

CIVIL ENGINEERING TESTING EQUIPMENT

(Soil, Rock & Geotextile)



Aimil Ltd.

www.aimil.com

Edition : 2022

Revision : 01

www.aimil.com



Disclaimer

With continuous improvements being made in design and workmanship, it is neither possible nor desirable to always adhere strictly to the detailed specifications given in the catalogue.

We, therefore, reserve the right to depart from these where necessary.

All products contained in this catalogue are designed for specific applications and conform to the standards (IS/BS/DIN/ASTM etc.) as mentioned. For all applications other than the ones specified, please check suitability of the products for your intended applications with our engineering department at New Delhi or your local Aimil office / representative.

Aimil Ltd. reserves the right to use the information published herein (Civil Engineering Material Testing Catalogue Edition 2022) in any manner whatsoever. No part of this publication/catalogue may be reproduced in any form, without the written permission of Aimil Ltd. This Catalogue is protected under the copyright Act.



Aimil Proudly Presents the Latest Product Catalogue, Edition - 2022 (Revision : 01)

...Dedicated to meet all your needs in the field of Civil Engineering Instrumentation.

Quality Policy

We will meet our Customer's requirement by the highest standards in Quality and Delivery through a continual review and improvement of our processes to achieve Customer delight.



Company Profile

Aimil Ltd., is a pioneer Instrumentation Company in India. We have built our presence in the Instrumentation domain in the Indian market, since our inception in 1932.

We are a multi-faceted, multi-function, Quality driven organization focused on customer needs which continuously explores the frontiers of technology and delivers quality state-of-the-art products and services.

Our Products

We specialise in marketing Instruments and services in the areas of Civil Engineering, Electronics, Analytical, Industrial and Healthcare applications.

In the field of Civil Engineering, we manufacture :

- Test equipment for Classification and Strength properties of Soil, Rock, Cement, Concrete and other Building materials.
- Test Instruments for Petroleum products, Asphalt Bitumen, Surface Flexure and Irregularity of Roads.

Whatever we do not manufacture, we represent.

Mission and Values

At Aimil, we express, who we are, through our Mission, Guiding Principles and Core Values. Developed over time, each represents a philosophy or goal that is intrinsically important to our organization.

Our Mission

"To provide optimal Quality and Customer Service by innovation and integration of leading edge global technologies".

Our Core Values

Core Values are the essential and enduring principles of Aimil that are integral to our success to date. These core values are unaffected by the trends of the day or market conditions. These are :

- Continuous improvement and pursuit of excellence
- Respect for individuals
- Learning and Self Improvement
- Credibility and Integrity

“We would like to thank all our customers for their continuous support and faith in **Brand Aimil** and making us what we are today.... **“Your Preferred Partners of Technology”** since 1932. Hope to receive your support and feedback in future as well which will help us evolve further and maintain the lead in Instrumentation.”

www.aimil.com

**Engineering
Capabilities**

MANUFACTURING



Instrumentation &
Technologies



DESIGN & DEVELOPMENT

Engineering
Capabilities





QUALITY CONTROL

Engineering
Capabilities



www.aimil.com

**Engineering
Capabilities**

WAREHOUSE



www.aimil.com

**Engineering
Capabilities**



CUSTOMER SUPPORT





Advanced Technology
& Engineering Services

Consulting Capabilities

Advanced Technology and Engineering Services (ATES)

Advanced Technology and Engineering Services (ATES) is the Consultancy division of Aimil Ltd. ATES is a multi-disciplinary group of highly qualified professionals, practicing in the areas of Civil, Geotechnical/Rock Engineering, Geophysical & Geology.

Mission Statement

"The mission of Advanced Technology and Engineering Services (ATES) is to provide Civil Engineering Consultancy and Research Services of International Standards and evolve innovative technology for finding an optimal and practical solutions to problems."

Whatever be your application you can count on ATES for a wide range of services & technical guidance to serve you, as your source of competitive advantage.

Specialized Services Provided by ATES

Design & Analysis

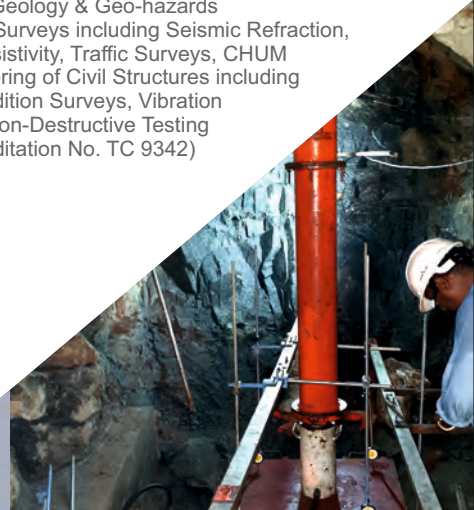
- Advanced Numerical Analysis of Geotechnical Structures • Tunnel Design & Analysis
- Foundation Design & Analysis • Slope Stability & Landslide Mitigation

Aimil Testing Laboratory NABL Approved (Accreditation No. TC-7287)

- Soil, Rock and Construction Material Testing
- Petrography

Survey & Investigations

- Geotechnical Investigations/Rock Testing
- Engineering Geology & Geo-hazards
- Geophysical Surveys including Seismic Refraction, Electrical Resistivity, Traffic Surveys, CHUM
- Health Monitoring of Civil Structures including Building Condition Surveys, Vibration Monitoring, Non-Destructive Testing (NABL Accreditation No. TC 9342)





Soil

Testing Equipment



Instrumentation & Technologies



INDEX

Soil Testing Range

A

Aimil-GDS Automatic Triaxial Testing System	A32
Aimil True Speed Soil Frame	A14
Air Water Constant Pressure System	A23
Andreasen Pipette Stand	A10
Automatic Free Fall Hammer	A1
Automatic Volume Change Gauge	A26

C

California Bearing Ratio	A51
Compaction Test Apparatus, Manual	A48
Consolidation Apparatus	A55-A58
Consolidation Apparatus, Automatic with Touchscreen	A59
Constant Pressure System Air/Oil Water Type	A23
Core Cutter	A76
Cyclic / Static Triaxial Apparatus	A36

D

De-Aired Water Apparatus	A38
Direct Shear apparatus for Soil Testing	A42-A45
Dynamic Cone Penetration Test Apparatus	A62

F

Field California Bearing Ratio Test Apparatus	A71
Field Vane Shear	A66

G

Software for Geotechnica Testing, Analysis and Reporting	A40
--	-----

H

Hand Operated Extractor	A2
High Speed Stirrer	A11

I

Infra-Red Moisture Meter	A4
In-situ Vane Shear Test Apparatus	A59
Infra-Red Moisture Meter	A4
In-situ Vane Shear Test Apparatus	A59

L

Laboratory Permeability Apparatus	A52
Laboratory Vane Shear Apparatus Motorised	A47
Large Direct Shear Apparatus	A37
Lateral Pressure Assembly	A22
Liquid Limit	A5
Load Frames	A12-A14
Load Truss	A75

M

Motorised Sieve Shaker	A10
------------------------	-----

O

Oil Water Constant Pressure System	A22
------------------------------------	-----

P

Plastic Limit	A5
Plate Bearing Test Apparatus	A73
Plummet Balance	A11
Pore Pressure Apparatus	A22
Pressurised Water Filling Tank	A23
Pressure Volume Controller	A25
Pressuremeter	A67-70
Proving Rings	A16-A17
Proctor Penetrometer	A77
Pycnometer	A7

R

Relative Density Apparatus	A50
----------------------------	-----

S

Sampleject-5000	A2
Sand Pouring Cylinder Apparatus	A76
Sensitive Volume Change Gauge	A25
Shrinkage Limit Set	A7
Sieves	A8-A9
Soil Cone Penetrometer (Digital)	A6
Soil Testing	A1
Speedy Moisture Meter	A3
Soil Permeability Apparatus	A60
Static Plate Load Tester	A72
Standard Penetration Test Set	A61
Static Cone Penetrometer	A64-A65
Stacked Deep Resistivity Meter	A78
Swell Test Apparatus	A61

T

Triaxial Cell	A19-A21
Triaxial Digital Kit	A27
Triaxial Test Apparatus	A28
Triaxial Test for Soil	A18-A21

U

Unconfined Compression tester for Soil	A18
Universal Automatic Compactor	A51
Universal Triaxial Cell, Stationary Bushing, 10 Bar	A20

V

Sieve Shaker	A10
--------------	-----

INDEX



AIM 025	A1	AIM 084-1	A26	AIM 125-1	A56
AIM 031	A2	AIM 085	A27	AIM 126	A56
AIM 031-S1	A2	AIM 085-1, 2 & 3	A27	AIM 126-1	A56
AIM 033-2	A2	AIM 085-D to 085-3-D	A27	AIM 127	A56
AIM 036-1	A3	AIM 095AN-38-1 to		AIM 127-1	A56
AIM 037-1	A3	AIM 095AN-100-2	A29	AIM 127-2	A56
AIM 038	A4	AIM 096DG-38-1 to		AIM 127-3	A56
AIM 040	A5	AIM 096DG-100-3	A29	AIM 129	A56
AIM 041	A5	AIM-096DGDAQ-38-1 to		AIM 129-1	A56
AIM 9831-1	A5	AIM-096DGDAQ-100-3	A30	AIM 129-2	A56
AIM 042-3	A6	AIM-096Mu-38-1 to		AIM 129-3	A56
AIM 045	A7	AIM-096Mu-100-2	A30	AIM 10125	A56
AIM 046	A7	AIM-096MuDAQ-38-1 to		AIM 127-4-T	A60
AIM 051	A9	AIM-096MuDAQ-100-2	A30	AIM 131	A61
AIM 052	A9	AIM 096-GDS	A32	AIM 132	A62
AIM 053	A9	AIM 096-CYC	A36	AIM 133	A62
AIM 054-1	A10	AIM 097-1	A39	AIM 134	A63
AIM 055	A10	AIM 10121 to AIM 123	A40	AIM 135	A64
AIM 056-1	A11	AIM 104	A42	AIM 136-DG	A65
AIM 057	A11	AIM 105	A43	AIM 136-20	A66
AIM 062-1	A12	AIM 105-6	A43	AIM 138	A67
AIM 064-2	A12	AIM 105-2	A44	AIM 141	A68
AIM 064-E	A13	AIM 105-3	A45	AIM 142	A69
AIM 065	A13	AIM 106	A45	AIM 143	A69
AIM 066	A14	AIM 106-1	A45	AIM 144	A70
AIM 062-E (4 Speed)	A14	AIM 10124-1	A46	AIM 145	A70
AIM 261 to AIM 281	A17	AIM 108-1	A47	AIM 146	A70
AIM 284	A17	AIM 110	A48	AIM 147	A71
AIM 290 to AIM 298	A17	AIM 111	A48	AIM 155	A72
AIM 074-1 to AIM 074-2-DG	A18	AIM 112	A48	AIM 157-ST	A73
AIM 075-38	A19	AIM 112-H	A48	AIM 157	A74
AIM 075	A20	AIM 113-L	A48	AIM 157-DG	A75
AIM 076	A21	AIM 113	A48	AIM 158	A76
AIM 077	A22	AIM 114-2	A49	AIM 159	A76
AIM 078	A22	AIM 114-2-BS	A49	AIM 160	A76
AIM 079-1	A23	AIM 114-2-ASTM	A49	AIM 161	A77
AIM 081-1	A23	AIM 115-1	A50	AIM 162	A77
AIM 81-1-2	A23	AIM 120	A51	AIM 162-1	A78
AIM 082	A24	AIM 120-MS	A51	AIM 164	A78
AIM 081-PV-1	A25	AIM 121	A52	AIM 9880	A79
AIM 081-PV-2	A25	AIM 12101, 12101-D	A52		
AIM 084	A25	AIM 125, 10116-1	A55		



Soil Testing Equipment



Automatic Free Fall Hammer

AIM 025

For improving the efficiency and accuracy of penetration tests SPT and DCPT, the Automatic Free Fall Hammer has been developed by the Central Building Research Institute, Roorkee and licensed to Aimil for commercial production. It is designed to deliver equal impact energy in each blow while performing Standard Penetration Test. This is achieved by providing a trigger mechanism to standardise the height of fall and a suitable guide system for maintaining verticality of guide rod and drill rod assembly. The guide system also maintains their alignment throughout the duration of the test. The system is compact and easy to use, provides maximum safety for the operator.

