



# **INSTRUCTION MANUAL**

## **HANDSOUNDING STATIC PENETROMETER**

### **Model HSA-5**

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This product should be installed and operated only by qualified personnel. Its misuse is potentially dangerous. The Company makes no warranty as to the information furnished in this manual and assumes no liability for damages resulting from the installation or use of this product. The information herein is subject to change without notification.

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# 1 INTRODUCTION

The ROCTEST handsounding static penetrometer has been designed to make soundings to limited depths by the “Dutch Cone Static Penetrometer” method with a single string of rods.

The standard version includes:

- Hydraulic measuring device with 2 hand grips;
- Pressure gauge with range 0 – 20 kg/cm<sup>2</sup>
- Push-pull handle
- 2 cones of 5 cm<sup>2</sup>
- 2 cones of 10 cm<sup>2</sup>
- 2 pressure rods 15 mm Ø by 1000 mm long
- 1 tin of oil
- 1 set of service tools.



# 2 DESCRIPTION

The surface area of the piston is 5 cm<sup>2</sup> (0.0005 m<sup>2</sup>) and the pressure gauge has a range of 0 to 2000 kPa. To determine the total load applied to the rods, the pressure gauge reading is multiplied by 0.0005.

Two 5 cm<sup>2</sup> and two 10 cm<sup>2</sup> cones are supplied with the instrument. Their diameters are:

- 5 cm<sup>2</sup> cone → diameter = 25.23 mm
- 10 cm<sup>2</sup> cone → diameter = 35.70 mm

Point resistance in kPa is obtained by dividing the total load in kN by the surface area in m<sup>2</sup> of the cone used.

### EXAMPLE:

- pressure gauge reading: 1200 kPa
- cone area = 10 cm<sup>2</sup>

$$\text{Total load } 1200 \text{ kPa} \times 0.0005 \text{ m}^2 = 0.6 \text{ kN}$$

$$\text{Point resistant } \frac{0.6 \text{ kN}}{0.001 \text{ m}^2} = 600 \text{ kPa}$$

The point resistance is equal to the pressure gauge reading when the 5 cm<sup>2</sup> cone is used.

## **3 INSTRUMENT PREPARATION**

Screw handles (2) onto the measuring head (1). Check that the piston free play is less than 1 cm. If the piston is free to move more than 1 cm, the cylinder must be refilled as described below. Screw the appropriate cone onto one extremity of a rod. The instrument is now ready for use.

## **4 TESTING**

Using the measuring head, the rod fitted with the cone is pressed at a uniform rate into the soil. The pressure gauge reading is noted every 10 or 20 cm. The rate of penetration should be approximately 2 cm per second. Rods are retrieved using the rod puller (3) (4).

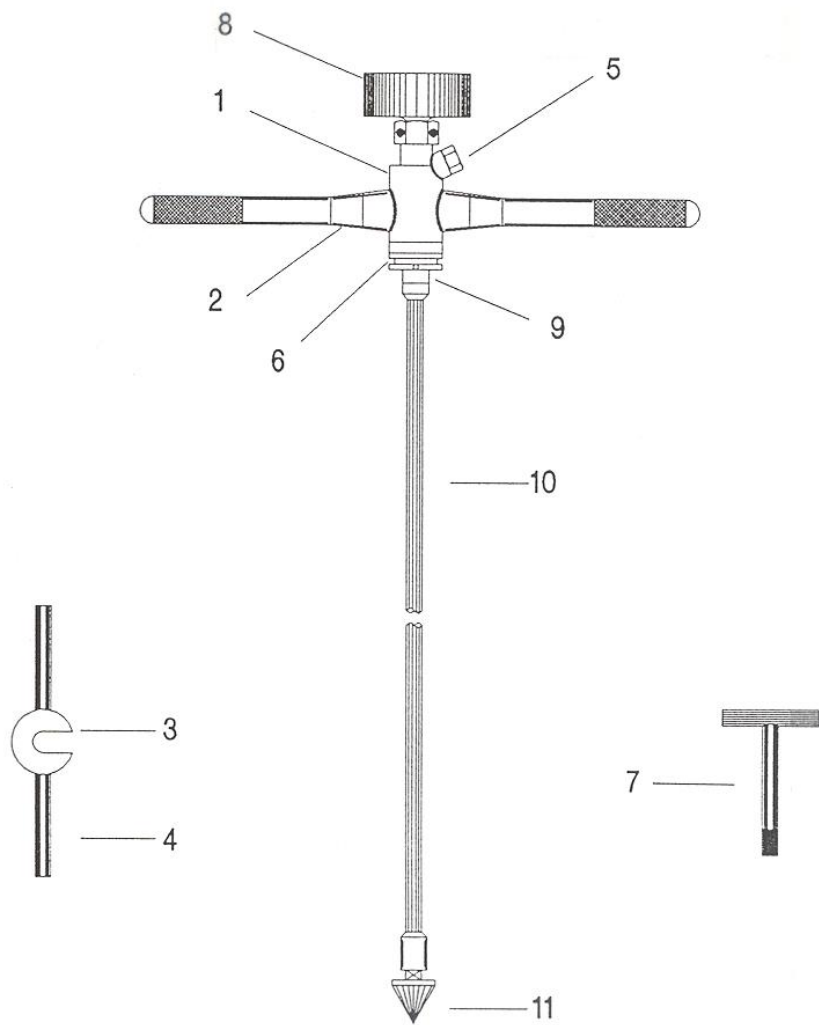
## **5 MAINTENANCE**

The rods and cones should be cleaned and greased lightly after use. If the free play of the piston is greater than 1 cm, the reservoir should be refilled. To do so, unscrew plug (5) and fill the reservoir with Shell Tellus 33 oil or an equivalent. During the filling, ensure that all the air in the reservoir is displaced with oil. Also the piston should be pushed up and down in the cylinder with the help of the key (7) which has been screwed into the piston.

Should an oil leak occur, tighten the sealing ring (6) using the "C" wrench supplied.

If the leak persists, unscrew ring (6) and replace the seal.

- 1) Measuring head
- 2) Removable handles
- 3) Rod puller
- 4) Puller handles
- 5) Oil reservoir plug
- 6) Sealing ring
- 7) Key
- 8) Pressure gauge
- 9) Piston
- 10) Rod
- 11) Cone



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