

OPERATING INSTRUCTIONS

Laboratory Vane Apparatus

26-2270, 26-2289

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1 Description of Apparatus

- 1.1 The size of the vanes supplied is 12.7 mm x 12.7 mm ($\frac{1}{2}$ x $\frac{1}{2}$ inch), although other sizes can be supplied upon request. The vanes are manufactured from stainless steel.
- 1.2 The vane is located in the rotating socket (2) in the lower part of the vane head assembly, and is retained by a knurled fixing screw. This socket rotates in a ball seating.
- 1.3 Four calibrated springs are supplied, each of which has a deflection/load chart. These springs are fitted with circular plugs at each end, the plugs having horizontal engagement pins connected to the vane carrier.
- 1.4 The spring (3) is fitted under compression, having the plug with the square hole downwards, with its engagement pins locked in the socket slots and the vertical shaft (4) engaged in the square hole.
- 1.5 The upper plug pins are engaged in the slots in the underside of the head. Thus any rotation of the upper drive is transmitted through the spring to the socket.
- 1.6 If the vane is prevented from rotating and the hand knob (5) is turned in a clockwise direction, the circular graduated scale (9) rotates and a torque is applied to the spring.
- 1.7 The load applied can be determined by noting the angular deflection from the graduated scale and reading the relevant spring calibration chart. If the vane is permitted to rotate, the amount of deflection of the vane can be seen on the outer secondary scale (8).
- 1.8 The lead screw (12) which is turned using the crank (11) is used for raising or lowering the vane head assembly.
- 1.9 Attachments can be provided to accommodate 38.1 mm ($1\frac{1}{2}$ inch) and 101 mm (4 inch) diameter sample tubes or to accept glass sample jars; these attachments hold the container rigid relative to the apparatus, thus ensuring that no errors take place during the test.

2 Assembly and Fixing Instructions

- 2.1 Place the vane vertically with the steel shaft uppermost into the lower part of the socket and tighten the fixing screw against the square section of the shaft.
- 2.2 Choose the correct spring based upon the characteristics of the soil to be tested.
- 2.3 Remove the vertical shaft (4) by lifting the knurled knob (10) from the centre of the dial.
- 2.4 The spring is lightly compressed by hand and the plug with the square hole is placed downwards in the upper slotted section of the socket. Allow the spring to extend so that the upper plug pins locate in the rotating head slots.
- 2.5 Replace the vertical shaft so that its square section is engaged in the square hole of the lower plug. The apparatus is now ready for use.

3 Testing Procedure

- 3.1 Place the soil container in the clamping attachment vertically below the vane shaft.
- 3.2 Bring the pointer (6) into contact with the carrier (7). Hold knob (10) and rotate the carrier until the pointer is brought to zero on the inner scale. Rotate handle (5) to bring the pointer to zero on the secondary scale.

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- 3.3 By turning crank (11) the vane is lowered into the soil to a depth which is sufficient to ensure that shearing will take place on the horizontal edges of the vane without movement of the soil sample surface.
- 3.4 By rotating the handle (5) in a clockwise direction, torque is set up in the spring which is resisted by the soil. The torque increases until the sample shears; the carrier will spring forward leaving the pointer showing the amount of spring deflection at failure and the amount of deflection of the vane.
- 4 Maintenance**
- 4.1 No maintenance is required other than periodic lubrication of the vertical screw thread and ball seating together with the application of a light film of oil on the vertical pillars.
- 5 Attachment to take 38 and 100 mm Sample Tubes (Figure 2) (26-2289)**
- Note: Attachment 26-2289 is an accessory and must be ordered separately from the main equipment.***
- 5.1 This is attached to the base (15 figure 1) after lifting off the base plate (14 figure 1) The tube locating block (1) is secured to the base with thumbscrews (2) in either of the positions shown. The sample tube is clamped to the block using U bolt (3) or (4) depending on the sample tube size.

