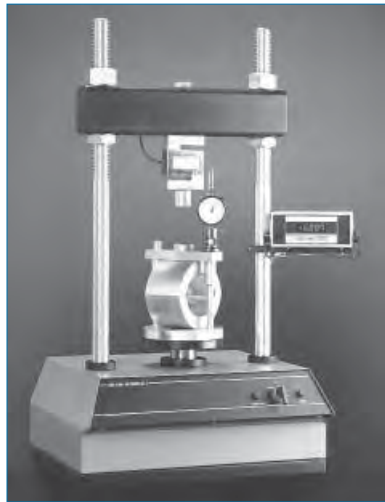


Marshall Load Frame

ASTM D 6927

The AM-100 Marshall Load Frame, with a load capacity of 10,000 lbf (45 kN), applies load to cylindrical asphalt test specimens mounted in a thick-walled stability test mold (breaking head). The sturdy, steel frame construction gives support to the drive motor, strain rods and crossbar member. The strain rate is fixed at 2 in/min. The AM-100 features directional switches with indicator lights to show when the unit is in operation and when the platen reaches its limit. Microswitches control a system shut-down for drive system protection at platen up/down limit.



AM-100*

*Shown with optional AM-114 Breaking Head, AM-112 Flow Meter, E-405 Digital Indicator, E-214 Load Cell

AM-100	Marshall Load Frame, 110 V, 60 Hz	169 lb
AM-10010	Marshall Load Frame, 220 V, 50 Hz	169 lb
AM-102	Marshall Load Frame with Proving Ring and Dial, 110 V, 60 Hz	
AM-10210	Marshall Load Frame with Proving Ring and Dial, 220 V, 50 Hz	
AM-105	Marshall Load Frame with S-Type Load Cell and Digital Indicator, 110 V, 60 Hz	170 lb
AM-10510	Marshall Load Frame with S-Type Load Cell and Digital Indicator, 220 V, 50 Hz	170 lb

AM-102 Set Includes:

AM-714	5,000 lbf Proving Ring with Dial
AM-218	Adaptor, Proving Ring to Cross Bar
AM-10212	Adaptor, Stability Test Mold to Proving Ring

AM-105 Set Includes:

E-214	6,000 lbf S-Type Load Cell
E-21410	Stability Test Mold to Load Cell
E-405	Smart Digital Indicator
E-45010	Mounting Bracket for E-405

Specifications for Marshall Load Frame

Capacity:	10,000 lbf (45 kN)
Platen Speed:	2 in (50.8 mm)/min
Platen Travel:	3 in (7.6 cm)
Cross Head Travel:	5 in (12.7 cm)
Clearance between rods:	11.75 in (30 cm)
Max. Vertical Clearance:	19 in (48.5 cm)
Overall Dimensions (WxDxH):	19 x 14 x 34 in (48.3 x 35.5 x 86.4 cm)
Electric Motor:	110 V, 60 Hz

Marshall Stability Test Set

ASTM D 1559

The AM-150 Marshall Test Set provides all the equipment to perform asphalt stability testing in accordance with ASTM D1559.



AM-150

AM-150	Marshall Stability Test Set	330 lb
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Marshall Stability Breaking Head

ASTM D 1159, D 5581 AASHTO T 245

Used for loading cylindrical asphalt samples for Marshall stability. Upper and lower cylindrical sections have a 2- and 3-in radius, respectively, for 4-in and 6-in Marshall test specimens. Lower section is mounted on base which has two vertical guide rods for aligning the upper half. Plated for rust resistance. Loading button of hardened steel to maintain radius.



AM-114

AM-114	Marshall Stability Breaking Head, 4 in (101.6 mm)	20 lb
AM-115	Marshall Stability Breaking Head, 6 in	26 lb

Related Products

AM-112	Asphalt Flow Indicator
E-311	Linear Displacement Transducer, 1 in.

