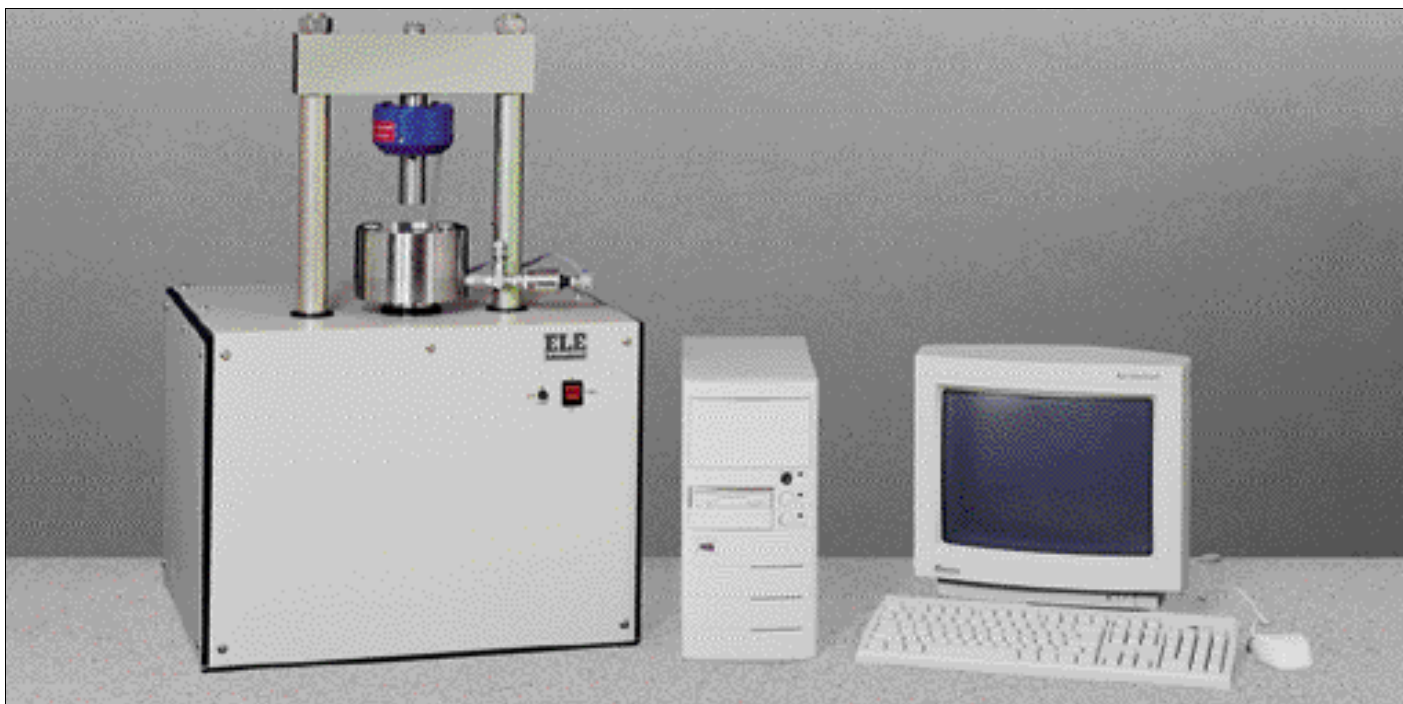




Automated Consolidation Testing System

- **Significantly reduces testing time.**
- **Wide range of consolidation test methods.**
- **Can run up to three tests simultaneously using auxiliary loading units.**
- **Supplied complete with consolidometer, computer system running Windows® 98 and Consolidation Software.**

The new Automated Consolidation Testing System is designed to significantly reduce the time to test the consolidation properties of soils. The system consists of a master loading unit plus a computer running Windows® 98 and the Consolidation System Software. Up to two additional auxiliary loading units can be added to the master unit for high production testing.

