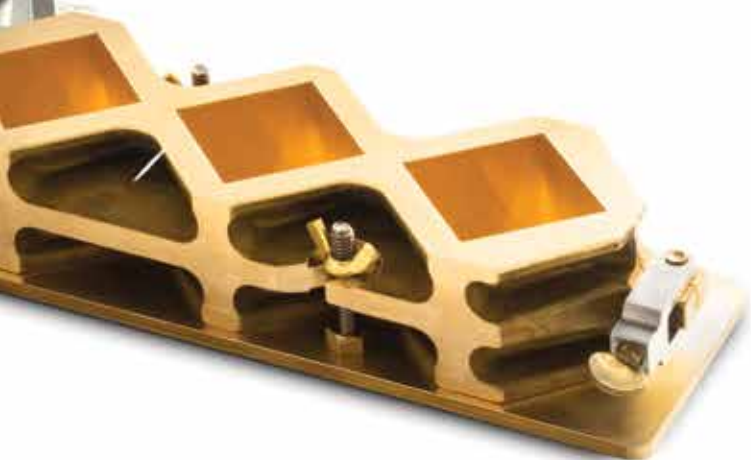




CEMENT

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H-3852.3F



H-3853.3F



H-3854.3F


Mortar Mixer, 4.73L (5qt)

ASTM C305; AASHTO T162; EN 196
DIN 1164; BS 3892; ISO 679; NF P15-411

Two-speed mixer designed to mix cement mortars and pastes. Mixer provides manually-controlled cement, water and sand supplies. Mixer features a 5 Liter (5.3qt) stainless steel bowl and ASTM stirrer, and a two-speed motor, which runs at either 140 \pm 5 rpm or 285 \pm 10 rpm.

Features touch screen-operated control panel, which provides fast, easy control in eight languages. Numerous safety features are incorporated in the mixer and includes a service program with malfunction messages for operator, including paddle/planetary speed and time monitoring. Heavy-duty construction of aluminum and cast iron provides durability and a long service life. The mixer provides a powerful motor for quiet and maintenance-free operation aided by the use of planetary gears and a toothed, belt drive. The mixing bowl is connected to the mixer by a quick-release clamping system. The distance between the mixing bowl and the stirrer is 3 \pm 1 mm and can be easily and accurately set.

Mixer design conforms to CE standards, featuring a mixing bowl cover, electronic position monitoring of the mixing bowl, emergency stop switch and restart protection.

Mortar Mixer, 4.73L (5qt) 120/230V 50/60Hz H-3852.3F
 Ship wt. 165lbs. (75kg)

Mortar Mixer w/ Program Control and Auto Sand Feed


ASTM C305; AASHTO T162; EN 196, EN 413, EN 480, DIN 1164; BS 3892; ISO 679; NF P15-411

Mixer with 4.73L (5qt) capacity provides automatic program control and auto sand feed with manually-controlled cement and water supply. Provides software with 4 standard programs installed covering the following standards: ASTM C305, EN 196 -1,3,9; EN 480 and EN 413. Two-speed mixer designed to mix cement mortars and pastes. Mixer features a 5 Liter (5.28qt) stainless steel bowl and ASTM stirrer, and a two-speed motor, which runs at either 140 \pm 5 rpm or 285 \pm 10 rpm.

Features touch screen-operated control panel, which provides fast, easy control in eight languages. Numerous safety features are incorporated in the mixer and includes a service program with malfunction messages for operator, including paddle/planetary speed and time monitoring.

Heavy-duty construction of aluminum and cast iron provides durability and a long service life. The mixer provides a powerful motor for quiet and maintenance-free operation aided by the use of planetary gears and a toothed, belt drive. The mixing bowl is connected to the mixer by a quick-release clamping system. The distance between the mixing bowl and the stirrer is 3 \pm 1 mm and can easily and accurately set.

Mixer design conforms to CE standards, featuring a mixing bowl cover, electronic position monitoring of the mixing bowl, emergency stop switch and restart protection.

Mortar Mixer w/Program, 120/230V 50/60Hz H-3853.3F
 Ship wt. 165lbs. (77kg)

Mortar Mixer w/ Program Control and Auto Sand and Water Feed


ASTM C305; AASHTO T162; EN 196, EN 413, EN 480, DIN 1164; BS 3892; ISO 679; NF P15-411

Mixer with 4.73L (5qt) capacity provides automatic program control and auto sand feed with manually-controlled cement and water supply. Provides software with 4 standard programs installed covering the following standards: ASTM C305, EN 196 -1,3,9; EN 480 and EN 413. Two-speed mixer designed to mix cement mortars and pastes. Mixer features a 5 Liter (5.28qt) stainless steel bowl and ASTM stirrer, and a two-speed motor, which runs at either 140 \pm 5 rpm or 285 \pm 10 rpm.

Features touch screen-operated control panel, which provides fast, easy control in eight languages. Numerous safety features are incorporated in the mixer and includes a service program with malfunction messages for operator, including paddle/planetary speed and time monitoring.

Heavy-duty construction of aluminum and cast iron provides durability and a long service life. The mixer provides a powerful motor for quiet and maintenance-free operation aided by the use of planetary gears and a toothed, belt drive. The mixing bowl is connected to the mixer by a quick-release clamping system. The distance between the mixing bowl and the stirrer is 3 \pm 1 mm and can easily and accurately set.

Mixer design conforms to CE standards, featuring a mixing bowl cover, electronic position monitoring of the mixing bowl, emergency stop switch and restart protection.

Mortar Mixer w/Program, 110/230V 50/60Hz H-3854.3F
 Ship wt. 170lbs. (77kg)



H-3858.3F



HC-3851



H-3841

Humboldt Laboratory Mixer, 5-Qt.

ASTM C305; AASHTO T162; EN 196
DIN 1164; BS 3892; ISO 679; NF P15-411

Humboldt's NEW 5-Qt. Laboratory Mixer has been designed to provide material testing labs with a step up in quality from the typical lab mixer. This mixer has been designed specifically for the demands of cement and soil mixing and not as a kitchen-prep machine. This new mixer, with its clear safety cover provides a sealed mixing design, which allows for material, water and other additives to be easily added to the mix via a port at the top of the mixer. The clear safety cover is attached to the mixer, independent of the bowl and can be removed for cleaning. The mixer features lightweight aluminum construction and comes with a stainless steel stirrer and mixing bowl.

The H-3858 promotes extremely safe operation and complies with CE standards. It provides enclosed operation, an emergency stop button and stops automatically when the bowl is lowered during the mixing process. Its design is optimized for easy handling including its easy-lowering bowl mechanism. The mixer provides two mixing speeds: 140 \pm 5 rpm and 285 \pm 10 rpm. Dimensions are: 9.25" x 15.5" x 22.4" (235 x 396 x 568mm).

Mixer, 5-Qt. (4.73L), 120/230V 50/60Hz H-3858.3F
Shipping wt. 66lbs (30kg)

Mortar Mixer, 5L (5.3qt)

ASTM C305; AASHTO T162; EN 196
DIN 1164; BS 3892; ISO 679; NF P15-411

This excellent, alternative to the Hobart mixer features two-speed, manual-control with a very robust design, expressly made for the efficient mixing of cement pastes and mortar. The mixer offers two speeds: 140 rpm for revolving with 62 rpm planetary action and 285 rpm revolving with 15 planetary action. This mixer features a heavy-duty design, which provides excellent stability when placed on a counter top. Provides open mixing bowl for easy visual consistency control. Simple distance control between stirrer paddle and mixing bowl maintains standard distance between bowl and stirrer.

Hoisting mechanism can also be used to lower the mixing bowl. Quick-clamping system allows mixing bowl to be attached to the mixer easily. Provided with standard stainless steel bowl and standard beater.

Mortar Mixer, 5L (5.3qt), 120V 60Hz HC-3851

Mortar Mixer, 5L (5.3qt), 230V 60Hz HC-3851.2F

Mortar Mixer, 5L (5.3qt), 230V 50Hz HC-3851.5F
Ship wt. 125lbs. (56kg)

Mixer, 5-Qt. (4.73L)

ASTM C305; AASHTO T162

ASTM-compliant mixer for mixing hydraulic cement pastes and mortars of plastic consistency. Mixer includes H-3844 bowl positioning adapter, a 5-qt. (4.73L) stainless steel bowl and 1 flat, stainless steel beater for mixing heavy materials. Hobart model No. N-50 operates on principle of planetary action—beater reaches every part of the batch, rotating on its axis in opposite directions as it moves around the bowl. Thoroughly blends, mixes and aerates all ingredients for consistent, predictable finished batches. Selective agitator transmission has 3 speed settings: 139, 285 and 591 RPM. Base dimensions: 10.375 x 15" (264 x 381mm). Height: 17" (432mm). Features UL-listed cord and plug. See below for accessories and replacement parts.

Mixer, 120V 60Hz H-3841

Mixer, 230V 60Hz H-3841.2F

Mixer, 230V 50Hz H-3841.5F

Ship wt. 55lbs. (25kg)

| Mixer Components | Part # |
|-------------------------------------------------|-----------|
| Bowl positioning adapter | H-3844* |
| Bowl lid, acrylic | H-3846L |
| Beater— stainless steel, flat-type | H-3841.1* |
| Bowl— stainless steel, 5 qt. (4.73L) | H-3841.2* |
| Wire loop whip— stainless steel | H-3841WW |
| Cage (guard) for bowl, metal | H-3841.7 |
| Wire loop whip— SS, Heavy-duty, 0.25" dia. wire | H-3841HW |

* Included with H-3841 mixer.



H-3841.1



H-3844



H-3841.2



H-3841HW



H-3841WW



ACCESSORIES

For Mixer Component Chart,
please see previous page 223.



H-3341



H-3342



H-3340



H-3820



H-3825

H-2845
H-2846**Humboldt Extreme-Duty Whisk**

Custom, hand-made extreme-duty whisk designed for use with the H-3841 mixer. Whisk is formed from 0.25" dia. stainless steel rod for extended service. Designed to withstand the abuse of mixing heavy-aggregate concrete and asphalt mixes. Whisks are available for other mixers, see page 280 for information.

Humboldt Extreme-Duty Whisk **H-3841HW**
Ship wt. 3lbs. (1.3kg)

Test Sand, ASTM 20-30

ASTM C91, C141, C185, C359, C778; AASHTO T132, T137, T185

Sand is specially graded natural silica sand to pass a No. 20 (850 μ) sieve. Specific gravity is 2.65. Packed in 50 lb. (22.7kg) bags or boxes.

Test Sand, ASTM 20-30, bag **H-3820**
Test Sand, ASTM 20-30, box **H-3820BX**
Ship wt. 55lbs. (24kg)

Ottawa Test Sand for Cube Molds

ASTM C87, C109, C348, C359, C593, C778; AASHTO T71, T106, T185

Sand is specially graded natural silica sand graded to retain 98% on a No. 100 (150 μ) sieve, 75% on a No. 50 (300 μ) 30% on a No. 40 (425 μ) and 2% on a No. 30 (600 μ). Specific gravity is 2.65. Packed in 50 lbs. (22.7kg) bags or boxes.

Ottawa Test Sand, bag **H-3825**
Ottawa Test Sand, box **H-3825BX**
Ship wt. 53lbs. (24kg)

Tube Sampler with Partitions, Bulk Cement

ASTM C183; AASHTO T127

For sampling hydraulic cement in bulk shipments or bulk storage. Has two polished brass telescopic tubes with registering slots (with partitions) that open or close by rotation of the inner tube. Outer tube has sharp point to facilitate penetration. Sampler is 1.375" (35mm) dia. x approximately 63" (160cm) long.

Tube Sampler with Partitions **H-3341**
Ship wt. 9.8lbs. (4.4kg)

Tube Sampler w/o Partitions, Bulk Cement

ASTM C183; AASHTO T127

For sampling hydraulic cement in bulk shipments or bulk storage. Has two polished brass telescopic tubes with registering slots (without partitions) that open or close by rotation of the inner tube. Outer tube has sharp point to facilitate penetration. Sampler is 1.375" (35mm) dia. x approximately 63" (160cm) long.

Tube Sampler without Partitions **H-3342**
Ship wt. 10.9lbs. (4.49kg)

Tube Sampler, Packaged Cement

ASTM C183; AASHTO T127

For sampling hydraulic packaged cement, brass unit has hardwood handle. Unit is 1.25" (32mm) dia. x 28.75 (730mm) long.

Tube Sampler, Packaged Cement **H-3340**
Ship wt. 1.7lbs. (.77kg)

Air Entrainment Meters for Mortar

EN 1015-7, EN 459-2

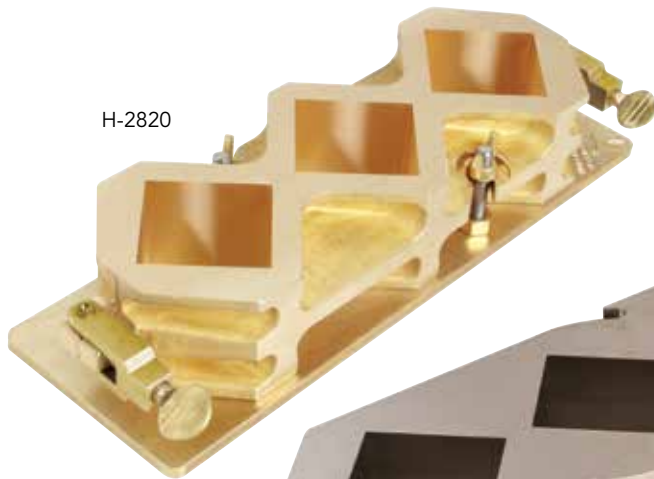
Air entrainment meters for testing freshly-mixed mortar with direct readings in percent. Uses hand-operated pump. The H-2845 and H-2846 Air Meters are used for the determination of the total air content in cement paste, mortar and masonry cement. These meters have a pressure chamber, in which a defined pressure is generated. By opening the overflow valve, the pressure in the chamber is equalized within the sample container, which is filled with mortar. The pressure drop is a measurement of the air content present in the mortar. The accuracy of the pressure gauge is 1.0. Both air meters use pushbutton controls for simple test operation. Both meters use a mechanical valve to provide a reliable seal between the pressure chamber and test container. The pressure gauge is integrated in the top of the meter. Quick-release fasteners between the container and cover provide easy sealing and opening of the meter. Both meters utilize a robust hand pump for operation independent of air supply system.

