HUMBOLDT

H-2860

H-3840

H-2816.8

H-2817

Tamper

Rubber compound or wood construction, tamper is 6" (152mm) long with 1/2x1" (13x25mm) cross section. Meets ASTM C87, C109, C157, C185, C596; AASHTO T106, T137, T160.

Description	Model
Rubber Compound Tamper.	H-2860
Wood Tamper.	H-2860W

Tapping Stick

Maple wood with 5/8" (16mm) dia. and 6" (152mm) length. Meets ASTM C185; AASHTO T137.

Description	Model
Tapping stick.	H-3855

Rubbing Block

Ground steel block 3" dia. x 1" (76x25mm) for removing lose sand grains and encrustations from concrete specimen surfaces before compressive testing.

Description	Model
Rubbing block.	H-2812

400ML Measure

Calibrated to 400ML, measure is used to determine air content of hydraulic cement mortar. Cylindrical with 3" (76mm) I.D., approxi–mately 3-15/32" (88mm) depth. Meets ASTM C185, C780; AASHTO T137.

Description	Model
400ML measure.	H-3840

Digital Calipers

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

Description	Model
Digital Caliper, 0-8" (0 to 200mm) range. 0.001" accuracy	H-2816.8
Digital Caliper, 0-12" (0 to 300mm) range. 0.0015" accuracy	H-2816.12

Stainless Steel Dial Caliper

Stainless steel dial caliper may be used for outside, inside, depth and step measurements up to 6" in .1" increments. Caliper delivers direct .001" reading and is adjustable to 0.

Description	Model
Stainless steel dial caliper.	H-2817

Tensile Test Ottawa Sand C190

Sand is specially graded natural silica sand to pass a No. 20 (850µ) sieve. Specific gravity is 2.65. Packed in 50 lbs. (22.7kg) cloth bags. Meets ASTM C91, C141, C185, C190, C359, C778; AASHTO T132, T137, T185.

Description	Model
Tensile test sand.	H-3820

Shipping wt. 50 lbs. (22.7kg)

Cube Test Ottawa Sand C109

Sand is specially graded natural silica sand graded to retain 98% on a No. 100 (150µ) sieve, 75% on a No. 50 (300µ) 30% on a No. 40 (425µ) and 2% on a No. 30 (600µ). Specific gravity is 2.65. Packed in 50 lbs. (22.7kg) cloth bags. Meets ASTM C87, C109, C348, C359, C593, C778; AASHTO T71, T106, T185.

Description	Model
Cube test sand.	H-3825

Shipping wt. 50 lbs. (22.7kg)


H-3050

H-3051


H-3133


H-3135, H-3137

Vicat Consistency Testers

Type	Description	Meets Specifications	Model
Vicat Consistency Apparatus	Reversible stainless steel plunger; 10mm dia. one end, 1mm dia. stainless steel needle on the other end. 300g weight, including adjustable indicator. Graduated 0-50mm scale. Includes frame, moveable rod with a variable weights and plunger assemblies. Includes H-3080 conical mold. Shipping wt. 8 lbs. (3.6kg)	ASTM C91, C141, C187, C191, C308, C451, C472; AASHTO T129, T131, T186	H-3050
Automatic Recording Vicat Apparatus	Used to determine the initial and final setting times. Fully autommatic test cycle with data recorded on chart recorder. Includes 1mm and 1.13mm diam. Needles, two conical molds, glass base plate, recording pen, pencil and 100 recording charts. 110V.60Hz.	ASTM C191, AASHTO T131, EN196/3.	H-3051
	Same as above except 220-240V. 50HZ.		H-3051.5F
Modified Vicat Apparatus	Similar to H-3050, with a 400g total weight of 10mm plunger, indicator and added weight. Includes H-3080 conical mold.	ASTM C359; AASHTO T185	H-3060
Time of Setting Vicat Needle Apparatus	Similar to H-3060, with 17.5mm dia. needle for consistency determination; 400g total weight. Includes H-3086 76mm I.D. x 40mm brass ring mold. Shipping wt. 6 lbs. (2.7kg).	ASTM C807	H-3085
Modified Vicat Consistency Apparatus	Features 19mm dia. plunger. Total 50g weight. Includes plunger, rod and indicator. Includes frame, moveable rod with variable weights and plunger assemblies. Shipping wt. 6 lbs. (2.7kg).	—	H-3090
Modified Vicat Consistency Apparatus	Similar to H-3090, with 12.5mm dia. plunger and 30g total weight.	ASTM C110	H-3120
Modified Vicat Cone Penetrometer	Features 10cm scale, attached aluminum cone and plunger. Total weight of plunger assembly, 200g. Includes frame, moveable rod with variable weights and plunger assemblies. Includes H-3840 400ml measure for sample as specified by ASTM C185. Shipping wt. 6 lbs. (2.7kg).	ASTM C780	H-3133
Modified Vicat Apparatus	Includes 35g magnesium cone for use on unsanded plaster. Includes H-3080 mold. Shipping wt. 6 lbs. (2.7kg).	ASTM C472	H-3135
	Same as H-3135 with additional 15g weight for 50g total weight for use on sanded plaster. Includes H-3080 mold. Shipping wt. 6 lbs. (2.7kg).		H-3137

H-3150

H-3070

H-3075

H-3080

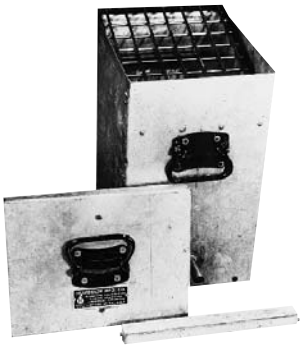
H-3065

Gillmore Apparatus			
Gillmore Apparatus	Two stainless steel needles, cylindrical for 3/16" (4.8mm). One is 1/12" (2.12mm) dia.; 1/4 lb. (113.4g) weight; second is 1/24" (1.06mm) dia., 1 lb. (453.6g) weight. Shipping wt. 10 lbs. (4.5kg)	ASTM C91, C141, C150, C266, C414; AASHTO T154	H-3150
Replacement Parts for Vicat Consistency Testers			
Part	**Description**	**For Use With**	**Model**
Plunger Plunger Plunger Plunger	With Vicat needle and indicator; 300g total weight. With shaft only, as used on H-3090. Total weight 50g. Includes bushings to fit H-3050 Vicat needle stand. Same as H-3110, with weight adjusted to 30g. Cone and plunger assembly. Includes spacers.	H-3050 H-3090 H-3050, H-3120 H-3135	H-3055 H-3110 H-3130 H-3135.1
Needle Needle Final Needle	Stainless steel 1mm diam with knurled threaded holder. Stainless steel 113mm diam x 50mm with knurled threaded holder. Determination of initial and final setting of cement. Needle has an air vent and an annular attachment.	H-3050 (fits one end) H-3050 H-3050	H-3070 H-3072 H-3075
Needle	2mm stainless steel Vicat needle.	H-3085	H-3147
Weight Weight Weight Weight	Replaces 1mm needle. Threaded one end. Provides 400g uncalibrated total weight. One end bored to fit over 1/4" (6.4mm) dia. plunger shaft; 100g to increase weight of plunger furnished with H-3090 to 150g. One end bored to fit over plunger. Total wt. 15g. One end bored to fit over plunger. Total wt. 65g.	H-3060 H-3090 H-3135 H-3135	H-3061 H-3100 H-3136 H-3138
Conical mold	70mm bottom dia. x 60mm top dia. x 40mm high plastic mold.	H-3050, H-3060, H-3090, H-3120, H-3135, H-3137	H-3080
Mold Container	76mm I.D. x 40mm deep brass mold. For false set test. 2 x 2 x 6": (50x50x150mm) I.D. Overall: 9-1/4" (240mm)	H-3085 H-3060, H-3137	H-3086 H-3065
Glass Plate	4" x 4" (101.6 x 101.6mm)	H-3050	H-3049
Replacement Parts for Gillmore Apparatus			
Gillmore Test Sample Template	Flat plate with 1/2" sides for striking off sample to exact 1/2" thickness for Gillmore testing.	H-3150	H-3154
Needle	1/24" (1.06mm) dia. with weight.		H-3151
Needle	1/12" (2.12mm) dia. with weight.		H-3152
Needle	.050" dia. Gillmore needle.		H-3152.4

H-3251, H-3253

H-3252, H-3254, H-3256

H-3260



H-3265

Prism Molds

Designed to produce required 10" effective gauge length, prism molds feature removable partitions and base and end plates. Effective gauge length is measured from inside end of the studs.

Molds produce cement prism specimens 11-1/4" long. Including studs, outside to outside length of specimen is 11-5/8". See table for product specifications.

Prism Molds

Description	Applications	Meets Specs	Model
2x2x10" (51x51x 254mm) 2-gang, cold-rolled steel	Volume change tests of mortars. Shipping wt. 27 lbs. (12.2kg)	ASTM C151 C157 C227 C311 C342 C441 C452 C490 C531 and AASHTO M210 T107 T160	H-3251
1x1x10" (25x25x254mm), 1-gang, cold-rolled steel	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. Shipping wt. 10 lbs. (4.5kg)		H-3252
1x1x10" (25x25x254mm), 2-gang, cold-rolled steel			H-3253
Same dimensions as H-3253, 2-gang, stainless steel			H-3253S
3x3x10" (76x76 x254mm), 1 gang, cold-rolled steel	Volume change of cement paste; length change of mortar and concrete. Shipping wt. 25 lbs. (11.4kg)		H-3254
1x1x5" (25x25 x127mm), 2-gang, cold-rolled steel	Same as H-3251 and H-3253. Shipping wt. 10 lbs. (4.5kg)		H-3255
4x4x10" (102x102 x254mm), 1-gang, cold-rolled steel	Volume change tests. Shipping wt. 35 lbs. (15.9kg)		H-3256

Replacement Gage Studs for use with Prism Molds

H-3260 series Gage Studs have stainless steel contact points and are knurled and threaded for use with cement prism molds. Packaged 10 per bag. Meets ASTM C151, C157, C227, C490; AASHTO M210, T107,

Description	Model
Gage Studs, 316 Stainless Steel (Pkg of 10)	H-3260

Prism Mold Parts & Accessories	Model
Tamping Rod. Round, straight steel 3/8" dia. x 12" (10x300mm). Both ends rounded to a hemispherical tip the same diameter as the rod. Meets ASTM C157, C192; AASHTO T160.	H-2905.1
Rectangular Mortar Bar Container. To store test specimens, stainless steel container has tight-fitting cover that prevents moisture loss from mortar bars. Container supports up to 36 bars vertically. Dimensions: 9x11x15-1/2" (229x279x394mm). Meets ASTM C227. Shipping wt. 25 lbs. (11.3kg)	H-3265
Round Mortar Bar Container. Plastic container includes test bar rack that supports 8 bars vertically. Dimensions: 6x17" (150x430mm). Meets ASTM C227. Shipping wt. 12 lbs. (5.44kg)	H-3267
Mortar Bar Container. Stainless steel. Dimensions: 1-1/4x3-1/2x12" (32x89x305mm) I.D. Tight-fitting cover prevents moisture loss. Capacity not more than 315ml of water, which completely immerses three specimens supported above bottom of container. Meets ASTM C342.	H-3264
Retaining Cage. For 2x2x10" (508x508x2,540mm) prism molds. Features 1/4-20 continuous threaded rod and acorn nuts. Meets ASTM C806.	H-3251RC
Retaining Cage. For 3x3x10" (762x762x2,540mm) prism molds. Features 10-24 continuous threaded rod. Meets ASTM C878.	H-3257

H-3251RC, H-3257

H-3267

H-3250

H-3250D

Comparators

Two models of comparators measure length changes of hardened cement paste, mortar and concrete prismatic specimens. Indicator is mounted on a sturdy upright support attached to solid triangular base. Model H-3250 includes mechanical dial indicator. Model H-3250D features easy-to-read digital indicator eliminating need to count revolution hands. 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 4x4" (102x101mm) cross section. Overall dimensions: 17x11-1/2x11" (432x292x279mm). Meets ASTM C151, C157, C227, C311, C341, C342, C452, C490, C596; AASHTO M210, T107, T160.

Comparator for Standard 10" Effective Gauge Length

Description	Model
Comparator for standard 10" (254mm) effective gauge length. Features sensitive dial indicator: 3-5/8" (92mm) dia. continuous dial with 0-10 reading, total range .400" and .0001" divisions.	H-3250
Comparator for standard 10" (254mm) effective gauge length with digital indicator. Measures inches and metric; .500" (12.6mm) range and .0001" (.0025mm) divisions. Includes AC adapter. Includes batteries.	H-3250D

Shipping wt. 32 lbs. (14.5kg)

Comparator for Special 16" Effective Gauge Length

Description	Model
Comparator for special 16" (406.4mm) effective gauge length. Features sensitive dial indicator: 3-5/8" (92mm) dia. continuous dial with 0-10 reading, total range .400" and .0001" divisions.	H-3248
Comparator for special 16" (406.4mm) effective gauge length with digital indicator. Measures inches and metric; .500" (12.6mm) range and .0001" (.0025mm) divisions. Includes AC adapter. Includes batteries.	H-3248D

Shipping wt. 38 lbs. (17.2kg)

Description, Replacement Parts & Accessories	Model
Invar reference bar for use with H-3250 and 10" (254mm) specimens.	H-3249
Replacement dial indicator, as furnished with H-3250.	H-3250.3
Replacement digital indicator, as furnished with H-3250D.	H-3250.3D
Replacement anvil with collar (one each). Same as furnished with comparators.	H-3250.4
Replacement anvil only.	H-3250.4.4
Replacement collar only.	H-3250.4.3
Elevating screw, nut collar and anvil assembly.	H-3250.7

Custom lengths are available, contact Humboldt for details.

H-3240


H-3243B


H-3240.3


H-3240.21M

H-3240.22


H-3245


H-3244

Cement Autoclave

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 thermometer, wrench and 5 gaskets. Additional gaskets, heating units and safety pop valves are available as replacement parts. Chamber dimensions: 6-1/8" ID x 16". Overall dimensions: 17x48x28" (431x1219 x711mm) 1700W maximum power demand. Meets ASTM C151; AASHTO T107.

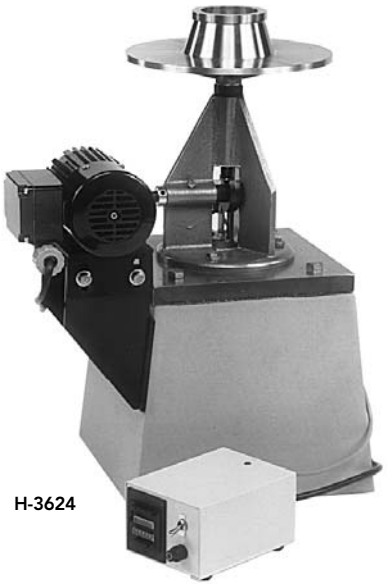
Description	Model
Autoclave. 110V. 50/60Hz.	H-3240
Autoclave. 220V. 50/60Hz.	H-3240.4F

Shipping wt. 171 lbs. (77.7kg)

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.
See chart to right.

Description, Replacement Parts & Accessories	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, graphite. 100 per package.	H-3242
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. Meets ASTM C141, C151; AASHTO T107.	H-3243B
Lower heating unit; two heaters in one housing. 115V. 50/60Hz. Shipping wt. 8 lbs. (3.6kg)	H-3244
Upper heating element; two-piece wrap-around type. 115V. 50/60Hz.	H-3245
Upper heating element; one-piece wrap-around type. 115V. 50/60Hz.	H-3246
Thermometer, 20 to 580 F.	H-2600.2F
Thermometer, -5 to 300 C.	H-2610.2C
Rupture disk, Monel.	H-3240.21M
Rupture disk, Nickel.	H-3240.21N
Holder for rupture disk.	H-3240.22



H-3624

H-3622

H-3620

H-3621

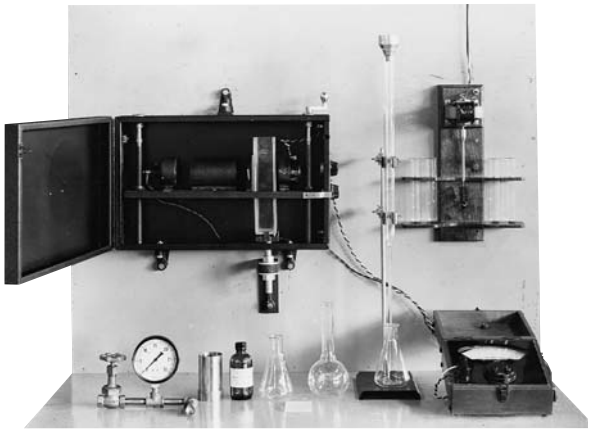
Flow Tables (Pedestal not included)

Use 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, 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) is measured. Mounts to user's pedestal (not included). Heavy-duty frame. Cast bronze table resists corrosion for long life. Shipped complete with one bronze flow mold. Optional motor conversion kit for increased operator convenience and productivity. Meets ASTM & AASHTO, see chart.