The loading frame features state-of-the-art electronics and a stepper motor drive system for precisely controlled stress applications onto the sample. High accuracy pressure, load and displacement transducers provide measurements for the pore pressure, stress and strain.

Test capabilities of the system include:

- **Constant Pressure Ratio (CPR) Tests**—in which the ratio between the excess pore pressure at the bottom of the sample and the total load is kept constant.
- **Constant Rate of Strain (CRS) Tests.**
- **Incremental Loading Tests**—controlled by the loading time.
- **Incremental Loading Tests**—controlled by the excess pore water pressure.

To monitor the tests in progress, the user can display load-compression and load-pore water pressure curves for CPR and CRS tests as well as time-compression curves for each loading step on Incremental Loading Tests.

Upon completion of CPR and CRS tests, the system can produce reports on relative compression, modulus of compressibility, coefficient of consolidation, pore water pressure and deformation rate as the functions of the effective load on the sample. Reports can be generated in a linear, logarithmic or square root scale. Deformation parameters of the soil, for instance, the *m* and *B* parameters of Janbu's deformation function, as well as other commonly used parameters (*C_v*, *M_v* etc.) can be automatically determined from the test results.

For Incremental Loading Tests, outputs such as displacement vs. time (semi-log scale) and displacement vs. square root of time can be generated.

Specifications

Construction.	Aluminum cabinet with enamel finish, aluminum load platform and plated steel vertical rods and crosshead.
Sample Size.	2.5" or 70 mm. Consolidometer included.
Maximum Load.	36 tsf.
Pore Pressure Cap.	100 psi (690 kPa).
Vertical Clearance.	11.25" (286 mm).
Horizontal Clearance.	8.5" (216 mm).
Max. Piston Travel.	2" (50.8 mm).
Dimensions.	Load Frame : 21.5" w. x 20" d. x 30" h. (546 x 508 x 762 mm).
Weight.	Net 130 lbs. (58.9 kg).

Ordering Information

Note: Clean compressed air source required for system operation.

- EI25-0550/02.** Automated Consolidation System for 2.5" diameter samples. 110vAC, 50/60Hz, 1Ø.
- EI25-0550/01.** Automated Consolidation System for 2.5" diameter samples. 220vAC, 50/60Hz, 1Ø.
- EI25-0552/02.** Automated Consolidation System for 70 mm diameter samples. 110vAC, 50/60Hz, 1Ø.
- EI25-0552/01.** Automated Consolidation System for 70 mm diameter samples. 220vAC, 50/60Hz, 1Ø.

Accessories

- EI25-0550/10.** 2.5" Sintered Steel Porous Stone.
- EI25-0550/11.** 2.5" Cutting Shoe.
- EI25-0552/10.** 70 mm Sintered Steel Porous Stone.
- EI25-0552/11.** 70 mm Cutting Shoe.
- EI25-0551/02.** Auxiliary Loading Unit for 2.5" diameter samples. 110vAC, 50/60Hz, 1Ø.
- EI25-0551/01.** Auxiliary Loading Unit for 2.5" diameter samples. 220vAC, 50/60Hz, 1Ø.
- EI25-0553/02.** Auxiliary Loading Unit for 70 mm diameter samples. 110vAC, 50/60Hz, 1Ø.
- EI25-0553/01.** Auxiliary Loading Unit for 70 mm diameter samples. 220vAC, 50/60Hz, 1Ø.

Special Note:

Other specimen diameters and capacities (12 to 72 tsf) are available on special order. Contact factory for details.



Pneumatic Consolidation Apparatus

ASTM D-2435, D-4546; AASHTO T-216.

- **Instantaneous loading without impact.**
- **Complete flexibility in choice of loads.**
- **Relatively insensitive to shock or inertia forces.**
- **Compact size allows for table top operation without the need for extraneous hanging weight assemblies.**

Used worldwide for stress controlled consolidation testing, the Pneumatic Consolidation Apparatus is a pneumatic load frame designed to apply loads instantaneously and to maintain any set load, regardless of sample compression occurring within the loading interval. The unit is self-contained with a built-in digital display with 0.25% accuracy.