Air Entrainment Meter for Mortar, 1L **H-2845**
Air Entrainment Meter for Mortar, 0.75L **H-2846**
Ship wt. 2.4lbs. (1.08kg)

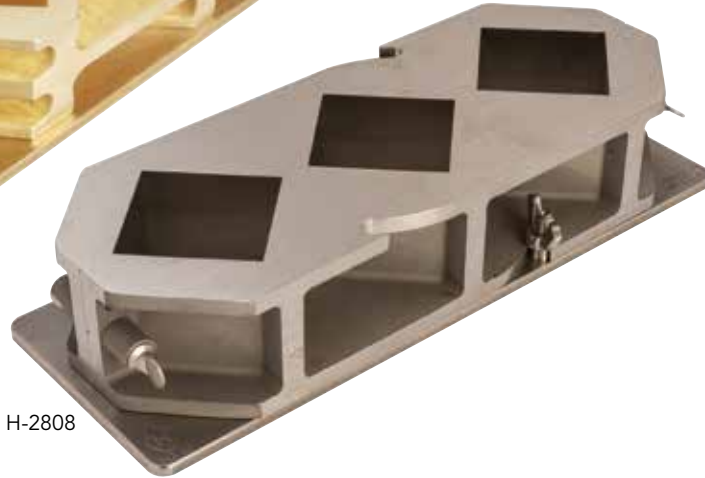
Air Meter Accessories

| Description | Model |
|----------------------------|----------|
| Filling Hopper (1L & 0.75) | H-2845.1 |
| Transport Box (1L & 0.75) | H-2845.2 |





H-2820



H-2808



H-2823



H-2802



H-2810



H-2821



H-2822

Cube Mold, Diagonal Bronze

ASTM C87, C91, C109, C141, C267, C307, C311, C472, C617, C618, C1073; AASHTO T71, T106.

Three-gang, cube mold with diagonal arrangement in forged bronze. Reinforcing rib prevents spreading and detachable baseplate. Available in 2" and 50mm.

2" Cube Mold, Parallel H-2820
50mm Cube Mold, Parallel H-2820M
Ship wt. 13.7lbs. (6.2kg)

Cube Mold, Diagonal Stainless Steel

ASTM C87, C91, C109, C141, C267, C307, C311, C472, C617, C618, C1073; AASHTO T71, T106.

Three-gang, 2" cube mold with diagonal arrangement in forged stainless steel. Reinforcing rib prevents spreading with detachable baseplate.

2" Cube Mold, Diagonal Stainless Steel H-2808
Ship wt. 12lbs. (5.4kg)

Cube Mold, Parallel Stainless Steel

ASTM C87, C91, C109, C141, C267, C307, C311, C472, C617, C618, C1073; AASHTO T71, T106.

Three-gang, cube mold with parallel arrangement in 316 stainless steel. Fitted with angles for attaching to studs threaded into detachable baseplate. Available in 2" and 50mm.

2" Cube Mold, Parallel H-2810
50mm Cube Mold, Parallel H-2810M
Ship wt. 14lbs. (6.3kg)

Cube Mold, Expansive Grout, Bronze

2" cube mold for expansive grout with diagonal arrangement, forged bronze. Reinforcing rib prevents spreading. Detachable base plate and top plate. Also available in 50mm.

Cube Mold, Expansive Grout, 2" H-2823
Cube Mold, Expansive Grout, 50mm H-2823M
Ship wt. 17.2lbs. (7.8kg)

Cover Plate for Cube Mold

Cover plate for slowing the cooling rate as compound is poured. Designed to be used with H-2820 cube molds.

Cover Plate for Cube Mold H-2822
Ship wt. 6.2lbs. (2.8kg)

Cube Mold, Expansive Grout, Stainless Steel

2" cube mold for expansive grout with diagonal arrangement, forged stainless steel. Reinforcing rib prevents spreading. Detachable base plate and top plate.

Cube Mold, Expansive Grout H-2802
Ship wt. 14lbs. (6.3kg)

Cube Mold, Econ-o-Cube

ASTM C109

The Econ-O-Cube cube mold forms three 2" test cubes in a diagonal arrangement. Mold and detachable base are held together by self-aligning thumbscrews, which ensure an even, tight fit. Molded to ASTM C109 dimensional tolerances.

Cube Mold, Econ-o-Cube H-2821
Ship wt. 4lbs. (2kg)



H-2809



H-2816.8



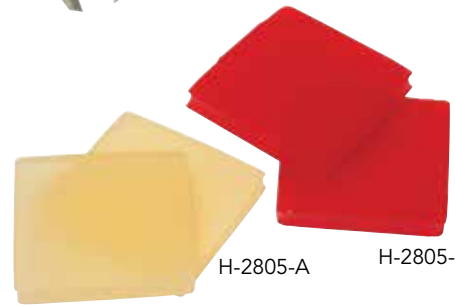
H-2817



H-2800



H-3855



H-2805-A

H-2805-R



H-2812



H-2860W

H-2860



H-2804

Cube Mold, Stamped Construction

2" cube mold with diagonal arrangement. Used with cement, gypsum, lime, mortars, etc. These molds do not meet ASTM or AASHTO specifications and must be individually measured.

Cube Mold, Stamped Construction **H-2809**
 Ship wt. 1.7lbs. (0.7kg)

Briquette Mold

ASTM C307

Cast-bronze briquette mold for hydraulic cement mortar tensile strength tests. Bronze clamps with pins hold the two mold halves securely. Designed to prevent spreading during molding.

Briquette Mold **H-2800**
 Ship wt. 3.5lbs. (1.5kg)

Tamper, Wood

ASTM C87, C109, C157, C185, C596; AASHTO T106, T137, T160

Wood tamper is 6" (152mm) long with 0.5 x 1" (13 x 25mm) cross section.

Tamper, Wood **H-2860W**
 Ship wt. 0.3lbs. (0.14kg)

Tamper, Rubber Compound

Rubber compound tamper is 6" (152mm) long with 0.5 x 1" (13 x 25mm) cross section. Does not comply with ASTM standards.

Tamper, Rubber Compound **H-2860**
 Ship wt. 0.3lbs. (0.14kg)

Tamping Stick

ASTM C185; AASHTO T137

Maple wood with .625" (16mm) dia. and 6" (152mm) length.

Tamping Stick **H-3855**
 Ship wt. 0.1lbs. (0.04kg)

Rubbing Block

Ground steel block 3" dia. x 1" (76 x 25mm) for removing loose sand grains and encrustations from concrete specimen surfaces before compressive testing.

Rubbing Block **H-2812**
 Ship wt. 0.2lbs. (0.09kg)

Digital Caliper, 0-200mm

Provides accurate outside, inside, depth and step measurements and features large, easy-to-read LCD digits, rolling thumb wheel; plus control buttons for zero, on/off and inch/mm functions.

Digital Caliper, 0-200mm **H-2816.8**
 Ship wt. 2.2lbs. (1kg)

Dial Caliper, Stainless Steel 6" (150mm)

Easy-to-read black face dial caliper with combination inch and metric scales features 0.001"/0.1mm graduations, hardened and ground stainless steel main beam with hardened, ground and lapped measuring faces.

Dial Caliper, Stainless Steel 6" (150mm) **H-2817M**
 Ship wt. 1.5lbs. (0.68kg)

Dial Caliper, Stainless Steel 6"

Similar to above, features a 6" measuring range with .001" graduations and .100" per revolution.

Dial Caliper, Stainless Steel 6" (150mm) **H-2817**
 Ship wt. 1.3lbs. (0.58kg)

Certified Calipers are also available, please inquire.

2" Cube Compression Pad, Amber

Compression pad, 90 durometer, used in compression tests of 2" cubes. Used with H-2804 Retainer Caps. Sold individually.

2" Cube Compression Pads, Amber **H-2805-A**
 Ship wt. .25lbs. (.11kg)

2" Cube Compression Pad, Red

Compression pad, 80 durometer, used in compression tests of 2" cubes. Used with H-2804 Retainer Caps. Sold individually.

2" Cube Compression Pads, Red **H-2805-R**
 Ship wt. 0.25lbs. (0.11kg)

2" Cube Pad Retainer Caps

Stainless steel retainer caps for use with 2" cube specimens. Use with 2" compression pads to eliminate the need for capping compound. Sold in sets of 2.

2" Cube Pad Retainer Caps **H-2804**
 Ship wt. 0.25lbs. (0.23kg)

2" Cube Compression Pads Set

Compression pads used with H-2804 Retainer Caps. Sold in set, consisting of (2) H-2805-R and (2) H-2805-A.

2" Cube Compression Pads Set **H-2805**
 Ship wt. .5lbs. (.22kg)



| Prism Molds | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------|
| Description | Ship wt. | Model |
| Application: Autoclave expansion of Portland cement; length change of mortar and concrete; potential alkali reactivity of cement/aggregate combinations; linear change of magnesium and oxychloride cements; volume change of cement paste | | |
| 1" x 1" x 10" (25 x 25 x 254mm), 1-mold, cold-rolled steel | 7.3 lbs (3.3kg) | H-3252 |
| 1" x 1" x 10" (25 x 25 x 254mm), 2-mold, cold-rolled steel | 9.6 lbs (4.3kg) | H-3253 |
| 1" x 1" x 5" (25 x 25 x 127mm), 2-mold, stainless steel | 6 lbs (2.72kg) | H-3255S |
| Description | Ship wt. | Model |
| Application: Volume change tests of mortars | | |
| 2" x 2" x 10" (51 x 51 x 254mm), 2-mold, cold-rolled steel | 20.6 lb (9.3kg) | H-3251 |
| 1" x 1" x 5" (25 x 25 x 127mm), 2-mold, cold-rolled steel | 6 lb (2.7kg) | H-3255 |
| Application: Volume change of cement past; length change of mortar and concrete | | |
| 3" x 3" x 10" (76 x 76 x 254mm), 1-mold, cold-rolled steel | 24.8 lbs (11kg) | H-3254 |
| Application: Volume change tests | | |
| 4" x 4" x 10" (102 x 102 x 254mm), 1-mold, cold-rolled steel | 35.5 lbs (16.1kg) | H-3256 |
| 1.6" x 1.6" x 6.3" (40 x 40 x 160mm) 3-gang mold, cold-rolled steel This mold, not used with gauge studs | 14.3 lbs (6.4kg) | H-3270 |

Prism Molds

ASTM C490

Designed to produce required 10" effective gauge length, prism test bars. Molds feature removable partitions, base and end plates. Effective gauge length is measured from inside end of the studs. Molds produce cement prism specimens 11.25" long. Including studs, outside to outside length of specimen is 11.625".

Prism Molds



see chart
Ship wt. see chart

Gauge Studs

ASTM C151, C157, C227, C490; AASHTO M210, T107.

Gauge studs have stainless steel contact points and are knurled and threaded for use with cement prism molds. Packaged 10 per bag.

Gauge Studs



H-3260
Ship wt. 0.15lbs. (0.06kg)

Tamping Rod

ASTM C157, C192; AASHTO T60.

Round, straight steel .375" dia. x 12" (10 x 305mm). Both ends rounded to a hemispherical tip the same diameter as the rod.

Tamping Rod



H-2905.1
Ship wt. 0.5lbs. (0.23kg)

Restraining Cage, 2" x 2" x 10"

ASTM C806

For 2" x 2" x 10" (51 x 51 x 254mm) prism molds. Features 1/4-20 continuous threaded rod and acorn nuts.

Retaining Cage, 2" x 2" x 10"



H-3251RC
Ship wt. 1.4lbs. (0.63kg)

Restraining Cage, 3" x 3" x 10"

ASTM C878

For 3" x 3" x 10" (51 x 51 x 254mm) prism molds. Features 1/4-20 continuous threaded rod and acorn nuts.

Restraining Cage, 3" x 3" x 10"



H-3257
Ship wt. 2.8lbs. (1.27kg)

Demold Device for Prism Molds

Handy device for removing prism samples from molds.

Demolding Device for Prism Molds



H-3258DD
Ship wt. 4lbs. (1.8kg)

Go-No Go Gauge

For gauge stud and molds.

Dimensions: 1" x 1" x 10" molds.