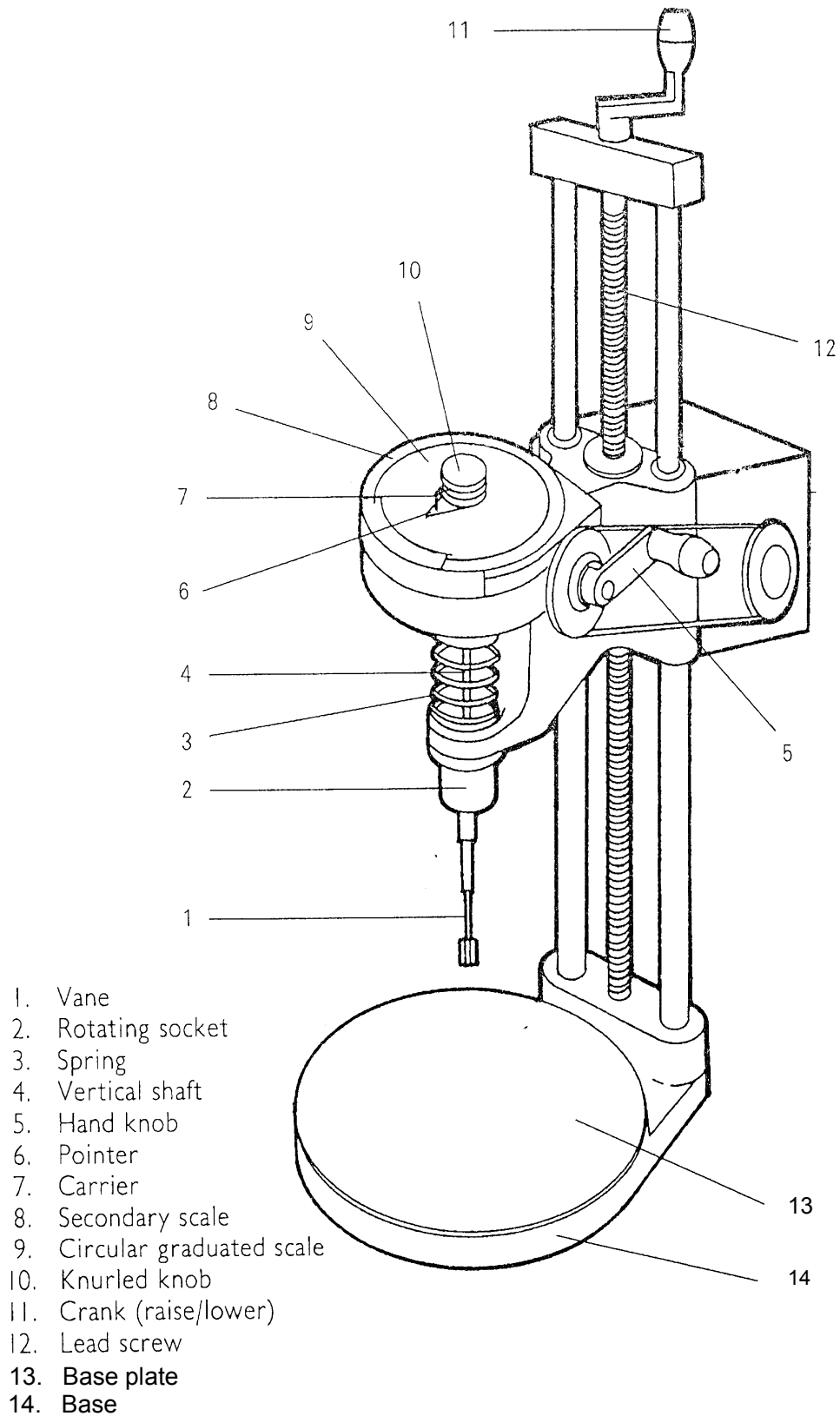


Figure 1