Lottman Breaking Head

ASTM D 4123 AASHTO T 283

Used to determine the tensile strength of Marshall test specimens. The tensile bar width is 1/2 in. for 4-in diameter Marshall test specimens and 3/4 in. for 6-in diameter specimens. Guide sleeve similar to Marshall Breaking heads. Plated steel for rust resistance.



AM-117, AM-116

AM-116	Lottman Breaking Head 4-in (10.2 cm)	9.0 lb
AM-117	Lottman Breaking Head 6-in (15.2 cm)	11.0 lb

Asphalt Flow Indicator

ASTM D 1559

For use with AM-114 Marshall Stability Breaking Head. Measures up to 1 in of plastic flow of samples undergoing Marshall testing. Utilizes maximum position brake assembly. Comes complete with mounting collar that fits either guide rod of test mold.



AM-112

AM-112	Asphalt Flow Indicator	4.0 lb
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Marshall Mechanical Compactor Set

ASTM D 1559 AASHTO T 245

Set includes a wooden pedestal, an automatic counter unit for pre-selecting the number of hammer blows after which the unit will automatically shut off. Lift and release mechanism on hammer weight ensures uniform impact on hammer foot. Constant surcharge weight is maintained on hammer foot during compaction, and face of hammer foot is held squarely against specimen at all times. Suitable for 4-in dia. specimen.



AM-130, AM-131.

AM-130	Single Marshall Compactor Set, 115 V, 60 Hz	198 lb
AM-13010	Single Marshall Compactor Set, 230 V, 60 Hz (*)	198 lb
AM-131	Double Marshall Compactor Set, 115 V, 60 Hz	265 lb
AM-13110	Double Marshall Compactor Set, 230 V, 60 Hz (*)	265 lb

Accessories:

- AM-136 Spare hammer for AM-130/131, allows for preheating of foot and also functions as a stand-by replacement. Includes locator guide, rod release mechanism, weight and foot.
 - AM-154 Compaction mold, 4 in
 - AM-13115 Compaction mold for AM-131 Double Compactor only, 4 in
- (*) Call for 50 Hz models

Sample Ejector

The DGSI Sample Ejector provides fast extrusion of samples from compaction molds. This Ejector may also be used to remove samples from standard and modified proctor molds, CBR/LBR molds, Marshall molds, and Thin-wall sampler tubes 6-in long.

Standard Features:

- Rugged all steel construction
- Hydraulic Jack with 6,000 lbf (27 kN) force
- Adaptor Plates and Pistons available in alternate sizes for other applications
- Quick change height adjustment



S-329

S-329	Sample Ejector w/ upper plate and piston for 4- and 6-in molds	50.0 lb
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Related Product:

S-32924 2.8 in Adapter Plate and Piston (for 3-in Shelby tube extraction)

Marshall Compaction Molds

ASTM D 1559 AASHTO T 245

Used for preparing specimens for Marshall testing. Consists of base plate, forming mold and collar. Interchangeable base plate and collar can be used on either end of compaction mold. Machined from seamless tubing and plated for rust resistance.



AM-154

AM-154	Marshall Stability Compaction Mold 4 in (10.2 cm) I.D.	10.0 lb
AM-155	Marshall Stability Compaction Mold, 6 in (1.2 cm) I.D.	14.0 lb
AM-13115	Marshall Stability Compaction Mold, for AM-131 Double Hammer w/ rotating base	

Accessories

- AM-174 Paper Disc, 4-in Diameter
- AM-176 Paper Disc, 6-in Diameter

Replacement Parts

- AM-15420 Mold Only, 4 in (101.6 mm) I.D.
- AM-15520 Mold Only, 6 in (152.3 mm) I.D.

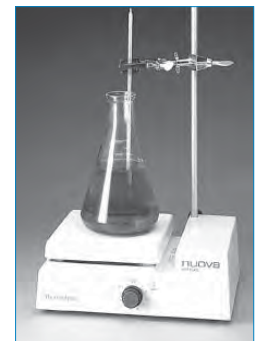
Note: C-354 Slump Cone Funnel can be used with 4-in Marshall Mold

Hot Plates

See Laboratory Section 6, page 114 for more choices and details.