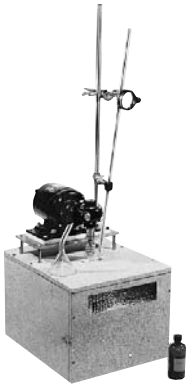
Flow Tables			
Application	**Description**	**Meets Specs**	**Model**
Compression strength and air content tests of cement mortar; flow tests of hydraulic cement mortars; consistency tests of magnesium oxychloride cements; flexural strength test for bond strength of mortar to masonry units.	10" (254mm) dia. top, motorized table with automatic counter. Motor stops automatically after pre-set number of drops. Includes 110V, 60Hz motor and mold. Shipping wt. 108 lbs. (49kg)	ASTM C87, C109, C110, C185, C230, C243, C348, C593; AASHTO T71, T106, T137, M152	H-3624
	Same as H-3624 with 220V, 50Hz, 1ph AC operation. Shipping wt. 118 lbs. (53.5kg)		H-3624.5F
Determining consistency of cement mortars	10" (254mm) dia. top, hand-driven table. Includes mold. Shipping wt. 30 lbs. (13.6kg)	ASTM C230	H-3620
	Same as H-3620, motorized. Shipping wt. 100 lbs. (45kg)		H-3625
	Same as H-3620, motorized with 220V, 50Hz, 1ph AC operation. Shipping wt. 110 lbs. (49.9kg)		H-3625.5F

Description, Replacement Parts & Accessories	Model
Automatic predetermining counter kit for use with H-3624.	H-3614A
Caliper. To measure mortar diameter and indicate percentage of flow. Meets ASTM C87, C185, C230; AASHTO M152, T71, T137.	H-3621
Flow mold. Cast bronze cone mold, 2-3/4" dia. x 2" H and 4" base dia. Meets ASTM C230; AASHTO M152.	H-3622
Flow mold. Same as H-3622 except 70mm dia. x 50mm H and 100mm base dia.	H-3622M
Circular shield for use with H-3622 flow mold to prevent mortar from spilling on table top. Meets ASTM C230; AASHTO M152.	H-3623
Straight edge. Ground steel with bevelled edge. 1/8x1-1/4x8" (3x32x200mm). Meets ASTM C185, D558, D559, D560, D698; AASHTO T137.	H-4144.8
Pedestal form.	H-3624F

H-3810



H-3805



H-3160

Blaine Air Permeability Apparatus

Determines fineness of portland cement in terms of specific surface expressed as total surface area in square centimeters per gram of cement. Consists of: calibrated U-tube manometer, ground glass joint, stainless steel test cell and plunger, rubber aspirator bulb and perforated disc. Includes 8 oz (226.8g) bottle of red manometer fluid, filter paper, wood block for holding test cell during filling and funnel. Mounted on finished wood panel with rubber-footed base. Meets ASTM C204; AASHTO T153.

Description	Model
Blaine air permeability apparatus.	H-3810

Shipping wt. 15 lbs. (6.8kg)

Description, Replacement Parts & Accessories	Model
Rubber Bulb.	H-3811
Stainless steel test cell and plunger.	H-3812
Perforated brass disc.	H-3813B
Perforated stainless steel disc.	H-3813S
Manometer fluid, 8 oz. (240ml) bottle.	H-3814
Manometer U-tube, calibrated.	H-3815
Filter paper discs, medium retentive. Package of 500.	H-3816
NBS 114 Portland calibration testing cement. 1 vial.	H-3817
NBS 114 Portland calibration testing cement. 20 vials.	H-3817.20

Wagner Turbidimeter

Determines fineness of portland cement, using photoelectric cell to measure light passing through suspended pulverized material. Microammeter 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, microammeter, 3 flasks, 4 test tubes, stirring apparatus and instruction book. Battery not included. Meets ASTM C115; AASHTO T98.

Description	Model
Wagner turbidimeter. 110V. 60Hz. 1ph. AC.	H-3805
Wagner turbidimeter. 220V. 50Hz, 1ph. AC.	H-3805.5F

Shipping wt. 140 lbs. (53.5kg)

Cement Calorimeter

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; differential thermometer plus holder, rod and reading magnifier; glass funnel; stirring paddle and chuck; geared synchronous motor; 4oz. (120ml) bottle of vinylite paint, and instructions. Meets ASTM C186.

Description	Model
Cement calorimeter. 120V. 60Hz. 1ph. AC.	H-3160
Cement calorimeter. 230V. 50Hz. 1ph. AC.	H-3160.5F

Shipping wt. 76 lbs. (34.5kg)

H-3320

H-3340

H-3341

H-3493

H-3425

Reaction Container

For determining potential alkali reactivity of aggregates (chemical method) when used with high alkali cements. Stainless steel unit is 2" dia. x 2-1/4" high (51mm dia. x 57mm) fitted with air-tight cover. 50-75ML capacity. Meets ASTM C289.

Description	Model
Reaction container.	H-3320

Tube Sampler, Packaged Cement

For sampling hydraulic packaged cement, brass unit has hardwood handle. Unit is 1-1/4" (32mm) dia.x 28-3/4 (730mm) long. Meets ASTM C183; AASHTO T127.

Description	Model
Tube sampler, packaged cement.	H-3340

Tube Sampler, Bulk Cement

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 1-3/8" (35mm) dia. x approximately 63" (160cm) long.

Description	Model
Tube sampler, bulk cement.	H-3341

Shipping wt. 11 lbs. (5kg)

Cement Soundness Tester

Mold used to determine soundness of cement by measuring expansion of cement when heated in an atmosphere of steam or boiling water. Consists of brass split ring and two long parallel indicating arms. As cement expands, ring is spread and increased distance between free ends of indicating arms gives an index of soundness.

Description	Model
Cement soundness tester.	H-3350

Length Comparator

Determines expansive characteristics of carbonate rocks while immersed in room temperature sodium hydroxide (NaOH) solution. Micrometer caliper head is graduated in 0.0001" (0.0025mm) divisions and accurate within 0.0001" (0.0025mm) with 0 to 1" (25mm) total range. Micrometer is mounted on upright support attached to base plate. Includes reference bar to check measuring device regularly. Overall dimensions: 8x3x3" (203x76x76mm). Meets ASTM C586.

Description	Model
Length comparator.	H-3425

Organic Impurities Test Set

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. Meets ASTM C40; AASHTO T21.

Description	Model
Organic impurities test set.	H-3493

Shipping wt. 10 lbs. (4.5kg)

Description, Replacement Parts	Model
Graduated glass bottle for making reference standard color and test solution. Features watertight cap. 12 oz. (262ml).	H-3490A
Bottle of sodium hydroxide pellets for mixing with sand in graduated glass bottles. 1 lb. (0.5kg). One bottle.	H-3491
Reference color comparison chart used in place of reference standard color solution to eliminate necessity of making new solutions. Includes five fade-proof glass color standards mounted in plastic holder, 3-3/8x3-3/8x1/-3/4" (86x86x44mm). Five color standards.	H-3492

H-3355

H-2715

H-3351, H-3371, H-3353

H-3400

H-3460

Specific Gravity Sieve #4

Designed for use in specific gravity test applications. Heavy-gage brass construction.

Description	Model
8" diameter specific gravity sieve, #4.	H-3355
12" diameter specific gravity sieve, #4.	H-3356

Hollow Tube Specific Gravity Cradle

Through this unique, yet simple stainless steel hollow tube designed, water displacement is virtually eliminated for improved accuracy in specific gravity test applications.

Description	Model
Hollow tube specific gravity cradle.	H-2715

Sample Container

For use in testing aggregate soundness, container is used to immerse samples of coarse aggregate in solution and then transfer samples to oven for uniform drying in minimum time. No. 4 wire mesh, bottom soldered to frame after fabricating. Overall dimension: 10x4" dia. (254x102mm) with 1/8" (3mm) round wire handle. Meets ASTM C88; AASHTO T104.

Description	Model
Sample container.	H-3351

Specific Gravity Basket

Stainless steel No. 8 wire mesh basket features reinforced construction and bail-type handle. Dimensions: 8x8" dia. Meets ASTM C127. Shipping wt. 9 lbs. (4kg)

Description	Model
Specific gravity basket.	H-3371

Utility Bucket

Heavily galvanized utility bucket has wire-reinforced top edge, bail-type handle and 14-qt. (13L) capacity. Meets ASTM C127.

Description, Replacement Parts & Accessories	Model
Utility bucket.	H-3372

Sample Container

Used to immerse samples of coarse aggregates in solution and transfer samples to oven. #8 stainless steel wire mesh, bottom soldered to frame after fabricating. Overall dimension: 5-1/2x4" dia. (140x102mm). Meets ASTM C88; AASHTO T104.

Description	Model
Sample container.	H-3353

Shipping wt. 6 lbs. (2.7kg)

Density Flask (Le Chatelier)

For determining density of powdered materials—limes, slag and hydraulic cement. Capacity: 250ML. Neck is graduated from 0 to 1ML and from 18 to 24ML. Flask is accurate to .05ML. Meets ASTM C188; AASHTO T133.

Description	Model
Density flask (Le Chatelier).	H-3400

Specific Gravity Flask (Chapman)

Flask has two bulbs for determining approximate percentage of voids and surface moisture in fine aggregates. Graduated to 200ML between bulbs and from 375ML up to 450ML (in 1ML divisions) above second bulb. Meets ASTM C70; AASHTO T142.

Description	Model
Specific gravity flask (Chapman).	H-3460

H-3600

H-3630A

H-2834, H-2835

H-2833

Cement Bleeding Apparatus

Used to determine bleeding rate and bleeding capacity of cement paste and mortar by direct and continuous procedure. Includes non-corrosive 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.

Description	Model
Cement bleeding apparatus.	H-3600

Shipping wt. 20 lbs. (9.0kg)

Water Retention Apparatus

The apparatus is used in specification tests of masonry cement and physical testing of quickline and hydrated lime. Unlike older models, the newly designed 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. Meets ASTM C1506, C110, C207 and E149.

Description	Model
Water retention apparatus	H-3630A

Description, Replacement Parts & Accessories	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
NBS 114 Portland calibration testing cement. 20 vials.	H-3817.20

Grout Flow Cone

Cast-aluminum flow cone is used in the laboratory and field for determining flow of grout mixtures by measuring the time of efflux of a specified volume of grout from a standardized flow cone. Includes adjustable point gauge assembly. Overall dimensions: 8" dia. x 12"H (203x305mm). Meets ASTM C939.

Description	Model
Grout flow cone with interchangeable1/2"(13mm) dia. orifice. May also be used with interchangeable 3/4"(19mm) dia.orifice, sold separately.	H-2834
Grout flow cone with interchangeable 3/4"(19mm) dia. orifice. May also be used with interchangeable 1/2"(13mm) dia. orifice, sold separately.	H-2835

Shipping wt. 9 lbs. (4.1kg)

Description, Replacement Parts & Accessories	Model
Interchangeable 1/2"(13mm) dia. orifice for use with grout flow cones H-2834 or H-2835.	H-2834.500
Interchangeable 3/4"(19mm) dia. orifice for use with grout flow cones H-2834 or H-2835.	H-2834.750
Stainless Steel Beaker. 6 liter Cap	H-2834SSB

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"Wx9-1⁄2"Dx23"H.

Description	Model
Flow cone stand.	H-2833

Shipping wt. 17 lbs. (7.7kg)

Volumetric Flasks

Glass flasks used in specific gravity determinations are calibrated to contain rated capacity at 20°C within permissible tolerance. Available stoppered or unstoppered. Meets ASTM D854; AASHTO T100.

Description, Volumetric Flasks	Model
Unstoppered volumetric flask 100ml.	H-3391
Unstoppered volumetric flask 250ml.	H-3392
Unstoppered volumetric flask 500ml.	H-3393
Stoppered volumetric flask 250ml.	H-3394
Stoppered volumetric flask 500ml.	H-3395

H-3847, H-3848

H-2904, H-2903

H-2902

Concrete Mixer

Compact, sturdy, lightweight concrete mixer for concrete, mortar, etc., can be bolted to floor or skid for permanent installation. Counter-balanced drum has four mixing blades and tilting mechanism with adjustable lever for discharging the mix. Mixing drum may be charged or discharged from either side. Drum mixing capacity is 3 cu. ft. (85 Liters). Includes hand tow pole and wheels. Drum size: 5-1/2 cu. ft. (156 Liters). Overall dimensions: 41x26x55" (1041 x 660 x 1397mm). Meets ASTM C192. Large capacities available. Call 1-800-544-7220.

Description	Model
Concrete mixer. 1/3HP. 110V. 60Hz. 1ph. AC.	H-3847
Concrete mixer. 1/3HP. 220V. 60Hz. 1ph. AC.	H-3847.2F
Concrete mixer. 1/3HP. 220V. 50Hz. 1ph. AC.	H-3847.5F

Shipping wt. 366 lbs. (166kg)

Concrete Mixer with Tow Hitch

Same as H-3847 with 1-7/8" (48mm) ball-and-socket hitch to tow mixer by truck or auto. Includes pneumatic tires with tapered roller wheel bearings. Meets ASTM C192.

Description	Model
Concrete mixer with tow hitch. 1/3HP. 110V. 60Hz. 1ph. AC.	H-3848
Concrete mixer with tow hitch. 1/3HP. 220V. 60Hz. 1ph. AC.	H-3848.2F
Concrete mixer with tow hitch. 1/3HP. 220V. 50Hz. 1ph. AC.	H-3848.5F

Tapered Cylinder Mold

Used to determine volume change of grout, mold is constructed of steel tubing 1/4" wall x 3" dia. x 6"H (6x76x152mm). 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. Meets ASTM C1090.

Description	Model
Tapered cylinder mold.	H-2904

Shipping wt. 6 lbs. (2.7kg)

Micrometer Depth Gauge

Graduations in the thousandths of an inch (.001"), range 0 to 3", 1/8" 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 2-1/2".

Description	Model
Micrometer depth gauge.	H-2902

Micrometer Bridge Set

Set is designed to hold one cylinder mold so as to permit repeated volume change measurements without moving or disturbing the specimens.

Description	Model
Micrometer bridge set. (Contains one each of parts listed below.)	H-2903

Shipping wt. 12 lbs. (5.4kg)

Description, Replacement Parts & Accessories	Model
Micrometer bridge.	H-2901
Depth micrometer.	H-2902
Tapered cylinder mold.	H-2904
Glass plate.	H-2905.2
Weight.	H-2905.3

Tamping Rod

Round, straight steel rod is 3/8" (10mm) dia. x 12" (300mm) long. Both ends are rounded to a hemispherical tip of the same diameter as the rod. Meets ASTM C157, C192.

Description	Model
Tamping rod.	H-2905.1

Acme Penetrometer

Hydraulic reaction-type apparatus for determining the time of setting of concrete with slump greater than zero by testing mortar sieved from the concrete mixture. Unit also determines effects of variables such as temperature, cement, mixture proportions, additions and admixtures upon the time of setting and hardening of concrete.

Penetrometer's new design makes it easier to operate, more efficient, with a longer gear rack. All needles are one length so settings may remain the same. Loads are applied hydraulically with pressures read on a 200 lbf (890N) capacity gauge graduated in 2 lbf divisions. Set of six needles allow multiplication to maximum 8000 lbf. reading.

Acme penetrometer features cast aluminum base and set of stainless steel Proctor needles in a wooden block (bearing area: 1, 1/2, 1/4, 1/10, 1/20 and 1/40 in.2; (645, 323, 161, 65, 32 and 16mm2). Includes 100 laboratory test data reporting forms. Meets ASTM C403; AASHTO T197.

Description	Model
Acme penetrometer.	H-4133

Shipping wt. 60 lbs. (27kg)

H-4133, H-4133N

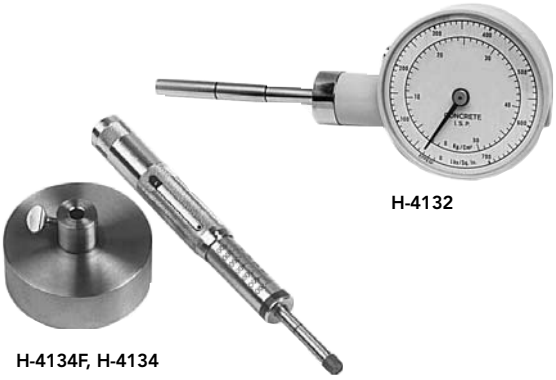
Penetration Parts and Accessories

Stainless steel needles and holding block for use with H-4133 Acme Penetrometer Mortar Penetration Resistance Apparatus. Needles available as set of six, or separately.

Description, Replacement Parts & Accessories	Model
Penetration needle set (six needles and block). Shipping wt. 7 lbs. (3.2kg)	H-4133N
1 sq. in. (645mm^2) end area needle.	H-4133.15
1/2 sq. in. (323mm^2) end area needle.	H-4133.16
1/4 sq. in. (161 mm^2) end area needle.	H-4133.17
1/10 sq. in. (65mm^2) end area needle.	H-4133.18
1/20 sq. in. (32 mm^2) end area needle.	H-4133.19
1/40 sq. in. (16mm^2) end area needle.	H-4133.20
Package of 100 "Time of Setting of Concrete Mixtures" data sheets for use with H-4133 and H-4137.	H-4133F


H-4137


H-3420


H-4132

H-4134F, H-4134

Mortar Penetration Resistance Apparatus

Spring-reaction-type apparatus, graduated from 10 to 130lbf (45 to 580N) in increments of 2lbf (9N) for testing rate of hardness of mortars sieved from concrete mixtures. Determines effects of variables such as temperature, cement, mixture proportions, additions and admixtures upon the time of setting and hardening of concrete. Penetration resistance is measured by the downward vertical force exerted to penetrate the mortar 1" (25mm). Pressure reading is measured by a scale with a sliding ring indicator on the handle's stem. Includes these interchangeable Proctor penetration resistance needles: 1, 1/2, 1/4, 1/10, 1/20 and 1/40 sq.in (645, 323, 161, 65, 32, 16mm2). Meets ASTM C403; AASHTO T197.

Description	Model
Mortar penetration resistance apparatus.	H-4137

Shipping wt. 20 lbs. (9kg)

Replacement Resistance Needles

Replacement needles for use with H-4137 mortar penetration resistance apparatus. Available as set or separately.

Description, Replacement Parts & Accessories	Model
Replacement resistance needle set.	H-4143
1sq. in. (645mm^2) Needle.	H-4143.1
1/2sq. in. (323mm^2) Needle.	H-4143.50
1/4sq. in. (161mm^2) Needle.	H-4143.25
1/10sq. in. (65mm^2) Needle.	H-4143.10
1/20sq. in. (32mm^2) Needle.	H-4143.05
1/40sq. in. (16mm^2) Needle.	H-4143.025

Scratch Hardness Tester

Determines quantity of soft particles in coarse aggregates on basis of scratch hardness. Apparatus consists of 1/16" (1.6mm) dia. brass rod with rounded point inserted into plunger. Overall weight of brass point and plunger is 2 ±0.1 lbs (8.9 ±0.4N). Plunger is mounted on support stand, permitting plunger to lower and raise freely. Furnished with one extra brass scratch rod. Meets ASTM C851.

