

Australian Standard[®]

Methods of testing soils for engineering purposes

Method 3.1.1: Soil classification tests— Determination of the liquid limit of a soil— Four point Casagrande method

1 SCOPE This method covers the determination of the liquid limit of an air-dried or low-temperature (50°C) oven-dried soil, i.e. the moisture content at which a soil passes from the plastic to the liquid state. The method may also be used on a sample of soil in its natural state (see Note 1).

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

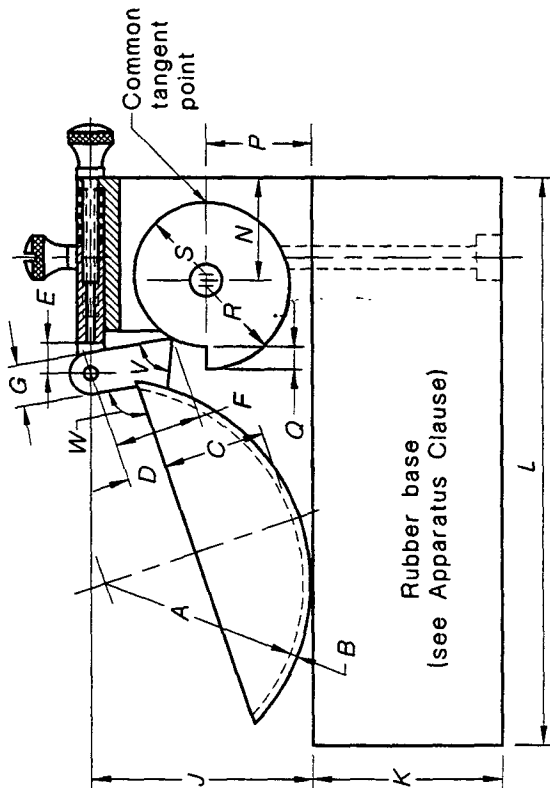
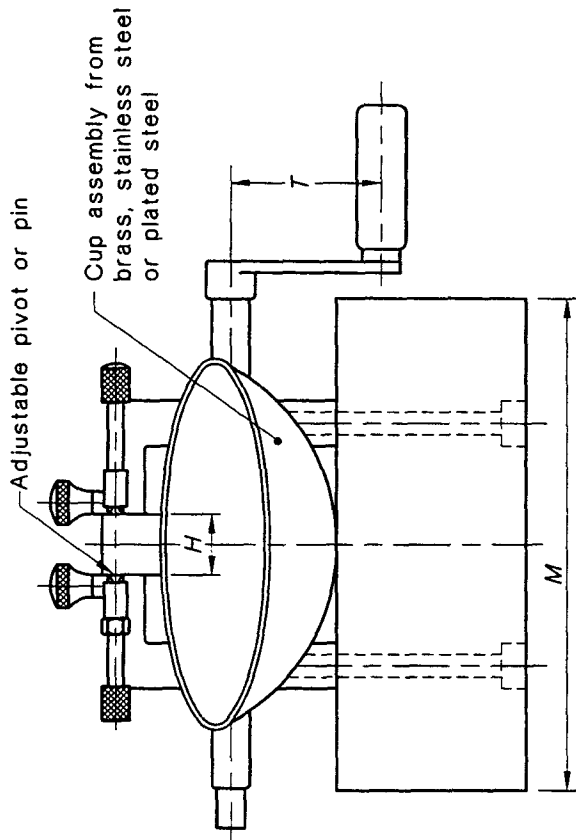
- 1289 Methods of testing soils for engineering purposes
- 1289.1 Method 1: Preparation of disturbed soil samples for testing
- 1289.2.1.1 Method 2.1.1: Soil moisture content tests—Determination of the moisture content of a soil—Oven drying method (standard method)
- 1289.2.1.4 Method 2.1.4: Soil moisture content tests—Determination of the moisture content of a soil—Microwave-oven drying method (subsidiary method)
- 1289.2.1.5 Method 2.1.5: Soil moisture content tests—Determination of the moisture content of a soil—Infrared lights method (subsidiary method)
- 1289.B3.1 Method B3.1: Soil moisture content tests—Establishment of correlation between a subsidiary method of moisture content determination and the standard method AS 1289.2.1.1

BS

- 903 Methods of testing vulcanized rubber
- Part A26: Determination of hardness

3 APPARATUS The following apparatus is required:

- (a) A thick, flat, rigid mixing plate of suitable size made of non-absorbent material.
- (b) A mixing bowl of convenient size with a suitable close-fitting lid.
- (c) Palette knives of convenient size, e.g. having a blade 200 mm long and 30 mm wide.
- (d) Liquid limit apparatus conforming in the essential details to the device illustrated in Figure 1 (see Note 2).
- (e) A grooving tool and gauge similar in essential details to that illustrated in Figure 2 or Figure 3.
- (f) A wash bottle or beaker containing potable water (see Note 3).