The equipment consist of the following replaceable parts :

AIM 02501	Anvil	1 No.
AIM 02502	Front Wheel	1 No.
AIM 02503	Hammer Guide Assembly	1 No.
AIM 02504	Fall Hammer having a weight of 63.5 kg for SPT & 65 kg (63.5+1.5) for DCPT attached to a flexible rope and drum, operated manually	1 No.
AIM 02505	Base Assembly for the hammer system with suitable wheels for moving about when attached to a vehicle	1 No.
AIM-02506	Frame for SPT	1 No.
AIM 016	Split Spoon Sampler without Brass Liner	1 No.
AIM 022	Tripod with Pulley an built-in Ladder	1 Set
AIM 02402	'A' Drill Rod, 1.0 m long, with adapter	15 Nos.
AIM 02404	'A' Drill Rod, 0.5 m long, with adapter	3 Nos.
AIM 13403	Dynamic Cone threaded for Type 'A' Rod Coupling.	1 No.



AIM 02506 (SPT)

AIM 025

Ordering Information :

AIM 025 Automatic Free Fall Hammer

Optional Accessories :

AIM 017 Split Spoon Sampler, with Brass liner

AIM 13401 Dynamic Cone plain, 50 mm dia base and cone angle of 60°

AIM 13402 Cone Adapter with standard threads

AIM-20507 Auger Dia 75mm X 1m long



Sample Preparation

The sample extractors shown in this section meet the requirements of IS, BS, ASTM and AASHTO standards. Soil core specimens can be extracted from sampling tubes with minimum disturbance. Specimens of smaller diameter can also be extracted from larger size samples.

Hand Operated Extractor

AIM 031 & AIM 031-S1

Hand operated Extractor for extracting soil core specimens of 38 & 50mm dia from sampling tube or from larger size samplers. It can be used in the field also, for taking out samples.



AIM 031

The equipment (AIM 031) consist of the following replaceable parts :

AIM 03101	Sample Extractor Frame Screw Type with a Wire Sample Trimmer for 38mm dia	1 No.
AIM 03102	Jarring Link for driving the Sampling Tube	1 No.
AIM 03103	Adapter with locking screw for fitting the 38 mm dia Sampling Tube to Jarring Link	1 No.
AIM 03105	Split Mould 38 mm dia x 76 mm long, provided with Quick Release Clamps	1 No.
AIM 006-1	Sampling Tube Unrelieved, 38 mm dia x 200 mm long	1 No.

The equipment (AIM 031-S1) consist of the following replaceable parts :

AIM 03101-1	Sample Extractor Frame Screw Type with a Wire Sample Trimmer for 38mm dia & 50mm dia	1 No.
AIM 03102	Jarring Link for driving the Sampling Tube	1 No.
AIM 03103	Adapter with locking screw for fitting the 38 mm dia Sampling Tube to Jarring Link	1 No.
AIM 03105	Split Mould 38 mm dia x 76 mm long, provided with Quick Release Clamps	1 No.
AIM 006-1	Sampling Tube Unrelieved, 38 mm dia x 200 mm long	1 No.
AIM 03103-1	Adaptor for locking screw for fitting 50mm dia Sampling Tube to Jarring link	1 No.
AIM 03104-1	Split Mould 50 mm dia x 100 mm long, provided with Quick Release Clamps	1 No.
AIM 03106	Pad for 50 mm dia sample	1 No.
AIM 03107	Sampling Tube Unrelieved, 50 mm dia x 200 mm long	1 No.

Ordering Information :

AIM 031	Hand Operated Extractor for 38mm dia specimen
AIM 031-S1	Hand Operated Extractor for 38mm dia & 50mm dia specimen

Sampleject-5000

AIM 033-2

This Extractor has been specially designed to overcome the difficulties faced in extracting specimens from longer sampling tubes.

Salient Features :

- High efficiency hydraulic pump
- Power pack with quick release couplings
- Manual operation possible on power failure
- Ejects soil from sampling tubes and moulds upto 60 cm in length and 38 to 150 mm in diameter by a single operation
- Allows direct transfer of soil from field sampling tubes, Proctor and CBR moulds into 38 mm diameter tubes with minimal disturbance
- 60 cm piston stroke
- 50kN pushing force



- Electrical-cum-hand operated or only hand operated hydraulic system
- Built-in safety valve to prevent loading beyond 50kN
- Portable, with facility for floor mounting
- Lever for selecting up/down movement of piston
- Top-plate for holding upto 6 sampling tubes of 38 mm dia.

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

The equipment consist of the following replaceable parts :

- AIM 033-101** Adapter rings and ejector discs for 38, 50, 75, 100 & 150 mm dia sampling tubes or moulds, included.
- AIM 006-1** Sampling Tube, Unrelieved, 38 mm dia x 200 mm long 6 Nos.



AIM 033-2

Ordering Information :

AIM 033-2 Sampleject-5000

Optional Accessories:

AIM 03311 Sampling tube 50mm dia x 200mm long

AIM 03312 Sampling tube 75mm dia x 200mm long

AIM 03313 Sampling tube 100mm dia x 250mm long

Moisture Content

Moisture content of soil is generally measured as a ratio of the weight of water to the weight of solids, expressed as a percentage. As soil behaviour depends on its moisture content, it is one of the basic parameters defining the soil condition.

To a quality control engineer, even a rapid moisture content check is extremely useful, as it gives an indication of the existing characteristics of the soil, which enables him to some extent to decide the pattern of test programme.

A number of procedures have been suggested for carrying out water content tests in IS : 2720 (Part 2); BS : 1377, 1924 and ASTM D2216. The equipment listed below gives a range of suitable apparatus for this purpose.

Speedy Moisture Meter

AIM 036-1 & 037-1

Ref. Standards: IS:2720 (Part2), IS:12175

Using a speedy moisture meter, the moisture content of soil, sand and other fine grained material can be obtained quickly with reasonable accuracy. The test technique is based on the fact that water will react with calcium carbide to form acetylene gas and the quantity of gas formed is directly proportional to the water present, leaving a surplus of the chemical used in the test.

The quantity of acetylene gas produced is indicated on a built-in pressure gauge which is calibrated in percentage of moisture on wet weight basis. A conversion formula gives the corresponding moisture content based on dry weight.



AIM 036-1



Soil Testing

The equipment consist of the following replaceable parts :

AIM 03601	Calcium Carbide Reagent	1 No.
AIM 03602	Moisture gauge, 0-25 % × 0.5%	1 No.
	or	
AIM 03701	Moisture gauge, 0-50 % × 1%	1 No.
AIM 03603	Digital Balance, 50g	1 No.
AIM 03612	Steel Balls 12.7mm Dia & 25mm Dia	1 No each
AIM 03611	Scoop	1 No.
AIM 03605	Cleaning Brush	1 No.
AIM 03606	Aluminum Dish	1 No.

Ordering Information :

AIM 036-1	Speedy Moisture Meter:	
	Range	: 0 - 25%
	Gauge Division	: 0.5%
AIM 037-1	Speedy Moisture Meter:	
	Range	: 0 - 50%
	Gauge Division	: 1%

Infra-Red Moisture Meter

AIM 038

Ref. Standard: IS:2720 (Part 2)

This moisture meter has been designed for rapid and accurate determination of the moisture content of a wide variety of materials.

It is torsion wire instruments, the torque being applied to one end of the wire be means of a calibrated drum to balance the loss of weight as the test sample dries under infrared radiation. The speed of drying (about 30 min) thus obtained, combined with the frictionless balancing system gives the result as accurate as those obtained by standard oven drying method. Since drying weighing are simultaneous, it is useful specially for determination of moisture in substances that quickly reabsorbs moisture after drying. The infrared radiation is controlled by a voltage regulator and thereby provided excellent heat control. The instrument is provided with an indicator lamp, which glows when the unit is switched on.

The torsion balance has a built-in magnetic damper or reduce pan vibrations that enables quick weighing. The balance scale (drum) is divided in terms of moisture percentage on wet weight basis, which are read directly from it. Graduations are from 0 to 100% in 0.2 % divisions, but readings may be estimated to 0.1% moisture content.

Suitable for operation on 220 V, 50 Hz, Single phase, AC Supply.

Capacity	: 5g approx.
Sensitivity	: 10mg approx.
Range	: 0 to 100% moisture content on wet weight basis.
Reading accuracy	: ± 0.20%
Probable error	: ± 0.25% in the lower range upto compared to 25% and ± 1% for moisture contents
Oven methods	: above 50%

The equipment consist of the following replaceable parts :

AIM 03801	Infra Red Lamp
AIM 03802	Thermometer (L-shaped)
AIM 03803	Torsion Wire

Ordering Information :

AIM 038	Infra-Red Moisture Meter
----------------	--------------------------



AIM 038



Index Properties of Soil

Liquid Limit

The liquid limit defined as the moisture content at which the soil passes from plastic state to liquid state, is very helpful for the classification of the potential properties of the soil material. The liquid limit gives a measure of the shearing resistance which a soil has, when mixed with water. The liquid limit of soil can be determined by Casagrande Method or Cone Penetrometer Method.

Casagrande Method

AIM 040 & 041

Ref. Standards: IS:2720 (Part 5), IS:9259, BS 1377
Mechanical method known as the Casagrande Method has been a standardised test in Soil Mechanics for many years.

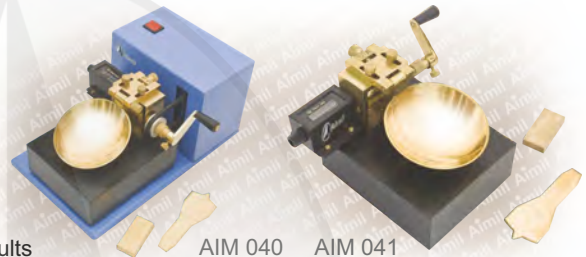
- High quality of design ensures consistency of results
- Satisfies International Standards
- Motorised model with integral blow counter is also available

The Liquid Limit Device consists of a hard rubber base carrying a sliding carriage assembly to which a brass cup is hinged. The cup is raised and allowed to fall through a height of 1 cm on to the hard rubber base, with the help of a lead screw provided at the back of the sliding carriage. A gauge block 50x25x10mm thick is provided to facilitate adjustment of fall of the cup to 10mm.

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

The equipment consist of the following replaceable parts :

AIM 041B13	Counter
AIM 04102	Grooving Tool Type B
AIM 04103	Bowl
AIM 04105	Casagrande Grooving Tool Type A
AIM 04109	Gauge Block Size (50x25x10mm) for Liquid Limit Device



Ordering Information :

AIM 040	Liquid Limit Device, motorised
AIM 041	Liquid Limit Device with Counter manually operated

Optional Accessories :

AIM 04107	Casagrande Grooving Tool (Type C of IS : 9259)
------------------	--

Note: As per BS/ASTM is also available.

Plastic Limit

The plastic limit test is done to determine plastic limit of soil, as per IS : 2720 (Part V) 1985. The plastic limit of soil is the water content of the soil below which it ceases to be a plastic. It begins to crumble when rolled into threads of 3mm dia.



