



Aimil Ltd.

Instrumentation & Technologies



Rock
Testing Equipment



Sample Preparation

Core Drilling Machine

- Heavy duty, pillar type frame with 1500W, single phase, AC motor
- Varying cutting feeds provided with water-fed swivel head which can be connected to suitable water supply.
- Provision at base for water collection / drainage
- Core preparation from regular and irregular samples
Core size : EX to 100 mm
- Clamping arrangement to hold specimens with regular/irregular shapes to the base of machine
- Two cutting speeds at no load 950/2100RPM.
- Water tank 5ltr. is Standard outfit.



AIM 201-2

Ordering Information :

AIM 201-2 Core Drilling Machine

Optional Accessories :

- AIM 20101** Core Drilling Bit 21.46 mm dia (EX size)
- AIM 20102** Core Drilling Bit 30.10 mm dia (AX size)
- AIM 20103** Core Drilling Bit 35 mm dia
- AIM 20104** Core Drilling Bit 42.04 mm dia (BX size)
- AIM 20105** Core Drilling Bit 54.74 mm dia (NX size)
- AIM 20106** Core Drilling Bit 50 mm dia
- AIM 20107** Core Drilling Bit 75 mm dia
- AIM 20108** Core Drilling Bit 100 mm dia

Note: HILTI BITS available on request

Core Cutting & Grinding Machine

Salient Features :

- Table Mounted.
- Stable Construction.
- Feed arrangement for cutting.
- Cooling water arrangement.

This unit is designed for cutting and grinding cylindrical rock specimens upto NX size. The outfit includes 200 mm dia diamond impregnated cutter, a fine diamond impregnated grinding wheel, a water supply system and sample holder.

A V-Vice, to hold the sample upto 55 mm dia x 140 mm long to be cut parallel and square to the longitudinal axis is provided. Cores longer than 140 mm can be prepared by reversing the specimen and holding the same vice. A hand feed arrangement is provided to facilitate the specimen with a uniform and smooth feeding motion.

Suitable for operation on 415 V, three phase, AC supply.



AIM 202

Ordering Information :

- AIM 202** Core Cutting & Grinding Machine, 75 mm dia
- AIM 202-100** Core Cutting & Grinding Machine, 100 mm dia
- AIM 202-150** Core Cutting & Grinding Machine, 150 mm dia

Polishing & Lapping Machine

Salient Features :

- Compact table model.
- 20 cm dia top and adapter to hold polishing cloth or paste.
- Sample Holders to accommodate upto NX size Cores.
- Continuous water feed arrangement during operation.

This unit is provided with a 1/4 HP, single phase, AC motor. This bench mounted, single spindle lapping machine is ideally suited for the final polishing of mounted rock or concrete specimens. This is a motor driven unit with 450/500 rpm. A swing-in tap, for continuous water supply during operation, is also provided.

Suitable for operation on 220 V, 50 Hz, Single Phase, AC supply.

The equipment consist of the following replaceable parts :

- AIM 20302** Sample Holder for Ax size 2 Nos.
- AIM 20303** Sample Holder for 38 mm size 2 Nos.
- AIM 20304** Sample Holder for Bx size 2 Nos.
- AIM 20305** Sample Holder for Nx size 2 Nos.



AIM 203

Ordering Information :

AIM 203 Polishing & Lapping Machine

Optional Accessories :

- AIM 20301** Sample Holder for Ex size
- AIM 20306** Abrasive Powder, coarse type
- AIM 20307** Abrasive Powder, fine type
- AIM 20308** Abrasive Powder, medium type

Note: Sample holders of other sizes can also be provided on request.

Rock Permeability

Miniature High Pressure Permeameter

This equipment is used for determining the permeability characteristics of solidified soils and rock cores.

The equipment consist of the following replaceable parts :

- AIM 20501** Mould 50 mm dia x 100 mm high, with Collar.
- AIM 20502** Top Plate
- AIM 20503** Base Plate with recess for Porous Stone.
- AIM 20504** Pipette 6 mm x 300 mm long.
- AIM 20505** Reservoir Tank. fitted with 7 kg/cm² Gauge, Valves, Flow Control Regulator & Foot pump.
- AIM 20506** Porous Stone to fit into Base Plate.



AIM 205

Ordering Information :

AIM 205 Miniature High Pressure Permeameter

The compressor is not supplied as a part of the standard out fit.