Description	Model
Scratch hardness tester.	H-3420

Shipping wt. 9 lbs. (4kg)

Description, Replacement Parts & Accessories	Model
Brass replacement rod (needle) for H-3420. Package of 10.	H-3421

Concrete Pocket Penetrometers

Lightweight, spring-reaction type concrete penetrometer for field and lab evaluation of the initial set of concrete mortar based on ASTM C403. Penetration plunger has a 1/20 sq. in. tip area. Plunger is steadily pushed into the mortar to a 1 in. depth, as indicated on the shaft, at periodic time intervals. Penetrometer's calibrated range is 0-700psi. Resistance in psi is indicated on the scale. The term "initial set" is the semi-hardened, partially hydrated condition of the concrete beyond which it can no longer be worked. The point of initial set is reached when the penetration value is 500psi. Meets ASTM C780.

Description	Model
Concrete pocket penetrometer.	H-4134
Concrete pocket penetrometer, dial.	H-4132

Description, Replacement Parts & Accessories	Model
Foot for pocket penetrometer. Stainless steel disk, 2.70" diam (68.58 mm).	H-4134F

Specific Gravity and Absorption of Coarse Aggregate Kit

Description	Model
Specific gravity and absorption of coarse aggregate kit. Meets ASTM **C127**; AASHTO T20, T85. (Kit contains one each of the parts listed below, except as noted.)	H-3370

Shipping wt. 48 lbs. (21.8kg)

Description, Replacement Parts & Accessories	Model
Balance, 8100g X 0.1g capacity.	H--4504E
Brass weight.	H-4880.2000
Brass weights. (Two in set.)	H-4880.1000
Wire basket.	H-3371
Container for immersing wire basket in water.	H-3372


H-3360


H-3381

Specific Gravity and Absorption of Fine Aggregate Kit

Description	Model
Specific gravity and absorption of fine aggregate kit. Meets ASTM **C128**; AASHTO T20, T84. (Kit contains one each of the parts listed below.)	H-3373

Shipping wt. 95 lbs. (43.1kg)

Description, Replacement Parts & Accessories	Model
Balance.	H-4603
Pycnometer top and 1 qt. (.95L) glass jar.	H-3381
Conical mold and tamper.	H-3360
Laboratory oven.	H-30120
3/4" (19mm) sample splitter.	H-3966

Hydrometer

For specific gravity of sodium sulfate solutions and liquids heavier than water. Range 1.150 to 1.200, subdivisions to 0.0005, length 330mm. Meets ASTM C88; AASHTO T104.

Description	Model
Hydrometer.	H-3374

Conical Mold and Tamper

Used for determination of bulk and apparent specific gravity and absorption of fine aggregate, brass mold is 40mm ID at top, 90mm ID at bottom, 75mm high. Steel tamper weighs 12 oz (340g) and has 1" dia. (25mm) flat circular tamping face. Meets ASTM C128; AASHTO T84.

Description, Replacement Parts & Accessories	Model
Conical mold and tamper.	H-3360
Conical mold only.	H-3361
Tamper only.	H-3362


H-2712

H-2712.2

Pycnometer Top

For determining specific gravity of fine aggregate. Top is spun brass with 3/8" (10mm) hole in one end; threaded end fits 1- or 2-qt. (1 or 2L) glass jar. Includes rubber gasket that fits on jar mouth to prevent fine particles from becoming deposited in the threads. Order jars separately.

Description	Model
Pycnometer top.	H-3380

Pycnometer Top and Glass Jar

Pycnometer top and 1qt. (.95L) glass jar set. Meets ASTM C128.

Description	Model
Pycnometer top and glass jar set.	H-3381

Economy Specific Gravity Tank (Bath) Assembly

This economical bath is designed for use with weigh-below balances, hooks or baskets for accurate specific gravity determinations of hardened concrete, aggregates and bituminous mixtures. The set consists of a 30 gallon polyethylene tank that measures 18"x24"x18" deep (457x609x457mm) It includes an overflow valve and bottom drain valve with hose connection for easy emptying. For maintaining a constant temperature during testing, the system includes a 30-gallon aquarium style tank heater with plastic heater guard and a circulating pump designed to maintain a bath temperature at 77°F. The pump gently circulates water to maintain even temperature distribution.

Description	Model
Economy Specific Gravity Tank Assembly, 110V, 60Hz.	H-2712

Description, Replacement Parts & Accessories	Model
30-Gallon Polyethylene Tank	H-2712.1
30-Gallon Aquarium-Style Tank Heater, Plastic Heater Guard and a Circulating Pump. 110V, 60Hz	H-2712.2
Specific Gravity Basket	H-3371
Hollow Tube Specific Gravity Cradle	H-2715
Ohaus Electronic Balance, Explorer 22,000 x 0.1g	H-4508E
Ohaus Electronic Balance, Explorer 32,000 x 0.1g	H-4510E

H-3384

SSDetect™ Bulk Specific Gravity and Absorption of Fine Aggregates Test System

The SSDetect system utilizes a "dry-to-wet" method by taking a 1000-gram sample, dried to a constant mass and then split into two 500-gram test samples. The first 500-gram sample is placed into a special test bowl that is mounted inside the unit. This sample is tested to determine he characteristic wetting curve of the material, called a Baseline Test. Once initiated, the unit will begin to inject water by way of a small injector mounted in the lid of the test bowl into the flow of material that is being mixed inside the bowl by way of the orbital mixing motion. It will continue to mix and add water until the surface of the aggregate for signs of water. Once the characteristic wetting curve has been established, the unit display will ask the user to insert the second 500-gram sample for SSD determination. The system then uses the characteristic wetting curve in the first test to determine the Saturated Surface Dry condition of the second sample.

Because this system utilizes the "dry-to-wet", materials with different absorption characteristics need to be tested differently. The software in this system has been designed to accommodate a wide range of materials.

The included software provides adaptability in two ways. 1) Soak times can be added to the SSD detection test, from 1 minute to 30 minutes, to allow materials to soak up their full potential of internal water. 2) Overall SSD detection test times can be programmed from 1 hour to 24 hours. The soak times occur within the overall test time.

Once the SSD condition is achieved, the sample can be poured into the pycnometer for the under water weight measurement. This SSD weight will also allow you to determine the absorption of the material, since you have a dry weight at the start of the test. No dry back is required.

The "dry-to-wet" provides even wetting of the material. The orbital mixing action also promotes even wetting action. All sizes of the aggregate gradation are wetted and allowed to absorb their full potential of water in an ambient environment. Unlike the "wet-to-dry" method, which will super heat the 200 material first, driving them well past the SSD condition and compromising the test results.

The SSDetct measure 14.5" (368mm) wide by 14.25" (362mm) high by 17.25" (438mm) deep. Meets ASTM C128; AASHTO T84

Description	Model
SSDetect. Supplied complete with software, two test bowls and accessories. 110-240V, 50-60Hz	H-3384

Shipping Weight 22 lbs (9.97kg)

H-2783

H-2786

H-2786C

Air Entrainment

Entrained air indicators quickly determine percentage of entrained air in freshly mixed concrete. Pressure-method model accuracy is not affected by barometric pressure changes. Original volume of air in the sample is determined by the principle of Boyle's Law.

Humboldt Pressure Meter

- Measures entrained air in freshly mixed concrete
- Improved clamping arrangement

Easy-to-use stainless clamping system employs four, one-piece, self-locking clamps to seal lid to base with proper tension. O-ring assures watertight seal. Easy-to-read (to nearest 1/10th of a percent) 4" diameter direct percentage gauge with calibration adjustments. All brass pump builds test pressure faster using fewer strokes. Unique pop-it valve eliminates seal failures. Complete with high-impact plastic carrying case, syringe, tamping rod, strike-off bar, calibration vessel, inside and outside calibration rubes and instructions.

Description	Model
Humboldt Pressure Meter.	H-2783

Press-Ur-Meter, Type B

For field and laboratory tests, 1/4-cu.-ft. (.007m3) air meter is designed to determine air content, determination of specific gravity and free moisture test of aggregates. Designed to save time, reduce water used, ensure accuracy and maintain sample integrity (sample may be used for slump and compression tests). Features built-in all-brass H-2785.DB super pump. Furnished with all necessary accessories for calibration and running entrained air test, and carrying case. Overall height: 20-1/2" (521mm). Meets ASTM C231; AASHTO T152.

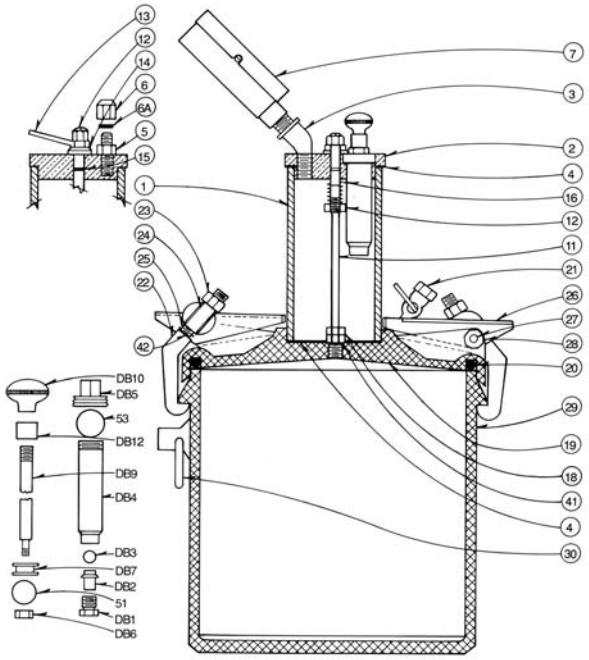
Description	Model
Press-Ur-Meter, Type B, with wood carrying case.	H-2786
Economy Press-Ur-Meter, Type B, with metal carrying case.	H-2786C
Press-Ur-Meter, Type B, with plastic carrying case.	H-2786P

Shipping wt. 36 lbs. (16.4kg)

Description, Replacement Parts & Accessories	Model
Super Pump	H-2785DB
Gauge (complete)	H-2785.7

Press-Ur-Meter and Super P ump Replacement P arts	
Pressure chamber	H-2785.1
Pressure chamber cap	H-2785.2
Pressure chamber elbow	H-2785.3
Pressure chamber gasket	H-2785.4
Pressure chmb air-release stem	H-2785.5
Pressure chamber air-release cap	H-2785.6
Release cap gasket	H-2785.6A
Gauge (complete)	H-2785.7
Needle valve stem	H-2785.11
Needle valve /Spring Ret. nut	H-2785.12
Needle valve lever	H-2785.13
Needle valve spacer	H-2785.14
Needle valve "O" ring	H-2785.15
Needle valve spring	H-2785.16
Needle valve seat assembly	H-2785.18
Cover	H-2785.19
Cover "O" ring	H-2785.20
Cover pet cock	H-2785.21
Clamp	H-2785.22
Clamp nut	H-2785.23
Clamp trunion	H-2785.24
Clamp spring	H-2785.25
Clamp toggle	H-2785.26
Clamp toggle set screw	H-2785.27
Clamp toggle lock nut	H-2785.28
Base	H-2785.29
Base handle	H-2785.30
Calibrating vessel	H-2785.31
Calibrating tube (outside)	H-2785.32
Calibrating tube (inside)	H-2785.33
Strike-off bar	H-2785.34
Tamping rod	H-2785.35
Syringe	H-2785.36
Gauge glass	H-2785.37
Wooden carrying case	H-2785.38
Plastic carrying case	H-2785.38P
Needle valve seat gasket	H-2785.41
Clamp stud for part #22	H-2785.42
"O" ring for part #54	H-2785.51*
Pump tube assembly (cmpl.)	H-2785.52*
"O" ring for part #52	H-2785.53*
Pump piston assembly (cmpl.)	H-2785.54*
Valve nut	H-2785.DB1
Valve	H-2785.DB2
Valve "O" ring	H-2785.DB3
Pump tube	H-2785.DB4
Pump cap	H-2785.DB5
Stem nut	H-2785.DB6
Pump piston	H-2785.DB7
Piston "O" ring	H-2785.51
Pump stem	H-2785.DB9
Pump handle	H-2785.DB10
Tube "O" ring	H-2785.53
Stem cap	H-2785.DB12
Meter and pump replacement gasket set	H-2785.55

*indicates parts for Watts pump



H-2785.DB, H-2789, H-2788

H-2795, H-2796

H-2795P

H-2756

Super Pump for Press-Ur-Meter, Type B

Super pump's all brass construction resists acids in cement. All parts, including valve, are replaceable.

Description	Model
Super pump.	H-2785.DB

Air Meter Calibrator

Calibrator checks accuracy of any pressure-type concrete air meter. Set the specially designed canister upright at the bottom of the water-filled base, and the meter should read 5% air by volume. Two calibrators will check 10% air reading. Dimensions: 4" dia. x 3-3/4" (102x95mm). The model H-2788 is constructed of Plastic with a weighted Ring. The more durable H-2789 is manufactured from machined Brass.

Description	Model
Air meter calibrator, plastic.	H-2788
Air meter calibrator, machined brass.	H-2789

Roll-A-Meter Air Indicator

Rolling or washout method air indicator for use with any aggregate not exceeding 2" (51mm). Capacity in base section: 130 cu. in. (2130cm3). Easy to handle in the field. Requires no special training or computation. Includes instructions and carrying case. Height: 22" (559mm). Max. O.D. 8" (203mm). Meets ASTM C173; AASHTO T196.

Description	Model
Roll-A-Meter air indicator, traditional solid bronze.	H-2795

Shipping wt. 38 lbs. (17.2kg)

Description	Model
Roll-A-Meter air indicator, lighter weight aluminum.	H-2796

Shipping wt. 25 lbs. (11.3kg)

Volumetair Air Meter

The Volumetair is used for the rolling method of measuring entrained air in any concrete. This ultra lightweight and easy-to-use instrument is supplied complete with the meter, funnel, syringe, tamper, calibration cup, mallet, strike-off bar and plastic carrying case. The plastic materials used in the construction of this unit not only make it lightweight; but also allows the user to use water for clean-up and small amounts of muratic acid for periodic cleaning. The sight tube has a range of 0 to 9% and the base volume is 134 cu. in. (2200ml). Meets ASTM C173.

Description	Model
Volumetair air meter.	H-2795P

Shipping wt. 25 lbs. (11.3kg)

Concrete Air Indicator (Isopropyl-Alcohol Method)

For quick field checks of air content of fresh concrete in about three minutes, pocket-sized unit air meter is furnished with instructions and correlation chart. Unit does not replace conventional 1/4- and 1/2-cu. ft. (.007 and .014m3) air meters. Overall dimensions: 6-1/4x1-1/8" dia. (159x29mm). Meets ASSHTO T199.

Description	Model
Concrete air indicator.	H-2755
Filter tube replacement glass vial for H-2755 concrete air indicator.	H-2755.2

Concrete Air Indicator Kit (Isopropyl-Alcohol Method)

Complete kit for measuring air content of fresh concrete includes H-2755 air indicator, instructions, cleaning brush and plastic squeeze-type bottle for alcohol. Components fit in plastic box. Meets ASSHTO T199.

Description	Model
Concrete air indicator kit in plastic box.	H-2756

H-3655

H-3655 with H-3656

H-3640

H-3640P

Ball Penetration Apparatus (Kelly Ball)

Determines depth of penetration of metal weight into plastic concrete. Apparatus consists of 30 lb. (14kg) cylinder with hemispherically shaped bottom and handle. Stirrup or frame guides handle and acts as reference for measuring depth of penetration. Handle is graduated in 1/4" (6.4mm) increments on one side and half-centimeter increments on the other side. Concrete may be tested as placed in the forms prior to any manipulation or in a suitable container. Meets ASTM C360; AASHTO T183; California Test Method CTM533

Description	Model
Ball penetration apparatus.	H-3655
Ball penetration apparatus, 20 lb.	H-3655-20

Shipping wt. 40 lbs. (18kg)

Carrier for Ball Penetration Apparatus (Kelly Ball)

Heavy-duty, cast-aluminum design with quick release latches. Provides convenience for the operator and protection to Kelly ball when transporting to and from the job site.

Description	Model
Carrier for ball penetration apparatus.	H-3656

Slump Cones

Determine slump of concrete in laboratory or field use. Choice of heavy-gauge seamless spun steel or lightweight plastic, in standard or metric sizes. Steel models have plated finish to resist rust, plastic models can be cleaned with acid bath and will not dent or rust. All models fitted with handles and foot lugs. Meets ASTM C31, C143, C172, C192, C232; AASHTO T23, T119, T126, T141, T158.

Description	Model
Steel slump cone. 8" (203mm) dia. at base, 4" (102mm) dia. at top and 12" (305mm) high.	H-3640
Metric steel slump cone. 200mm dia. at base, 100mm dia. at top and 300mm high.	H-3640M

Shipping wt. 6 lbs. (2.7kg)

Description	Model
Plastic slump cone. 8" (203mm) dia. at base, 4" (102mm) dia. at top and 12" (305mm) high.	H-3640P
Plastic Metric slump cone. 200mm dia. at base, 100mm dia. at top and 300mm high.	H-3640PM

Tamping (Puddling) Rod

Round, straight steel rod for use with concrete cylinder molds, slump cones and unit weight measures 5/8" (16mm) dia. x 24" (600mm) long. Both ends are rounded to a hemispherical tip with a 5/8" (16mm) dia. Plated for rust resistance. Meets ASTM C29, C31, C138, C143, C172, C192, C231, C232, C234; AASHTO T19,T23, T119, T121, T126, T141, T152,T158,T159.

Description	Model
Tamping (Puddling) rod.	H-3650

Graduated Tamping Rod

Same as H-3650 with 6" scale in 1/4" increments engraved on handle end of rod for measuring amount of slump when handle of H-3636 base is raised over specimen.

Description	Model
Graduated tamping rod.	H-3651

Slump Cone Funnel

Funnel is used all slump cone models to assist in filling the cone.

Description	Model
Slump cone funnel.	H-3638

Slump Cone Base Plate

Cast-aluminum base plate firmly holds all slump cone models, permitting one person to conveniently perform test. Base clamps turn down over cone foot lugs to secure entire assembly. Movable handle raises vertically over specimen (after removal of cone) and slump is easily measured with the 6" scale cut into handle end of H-3651 tamping rod. Order tamping rod separately. Meets ASTM C31, C143, C172, C192, C232; AASHTO T23, T119, T126, T141, T158.

