



## STATIC CONE PENETRATION TEST

Static cone penetration test is internationally recognized as a standard field test to collect data about bearing capacity and frictional resistance of soil.

The equipment meets the essential requirements of IS:4968 (Part - III) the probing part consists of a cone which has an apex angle of  $60^\circ$  and an overall base diameter of 35.7 mm equivalent to area of  $10 \text{ cm}^2$ .

The cone is connected with sounding rods which are protected by mantle tubes. The assembly of sounding rod and mantle tube is pushed into the soil, by means of a mechanical rack jack or by an engine driven hydraulic pumping unit and ram. Basically the test procedure consists of first pushing the cone alone, then the cone and the friction jacket and finally the whole assembly in sequence through specified depth and noting the resistance in the first two cases, limited to the designed capacity of the unit. The readings are taken for every 20 cm of penetration, and thus continuous data of end bearing and frictional resistance of soil is recorded. The results are correlated with bearing capacity and settlement of shallow foundation and piles.

Static Cone Test is unsuitable for gravelly soils. The Static Cone resistance is correlated with the 'N' value as obtained from standard penetration test, thus increasing the utility of the test.

'HEICO' Static Cone Penetrometers, both hand operated and engine driven, conform to the essential requirements of IS : 4968 (Part III) - 1976.

### ●● HS34.70

#### Static Cone Penetrometer, Hand Operated, 30 kN (3000 kgf.) Capacity

The unit incorporates a two speed geared drive assembly and is provided with two handles for ease of operation. The essential features are a frame to which is mounted a two column structure. The cross head carries the worm mechanism with a pinion



HS34.70

driving a long travel geared rack.

#### The unit is supplied complete with:

- i) Screw type anchors for reaction complete with fixtures. 4 Nos.
- ii) Mantle tubes one meter long with conical threads, 36 mm non-uniform diameter -15 Nos.
- iii) Sounding rods, one meter long 15 Nos.
- iv) Pressure Gauges, 150 mm dia 0-60 &  $160 \text{ kgf/cm}^2$  - 1 No. each
- v) Cone with friction jacket  $10 \text{ cm}^2$  base area - 1 No.

- vi) Cone without friction jacket  $10 \text{ cm}^2$  base area - 1 No.
- vii) Set of tools for the unit - 1 set.
- viii) Automatic cut-off device for pressure Gauge - 1 No.

#### ACCESSORIES:

**HS34.70.1** Mantle tube, 36 mm uniform diameter .

**HS34.70.2** Cone with friction jacket,  $10 \text{ cm}^2$  base area

**HS34.70.3** Cone without friction jacket,  $10 \text{ cm}^2$  base area

**HS34.70.4** Pressure Gauge  $0-60 \text{ kg/cm}^2$

**HS34.70.5** Pressure gauge  $160 \text{ kg/cm}^2$

## ●● HS34.75

### Static Cone Penetrometer, 100 kN (10,000 kgf ) Capacity, Engine Driven

The unit facilitates exploration to greater depths with smooth penetration at a fairly constant penetration rate. The machine is driven by 4.8 hp diesel engine, suitable for loading up to 100 kN. and is mounted on a pneumatic tyred towable frame.

The equipment comprises the following :-

- i) Driving mechanism consisting of an engine driven pumping unit and a hydraulic ram.
- ii) Driving head consisting of hydraulic cylinder and piston.
- iii) One pressure gauge 0 to 160 kg/cm<sup>2</sup> capacity.
- iv) One pressure gauge 0 to 600 kg/cm<sup>2</sup> capacity.
- v) Automatic cut-out without pressure gauge 1 No.
- vi) Mantle tubes, of uniform diameter one meter long 30 Nos.
- vii) Sounding rods, one meter long 30 Nos.
- viii) Sounding cone, without friction jacket, 10 cm<sup>2</sup> base area 1 No.
- ix) Sounding cone with friction jacket, 10 cm<sup>2</sup> base area 1 No.
- x) Trusses : 2 No.
- xi) Screw Anchors with 45 cm blade complete 6 Nos.
- xii) Screw Anchors, blade only, 30 cm dia 6 Nos.
- xiii) Screw Anchors blade only, 20 cm dia 6 Nos.
- xiiii) Handle for screw anchors 1 No.
- xv) Tool kit for machine 1 Set.
- xvi) Tarpaulin cover

#### ACCESSORIES:

**HS3 4.751** Pressure Gauge 0 to 160 kg/cm<sup>2</sup>

**HS34.75.2** One pressure gauge 0 to 600 kg/cm<sup>2</sup>

**HS34.75.3** Sounding cone, without friction jacket, 10 cm<sup>2</sup> base area

**HS34.75.4** Sounding cone with friction



HS34.75

jacket, 10 cm<sup>2</sup> base area

**HS34.75.5** Sounding rods, one meter long.

**HS34.75.6** Mantle tubes uniform diameter one meter long .

**HS34.75.7** Tarpaulin cover - 1 No.

#### OPTIONAL ACCESSORY

**HS34.75.10** Hydraulic spanner for driving the augers

Hydraulic spanner is driven by the prime mover of the mother machine. It creates a torque of 50kg cm to drive the auger into the soil. In reverse direction it takes out the augers.



HS34.75.10



## ●● HS34.77

### 200kN Static cone penetration machine

The 200 kN Static Cone Penetration Machine is one of the latest development by HEICO in the field of Geo-technical Engineering. It is powered by a 12.5 H.P. air cooled diesel engine. The frame of the machine is made as light as possible, but strong enough to resist the stress developed due to penetration and withdrawal of sounding tubes. The drive head consists of two long stroke double acting hydraulic rams supported by two guide columns. Pressure is exerted onto the tubes and rods through the measuring head fixed with two high and low load gauges.

An automatic pressure cut off valve is provided which automatically cuts low pressure gauge the moment pressure exceed 120 kg/sqcm. Measuring device is provided for both cone pressure and total pressure while driving the standard cone of 60o with base area of 10 cm<sup>2</sup> and friction jacket at a constant rate as per Indian Standard 4968 (Part - III).

All components are mounted on a single axle steel trailer frame on pneumatic wheels with built in truss for anchoring it through number of ground anchors for reaction as required under field conditions. It is provided with telescopic legs with inbuilt provisions for leveling the unit before tests.

#### Technical specifications

Max. Pushing force: 200 kN  
 Max. pulling force : 220 kN  
 Drive : 12.5 HP Diesel Engine

Pressure Gauge

**Low:** 0-160 kg/cm<sup>2</sup>

**High:** 0-600 kg/cm<sup>2</sup>

**Penetration Speed:** 10-15 mm/sec as per ISI 4968 (Part III)

#### Standard Accessories

- i) Driving head consisting of hydraulic piston and cylinder 1 No.
- ii) Pressure Gauge 0-160 kg/cm<sup>2</sup> 1 No.

- iii) Pressure Gauge 0-600 kg/cm<sup>2</sup> 1 No. 2 Nos.
- iv) Automatic cut off switch 1 No.
- v) Mantle tubes of uniform diameter 45 Nos.
- vi) Sounding rods of 1 meter length 45 Nos.
- vii) Sounding Cone with friction jacket 10 cm<sup>2</sup> base area 2 Nos.
- viii) Sounding cone without friction jacket
- ix) Screw anchors  
 45 cm blades: 8 Nos.  
 30 cm blades: 8 Nos.  
 20 cm blades: 8 Nos.
- x) Handle for screw anchors: 1 No.
- xi) Tool Kit: 1 No.
- xii) Tarpaulin cover: 1 No.



HS34.70