Ordering Information :

AIM 9831-1	Plastic limit set comprising of glass plate, Brass Rod, Spatula, Moisture Tin & Porcelain Dish.
-------------------	---

Note: Balance with 0.1g accuracy, Oven (110° C ± 5°C) & Sieves can also be supplied, on request as optional extra.



Soil Penetrometer

Digital Penetrometer Method

Ref. Standards IS:2720 (Part 5) BS 1377 IS:11196

Digital Penetrometer method has several advantages over the Casagrande method. It is easier to perform this test and the results are not so dependent on the design of the apparatus or the judgement of the operator. It is applicable to a wider range of soils. The test is based on the relationship between moisture content and the penetration of the cone into the soil sample. The moisture content at a given depth of penetration of the cone is taken as the liquid limit.

As an inferential test, empirical correlations have been developed to assess the shear strength of soils at liquid limit.

- Reduces operator error
- Applicable to a wide range of soils
- Gives reproducible test results
- Provides direct measurement of penetration

Digital Cone Penetrometer

AIM 042-3

Enables the determination of liquid limit simply and quickly. The unit is supplied complete with a stainless steel penetration test cone 35 mm long with smooth polished surface with an angle of 30°, total weight of cone & plunger is 80 gm. Facility exists for adjusting cone height in relation to the specimen.

Salient Features:

- Provision of Recording & Displaying Temperature & Humidity.
- System having analog 16-bit resolution and inbuilt LCD display
- Inbuilt Real Time Clock for real time operation & display in stand - alone mode
- Automatic Taring of Initial Penetration Reading
- Sample detection with Penetration Cone
- Automatic data storing for every test
- Provision for data storing up to 4000 readings
- Data stored with test number, date, time, temperature, humidity, mode, test time & penetration value
- Windows Based Software for unloading data
- Data download through RS232 in text, excel & csv format.
- Date and time setting facility
- Dual mode operation: Automatic & Manual
- Clear memory facility
- Displacement range 0 to 40 mm
- Variable test time between 0 to 99 Sec
- Least count of Penetration measurement 0.01 mm

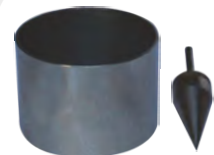
Suitable for operation on 220 V, 50 Hz, Single Phase, AC supply.

The equipment consist of the following replaceable parts :

- | | |
|------------------|---|
| AIM 04201 | Soil Penetration Test Cone with adjustable weight |
| AIM 04202 | Soil Penetration Test Cup 50 mm dia x 50 mm deep |



AIM 042-3



Ordering Information :

AIM 042-3 Digital Cone Penetrometer for Soil Testing

Note: For Digital Universal Penetrometer AIM 512-1 refer page no-G4 of Asphalt Section.



Shrinkage Limit

Shrinkage Limit Method

Ref. Standards IS : 2720 (Part 6), 10077, ASTM : D 427, BS : 1377, AASHTO T-92

The Shrinkage Limit of a soil is defined as the moisture content after which any further reduction of moisture does not cause volume reduction. The shrinkage of clayey soil can be very significant. A fully saturated soil specimen is allowed to dry in free air and its volume is measured repeatedly by immersing in a mercury bath. From the data obtained from this test, Shrinkage Limit, Shrinkage Ratio, Shrinkage Index and Volumetric Shrinkage can be calculated.

The choice of puddle-clay material is often governed by the results obtained from this test.

Shrinkage Limit Set

AIM 045

The equipment consist of the following replaceable parts :

- AIM 04501 Evaporating Dish
- AIM 04502 Shrinkage Dish
- AIM 04503 Glass Cup
- AIM 04504 Perspex Plate, with three Metal Prongs
- AIM 04505 Perspex Plain Plate
- AIM 04506 Spatula
- AIM 04507 Glass Cylinder, graduated, 25 ml x 0.5 ml
- AIM 04508 Mercury, 750g
- AIM 04509 Straight Edge



AIM 045

Ordering Information :

AIM 045 Shrinkage Limit Set

Specific Gravity

Specific Gravity Method :

Specific Gravity is the ratio of the weight of a given volume of a material in air at a standard temperature to the weight in air of an equal volume of distilled water at the same stated temperature. The equipment mentioned below can be used to test a wide range of materials from clay to sand and gravel, smaller than 10 mm.

Pycnometer

AIM 046

Ref. Standard IS:2386 (Part 3)

Consists of a 1 kg Glass Jar with Brass Cone, Locking Ring and Rubber Seal.



AIM 046

Ordering Information :

AIM 046 Pycnometer



Particle Size Analysis

Sieve Analysis :

Ref. Standards IS:2720 (Part 4), IS: 460 (Part I & Part II), ASTM D 422, AASHTO T 88, BS:1377

The analysis of soil by particle size provides a useful engineering classification system from which a considerable amount of empirical data can be obtained. This helps in ascertaining possible frost action, determining graded filters, selection of grouting materials, designing of cement and asphaltic concrete mixes etc.

Two different procedures are used for coarse and fine soils. Sieving is used for gravel as well as sand size particles and sedimentation procedures are used for finer soils. For soils containing coarse and fine soil particles, it is usual to employ both sieving and sedimentation procedures.

Aimil provides the following range of equipment for performing particle size analysis:

- Sieves, GI Frame of 45 cm diameter
- Sieves, GI Frame of 30 cm diameter
- Sieves, Brass Frame of 20 cm diameter
- Motorised Sieve Shaker

Note: NABL calibration can be provided at an extra cost.



30 cm dia G.I. Sieves

Note: In addition, on request we can also supply imported sieves from Endecotts Ltd., UK., which are supplied in accordance with BS EN 9002 Qmas. Endecotts offer wide range of test sieves like woven wire mesh, perforated plate, wet washing sieves etc., Calibration samples for calibration are also available. Endecotts is only company worldwide to have both BSI Kitemark for test sieves and UKAS accreditation.



Sieves Set

Ref. Standard IS:460 (Part-I & Part II)

Ordering Information :

Perforated Plate GI Frame Sieves

Aperture Size, mm	AIM 051 (45 cm dia)	AIM 052 (30 cm dia)
125.00	AIM 05101	AIM 05227
106.00	AIM 05102	AIM 05228
100.00	AIM 05103	AIM 05230
90.00	AIM 05104	AIM 05225
80.00	AIM 05105	AIM 05201
75.00	AIM 05106	AIM 05202
63.00	AIM 05107	AIM 05203
53.00	AIM 05108	AIM 05204
50.00	AIM 05109	AIM 05205
45.00	AIM 05110	AIM 05206
40.00	AIM 05111	AIM 05207
37.50	AIM 05112	AIM 05208
31.50	AIM 05113	AIM 05209
26.5	AIM 05114	AIM 05210
25.00	AIM 05115	AIM 05211
22.40	AIM 05116	AIM 05212
20.00	AIM 05117	AIM 05213
19.00	AIM 05118	AIM 05214
16.00	AIM 05119	AIM 05215
14.00	AIM 05139	AIM 05235
13.20	AIM 05120	AIM 05216
12.50	AIM 05121	AIM 05217
11.20	AIM 05122	AIM 05218
10.00	AIM 05123	AIM 05219
9.50	AIM 05124	AIM 05220
8.60	AIM 05125	AIM 05241
8.00	AIM 05126	AIM 05221
6.70	AIM 05127	AIM 05234
6.30	AIM 05128	AIM 05222
6.00	AIM 05136	AIM 05236
5.60	AIM 05129	AIM 05223
5.00	AIM 05129-1	AIM 05223-1
4.75	AIM 05130	AIM 05224
4.00	AIM 05138	AIM 05242
3.35	AIM 05134	AIM 05226
2.80	AIM 05131	AIM 05233
2.36	AIM 05132	AIM 05232
2.00	AIM 05137	AIM 05237
Pan and Cover	AIM 05150	AIM 05250



Brass Sieves, 20 cm dia.

Brass Wire Cloth Sieves

APERTURE SIZE	AIM 053 (20 cm dia)
10.00 mm	AIM 05337
5.60 mm	AIM 05301
4.75 mm	AIM 05302
4.00 mm	AIM 05303
3.35 mm	AIM 05304
2.80 mm	AIM 05305
2.36 mm	AIM 05306
2.00 mm	AIM 05307
1.70 mm	AIM 05308
1.60 mm	AIM 05338
1.40 mm	AIM 05309
1.18 mm	AIM 05310
1.00 mm	AIM 05311
850 microns	AIM 05312
710 microns	AIM 05313
600 microns	AIM 05314
500 microns	AIM 05315
425 microns	AIM 05316
355 microns	AIM 05317
300 microns	AIM 05318
250 microns	AIM 05319
212 microns	AIM 05320
180 microns	AIM 05321
160 microns	AIM 05339
150 microns	AIM 05322
125 microns	AIM 05323
106 microns	AIM 05324
90 microns	AIM 05325
80 microns	AIM 05340
75 microns	AIM 05326
63 microns	AIM 05327
53 microns	AIM 05328
45 microns	AIM 05329
38 microns	AIM 05330
Pan & Cover	AIM 05350



Soil Testing

Motorised Sieve Shaker

AIM 054-1

To make the process of sieving easier and quicker, electrically operated mechanical Sieve Shakers are offered for dry sieving. The mechanical Sieve Shakers effect a more elaborate and standardised sieving action to produce accurate results and eliminate personal errors involved in manual sieving. On the basis of experience gained in the production of these sieve shakers for more than thirty years, considerable improvement has been made in the design and performance of these units. These Sieve Shakers are popularly used not only in soil laboratories but also in a number of industries where sieving is required; such as for ores, refractory materials, minor aggregates, pigments, powdered coal, soap, cement, roofing materials, plastic moulding powders and pharmaceuticals.

The new design is compact and light weight and can be mounted on a bench top. This eliminates the use of concrete foundation. Noise has been reduced considerably in the new model. A digital timer adjustable from 0-99 minutes is incorporated as an integral part of the equipment.

The Sieve Shaker can carry upto 8 sieves of 20cm dia. It is driven by a ¼ HP geared motor. The Sieve Table is inclined from the vertical axis and the direction of inclination changes progressively in the clockwise direction. In addition to the gyratory motion of the table, there is a tapping motion as well.

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



AIM 054-1

Ordering Information :

AIM 054-1 Motorised Sieve Shaker

Optional Accessories :

AIM 05401 Adapter, for 30 cm dia Sieves

Sedimentation Analysis

Ref. Standards IS:2720 (Part II), BS:1377

Universally used for the determination of sub-sieve particle size in a soil sample. An analysis of this kind expresses quantitatively the properties by weight of the various sizes of particles present in the soil. It is recommended as standard procedure, to use a dispersion agent to avoid fluctuation.

Andreasen Pipette Stand

AIM 055

Incorporates a sliding carriage which is operated without transmitting vibrations to pipette or to sedimentation tube when the pipette is inserted and withdrawn from the liquid.

The equipment consist of the following replaceable parts :

AIM 05501 Andreasen Pipette, Glass, 10ml. capacity

AIM 05502 Sedimentation tube, Glass, 500ml. capacity



AIM 055

Ordering Information :

AIM 055 Andreasen Pipette Stand



High Speed Stirrer

AIM 056-1

Ref. Standard IS:2720 (Part 4)

Designed as a compact bench-mounted laboratory Stirrer for the pretreatment stage of soils before particle size analysis. The mixer spindle operates within a dispersion cup which can be fitted with an antislashing baffle to improve the efficiency of mixing.

