

COMPACTION PERMEAMETERS

These compaction permeameters are designed for measuring water that passes through soils and other materials including sand, clay, gravel, and silt. The permeameters can also be used for either constant head or falling head studies on undisturbed, compacted or remolded soils. The center mold and collar sections are very similar to the **S3111**. The upper plate of the mold has an inlet/outlet connector and overflow valves for air removal. The base plate also has inlet/outlet connector. The mold is plated steel which resists corrosion. A porous stone filter is also furnished.



MODELS	DESCRIPTION
S3241	COMPACTION PERMEAMETER, 4" ID X 4.584" H
S3246	COMPACTION PERMEAMETER, 6" ID X 7.0" H

ACCESSORIES	DESCRIPTION
L8456	EXTRA POROUS FILTER FOR S3241
L8457	EXTRA POROUS FILTER FOR S3246

SOIL PENETROMETER (NEEDLE TYPE)



The **S3251** penetrometer is used to perform moisture-penetration tests. In the penetration test a needle of given end area is pushed into a soil sample that has been compacted in a mold. The force is then directly read off the penetrometer scale by use of an internal calibrated spring. A moisture-penetration curve can then be plotted and used to indicate moisture and density in the field. The penetrometer is furnished with seven graduated needles of different surface areas. Needles included 1", 3/4", 1/2", 1/3", 1/5", 1/10", 1/20".

MODELS	DESCRIPTION	STANDARDS
S3251	SOIL PENETROMETER (NEEDLE TYPE)	ASTM D-698, D-1557, D-1558 / AASHTO T-99, T-180

ACCESSORIES	DESCRIPTION
S3251C	CARRYING CASE
S3251N	EXTRA NEEDLES,

DOUBLE RING INFILTROMETER

The double ring infiltrometer is the only accepted field method for determining the rate of infiltration of liquids into soils. The **S3231** is the double ring apparatus only which includes 12" and 24" aluminum rings which have one beveled edge, 2 constant level float valves which maintain the proper liquid level, 2 individually calibrated plastic cylinders. One cylinder is graduated to 5,000 ml and the other is to 13,000 ml and with the special supports the cylinders are prevented from tipping and, therefore, maintain the proper height. Also included with the apparatus are splash guards, tamper, driving cap, pad of data sheets and instructions. The **S3235** includes all the parts in **S3231** and in addition a rubber mallet, small sledge hammer, water bucket with pouring spout, carpenter's level, dial thermometer, pH paper, wood block to drive cap assembly and long handled shovel.



MODELS	DESCRIPTION	STANDARDS
S3231	DOUBLE RING INFILTROMETER	ASTM D-3385-88
S3235	DOUBLE RING INFILTROMETER W/ ACCESSORIES	

COMPACTION MOLDS



These compaction molds are available in 4" and 6" diameter models. The 4" ID. molds are 4.584" high and 1/30 cu. ft. which are available in plain, split and tapered versions. The 6" ID. molds are 4.584" high and 1/13.33 cu. ft. which are available in plain and split versions. These molds are used along with the tampers, that are listed on page 133, to determine the relationship between the

moisture content and the density of compacted soils. This is also known as the proctor test. Soil samples are easily removed from split and tapered molds. Plain mold samples are easily removed using a **S3415** core ejector. The molds are furnished complete with base, tie down rods and wing nuts, collar and mold body. They are constructed from cold-rolled steel and plated for rust resistance.

MODELS	DESCRIPTION	SIZE	STANDARDS
S3111	COMPACTION MOLD, PLAIN	4"	ASTM D-558, D-559, D-560, D-698, D-1157, D-1158, AASHTO T-99, T-134, T-135, T-136, T-180
S3112	COMPACTION MOLD, SPLIT		
S3113	COMPACTION MOLD, TAPERED		
S3135	COMPACTION MOLD, PLAIN	6"	
S3136	COMPACTION MOLD, SPLIT		

ACCESSORIES	DESCRIPTION
S3415	CORE EJECTOR, 2",3",4" & 6"

TAMPERS



These tampers are used along with the proctor molds to prepare moisture density samples for the proctor test. There are three types of tampers, 5^{-1/2} lb with a 12" drop, 10 lb with an 18" drop, and 5^{-1/2} lb with an 18" drop. The tamper weights have a 2" diameter face. The guide tubes have vents to prevent any air pressure from developing and all parts are plated to prevent rusting. The **S3143** tamper is not required by ASTM or AASHTO. The U.S. Army Corps of Engineers Tamper is guided on a shaft instead of a sleeve. The length of the drop is slightly adjustable. The foot assembly has a recoil mechanism which reduces the impact and the fatigue on parts.