Hot Plate, GO-235



Hot Plate, GO-239

Water Baths

See Laboratory Section 6, page 114 for details.



GO-233



GO-234

2000 G Vacuum Pycnometer

ASTM D 2041 (Type E)
AASHTO T 209, T 283

A-516 is a 2000-g capacity vacuum pycnometer with a 4.5 liter (1.2 gal) capacity. For mixes with maximum aggregate size of 3/4 in. The unit is supplied with two lids. A transparent lid on the pycnometer allows the operator to observe the bubble release from the asphalt sample during the vacuum test. A second volumetric lid is provided so the unit can be used as a volumeter for determining the specific gravity of compacted bituminous mixes.



A-516

A-518 is an optional 1500-gram capacity pycnometer with a 4-in deep chamber intended for mixes with aggregate sizes up to 1/2 in.

The A-516 or A-518 set includes an aluminum volumetric canister, volumetric lid, flat Plexiglass vacuum lid with O-ring, volumeter, release valve, fittings, a metal aspirator with 3/8-in. IPT fittings and 6 ft of hose.

A-516	Vacuum Pycnometer - 2000 g	18 lb
A-518	Vacuum Pycnometer - 1500 g	15 lb

Specifications for	A-516	A-518
Capacity:	2000 g	1500 g
Construction:	Aluminum	Aluminum
Inside Diameter:	7½ in	7½ in
Depth:	6 in	4 in
Gauge:	2-in Dia., 30 in Hg x 1/2 in	

Absolute Pressure Gauge (Digital Manometer)

For measuring vacuum levels applied in Rice Specific Gravity tests and other lab procedures. Safe and accurate. The absolute pressure gauge is mercury free, using an absolute pressure transducer to instantly provide measurements from 0 to 1000 mm Hg. The large 4-digit digital display has 0.4 in. (10.2 mm) characters easing visibility. Automatic power-save mode shuts off the gauge after 20 minutes to conserve battery life.



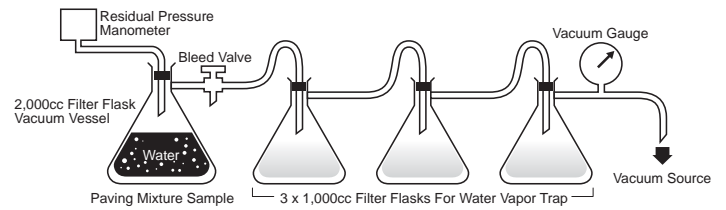
A-513D

Accuracy:	± 0.5%
Display:	Digital, 4-digit
Power:	9 V battery / 110 V AC adapter
Dimensions: W x D x H	3.1 x 6.5 x 1.18 in (78.7 x 165 x 30 mm)
Fittings:	¼-in (6.4 mm) hose barb

A-513D	Absolute Pressure Gauge (Digital Manometer)	2 lb
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Erlenmeyer Flasks as Vacuum Pycnometers

Arrangement of Testing Apparatus (AASHTO T 209)



An aspirator or vacuum pump is used to provide the vacuum and an A-512 or A-513 Pressure Manometer is used to measure the vacuum in the pycnometer.

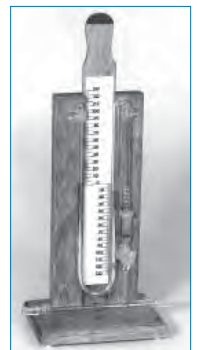
G-39425	Filter Flask, 250 ml, w/ tubulation
G-395	Filter Flask, 500 ml
G-396	Filter Flask, 1 l, heavy wall
G-39601	No. 8 Stopper w/ glass fitting
G-397	Filter Flask, 2 l, w/ tubulation
G-39701	No. 9 Stopper w/ glass fitting
G-398	Filter Flask, 4 l, heavy wall with tubulation
G-39801	No. 12 Stopper w/ glass fitting for G-398
G-39899	Filter Flask, 4 l, heavy wall w/ out tubulation
Related Item	
G-430	Desiccant, 5-lb container

G-400	Vacuum Pump Assembly
G-409	Vacuum Valve
A-512	Residual Pressure Manometer
G-396	Filter Flask, 1 l, Heavy Wallw/ tubulation
G-397	Filter Flask, 2 l, w/ tubulation
A-52001	Vacuum Gauge

Residual Pressure Manometer

ASTM D 2041
AASHTO T 209

The Residual Pressure Manometer has a sliding scale that is graduated both above and below zero to 130 mm in 1 mm increments. The glass U-tube is mounted on a wooden stand and comes complete with mercury.