Description	Model
Slump cone base plate.	H-3636

Shipping wt. 10 lbs. (4.5kg)


H-3635


H-3645


H-3643


H-3644

Components of Slump Cone Test Sets

Description	Set H-3635	Set H-3637	Set H-3645	Item Model
Base Plate.	●	●		H-3636
Funnel.	●			H-3638
Brush.	●			H-3639
Slump Cone (standard steel).	●	●	●	H-3640
Tamping rod w/ 6" scale on handle.	●	●		H-3651
Scoop.	●			H-3731
Brush.			●	H-3800
Tamping (Puddling) rod.			●	H-3650
Cement imersion pan.			●	H-3725
Trowel.			●	H-3760

Slump Cone Test Set

Slump cone test set for measuring slump of freshly mixed concrete. See chart for included components, also available separately. Meets ASTM C31, C143, C172, C192, C232; AASHTO T23, T119, T126, T141, T158.

Description	Model
Slump cone base set.	H-3635

Shipping wt. 25 lbs. (11.3kg)

Portable Slump Cone Test Set

See chart for included components, also available separately. Meets ASTM C31, C143, C172, C192, C232; AASHTO T23, T119, T126, T141, T158.

Description	Model
Portable slump cone test set.	H-3637

Shipping wt. 19 lbs. (8.6kg)

Slump Test Set

See chart for included components, also available separately. Meets ASTM C31, C143, C172, C192, C232; AASHTO T23, T119, T126, T141, T158.

Description	Model
Slump test set.	H-3645

Shipping wt. 24 lbs. (10.9kg)

K-Slump Tester

For in-place measurements of forms and test molds. Tester indicates correlation to the slump test. Probe determines the workability of concrete and degree of compaction after being placed in the forms. Includes correlation chart and instructions.

Description	Model
K-Slump tester.	H-3643

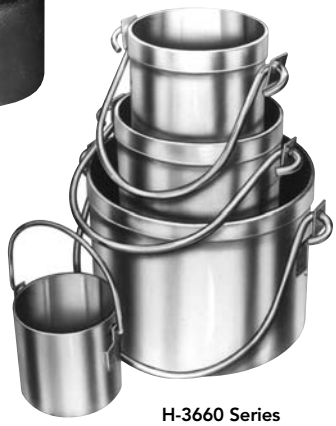
Flowgauge

Designed in strict compliance with ASTM specifications, the Flowgauge provides a fast and economical means for establishing the flow, consistency and workability of fresh concrete. The unit is completely portable and is made of lightweight, easy-to-clean Delrin. Meets ASTM C1362.

Description	Model
Flowgauge.	H-3644

H-4734D

H-3660.1,
H-3661.1, H-3663.1



H-3660 Series

Digital Concrete Field Scale

The Digital Concrete Field Scale was developed to meet the requirements of ASTM and AASHTO specifications for unit weight, yield and gravimetric air content test applications. The battery-powered scale has a 130 lb (60 kg) capacity with an accuracy and readability of 0.02 lb (10 g). The stainless steel platform measures 17-3/4" by 13". The unit features a digital indicator with 1" high, easy-to-read digits, lb/kg selection button, taring up to full capacity with indicator, low battery indicator, adjustable leveling feet, automatic zero and a durable plastic covered wood carrying case.

Description	Model
Digital concrete field scale.	H-4734D

Unit Weight Measures

Description	Capacity	Inside Dia.	Inside Ht.	Shipping Wt. (lbs/kg)	Meets Specs	Model
Machined aluminum cylindrical unit weight measures with handles for determining unit weight of fine, coarse or mixed aggregates. Watertight, with true and even top and bottom. Measures retain form after repeated use.	1/10 cu. ft. (2.8)	6" (152mm)	6.1" (155mm)	6 lbs. (2.7kg)	ASTM C29, C138, C192, C232; AASHTO T19, T121, T158	H-3660.1
	1/2 cu. ft. (14.1)	10" (254mm)	11" (279mm)	16 lbs. (7.2kg)		H-3661.1
	1 cu. ft. (28.3)	14" (356mm)	11.2" (285mm)	31 lbs. (13.6kg)		H-3662.1
	1/3 cu. ft. (9.3)	8" (203mm)	11.5" (292mm)	17 lbs. (7.7kg)		H-3663.1
	1/4 cu. ft. (7.1)	8" (203mm)	8.8" (224mm)	11 lbs. (4.9kg)		H-3664.1
Heavy-gauge seam-welded watertight steel unit weight measures have bail handles. Used for determining unit weight of aggregate for concrete.	1/10 cu. ft. (2.8)	6" (152mm)	6.1" (155mm)	7 lbs. (3.2kg)	Non-ASTM Models	H-3660
	1/2 cu. ft. (14.1)	10" (254mm)	11" (279mm)	22 lbs. (10kg)		H-3661
	1 cu. ft. (28.3)	14" (356mm)	11.2" (285mm)	33 lbs. (15kg)		H-3662
	1/3 cu. ft. (9.3)	8" (203mm)	11.5" (292mm)	19 lbs. (8.7kg)		H-3663
	1/4 cu. ft. (7.1)	8" (203mm)	8.8" (224mm)	15 lbs. (6.8kg)		H-3664

Strike-Off Plates

Meets Specs	Size	Strike-Off Plate
ASTM C138; AASHTO T121	8x8" (203x203mm)	H-3669.1
	12x12" (305x305mm)	H-3669.2
	16x16" (406x406mm)	H-3669.3
	10x10" (254x254mm)	H-3669.4
	8x8" (203x203mm)	H-3669.1
	12x12" (305x305mm)	H-3669.2
	16x16" (406x406mm)	H-3669.3
	10x10" (254x254mm)	H-3669.4


H-2950


H-2920


H-3041, H-3037PML, H-3038PML, H-3041S


H-3043.6

Metal Cylinder Molds

Size	Description	Meets Specifications	Model
6x12" (152x305mm)	Wall thickness 1/8" (3mm) steel. Mold is split along one side with 2 quick-acting clamps welded to mold. When open, mold springs apart slightly to allow specimen removal. Supplied with 1/4" (6mm) detachable base plate included. Shipping wt. 18 lbs. (8.2kg)	ASTM C31, C39, C192, C470; AASHTO T22, T23, T126, T198	H-2942
	Similar to H-2942 but with 1/4" (6mm) steel wall. Furnished with detachable base plate. Shipping wt. 31 lbs. (14kg)		H-2950
4x8" (102x203mm)	Wall thickness is 1/4". Mold has detachable base plate. Shipping wt. 8 lbs. (3.6kg)	ASTM C39, C192, C470; AASHTO T22, T126, T198	H-2934
2" dia.x4"H (51mmx102mm)	Split cast-bronze mold has heavy rib reinforcement at top, bottom and sides. Fitted with heavy quick-acting yoke clamps, bolts and thumbscrews for locking halves. Shipping wt. 5 lbs. (2kg)	ASTM C31, C39, C192	H-2920

Single-use Cylinder Molds

6x12"	Disposable plastic mold with flat plastic bottom; molds are easily stripped with H-3041S stripper; order separately. Carton of 36. Reinforcing rib around top opening. Lids not included.	ASTM C31, C39, C192, C470, C496; AASHTO T22, T23, T126, T198, M205	H-3041
4x8"	Disposable plastic mold with flat plastic bottom. Supplied complete with inegral domed plastic lid. Carton of 36.	ASTM C39, C192, C470, C496; AASHTO T22, T126, T198	H-3037PML
3x6"	Disposable plastic mold with flat plastic bottom. Supplied complete with inegral domed plastic lid. Carton of 80.		H-3038PML
6x12"	Waxed cardboard mold with flat metal bottom. Carton of 24.	ASTM C31, C39, C192, C470, C496; AASHTO T22, T23, T126, T198, M205	H-3040
4x8"	Waxed cardboard mold with flat metal bottom. Carton of 50.	ASTM C39, C192, C470, C496; AASHTO T22, T126, T198	H-3037
3x6"	Waxed cardboard mold with flat metal bottom. Carton of 50.	ASTM C39, C192, C470, C496; AASHTO T22, T126, T198	H-3038
2x4"	Waxed cardboard mold with flat metal bottom. Carton of 50.	ASTM C39, C192, C470, C496; AASHTO T22, T126, T198	H-3032P84

Single-use Cylinder Accessories

6"	Domed plastic lid for use with H-3041 mold.	H-3041L
—	T-Handle style Mold stripper to split single-use cylinder molds longitudinally for cylinder removal.	H-3041S
—	Screwdriver style Mold stripper to split single-use cylinder molds longitudinally for cylinder removal.	H-3041SMA

Permamold Reusable Plastic Cylinder Molds

4x8"	Lightweight, impact resistant construction. Will not crack, rust or deform. 1/4" (6.2mm) thick walls. Can be reused up to 100 times. Meets ASTM. Sold individually.	H-3043.4
6x12"		H-3043.6

H-2943

H-2945

H-2945G

H-2914

H-2733

Sample Cart

For use in handling concrete beams and cylinders, plus soil and aggregate samples in the lab or field. Cart has pan-type rolled-edge 3-1/2"-(89mm)-deep steel shelves. Top shelf reverses to flat working surface. Features 5" (127mm) dia. rubber casters; front casters swivel for easy steering. Dimensions: 24x36x32" (61x91x97cm). Ready to assemble.

Description	Model
Sample cart.	H-2944

Shipping wt. 43 lbs. (19.5kg)

Welded Sample Cart

Premium-grade all-welded cart has 800-lb. capacity. Features 5x1-1/4" casters mounted to cross-channel bolster plate for added support, convenient offset handle and 36x24" (914x609mm) tray size. Smooth finish; no rough edges. Shipped assembled.

Description	Model
Welded sample cart.	H-2943

Shipping wt. 75 lbs. (34kg)

Cylinder Carrier (Cradle Type)

Steel cylinder carrier is plated to resist rust. Used to carry 6" (152mm) dia. concrete cylinders in field or laboratory.

Description	Model
Cylinder carrier, cradle-type.	H-2945

Cylinder Carrier (Gripper Type)

Employs a hand-grip pincer action to secure standard 6" (152mm) dia. cylinders.

Description	Model
Cylinder carrier, gripper-type.	H-2945G

Master Humidifier

Unit is recommended for humidifying comparatively large areas, evaporating maximum 5 lbs. (approximately 6/10 gal) of water per hour. Reservoir is copper; unit includes adjustable brass water float for operation on variable water pressure up to 75 lbs. (334N). Humidistat controller can be wired to unit to provide automatic humidity regulation. Sealed to protect it from water, motor section drives both disc and pump tube to produce vapor without heat. Overall dimensions: 14-1/2" dia. x 10-1/2" height (368x267mm).

Description	Model
Master humidifier. 115V. 60Hz.	H-2914

Humidistat Controller

Measures moisture in air of room or space in which it is installed. Automatically controls H-2914 master humidifier to achieve desired indoor relative humidity.

Description	Model
Humidistat controller. 115-220V.	H-2915

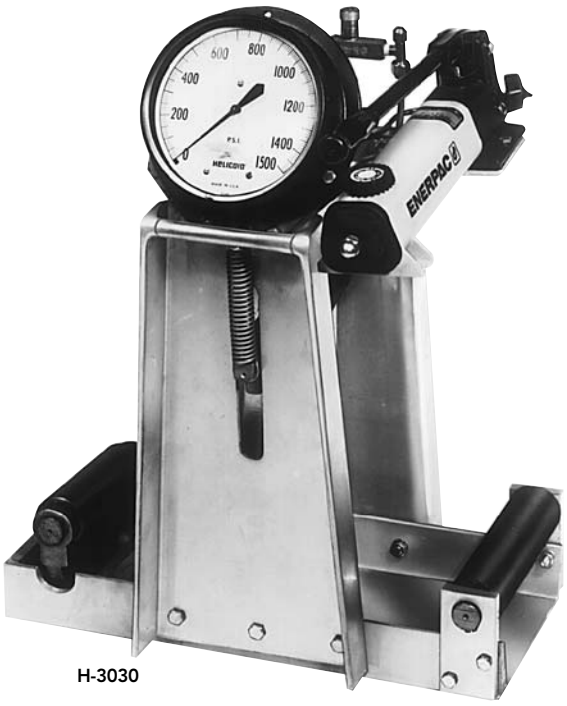
Hydrofogger 300

The hydrofogger system generates impressive clouds of smoky fog, which will add abundant cool humidity at a 2-gal. (7.5 liter) per hour and is ideal for use in cement and concrete curing storage areas up to 2000 sq. ft. (57 M^3). No wiring is necessary, the unit plugs directly into a standard electrical outlet (115V/60Hz). A GFCI-protected electrical outlet is suggested. An internal float valve is incorporated to automatically fill a water reservoir. Unit connects to standard 1/4" OD tubing water supply lines. 20 feet of 1/4" tubing is included for plumbing connection. To automate the above Hydrofogger and maintain RH levels of 85%, the accessory H-2733.1 Cycle Timer is recommended. The dimensions are 14" x 14" (360mm x 360mm).

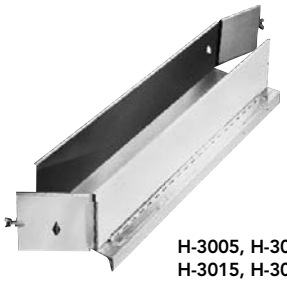
Description	Model
Hydrofogger 300. 115V, 60Hz, 0.9 Amp, 103 watts.	H-2733

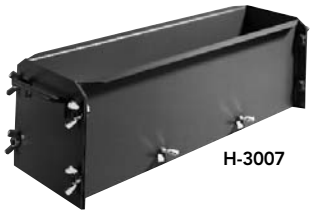
Description, Replacement Parts	Model
Cycle Timer with Trippers for up to 24 On/Off cycles per day.	H-2733.1

Shipping wt. 31 lbs. (14.1kg)



H-3030


H-3005, H-3010,
H-3015, H-3020


H-3007


H-2827


H-3009

Concrete Beam Tester

Self-contained shock-proof portable concrete beam tester accurately and easily determines flexural strengths of up to 6x6" cross-section test beams. Hydraulically driven unit uses center-point loading method with continuous readings to the break and retains maximum reading to eliminate lost data. Gauge resets to zero for repeat tests. Lightweight aluminum unit has dual registration of modulus of rupture between 10,000 lbf. and 0–4,500 kgf.

Description	Model
Beam tester, manual pump, 16" distance, single point.	H-3030
Beam tester, manual pump, 18" distance, single point.	H-3032
Beam tester, manual pump, 18" distance, 3-point loading.	H-3033

Shipping wt. 65 lbs. (29kg)

Concrete Beam Forms

Reusable. Fast and easy to assemble and use. Easy to strip clean, knock down and store. Molds give accurate specimens for center or third-point loading tests. Meet ASTM C31, C78, C192, C293; AASHTO T23, T97.

Lightweight, Stamped, Steel Model

Hinge-free, collapsible into interchangeable parts. Fastened with wing nuts.

Description	Model
Concrete beam form, lightweight steel. 6x6x21" (152x152x533mm). Shipping weight 21 lbs. (9.5kg).	H-3007

Heavyweight, Machined 3/8" Steel Models

One piece sides hinged to base, ends hinged to sides. Fastened with wing nuts.

Description	Model
Concrete beam form, heavyweight 3/8" steel. 6x6x21" (152x152x533mm). Shipping weight 59 lbs. (26.8kg).	H-3005
Concrete beam form, heavyweight 3/8" steel. 6x6x24" (152x152x610mm). Shipping weight 67 lbs. (30.4kg).	H-3010
Concrete beam form, heavyweight 3/8" steel. 6x6x30" (152x152x762mm). Shipping weight 82 lbs. (37.2kg).	H-3015
Concrete beam form, heavyweight 3/8" steel. 6x6x36" (152x152x914mm). Shipping weight 100 lbs. (45.4kg).	H-3020

Plastic Model

Weighs less than one quarter of steel molds. Requires no tools. Interlocking joints make mold virtually watertight, eliminate need to grease or seal joints. Thumb screws speed assembly, stripping & cleaning.

Description	Model
Concrete beam form, plastic model. 6x6x21" (152x152x533mm). Shipping weight 10 lbs. (4.5kg).	H-3009

Cube Mold

Single-cavity steel cube mold with base plate is 6x6x6" (152x152x152mm). Used for compression testing of concrete cubes and for mortar specimens in the Time of Initial and Final Setting of Concrete. Meets ASTM C403; AASHTO T197.

Description	Model
Cube mold, 6x6x6".	H-2827
Cube mold, metric, 150x150x150mm.	H-2827M

Shipping wt. 27 lbs. (12.3kg)

H-2967, H-2968

H-2970

H-2970.1

H-3755

H-2999

Concrete Curing Box

For curing concrete cylinders by maintaining temperature and humidity for 48 hours. Holds 22 standard 6 x 12 (152 x 305mm) test specimens. Preset 73°F temperature control maintained at ±2°F (22.2°C at ±1.1°C) throughout the curing period. Lightweight, portable—weighs only 74 lbs. (33.6kg). Plastic construction is very rugged, durable, rustproof. Sturdy, 14-gauge steel bottom rack provides optimum water circulation for even curing. Bottom valve for fast drainage. Lockable lid resists tampering. Requires minimum 15 amp circuit. I.D. = 18x54x17" (457x1372x432mm). Meets ASTM C192, C511, C31; AASHTO M201, T126, T23.

Description	Model
Curing Box, Economy, heats only. Adjustable temperature controller, dial thermometer. 115v, 60hz.	H-2967
220V, 50hz model.	H-2967.5F

Shipping wt. 75 lbs. (33.5kg)

Description	Model
Concrete curing box, Deluxe, both heats and cools. Temperature set buttons, digital display for water temperature, indicator lights for heat/cool modes. 115V, 60Hz.	H-2968
220V, 50Hz model.	H-2968.5F

Shipping wt. 162 lbs. (73.4kg)

Field Curing Chest

The H-2970 series Field Curing Chest offers the user with an affordable approach to store, transport and cure concrete test cylinders. The chest consists of a 24" x 24" x 14" (610 x 610 x 356mm) zipper-sealed polymer and vinyl chest with 1/2" (12.7mm) insulating foam and a thermostatically controlled fan-circulated heater. The unit can accept up to eight 6" x 12" concrete cylinders.

