PL-v100 - Point Load
Testing Equipment

- COMPLIANT TO ASTM D5731-16
- CAPACITY UP TO 100KN
- COST EFFECTIVE

The PL-100V is a cost effective portable point load tester used for determining the point load strength index for rock strength classification. Its digital readout unit comes with wide spread display battery operated with keyboard.

Description

The PL-100V point load tester consists of a loading frame, a hydraulic cylinder, a pump and a pressure gauge with digital readout unit for maximum load reading. An upper conical platen is fixed on the frame and a lower one on the cylinder 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:

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 “De” 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.

Key Features

- Load capacity up to 100 kN
- Selectable force unit display in kN and
- Ease of transportation
- Direct reading of specimen diameter
- Load resolution: 1N
- Load measurement accuracy: +/- 1%

Applications

- Determination of the Point Load strength index for rock strength classification
- Determination of rock anisotropy
- Prediction of other rock strength properties such as uniaxial tensile and compressive strengths

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General specifications

Maximum specimen size	102 mm
Maximum load	100 kN
Effective resolution	18 bit (1/262'000 div)
Pressure gauge	
Range	100 000 kPa
Accuracy	1% F.S.
Available units	kN*, MPa, psi
Load measurement accuracy	1 kN

** Based on conversion factor determined at calibration*

Main frame assembly

Height	418 mm
Length	200 mm
Depth	200 mm
Weight	14 kg

Pump assembly

Height	160 mm
Length	798 mm
Depth	310 mm
Weight	8.3 kg

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:
$I_s = P / De2$
where: I_s: Uncorrected Point Load Strength Index, in MPa or psi
P: Failure load, in MN or lbf
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.*

Ordering Information

- The unit comes in a custom made road case

Optional Accessories

- Set of spare conical platens
- Set of spare protective shields
- Calibration Kit

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