Strength Index

Point Load Index Tester

Ref. Standard - IS:8764

Point Load Index Tester, is used for determining the Diametral Point Load Strength Index of rock cores and irregular lumps which can be tested without any treatment. The Point Load Test is primarily an Index Test for strength classification of rock materials. This instrument is mainly intended for field measurements on rock specimen but it can also be used in the laboratory. The results of the test may also be used to predict the uniaxial compressive strength of rock from correlations. The apparatus is light and portable. It can be used in the laboratory as well as in the field.

Salient Features :

- Rock core specimens can be tested without any preparation.
- The results of the test may also be used to predict the uniaxial compressive strength of rock.
- With this instrument, a wide range of core sizes can be tested.
- The frame has adequate adjustments to align perfectly the loading axis passing through the centre of the bearing plates and loading platens at position of the ram of the hydraulic jack.

The equipment consist of the following replaceable parts :

- AIM 20601** Loading Frame fitted with Hydraulic Jack, hand operated, capacity 100 kN
- AIM 20602** Load Gauge 0 - 25 kN x 0.25 kN
- AIM 20603** Load Gauge 0 - 100 kN x 0.50 kN
- AIM 20604** Conical Loading Platens.



AIM 206-1

Ordering Information

AIM 206-1 Point Load Index Tester



Brazilian Test Apparatus

Ref. Standard - IS:10082

The instrument is designed to test specimens from 50 mm dia to 100 mm dia having thickness equal to half of the diameter. A pair of loading jaws, designed so as to contact a disc shaped sample at diametrically opposed surfaces over an arc of contact of about 10 degrees at failure, is supplied. The set of jaws supplied with the equipment is designed for 50 mm dia specimen and therefore it is essential to order jaws for required sizes, if the samples of other diameters are to be tested. A set of plain platens are provided with the jack to enable testing of cube and circular specimens upto 50 mm size for compressive strength.

The equipment consist of the following replaceable parts :

- AIM 20701** Loading Frame fitted with hand operated Hydraulic Loading Jack of 100 kN (10,000 kgf) capacity provided with self retracting Piston, pair of plain platens
- AIM 20702** Pair of Semi-Circular Jaws for 50 mm dia samples
- AIM 20703** Load Gauge 0-200 kN x 1 kN capacity, provided with maximum Load Indicator.

Ordering Information :

AIM 207 Brazilian Test Apparatus

Optional Accessories :

- AIM 20704** Pair of Jaws for 60 mm dia samples
- AIM 20705** Pair of Jaws for 70 mm dia samples
- AIM 20706** Pair of Jaws for 80 mm dia samples
- AIM 20707** Pair of Jaws for 90 mm dia samples
- AIM 20708** Pair of Jaws for 100 mm dia samples

Slake Durability Apparatus

Ref. Standard : IS : 10050

- For determination of resistance offered by rock to weathering and disintegration when subjected to immersion in water.
- Facility to test upto four sets of samples.
- Quick couplings for assembly and removal of drums.

The apparatus consists of a motor on base board capable of driving two or more drums at a speed of 20 rpm. A suitable number of plastic water troughs, each designed to contain a test drum with quick release drive assemblies, permit 1 to 4 drums to be driven at one time. The test drums are supported on water lubricated bearings allowing 40 mm unobstructed clearance below the drum and a trough water level 20 mm below the axis of the drum. Drums are made of brass and comprise 2 mm wire mesh cylinders of 140 mm dia and 100mm length.

The strength, of most rocks, increases considerably with increase of confining pressure. The design engineer needs to carry out triaxial tests at a range of confining pressures, in order to determine the strength at the required confining pressure. To suit individual requirements, a wide range of instruments listed below is offered.

Suitable for operation on 220 V, 50 Hz, Single Phase, AC supply.

The equipment consist of the following replaceable parts :

Base Board with Motor Drive assembly with two drum and tank assemblies.



AIM 208

Ordering Information :

AIM 208 Slake Durability Apparatus

Optional Accessories :

- AIM 20801** Pair of Drums & Tank Assemblies including coupling to enable upto 4 test drums to be driven at a time
- AIM 20802** Electric timer, 0-30mm

Triaxial Testing of Rocks

Triaxial Cells

These cells are designed to withstand a lateral pressure of 150 bar (150 kg/cm²). Four no-volume change valves are fitted to the base for measurement of pore pressure, top drainage, bottom drainage and for entry/exit of cell pressure. The cell is nickel plated and completely rust-proof, hardened and ground pedestals and top loading pads with suitable centering arrangements for different sample sizes are provided. The lower pedestals are provided with radial grooves. The top loading pad is provided with spherical seating.



