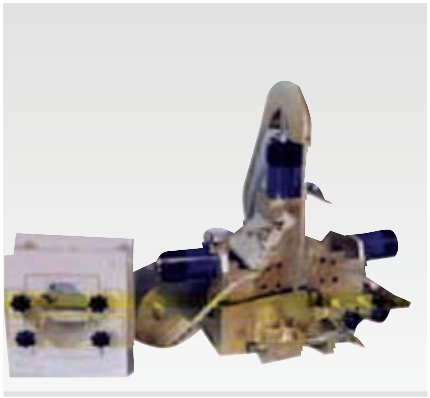
ROCK SHEAR BOX APPARATUS

HR72.335

Field Shear Box

Introduction

This apparatus, similar to one developed by Rock one developed by Rock Mechanics Centre, Imperial College, London, is used for practical rock testing either in the field or laboratory.



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The apparatus consists of a shear box in two parts which can accept samples of max. size 115 x 125 mm or cores upto 102 mm diameter. The lower half is fitted with two rams for reversible shearing action, and the upper fitted with a ram for normal load application. The normal loading unit is complete with low friction hardened rods to maintain constant normal load throughout the duration of the test.

The equipment comprises :-

i) Hydraulic Pumps - 2 Nos.
ii) Pressure Gauges - 2 Nos.
iii) Hose Pipes - 2 Nos.
iv) Dial Gauge 0.01 x 25 mm - 1 No.
v) Perspex sided aluminium mould

HR72.377

Oblique Shear Equipment

Introduction
The instrument is used for finding out the shear strength of rock specimen at predetermined angle.
It consists of two blocks which, with suitable adopters, can accept specimens ranging from 'EX' to 'NX' size, with diameter to length ratio of 1:1. The shearing angle can be adjusted at 30°, 35°, 40°, 45° and 50°. It can be used in compression testing machine with day light clearance of approximately 400 mm.
Equipment comprises the following:-

i) Set of specimen holders.
ii) Bottom and top plates.
iii) Rollers 15 Nos

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Compression Loading Unit, Hand Operated

Hydraulic Loading unit of 250 kN capacity with maximum daylight clearence of 400 mm. The unit is fitted with 200 mm dia direct reading load gauge.

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Digital Rock Shear Equipment

The system comprises of two controllers, hydraulic power pack with Tandem Pump to feed two actuators. Since the size of the box is 300 mm x 300 mm x 450 mm, it can take maximum rock specimens of 300 x 300 x 150 mm, naturally or artificially jointed, in any shape and form. All the parameters like normal load and shearing load either on strain basis or stress basis are controlled through the dedicated computer. On line graphical presentation is shown on the monitor. After the completion of the test the following graphs are plotted in window perated software.

i) Shear force Vs Horizontal displacement
ii) Horizontal displacement Vs Vertical displacement.
iii) Shear Stress Vs normal stress.

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The system includes :-

1) Loading Unit

It is a welded structure fitted with two actuators for normal and shear load. Box assembly can be moved out of the loading unit on the railings provided. This facilitates in the easy loading of the sample.

Capacity of the actuators

1 Normal Load : 500kN
2 Shearing Load : 750kN
3 Strain Adjustment: 0.001 mm/min-50 mm/min.
4 Shearbox assembly 350 x 350 x 450 mm.

Comprises of :-

i) Shear box housing in two halves.
ii) Spherical seating
iii) L.V.D.T. ± 20 mm for vertical strain : 2 Nos.
iv) L.V.D.T. ± 20 mm for horizontal strain : 2 Nos.
v) Load Cell for Shear Load, 750kN capacity : 1 No.
vi) Bottom Plate : 1 No.
vii) Casting Mould : 1 No.
viii) Load Cell for normal Load 500kN : 1 No.

5) Power Pack
Capacity of the oil tank : 100 Ltrs.
Pumps tandem type : 15 + 15 Ltrs/min.
HP of the motor : 20 HP
Heat Exchanger : 10,000 k cal/hr.
Servo Valves : Moog/Tokyo Instruments
Operating Pressure : 150 Bars.
Pressure Line Filters : 3 Microns Absolute

Accumulators : Piston Type, 1 Ltr. Capacity.

6) Computer Pentium IV with Data Acquisition Card (Dedicated)