Go-No Go Gauge



H-3258
Ship wt. 2lbs. (0.9kg)

**Flow Table, Motorized with Counter**

ASTM C87, C109, C110, C185, C230, C243, C348, C593; AASHTO T71, T106, T137 and T152
Used to determine the flow of hydraulic cement, mortars and cement pastes. A test specimen is molded on the table to a specified volume and shape. Then, with the mold removed, leaving the test specimen on the table. The table is dropped and raised (via a hand crank or optional motor) a specified number of cycles, after which the flow (or increase in average diameter of the specimen) is measured. Motorized flow table with 10" (254mm) dia. cast-bronze table/platen and automatic digital counter. Motor stops automatically once pre-set number of drops is achieved. Includes heavy-duty table/platen assembly, standard H-3622 cast bronze, 2.75" top dia. x 2" high x 4" bottom dia. cone mold, motor and H-3614B counter. Designed to be mounted to concrete mounting block. Order H-3624F, pedestal form and easily create your own mounting block. Applications include: compression strength and air content tests of cement mortar; flow tests of hydraulic cement mortars; consistency tests of magnesium oxychloride cements; flexural strength test for bond strength or mortar to masonry units.

| | |
|----------------------------------|-----------|
| Flow Table, w/Counter, 120V 60Hz | H-3624 |
| Flow Table, w/Counter, 220V 60Hz | H-3624.2F |
| Flow Table, w/Counter, 220V 50Hz | H-3624.5F |
| Ship wt. 81lbs. (37kg) | |

Flow Table, Motorized

ASTM C230

Used to determine the flow of hydraulic cement, mortars and cement pastes. A test specimen is molded on the table to a specified volume and shape. Then, with the mold removed, leaving the test specimen on the table. The table is dropped and raised (via a hand crank or optional motor) a specified number of cycles, after which the flow (or increase in average diameter of the specimen) is measured. Motorized flow table with 10" (254mm)

dia. cast-bronze table/platen. Includes heavy-duty table/platen assembly, standard H-3622 cast bronze, 2.75" top dia. x 2" high x 4" bottom dia. cone mold, and motor. Designed to be mounted to concrete mounting block. Order H-3624F, pedestal form and easily create your own mounting block. Used in determining consistency of cement mortars.

| | |
|----------------------------------|-----------|
| Flow Table, Motorized, 120V 60Hz | H-3625 |
| Flow Table, Motorized, 220V 60Hz | H-3625.2F |
| Flow Table, Motorized, 220V 50Hz | H-3625.5F |
| Ship wt. 80lbs. (36kg) | |

**NOTE**

220V 60Hz machines require a transformer, which is included.

Flow Table, Hand-Driven

ASTM C230

Hand-driven flow table with 10" (254mm) dia. cast-bronze table/platen. Includes standard H-3622 cast bronze, 2.75" top dia. x 2" high x 4" bottom dia. cone mold. Used in determining consistency of cement mortars.

| | |
|--------------------------|--------|
| Flow Table, Hand-Driven | H-3620 |
| Ship wt. 27lbs. (12.2kg) | |

Flow Molds

Cast-bronze 2.75" top dia. x 4" bottom dia. x 2" high cone mold or cast-bronze 70mm top dia. x 100mm bottom x 50mm high. cone mold.

| | |
|-----------------------------------|---------|
| Flow Mold, 2.75" / 4" x 2" high | H-3622 |
| Flow Mold, 70mm/100mm x 50mm high | H-3622M |
| Ship wt. 2.4lbs. (1.08kg) | |

Pedestal Form

Wooden form used to create a concrete base for flow tables.

| | |
|--------------------------|---------|
| Pedestal Form | H-3624F |
| Ship wt. 28lbs. (12.7kg) | |

Counter, Automatic

Can be used to upgrade H-3625 motorized flow table so a predetermined number of drops can be set to run automatically. Use H-3614B.4F with H-3625.5F.

| | |
|-------------------------------|------------|
| Counter, Automatic, 120V 60Hz | H-3614B |
| Counter, Automatic, 220v 50Hz | H-3614B.4F |
| Ship wt. 4lbs. (1.8kg) | |

Caliper, Mortar Diameter Check

ASTM C87, C185, C230; AASHTO M152, T71, T137
Rugged caliper used to measure mortar flow diameter and indicate the + percentage of flow.

| | |
|--------------------------------|--------|
| Caliper, Mortar Diameter Check | H-3621 |
| Ship wt. 2lb. (0.9kg) | |

Mortar Flow Shield

ASTM C230; AASHTO M152

Circular shield for use with H-3622 flow mold to prevent mortar from spilling on table top.

| | |
|------------------------|--------|
| Mortar Flow Shield | H-3623 |
| Ship wt. 2lbs. (0.9kg) | |

Straight Edge

ASTM C185, D558, D559, D560, D698; AASHTO T137

Straight edge of ground steel with beveled edge. .125" x 1.25" x 8" (3 x 32 x 200mm).

| | |
|--------------------------|----------|
| Straight Edge | H-4144.8 |
| Ship wt. 0.9lbs. (0.9kg) | |

Grout Boxes

ASTM C1019

Cardboard box designed to be used to mold grout test samples. Each box forms 4 molds and can be used as a transport/shipping container as well. Boxes yield consistent, identical prism samples, while the engineered, slotted corrugation retains moisture while closely simulating CMU absorption rates. 25 boxes to a package. Overall dimensions: 7.5" x 7.5" x 7" (190 x 190 x 178mm). Section: 3.25" x 3.25" x 6.75" (83 x 83 x 171mm)

| | |
|-----------------------------|--------|
| Grout Boxes (package of 25) | H-2838 |
| Ship wt. 17.3lbs. (7.84kg) | |

**Grout Flow Cone Set**

ASTM C939

These test sets are used to determine the time of efflux of a specified amount of fluid hydraulic cement grout, by allowing it to flow through a standardized flow cone. It can be used for with preplaced-aggregate (PA), but can also be used for other fluid grouts. The test method described in ASTM C939 determines the flowability by measuring the time of discharge of a 1.725L sample of grout as it is passed through a 0.5" (12.7mm) orifice at the bottom of the cone. Humboldt's HC-2834S test set, which complies with ASTM C939, is comprised of a cast aluminum cone with a top ID of 7" (178mm) and a replaceable orifice at the bottom of 0.5" (12.7mm). The cone also includes an adjustable point gauge assembly, which is used to indicate the initial level of the grout sample. The set also includes a sturdy, tripod stand, which allows the cone to firmly fit into for testing (H-2833) and a 6L stainless steel beaker (H-2434SSB). The test set is also available with a 0.75" (19mm) orifice (HC-2835S), which does NOT comply with ASTM C939, but accommodates grout with larger aggregate. All items of the set are available as individual items, please see replacement parts for these items.

ASTM Grout Flow Cone Set, 0.5" (13mm) H-2834S
 Grout Flow Cone Set, 0.75" (19mm) H-2835S

Ship wt. 30lbs. (13.6kg)

Grout Flow Cone

ASTM C939

Cast-aluminum flow cone with either 0.5" (13mm) or 0.75" (19mm) replaceable orifice. Includes adjustable point gauge assembly. Overall dimensions: 8" dia. x 12"H (203 x 305mm). H-2835 does NOT comply with ASTM C939.

ASTM Grout Flow Cone, 0.5" (13mm) H-2834
 Grout Flow Cone, 0.75" (19mm) H-2835

Ship wt. 10lbs. (4.5kg)

Grout Flow Cone, Plastic

Plastic flow cone with either 0.5" (13mm) or 0.75" (19mm) replaceable orifice. Includes adjustable point gauge assembly. H-2834 sold separately.

ASTM Grout Flow Cone, 0.5" (13mm) H-2834P

Grout Flow Cone, 0.75" (19mm) H-2835P

Ship wt. 2lbs. (0.9kg)

Grout Flow Orifice, Replacement

ASTM C939

Grout flow orifice with either 0.5" (13mm) or 0.75" (19mm) opening.

Grout Flow Orifice, 0.5" (13mm) H-2834.500

Grout Flow Orifice, 0.75" (19mm) H-2834.750

Ship wt. 1lb. (0.45kg)

Grout Flow Cone Stand

Sturdy well-constructed steel stand to support flow cones so the top is level and the cone free from vibration. Overall dimensions: 21"W x 9.5"D x 23"H.

Grout Flow Cone Stand H-2833

Ship wt. 9.5lbs. (4.3kg)

Beaker, 6-liter Stainless Steel

6-liter stainless steel beaker with rolled-top edge, perfect for grout flow testing. Cleans up with ease.

Beaker, 6-liter Stainless Steel H-2834SSB

Ship wt. 2.8lbs. (1.27kg)

Micrometer Bridge Set

Designed to hold one cylinder to permit repeated volume change measurements without moving or disturbing the specimen. Includes the following items: H-2901 micrometer bridge, H-2902 micrometer depth gauge, H-2904 tapered cylinder mold, H-2905.2 tamping rod, H-2905.2 glass plate and H-2905.3 weight.

Micrometer Bridge Set H-2903

Ship wt. 23.4lbs. (10.6kg)

Tapered Cylinder Mold

ASTM C1090

Used to determine volume change of grout, mold is constructed of steel tubing 0.25" wall x 3" dia. x 6"H (6 x 76 x 152mm). Mold is split longitudinally with two quick-acting clamps welded to the mold. Top edge of mold is machine tapered to a narrow rim. Includes detachable base plate.

Tapered Cylinder Mold H-2904

Ship wt. 7.8lbs. (3.5kg)

Micrometer Depth Gauge

Graduations in the thousandths of an inch (.001"), range 0 to 3", .125" rod dia. Sleeve is designed with staggered lines, hardened and precision ground screw; lock nut holds the setting at the precise measurement. Includes protective case. Base length is 2.5".

Micrometer Depth Gauge H-2902

Ship wt. 2lbs. (.9kg)

Micrometer Bridge

Bridge is used to hold the H-2904 mold in place while repeated volume change measurements are made. Stainless Steel.

Micrometer Bridge H-2901

Ship wt. 7lbs. (3.1kg)

Tamping Rod

ASTM C157, C192

Round, straight steel rod is .375" (10mm) dia. x 12" (305mm) long. Both ends are rounded to a hemispherical tip of the same diameter as the rod.

Tamping Rod H-2905.1

Ship wt. 4.5lbs. (2.04kg)

Glass Plate

Glass plate used with micrometer bridge setup.

Glass Plate H-2905.2

Ship wt. 0.4lbs. (0.18kg)

Weight, 3 lb

3 lb weight for use with micrometer bridge setup.

Weight, 3 lb H-2905.3

Ship wt. 3lbs. (1.4kg)



H-3493A



H-3491



H-3492A



H-3490A



H-3320



H-3161



H-3162.5F

Organic Impurities Test Set

ASTM C40; AASHTO T21

Determines presence of injurious organic compounds in sands used in cement mortar or concrete. Test serves as warning that further tests of sands are necessary before they can be approved for use. Air shipments must meet Dangerous Goods requirements because of Sodium Hydroxide Beads. **Order H-3493X without Sodium Hydroxide Beads to avoid Dangerous Goods requirements.**

Organic Impurities Test Set
Test Set, w/o Sodium Hydroxide

H-3493A
H-3493AX



Ship wt. 6.8lbs. (3kg)

Organic Color Wheel

ASTM C40; AASHTO T21

Color comparison wheel for use with organic impurities test. Color wheel has five different color filters to compare to test solution.

Organic Color Wheel

H-3492A



Ship wt. 0.6lbs. (.27kg)

Sodium Hydroxide Beads

1lb (454g) Container of Sodium Hydroxide Beads. Air shipments must meet Dangerous Goods requirements.

Sodium Hydroxide Beads

H-3491



Ship wt. 1.5lbs. (.68kg)

Graduated Bottle

12 oz. (.35L) graduated bottle for organics impurities test.

Graduated Bottle

H-3490A



Ship wt. 0.8lbs. (0.36kg)

Reaction Container

ASTM C289

For determining potential alkali reactivity of aggregates (chemical method) when used with high alkali cements. Stainless steel unit is 2" dia. x 2.25" high (51mm dia. x 57mm) fitted with air-tight cover. 50-75ML capacity.

Reaction Container

H-3320



Ship wt. 1.3 lbs. (0.56kg)

Cement Calorimeter, Digital

ASTM C186

Features precision digital thermometer for determining heat of hydration of cements by measuring difference between heat of solution of dry cement and heat of solution of a separate sample partially hydrated for 7 to 28 days. Constant-speed stirrer maintains uniform temperature throughout liquid and supplies sufficient agitation to keep solid reactant suspended in the acid mixture. Includes insulated wood case, insulated 1G (3.8L) can; 1 pt. (0.47L) vacuum jar with stopper; 2-channel, Precision Digital Thermometer with a resolution of 0.001°C; plastic funnel; stirring paddle and chuck; geared synchronous motor.