Description	Model
Field Curing Chest. 115V, 60Hz.	H-2970

Shipping wt. 15 lbs. (6.8kg)

6" Test Cylinder Transport Rack

The H-2970.1 6" Test Cylinder Transport Rack securely holds (8) 6 x 12 inch specimens in a lightweight and durable frame, which can be secured to a truck bed or used in conjunction with the Field Curing Chest listed above. Open center position is available for heater storage. Will not rot or rust.

Description	Model
6" Test Cylinder Transport Rack.	H-2970.1

Vibrating Table

Cushioned impact vibrating table with load capacity of 300 lbs. (136.1kg) is used to vibrate beam forms, cylinder molds, concrete products and soil specimens. Table deck is 20x20" (508x508mm). Table vibrates at 3600 vpm. Amplitude or power of vibration is regulated by means of a rheostat in the electrical control circuit. Not supplied with cord and plug due to high wattage consumption requirements—must be connected through electrical conduit and fittings. Meets ASTM C31, C192.

Description	Model
Vibrating table. 115V. 60Hz. 10h. 4.5 amps. AC.	H-3755
Vibrating table. 230V. 50Hz. 10h. 2.3 amps. AC.	H-3755.5F

Shipping wt. 123 lbs. (55.8kg)

Vibration Indicator, Tachometer Type

Precision tachometer is pen size to allow accurate readings even on hard-to-reach equipment. Scale gives readings from 2,000 to 21,000

Description	Model
Vibration indicator, tachometer type	H-3753

Vibration Indicator, Visual Type

Visual indicator gives accurate reading of amplitude of vibration so vibrating table may be adjusted to ASTM specification.
See photo on page 125.

Description	Model
Vibration indicator, visual type	H-3754

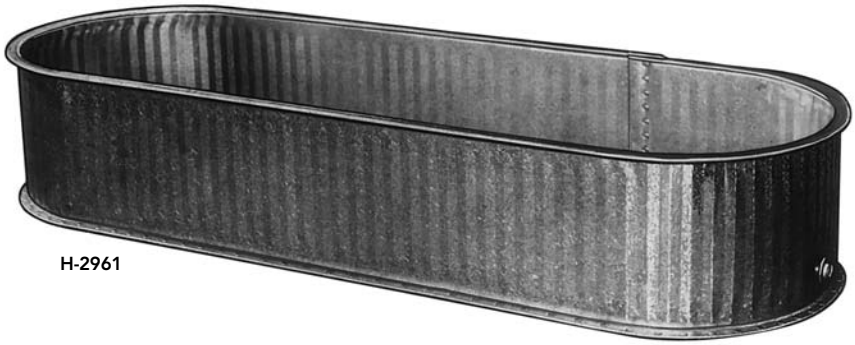
Laboratory Vibrator

Lightweight square-head model is used for vibrating concrete test cylinders and molds in the laboratory or field. Unit is flexible-shaft type, powered with 3/4 HP electric motor. Shaft is 24" (610mm) long; vibrating head is 1" sq x 13" L (25x330mm) with a speed of 10,000 vpm. Meets ASTM C31, C138, C192. **See photo on page 125.**

Description	Model
Laboratory vibrator. 115V. 50/60Hz. 7 amps. 1ph.	H-2999
Laboratory vibrator. 230V. 50/60Hz. 3.6 amps. 1ph.	H-2999.4F

Shipping wt. 21 lbs. (9.5kg)

Note: Other lengths and tip sizes available, contact Humboldt.


H-2961


H-2986A


H-2985

Curing Tanks

Useful for curing cylinders, beams and material needing total immersion in laboratory or the field. Tanks are constructed from 20ga. galvanized steel; side walls are deeply corrugated and made from one piece, having only one side seam. All joints are assembled with elastic packing and rivets. Rolled into the metal at top of the tank is a steel pipe, forming a rigid top that will not break or get out of shape. Larger tanks are supplied with top angle brace. Meets ASTM C192; AASHTO T127.

Curing Tanks

Capac. gal. (L)	Width ft. (m)	Depth ft. (m)	Length ft. (m)	Shp. Wt. lbs. (kg)	Models
95 (360L)	2 (.6m)	2 (.6m)	4 (1.2m)	55 lbs. (25kg)	H-2961
142 (538L)	2 (.6m)	2 (.6m)	6 (1.8m)	80 lbs. (36.3kg)	H-2961.1
300 (1,136L)	3 (.9m)	2 (.6m)	8 (2.4m)	120 lbs. (54.4kg)	H-2961.2
385 (1,458L)	3 (.9m)	2 (.6m)	10 (3.1m)	155 lbs. (70.3kg)	H-2961.3

Precision Tank Heater

Designed for efficient and economical indoor operation with H-2961 series curing tanks where temperature does not fall below 55°F (13°C). Temperature is thermostatically controlled and adjustable. The 1,000W, 8.3 amp, 120V solid-state controlled element will warm to a maximum of 200°F. Heater is incoloy sheathed to prevent rust and is secured to aluminum base. Base provides protection for heater components from test cylinders in the tank. Overall length: 22-1/2" (46cm).

Description	Model
Electric tank heater. 110V. 50/60Hz. AC.	H-2986A
Electric tank heater. 230V. 50/60Hz. AC.	H-2986A.4F

Shipping wt. 6 lbs. (2.7kg)

Curing Tank Circulator

Silent submersion pump is 1/160HP (30W) with 120GPH rating at 1-ft. (0.3cm) height. Circulation from the 1/4" (6.4mm) MNPT discharge may be aimed; simply place the housing on any of five sides. Flow also may be directed using elbow connector (included) or by attaching extension tubing. Working parts are lubricated and sealed for life in glass-filled nylon housing with flush inlet. Features 6-ft. (1.8m) grounded cord.

Description	Model
Curing tank circulator, 110V 60Hz.	H-2985
Curing tank circulator, 220V, 50/60Hz.	H-2985.4F

H-2983

H-2988

H-2735

H-2745

Curing Tank Heater

Curing tank heaters are recommended for H-2961 series curing tanks. Heavy-duty, vertical loop curing tank heater is designed for heating large capacity curing tanks. Thin profile along tank wall allows maximum work space inside the tank. A submersible pump circulates the curing solution through heating coils. Solution level should be a minimum 6" (15.2cm) above the heating coils at all times to prevent overheating damage. Thermostat has a range of 0° to 100°F. Heater has a capillary and bulb that serve as temperature sensing device. Pilot light indicates when heater is working. Heater attaches to side of curing tank.

Description	Model
Curing tank heater. 240V. 50/60Hz. 7.5KW.	H-2983

Shipping wt. 65 lbs. (29.48kg)

Heater/Circulator

Analog controller with proportional temperature control. Low liquid safety. Suitable for use with any tank or jar style bath to create a highly accurate constant temperature circulating system at above ambient temperatures. Minimum immersion depth 3" (8cm), maximum immersion depth 7" (17cm). Clamp-on style fits up to 1-3/16" (3cm) wall thickness, or rod type lab stand. All stainless steel construction. Two-speed pump minimizes turbulence in small tanks, maintains greater uniformity in large tanks. Adjustable flow director accepts 1/2" (13mm) I.D. tubing for external circulation. Suitable for use with wide variety of fluids. 6x5x13" (152x127x330mm).

Heater/Circulator					
Temp Range	Temp Stability	Display	Pumping (liters/min)	Over-Temp Cutoff	Model
5 C above ambient to 100 C	0.2 C	H-2614 Thermometer (included)	7 or 15	Adjustable	H-2988
Heater/Circulator, 120V, 60Hz, 9 amp.					
Heater/Circulator, 220V, 50/60Hz, 5 amp.					H-2988.4F

Shipping wt. 10 lbs (4.5kg)

Temperature Chart Recorder with Remote Probe

Used to monitor curing tank temperatures, as well as a wide range of other temperature recording applications in concrete and cement testing laboratories. The recorder has an accuracy of ±0.5% of full scale ±1°C (1.8°F) and can be set for either 7-day or 24-hour recording times. In the event of a power outage, the unit incorporates a 9v battery backup system. The recorder is supplied complete with 7-day recording charts (0 to 100°F/C), pen, battery and bead wire probe.

Description	Model
Temperature chart recorder with remote probe, 120V 60 Hz.	H-2735
Temperature chart recorder with remote probe, 240V 50-60 Hz.	H-2735.4F

Description, Optional Accessories	Model
6" Stainless steel probe with 4' lead (included).	H-2735.3
10' Straight extension lead for H-2735.3 (optional).	H-2735.4

Description, Replacement Parts	Model
7-Day charts, pkg. of 60.	H-2735.1
Replacement pen for H-2735.	H-2735.2

Temperature and Humidity Chart Recorder

This general-purpose chart recorder is ideally suited for basic temperature and humidity monitoring. The recorder has a user selectable temperature range of +32 to +100°F (0 to +50°C) at an accuracy of ±1.8°F (±-1°C). Humidity measurements and recording can be made Within the range of 0 to 95% RH (non-condensing) at an accuracy of ±3% from 0 to 90% at 73°F. The recorder is supplied complete with 120v AC power adapter, pens and 7-day recording charts.

Description	Model
Temperature and humidity chart recorder, 120V 60 Hz.	H-2745
Temperature and humidity chart recorder, 240V 50-60 Hz.	H-2745.4F

Description, Replacement Parts	Model
7-Day charts, pkg. of 60.	H-2735.1
Replacement pens for H-2740.	H-2745.2

H-2952

H-2925 Series

Vertical Cylinder Capper

For capping 6" dia. x 12" high (152x305mm) concrete test cylinders when making compression tests. Simplifies capping process by assuring plane end surfaces are right angles to the axis of the cylinder. The upright is a guide for positioning the cylinder. Molten capping compound is poured into the mold (plate); then cylinder is placed on the capping material. After the compound is set, the capped cylinder is removed for testing. All types of capping compounds can be used with this apparatus.

Capping plate is machined and finish-ground from cold-rolled steel to within .002" (.05mm) planeness. Thickness of the capping plate is 3/4" (19mm), to allow regrinding and refinishing after considerable usage should the plate become gouged. Capping plates are round, allowing circular rotation during use that results in uniform wearing down of contacting surfaces for maximum length of service. The frame is machined from high-strength aluminum alloy. Meets ASTM C31, C39, C192, C617; AASHTO T22, T23, T126, T231.

Description	Model
Vertical cylinder capper.	H-2952

Shipping wt. 27 lbs. (12.3kg)

Capping Plate

Replacement ring and bottom plate for H-2952 vertical cylinder capper.

Description	Model
Capping plate.	H-2952.3

Shipping wt. 16 lbs. (7.3kg)

Vertical Cylinder Capping Kit

Kit includes one each of the following parts. See individual components for descriptions.
H-2945 cylinder carrier
H-2952 vertical cylinder capper
H-2953 compound melting pot
H-2957 capping compound
H-2958 ladle
Meets ASTM C31, C39, C192, C617; AASHTO T22, T23, T126, T231.

Description	Model
Vertical cylinder capping kit with compound melting pot, 110V, 60Hz.	H-2951
Vertical cylinder capping kit with compound melting pot, 220V, 50/60Hz.	H-2951.4F

Shipping wt. 140 lbs. (63.5kg)

Vertical Cylinder Capper—Universal

Base and capping plate are machined from cold-rolled steel. Capping plate is finish-ground within .002" (.05mm) planeness. Guide is machined from high-strength cast-aluminum alloy.

Description	Model
Vertical cylinder capper for 2" dia.x 4" (51x102mm) specimens.	H-2925A
Vertical cylinder capper for 3" dia.x 6" (76x152mm) specimens.	H-2925B
Vertical cylinder capper for 4" dia.x 8" (102x203mm) specimens.	H-2925C
Vertical cylinder capper for 2.5" dia. specimens.	H-2925E

Shipping wt. 18 lbs. (7.7kg)

Capping Plates

Replacement top and bottom plates for H-2925 vertical cylinder capper.

Description	Model
Capping plate for 2" dia. x 4" (51x102mm) specimens.	H-2925A.1
Capping plate for 3" dia. x 6" (76x152mm) specimens.	H-2925B.1
Capping plate for 4" dia. x 8" (102x203mm) specimens.	H-2925C.1

H-2953, H-2954, H-2955, H-2948, H-2949

H-2958

H-2946D

H-2900.6

Compound Melting Pots

Designed for melting capping compound, paraffin and similar materials, compound melting pots feature adjustable thermostat to deliver close temperature control automatically from 100° to 320°F (37.8 to 160°C). Includes cover, pilot light, 6' (1.8m) 3-conductor grounded cord set. Inner pot is cast aluminum encased in a metal jacket with fiberglass and air insulation, keeping heat loss to a minimum. Replaceable heating elements are securely clamped to the bottom and sides of the crucible for even heat distribution. Meets ASTM C617; AASHTO T231.

Compound Melting Pots				
Capacity	Amps	Shipping Wt.	Meets Specs	Model
4qt. 110V, 60Hz. 3.8L. 220V. 50/60Hz.	6 3	13 lbs. (5.9kg)	ASTM C617; AASHTO T231	H-2953 H-2953.4F
8qt. 110V. 60Hz. 7.6L. 220V. 50/60Hz.	10 5	27 lbs. (12.3kg)		H-2954 H-2954.4F
12qt. 110V. 60Hz. 11.4L. 220V. 50/60Hz.	11 5.5	29 lbs. (13.2kg)		H-2955 H-2955.4F
20qt. 110V. 60Hz. 19L. 220V. 50/60Hz.	12 6	32 lbs. (14.5kg)		H-2948 H-2948.4F
28qt. 110V. 60Hz. 26.5L. 220V. 50/60Hz.	15 7.5	38 lbs. (17.3kg)		H-2949 H-2949.4F

Concrete Capping Compound, Powder

Cylcap pours at about 240°F (116°C); uncontaminated spillover can be remelted to eliminate loss from pouring waste. Compound does not deteriorate in any state, as dry powder, liquid or hardened cap. It maintains its strength when specimens are stored in a humidity chamber. Supplied as a dry powder in moisture-proof bag. Meets ASTM C617; AASHTO T231.

Description	Model
Powder-Style Capping Compound, 50 lb bag.	H-2957

Shipping wt. 50 lbs. (22.7kg)

Concrete Capping Compound, Flake-Style

Sauereisen No. 600 sulfur base flake-form capping compound melts and sets within minutes. Silica-filled compound has 150psi bond strength, 9000psi compressive strength and 605psi tensile strength. Compound pours between 265 and 290°F (129 to 143°C). Over-heated material's viscosity is reinstated by decreasing temperature to 290°F. Meets ASTM C307, C321, C386, C579, C617, D71.

Description	Model
Flake-style capping compound, 50 lb. bag.	H-2959

Capping Ladle

Stainless steel ladle with 4" (102mm) dia. bowl is used in transferring capping compound from melting pot to capping fixture.

Description	Model
Capping ladle.	H-2958

Econ-o-Cap

Precision-machined high-alloy steel retaining caps retain compression pads that fit over the ends of the concrete cylinder. Compression pads are made from tough elastomeric material that flows into irregularities to distribute the test load uniformly to assure consistent breaks. Meets ASTM C1231; AASHTO T22, T851.

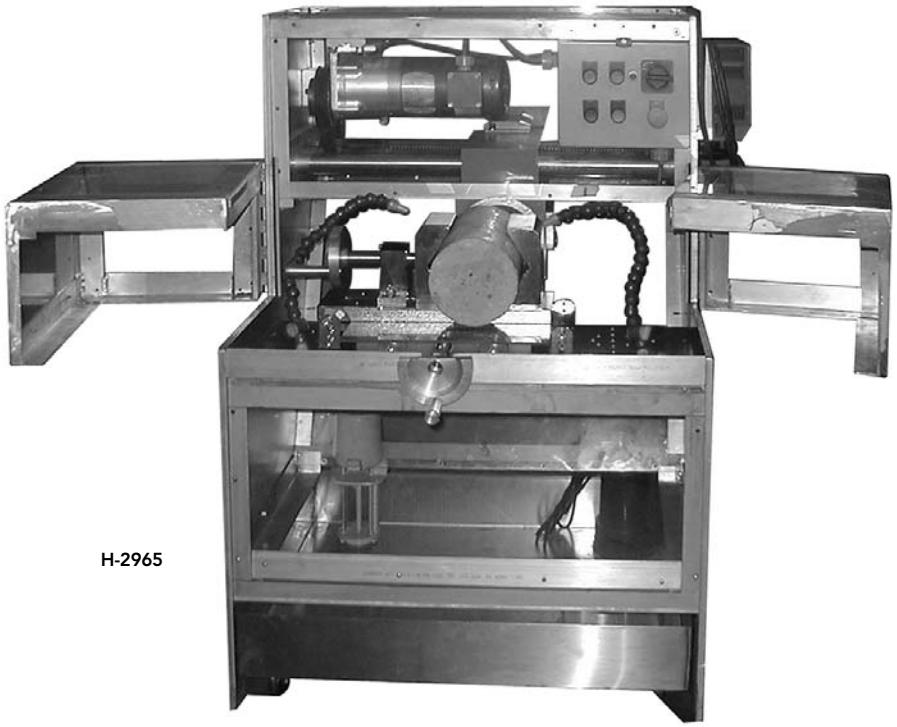
Description	Model
Econ-o-Cap set: 2 rings and two 60 durometer pads for 6" dia. x 12" specimens.	H-2946D
Econ-o-Cap set: 2 rings and two 60 durometer pads for 3" dia. x 6" specimens.	H-2946B
Econ-o-Cap set: 2 rings and two 60 durometer pads for 4" dia. x 8" specimens.	H-2946C

Description, Replacement Parts & Accessories			
	Pad Diameter		
One 6" cylinder pad for H-2946D	6-1/8"	Must specify durometer: either 50, 60, or 70. i.e.: H-2946DCP60	H-2946DCP
One 6" cylinder pad (old style).	6-3/16"		H-2946DOCP
One 3" cylinder pad for H-2946B.	3-1/8"		H-2946BCP
One 4" cylinder pad for H-2946C	4-1/8"		H-2946CCP
One 6" dia. replacement ring.			H-2946DR
One 3" dia. replacement ring.			H-2946BR
One 4" dia. replacement ring.			H-2946CR

Concrete Cylinder Wraps

Used to minimize fragment scattering and reduce cleanup time after the compression test. Made of canvas nylon with Velcro fastening strips.