Available in three load ranges, the load frame uses a dual-piston system for handling loads to 16 or 32 tsf while retaining sensitivity in the lower load ranges. A precision, low-bleed type of pressure regulator is used to set and maintain the load on the specimen.

Adjustable centering pads on the load platform aid in aligning the consolidometer and will accept any consolidometer up to a maximum diameter of 7.25" (184 mm). The top loading design eliminates time consuming weight calculations.

Specifications

Construction.	Aluminum cabinet with enamel finish; 1" (25.4 mm) thick aluminum load platform plate; stainless steel vertical rods.
Maximum Load.	EI25-0555 series: 16 tsf. EI25-0560 series: 32 tsf.
Req. Air Pressure.	EI25-0555 series: 62 psi (427 kPa). EI25-0560 series: 123 psi (848 kPa).
Vertical Clearance.	8.25" (210 mm).
Horizontal Clearance.	7.75" (197 mm).
Max. Piston Travel.	0.5" (12.7 mm).
Dimensions.	12" w. x 14.5" d. x 20.5" h. (305 x 368 x 521 mm).
Weight.	Net 48 lbs. (21.8 kg).

Ordering Information

Note: Shown with consolidometer and dial indicator; not included, order separately.

- EI25-0555. Pneumatic Consolidation Apparatus. 16 tsf capacity.
- EI25-0560. Pneumatic Consolidation Apparatus. 32 tsf capacity.

Accessories

- EI25-0479. Fixed Ring Consolidometer. For 2.5" diam. specimens.
- EI25-0455. Fixed Ring Consolidometer. For 50 mm diam. specimens.
- EI25-0503. Fixed Ring Consolidometer. For 75 mm diam. specimens.
- EI25-0530. Floating Ring Consolidometer. For 2.5" diam. specimens.
- EI88-4070. Dial Indicator. 0.4" range x 0.0001" graduations.
- EI88-4080. Dial Indicator. 10 mm range x 0.0025 mm graduations.
- EI88-4120. Dial Indicator. 1.0" range x 0.001" graduations.
- EI88-4130. Dial Indicator. 25 mm range x 0.010 mm graduations.
- EI88-4210. Electronic Digital Indicator. 0.600" (15 mm) range.
- EI88-4220. Electronic Digital Indicator. 1.0" (25.4 mm) range.
- EI88-4260. RS232 Data Output Cable.
- EI88-4270/02. AC Adapter. 110vAC, 50/60 Hz.
- EI88-4270/01. AC Adapter. 220vAC, 50/60 Hz.

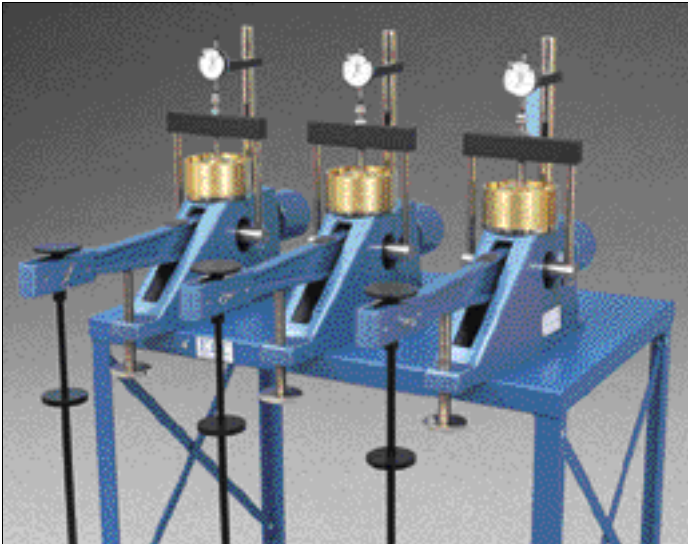


Table Top Consolidation Apparatus
ASTM D-2435, D-4546; AASHTO T-216; BS-1377.