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

The equipment consist of the following replaceable parts :

AIM 05601 Dispersion Cup

AIM 05602 Baffle

Ordering Information :

AIM 056-1 High Speed Stirrer



AIM 056-1

Plummet Balance

AIM 057

Ref. Standard IS:2720 (Part 4)

Salient Features :

- Simple operation
- Sinking of Plummet to right depth is all that is required before taking a reading.
- Grain size distribution curve for the entire sub-sieve range of particle size is possible; which is not so with pipette method, where only specific sizes of particles can be determined
- Eliminates computations involved in Hydrometer Method
- Percentage of soil in suspension can be directly read
- Grain size distribution curve can be directly plotted as experiment progresses

The Plummet Balance consists of a vertical rod mounted on a heavy base with levelling screws. A light weight pointer with pointed steel pivots, turning in jeweled bearings moves over a scale graduated in percentage units 0-100 in 2% divisions. The pointer is provided with a hook for hanging plummet.

The balance moves up and down over the vertical rod with the help of rack and pinion arrangement. A chart showing the relationship between K and Temp. of suspension of soils of varying specific gravity from 2.4 to 2.8 to help solve Stoke's equation is provided. Supplied complete with one perspex Plummet, one measuring jar, one rider weight for zero adjustment and one rider weight for adjusting the pointer to 100%.



AIM 057

Ordering Information :

AIM 057 Plummet Balance



Soil Testing

Load Frames

Load Frames are Loading devices employed for application of compression and penetration loads required for various tests, such as Unconfined Compression Test, Triaxial Shear Test, California Bearing Ratio Test etc. The load application is effected by advancement of a lead screw secured against rotation by a sliding key and is measured with a Proving ring or Load Cell. Aimil manufactures a wide variety of Electro Mechanical to Microprocessor Load Frames with different designs of frame structure, modes of operation (manual or electrically driven), loading capacities, speeds of travel, so that appropriate selection is possible to meet the requirements of standard methods used for various tests to cover different soil types and sizes of specimens.

Load Frame, Motorised, Three Speed

AIM 062-1

Salient Features:

- Two pillar type.
- Lightweight and Sturdy.
- Can also be used in Mobile Laboratories.
- Operational ease.

This load frame is designed for conducting Unconfined, Triaxial, CBR and other routine tests. Loading system comprises of a screw jack with detachable handle. The lower platen moves up and down. The top bracket is adjustable for vertical clearance and has an adaptor for connecting standard proving rings or load cells. A dial gauge mounting bracket is provided on one of the two pillars.

Rate of strain : 1.25, 1.5 and 2.5mm/min

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



AIM 062-1

Load Frame, 34 Speed, Digital

AIM 064-2

Salient Features:

- Microprocessor based control
- LCD display
- Direct entry via a touch sensitive keyboard
- Rapid approach and return to datum of platen
- Rate of Strain: 33 fixed speeds between 0.0005 mm/min and 6.00 mm/min.
- Samples up to 100 mm diameter
- Useful for triaxial and CBR test

This 50kN capacity Load frame designed primarily for triaxial testing of soil specimens up to 100 mm diameter x 200 mm long. It comprises of a rigid twin column construction with an integral, fully variable microprocessor controlled drive unit and LCD display with a touch sensitive keyboard

The use of a microprocessor controlled drive system and keyboard entry provides the Load Frame with a wide variety of features.

A robustly constructed steel case houses the motor drive system with careful attention being given to the prevention of ingress of water or grit. All operating controls are mounted on the front panel of the machine which is angled and recessed to prevent physical and environmental damage.

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



AIM 064-2



Speed Chart					
Speed No.	Speed (mm/min)	Speed No.	Speed (mm/min)	Speed No.	Speed (mm/min)
1	0.0005	12	0.08	23	1
2	0.001	13	0.1	24	1.25
3	0.003	14	0.12	25	1.5
4	0.005	15	0.16	26	1.75
5	0.008	16	0.2	27	2
6	0.01	17	0.25	28	2.5
7	0.02	18	0.3	29	3
8	0.03	19	0.4	30	3.5
9	0.04	20	0.5	31	4
10	0.05	21	0.6	32	5
11	0.06	22	0.8	33	6

Speed No.34- Fast up and Fast down 15mm/min

Technical Specifications:

Capacity	: 50kN
Drive Mechanism	: Stepper Motor
Drive	: Microprocessor controlled
Fast Forward & Reverse	: 15mm / minute
Horizontal clearance	: 364mm
Max. vertical clearance	: 910mm
Max. Platen travel	: 100mm
Specimen dia	: 38mm to 100 mm
Overall Dimensions (L×W×H)	: 600 × 500 × 1440 mm

Load Frame, Microprocessor Based

AIM 064-E

Salient Features:

- Microprocessor based control
- LCD display
- Direct entry via a touch sensitive keyboard
- Rapid approach and return to datum of platen
- Fully variable speed, 0.00001 to 9.99999 mm/min
- Samples up to 100 mm diameter

This 50 kN capacity Load frame designed primarily for triaxial testing of soil specimens up to 100 mm diameter x 200 mm long. It comprises of a rigid twin column construction with an integral, fully variable microprocessor controlled drive unit and LCD display with a touch sensitive keyboard. The machine is bench mounted for ease of installation and operation.

The use of a microprocessor controlled drive system and keyboard entry provides the Load Frame with a wide variety of features which include pause and speed reset during test, RS232 interface for computer control, operator programming of speed and control functions and many other features.

A robustly constructed steel case houses the motor drive system with careful attention being given to the prevention of ingress of water or grit. All operating controls are mounted on the front panel of the machine which is angled and recessed to prevent physical and environmental damage.

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



AIM 064-E

**Specifications :**

Capacity	: 50kN
Drive Mechanism	: Stepper Motor
Drive	: Microprocessor controlled
Platen Speed range	: 0.00001 to 9.99999 mm/minute.
Fast Forward & Reverse	: 15mm / minute
Horizontal clearance	: 364mm
Max. vertical clearance	: 910mm
Max. Platen travel	: 100mm
Specimen dia	: 38mm to 100 mm
Dimensions (L×W×H)	: 600 × 500 × 1440 mm
Weight	: 85 kg. (Approx.)

Load Frame, Motorised, 12 Speeds, 200kN

AIM 065

Salient Features :

- Two pillar type
- Enclosed motor and Gear System
- Operational ease
- Jewel lamps indicating direction of motion

The Load Frame is extremely versatile and designed to conduct triaxial shear test on soil and rock specimens.

The instrument consists of a cabinet which houses the gear system and motor with sturdy angle iron frame. The loading is done through the bottom loading platen, which is carried on a lead screw which advances upwards. The top load bracket, which slides over two upright pillars, can be positioned at any desired height and locked. It carries a screw adaptor for standard Proving Rings or Load Cells.

The loading part of the unit is detachable from the main unit for ease of transport and to avoid damage to the tension rods.

Rates of Strain: 12 fixed speeds between 1.25 and 0.0064 mm/min.

Suitable for operation on 415 V, 50 Hz, 3 phase, AC supply.

Load Frame, Motorised, 12 Speeds, 500kN

AIM 066

Salient Features :

- Two pillar type
- Enclosed motor and Gear System
- Operational ease
- Jewel lamps indicating direction of motion

The Load Frame is designed for conducting triaxial shear tests on rock specimens, but its use can be extended to any field where there is a requirement of the rates of strain of this load frame to be applied. This load frame gives a choice of twelve rates of strain from a maximum of 5 mm/min to 0.0001 mm/min.

It consists of a cabinet housing the electric motor, reduction gear and the turret gear box. Two pillars are fitted on the base over the cabinet. The load is applied by advancement of a lead screw. A suitable adapter is provided for fixing a 500 kN capacity proving ring. This load frame has a platen of about 25 cm dia to house the high pressure Triaxial Cell for testing rock specimens.

Suitable for operation on 415 V, 50 Hz, 3 Phase, AC supply.



Aimil True Speed Soil Frame

AIM 062-E (4 Speed)

This frame represents the most economical option with the true speed feature. It is able to perform tests such as CBR/ UCS while maintaining higher accuracy levels as compared to traditional frames.

Technical Specification:

Type	:	Closed Loop Speed, Two Pillar Type
Load	:	50kN
Speed Range	:	1.25/1.5/2.5mm/min with True Speed Control of upto 15mm/min
Up/Down	:	Fast Up and Down speed of 10mm/min
Display	:	LCD
Electrical	:	220V, 50Hz, Single Phase. AC Supply



AIM 062-E

Cat. No.	AIM 062-1	AIM 064-2	AIM 064-E	AIM 065	AIM 066	AIM 062-E (4 Speed)
Capacity	50 kN	50 kN	50 kN	200 kN	500 kN	500 kN
Types of Operation	Electrical-cum manual	Micro Processor Based	Micro Processor Based	Electrical-cum manual	Electrical-cum manual	Microprocessor Based Closed loop feedback control
Rates of Strain mm/min	Three Rates 1.25, 1.5 and 2.5mm/min	Thirty Four Rates 0.0005 to 6.00mm/min	0.00001 to 9.99999mm/min	Twelve Rates 0.0064 to 1.25mm/min	Twelve Rates 0.0001 to 5mm/min	1.25-1.5-2.5 to 15mm/min with true speed
Horizontal Clearance	265 mm	364 mm	364 mm	300 mm	545 mm	265mm
Vertical clearance	700 mm	910 mm	910 mm	750 mm	1200 mm	700mm
Maximum Platen dia	157 mm	133 mm	133 mm	198 mm	250 mm	130mm
Maximum Platen Travel	100 mm	100 mm	100 mm	100 mm	160 mm	30mm
Specimen dia	38 to 100 mm	38 to 100 mm	38 mm to 100 mm	38 to 100 mm AX, BX, NX cores of rock upto 100 mm dia		50mm
Application	CBR Unconfined Compression Test	Triaxial & CBR Test	Triaxial, CBR Test	Triaxial Test on Unconfined rocks, Unconfined Compression Test	Routine tests on Rocks Unconfined on medium & coarse grained stabilized soil	CBR, UCS and Quick Undrained Triaxial Tests

Ordering Information :

AIM 062-1	Load Frame, Motorised Three Speed, 50 kN
AIM 064-2	Load Frame, Digital, 34 speeds, 50 kN
AIM 064-E	Load Frame, Motorised, 50 kN Microprocessor Based
AIM 065	Load Frame, Motorised, 12 speeds, 200 kN
AIM 066	Load Frame, Motorised, 12 speeds, 500 kN
AIM 062-E	Aimil True Speed Soil Frame (4 Speed), 50 kN



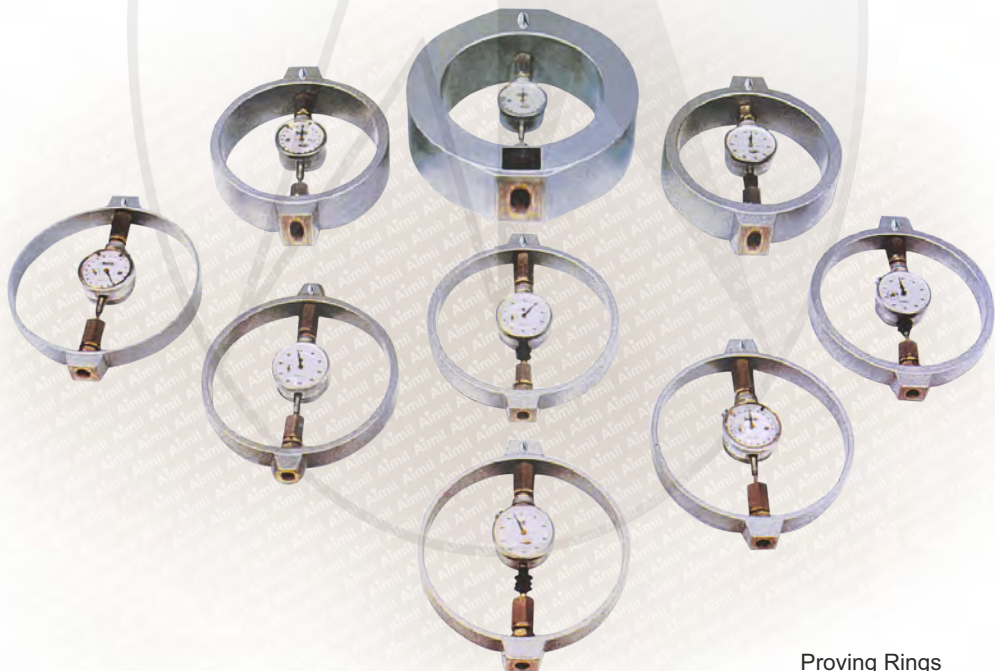
Integral Proving Rings

The Proving Rings are made up of special steel, carefully forged to give maximum strength and machined to give high sensitivity commensurate with stability, ensuring long life and accuracy.