Cement Calorimeter, Digital, 120V 60Hz

H-3161

Cement Calorimeter, Digital, 230V 50/60Hz

H-3161.4F



Ship wt. 35lbs. (15.8kg)

CEMENT

Calorimeter

EN 196-9

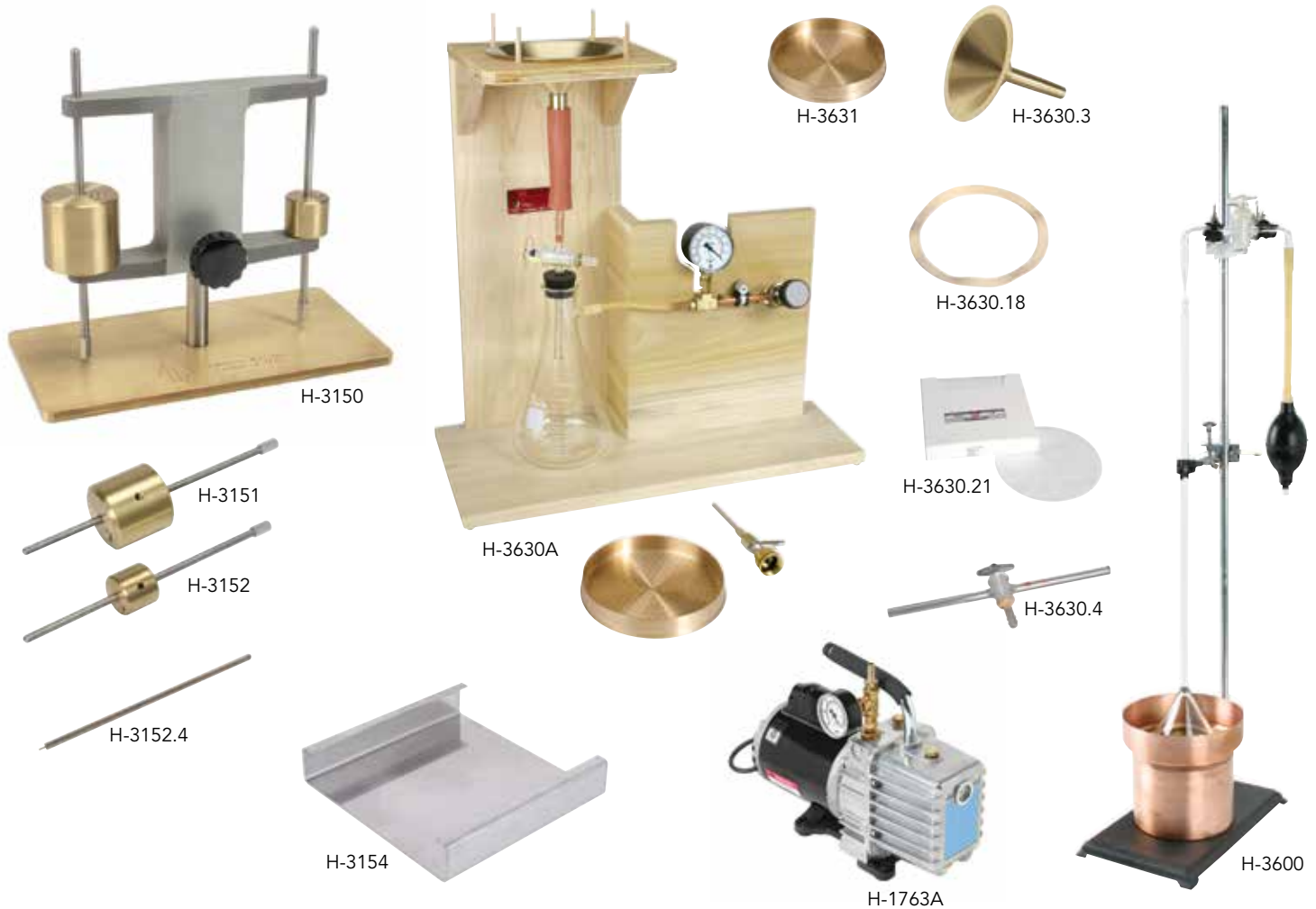
Used to measure the heat of hydration of cement by the semi-automatic Langavant method. Test calorimeter includes factory calibration certificate. Temperature recorder provides (4) input channels for recording and transmission of temperature values. Analysis software provides reporting and editing function for calculating the heat of hydration. Unit includes: test calorimeter; reference calorimeter; mortar-sample container, temperature recording device and analysis software. Power for unit is supplied by USB from a PC or laptop. Does not include required PC.

Calorimeter, 220V, 50Hz

H-3162.5F

Ship wt. 77lbs. (35kg)



**Gillmore Apparatus**

ASTM C91, C141, C150, C266, C414;
AASHTO T154

Used to determine initial and final set times of Portland cement, masonry cement, hydraulic hydrated lime and certain mortars. Comprised of two stainless steel needles with 0.0375" (4.8mm) cylindrical flat-end needles. One is 1/12" (2.12mm) dia. 1/4 lb. (113.4g) weight for initial set. The second is 1/24" (1.06mm) dia., 1lb. (453.6g) weight for final set.

Gillmore Apparatus**H-3150**

Ship wt. 5.7lbs. (2.5kg)

Gillmore Accessories and Replacement Parts

| Description | Model |
|---------------------------------------------------------|----------|
| Strike-off plate, 0.5" thickness | H-3154 |
| Needle, 1/24" (1.06mm) dia. with 1lb (453.6g) weight | H-3151 |
| Needle, 1/12" (2.12mm) dia. with 1/4lb. (113.4g) weight | H-3152 |
| Gillmore needle, 0.050" dia. | H-3152.4 |

Water Retention Apparatus

ASTM C1506, C110, C207 and E149

The apparatus is used in specification tests of masonry cement and physical testing of quicklime and hydrated lime. These tests include: ASTM D1506, ASTM C110 and ASTM C207. This test method provides a means for determining the ability of mortars and plasters to retain water under suction. Test results may be used to determine compliance with specifications. The results obtained using this test method can be used to compare the relative ability of mortars and plasters to retain water under suction. Unlike older models, this unit incorporates a vacuum regulator and gauge system in place of the old mercury manometer and relief column. The complete unit consists of an aspirator pump, vacuum regulator, vacuum gauge, three-way stopcock, flask, rubber gasket, brass funnel, perforated brass dish, filter paper and hardwood stand.

Water Retention Apparatus**H-3630A**

Ship wt. 25lbs. (11.3kg)

Water Retention Apparatus Replacement Parts

| Description | Model |
|------------------------------------|-----------|
| Funnel | H-3630.3 |
| Stopcock | H-3630.4 |
| Rubber gasket | H-3630.18 |
| Filter paper, 15cm, package of 100 | H-3630.21 |
| Perforated brass dish | H-3631 |
| Flask, 1000ml | H-4913.1M |
| Vacuum Pump | H-1763A |
| Drierite Air Drying Unit | H-1759 |

Cement Bleeding Apparatus

ASTM C243

Used to determine bleeding rate and bleeding capacity of cement paste and mortar by direct and continuous procedure. Includes noncorrosive metal container for paste or mortar, collecting ring, support stand and necessary glassware. Rubber-covered double V-jaw burette clamp holds stopcock in position; single rubber-covered jaw clamp supports the burette and funnel assembly.

Cement Bleeding Apparatus**H-3600**

Ship wt. 16lbs. (7.2kg)



NOTE

.3F part numbers are 120/220V 50/60Hz

Blaine Air Permeability Apparatus

ASTM C204; AASHTO T153

The Blaine Air Permeability Apparatus determines the fineness of Portland cement in terms of specific surface area expressed as the total surface area in square centimeters per gram of mortar or cement. The Blaine works by drawing a definite quantity of air through of bed of cement exhibiting a definitive porosity value. The number and size of the pores in a prepared bed of definite porosity is a function of the size of the particles and determines the rate of airflow through the bed. This procedure is outlined in ASTM C204, Method A and AASHTO T153. The Humboldt Blaine Air Permeability Apparatus consists of: calibrated U-tube manometer, ground glass joint, stainless steel test cell and plunger, rubber aspirator bulb and perforated disc. Includes an 8 oz. (226.8g) bottle of red manometer fluid, filter paper, wood block for holding test cell during filling and a funnel. Mounted on finished wood panel with rubber-footed base. To perform this test, NIST Portland Cement #114q is required by the ASTM standard for calibration. See Accessories H-3817 and H-3817.20.

Blaine Air Permeability Apparatus H-3810

Ship wt. 7lbs. (3.1kg)

H-3810 Accessories & Replacement Parts

| Description | Model |
|--------------------------------------------------------|-----------|
| Rubber bulb | H-3811 |
| Cell and plunger | H-3812 |
| Cell and plunger, Calibrated | H-3812CAL |
| Perforated brass disc | H-3813B |
| Perforated stainless steel disc | H-3813S |
| Manometer fluid, 8oz (240ml) | H-3814 |
| Monometer u-tube, calibrated | H-3815 |
| Filter paper discs, medium retentive, 1.27cm, pkg 1000 | H-3816.1M |

SRM 114q - Portland Cement Fineness Standard

This Standard Reference Material (SRM) is used in calibrating fineness testing equipment according to

ASTM Standard Methods. The SRM unit consists of a glass vial with plastic caps containing powdered cement (each vial is contained in a sealed foil bag). Each vial contains approximately 5g of cement.

SRM 114q, 1 vial H-3817

SRM 114q, package of 20 H-3817.20

Ship wt. 0.5lbs. (0.2kg)

Blaine Apparatus, Semi-Automatic

ASTM C204; AASHTO T153, EN 196; DIN 1164; BS 4550

Determines fineness of cement in terms of specific surface expressed as total surface area square centimeters per gram. To obtain the most accurate results, the test should be performed in a temperature-controlled environment. The Semi-automatic Blaine Apparatus provides more accuracy and precision than provided by the manual Blaine Apparatus. The device uses an automatic pump and timer to evaluate the time precisely. Calibration of this unit is done using a cement sample reference, such as NIST 114q. To obtain the most accurate results, the test should be performed in a temperature controlled environment. Unit includes: the unit with an electric pump and timer; measuring cell, filter papers (12.8mm, 1000pk.; fill oil (50ml); plug; thermometer; brush and funnel.

Blaine Apparatus, Semi-Automatic H-3056.3F

Ship wt. 15lbs. (6.8kg)

H-3056.3F Accessories & Replacement Parts

| Description | Model |
|------------------------------|-----------|
| Calibration Sand, Coarse | H-3056.2 |
| Calibration Sand, Fine | H-3056.4 |
| Fill Oil | H-3056.5 |
| Light Grease | H-3056.10 |
| U-shaped Tube | H-3056.6 |
| Filter Papers, 12.8mm (1000) | H-3056.1 |
| Measuring Cell | H-3056.11 |
| Perforated Disc | H-3056.8 |
| Tamper | H-3056.13 |

Blaine Air Permeability (H-3810) Replacement Parts



Blaine Semi-Automatic Apparatus (H-3056.3F) Replacement Parts



Electronic Blaine Apparatus, Dyckerhoff (see next page)

The Electronic Blaine Apparatus, Dyckerhoff system is a semi-automatic device with pump and time registration for the rapid determination of specimen characteristics. This device is a semi-automatic cement air permeability tester used for the determination of the specific surface or Blaine value. Once the test material is set inside the chambers, the test procedure is able to measure the values for the user. Measuring cell dia. is 41 mm (1.6"). Volume of measuring cell is 73 cm³. Unit includes apparatus, measuring cell, filter papers ø41mm 500pk, fill oil 150ml, tamper and dust filter ø13mm.

Electronic Blaine Apparatus, Dyckerhoff H-3058.3F

Ship wt. 47lbs. (21.3kg)

PC-Controlled Blaine Apparatus, Dyckerhoff (see next page)

The PC-controlled, electronic Blaine Apparatus, Dyckerhoff system provides a fully automatic test procedure and evaluation, complete with software, for one cell. Once the test material is set inside the chambers, the test procedure is able to measure the values for the user. This device provides quick test preparation, which does not require the operator to determine the weighed quantity, as precise as he would for the standard procedure. After test preparation, the device can perform the test in full automation, recording all information without need of supervision Software automatically records all information without need of supervision. Apparatus and software are able to measure the final result for the user. Measuring cell dia. is 41 mm (1.6"). Volume of measuring cell is approximately ca. 75 cm³. Comes complete with apparatus, measuring cell, filter papers ø41mm 500pk, fill oil 150ml, tamper and dust filter ø13mm.

Does not include required PC. See next page for replacement parts and accessories.

PC-Controlled Apparatus, Dyckerhoff H-3059.3F

Ship wt. 47lbs. (21.3kg)



H-3058.3F



H-3059.3F



HA-3056



H-3052



H-3058.1

H-3058, H-3059 Accessories & Replacement Parts

| Description | Model |
|-------------------------------|-----------|
| Reference Sand, Coarse, 600g | H-3058.7 |
| Reference Sand, Fine, 600g | H-3058.8 |
| Fill Oil | H-3056.5 |
| Light Grease | H-3056.10 |
| U-shaped Tube | H-3056.6 |
| Filter Papers, 41mm (500) | H-3058.1 |
| Foam Plugs, dust filters (10) | H-3058.5 |
| Precision Digital Gauge | H-3059.6 |
| O-ring | H-3058.2 |
| Perforated Disk, 30 x 7mm | H-3058.4 |

Vicat Apparatus, Automatic

ASTM C187, C191, AASHTO T131, EN 196-3, DIN 1164, DIN 1168 gypsum, NF P15/431 and BS4550

This automatic Vicat Apparatus provides a completely automatic method for determining the initial and final setting time of cements or mortar pastes.

The HA-3056 is supplied complete with a 1.13mm x 57mm needle; a vicat mold 70/80 dia. x 40mm height; sample container (water bath); 500 sheets of plotting paper; final set needle; cleaning strip; tweezer, T-wrench and delay timer.

Vicat Apparatus, Auto, 120/220V 50/60Hz **HA-3056.3F**
 Ship wt. 37lbs. (17.6kg)

HA-3056 Accessories, Spare Parts

| Description | Model |
|-------------------------------------------------------|-----------|
| Initial set needle, 1.13mm dia. x 57mm length | HA-3056.2 |
| Final set needle with special foot, 1.13mm dia. | HA-3056.5 |
| Vicat mold, 70/80 dia. x 40mm (EN 196, ASTM C187-191) | HA-3056.6 |
| Plotting Paper (500 sheets) | HA-3056.1 |
| Recording Pen (1) | HA-3056.3 |
| Sample Container (140 x 60mm) | HA-3056.8 |
| Glass Base Plate | HA-3056.7 |
| Cleaning Strip for Needle | HA-3056.4 |

Vicat Machine, Automatic

ASTM C187, C191; AASHTO T131; EN 196-3; DIN 1164, DIN 1168 gypsum; NF P15/431 and BS4550

The Vicatronic apparatus provides a completely automatic method for determining the initial and final setting time of cements or mortar pastes. The automated test operation provides for precise and repeatable results, which are automatically printed out from the integral printer built into the apparatus. The Vicatronic can also be connected to a PC via a RS232 cable allowing data to be downloaded via programs like Microsoft hyper terminal. The Vicat-Win software (H-3052.4) allows the receiving, managing, processing and completing test data; the software can automatically create graphs, personalize them and print test reports.

