIST Traceable Certificate of Calibration. Rugged, weatherproof plastic case is IP67 rated. **Product Dimensions:** 12x10.5x5.8in (310x267x147mm), WxDxH.

Soil Resistivity Apparatus	
Soil Resistivity Kit	HM-940
Analog Soil Resistance Meter	HM-942
Digital Soil Resistance Meter	HM-944
Accessories	
Soil Resistivity Reel w/four Lead Wires	HMA-670
Heavy Duty Soil Pin	HMA-671
Soil Box for Laboratory Testing	HMA-672
Leads for Soil Box, set of four	HMA-673

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MA-257

MA-260 shown with MAA-192, MAA-194 and MAA-196

MA-267

PEN PH METERS
ASTM D4972; AASHTO T 289

Pen pH meters from Ohaus provide accurate, straightforward operation at an affordable price. Units show pH measurements in the 0 to 14pH range on the large, easy to read LCD display. The pocket-size pH meters are constructed with a durable ABS housing, a protective cap to safeguard the sensor and automatic shutdown feature that preserves battery life. Pen meters endure prolonged use in rugged environments and feature IP67 waterproof design to prevent water damage when dropped in liquid. A wrist strap is included. The meters operate for approximately 200 hours on four included AG13 button-cell batteries. Working Environment for both units is 50°F to 104°F (10°C to 40°C) and 85%RH, non-condensing. **Product Dimensions:** 1.8x1.5x7.3in (45x38X185mm), WxDxH.

Economy Pen pH Meter has single line LCD display, range of 0 to 14x0.1 pH and accuracy of ±0.1pH. The built-in electrode is factory calibrated with no need for use of Buffer Solution and the meter is not equipped with temperature measurement or compensation functions.

Standard Pen pH Meter has dual line display for all pH and temperature values. The pH range is 0 to 14 x0.01ph with ±0.05pH accuracy. The built-in electrode features 3-point calibration using 4.01, 7.00 and 10.01 buffers. This meter has temperature compensation with range of 0 to 99.0°C (32.0 to 210.2°F).

Pen pH Meters	
Economy Pen pH Meter	MA-257
Standard Pen pH Meter	MA-258
Accessories	
pH Electrode Storage Solution	MAA-190
Buffer Solution, pH 4.01, 250ml	MAA-192
Buffer Solution, pH 7.00, 250ml	MAA-194
Buffer Solution, pH 10.01, 250ml	MAA-196

PORTABLE PH METER
ASTM D4972; AASHTO T 289

Versatile Ohaus Portable pH Meter is rugged, reliable and easy to use in the lab or field. With an IP54-rated protective ABS plastic casing shielding the meter from water and dust damage, the compact and ergonomic design is adaptable for a wide array of environments. Automatic and manual temperature compensation ensures accurate readings while a data library stores up to thirty measurements for future reference. Large, easy to read LCD display.

The auto buffer recognition stores calibration data and helps avoid errors during the calibration process. A maintenance-free 3-in-1 non-refillable plastic gel pH electrode with integrated temperature probe is included. Measurement range of the meter as equipped with supplied probe is 0 to 13x0.01pH. Accuracy is ±0.01pH. Temperature measurement is 0° to 80°C (32° to 212°F)x0.1°. The meter also reads -1999 to +1999x1mv. MA-260 includes the pH electrode, a meter stand, wrist strap, pH buffer packets (4.01, 7.00 and 10.01pH) and carrying bag. Working Environment 41° to 104°F (5° to 40°C), 80%RH, non-condensing. Operates approximately 500 hours on four included AAA batteries. **Product Dimensions:** 3.5x6x1.4in (90x150x35mm), WxDxH.

Portable pH Meter	
Portable pH Meter	MA-260
Accessories	
Buffer Solution, pH 4.01, 250ml	MAA-192
Buffer Solution, pH 7.00, 250ml	MAA-194
Buffer Solution, pH 10.01, 250ml	MAA-196
Replacement 3-in-1 pH Gel Electrode	MAA-198

PORTABLE TURBIDITY METER
USEPA 180.1

The amount of suspended particles in water is quickly determined with the Portable Turbidity Meter Kit. This easy-to-use hand-held instrument accurately measures turbidity by intensity of reflected light. Values are proportional to the quantity of suspended particles in the sample. The MA-267 meets EPA specifications for testing drinking water and is useful for measuring clarity of aqueous solutions in general.

Range is 0 – 100 NTU (Nephelometric Turbidity Units) and 0 – 2,000 AU (Attenuated Units). Accuracy is ±0.05 NTU from 0–2.5 NTU, ±2% from 2.5–100 NTU. Resolution is 0.01–1.0 NTU, dependent upon range. This model also performs ratiometric measurements with a range of 0 – 1,000 NTRU. Additional units of measure are ASBC (American Society of Brewing Chemists), FNU (Formazin Nephelometric Units), or EBC (European Brewery Convention) units. Other features include IP67 waterproof construction, tungsten light source, large 6-line backlit LCD display, 500-point data-logging and auto shut-off. Meter carries the CE mark. SmartLink 3 software can be purchased separately for data transfer to PC.

MA-267 Portable Turbidity Meter includes meter, 0, 1 and 10 NTU Calibrating Standards, sample bottle, six sample tubes, USB cable with wall outlet adapter and waterproof carrying case. Power is provided by a built-in 3.7V Lithium ion battery, rechargeable via included USB cable or 115V AC wall adapter. A 12VDC Car Charger is optional. **Product Dimensions:** 3.5x2.5x7.5in (88x64x191mm), WxDxH.

Portable Turbidity Meter	
Portable Turbidity Meter	MA-267
Accessories	
Calibration Standard, 0 NTU	MAA-240
Calibration Standard, 1 NTU	MAA-241
Calibration Standard, 10 NTU	MAA-242
SmartLink 3 Software	MAA-247
Car Charger, 12V	MAA-248

technote

Inquire for the full Ohaus line of Pen and Portable meters and electrodes for pH, Total Dissolved Solids (TDS), Dissolved Oxygen (DO), Oxidation Reduction Potential (ORP) and Salinity.

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SP-254

SP-258

SP-261

SP-274

SP-284

SP-138

SPA-256

Soil Samplers		
Description	Carbon Steel	Stainless Steel
Standard Augers are best for a wide range of soil types. Open bit design allows larger particles to pass through for recovery. Supplied with quick-connect fittings. SPA-256 Quick Connect Pins are purchased separately. Inquire for augers with threaded connectors.		
3in (76mm)	SP-254	SP-258
4in (102mm)	SP-256	SP-259
Clay Augers have an open bit design and openings machined in sides that make sample viewing and recovery easier in cohesive soils. Length is 18in (457mm). Supplied with quick-connect fittings. SPA-256 Quick Connect Pins are purchased separately. Inquire for augers with threaded connectors.		
3in (76mm)	SP-261	SP-264
4in (102mm)	SP-262	SP-266
Sand Augers have partially closed bodies and closed bits that aid sample retention in loose, granular soils. Length is 18in (457mm). Supplied with quick-connect fittings. SPA-256 Quick Connect Pins are purchased separately. Inquire for augers with threaded connectors.		
3in (76mm)	SP-268	SP-271
4in (102mm)	SP-269	SP-272
Mud (Dutch) Augers have a unique, open design that is ideal for cutting in mucky, boggy, root-bound soils. Sample recovery and clean-up are easier. Available in 3in (76mm) diameter only. Length is 12in (305mm). Supplied with quick-connect fittings. SPA-256 Quick Connect Pins are purchased separately. Inquire for augers with threaded connectors.	SP-274	SP-278
Handles & Extensions 16in (406mm) T-Handles are fitted with comfort-grip padding for ease of use. Extensions are high-strength 1in tubing, permanently marked with 6in (152mm) increments. Supplied with quick-connect fittings. SPA-256 Quick Connect Pins are purchased separately. Inquire for handles and extensions with threaded connectors.		
2ft (610mm)	SP-284	SP-289
3ft (914mm)	SP-285	SP-290
4ft (1,219mm)	SP-286	SP-291
5ft (1,524mm)	SP-287	SP-292
T-Handle	SP-288	SP-293
Adapters allow our Quick-Connect Augers to be used on older extensions with 5/8in-11 NC threaded connections. A locking pin is included.	SPA-255	–
Quick-Connect Pin 0.25x1.25in pin has spring retention clip. qty. 1	SPA-256	SPA-257
One-Piece Soil Samplers T-Handle samplers take 0.75in (19mm) diameter cores in tubes with replaceable hardened tips. Welded high-quality plated steel construction. SP-140 has a footstep to assist insertion in the soil.		
One-Piece Soil Sampler, 19in (482mm) Long, 15in (381mm) Core Sample	–	SP-138
One-Piece Soil Sampler, 36in (914mm) Long, 9in (229mm) Core Sample	–	SP-140

technote

Systems using 5/8-11NC threaded connectors and stainless steel systems for environmental sampling applications are available.

helpfulhint

Soil Samplers are a fast, accurate way to profile soil layers and obtain samples for classification and testing. Gilson Augers and Extensions use precision quick-connect fittings of high-strength steel. One-piece pins are used to secure the components. This system is faster, more robust and easier to use than conventional threaded systems. Heat-treated super alloy bits can be rebuilt when worn. Call for a quotation.

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SC-4, SC-1 , SC-5 & SC-3

SC-45

SC-74, SC-73, SC-78 and SC-77

SC-80 through 84

SC-270 & SC-272

Sample Pans

Description	Model	Dimensions	Capacity
Galvanized Iron Pans have wire-bound and rolled top edges and two drop-handles. Often used for drying or mixing of laboratory samples of soils and aggregates. Pans SC-2, SC-4 and SC-5 have tapered sides for nesting. Others have straight sides. Can safely be used with maximum oven temperatures to 350°F (177°C).		**WxDxH, in**	**Qt.**
	SC-1	18x18x1.5	8.0
	SC-2	18x18x3	17.0
	SC-3	24x24x4	40.0
	SC-4	24x24x3	30.0
	SC-5	10x20x3	10.0
Stainless Steel Pans feature top-quality seamless construction with rounded corners. Rectangular pans have straight sides. SC-45 through SC-47 have handles, others have oversize flanges for handling. Round Pans have straight-tapered sides and will nest for storage. SC-77 is sized to contain 8in (200mm) sieves. Round Bowls SC-80 through SC-84 have rounded sides and will also nest.	**Rectangular Pans**	**WxDxH, in**	**Qt.**
	SC-45	17.2x14.5x2.5	8.3
	SC-46	15.3x13x2.5	6.5
	SC-47	13.5x11.2x2.5	4.3
	SC-50	20.7x12.7x2.5	8.3
	SC-51	20.7x12.7x4	14.0
	SC-55	10.4x12.7x2.5	4.0
	SC-56	10.4x12.7x4	6.7
	SC-57	10.4x12.7x6	9.6
	SC-60	6.9x12.7x2.5	2.6
	SC-61	6.9x12.7x6	5.9
	SC-65	6.4x10.4x2.5	1.8
	SC-70	6.9x6.3x2.5	1.2
	Round Pans	**Diameter x H, in**	**Qt.**
	SC-73	10x1.9	0.7
	SC-74	14.2x1.9	1.3
	SC-77	11x3.5	5.0
	SC-78	13.5x5	7.5
	Round Bowls	**Diameter x H, in**	**Qt.**
	SC-80	7.7x2.7	1.5
	SC-81	9x3.2	3.0
	SC-82	11.3x3.6	5.0
	SC-83	13.3x4.4	8.0
	SC-84	17.5x5.2	16.0
Sample Cans are round, tinned metal with moisture-tight friction type lids and epoxy lacquered interiors. They are ideal for preparing, storing or transporting soil, aggregates, or other samples. Models SC-270 and SC-272 are sold in case quantities.		**Diameter x H, in**	**Qt.**
	SC-272, 6/Case	6.6x7.5	4
	SC-270, 12/Case	4.3x4.9	1
	MAA-43, Each	3.3x4.0	0.5
Plastic Graduated Cylinders are quality poly-methylpentene (PMP). PMP is highly transparent, rigid, resists impact and handles temperatures of 200°C (180°C continuous). Not recommended for use with chlorinated solvents or strong oxidizing agents. Cylinders have pour spout, stable base and molded-in graduations. Models with "P" suffix are sold in case quantities.			**Capacity x Graduations, ml**
	GW-40	–	10x0.2
	GW-40P, 10/Case	–	10x0.2
	GW-41	–	25x0.5
	GW-41P, 5/Case	–	25x0.5
	GW-42	–	50x1
	GW-42P, 5/Case	–	50x1
	GW-43	–	100x1
	GW-43P, 5/Case	–	100x1
	GW-44	–	250x2
	GW-45	–	500x5
	GW-46	–	1,000x10
	GW-47	–	2,000x20

GW-40 through GW-47

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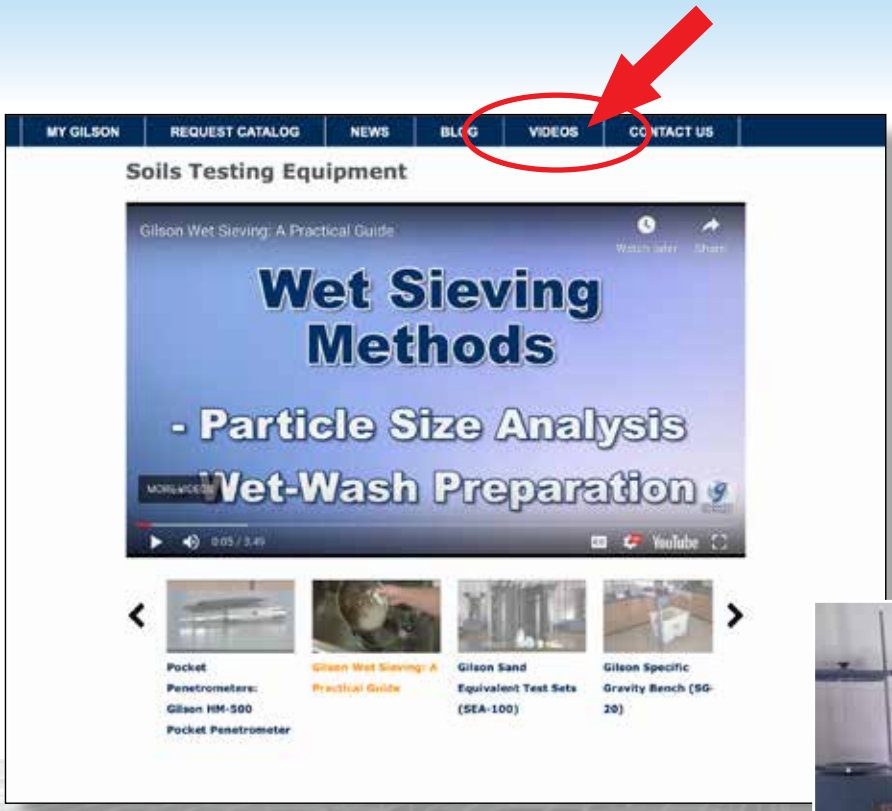

- Explore features and benefits
- See side-by-side comparisons and watch our equipment in action
- Answers to your installation, set-up and maintenance questions
- Step-by-step "how to" guides
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Gilson Set Equivalent Test Sets (SEA-100)

Gilson HM-500 Pocket Penetrometer

Gilson Master Control Panel for Triaxial and Permeability Tests (HM-350)

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How to select the oven that best meets your requirements:

Step 1: Decide on gravity or forced convection air flow.
Step 2: Choose desired temperature range.
Step 3: Determine appropriate dimensions and capacity.

Having trouble deciding? Call a Gilson representative to discuss your application.

Oven Selection Guide

Model	Temperature Max. °F (°C)	Temperature Uniformity °C	Chamber Dimensions WxDxH, in (cm)		Product Dimensions WxDxH, in (cm)		Capacity ft³ (L)		Electrical[1] Volts	Electrical[1] Amps
Gravity Convection										
LT-10R	210 (99)	±0.8° at 75°C	12x10x10	(30x25x25)	14x12x17	(36x30x43)	0.7	(20)	115	2.6
LT-20R	210 (99)	±0.8° at 75°C	13x13x13	(33x33x33)	15x15x21	(38x38x53)	1.3	(36)	115	2.6
LT-30R	210 (99)	±1° at 75°C	18x12x16	(46x30x41)	20x14x25	(51x36x64)	2.0	(57)	115	5.2
LT-40R	210 (99)	±1° at 75°C	18x14x21	(46x36x53)	20x16x30	(51x41x77)	3.0	(85)	115	5.2
BO-10R	450 (232)	±3° at 150°C	12x10x10	(30x25x25)	14x12x17	(36x30x43)	0.7	(20)	115	5.2
BO-20R	450 (232)	±3° at 150°C	13x13x13	(33x33x33)	15x15x21	(38x38x53)	1.3	(37)	120	6.3
BO-30R	450 (232)	±3° at 150°C	18x12x16	(46x30x41)	20x14x25	(51x36x64)	2.0	(57)	115	10.5
BO-40	450 (232)	±3° at 150°C	18x14x21	(46x36x53)	20x16x30	(51x41x77)	3.0	(85)	120	12.5
PO-23[2]	550 (288)	Not-Rated	33x22x7.5	(84x55x19)	41.5x27x61	(105x69x155)	12.6	(357)	—	—
Forced Convection										
OT-2	105 (41)	Not-Rated	35.8x22.5x64	(9x57x163)	36x29.8x78	(92x76x198)	30.0	(850)	120	20
LT-110	225 (107)	±0.8° at 75°C	12x10x9	(30x25x22)	14x12x21	(36x30x53)	0.6	(17)	115	3.7
LT-120	225 (107)	±0.8° at 75°C	13x13x12	(33x33x30)	15x15x25	(38x38x64)	1.1	(32)	115	3.7
LT-130	225 (107)	±1° at 75°C	18x12x14	(46x30x38)	20x14x29	(51x36x74)	1.8	(52)	115	4.8
LT-140	225 (107)	±1° at 75°C	18x14x20	(46x36x51)	20x16x35	(51x41x86)	2.9	(81)	115	6.8
BO-250	300 (149)	±2.5° at 100°C	26x24x20	(66x61x51)	33x36x24	(84x91x61)	7.0	(198)	115	9.2
BO-250ER	300 (149)	±2° at 100°C	26x24x20	(66x61x51)	33x36x24	(84x91x61)	7.0	(198)	115	9.2
BO-60[3]	400 (204)	±2° at 177°C	50x30x54	(127x77x137)	70x46x80	(178x117x203)	46.9	(1,328)	230/460[4]	43/22
BO-62[3]	400 (204)	±2° at 177°C	56x30x60	(142x77x152)	76x46x86	(193x117x218)	58.3	(1,651)	230/460[4]	65/33
BO-64[3]	400 (204)	±2° at 177°C	68x30x66	(173x77x168)	88x46x92	(224x117x234)	77.9	(2,206)	230/460[4]	87/43
BO-323	400 (204)	±2° at 177°C	36x21x36	(91x53x91)	49x28x57	(124x71x145)	15.8	(447)	230/460	19/10
BO-333	400 (204)	±2° at 177°C	36x36x36	(91x91x91)	49x43x57	(124x109x145)	27.0	(764)	230/460	29/14
BO-343	400 (204)	±2° at 177°C	36x48x36	(91x122x91)	49x55x57	(124x140x145)	36.0	(1,019)	230/460	29/14
DOL-24A	400 (204)	±3° at 150°C	18x18x12	(46X46X30)	24x26x26	(61x66x67)	2.3	(66)	120/240	11.6/5.8
DOL-69A	400 (204)	±3° at 150°C	30x18x22	(76X46X56)	36x26x36	(92x65x92)	6.9	(196)	120/240	21.6/10.8
DOL-120A	400 (204)	±3° at 150°C	30x20x35	(76X51X89)	36x28x51.5	(91x71x130)	12.1	(340)	240	16.6
DOL-180A	400 (204)	±3° at 150°C	37x24x35	(94X61X89)	43x32x51	(109x81x130)	18.0	(510)	240	16.7
DOL-270A	400 (204)	±3° at 150°C	37x37x35	(94X94X89)	43x45x51	(109x114x130)	27.7	(784)	240	21.7
BO-110	450 (232)	±3° at 150°C	12x10x9	(30x25x22)	14x12x21	(36x30x53)	0.6	(17)	120	6.6
BO-120	450 (232)	±3° at 150°C	13x13x12	(33x33x30)	15x15x25	(38x38x64)	1.1	(31)	120	8.8
BO-130	450 (232)	±3° at 150°C	18x12x15	(46x30x38)	20x14x29	(51x36x74)	1.8	(51)	120	12.5
BO-140	450 (232)	±3° at 150°C	18x14x20	(46x36x51)	20x16x34	(51x41x86)	2.9	(82)	120	12.5
BO-350	450 (232)	±2.5° at 100°C	26x24x20	(66x61x51)	33x36x24	(84x91x61)	7.0	(198)	120	16
BO-350ER	450 (232)	±2° at 100°C	26x24x20	(66x61x51)	33x36x24	(84x91x61)	7.0	(198)	120	16
BO-355	450 (232)	±3° at 100°C	26x24x30	(66x61x76)	33x36x34	(84x91x86)	10.6	(300)	120	16
BO-355ER	450 (232)	±2° at 100°C	26x24x30	(66x61x76)	33x36x34	(84x91x86)	10.6	(300)	120	16
SH-142	500 (260)	±3.0° at 110°C	30.7x24.7x31.0	(78.1x62.8x78.7)	37.8x34.0x48.0	(95.9x86.4x122)	13.7	(387)	230	12
SH-282	500 (260)	±3.5° at 150°C	30.7x24.7x31.0	(78.1x62.8x78.7)	37.8x34.0x48.0	(95.9x86.4x122)	27.5	(781)	230	20
DOC-38	500 (260)	±1° at 100°C	19x18x19	(48x46x48)	31x27x38	(78x69x96)	3.8	(105)	120/240	16.3/10.5
DOC-67	500 (260)	±1° at 100°C	24x20x24	(61x50x62)	36x29x43	(91x74x110)	6.7	(187)	240	12.4
DOC-120	500 (260)	±1° at 100°C	24x24x36	(61x61x91)	36x33x55	(91x84x139)	12.0	(340)	240	24.2
DOC-180	500 (260)	±1° at 100°C	35x24x36	(90x61x91)	47x33x55	(120x84x139)	18.0	(18.0)	240	24.2
BO-61[3]	550 (288)	±3° at 260°C	50x30x54	(127x77x137)	70x46x80	(178x117x203)	46.9	(1,328)	230/460[4]	65/33
BO-63[3]	550 (288)	±3° at 260°C	56x30x60	(142x77x152)	76x46x86	(193x117x218)	58.3	(1,651)	230/460[4]	87/43
BO-65[3]	550 (288)	±3° at 260°C	68x30x66	(173x77x168)	88x46x92	(224x117x234)	77.9	(2,206)	230/460[4]	109/55
BO-550	550 (288)	±3.5° at 100°C	26x23x20	(66x58x51)	33x36x24	(84x91x61)	6.6	(187)	230	12.5
BO-550ER	550 (288)	±2.5° at 100°C	26x23x20	(66x58x51)	33x36x24	(84x91x61)	6.6	(187)	230	12.5
SH-100	583 (306)	±2.25° at 150°C	12.1x13.7x14.5	(30.7x34.9 x36.8)	22.7x23.5x31.5	(57.7x59.6x80.0)	1.39	(39.4)	115	12
SH-100F	583 (306)	±1.75° at 150°C	12.1x13.7x14.5	(30.7x34.9 x36.8)	22.7x23.5x31.5	(57.7x59.6x80.0)	1.39	(39.4)	230	8
SH-300	583 (306)	±1.75° at 150°C	16.5x16.2x19.5	(41.9x41.2x49.5)	26.9x28.6x34.0	(68.4x72.7x86.4)	3.0	(85)	115	14
SH-300F	583 (306)	±2.5° at 150°C	16.5x16.2x19.5	(41.9x41.2x49.5)	26.9x28.6x34.0	(68.4x72.7x86.4)	3.0	(85)	230	10
SH-500	583 (306)	±1.75° at 150°C	21.0x19.4x20.7	(53.3x49.4x52.7)	31.4x28.1x38.8	(79.8x71.4x98.5)	4.9	(138)	115	14
SH-500F	583 (306)	±1.5° at 150°C	21.0x19.4x20.7	(53.3x49.4x52.7)	31.4x28.1x38.8	(79.8x71.4x98.5)	4.9	(138)	230	10

[1] Other voltages and standard accessories available. [2] PO-23 Gas Oven has four chambers of indicated size. [3] Base dimensions shown, see listing in this section for dimensions as supplied. [4] Gas models available

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LT-10R

LT-130

QUINCY LOW-TEMP LAB OVENS

- Gravity or forced-air convection models
- Maximum temperatures of 210°F (99°C) or 225°F (107°C)
- PID digital proportional temperature controller with ±1°C or 2°F accuracy
- LED display with setting lock function
- Temperature-tracking function stores temperature deviation from set point
- Insulated double-wall construction
- Corrosion-resistant aluminized steel chamber
- Energy efficient, Incoloy-sheathed elements for quick heat-up
- Steel cabinets with scratch-resistant finish
- Ovens are supplied with one fixed and two adjustable shelves
- Models operate on 115V/60Hz and are supplied with cords and plugs
- Add "F" to the model number for 230V/50Hz operation shipped with cords and plugs

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Quincy Low-Temp Lab Ovens

Type	Model	Max. Temp. °F (°C)	Uniformity	Chamber Capacity, ft³ (L)	Chamber Dimensions WxDxH, in (cm)	Product Dimensions WxDxH, in (cm)	Electrical Volts/Amps	Shelf
Gravity Convection	LT-10R	210 (99)	±0.8° at 75°C	0.7 (20)	12x10x10 (30x25x25)	14x12x17 (36x30x43)	115/2.6	BOA-30
	LT-20R	210 (99)	±0.8° at 75°C	1.3 (36)	13x13x13 (33x33x33)	15x15x21 (38x38x53)	115/2.6	BOA-31
	LT-30R	210 (99)	±1° at 75°C	2.0 (57)	18x12x16 (46x30x41)	20x14x25 (51x36x64)	115/5.2	BOA-32
	LT-40R	210 (99)	±1° at 75°C	3.0 (85)	18x14x21 (46x36x53)	20x16x30 (51x41x77)	115/5.2	BOA-33
Forced Air Convection	LT-110	225 (107)	±0.8° at 75°C	0.6 (17)	12x10x9 (30x25x22)	14x12x21 (36x30x53)	115/3.7	BOA-30
	LT-120	225 (107)	±0.8° at 75°C	1.1 (32)	13x13x12 (33x33x30)	15x15x25 (38x38x64)	115/3.7	BOA-31
	LT-130	225 (107)	±1° at 75°C	1.8 (52)	18x12x14 (46x30x38)	20x14x29 (51x36x74)	115/4.8	BOA-32
	LT-140	225 (107)	±1° at 75°C	2.9 (81)	18x14x20 (46x36x51)	20x16x35 (51x41x86)	115/6.8	BOA-33

VIDEO ONLINE

BO-350

BO-355ER

QUINCY BENCH OVENS

- Forced-air convection
- Hydraulic thermostat control and high/low heat switch
- "ER" series has PID microprocessor controller with ±1°C or 2°F accuracy
- Full-width gasketed double doors
- Corrosion-resistant aluminized steel chamber
- Add "S" to model number to order long-lasting stainless steel interior
- Two heavy-duty 80lb (36kg) capacity shelves included
- Ovens hold up to 11 shelves, adjustable on 1.5in centers; BO-355 holds 17
- Electrical components are UL listed, CSA approved
- 6ft (1.8M) grounded cord with plug included
- Single phase, 50/60Hz operation
- Add "F" to model number for 230V operation

: PRODUCT SPOTLIGHT

POPULAR ACCESSORIES FOR QUINCY BENCH OVENS

Heavy-Duty 80lb (36kg) Oven Shelf	BOA-1
Floor Cabinet with 2 Sliding Shelves	BOA-2
Floor Stand with 1 Fixed Shelf	BOA-3
Exhaust Adapter for 3in (76mm) Pipe	BOA-4
12 Hour Timer	BOA-5[1]
Spirit Thermometer with Grommet	BOA-7[2]

[1] Also fits Lab Ovens, except BO-10R and BO-110. [2] Fits all Bench and Lab Ovens.

Quincy Bench Ovens

Model	Max. Temp. °F (°C)	Uniformity	Chamber Capacity, ft³ (L)	Chamber Dimensions WxDxH, in (cm)	Product Dimensions WxDxH, in (cm)	Electrical Volts/Amps
BO-250	300 (149)	±2.5° at 100°C	7.0 (198)	26x24x20 (66x61x51)	33x36x24 (84x91x61)	115/9.2
BO-250ER	300 (149)	±2° at 100°C	7.0 (198)	26x24x20 (66x61x51)	33x36x24 (84x91x61)	115/9.2
BO-350	450 (232)	±2.5° at 100°C	7.0 (198)	26x24x20 (66x61x51)	33x36x24 (84x91x61)	120/16
BO-350ER	450 (232)	±2° at 100°C	7.0 (198)	26x24x20 (66x61x51)	33x36x24 (84x91x61)	120/16
BO-355	450 (232)	±3° at 100°C	10.6 (300)	26x24x30 (66x61x76)	33x36x34 (84x91x86)	120/16
BO-355ER	450 (232)	±2° at 100°C	10.6 (300)	26x24x30 (66x61x76)	33x36x34 (84x91x86)	120/16
BO-550	550 (288)	±3.5° at 100°C	6.6 (187)	26x23x20 (66x58x51)	33x36x24 (84x91x61)	230/12.5
BO-550ER	550 (288)	±2.5° at 100°C	6.6 (187)	26x23x20 (66x58x51)	33x36x24 (84x91x61)	230/12.5

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BO-10R

BO-40

BO-140

QUINCY LAB OVENS

- Gravity or forced-air convection models
- BO-10R and BO-110 have bimetallic thermostats; others have hydraulic thermostats
- Maximum temperatures of 450°F (232°C)
- Illuminated On/Off rocker switch and a heat/cycle pilot light
- Gravity models include BOA-7 glass Spirit Thermometer; forced air models have built-in dial thermometer
- Corrosion-resistant aluminized steel chamber
- Factory installed BOA-5 12-Hour Timer
- Energy efficient, Incoloy-sheathed elements for quick heat-up
- Steel cabinets with scratch-resistant finish
- Ovens are supplied with one fixed and two adjustable shelves
- Standard models operate on 115-120V/60Hz and are supplied with cords and plugs
- Add "F" to the model number for 230V/50Hz model. Shipped with cord and plug

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Quincy Lab Ovens

Type	Model	Max. Temp. °F (°C)	Uniformity	Chamber Capacity, ft³ (L)	Chamber Dimensions WxDxH, in (cm)	Product Dimensions WxDxH, in (cm)	Electrical Volts/Amps	Shelf
Gravity Convection	BO-10R	450 (232)	±3° at 150°C	0.7 (20)	12x10x10 (30x25x25)	14x12x17 (36x30x43)	115/5.2	BOA-30
	BO-20R	450 (232)	±3° at 150°C	1.3 (36)	13x13x13 (33x33x33)	15x15x21 (38x38x53)	120/6.3	BOA-31
	BO-30R	450 (232)	±3° at 150°C	2.0 (57)	18x12x16 (46x30x41)	20x14x25 (51x36x64)	115/10.5	BOA-32
	BO-40	450 (232)	±3° at 150°C	3.0 (85)	18x14x21 (46x36x53)	20x16x30 (51x41x77)	120/12.5	BOA-33
Forced Air Convection	BO-110	450 (232)	±3° at 150°C	0.6 (17)	12x10x9 (30x25x22)	14x12x21 (36x30x53)	120/6.6	BOA-30
	BO-120	450 (232)	±3° at 150°C	1.1 (32)	13x13x12 (33x33x30)	15x15x25 (38x38x64)	120/8.8	BOA-31
	BO-130	450 (232)	±3° at 150°C	1.8 (52)	18x12x15 (46x30x38)	20x14x29 (51x36x74)	120/12.5	BOA-32
	BO-140	450 (232)	±3° at 150°C	2.9 (81)	18x14x20 (46x36x51)	20x16x34 (51x41x86)	120/12.5	BOA-33

Find Estimated Ship Weights for all our products in the Ship Weight Index

DOL-120A

DOL-69A

DOC-120

DESPATCH STANDARD ELECTRIC BENCH OVENS

- Forced-air convection
- Digital single-setpoint microprocessor controller
- Stainless steel chamber
- Rocker switches for power and heat
- Maximum temperature of 400°F (204°C)
- Uniformity of 3°C at 150°
- Ovens with chamber capacity 6.9ft³ (195L) and above have two doors
- DOL-24A includes two 50lb (22kg) capacity shelves; other models include two heavy-duty shelves with 200lb (90kg) capacity
- Optional DOBA-2 count-down timer shuts down oven at end of cycle
- Shelves adjust on 2in (51mm) centers
- 5-Year manufacturer's warranty
- DOL-24A, DOL-69A and DOC-38 are available in 120V or 240V models, others operate on 240V; all will operate on 50 or 60Hz power supplies
- DOL-24A, DOC-38, DOC-67 supplied with cord and plug; all others must be hardwired into electrical supply

DESPATCH DELUXE ELECTRIC BENCH OVENS

- Forced-air convection
- Despatch Protocol 3™ digital self-diagnostic controller with calibrating capabilities
- Stainless steel chamber
- Programmable for up to 255 ramp and soak segments
- Maximum temperature of 500°F (260°C)
- Uniformity of ±1°C at 100°C
- Two standard-duty shelves with 50lb (22kg) capacity; inquire for heavy-duty shelves
- Shelves adjust on 2in (51mm) centers
- 5-Year manufacturer's warranty
- DOC-38 is available in 120V or 240V models, others operate on 240V; all will operate on 50 or 60Hz power supplies
- DOC-38, DOC-67 supplied with cord and plug; all others must be hardwired into electrical supply

Despatch Electric Bench Ovens

Type	Model	Max Temp °F (°C)	Uniformity	Chamber Capacity, Ft³ (L)	Chamber Dimensions, WxDxH, In (cm)	Overall Dimensions, WxDxH, In (cm)	Electrical Volts/Amps	Shelf	Base Stand
Standard	DOL-24A	400 (204)	±3° at 150°C	2.3 (65)	18x18x12 (46x46x30)	24x26x26 (61x66x67)	120/11.6 or 240/5.8[1]	DOLA-20	—
	DOL-69A	400 (204)	±3° at 150°C	6.9 (195)	30x18x22 (76x46x56)	36x26x36 (92x65x92)	120/21.6 or 240/10.8[1,2]	DOLA-30A	DOLA-82
	DOL-120A	400 (204)	±3° at 150°C	12.1 (342)	30x20x35 (76x51x89)	36x28x51.5 (91x71x130)	240/16.6[2]	DOLA-40A	DOLA-85
	DOL-180A	400 (204)	±3° at 150°C	18.0 (510)	37x24x35 (94x61x89)	43x32x51 (109x81x130)	240/16.7[2]	DOBA-40A	DOLA-83
	DOL-270A	400 (204)	±3° at 150°C	27.7 (784)	37x37x35 (94x94x89)	43x45x51 (109x114x130)	240/21.7[2]	DOBA-50A	DOLA-84
Deluxe	DOC-38	500 (260)	±1° at 100°C	3.8 (108)	19x18x19 (48x46x48)	31x27x38 (78x69x96)	120/16.3 or 240/10.5[1]	DOCA-20	DOCA-70
	DOC-67	500 (260)	±1° at 100°C	6.7 (190)	24x20x24 (61x50x62)	36x29x43 (91x74x110)	240/12.4	DOCA-30	DOCA-71
	DOC-120	500 (260)	±1° at 100°C	12.0 (340)	24x24x36 (61x61x91)	36x33x55 (91x84x139)	240/24.2	DOCA-40	DOCA-72
	DOC-180	500 (260)	±1° at 100°C	18.0 (510)	35x24x36 (90x61x91)	47x33x55 (120x84x139)	240/24.2[2]	DOCA-50	DOCA-73

[1] Specify desired voltage. [2] Oven is not supplied with cord and plug and must be hard-wired into electrical supply.