- **Loading Pressures on 2.5" (63 mm) diameter samples of up to 48 tons per sq. ft. (5,148 kPa) using 11:1 beam ratio.**
- **Triple beam ratios of 9:1, 10:1 and 11:1 minimize loading weight requirements.**
- **Rigid frame construction ensures accuracy, repeatability and reliability of test results.**
- **Integral beam support jack eliminates possible shock to sample during load application procedures.**
- **Compact, table top design for maximum space savings in the laboratory.**
- **Cast aluminum and plated steel construction for rust resistance and long life.**

Consolidation tests are performed in the laboratory to determine the settlement characteristics of soil over a period of time. The data obtained from tests on a small sample in the laboratory can be used to predict the settlement of a foundation under a building, dam, bridge, or similar structure.

The Table Top Consolidation Apparatus is a compact machine designed to provide reliable, accurate and reproducible results. The apparatus features a rigid loading mechanism, capable of applying loads for long durations. Load pressures of up to 48 tons per sq. ft. (5,148 kPa) can be generated on 2.5" (63 mm) diameter samples.

The unit incorporates an integral beam support jack that eliminates the possibility of shock to the sample during load application procedures.

Specifications

Load Capacity.	48 tons/sq. ft. (5,148 kPa) on 2.5" (63 mm) diam. samples.
Loading Beam.	Cast aluminum; counterbalanced; 9:1, 10:1 and 11:1 ratios.
Frame.	Cast aluminum; integral beam support jack; plated steel and platform.
Dimensions.	8" w. x 28" d. x 20" h. (203 x 711 x 508 mm), excluding weight hanger.
Weight.	Net 30 lbs. (13.6 kg); Shpg. 40 lbs. (18.1 kg).

Ordering Information

Note: Shown with consolidometer, dial indicator loading weights and floor mounting stand; not included, order separately.

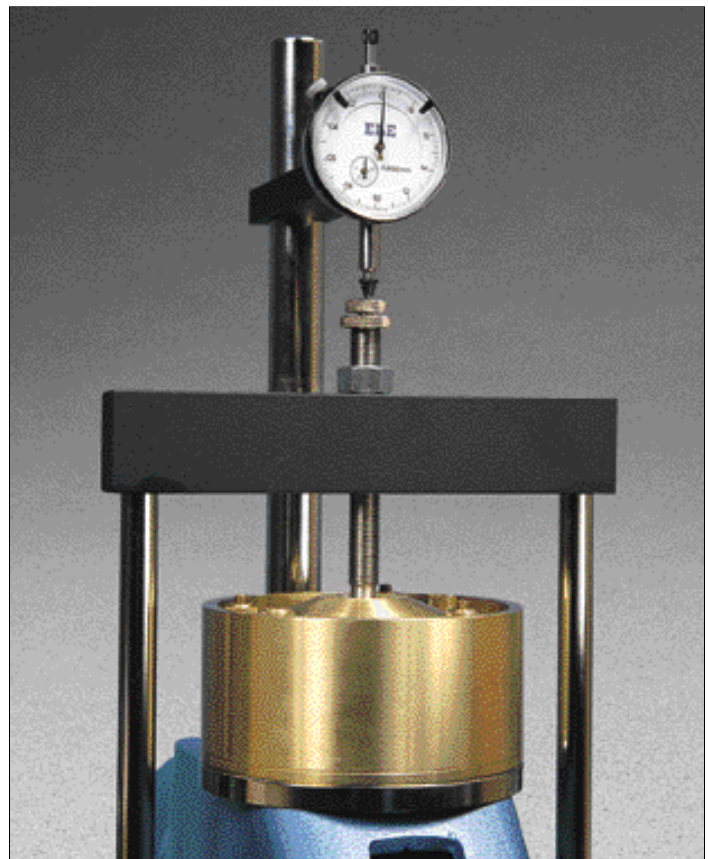
EI25-0402.