The Vicatronic has a large high-contrast, high-resolution LCD display, which shows the test data together with the general functions of the unit. The easy-to-see menu provides a simplified guide to running a test. During the test, the display also provides a real-time graph of the results, which can be monitored.

The Vicatronic is supplied with firmware that allows the automatic performance of tests in accordance with the following standards: ASTM C191, AASHTO T131, EN 196/3, DIN 1164, DIN 1168 gypsum, NF P15/431 and BS4550. Additional programs can be developed by the operator. This is particularly useful when testing new mortars, additives or research tests requiring sophisticated and flexible applications.

The Vicatronic is supplied complete with the integral printer, two hardened needles (one with 1mm diameter and one with 1.13mm. diameter), two conical molds EN and ASTM, and a glass plate to hold the conical mold. Dimensions: 15.75" x 7.87" x 18.5" (400 x 200 x 470mm).

Vicat Machine, Automatic, 120V 50/60Hz **H-3052**
 Vicat Machine, Automatic, 230V 50/60Hz **H-3052.4F**
 Ship wt. 37.6lbs. (17kg)

H-3052 Accessories, Spare Parts

| Description | Model |
|------------------------------|-----------|
| Needle 1.13mm dia., EN 196-3 | H-3052.2 |
| Needle 1mm dia., ASTM C191 | H-3052.9 |
| Weight, 700g | H-3052.45 |
| Mold tank, in-water testing | H-3052.3 |
| Printer paper (5 rolls) | H-3052.6 |

Vicat-Win Software

Allows the receiving, managing, processing and completion of test data on a PC. This software can automatically create graphs, personalize them and print test reports.

Vicat-Win Software **H-3052.4**
 Ship wt. 0.1lbs. (0.04kg)



HC-3056.3F



HC-3057.3F



HC-3058.3F




HC-3059.3F

Vicat Apparatus, Computer-Controlled

ASTM C187, C191, AASHTO T131, EN 196-3, DIN 1164, DIN 1168 gypsum, NF P15/431 and BS4550

This automatic, computer-controlled Vicat Apparatus provides a completely automatic method for determining the initial and final setting time of cements or mortar pastes.

With the use of a PC or Laptop this bench-top model provides programmed test sequences for vicat testing. Tests can be performed in air or in a water bath with constant temperature (heat exchanger and cooler for constant water temperature) The unit automatically records initial set time and final set time, as well as the ability of setting plots. The supplied plunger and needle weigh $300g \pm 1g$ and after each penetration the vicat needle is automatically cleaned. The standard, supplied software provides programmable test sequences for data recording. Includes: (1) Vicat mold (conical hard plastic ring) 70/80 dia. x 40 mm; (1) glass base plates, 120 mm dia.; (1) centering for Vicat mold (conical hard plastic ring) 70/80 dia. x 40 mm; (1) pair of cleaning brushes; (1) tee wrench, 1.25 mm; (1) tee wrench, 2 mm; (1) spare glass plates, 120 mm dia.; (2) spare initial-set needles, 1.13 mm dia.; Serial cable, USB/RS232-Adapter and Mains cable. **PC or laptop required for operation— not included.**

Vicat Apparatus, Comp, 120/220V 50/60Hz HC-3056.3F
 Ship wt. 154lbs. (70kg)

Vicat Apparatus, Computer Controlled


ASTM C191 Method B; AASHTO T131; EN 196-3, EN 480-2; DIN 1164; BS4550

These computer-controlled, Vicat Apparatus can be used to determine the initial and final setting time of cement, mortar pastes and gypsum. This six-station apparatus automatically monitors the setting process and provides output curves of the process. The test sequence is programmable and tests can be performed in air or in the supplied, temperature-controlled water bath. With programmed test sequences, the unit provides automatic registration of initial set and final set times, as well as providing setting plots of the entire sequence. The supplied plunger and needle weigh $300g \pm 1g$ and after each penetration the vicat needle is automatically cleaned.

The computer-controlled vicat apparatus includes: Base unit as a table model apparatus with a control unit and standard software for performing programmable test sequences and for data recording.

6-Station Vicat Apparatus


Includes: (6) vicat molds (60/70 dia. x 40 mm conical hard-plastic rings); (6) glass base plates (120 mm dia.); (6) centerings for the vicat molds; 1 pair of cleaning brushes; (1) t-wrench (1.25 mm); (1) t-wrench (2 mm); (2) spare glass plates (120 mm dia.); (2) spare initial-set needles, (1.0 mm dia.); Filter sponge (coarse); Filter sponge (fine); serial cable, and cover. **PC or laptop required for operation— not included.**

Vicat Apparatus, 6-Station, 120/220V 50/60Hz HC-3057.3F
 Ship wt. 215lbs. (97.5kg)

8-Station Vicat Apparatus


Includes: (8) vicat molds (60/70 dia. x 40 mm conical hard-plastic rings); (8) glass base plates (120 mm dia.); (8) centerings for the vicat molds; 1 pair

of cleaning brushes; (1) t-wrench (1.25 mm); (1) t-wrench (2 mm); (2) spare glass plates (120 mm dia.); (2) spare initial-set needles, (1.0 mm dia.); Filter sponge (coarse); Filter sponge (fine); serial cable, and cover. **PC or laptop required for operation— not included.**

Vicat Apparatus, 8-Station, 120/220V 50/60Hz HC-3058.3F
 Ship wt. 237lbs. (108kg)

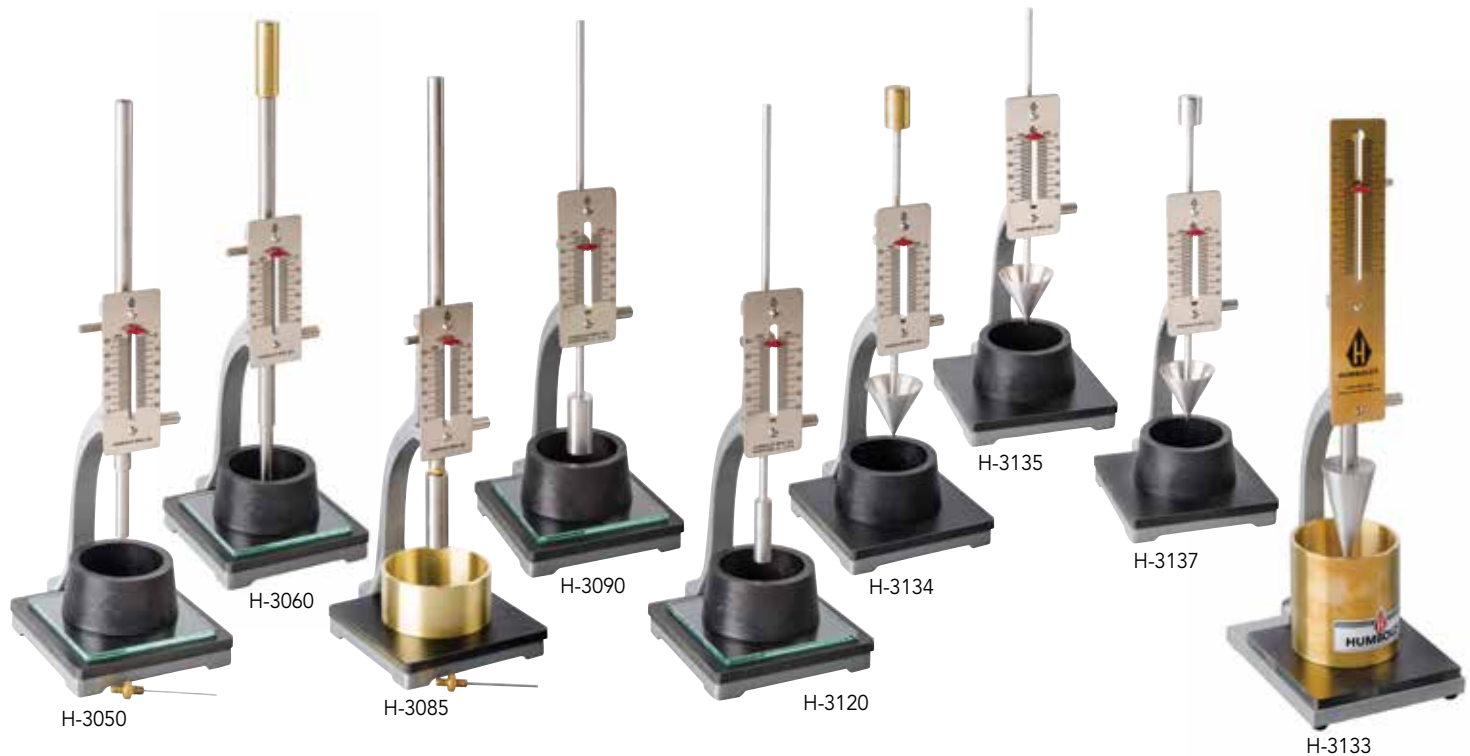
12-Station Vicat Apparatus

Includes: (12) vicat molds (60/70 dia. x 40 mm conical hard-plastic rings); (12) glass base plates (120 mm dia.); (12) centerings for the vicat molds; 1 pair of cleaning brushes; (1) t-wrench (1.25 mm); (1) t-wrench (2 mm); (2) spare glass plates (120 mm dia.); (2) spare initial-set needles, (1.0 mm dia.); Filter sponge (coarse); Filter sponge (fine); serial cable, USB/RS232 adapter and power supply. **Standard PC or laptop required for operation— not included.**

Vicat Apparatus, 12-Station, 120/220V 50/60Hz HC-3059.3F
 Ship wt. 430lbs. (195kg)

HC-3057, HC-3058 & HC-3059 Spare Parts

| Description | Model |
|--------------------------------------------|------------|
| Needle 1.13mm dia., EN 196-3 | HC-3057.13 |
| Needle 1.0mm dia., ASTM C191 | HC-3057.14 |
| EN ring $\varnothing 70/80 \times 40$ mm | HC-3057.02 |
| ASTM ring $\varnothing 60/70 \times 40$ mm | HC-3057.03 |
| Glass plate, 120mm | HC-3057.07 |
| Cleaning brushes, 1 pair | HC-3057.08 |
| 700g weight for EN 480-2 | HC-3057.10 |

**Vicat Consistency Apparatus**

ASTM C91, C141, C187, C191, C308, C451, C472; AASHTO T129, T131, T186

Reversible stainless steel plunger with 10mm dia. on one end and threaded, H-3070 1mm dia. stainless steel needle on the other. Weight of plunger assembly with adjustable indicator is 300g total. This includes the 1mm stainless needle. Graduated 0-50mm scale. Includes frame with bakelite platform, graduated 0-50mm scale, reversible plunger assembly with H-3070 1mm diameter stainless steel needle, H-3080 conical mold and H-3049 glass plate.

Vicat Consistency Apparatus H-3050
 Ship wt. 5lbs. (2.2kg)

Vicat Apparatus, Modified, 400g

ASTM C191, AASHTO T131, EN196/3

Modified vicat apparatus with 10mm dia. plunger and H-3061 100 gram weight. Weight of plunger assembly with adjustable indicator is 400g total. Includes graduated 0-50mm scale, frame with bakelite platform, plunger assembly, H-3080 conical mold and H-3049 glass plate.

Vicat Apparatus, Modified, 400g H-3060
 Ship wt. 4.6lbs. (2kg)

Vicat Apparatus, Set Time & Consistency

ASTM C807

Designed to switch between 17.5mm dia. plunger for consistency determinations and a 2mm dia. needle for time of set determinations. Plunger assembly with adjustable indicator weighs 400g with 17.5mm needle attached and 300g with 2mm needle. Includes graduated 0-50mm scale, frame

with bakelite platform, plunger assembly with adjustable indicator and H-3086 brass ring mold (76mm ID x 40mm).

Vicat Apparatus, Set Time & Consistency H-3085
 Ship wt. 4.7lbs. (2.1kg)

Vicat Consistency Apparatus, Modified, 50g

ASTM C110

Modified consistency vicat apparatus with 19mm dia. aluminum plunger on .25" rod. Weight of plunger assembly with adjustable indicator is 50g total. Includes graduated 0-50mm scale, frame with bakelite platform, plunger assembly, H-3080 conical mold and H-3049 glass plate.

Vicat Consistency Apparatus, Modified, 50g H-3090
 Ship wt. 5lbs. (2.7kg)

Vicat Consistency Apparatus, Modified, 30g

ASTM C110

Modified consistency vicat apparatus with 12.5mm dia. aluminum plunger on .25" rod. Weight of plunger assembly with adjustable indicator is 30g total. Includes graduated 0-50mm scale, frame with bakelite platform, plunger assembly, H-3080 conical mold and H-3049 glass plate.

Vicat Consistency Apparatus, Modified, 30g H-3120
 Ship wt. 10lbs. (4.5kg)

Modified Vicat Cone Penetrometer, 100g

American Dental Association

Features a 35g magnesium cone with a 65g brass weight for a total plunger weight of 100g. Includes frame with bakelite platform, graduated 0-50mm scale, magnesium cone plunger assembly with adjustable indicator, 65g weight and H-3080 conical mold.