All proving rings are integral type viz. the loading (outside) bosses are forged integral with the ring body. This ensures that there is no possibility of abutment shift and consequent loss of accuracy in reading that always exists with bolted abutments.

Repeatability in these Proving Rings is as stipulated in IS:4169. The rings are supplied complete with dial gauge and Works Calibration Chart, individually packed in polished wooden boxes. National Physical Laboratory (NPL), (India)/ National Council for Cement & Building Material (NCCBM) Calibration can also be arranged for any proving ring at an additional cost. Proving rings to meet special requirements are also available on request.

Separate polished and ground pair of Loading Pads for Compression Proving Rings and pair of Shackles for Tension Proving Rings are provided to suit each proving ring.



Proving Rings

Note: Important : Proving Ring must be recalibrated when a replacement dial gauge is fitted



Ordering Information :

Compression Proving Rings

Cat. No.	Capacity (kN)	Cat No. Loading Pads
AIM 261*	0.25 kN	AIM 26101
AIM 262*	0.5 kN	AIM 26201
AIM 263*	1 kN	AIM 26301
AIM 264*	2 kN	AIM 26401
AIM 265*	2.5 kN	AIM 26501
AIM 266*	4 kN	AIM 26601
AIM 267*	5 kN	AIM 26701
AIM 268*	10 kN	AIM 26801
AIM 269*	15 kN	AIM 26901
AIM 270*	20 kN	AIM 27001
AIM 271*	25 kN	AIM 27101
AIM 272*	30 kN	AIM 27201
AIM 273*	40 kN	AIM 27301
AIM 274*	50 kN	AIM 27401
AIM 275*	100 kN	AIM 27501
AIM 276*	200 kN	AIM 27601
AIM 277*	300 kN	AIM 27701
AIM 278*	500 kN	AIM 27801
AIM 279*	1000 kN	AIM 27901
AIM 280**	2000 kN	AIM 28001
AIM 281**	3000 kN	AIM 28101

Note: *Supplied with Aimil Calibration Certificate. NPL/NCCBM calibration can be provided on request at extra cost.
 **Supplied with NCCBM Certificate. NPL Certificate can be provided on request at extra cost.

Tension Proving Rings

Cat. No.	Capacity (kN)	Cat. No. shakles
AIM 290 [†]	0.5 kN	AIM 29001
AIM 291 [†]	1.0 kN	AIM 29101
AIM 292 [†]	2.0 kN	AIM 29201
AIM 293 [†]	2.5 kN	AIM 29301
AIM 294 [†]	5.0 kN	AIM 29401
AIM 295 [†]	10.0 kN	AIM 29501
AIM 296 [†]	20.0 kN	AIM 29601
AIM 297 [†]	50.0 kN	AIM 29701
AIM 298 [†]	100.0 kN	AIM 29801

Note: [†]Calibration can be provided on request at extra cost.

Tension Compression Proving Rings

Cat. No.	Capacity (kN)	Cat. No. Shakles
AIM 284 ^{††}	2.0 kN	28401

Note: ^{††}Supplied with Aimil Calibration Certificate. Third party Calibration can be provided at an extra cost.



Shear Strength

Determination of soil shear strength is essential for designing the foundation of structures, soil and soil retaining structures, soil slopes, etc., Shear strength of soil depends on various factors and insitu soil conditions. Therefore, when laboratory tests in soil are performed to evaluate shear strength of soil, the insitu soil conditions and other factors should be simulated for obtaining meaningful results. For example, the Unconsolidated Undrained test on soil will yield the undrained strength, which can be used for finding the immediate stability of an excavation, whereas a consolidated undrained test with measurement of pore pressure can be used to evaluate the effective strength parameters of soil for designing the long term stability of an earth fill dam.

It is well known that the engineering behaviour of soil depends on the effective stress and not the total stress. The effective stress can be calculated by measuring the total stress and subtracting the pore water pressure from it.

To cater to the needs of shear strength determination of soil, a range of equipment is offered, as listed in this section.

Unconfined Compression Tester,

AIM 074-1, AIM 074-2, AIM 074-1-DG & AIM 074-2-DG

Ref. Standards IS:2720 (Part 10), AASHTO T208



AIM 074-1

The constituents of various models are detailed in the table.

Cat. No.	AIM 074-1	AIM 074-2	AIM 074-1-DG	AIM 074-2-DG
AIM 062-1 Load Frame 3 Speed	1	-	1	-
AIM 062-E Load Frame 4 Speed	-	1	-	1
AIM 03105 Split Mould	1	1	1	1
AIM 07401 Plain Platen with Adaptor	1	1	1	1
AIM 07506 Rubber Sheath	1	1	1	1
AIM 264 Proving Ring 2kN	1	1	-	-
AIM 072 Dial Gauge 25mm	1	1	-	-
AIM 074-01 Digital Conversion Kit 2kN	-	-	-	1
AIM 074-02 Digital Conversion Kit 10kN	-	-	1	-

Ordering Information :

AIM 074-1	Unconfined compression tester
AIM 074-2	Unconfined compression tester
AIM 074-1-DG	Digital Unconfined compression tester
AIM 074-2-DG	Digital Unconfined compression tester

Note: As per ASTM/BS is also available.



Triaxial Shear

Ref: Standard IS : 2720 (Part XII)

The knowledge of stress-strain and strength characteristics of soils is of primary importance for the analysis and design of earth and earth retaining structures and foundations. The triaxial compression test, inspite of its limitation to simulate all combinations of practical stress and strain conditions, occupies at present a fairly dominant position in soil testing.

Triaxial Cells

Aimil Triaxial Cells conform to the requirements of IS:2720 (Part 11) & (Part 12) and are made from corrosion resistant material. Particular attention is paid to the quality of the finish between the stainless steel plunger and the bushing. The cell cylinders are made from acrylic plastic material and those for use upto 20 bar (20 kg/cm^2) are usually reinforced by bands. Each cell has four/five take-off positions, drilled in the base, for Cell pressure, Pore water pressure, Drainage or back pressure. All valves are of 'no-volume change' type. Universal triaxial cells accept a range of base adaptors for testing a wide range of specimen sizes.

Triaxial Cell, Stationary Bushing

AIM 075-38



Ref Standard: IS : 2720 (Part XII)

For testing specimen of size 38mm dia x 76mm long. Triaxial Cell consists of Perspex chamber with anvil and loading plunger. The cell is easily split by releasing four tie rods. It is leak proof upto 10 bar (10 kg/cm^2) fluid pressure. An oil plug and an air vent are provided for introducing a thin layer of oil over water. This provides effective sealing at the plunger for long duration tests. The cell is fitted with four valves of no volume change type to the base.

The equipment consist of the following replaceable parts :

AIM 07501	Top loading pad, Perspex, 38 mm dia	1 No.
AIM 07502	Plain Perspex disc 38 mm dia x 6 mm thick	1 pair.
AIM 07503	Porous Stone 38 mm dia x 6 mm thick	1 pair.
AIM 07504	Sheath stretcher for 38 mm dia specimen	1 No.
AIM 07505	Two way split former for 38 mm dia specimen	1 No.
AIM 07506	Rubber sheath for 38 mm dia specimen	12 Nos.
AIM 07508	Drainage tube for 38 mm	4 Nos.
AIM 07509	'O' rings for 38 mm dia specimen	4 Nos.
AIM 03105	Split Mould, 38 mm dia	1 No.

Ordering Information :

AIM 075-38	Triaxial Cell, 10 kg/cm^2 for 38 mm dia samples
AIM 075-38 H	Triaxial Cell, Heavy, 10 kg/cm^2 for 38mm dia sample



Soil Testing

Triaxial Cells, 38mm and 50mm dia

AIM 075



AIM 075

For testing specimens of size 38 mm dia x 76 mm long and 50 mm dia x 100 mm long.

Triaxial cell comprises of a perspex chamber with an anvil and a loading plunger. The cell is easily split by releasing four tie rods. It is leakproof upto 10 bar (10 kg/cm^2) fluid pressure.

Cells which can withstand the pressure of 20 bar can be made on request.

An oil plug and air vent are provided for introducing a thin layer of oil over water. This provides an effective sealing at the plunger for long duration tests. The cell is also fitted with four ball valves of no-volume change type, at the base.

The equipment consist of the following replaceable parts :

AIM 07501	Top loading pad, Perspex, 38 mm dia	1 No.
AIM 07502	Plain Perspex disc 38 mm dia x 6 mm thick	1 pair.
AIM 07503	Porous Stone 38 mm dia x 6 mm thick	1 pair.
AIM 07504	Sheath stretcher for 38 mm dia specimen	1 No.
AIM 07505	Sand former for 38 mm dia	1 No.
AIM 07506	Rubber sheath for 38 mm dia specimen	12 Nos.
AIM 07508	Drainage tube for 38 mm	4 Nos.
AIM 07509	'O' rings for 38 mm dia specimen	8 Nos.
AIM 07510	Brass pedestal 38 mm dia	1 No.
AIM 07521	Top loading pad, Perspex, 50 mm dia	1 No.
AIM 07522	Plain Perspex disc 50 mm dia x 6 mm thick	1 pair.
AIM 07523	Porous Stone 50 mm dia x 6 mm thick	1 pair.
AIM07524	Sheath stretcher for 50 mm dia specimen	1 No.
AIM 07525	Sand former for 50 mm dia	1 No.
AIM 07526	Rubber sheath for 50 mm dia	12 Nos.
AIM 07528	Drainage tube for 50 mm	4 Nos.
AIM 07529	'O' ring for 50mmdia-specimen	8 Nos.
AIM 07530	Brass pedestal 50 mm dia	1 No.
AIM 03105	Split Mould, 38 mm Dia x 76 mm long	1 No.
AIM 03301	Split Mould, 50 mm Dia x 100 mm	1 No.

Ordering Information :

AIM 075	Triaxial Cell, 10 kg/cm^2 for 38mm and 50mm dia samples
AIM 075-H	Triaxial Cell, Heavy, 10 kg/cm^2 for 38mm and 50mm dia samples
AIM 075-50	Triaxial Cell, 10 kg/cm^2 for 50mm dia sample



Universal Triaxial Cell, Stationary Bushing, 10 Bar

AIM 076

For testing specimens of size 38, 50, 75 and 100 mm dia. It consists of a Perspex chamber with anvil and loading plunger. Leak proof upto 10 bar (10kg/cm²). Fitted with five sleeve packed valves to the base.