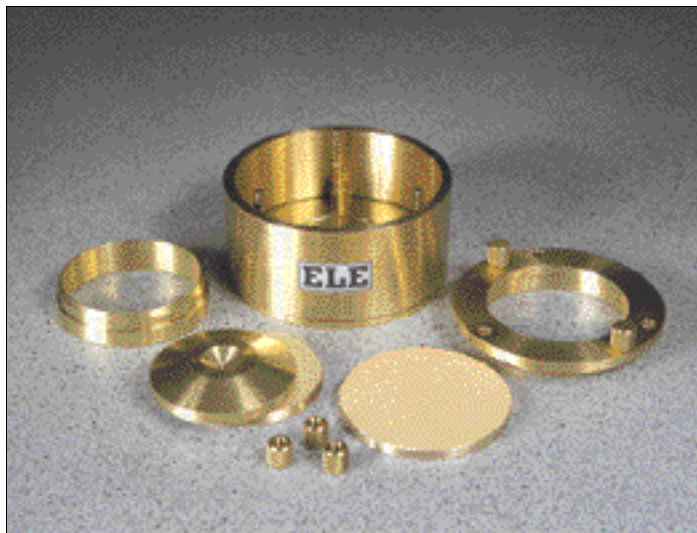
Accessories

EI25-0429.	Floor Mounting Stand.
EI25-0479.	2.5" Fixed Ring Consolidometer. With cutting (specimen) ring.
EI25-0455.	50 mm Fixed Ring Consolidometer. With cutting (specimen) ring.
EI25-0503.	75 mm Fixed Ring Consolidometer. With cutting (specimen) ring.
EI25-0530.	2.5" Floating Ring Consolidometer.
EI88-4070.	Dial Indicator. 0.4" range x 0.0001" graduations.
EI88-4080.	Dial Indicator. 10 mm range x 0.0025 mm graduations.
EI88-4120.	Dial Indicator. 1.0" range x 0.001" graduations.
EI88-4130.	Dial Indicator. 25 mm range x 0.010 mm graduations.
EI88-4210.	Electronic Digital Indicator. 0.600" (15 mm) range.
EI88-4220.	Electronic Digital Indicator. 1.0" (25.4 mm) range.
EI88-4260.	RS232 Data Output Cable.
EI88-4270/02.	AC Adaptor. 110vAC, 50/60 Hz.
EI88-4270/01.	AC Adaptor. 220vAC, 50/60 Hz.
EI25-0535.	Weight Set A. Includes: four 1 kg, five 4 kg, and four 16 kg weights.
EI25-0537.	Weight Set B. Includes: four 1 kg, three 4 kg and one 16 kg weights.
EI25-0544.	16 Ton Weight Set. Includes: two 1/16 ton, one 1/8 ton, one 1/4 ton, one 1/2 ton, one 1 ton and seven 2 ton weights.

Special Note:

See Data Acquisition section for electronic displacement and logging equipment options for use with the ELE Consolidation Apparatus.





Fixed Ring Consolidometers

ASTM D-2435, D-4546; AASHTO T-216; BS-1377.

- Specimen cutting ring for trimming directly from sample tubes.
- Integral water reservoir for specimen inundation, when required.

All Fixed Ring Consolidometers are manufactured from corrosion resistant materials and incorporate an integral cutting ring for trimming specimens to size. The design also features an integral water reservoir for specimen inundation. All consolidometers are supplied complete with upper and lower porous stones, pressure pad and specimen cutting ring.

Note: The following table shows typical loading of cells giving unit stress when used with the ELE Table Top Consolidation Apparatus.