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SH-100

SH-282 shown with four optional SHA-38 Shelves

SHEL LAB® OVENS

- Forced-air convection
- PID temperature controller with digital display
- Digital countdown timer built-in
- Fast heat up and recovery with excellent uniformity
- UL/CSA/CE approved ovens meet ASTM E145 and DIN 12880 standards
- Stainless steel chambers and shelves
- Shelves adjust on 0.5in (13mm) centers, most models include 2 standard shelves; SH-142 includes 3 and SH-282 includes 6 standard shelves
- Standard shelves have 50lb (23kg) capacity, heavy-duty shelves have 75lb (34kg) capacity
- 1.75in (44mm) instrumentation port and 3in (76mm) exhaust port included
- Heavy-gauge triple-wall insulated steel construction, powder coat finish
- Models operate on 115 or 230 Volt single-phase, 50 or 60 Hertz electrical supplies

SHEL LAB® Ovens

Model	Max. Temp. °F (°C)	Uniformity C°	Chamber Capacity ft³ (L)	Chamber Dimensions WxDxH, in (cm)	Product Dimensions WxDxH, in (cm)	Electrical Volts/Amps	Standard Shelf	Heavy-Duty Shelf	Stand w/Casters
SH-100	583 (306)	±2.25 at 150	1.39 (39.4)	12.1x13.7x14.5 (30.7x34.9 x36.8)	22.7x23.5x31.5 (57.7x59.6x80.0)	115/12	SHA-21	SHA-31	—
SH-100F		±1.75 at 150				230/8			
SH-300	583 (306)	±1.75 at 150	3.0 (85)	16.5x16.2x19.5 (41.9x41.2x49.5)	26.9x28.6x34.0 (68.4x72.7x86.4)	115/14	SHA-23	SHA-33	SHA-43
SH-300F		±2.5 at 150				230/10			
SH-500	583 (306)	±1.75 at 150	4.9 (138)	21.0x19.4x20.7 (53.3x49.4x52.7)	31.4x28.1x38.8 (79.8x71.4x98.5)	115/14	SHA-25	SHA-35	SHA-45
SH-500F		±1.5 at 150				230/10			
SH-142	500 (260)	±3.0 at 110	13.7 (387)	30.7x24.7x31.0 (78.1x62.8x78.7)	37.8x34.0x48.0 (95.9x86.4x122.0)	230/12	—	SHA-38	SHA-47
SH-282	500 (260)	±3.5 at 150	27.5 (781)	30.7x25.0x62.0 (78.1x63.5x157.4)	37.5x35.0x78.3 (95.3x88.9x198.8)	230/20	—	SHA-38	SHA-47

BO-60EB

PO-23

LARGE CABINET OVENS

- Forced-air convection with horizontal air flow
- High-volume ovens in electric or gas models with chamber volumes 46.9 to 78ft³ (1,328 to 2,206L)
- Digital controller with ±0.3% accuracy; uniformity is ±2°C (±4°F) for 400°F models and ±3°C (±6°F) for 550°F models
- Type 304 stainless steel interior
- Adjustable air intake and exhaust dampers; explosion-venting latches
- Holds eight to ten 100lb (46kg) capacity wire shelves on 6in centers, two are included
- Available BOA-46 shut-down timer turns oven off at preset time. Specify 1, 5, 10, or 30 hour range
- Available BOA-48 operation timer sounds alarm at preset time. Specify 1, 5, 10, or 30 hour range
- Add "EB" suffix to model number for 230V/60Hz/3-phase, "EC" for 460V/60Hz/3-phase electrical operation; inquire for 50Hz models
- For gas ovens, add "GB" suffix to model number for 230V/60Hz/3-phase and GC for 460V/60Hz/3-phase

Large Cabinet Ovens

Model	Max. Temp. °F (°C)	Uniformity	Chamber Capacity, ft³ (L)	Chamber Dimensions WxDxH, in (cm)	Product Dimensions[1] WxDxH, in (cm)	Shelf
BO-60	400 (204)	±2° at 177°C	46.9 (1,328)	50x30x54 (127x77x137)	70x46x80 (178x117x203)	BOA-70
BO-62	400 (204)	±2° at 177°C	58.3 (1,651)	56x30x60 (142x77x152)	76x46x86 (193x117x218)	BOA-71
BO-64	400 (204)	±2° at 177°C	77.9 (2,206)	68x30x66 (173x77x168)	88x46x92 (224x117x234)	BOA-72
BO-61	550 (288)	±3° at 260°C	46.9 (1,328)	50x30x54 (127x77x137)	70x46x80 (178x117x203)	BOA-70
BO-63	550 (288)	±3° at 260°C	58.3 (1,651)	56x30x60 (142x77x152)	76x46x86 (193x117x218)	BOA-71
BO-65	550 (288)	±3° at 260°C	77.9 (2,206)	68x30x66 (173x77x168)	88x46x92 (224x117x234)	BOA-72

Accessories

Shut-Down Timer	BOA-46
Operation Timer	BOA-48

[1] Add 10in width to allow for blower and control panel on right side. For Gas models, add additional 15in to left side for burner.

PEERLESS GAS OVEN

- Gravity Convection
- Supplied for use with natural gas, or liquid propane (LP) model available at request
- Included Low Temperature System device for accurate control in the 66° to 260°C (150° to 500°F) range
- Four chambers for total capacity of 12.6ft³ (357L)
- Steel decks with aluminized interior
- Heavy steel construction; steel doors with enameled exterior
- 5in (127mm) direct vent connection or vents under canopy hood
- POA-10 Flue Diverter sold separately
- Maximum temperature of 550°F (288°C)

Peerless Gas Oven

Peerless Gas Oven	PO-23
Accessories	
Flue Diverter	POA-10

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BO-333

OT-2

BUDGET HI-CAPACITY OVENS

- Forced-air convection
- High sample capacity and efficient operation at affordable prices
- Maximum temperature is 400°F (204°C)
- Thermocouple actuated temperature controller
- UL-listed control panel has blower controls, On/Off heat switch, temperature control and indicator lights
- 50lb (23kg) capacity shelves are adjustable on 3in centers; two shelves included
- Rapid drying of large sample loads
- Optional BOA-46 Shut Down Timer with “hold” feature turns off oven at a preset time
- Optional BOA-48 Operation Timer rings bell at end of preset time
- Heaters shut off if blower fails
- Adjustable air intake and exhaust dampers
- Explosion venting latches
- Incoloy-sheathed tubular heating elements with built-in baffle
- Choose from a variety of electrical configurations

Budget Hi-Capacity Ovens

Model[1]	Chamber Capacity, ft³ (L)	Chamber Dimensions WxDxH, in (cm)	Product Dimensions[2] WxDxH, in (cm)	Stand Kit	Shelf
BO-323	15.8 (447)	36x21x36 (91x53x91)	49x28x57 (124x71x145)	BOA-40	BOA-50
BO-333	27 (764)	36x36x36 (91x91x91)	49x43x57 (124x109x145)	BOA-41	BOA-51
BO-343	36 (1,019)	36x48x36 (91x122x91)	49x55x57 (124x140x145)	BOA-42	BOA-52

Accessories	
Shut-Down Timer	BOA-46
Operation Timer	BOA-48

[1] Add letter suffix to model number to specify electrical characteristics desired: "A" suffix, 230V/60Hz/1ph; "B" suffix, 230V/60Hz/3ph; "C" suffix, 460V/60Hz/3ph. Other electrical characteristics quoted on request. [2] Dimensions include 10in (25cm) for blower motor on top of case and 9in (23cm) control panel on right side.

AIR DRYING OVEN

ASTM D197, D421, D558, D559, D698, D2013, D3302, E605; AASHTO R 58, R 74, T 99, T 180

- Forced-air convection
- Low-temperature operation and high-volume air flow
- Maximum temperature is 105°F (41°C)
- 1 to 4 air changes per minute
- Rapid drying without high-heat damage
- For large bulk samples of soils, aggregates, fireproofing and other materials
- Six included shelves adjust on 2in centers
- 30ft³ (850L) chamber space
- Double full-height doors
- Air is drawn over the 2,000-watt heating element for even, horizontal distribution
- Two 24hr timers control heater and fan
- Solid-state temperature controller with digital display

Air Drying Oven

Air Drying Oven, 120V/60Hz	OT-2
230V/50Hz	OT-2F

MF-2A

MF-4A

LABORATORY MUFFLE FURNACES

- Cost-effective muffle furnaces for high-temperature applications
- Programmable controllers feature precise programming and digital display
- Chamber capacities from 242 to 5,841in³ (4.0 to 95.7L)
- MF-2A models have 2,350°F (1,288°C) maximum temperature; other models are 2,000°F (1,093°C)
- Chambers enclosed with minimum 2.5in (64mm) refractory firebrick
- Heavy-gauge painted steel case
- Heating elements are easily accessible for maintenance
- Counter-weighted drop-down doors provide convenient surface for loading/unloading
- Furnaces are supplied with power cord and plug
- Optional MFA-120 powered exhaust system available for MF-4 and MF-6 series

Laboratory Muffle Furnaces

Model	Max. Temp. °F (°C)	Controller	Chamber Capacity, in³ (L)	Chamber Dimensions WxDxH, in (cm)	Product Dimensions WxDxH, in (cm)	Electrical Volts/Amps/Watts
MF-2A	2,350 (1,287)	Automatic Digital	242 (4.0)	6x6x6.3 (152x152x159)	11x15x18 (28x38x46)	120/12/1,440
MF-2AF	2,350 (1,287)	Automatic Digital	242 (4.0)	6x6x6.3 (152x152x159)	11x15x18 (28x38x46)	240/6/1,440
MF-4A	2,000 (1,093)	Automatic Digital	673 (11.0)	8.5x9x8.8 (216x229x224)	14x18x20.5 (36x46x52)	120/14/1,692
MF-4AF	2,000 (1,093)	Automatic Digital	673 (11.0)	8.5x9x8.8 (216x229x224)	14x18x20.5 (36x46x52)	240/7/1,692
MF-6A	2,000 (1,093)	Automatic Digital	1,537 (25.2)	13x13.5x8.8 (330x343x224)	18.25x22.5x20.5 (46x57x52)	240/13/3,120
MF-8A	2,000 (1,093)	Automatic Digital	5,841 (95.7)	21x21x13.3 (533x533x338)	37.5x30x23 (95x76x58)	240/30/7,200

Accessories

Powered Exhaust Vent for MF-4 and MF-6 Series, 115V/60Hz	MFA-120

also available

See listings for Porcelain Crucibles, and Crucible Tongs in the Pans, Tools and Glassware section.

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MF-7910

MF-8020

MF-6010

MUFFLE FURNACES

- Laboratory furnaces by Thermolyne for high-temperature applications
- Rugged construction and quality components for long service life
- Select from three controller types (digital, single set-point or programmable)
  - Digital control display shows current temperature and setpoint; over-temperature protection not included
  - Single setpoint control has single ramp to setpoint and a dwell; over-temperature protection included
  - Programmable control stores one program of 8 segments; over-temperature protection included
- Multiple elements embedded in sides, tops and bottom of chambers
- MF-1310 and MF-1315 have ceramic fiber insulation for faster heat-up
- Safety interlock switches cut power when door is opened
- Most models include cord and plug, MF-6020 must be hard-wired to power
- All models operate on 50 or 60Hz power supplies

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Muffle Furnaces

Model	Max. Temp. °F (°C)	Controller	Chamber Capacity, in^3 (L)	Chamber Dimensions WxDxH, in (cm)	Product Dimensions WxDxH, in (cm)	Electrical Volts/Hertz/Amps/ Watts
MF-1310	2,012 (1,100)	Digital	79 (1.3)	4x5x3.8 (102x127x97)	9x13x14 (24x33x366)	240/50–60/4.4/1,060
MF-1315	2,012 (1,100)	Digital	79 (1.3)	4x5x3.8 (102x127x97)	9x13x14 (24x33x36)	120/50–60/8.9/1,060
MF-7910	2,192 (1,200)	Digital	120 (2)	5x6x4 (127x152x102)	11.3x15.5x18.5 (29x39x47)	240/50–60/4.2/1,000
MF-7915	2,192 (1,200)	Digital	120 (2)	5x6x4 (127x152x102)	11.3x15.5x18.5 (29x39x47)	120/50–60/8.3/1,000
MF-8010	2,192 (1,200)	Digital	350 (5.8)	7x10x5 (178x254x127)	13.3x19.5x19 (34x50x48)	240/50–60/7.5/1,800
MF-8015	2,192 (1,200)	Digital	350 (5.8)	7x10x5 (178x254x127)	13.3x19.5x19 (34x50x48)	120/50–60/15/1,800
MF-8020	2,192 (1,200)	Single Set	350 (5.8)	7x10x5 (178x254x127)	13.3x19.5x19 (34x50x48)	240/50–60/7.5/1,800
MF-8025	2,192 (1,200)	Single Set	350 (5.8)	7x10x5 (178x254x127)	13.3x19.5x19 (34x50x48)	120/50–60/15/1,800
MF-6010	2,192 (1,200)	Digital	864 (14.2)	12.8x10x6.8 (325x254x173)	19.1x20.1x21 (49x51x53)	240/50–60/12.9/3,095
MF-6020	2,192 (1,200)	Programmable	864 (14.2)	12.8x10x6.8 (325x254x173)	19.1x20.1x21 (49x51x53)	240/50–60/18.3/4,400

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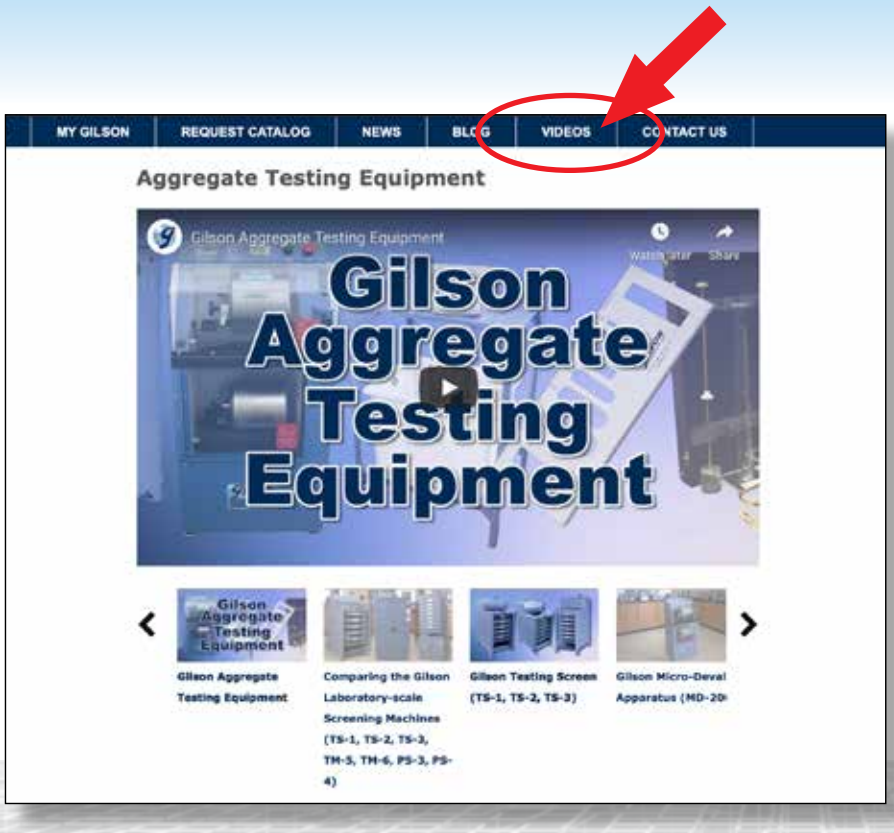

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Gilson Quincy Lab Bench Ovens (BO-250, BO-350, BO-355, BO-550)

Also check out our blog post on Choosing the Right Lab Oven.

Selection Guide 268
Scales & Balances 269
Calibration Weights 280

Scale & Balance Selection Guide

Capacity g / lb	Readability g / lb	Data Port	Weigh-Below	Brand	Model	Page
Electronic						
120	0.001/—	•	—	A&D	AD-123	277
120	0.01/—	OPT	—	A&D	AD-122	277
120	0.001/—	•	•	Adam	CP-300	276
150	0.005/—	•	•	Adam	CP-301	276
210	0.01/—	OPT	—	A&D	AD-202	277
220	0.001/—	•	•	Ohaus	OBD-223	275
220	0.001/—	•	—	Adam	CP-40	277
300	0.01/—	OPT	•	Adam	CP-303	276
310	0.001/—	•	—	A&D	AD-302	277
310	0.001/—	•	—	A&D	AD-303	277
410	0.01/—	OPT	—	A&D	AD-402	277
420	0.001/—	•	—	Adam	CP-41	277
600	0.01/—	•	•	Adam	CP-306H	276
600	0.02/—	•	•	Adam	CP-306	276
610	0.01/—	OPT	—	A&D	AD-602	277
620	0.001/—	•	—	Adam	CP-42	277
820	0.01/—	•		Ohaus	OBD-822	275
820	0.001/—	•	OPT	Adam	CP-43	277
1,000	0.01/—	•	•	Adam	CP-310	276
1,500	0.01/—	OPT	OPT	A&D	AD-154	277
1,500	0.05/—	•	•	Adam	CP-315	276
1,520	0.01/—	•	•	Ohaus	OBD-152	275
1,600	0.01/—	•	•	Ohaus	OBP-162	276
2,100	0.01/—	OPT	OPT	A&D	AD-214	277
2,200	0.01/—	•	•	Ohaus	OBP-222	276
2,200	0.01/—	•	•	Ohaus	OBP-221	276
2,600	0.01/—	•	—	Adam	CP-45	277
3,000/6	0.01/0.00002	•	•	Ohaus	OB-132H	271
3,000/6	0.05/0.0001	•	•	Ohaus	OB-132	271
3,000	0.1/—	•	•	Adam	CP-330	276
3,100	0.1/—	OPT	OPT	A&D	AD-314	277
3,200	0.1/—	•	•	Ohaus	OBP-322	276
3,600	0.1/—	•	—	Adam	CP-47	277
4,000/8	0.1/0.0002	•	OPT	Adam	CP-20	273
4,100	0.01/—	OPT	OPT	A&D	AD-414	277
4,200	0.01/—	•	•	Ohaus	OBD-421	275
4,200	0.01/—	•	•	Ohaus	OBP-422	276
4,200	0.01/—	•	•	Ohaus	OBD-422	275
4,200	0.1/—	•	•	Ohaus	OBP-421	276
4,600	0.01/—	•	—	Adam	CP-48	277
6,000/15	0.02/0.00005	•	•	Ohaus	OB-133H	271
6,000/15	0.1/0.0002	•	•	Ohaus	OB-133	271
6,000/13	2.0/0.005	•	—	Adam	CP-6	274
6,000/13	2.0/0.005	•	—	Adam	CP-7	274
6,100	0.01/—	OPT	OPT	A&D	AD-614	277
8,000/16	0.5/0.0001	•	OPT	Adam	CP-23	273
8,000/16	0.1/0.0002	•	OPT	Adam	CP-22	273
8,000/16	0.2/0.0005	•	OPT	Adam	CP-21	273
8,000/16	0.1/0.0002	•	—	Adam	CP-401	270
8,000/16	0.1/—	•	•	Ohaus	OBD-821	275
12,000	0.1/—	•	OPT	Adam	CP-91	277
12,000/26	0.1/0.0005	•	OPT	Adam	CP-61	272
12,000/26	0.1/0.0005	•	OPT	Adam	CP-61C	272
12,000/26	0.1/0.0005	•	OPT	A&D	AD-12KA	269
12,000/26	0.1/0.0005	•		Ohaus	OBX-512	269
12,500/25	0.5/0.001	•	—	Ohaus	OB-750	270
15,000/30	0.2/0.005	•	•	Ohaus	OB-134	271
15,000/30	0.1/0.0002	•	•	Ohaus	OB-134H	271
15,000/3	5.0/0.01	•	—	Adam	CP-15	274
15,000/3	5.0/0.01	•	—	Adam	CP-16	274
16,000	0.1/—	•	OPT	Adam	CP-92	277
16,000/35	0.1/0.0005	•	OPT	Adam	CP-62	272
16,000/35	0.1/0.0005	•	OPT	Adam	CP-62C	272

Scale & Balance Selection Guide

Capacity g / lb	Readability g / lb	Data Port	Weigh-Below	Brand	Model	Page
Electronic						
16,000/35	0.1/0.0002	•	OPT	Adam	CP-25	273
16,000/35	0.5/0.001	•	OPT	Adam	CP-24	273
16,000/35	0.5/0.001	—	—	Adam	CP-403	270
21,000/46	0.1/0.0005	•	OPT	A&D	AD-20KA	269
22,000	0.01/—	—	OPT	Adam	CP-93	253
22,000/48	0.1/0.0005	•	OPT	Adam	CP-63	272
22,000/48	0.1/0.0005	•	•	Adam	CP-63C	272
24,000/52	25,000/50		•	Ohaus	OBX-524	269
25,000/50	1.0/0.003	•	—	Ohaus	OB-752	270
25,000/50	1.0/0.003	•	—	Ohaus	OB-762	270
30,000/60	2.0/0.005	•	—	A&D	AD-60PA	273
31,000/68	0.1/0.0005	•	OPT	A&D	AD-30KA	269
31,000/68	1.0/0.005	•	OPT	A&D	AD-32KDA[1]	272
31,000/68	0.1/0.0005	•	OPT	A&D	AD-30KD	269
32,000/70	0.1/0.0005	•	OPT	Adam	CP-64	272
32,000/70	0.1/0.0005	•	•	Adam	CP-64C	272
32,000/70	1.0/0.002	•	—	Adam	CP-405	270
32,000/70	0.1/0.002	•	•	Ohaus	OB-135H	271
32,000/70	0.2/0.0005	•	OPT	Adam	CP-27	273
32,000/70	0.5/0.001	•	•	Ohaus	OB-135	271
35,000/70	0.1/0.0005	•	•	Ohaus	OBX-535	269
32,000/70	1.00/002	•	OPT	Adam	CP-26	273
35,000/75	10.0/0.02	•	—	Adam	CP-35	274
35,000/75	10.0/0.02	•	—	Adam	CP-46	274
41,000/90	0.5/0.002	•	OPT	A&D	AD-40KA	269
48,000/100	0.5.0.001	•	OPT	Adam	CP-29	273
48,000/100	2.0/0.005	•	OPT	Adam	CP-28	273
50,000/100	10/0.02	—	•	Adam	CP-52	279
50,000/100	2.0/0.005	•	—	Ohaus	OB-754	270
50,000/100	2.0/0.005	•	—	Ohaus	OB-764	270
60,000/100	2.0/0.005	•	—	Adam	CP-407	270
60,000/100	5.0/0.01	•	—	A&D	AD-150PA	273
61,000/134	1.0/0.005	•	OPT	A&D	AD-60KA	269
61,000/134	1.0/0.005	•	OPT	A&D	AD-60KD	269
61,000/134	0.1/0.0005	•	OPT	A&D	AD-61KD	269
61,000/134	1.0/0.005	•	OPT	A&D	AD-61KA	269
75,000/165	0.02/0.05	•	—	Ohaus	OB-165	276
75,000/165	20.0/0.05	•	—	Adam	CP-75	274
75,000/165	20.0/0.05	•	—	Adam	CP-76	274
75,000/165	20.0/0.05	•	—	Ohaus	OB-165	275
101,000/222	1.0/0.005	•	OPT	A&D	AD-101KA	269
101,000/222	1.0/0.005	•	OPT	A&D	AD-101KD	269
101,000/222	10.0/0.05	•	•	A&D	AD-102KDA[1]	272
120,000/260	5.0/0.01	•	—	Adam	CP-409	270
125,000/250	5.0/0.01	•	—	Ohaus	OB-756	270
125,000/250	5.0/0.01	•	—	Ohaus	OB-766	270
150,000/300	10.0/0.02	•	—	A&D	AD-300PA	273
150,000/300	20/0.05	—	•	Adam	CP-54	279
150,000/330	50.0/0.1	•	—	Adam	CP-150A	274
150,000/330	50.0/0.1	•	—	Adam	CP-151	274
200,000/440	50.0/0.1	•	—	Adam	CP-200	274
200,000/440	50.0/0.1	•	—	Adam	CP-201	274
250,000/500	10.0/0.03	•	—	Ohaus	OB-770	270
250,000/500	10.0/0.03	•	—	Ohaus	OB-758	270
300,000/600	50.0/0.1	—	•	Adam	CP-56	279
500,000/1000	20.0/0.05	—	—	Ohaus	OB-772C	270
Mechanical						
311	0.01/—	—	—	Ohaus	OB-311	278
3,000[2]	10.0/—	—	•	Marcy	CS-10	279
3,000[2]	10.0/—	—	•	Marcy	CS-10W	279
3,000[2]	10.0/—	—	•	Marcy	CS-10S	279
16,000	5.0/—	—	—	Ohaus	OB-2400M	278
—/36	—/0.1	—	—	Ohaus	OB-2400P	278

[1] Dual-Range Balance. [2] Pulp Density Scale range = 1.2—7.8 specific gravity. OPT = Optional

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AD-12KA
Swing-Arm Up

AD-30KD

AD-12KA
Swing-Arm Down

A&D GP INDUSTRIAL HIGH CAPACITY BALANCES

- High-capacity balances with laboratory precision
- g, kg and lb selectable weighing units (12 units total)
- KA-models feature 25.7in swing-arm to position display at any angle
- KD-models feature detached display with 9.8ft cable
- Easily readable vacuum fluorescent digital display
- NEMA4/IP65 rated, all metal body
- 15.1x13.5in (384x344mm) stainless steel platform
- Automatic Self-Calibration when ambient temperature changes
- One-touch automatic internal calibration
- Built-in Windows communication software
- USB and RS-232 interface
- Models up to 31,000g capacity have weigh-below capability with ADA-4A Hook accessory
- Models over 61,000g capacity can accommodate the ADA-6A Weigh-Below Hook accessory
- 5-year warranty
- **Product Dimensions:** 13.5x15.1x24.5in (344x384x662mm), WxDxH

A&D GP Industrial High Capacity Balances		
Model	Capacity x Readability g (lb)	Repeatability, g
AD-12KA	12,000x0.1 (26 x 0.0005)	0.1
AD-20KA	21,000x0.1 (46 x 0.0005)	0.1
AD-30KA	31,000x0.1 (68 x 0.0005)	0.1
AD-40KA	41,000x0.5 (90 x 0.002)	0.5
AD-60KA	61,000x1.0 (134 x 0.005)	0.2
AD-61KA	61,000x1.0 (134 x 0.005)	0.7
AD-101KA	101,000x1.0 (222 x 0.005)	1.0
AD-30KD	31,000x0.1 (68 x 0.0005)	0.5
AD-60KD	61,000x1.0 (134 x 0.005)	0.7
AD-61KD	61,000x0.1 (134 x 0.0005)	0.5
AD-101KD	101,000x1.0 (222 x 0.005)	1.0
Accessories		
Weigh-Below Hook		ADA-4A

OBX-512 with OBA-709

OBX-512

OHAUS EXPLORER® PRECISION HIGH CAPACITY BALANCES

- Touchless sensors for hands-free operation of zero, tare and calibration functions
- Parts counting, percent weighing, differential weighing, density determination, statistics and more
- g, kg and lb selectable weighing units (16 units total)
- Full-color 5.7in (145mm) VGA graphic touch screen display
- Detachable display with 5ft (1.5m) cable
- OBA-709 Display Column Kit accessory
- Die-cast metal base and IP54 rated enclosure for protection against spills, debris and humidity
- 12.2x14.8in (311x377mm) stainless steel platform
- Ohaus SmarText™ 2.0 software with AutoCal™ for fast internal calibration
- USB and RS-232 interface
- Weigh-below hook included
- Operate on 100/120V or 220/240V, 50/60Hz electrical supplies or rechargeable battery kit, sold separately
- 2-year warranty
- **Product Dimensions:** 14.8x17.4x4.7in (377x443x120mm), WxDxH

Ohaus Explorer® Precision High Capacity Balances		
Model	Capacity x Readability, g (lb)	Repeatability, g
OBX-512	12,000x0.1 (26x0.0005)	0.1
OBX-524	24,000x0.1 (52x0.0005)	0.1
OBX-535	35,000x0.1 (77x0.0005)	0.1
Accessories		
Display Column Kit, 18in high		OBA-709
Rechargeable battery kit		OBA-42

CP-401

OB-772C

OB-750

ADAM GBK BENCH SCALES

- Affordable, portable high capacity
- Simple, user-friendly operation
- kg, g, lb, oz and lb:oz selectable weighing units
- Large, backlit LCD with capacity tracker
- Tough, splash proof ABS housing
- 11.8x15.7in (300x400mm) stainless steel platform
- RS-232 interface
- Overload protection
- Rechargeable battery pack for portable use
- 2-year warranty
- **Product Dimensions:** 11.8x20.5x26.8in (300x520x680mm), WxDxH

Adam GBK Bench Scales		
Model	Capacity x Readability, kg (lb)	Repeatability, g
CP-401	8x0.1 (16 x 0.0002)	0.2
CP-403	16x0.5 (35 x 0.001)	1.0
CP-405	32x1 (70 x 0.002)	2.0
CP-407	60x2 (130 x 0.005)	4.0
CP-409	120x5 (260 x 0.01)	10.0

Accessories	
RS-232 to PC cable	CPA-41
RS-232 to USB Interface Cable	CPA-43
Adam Data Collection Software	CPA-45

OHAUS DEFENDER® 5000 BENCH SCALES

- Fast display of weight within 2 seconds
- kg, g, lb, oz, lb:oz, metric tonnes, short ton and selectable weighing units
- Large LCD display with backlight viewable even in direct sunlight
- Powder-coated steel construction with ABS indicator housing and aluminum load cell
- Removable stainless steel weighing platform
- RS-232 interface with RS485, USB device, Ethernet and WiFi/Bluetooth connectivity available
- Included SD card storage of up to 50,000 items and 1,000 user profiles
- Optional lithium battery for cordless operation
- Add “C” suffix to model number for Column-Mounted display model (inquire for dimensions)
- 1-year warranty

Ohaus Defender® 5000 Bench Scales				
Model	Capacity x Readability kg (lb)	Readability, g	Platform Size, in (mm)	Product Dimensions, WxDxH in (mm)
OB-750	12.5x0.0005 (25x0.001)	0.5	12x12 (305x305)	12x23.1x4.6 (305x588x118)
OB-752	25x 0001 (50x0.002)	1.0	12x12 (305x305)	12x23.1x4.6 (305x588x118)
OB-754	50x0.002 (100x0.005)	2.0	18x18 (457x457)	18x28.9x4.6 (457x734x118)
OB-756	125x.005 (250x0.01)	5.0	18x18 (457x457)	18x28.9x4.6 (457x734x118)
OB-758	250x0.01 (500x0.02)	10	24x24 (610x610)	24x34.6x4.6 (610x880x118)
OB-762	25x0.001 (50x0.002)	1.0	14x12 (355x305)	12x25.1x4.6 (305x638x118)
OB-764	50x0.002 (100x0.005)	2.0	14x12 (355x305)	12x25.1x4.6 (305x638x118)
OB-766	125x0.005 (250x0.01)	5.0	24x18 (610x457)	18x34.9x4.6 (457x887x118)
OB-770	250x0.01 (500x0.02)	10	24x18 (610x457)	18x34.9x4.6 (457x887x118)
OB-772C*	500x0.02 (1000x0.2)	20	31x23.6 (800x600)	31.5x37.9x47.4 (800x963x1203)

Accessories	
Rechargeable Battery Kit for Defender 5000 Scales	OBA-51

* Only available in Column-Mounted model

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OB-132

OB-134

OHAUS RANGER® 7000 COMPACT BENCH SCALES

- Standard and high-resolution models, built for demanding industrial applications
- Exclusive Sieving Analysis mode
- g, kg lb and oz selectable weighing units
- Weigh-below density, percent weighing, differential weighing, filling and more
- 4.3in (109mm) TFT graphical LCD display
- Base and indicator housing are die-cast metal
- Stainless steel platform (size varies, see below)
- Models with "H" suffix have higher resolution and exclusive Auto-Cal function
- Operation is powered by exclusive Ohaus SmarText™ 2.0 software
- USB and RS-232 interfaces
- Weigh-below hook included
- Column mounted display, rechargeable battery and printer accessories
- 1-year warranty

Ohaus Ranger® 7000 Compact Bench Scales

Model	Capacity x Readability, g (lb)	Repeatability, g	Platform Size, in (mm)	Product Dimensions, WxDxH in (mm)
OB-132	3,000x0.05 (6 x 0.0001)	0.1	11x11 (280x280)	11x16.5x4.5 (280x420x114)
OB-133	6,000x0.1 (15 x 0.0002)	0.2	11x11 (280x280)	11x16.5x4.5 (280x420x114)
OB-134	15,000x0.2 (30 x 0.005)	0.4	14.8x12.2 (377x311)	14.9x18.4x5 (377x467x128)
OB-135	35,000x0.5 (70 x 0.001)	1.0	14.8x12.2 (377x311)	14.9x18.4x5 (377x467x128)
OB-132H	3,000x0.01 (6 x 0.00002)	0.02	11x11 (280x280)	11x16.5x4.5 (280x420x114)
OB-133H	6,000x0.02 (15 x 0.00005)	0.04	11x11 (280x280)	11x16.5x4.5 (280x420x114)
OB-134H	15,000x0.1 (30 x 0.002)	0.2	14.8x12.2 (377x311)	14.9x18.4x5 (377x467x128)
OB-135H	35,000x0.1 (70 x 0.002)	0.2	14.8x12.2 (377x311)	14.9x18.4x5 (377x467x128)

Accessories

Rechargeable Battery	OBA-42
Impact Printer	OBA-44
Column Kit for Display	OBA-46

technote

Ranger 7000 Sieving Analysis Mode

Ohaus Ranger 7000 Compact Bench Scales now feature an exclusive new operating mode for Sieve Analysis. This application quickly calculates distributions for particle size analysis, enhancing lab efficiency and minimizing recording errors.

After a set of sieves is set up in the Ranger 7000's library, operation in the Sieve Analysis Mode quickly weighs the contents of each sieve fraction and computes percent retained and passed, along with any weight lost during the process. The end result is displayed on the Ranger's bright QVGA display and can be sent to the OBA-44 printer for ticket printing or to a PC for integration into a data management system. The Ranger 7000 also computes Fineness Modulus and provides cumulative percent retained for each fraction size.

