Direct Shear

Ref. Standards IS:2720 (Part 13), ASTM D 3080

The Direct Shear test is carried out with an apparatus consisting of a square or circular box divided into two halves. The specimen, contained in the box, is subjected to a constant normal load while an increasing horizontal force is applied to one of the sections of the shear box. This force causes a shear failure along the juncture between the box sections. The shear force and the normal load are measured directly. The rate of strain is adjusted by the speed of the horizontal force applied. The loading unit has V-strips on which the shear box housing rests. The precalibrated load yoke helps counter balance the loading system. The load yoke with direct and through level system for applying normal load upto 8 kg/cm^2 capacity, fixtures for proving ring, brackets for holding consolidation and strain dial gauges are provided. The lead screw connected to the shear box housing helps application of shear stress.

UMI offers the following models :

UMI - 115
Direct Shear Apparatus, 2 kN
Ref. Standards IS:11229, 2720 (Part 13)

Type of Shear measurement	:	Direct / Residual
Operation	:	Motorised
Rates of Strain (mm/min)	:	1.25, 0.625, 0.25, 0.125, 0.05, 0.025, 0.01, 0.005, 0.002, 0.001, 0.0004, 0.0002
Specimen Size	:	60 x 60 x 25 mm
Power Specifications	:	220 V, 50 Hz, Single Phase, AC Supply
The apparatus consists of :		
Shear Box Assembly	:	1 set
Comprises of :		
Halves of the Shear Box	:	Set of two
Plane Gripper Plate	:	1 Pair
Perforated Gripper Plate	:	1 Pair
Porous Stone	:	1 Pair
Top Loading Pad	:	1 No.
Base Plate	:	1 no.
Shear Box Housing, with two Ball Roller Strips		: 1 No.
Specimen Cutter		: 1 No.
Weights to attain Normal Stress of 3 kg/cm^2		: 1 Set
comprises of :		
0.05 kg/cm^2		4 Nos.
0.10 kg/cm^2		1 No.
0.20kg/cm^2		1 No.
0.50 kg/cm^2		3 Nos.
1.00 kg/cm^2		1 No.

UMI - 115

Essential Accessories (to be ordered extra)

Compression-Tension Proving Ring, 2 kN (200 kgf) capacity

UMI - 115E
Direct Shear Test Apparatus, Electronic
Ref. Standards IS:2720 (Part 13), IS:11229

- Digital readout minimizes operator error
- Reduces operator time and involvement
- Direct reading in engineering units
- Pre-calibrated before despatch
- Plug-in transducer module system
- Peak hold facility for load

The apparatus is similar to UMI - 115 model but with the Electronic Outfit in place of Proving Ring and Dial Gauges.

Note : Due to constant R&D, specifications are subject to change without prior notice.

Soil

UMI - 155L
Large Direct Shear Apparatus, Motorised, 50 kN (5,000 kgf)
Ref. Standards IS:2720 (Part 39, Section 1) IS:11593

For testing sand, gravel, gravelly clays and clay gravels for use in rolled fill embankments.

Operation	:	Motorised
Rates of Strain (mm/min)	:	72 speeds Ranging from 0.0014 to 10.16 mm/min
Specimen Size	:	30 x 30 x 15 cm
Change gears	:	12
Shear Load capacity	:	50 kN
Vertical stress	:	500 kN/m^2
Power	:	415 V, 50 Hz, 3 phase, AC supply
The above apparatus consists of :		
Shear Box Assembly	:	1 No.
Consists of :		
Plane Gripper Plate	:	2 Nos.
Perforated Gripper Plate	:	2 Nos.
Perforated Spacer Plate	:	2 Nos.
Base Plate	:	1 No.
Top Loading Pad : 1 No.		
Shear Box Housing, with two Ball Roller Strips	:	1 No.
Weights, 9 Nos. each to give 50 kN/m^2 (0.5 kg/cm^2) and 2 Nos. each to give 25 kN/m^2 (0.25 kg/cm^2)	:	1 Set
Proving Ring, capacity 50 kN	:	1 No.
Dial Guage, 25 mm travel, 0.01 least count (for Consolidation and Shear Strain)	:	2 Nos.
Magnetic Stand, for Shear Strain Dial Guage	:	1 No.

Vane Shear

Vane Shear Tests are conducted where it is difficult to obtain suitable specimens or where intrusion from a sampling tube may cause too much of a disturbance.

UMI - 138
Laboratory Vane Shear Apparatus, Motorised.
Ref. Standard IS:2720 (Part 30)

Consists of a torque head, adjustable in height by means of a lead screw rotated by a drive wheel to enable the vane to be lowered into the specimen.
Rotation of the vane is by means of an electric motor which operates a worm gear arrangement turning the upper end of a calibrated torsion spring.
The vane shaft is attached through the hollow upper shaft to a resettable pointer which indicates the angle of torque on a dial graduated in degrees.
The dial reading multiplied by spring factor gives the torque.

Rate of rotation : 1/60 rpm

operates on 220, 50 Hz, Single Phase, AC supply.

Supplied complete with :

Container : 1 No.

Set of 4 Springs, each of capacity 2 kg-cm, 4 kg-cm, 6 kg-cm and 8 kg-cm : 1 No.

(complete with a wooden carrying case)

UMI - 138

Optional Extra

Stand, for use at the site

Note : Due to constant R&D, specifications are subject to change without prior notice.