Typical Loading:

Model No.	EI25-0479	EI25-0455	EI25-0503.
Application.	ASTM	High Pressure	BS
Specimen Diameter.	2.5"	50 mm	75 mm
Specimen Area.	4.909 in ²	1963 mm ²	4418 mm ²
Beam Ratio.	10:1	10:1	9:1
Load.	1.55 kg	1 kg	1 kg
Stress.	1,000 lbf/ft ²	50 kPa	20 kPa
Typical Maximum Stress.	103,200 lbf/ft ²	8 MPa	3.2 MPa
Stress for 1 kg.	645 lbf/ft ²	50 kPa	20 kPa

Ordering Information

- EI25-0479. Fixed Ring Consolidometer. For 2.5" diam. specimens.
 EI25-0455. Fixed Ring Consolidometer. For 50 mm diam. specimens.
 EI25-0503. Fixed Ring Consolidometer. For 75 mm diam. specimens.

Accessories

- EI25-0485. Calibration Disc for EI25-0479.
 EI25-0461. Calibration Disc for EI25-0455.
 EI25-0509. Calibration Disc for EI25-0503.

Replacement Parts

- EI25-0482. Cutting Ring for EI25-0479.
 EI25-0458. Cutting Ring for EI25-0455.
 EI25-0506. Cutting Ring for EI25-0503.
 EI25-0479/13. Upper and Lower Porous Stones, 2.5".
 EI25-0455/13. Upper and Lower Porous Stones, 50 mm.
 EI25-0503/13. Upper and Lower Porous Stones, 75 mm.



Floating Ring Consolidometer

- Floating type design eliminates friction between soil specimen and ring.
- Rust-resistant construction for long service life.

The Floating Ring Consolidometer is designed to eliminate the friction that occurs between the soil specimen and ring in consolidation testing. The unit consists of a one-piece machined base, porous stones, and specimen ring. All metal parts are brass or phosphor bronze. The base is approximately 5" (127 mm) diameter by 3" (76 mm) high.

Specifications

Specimen Size.	2.5" diam. x 1" h. (63.5 x 25.4 mm).
Base.	One-piece machined bronze; 5" diam. x 3" h. (127 x 76.2 mm).
Specimen Ring.	Machined brass.
Porous Stones.	2-15/32" diam. x 1/2" thick (62.7 x 12.7 mm).
Weight.	Net 13 lbs. (5.9 kg).

Ordering Information

EI25-0530.

Replacement Parts

- EI25-0533. Specimen Ring. For 2.5" (63 mm) diam. samples.
 EI25-0530/10. Porous Stone. 2-15/32" diam. x 1/2" thick (62.7 x 12.7 mm).