Fully customizable print templates include information like company name, address, phone number, website and contact email, as well as GMP/GLP data for date, time, user ID, project ID, Scale ID and a unique Sample ID. The Ranger 7000 supports full capture of scale settings and data via the included USB port and can support a range of printers and bar code scanners.

```
Sample Tag#: 12345
DATA
Start Weight: 1271.9 g
Size      Measured Weight
25mm              169.9 g
12.5mm            715.9 g
6.3mm             246.9 g
Pan               138.2 g
         ----------------
Weight Lost:        1.0 g
End Weight:      1270.9 g
ANALYSIS
Size    Retained   Passed
25mm     13.37%    86.63%
12.5mm   56.33%    30.30%
6.3mm    19.43%    10.87%
Pan      10.87%     0.00%
Size      Acc % retained
25mm              13.37%
12.5mm            69.70%
6.3mm             89.13%
Pan                  ---
Fineness Modulus: 1.72
```

Sample print-out from OBA-44 Impact Printer

CP-61

CP-61C

AD-32KDA

ADAM ECLIPSE® HIGH CAPACITY BALANCES

- High capacity, affordable precision
- g, kg, lb, oz weighing units (16 units total)
- Sealed, illuminated touch keypad has durable, smooth surface for easy wipe-down
- Vivid, backlit LCD display is easily visible in any lighting conditions
- Weigh-Below capability with CPA-15 Weigh-Below Hook accessory
- Overload protection and capacity tracker
- External calibration for verification and adjustment with calibration masses
- RS-232 and USB interfaces
- Models with column-mounted or low-profile attached displays
- Large, 304 stainless steel platforms, 15.7x11.8in (400x300mm) 304 stainless steel platform
- Rugged metal frame with level indicator and adjustable feet
- 18VDC AC adapter included. CE and CUL marked
- Add "C" suffix to model number for units with Column-Mounted Display
- **Product Dimensions:** 15.8x18.1x4in (401x460x102mm) WxDxH
- **Product Dimensions (column-mounted):** 15.8x19.7x23.6in (401x500x-600mm), (WxDxH)

Adam Eclipse® High Capacity Balances		
Model	Capacity x Readability g (lb)	Repeatability, g
CP-61	12,000x0.1 (26x0.0005)	0.2
CP-62	16,000x0.1 (35x0.0005)	0.2
CP-63	22,000x0.1 (48x0.0005)	0.2
CP-64	32,000x0.1 (70x0.0005)	0.2
Accessories		
Weigh-Below Hook		CPA-15

A&D GP SMART-RANGE INDUSTRIAL BALANCES

- Dual weighing ranges
- Standard range: high capacity with normal readability
- Precision range: limited capacity with enhanced precision and readability
- g, kg and lb selectable weighing units (12 units total)
- 25.7in swing arm positions display at any angle
- Easily readable vacuum fluorescent digital display
- NEMA4/IP65 washdown rated, all metal body
- 13.5x15.1in (344x384mm) stainless steel platform
- One-touch Automatic Internal Calibration
- Built-in Windows communication software
- Affordable alternative for multiple weighing applications
- RS-232 interface
- ADA-4A and ADA-6A Weigh-Below Hook accessories
- 5-year warranty
- **Product Dimensions:** 14x24.2x5.1in (372x615x130mm), WxDxH

A&D GP Smart-Range Industrial Balances			
Model	Standard Capacity and Readability, g (lb)	Precision Capacity and Readability, g (lb)	Repeatability, g
AD-32KDA	31,000x1.0 (68x0.005)	6,000x0.1 (15x0.0005)	0.1
AD-102KDA	101,000x10 (222x0.05)	61,000x1.0 (134x0.005)	1.0
Accessories			
Weigh-Below Hook			ADA-4A

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AD-150PA

A&D FG-K BENCH/PLATFORM SCALES

- Cost effective, portable scale for lab or field use
- kg, lb and oz selectable weighing units
- Platform-mounted LCD display, inquire for column-mounted models
- IP65 rated, all metal body and rock-solid frame construction
- 12x15in (305x381mm) stainless steel platform
- RS-232 communication with ADA-30A Serial Interface accessory
- ADA-33A Carrying Handle accessory
- Powered by included AC adapter or four C batteries (not included)
- 2-year warranty
- **Product Dimensions:** 15x18.3x4.6in (380x464x118mm), WxDxH

A&D FG-K Bench/Platform Scales

Model	Capacity x Readability, kg (lb)	Repeatability, g
AD-60PA	30x0.002 (60x0.005)	5.0
AD-150PA	60x0.005 (150x0.01)	10.0
AD-300PA	150x0.01 (300x0.02)	20.0

Accessories	
RS-232 Serial Interface	ADA-30A
Wall Mount Kit	ADA-32A
Carrying Handle	ADA-33A
17ft Extension Cable	ADA-34A

CP-20

ADAM CRUISER BENCH SCALES

- Large capacities, choice of resolutions
- g, kg, lb, oz and lb:oz selectable weighing units
- Large, backlit LCD with 0.6in (15mm) digits
- Tough, splash proof ABS housing
- Sealed keypad
- 8.3x11.8in (210x300mm) stainless steel platform
- RS-232 interface
- Overload protection
- Adjustable feet and level indicator
- Weigh-below capable if purchased with factory-installed CPA-33 Weigh-Below Hook accessory
- Powered by included AC adapter or internal 90-hour rechargeable battery
- **Product Dimensions:** 12.4x14x4.5 (315x355x114), WxDxH

Adam Cruiser Bench Scales

Model	Capacity x Readability, g (lb)	Repeatability ,g
CP-20	4,000x0.1 (8x0.0002)	0.2
CP-21	8,000x0.2 (16x0.0005)	0.4
CP-22	8,000x0.1 (16x0.0002)	0.2
CP-23	8,000x0.05 (16x0.0001)	0.1
CP-24	16,000x0.5 (35x0.001)	1.0
CP-25	16,000x0.1 (35x0.0002)	0.2
CP-26	32,000x1.0 (70x0.002)	2.0
CP-27	32,000x0.2 (70x0.0005)	0.2
CP-28	48,000x2.0 (100x0.005)	4.0
CP-29	48,000x0.5 (100x0.001)	1.0

Accessories	
Weigh-Below Hook	CPA-33

CP-46

CP-75 shown with HM-30 Air Meter Base

ADAM CPW PLUS BENCH SCALES

- Portable high capacity with extra readability
- Simple, 4-button operation for fast, affordable weighing operations
- kg, lb, oz and lb:oz selectable weighing units
- Corded remote display with large, easy-to-read LCD display and backlight
- Wall mount bracket
- Tough, splash proof housing
- 11.8x11.8in (300x300mm) low profile stainless steel platform
- RS-232 interface
- Powered by included AC adapter or six AA batteries (not included)
- Hold function allows continuous display weight readings
- 1-year warranty
- **Product Dimensions:** 11.8x11.8x2in (300x300x50mm), WxDxH

Adam CPW Plus Bench Scales		
Model	Capacity x Readability, kg (lb)	Repeatability, g
CP-7	6x0.002 (13x0.005)	2.0
CP-16	15x0.005 (33x0.01)	5.0
CP-46	35x0.01 (75x0.02)	10.0
CP-76	75x0.02 (165x0.05)	20.0
CP-151	150x0.05 (330x0.1)	50.0
CP-201	200x0.05 (440x0.1)	50.0

COMPACT FIELD SCALES

- Portable, affordable solution for field weights
- kg, lb, oz and lb:oz selectable weighing units
- Large, easy-to-read LCD display
- Wall mount bracket
- 11.8x11.8in (300x300mm) stainless steel weighing platform
- RS-232 interface
- Aluminum carrying case with fitted foam interior
- Compliant with ASTM C29, C138 and AASHTO T 19 and T 121 for field unit weights and yield tests
- Hold function allows continuous display of weight readings
- Powered by included AC adapter or six AA batteries (not included)
- 1-year warranty
- **Product Dimensions:** 11.8x11.8x2in (300x300x50mm), WxDxH
- **Outside Case Dimensions:** 18.63x14.25x6in (473.08x361.95x152.4mm), WxDxH

Compact Field Scales		
Model	Capacity x Readability, kg (lb)	Repeatability, g
CP-6	6x0.002 (13x0.005)	2.0
CP-15	15x0.005 (33x0.01)	5.0
CP-35	35x0.01 (75x0.02)	10.0
CP-75	75x0.02 (165x0.05)	20.0
CP-150A	150x0.05 (330x0.1)	50.0
CP-200	200x0.05 (440x0.1)	50.0

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OB-165

OHAUS DIGITAL FIELD TEST SCALE

- Portable, precision field weighing of concrete, asphalt, aggregate and soil samples
- 165lb (75kg) capacity with 20g readability
- 3-second stablization time
- Selectable weighing units of lb, oz, lb:oz, kg and g
- Easy-to-read LCD display with backlight
- Selectable auto-shutoff
- Large 11x12.4x1.8in painted diamond plate steel platform
- RS232 interface
- Aluminum carrying case with fitted foam interior for all components
- Meets ASTM C29, ASTM C138, AASHTO T 19 and AASHTO T 121 for field weights and yield test
- Flexible coiled cable (extendable up to 9 ft.)
- Operates on included AC adapter or 70-hour internal rechargeable battery
- 1-year warranty
- **Base Dimensions:** 11x12.4x1.77in (280x316x45mm), WxDxH
- **Outside Case Dimensions:** 15x13.5x7in (381x343x178mm), WxDxH

Ohaus Digital Field Test Scale		
Model	Capacity x Readability kg (lb)	Repeatability, g
OB-165	75x0.02 (165x0.05)	2.0

OBD-223

OBD-822

OHAUS ADVENTURER PRECISION BALANCES

- High-resolution balances for laboratory, industrial and educational applications
- g, kg and lb selectable weighing units (16 units total)
- Adventurer series is designed for stability, accuracy and fast response time
- 4.3in (109mm) full color LCD touch screen makes application control easy, even with laboratory gloves on
- Dual USB ports
- Weigh-below hook, protective cover, integral security bracket and stability indicator are included
- OBD-223 model features a draftshield with wide-entry, glass panel doors
- Sealed front panel, molded spill ring, large stainless steel platforms and leveling feet for quick setup
- Operates on included AC adapter or 70-hour internal rechargeable battery
- Inquire for models conforming to National Type Evaluation Program (NTEP) Standards and units with internal calibration
- 2-year warranty
- **Product Dimensions:** 9.1x13.9x3.9in (230x354x100mm), WxDxH. OBD-223 with draftshield has 9.5in (241mm) height

Ohaus Adventurer Precision Balances			
Model	Capacity x Readability, g	Repeatability, g	Platform size in (mm)
OBD-223	220 x0.001	0.001	5.1 dia. (130)
OBD-822	820x0.01	0.01	6.9x7.7 (175x195)
OBD-152	1,520x0.01	0.01	6.9x7.7 (175x195)
OBD-421	4,200x0.01	0.01	6.9x7.7 (175x195)
OBD-422	4,200x0.1	0.1	6.9x7.7 (175x195)
OBD-821	8,200x0.1	0.1	6.9x7.7 (175x195)

OBP-162

CP-310

OHAUS PIONEER PRECISION BALANCES

- Economical high-resolution balances for laboratory, industrial and educational applications
- Selectable weighing units include g, kg, oz and lb (18 units total)
- Pioneer series is designed for accuracy, durability, economy and simple operation
- Backlit Liquid Crystal Display (LCD) has second line of text for guidance
- RS-232 and USB interfaces
- Durable construction with cast-metal lower housing, metal sub-pan and stainless steel weighing pan
- Integrated weigh-below hook, protective cover, integral security bracket and stability indicator are included
- Leveling feet for fast set up
- Large, 7.09in (180mm) platform diameter
- Models operate on 100-240V/50-60Hz power supply with the included AC Adapter
- Add “B” suffix to model number for units with internal calibration (calibrates and adjusts with the touch of a button)
- 2-year warranty
- **Product Dimensions:** 8.2x12.6x3.9in (209x321x98mm), WxDxH

Ohaus Pioneer Precision Balances		
Model	Capacity x Readability g	Repeatability, g
OBP-162	1,600x0.01	0.01
OBP-222	2,200x0.01	0.01
OBP-322	3,200x0.01	0.01
OBP-422	4,200x0.01	0.01
OBP-221	2,200x0.1	0.1
OBP-421	4,200x0.1	0.1

ADAM HIGHLAND PORTABLE PRECISION BALANCES

- Rugged, lightweight and portable
- g and lb selectable weighing units (15 units total)
- LCD display with backlight
- 4.7in (120mm) diameter stainless steel platform
- HandiCal™ calibration with built-in mass
- ShockProtect™ overload protection
- USB and RS-232 interfaces
- Weigh-below hook included
- Internal rechargeable battery with AC adapter
- Removable draft shield standard on all models
- 2-year warranty
- **Product Dimensions:** 6.7x9.6x3.1 (170x245x80), WxDxH

Adam Highland Portable Precision Balances		
Model	Capacity x Readability g	Repeatability, g
CP-300	120x0.001	0.002
CP-301	150x0.005	0.05
CP-303	300x0.01	0.01
CP-306	600x0.02	0.02
CP-306H	600x0.01	0.01
CP-310	1,000x0.01	0.01
CP-315	1,500x0.05	0.05
CP-330	3,000x0.1	0.1

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CP-41

CP-91

ADAM PRECISION BALANCES

- Multilingual display capability
- CP-40 to CP-43 models: 13 selectable weighing units
- CP-45 to CP-48 models: 16 selectable weighing units
- CP-50 model: 14 selectable weighing units
- CP-91 to CP-93 models: 10 selectable weighing units
- Large display for clear visibility
- Stainless steel weighing platform
- USB and RS-232 interfaces (CP-50: RS-232 only)
- External calibration for verification and adjustment with weights
- Level indicator and adjustable feet ensures correct setup
- 3-year warranty
- **Product Dimensions:** CP-40 to CP-43: 8.8x14.7x8.6in (224x373x-218mm), WxDxH. CP-45 to CP-50: 8.8x14.7x3.7in (224x373x95mm) CP-91 to CP-93 Dimensions: 8.7x12.2x6.6in (221x310x168mm)

Adam Precision Balances

Model	Capacity x Readability, g	Repeatability, g	Platform Size in (mm)
CP-40	220x0.001	0.002	4.7 (120) dia.
CP-41	420x0.001	0.002	4.7 (120) dia.
CP-42	620x0.001	0.002	4.7 (120) dia.
CP-43	820x0.001	0.002	4.7 (120) dia.
CP-45	2600x0.01	0.02	7.3 (185) dia.
CP-47	3600x0.01	0.02	7.3 (185) dia.
CP-48	4600x0.01	0.02	7.3 (185) dia.
CP-50	6200x0.01	0.02	7.3 (185) dia.
CP-91	12000x0.1	0.2	15.7x11.8 (400x300)
CP-92	16000x0.1	0.2	15.7x11.8 (400x300)
CP-93	22000x0.1	0.2	15.7x11.8 (400x300)

Accessories

Weigh-Below hook for CP-91–CP-93	CPA-20

VIDEO ONLINE

AD-214

A&D NEWTON COMPACT BALANCES

- Affordable precision and portability
- 10 selectable weighting units
- LCD display with backlight and fast 1 second response time
- USB and RS-232 Interface accessories
- Models with 1,500g or more are weigh-below capable if purchased with applicable Weigh-Below Hook accessory
- Built-in specific gravity functions
- AC or battery operation with four AA batteries (not included)
- ADA-35 Carrying Case accessory for easy portability (excludes AD-123 and AD-303 models)
- ADA-36 Draft Shield included with AD-123 and AD-303
- 5-year warranty
- **Product Dimensions:** 7.5x8.3x3.3in (190x211x83mm), WxDxH

A&D Newton Compact Balances

Model	Capacity x Readability g	Repeatability, g	Platform Size in (mm)
AD-123	120x0.001	0.003	4.3 (110) dia.
AD-303	310x0.001	0.003	4.3 (110) dia.
AD-122	120x0.01	0.01	4.3 (110) dia.
AD-202	210x0.01	0.01	4.3 (110) dia.
AD-302	310x0.01	0.01	4.3 (110) dia.
AD-402	410x0.01	0.01	4.3 (110) dia.
AD-602	610x0.01	0.01	4.3 (110) dia.
AD-154	1,500x0.1	0.1	5.5x5 (127x140)
AD-214	2,100x0.1	0.1	5.5x5 (127x140)
AD-314	3,100x0.1	0.1	5.5x5 (127x140)
AD-414	4,100x0.1	0.1	5.5x5 (127x140)
AD-614	6,100x0.1	0.1	5.5x5 (127x140)

Accessories

Weigh-Below Hook for AD-154 and AD-214	ADA-20
Weigh-Below Hook for AD-314, AD-414 and AD-614	ADA-22
Carrying Case	ADA-35
USB Interface	ADA-202
RS-232C Interface	ADA-203
Draft Shield for ADA-122, ADA-123, ADA-202, ADA-302, ADA-303, ADA-402 and ADA-602	ADA-36

OB-311

OB-2400P

OHAUS CENT-O-GRAM BALANCE

- Reliable mechanical design for economical weighing of small samples
- 311x0.01g capacity with four notched beams for counterweights
- Magnetic damping, agate bearings and precision-ground knives
- 3.5in (89mm) diameter stainless steel pan with handle and two pouring spouts
- Adjustable platform allows suspended weighing for specific gravity samples
- OBA-110 Vinyl Dust Cover accessory protects the balance between uses
- 5-year warranty
- **Product Dimensions:** 14.1x6.5x9.8in (360x166x249mm), WxDxH

Ohaus Cent-O-Gram Balance	
Ohaus Cent-O-Gram Balance	OB-311
Accessories	
Vinyl Dust Cover	OBA-110

OHAUS FIELD TEST SCALES

- Rugged mechanical balances
- Both have a single beam graduated in 0.01lb and 5g divisions and are supplied with slotted iron weights
- OB-2400P has 36x0.01lb Imperial (pound) weights
- OB-2400M has 16kgx5g metric weights
- Models converted between Metric and Imperial weighing systems with purchase of additional weight sets
- Heavy, cast metal base features an integral carrying handle
- 11in (279mm) weighing platform
- **Product Dimensions:** 15.3x7.6x8.2in (390x194x209mm), WxDxH

Ohaus Field Test Scales	
Ohaus Field Test Scale, lb	OB-2400P
Ohaus Field Test Scale, Kg	OB-2400M
Accessories	
lb Weight Set, 36lb	OBA-137P
Kg Weight Set, 16kg	OBA-137M
Stainless Steel Scoop	OBA-126A

Weighing/Handling Scoops

WEIGHING/HANDLING SCOOPS

Select from a range of sizes and capacities of scoops with pouring spouts for weighing and handling of samples. Types of construction include stainless steel (SS), aluminum (AL), polypropylene (PP). For larger samples, see TSA-162, TSA-163 and HMA-68 described elsewhere.

Weighing/Handling Scoops			
Model	Description	Size, LxWxH, in	Approx. Tare, g
OBA-10783A	SS Flat Bottom	11.9x7.38x1.7	190
OBA-1101	PP Footed	12x6x2.8	125
OBA-171[1]	AL Flat Bottom with Tab	3x2.3x0.8	9
OBA-170[1]	AL Flat Bottom with Tab	2x1.5x0.4	4
OBA-126A	SS Flat Bottom	17.2x11x3.4	800

[1]*Includes counterweight.*

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CP-52

CS-10S

CS-10W

ADAM SHS CRANE SCALES

- Ideal for rapid weight determinations of large, difficult-to-position items
- lb and kg selectable weighing units
- Die-cast metal frame and 360° rotary safety hook
- Overload rated to 150% of total capacity with full-range taring
- Included remote control promotes safety when selecting units, hold functions and zeroing
- Large, red LED display with easily readable 0.6in (15mm) digits
- Rechargeable lithium batteries last up to 20 hours; or use AA batteries
- 100-240V/50-60Hz AC Adapter
- 1-year warranty
- **Product Dimensions:** 5.8x2.6x12.6in (148x65x320mm), WxDxH

Adam SHS Crane Scales		
Model	Capacity x Readability, kg (lb)	Repeatability, g
CP-52	50x0.01 (100x0.02)	10
CP-54	150x0.02 (300x0.05)	20
CP-56	300x0.05 (600x0.1)	50

PULP DENSITY/SPECIFIC GRAVITY SCALES

- Direct readings of specific gravity, percent solids and weight in kilograms
- Simple, direct determination of pulp densities and specific gravities of pulps, liquids and dry solids
- Calculation errors are eliminated
- Wide range for specific gravities from 1.2 to 7.8 using one of twelve included interchangeable analog dial faces
- Sturdy painted steel scales have a 10in (254mm) circular dial with acrylic lens
- A 1,000ml stainless steel or plastic container with overflow holes are available separately or included with the Marcy™ Specific Gravity Scale
- CS-10W Scale is sold without a container
- CS-10 Scale is supplied with the clear plastic container w/slotted overflow holes
- CS-10S Scale is supplied with the stainless steel container w/round overflow holes
- **Product Dimensions:** 17.5x12x3in (445x305x76mm), WxDxH

Pulp Density/Specific Gravity Scales	
Marcy™ Pulp Density/Specific Gravity Scale, without Container	CS-10W
Marcy™ Pulp Density/Specific Gravity Scale, with Clear Container	CS-10
Marcy™ Pulp Density/Specific Gravity Scale, with Stainless Steel Container	CS-10S
Accessories	
1,000ml Plastic Container	CSA-25
1,000ml Stainless Steel Container	CSA-26
Set of 12 Dial Faces for CS-10W, CS-10, or CS-10S	CSA-30

Calibration Weights

Calibration Sets

NIST Weights

CALIBRATION WEIGHTS FOR BALANCES

Sophisticated testing and frequent auditing of laboratory equipment has made it increasingly necessary for laboratories to calibrate their own balances. Calibration Weights check span and linearity and calibrate electronic balances. The commonly used Span Calibration method uses one-point calibration with a single mass approximately equal to the capacity of the balance. Some balances use the Linearity Calibration method which allows the user to select multiple mass settings, normally defined as zero, center (half span) and full span of the balances capacity. This method minimizes deviation throughout the balance's weighing range.

Gilson offers Calibration Weights in ASTM Classes 1 and 4, NIST Class F and Ultra Class. Ultra Class weights boast weight tolerances 40—50% tighter than ASTM Class 1 and equal to or exceeding OIML Class E2. Ultra Class and ASTM Class 1 weights are highly polished stainless steel. ASTM Class 4 weights are satin-finished stainless steel. Recessed grip handles are part of the 10kg and 20kg weights for easier handling and stacking. Individual weights from 10—4,000g include a glove and protective, foam-lined plastic case. Cases for 10kg and 20kg weights are high-impact plastic, reinforced with metal edges.

Precision Weights Sets are available in Ultra Class, ASTM Class 1 and ASTM Class 4 with ranges of 1mg—100g and 1—100g. Weights are supplied in 5-2-2-1 series as ASTM E617 specifies.

NIST Class F Calibration Weights are available for higher capacity balances and scales. Fabricated of cast iron with integral grip handles.

Traceable or NVLAP Certificates are available for all weights and sets. Traceable Certificates document traceability to NIST and compliance with ASTM or OIML specifications. They include nominal value and correction, date of calibration, accuracy class, customer name and purchase order number. NVLAP Weight Calibration Certificates should be requested by users who must provide certification to ISO, FDA, ANSI or other requirements. Report format and contents comply with NVLAP requirements. Order weights or sets with these certifications, by adding "T" for Traceable certificate or "W" for NVLAP Certificate to the catalog number.

helpfulhint

Ultra Class:	For analytical and sensitive balances and applications that demand superior accuracy.
ASTM Class 1:	For analytical balances and applications requiring first-order accuracy.
ASTM Class 4:	For most balances less sensitive than 0.01g and applications having average accuracy requirements.
NIST Class F:	For higher capacity, less sensitive balances and scales.

Calibration Weights for Balances

Weight	Ultra Class	ASTM Class 1	ASTM Class 4	NIST Class F
Individual Weights				
10g	OBA-201	OBA-301	OBA-401	—
20g	OBA-202	OBA-302	OBA-402	—
30g	OBA-203	OBA-303	OBA-403	—
50g	OBA-204	OBA-304	OBA-404	—
100g	OBA-205	OBA-305	OBA-405	—
200g	OBA-206	OBA-306	OBA-406	—
300g	OBA-207	OBA-307	OBA-407	—
400g	OBA-208	OBA-308	OBA-408	—
500g	OBA-209	OBA-309	OBA-409	—
1,000g	OBA-210	OBA-310	OBA-410	—
2,000g	OBA-211	OBA-311	OBA-411	—
3,000g	OBA-212	OBA-312	OBA-412	—
4,000g	OBA-213	OBA-313	OBA-413	—
10kg	OBA-214	OBA-314	OBA-414	OBA-282
20kg	OBA-215	OBA-315	OBA-415	OBA-284
25kg	—	—	—	OBA-286
50kg	—	—	—	OBA-288
100kg	—	—	—	OBA-289
250kg	—	—	—	OBA-291
25lb	—	—	—	OBA-278
50lb	—	—	—	OBA-280
Sets				
1mg—100g	OBA-216	OBA-316	OBA-416	—
1g—100g	OBA-217	OBA-317	OBA-417	—

Accessories

Plastic Case for all 10kg Weights	OBA-10
Plastic Case for all 20kg Weights	OBA-20

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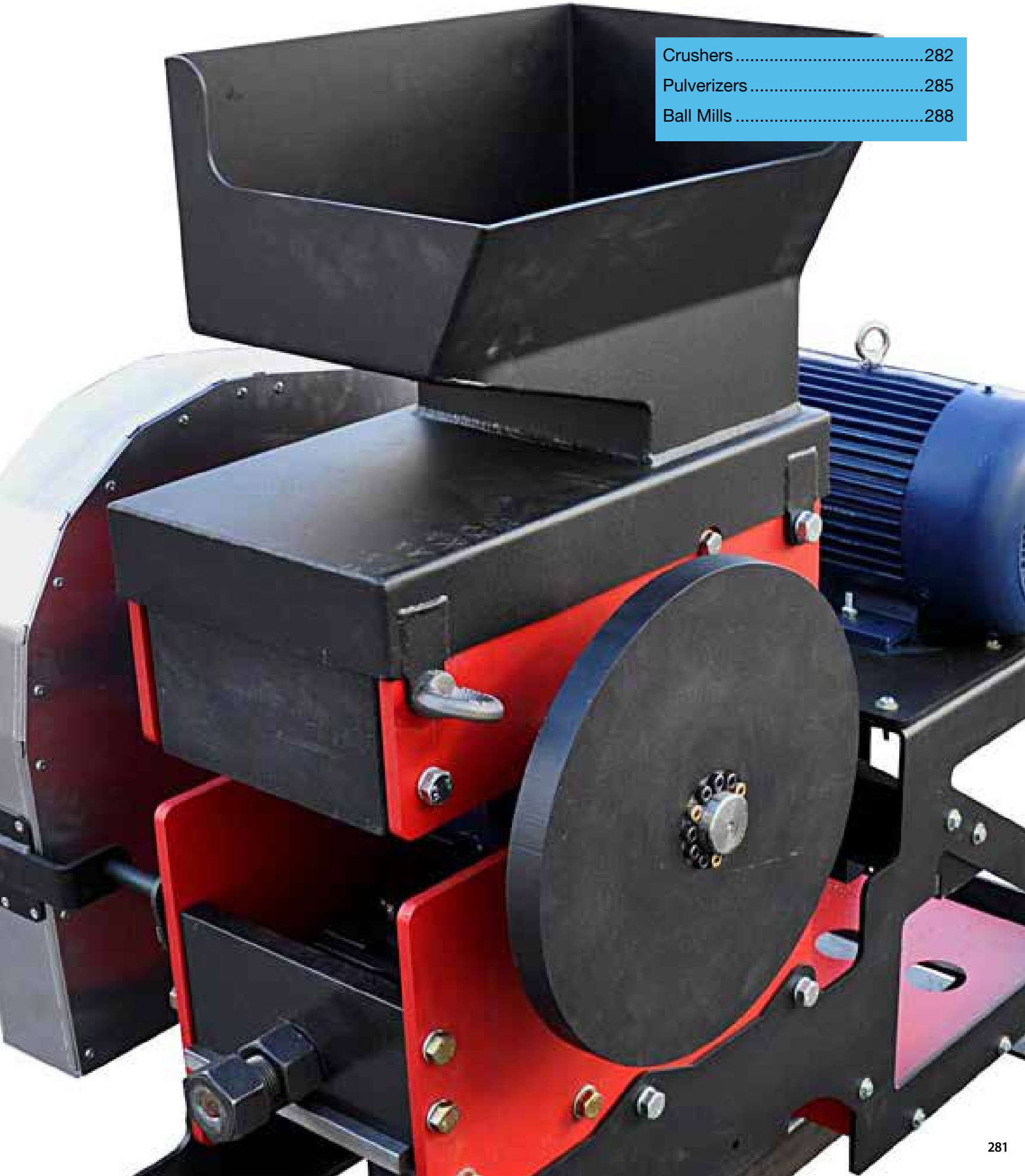
Crushers 282
Pulverizers 285
Ball Mills 288



LC-33

LC-37 shown with LCA-57

BICO JAW CRUSHERS

Sturdy Bico Crushers are designed for size reduction of hard rock, ores and minerals. Capacity is exceptional with minimum power consumption. Time proven designs are effective and have long service life, all parts are accessible for cleaning and maintenance.

Electric motor starting switch is included, but must be installed on-site. Single phase motors can be configured for 110V or 220V operation. Three phase motors can be set to operate on 220V or 440V. Please specify voltage, phase and frequency at time of order.

LC-33 and LC-34 Chipmunk Jaw Crushers have reversible jaw plates to extend life. Stationary jaw lifts easily from frame for cleaning interior parts and both jaws are easily replaced when worn. Construction is wear-resistant alloy steel with sealed bronze bearings and alloy steel shafts. Semi-enclosed motor with mounting blocks drives four V-belt drive. Sample Pan, Feed Hopper and Guards for belts and flywheel are included. Both the LC-33 and LC-34 Crushers have 3x6in (76x152mm) jaw size with 3x2.25in (76x57mm) opening. A hand-wheel on the side adjusts wedge blocks to set jaw discharge to 1/16–3/8in (1.6–9.5mm) particle size.

LC-35 and LC-36 Chipmunk Jaw Crushers have 4x9in (102x229mm) jaw size with 4x2.375in (102x60mm) opening and adjust for 1/16–5/8in (1.6–15.9mm) final particle size.

LC-37 Badger Jaw Crusher has the high crushing capacity needed for labs and pilot plants. This heavy-duty unit has a jaw size of 5x7in (127x178mm) and a unique vertical/horizontal jaw action to aggressively and efficiently reduce 4x6in (102x152mm) topsize rock sample to 1/8–3/4in (3–19mm) at a rate of 1,300lb/hour (590kg). Guards for belts and flywheel and a Feed Hopper are included. Dust Collector Base with Pan is available as LCA-57.

LCA-91 Dust Enclosure Bench can accommodate either LC-33, LC-34, LC-35, or LC-36 Jaw Crusher. The 50x36x35in (1,270x914x889mm), WxDxH painted sheet metal enclosure has a lighted interior and a hinged cover with view panel. The removable-grate work surface is made up of 0.75in (19mm) bars. A high-capacity blower with 500—700FPM (152—213m/min) air velocity moves dust to a collector drawer with replaceable filter cartridge. An exhaust silencer controls noise. Pulverizer plates may be changed without moving the machine. Shipped fully assembled and requires no installation or special duct work. Operates on 220V/60Hz. Specify 440V/60Hz operation by adding a "V" suffix. **Product Dimensions:** 57x37x60in (1,448x940x1,524mm), WxDxH.

Bico Jaw Crushers

Model	Description	Max. Feed Size, in	Capacity[1] lb (kg)/hour	Motor HP	Electrical Supply	Dimensions WxDxH, in (cm)
LC-33	Chipmunk Jaw Crusher	2.2x3	400 (182)	2	110V/50–60Hz/1ph	25x19x30 (64x48x76)
LC-33A	Chipmunk Jaw Crusher	2.2x3	400 (182)	2	220V/50–60Hz/1ph	25x19x30 (64x48x76)
LC-34	Chipmunk Jaw Crusher	2.2x3	400 (182)	2	220V/50–60Hz/3ph	25x19x30 (64x48x76)
LC-34A	Chipmunk Jaw Crusher	2.2x3	400 (182)	2	440V/50–60Hz/3ph	25x19x30 (64x48x76)
LC-35	Chipmunk Jaw Crusher	2.4x4	800 (363)	3	110V/50–60Hz/1ph	28x19x32 (71x48x81)
LC-35A	Chipmunk Jaw Crusher	2.4x4	800 (363)	3	220V/50–60Hz/1ph	28x19x32 (71x48x81)
LC-36	Chipmunk Jaw Crusher	2.4x4	800 (363)	3	220V/50–60Hz/3ph	28x19x32 (71x48x81)
LC-36A	Chipmunk Jaw Crusher	2.4x4	800 (363)	3	440V50–60Hz/3ph	28x19x32 (71x48x81)
LC-37	Badger Jaw Crusher	4x6	1,300 (590)	5	220V/60Hz only/3ph	32x24x20 (81x61x51)
LC-37A	Badger Jaw Crusher	4x6	1,300 (590)	5	440V/60Hz only/3ph	32x24x20 (81x61x51)

Accessories

Dust Collector Base for LC-37	LCA-57
Dust Enclosure Bench, 220V/60Hz/3ph	LCA-91
Dust Enclosure Bench, 440V/60Hz/3ph	LCA-91V
Replacement Filter for LCA-91	LCA-92

[1] Capacity is for reduction of 7 Mohs hardness quartz to 1/4in for crusher.

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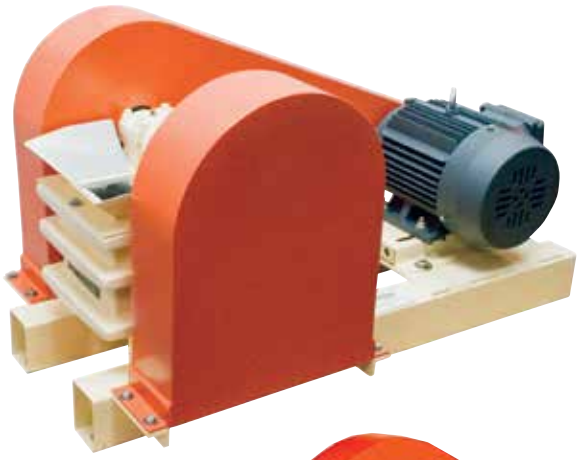
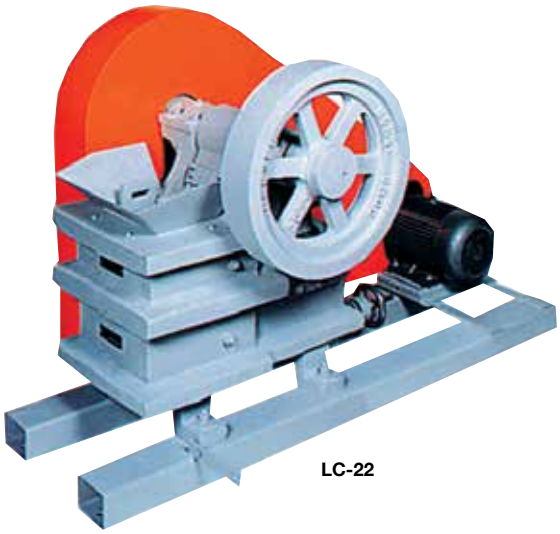
LC-26



LC-20



LC-22

LABORATORY JAW CRUSHERS

Laboratory Jaw Crushers are designed for economic size reduction of typical aggregates and common minerals at an output scaled for laboratory testing. Adjustable jaw openings allow close control of output size. High operating RPM promotes efficient size reduction with lower dust generation compared to other crushers and pulverizers. Crushers are mounted on sturdy welded-steel base frames with CSA-rated electric motors and are fully equipped with pulleys, feed hoppers and safety guards. Replacement Jaw Plate sets are available.

LC-26 1x2in Laboratory Jaw Crusher reduces aggregate, rock and ore samples from 3/4in (20mm) feed size to 80% passing a No. 14 (1.4mm) sieve and 50% passing a No. 50 (300µm). Maximum throughput as much as 20lb (9kg) per hour. A high-frequency overhead eccentric combined with the variable speed controller produces a short throw of the jaws at rates up to 500 RPM. Jaw opening is adjusted with an easy to use adjustable bolt to control output size. Jaw plates are high-impact, wear-resistant AR450 steel. 1hp electric motor. Electrical cord and plug are included for operation on 115V/60Hz electrical supplies. Variable speed controller can also operate on 220V/50Hz power sources with a slight reduction in speed.

LC-27 2.25x3in Laboratory Jaw Crusher reduces 2in (50mm) aggregate, ore and rock materials to a product with 80% passing a No. 14 (1.4mm) sieve. Jaw opening easily adjusts down to 1mm minimum to closely control output size. Maximum throughput is approximately 50lb (22kg) per hour at 525 RPM. Rate of operation is regulated by the variable speed controller. Jaw plates are high-impact, wear-resistant AR450 steel. 1hp electric motor. Electrical cord and plug are included for operation on 115V/50-60Hz electrical supplies. Variable speed controller can also operate on 220V/50-60Hz power sources with a slight reduction in speed.

LC-28 3x4in Laboratory Jaw Crusher reduces 3in feed aggregate and rock material to product with 50% passing 0.25in (6.3mm) sieve. Jaw opening quickly adjusts from 0.375 to 1.5in (9.5 to 38mm) Operation of the overhead eccentric is regulated by the variable speed controller up to 375 RPM and quickly crushes material for final testing or to prepare for secondary crushing. Throughput is up to 500lb (227kg) per hour for most materials. High-manganese steel jaw plates can be rotated when worn for extended service life. 3hp electric motor is 220V and operates on either 50 or 60Hz electrical supplies.

Laboratory Jaw Crushers

Model	Feed Opening In (mm)	Electrical Volts/ Hertz	Capacity lb (kg)/hr	Dimensions, WxDxH in (mm)	Replacement Jaw Sets
LC-26	1x2 (25x51)	115/60[1]	11 (5)	13x22x20 (330x559x508)	LCA-190
LC-27	2.25x3 (57x75)	115/60[1]	25 (11)	13x22x20 (330x559x508)	LCA-191
LC-28	3x4 (76x102)	220/50–60	220 (100)	19x32x31 (483x813x787)	LCA-192

[1]Model can also operate on 220V/50Hz electrical supply

MORSE JAW CRUSHERS

Heavy-duty Morse Jaw Crushers are built for high throughput and larger feed size. These high horsepower units have heavy cast frames and flywheels. Guards for belts and flywheels are included. Eccentric overhead action and corrugated jaw plates work together to force-feed material and avoid back-flow or "pop out" of particles. Particle size down to 1/4in (6.4mm) minus is set via handwheel adjustment of a single toggle. Jaw plates are reversible for extended life. Crushing rates vary with hardness and size of feed.

Jaw and cheek plates are heat treated, abrasion-resistant steel alloy. Heavy-duty bronze bearing inserts may be replaced easily in the field. Cast iron alloy frame, motor guard and feed hopper are mounted on a tubular steel frame.

Select from models with 4x6in (102x152mm), 5x6in (127x152mm), or extra-large 8x8in (203x203mm), WxD jaw inlets, all equipped with TEFC, three phase motor. Voltage and Hz of supply must be specified with order.

Morse Jaw Crushers

Model	Jaw Size DxW, in (mm)	Motor	Capacity lb (kg)/hour	Dimensions WxDxH, in (cm)
LC-20	4x6 (102x152)	3hp/3ph 230/460V/60Hz	400–1,200 (182–545)	42x24x24 (107x61x61)
LC-20F	4x6 (102x152)	3hp/3ph 220/380/440V/50Hz	400–1,200 (182–545)	42x24x24 (107x61x61)
LC-22	5x6 (127x152)	5hp/3ph 230/460V/60Hz	1,000–2,500 (454–1134)	54x30x38 (137x76x97)
LC-22F	5x6 (127x152)	5hp/3ph 220/380/440V/50Hz	1,000–2,500 (454–1134)	54x30x38 (137x76x97)
LC-24	8x8 (203x203)	10hp/3ph 230/460V/60Hz	1,500–4,000 (682–1818)	73x39x38 (185x99x97)
LC-24F	8x8 (203x203)	10hp/3ph 220/380/440V/50Hz	1,500–4,000 (682–1818)	73x39x38 (185x99x97)

VIDEO ONLINE

LC-44

LC-47

PORTABLE CRUSHERS

Rugged and versatile new crushers excel at processing bulk aggregate, minerals and ore materials for high-volume lab testing, pilot-plant and even small production operations. Outfitted with your choice of gasoline, diesel, or electric power, their tough construction allows easy adaptation from the most remote placements to permanent installations. Both crusher models feature robust design and use heavy welded-steel plate and high-quality materials throughout for uninterrupted reliability in the harshest environments. Top of the line bearings, pillow blocks and other components mean less downtime and higher production. Crushers are pre-mounted on sturdy welded-steel frames. Inquire for available mounting options on single or dual-axle trailers for truly mobile operation.

Jaw Crusher and Hammermill models can be used independently, but also work efficiently together as primary and secondary crushers for reduction of bulk materials from 8in (203mm) to finer than No. 35 (0.5mm) sizes. Each crusher arrives fully assembled and ready for immediate use.

LC-44 10in Jaw Crusher has a maximum feed size of 8in (203mm) and final output size can be regulated from 0.25 to 3in (6 to 76mm) through clearance adjustment of the jaw plates. Throughput is approximately 1 to 2 tons (900 to 1,800kg) per hour. Jaw sizes are 10 x 6in (254x152mm) WxD and are made from 0.75in (19mm) material hard-faced with abrasion resistant steel. Facing material has Brinell hardness of 450. Special abrasion-resistant LCA-415 Cast Manganese/Chrome jaw plates are also available for longer life or for processing of especially hard and tough materials. Available power options are 20hp Gasoline or 18hp Diesel engines, or a 10hp Electric Motor. The main shaft is 2.4in (61mm) at the cam shaft and 2in (51mm) at the drive shaft. The efficient electric motor is supplied ready for wiring to a number of common three-phase voltage configurations from 208 to 460 volt. **Product Dimensions:** 56x32x48in (1422x812x1220mm), WxDxH.