Description	Model
Cylinder Wrap for 4" dia. Samples.	H-2900.4
Cylinder Wrap for 6" dia. Samples.	H-2900.6



H-2965

Concrete Cylinder End Grinding Machine

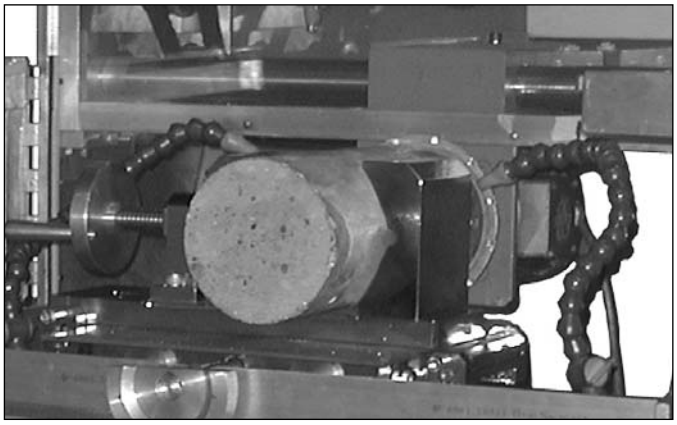
- Grinds the faces of the concrete cylinder ends plane and parallel to within ASTM C617
- Usually one pass of the diamond wheel is sufficient
- Compression testing can commence immediately after grinding
- Eliminates fumes and waiting time associated with capping compound

The new H-2965 concrete cylinder grinding machine is ideally suited for use by commercial testing labs and producers involved in compressive strength testing of high-strength concrete and rock.

The new design incorporates plexiglass paneling and stainless steel bolts to minimize corrosion. The adjustable chuck is set to grind cylinders or cores frm 4" to 6" in diameter. With the adjustment of only 2 bolts, 3" to 4" diameter specimens may also be ground.

The unit is supplied complete with a high quality, genuine diamond cutting wheel.

Rotation speed of diamond cutting wheel is variable to 6200 RPM, depending on quality of finish desired.



Specifications:

Sample Size.	Adjustable; 6x12", 4x8", 3x6" cylinders.
Cut Precision.	Plane and parallel to within 0.002".
Feed.	Removes 0.4mm of material per handwheel rotation.
Cutting Head.	Diamond wheel.
Utilities Req.	Water source required for coolant.
Dimensions.	43" L x 31" D x 42" H (1092 x 787 x 1067mm).
Shipping wt.	742 lbs. (336kg).

Description	Model
Concrete cylinder grinding machine. 120V,60Hz.	H-2965
Concrete cylinder grinding machine. 220V,50Hz.	H-2965.5F

Description, Replacement Parts	Model
Diamond cutting wheel.	H-2965.1

HCM-2500DI

DI/DIR Display

HCM-2500 Series 250,000 LBF (1,112kN) Concrete Compression Testers

- Complete and ready to use—includes platens for testing 6" x 12" (152 x 305mm) cylinders using capping compound or capping pad methods.
- Wide testing range—from 2,500 to 250,000 lbf. at an accuracy of +/- 0.5% of indicated load.
- Supplied complete with safety guard doors.
- Choice of three different digital display systems to choose from to meet individual testing needs.
- Adaptable—wide range of optional accessories for testing beams, cores, cubes and block test specimens.
- Meets ASTM C39, E4; AASHTO T22.

Note: Please see page 79 for a complete listing of accessories for use on the HCM-2500 Series Concrete Compression Testers.

These lightweight and portable compression testers are ideally suited for job site or laboratory testing applications. The unique construction of the structural steel side members and solid steel crossheads from a load frame that offers the stability needed for accurate and repeatable test results.

Testing pressure is applied to the specimen by means of a 6" (152mm) diameter power piston with a working stroke of 2-1/2" (63.5mm). The 6-1/2" (165mm) diameter, spherically seated upper platen is precision ground and hardened and incorporates concentric circles for easy specimen centering.

Pressure is applied to the system by means of two-stage hydraulic pump assembly with controls for controlled advance, rapid advance, hold and retract functions.

Three different digital display systems are available to meet your exact testing needs and budget. These include:

The economical DI and DIR Series for basic compressive strength testing, with both models featuring user-selectable engiineering units of Lb, N, kN and kg, on any easy-to-read transflective display with 3/8" (9.5mm) high digits. The DIR Series has the added feature of displaying both rate of load and load simultaneously.

The mid range SD series that that combines a 32 bit microprocessor with an auto-ranging data acquisition processor to produce accurate digital measurements of load, specimen stress and rate of load monitoring. The user can select lb, kN, N or Kg load units, in, mm or cm dimensional values, PSI, mPa, kPa or Kg/cm2 stress values, as well as rate of load display in lbs, kN, N or Kg units of time in minutes or seconds. All of which selectable by the operator. The indicator consists of a 2-line 16 character alphanumeric backlit LCD and keypad functions. Up to 150 tests with specimen ID information can be stored in memory for output to a PC or printer.

For the ultimate in digital load indication, the top-of-the-line LX series might be the choice for you. This system utilizes a 20-character alphanumeric blue fluorescent display system and keypad. In addition to all of the capabilities of the SD series, the LX series offers the user with cylinder correction factor and beam test functions, load vs. time (X-Y) plotting to printers, supervisor lock out functions as well as data storage for up to 1,000 tests.

Description

Display Type	Design Type	Inside Dimensions W x D x X	Outside Dimensions W x D x X	Voltage	Shipping Wt.	Model
DI Series	Single Unit with digital and pump on right side of frame	9.25" x 19.5" (235 x 495mm) (Less Upper Platen)	27" x 12.5" x 34" (686 x 318 x 864mm)	115V, 60HZ	780 lbs. (354kg)	HCM-2600DI
				220V, 60HZ		HCM-2600DI.2F
				220V, 50HZ		HCM-2600DI.5F
DIR Series			27" x 12.5" x 34" (686 x 318 x 864mm)	115V, 60HZ		HCM-2600DIR
				220V, 60HZ		HCM-2600DIR.2F
				220V, 50HZ		HCM-2600DIR.5F
SD Series			30" x 12" x 34" (762 x 305 x 864mm)	115V, 60HZ		HCM-2500SD
				220V, 60HZ		HCM-2500SD.2F
				220V, 50HZ		HCM-2500SD.5F
LX Series				115V, 60HZ		HCM-2500DB
				220V, 60HZ		HCM-2500DB.2F
				220V, 50HZ		HCM-2500DB.5F

Note: HCM0020 Series, 20,000 lb. capacity, motorized beam tester is available, contact Humboldt for details.

HCM-3000SD

HCM-3000 Series 300,000 LBF (1,334kN) Concrete Compression Testers

- Complete and ready to use—includes platens for testing 6" x 12" (152 x 305mm) cylinders using capping compound or capping pad methods.
- Wide testing range—from 3,000 to 300,000 lbf. at an accuracy of +/- 0.5% of indicated load.
- Rigid Frame—with 10.5M lbs/in frame stiffness.
- Supplied complete with safety guard doors.
- Choice of three different digital display systems to choose from to meet individual testing needs.
- Adaptable—wide range of optional accessories for testing beams, cores, cubes and block test specimens.
- Meets ASTM C39, E4; AASHTO T22; ACI.

Note: Please see page 79 for a complete listing of accessories for use on the HCM-3000 Series Concrete Compression Testers.

The HMC-3000 Series Compression tester combines a rigid compact frame design with digital accuracy all at an affordable price. The rigid frame features a unique wrap around welded box design that anchors all four corners of the frame together, resulting in a solid one-piece unit that exceeds ACI frame rigidity requirements.

Testing pressure is applied to the specimen by means of a 7" (178mm) diameter power piston with a working stroke of 3" (76.2mm). The 6-1/2" (165mm) diameter, spherically seated upper platen is precision ground and hardened and incorporates concentric circles for easy specimen centering.

Pressure is applied to the system by means of two-stage hydraulic pump assembly with controls for controlled advance, rapid advance, hold and retract functions.

Two different digital display systems are available to meet your exact testing needs and budget. These include:

The SD series combines a 32 bit microprocessor with an auto-ranging data acquisition processor to produce accurate digital measurements of load, specimen stress and rate of load monitoring. The user can select lb, kN, N or Kg load units, in, mm or cm dimensional values, PSI, mPa, kPa or Kg/cm2 stress values as well as rate of load display in lbs, kN, N or Kg units of time in minutes or seconds. All of which selectable by the operator.

The indicator consists of a 2-line 16 character alphanumeric backlit LCD and keypad functions. Up to 150 tests with specimen ID information can be stored in memory for output to a PC or printer.

For the ultimate in digital load indication, the top-of-the-line LX series might be the choice for you. This system utilizes a 20-character alphanumeric blue fluorescent display system and keypad. In addition to all of the capabilities of the SD series, the LX series offers the user with cylinder correction factor and beam test functions, load vs. time (X-Y) plotting to printers, supervisor lock out functions, as well as data storage for up to 1,000 tests.

Description						
Display Type	**Design Type**	**Inside Dimensions W x D x X**	**Outside Dimensions W x D x X**	**Voltage**	**Shipping Wt.**	**Model**
SD Series	Single Unit with digital and pump on right side of frame	9.5" x 18.5" (241 x 470mm) (Less Upper Platen)	29" x 11.75" x 34.375" (737 x 298 x 873mm)	115V, 60HZ	975 lbs. (442kg)	HCM-3000SD
				220V, 60HZ		HCM-3000SD.2F
				220V, 50HZ		HCM-3000SD.5F
LX Series				115V, 60HZ		HCM-3000DB
				220V, 60HZ		HCM-3000DB.2F
				220V, 50HZ		HCM-3000DB.5F

HCM-4000SD

HCM-4000 Series 400,000 LBF (1,780kN) Concrete Compression Testers

- Two model styles—separate console or single unit design.
- Complete and ready to use—includes platens for testing 6" x 12" (152 x 305mm) cylinders using capping compound or capping pad methods.
- Wide testing range—from 4,000 to 400,000 lbf. at an accuracy of +/- 0.5% of indicated load.
- Supplied complete with safety guard doors.
- Choice of three different digital display systems to choose from to meet individual testing needs.
- Adaptable—wide range of optional accessories for testing beams, cores, cubes and block test specimens.
- Meets ASTM C39, E4; AASHTO T22; ACI-363; BS 1610 and 1810.

Note: Please see page 79 for a complete listing of accessories for use on the HCM-4000 Series Concrete Compression Testers.

The HCM-4000 series frame uses four structural steel side members welded to solid steel crossheads. This wrap around box construction anchors all four corners of the load frame together, creating a stiff distortion resistant frame the exceeds ACI-363 stiffness requirements.

The wide opening of the frame allows users to test blocks up to 12" (305mm) wide using the block platen accessory.

Testing pressure is applied to the specimen by means of a 8" (203mm) diameter power piston with a working stroke of 2-1/2" (63.5mm). The 6-1/2" (165mm) diameter, spherically seated upper platen is precision ground and hardened and incorporates concentric circles for easy specimen centering.

Pressure is applied to the system by means of two-stage hydraulic pump assembly with controls for controlled advance, rapid advance, hold and retract functions.

Two different digital display systems are available to meet your exact testing needs and budget. These include:

The SD series that that combines a 32 bit microprocessor with an auto-ranging data acquisition processor to produce accurate digital measurements of load, specimen stress and rate of load monitoring. The user can select lb, kN, N or Kg load units, in, mm or cm dimensional values, PSI, mPa, kPa or Kg/cm2 stress values as well as rate of load display in lbs, kN, N or Kg units of time in minutes or seconds. All of which selectable by the operator. The indicator consists of a 2-line 16 character alphanumeric backlit LCD and keypad functions. Up to 150 tests with specimen ID information can be stored in memory for output to a PC or printer.

For the ultimate in digital load indication, the top-of-the-line LX series might be the choice for you. This system utilizes a 20-character alphanumeric blue fluorescent display system and keypad. In addition to all of the capabilities of the SD series, the LX series offers the user with cylinder correction factor and beam test functions, load vs. time (X-Y) plotting to printers, supervisor lock out functions, as well as data storage for up to 1,000 tests.

Description

Display Type	Design Type	Inside Dimensions W x D x X	Outside Dimensions W x D x X	Voltage	Shipping Wt.	Model
SD Series	Single Unit with digital and pump on right side of frame	13.25" x 18.375" (336 x 467mm) (Less Upper Platen)	40" x 20" x 60.5" (1016 x 508 x 1537mm) (on frame stand)	115V, 60HZ	1,625 lbs. (737kg)	HCM-4000SD
				220V, 60HZ		HCM-4000SD.2F
				220V, 50HZ		HCM-4000SD.5F
LX Series				115V, 60HZ		HCM-4000DB
				220V, 60HZ		HCM-4000DB.2F
				220V, 50HZ		HCM-4000DB.5F
LX Series	Separate console and load frame		Frame: 33" x 20" x 60.5" (838 x 508 x 1537mm) (on frame stand) Console: 18" x18" x 44.5" (457 x 457 x 1130mm)	115V, 60HZ	1,825 lbs. (828kg)	HCM-4000D
				220V, 60HZ		HCM-4000D.2F
				220V, 50HZ		HCM-4000D.5F

HCM-5000DB

HCM-5000 Series 500,000 LBF (2,224kN) Concrete Compression Testers

- Two model styles—separate console or single unit design.
- Complete and ready to use—includes platens for testing 6" x 12" (152 x 305mm) cylinders using capping compound or capping pad methods.
- Wide testing range—from 5,000 to 500,000 lbf. at an accuracy of +/- 0.5% of indicated load.
- Supplied complete with safety guard doors.
- Choice of three different digital display systems to choose from to meet individual testing needs.
- Adaptable—wide range of optional accessories for testing beams, cores, cubes and block test specimens.
- Meets ASTM C39, E4; AASHTO T22; ACI-363; BS 1610 and 1810.

The HCM-5000 series concrete compression testers were developed to meet the needs of today's modern laboratories seeking a high capacity , rigid frame compression tester for use in high volume test applications.

The load frame is manufactured from solid steel plate and completely welded. The two vertical side members are 2" (50.8mm) thick by 18" (457mm) deep with 6" (152mm) thick top and bottom crossheads.

Testing pressure is applied to the specimen by means of a 9" (229mm) diameter power piston with a working stroke of 2-1/2" (63.5mm). The 6-1/2" (165mm) diameter, spherically seated upper platen is precision ground and hardened and incorporates concentric circles for easy specimen centering.

Pressure is applied to the system by means of two-stage hydraulic pump assembly with controls for controlled advance, rapid advance, hold and retract functions.

Two different digital display systems are available to meet your exact testing needs and budget. These include:

The SD series that that combines a 32 bit microprocessor with an auto-ranging data acquisition processor to produce accurate digital measurements of load, specimen stress and rate of load monitoring. The user can select lb, kN, N or Kg load units, in, mm or cm dimensional values, PSI, mPa, kPa or Kg/cm2 stress values as well as rate of load display in lbs, kN, N or Kg units of time in minutes or seconds. All of which selectable by the operator. The indicator consists of a 2-line 16 character alphanumeric backlit LCD and keypad functions. Up to 150 tests with specimen ID information can be stored in memory for output to a PC or printer.

For the ultimate in digital load indication, the top-of-the-line LX series might be the choice for you. This system utilizes a 20-character alphanumeric blue fluorescent display system and keypad. In addition to all of the capabilities of the SD series, the LX series offers the user with cylinder correction factor and beam test functions, load vs. time (X-Y) plotting to printers, supervisor lock out functions as well as data storage for up to 1,000 tests.

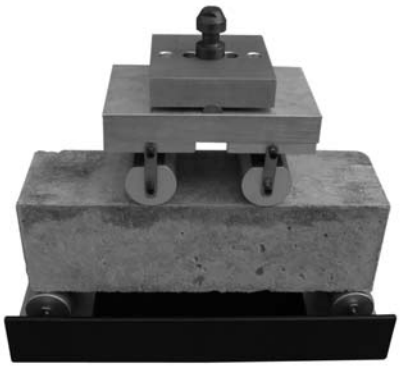
Note: Please see page 79 for a complete listing of accessories for use on the HCM-5000 Series Concrete Compression Testers.

Description						
Display Type	**Design Type**	**Inside Dimensions W x D x X**	**Outside Dimensions W x D x X**	**Voltage**	**Shipping Wt.**	**Model**
SD Series	Single Unit with digital and pump on right side of frame	14" x 18.375" (356 x 467mm) (Less Upper Platen)	23.5" x 24" x 60.5" (597 x 610 x 1537mm) (on frame stand)	115V, 60HZ	2,500 lbs. (1,134kg)	HCM-5000SD
				220V, 60HZ		HCM-5000SD.2F
				220V, 50HZ		HCM-5000SD.5F
LX Series				115V, 60HZ		HCM-5000DB
				220V, 60HZ		HCM-5000DB.2F
				220V, 50HZ		HCM-5000DB.5F
LX Series	Separate console and load frame		Frame: 23.5" x 24" x 60.5" (597 x 610 x 1537mm) (on frame stand) Console: 18" x18" x 44.5" (457 x 457 x 1130mm)	115V, 60HZ	2,675 lbs. (1,213kg)	HCM-5000D
				220V, 60HZ		HCM-5000D.2F
				220V, 50HZ		HCM-5000D.5F

HCM-0112

HCM-0113

HCM-0106



HCM-0119

2" (50mm) Cube Platen Sets

Used for testing 2" (50mm) cubes and 3" (76mm) diameter cylinders or cores. Platen surfaces are ground and hardened. Set consists of a spherically seated upper compression platen and a lower pedestal. Meets ASTM C109, BS812, BS1881.

Description	Model
2" (50mm) Cube test set for HCM-2500 series compression testers.	HCM-0112
2" (50mm) Cube test set for HCM-3000 series compression testers.	HCM-0114
2" (50mm) Cube test set for HCM-4000 and HCM 5000 series compression testers.	HCM-0115

Shipping wt. 56 lbs. (25kg)

6" (152mm) Cube Platen Set

Used for testing 6" (152mm) concrete cubes. Set consists of a spherically seated upper platen/spacer assembly and lower platen. Platen surfaces are ground and hardened. Meets ASTM C39.