Table Top Consolidation Set

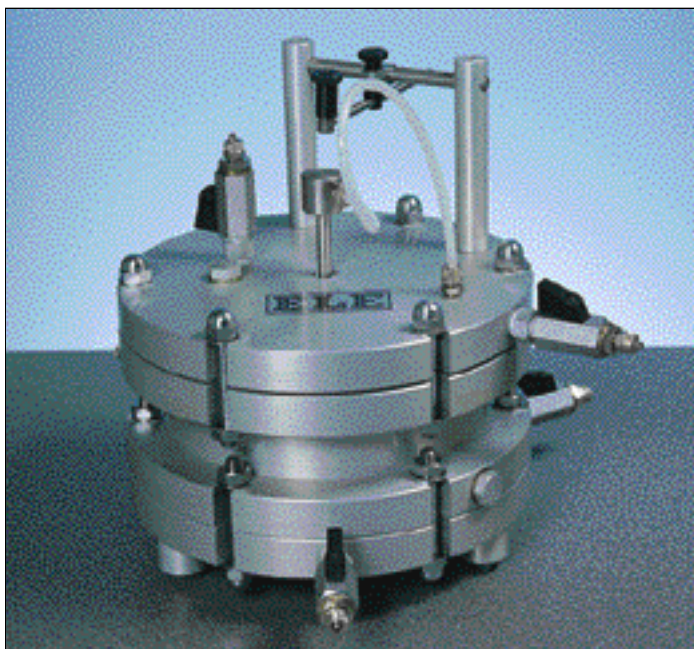
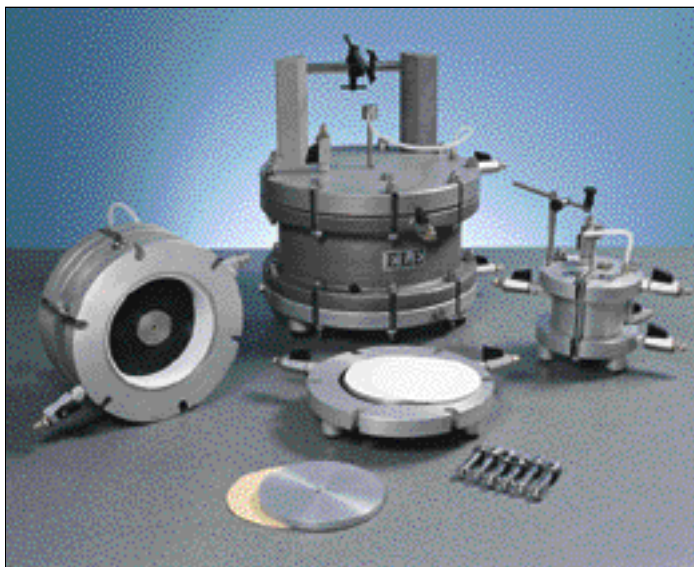
ASTM D-2435, D-4546; AASHTO T-216.

The Consolidation Test Set consists of a basic selection of equipment needed to perform consolidation testing of soils.

Ordering Information

- Set includes:
- 1 Table Top Consolidation Apparatus.
 - 1 Fixed Ring Consolidometer, 2.5".
 - 1 Dial Indicator.
 - 1 Weight Set.

- EI2200. With English dial indicator and kilogram weight set.
 EI2210. With English dial indicator and tsf weight set.
 EI2220. With Metric dial indicator and kilogram weight set.



ELE/Rowe-Type Consolidation Cells BS-1377.

- **Pore water pressure and drainage control.**
- **Wide variety of test applications.**
- **Large specimen capability.**

The ELE range of Rowe-Type Consolidation Cells is a development of the original cells designed by Professor P.W. Rowe at Manchester University, England. These cells, in which load is applied to the sample hydraulically, offer many advantages and considerably widen the scope of laboratory testing. In addition, the hydraulic loading system provides accurate control of the applied loads over a wide range, including high pressures on large diameter samples.

The most important feature of the system is the ability to control drainage and to measure pore water pressure during the consolidation test. Several drainage conditions are possible and backpressure can be applied to the sample.

The cells have a maximum working pressure of 145 psi (1,000 kPa) and are supplied complete with five no-volume change valves, porous drainage disc, rigid loading disc, three porous plastic liners, two spanner wrenches and a spare set of plastic inserts.

Specifications

Sample Size.	EI25-0700 series: 75.7 mm diam. x 30 mm h.
	EI25-0705 series: 151.4 mm diam. x 50mm h.
	EI25-0710 series: 252.3 mm diam. x 90 mm h.
Sample Area.	EI25-0700 series: 4,500 mm ²
	EI25-0705 series: 8,000 mm ²
	EI25-0710 series: 50,000 mm ²
PWP Points in Base.	EI25-0700 series:2.
	EI25-0705 series:2.
	EI25-0710 series:4.
Weights.	EI25-0700 series: Net 11 lbs. (5 kg).
	EI25-0705 series: Net 26.5 lbs. (12 kg).
	EI25-0710 series: Net 97 lbs. (44 kg).

Ordering Information

EI25-0700.	ELE/Rowe-Type Cell, 75.7 mm.
EI25-0705.	ELE/Rowe-Type Cell, 151.4 mm.
EI25-0710.	ELE/Rowe-Type Cell, 252.3 mm.