LC-47 Hammermill Crusher has a maximum feed size of 2in (51mm) and final output sizes as fine as No. 80 (0.2mm) controlled by standard screen inserts of No. 35 (0.5mm) or No. 20 (1.0mm) openings. Production is higher and hammer life is enhanced by feeding 1in (25mm) material. Approximately 1 to 2 tons (900 to 1,800kg) of throughput per hour. The ten 1.5in (38mm) wide hammers are made from wear-resistant high-chrome steel for long service life. One standard screen is included, specify at time of order. Custom Screens are also available with any opening size, inquire for available sizes. Screens are laser-cut from long-lasting 0.25in (6mm) material. Proprietary non-slip disc system allows complete change-out of the hammers in less than ten minutes. Power is supplied by 30hp Gasoline or 24hp Diesel engines, or a 15hp Electric Motor. The powerful electric motor is supplied ready for wiring to a number of common three-phase voltage configurations from 208 to 460 volt. The drive shaft is 2in (51mm) diameter. **Product Dimensions:** 56x33x53in (1422x838x1346mm), WxDxH.

Portable Crushers	
10in Jaw Crusher, 20hp Gasoline Engine	LC-44G
10in Jaw Crusher, 18hp Diesel Engine	LC-44D
10in Jaw Crusher, 10hp Electric Motor	LC-44E
Hammermill Crusher, 30hp Gasoline Engine	LC-47G
Hammermill Crusher, 24hp Diesel Engine	LC-47D
Hammermill Crusher, 15hp Electric Motor	LC-47E
Accessories	
Replacement Hard-Faced Steel Jaw Plates for LC-44	LCA-412
Cast Manganese/Chrome Steel Jaw Plates for LC-44	LCA-415
0.125in (3.18mm) Screen for LC-47	LCA-416
No. 10 (2.0mm) Screen for LC-47	LCA-417
No. 20 (1.0mm) Screen for LC-47	LCA-418
0.75mm Screen for LC-47	LCA-419
No. 35 (0.5mm) Screen for LC-47	LCA-422

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LC-53

LCA-9

LC-53 alternate view

LC-53 shown with LCA-91

BICO PULVERIZER

The Bico Pulverizer features efficient operation for minimum power consumption and long service life. This time proven design is compact and effective for processing hard rock, ores and minerals. The grinding chamber is easily accessible for cleaning, maintenance and complete sample recovery.

The LC-53 Pulverizer grinds 1/4in (6.4mm) feed material to approximately 75µm (No.200 sieve size) in a single pass, depending on material. Throughput is about 60lb (27kg) per hour. A threaded knob with locking lever adjusts the gap between the 8in (203mm) diameter grinding plates to control particle size output. Stationary and revolving grinding plates are easily replaced. Grinding Plate Sets are available in a variety of materials and hardnesses to suit individual applications. One LCA-6 Iron Alloy Grinding Plate Set is included. LCA-5 Semi-Steel set is recommended for most applications and has up to three times the wear resistance of LCA-6. Semi-steel is a compound of iron carbide in a Martensite matrix, with a Rockwell C-Scale hardness of 55–62. Other heavy-duty or special-use plate sets are available for specialized applications. Contact a Gilson Product Specialist for advice on selecting the best grinding plate options for your application.

Power from the 2hp motor rotates the shaft at 900–1,000RPM through a double V-belt drive. Three phase 50 or 60Hz motors can be set to operate on 220V or 440V. A motor starting switch is included and must be installed separately. Inquire for additional voltages. Totally enclosed motor has thermal overload protection. Safety guards and catch pan are included. Lubrication to shaft bearings is supplied by manually adjusted grease cups. **Product Dimensions:** 37x22x23 (940x559x584mm), WxDxH.

The LCA-91 Dust Enclosure Bench has a lighted interior, removable bottom grate and a hinged cover with a viewing panel. High capacity blower moves dust to a collection drawer with a replaceable filter cartridge and exhaust silencer. **Product Dimensions:** 67x37x67.5in (1,702x940x1,715mm), WxDxH.

Bico Pulverizer	
Bico Pulverizer, 220-240V/50–60Hz/3ph	LC-53
Accessories	
Semi-Steel Grinding Plate Set	LCA-5
Iron Alloy Grinding Plate Set	LCA-6
Low-Phosphorus Carbon Steel Grinding Plate Set	LCA-7
Hardened Iron Alloy Grinding Plate Set	LCA-9
Ceramic Grinding Plate Set	LCA-11
Dust Enclosure Bench, 220V/60Hz	LCA-91
Replacement Filter for LCA-91	LCA-92

LC-115

LCA-242

SSA-39

VIBRATING CUP PULVERIZER

The Vibrating Cup Pulverizer, also known as a puck mill or shatterbox, efficiently uses pressure, impact and friction to grind rock, ore, minerals, soil and other materials to analytical size. It has many useful applications in the laboratory and small-scale pilot plants. An 8in (203mm) diameter bowl containing grinding rings and a puck is driven by a rotating eccentric and swings contents on a horizontal plane at a precise speed and distance for maximum grinding efficiency. The grinding bowl is locked down and held securely in-place by a cam lever system and a protective cover encloses the grinding chamber for safe and quiet operation. Wet or dry samples of 0.5in (12.7mm) maximum feed size are rapidly reduced to a final particle size of 150–38µm (No.100 to No.400 U.S. Standard sieve size), depending on material.

The included chrome-steel alloy Grinding Set has a sample volume of 250ml and consists of an 8in (203mm) bowl with cover, two rings and a puck. For more efficient processing, additional Grinding Sets can be ordered as LCA-240. LCA-242 Tungsten Carbide Grinding Set with 100ml capacity is also available. Contact a Gilson Product Specialist for expert advice on applications for this unit. The heavy-duty 1hp motor includes a starting switch and drives the eccentric at a speed of 900RPM (750RPM at 50Hz). The control panel is set at the proper angle and height for best visibility and ease of operation. A 0-100 minute digital timer resets itself automatically after each test for maximum repeatability. An emergency stop button is provided. Sturdy painted-steel insulated cabinet reduces noise. The motor operates on 208/220/400V, 50/60Hz and 3 phase power supplies. Single phase available as well. **Product Dimensions:** 24x24x43in (610x610x1092mm), WxDxH.

Vibrating Cup Pulverizer	
Vibrating Cup Pulverizer, 220-240V/50–60Hz/3ph	LC-115
Accessories	
Chrome Steel 250ml Grinding Set	LCA-240
Tungsten Carbide 100ml Grinding Set	LCA-242

BALL-PAN HARDNESS TEST
ASTM D3802

The ball-pan hardness test method determines degradation resistance of granulated activated carbons. SSA-39 set consists of a special 8in (204mm) diameter brass ball-pan and two sets of 0.5in (12.7mm) and 0.375in (9.5mm) steel balls. The ball-pan has a special 8mm thick hardened brass bottom plate dished out at 1.092mm inner radius to give a 3.2mm thickness at its center. The bottom plate is mounted in a standard full-height sieve frame with extended rim for stacking.

A sample is placed in the ball-pan with the steel balls and run for 30 minutes in a Model SS-30 Ro-Tap® Sieve Shaker. The ball-pan is stacked with five regular 8in sieves, sieve pan and cover. "Hardness" of the activated carbon sample is determined by degradation resistance as measured by sieving the ground sample. The Ro-Tap®, sieves, sieve pan and cover are listed separately.

Ball-Pan Hardness Test	
Ball-Pan Hardness Set	SSA-39
Accessories	
Ball-Pan	SSA-41
0.5in Steel Balls, set of 15	SSA-43
0.375in Steel Balls, set of 15	SSA-44

Order by Phone: 800.444.1508 / 740.548.7298 • Order Online: www.globalgilson.com

LC-8

LC-7

MINI-PULVERIZER & MINI-CRUSHER

LC-7 Mini-Pulverizer reduces up to 20g of 1/8in (3.2mm) material to minus No.140 (106µm). Unit is supplied with 1.625in (41mm) diameter high-density alumina ceramic grinding plates. A switch reverses direction of plate rotation for extended plate life of up to 3,000 samples. For extra-hard materials, the LCA-56 Tungsten Carbide Plate Set is available as an accessory. Grind is adjustable to produce sample sizes from No.40–No.140 (425–106µm). Nearly all product is recoverable by brushing.

The Mini-Pulverizer has cam-action closure with sealed bearings and is driven by a 1/3hp capacitor-start motor mounted on rubber feet. **Product Dimensions:** 10x15x10in (254x381x254mm), WxDxH.

LC-8 Mini-Crusher has 2x2in (51x51mm) feed opening for crushing 1in (25.4mm) and smaller feed material to 1/16in (1.6mm) and finer at about 1/4lb (114g) per minute. The unit comes standard with hardened steel alloy jaw and cheek plates. For special applications, order LCA-46 ceramic jaw and cheek set (85% alumina) to avoid metal contamination or LCA-47 tungsten carbide set (in 6% cobalt binder) for extra tough jobs. Sets are interchangeable and adjust in opening to produce product from 1/4in (6.4mm) to below 1/16in (1.6mm) in size.

Construction of the LC-8 features a case-hardened alloy steel eccentric shaft with heavy-duty sealed bearings. The crusher is belt driven by a 1/4hp motor with overload and On/Off switches, all mounted on a steel base with rubber feet for freestanding operation. **Product Dimensions:** 10x19x11in (254x483x279mm), WxDxH. Samples are collected in a stainless steel tray.

Mini-Pulverizer & Mini-Crusher	
Mini-Pulverizer, 115V/60Hz	LC-7
230V/50Hz	LC-7F
Mini-Crusher, 115V/60Hz	LC-8
230V/50Hz	LC-8F
Accessories	
Replacement Alumina Plate Set for LC-7	LCA-55
Tungten Carbide Plate Set for LC-7	LCA-56
Replacement Alloy Steel Plate Set for LC-8	LCA-45
Ceramic Plate Set for LC-8	LCA-46
Tungsten Carbide Plate Set for LC-8	LCA-47

VIDEO ONLINE

LC-82

LC-80

LABORATORY DISC MILLS

Hand-Cranked or Motorized Laboratory Disc Mills provide effective performance for limited dry or wet grinding to moderate fineness. Mills are useful for coal, chemicals, ores, pharmaceuticals, nuts, grains and other friable materials. Both mills process materials between a set of iron alloy fixed and rotating 4in (102mm) diameter grinding discs for reduction. Feed hoppers have 50in³ (0.8L) volume and final fineness is easily set by thumb screw adjustment of grinding disc clearance. No.80–No.100 (180–150µm) is typical fineness limit. Mills disassemble quickly without tools for cleaning.

Disc mills are supplied with tooth-type feed augers for dry materials and a set of fine-grinding discs. For wet or oily materials, optional Wet-Feed Auger sets are available and include a worm-type feeder and fine-grinding discs. LCA-171 Coarse Grinding Disc Set is purchased separately to fit either mill and allows higher throughput of coarse product. Feeders and Grinding Discs quickly interchange and extras are useful for different sample types and to avoid contamination.

LC-80 Hand-Crank Disc Mill has painted, cast iron body that mounts by screw clamp on a bench top up to 1.5in (38.1mm) thick. Throughput varies with material type, but 10lb (4.5kg) per hour is typical. Overall height is 14in (356mm). Includes LCA-175 Dry-Feed Auger and Grinding Disc Set.

LC-82 Motorized Disc Mill has a 89RPM 1/3hp motor mounted to a welded steel base. Body is plated cast iron. Capacity varies with type of material, but 40lb (18kg) per hour is typical. The LC-82 meets ASTM C409 requirements for preparation of Hardgrove Grindability specimens. The oil-filled gear box features the replaceable LCA-179 Safety Coupling to prevent overload damage. An 8ft (2.4m) grounded cord with in-line switch is provided. Includes LCA-176 Dry Feeder and Grinding Disc Set. LCA-178 is a complete Grinding Head with body, dry tooth-feed auger and fine-grinding discs. **Product Dimensions:** 25x8x12in (635x203x305mm), WxDxH.

Laboratory Disc Mills	
Hand-Crank Disc Mill	LC-80
Motorized Disc Mill, 115V/60Hz	LC-82
220V/60Hz	LC-82S
220V/50Hz	LC-82F
Accessories	
Fine Grinding Disc Set	LCA-170
Coarse Grinding Disc Set	LCA-171
Wet-Feed Auger & Grinding Disc Set for LC-80	LCA-172
Wet-Feed Auger & Grinding Disc Set for LC-82	LCA-173
Dry-Feed Auger & Grinding Disc Set for LC-80	LCA-175
Dry-Feed Auger & Grinding Disc Set for LC-82	LCA-176
Complete Grinding Head for LC-82	LCA-178
Safety Coupling for LC-82	LCA-179

LC-88

LCA-73 through LCA-76

LCA-34 through LCA-37

BENCHTOP LABMILL

Compact Benchtop Labmill rotates milling jars smoothly and quietly, adjusting easily for four sizes of jars from 0.5–10L (16–320oz). Sample volumes from 75ml to 4L can be handled with unattended ease. Estimated specimen capacity is approximately 25% of total jar volume. Volume for grinding media required is approximately 50% of jar volume. The special HDPE (High Density Polyethylene) jars are disposable to avoid cross-contamination and feature baffled interiors for efficient wet or dry grinding action. Each milling jar is held in a supporting metal sleeve for rigidity.

The unit also holds other grinding jars, from 3–7in (75–178mm) diameter and up to 11in (279mm) width. A speed control switch gives 10–260RPM roller speed from the direct-drive 60 Watt DC motor. For 230V, 50–60Hz electrical supplies, order TR-502 Transformer separately. Disposable Grinding Jars and Supporting Metal Sleeves are ordered separately. **Product Dimensions:** 18x14x2.5in (457x356x64mm), WxDxH.

Benchtop Labmill	
Benchtop Labmill, 115V, 50/60Hz	LC-88
Accessories	
Disposable HDPE Jars, 500ml, pkg. of 12	LCA-73
Disposable HDPE Jars, 1L, pkg. of 6	LCA-74
Disposable HDPE Jars, 4L, pkg. of 6	LCA-75
Disposable HDPE Jars, 10L, pkg. of 4	LCA-76
Stainless Steel Sleeve for 500ml Jar	LCA-34
Stainless Steel for 1,000ml Jar	LCA-35
Anodized Sleeve for 4,000ml Jar	LCA-36
Aluminum Sleeve for 10,000ml Jar	LCA-37

LC-91 shown with LCA-63

JAR MILLS

Jar Mills are used for wet or dry grinding or mixing and blending a wide variety of materials like ores, chemicals, paints, ceramics, glass, etc. Different size jars are available for different grinding conditions. Bench or floor model Jar Mills from Gilson have capacities from one to six jars.

Totally enclosed DC motors drive special 2in (50.8mm) diameter neoprene-covered rollers at speeds from 20 to 300RPM. Roller spacing adjusts easily to accommodate jars from 2 to 15in (51 to 381mm) diameter and are configured to keep jars centered during operation. Welded steel frames, roller chain drives and sealed ball bearings assure long service life. Mills operate on 115V, 50/60Hz electrical supply. Add "F" to model number for 230V/50Hz models. Grinding Jars and Media are ordered separately.

Grinding Jars are ceramic-based Roalox™ or premium High Alumina material. High-strength Roalox™ has four times the wear life of ordinary porcelain and reduces levels of silica contamination. Ultra-high fired High Alumina jars have higher service life, negligible silica contamination and polyurethane coated body to minimize breakage. Both have wide mouths for fast loading/cleaning and neoprene gasketed lids with positive-locking bar and hand wheel. Jar capacities range from 0.1 to 6.6gal (0.3 to 25.0L) and diameters from 3.4 to 14.63in (86 to 372mm). Specimen capacity is approximately 25% of total jar volume and Grinding Media should take up approximately 50% of total volume.

Grinding Media is cylindrical, with equal length and diameter for maximum surface area. Ultra-high fired Burundum alumina with 3.42 specific gravity is ideal for most milling and has low contamination. Burundum is supplied in 10lb (5kg) packages. Premium high-density 5.55 specific gravity Zirconia mills faster than Burundum, with less wear of grinding jars and media. Zirconia is sold in 5lb (2kg) packages.

Jar Mills				
Model	Tiers	Maximum Jars	Motor hp	Dimensions WxDxH, in (mm)
LC-91	1	2	1/4	30x13x16 (762x330x406)
LC-92	2	2	1/4	20x12x34 (508x305x864)
LC-95	3	6	3/4	40x12x50 (1,016x305x1,270)

Accessories	
Roalox™ Porcelain Grinding Jar, 0.3L	LCA-50
Roalox™ Porcelain Grinding Jar, 1.0L	LCA-51
Roalox™ Porcelain Grinding Jar, 1.8L	LCA-52
Roalox™ Porcelain Grinding Jar, 5.6L	LCA-53
Roalox™ Grinding Jar, 8.3L	LCA-80
Roalox™ Grinding Jar, 12.4L	LCA-81
Roalox™ Grinding Jar, 17.6L	LCA-82
Roalox™ Grinding Jar, 25.0L	LCA-83
High Alumina Grinding Jar, 1.0L	LCA-60
High Alumina Grinding Jar, 5.6L	LCA-61
High Alumina Grinding Jar, 12.4L	LCA-63
Burundum Media, 13x13mm, 10lb pkg	LCA-65
Burundum Media, 21x21mm, 10lb pkg	LCA-66
Burundum Media, 32x32mm, 10lb pkg	LCA-68
Zirconia Media, 10x10mm, 5lb pkg	LCA-70
Zirconia Media, 13x13mm, 5lb pkg	LCA-72

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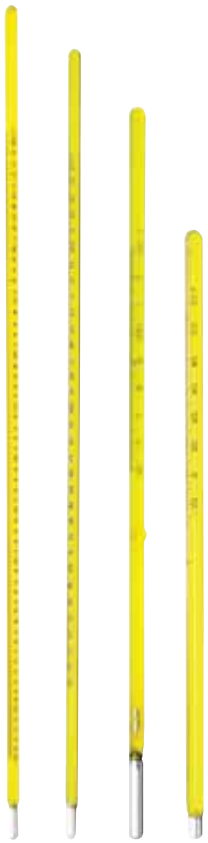


ASTM Thermometers

ASTM MERCURY THERMOMETERS
ASTM E1, E77

ASTM thermometers have strict manufacturing tolerances. Accuracy is assured by inspection and testing of samples from each production run. Each thermometer is supplied with a statement of compliance to E1 and E77 requirements. ASTM Thermometers are yellow-backed glass with permanent graduations, mercury-filled and individually packed in cardboard tubes. MA-450 Sets include one each of ASTM 62 to 70 (°C or °F) in a velvet-lined protective case. Inquire for other ASTM Thermometers.

To order ASTM thermometers with NIST traceable Certificate of Calibration at five points, add "T" suffix to the model number.

Always store liquid-in-glass thermometers vertically to prevent mercury column separation, see MA-305 Thermometer Storage Rack.

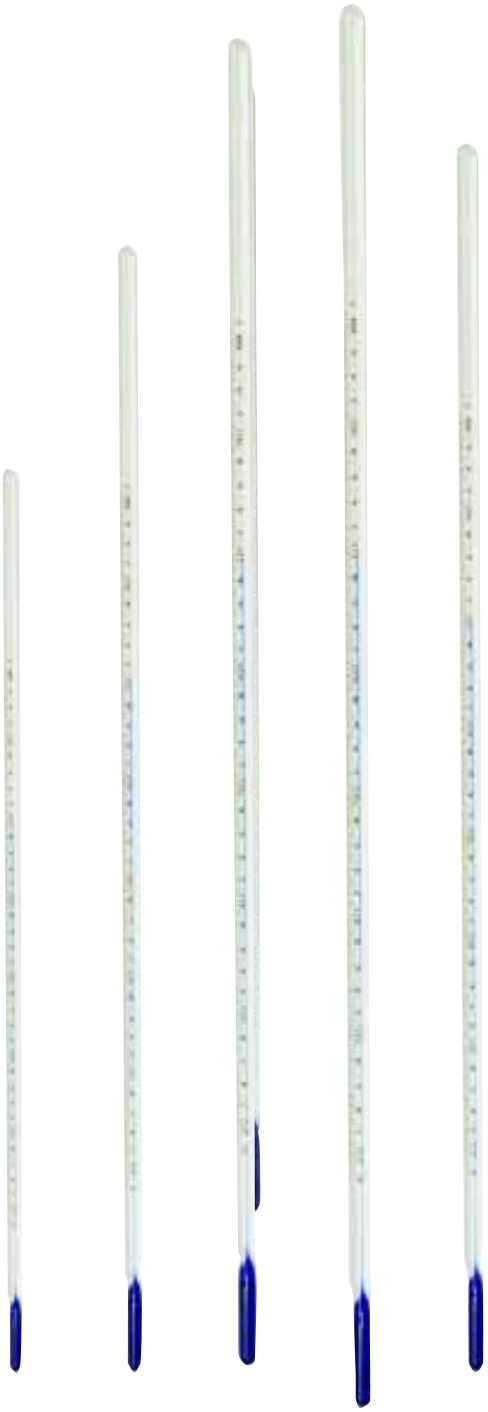
helpfulhint

State or local ordinances may prevent sales or shipment of instruments containing Mercury into your area.

Please check for restrictions before ordering or consult our customer service specialists.

ASTM Mercury Thermometers

Type	Model	ASTM Number	Range	Division	Length in (mm)	Immersion in (mm)
General Use	MA-420F	1F	0°–302°F	2.0°	12.7 (322)	3 (76)
	MA-420C	1C	-20°–150°C	1.0°	12.7 (322)	3 (76)
	MA-421F	2F	20°–580°F	2.0°	15.4 (390)	3 (76)
	MA-421C	2C	-5°–300°C	1.0°	15.4 (390)	3 (76)
	MA-422F	3F	20°–760°F	2.0°	16.3 (415)	3 (76)
	MA-422C	3C	-5°–400°C	1.0°	16.3 (415)	3 (76)
Cloud & Pour	MA-424F	5F	-36°–120°F	2.0°	9.0 (230)	4.3 (108)
	MA-424C	5C	-38°–50°C	1.0°	9.0 (230)	4.3 (108)
Distillation	MA-426F	7F	30°–580°F	2.0°	15.1 (384)	Total
	MA-426C	7C	-2°–300°C	1.0°	15.1 (384)	Total
	MA-427F	8F	30°–760°F	2.0°	15.1 (384)	Total
	MA-427C	8C	-2°–400°C	1.0°	15.1 (384)	Total
Precision Use	MA-430F	62F	-36°–35°F	0.2°	14.9 (379)	Total
	MA-430C	62C	-38°–2°C	0.1°	14.9 (379)	Total
	MA-431F	63F	18°–89°F	0.2°	14.9 (379)	Total
	MA-431C	63C	-8°–32°C	0.1°	14.9 (379)	Total
	MA-432F	64F	77°–131°F	0.2°	14.9 (379)	Total
	MA-432C	64C	25°–55°C	0.1°	14.9 (379)	Total
	MA-433F	65F	122°–176°F	0.2°	14.9 (379)	Total
	MA-433C	65C	50°–80°C	0.1°	14.9 (379)	Total
	MA-434F	66F	167°–221°F	0.2°	14.9 (379)	Total
	MA-434C	66C	75°–105°C	0.1°	14.9 (379)	Total
	MA-435F	67F	203°–311°F	0.5°	14.9 (379)	Total
	MA-435C	67C	95°–155°C	0.2°	14.9 (379)	Total
	MA-436F	68F	293°–401°F	0.5°	14.9 (379)	Total
	MA-436C	68C	145°–205°C	0.2°	14.9 (379)	Total
	MA-437F	69F	383°–581°F	1.0°	14.9 (379)	Total
	MA-437C	69C	195°–305°C	0.5°	14.9 (379)	Total
	MA-438F	70F	563°–761°F	1.0°	14.9 (379)	Total
	MA-438C	70C	295°–405°C	0.5°	14.9 (379)	Total
Precision Use Sets	MA-450F	°F Set	-36°–761°F	Varies	14.9 (379)	Total
	MA-450C	°C Set	-38°–405°C	Varies	14.9 (379)	Total
Pensky-Martens & Tag Closed High	MA-210F	9F	20°–230°F	1.0°	11.8 (290)	2.3 (57)
	MA-210C	9C	-5°–110°C	0.5°	11.8 (290)	2.3 (57)
Tag Closed Low	MA-428F	57F	4°–122°F	1.0°	11.8 (290)	2.3 (57)
	MA-428C	57C	-20°–50°C	0.5°	11.8 (290)	2.3 (57)
Pensky-Martens High	MA-211F	10F	200°–700°F	5.0°	11.8 (290)	2.3 (57)
	MA-211C	10C	90°–370°C	2.0°	11.8 (290)	2.3 (57)
Open Flash	MA-212F	11F	20°–760°F	5.0°	12.1 (310)	1 (25)
	MA-212C	11C	-6°–400°C	2.0°	12.2 (310)	1 (25)
Gravity	MA-429F	12F	-5°–215°F	0.5°	16.5 (420)	Total
	MA-429C	12C	-20°–102°C	0.2°	16.5 (420)	Total
Loss on Heat	MA-223C	13C	155°–170°C	0.5°	7.0 (155)	Total
Bituminous Softening Point	MA-225F	15F	30°–180°F	0.5°	15.6 (396)	Total
	MA-225C	15C	-2°–80°C	0.2°	15.6 (396)	Total
	MA-226F	16F	85°–392°F	1.0°	15.6 (396)	Total
	MA-226C	16C	30°–200°C	0.5°	15.6 (396)	Total
	MA-227F	113F	30°–350°F	1.0°	15.9 (405)	Total
	MA-227C	113C	-1°–175°C	0.5°	15.9 (405)	Total
Saybolt Viscosity	MA-213F	17F	66°–80°F	0.2°	10.8 (275)	Total
	MA-213C	17C	19°–27°C	0.1°	10.8 (275)	Total
	MA-214F	18F	94°–108°F	0.2°	10.8 (275)	Total
	MA-214C	18C	34°–42°C	0.1°	10.8 (275)	Total
	MA-215F	19F	120°–134°F	0.2°	10.8 (275)	Total
	MA-215C	19C	49°–57°C	0.1°	10.8 (275)	Total
	MA-216F	20F	134°–148°F	0.2°	10.8 (275)	Total
	MA-216C	20C	57°–65°C	0.1°	10.8 (275)	Total
	MA-217F	21F	174°–188°F	0.2°	10.8 (275)	Total
	MA-217C	21C	79°–87°C	0.1°	10.8 (275)	Total
	MA-218F	22F	204°–218°F	0.2°	10.8 (275)	Total
	MA-218C	22C	95°–103°C	0.1°	10.8 (275)	Total
	MA-452F	77F	245°–265°F	0.5°	10.8 (275)	Total
	MA-454F	78F	295°–315°F	0.5°	10.8 (275)	Total
	MA-453F	108F	270°–290°F	0.5°	10.8 (275)	Total
	MA-455F	109F	320°–340°F	0.5°	10.8 (275)	Total
	MA-456F	79F	345°–365°F	0.5°	10.8 (275)	Total
	MA-457F	80F	395°–415°F	0.5°	10.8 (275)	Total
	MA-458F	81F	445°–465°F	0.5°	10.8 (275)	Total
Kinematic Viscosity	MA-219F	47F	137.5°–142.5°F	0.1°	12.0 (305)	Total
	MA-219C	47C	58.6°–61.4°C	0.05°	12.0 (305)	Total
	MA-220F	110F	272.5°–277.5°F	0.1°	12.0 (305)	Total
	MA-220C	110C	133.6°–136.4°C	0.05°	12.0 (305)	Total
Solvents Distillation	MA-460C	37C	-2°–52°C	0.2°	15.6 (396)	3.9 (100)
	MA-462C	39C	48°–102°C	0.2°	15.6 (396)	3.9 (100)
	MA-464C	41C	98°–152°C	0.2°	15.6 (396)	3.9 (100)
	MA-467C	103C	148°–202°C	0.2°	15.6 (396)	3.9 (100)
	MA-469C	105C	198°–252°C	0.2°	15.6 (396)	3.9 (100)
	MA-471C	107C	248°–302°C	0.2°	15.6 (396)	3.9 (100)



ASTM Non-Mercury Thermometers

ASTM NON-MERCURY THERMOMETERS

ASTM E1, E77, E2251

These ASTM Non-Mercury Thermometers meet standard test method requirements for use in their referenced applications. The liquid-in-glass thermometers have the same performance characteristics as ASTM Mercury Thermometers, but use safe blue liquid instead of mercury. The proprietary formula is biodegradable, nontoxic and nonhazardous. Dark blue color is easily read against the white-backed stem.

For individual thermometers with five-point certification by an ISO/IEC accredited laboratory, add a "T" suffix to the model number when ordering. Full sets of Certified Precision Use Thermometers are available as MA-751CT for S62C to S67C ASTM numbers, or MA-751FT for S62F to S67F. To prevent fluid column separation, always store liquid-in-glass thermometers vertically, using our MA-305 Thermometer Storage Rack.

ASTM Non-Mercury Thermometers

Type	Model	ASTM Number	Range	Division	Length mm	Immersion
Bomb Calorimeter	MA-538C	S56C	19°–35°C	0.02°	600	Total
	MA-538F	S56F	66°–95°F	0.05°	600	Total
	MA-521C	5116C	18.9°–25.1°C	0.01°	614	Total
	MA-522C	5117C	23.9°–30.1°C	0.01°	614	Total
Cloud & Pour	MA-524C	S5C	-38°–50°C	1.0°	235	108mm
	MA-524F	S5F	-36°–120°F	2.0°	235	108mm
Gravity	MA-529C	S12C	-20°–102°C	0.2°	425	Total
	MA-529F	S12F	-5°–215°F	0.5°	425	Total
Kinematic Viscosity	MA-536	S120C	38.5°–41.5°C	0.05°	305	Total
Low Softening Point	MA-525C	S15C	-2°–80°C	0.2°	400	Total
	MA-525F	S15F	30°–180°F	0.2°	400	Total
Precision Use	MA-530C	S62C	-38°–2°C	0.1°	400	Total
	MA-530F	S62F	-36°–35°F	0.2°	400	Total
	MA-531C	S63C	-8°–32°C	0.1°	400	Total
	MA-531F	S63F	18°–89°F	0.2°	400	Total
	MA-532C	S64C	25°–55°C	0.1°	400	Total
	MA-532F	S64F	77°–131°F	0.2°	400	Total
	MA-533C	S65C	50°–80°C	0.1°	400	Total
	MA-533F	S65F	122°–176°F	0.2°	400	Total
	MA-534C	S66C	75°–105°C	0.1°	400	Total
	MA-534F	S66F	167°–221°F	0.2°	400	Total
	MA-535C	S67C	95°–155°C	0.2°	400	Total
	MA-535F	S67F	203°–311°F	0.5°	400	Total
Precision Use Sets	MA-751CT		-38°–155°C	Varies	400	Total
	MA-751FT		-36°–311°F	Varies	400	Total
Saybolt Viscosity	MA-514C	S18C	34°–42°C	0.1°	280	Total
	MA-514F	S18F	94°–108°F	0.2°	280	Total
	MA-518C	S22C	95°–103°C	0.1°	280	Total
	MA-518F	S22F	204°–218°F	0.2°	280	Total
Tank	MA-540C	S58C	-34°–49°C	0.5°	305	Total
	MA-540F	S58F	-30°–120°F	1.0°	305	Total
	MA-542C	S59C	-18°–82°C	0.5°	305	Total
	MA-542F	S59F	0°–180°F	1.0°	305	Total
	MA-543C	S130C	-7°–+105°C	0.5°	305	Total
	MA-543F	S130F	20°–220°F	1.0°	305	Total

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ASTM Equivalent Non-Mercury Thermometers

ASTM EQUIVALENT NON-MERCURY THERMOMETERS

ASTM E1, E77

These liquid-in-glass thermometers have physical and performance characteristics matching those of ASTM thermometers for their referenced applications, but have not yet been reviewed and accepted by ASTM for these purposes. They use a safe blue or red indicating liquid that is biodegradable, nontoxic and nonhazardous. Dark blue or red color is easily read against the white-backed stem. Add a "T" suffix to the model number to specify thermometers with five-point certification by an ISO/IEC accredited laboratory. Always store liquid-in-glass Thermometers vertically to prevent fluid column separation using our MA-305 Thermometer Storage Rack.

ASTM Equivalent Non-Mercury Thermometers

Type	Model	ASTM Number	Range	Division	Length mm	Immersion
Bituminous Softening Point	MA-526C	S16C	30°–200°C	0.5°	400	Total
	MA-526F	S16F	85°–392°F	1.0°	400	Total
	MA-527C	S113C	-1°–175°C	0.5°	410	Total
	MA-527F	S113F	30°–350°F	1.0°	410	Total
Bomb Cabrimeter	MA-521C	S116C	18.9°–25.1°C	0.01°	614	Total
	MA-522C	S117C	23.9°–30.1°C	0.01°	614	Total
Cloud & Pour	MA-545C	S6C	-80°–20°C	1.0°	232	76mm
	MA-545F	S6F	-112°–70°F	2.0°	232	76mm
General Use	MA-520C	S1C	-20°–150°C	1.0°	327	76mm
	MA-520F	S1F	0°–302°F	2.0°	327	76mm
Kinematic Viscosity	MA-519C	S47C	58.6°–61.4°C	0.05°	320	Total
	MA-519F	S47F	137.5°–142.5°F	0.1°	320	Total
	MA-557C	S110C	133.6°–136.4°C	0.05°	320	Total
	MA-557F	S110F	272.5°–277.5°F	0.1°	320	Total
Loss on Heat	MA-523C	S13C	155°–170°C	0.5°	175	Total
Pensky-Martens & Tag Closed High	MA-510F	S9F	20°–230°F	1.0°	295	57mm
	MA-510C	S9C	-5°–110°C	0.5°	295	57mm
Saybolt Viscosity	MA-513C	S17C	19°–27°C	0.1°	280	Total
	MA-513F	S17F	66°–80°F	0.2°	280	Total
	MA-515C	S19C	49°–57°C	0.1°	280	Total
	MA-515F	S19F	120°–134°F	0.2°	280	Total
	MA-516C	S20C	57°–65°C	0.1°	280	Total
	MA-516F	S20F	134°–148°F	0.2°	280	Total
	MA-517C	S21C	79°–87°C	0.1°	280	Total
	MA-517F	S21F	174°–188F	0.2°	280	Total
	MA-552F	S77F	245°–265°F	0.5°	290	Total
	MA-553F	S108F	270°–290°F	0.5°	290	Total
	MA-554F	S78F	295°–315°F	0.5°	290	Total
	MA-555F	S109F	320°–340°F	0.5°	290	Total
	MA-556F	S79F	345°–365°F	0.5°	290	Total
Solvents Distillation	MA-567C	S103C	148°–202°C	0.2°	410	100mm
	MA-560C	S37C	-2°–52°C	0.2°	400	100mm
	MA-562C	S39C	48°–102°C	0.2°	400	100mm
	MA-564C	S41C	98°–152°C	0.2°	410	Total
Tag Closed Low	MA-528C	S57C	-20°–50°C	0.5°	292	57mm
	MA-528F	S57F	-4°–122°F	1.0°	292	57mm
Tank	MA-543C	S130C	-7°–105°C	0.5°	305	Total
	MA-543F	S130F	20°–220°F	1.0°	305	Total

technote.....

To prevent fluid column separation, always store liquid-in-glass Thermometers vertically using our MA-305 Thermometer Storage Rack.

VIDEO ONLINE

Watch video tutorials for our products online at www.globalgilson.com!