Letter	A	B	C	D	E	F	G	H	J
Dimension	54 ±0.5	2 +0, -0.4	27 ±0.5	12.5 ±0.5	8 ±1	25 ±0.5	10 ±0.5	16 ±0.5	60 ±1

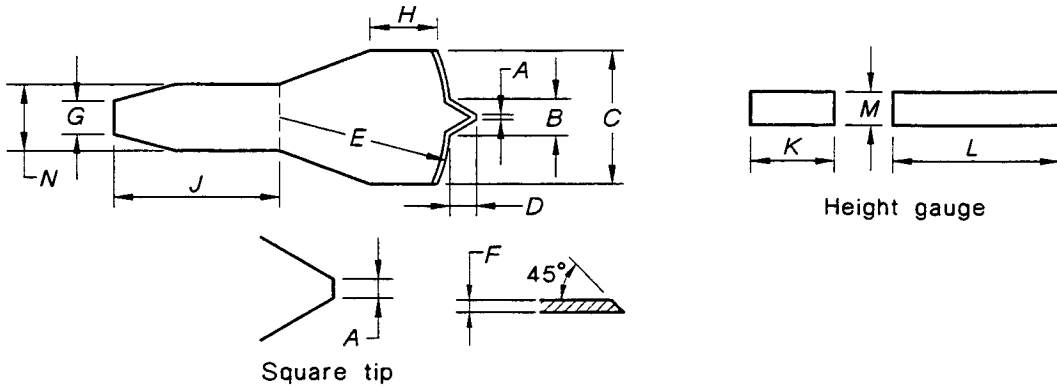
Letter	K	L	M	N	P	Q	R	S	T
Dimension	50 ±5	150 min.	130 min	27 ±1	28 ±0.5	Ref R and S	22 ±0.5	19 ±0.5	40

NOTES:

- Essential dimensions are tolerated.
- The cam is manufactured from two semicircular sections with a common tangent point.

	degrees	
Letter	V	W
Angle	75 ±5	100 ±3

FIGURE 1 STANDARD LIQUID LIMIT APPARATUS



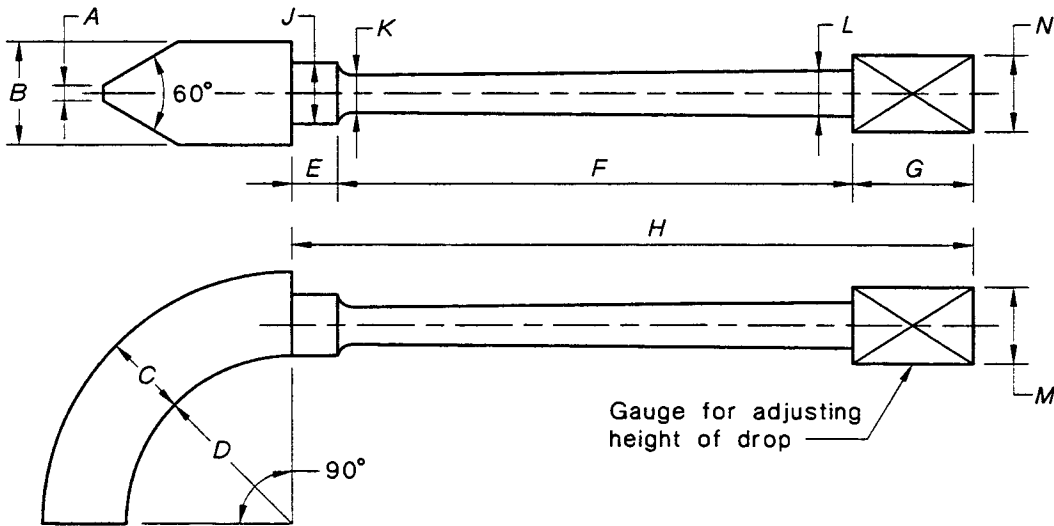
Letter	A	B	C	D	E	F
Dimension	2 +0.5, -0.1	11 ±0.25	40 ±0.25	8 ±0.25	51 ±0.25	1.6 ±0.1

Letter	G	H	J	K	L	M	N
Dimension	10	20	50	25	50	10 ±0.25	20

NOTES:

- 1 Essential dimensions are toleranced.
- 2 A suitable height gauge may be incorporated as part of the grooving tool.

FIGURE 2 GROOVING TOOL AND HEIGHT GAUGE
(Brass, stainless steel or plated steel)



Letter	A	B	C	D	E	F	G	H
Dimension	2 +0.5 -0.1	13.5 ±0.25	10 ±0.25	22 ±0.25	6	68	16	90

Letter	J	K	L	M	N
Dimension	8	5	6	10 ±0.25	10 ±0.25

NOTE: Essential dimensions are toleranced.

FIGURE 3 ALTERNATIVE GROOVING TOOL
(Brass, stainless steel or plated steel)