AIM 211



Ordering Information :

- AIM 211** Triaxial Cell For testing of samples of BX & NX
- AIM 212** Triaxial Cell For testing samples of 75 mm, 100 mm, 150 mm

Constant Pressure System for Rocks

The apparatus is designed to provide confining pressure upto 160 Bar to triaxial cells.

The system consists of an oil pump, continuously driven by an electric motor during the entire period of operation to maintain the desired pressure.

The unit provides continuous variable pressure upto 160 Bar, which can be increased or decreased, simply by turning a control knob.

Supplied complete with pressure gauge, flow valves and connecting pressure hose.

- Range** : 0-160 kg/cm².
- Steps of Pressure** : 1 kg/cm².
- Accuracy** : ± 1% of Indicated Load.

Suitable for operation on 220 V, 50 Hz, single phase, AC supply.



AIM 213

Ordering Information :

- AIM 213** Constant Pressure System for Rocks

Electronic Instrumentation for Rock Triaxial Test

This double channel electronic outfit is designed for direct reading of load and pore pressure in rock samples. This plug-in transducer module system facilitates easy installation and quick observation of readings.

The equipment consist of the following replaceable parts :

- AIM 21401** **Load Cell**
Capacity : 500 kN
Resolution : 0.1 kN
Load Cell Excitation : 7.5 V DC
Sensing Element : Strain gauges in full bridge configuration
- AIM 21402** **Pore Pressure Transducer**
Capacity : 200 bar
Resolution : 0.1 bar
Pressure Cell Excitation : 7.5 V DC
Sensing Element : Strain gauges in full bridge configuration
- AIM 21403** **Digital Indicator**
Mode of Display : Micro controller multi line alpha numeric VFD display for all simultaneous channel (No need for channel selection)

Suitable for operation on 220 V, 50 Hz, single phase, AC supply.



AIM 214

Ordering Information :

- AIM 214** Electronic Instrumentation for Rock Triaxial Test

Constituents Triaxial Test outfits:

Cat No.	AIM 215	AIM 216
Samples Dia	BX & NX	75, 100 & 150mm
Triaxial Cell	AIM 211	AIM 212
Load Frame	AIM 066	AIM 066
Triaxial Electronic System	AIM 214	AIM 214

Ordering Information :

- AIM 215** Triaxial Testing System for BX & NX dia samples
- AIM 216** Triaxial Testing System for 75, 100 & 150mm dia samples



Unconfined

Unconfined Compression Tester for Rocks

Ref. Standard : ASTM 2938

This equipment is used for determining unconfined compressive strength of intact rock core specimens. The rock sample is cut to length and the ends are machined flat. The specimen is placed in a loading frame and if required heated to the desired test temperature. Axial load is continuously increased on the specimen until peak load and failure are obtained.

The equipment consist of the following replaceable parts :

AIM065	Load Frame, 200 kN Capacity 12 speed
AIM275	Proving Ring, 100 kN
AIM 072	Dial Gauge 25mm travel, 0.01 mm least count.
AIM-21701	Platen Set as per ASTM 2938 requirements

Ordering Information :

AIM 217-S2 Unconfined Compression Tester for Rocks

In-Situ Stress

For measuring in-situ rock stress close to the surface of excavation. The method consists of cutting a slot, thereby relieving the stresses perpendicular to the slot, resulting in the deformation of the slot, which is measured. Flat Jack is then embedded in the slot and grouted. Hydraulic Pressure is applied through the flat jack until the displacements which took place on slot cutting are reduced and finally cancelled. By measuring the cancellation pressure in two mutually perpendicular directions, the in-situ stress close to the rock surface can be assessed approximately.

Flat Jack Outfit

The equipment consist of the following replaceable parts :

AIM 22001	Flat Jack 30 cm x 30 cm	1 No.
AIM 22002	Hydraulic Pump hand operated, with 15 cm dial Pressure Gauge of 70 kg/cm ² capacity with flexible Pressure Pipe of 1 m length	1 No.
AIM 22003	Deformeter consisting of a Dial Gauge having 10mm travel and 0.002 mm least count, and two interchangeable Stems for 150mm and 250mm gauge length	1 Set.
AIM 22004	Standard Bar	1 No.
AIM 22005	Reference Pins	6 No.

Flat Jacks of other sizes and capacities can also be manufactured on request.

Ordering Information :

AIM 220 Flat Jack Outfit

Rock Direct Shear

Direct Shear Apparatus, Hand operated for Rocks

Ref. Standard : ASTM D-5607-95

The equipment is used for Direct Shear Laboratory Test in Rock Samples. The test measures peak & residual Direct Shear Strength as a function of stress normal to the sheared plane. The equipment can be used for testing Core, Lump specimens.