MA-155, MA-156 & MA-157

MA-110

MA-161

MA-159

MA-149

Non-Mercury Thermometers

Description	Model	Range	Division	Length in (mm)
General Purpose Total Immersion Thermometers are liquid-in-glass and SAMA (Scientific Apparatus Makers Association) approved. Each Thermometer is filled with an environmentally safe, non-hazardous Blue-Spirit liquid. Single fixed scale is accurate to ±1 division below 105°C (221°F), ±1.5 division above 105°C (221°F) and ±2 divisions above 200°C (392°F). Thermometers are serial numbered and shipped with an accuracy statement. These thermometers should be stored vertically in our MA-305 Thermometer Storage Rack to prevent fluid column separation.	MA-655 MA-645 MA-646 MA-657 MA-656 MA-648 MA-650	-20°–110°C 0°–230°F 0°–300°F -10°–260°C -20°–150°C -30°–120°F -35°–50°C	1.0° 2.0° 2.0° 1.0° 1.0° 2.0° 1.0°	12 (305) 12 (305) 12 (305) 12 (305) 12 (305) 12 (305) 12 (305)
General Purpose Partial Immersion Thermometers are liquid-in-glass, SAMA (Scientific Apparatus Makers Association) approved and designed for 76mm (3in) immersion. Indicating fluid is an environmentally safe, non-hazardous Blue-Spirit liquid. Single scale graduations are accurate to ±1 division below 105°C (221°F), ±1.5 division above 105°C (221°F) and ±2 divisions above 200°C (392°F). Thermometers are serial numbered and shipped with an accuracy statement. These thermometers should be stored vertically in our MA-305 Thermometer Storage Rack to prevent fluid column separation.	MA-145 MA-146 MA-157 MA-155 MA-156 MA-147 MA-649 MA-650P	0°–230°F 0°–300°F -10°–260°C -20°–110°C -20°–150°C 20°–500°F -30°–120°F -35°–50°C	2.0° 2.0° 1.0° 1.0° 2.0° 1.0° 2.0° 1.0°	12 (305) 12 (305) 16 (405) 12 (305) 12 (305) 16 (405) 12 (305) 12 (305)
Pocket Copper-Plated Thermometer is red spirit-filled. Pointed copper bulb prevents abrasion and breakage. Reversible aluminum storage case serves as a handle.	MA-110	0°–120°F	1.0°	6.0 (152)
Max/Min Registering Thermometer shows maximum and minimum temperatures in °F and °C since last reset, as well as current temperature. Reset button and protective plastic case for the spirit filled U-shaped capillary instrument are included. **Product Dimensions:** 3x9.5x1in (76x241x25mm), WxDxH.	MA-161	-40°–120°F (-40°–50°C)	2.0° (1.0°)	8.0 (203)
Hybrid Max/Min Thermometer is a unique Mercury-Free model with spirit-in-glass units showing current temperatures and a built-in digital display to indicate maximum and minimum temperatures since last reset. Both Displays in °F or °C. **Product Dimensions:** 10x4x1.5in (254x102x38mm), WxDxH.	MA-159	-40°– 120°F (-40°– 50°C)	2.0° (1.0°) (0.10 for digital)	8.0 (203)
Non-Mercury Concrete Reference Thermometer meets ASTM C1064 and E 77 requirements to verify temperature measuring devices for cement and concrete testing. Blue liquid spirit filled glass thermometer is calibrated for 3in (76mm) immersion and includes documented certification at seven points with NIST traceability.	MA-149	-1°–51°C	0.2°	15.7 (400)
Armored Non-Mercury Thermometers are red spirit-filled glass for general laboratory use and accurate to NIST tolerances. Sturdy nickel-plated brass cases with built-in suspension rings protect against accidental breakage and have slotted front for ease of reading. 76mm immersion depth. Etched black divisions against white background. To order glass thermometer refill only, add "R" suffix to model number.	MA-780 MA-781 MA-783 MA-784 MA-785 MA-786 MA-787	-35°–50°C -20°–150°C -10°–200°C -10°–260°C -30°–120°F 0°–230°F 30°–300°F	1° 1° 1° 1° 1° 2° 2°	12 (305) 12 (305) 12 (305) 16 (405) 12 (305) 12 (305) 12 (305)

MA-780

MA-140 & MA-150

MA-111

MA-162

MA-158

MA-305

MAA-90

Mercury-In-Glass Thermometers

Description	Model	Range	Division	Length in (mm)
General Purpose Lab Thermometers have single scale to SAMA (Scientific Apparatus Makers Association) standards and engraved stem. Calibrated for total immersion, mercury filled.	MA-140 MA-150 MA-141 MA-151 MA-142 MA-152 MA-143 MA-153 MA-144 MA-154	-30°–120°F -35°–50°C 0°–230°F -20°–110°C 0°–300°F -20°–150°C 20°–500°F -10°–250°C 20°–750°F -10°–400°C	1° 1° 2° 1° 2° 1° 2° 1° 5° 2°	12 (305) 12 (305) 12 (305) 12 (305) 12 (305) 12 (305) 16 (405) 16 (405) 16 (405) 16 (405)
Armored Mercury-Filled Thermometers feature rugged nickel-plated brass cases to reduce accidental breakage and clean up of hazardous material. Thermometers for general laboratory use meet NIST requirements and tolerances. Cases have slotted front for ease of reading and built-in suspension rings. Etched black divisions against yellow background. 76mm Immersion depth. To order glass thermometer refill only, add "R" suffix to model number.	MA-680 MA-681 MA-682 MA-683 MA-684 MA-685 MA-686 MA-687 MA-688 MA-689 MA-690 MA-691 MA-692	-30°–120°F -35°–50°C 0°–220°F -20°–105°C 0°–300°F -20°–150°C -2°–150°C -2°–205°C -2°–260°C 20°–400°F 20°–500°F -2°–315°C -2°–400°C	1° 1° 2° 1° 2° 1° 1° 1° 1° 2° 2° 1° 1°	12 (305) 12 (305) 12 (305) 12 (305) 12 (305) 12 (305) 14 (355) 14 (355) 14 (355) 16 (405) 16 (405) 16 (405) 16 (405)
Teflon®-tipped Pocket Thermometer is mercury-filled. Teflon® wrapped bulb resists abrasion and breakage. Sturdy aluminum case has a loop for lanyard.	MA-111	100°–450°F	5°	6 (152)
Max/Min Registering Thermometer shows maximum and minimum temperatures since last reset, as well as current temperature in °F and °C. Reset button and protective plastic case for the mercury-filled U-shaped thermometer are included. **Product Dimensions:** 9x3.25in (229x83mm), WxH.	MA-162	-60°–120°F -50°–50°C	2° 1°	8 (203)
Concrete Reference Thermometer checks calibration of other devices used for temperature determinations in cement and concrete. Meets ASTM C1064 and E 77. Mercury-filled with black engraved numbers against yellow background. Calibrated for 3in (76mm) immersion and includes a certificate with NIST traceability. Purchase the MA-149 for a non-mercury alternative.	MA-158	30°–124°F	0.2°	18 (457)
Thermometer Storage Rack holds up to 25 thermometers in correct vertical position to prevent fluid column separation and reduce risk of breakage. Construction is 0.25in (6.35mm) thick polyethylene with sturdy base and large carrying handles. Retaining holes are 0.3125in (7.9mm) and base plate has 0.125in (3.2mm) drain holes. **Product Dimensions:** 6x9x9.5in (152x229x241mm), WxDxH.	MA-305	–	–	–
Thermometer Well provides temperature stability when reading or calibrating laboratory ovens. The solid aluminum block with machined internal well protects 1/4in (6.4mm) dia. glass thermometers, transfers heat efficiently and maintains constant temperature when oven doors are opened. The large, square cross-section is stable on most oven shelves. **Product Dimensions:** 2x2x3.75in (51x51x95mm), WxDxH.	MAA-90	–	–	–

helpful hint

State or local ordinances may prevent sales or shipment of instruments containing Mercury into your area.

Please check for restrictions before ordering or consult our customer service professionals.

MA-102

MA-117

MA-118

MA-123

MA-127

Thermometers

Description	Model	Range	Division	Length in (mm)
Pocket Dial Thermometers feature type 304 stainless steel dial case and pointed 0.15in diameter stem. Dial face is 1in (25.4mm) diameter and adjustment nut allows easy recalibration. Accurate to 1% of range. Includes plastic carrying case with clip.	MA-100	-40°–160°F	2°	5 (127)
	MA-101	0°–250°F	2°	5 (127)
	MA-102	25°–125°F	1°	5 (127)
	MA-103	50°–550°F	5°	5 (127)
	MA-104	0°–150°C	2°	5 (127)
	MA-105	10°–285°C	5°	5 (127)
Pocket Digital Thermometers both have LCD display and switches for on/off, wide-range operation and °F/°C selection. Sturdy pocket case with clips and long-life 1.5V batteries are included. Economical MA-117 has 5x0.15in (127x3.8mm) stainless steel stem and one-second response time. Premium MA-118 model is waterproof and features backlit display, auto-off, max/min memory and hold functions. 4.5x0.12in (114x3mm) stainless steel probe has 0.06in (1.5mm) step-down tip for very fast response time. The MA-118 can be recalibrated.	MA-117	-58°–500°F (-50°–260°C)	0.1°	5 (127)
	MA-118	-40°–500°F (-40°–260°C)	0.1°	4.5 (114)
Dual Range, Large Dial Thermometers, have type 304 stainless steel dial cases and 8.0x0.15in (203x3.8mm) Lxdia. stems. Dual scale 1.75 (44.45mm) diameter dial faces are clearly marked with °F and °C graduations and have polycarbonate lenses. MA-121 and MA-123P have 2in (50.8mm) dials. MA-123 has 2in sturdy glass lens and can be used in higher temperature environments. All are accurate to ±1% of range and include an adjustable mounting clip. An adjustment nut allows calibration to known temperature. Models with polycarbonate dial faces are not intended for use in oven chambers.	MA-120	0°–220°F (-18°–105°C)	2°	8 (203)
	MA-121	25°–125°F (0°–50°C)	1°	8 (203)
	MA-122	50°–300°F (10°–150°C)	2°	8 (203)
	MA-123	0°–550°F (0°–285°C)	5°	8 (203)
	MA-123P	50°–510°F (10°–265°C)	5°	8 (203)
Single Range, Large Dial Thermometers have type 304 stainless steel dial cases and 8.0x0.15in (203x3.8mm) Lxdia. stems. 1.75in (44.45mm) diameter dial faces are marked with either °F and °C graduations. Accurate to ±1% of range. Adjustment nut allows calibration to known temperature. Polycarbonate dial faces are not intended for use in oven chambers.	MA-120F	0°–220°F	2°	8 (203)
	MA-121F	25°–125°F	1°	8 (203)
	MA-124	0°–50°C	0.5°	8 (203)
Dual Range, Dial Surface Thermometers measure surface temperatures on contact with any horizontal surface. Two integral magnets also allow mounting on non-horizontal ferrous surfaces. Dials are 2in (50.8mm) diameter and marked with both °F and °C graduations. Accuracy is ±2% of scale.	MA-125	0°–150°F (-15°–65°C)	2° 1°	–
	MA-126	0°–250°F (-15°–120°C)	5° 1°	–
	MA-127	0°–500°F (-15°–250°C)	10° 5°	–

VIDEO ONLINE

MA-341

MA-106

MA-115

MA-343

MA-347

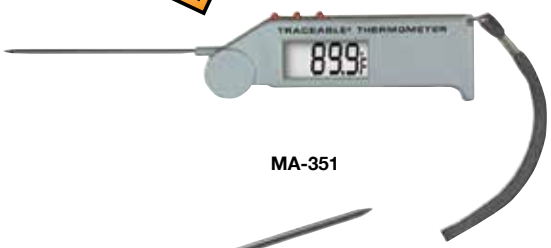
Thermometers

Description	Model	Range	Resolution	Accuracy
Traceable® Jumbo Display Digital Dial Thermometers provide continuous display for over a year. Switchable between °F/°C. MA-342 Ultra™ accuracy is ±0.3°C at tested points. Extra large LCD display is easy to read. Stainless steel probe is resistant to most laboratory chemicals. Plastic and stainless steel construction make it safer than mercury thermometers. An individually serial numbered NIST traceable certificate is included. Stem: 5.25x0.14in (133x3.8mm), Lxdia. Top Diameter: 2.125in (54mm). Overall Length: 6.5in (165.1mm). Supplied with silver oxide battery.				
Traceable® Jumbo Display Digital Dial Thermometer Traceable® Ultra™ Jumbo Display Digital Dial Thermometer	MA-341 MA-342	-58°–302°F (-50°–150°C)	0.1° from -20° – 200°, 1° otherwise	±1°C ±0.3°C
Traceable® Lollipop™ Thermometer is water-resistant/shockproof, wide-range and ideal for wet areas and virtually all field applications. Bright 0.25in (6mm) display, Min/Max recall and °F/°C switchable. Shockproof for drops up to 5ft (1.5m). Solid-state construction eliminates dangers inherent in breakable glass and toxic mercury thermometers. 8in (203mm) stainless-steel probe is resistant to most laboratory chemicals. Probe cover with pocket clip and battery are included.	MA-106	–58 –572°F –50 –300°C)	0.1° from –20 to 200°C, 1°C otherwise	±0.4°C at tested points, ±1°C otherwise
Traceable® Long-Stem Thermometers feature stainless steel probes for easy measurements in flasks, beakers and other recessed areas. Rugged ABS Plastic and stainless steel construction. MA-115 and MA-116 models have 8in (203mm) probes but differ in accuracy. MA-119 has a longer 11.4in (290mm) stem. Bright 0.25in (6.4mm) digital display switches between °C/°F ranges. Includes protective probe sleeve, NIST Traceable certificate and battery.				
Traceable® Long-Stem Thermometer Traceable® Long-Stem Ultra Thermometer Traceable® Long-Stem Thermometer	MA-115 MA-116 MA-119	-58°–302°F (-50°–150°C)	0.1° from -20° – 200°, 1° otherwise	±1°C ±0.2°C ±1°C
Traceable® Pocket Thermometer has flat profile design. Stainless steel and plastic construction makes it safe for all lab tests. Probe guard extends overall length to 10.75in (273.1mm). MA-344 Ultra™ model accuracy is ±0.4°C at tested points. Recall Max/Min readings at the touch of a key. HOLD key freezes display; another switches from °F/°C. Large, bright LCD display is easy to read. Operates continuously for 1.5 years on a replaceable silver oxide battery. Includes an individually serial numbered NIST traceable certificate and a protective case. Overall Length: 7in (178mm). Stem: 3.5x0.14in (89x3.6mm), Lxdia.				
Traceable® Pocket Thermometer Traceable® Ultra™ Pocket Thermometer	MA-343 MA-344	-58°–572°F (-50°–300°C)	0.1° from -20° – 200°, 1° otherwise	±1.5°C ±0.4°C
Traceable® Robo™ Thermometer has rotating digital display for easy viewing. Switchable between °F/°C. MA-348 Ultra™ accuracy is ±0.4°C. Stainless steel probe is resistant to most laboratory chemicals. Rugged plastic and stainless steel construction makes it safer than mercury-in-glass thermometers. An individually serial numbered NIST traceable certificate is included. Large, bright 0.25in (6.4mm) high LCD display is easy to read. Overall Length: 9.25in (235mm). Stem: 8x0.14in (203x3.6mm), Lxdia. Battery is included.				
Traceable® Robo™ Thermometer Traceable® Ultra™ Robo™ Thermometer	MA-347 MA-348	-58°–536°F (-50°–280°C)	0.1° from -20° – 200°, 1° otherwise	±1°C ±0.4°C

MA-249

MA-182

NEW



MA-351

MA-114

MA-355

MA-270

Thermometers

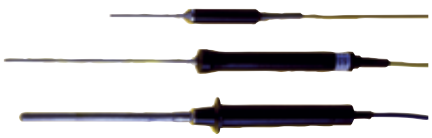
Description	Model	Range	Resolution
Waterproof Thermometers are shockproof and monitor temperature inside chambers, water baths and other lab and field environments. Max/Min readings can be recalled for any time period. Accuracy is ±1°C between -20°–100°C for MA-248 and ±0.5°C for MA-249. Tough 1.75in (44mm) dia. ABS plastic case and 4.75in (120.6mm) long stainless steel probe with 10ft (3m) cable can be installed anywhere with included suction cups, Velcro®, or magnetic mounts. °F/°C switchable. An individually serial numbered NIST traceable certificate is provided.			
Waterproof Thermometer Hi-Accuracy Waterproof Thermometer	MA-248 MA-249	-58°– 572°F (-50°– 300°C)	0.1° from -19.9°–199.9°C, then 1°
Max/Min Memory Thermometer displays inside and outside temperature simultaneously in large 1.25in (32mm) LCD digits and has memory for maximum and minimum limits of both until cleared. Accuracy is ±2% of reading. The unit comes with an 8ft (2.4m) sensor cable for outside measurements. The case has a built-in stand and a wall-mount bracket is also provided. One AAA battery is included. **Product Dimensions:** 5x3.5x.5in (127x89x127mm), WxDxH.	MA-182	-58° – 158°F (-50°– 70°C)	0.1°F
Traceable® Flip-Stick™ Thermometer has flip-to-open design. Stainless steel probe can be positioned at any angle. When folded, protected probe permits carrying by the wrist strap or in a pocket. Large LCD display. Ultra™ model accuracy is ±0.3°C at tested points. Features include °F/°C switch, Max/Min memory and a HOLD switch. An individually serial numbered NIST traceable certificate is included. Accuracy for MA-351 is ±1°C and ±0.3°C for MA-352. Length: extended 11in (279mm), folded 6in (152mm). **Stem Product Dimensions:** 4.5x0.14in (114x3.6mm), Lxdia. Weight: 2.4oz (340g).			
Traceable Flip-Stick Thermometer Traceable Ultra Flip-Stick Thermometer	MA-351 MA-352	-58°– 572°F (-50°– 300°C)	0.1° from -20°–200°C, then 1°
Thermistor/Infrared Pen unit handles both infrared surface and penetration temperature measurements. Infrared surface temperatures are displayed on a backlit LCD. Accuracy is ±2% of reading or 2°C, whichever is greater. The stainless steel thermistor probe rotates out and locks at 90° or 180° for penetration measurements and features min-max and hold functions. Accuracy is ±1.5% of reading. Carrying case and batteries are included. **Product Dimensions:** 7x0.75in (178x19mm) Lxdia. Probe: 6x0.06in (152x1.5mm) Lxdia.	MA-114	Infrared: -28° – 428°F (-33° – 220°C) Thermistor Probe: -58°– 302°F (-50°– 150°C)	Infrared: 0.1° below –200°C, then 1° Thermistor Probe: 0.1°C
Thermocouple/Infrared Thermometer measures both internal and infrared surface temperatures. Features include F° or C° selectable, hold, Min/Max, auto-off and a built-in, convenient belt clip. Folding 4in (102mm) thermocouple probe has a large temperature range with one second response time and ± 2°F accuracy. Non-contact infrared has a one second response time, ± 2°F accuracy and 0.95 emissivity. A lithium battery and nylon storage case are included. **Product Dimensions:** 6x1.6x1 (152x41x25mm), LxWxH.	MA-355	Infrared: -27° – 428°F (-33° – 220°C) Thermocouple Probe -67° – 630°F (-55° – 330°C)	0.1°C
Platinum RTD Thermometer is accurate, reliable and meets requirements for ASTM D2726, D6927, D2041 and other standard test methods as an alternative to Mercury thermometers. This highly accurate unit has accuracy to ±0.1% + 0.2°C below 200°C and ±0.15% + 0.5°C above 200°C. IP67 waterproof rating. Fast 1-second °F/°C switchable data update with low battery indicator. Includes hard carry case, stainless steel probe holder, Traceable® Certificate and probe with stainless steel 5.9in (150mm) stem and 43in (1.1m) cable. Powered by 4 AAA batteries (included). **Product Dimensions:** 2.04x0.86x6.3in (52x22x160mm), LxWxH.	MA-270	–58 – 752°F (–50 – 400°C)	0.01°C

MA-238

MA-322A

MA-323

MA-349



MAA-288, MAA-287 & MAA-286

Thermometers

Description	Model	Range	Resolution
Traceable® Workhorse™ Thermometer has adjustable calibration to a specific temperature or sensor. The sharp LCD display is easy to read in variable light conditions. Compatible with all Type K probes and features a hold key. Meter temperature accuracy is 1°C from 0–500°C. An individually serial numbered NIST traceable certificate is provided. Includes a Type K sensor with probe and cable. A bench stand, 9V battery and carrying case are also supplied. Probe cable is 30in (762mm). **Product Dimensions:** 2.75x1.25x5.5in (70x32x140mm), WxDxH.	MA-238	-58°– 2,372°F (-50°– 1,300°C)	0.1° from -50°–200°F then 1°
Basic Type K or J Thermometers pocket-sized thermometers accept standard Type K or J thermocouples. Features Max/Min memory, hold, auto power-off and relative temperature function. Four digit LCD display switches between °C and °F. Includes a 9V battery and beaded wire probe (two probes for MA-322A). Dual channel MA-322A reads and displays results from two probes simultaneously. Add "T" to model number for NIST traceable certificate of calibration. Accuracy is ±0.05% of reading +0.7°C (1.4°F). MAA-203 Rubber Boot Accessory provides protection for rugged use. **Product Dimensions:** 2.25x1.25x5.25in (57x32x133mm), WxDxH.		Type K -328°– 2,498°F (-200°– 1,370°C) Type J -328°– 1,922°F (-200°– 1,050°C)	0.1°C
Basic Type K Thermometer, Single-Channel	MA-321A		
Basic Type K or J Thermometer, Single-Channel with NIST Certificate	MA-321AT		
Basic Type K Thermometer, Dual Channel	MA-322A		
Basic Type K or J Thermometer, Dual Channel with NIST Certificate	MA-322AT		
Rubber Boot Accessory	MAA-203		
4-Channel Thermometer displays data from four probes simultaneously on a backlit LCD screen in °C or °F, using standard Type K thermocouples. Features include automatic shut-off, auto ranging, Max/Min and hold functions. Accuracy is ±0.5% of reading +1°C or 2°F, full-scale. Includes foam-lined case, two beaded-wire probes and 9V battery. An AC adapter is optional. A plastic, water-resistant pouch and bench-top mounting tripod are also available. Add "C" to the model number for models with NIST Traceable Certification. **Product Dimensions:** 2.5x1.25x7.25in (64x32x184mm), WxDxH.		-328°– 2,498°F (-200°– 1,370°C)	0.1°– 200°F then 1°
4-Channel Thermometer	MA-323		
4-Channel Thermometer with NIST Certificate	MA-323C		
AC Adapter, 115V/60Hz	MAA-227		
Water Resistant Instrument Pouch	MAA-228		
Bench-Top Tripod	MAA-229		
Traceable Alarm Timer with Probe features dual time/temperature alarms. Accuracy is ±2°C. The 1.5x2in. (28x51mm) LCD display can be viewed from up to 9ft. (3m) and folds to allow viewing angle adjustment. Remaining time, probe temperature and temperature alarm setting are shown simultaneously. Magnets permit vertical mounting. Unique time/temperature alarm tones. Temperature alarm is set in 1° increments and 24-hour timer is set in 1-minute increments. Timer memory function recalls the previous set time. The removable 8.5in (216mm) stainless steel probe has a high-temperature, silicon-coated 42in. (1067mm) cable suitable for oven use. Base is made from chemical-resistant ABS plastic. Includes individually numbered Traceable® Certificate and AAA battery. **Product Dimensions:** 2.75x3x0.5in (70x76x13mm), WxDxH.		32 – 392°F (0 – 200°C)	1°
Traceable Alarm Timer with Probe	MA-349		
Thermocouple Probes and Accessories have standard two-blade connector. Separate connectors and bulk rolls of Type K thermocouple wire allow users to fabricate probes as needed. Simply install a connector and solder or crimp the ends of the two wires together to form an inexpensive, disposable probe.			
Short General Purpose Probe, 0.0625x4in (1.6x101.6mm)	MAA-286	–	–
Long General Purpose Probe, 0.125x6in (3.2x152.4mm)	MAA-287	–	–
High-Temperature Probe, 2,200°F (1,200°C), 0.3125x3.25in (7.9x83mm)	MAA-288	–	–
Type K Wire Probe, 3ft (914mm)	HMA-320	–	–
Type K Male Connector	HMA-323	–	–
Type K Wire, 100ft (30m)	HMA-324	–	–
Type T Wire, 100ft (30m)	HMA-20	–	–
Type K Wire Extension with Female Connectors, 10ft (3m)	HMA-321	–	–

MA-372

MA-373

MA-107

MA-384

Infrared Thermometers

Description	Model	Range	Resolution	Accuracy	D:S Ratio
Infrared Thermometer has selectable °F/°C temperature units, 8-point circular laser pointing and maximum temperature capture shown on the LCD display. Emissivity is fixed at 0.95 and D:S ratio is 12:1. **Product Dimensions:** 8x3x1.5in (203x76x38mm), WxDxH.		-76°– 932°F (-60°– 500°C)	0.1°F or °C	±2% or 2°C	12:1
Infrared Thermometer Soft Carry Case	MA-372 MAA-10B				
Infrared/Thermocouple Thermometer features port for Type K Thermocouple Probes (purchased separately). Also includes high and low alarms, selectable °F/°C and 8-point circular laser aiming. Emissivity is adjustable from 0.10–1.00, with default setting of 0.95. Selectable modes for IR or probe functions include Max/Min, Difference (Max/Min) and Lock for continuous scanning. **Product Dimensions:** 8x3x1.5in (203x76x38mm), WxDxH.		-76°– 1,157°F (-60°– 625°C)	0.1°F or °C	±2% or 2°C	16:1
Infrared/Thermocouple Thermometer Available with Certificate of Calibration Soft Carry Case	MA-373 MA-373C MAA-10B				
Infrared/Thermocouple Traceable® Thermometer displays accurate surface temperatures in less than a second. Temperatures from a connected Type K thermocouple can also be shown simultaneously on the dual display. Dual lasers target the surface. Switchable between °F and °C. Max/min, average and differential temperatures, Hi/Lo temperature alarms and adjustable emissivity are all included features. A 48in (1219mm) beaded Type K thermocouple probe is included. The CE Marked unit includes a Traceable® Certificate and batteries. **Product Dimensions:** 7x4x2in (178x102x51mm), WxDxH.	MA-107	Infrared: –76 – 1022°F (–60 – 550°C) Thermcouple Probe: –83 – 2552°F (–64 –1400°C)	0.1°F or °C	±2% of 2°C,	12:1
Dual-Laser Infrared Thermometer has a wide temperature range with 0.1° resolution and high Distance to Spot (D:S) ratio at 30:1. Dual-laser aiming system allows precise spotting for increased accuracy. Emissivity is adjustable from 0.10–1.00. Measuring modes include Max/Min, Difference (Max/Min), Lock for continuous scanning and high and low temperature alarms. Built-in LED flashlight and magnetic base for extended versatility. Two AAA batteries provide up to 180 hours of continuous operation**. Product Dimensions:** 7x3x1.5in (178x76x38mm), WxDxH.	MA-384	-76°– 1,600°F (-60°– 871°C)	0.1°F or °C	±2% or 2°C	30:1

VIDEO ONLINE

MA-771

VIDEO ONLINE

MA-769

FLIR® INFRARED THERMAL IMAGING CAMERAS

Thermal Imaging Cameras by FLIR® were selected by Gilson as the best values for instant detection of temperature gradients in many different materials. The color LCD displays highlight problem areas fast, something that can't be done with standard infrared thermometers. Paving operations, bridge deck and floor slab inspections, location of delaminations, cavities and moisture problems in concrete and masonry prism walls are just a few of the applications for these sophisticated instruments.

FLIR® Cameras are light and compact, with focus-free lenses and simple navigation for easy one-handed operation, yet are tough enough for rugged field conditions and rated to withstand shock values to 25g. Rechargeable Lithium-Ion batteries yield two to four hours or more of operating time and are quickly charged on the included AC charger. The unmatched manufacturer's warranty offers 10-year coverage on the detector and 2 years parts and labor.

Exclusive MSX® thermal image enhancement on most models adds key details from the visible spectrum camera to the entire infrared image on the color LCD display. Text becomes clearly visible, making it easy to read a label or identifier in the image. The all-in-one image shows accurate thermal gradients along with visible details. Higher-end models feature enhanced infrared resolution, selectable measurement modes and picture-in-picture displays, which superimpose a thermal image over a visible spectrum photo.

FLIR® Infrared Thermal Imaging Cameras

Description	Model	Temperature Range F° (C°)	Accuracy	Thermal Sensitivity C°	IR Sensor Resolution (Pixels)	Field of View
FLIR® C2 Thermal Imaging Camera This pocket-sized, full-featured thermal camera is the first designed for construction applications. The C2 saves thermal, visible and MSX®-enhanced JPEG still images, as well as non-radiometric streaming thermal video. Fully radiometric images allow measurement at any point during on-screen analysis and the included FLIR® Tools software for PC or Mac allows easy reporting and analysis down to the pixel level. The large, 3in (76mm) LCD intuitive touch screen display features auto-orientation and wide field of view. Internal memory stores at least 500 images in standard JPEG format. A built-in digital camera captures visible images. Also included are a lanyard, USB Memory Stick and USB cable with Micro-B connector for data transfer to and from PC, iOS and Android devices. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-771	14°—302° (-10°—150°)	±2°C or 2%	<0.10	80x60 (4,800)	41°x31°
FLIR® Spot Thermal Camera The affordable new Imaging IR Thermometer bridges the gap between ordinary infrared thermometers and FLIR® infrared Thermal Imaging Cameras. The MA-769 lets you easily visualize heat patterns instead of relying on spot temperatures. Up to 75,000 surface temperatures and images are saved to an included 8Gb Micro SD card or to a PC over a USB connection. Memory can be expanded up to 32Gb with user-supplied micro SD card. The measurement field is framed by dual-laser pointers and has a 24:1 spot ratio for accurate measurements at a safe distance. The 2in (50mm) display has gray-scale or hot iron color palettes and adjustable auto power-off. A lanyard, USB Cable and international AC charger are included. Analysis Software is not included. MAA-14 Protective Vinyl Case and a convenient Belt Holster are available as options. **Product Dimensions:** 2.2x3.7x7.3in (55x94x186mm), WxDxH.	MA-769	-13°—716° (-25°—380°)	±2°C or 2%	<0.15	80x60 (4,800)	50°x39°

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MA-774

MA-775

MA-776

MA-778

FLIR® Infrared Thermal Imaging Cameras

Description	Model	Temperature Range F° (C°)	Accuracy	Thermal Sensitivity C°	IR Sensor Resolution (Pixels)	Field of View
E4 Thermal Imaging Camera is economical and features infrared, visual and MSX image modes on 3in (76mm) color display. Sensor operates only in center-spot measurement mode. Comes with FLIR Tools software and a sturdy plastic case. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-774	-4°—482° (-20°—250°)	±2°C or 2%	<0.15	80x60 (4,800)	45°x34°
E5 Thermal Imaging Camera measurement modes include center-spot or area box. Automatic hot/cold detection marks maximum and minimum temperatures within the 3in (76mm) color display. Image modes are infrared, visual and MSX. A plastic carrying case and FLIR® Tools software are included. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-775	-4°—482° (-20°—250°)	±2°C or 2%	<0.10	120x90 (10,800)	45°x34°
E6 Thermal Imaging Camera with higher infrared resolution and thermal sensitivity rating of less than 0.06°C. Measurement modes include center-spot or area box. Automatic hot/cold detection marks maximum and minimum temperatures within the display area. Image modes are infrared, visual, MSX and picture-in-picture mode on the 3in (76mm) color display. FLIR® Tools analytical software and a plastic case are included. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-776	-4°—482° (-20°—250°)	±2°C or 2%	<0.06	160x120 (19,200)	45°x34°
E8 Thermal Imaging Camera features infrared 76,800 pixel resolution with thermal sensitivity rating of less than 0.06°C. Measurement modes include center-spot or area box. Automatic hot/cold detection marks maximum and minimum temperatures within the display area. Image modes are infrared, visual, MSX and picture-in-picture on the 3in (76mm) color display. A plastic case and FLIR® Tools software for analysis are included. **Product Dimensions:** 3.1x1x4.9in (80x24x125mm), WxDxH.	MA-778	-4°—482° (-20°—250°)	±2°C or 2%	<0.06	320x240 (76,800)	45°x34°

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MA-81

MA-324

MA-245

MA-317

MA-246

Temperature Humidity Recorders & Data Loggers

Description	Model	Range	Division	Accuracy
Temperature Chart Recorders save data on 8in (203mm) circular paper charts and feature selectable 24 hour or 7-day operation. No power source or batteries required. Wall-mounted or Portable models can be equipped with air or liquid sensors. Air sensors have a bendable 14-3/8in (365mm) cable. Liquid sensors are supplied with 5ft (1.5m) cable. Heavy aluminum cases have gasket seals. Includes 100 7-day charts and a felt-tip pen. Extra pens and 24 hour charts are ordered separately. Recorders for other ranges (°F or °C) and/or electric and battery operated drives are quoted on request. Inquire for models with NIST traceable calibration. Temperature sensors contain mercury and may be restricted for sale in some areas. Check local regulations before ordering. **Product Dimensions:** 10.5x5x14.5in (267x127x368mm), WxDxH.		0°– 150°F	3°	±1%
Wall-Mounted Recorder with Air Sensor	MA-80			
Wall-Mounted Recorder with Liquid Sensor	MA-80B			
Portable Recorder with Air Sensor	MA-81			
Portable Recorder with Liquid Sensor	MA-81B			
7-Day Charts, pkg. 100	MAA-60			
24 Hour Charts, pkg. 100	MAA-61			
Felt-Tip Pens, pkg. of 5	MAA-62			
4-Channel Data Logging Thermometer displays data from four probes simultaneously on a multi-line backlit LCD screen in °C or °F, using standard Type J, K, E and T thermocouples. Features include automatic shut-off, hi-lo alarms, auto ranging, max/min and hold functions. Accuracy is ±0.1% of reading +0.7°C or 1.4°F, full-scale. 99 memories store up to 16,000 data points for downloading to PC with USB cable and downloadable software. Includes foam-lined case, two beaded-wire probes, USB computer power cable, free software download and 4x AA batteries. A plastic, water-resistant pouch is also available. Add "C" to the model number for models with NIST Traceable Certification. **Product Dimensions:** 2.5x1.25x7.25in (64x30x184mm), WxDxH.		-328°– 2,498°F (-200°–1,370°C)	0.1°– 200°F and 1° above 200°F	0.1% of reading +0.7°C
4-Channel Data Logging Thermometer	MA-324			
Water Resistant Instrument Pouch	MAA-228			
Datalogging Thermometer captures 5.9 million date, time and temperature readings on a 256mb SD memory card. Data is quickly uploaded to any Windows™ PC via the included USB flash drive with built-in SD card reader port. Features include max/min memory and user-adjustable high/low alarms. Four-line display shows probe and ambient temperatures, relative humidity and time of day. Range is -22° to 158°F (-30° to 70°C) with 0.1° resolution. Accuracy is ±0.6°C from 0° to 50°C and ±1.2°C otherwise. Stainless steel probe is 0.16x1in (4x25mm) ODxL. A 256mb SD card, USB card reader, bench stand, wall mount, batteries, AC adaptor and certificate are included. **Product Dimensions:** 3.5x1.25x4.25in (88.9x31.75x108mm), WxDxH.	MA-245	-22°– 158°F (-30°– 70°C)	0.1°	±0.6°C from 0°–50°C
Kestrel® 5200 Professional Environmental Meters are handheld, portable units with built-in evaporation rate calculators for monitoring the conditions allowing plastic shrinkage cracking in fresh concrete. Meeting ACI 308R guidelines for documentation of concrete placement and curing conditions, the meters offers a complete suite of environmental measurements and calculations including air temperature, wind speed, relative humidity, barometric pressure, evaporation rate, dew point, heat stress and wind chill. The high-resolution display and dual color backlight provide visibility in any lighting conditions. Up to 2,900 data points can be uploaded and stored to a PC with the MAA-166 USB Transfer Cable. Waterproof to IP67 and drop-tested to MIL-STD-810G. The MAA-317B LiNK model enables WiFi connectivity to a smartphone or tablet for remote monitoring. The LiNK enabled model can communicate directly to a Windows or Mac computer via WiFi when used with the MA-167 Kestrel LiNK® Dongle, purchased separately. A waterproof carrying pouch, wrist lanyard and AA Lithium battery are included with both models. Optional Mini Tripod allows hand-free operation and the Wind Vane mount keeps the unit oriented into the wind for continuous measurement of key weather parameters. **Product Dimensions:** 4.8x1.9x1.1in (122x48x36mm)		Temperature -20°– 158°F (-29°– 70°C) Humidity 0 – 90%RH @ 25°C Non-Condensing Wind Speed 1.3 – 89.5mph (0.6 – 40m/s) Pressure 20.67 – 32.48 inHg	0.1° 0.1% RH 0.1mph (0.1m/s) 0.1inHg	0.9°F 0.5°C ±2%RH 3% of reading ±0.044 inHg @77°F (25°C)
Kestrel® 5200 Professional Environmental Meter	MA-317			
Kestrel® 5200 Professional w/LiNK Environmental Meter	MA-317B			
Mini Tripod	MAA-162			
Portable Wind Vane Mount	MAA-163			
USB Transfer Cable	MAA-166			
Kestrel® Link Dongle	MAA-167			
Platinum RTD Datalogging Thermometer is highly accurate and allows direct transfer of recorded data (CSV files) to PC or Mac using a USB flash drive (not included) — no need for additional software. Temperature range is –130° to 221°F (–90° to 105°C) with 0.01° resolution and accuracy of ±0.2°C across the entire range. Rolling datalogging memory captures temperatures at user-defined intervals from 1 minute to 24 hours with capacity for a year of recorded data using 1-minute intervals. Smart-Alarm™ visual and audible indicators signal continuously until acknowledged. Up to ten alarm events are stored and time-stamped in memory. Also features Max/Min, difference and average functions. This two-channel unit is available supplied with one or two 316 stainless steel factory-calibrated Probes, for connection to high-impact, chemical-resistant ABS plastic case with 10ft (3M) leads. Replacement probes must be factory-installed and calibrated. Each CE marked thermometer features NIST Traceable calibration from an A2LA lab and has a unique ID for identification. Includes AAA batteries, AC adaptor, built in stand and wall-mount accessories. **Product Dimensions:** 2.75x0.75x4.25in (70x19x108mm), WxDxH.		–130° – 221°F (–90° – 105°C)	0.1°	±0.2°C
Platinum RTD Datalogging Thermometer, w/1 Probe	MA-246			
Platinum RTD Datalogging Thermometer, w/2 Probes	MA-247			

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USB TEMPERATURE DATA LOGGERS

°C/°F selectable, these accurate and reliable USB Data Loggers allow temperature values to be monitored and recorded over a period of time. Included software enables quick configuration and data transfer to a PC. Data can then be exported to other applications for detailed analysis.

