

## SPECIFIC GRAVITY BOTTLE

The **B5501** (Hubbard) featuring a straight side is for determining the specific gravity of road oils, tar, asphalt and cement. The solid stopper has a hole approximately 1.6 mm in dia. through the center to allow air to escape. The **B5511** (Hubbard-Carmick) features a tapered side utilized for determining the specific gravity of viscous and semisolid bitumen.



**B5501**



**B5511**

MODELS	DESCRIPTION	STANDARDS
<b>B5501</b>	SPECIFIC GRAVITY BOTTLE, STRAIGHT SIDE	ASTM D-70, D-115, D-234 / AASHTO T-43, T-228
<b>B5511</b>	SPECIFIC GRAVITY BOTTLE, TAPERED SIDE	

## ORBITAL SHAKERS

The **B5518** Digital Big Bill® Orbital Shaker is the new alternative to the Rice Test equipment. The shaker is compact and well designed to provide a uniform balanced shaking motion. The speed controller provides accurate regulation of the shaker speed from 40 to 400 rpm and is displayed on a large LED readout. Also featured, is a built-in timer which can be set for continuous operation or for timed shaking up to 60 minutes. The exterior is constructed from molded polyethylene that will not chip, rust or corrode. The drive mechanism produces 3/4 inch diameter circular motion and is counter balanced to ensure smooth, vibration free operation at any speed. Power is delivered by a 1/50 HP motor and runs off of 120V-50/60Hz. The shaker dimensions are 11" x 13-1/2" x 7". The combination platform allows you to design your own platform to meet specific shaking requirements. The **B5522** dedicated platform rotates on nine sealed bearings and is 13" x 11" and is furnished standard with clamps for four 2 liter Erlenmeyer flasks. The combination platform is 18" x 18". The clamps (**B5524**) for 4,000 ml flasks are used in conjunction with the combination platform to securely hold glassware in place while shaking. The clamps have four prongs and are constructed from stainless steel and also includes a retaining spring for extra grip.



**B5518**



**B5520 - B5521**

MODELS	DESCRIPTION
<b>B5518</b>	DIGITAL BIG BILL® ORBITAL SHAKER
<b>B5520</b>	BENCH TOP ORBIT SHAKER, 120V / 50-60 Hz
<b>B5521</b>	BENCH TOP ORBIT SHAKER, 240V / 50-60 Hz

ACCESSORIES	DESCRIPTION
<b>B5522</b>	DEDICATED PLATFORM
<b>B5523</b>	COMBINATION PLATFORM
<b>B5524</b>	4000 ML ERLENMEYER FLASK CLAMP FOR <b>B5523</b>
<b>B5518A</b>	ACCESSORY CLAMP, 2000 ML FOR <b>B5518</b>

## VACUUM PYCNOMETER, RICE TEST



This large capacity vacuum pycnometer is used to determine the theoretical maximum specific gravity of bituminous paving mixtures. The pycnometer has a sample capacity of 13 lbs. (6 kgs) with maximum aggregate size of 2" (50 mm). The unit consists of a transparent top for visual inspection, a vacuum gauge with quick disconnect fitting, a water inlet valve, hoses for the water and vacuum valves, and an aspirator pump. The unit has an approximate volume of 10 liters. The maximum clearance above plate is 7-3/4". The dimensions are 9-7/16" I.D. x 12-1/8".

MODELS	DESCRIPTION	STANDARDS
<b>B5541</b>	VACUUM PYCNOMETER (RICE TEST)	ASTM D-2041 / AASHTO T-209, T-283

ACCESSORIES	DESCRIPTION
<b>G8201</b>	VACUUM PUMP, 2 STAGE, 110V / 60 Hz
<b>G8202</b>	VACUUM PUMP, 2 STAGE, 220V / 50 Hz
<b>G8270</b>	VACUUM PUMP, OILLESS 2 STAGE, 110V / 60 Hz

**VACUUM PYCNOMETER, 2,000 GRAM**

This vacuum pycnometer is used to determine the theoretical maximum specific gravity of bituminous paving mixtures by Pennsylvania test method # 740, a modification of AASHTO T-209. The pycnometer has a sample capacity of 4.4 lbs (2 kgs) with maximum aggregate size of 3/4" (19.1 mm). The unit consists of a transparent top for visual inspection, a vacuum gauge with quick disconnect fitting, a water inlet valve, hoses for the water and vacuum valves, and an aspirator pump. The unit has an aluminum volumetric canister that measures 7<sup>1/2</sup>" I.D. x 6" deep.