AIM 076

The equipment consist of the following replaceable parts :

AIM 07510	Brass pedestal 38 mm dia	1 No.
AIM 07530	Brass pedestal 50 mm dia	1 No.
AIM 07567	Brass pedestal 75 mm dia	1 No.
AIM 07550	Brass pedestal 100 mm dia.	1 No.
AIM 07501	Perspex loading pad 38 mm dia.	1 No.
AIM 07521	Perspex loading pad 50 mm dia.	1 No.
AIM 07568	Perspex loading pad 75 mm dia.	1 No.
AIM 07569	Perspex loading pad 100 mm dia.	1 No.
AIM 07502	Plain discs, 38 mm dia.	1 Pair
AIM 07522	Plain discs, 50 mm dia.	1 Pair
AIM 07553	Plain discs, 75 mm dia.	1 Pair
AIM 07554	Plain discs, 100 mm dia.	1 Pair
AIM 07503	Porous stone 38 mm dia.	1 Pair
AIM 07523	Porous stone 50 mm dia.	1 Pair
AIM 07555	Porous stone 75 mm dia.	1 Pair
AIM 07556	Porous stone 100 mm dia.	1 Pair
AIM 07504	Sheath Stretcher for 38 mm dia.	1 No.
AIM 07524	Sheath Stretcher for 50 mm dia.	1 No.
AIM 07557	Sheath Stretcher for 75 mm dia.	1 No.
AIM 07558	Sheath Stretcher for 100 mm dia.	1 No.
AIM 07505	Sand former for 38 mm dia.	1 No.
AIM 07525	Sand former for 50 mm dia.	1 No.
AIM 07559	Sand former for 75 mm dia.	1 No.
AIM 07560	Sand former for 100 mm dia.	1 No.
AIM 07506	Rubber sheath for 38 mm dia.	12 Nos.
AIM 07526	Rubber sheath for 50 mm dia.	12 Nos.
AIM 07561	Rubber sheath for 75 mm dia.	12 Nos.
AIM 07562	Rubber sheath for 100 mm dia.	12 Nos.
AIM 07535	Drainage tube for 38 mm.	4 Nos.
AIM 07528	Drainage tube for 50 mm.	4 Nos.
AIM 07536	Drainage tube for 75 mm.	4 Nos.
AIM 07537	Drainage tube for 100 mm.	4 Nos.
AIM 07509	'O'ring for 38 mm dia.	8 Nos.
AIM 07529	'O'ring for 50 mm dia.	8 Nos.
AIM 07563	'O'ring for 75 mm dia.	8 Nos.
AIM 07564	'O'ring for 100 mm dia.	8 Nos.



Soil Testing

Ordering Information :

AIM 076 Universal Triaxial Cell, 10kg/cm² for 38, 50, 75 & 100 mm dia samples

AIM 076-H Universal Triaxial Cell, Heavy, 10kg/cm² for 38, 50, 75 & 100 mm dia samples

Optional Accessories :

AIM 07511 Three part split mould, 38 mm dia with Collar, base plate and hinged clamp with rammer

AIM 07531 Three part split mould, 50 mm dia with Collar, base plate and hinged clamp with rammer

AIM 07565 Three part split mould, 75 mm dia with Collar, base plate and hinged clamp with rammer

AIM 07566 Three part split mould, 100 mm dia with Collar, base plate and hinged clamp with rammer

AIM 03301 Split Mould, 50 mm dia x 100 mm

AIM 03105 Split Mould, 38 mm dia x 76 mm

AIM 07540 Split Mould 75 mm dia x 150 mm

AIM 07541 Split Mould 100 mm dia x 200 mm

Pore Pressure Apparatus

AIM 077 & AIM 078

The Pore Pressure Apparatus manufactured by Aimil is designed according to the principles outlined in the book "The Measurement of Soil Properties in the Triaxial Test" by A.W. Bishop and D.J. Henkel. This pore pressure measuring apparatus consists of a screw pressure pump, null indicator in perspex, pressure gauge, mercury manometer, volume change burette and the necessary connecting tubes and valves. It is used for measuring pore water pressure and pore air pressure in soils.

It has many features which simplify the operation. The Null Indicator is made from a transparent perspex block. It is a simplified U-Tube Null Indicator, in which water can bypass mercury if null indicator is tilted; thus de-airing process by circulation of water is facilitated. All features enable a visual check to be made during the de-airing operation of apparatus. A mercury manometer and a pressure gauge of Bourdon Tube type are provided on the panel on which the whole equipment is mounted. Very small positive or negative pressures are observed on the manometer. A 50ml burette is clamped to a sliding bracket on one side of the panel. It is used for measuring the volume change in the specimen when subjected to confining pressure in the triaxial cell. A small amount of Mercury is supplied along with the apparatus.



AIM 077

The equipment consist of the following replaceable parts :

AIM 07701 Pressure Gauge Bourdon Tube Type, Graduation : -1.0 to +10 bar in 0.1 bar Divisions (-1 to 10 kg/cm²) Dia : 200 mm

or

AIM 07801 Pressure Gauge Bourdon Tube type, Graduation : -1.0 to +20 bar in 0.1 bar Divisions. (or -1 to +20 kg/cm²) Dia : 200 mm

AIM 07702 Manometer Glass U-Tube, measures low positive and negative pore pressure and helps to check zero error of pressure gauge. It is provided with a mercury trap.

AIM 07703 Null Indicator Perspex with mercury trap and a cursor to indicate the mercury level

AIM 07704 Burette, 50 ml for measurement of volume change in the soil specimen.

AIM 07705 Pressure Pump fitted with four Ball Valves.

AIM 07706 Copper Coil

AIM 07707 Water Reservoir

All the above parts are fixed on a panel suitable for mounting on the wall.

Ordering Information :

AIM 077 Pore Pressure Apparatus 1000 kPa (10 kg/cm²) capacity.

AIM 078 Pore Pressure Apparatus 2000 kPa (20 kg/cm²) capacity.



Pressurised Water Filling Tank

AIM 079-1

The tank is designed specifically to reduction of time and labour to fill the water in Triaxial Cell. Water is filled in the pressure tank and pressure is generated by supplying air through a foot pump. Unit is made ready by raising the pressure in the tank.

It comprises the following:

AIM 07901	Pressure chamber fitted with valves & pressure gauge	1 No.
AIM 07910	Foot pump	1 No.
AIM 07917	Pressure Hose	1 No.

Ordering Information :

AIM 079-1 Pressurised Water Filling Tank



AIM 079-1

Constant Pressure Systems

Constant Pressure Systems are meant for maintaining the pressure in the triaxial cell constant by automatically compensating for the fluctuation of cell pressure taking place as a result of volume change occurring in the cell due to expansion of the specimen under high pressure, entry of the loading plunger into the cell, consolidation of specimen, etc. Constant Pressure Systems are usually employed to ensure accurate performance of such types of Triaxial Shear tests (consolidated undrained test on clayey soils and drained test on most of the soils) where maintenance of the set pressure constant over a long period is essential.

Constant Pressure System Oil Water Type

AIM 081-1 & AIM 081-1-2

- Maintains Constant Pressure continuously
- Pressure Capacity: 10kg/cm^2
- Also suitable for mobile laboratories

Oil Water Constant Pressure System is an extremely versatile apparatus which can be used for a wide range of applications. The apparatus is designed to provide confining pressure upto 16kg/cm^2 to Triaxial Cells however for safety it has been factory-locked at a max Pressure of 12kg/cm^2 .

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



AIM 081-1-2



Soil Testing

The unit provides variable pressure upto 12 kg/cm^2 which can be increased or decreased simply by turning a control knob. A transparent oil water interchange vessel is provided to transmit water pressure to the test apparatus.

Range : 10 kg/cm^2

Resolution : 0.1 kg/cm^2

Accuracy : $\pm 1\%$ of the indicated pressure

Supplied complete with Pressure Gauge, Flow Valves, connecting Pressure Hose.

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

Ordering Information :

AIM 081-1 Constant Pressure System, Oil Water Type with One Cell

AIM 081-1-2 Constant Pressure System, Oil Water Type with Two Cells

Note : If a higher Confining pressure is desired one can be designed at extra cost.

Constant Pressure System Air Water Type

AIM 082

This Air Water Constant Pressure System is meant for maintaining constant lateral pressure on triaxial test specimens throughout the test periods regardless of the volume changes occurring in the cell due to expansion of specimens under high pressures, leakage, entry of loading plunger into the triaxial cell, distortion of the specimen under load, consolidation etc. The equipment is provided with two air water interface chambers with individual regulators to control the outlet pressure at desired pressure levels.

Constant pressure is maintained in the system by applying air pressure into the cell with the help of a pressure regulator. The apparatus is designed to provide confining pressure upto 10 kg/cm^2 and is a two cell model.

Range : 0 to 10 kg/cm^2

Resolution : 0.1 kg/cm^2

Accuracy : $\pm 1\%$ of the indicated pressure

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



AIM 082

Ordering Information :

AIM 082 Constant Pressure System Air Water Type with Two Cells

Note 1 : Four Cell model can be provided on request.

Note 2 : Compressed Air is needed to operate the machine. Compressor with Moisture Trap (if required) can be supplied at extra cost.



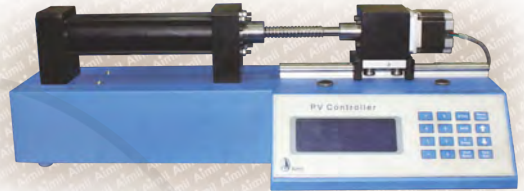
Pressure Volume Controller

AIM 081-PV, AIM 081-PV-1 & AIM 081-PV-2

Pressure/volume controllers one to control the cell pressure and the other to control the back pressure are a part of this Triaxial Outfit. Pressure/volume controllers are a robust stepper motor-controlled system with a pressure range of up to 1Mpa. Pressure/Volume Controller is a general-purpose water pressure source and volume change for the precise regulation and measurement of fluid pressure and volume change.

Features

- Confining pressure : 0.1% of FRO
- Back pressure : 0.1% of FRO
- Volume change : 200cc, 0.1% of FRO
- Facility to operate in either Standalone Mode or through a Computer Controlled system complete with software
- Pressure control range : 0-1000kPa
- Pressure Resolution : 1kPa
- Volume Resolution : 1 mm³
- Fast fill & slow fill of cylinder
- Fast empty & slow empty of cylinder
- Memory status
- Date & Time setting
- Logging interval setting
- De-airing apparatus (optional item)
- Vacuum pump (optional item)



Ordering Information :

AIM-081-PV	Pressure Volume Controller, Capacity 1000kPa
AIM-081-PV-1	Pressure Volume Controller, Capacity 1000kPa with heavy triaxial cell, 38mm
AIM-081-PV-2	Pressure Volume Controller, Capacity 2000kPa
AIM-081-PV-3	Pressure Volume Controller, Capacity 1000kPa (Set of 2 Nos.)

Sensitive Volume Change Gauge

AIM 084



AIM 084

This Volume Change Gauge works on the principle of reversing the direction of flow when the limit of the volume change scale is reached. The number of cycles with the volume of fluid handled in each cycle provide the total volume change, whereas the sensitivity is governed by the dia of the polythene tube used. Sensitivity of 0.003 ml/mm with 6 ml volume of fluid per cycle has been realized by this sensitive volume change gauge.



Soil Testing

The apparatus consists of a volume measuring polythene tube running along both sides of a scale and connected at both ends to two mercury traps.

These traps are connected to flow reversal valves through a manifold. The length of the polythene tube is enough to measure 6 ml volume of fluid per cycle. A small pallet of mercury is introduced in the circuit to be used as a cursor, and the movement of pallet is measured.

The unit is tested to a pressure of 10 bar (10 kg/cm²) and is designed for wall mounting.

Ordering Information :

AIM 084 Sensitive Volume Change Gauge

Automatic Volume Change Gauge

AIM 084-1

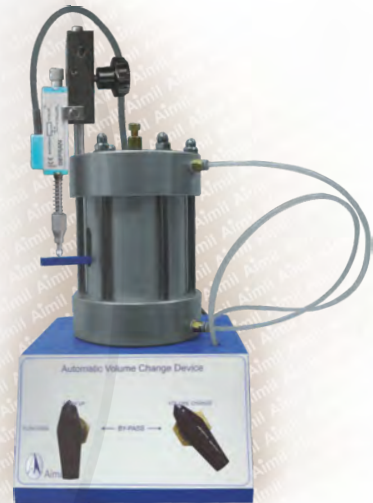
Designed for use with triaxial cells, specifically for continuous measurements of volume change during the test. The unit consists of a top volume change chamber, which has a capacity of 100 ml and a bottom chamber with a capacity of 100ml. The changeover valve box enable the effective use of the device with unlimited capacity.