MA-491

MA-492

MA-493

MA-494

MA-495

MA-496

USB Temperature Data Loggers

Description	Model	Range °F (°C)	Resolution	Accuracy °F (°C)
Thermocouple Data Logger with Graphic Screen measures and stores more than 250,000 temperature readings from K, J or T-type thermocouples. It is supplied with a K-type thermocouple. A high contrast dot-matrix LCD graphic display has three buttons to navigate through the on-screen menu. This menu provides access to real-time trend analysis, data summaries and the ability to start, stop and restart the data logger independently of the host-PC. The Max/Min reading can be reset on-screen; introducing an event marker into the data which can later be viewed in the graphing software and data file. Logging intervals selectable from 2 seconds to 1 hour. The data logger is supplied with two lithium batteries, with typical life of up to one year. **Product Dimensions:** 4x1.9x1.2in (102x48.5x30.5mm), LxWxH.	MA-491	-112º– 752º (-80º– 400º)	0.1 (0.1)	±2.7° (±1.5°) Logger Only
Thermocouple Temperature Data Logger with Display measures and stores over 32,000 temperature readings from K, J or T type thermocouples. Thermocouples are attached via a standard connector on the base of the unit. The user can cycle between several different temperature variables on the LCD display using the push button. The logger can be started immediately, delayed or with push-start button. Logging intervals selectable from 1 second to 12 hours. The data logger is supplied with a long-life lithium battery, with typical life of up to one year. **Product Dimensions:** 5.31x0.94x0.82in (135x24x21mm), LxWxH.	MA-492	-112º– 752º (-80º– 400º)	1.0 (0.5)	±2 (±1) Logger Only
Temperature and Humidity Data Logger with Display stores up to 16,379 each relative humidity and temperature readings over 0 to 100%RH and -35 to +80°C (-31 to +176°F) measurement ranges. Relative humidity, temperature and dew point data can be graphed, printed and exported to other applications. At the touch of a button, the user can cycle between current temperature and humidity and Max/Min stored values. Logging intervals selectable from 10 seconds to 12 hours. The data logger is supplied with a long-life lithium battery, with typical life of up to one year. **Product Dimensions:** 5x1x0.9in (126x25x22mm), LxWxH.	MA-493	Temperature: -31º– 176º (-35º– 80º) Relative Humidity: 0–100% Non-Condensing	Temp: 0.2 (0.1) RH: 0.5%	Temp: ±4 (±2) RH: ±2.25%
Temperature Data Logger stores up to 16,382 readings. Operational status is indicated by flashing red, green and orange LEDs. The data logger is protected against moisture to IP67 standard when the protective cap is fitted. Selectable parameters include logging rate from 10 seconds to 12 hours, temperature units, high & low alarms and start-time. The data logger is supplied with a long-life lithium battery, with typical life of up to one year. **Product Dimensions:** 3.9x1x0.9in (99x25x23mm), LxWxH.	MA-494	-31º– 176º (-35º– 80º)	1.0 (0.5)	±2 (±1)
Thermocouple Temperature Data Logger measures and records over 32,000 temperature readings from K, J, or T type thermocouples. A standard Type K thermocouple is included. Thermocouples are attached via a standard connector on the base of the unit. Start times are programmed and recorded temperatures displayed through connection to the USB port of a Windows-based PC. Selectable logging intervals from 1 second to 12 hours. The data logger is supplied with a long-life lithium battery, with typical life of up to one year. **Product Dimensions:** 4.6x1.1x1.1in (118x27x27mm), LxWxH.	MA-495	-112º– 752º (-80º– 400º)	1.0 (0.5)	±2 (±1) Logger Only
Submersible Temperature Data Logger measures and stores up to 32,510 temperature readings. The logger is housed in a 316 grade stainless steel case for years of protection from corrosion, impact and moisture. Selectable logging intervals from 1 second to 12 hours. Moisture protection is rated at IP-67 standards. A slot for a retrieval lanyard is provided. A long life, high-capacity lithium battery is included for logging for up to 3 years. **Product Dimensions:** 4.3x0.7in (110x18mm), Lxdia.	MA-496	-40º– 257º (-40º– 125º)	0.2 (0.1)	±0.4° (±0.2°)

TSA-169R

TSA-1167

TSA-190

MA-193

MA-38

Timers & Stopwatches

Description	Model	Power Supply	Range
Digital Lab Timer controls electrical loads up to 20 amps. Bright 0.5in (12.6mm) LED display shows remaining time, stops machine at zero, then resets to programmed time for next use. Test times are set with tactile panel buttons. When stopped and restarted, countdown resumes from remaining time when paused. Electronics are mounted in a stainless steel case. The timer has a three-pronged receptacle for timed devices. TSA-169RF has two 6ft (3m) three-wire cords without plugs for connection to mains and machine. **Product Dimensions:** 4.5x5x5.5in (114x127x140mm), WxDxH.	TSA-169R TSA-169RF	100-250V 50/60Hz	Four Modes: 9,999 sec 9,999 min 99:59 min:sec 99:59 hr:min
Gralab Timer is an electromechanical timer that plugs into wall outlet and controlled device plugs into timer. Option for continuous-run without removing timer from circuit. Rugged plastic case with gray and white finish. 6.5in (165mm) Dial has black markings and hands. Smaller red numerals allow alternate use as a stop-clock. Controls up to 1/3hp motor or 1,200 Watt resistive load. **Product Dimensions:** 7.5x2.5x7.5in (190x65x190mm), WxDxH.	TSA-1167 TSA-1167F	120V/60Hz 230V/50Hz	60minx1sec
Spring-Wound Timers are simple to operate and have 30 or 60 minute ranges in 1 minute increments. Just plug the timed device into the back of the timer and turn the dial to the desired interval. When the dial returns to zero, power is cut off and the device stops. The black plastic case features an easy to set indicator dial and satin chrome face with black numerals. These timers are fully grounded for single-phase rated to control up to 10 amps at 125 VAC. **Product Dimensions:** 3x2.75x3.3in (76x70x84mm), WxDxH.	TSA-190 TSA-191	115V/60Hz/15A	30minx1min 60minx1min
Dual Timer has 0.6in LCD displays for two independent timers, with both audio and flashing green/red visual alarms. Two memory settings for repetitive times. Large buttons and simple programming make it easy to use. NIST Traceable certificate for ±0.01% accuracy. Supplied with magnetic back, stand/spring-clip, lanyard opening and two AAA alkaline batteries. **Product Dimensions:** 3.5x0.6x3in (89x15x76mm), WxDxH.	MA-193	Two AAA Batteries (Included)	2 Timers 99hr:99min x1sec
Four-Channel Traceable® Alarm Timer has a large, 0.75in (19mm) display for viewing from across the lab. Accuracy is 0.01%. The extra-loud, high-decibel alarm sounds for one minute or until silenced. At zero, the timer starts counting up, showing time elapsed since alarm. All 4 channels may be used simultaneously and separately to count-down or count-up. For repetitive tests, the memory returns the display to the previously programmed countdown time at the touch of a key. Finger-size keys make it easy to set times and change channels. An individually serial-numbered certificate traceable to NIST is provided from an A2LA accredited laboratory. Magnetic back and flip-open stand allows the timer to be placed on any surface. **Product Dimensions:** 2.75x2.5x0.5in (70x64x13mm), WxDxH.	MA-38	2-year, silver-oxide battery (Included)	99hr, 59min, 59secx1sec

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MA-189

MA-349

TSA-195

MA-30

Timers & Stopwatches

Description	Model	Power Supply	Range
Thermo-Timer is a 99 minute countdown timer that also displays temperature in 32°–392°F (0°–200°C) range and is switchable between °F and °C. Temperature cable with probe fits into closed oven door. 4ft cord is resistant to 482°F (250°C). Alarm sounds when time or temperature limit is reached. Time and temperature functions can be used separately or simultaneously. The display swivels for easy reading and magnets permit mounting on sides of ovens. Accuracy is ±2°C. Probe and two AAA batteries included. **Product Dimensions:** 3x1x5in (76x25x127mm), WxDxH.	MA-189	Two AAA Batteries (Included)	24hr x 1sec
Traceable® Timer/Temperature Alarm with Probe features both time and temperature alarms. Range is 32 to 392°F (0 to 200°C), accuracy is ±2°C and resolution is 1°. Meets ISO/IEC standards. The large 1.5x2in. (28x51mm) LCD display folds to allow viewing angle adjustment. Time remaining, probe temperature and temperature alarm setting are shown simultaneously. Magnets on the back of the unit permit vertical mounting. The temperature and time alarms have unique alarm tones. Temperature alarm is set in 1° increments. A continuous five-minute alarm sounds when the temperature passes the set point. The 24-hour timer is set in one-minute increments. When time expiries, a one-minute alarm sounds, the display flashes and the timer counts up from zero. For repetitive tasks, the timer memory function recalls the previous set time. The removable 8.5in (216mm) stainless steel probe has a high-temperature, silicon-coated 42in (1067mm) cable suitable for oven use. The timer base is made from chemical-resistant ABS plastic. Unit comes with an individually numbered Traceable® Certificate and AAA battery. CE marked. **Product Dimensions:** 2.75x3x3.5in. (70x76x89mm), WxDxH.	MA-349	One AAA Battery (Included)	32° to 392°F (0° to 200°C)
Field Test Timer is a simple LCD digital timer with a magnetic back, audible signal and large 1.2in (30mm) start button, ideal for laboratory or field applications. Test times reset automatically until new time is programmed. Timer can be hand held or attached to magnetic material. A 30 second alarm sounds at zero. Durable plastic case measures 1.8x0.5x3.5in (46x13x89mm), WxDxH.	TSA-195	1.5V Battery (Included)	99min x 1sec
Large Display Digital Stopwatch has click-stop controls with positive tactile feedback and a large LCD display. Unit has split interval, clock and calendar functions. Housed in a rugged ABS plastic case. A vinyl case is included. **Product Dimensions:** 2.5x0.75x3.75in (63.5x19.05x95.25mm), WxDxH.	MA-30	One AA Battery (Included)	30min x 0.1sec 24hr x 1sec

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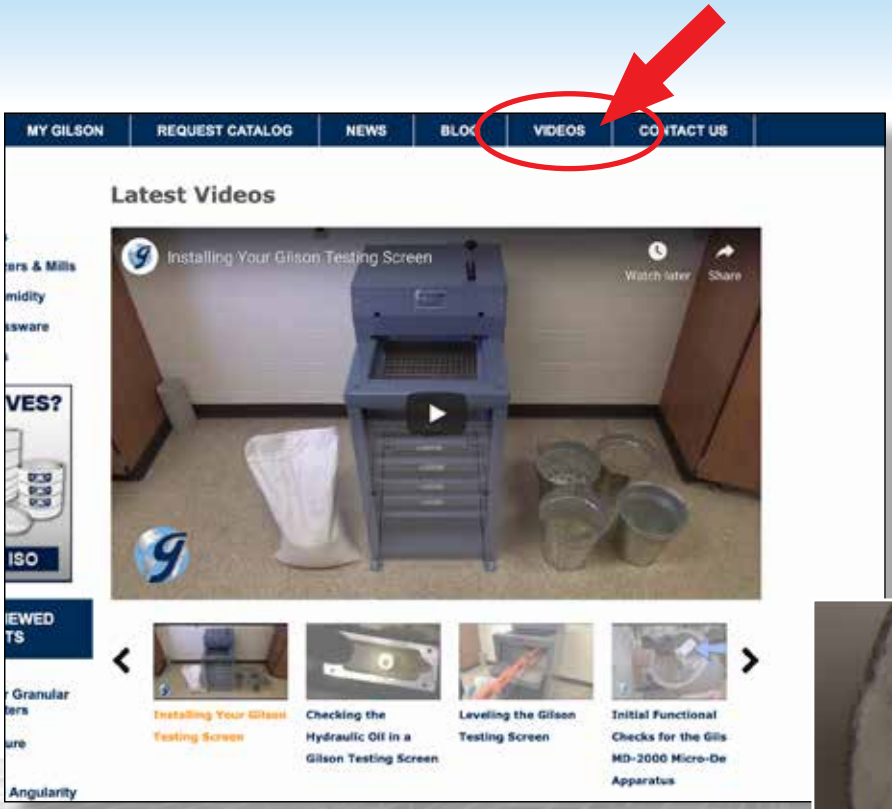

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Gilson Dual Range Surface Dial Thermometers (MA-125, MA-126, and MA-127)

FLIR® C2 Thermal Imaging System (MA-771)

Gilson Dial Thermometers (MA-121, MA-122, MA-123, MA-124, MA-341, and MA-342)

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TSA-163

SPA-100

SC-4, SC-1 , SC-5 & SC-3

SC-45

SC-55, SC-56, SC-51 & SC-50

Metal Sample Pans & Containers

Description	Type	Model	External Dimensions, in	Capacity qt
Steel Pans are welded and painted for a durable, long life. Cross-stacking Handling Pans have chute end and swing-down handle to permit oven access. Sample Pans have end flanges for lifting and nest for storage. SPA-120 is also available in aluminum as SPA-122.	Steel Handling Pans	TSA-162	15x30x4H	39.0
		TSA-163	12x20.5x4H	17.0
	Steel Sample Pans	SPA-105	29x12x9H	48.0
		SPA-104	22x13x11H	49.0
		SPA-400	25x9x8H	31.0
		SPA-101	20x7x6H	14.0
		SPA-100	26x9x6H	24.0
		SPA-120	29x13.75x6.75H	36.0
Galvanized Iron Pans have wire-bound rolled top edges and two drop handles. Often used for drying or mixing. Pans SC-2 , SC-4 and SC-5 have tapered sides for nesting. Others have straight sides. Safe for use in oven temperatures to 350°F (177°C).	Galvanized Pans	SC-1	18x18x1.5H	8.0
		SC-2	18x18x3H	17.0
		SC-3	24x24x4H	40.0
		SC-4	24x24x3H	30.0
		SC-5	10x20x3H	10.0
Stainless Steel Pans and Bowls have top quality seamless construction with rounded corners. Rectangular pans have straight sides. SC-45 through SC-47 have handles, others have oversize flanges for handling. Round pans have tapered sides. SC-77 is sized to contain 8in (203mm) sieves. SC-80 through SC-84 are round sided.	SS Rectangular Pans	SC-45	17.2x14.5x2.5H	8.3
		SC-46	15.3x13x2.5H	6.5
		SC-47	13.5x11.2x2.5H	4.3
		SC-50	20.7x12.7x2.5H	8.3
		SC-51	20.7x12.7x4H	14.0
		SC-55	10.4x12.7x2.5H	4.0
		SC-56	10.4x12.7x4H	6.7
		SC-57	10.4x12.7x6H	9.6
		SC-60	6.9x12.7x2.5H	2.6
		SC-61	6.9x12.7x6H	5.9
		SC-65	6.4x10.4x2.5H	1.8
		SC-70	6.9x6.3x2.5H	1.2
	SS Round Pans	SC-73	10 dia.x1.9H	0.7
		SC-74	14.2 dia.x1.9H	1.3
		SC-77	11 dia.x3.5H	5.0
		SC-78	13.5 dia.x5H	7.5
	SS Round Bowls	SC-80	7.7 dia.x2.7H	1.5
		SC-81	9 dia.x3.2H	3.0
		SC-82	11.3 dia.x3.6H	5.0
		SC-83	13.3 dia.x4.4H	8.0
		SC-84	17.5 dia.x5.2H	16.0
Aluminum Pans are popular seamless, heavy-gauge aluminum pans for economical and lightweight option for handling samples. Models SC-149 through SC-151 have end handles. Large SC-149 is extra heavy-duty.	Aluminum Pans	SC-149	26x18x3.5H	27.0
		SC-150	18x12x2.5H	7.7
		SC-151	15.5x11x2.5H	4.5
		SC-163	13.5x10x2.5H	4.0
		SC-152	8x8x2H	2.0
		SPA-301	7.5x3.7x2.3H	1.1
	Aluminum Round Pan	SC-165	8 dia.x1.5H	1.3

SC-74, SC-73, SC-78 & SC-77

SC-83, SC-84, SC-81, SC-82 & SC-80

SC-151, SC-149, SC-150 & SC-152

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SC-250 & SC-251

SC-252

SC-259

SC-400 through SC-406

SC-498 through SC-508

Sample Pans & Containers

Description	Type	Model	External Dimensions, in	Capacity
Glass Ovenware has heavy-duty 0.375in (9.5mm) thick ovenproof clear glass and is microwavable. Dimensions include handles.	Rectangular Dish	SC-250	10.9x15.8x2.3	3qt
	Rectangular Dish	SC-251	8.5x13.7x2.3	2qt
	Square Dish	SC-252	8.5x0.5x2.5	1.5qt
	Deep Dish	SC-253	5.5x11.3x3	1.5qt
	Round Bowl	SC-258	8.5dia.x4.3	2.5qt
	Round Bowl	SC-259	7.3dia.x3.5	1.5qt
Metal Round Sample Containers have tight-fitting lids to prevent moisture loss in samples. All have straight sides and flat bottoms. Covers fit bottom of container during drying. Premium aluminum never needs tare adjustment for rusting. Sold in packages of twelve.	Aluminum, Round Pkg. of 12	SC-400	2dia.x0.9H	1.5oz
		SC-402	2.5dia.x1.8H	4oz
		SC-404	3dia.x1H	5oz
		SC-406	3.5dia.x2H	11oz
	Tinned, Round Pkg. of 12	SC-498	1.9dia.x1.3H	2oz
		SC-500	2.2dia.x1.6H	3oz
		SC-502	2.4dia.x1.6H	4oz
		SC-504	2.9dia.x1.9H	6oz
		SC-506	3dia.x2.2H	8oz
		SC-508	3.8dia.x2.8H	16oz
Plastic Round Sample Jars are light-weight and enclosed to protect from moisture, dust, etc. Intermediate Poly-propylene wide-mouth jars with leakproof screw-top lids. Sold in case lots only.	Plastic, Round			
	12/case	SC-115	4.4dia.x3.8H	32oz
	12/case	SC-116	3.4dia.x4.1H	16oz
	12/case	SC-117	2.5dia.x3.5H	8oz
	24/case	SC-118	2dia.x2.8H	4oz
	24/case	SC-119	1.6dia.x2.8H	2oz
Porcelain Crucibles are used with Muffle Furnaces for loss-on-ignition (LOI) testing of cement, fly ash and soil materials. They are temperature rated to 1,832°F (1,000°C). They have a high-form design and are glazed inside and out, except for outside bottom and rim. Available in three sizes.	Porcelain, Glazed	MFA-65	30x25mm	10ml
	Porcelain, Glazed	MFA-70	45x36mm	30ml
	Porcelain, Glazed	MFA-75	50x30mm	45ml
Sample Cans are round, tinned-metal cans ideal for storing or transporting soil, aggregates, or other samples. Ep-oxy lacquered interiors and tight fitting friction-type lids provided.	Tinned-Metal, Round			
	6/Case	SC-272	6.6dia.x7.5H	4qt
	12/Case	SC-270	4.3dia.x4.9H	1qt
	1 each	MAA-43	3.3dia.x4.0H	1pt
Sample Buckets are ideal for bulk field samples. Thick-wall, high-density polyethylene containers have sturdy bail handles for easy transport. Tight-fitting lids prevent moisture loss and spillage.	Plastic Square	HM-450	9.5x9.5x13	16qt

SC-115 & SC-118

MFA-70

SC-270 & SC-272

HM-450

GW-11

GW-74

VIDEO ONLINE

GW-20 through GW-24

GW-32

MA-45, MA-48 & MA-50

SG-250

MA-42, MA-41 & MA-40

GW-60

VIDEO ONLINE

GW-40 through GW-47

Laboratory Flasks, Beakers & Graduated Cylinders

Description	Capacity ml	Other Features	Models Unit	Models Pkg.	Pkg. Qty.
Erlenmeyer Flasks are narrow-mouth and meet ASTM E1404 Type 1 requirements. They have a heavy-duty rim and permanent white volume graduations for approximate measuring/mixing. Large matte spot for easy writing and erasing. Not for vacuum or pressure use.		**Graduations, ml**			
	125	25	GW-10	GW-10P	12
	250	25	GW-11	GW-11P	12
	500	50	GW-12	GW-12P	6
	1,000	50	GW-13	GW-13P	6
	2,000	100	GW-14	GW-14P	4
	4,000	500	GW-15	—	1
	6,000	500	GW-16	—	1
Filter Flasks with side tubulation for 0.375in ID tubing. Heavy-duty 2,000/4,000ml sizes have thick wall for maximum strength.		**Stopper Size**			
	1,000	#8	GW-74	—	1
	2,000	#9	GW-75	—	1
	4,000	#12	GW-76	—	1
Graduated Cylinders are durable borosilicate glass with etched single scale for precision liquid measurements. Large pouring lip and oversize, stable base. 10ml size has enlarged funnel top.		**Graduations, ml**			
	10	0.2	GW-20	GW-20P	4
	25	0.5	GW-21	GW-21P	4
	50	1.0	GW-22	GW-22P	4
	100	1.0	GW-23	GW-23P	4
	250	2.0	GW-24	GW-24P	2
	500	5.0	GW-25	—	1
	1,000	10.0	GW-26	—	1
	2,000	20.0	GW-27	—	1
Beakers are low-form Griffin borosilicate glass beakers that meet ASTM E960 Type 1 requirements and have reinforced rims, uniform wall thickness and spouts for pouring. Approximate volume graduations guide measuring/mixing operations with ±5% accuracy. The range of graduation marks is less than total capacity of the beaker. Large matte area for marking.		**Graduations, ml**			
	50	5	GW-30	GW-30P	12
	100	10	GW-31	GW-31P	12
	250	25	GW-32	GW-32P	12
	400	25	GW-33	GW-33P	12
	600	50	GW-34	GW-34P	6
	800	50	LPA-43	LPA-43P	6
	1,000	50	GW-35	GW-35P	6
Volumetric Flasks are borosilicate glass and calibrated to contain indicated quantity at 20°C. Supplied with plastic snap cap. Meets ASTM E288, E694; useful for specific gravity tests such as ASTM D854.	100	—	SG-100	—	1
	250	—	SG-250	—	1
	500	—	SG-500	—	1
	1,000	—	SG-1000	—	1
Stainless Steel Beakers are heavy-duty, seamless and corrosion resistant with rolled top rims. MA-40 through MA-42 have sturdy handles and oz/cc graduations. Larger MA-45 through MA-50 are straight-sided Bain Marie style with no handle or graduations. Useful for handling, collecting corrosive solvents, extracts or bitumen samples without fear of breakage.		**Top dia. x H in (mm)**			
	500	3.5x4.5 (89x114)	MA-40	—	1
	1,000	4.5x5 (114x127)	MA-41	—	1
	2,000	5.5x6.5 (140x165)	MA-42	—	1
	1,893	4.9x6.8 (124x172)	MA-45	—	1
	5,678	7.3x8.6 (185x218)	MA-48	—	1
	11,356	9x10.9 (229x279)	MA-50	—	1
Plastic Graduated Cylinders are quality polymethylpentene (PMP). PMP is highly transparent, rigid, resists impact and handles temperatures of 200°C (180°C continuous). Not recommended for use with chlorinated solvents or strong oxidizing agents. Cylinders have pour spout, stable base and molded-in graduations.		**Graduations, ml**			
	10	0.2	GW-40	GW-40P	10
	25	0.5	GW-41	GW-41P	5
	50	1.0	GW-42	GW-42P	5
	100	1.0	GW-43	GW-43P	5
	250	2.0	GW-44	—	1
	500	5.0	GW-45	—	1
	1,000	10.0	GW-46	—	1
	2,000	20.0	GW-47	—	1
Measuring Pipettes are Mohr-type, color coded by size and calibrated to deliver at 20°C. Each has permanent markings with zero at the top. Mouth end of 5ml and larger sizes is reduced in diameter for ease of use.		**Color Code**			
	1	Yellow	GW-60	—	1
	5	Blue	GW-62	—	1
	10	Orange	GW-63	—	1
	25	White	GW-64	—	1
	50	None	GW-65	—	1
Neoprene Stoppers fit various sizes of Erlenmeyer Filter Flasks and some Graduated Cylinders.		**Size #**			
	—	8	GWA-508	—	1
	—	8.5	GWA-585	—	1
	—	9	GWA-509	—	1
	—	12	GWA-512	—	1

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TSA-168 TSA-170 TSA-179 TSA-173

TSA-172

TSA-171

TSA-174 TSA-176

WT-6

TSA-177 & TSA-178 TSA-182 & TSA-183

TSA-184, TSA-186 & TSA-188 TSA-198 TSA-205, TSA-207 & TSA-208

Brushes

Description	Model
Small Fine Sieve Cleaning Brush has soft bristles tapered for use with #50 and finer mesh sieves. Mounted in round 0.75in (19mm) ferrule. Overall length is 5in (127mm) with wood handle.	TSA-168
Fine Sieve Cleaning Brush is ideal for cleaning No.16 and finer sieves. Soft bristles, nickeled steel ferrule, lacquered wood handle, 1.25x5.75in (32x146mm), dia.xL.	TSA-170
Nylon Sieve Cleaning Brush is a hardwood block brush with nylon bristles, optimal for cleaning No. 120 mesh and finer sieves. 1.875x0.875 (48x22mm), dia.xThick with 3.75in (95mm) straight wood handle. Overall brush length is 5.88in (149mm).	TSA-179
Wire Loop Brush is a 1.25in (32mm) wide fan-type brush with 1.625in (41mm) long metal bristles and a wire loop handle. The 4.75in (121mm) long brush is designed for use on #16 and coarser wire cloth.	TSA-173
Coarse Sieve Cleaning Brush has an 8.5in (216mm) curved plastic handle with 1.5x1.75in (38x44mm) of slanted brass wire bristles—perfect for No.30 and coarser wire cloth in round sieves.	TSA-172
Coarse Screen Tray Brush is recommended for No.30 and coarser wire cloth in screen trays. The 13in (330mm) curved wooden handle has 5.5x0.75in (140x19mm) of fine (0.005) brass wire bristles, which slant toward the tip for cleaning corners of screen trays. Also useful for cleaning sample molds.	TSA-171
Table Brush has 9x3in (229x76mm) of horsehair bristles. This 14in (356mm) long brush comes with a plastic or wood handle, depending on availability. A general purpose brush suitable for clean up of lab equipment.	TSA-174
Wire Scratch Brush has flat wire bristles that are grouped in 5x10 rows. Sturdy wood block handle is 7.75x 2.625in (197x67mm),LxW. The TSA-176, with 2in bristles, may be used on soil-cement specimens to meet ASTM D559, D560, AASHTO T 135 and T 136. The TSA-176A is the same brush with 1.25in (32mm) bristles.	
Wire Scratch Brush, 2in Bristles	TSA-176
Wire Scratch Brush, 1.25in Bristles	TSA-176A
Scrub Brushes are available in 20in (508mm) long-handled, or 8in (203mm) short-handled versions and stand up to heavy everyday use in the field. Both feature durable, solid plastic handles and sturdy, acid-resistant synthetic fibers.	
Short Scrub Brush, 8in (203mm)	TSA-232
Long Scrub Brush, 20in (508mm)	TSA-233
Camel Hair Brush Set for small 3in (75mm) dia., #50 and finer sieve mesh includes two flat-tip and two round-tip brushes.	WT-6

TSA-232

TSA-233

Scoops

Type	Model	Capacity oz (L)	Bottom Type	Bowl LxW, in	Overall Length in (mm)
Plastic	TSA-177	32 (0.95)	Flat	6.5x5.0	11.5 (292)
	TSA-178	82 (2.4)	Flat	9.0x6.0	14.5 (368)
Aluminum	TSA-182	38 (1.12)	Flat	8.8x5.3	14.0 (355)
	TSA-183	3.5 (0.10)	Flat	4.8x2.8	8.5 (216)
	TSA-193	2 (0.05)	Round	4.5x2.0	7.8 (198)
	TSA-184	5 (0.15)	Round	4.8x2.5	7.3 (185)
	TSA-185	12 (0.36)	Round	5.8x3.3	8.8 (223)
	TSA-186	24 (0.71)	Round	7.0x3.8	10.5 (267)
	TSA-187	85 (2.37)	Round	11.8x6.3	16.0 (406)
	TSA-188	38 (1.12)	Round	8.8x4.6	12.3 (312)
	TSA-189	58 (1.71)	Round	10.0x5.3	14.3 (363)
Stainless Steel	TSA-198	4 (0.11)	Round	3.0x5.0	9.0 (229)
	TSA-205	12 (0.36)	Flat	5.5x3.0	9.0 (229)
	TSA-206	24 (0.71)	Flat	7.0x4.5	12.0 (305)
	TSA-207	45 (1.33)	Flat	8.0x5.5	13.5 (343)
	TSA-208	63 (1.86)	Flat	10x7.0	15.0 (381)

MA-278

MA-275

HMA-302

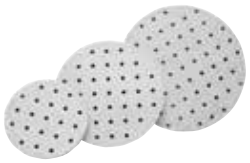
HMA-340

HMA-300

HMA-304

HMA-307

MA-203

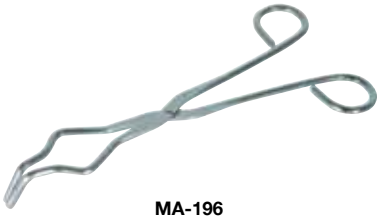

MA-207, MA-208 & MA-209

MA-187

MA-194

WT-4R

MA-195


MA-196

MA-198

Laboratory Tools

Description	Model
Evaporating Dishes, Porcelain, MA-275 and MA-276 are glazed inside and out; MA-277 and MA-278 are glazed inside and around rim, bottom is not glazed.	
Diameter x Height, mm — ml	
80x34 — 80	MA-275
93x40 — 120	MA-276
104x40 — 150	MA-277
120x42 — 250	MA-278
Chisel, hardened steel with 1in (25.4mm) wide blade; 10in (254mm) long.	HMA-302
Estwing Rock Hammer is top quality for digging, splitting and prying. One-piece forged solid steel. Handle has nylon-vinyl grips.	HMA-340
Rubber Mallet, hard rubber, 2.25in (57mm) face, wooden handle, 12in (305mm) overall length.	HMA-300
Spoon, for mixing, digging of soils, etc., one piece stainless steel. Approximate length: 11.5in (292mm).	HMA-304
Trowel, 4.5x3in (114x76mm), LxW flat blade with wood handle.	HMA-306
ASTM Trowel, 4.5x3in (114x76mm), LxW flat blade with wood handle. Has straight edges to meet ASTM C109, AASHTO T 106.	HMA-307
Desiccators, Scheibler, complete with cover. Clear heavy glass, ground rim and cover with knob. Desiccator Plates and Desiccant Cartridges are purchased separately.	
6in (152mm) ID	MA-203
8in (203mm) ID	MA-204
10in (254mm) ID	MA-205
Desiccator Plates support specimens in Desiccators. Chemical resistant and withstands temperatures to 300°F (149°C).	
140mm (for 6in)	MA-207
190mm (for 8in)	MA-208
230mm (for 10in)	MA-209
Desiccant Cartridges in durable perforated bags fit desiccators. Nutrasorb indicating silica gel beads are blue when dry, pink when moist and cartridges regenerate repeatedly when dried in a 300°F (149°C) oven.	
114mm (for 6in and 8in)	MA-187
197mm (for 10in)	MA-188
Sink Aspirator with Coupling, Chapman style. Low cost vacuum using 10—50psi water source. Has 3/8in NPT water inlet or fits threaded faucet with included coupling. Ni-plated, 6in long, with ball valve to prevent water backflow.	MA-194
Tongs, 10in (229mm) long, Ni-plated steel with riveted joint. MA-195 has 5in plastisol jaws to fit 50–2,000ml beakers.	
Beaker Tongs	MA-195
Crucible Tongs	MA-196
Clear Vinyl Tubing, 1/16in wall thickness.	
3/8in ID, per foot	WT-4
100ft pack	WT-4R
1/4in ID, per foot	WT-8
100ft pack	WT-8R
Hose Clamp, with adjustment screw to permit accurate flow regulation in flexible tubing. Ni-plated brass with pivoting lower jaw.	MA-198

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HMA-25 & HMA-24

HM-109

HM-111

HMA-10, HMA-11, HMA-11A & HMA-12

HMA-13

SC-90

SPA-23

SPA-24

SPA-22

SP-92

TR-1002

Laboratory Tools

Description	Model
Wash Bottles, polyethylene, squeeze dispensing; flow can be increased by cutting tip.	
Wash Bottle, 250ml	HMA-24
Wash Bottle, 500ml	HMA-25
Mortar & Pestles, heavy porcelain 5in dia. mortar has 320ml, glazed except for sample contact area (small porcelain pestle included). Use HM-111 rubber tipped wooden pestle to break up agglomerates of soils, etc.	
Mortar & Pestle	HM-109
Rubber Tip Pestle	HM-111
Spatulas with mirror-finished stainless steel blades riveted to hardwood handles. HMA-11A meets ASTM C1252 and AASHTO T 304.	
L x W of Blade, in (mm) / Overall Size, in (mm)	
4x0.75 (102x19) / 7.8 (197)	HMA-10
6x0.5 (152x13) / 11.5 (292)	HMA-9
6x1 (152x25) / 10.5 (267)	HMA-11
4x0.9 (100x23) / 8.25 (210)	HMA-11A
10x1.5 (254x38) / 14.3 (368)	HMA-12
Stainless Steel Spatula & Spoon is handy for mixing, scraping and handling powders. Constructed entirely of stainless steel, the overall length is 7.8in (198mm). Spatula blade is 1.8x0.4in (30x9mm).	HMA-13
Sample ID Tags of soft embossable aluminum are 3x0.8in (76x22mm), LxW. and can be permanently marked by either pencil or ballpoint to attach to bags, containers, etc. via wire ties provided. Weatherproof and ovenproof. Package of 500.	SC-90
Bucket Liner Sample Bags optimize efficiency of sample collection, transport and handling. Insert as a liner into an appropriate-size bucket or other container and the top stays wide open for easy one-person collection of bulk soil, aggregate or asphalt samples. The bucket is easily carried around to the collection points and once filled, the bag opening is secured for transport using Double-Loop Wire Ties and the Wire Tie Twister, both purchased separately. Bags are 20x24in (508x610mm) WxH and can be used with Gilson HM-450, HM-452, MA-950 and SSA-20 sample containers and many other standard buckets with 3 to 6gal (11 to 22L) capacity. Fabric and thread of the sturdy cotton cloth bags is temperature-rated to 400°F (204°C).	
Bucket Liner Sample Bags, qty. of 10	SPA-22
Bucket Liner Sample Bags, qty. of 100	SPA-22C
Bucket Liner Sample Bags, qty. of 1,000	SPA-22K
Double-Loop Wire Ties, 7 7/8in (200mm), qty. of 50	SPA-23
Wire Tie Twister, Plastic Handle	SPA-24
Sample Bags are heavy-duty and available with or without poly liners. Bags are quality high count drill textile with drawcords and are suitable for use with soil, sand, aggregates, ores and similar materials. Use lined bags for fine or wet materials. Capacity for 10x8in bags is approximately 50lbs (23kg) and for 17x32in bags approximately 75lbs (34kg). Packages of 10.	
Sample Bags, 10x18in (254x457mm)	SP-92
Sample Bags, 17x32in (432x813mm)	SP-96
Lined Sample Bags, 10x18in (254x457mm)	SP-93
Lined Sample Bags, 17x32in (432x813mm)	SP-97
Step-up/Step-Down Transformers convert electrical voltages up from 110-120 volt to 220-240 volt, or down from 220-240 volt to 110-120 volt. Included adaptor allows input connection to common grounded power supplies in North America, Europe and many other parts of the world. Universal output accepts North American, UK, European and other plugs. Transformers have an On/Off switch, two spare fuses and are CE marked. Do not exceed maximum rated wattage. **Product Dimensions:** 6x5x4in (152x127x102mm), WxDxH. TR-1002: 8.5x7.5x5.5in (216x191x140mm), WxDxH. TR-3002: 7.2x9.8x6in (183x249x152mm), WxDxH.	
Step-Up/Step-Down Transformer, 500W	TR-502
Step-Up/Step-Down Transformer, 1000W	TR-1002
Step-Up/Step-Down Transformer, 3000W	TR-3002

MA-1807

MA-1827 (Flask not included)

MA-839

MA-812

MA-290

Hot Plates/Driers

Description	Model	Maximum Temperature, °F (C°)	Dimensions, in (mm), WxDxH
Cimarec+™ Stirring Hot Plates feature digital displays with settings adjustable in 1-degree increments. Microprocessor-controlled feedback maintains accurate, consistent temperatures. Hot-surface alert system warns of high temperatures regardless of On/Off status. Ceramic heating plate is easy to clean and resistant to most chemicals. Low-profile aluminum housing prevents fluid spills into electronics. Large wire-wound mica heating element assures fast, even heat up. Model with magnetic stirrer uses ceramic drive magnet and stepless control for quiet, reliable operation. Patented Stir-Trac Technology provides exceptional slow-speed stirring 50 to 1,500rpm and immediate braking. A 2x0.375in (51x10mm) Teflon-coated stir bar is included with MA-1827. Models operate on 100-120V/50-60Hz.			
Hot Plate, 100–120V/50–60Hz	MA-1807	1,004 (540)	14.2x8.2x4.1 (360x208x105)
Magnetic Stirring Hot Plate, 100–120V/50–60Hz	MA-1827	1,004 (540)	14.2x8.2x4.1 (360x208x105)
Electric Ranges with one or two element heavy-duty burner plates are ideal for laboratory heating/drying applications where precise temperature control is not required. High quality commercial grade cast iron elements are built for long service life and stand up to daily use. Single-burner MA-838 is rated at 1,300 watts and 11amp operation for quick warm-up and heat retention. Double-burner MA-839 has one 1,300 watt and one 500 watt burner for lower temperature warming and drying. MA-839 has total 15 amp draw. Adjustable thermostatic heat controls have On and Ready indicator lights. Brushed stainless steel case and non-slip rubber feet allow safe operation and low maintenance. 120V, 60Hz.			
Electric Range, Single-Burner, 120V/60Hz	MA-838	—	11x12.25x3.25 (279x311x82)
Electric Range, Double-Burner, 120V/60Hz	MA-839	—	19.75x12.25x3.25 (501x311x82)
Propane Hot Plates are ideal for remote operation. Cast metal construction is rugged enough for reliable use in the most demanding field conditions. Single and Double Burner Heavy-Duty models weigh 21.5 and 53lb (9.8 and 24kg) respectively and have 35,000 BTU rating for each burner. Economy models have 15,000 btu burners and weigh 9.5 and 18lb (4.3 and 8.1kg) each. All operate on standard propane cylinders connected to the 3/8in (9.5mm) male flare fitting. Each Hot Plate requires a Low-Pressure (11in Water Column) Regulator, purchased separately MAA-181 POL or MAA-182 Type 1 tank connectors. Includes 5ft (1.5m) length of U.L. listed LPG hose with a 3/8in (9.5mm) female flare swivel.			
Single Burner Economy Propane Hot Plate	MA-812	—	10.5x11.5x5.75 (266x292x146)
Double Burner Economy Propane Hot Plate	MA-814	—	20.5x11.5x5.75 (520x292x146)
Single Burner Heavy-Duty Propane Hot Plate	MA-816	—	13x13x7.5 (330x330x190)
Double Burner Heavy-Duty Propane Hot Plate	MA-818	—	27x13x7.5 (685x330x190)
Low Pressure Regulator w/POL Connector	MAA-181	—	—
Low Pressure Regulator w/Type 1 Connector	MAA-182	—	—
Heat Gun Driers are industrial-duty and ideal for use on soil and aggregate samples. Versatile design allows hand-held or bench-top operation on a nonslip, removable base. Heating elements are reinforced mica-insulated ceramic and the housing is sturdy die-cast aluminum. The 1.19in (30mm) diameter heat nozzle rotates and locks over 90°. Maximum air volume is 23cfm (651L/min) at 3,000ft/ min (914m/min) velocity. An adjustable air intake shutter controls air temperature. Models operate on 120V/60Hz power supply and are UL listed and CSA approved. Add,"F" suffix for models that operate on 220–240V/50Hz.			
Standard Dryer, 600 Watts	MA-290	300 (149)	10x5.25x9.5 (254x133x241)
High-Temperature Dryer, 1,440 Watts	MA-291	500 (260)	10x5.25x9.5 (254x133x241)