MODELS	DESCRIPTION	STANDARDS
<b>B5551</b>	VACUUM PYCNOMETER, 2000 G	ASTM D-2041 / AASHTO T-209, T-283 / PA 740

ACCESSORIES	DESCRIPTION
<b>B5551A</b>	O-RING FOR PLASTIC LID
<b>B5551B</b>	IN-LINE VACUUM GAUGE, 0-30 HG, 2" DIA
<b>G8201</b>	VACUUM PUMP, 2 STAGE, 110V / 60 Hz
<b>G8202</b>	VACUUM PUMP, 2 STAGE, 220V / 50 Hz
<b>G8270</b>	VACUUM PUMP, OILLESS 2 STAGE, 110V / 60 Hz
<b>G8274</b>	VACUUM PUMP 1/3 HP, 2 STAGE, 110V / 60 Hz

**VIBRATING TABLES**

The **B5552** vibrating table is used in conjunction with the with the **B5541** 6000 gram Vacuum Pycnometer. The heavy duty construction keeps sample material loose for more reliable test results. The tables feature a strong vibrators and sturdy bases with integral on/off switch. Exclusive quick release cam/lock fasteners allow quick placement and removal of canister. The open-end model has a sliding scale and is graduated above and below zero to 130 x 1 mm. The **B5542** & **B5543** vibratory tables are used with the **B5551** 2000 gram Vacuum Pycnometer. The pycnometer canister is held to the table via clamps. The table vibrates 3,000 times per minute and is available in 110V/60Hz. The **B5554** Vibro-Deairator is designed for consistent shaking of Rice test vacuum pycnometers while freeing the lab technician for other work. It is also a useful deaeration device for specific gravity tests of fine aggregates (ASTM C-128) and soils (ASTM D-854), for sample preconditioning per ASTM D-4867 and AASHTO T-283. Case has built-in 0 to 99 min., 59 sec. digital timer with 0.25 sec. accuracy, vibration speed control, and a 3-position switch for manual or timed operation—all front panel mounted for ease of use. Speed control allows setting of agitation to avoid stripping of asphalt. The **B5554A** Adapter Set is used with Filter Flasks, Volumetric Flasks, LeChatelier Flask, mason jar pycnometers. Special "speed knobs" tighten easily to secure the pycnometer. After a few loosening turns, they tilt and slide for quick removal. The unit is fully grounded and fused. The aluminum case has rubber feet; no mounting is required.

**B5542 & B5543****B5552****B5554**

MODELS	DESCRIPTION
<b>B5542</b>	VIBRATING TABLE, 3000 VPM, FOR USE WITH <b>B5541</b> , 115V / 60 Hz
<b>B5543</b>	VIBRATING TABLE, 2400 VPM, FOR USE WITH <b>B5541</b> , 230V / 50 Hz
<b>B5552</b>	VIBRATING TABLE, FOR USE WITH <b>B5551</b> , 110V / 60 Hz
<b>B5554</b>	VIBRO DEAIRATOR

ACCESSORIES	DESCRIPTION
<b>B5552A</b>	FLASK ATTACHMENT, FOR USE WITH <b>B5552</b>
<b>B5554A</b>	ADAPTER SET FOR 2LT / 4LT FLASK, FOR USE WITH <b>B5554</b>

## BREAKING HEADS

The **B9114** & **B9115** Breaking heads consist of upper and lower cylindrical segments having an inside radius curvature of 3" for 6" sample and 2" for a 4" sample. Lower segment is mounted on a base; two perpendicular guide rods extend vertically from the base. One guide rod is larger than the other, with a correspondingly larger guide sleeve in the upper segment to assure correct assembly. The guide sleeves in the upper segment bring the two sections together without appreciable binding or loose motion on the guide rods. The **B9116** & **B9116L** Lottman breaking heads are used along with the **B9121** Marshall testing machine to determine the loss of strength in asphaltic concrete resulting from water saturation and accelerated water conditioning. SHRP has designated AASHTO T-283 as Superpave primary test method for moisture sensitivity. The breaking head is also used for determining resilient modulus using repeated load indirect tension test.