The equipment consist of the following replaceable parts :

AIM 22101	Shear Box Size (300mm x 300mm x 100mm)	1 No.
AIM 22102	Jack Capacity 100kN	3 Nos.
	a) One jack for normal Load	
	b) One jack for Shear Load	
	c) One jack to return the sample to original position	
AIM 072	Dial Gauges, 25mm x 0.01mm	6 Nos.
	a) 2 Nos for measurement of Shear Displacement	
	b) 4 Nos for normal displacement & consolidation of sample	
AIM 475	Hand operated Hydraulic Pump	2 Nos.
AIM 303-LG100H-AN	Load Gauge 0-100kN x 0.5kN	2 Nos.
AIM 47002	Flexible hose pipe 2 meter	3 Nos.
AIM 22103	Moulds for Casting the samples (Wooden)	2 Nos.



Ordering Information :

AIM 221 Direct Shear Apparatus, hand operated for Rocks



Hydro Fracture

Hydro Frac System

Aimil Hydro Frac System has been developed for application of In-situ stress measurement by Hydro Fracture Test at near surface and underground situations. The compact nature of Hydro Frac tool enables location of the tool in a section of test hole free of incipient weakness in the rock mass and as uniform as possible. This also means that the stress measurements can be made within a volume of rock small enough that stress gradient will not have a significant impact on the measurement.

The equipment is designed for operating upto a depth of 30m approximately consistent with a typical application envisaged and avoiding the need for any sophisticated "down hole" Instrumentation.

The Hydro Frac System consists of two manually operated Hydraulic Pumps, a USB Data Acquisition System, two pressure transducers, two pressure gauges, all of which are enclosed in a dust proof metal enclosure and is called the main unit. The controls of the equipment are located on the main unit in such a way that they are easily accessible to the operator. The main unit is mounted on a metal frame to make it convenient for carrying to the test site manually. The Installation rods are manufactured from stainless steel. The system can deliver dual hydraulic pressure upto 400 kgf/cm². An Impression packer which is a very important part of the system is manufactured for use in diamond drilled Ex size bone base holes.

The equipment consist of the following replaceable parts :

AIM 24001	Hydro Frac Tool (paches)	1 No.
Diameter	: 36 mm	
Overall length	: 620 mm	
Test Section length	: 160mm	
Weight	: 2.4 kg	
Max. packer pressure	: Typically greater than 350 kg/cm ² (Under ideal test conditions)	
AIM 24002	Impression packer	1 No.
Diameter of collars	: 36 mm	
Diameter of packer	: 34 mm	
Diameter when wrapped	: 37 mm	
Overall length	: 620 mm	
Active length	: 500 mm	
Weight	: 2.4 kg	
Max. packer pressure	: 200 kg/cm ² (under ideal test conditions)	
AIM 24003	Pressure Pump, Hydraulic manually operated	2 No.
Fluid	: Water / Soluble Oil	

Max. pressure : 400 kg/cm²
Oil capacity : 15 litre

AIM 24004	Pressure Gauge, Panel mounted	2 No.
	0-400kg/cm ²	
AIM 24005	USB data Acquisition system comprising	1 No.
	Data Acquisition hardware Module, USB Cable, Data Acquisition software for acquiring data on PC, Software license key, 24V Rechargeable Battery, Battery charger 24V	
AIM 24006	Pressure Transducer	2 No.



AIM 240

Ordering Information :

AIM 240 Hydro Frac System

Essential Accessories :

AIM 24007	Installation Rod hollow stainless steel tube dual line	20 Nos.
	36 mm dia, 1500 mm long	
AIM 24008	Fracture Rod	1 No.
AIM 24009	Impression Tool	1 No.
AIM 24010	Impression wrap	2 No.
AIM 24011	Double Hose Pipe with Quick release connector	1 No.
AIM 24012	O-Rings (Pack of 10)	1 No.
AIM 24013	Pens	1 No.
AIM 24014	Flat File (Rough) 10"	1 No.
AIM 24015	Flat File (smooth) 10"	1 No.
AIM 24016	Silicon Grease Tube	1 No.
AIM 24017	Brush "Small"	1 No.
AIM 24018	Sauple paint (set of 4 colour)	1 No.
AIM 24019	Spanner (24 - 27)	2 No.
AIM 24020	Allen Key, M8	1 No.