Modified Vicat Cone Penetrometer, 100g H-3134
 Ship wt. 6.8lbs. (3kg)

Modified Vicat Cone Penetrometer, 35g

ASTM C472

Used to evaluate unsanded plaster. Features a magnesium cone and plunger assembly with a total weight of 35g. Includes frame with bakelite platform, graduated 0-50mm scale, magnesium cone plunger assembly with adjustable indicator and H-3080 conical mold.

Modified Vicat Cone Penetrometer, 35g H-3135
 Ship wt. 6.8lbs. (3kg)

Modified Vicat Cone Penetrometer, 50g

ASTM C472

Used to evaluate unsanded plaster. Features a magnesium cone and plunger assembly, which includes a 15g weight for a total plunger weight of 50g. Includes frame with bakelite platform, graduated 0-50mm scale, magnesium cone plunger assembly with weight and adjustable indicator and H-3080 conical mold.

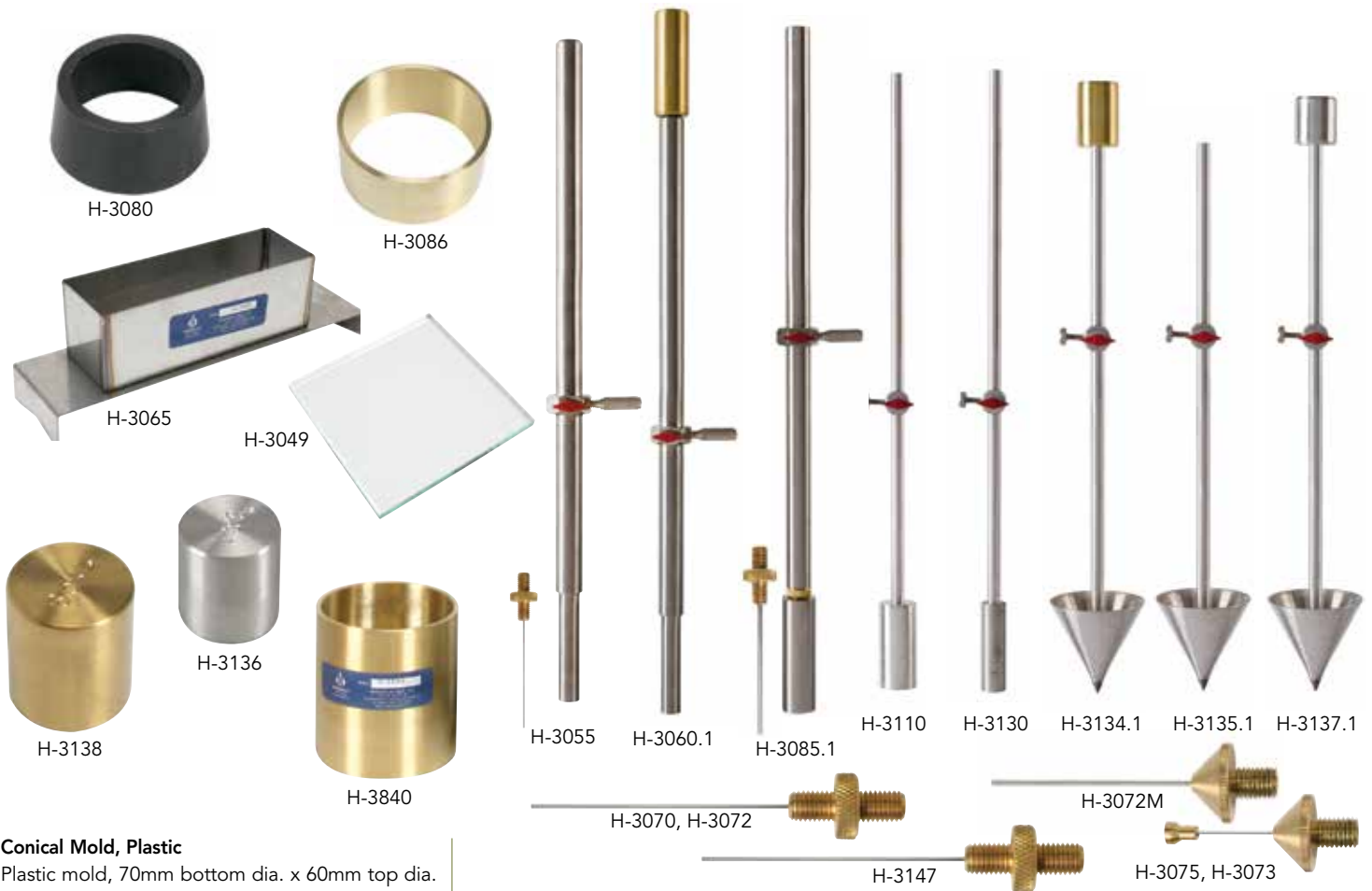
Modified Vicat Cone Penetrometer, 50g H-3137
 Ship wt. 4lbs. (1.8kg)

Modified Vicat Cone Penetrometer, 200g

ASTM C780, C185

Used to evaluate unsanded plaster. Features an aluminum cone, 1.625" x 3.625" (41.3 x 92.08mm) and blunted to a hemisphere a distance of .125" (3.2mm) for an overall length of 3.5" (88.9mm) and plunger assembly with adjustable indicator. Total plunger weight is 200g. Includes frame with bakelite platform, aluminum cone plunger assembly with adjustable indicator and H-3840 400ml brass measure cup as specified for ASTM C185.

Modified Vicat Cone Penetrometer, 200g H-3133
 Ship wt. 7lbs. (3.1kg)

**Conical Mold, Plastic**

Plastic mold, 70mm bottom dia. x 60mm top dia. x 40mm high. For use with all Vicat apparatuses.

Conical Mold, Plastic**H-3080**

Ship wt. 0.6lbs. (0.2kg)

Mold, Brass

Brass mold, 76mm dia. x 40mm high. For use with H-3085 vicat apparatus.

Mold, Brass**H-3086**

Ship wt. 0.5lbs. (0.2kg)

Mold Container

ASTM C359

Mold for use in false set test. 2" x 2" x 6" (51mm x 51mm x 152mm) Overall length including base is 9.25" (235mm).

Mold Container**H-3065**

Ship wt. 1lbs. (0.4kg)

Glass Plate

Glass plate, 4" x 4" x .1375" (101.6mm x 101.6mm x 4.8mm). For use with H-3050, H-3060 and H-3090 vicat apparatus.

Glass Plate**H-3049**

Ship wt. 0.4lbs. (0.1kg)

Measure, 400ml

ASTM C185, C780; AASHTO M152

Calibrated to 400ml, this measure is used to determine air content of hydraulic cement mortar. Cylindrical with 3" (76mm) ID, approximately 3-15/32" (88mm) depth.

Measure, 400ml**H-3840**

Ship wt. 2.3lbs. (1.04kg)

| Replacement Plunger Assemblies | Vicat | Plunger |
|----------------------------------------------------------------------|--------|----------|
| Plunger assembly: plunger, needle and indicator, 300g | H-3050 | H-3055 |
| Plunger assembly: plunger, weight and indicator, 400g | H-3060 | H-3060.1 |
| Plunger assembly: plunger and indicator, 300g | H-3085 | H-3085.1 |
| Plunger assembly: plunger, needle, weight and indicator | H-3090 | H-3110 |
| Plunger assembly: plunger, needle, weight and indicator | H-3120 | H-3130 |
| Plunger assembly: plunger, cone, weight, indicator, and (2) bushings | H-3134 | H-3134.1 |
| Plunger assembly: plunger, cone, indicator and (2) bushings | H-3135 | H-3135.1 |
| Plunger assembly: plunger, cone, weight, indicator and (2) bushings | H-3137 | H-3137.1 |
| Plunger assembly: plunger, cone and indicator | H-3133 | H-3133.1 |

| Needles | Vicat | Needle |
|----------------------------------------------------------|------------------|------------|
| 1mm dia. stainless steel with knurled threaded holder | H-3050 H-3085 | H-3070 |
| 1.13mm dia. stainless steel with knurled threaded holder | | H-3072 |
| Initial set needle, 1.13mm dia. x 45mm, BS EN 196-3. | | H-3072M |
| Final set needle, 1.13mm dia., BS EN 196-3. | | H-3073 |
| Initial and final set needle, ASTM C191 | | H-3075 |
| 2mm dia., stainless steel vicat needle | | H-3147 |
| 17.5mm dia., stainless steel vicat needle | | H-3085.1.1 |

| Weights | Vicat | Weight |
|---------------------------------------|--------|--------|
| 100g weight replacement for H-3060 | H-3060 | H-3061 |
| 100g weight, increases H-3090 to 150g | H-3090 | H-3100 |
| 100g weight replacement for H-3137 | H-3137 | H-3136 |
| 65g weight replacement for H-3134 | H-3134 | H-3138 |



H-3250



H-3250D



H-3250.8

**ACCESSORIES**

For Molds, please see page 227.

Length Comparator, Dial Indicator

ASTM C151, C157, C227, C311, C341, C342, C452, C490, C596; AASHTO M210, T107, T160.

Length comparators measure length changes of hardened cement paste, mortar and concrete prismatic specimens. Indicators are mounted on a sturdy upright support attached to a solid triangular base. All units include stationary and movable anvils designed to fit H-3260 gauge studs, which are cast into test specimens and an invar reference bar. Comparators for 10" (254mm) or 16" (406mm) effective length samples with 3.625" (92mm) dia. dial gauge with a range of .400" and gradations of .0001". The Dial is marked 0-10. Includes stationary and movable anvils designed to fit the H-3260 gauge studs that are cast on test specimens and an invar reference bar. Unit accommodates test specimens up to 4" x 4" (102 x 102mm) cross section.

Length Comparator, 10" Effective Length H-3250
 Length Comparator, 16" Effective Length H-3248

Ship wt. 32.7lbs. (14.8kg)

Length Comparator, Digital Indicator

ASTM C151, C157, C227, C311, C341, C342, C452, C490, C596; AASHTO M210, T107, T160.

Length comparators measure length changes of hardened cement paste, mortar and concrete prismatic specimens. Indicators are mounted on a sturdy upright support attached to a solid triangular base. All units include stationary and movable anvils designed to fit H-3260 gauge studs, which are cast into test specimens and an invar reference bar. Comparators for 10" (254mm) or 16" (406mm) effective length samples with digital indicator with a range of .600" and resolution of .0001". Measures inches and millimeters includes batteries and AC adapter. Unit can be zeroed at any point on the range and can be switched from inches to mm by pressing a button. Includes stationary and movable anvils designed to fit the H-3260 gauge studs that are cast on test specimens and an invar reference bar. Unit accommodates test specimens up to 4" x 4" (102 x 102mm) cross section.

Length Comparator, 10" Effective Length
 120V 60Hz H-3250D
 220V 50/60Hz H-3250D.4F

Length Comparator, 16" Effective Length
 120V 60Hz H-3248D
 220V 50/60Hz H-3248D.4F

Ship wt. 36.5lbs. (16.8kg)

Comparator Replacement Components

| Description | Model |
|-------------------------------------------------------------------|--------------|
| Invar reference bar for use with H-3250 and 10" (254mm) specimens | H-3249A |
| Invar reference bar for use with H-3248 and 16" (406mm) specimens | H-3249A.16 |
| Invar Sleeve | H-3249.2 |
| Dial indicator | H-3250.3 |
| Digital indicator, 120V 60Hz | H-3250.3D |
| Digital indicator, 220V 50/60Hz | H-3250.3D.4F |
| Anvil, Top with collar (one each) | H-3250.4 |
| Anvil, Top only | H-3250.4.4 |
| Collar w/ set screw | H-3250.4.3 |
| Elevating screw, nut collar & anvil assembly, Bottom | H-3250.7 |
| Adapter for 5" specimens | H-3250.8 |

Custom size Invar Reference Bars are available, please inquire: 1.800.544.7220.

**NOTES**

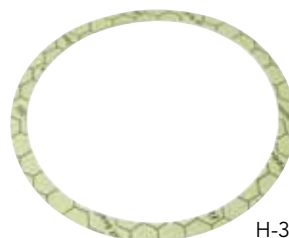
Length Comparators can be custom made for any length prism molds.



H-3240



H-3243B



H-3242



H-3240.4



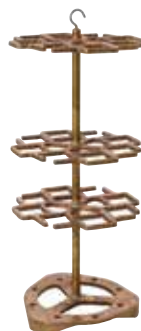
H-3267.ST



H-3240.22

H-3240.21M
H-3240.21N

H-3240.3



H-3243A



H-3245



H-3244

ACCESSORIES

For Molds, please see page 227.

Cement Autoclave

ASTM C151; AASHTO T107

Uses accelerated means of estimating delayed expansion of Portland cement caused by hydration of CaO and MgO. Test bars are exposed to controlled steam pressure and corresponding constant temperature. Unit produces 60-350 psi (0.4-2.4MPa) range of pressures and consists of steam vessel, pressure regulator, pressure gauge (0-600 psi x 5 psi), air vent valve, power switches and safety pop valve set at 350psi. Includes 20° 500°F spirit thermometer, wrench and 5 gaskets. Additional gaskets, heating units and safety pop valves are available as replacement parts. Chamber dimensions: 6.125" ID x 16". Overall dimensions: 17" x 48" x 28" (431 x 1219 x 711mm) 1700W maximum power demand. 220V version comes with transformer.