**B9114 & B9115**



**B9116 & B9116L**

MODELS	DESCRIPTION	STANDARDS
<b>B9114</b>	MARSHALL BREAKING HEAD, 6"	ASTM D-4123 / AASHTO T-283
<b>B9115</b>	MARSHALL BREAKING HEAD, 4"	
<b>B9116</b>	LOTTMAN BREAKING HEAD, 4"	
<b>B9116L</b>	LOTTMAN BREAKING HEAD, 6"	

## MARSHALL TESTING MACHINE, 4" AND 6"

This Marshall testing machine accurately measures the resistance to plastic flow of bituminous mixtures. Since the **B9121** & **B9122** are compact and lightweight, they can be transported to different sites with ease. The testing machine has a 1/4 hp motorized press with precision gear box for a deformation rate of 2" per minute. Supplied with the apparatus is a 10,000 lb. calibrated proving ring and dial indicator for determining test load. The machine can be used with either the 4" Marshall Stability breaking head or the 4" Lottman breaking head. Available in 110V/60Hz (**B9121**) and 220V/50Hz (**B9122**). Please specify type needed. For the Marshall Test Set please refer to the Bituminous set section. The **B9161** is a manual extractor for 4" molds. The **B9162** Specimen Extractor is used to eject a compacted 4" dia. test specimen from the mold after the specimen is compacted. The Extractor uses a 3 ton hydraulic jack centered under retainer rings to push a specimen up and out of the mold without fracture. The large base provides good stability and springs retract the jack when the valve is opened. The **B9163** is similar to the **B9162** except that it can be used with 4" & 6" molds and it is furnished with an 8000 lbf manual hydraulic jack. The Marshall Testing Machine MEETS ASTM D-1559.

MODELS	DESCRIPTION
<b>B9121</b>	MARSHALL TESTING MACHINE FOR 4" & 6" MOLDS, 110V / 60 Hz
<b>B9122</b>	MARSHALL TESTING MACHINE FOR 4" & 6" MOLDS, 220V / 50 Hz

ACCESSORIES	DESCRIPTION
<b>B9101</b>	4" MOLD, W/ BASE & COLLAR
<b>B9102</b>	MOLD ONLY FOR <b>B9101</b>
<b>B9106</b>	MOLD HOLDER
<b>B9105</b>	FILTER PAPER, CIRCULAR, 4" DIA., 1000/PKG
<b>B9107</b>	FILTER PAPER, THICKER, CIRCULAR, 4" DIA., 1000/PKG
<b>B9108</b>	PAPER DISCS, 150 MM, 500/PKG
<b>B9109</b>	WATER BATH, 110V / 60 Hz
<b>B9110</b>	WATER BATH, 220V / 50 Hz
<b>B9118</b>	WATER BATH W/ CIRCULATOR, 110V / 60 Hz
<b>B9118E</b>	WATER BATH W/ CIRCULATOR, 220V / 50 Hz
<b>B9119</b>	ECONO WATER BATH, 110V / 60 Hz
<b>B9119E</b>	ECONO WATER BATH, 220V / 50 Hz
<b>B9120</b>	SHELF FOR <b>B9119</b> AND <b>B9119E</b>
<b>B9111</b>	TAMPER, COMPACTION 10 LB
<b>B9114</b>	MARSHALL BREAKING HEAD, 6"
<b>B9115</b>	4" MARSHALL STABILITY BREAKING HEAD W/ GUIDES
<b>B9116</b>	4" LOTTMAN BREAKING HEAD
<b>B9116L</b>	6" LOTTMAN BREAKING HEAD
<b>B9117</b>	FLOW METER W/ DIAL
<b>B9161</b>	MANUAL EXTRACTOR FOR 4" MOLDS
<b>B9162</b>	SPECIMEN EXTRACTOR FOR 4" MOLDS
<b>B9163</b>	EJECTOR JACK W/ 4" & 6" DISKS
<b>B9165</b>	PEDESTAL W/ STEEL PLATE
<b>B4324</b>	MATERIAL HANDLING CHUTE



**B9121 & B9122**



**B9162**



**B9163**



**B4324**