POINT LOAD TESTER

Model PIL-7

APPLICATIONS

The point load tester permits the determination of the Point Load Strength Index ($I_{s(50)}$). This index provides a method to establish rock strength classification.

The index can also be used to determine the rock anisotropy as well as to predict other rock strength properties, like the uniaxial tensile and compressive strengths.

DESCRIPTION

The PIL-7 point load tester consists of a loading frame, a mounted hydraulic ram and a pressure gage for maximum load indication. An upper conical platen is fixed on the frame and a lower one on the jack piston. A graduated scale is fixed on the frame and indicates the specimen diameter.

TEST PROCEDURE

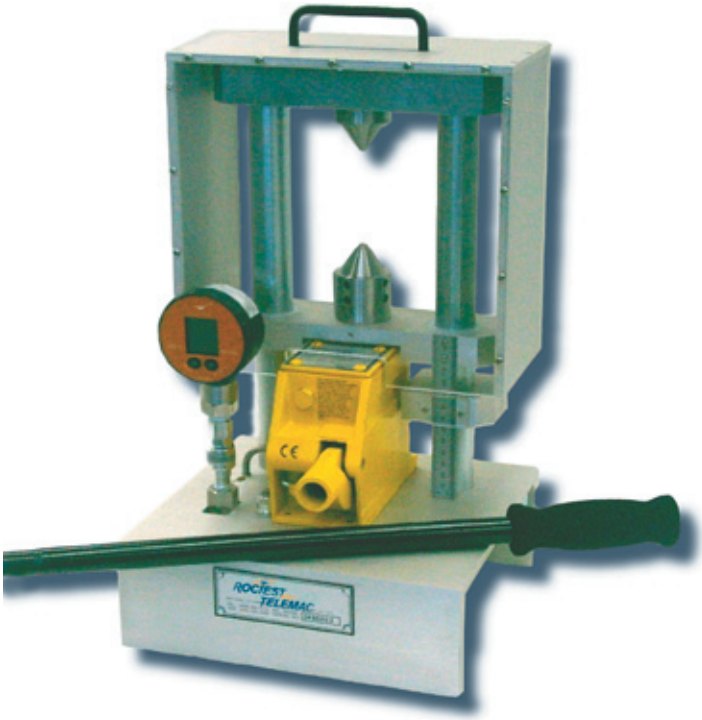
Three point load test configurations are used depending on the available rock specimens:

TESTS: DIAMETRICAL - AXIAL - IRREGULAR LUMP

The diametrical and axial tests use core specimens with length/diameter (L/D) ratios greater than 1.0 in the first case and between 0.3 and 1.0 in the second case. Rock pieces of suitable irregular shapes are used when cores are not available.

The testing steps are the same for all configurations:

1) The specimen is positioned between the conical platens. The platens are then closed to make contact.
2) The distance "D_e" between the points of contact is read on the scale.
3) The load is increased such that failure occurs within 10 to 60 sec. and the failure load "P" is read and recorded.



FEATURES

- **CONICAL PLATENS CONFORM TO ISRM SUGGESTED METHOD**
- **DIRECT READING OF SPECIMEN DIAMETER**
- **MAXIMUM LOAD INDICATOR**
- **PORTABLE**
- **SHIELD PROTECTS FROM FLYING CHIPS UPON FAILURE**
- **EXTREME RIGIDITY**

INTERPRETATION

The Point Load Tester allows the user to determine an "Uncorrected Point Load Strength Index" (I_s). This index must be corrected to a standard equivalent diameter (D_e) of 50 mm. It then becomes a unique property of the rock tested ($I_{s(50)}$) which is most useful in rock strength classification.

Rock anisotropy is quantified by the "Strength Anisotropy Index" ($I_{a(50)}$). This index is the ratio of the greatest to least $I_{s(50)}$ index measured respectively perpendicular and parallel to the existing planes of weakness.

The uniaxial tensile (UTS) and compressive (UCS) strengths can be approximated from the $I_{s(50)}$ index. The UTS is about 1.25 times $I_{s(50)}$ and the UCS is normally between 20 and 25 times the $I_{s(50)}$ index.

I_s is obtained from the following equation:

$$\mathbf{I_s = P / D_e^2}$$

Where: $\mathbf{I_s}$: Uncorrected Point Load Strength Index in MPa or psi

P: Failure load in MN or lbf (maximum pressure X jack piston area)

$\mathbf{D_e}$: Equivalent core diameter in meters or inches (D_e = D for diametral tests)

The ISRM* "Suggested Method for Determining Point Load Strength" size correction procedure is used. $I_{s(50)}$ is obtained either graphically, mathematically or by testing 50 mm (maximum diameter) specimens.

**ISRM: International Society of Rock Mechanics.*

SPECIFICATIONS

Maximum specimen size		102 mm
Maximum load		70 kN
Scale minor division		0.5 mm
Pressure gage		
	- Range:	100 000 kPa
	- Accuracy:	±0.2% F.S.
Height		48 cm
Length		27 cm
Depth		25 cm

ACCESSORIES

- Set of spare conical platens
- Spare pressure gage
- Spare front protective shield
- Spare back protective shield
- Set of optional flat platens
- Set of optional spherical seats
- Optional low pressure gage (30 000 kPa)
- Carrying case for point load tester

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