Cement Autoclave, 120V 60Hz H-3240

Cement Autoclave, 220V 50/60Hz H-3240.4F

Ship wt. 180lbs. (81.6kg)

Test Bar Holder, 10"

ASTM C141, C151; AASHTO T107

Test bar holder for 10"-long (254mm) gauge bars; 8-bar capacity. Holds specimens vertically, above water level, so each test bar is exposed to steam.

Test Bar Holder H-3243B

Ship wt. 2.9lbs. (1.4kg)

Test Bar Holder, 5"

ASTM C141, C151; AASHTO T107

Test bar holder for 5"-long (127mm) samples.

Test Bar Holder H-3243A

Ship wt. 4lbs. (1.8kg)

Test Bar Holder Only

ASTM C227

Test bar holder (stamp steel) for use with H-3267 mortar bar container. Holder has feet that elevate it from the base of the container providing space for water.

Test Bar Holder Only H-3267.ST

Ship wt. 4lbs. (1.8kg)

Rupture Disk

Rupture disks are used as safety devices in systems that involve pressure vessels, eliminating the need for a safety valve. The rupture disk is designed to be the weakest part of a pressure system so if there is a situation when excessive pressures occur, then the rupture disk fractures or opens thus releasing the built-up energy rendering the system safe. Rupture disks are a simple, yet reliable method for providing a safe system, which does not require calibration. Both disks are rated to 420°F. The Monel disk is rated to 375psi and the Nickel disk is rated to 341psi.

Rupture Disk, Monel H-3240.21M

Rupture Disk, Nickel H-3240.21N

Ship wt. 0.4lbs. (0.18kg)

Rupture Disk Holder

Rupture disk holder, complete with piping to attach to the H-3240 cement autoclave. Order rupture disks separately.

Rupture Disk Holder H-3240.22

Ship wt. 2.9lbs. (1.3kg)

Autoclave Replacement Parts

| Description | Model |
|-----------------------------------------------------------------------------------|-----------|
| Air vent valve | H-3240.2 |
| Safety pop-off valve | H-3240.3 |
| Pressure gauge | H-3240.4 |
| Pressure-control switch | H-3240.5 |
| Set of cap screws, 16 per set | H-3240.6 |
| Relay 60Hz | H-3240.7 |
| Gaskets, 100 per package | H-3242 |
| Lower heating unit for discontinued models. 115V. 50/60Hz | H-3244 |
| Heating element; two-piece wrap-around type for both top and bottom. 115V 50/60Hz | H-3245 |
| Thermometer, 20 to 580°F | H-2600.2F |
| Thermometer, -5 to 300°C | H-2610.2C |

**High-Pressure Autoclave**

ASTM C141, C151

Uses accelerated means of estimating delayed expansion of Portland cement caused by hydration of CaO and MgO. This is done by determining the volume constancy of mortar prism samples. Test bars are exposed to high-pressure steam compartment, which accepts a sample holder for 8 prisms per ASTM, 1" x 1" x 11.25" (25 x 25 x 285mm) and 6 prisms as per the DIN standard, 40 x 40 x 160mm. Unit has a capacity of 7.8 liters, a max pressure of 360 psi (25 bar) and a max temperature of 482°F (250°C).

Includes two gauges, one for temperature and one for pressure and a safety pop valve for safety. Also includes security test certificate for pressure chamber in accordance with EN pressure device directive.

The 120V 60Hz version of this autoclave comes with an auxiliary voltage converter, which is included. Overall dimensions: 20.5 dia" x 44" (550 dia x 1120).

High-Pressure Autoclave, 120V 60Hz H-3241
High-Pressure Autoclave, 220V 50Hz H-3241.5F

Ship wt. 220lbs. (100kg)

Prism Bar Frame

ASTM C141, C151

Prism bar frame for use with H-3241 autoclave. ASTM model holds 8 prisms 1" x 1" x 11.25" (25 x 25 x 285mm). DIN model holds 6 prisms 40 x 40 x 160mm.

Prism Bar Frame, ASTM H-3241.1

Prism Bar Frame, DIN H-3241.2

Ship wt. 4lbs. (1.8kg)

Wagner Turbidimeter

ASTM C115; AASHTO T98

Determines fineness of Portland cement, using photoelectric cell to measure light passing through suspended pulverized material. Microamp meter measures current generated in the cell; indicated reading is measure of turbidity of the suspension. Includes photoelectric cell (and light source in metal cabinet, timing burette and stand, wet sieving assembly including gauge and spray nozzle, microamp meter, 3 flasks, 4 test tubes, stirring apparatus and instruction book. Battery not included.

Wagner Turbidimeter H-3805

Wagner Turbidimeter, 230V 60Hz H-3805.2F

Wagner Turbidimeter, 230V 50Hz H-3805.5F

Ship wt. 65lbs. (29.4kg)

Mortar Bar Container, 9" x 11" x 15.5"

ASTM C227, C1260

Stainless steel covered container for storing test specimens has tight-fitting cover that prevents moisture loss. Supports up to 36 mortar bars vertically. Dimensions: 9" x 11" x 15.5" (229 x 279 x 394mm).

Container, Mortar Bar-Rectangular H-3265

Ship wt. 16lbs. (7.2kg)

Mortar Bar Container, Round with Bar Holder

ASTM C227

Plastic container includes H-3267.ST Test bar holder (cast bronze) that supports 8 bars vertically. Holder has feet that elevate it from the base of the container, which provides space for water and keeps test bars out of the water. Dimensions: 6" dia. x 17" (152 x 432mm).

Mortar Bar Container with Bar Holder H-3267

Ship wt. 6.1lbs. (2.7kg)

Test Bar Holder Only

ASTM C227

Test bar holder (cast bronze) for use with H-3267 mortar bar container. Holder has feet that elevate it from the base of the container providing space for water.

Test Bar Holder Only

H-3267.1

Ship wt. 4lbs. (1.8kg)

Test Bar Holder Only

ASTM C227

Test bar holder (stamp steel) for use with H-3267 mortar bar container. Holder has feet that elevate it from the base of the container providing space for water.

Test Bar Holder Only

H-3267.ST

Ship wt. 4lbs. (1.8kg)



Multiple Bond Strength Tester

ASTM C1583, D4541, D7234, D7522; BS 1881 Part 207, EN 12004-2, 12002, 1324, 1542, 1015, 1348, 13892-8; DIN 1048-2, 13279-2, ISO 4624

Computer-aided multiple bond strength tester with force- or displacement-controlled test execution and deformation measurement.

The Multiple bond strength tester is a computer-controlled hydraulically operated device with which several samples can be tested in a short sequence (approx. 20-25 pieces depending on the arrangement). The manual positioning of the pulling device is carried out on low-friction linear slides. Thus the tests can be carried out very comfortably and quickly. The bond strength is determined using a highly sensitive force transducer of class 0.2. A displacement measuring system is installed in the cylinder with which the deformation of the coating of the test specimen under load can be determined. The tests can be carried out both force- and displacement-controlled. All tests are recorded with software and can be subsequently analyzed and transferred to a freely configurable protocol. The graphical display of the measured value curve allows samples to be compared with each other at a glance. This makes the instrument suitable both for large laboratories with high testing volumes and for research facilities. The entire instrument is mounted on a stainless steel substructure in which the hydraulic and electrical components are installed. The hydraulic system is driven by a powerful radial piston pump. The electrical system is switched via a main switch with under-voltage release and the test can be interrupted immediately via an emergency stop button. Both round and square samples of different sizes

can be tested (e.g. diameter 50 mm or 50 x 50 mm). The samples are attached to a support plate (e.g. concrete) with the dimensions 400 x 400 mm and then inserted into the device via a heavy-duty pull-out and clamped there. The replacement of the slabs takes less than one minute. Plates with thicknesses from 10 to 80 mm can be used for fixing the specimens. The device covers all international standards and can also be configured for completely free test runs. This means that the device can also be used in the long term in case of any changes to standards. Standard configuration is 20kN, other load configurations are available, please enquire.

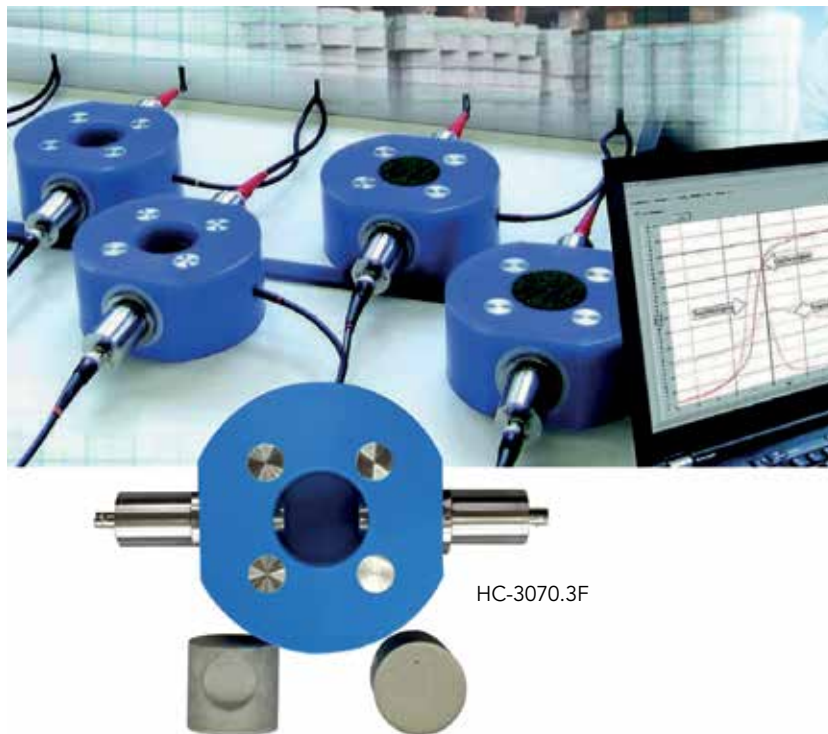
Bond Strength Tester, 220V 50/60Hz HC-3060.4F

Ship wt. 882lbs. (400kg)

Ultrasonic Measuring System

This 8-channel, ultrasonic measuring system is specifically designed to measure the setting times of materials, such as cement, mortar, gypsum and concrete. The system is comprised of eight (8) measuring units with ultrasonic probes and temperature sensors, which are connected to an 8-channel hub. This hub is connected, via a USB cable, to a PC computer running the control software, which allows control and evaluation of each measuring unit.

The system provides a high-precision (0.05 μ s resolution) monitoring of the complete setting process from mixing to 28-day consistency in one test. The software provides an intuitive user-interface with direct-reading results from different modelings. The system provides a very-high reproducibility of the measurement results. It is able to detect deviations in the results early in the testing stage, which can speed up the testing process and provide an



optimal process for maintaining quality control of production and a substantial reduction in development times and costs.

Features:

- **Measuring Period:** 15 minutes - 31 days
- **Measuring Interval:** 10 seconds - 60 minutes
- Ultrasonic velocity in m/s or runtime in μ s
- Derivation (acceleration) and curvature
- Temperature inside the specimen
- Various zoom and scaling features also during the tests
- Reference measurements: online comparison of running measurements
- Envelope curves: definition of acceptable deviations from reference measurements
- Detection of initial set and final set
- Evaluation, Excel-export and printing during the running measurements
- Automatic logging of all measurements
- Log file browser with sort function (e.g. date product, filename, user)
- Calculation of dynamic modulus of elasticity

Includes UltraTestLab® Control Software.

Requires PC computer, not included.

Ultrasonic Measuring System

HC-3070.3F

Ship wt. 16lbs. (7.2kg)



Fast-Action Clamp



General Clamp

HC-3253.4F
HC-3254.4F

HCM-1000iH



HC-2820A.4F

Vibrating Table, 3-gang Molds

EN 196-1, BS 4550

Required for compaction of 40 x 40 x 160mm samples for EN 196-1 and BS 4550 standards. It can be ordered with either a fast-action clamp fitting or a general-purpose clamp fitting for (1) 3-gang mold for 40 x 40 x 160mm samples. The vibrating plate is 400 x 300 mm in size and is built into a powder-coated steel cabinet. The power switch box is mounted on a post attached to the top of the cabinet. Oscillation frequency is 50Hz with a sinusoidal waveform digital timer. Peak-to-peak value is $0.75 \pm 0.05\text{mm}$. **Note: A total vibrating mass of 35.0 +/- 1.5 kg acc. to EN 196-1:2005 can only be guaranteed by utilizing the precision three-gang mold with feeding hopper listed below.**

Vibrating Table, Fast-action Clamp, 230V 50/60Hz HC-3253.4F
CE

Ship wt. 552lbs. (250kg)

Vibrating Table, General Clamp, 230V 50/60Hz HC-3254.4F
CE

Ship wt. 552lbs. (250kg)

Precision, 3-gang Mold

EN 196

For use with vibrating table above. 40.1 x 40 x 160mm. Polished bright surface with numbered webs and nutplates. Electroless nickel finish.

Precision, 3-gang Mold HC-3253.1



Ship wt. 1.4lbs. (0.63kg)

Feeding Hopper for 3-gang Mold

EN 196

Feeding hopper for 3-gang mold and vibrating table.

Feeding Hopper, 3-gang Mold HC-3253.2



Ship wt. 1.4lbs. (0.63kg)

HCM-1000 Series Compression Machines

ASTM C39, ASTM C78, ASTM C293, ASTM C469, ASTM C496, ASTM C1019, ASTM C109/C109M, BS EN 12390-3

The HCM-1000 has been custom-configured to be used for mortar applications like 2" and 4" cubes, beams and other low-strength materials, below 100,000 lbs. (445kN). These machines are based on HCM-2500 frames, which have been reconfigured for accurate readings of lower-strength materials. The machines are sold without platens, so be sure to order the appropriate set for your applications.