Description	Model
6" (152mm) Cube test set for HCM-2500 series compression testers.	HCM-0113
6" (152mm) Cube test set for HCM-3000, HCM-4000 and HCM-5000 series compression testers.	HCM-0116

Shipping wt. 129 lbs. (58kg)

Masonry Block Platens

Used for testing concrete block and other masonry products up to 12" (305mm) wide. The spherical disk is precision machined to assure that the maximum amount of contact surface is used for stability under load pressure. The load bearing plate is connected to the main body by four bolts that allow for adjustment compensation for out of parallel test specimens. Meets ASTM C140, E447.

Description	Model
Block platen for use with HCM-2500 and HCM-3000 series compression testers.	HCM-0106
Block platen for use with HCM-4000 and HCM-5000 series compression testers.	HCM-0107P

Block Platen Carrier Brackets

Enables user to easily install and remove heavy upper block platen without lifting.

Description	Model
Carrier Bracket For 400,000 lb Machines.	HCM-0190SP
Carrier Bracket For 500,000 lb Machines.	HCM-0190P

Flexural Beam Test Set

Used for either center or third point beam tests for modulus of rupture determinations. The upper head assembly has drilled and tapped mounting holes for the adjustment of the bearing blocks for center or third point testing configurations. Meets ASTM C78, C293.

Description	Model
Universal flexural beam testing attachment. For use on 250,000; 400,000 and 500,000 lb machines.	HCM-0119
Universal flexural beam testing attachment. For use on 300,000 lb machines.	HCM-0117

Shipping wt. 200 lbs. (91kg)

Machine Mounting Stands

Used to raise the height of the compression machine to a more convenient height for sample placement. Please note that machine stands are supplied as standard on all machines that have a separate control console.

Description	Model
Machine mounting stand for HCM-2500 series machines	HCM-0200

H-2790

H-3220

High-Low Detector (Rolling Straight Edge)

Used to measure planeness of pavement surface of highway, airport runway, bridge, etc. Requires only one operator to detect, register, and dye mark high and low areas which need to be ground or filled.

- Easy-to-use
- One-person operation
- Vertical sweep vertical indicator

Operator has full view of variations which are magnified 16 times, on a vertical scale graduated in 1/8" (1mm) increments, so that magnified readings range up to 1/4" (6.4mm), high or low.

Specifications:

Frame.	Rectangular aluminum
Wheels.	One front, one rear for support, with one indicator wheel, center. Provision to check wheel alignment. Precision ball bearings, neoprene tires. Scraper blades keep wheels clean to maximize accuracy. Wheel stands for calibration, transport, and storage.
Dye.	Bright orange, 12-oz. (340 g) aerosol can. Non-clogging, contains no fluorocarbons. Mounts beside indicator wheel.
Steering Handle.	T-type with button for discharge of dye.
Scale.	Vertical with large pointer, magnifies variations 16x, mounted above indicator wheel.
Graduations.	1/8" or 1mm.
Readings.	Magnified, range: 0 to 1/4" 6.4mm), high or low.

Description	Model
High-low detector, 10 ft. (3m) span. Shipping wt. 140 lbs. (64kg).	H-2790
High-low detector, 12 ft. (3.7m) span. Shipping wt. 160 lbs. (73kg).	H-2791
High-low detector, 16 ft. (4.9m) span, with reinforcing aluminum riveted to either side of frame. Shipping wt. 200 lbs. (91kg).	H-2792

Description, Replacement Parts & Accessories	Model
Bell/buzzer indicator, sounds simultaneously visual indicator, 9vDC battery powered.	H-2790B
Aerosol dye, carton of 12, 16-oz. (454g) cans.	H-2790D

Benkelman Beam

Measures the deflection of a flexible pavement under moving wheel loads. Extremely accurate and easy to use. Direct-reading dial indicator eliminates need for conversion tables or field calculations.

- Precision accuracy
- Easy to use on test site
- Lightweight, quick set-up
- Easy to transport, easy to store
- No need for conversions or field calculations

Dial indicator vibrator system assures accurate pavement measurements. Telescoping design adds convenience, reduces weight, and saves storage space. Lightweight aluminum construction. Order dial gauge separately. AASHTO T256.

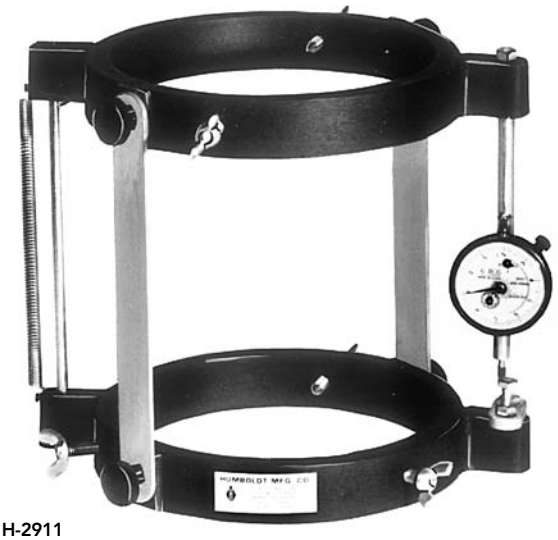
Specifications:

Main Body.	Aluminum with black finish 55" (1,397mm).
Probe Beam.	Telescopes into body, aluminum 8 ft. (2.4m).
Probe Fulcrum.	Provides lever ratio of 2:1, ball pivot bearing.
Vibrator System.	Assures measurement accuracy. Operating switch mounted on top of instrument section. Requires 4 "D" size batteries.
Dial indicators.	Ordered separately. Compensated for direct reading.
Leveling Wheel.	Adjusts beams to proper elevation.
Overall Length.	With beam fully extended 12 ft. (3.7m).

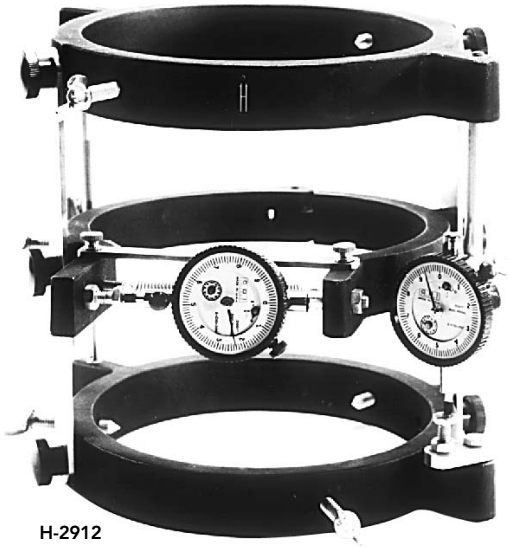
Description	Model
Benkelman Beam.	H-3220

Shipping wt. 40 lbs. (18.1kg)

Description, Replacement Parts & Accessories	Model
Dial indicator, horizontal, 0.4" range x 0.002" divisions.	H-3221H
Dial indicator, vertical, 1" range x 0.002" divisions.	H-3222
Dial indicator, vertical, 25mm range x 0.02mm divisions.	H-3222M



H-2911



H-2912

Compressometer

Apparatus is used for evaluating deformation and strain characteristics of 6" dia. x 12" L (152x305mm) concrete cylinders while undergoing compression testing. Compressometer includes two cast-aluminum alloy yokes, mounting points and central points, stainless steel control rods and a dial indicator. Indicator has a range of 0.2" (5.08mm) and minimum graduations of .0001 (.0025mm). All H-2900 Series Compressometers may be ordered with digital dial indicators, which are switchable to read in either inches or metric, and may be incorporated into data acquisition systems. Meets ASTM C469.

Description	Analog Model	Digital Model
Compressometer for use with 6" dia. x 12"L (152x305mm) concrete cylinders.	H-2911	H-2911D
Compressometer for use with 4" dia. x 8"L (101x203mm) concrete cylinders.	H-2916	H-2916D
Compressometer for use with 3" dia. x 6"L (76x152mm) concrete cylinders.	H-2918	H-2918D

Shipping wt. 22 lbs. (10kg)

Compressometer-Extensometer

Combined compressometer and extensometer for 6" dia.x 12"L (152x305mm) concrete cylinders is a convenient unbounded device. Apparatus contains a third yoke located halfway between the two compressometer yokes and attached to the specimen at two diametrically opposite points. Middle yoke is hinged to permit rotation of the two segments of the yoke in the horizontal plane. Dial indicator gives readings of deformation. Second dial indicator is furnished for compressometer section. Unit measures change in length and in diameter. All H-2900 Series Compress-ometers may be ordered with digital dial indicators, which are switchable to read in either inches or metric, and may be incorporated into data acquisition systems. To do so, add the letter "D" after model number when ordering, i.e., H-2912D. Meets ASTM C469.

Description	Analog Model	Digital Model
Compressometer-extensometer for use with 6" dia. x 12"L (152x305mm) concrete cylinders.	H-2912	H-2912D

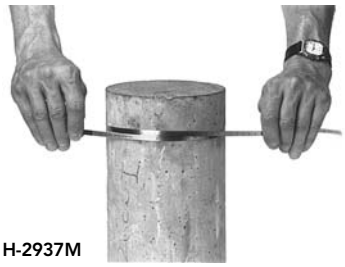
Shipping wt. 26 lbs. (1.8kg)

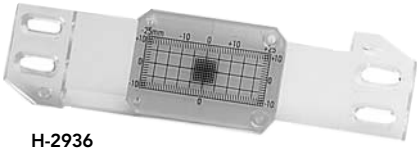
Description	Analog Model	Digital Model
Compressometer-extensometer for use with 4" dia. x 8"L (102x203mm) concrete cylinders.	H-2917	H-2917D
Compressometer-extensometer for use with 3" dia. x 6"L (76x152mm) concrete cylinders.	H-2919	H-2919D

Shipping wt. 17 lbs. (7.7kg)


H-2938


H-2939


H-2937, H-2937M


H-2936


H-3230 & H-3231

Concrete Micrometer

Designed for accurately measuring diameters of concrete cylinders, micrometer has spindles of hardened steel. Thimble and sleeve sections are chrome finish and have black graduations and numbers. Instrument has a range of 5.5 to 6.5 inches; readings can be made to hundredths or thousandths in decimals.

Description	Model
Concrete micrometer.	H-2938

Core Length Measuring Device

For determining concrete core lengths. Device accommodates either 4" or 6" diameter specimens up to 24" long. Allows measurements to be taken at the center of the specimen's upper end, as well as eight equidistant points along the circumference. Measuring rod has gradations 0.10" (2.5mm) apart. Meets ASTM C174.

Description	Model
Core length measuring device.	H-2939

Shipping wt. 19 lbs. (8.6kg)

Pi Tape

Manufactured with the precise accuracy as a micrometer, periphery or Pi tape is a fast, reliable method for measuring diameter of concrete, soil and asphalt cores and cylinders. One reading provides round and out-of-round diameters within accuracy of .001" (.03mm on metric model) by means of special graduations and vernier scale.Tape is spring steel; graduations and numerals are engraved and acid etched on a ground surface. Tape has diameter range of 2 to 12" (50 to 300mm on metric model). Includes certificate of calibration.

Description	Model
Pi tape.	H-2937
Pi tape, Metric.	H-2937M

Crack Monitor Gauge

Simple and accurate device for monitoring & charting movement of cracks & joints in concrete and masonry structures. Any movement is indicated by crosshairs on a grid. Movement may be recorded by periodically copying the crosshair positions on an accompanying chart.

Description	Model
Crack monitor gauge.	H-2936

Multi-Length Strain Gauge Set

Mechanical gauge is recommended as a substitute for the Whittemore strain gauge for many applications. Designed to measure strain in masonry-type materials, structural components under load, opening or closing of structural cracks, measuring relative structural displacements, rock mechanics testing and drying shrinkage of concrete block testing. Instrument frame is cast aluminum alloy with 5 master settings of 2, 4, 6, 8 and 10 inches, easily set for gauging. Dial indicator has .0001" minimum graduation; effective strain range is 0.3". Maximum linear measurement is 0.4". Set includes: strain gauge, dial indicator, 8 brass inserts, 2 contact seats, 2 mounted contact points, invar master bar, punch bar and one compartmented wood storage case. Metric model has 5, 10, 15, 20 and 25cm settings and dial indicator with 002mm graduations. Meets ASTM C426.

Description	Analog Model	Digital Model
Multi-length strain gauge set.	H-3230	H-3230D
Metric multi-length strain gauge.	H-3231	H-3231D

Description, Replacement Parts & Accessories	Model
Contact points for replacement mounting in H-3230 or H-3231 gauge. Hardened tool steel; 45 angle included.	H-3230.2
Brass inserts for mounting specimen or material being measured. 3/8" (10mm) hexagon x 7/8" (22mm) long. 8-32N.C. thread. Package of 100.	H-3230.3
Contact seats used to screw into brass inserts as a measurement position. Stainless steel, hex head, 8-32 N.C. thread	H-3230.4
Invar steel master bar with stainless steel seat inserts. For checking 2, 4, 6, 8 and 10" settings of H-3230 strain gauge.	H-3230.5
Strain gauge punch bar used to accurately locate H-3230.3 brass inserts in material. Has one stationary point and moveable point for settings of 2, 4, 6, 8 and 10 inches.	H-3230.6
Invar steel master bar with stainless steel seat inserts. For use with H-3231 metric strain gauge.	H-3230.5M
Strain gauge punch bar for use with H-3231 metric strain gauge.	H-3230.6M

H-2975

H-2975NR

H-2972

Concrete Test Hammers (Original Schmidt Test Hammers)

The Original Schmidt Concrete Test Hammer is the most frequently used device and method for non-destructive strength testing of concrete and structural components. The spring-driven hammer is also useful in determining when forms may be removed as well as assessing the damage done to a structure from freezing or fire.

In operation, the hammer hits the concrete at a defined energy. Its rebound is dependent on the hardness of the concrete. Through the use of the included conversion table, the rebound value can be converted to compressive strength.

The standard mechanical hammers are available in three different versions depending on your testing requirements.

The standard (Type N) hammer that displays rebound values on a mechanical sliding scale or the standard (Type NR) hammer with rebound values recorded on a strip chart. Both models are designed for testing concrete within the range of 1,500 to 8,000 psi (100 to 600 kg/cm^2). Both models meet ASTM C805 specifications.

For testing thin-walled structural components with a thickness of less than 4" (100mm) or rock cores, the standard (Type L) hammer may be used. This hammer features an impact energy three times smaller than the Type N hammers.

All models include a rubbing stone, carrying case and instruction booklet with conversion charts.

Description		Model
Type N	Standard Concrete Test Hammer	H-2975
Type NR	Standard Concrete Test Hammer with chart recorder. Includes one roll of paper for recording up to 4000 impacts.	H-2975NR
Type L	Lightweight Test Hammer	H-2975L

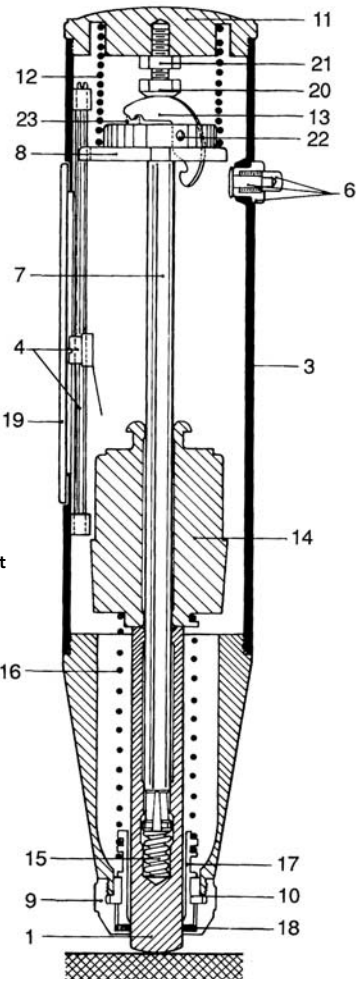
Note: *See the following page for the new Digi-Schmidt 2000 electronic concrete test hammer.*

Calibration Anvil

Hardened steel anvil for calibration of H-2975 test hammer. Includes hammer guide; calibration instructions are furnished with hammers. Meets ASTM C805.

Description	Model
Calibration Anvil.	H-2972

Shipping wt. 40 lbs. (18.2kg)



H-2975 Concrete Test Hammer

Concrete Test Hammer Replacement Parts					
Description	**Model**	**Description**	**Model**	**Description**	**Model**
Impact plunger	H-2975.1	Rear cover	H-2975.11	Plexiglass window scale, printed on window	H-2975.19
Housing, complete	H-2975.3	Compression spring	H-2975.12		
Rider with guide rod	H-2975.4	Pawl	H-2975.13	Trip screw	H-2975.20
Pushbutton, complete	H-2975.6	Hammer mass	H-2975.14	Lock nut	H-2975.21
Hammer guide bar	H-2975.7	Retaining spring	H-2975.15	Pin	H-2975.22
Disk	H-2975.8	Impact spring	H-2975.16	Pawl spring	H-2975.23
Cap	H-2975.9	Guide sleeve	H-2975.17	Replacement rubbing stone	H-2975.27
Two-part ring	H-2975.10	Felt washer	H-2975.18		

H-2976


H-2670A


H-2682

Digi-Schmidt Concrete Test Hammer

The new Digi-Schmidt Concrete Test Hammer couples the original Schmidt Hammer with rebound measuring sensors and microprocessor technology to provide an instrument designed for today's busy user. The method is rapid, reproducible, and has resolution previously unattainable by manual models.

The hammer is connected to a control and display unit by means of a connecting cable. Strength values are shown digitally as they are taken and also displayed as groups of bars on the 128x128 pixel graphic LCD. Mean value and standard deviation for a preset number of measurements are computed and displayed. Via a menu display, the user can select hammer impact direction (up, down, horizontal, etc.) and desired engineering units (psi, MPa, kg/cm^2, or N/mm^2) and indicates the specimen size and type (cylinders, cubes, etc.) for which strength data are to be predicted.

Rebound vs. strength correlation curves for 7 and 28 day strengths are installed in memory, or the users own data may be installed via keyboard entry. The Internal memory holds 5000 measurements, each with date and time. Data can be transferred via the RS-232C interface to PC in Microsoft Excel format under Microsoft Windows using the included cable and software. Direct printing is possible.