MODELS	DESCRIPTION	STANDARDS
S3141	TAMPER, 5-1/2 LB, 12" DROP	ASTM D-558, D-560, D-698, D-1157 AASHTO T-99, T-134, T-135, T-136, T-180
S3142	TAMPER, 10 LB, 18" DROP	
S3143	TAMPER, 5-1/2 LB, 18" DROP	
S3154	C.O.E. TAMPER, 5-1/2 LB, 12" DROP	
S3155	C.O.E. TAMPER, 10 LB, 18" DROP	

RELATIVE DENSITY APPARATUS

The relative density apparatus is used with cohesionless free-draining soils since this type of soil does not produce a satisfactory moisture-density curve or maximum density with traditional Proctor moisture-density impact compaction tests. Maximum density is determined by placing the soil in a mold and then vibrating the specimen under a surcharge load and weighing. Minimum index density is determined by loose placement in the molds using a scoop. The Vibratory tables which are semi-noiseless have a net weight over 100 lb. with a frequency of 3600 vibrations/minute and amplitude variable between .002" and .025" under 250 lb load. The table has a cushioned steel 30" x 30" deck which is activated by a electromagnetic vibrator . The mold sets consist of cylindrical metal mold, guide sleeve with camp, base plate, surcharge weight and a base plate handle. The Gauge set consists of a **G3104** dial .001 x 2", holder and bar 3 x 12" x 1/8".



MODELS	DESCRIPTION	POWER
S3341S	RELATIVE DENSITY APPARATUS	110V / 60Hz
S3342S		220V / 50Hz

ACCESSORIES	DESCRIPTION
S3331	MOLDS SET, 0.1 FT ³
S3332	MOLD ONLY, 0.1 FT ³
S3333	MOLDS SET, 0.5 FT ³
S3334	MOLD ONLY, 0.5 FT ³
S3335	GAUGE SET
S3338	VIBRATORY TABLE, 30" X 30" 230V / 60 Hz
S3339	VIBRATORY TABLE, 30" X 30" 220V / 50 Hz



AUTOMATIC SOIL COMPACTOR

This machine is designed to automatically compact soil samples for proctor testing in a quick and efficient manner. This machine replaces older time consuming hand compaction with a tamper testing. This unit is used for standard or modified tests. The rammer weight is adjustable from 5-1/2 to 10 lbs and the drop height can be set for either 12" or 18". The compactor accommodates either 4" or 6" molds. The unit is equipped with an automatic counter that shuts off the machine after a preset number of blows have been met. The molds are mounted on a circular base and are rotated throughout the process to assure good compaction of the entire soil surface. The compactor is furnished complete with a 4" and a 6" mold, and a 5-1/2 lb. and a 10 lb hammer. The 5-1/2 lb hammer has a circular face and the 10 lb hammer has a pie shaped face for 6" molds. The **S3391** & **S3392** are very similar to the aforementioned compactors. The difference is a 25" instead of a 14" clearance and they also cannot use the 5-1/2 lb round or pie shape hammer. This compactor was developed specifically for California in which a mold 16" in height is used. Hogentogler recommends the **S3361** & **S3362** unless there is a specific need.



MODELS	DESCRIPTION	POWER	STANDARDS
S3361	AUTOMATIC SOIL COMPACTOR	110V / 60 Hz	ASTM D-558, D-559, D-560 D-698, D-1557, D-1558 AASHTO T-99, T-134, T-135 T-136, T-180
S3362		220V / 50 Hz	
S3391	CALIFORNIA SOIL COMPACTOR FOR 4" & 6"	110V / 60 Hz	
S3392		220V / 50 Hz	

ACCESSORIES	DESCRIPTION
S3363	CALIBRATION KIT W/ DIAL & 50 LEAD CYLINDERS
S3364	MOLD, PLAIN, 4"
S3365	MOLD, SPLIT, 4"
S3366	MOLD, PLAIN, 6"
S3367	MOLD, SPLIT, 6"
S3368	ROUND HAMMER
S3369	PIE-SHAPED HAMMER

CORE EJECTORS

The **S3415** Vertical Core Ejector is used for removing soil cores from molds or tubes. The mold is placed in the frame and the core is extruded by a hydraulic jack. The ejector is designed for 6" diameter cores with adapters for 2", 3", and 4". The **S3421** Horizontal Core Ejector is designed for 2" and 3" O.D. tubes. It is a mechanical type for thin wall sample tubes. The ejector has a two-speed gear box jack and can be used with samples up to 36" long. Also furnished with this ejector are piston and grips for 2" and 3" O.D. tubes. Also available is an adapter (**S3425**) for 2-1/2" tubes. The **S3431** & **S3432** Motorized Core ejector is for fast ejection of soil cores used with 2" and 3" thin wall tubes up to 36" long. Since there is no cutting involved the tubes can be reused. The ejector is designed for use in a vertical position but can be used in horizontal position with the aid of the **S3435** Trough. The hydraulic cylinder is operated by an electric pump with control valve to regulate travel speed and for fast retraction.



MODELS	DESCRIPTION
S3415	VERTICAL CORE EJECTOR
S3421	HORIZONTAL CORE EJECTOR
S3431	MOTORIZED CORE EJECTOR, 115V / 60 Hz
S3432	MOTORIZED CORE EJECTOR, 230V / 50 Hz

ACCESSORIES	DESCRIPTION
S3425	ADAPTER SET FOR 2-1/2" O.D. FOR S3421
S3435	TROUGH, FOR S3431 & S3432