SE-20

MA-74

SE-26

SE-42

SE-28

SE-24

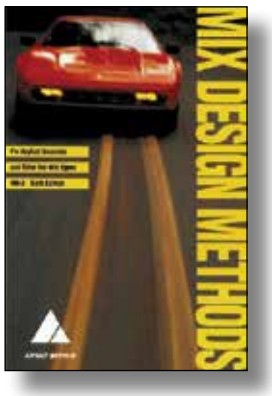
Safety Equipment

Description	Model
Lightweight Hearing Protector earmuff features three-position contoured headband for use with helmets and shields and is made from non-conductive materials. Cushion-seal earpieces adjust easily for comfortable fit. Includes an auxiliary headband strap for multi-position wear. Noise Reduction Rating (NRR) is 25dB.	SE-20
Compressible Hearing Protectors are reusable, form-fitting foam ear plugs. Bright orange plugs have a smooth, soil-resistant skin and tapered shape for easy insertion. Once inserted, the plugs expand slightly for a snug, comfortable fit. Flared ends enable effortless removal. Noise Reduction Rating (NRR) 33 dB. Sold in packs of twenty five pairs.	MA-74
Safety Goggles have a soft, clear vinyl frame that fits snugly and comfortably. Perforated side-shields permit air flow but still protect from splashes, flying chips and particles. Premium clear polycarbonate lenses are scratch-resistant with anti-fog coating. Can be worn over prescription glasses; adjustable elastic headband provided.	SE-26
Face Shield with full coverage protects from sparks, particles, short duration heat exposure, etc. The headgear has ratchet type adjustment, floating suspension and pivots up when not in use. The 70 mil thick 9x15.5in (229x394mm) impact and heat resistant polycarbonate window is held securely in place by locking cams. Meets ANSI Z87.1.	SE-42
Safety Glasses have clear, impact-resistant polycarbonate lenses with full coverage side-shields for maximum protection. Wrap around ear pieces for secure fit.	SE-28
Disposable Dust Masks provide relief from non-toxic nuisance dusts. Lightweight, contoured design has a comfortable fit, adjustable elastic headband and an adjustable metal nosepiece. They are not NIOSH approved. Packed in boxes of fifty.	SE-24
Heat Resistant Gloves are made from long-lasting, genuine suede leather and protect hands from thermal heat up to 200°C (392°F). A cut and puncture-resistant layer provides protection from sharp edges and abrasions. The palm areas are reinforced with an extra layer of leather for additional durability. Soft, 100% cotton fleece lining adds extra insulation and comfort. 100% Kevlar® stitching provides improved flexibility, longevity and is flame resistant. Ideal for asphalt hot mix testing. One-size-fits-all.	SE-33
Nitrile Rubber Gloves are durable and outperform other rubber types for petroleum and chlorinated solvents. They are ideal for use with oils, acids, caustics and alcohol compounds. Sturdy embossed-grip gloves are 12.5in (318mm) long, 17mil thick, flock lined and resistant to cuts and snags. Available individually or by the dozen in M, L, or XL sizes.	
Nitrile Rubber Glove, Medium, 1 pair	SE-30M
Nitrile Rubber Gloves, Medium, pkg. of 12	SE-30MD
Nitrile Rubber Gloves, Large, 1 pair	SE-30L
Nitrile Rubber Gloves, Large, pkg. of 12	SE-30LD
Nitrile Rubber Gloves, XL, 1 pair	SE-30X
Nitrile Rubber Gloves, XL, pkg. of 12	SE-30XD

SE-33

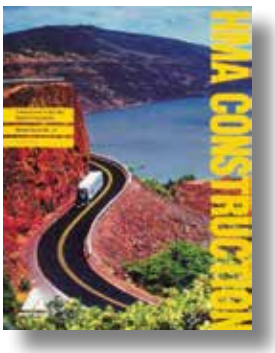
SE-30

BK-50



BK-43

BK-44



BK-45

BK-447R

BK-36

Reference Library

Description	Model
ASPHALT BINDER HANDBOOK A comprehensive manual devoted entirely to information about asphalt binders and bitumen. It is a compilation of information contained in numerous other Asphalt Institute publications, including SP-1, MS-4, MS-5, MS-19 and MS-25 manuals. It also includes previously unpublished information on topics like the Multiple-Stress Creep Recovery (MSCR) test, testing variability and resolution and the generation of mastercurves. Fully illustrated, 223 pages. **Product Dimensions:** 6x9in (150x225mm)	BK-50
ASPHALT MIX DESIGN METHODS A practical guide to asphalt mix design by Marshall and Hveem methods. Fully illustrated paperback. 6th edition. 1994, 112 pp. **Product Dimensions:** 6x9in (150x225mm)	BK-43
THE ASPHALT HANDBOOK Chapters include types of asphalts, mix designs, mixing facilities, paving, compaction, surface treatments, recycling, maintenance, structural design and more. Leatherette bound, 7th edition, 832 pp. **Product Dimensions:** 6x9in (150x225mm)	BK-44
CONSTRUCTION OF HOT-MIX ASPHALT PAVEMENTS Prepared by the Asphalt Institute for the U.S. Federal Highway Administration to define asphalt pavement quality control procedures. Chapters include Inspection and the Inspector, Materials, Mix Design, Plant Operations, Placing Operations and Compaction. Useful for engineers, inspectors and technicians. Paperback with appendices. 2nd edition. **Product Dimensions:** 8.5x11in (216x279mm)	BK-45
ASTM MANUAL ON TEST SIEVING METHODS New 5th edition ASTM publication supplements current ASTM sieving standards. Subject matter covers sieve types, sampling methods, sieving procedures, calculation and graphing. Appendices include reference tables and charts. 66 pp. soft cover. **Product Dimensions:** 6x9in (152x229mm)	BK-447R
THE AGGREGATES HANDBOOK This compilation of articles creates a comprehensive reference for anyone dealing with aggregates. Discusses basic properties, aggregate as a component of Portland cement and asphalt concrete, sampling and testing principles and more. New second edition features expanded coverage of many industry topics. **Product Dimensions:** 8.5x11in (216x279mm)	BK-36

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AD

	lb	(kg)
AD-12KA	40	(18)
AD-20KA	40	(18)
AD-25	2	(1)
AD-30KA thru 60KA	40	(18)
AD-30KD	46	(21)
AD-60KA	40	(18)
AD-60KD	46	(21)
AD-61KA	49	(22)
AD-61KD	46	(21)
AD-60PA	22	(10)
AD-101KA	40	(18)
AD-101KD	46	(21)
AD-102KDA	40	(18)
AD-122	3	(1)
AD-123	6	(3)
AD-150PA	22	(10)
AD-154 thru 214	3	(1)
AD-202	5	(2)
AD-214	5	(2)
AD-300PA	22	(10)
AD-302	3	(1)
AD-303	6	(3)
AD-314	3	(1)
AD-402 thru 614	3	(1)
AD-414	5	(2)
AD-602	5	(2)
AD-614	6	(3)
ADA-4A	2	(1)
ADA-9 thru 22	1	(0.5)
ADA-20	2	(1)
ADA-22	1	(0.5)
ADA-28	6	(3)
ADA-30A	1	(0.5)
ADA-32A	1	(0.5)
ADA-33A	4	(2)
ADA-34A	4	(2)
ADA-35	6	(3)
ADA-36	1	(0.5)
ADA-202	1	(0.5)
ADA-203	1	(0.5)

AJ / AP

	lb	(kg)
AJ-103/B	31	(14)
AJ-105/B	31	(14)
AJ-111	1	(0.5)
AJA-4	24	(11)
AJA-8	5	(2)
AJA-133, 133F	18	(8)
AJA-134, 134F	42	(19)
AJA-135	11	(5)
AJA-139	10	(5)
AJA-140 thru 144	2	(1)
AJA-210 thru 245	2	(1)
AP-1B	51	(23)
AP-14	18	(8)
AP-16	20	(9)
AP-20	350	(159)
AP-20F	393	(178)
AP-20L	393	(178)
APA-11B	6	(3)
APA-17	2	(1)
APA-18	1	(0.5)
APA-22	8	(4)
APA-25	80	(36)
APA-31 thru 34	3	(1)
APA-35	2	(1)
APA-36	16	(7)
APA-37	1	(0.5)
APA-40	2	(1)
APA-105	2	(1)
APA-120	3	(1)
APA-144	2	(1)
APA-166	3	(1)

BK

	lb	(kg)
BK-36	4	(2)
BK-43	1	(0.5)
BK-44	3	(1)
BK-45	2	(1)
BK-50	2	(1)
BK-447R	1	(0.5)
BK-447RC	0.5	(.23)

BO

	lb	(kg)
BO-10R, 10RF	43	(20)
BO-20R, 20RF	57	(26)
BO-30R thru 30RF	77	(35)
BO-40 thru 40F	92	(42)
BO-60EB thru 60GB	1675	(760)
BO-61EB thru 61GC	2075	(941)
BO-62EB thru 62GC	2075	(941)
BO-63EB thru 63GC	2285	(1036)
BO-64EB thru 64GC	2850	(1293)
BO-65EB thru 65GC	2960	(1342)
BO-110, 110F	51	(23)
BO-120, 120F	66	(30)
BO-130, 130F	85	(39)
BO-140, 140F	99	(45)
BO-250 thru 250SF	185	(84)
BO-250ER thru 250ERS	185	(84)
BO-323A thru 323C	600	(272)
BO-333A thru 333CF	750	(340)
BO-343A thru 343C	850	(385)
BO-350 thru 350SF	185	(84)
BO-350ER thru 350ERS	185	(84)
BO-355 thru 355SF	260	(118)
BO-550 thru 550SF	195	(88)
BOA-30 thru 32	2	(1)
BOA-33	4	(2)
BOA-40, 41	79	(36)
BOA-42	70	(32)
BOA-46	1	(0.5)
BOA-48	1	(0.5)
BOA-50	15	(7)
BOA-51	20	(9)
BOA-52	25	(11)
BOA-70	24	(11)
BOA-71	28	(13)
BOA-72	32	(15)

BR

	lb	(kg)
BR-2	38	(17)
BR-3	38	(17)
BR-12	280	(127)
BR-13	280	(127)
BRA-30	7	(3)
BRA-31	7	(3)
BRA-32	62	(28)
BRA-33	6	(3)
BRA-34	1	(0.5)
BRA-40	15	(7)
BRA-41	15	(7)
BRA-42	25	(11)
BRA-45	50	(23)
BRA-55	174	(79)
BRA-57	209	(95)
BRA-59	20	(9)
BRA-59M	9	(4)
BRA-60	21	(10)
BRA-60B	4	(2)
BRA-60C	2	(1)
BRA-60M	11	(5)
BRA-61	20	(9)
BRA-62	20	(9)
BRA-63	6	(3)
BRA-64	6	(3)
BRA-67	4	(2)
BRA-68, 68F	1.5	(1)
BRA-70	4	(2)
BRA-75	1	(0.5)
BRA-76	1	(0.5)

BS

	lb	(kg)
BS-5	1	(0.5)
BS-10 thru BS-420	1	(0.5)

CD / CF

	lb	(kg)
CD-1	375	(170)
CD-6, 6F	150	(68)
CDA-15	8	(4)
CDA-16	9	(4)
CDA-18	5	(3)
CDA-19	7	(3)
CDA-20	10	(5)
CDA-22	45	(20)
CDA-24	12	(5)
CDA-26	10	(5)
CDA-32	3	(1)
CDA-40	4	(2)
CDA-41	4	(2)
CDA-43	6	(3)
CDA-45	7	(3)
CDA-46	8	(4)
CDA-50	12	(5)
CDA-51	12	(5)
CDA-55	6	(3)
CDA-122	7	(3)
CDA-123	9	(4)
CDA-130	8	(4)
CDA-131	10	(5)
CDA-132	8	(4)
CDA-133	10	(5)
CDA-140	10	(5)
CDA-141	12	(5)
CDA-142	10	(5)
CDA-143	12	(5)
CDA-160	14	(6)
CDA-161	16	(7)
CDA-162	14	(6)
CDA-163	16	(7)
CDA-220	6	(3)
CDA-221	8	(4)
CDA-222	7	(3)
CDA-223	9	(4)
CDA-230	8	(4)
CDA-231	10	(5)
CDA-232	8	(4)
CDA-233	10	(5)
CDA-240	10	(5)
CDA-241	12	(5)
CDA-242	10	(5)
CDA-243	12	(5)
CDA-260	14	(6)
CDA-261	16	(7)
CDA-262	14	(6)
CDA-263	16	(7)

CP / CS

	lb	(kg)
CP-6 thru 7	11	(5)
CP-15	11	(5)
CP-16	11	(5)
CP-20 thru CP-29	10	(5)
CP-35	11	(5)
CP-46	11	(5)
CP-52 thru CP-56	4	(2)
CP-61 thru CP-65	17	(8)
CP-75 thru 76	11	(5)
CP-150A thru 151	11	(5)
CP-200 thru 201	11	(5)
CP-301 thru 310	7	(3)
CP-306H	7	(3)
CP-315	7	(3)
CP-330	7	(3)
CP-365	14	(6)
CP-401 thru CP-409	19	(9)
CP-310	14	(6)
CP-41 thru CP-45	1	(0.5)
CS-10	12	(5)
CS-10W	10	(5)
CSA-25	6	(3)
CSA-26	2	(1)
CSA-30	1	(0.5)
CDA-50, 50B	4	(2)
CDA-51, 51B	4	(2)
CT-130	7	(3)
CT-133	3	(1)
CT-135	3	(1)
CT-140	10	(5)
CT-143	10	(5)
CT-150	5	(2)
CT-153	5	(2)
CT-155	5	(2)
CT-160	16	(7)
CT-163	16	(7)
CT-165	16	(7)
CT-170	18	(8)
CTA-18 thru CTA-22	2	(1)
CTA-24 thru CTA-29	2	(1)
CTA-30	3	(1)
CTA-32	2	(1)
CTA-33	1	(0.5)
CTA-34	2	(1)
CTA-35 thru CTA-39	1	(0.5)
CTA-40 thru CTA-45	1	(0.5)
CTA-45 thru CTA-46	1	(0.5)
CTA-47	2	(1)
CTA-48 thru CTA-56	1	(0.5)
CTA-85	5	(2)
CTA-92	6	(3)
CTA-95	4	(2)
CTA-96 thru CTA-97	12	(5)

DO

	lb	(kg)
DOBA-40A	7	(3)
DOBA-50A	7	(3)
DOC-38	270	(122)
DOC-67	360	(163)
DOC-120	480	(218)
DOC-180	600	(272)
DOCA-20 thru 50	5	(2)
DOL-24A, 24AF	205	(93)
DOL-69A, 69AF	320	(145)
DOL-120A	385	(175)
DOL-180A	485	(220)
DOL-270A	635	(288)
DOLA-20 thru 40A	5	(2)

GA

	lb	(kg)
GA-6	47	(21)
GA-8	170	(77)
GAA (All)	3	(1)

GP / GV / GSA

	lb	(kg)
GP-4 thru 6	3	(1)
GP-6S	4	(2)
GP-8	2	(1)
GP-12	7	(3)
GP-14	8	(4)
GP-16	9	(4)
GP-22	10	(5)
GP-24	11	(5)
GP-25	9	(4)
GP-29 thru 29A	11	(5)
GP-68A	20	(9)
GP-70A	22	(10)
GP-80	3	(1)
GP-82	4	(2)
GP-106	2	(1)
GP-112	2	(1)
GP-118	10	(5)
GP-11	11	(5)
GSA-201	0.3	(.11)
GSA-202 thru 203	1	(0.5)
GSA-207 thru 232	1	(0.5)
GSA-234	1	(0.5)
GSA-331A	1	(0.5)
GSA-337	1	(0.5)

GW / GX

	lb	(kg)
GW-10 thru 13	2	(1)
GW-14	4	(2)
GW-15	6	(3)
GW-16	8	(4)

GW-20 thru 26 ..... 1 (0.5)
GW-27 ..... 5 (2)
GW-30 thru 47 ..... 3 (1)
GW-60 thru 63 ..... 2 (1)
GW-64 ..... 5 (2)
GW-65 ..... 1 (0.5)
GW-74 ..... 3 (1)
GW-75 ..... 4 (2)
GW-76 ..... 6 (3)
GWA-1 thru 3 ..... 2 (1)
GW-508, 509 ..... 0.5 (.23)
GW-512, 585 ..... 0.5 (.23)
GX-4A1 thru 4A1F 3250 (1474)
GX-4A2 thru 4A2F 2550 (1156)
GXA (All) 20 (9)

HM

lb (kg)

HM-5-1 ..... 1 (0.5)
HM-5, 5F 30 (14)
HM-6, 6F 50 (23)
HM-8 ..... 70 (32)
HM-10 ..... 23 (10)
HM-11 ..... 14 (6)
HM-12 ..... 12 (5)
HM-13 ..... 4 (2)
HM-15 ..... 35 (16)
HM-20 ..... 35 (16)
HM-21 ..... 22 (10)
HM-22 ..... 19 (9)
HM-23 ..... 7 (3)
HM-24 ..... 3 (1)
HM-25 ..... 1 (0.5)
HM-27 ..... 3 (1)
HM-28 ..... 15 (7)
HM-29 ..... 8 (4)
HM-30 ..... 40 (18)
HM-30S 35 (16)
HM-31 ..... 8 (4)
HM-32L 29 (13)
HM-33 ..... 18 (8)
HM-34 ..... 2 (1)
HM-35 ..... 70 (32)
HM-36 ..... 19 (9)
HM-37 ..... 26 (12)
HM-38B 10 (5)
HM-38R 9 (4)
HM-39, 39F 3 (1)
HM-40 ..... 17 (8)
HM-42 ..... 24 (11)
HM-43 ..... 4 (2)
HM-45 ..... 5.11 (3)
HM-45M 5.62 (3)
HM-47 ..... 2 (1)
HM-48, 48A 3 (1)
HM-49 ..... (with pallet) 225 (102)
HM-50 ..... (with pallet) 170 (77)
HM-52, 52F 35 (16)
HM-53 ..... 2 (1)
HM-54 ..... 20 (9)
HM-55 ..... 55 (25)
HM-56, 56A, 56B 2 (1)
HM-57R, 57RF 50 (23)
HM-58R 16 (7)
HM-59, 59F 379 (172)
HM-60, 60F 182 (83)
HM-62, 62F 500 (227)
HM-63 ..... 4 (2)
HM-64 ..... 1 (0.5)
HM-66 ..... 15 (7)
HM-67 ..... 15 (7)
HM-68 ..... 10 (5)
HM-70A, 70AF 1180 (535)
HM-71 ..... 4 (2)
HM-72, 72L 5 (2)
HM-73, 73F 390 (177)
HM-74 ..... 452 (205)
HM-75 ..... 5 (2)
HM-76B 60 (27)
HM-78 ..... 1 (0.5)
HM-79, 79L 5 (2)
HM-80 ..... 1 (0.5)
HM-81 ..... 6 (3)
HM-82, 82L 5 (2)
HM-84, 84L 5 (2)
HM-90, 91 ..... 93 (42)
HM-97 ..... 20 (9)
HM-98 ..... 50 (23)
HM-100 ..... 5 (2)
HM-101 ..... 7 (3)
HM-102 ..... 2 (1)
HM-104 ..... 4 (2)
HM-106 thru 108 ..... 52 (24)
HM-109 ..... 2 (1)
HM-111 ..... 2 (1)
HM-112 ..... 17 (8)
HM-114 ..... 5 (2)
HM-116 ..... 14 (6)
HM-124E 40 (18)
HM-124H 41 (19)
HM-124P 37 (17)
HM-125E 433 (196)
HM-125H 442 (200)
HM-125P 403 (183)
HM-128 ..... 150 (68)
HM-130 thru 131D 25 (11)
HM-133, 133F 19 (9)
HM-134 ..... 10 (5)
HM-136 ..... 10 (5)
HM-137 ..... 6 (3)
HM-137F 4 (2)
HM-140, 140F 151 (68)
HM-141 ..... 5 (20)
HM-142 ..... 23 (10)
HM-143 ..... 12 (5)
HM-144 ..... 25 (11)
HM-145 thru 148 ..... 7 (3)
HM-139 ..... 14 (6)
HM-151 thru 153 ..... 36 (16)
HM-154 ..... 46 (21)
HM-156 thru 159 ..... 15 (7)
HM-160 ..... 1 (0.5)
HM-161 ..... 7 (3)
HM-162 ..... 2 (1)
HM-163 thru 164 ..... 18 (8)
HM-166 ..... 35 (16)
HM-169 ..... 24 (11)
HM-178 ..... 1 (0.5)
HM-179 ..... 1 (0.5)
HM-180 ..... 20 (9)
HM-181 ..... 20 (9)
HM-182 ..... 8 (4)
HM-183 ..... 4 (2)
HM-186, 187 ..... 50 (22)
HM-188 ..... 2 (1)
HM-189 ..... 52 (24)
HM-190, 192 ..... 51 (23)
HM-196 ..... 3 (1)
HM-197 ..... 3 (1)
HM-200, 200F 20 (9)
HM-201, 201F 39 (17)
HM-202, 202F 39 (17)
HM-203, 203D 25 (11)
HM-204, 204F 55 (25)
HM-205, 205F 55 (25)
HM-206, 206F 55 (25)
HM-207, 207D 25 (11)
HM-220 ..... 296 (134)
HM-223 ..... 200 (91)
HM-228 ..... 115 (52)
HM-229 ..... 20 (9)
HM-231 ..... 6 (3)
HM-232 ..... 7 (3)
HM-239 ..... 160 (73)
HM-246 ..... 21 (10)
HM-250, 250D 33 (15)
HM-252 ..... 250 (113)
HM-254 ..... 3 (1)
HM-255 ..... 21 (10)
HM-256 ..... 8 (4)
HM-257 ..... 10 (5)
HM-258 ..... 10 (5)
HM-259 ..... 25 (11)
HM-262X 1 (0.5)
HM-267 ..... 1 (0.5)
HM-268 ..... 2 (1)
HM-270 ..... 25 (11)
HM-271, 271F 350 (159)
HM-272, 272F 110 (50)
HM-273, 273F 85 (39)
HM-274 ..... 25 (11)
HM-275 ..... 17 (7)
HM-279 ..... 25 (11)
HM-280 ..... 59 (27)
HM-281 ..... 25 (11)
HM-282 ..... 67 (30)
HM-284 ..... 82 (37)
HM-286 ..... 100 (45)
HM-287 ..... 17 (7)
HM-288 ..... 3 (1)
HM-290 ..... 27 (12)
HM-291 ..... 5 (2)
HM-292 ..... 4 (2)
HM-294, 294M 14 (6)
HM-294C 18 (8)
HM-295 ..... 8 (4)
HM-296, 296M 14 (6)
HM-296C 18 (8)
HM-297 ..... 4 (2)
HM-298 ..... 1 (0.5)
HM-299 ..... 7 (3)
HM-300 ..... 5 (2)
HM-302 ..... 5 (2)
HM-307 ..... 5 (2)
HM-308, 308C 5 (2)
HM-309 ..... 2 (1)
HM-310 ..... 6 (3)
HM-315, 315F 500 (227)
HM-317 ..... 99 (45)
HM-318 ..... 282 (128)
HM-319 ..... 8 (4)
HM-320 ..... 25 (11)
HM-322 (All) 32 (15)
HM-331 ..... 15 (7)
HM-335 ..... 2 (1)
HM-340 ..... 7 (3)
HM-345 ..... 62 (28)
HM-350A 50 (23)
HM-350M, MF 50 (23)
HM-353 ..... 50 (23)
HM-354 , 354F 44 (20)
HM-355, 355F 44 (20)
HM-356, 356F 44 (20)
HM-360 ..... 1 (0.5)
HM-360CS 12 (5)
HM-361 ..... 1 (0.5)
HM-361CS 12 (5)
HM-362 ..... 1 (0.5)
HM-362CS 12 (5)
HM-363 ..... 1 (0.5)
HM-363CS 12 (5)
HM-364 ..... 1 (0.5)
HM-364CS 12 (5)
HM-365 ..... 1 (0.5)
HM-365CS 12 (5)
HM-366 thru 369 ..... 2 (1)
HM-370 ..... 1 (0.5)
HM-371 ..... 7 (3)
HM-372A 8 (4)
HM-372B 11 (5)
HM-373 ..... 13 (6)
HM-373B 9 (4)
HM-375 ..... 49 (22)
HM-375R 120 (54)
HM-378 ..... 523 (237)
HM-380D, 380DF 250 (113)
HM-380R, 380RF 250 (113)
HM-381, 381F 175 (79)
HM-382, 382F 175 (79)
HM-384, 384F 1025 (465)
HM-385, 385F 1025 (465)
HM-396 thru 398F 250 (113)
HM-399, 399F 250 (113)
HM-401 ..... 25 (11)
HM-403 ..... 21 (10)
HM-410 ..... 15 (7)
HM-410P 20 (9)
HM-413 ..... 23 (10)
HM-414 ..... 23 (10)
HM-415 ..... 24 (11)
HM-416 ..... 25 (11)
HM-417 ..... 25 (11)
HM-418 ..... 7 (3)
HM-419 ..... 7 (3)
HM-420 thru 422D 2 (1)
HM-424 thru 425D 4 (2)
HM-427 ..... 5 (2)
HM-428, 428D 5 (2)
HM-430 ..... 6 (3)
HM-430D 5 (2)
HM-438D 22 (10)
HM-442 ..... 27 (12)
HM-444 ..... 11 (5)
HM-447 ..... 3 (1)
HM-450 ..... 5 (2)
HM-452 ..... 3 (1)
HM-457 ..... 1900 (862)
HM-459 ..... 3230 (1465)
HM-491 ..... 40 (18)
HM-493 ..... 30 (14)
HM-495 ..... 40 (18)
HM-500 thru 504A 1 (0.5)
HM-510 thru 513 ..... 1 (0.5)
HM-514 ..... 48 (22)
HM-516 ..... 49 (22)
HM-519 ..... 2 (1)
HM-524, 524F 195 (88)
HM-530 ..... 400 (181)
HM-530F 450 (204)
HM-534 ..... 6 (3)
HM-536 ..... 6 (3)
HM-550 ..... 10 (5)
HM-551 ..... 15 (7)
HM-559A 8 (4)
HM-562 ..... 20 (9)
HM-564 ..... 18 (8)
HM-565 ..... 18 (8)
HM-567 ..... 8 (4)
HM-570 ..... 40 (18)
HM-571 ..... 16 (7)
HM-574 ..... 100 (45)
HM-591, 591F 6 (3)
HM-602W 85 (39)
HM-614, 614F 450 (204)
HM-620 ..... 68 (30)
HM-621 ..... 85 (39)
HM-622 ..... 126 (57)
HM-623 ..... 22 (10)
HM-626 ..... 135 (61)
HM-630 ..... 40 (18)
HM-633 ..... 43 (20)
HM-634 thru 639 ..... 1 (0.5)
HM-642 ..... 2 (1)
HM-626 ..... 135 (61)
HM-644 ..... 2 (1)
HM-645 ..... 2 (1)
HM-646 ..... 3 (1)
HM-648 thru 649F 10 (5)
HM-649, 649F 10 (5)
HM-651 ..... 5 (2)
HM-653, 653F 43 (19)
HM-655, 655F 4 (2)
HM-668D 1 (0.5)
HM-669 ..... 1 (0.5)
HM-673, 673F 43 (19)
HM-674B 5 (2)
HM-674D 2 (1)
HM-677 ..... 9 (4)
HM-678 ..... 16 (7)
HM-679 ..... 24 (11)
HM-680 ..... 10 (5)
HM-681 ..... 9 (4)
HM-685 (All) 2500 (567)
HM-687, 687F 700 (317)
HM-714A 1100 (499)
HM-716A 1100 (499)
HM-723/F 28 (12)
HM-739 thru 740 ..... 2 (1)
HM-750R, 750RF 150 (68)

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HM-806, 806F 113 (51)
HM-807, 807F 113 (51)
HM-808, 808F 113 (51)
HM-810 thru 814 ..... 1 (0.5)
HM-815 ..... 1 (0.5)
HM-816 ..... 2 (1)
HM-817 ..... 1 (0.5)
HM-818 ..... 2 (1)
HM-831, 832 ..... 6 (3)
HM-833 ..... 10 (4)
HM-834 ..... 12 (5)
HM-835 ..... 20 (9)
HM-891 ..... 12 (5)
HM-892 ..... 12 (5)
HM-893 ..... 15 (7)
HM-894 ..... 20 (9)
HM-895 ..... 25 (11)
HM-914 ..... 6 (3)
HM-916 ..... 10 (4)
HM-923, 923F 185 (84)
HM-924 ..... 3 (1)
HM-925 ..... 3 (1)
HM-926 ..... 3 (1)
HM-930 ..... 1 (0.5)
HM-940 ..... 24 (11)
HM-942 ..... 7 (3)
HM-944 ..... 9 (4)
HM-952 ..... 5 (2)
HM-954 ..... 5 (2)

HMA

lb (kg)

HMA-1A ..... 0.5 (.23)
HMA-2 ..... 1 (0.5)
HMA-5 ..... 1 (0.5)
HMA-8 ..... 12 (5)
HMA-9 ..... 1 (0.5)
HMA-10 thru 12 ..... 2 (1)
HMA-13 ..... 1 (0.5)
HMA-15 ..... 1 (0.5)
HMA-20 ..... 2 (1)
HMA-21 ..... 2 (1)
HMA-24 thru 49 ..... 1 (0.5)
HMA-51 ..... 10 (5)
HMA-52 ..... 4 (2)
HMA-53 ..... 2 (1)
HMA-54 ..... 3 (1)
HMA-54-2 ..... 6.5 (3)
HMA-54-5 ..... 5.5 (2.5)
HMA-55V 1 (0.5)
HMA-56 ..... 6 (3)
HMA-56B 58 (26)
HMA-58 ..... 2 (1)
HMA-60 ..... 6 (3)
HMA-61 ..... 10 (5)
HMA-62 ..... 4 (2)
HMA-63 ..... 4 (2)
HMA-64-1 ..... 2.5 (1)
HMA-68 ..... 9 (4)
HMA-69 ..... 25 (11)
HMA-78 ..... 2 (1)
HMA-79 ..... 2 (1)
HMA-82 ..... 2 (1)
HMA-83 ..... 10 (5)
HMA-84 ..... 10 (5)
HMA-85 ..... 6 (3)
HMA-86 ..... 4 (2)
HMA-88 ..... 1 (0.5)
HMA-89 ..... 30 (14)
HMA-90A thru 90J 1 (0.5)
HMA-94 ..... 100 (45)
HMA-95 ..... 80 (36)
HMA-104, 104C 20 (9)
HMA-107R 1 (0.5)
HMA-108 ..... 1 (0.5)
HMA-110 ..... 13 (6)
HMA-110B 6 (3)
HMA-110C 3 (1)
HMA-110M 6 (3)
HMA-111, 111M 6 (3)
HMA-113 ..... 3 (1)
HMA-114 ..... 30 (14)
HMA-115 ..... 5 (2)
HMA-116 ..... 19 (9)
HMA-116C 5 (2)
HMA-116M 8 (4)
HMA-117 ..... 21 (9)
HMA-117M 8 (4)
HMA-118 ..... 6 (3)
HMA-120 ..... 6 (3)
HMA-121 thru 123 ..... 10 (5)
HMA-124 ..... 20 (9)
HMA-125 ..... 3 (1)
HMA-129 ..... 6 (3)
HMA-130 ..... 13 (6)
HMA-131 ..... 20 (9)
HMA-132, 132WR 20 (9)
HMA-133 ..... 3 (1)
HMA-134 ..... 2 (1)
HMA-135 ..... 2 (1)
HMA-136 ..... 3 (1)
HMA-137 ..... 1 (0.5)
HMA-139 ..... 2 (1)
HMA-140 ..... 6 (3)
HMA-141 ..... 1 (0.5)
HMA-143 ..... 2 (1)
HMA-145 ..... 1 (0.5)
HMA-146 ..... 0.5 (.23)
HMA-147 ..... 0.5 (.23)
HMA-155 ..... 2 (1)
HMA-180, 180C 1 (0.5)
HMA-181, 181C 1 (0.5)
HMA-182 ..... 2 (1)
HMA-183, 183S 1 (0.5)
HMA-188 ..... 2 (1)
HMA-190 ..... 3 (1)
HMA-191 ..... 16 (7)
HMA-203 ..... 2 (1)
HMA-204W 25 (11)
HMA-207 ..... 2 (1)
HMA-208 ..... 1 (0.5)
HMA-214 thru 220 ..... 2 (1)
HMA-221 ..... 3 (1)
HMA-224 ..... 28 (13)
HMA-225 ..... 17 (8)
HMA-226 ..... 40 (18)
HMA-227 ..... 26 (12)
HMA-228 ..... 3 (1)
HMA-229 ..... 3 (1)
HMA-232, 232D 3 (1)
HMA-234, 234D 5 (2)
HMA-236, 236D 8 (4)
HMA-240 ..... 55 (25)
HMA-250 ..... 10 (5)
HMA-251 ..... 3 (1)
HMA-258 ..... 4 (2)
HMA-259 ..... 2 (1)
HMA-260 ..... 6 (3)
HMA-261 ..... 6 (3)
HMA-262 ..... 6 (3)
HMA-263 ..... 5 (2)
HMA-264 ..... 5 (2)
HMA-265 ..... 2 (1)
HMA-266 ..... 5 (2)
HMA-271A 3 (1)
HMA-272 ..... 1 (0.5)
HMA-276A 3 (1)
HMA-277 ..... 1 (0.5)
HMA-278 ..... 7 (3)
HMA-279 ..... 2 (1)
HMA-282 ..... 5 (2)
HMA-283 ..... 6 (2)
HMA-284 ..... 17 (7)
HMA-286 ..... 20 (9)
HMA-287 ..... 25 (11)
HMA-289 ..... 80 (36)
HMA-290 ..... 1 (0.5)
HMA-292 ..... 1 (0.5)
HMA-293 ..... 3 (1)
HMA-295 ..... 3 (1)
HMA-296 ..... 5 (2)
HMA-298 ..... 1 (0.5)
HMA-299 ..... 4 (1)
HMA-300 ..... 2 (1)
HMA-301 ..... 1 (0.5)
HMA-302 ..... 3 (1)
HMA-303 ..... 1 (0.5)
HMA-304 thru 308R 2 (1)
HMA-309 ..... 1 (0.5)
HMA-320 ..... 2 (1)
HMA-321 ..... 1 (0.5)
HMA-323 ..... 1 (0.5)
HMA-324 ..... 2 (1)
HMA-338 ..... 2 (1)
HMA-340 ..... 3 (1)
HMA-347 ..... 1 (0.5)
HMA-348R 1 (0.5)
HMA-349 ..... 4 (2)
HMA-354 ..... 50 (23)
HMA-355 ..... 2 (1)
HMA-356 ..... 1 (0.5)
HMA-356A,B,C 0.5 (0.23)
HMA-359 ..... 12 (5)
HMA-368 ..... 0.5 (.23)
HMA-385 ..... 2 (1)
HMA-386 ..... 1 (0.5)
HMA-387 ..... 1 (0.5)
HMA-402, 402F 6 (3)
HMA-410, 411 ..... 8 (4)
HMA-482 ..... 20 (9)
HMA-490 ..... 1 (0.5)
HMA-491 ..... 3 (1)
HMA-492 ..... 5 (2)
HMA-493 ..... 10 (5)
HMA-506 ..... 2 (1)
HMA-514, 514S 19 (9)
HMA-516, 516S 30 (14)
HMA-517, 517S 31 (14)
HMA-518, 518S 31 (14)
HMA-519, 519S 45 (20)
HMA-520 ..... 13 (6)
HMA-521 ..... 7 (3)
HMA-522 ..... 2 (1)
HMA-523 ..... 2 (1)
HMA-524 ..... 3 (1)
HMA-525 ..... 1 (0.5)
HMA-526 ..... 5 (2)
HMA-527 thru 529 ..... 2 (1)
HMA-553 ..... 2 (1)
HMA-554 ..... 3 (1)
HMA-556 ..... 6 (3)
HMA-557 ..... 1 (0.5)
HMA-558 ..... 1 (0.5)
HMA-559 ..... 2 (1)
HMA-563 thru 569 ..... 1 (0.5)
HMA-573 thru 579 ..... 1 (0.5)
HMA-583 ..... 5 (2)
HMA-584 ..... 5 (2)
HMA-586A 5 (2)
HMA-587A/B 5 (2)
HMA-588A/B 5 (2)
HMA-589A/B 5 (2)
HMA-591 ..... 7 (3)
HMA-592 ..... 10 (5)
HMA-593 ..... 3 (1)
HMA-608 ..... 1 (0.5)
HMA-609 ..... 1 (0.5)
HMA-610 ..... 1 (0.5)
HMA-611 ..... 1 (0.5)
HMA-612 ..... 1 (0.5)
HMA-613 ..... 1 (0.5)
HMA-615, 616 ..... 30 (14)
HMA-617 ..... 22 (10)
HMA-618 ..... 3 (1)
HMA-619 ..... 22 (10)
HMA-621 ..... 60 (27)
HMA-622 ..... 14 (6)
HMA-623 ..... 14 (6)
HMA-624 ..... 4 (2)
HMA-626 ..... 18 (8)
HMA-628 ..... 8 (4)
HMA-629 ..... 8 (4)
HMA-630 ..... 3 (1)
HMA-632 ..... 18 (8)
HMA-633 ..... 27 (12)
HMA-635 ..... 18 (8)
HMA-661 ..... 1 (0.5)
HMA-665 ..... 6 (3)
HMA-667 ..... 15 (7)
HMA-668 ..... 4 (2)
HMA-670 ..... 4 (2)
HMA-671 ..... 1 (0.5)
HMA-672 ..... 1 (0.5)
HMA-673 ..... 1 (0.5)
HMA-674/C 18 (8)
HMA-683D 24 (11)
HMA-685 ..... 16 (7)
HMA-685D 33 (15)
HMA-686 ..... 7 (3)
HMA-687 ..... 13 (6)
HMA-687D 30 (14)
HMA-694 ..... 30 (14)
HMA-696 ..... 25 (11)
HMA-697 ..... 4 (2)
HMA-700 ..... 3 (1)
HMA-701 ..... 1 (0.5)
HMA-702 ..... 1 (0.5)
HMA-704 ..... 2 (1)
HMA-715 ..... 3 (1)
HMA-725 ..... 166 (75)
HMA-727 ..... 79.5 (36)
HMA-729 ..... 243 (110)
HMA-730 ..... 95 (43)
HMA-731 ..... 219 (99)
HMA-732 ..... 134 (61)
HMA-733 ..... 3 (1)
HMA-734 thru 734S 3 (1)
HMA-735, 735S 3 (1)
HMA-736, 736S 6 (3)
HMA-737, 737S 6 (3)
HMA-739 ..... 6 (3)
HMA-743 ..... 1 (0.5)
HMA-744 thru 744S 1 (0.5)
HMA-745 ..... 1 (0.5)
HMA-746, 746S 1 (0.5)
HMA-747S 1 (0.5)
HMA-763 ..... 1 (0.5)
HMA-764 thru 764S 2 (1)
HMA-765 ..... 2 (1)
HMA-766S 3 (1)
HMA-767S 3 (1)
HMA-772 ..... 1 (0.5)
HMA-773 ..... 1 (0.5)
HMA-774 ..... 1 (0.5)
HMA-775 ..... 1 (0.5)
HMA-776 ..... 1 (0.5)
HMA-804 ..... 1 (0.5)
HMA-810 ..... 173 (78)
HMA-812 ..... 2 (1)
HMA-813 ..... 20 (9)
HMA-814 ..... 2 (1)
HMA-815 ..... 8 (4)
HMA-820 ..... 96 (44)
HMA-821 ..... 37 (17)
HMA-822 ..... 52 (24)
HMA-826 ..... 78 (35)
HMA-828 ..... 56 (25)
HMA-834D, 834E 7 (3)
HMA-835 ..... 4 (2)
HMA-836 ..... 7 (3)
HMA-837 ..... 6 (3)
HMA-838, 839 ..... 15 (7)
HMA-840 ..... 10 (4)
HMA-841 ..... 4 (2)
HMA-842 ..... 4 (2)
HMA-843 ..... 6 (3)
HMA-844 ..... 8 (4)
HMA-846 ..... 1 (0.5)
HMA-848 ..... 1 (0.5)
HMA-850 thru 854 ..... 1 (0.5)
HMA-855 ..... 2 (1)
HMA-856 ..... 2 (1)
HMA-857 ..... 1 (0.5)
HMA-860 ..... 1 (0.5)
HMA-861 ..... 40 (18)
HMA-862 ..... 40 (18)
HMA-864 ..... 40 (18)
HMA-866 ..... 1 (0.5)
HMA-920 ..... 14 (6)
HMA-922 ..... 12 (5)