Instrument measuring range is 1,450 to 10,150 psi (10-70 N/mm^2) using 2.207 Nm impact energy. Accuracy is ±0.2R with 0.5R reproducibility.

The Digi-Schmidt consists of the test hammer, control and display unit, connecting cable, PC cable, carrying strap, rubbing stone, instruction manual and a plastic carrying case Meets ASTM C805 standards.

Description	Model
Digi-Schmidt Concrete Test Hammer.	H-2976
Printer Cable (Optional).	H-2976C

See Page 176 for more meters with thermocouple capabilities.

Single-Channel Maturity Meter Set

Brighter back-lit display, impact and water resistant too. Simultaneously displays concrete temperature and maturity number via inexpensive, quick-connecting type "T" thermocouple wire. Operating temperature, -20° to 60°C. Temperature readout ± 1°C. Rechargeable battery allows up to 2-1/2 month continuous operation. Includes thermocouple wire, spare plug and battery charger. Meets ASTM C-1074.

Description	Model
Single channel maturity meter.	H-2670A

Multi-Channel Maturity Meter Set

Digital unit gives maturity number calculation, instant readout and temperature history. All four channels may be used simultaneously. All information is available on menu-driven alphanumeric display. Datum temperature is programmable from -20°C to +60°C. Communications port allows information transfer from meter to meter, printer or computer. Includes four type "T" thermocouple wire, connectors, RS-232 communications cable and plastic carrying case. Dimensions: 8x4-3/4x3" (203x121x76mm). Meets ASTM C1074.

Description	Model
Multi-channel maturity meter set.	H-2680

Shipping wt. 7.6 lbs. (3.44kg)

Rechargeable Multi-Channel Maturity Meter

Same as H-2680 except that a rechargeable nickel-cadmium battery is used. A waterproof battery charge connector enables charging from the 120V charger supplied or run directly off of AC power. This unit provides improved low ambient service temperature performance. Meets ASTM C1074.

Description	Model
Rechargeable multi-channel maturity meter.	H-2682

Replacement Parts	Model
Thermocouple wire, 24 gauge, sold per foot.	H-2670.1
Plug for thermocouple wire.	H-2680.P
Printer.	H-2684

H-2978

H-3422

H-2995

Windsor HP Probe System

The Windsor HP Probe System is used to evaluate the compressive strength of in-place concrete. This non-destructive test can be used on fresh or mature concrete with equal effectiveness. The system features a new electronic measuring device for improved accuracy and efficiency. Three individual tests can be automatically averaged and displayed on the LCD in compliance with ASTM procedures. The data, together with time and date of the test can be stored in the memory for uploading to a PC. Two probe and power load types are available. The silver probes can be used for high performance concrete with a strength up to 17,000 psi (110 MPa) and the gold probes for test applications on concrete with less than 3,000 psi (19.4 MPa) strength. The system consists of the drive unit, electronic measuring device, templates, measuring caps, gauge plates and carrying case. Probes are not included and must be ordered separately. Meets ASTM C-803 and BS-1881.

Description	Model
Windsor HP Probe System.	H-2978

Probe Kits

Each certified probe kit includes 3 probes and 3 matched nickel-plated power loads. Use Silver probe kit for natural stone coarse aggregate (density greater than 125 lbs/cu ft). Order Gold probe kit for lightweight aggregate (less than 125 lbs/cu ft density), such as porous man-made aggregate and shale.

Description	Model
Silver probe kit.	H-2978.01
Gold probe kit.	H-2978.03

Moh's Scale of Hardness of Minerals

Set includes 9 specimens, from talc to Carborundum, to determine mineral hardness by scratch test. Numbered specimens are keyed to descriptions inside box cover.

Description	Model
Moh's scale of hardness of minerals.	H-3422

Moisture Measurement System (MMS)

The Moisture Measurement System (MMS) is a powerful and versatile instrument for measuring concrete floor moisture, as well as a wide range of other dampness conditions in buildings. With the included probes, the user can switch between hygrometer and moisture meter modes to gain a thorough understanding of the extent of moisture or dampness related problems within the structure. Uses of the system include:

- Identification of moisture on and below surfaces.
- Measurement of the relative humidity and temperature of air.
- Quantify wood moisture equivalent levels of materials.
- Confirm the occurrence of condensation on surfaces.

The complete system consists of the MMS instrument, a hygrometer probe, extension lead, pin-type moisture probe, two deep wall probes, direct-contact surface temperature sensor, calibration check device, carrying case, batteries and detailed instruction manual. For users who desire to imbed sensors in the floor or use the sleeve method for concrete floor moisture test applications, optional five-pack hygrometer probes and humidity sleeves are available. Meets ASTM E1907.

Description	Model
Moisture Measurement System (MMS).	H-2995

Description, Replacement Parts & Accessories	Model
Hygrometer probes. Pkg. of 5.	H-2995.1
Humidity sleeves. Pkg. of 20	H-2995.2
Extension lead for hygrometer probe.	H-2995.3
Moisture probe.	H-2995.4
Deep wall probes.	H-2995.5
Surface temperature sensor.	H-2995.6

H-2990

H-2993A


H-2980A


H-2977

Moisture Encounters Electronic Hygrometers

Non-destructive moisture detector. Portable, battery-powered unit immediately identifies moisture without scratching or drilling on relatively smooth surfaces. Unit transmits low-frequency signals calibrated to give average moisture content to 100mm depth, in 0–6% H20 range, on clear analog dial. Powered by 9-volt battery.

Description	Model
Moisture Encounter for Concrete 5.9 x 3 x 1.3" (150x75x33mm).	H-2990
Moisture Encounter for Rising Damp, Timber, Felt Roofing, Plaster, Brick, Tiles, Paint, Varnish, Wallpaper. 6 x 3.2 x 1.2" (150 x80x30mm).	H-2991

Vapor Emission Test Kit

The vapor emission test is used for determining the moisture acceptability for the placement of floor coverings and coatings over concrete slab surfaces. Using this method, users can easily quantify the volume of water vapor emitting from a 1,000 square foot concrete slab over a 24-hour period. Commonly known as the Anhydrous Calcium Chloride Vapor Emission Method, the test is directly specified by the vast majority of the Floor Covering Industry as the primary measure of moisture acceptability for floor covering or coating installations. The kit consists of a calcium chloride container, a specifically designed dome cover with seal and step-by-step instructions. A balance or scale readable to 0.1 grams is required, but must be purchased separately. Meets ASTM E1907 and F1869 specifications.

Description	Model
Vapor emission test kit. Pack of 3 kits. For surveying areas up to 1,000 sq. ft.	H-2993A
Vapor emission test kit. Pack of 12 kits. For surveying areas up to 10,000 sq. ft.	H-2993B

Description, Accessories	Model
Portable electronic balance. 200 x 0.1g capacity.	H-4720

Micro Covermeter

The Micro Covermeter accurately determines the position and direction of reinforcement bars and the precise measurement of the concrete coverage. Two different probes are available for use with the instrument. The Maxi-Probe, which enables the instrument to measure large size bars to depths of up to 14" (360mm) and the Mini-Probe, which offers better resolution of dense bars, intersecting bars and mesh to depths of 4.7" (120mm). Accuracy of all readings is to within ±2mm or ±5% up to 75% of the maximum range. When used by an experienced operator, the sizing of bar diameters to ±1 bar size is typical. in cases of extreme material abnormalities, errors of ±2 bar size may occur. The instrument is powered by four "AA" size batteries and incorporates an LCD display with user selectable, English or Metric measurement modes. Probes are not included and must be ordered separately.

Description	Model
Micro Covermeter, less probes. Calibrated for English bar sizes ranging from No.2 to No. 14.	H-2980A
Micro Covermeter, less probes. Calibrated for Metric bar sizes ranging from 5mm to 40mm	H-2980B

Description, Accessories	Model
Mini-Probe. 4.7" (120mm) depth range.	H-2980.1
Maxi-Probe. 14" (360mm) depth range.	H-2980.2

Economy Rebar Locator

Rebar locator detects exact position and orientation of rebars, pre- or post-tensioned concrete cables and lost tendon splices quickly and accurately. Unit measures bar size with ±1/8" accuracy and concrete cover with ±1/8" accuracy. Concrete thickness may be measured in tanks, pipes and other structures where inner lining is steel and within 10" of the surface. Locates ferrous base materials embedded in concrete, masonry or wood to a depth of 10". Includes rechargeable storage battery. Operating temperature range: 23° to 113°F (-5° to 45°C). Unit weighs less than 3-1/2 lbs. (1.6kg)

Description	Model
Rebar locator. 110V. 50/60Hz.	H-2977
Rebar locator. 240V. 50/60Hz.	H-2977.4F

HUMBOLDT

H-2853A

H-2853B

Pundit Pulse Velocity Test System

The Pundit system is primarily used for quality control testing and inspection of concrete structures. The system is ideal for checking concrete uniformity, cavities, cracks, fire or frost defects, as well as strength determinations.

In operation, the instrument measures the speed of which an ultrasonic pulse passes through the material. By taking a series of readings, the operator can then determine if any imperfections are present.

The system can be operated from both AC and battery power and is supplied complete with two 54 kHz transducers with two 12 ft. (3.6m) cables, calibration bar, contact paste, manual and carrying case. Meets ASTM C597, AASHTO TP37 and BS 1881, Part 203. Transducers with other frequencies and longer length cables are available for special test applications. Contact Humboldt for details.

Specifications:

Display:	4-digit LCD.
Ranges:	0.1 to 999.9 microseconds and 1 to 9999 microseconds.
Accuracy:	±0.1 microsecond.
Pulse Repetition Rate:	10 or 100 pulses per second, switch selectable.
Power:	110-240V AC and rechargeable NiCad battery.
Meter Dimensions:	7.3 x 6.3 x 5.1" (186x160x130mm).
Shipping wt.:	17 lbs. (7.8kg).

Description	Model
Pundit pulse velocity test system, 110V.	H-2853A
Pundit pulse velocity test system, 240V.	H-2853A.4F

Pundit Plus Ultrasonic Pulse Velocity Test System

The Pundit Plus is the new generation, pulse velocity test system that features the latest in microprocessor technology for today's increasing demands for accuracy, reliability and ease of operation. For added convenience, the new system incorporates a transducer-mounted switch for ease in recording of readings and built-in memory to store up to 100 readings.

A standard RS-232C port allows the user to download the stored information using Windows '95 or 98' HyperTerminal for exporting into compatible spreadsheet applications. Menu-driven options permit the user to display transit time, velocity, limits or elastic modulus in either English or Metric units.

The complete kit includes the instrument in a nylon holder, AC power supply and power cord, two 54 kHz transducers, two 12 ft. (3.7m) cables, coupling agent, operating manual and heavy-duty aluminum carrying case. Meets ASTM C597, AASHTO TP37 and BS 1881, Part 203. Transducers with other frequencies and longer length cables are available for special test applications. Contact Humboldt for details.

Specifications:

Display:	128x128 dot backlit LCD.
Velocity Measurements:	1 to 9999 ft/s or m/s at a accuracy of ±1 ft/s or m/s.
Transit Time Measurements:	1 to 9999 microseconds using either 0.1 or 1 microsecond range at an accuracy of ±1 microsecond.
Elastic Modulus Measurements:	up to 999.9 GN/m^2 at an accuracy of ±0.1 GN/m^2.
Outputs:	RS-232C and Scope.
Power:	110-240V AC and rechargeable NiMH battery.
Meter Dimensions:	9.8 x 6.3 x 3.9" (250x160x100mm).
Shipping wt.:	18 lbs. (8.2kg).

Description	Model
Pundit Plus ultrasonic pulse velocity test system, 110V.	H-2853B
Pundit Plus ultrasonic pulse velocity test system, 240V.	H-2853B.4F


H-2870


H-2872

H-2874,
H-2874T

Vu-Con Impact Echo System

The Vu-Con system provides the engineer with the sturdiest, most reliable system available for impact echo analysis.

The system incorporates the latest in microcomputer technology and features an easy-to-view 3.5" by 4.5" (90 x 115mm) graphic display screen that is engineered for easy viewing in bright daylight conditions.

Test data can be analyzed directly on the job site or stored in memory with date and time stamps for analysis later. All stored test data can be easily uploaded to a PC via the RS-232 communications port and Windows compatible OC software.

The built-in menu system has the provisions for determining all the parameters for the material under test. The thickness menu allows rapid display of the frequency spectra of an impact. Peaks are automatically found and highlighted for a given test. The velocity menu, for use with the dual transducer set, facilitates determination of the stress wave speed in a given material. This allows the user to gather and analyze date quickly and easily in the field. Users can also select from multiple gain settings for various material dimensions, multiple sampling rates and an adjustment for different trigger levels to help the user produce accurate and reliable results.

The system is supplied complete with broad band active transducers, impactor set, transducer spacer, and PC software and battery charger. Meets ASTM C1383.

Description	Model
Vu-Con Impact Echo System.	H-2870

CorMap Rebar Corrosion Mapping System

The CorMap is a simple and economical instrument for use in identifying areas of probable rebar corrosion. The system consists of the voltmeter, two electrode extensions, reference electrode with copper sulphate reservoir, copper sulphate, wetting agent reservoir, dispensing sponge, 250 ft. (80m) cable reel, and a heavy-duty carrying case.

In operation, the high impedance voltmeter is connected between the reinforcing steel and the reference electrode on the concrete surface where a measurement can be made for the half-cell potential. This measurement is then used to determine the probability of corrosion activity. By testing at a fixed distance apart, a grid of half-cell potentials can be developed and areas delineated. Meets ASTM C876.

Description	Model
CorMap Rebar Corrosion Mapping System.	H-2872

Description	Model
Copper Sulphate, 8.5oz. (400ml) Container.	H-2872.1

IQT Temperature Logging System

The IQT Temperature Logger is a flexible and economical temperature monitoring system. The logger can store over eight thousand temperature readings at user selectable intervals from one minute to twenty-four hours between readings. The system uses a standard K-type thermocouple with 3 ft. (1m) length. The economical IQT software allows the user to upload the temperature data from the logger via the serial port to a PC working under the Windows environment. The data then can be imported into any spreadsheet or word processing file.

Description	Model
IQT Temperature logger, 9V battery powered.	H-2874
IQT K-Thermocouple, 3ft. (1m).	H-2874T
IQT Windows Software	H-2874S


H-3185


H-3195


H-3175

Rapid Freeze-Thaw Cabinet

The Rapid Freeze-Thaw Cabinet is used to measure the resistance of concrete to deterioration caused by repeated cycles of freezing and thawing in water. The system is designed to test up to seventeen 3x4x16" (76x102x406cm) concrete specimens plus one sample simultaneously. Key features of system include:

- Fully automatic operation frees operator to perform other lab duties.
- Allows users to establish field control using correlations between concrete strength and durability
- Permits the evaluation of variables in concrete properties and conditioning.
- Useful in the evaluation of the durability of aggregates, as well as the properties of admixtures.

Up to six freeze-thaw cycles are possible within a 24-hour period. But the exact number of cycles is dependent upon the time required for the temperature at the center of the control prism to to from 40 to 0°F (4.4 to -17.8°C) and then back to 40°F (4.4°C).
The temperature at the center of the control specimen is cycled by means of a 3/4 HP (0.6KW) refrigeration unit and electric resistance heaters with fully automatic controls. An electric temperature recorder with 24-hour, 7-day week chart is incorporated into the unit to accurately maintain a record of the control specimen temperature throughout the testing period.
For corrosion resistance and long service life, the system features a stainless steel, 84x34x11" (213x86x30cm) cabinet construction with 3" (76mm) insulation on all sides. The internal test compartment measures 6x26x74" (15x66x188cm). A 30-amp circuit is required for operation. Meets ASTM C666, procedure A; and AASHTO T161, procedure A. Order H3195 freeze-thaw molds separately. Includes 1 package of 60 charts and 2 pens.

Description	Model
Rapid freeze-thaw cabinet. 115V. 60 Hz. 1ph.	H-3185
Rapid freeze-thaw cabinet. 230V. 60 Hz. 1ph.	H-3185.2F
Rapid freeze-thaw cabinet. 230V. 50 Hz. 1ph.	H-3185.5F

Shipping wt. 1200 lbs. (544kg); 101 cu. ft.

Description, Replacement Parts	Model
Heating Element. Specify desired voltage, either 115V or 230V.	H-3185SH
Stainless steel sample positioning tray.	H-3185T

Chart Paper for Recording Thermometer

Recording chart covers 24 hours, 7-day week, with a temperature range of -20 to + 80°F in 2 div. Hours are numbered; days are marked. Easily changed charts are self-centering.

Description	Model
Recording thermometer chart paper. (please specify recorder type)	H-3185.1 Series
Pen arm replacement kit. Two per kit. (please specify recorder type)	H-3185.3 Series

Freeze-Thaw Specimen Mold

For 3x4x16" (76x102x406mm) specimens exposed to rapidly repeated freeze-thaw cycles in water or air. Mold is cold-rolled steel with detachable base plate. Meets ASTM C233, C666; AASHTO T157, T161.

Description	Model
Freeze-thaw specimen mold.	H-3195

Shipping wt. 37 lbs. (16.8kg)

Sonometer

Used to perform freeze-thaw tests in the lab for such purposes as:

- dynamic testing of concrete specimens
- assessing uniformity of field concrete
- evaluating expansion, bending and twisting of: wood, metal, plastic, ceramic and other materials
- measuring changes in relative frequency that occur as concrete deteriorates after freezing and thawing cycles.

Solid-state unit consists of 30W portable driver and pickup circuits. Amplitude and frequency of vibrations can be controlled in ranges of 0-25 watts; 400-12,000 cps frequency is displayed to ±2%. Built-in counter displays frequency to ±1 digit.
Pick-up circuit has cartridge mounted on adjustable metal stand with amplifier, oscilloscope and voltmeter. Driver has 6' (1.8m) plug-in shielded cables. Pick-up has 4' (1.2m) plug-in shielded cables. Chassis dimensions: 17x14x11" (432x356x279mm). Meets ASTM C215, C666.

Description	Model
Sonometer. 115V. 60Hz.	H-3175
Sonometer. 230V. 50Hz.	H-3175.5F

Shipping wt. 51 lbs. (23kg)