Salient Feature:

- It is used with LVDT
- The accuracy is better than 0.1 ml
- Supplied with push fittings (4mm) for easy connections, but without measurement device.

Technical Specifications

- The automatic volume change apparatus consists of a calibrated chamber of known volume and a piston machined to tight tolerances, to give a precise measurement of the changing volume within the cylinder. As the piston moves an LVDT, either displays or transmits the change in volume to a data logger.
- If the change in volume exceeds 100cc then a changeover valve allows the internal piston to move in the opposite direction.
- This can be repeated until volume change has completed.



AIM 084-1

Specifications	
Capacity	Initially 100cc
Pressure capacity	10 bar
Accuracy	0.1ml
Weight	7.5 kg
Dimensions	200mm (L) X 250mm (W) X 330mm (H)

Ordering Information :

AIM 084-1 Automatic Volume Change Gauge

Note: If AIM 084-1 is being purchased as stand alone unit, then one indicator also needs to be purchased. Indicator to be priced extra.



Triaxial Digital Kit

- Display of Displacement, load and pore pressure
- Digital Read-out minimizes operator error
- Reduces operator time and involvement
- Plug-in transducer module system
- Easy to install
- Inbuilt DAQ (on order at extra cost)
- Facility for connecting read-out units to PC for Data Acquisition



AIM 085

With an external load cell, 10 kN capacity, Pore Pressure Transducer, 20 kg/cm² capacity, an LVDT (Displacement Sensor) having a range of 0-20mm mm and a 4/3 - Channel Digital Indicator which has been specially designed to meet the requirements of Triaxial Test. Suitable for operation on 220 V, 50 Hz, Single Phase, AC supply.

The equipment consist of the following replaceable parts :

AIM 08501

Mode of Display

Digital Indicator

: Micro controller based multi line alpha numeric LCD display for monitoring simultaneously four / three parameters.

AIM 08502

Capacity

Load Cell

: 10 kN

Max. overload capacity

: 10% of the rated

Load Cell excitation

: 5 V, DC

Resolution

: 0.01 kN

Sensing element

: Strain gauges in full bridge configuration

AIM 08503

Capacity

Pore Pressure Transducer

: 20 kg/cm²

Max. overload capacity

: 150% of rated

Pressure Cell Excitation

: 5V, DC.

Resolution

: (0.01 kg/cm²).

Sensing element

: Strain Gauges in full bridge configuration.

AIM 08504/AIM 5502003 Displacement Transducer

Range

: 0-20 mm/ 0-50 mm

Sensing element

: LVDT

With or Without

AIM 101-1 Aimil Data Acquisition controller chip

Ordering Information :

AIM 085	Triaxial Digital Kit consists of Load Cell 10kN, Pore Pressure Transducer 20 kg/cm ² , LVDT (Displacement Sensor) 0-20mm and 3-Channel Digital Indicator
AIM-085-1	Triaxial Digital Kit consists of Load Cell 10kN, Pore Pressure Transducer 20 kg/cm ² , LVDT (Displacement Sensor) 0-50mm and 3-Channel Digital Indicator
AIM-085-2	Triaxial Digital Kit consists of Load Cell 10kN, Pore Pressure Transducer 20 kg/cm ² , LVDT (Displacement Sensor) 0-20mm and 4-Channel Digital Indicator for use with AIM 075 & AIM - 084-1
AIM-085-3	Triaxial Digital Kit consists of Load Cell 10kN, Pore Pressure Transducer 20 kg/cm ² , LVDT (Displacement Sensor) 0-50mm and 4-Channel Digital Indicator for use with AIM 076 & AIM - 084-1
AIM-085-D	Triaxial Digital Kit consists of load cell 10kN, Pore Pressure Transducer 20 kg/cm ² , LVDT (Displacement Sensor) 0-20mm and 3-Channel Digital Indicator with Aimil DAQ controller chip for use with AIM 075
AIM-085-1-D	Triaxial Digital Kit consists of Load Cell 10kN, Pore Pressure Transducer 20 kg/cm ² , LVDT (Displacement Sensor) 0-50mm and 3-Channel Digital Indicator with Aimil DAQ controller chip for use with AIM-076
AIM-085-2-D	Triaxial Digital Kit consists of Load Cell 10kN, Pore Pressure Transducer 20 kg/cm ² , LVDT (Displacement Sensor) 0-20mm and 4-Channel Digital Indicator with Aimil DAQ controller chip for use with AIM 075 & AIM-084-1
AIM-085-3-D	Triaxial Digital Kit consists of Load Cell 10kN, Pore Pressure Transducer 20 kg/cm ² , LVDT (Displacement Sensor) 0-50mm and 4-Channel Digital Indicator with Aimil DAQ controller chip for use with AIM 076 & AIM-084-1



Soil Testing

Triaxial Test Apparatus

Ref: Standard IS : 2720 (Part XI & XII) BS 1377-7, 1924 -2, ASTM D2850, D4767 AASHTO T296, T297

The settlement of foundations and changes in earth pressure due to movement of retaining walls or other earth supports, the yield of soil caused by application of load, are affected by the stress-strain relationship of soils.

The experimental investigation for determining the stress-strain relationship is usually carried out with the Triaxial Compression test. During the test, the soil samples gradually stressed upto failure. Generally speaking, Triaxial tests are performed to simulate different types of stress and drainage conditions that can occur in the sub-soil for simulating the effect of building construction, excavation, tunneling etc. The Three different triaxial tests are usually performed for total and effective stress measurement.

The apparatus consists of the following parts :

- Triaxial Cell
- Load Frame
- Dial Gauge - For Analogue Model only
- Proving Ring - For Analogue Model only
- Pore Pressure Apparatus - For Analogue Model only
- Digital Triaxial Kit with or without DAQ controller chip - For Digital Model only
- Constant Pressure System
- Volume Change Gauge
- Analysis Software
- De-Aired Apparatus (optional)

Note:

Computer (supplied at extra cost) with following minimum specifications is recommended for the subject product :

Minimum Recommended Computer Hardware

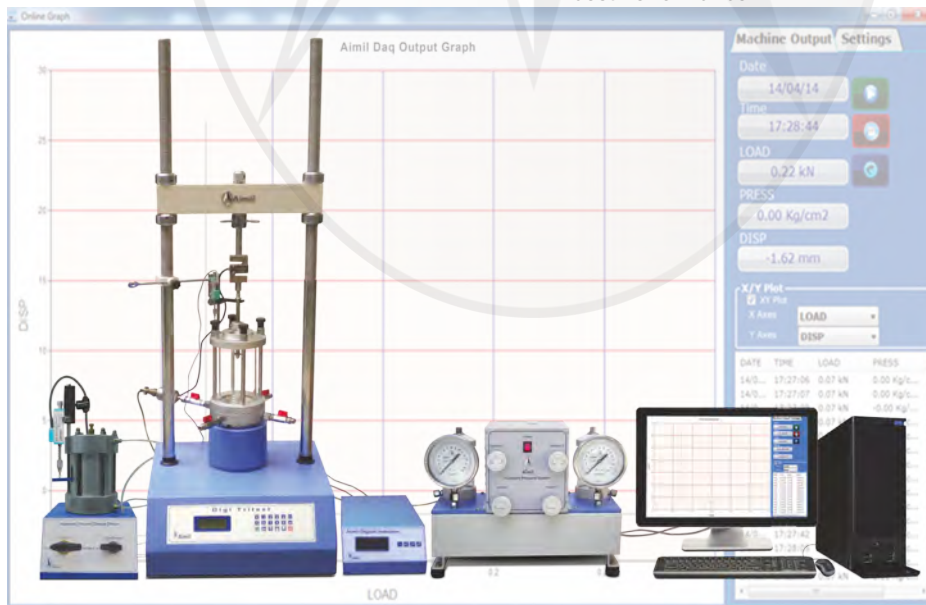
- 2 GHz Pentium Dual Core or better
- 4 GB RAM
- Using multiple testing machines may require additional memory and/or a faster processor
- 512 MB DirectX 10.0 capable video card or better
- 500 GB HD Drive
- RS232 Serial Port
 - 1 integrated serial port (not USB) where possible per testing machine

- If RS232 serial port unavailable, then 1 USB serial port with RS232/USB adapter is required (per machine)
- USB Port
 - Additional ports required if using RS232/USB adapters to communicate with machines
 - Additional ports for required measuring devices, barcode scanners, etc.
- Mouse or pointing device and keyboard supported by Windows
- Monitor
 - 32-bit color
 - 1600 x 900 (Widescreen) or higher
- Windows compatible printer (for reporting capabilities)
- Windows compatible sound card and speakers (for audio playback)
- An active Internet connection (for team viewer use and help desk support)

Software Requirements

- The Aimil Software's are designed for 32-bit & 64-bit operating systems running Windows 7, Windows 8 or Window 10. It does Not support Windows XP and below.
- Internet Explorer 8 or higher.

Note: A 64-bit operating system is preferred for best Performance



Triaxial Outfit



Triaxial Test Apparatus(Analogue)

Cat No.	Sample Dia	Triaxial Cell	Load Frame	Dial Gauge	Proving Ring	Constant Pressure	Pore Pressure	Volume Change	Pressurised Water Tank	Test to be done
AIM-095AN-38-1	38mm	AIM-075-38	AIM-064-2	AIM-072	AIM-265	AIM-081-1	AIM-077	-	AIM-079-1	UU
AIM-095AN-38-2	38mm	AIM-075-38	AIM-064-2	AIM-072	AIM-265	AIM-081-1	AIM-078	-	AIM-079-1	UU
AIM-095AN-38-3	38mm	AIM-075-38	AIM-064-2	AIM-072	AIM-265	AIM-081-1-2	AIM-077	-	AIM-079-1	UU
AIM-095AN-38-4	38mm	AIM-075-38	AIM-064-2	AIM-072	AIM-265	AIM-081-1-2	AIM-077	AIM-084	AIM-079-1	UU,CU,CD
AIM-095AN-50-1	38-50mm	AIM-075	AIM-064-2	AIM-072	AIM-265	AIM-081-1	AIM-077	-	AIM-079-1	UU
AIM-095AN-100-1	38-100mm	AIM-076	AIM-064-2	AIM-072	AIM-268	AIM-081-1	AIM-077	-	AIM-079-1	UU
AIM-095AN-100-2	38-100mm	AIM-076	AIM-064-2	AIM-072	AIM-268	AIM-081-1-2	AIM-077	-	AIM-079-1	UU
AIM-095AN-100-3	38-100mm	AIM-076	AIM-064-2	AIM-072	AIM-268	AIM-081-1-2	AIM-077	AIM-084	AIM-079-1	UU,CU,CD

Triaxial Test Apparatus (Digital)