A-512

A-512	Residual Pressure Manometer	10 lb
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Rice Test Vibrators

Rice Test Vibrators provide consistent shaking of vacuum pycnometers. Case has built-in 99 minute timer, vibration rate control and a 3-position switch for manual or timed operations. max. 3000 VPM. 1/20 hp, 115 V, 50/60 Hz.

Dim. (WxDxH): 13 x 14 x 19 in.



A-515, shown with optional mounting plate, A-51503

A-515	Rice Vibrating Table	30 lb
A-51502	Mounting Plate for A-520	34 lb
A-51503	Mounting Plate for 2 or 4 L Erlenmyer Flask	4 lb

Rice Test Orbital Shaker

Meets Florida D.O.T. requirements

The Orbital Shaker features a built-in timer which may be set for either continuous operation or timed shaking (up to 99.9 min.). Speeds can be regulated accurately from 15 to 500 rpm on 0.75" orbit and are displayed on a large LED readout. The load capacity is 35 lb (15.8 kg).



A-514 shown in use with optional flask holder and flasks.

A-514	Orbital Shaker, 120 V
A-51450	Platform, 11 x 13 in
A-51451	Platform, 18 x 18 in
A-51452	Platform, 18 x 24 in
A-51460	Flask Holder, 2 ℓ
A-51470	Flask Holder, 4 ℓ
<i>Other Flask Holders available</i>	
Related Items	
S-29180	2 ℓ Flask
S-29190	4 ℓ Flask

Rolling Thin Film Oven

ASTM D 2872 AASHTO T 240

Model A-720 Rolling Thin Film Oven is preferred by SHRP for simulating short term aging of asphalt binders by measuring the effect of heat and air on a moving film of semi-solid asphaltic material. Maximum temperature is 400°F (204°C). The circular test rack holds up to 8 special glass containers (included) and rotates at 15 rpm. Complete dry air piping assembly including pressure regulator and gauge, flow control, flowmeter and moisture indicator allows single point connection to dry air supply. Large observation window in door provides clear view of sample bottles and thermometer.



A-720

Inside chamber dimensions: 16 x 17 x 13 in (41 x 44 x 34 mm).
Overall dimensions: 38 x 28 x 37 in (98 x 71 x 94 cm).

A-720	Rolling Thin-Film Oven, 208-230 V, 60 Hz
A-72015	Rolling Thin-Film Oven, 220 V, 50 Hz

Specific Gravity Bench

Designed to enable measurement of the specific gravity of compacted and uncompacted bituminous mixtures as well as other materials. Each of the components are available separately, as shown in the table.



A-530 shown with accessories

A-530	Specific Gravity Bench, w/ 115V, 60 Hz outlet strip, 31 x 26 x 36 in (WxDxH)	75 lb
Related Items		
GW-30316*	Explorer Pro High Precision 22000 x 0.1g w/o Cal	10 lb
A-532	Water Tank, 45 gal, 28 x 18, 24 in deep	20 lb
A-535	Specific Gravity Cradle, 8 x 9 x 6 in	1 lb
C-625	Wire Basket, No. 6 wire mesh, 8 x 8 in	8 lb
C-255	Tank Heater, 1000 W, 115 V, 60 Hz	6 lb
C-256	Tank Circulator	10 lb
G-170	Thermometer, -30 to 110°C x 1°C	1 lb
G-175	Thermometer, -30 to 120°F x 1°F	1 lb

* For lighter-weight aggregates, consider scale GW-30315 (12000 x .1 g)