HMA-924 ..... 4 (2)
HMA-943 ..... 2 (1)
HMA-944 ..... 2 (1)
HMA-946A 2 (1)
HMA-947 ..... 2 (1)
HMA-948 ..... 2 (1)
HMA-949 ..... 2 (1)
HMA-953 ..... 5 (2)
HMA-954 ..... 7 (3)
HMA-956 ..... 13 (6)
HMA-957 thru 957B 2 (1)
HMA-958 ..... 2 (1)
HMA-958A 4 (2)
HMA-958B 3 (1)
HMA-959 ..... 3 (1)
HMA-959A 5 (2)
HMA-963 ..... 4 (2)
HMA-964 ..... 6 (3)
HMA-966 ..... 13 (6)
HMA-967 thru 967B 2 (1)
HMA-968 ..... 2 (1)
HMA-968A thru 969 ..... 3 (1)
HMA-969A 4 (2)
HMA-973 ..... 4 (2)
HMA-974 ..... 6 (3)
HMA-976 ..... 13 (6)
HMA-977 thru 978 ..... 2 (1)
HMA-978A thru 979 ..... 3 (1)
HMA-979A 4 (2)
HMA-983 ..... 9 (4)
HMA-984 ..... 10 (5)
HMA-986 ..... 17 (8)
HMA-987 thru 988 ..... 7 (3)
HMA-988A thru 989 ..... 8 (4)
HMA-989A 9 (4)
HMA-1050 ..... 65 (29)
HMA-1051 ..... 20 (9)
HMA-1052 ..... 1 (0.5)
HMA-1053 ..... 27 (12)
HMA-1054 ..... 65 (29)

LC

lb (kg)

LC-7, 7F 50 (23)
LC-8, 8F 75 (34)
LC-20, 20F 737 (334)
LC-22, 22F 1736 (787)
LC-26 ..... 125 (57)
LC-27 ..... 125 (57)
LC-28 ..... 250 (113)

LC-33 ..... 430 (195)
LC-34 ..... 430 (195)
LC-35 ..... 610 (277)
LC-36 ..... 610 (277)
LC-37 ..... 885 (401)
LC-44D/E/G 1050 (476)
LC-47D/E/G 1500 (680)
LC-53 ..... 370 (168)
LC-80 ..... 15 (7)
LC-82, 82F 63 (29)
LC-82S 83 (38)
LC-88 ..... 33 (15)
LC-115 ..... 630 (286)

LCA

lb (kg)

LCA-5 thru 9 ..... 22 (10)
LCA-11 ..... 23 (10)
LCA-34 ..... 4 (2)
LCA-35 ..... 5 (2)
LCA-36 ..... 6 (3)
LCA-37 ..... 12 (5)
LCA-45 ..... 15 (7)
LCA-46 ..... 5 (2)
LCA-47 ..... 9 (4)
LCA-50 ..... 3 (1)
LCA-51 ..... 7 (3)
LCA-52 ..... 9 (4)
LCA-53 ..... 23 (10)
LCA-55 ..... 2 (1)
LCA-56 ..... 2 (1)
LCA-57 ..... 210 (95)
LCA-60 ..... 6 (3)
LCA-61 ..... 23 (10)
LCA-63 ..... 22 (10)
LCA-65 thru 68 ..... 11 (5)
LCA-70 ..... 6 (3)
LCA-72 ..... 6 (3)
LCA-73 ..... 4 (2)
LCA-74 ..... 3 (1)
LCA-75 ..... 9 (4)
LCA-76 ..... 10 (5)
LCA-91 ..... 700 (317)
LCA-92 ..... 13 (6)
LCA-80 ..... 24 (11)
LCA-81 ..... 36 (16)
LCA-82 ..... 47 (21)
LCA-83 ..... 56 (25)
LCA-97 ..... 306 (139)
LCA-170 ..... 2 (1)
LCA-171 ..... 2 (1)
LCA-172 thru 176 ..... 3 (1)
LCA-178 ..... 12 (5)
LCA-179 ..... 1 (0.5)
LCA-240 ..... 38 (17)
LCA-242 ..... 28 (13)
LCA-412 ..... 45 (20)
LCA-416 ..... 30 (13)
LCA-417 ..... 30 (13)
LCA-418 ..... 30 (13)
LCA-419 ..... 30 (13)
LCA-422 ..... 30 (13)

LP / LPA

lb (kg)

LP-10, 10F 258 (117)
LP-16 ..... 3 (1)
LP-18 ..... 3 (1)
LP-22 ..... 38 (17)
LP-23 ..... 38 (17)
LPA-10 thru 12 ..... 3 (1)
LPA-20 ..... 2 (1)
LPA-21 ..... 2 (1)
LPA-24 ..... 1 (0.5)
LPA-26 ..... 2 (1)
LPA-30, 30F 53 (24)
LPA-43 ..... 0.5 (0.25)
LPA-43 ..... 0.5 (.25)
LPA-52 ..... 15 (7)
LPA-55 ..... 1 (0.5)
LPA-56 ..... 4 (2)
LPA-58 ..... 1 (0.5)
LPA-62 ..... 1 (0.5)
LPA-63 ..... 1 (0.5)
LPA-118 ..... 1 (0.5)
LPA-121 ..... 1 (0.5)
LPA-127 ..... 1 (0.5)
LPA-127D 4 (2)
LPA-128 ..... 1 (0.5)
LPA-129 ..... 1 (0.5)
LPA-182 ..... 12 (5)
LT-10R thru 40R 7 (3)

MA

lb (kg)

MA-10 ..... 7 (3)
MA-11 ..... 1 (0.5)
MA-12 ..... 4 (2)
MA-13 ..... 2 (1)
MA-20A 23 (10)
MA-21A 23 (10)
MA-23, 23F 27 (12)
MA-24, 24F 20 (9)
MA-25, 25C 23 (10)
MA-26X 16 (7)
MA-27A, 27AF 30 (14)
MA-28, 28F 90 (41)
MA-29, 29F 90 (41)
MA-30 ..... 1 (0.5)
MA-31 ..... 6 (3)
MA-32, 32F 25 (11)
MA-33, 33F 12 (6)
MA-38 ..... 1 (0.5)
MA-40 thru 45 ..... 2 (1)
MA-48 ..... 2 (1)
MA-50 ..... 2 (1)
MA-52 ..... 55 (25)
MA-52X 55 (25)
MA-54A 210 (95)
MA-66 ..... 53 (24)
MA-67 ..... 113 (51)
MA-68 ..... 125 (57)
MA-71 ..... 2 (1)
MA-74 ..... 2 (1)
MA-78 ..... 5 (2)
MA-80, 80B 10 (5)
MA-81, 81B 10 (5)
MA-100 thru 127 ..... 1 (0.5)
MA-140 ..... 6 (3)
MA-141 ..... 1 (0.5)
MA-142 ..... 2 (1)
MA-143 ..... 3 (1)
MA-144 ..... 3 (1)
MA-145 ..... 1 (0.5)
MA-145 thru 149 ..... 1 (0.5)
MA-150 thru 154 ..... 0.5 (.23)
MA-155 thru 158 ..... 1 (0.5)
MA-159 ..... 2 (1)
MA-161 thru 162 ..... 1 (0.5)
MA-168 thru 169 ..... 2 (1)
MA-170 thru 170F 3 (1)
MA-182 ..... 1 (0.5)
MA-187 ..... 1 (0.5)
MA-188 ..... 2 (1)
MA-189 ..... 1 (0.5)
MA-193 thru 198 ..... 2 (1)
MA-203 ..... 8 (4)
MA-204 ..... 18 (8)
MA-205 ..... 23 (10)
MA-207 thru 209 ..... 1 (0.5)
MA-210C 3 (1)
MA-238 ..... 2 (1)
MA-245 thru 249 ..... 2 (1)
MA-257 thru 258 ..... 2 (1)
MA-260 ..... 2 (1)
MA-267 ..... 2 (1)
MA-275 thru 278 ..... 1 (0.5)
MA-27A, 27AF 30 (14)
MA-290 ..... 5 (2)
MA-291 ..... 5 (2)
MA-305 ..... 2 (1)
MA-317, 317B 1 (0.5)
MA-321A thru 322AT 2 (1)
MA-323 thru 324C 3 (1)
MA-330 thru 373C 2 (1)
MA-384 ..... 2 (1)
MA-420C thru 471T 1 (0.5)
MA-491 thru 496 ..... 1 (0.5)
MA-510C 1 (0.5)
MA-510C/F thru 540C/F 1 (0.5)
MA-529C thru 541T 3 (1)
MA-542, 542T 2 (1)
MA-543 thru 692 ..... 1 (0.5)
MA-751CT, 751FT 3 (1)
MA-769 ..... 2 (1)
MA-771 ..... 0.3 (0.13)
MA-774 thru 778 ..... 7 (3)
MA-778 ..... 7 (3)
MA-780 ..... 1 (0.5)
MA-781 ..... 1 (0.5)
MA-783 thru 787 ..... 1 (0.5)
MA-812 ..... 11 (5)
MA-814 ..... 22 (10)
MA-816 ..... 22 (10)
MA-818 ..... 45 (20)
MA-838 ..... 9 (4)
MA-839 ..... 20 (9)
MA-950 ..... 5 (2)
MA-1807 ..... 9 (4)
MA-1827, 1827F 11 (5)

MAA

MAA-10B 2 (1)
MAA-25 ..... 0.5 (.23)
MAA-30A 1 (0.5)
MAA-32 ..... 3 (1)
MAA-34A 9 (4)
MAA-43 ..... 0.5 (.23)
MAA-44 ..... 13 (6)
MAA-45 ..... 2 (1)
MAA-46 ..... 5 (2)
MAA-47 ..... 2 (1)
MAA-48 thru 52 ..... 1 (0.5)
MAA-60 ..... 2 (1)
MAA-61 ..... 2 (1)
MAA-62 ..... 1 (0.5)
MAA-64, 64F 14 (6)
MAA-81 ..... 1 (0.5)
MAA-90 ..... 1 (0.5)
MAA-116 ..... 1 (0.5)
MAA-141 ..... 6 (3)
MAA-142 ..... 2 (1)
MAA-143 ..... 2 (1)
MAA-144 ..... 6 (3)
MAA-145 ..... 18 (8)
MAA-146 ..... 4 (2)
MAA-147 ..... 4 (2)
MAA-148 ..... 3 (1)
MAA-149 ..... 4 (2)
MAA-162 thru 163 ..... 2 (1)
MAA-166 ..... 1 (0.5)
MAA-167 ..... 1 (0.5)
MAA-181 thru 227 ..... 2 (1)
MAA-228 thru 230 ..... 1 (0.5)
MAA-231 thru 247 ..... 2 (1)
MAA-248 ..... 1 (0.5)
MAA-260 ..... 1 (0.5)
MAA-261A 4 (2)
MAA-266 ..... 5 (2)
MAA-267A 8 (4)
MAA-286 thru 288 ..... 1 (0.5)

MC

lb (kg)

MC-60, 60F 780 (354
MC-250P thru 250PR 800 (363)
MC-300P thru 300PR 975 (442)
MC-400P thru 400PR 1620 (735)
MC-500 (All) 2500
(1134)
MCA-4 ..... 190 (86)
MCA-5 ..... 41 (19)
MCA-6 ..... 41 (19)
MCA-7 ..... 38 (17)
MCA-8 ..... 117 (53)
MCA-9 ..... 101 (46)
MCA-10 ..... 152 (69)
MCA-11 ..... 114 (52)
MCA-14 ..... 34 (15)
MCA-22 ..... 1 (0.5)
MCA-41 ..... 1 (0.5)
MCA-42 ..... 1 (0.5)
MCA-44, 44N 4 (2)
MCA-46 ..... 4 (1)
MCA-61 thru 64 ..... 0.5 (.23)

MD / MF

lb (kg)

MD-2000/F 252 (114)
MF-2 thru 2AF 44 (20)
MF-4 thru 4AF 74 (34)
MF-6A 146 (66)
MF-8A 348 (158)
MF-1310 ..... 45 (20)
MF-1315 ..... 50 (23)
MF-6010 ..... 140 (63)
MF-6020 ..... 135 (61)
MF-7910 ..... 65 (29)
MF-7915 ..... 65 (29)
MF-8010 thru 8025 ..... 85 (39)

MFA / MOA

MFA-65 ..... 2 (1)
MFA-70 ..... 3 (1)
MFA-75 ..... 4 (2)
MOA-2 ..... 1 (0.5)

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MOA-2C 10 (5)
MOA-3 ..... 1 (0.5)
MOA-5 ..... 2 (1)
MOA-6 ..... 2 (1)
MOA-10 ..... 4 (2)

MO / MS

lb (kg)

MO-36 ..... 400 (181)
MO-39 ..... 420 (190)
MOA-2, 2C 1 (0.5)
MOA-3 ..... 2 (1)
MOA-5 ..... 1 (0.5)
MOA-6 ..... 2 (1)
MOA-10 ..... 5 (2)
MS-1, 1F 198 (90)
MS-2, 2F 265 (120)
MS-3, 3F 357 (162)
MS-5, 5F 400 (181)
MS-6, 6F 400 (181)
MS-10 ..... 145 (66)
MS-45 ..... 14 (6)
MS-25, 25D, 25F 2 (1)
MS-26 ..... 21 (10)
MS-27 ..... 4 (2)
MS-29 ..... 41 (19)
MS-35 ..... 6 (3)
MS-36 ..... 20 (9)
MS-43, 43F 40 (18)
MS-45 ..... 14 (6)
MS-48 ..... 165 (75)
MS-62, 62F 20 (9)
MS-64, 64F 29 (13)
MS-66, 66F 39 (17)
MS-67, 67F 55 (25)
MS-86, 86F 250 (113)
MS-87 ..... 250 (113)
MS-398, 398F 250 (113)
MSA-100 ..... 8 (4)
MSA-100B thru 100M 4 (2)
MSA-101 thru 101M 9 (4)
MSA-106, 106M 15 (7)
MSA-106B 10 (5)
MSA-106C 5 (2)
MSA-111 ..... 24 (11)
MSA-112 ..... 20 (9)
MSA-113 ..... 25 (11)
MSA-114 ..... 26 (12)
MSA-120 ..... 4 (2)
MSA-121 ..... 4 (2)
MSA-125, 125F 22 (10)
MSA-130, 130F 109 (49)
MSA-131, 131F 100 (45)
MSA-134 ..... 1 (0.5)
MSA-220 ..... 4 (2)
MSA-222 ..... 1 (0.5)
MSA-860 ..... 22 (10)
MSA-860D 15 (7)

NM

lb (kg)

NM (All) 1 (0.5)

OB / OT

lb (kg)

OB-132 thru 133H 20 (9)
OB-134 thru 135H 22 (10)
OB-165 ..... 18 (8)
OB-205 ..... 2 (1)
OB-311 ..... 4 (2)
OB-750 ..... 22 (10)
OB-752 ..... 22 (10)
OB-752 ..... 22 (10)
OB-754 ..... 37 (17)
OB-756 ..... 37 (17)
OB-758 ..... 81 (37)
OB-762 ..... 24 (11)
OB-764 ..... 24 (11)
OB-766 ..... 60 (27)
OB-766C 66 (30)
OB-770 ..... 60 (27)
OB-770C 66 (30)
OB-2400M/P 19 (9)
OBA-15R 13 (6)
OBA-110 ..... 2 (1)
OBA-126A 4 (2)
OBA-137M/P 10 (5)
OBA-170 ..... 2 (1)
OBA-171 ..... 2 (1)
OBA-201 thru 204W 1 (0.5)
OBA-205 thru 209W 2 (1)
OBA-210 thru 210W 4 (2)
OBA-211 thru 211W 7 (3)
OBA-212 thru 212W 8 (4)
OBA-213 thru 213W 12 (5)
OBA-214 thru 214W 25 (11)
OBA-215 thru 215W 50 (23)
OBA-216 thru 217W 2 (1)
OBA-278 thru 278W 25 (11)
OBA-280 thru 280W 50 (23)
OBA-282 thru 282W 23 (10)
OBA-284 thru 284W 45 (20)
OBA-286 thru 286W 56 (25)
OBA-288 thru 288W 111 (50)
OBA-289 thru 289W 221 (100)
OBA-291 thru 291W 552 (250)
OBA-301 thru 305W 1 (0.5)
OBA-306 thru 309W 2 (1)
OBA-310 thru 310W 4 (2)
OBA-311 thru 311W 6 (3)
OBA-312 thru 312W 8 (4)
OBA-313 thru 313W 11 (5)
OBA-314 thru 314W 23 (10)
OBA-315 thru 315W 45 (20)
OBA-316 thru 317W 2 (1)
OBA-401 thru 405W 1 (0.5)
OBA-406 thru 409W 2 (1)
OBA-410 thru 410W 4 (2)
OBA-411 thru 411W 6 (3)
OBA-412 thru 412W 8 (4)
OBA-413 thru 413W 11 (5)
OBA-414 thru 414W 23 (10)
OBA-415 thru 415W 45 (20)
OBA-416 thru 417W 2 (1)
OBA-1101 ..... 2 (1)
OBA-10783A 2 (1)
OBD-152 ..... 20 (9)
OBD-223 ..... 20 (9)
OBD-421 thru 422 ..... 20 (9)
OBD-821 ..... 20 (9)
OBD-822 ..... 13 (6)
OBP-162 thru 422 ..... 11 (5)
OBX-512 thru 535 ..... 26 (12)
OT-2, 2F 362 (164)

PM / PO

lb (kg)

PM (All) 1 (0.5)
PO-23 ..... 536 (243)
POA-10 ..... 5 (2)

PR / PS

lb (kg)

PR-10 ..... 380 (172)
PRA-14 ..... 5 (2)
PS-3, 3F 206 (93)
PS-4, 4F 197 (89)
PSA-114 ..... 4 (2)
PSA-299 thru 316 ..... 12 (5)
PSA-312 ..... 26 (12)
PSA-324 thru 335 ..... 3 (1)
PSA-336 ..... 12 (5)
PSA-356 ..... 38 (17)
PSA-367 ..... 20 (9)

PT

lb (kg)

PT-6A, 6AF 20 (9)
PT-53, 53F 80 (36)
PT-61, 61F 65 (29)
PT-62, 62F 65 (29)
PT-82, 82F 94 (43)
PT-101 thru 115 ..... 2 (1)
PTA-61 ..... 20 (9)
PTA-70 ..... 51 (23)
PTA-162 ..... 1 (0.5)
PTA-163 ..... 1 (0.5)
PTA-164 ..... 10 (5)
PTA-165 ..... 1 (0.5)
PTA-166 ..... 1 (0.5)
PTA-168 ..... 2 (1)
PTA-169 ..... 1 (0.5)
PTA-176 thru 180 ..... 1 (0.5)

SA

lb (kg)

SA-1 ..... 2 (1)
SA-2 ..... 2 (1)
SA-5 ..... 3 (1)
SA-14 ..... 17 (8)
SA-16 ..... 3 (1)
SA-18 ..... 3 (1)
SA-19 ..... 15 (7)
SA-20, 20C 2 (1)
SA-25, 25F 155 (70)
SA-45 ..... 36 (16)
SA-55A 1 (0.5)
SA-56 ..... 2 (1)
SA-60, 60F 18 (8)
SA-61 ..... 5 (2)
SA-62 ..... 5 (2)
SA-65 ..... 10 (4)
SA-66 ..... 8 (4)
SA-80, 80F 68 (31)
SAA-2 ..... 1 (0.5)
SAA-8 ..... 3 (1)
SAA-9 thru 12 ..... 1 (0.5)
SAA-15 ..... 6 (3)
SAA-22 thru 24 ..... 1 (0.5)
SAA-30 ..... 12 (5)
SAA-31 ..... 38 (17)

SC

lb (kg)

SC-1 ..... 8 (4)
SC-2 ..... 8 (4)
SC-3 ..... 9 (4)
SC-4 ..... 9 (4)
SC-5 ..... 5 (2)
SC-20 ..... 2 (1)
SC-45 ..... 7 (3)
SC-46 ..... 3 (1)
SC-47 ..... 4 (2)
SC-50 ..... 3 (1)
SC-51 ..... 4 (2)
SC-55 ..... 2 (1)
SC-56 thru 65 ..... 3 (1)
SC-70 thru 81 ..... 2 (1)
SC-82 ..... 3 (1)
SC-83 ..... 3 (1)
SC-84 ..... 4 (2)
SC-90 ..... 3 (1)
SC-108 ..... 10 (5)
SC-115 ..... 4 (2)
SC-116 thru 119 ..... 2 (1)
SC-149 ..... 8 (4)
SC-150 ..... 3 (1)
SC-151 ..... 3 (1)
SC-152 thru 165 ..... 2 (1)
SC-250 ..... 6 (3)
SC-251 ..... 6 (3)
SC-252 ..... 5 (2)
SC-253 thru 259 ..... 3 (1)
SC-270 ..... 7 (3)
SC-272 ..... 9 (4)
SC-400 ..... 1 (0.5)
SC-402 ..... 2 (1)
SC-404 ..... 3 (1)
SC-406 ..... 4 (2)
SC-498 thru 504 ..... 2 (1)
SC-502 ..... 2 (1)
SC-506 ..... 3 (1)
SC-508 ..... 3 (1)

SE / SF

lb (kg)

SE-2B, 2BF 190 (86)
SE-5 ..... 31 (14)
SE-6 ..... 75 (34)
SE-20 ..... 4 (2)
SE-24 ..... 2 (1)
SE-26 ..... 2 (1)
SE-28 ..... 1 (0.5)
SE-30L 1 (0.5)
SE-30LD 5 (2)
SE-30M 1 (0.5)
SE-30MD 5 (2)
SE-30X 1 (0.5)
SE-30XD 5 (2)
SE-33 ..... 2 (1)
SE-42 ..... 1 (0.5)
SEA-99 ..... 9 (4)
SEA-100 ..... 15 (7)
SEA-100A 3 (1)
SEA-100B 2 (1)
SEA-100C 2 (1)
SEA-100E 10 (5)
SEA-100F 2 (1)
SEA-100G 1 (0.5)
SEA-101 ..... 3 (1)
SEA-102 ..... 1 (0.5)
SEA-103 ..... 11 (5)
SF-10 ..... 45 (20)
SF-20 ..... 55 (25)
SFA-20 ..... 2 (1)
SFA-21 ..... 1 (0.5)
SFA-22 ..... 1 (0.5)
SFA-24 ..... 2 (1)
SFA-25 ..... 3 (1)

SG

lb (kg)

SG-1, 2, 3 ..... 3 (1)
SG-4 ..... 37 (17)
SG-6 ..... 7 (3)
SG-7A 3 (1)
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SH-500, 500F	258	(117)
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SHA-33	7	(3)
SHA-35	7	(3)
SHA-38	7	(3)
SHA-43	150	(68)
SHA-45	150	(68)
SHA-47	150	(68)

SM

	lb	(kg)
SM-1	1250	(567)
SM-2	1150	(522)
SM-3, 3L, 3LC	900	(408)
SM-4, 4L, 4LC	500	(227)
SM-4X, 4XL, 4XLC	700	(317)
SM-5, 5L, 5LC	500	(227)
SM-6, 6L, 6LC	300	(136)
SM-6SL	145	(66)
SM-6SLC	175	(79)
SM-31	1000	(454)
SM-41	700	(317)
SM-51	600	(272)
SM-61	400	(181)

SP

	lb	(kg)
SP-0	460	(209)
SP-1, 1C	136	(62)
SP-2	71	(32)
SP-2.5	50	(22)
SP-3	15	(7)
SP-6	325	(147)
SP-10	370	(168)
SP-12CA, 12CG	244	(111)
SP-33	15	(7)
SP-48R, 48RF	470	(213)
SP-50	50	(23)
SP-52	114	(56)
SP-55	70	(32)
SP-90	8	(4)
SP-92	3	(1)
SP-93	3	(1)
SP-96	5	(2)
SP-97	5	(2)
SP-138	4	(2)
SP-140	6	(3)
SP-171	3	(1)
SP-171X	6	(3)
SP-173	16	(7)
SP-174	28	(13)
SP-175	15	(7)
SP-177	16	(7)
SP-230	79	(36)
SP-245, 245F	735	(333)
SP-254	65	(29)
SP-256	72	(33)
SP-258	64	(29)
SP-259	72	(33)
SP-261	51	(23)
SP-262	57	(26)
SP-264	51	(23)
SP-266	57	(26)
SP-268	65	(29)
SP-269	74	(34)
SP-271	65	(29)
SP-272	74	(34)
SP-274	33	(15)
SP-278	33	(15)
SP-284	27	(12)
SP-285	33	(15)
SP-286	41	(19)
SP-287	49	(22)
SP-288	20	(9)
SP-289	27	(12)
SP-290	33	(15)
SP-291	41	(19)
SP-292	49	(22)
SP-293	20	(9)
SPA-7	195	(88)
SPA-21	16	(7)
SPA-22, 22C	5	(2)
SPA-22K	45	(20)
SPA-23	0.45	(.20)
SPA-24	0.30	(.14)
SPA-30	9	(4)
SPA-31	13	(6)
SPA-51	36	(16)
SPA-64	4	(2)
SPA-100	10	(5)
SPA-101	6	(3)
SPA-102	6	(3)
SPA-104	55	(25)
SPA-105	55	(25)
SPA-108	4	(2)
SPA-109	12	(5)
SPA-110	10	(5)
SPA-111	12	(5)
SPA-114	15	(7)
SPA-115	22	(10)
SPA-120	20	(9)
SPA-122	10	(5)
SPA-129 thru 132	2	(1)
SPA-151	4	(2)
SPA-171	6	(3)
SPA-181	6	(3)
SPA-240X	1	(0.5)
SPA-241	1	(0.5)
SPA-242	2	(1)
SPA-244	1	(0.5)
SPA-245X	4	(2)
SPA-255	4	(2)
SPA-256 thru 262	2	(1)
SPA-263	5	(2)
SPA-264	1	(0.5)
SPA-301	1	(0.5)
SPA-302	8	(4)
SPA-303	2	(1)
SPA-400	20	(9)
SPA-450	30	(14)
SPA-501	12	(5)
SPA-501X	10	(5)

SS

	lb	(kg)
SS-3	17	(8)
SS-8R, 8RF	135	(61)
SS-10	145	(66)
SS-12R, 12RF	200	(91)
SS-14 thru 14F	100	(45)
SS-15 thru 15F	50	(23)
SS-18, 18F	76	(34)
SS-20, 20F	219	(99)
SS-21, 21F	228	(103)
SS-22, 22F	245	(111)
SS-23	8	(4)
SS-25, 25F	148	(67)
SS-28, 28F	8	(4)
SS-30 thru 30S	170	(77)
SS-31 thru 31S	190	(86)
SS-33 thru 33S	242	(110)
SS-34, 34F	95	(43)
SS-36, 36F	121	(55)
SS-82, 82F	95	(43)
SSA-10	1	(0.5)
SSA-11 thru 15	2	(1)
SSA-17	0.5	(.23)
SSA-20	5	(2)
SSA-22	3	(1)
SSA-39	8	(4)
SSA-41 thru 58	1	(0.5)
SSA-72 thru 76	1	(0.5)
SSA-77	5	(2)
SSA-320A	115	(52)
SSA-321	165	(75)
SSA-325	55	(25)
SSA-801 thru 803	10	(5)
SSA-804	5	(2)
SSA-805R	125	(57)
806		
SSA-807	10	(5)
SSA-809	8	(4)
SSA-820	26	(12)
SSA-822	40	(18)
SSA-823	3	(1)

SV

	lb	(kg)
SV-125	2	(1)
SV-126	2	(1)
SV-135 thru 218	1	(0.5)
SV-800	2	(1)
SV8-2C, 2F	2	(1)

TM

	lb	(kg)
TM-5, 5F	680	(308)
TM-6, 6F	695	(315)
TR-502	9	(4)
TR-1002	21	(9)
TR-3002	37	(17)

TS

	lb	(kg)
TS-1, 1F	405	(184)
TS-2, 2F	399	(181)
TS-3, 3F	454	(206)
TS-4, 4F	520	(236)
TSA-100 thru 115	15	(7)
TSA-116	22	(10)
TSA-117	22	(10)
TSA-124 thru 135	3	(1)
TSA-136	13	(6)
TSA-137	13	(6)
TSA-140 (All)	3	(1)
TSA-153	1	(0.5)
TSA-154R	30	(14)
TSA-155	24	(11)
TSA-156	45	(20)
TSA-157	20	(9)
TSA-159	30	(14)
TSA-162	15	(7)
TSA-163	10	(5)
TSA-167	51	(23)
TSA-168	1	(0.5)
TSA-169R, 169RF	5	(2)
TSA-170	1	(0.5)
TSA-171	2	(1)
TSA-172 thru 174	1	(0.5)
TSA-175 thru 178	2	(1)
TSA-179	1	(0.5)
TSA-180	290	(132)
TSA-182 thru 189	1	(0.5)
TSA-190	2	(1)
TSA-191	2	(1)
TSA-193	1	(0.5)
TSA-195	3	(1)
TSA-198	1	(0.5)
TSA-205	2	(1)
TSA-206	5	(2)
TSA-207	5	(2)
TSA-208	3	(1)
TSA-222	5	(2)
TSA-232 thru 271	2	(1)
TSA-273	3	(1)
TSA-275 thru 279	2	(1)
292		
TSA-1167, 1167F	3	(1)

UB

	lb	(kg)
UB-1/1A		
UB-5, 5A	120	(54)
UB-15	5	(2)
UB-18 thru 18B	183	(83)
UBA-1	7	(3)
UBA-4	11	(5)
UBA-100	7	(3)

V

	lb	(kg)
V3 (All)	1	(0.5)
V3 Covers	1	(0.5)
V3 Pans	1	(0.5)
V6 (All)	2	(1)
V6 Covers	1	(0.5)
V6 Pans	1	(0.5)
V8 (All)	2	(1)
V8 Covers	1	(0.5)
V8 Pans	2	(1)
V10 (All)	3	(1)
V10 Covers	2	(1)
V10 Pans	2	(1)
V12 (All)	4	(2)
V12 Covers	2	(1)
V12 Pans	4	(2)
V18 (All)	8	(4)
V18 Covers	4	(2)
V18 Pans	8	(4)
V200 (All)	2	(1)
V200 Covers	2	(1)
V200 Pans	2	(1)
V300 (All)	4	(2)
V300 Covers	4	(2)
V300 Pans	4	(2)

WP / WPA / WT / WV

	lb	(kg)
WP-530	27	(12)
WP-532, 532A	27	(12)
WP-700	4	(2)
WPA-1, 1B	3	(1)
WPA-3, 3B	3	(1)
WT-1, 1A	3	(1)
WT-3	2	(1)
WT-3S	3	(1)
WT-4	2	(1)
WT-4B	1	(0.5)
WT-4R	3	(1)
WT-5	1	(0.5)
WT-6	1	(0.5)
WT-7	1	(0.5)
WT-8	1	(0.5)
WT-8R	3	(1)
WT-10	4	(2)
WT-13	1	(0.5)
WT-13S	2	(1)
WT-23ESB	1	(0.5)
WT-34C, 34S	2	(1)
WT-62	1	(0.5)
WT-62	1	(0.5)
WT-84C, 84S	3	(1)
WT-88C, 88S	3	(1)
WT-128C, 128S	5	(2)
WT-204	2	(1)
WT-206	3	(1)
WT-324	2	(1)
WT-326	3	(1)
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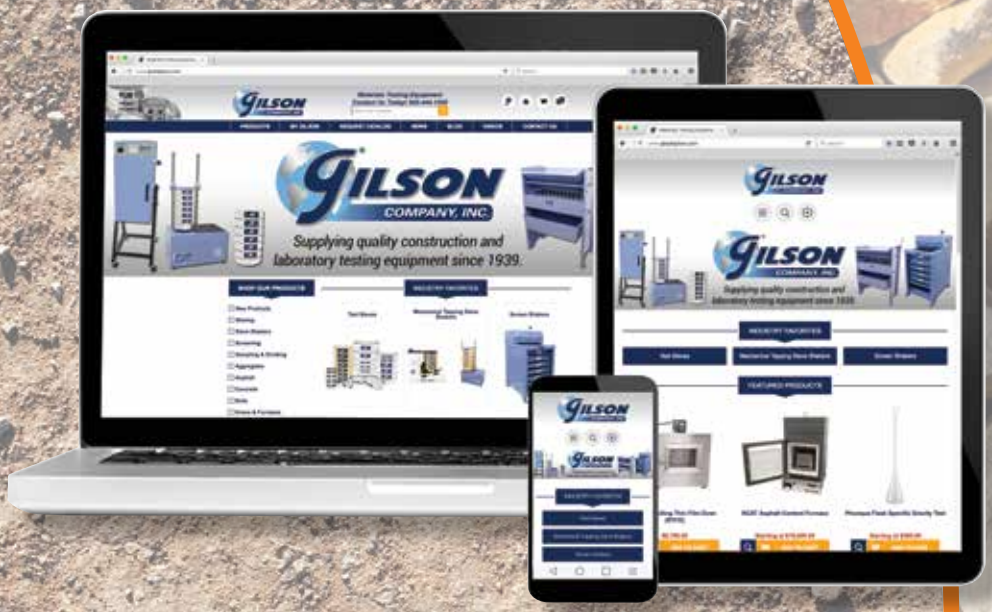

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