Replacement Parts

EI25-0700/K.	Spare Parts Kit for EI25-0700. Consists of a porous disc, diaphragm, O-ring seals, porous plastic liners and inserts.
EI25-0700/10.	Diaphragm for EI25-0700.
EI25-0700/11.	Porous Disc for EI25-0700.
EI25-0705/K.	Spare Parts Kit for EI25-0705. Consists of a porous disc, diaphragm, O-ring seals, porous plastic liners and inserts.
EI25-0705/10.	Diaphragm for EI25-0705.
EI25-0705/11.	Porous Disc for EI25-0705.
EI25-0710/K.	Spare Parts Kit for EI25-0710. Consists of a porous disc, diaphragm, O-ring seals, porous plastic liners and inserts.
EI25-0710/10.	Diaphragm for EI25-0710.
EI25-0710/11.	Porous Disc for EI25-0710.

Special Note:

Vertical settlement, pressure and volume change measurement devices as well as air/water or oil/water pressure systems are required for cell operation; not included. Contact factory for complete details.



Expansion Index Test Apparatus

ASTM D-4829; California UBC 29-2.

- **Completely self-contained and compact design.**
- **Accurate to 0.0001" (0.002 mm).**
- **Testing time of 24 hours or less on cured soil specimens.**

The Expansion Index Test Apparatus is a completely self-contained apparatus designed for use in determining the expansion index of soils. Using the new consolidation apparatus, contractors and laboratory technicians can conduct an expansion test on a cured soil specimen in 24 hours or less.

The apparatus is designed to control all of the variables that influence the expansive characteristics of a particular soil while still performing a practical test for general engineering use.

The unit consists of a cast aluminum base and collar, stainless steel specimen ring, porous stones, dial indicator, and a 12.6 lb. (5.7 kg) loading weight.

Specifications

Base and Collar.	Cast aluminum construction; brass hold-down rods.
Specimen Ring.	Stainless steel; 4" i.d. x 1" h. (101.6 x 25.4 mm).
Porous Stones.	4" diam. x 1/2" thick (101.4 x 12.7 mm).
Loading Weight.	Brass; 12.6 lbs. (5.7 kg).
Dial Indicator.	EI25-0380: 0.3" range x 0.0001" graduations. EI25-0385: 8 mm range x 0.002 mm graduations.
Test Duration.	24 hours or less on cured sample.
Dimensions.	6" diam. x 11" h. (152 x 279 mm).
Weight.	Net 18 lbs. (8.2 kg).

Ordering Information

EI25-0380.	English.
EI25-0385.	Metric.



Soil Volume Change Meter

- **Measures both shrinkage and swelling of soils.**
- **Ideal for measuring swelling of clay soils.**
- **Fast and easy to operate.**

The Soil Volume Change Meter (PVC) is used to evaluate potentially dangerous swelling or shrinking conditions existing in some clay soils used in residential and commercial developments.

The device was originally developed by the Federal Housing Administration after considerable research to provide satisfactory background laboratory testing data, a summarization of mechanisms causing volume change in soils and the factors influencing these changes. PVC refers to the maximum possible volume change that a soil could undergo when subjected to changing moisture conditions.

The unit is supplied complete with a 1,000 lb. (4.5 kN) capacity proving ring and compaction hammer.

Specifications

Mold Assembly.	Includes porous stones and loading cap.
Proving Ring.	1,000 lb. (4.5 kN) capacity; dial indicator.
Other Components.	Loading pistons; compaction hammer.
Specimen Ring.	2-3/4" (70 mm) diam.
Sample Size.	10 teaspoons.
Water Required.	5 oz.
Charts.	Convert readings to lbs./sq.ft. and then to PVC (Potential Volume Change) rating.
Dimensions.	7-1/4" diam. base x 15-1/2" h. (184 x 394 mm).
Weight.	Net 25 lbs. (11.3 kg).

Ordering Information

EI25-0390.