- Custom-configured for mortar applications like 2" and 4" cubes
- 1,000 to 100,000 (11 to 445kN) testing range with accuracy of $\pm 5\%$ of indicated load
- Machine comes with no platens, order the appropriate set for your applications
- **Mounting Stand: OPTIONAL**, order: HCM-0200

| Specification | Value |
|--------------------|-------------------|
| Vertical Opening | 19.375" (492mm) |
| Horizontal Opening | 9.25" (235mm) |
| Piston Stroke | 2.5" (63.5mm) |
| Lower Platen | NA |
| Upper Platen, Dia. | NA |
| Oil Reservoir Cap. | 2 gal (7.6 liter) |
| Overall Width | 30" (762mm) |
| Overall Depth | 23.750" (603mm) |
| Overall Height | 60.625" (1540mm) |

See Page 166 for models and ordering information.

HCM-1000 Series Compression Machines



Ship wt. 610lbs. (277kg)

Cement Compression/Flexural Machine

ASTM C109; EN 196-1, 459-2, 1744-1, 1015-11, 13459-2; BS 3892-1, 4554-1

This fully-automatic, Combined Universal Compression / Bending / Tensile Testing Machine has been designed according to the EN196-1 and ASTM C109 standards for testing cement, mortar prisms and other binders, as well as plaster samples. The machine features a torsional rigid frame with 5 columns that are clamped in a way to restrict movement. It also features an impact-resistant polycarbonate test chamber for full enclosure protection.

The standard configuration for this machine is 300kN pressure and 30kN tensile/flexural pressure. Other combinations up to 600/30kN are available, please enquire. The test procedure is fully automatic and consists of a digital display with the ability to store the highest value of the test. Test accuracy meets EN ISO 7500-1, class 1 specifications.

Load Frame Specifications:

- Load Cells: according to DMS measuring principle
- Force indication range: 0 - 300 kN
- Force range: 6 - 300 kN, class 1 (Individual measuring range of class 1 is available optionally)
- Piston stroke: 50 mm
- Test chamber height: 200mm with round pressure plates
- Distance between columns: 210mm
- Insertion of standard-specific testing devices and accessories can be changed and fixed easily



HC-2821A.4F

Optional machine configuration with single-acting cylinders and pressure plates on both sides



HC-2820A.4



HC-2820A.5



HC-2820A.6



HC-3080.4F

- Electric piston stroke limitation and anti-rotation ball joint

Bending and Tensile Frame Specifications:

Load Cells: according to DMS measuring principle

Force indication range: 0 - 30 kN

Force range: 0.3 - 30 kN, class 1

Double-acting cylinder in servo quality

(low-friction sealing system) with distance measuring system and piston stroke of 200 mm

With anti-rotation lock on piston for force, displacement and deformation controlled testing.

Test chamber heights can be adjusted according to the type of accessories used (can be customised according to specifications).

Insertion of standard-specific testing devices and accessories can be changed and fixed easily.

- Operating desk, which consists of an emergency stop switch, prepared for installation of DOLI EDC Controller
- Hydraulic system with radial piston pump (or Internal gear pump) including all necessary safety, control and directional valves according to DIN 4413

- Accurate force and displacement control with servo valve

- Incl. switch box for electrical connection

The technology enables interchangeability of sensors since the sensor parameters are stored in the sensor plug.

- Remote maintenance by PC and internet connection

- Visualization of the force curve by software

- Force and deformation controlled tests with automatic fracture detection and the ability to store measured data

Dimensions: 47.3" x 22.4" x 93.3"

(1200 x 570 x 2370mm) (L X B X H)

Electrical: 3ph 230/400V, 50/60 Hz, 1.1 kW

Universal Compression Machine, 400V 50/60Hz HC-2820A.4F



Ship wt. 1433lbs. (650kg)

Universal Machine with Single-Acting Cylinders

ASTM C109; EN 196-1, 459-2, 1744-1, 1015-11, 13459-2; BS 3892-1, 4554-1

Optional machine configuration with single-acting cylinders and pressure plates on both sides.

Universal Machine, 400V 50/60Hz HC-2821A.4F



Ship wt. 1433lbs. (650kg)

2" Cube Compression Testing Device

ASTM C109

For testing 2" x 2" cubes (50mm x 50mm). Installation height is 185mm.

2" Cube Compression Testing Device HC-2820A.4



Ship wt. 30lbs. (13.6kg)

Flexure Testing Device

ASTM C348

For testing 2" x 2" cubes (50mm x 50mm). Installation height is 185mm.

Flexure Testing Device HC-2820A.5



Ship wt. 30lbs. (13.6kg)

Prism Compression Testing Device

ASTM C349; EN196-1

For testing 40.1 x 40 x 160mm prisms with 40 x 40mm platens.

Prism Compression Testing Device HC-2820A.6



Ship wt. 30lbs. (13.6kg)

Rolling Wheel Abrasion Machine (RWA)

EN 13892-5, EN 13892-7

The Rolling Wheel Abrasion Machine is used for the determination of the resistance to rolling strain on screeds for wear layers according to EN 13892-5 and screeds with floorcoverings according to EN 13892-7.

The RWA Provides Test Programs For:

- EN 13892-5 with impellers Ø125 mm and 2000N (test surface: 390 x 260 mm)
- EN 13892-7 with impeller Ø47 mm and 150, 250, 350, 450, 550N (test surface: 210 x 150 mm),
- Freely programmable test sequences within the max. possible parameter of the other two standards

Features:

- Easy exchange of the impellers
- Large wheel with scrapers (against adhesion of sample material)
- The speeds of the X and Y axes can be adjusted for each standard
- Infinitely adjustable test load, display in Newton (calibratable)
- Fully enclosed test room with large secure access doors.
- Sample table 700 x 800 mm and 765 mm above the ground
- Manually infinitely adjustable sample lock, depending on the sample dimension
- Sample table of the machine moves up to the access doors of the machine for easy sample change
- Suction ring for suction of sample abrasion (vacuum cleaner not included)
- Fracture detection of samples (The limit switches for each impeller are adjustable)
- Operation via touchscreen
- Compressed air connection min. 6 bar up to max. 10 bar required

Rolling Wheel Abrasion Machine, 230V 50/60Hz HC-3080.4F



Ship wt. 1764lbs. (800kg)



HC-3043.4F

Humidity Curing and Storage Chambers


ASTM C109; EN 196-1


These upright humidity cabinets have been designed specifically for the curing and storage of mortar prisms and cubes in 3-gang molds. They feature durable stainless steel construction with durable specimen shelves that stand up to the loading and unloading of molds.


These chambers maintain a curing temperature 68°F (20°C) at an accuracy of $\pm 1^\circ$. A humidity reading of 95% can be maintained at an accuracy of $\pm 3\%$. These parameters are maintained through the use of an electronic, adjustable controller for both temperature and humidity.

Chambers are available with 6, 8 or 12 shelves. Each shelf will hold (4) 3-gang molds. So the 6-shelf model will hold (24) 3-gang molds; the 8-shelf model will hold (32) 3-gang molds and the 12-shelf model will hold (48) 3-gang molds.

Electrical specifications for these cabinets are
230V / 50/60 Hz / 1200 W

Humidity Curing Chamber, 6-shelf **HC-3040.4F**
 Ship wt. 772lbs. (350kg)

Humidity Curing Chamber, 8-shelf **HC-3041.4F**
 Ship wt. 794lbs. (360kg)

Humidity Curing Chamber, 12-shelf **HC-3042.4F**
 Ship wt. 860lbs. (390kg)

Workbench-style Humidity Curing Chambers


ASTM C109; EN 196-1


These humidity cabinets have been designed as a workbench to provide a work surface, as well as a cabinet for curing and storage of mortar prisms and cubes in 3-gang molds. They feature durable stainless steel construction with durable specimen shelves that stand up to the loading and unloading of molds.


These chambers maintain a curing temperature 68°F (20°C) at an accuracy of $\pm 1^\circ$. A humidity reading of 95% can be maintained at an accuracy of $\pm 3\%$. These parameters are maintained through the use of an electronic, adjustable controller for both temperature and humidity.

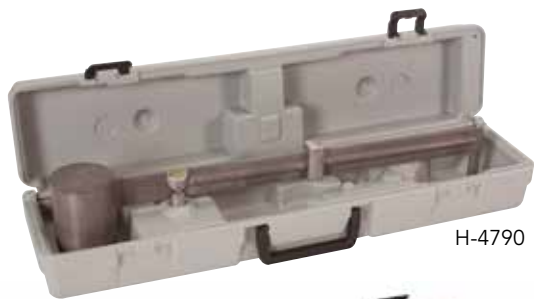
Chambers are available with 3, 6 or 9 shelves. Each shelf will hold (4) 3-gang molds. So the 6-shelf model will hold (12) 3-gang molds; the 8-shelf model will hold (24) 3-gang molds and the 12-shelf model will hold (36) 3-gang molds.

Electrical specifications for these cabinets are
230V / 50/60 Hz / 1200 W

Workbench Curing Chamber, 3-shelf **HC-3043.4F**
 Ship wt. 529lbs. (240kg)

Workbench Curing Chamber, 6-shelf **HC-3044.4F**
 Ship wt. 661lbs. (300kg)

Workbench Curing Chamber, 9-shelf **HC-3045.4F**
 Ship wt. 882lbs. (400kg)



H-4790



H-4791



HC-2842



HC-2843A



HC-2843



HC-2845



H-2818



H-2818HD



H-2818MS

Mud Balance

ASTM D4380

The mud balance provides a simple, practical method for the accurate determination of fluid density. The item's durable aluminum construction makes it ideal for field use. Its high-impact plastic case protects the balance during transport while providing a secure base for the balance during use. Scale reads in pounds per gallon (6-24 lb/gal); specific gravity (0.72-2.88 gms/cm³); pounds per cubic foot (45-180 lb/cu ft), and pounds per square inch per 1,000 feet of depth (310-1250 lb/sq in/100ft of depth). The H-4790 mud balance meets all the requirements of the API standard procedures for testing water base drilling fluids, oil base drilling fluids and oil well cements.

Mud Balance

H-4790



Ship wt. 5lbs. (2.2kg)

Tru-Wate Density Balance

ASTM D4380

The TRU-WATE Mud Balance is an instrument for measuring the absolute density of a fluid sample. With the TRU-WATE Balance, the density of a fluid sample, such as cement slurry, can be measured in a fixed volume sample under pressure. By pressurizing the sample cup the entrained air or gas can be decreased to a negligible volume, thus providing a slurry density measurement more closely in agreement with the true density which will be realized under down-hole conditions. This density balance is constructed of premium metals for durability, accuracy and ease of use. A high impact plastic case protects the balance during transport and provides a secure base in its working position.

TRU-WATE Density Balance

H-4791



Ship wt. 5lbs. (2.2kg)

Marsh Funnel Viscometer

ASTM D6910

The marsh funnel viscometer is a rugged, easy to operate instrument that is used for making rapid, on the spot measurements of drilling mud viscosity. Marsh funnel readings are only general measurements, but the frequent reporting of the marsh funnel viscosity will alert the mud engineer to sudden changes in the mud viscosity that could require corrective action. The marsh funnel Viscosity is the ratio of the speed of the mud as it passes through the outlet tube (the shear rate) to the amount of force—the weight of the mud itself, which is causing the mud to flow (the shear stress). marsh funnel viscosity is reported as the number of seconds required for one quart of mud to flow out of a full marsh funnel.

Marsh Funnel Viscometer

HC-2842



Ship wt. 3lbs. (1.3kg)

1 Liter Measuring Cup for Marsh Funnel

1 liter, plastic measuring cup used for collecting sample from marsh funnel.

1 Liter Measuring Cup

HC-2843A



Ship wt. 1lbs. (0.45kg)

1 Liter Measuring Cup for Marsh Funnel

1 liter, plastic measuring cup used for collecting sample from marsh funnel.

1 Liter Measuring Cup

HC-2843



Ship wt. 1lbs. (0.45kg)

Sand Content Test Set

ASTM D4380

The sand content kit is a simple, accurate and inexpensive sieve analysis apparatus for determining the sand content of drilling muds. The sand content kit consists of a special 200-mesh sieve 2.5" in diameter, fastened inside a collar upon which a small funnel is fitted on either end. This is used with a 10 ml glass measuring tube, graduated to read from 0 to 20% the percentage sand by volume. The collar and funnel are made of polyethylene and the screen is made of brass. A 500ml wash bottle and carrying case are included.

Sand Content Test Set

HC-2845



Ship wt. 3lbs. (1.3kg)

Mat Depth Gauge, Fireproofing

Gauge for measuring the depth of fireproofing. Plastic body with steel probe. Range: 0-6" (0-150mm).

Mat Depth Gauge, Fireproofing

H-2818



Ship wt. 0.3lbs. (0.13kg)

Mat Depth Gauge, Fireproofing

Gauge for measuring the depth of fireproofing. Plastic body with steel probe. Range: 0-3" (0-76mm).

Mat Depth Gauge, Fireproofing

H-2818HD



Ship wt. 0.3lbs. (0.13kg)

Mat Depth Gauge, Fireproofing

Gauge for measuring the depth of fireproofing. Plastic body with steel probe. Range: 0-3" (0-76mm).

Mat Depth Gauge, Fireproofing

H-2818MS



Ship wt. 0.3lbs. (0.13kg)