Cat No.	Sample Dia	Triaxial Cell	Load Frame	Digital Kit	Constant Pressure	Analysis Software	Volume Change	Pressurised Water Tank	Test To Be Done
AIM-096DG-38-1	38mm	AIM-075-38	AIM-064-2	AIM-085	AIM-081-1	-	-	AIM-079-1	UU
AIM-096DG-38-2	38mm	AIM-075-38	AIM-064-2	AIM-085	AIM-081-1-2	-	-	AIM-079-1	UU
AIM-096DG-38-3	38mm	AIM-075-38	AIM-064-2	AIM-085	AIM-081-1-2	-	AIM-084	AIM-079-1	UU,CU,CD
AIM-096DG-38-4	38mm	AIM-075-38	AIM-064-2	AIM-085-2	AIM-081-1-2	-	AIM-084-1	AIM-079-1	UU,CU,CD
AIM-096DG-50-1	38-50mm	AIM-075	AIM-064-2	AIM-085	AIM-081-1	-	-	AIM-079-1	UU
AIM-096DG-50-2	38-50mm	AIM-075	AIM-064-2	AIM-085-2	AIM-081-1-2	-	AIM-084-1	AIM-079-1	UU,CU,CD
AIM-096DG-100-1	38-100mm	AIM-076	AIM-064-2	AIM-085-1	AIM-081-1	-	-	AIM-079-1	UU
AIM-096DG-100-2	38-100mm	AIM-076	AIM-064-2	AIM-085-1	AIM-081-1-2	-	-	AIM-079-1	UU
AIM-096DG-100-3	38-100mm	AIM-076	AIM-064-2	AIM-085-3	AIM-081-1-2	-	AIM-084-1	AIM-079-1	UU,CU,CD



Triaxial Test Apparatus (Digital with Analysis Software)

Cat No.	Sample Dia	Triaxial Cell	Load Frame	Digital Kit	Constant Pressure	Analysis Software	Volume Change	Pressurised Water Tank	Test To Be Done
AIM-096DGDAQ-38-1	38mm	AIM-075-38	AIM-064-2	AIM-085-D	AIM-081-1	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
AIM-096DGDAQ-38-2	38mm	AIM-075-38	AIM-064-2	AIM-085-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
AIM-096DGDAQ-38-3	38mm	AIM-075-38	AIM-064-2	AIM-085-2-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1	AIM-084-1	AIM-079-1	UU, CU, CD
AIM-096DGDAQ-50-1	38-50mm	AIM-075	AIM-064-2	AIM-085-D	AIM-081-1	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
AIM-096DGDAQ-50-2	38-50mm	AIM-075	AIM-064-2	AIM-085-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
IM-096DGDAQ-100-1	38-100mm	AIM-076	AIM-064-2	AIM-085-1-D	AIM-081-1	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
AIM-096DGDAQ-100-2	38-100mm	AIM-076	AIM-064-2	AIM-085-3-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1	AIM-084-1	AIM-079-1	UU, CU, CD
AIM-096DGDAQ-100-3	38-100mm	AIM-076	AIM-064-2	AIM-085-1-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU

Triaxial Test Apparatus (Microprocessor based)

Cat No.	Sample Dia	Triaxial Cell	Load Frame	Digital Kit	Constant Pressure	Analysis Software	Volume Change	Pressurised Water Tank	Test To Be Done
AIM-096Mu-38-1	38mm	AIM-075-38	AIM-064-E	AIM-085	AIM-081-1	-		AIM-079-1	UU
AIM-096Mu-38-2	38mm	AIM-075-38	AIM-064-E	AIM-085	AIM-081-1-2	-		AIM-079-1	UU
AIM-096Mu-38-3	38mm	AIM-075-38	AIM-064-E	AIM-085-2	AIM-081-1-2	-	AIM-084-1	AIM-079-1	UU, CU, CD
AIM-096Mu-50-1	38-50mm	AIM-075	AIM-064-E	AIM-085	AIM-081-1-2	-		AIM-079-1	UU
AIM-096Mu-100-1	38-100mm	AIM-076	AIM-064-E	AIM-085-1	AIM-081-1-2	-		AIM-079-1	UU
AIM-096Mu-100-2	38-100mm	AIM-076	AIM-064-E	AIM-085-3	AIM-081-1-2	-	AIM-084-1	AIM-079-1	UU, CU, CD

Triaxial Test Apparatus (Microprocessor based with Analysis Software)

Cat No.	Sample Dia	Triaxial Cell	Load Frame	Digital Kit	Constant Pressure	Analysis Software	Volume Change	Pressurised Water Tank	Test To Be Done
AIM-096MuDAQ-38-1	38mm	AIM-075-38	AIM-064-E	AIM-085-D	AIM-081-1	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
AIM-096MuDAQ-38-2	38mm	AIM-075-38	AIM-064-E	AIM-085-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
AIM-096MuDAQ-38-3	38mm	AIM-075-38	AIM-064-E	AIM-085-2-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1	AIM-084-1	AIM-079-1	UU, CU, CD
AIM-096MuDAQ-50-1	38-50mm	AIM-075	AIM-064-E	AIM-085-2-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1	AIM-084-1	AIM-079-1	UU, CU, CD
AIM-096MuDAQ-50-2	38-50mm	AIM-075	AIM-064-E	AIM-085-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
AIM-096MuDAQ-100-1	38-100mm	AIM-076	AIM-064-E	AIM-085-1-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1		AIM-079-1	UU
AIM-096MuDAQ-100-2	38-100mm	AIM-076	AIM-064-E	AIM-085-3-D	AIM-081-1-2	AIM-10121-1, AIM-10122-1, AIM-10123-1	AIM-084-1	AIM-079-1	UU, CU, CD



Ordering Information :

AIM-095AN-38-1	Analogue Triaxial Test Apparatus
AIM-095AN-38-2	Analogue Triaxial Test Apparatus
AIM-095AN-38-3	Analogue Triaxial Test Apparatus
AIM-095AN-38-4	Analogue Triaxial Test Apparatus
AIM-095AN-50-1	Analogue Triaxial Test Apparatus
AIM-095AN-100-1	Analogue Triaxial Test Apparatus
AIM-095AN-100-2	Analogue Triaxial Test Apparatus
AIM-095AN-100-3	Analogue Triaxial Test Apparatus
AIM-096DG-38-1	Digital Triaxial Test Apparatus
AIM-096DG-38-2	Digital Triaxial Test Apparatus
AIM-096DG-38-3	Digital Triaxial Test Apparatus
AIM-096DG-38-4	Digital Triaxial Test Apparatus
AIM-096DG-50-1	Digital Triaxial Test Apparatus
AIM-096DG-50-2	Digital Triaxial Test Apparatus
AIM-096DG-100-1	Digital Triaxial Test Apparatus
AIM-096DG-100-2	Digital Triaxial Test Apparatus
AIM-096DG-100-3	Digital Triaxial Test Apparatus
AIM-096DGDAQ-38-1	Digital Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096DGDAQ-38-2	Digital Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096DGDAQ-38-3	Digital Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096DGDAQ-50-1	Digital Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096DGDAQ-50-2	Digital Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096DGDAQ-100-1	Digital Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096DGDAQ-100-2	Digital Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096DGDAQ-100-3	Digital Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096Mu-38-1	Microprocessor based Triaxial Test Apparatus
AIM-096Mu-38-2	Microprocessor based Triaxial Test Apparatus
AIM-096Mu-38-3	Microprocessor based Triaxial Test Apparatus
AIM-096Mu-50-1	Microprocessor based Triaxial Test Apparatus
AIM-096Mu-100-1	Microprocessor based Triaxial Test Apparatus
AIM-096Mu-100-2	Microprocessor based Triaxial Test Apparatus
AIM-096MuDAQ-38-1	Microprocessor based Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096MuDAQ-38-2	Microprocessor based Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096MuDAQ-38-3	Microprocessor based Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096MuDAQ-50-1	Microprocessor based Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096MuDAQ-50-2	Microprocessor based Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096MuDAQ-100-1	Microprocessor based Triaxial Test Apparatus with Aimil DAQ & Analysis Software
AIM-096MuDAQ-100-2	Microprocessor based Triaxial Test Apparatus with Aimil DAQ & Analysis Software



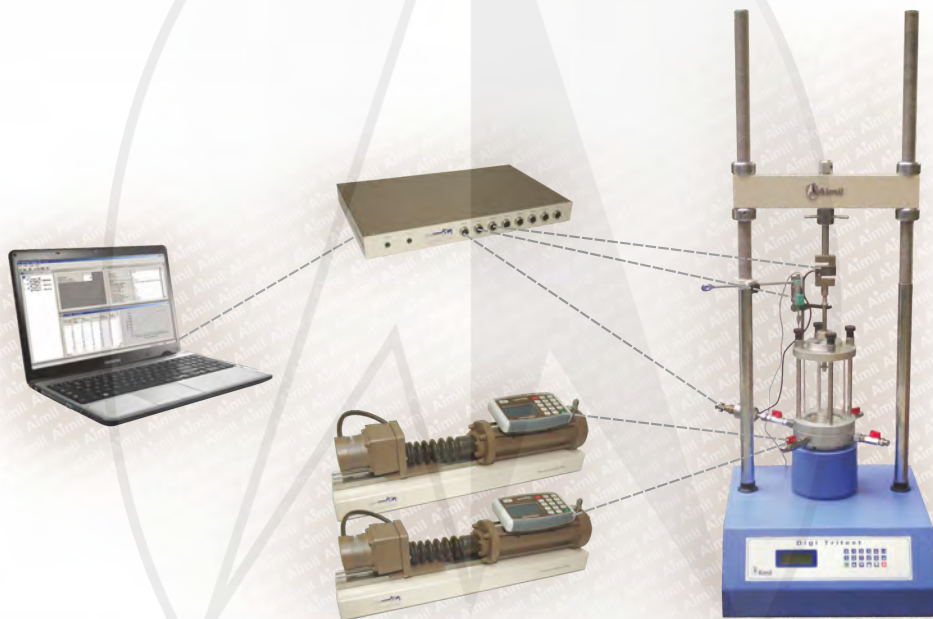
Aimil-GDS Automatic Triaxial Testing System

AIM 096-GDS

Standard Outfit

The equipment consists of the following:

- Aimil Load Frame with Control Electronics
- GDS Lab Software and Data Acquisition System
- 2 Nos. GDS Pressure Volume Controllers for measuring change in Volume & Constant Pressure
- Aimil Triaxial Cells, 38mm and 50mm dia



AIM 096-GDS

The Aimil - GDS Triaxial Testing System has been designed to comply with international standards of test execution and data presentation and to qualify for national laboratory accreditation schemes.

The system is controlled by the user's PC running MS Windows® and GDSLAB software integrated with Aimil electronics.

The operator chooses the type of test from a test menu (eg. multi-stage, stress path etc) and then enters the test parameters (of cell pressure, back pressure, testing rate and so on) and test termination conditions.

The test then proceeds automatically with all test data being saved to a file. On-line graphics are presented with up to three graphs displayed together with a block of current live test data.

The computer directly controls the cell pressure, back pressure and testing rate. In addition to logging these parameters to the PC hard drive, the computer also logs axial displacement, axial load, pore pressure and volume change.



Load Frame

The equipment is supplied with a load frame with following specifications:

Capacity	50kN
Drive Mechanism	Stepper Motor Drive Microprocessor controlled
Platen Speed range	0.00001 to 9.99999 mm/minute.
Fast Forward & Reverse	10mm / minute
Horizontal clearance	364mm
Max. vertical clearance	910mm
Max. Platen travel	100mm
Specimen dia	38mm to 100 mm
Dimensions (L×W×H)	600 × 500 × 1440 mm
Weight	85 kg. (Approx.)



AIM 064-E

Pressure Volume Controllers

Enterprise Level Pressure/Volume Controller (ELDPC)

The Enterprise Level Pressure Controller is designed to give a highly competitive entry point in to the GDS pressure controller range. It is only available in one configuration and is the perfect plug and play pressure source.

Pressure Accuracy 0.25% FRO. Working pressure range: 1MPa Volumetric accuracy: 0.4% Volumetric capacity: 200cc



Triaxial Cell

Triaxial Cells, 38mm and 50mm dia

For testing specimens of size 38 mm dia x 76 mm long and 50 mm dia x 100 mm long.

This is provided with standard accessories.



Data Acquisition System and Transducers

The GDS Serial Data Pad, a robust 8 channel data acquisition system is provided with this outfit.

GDS 8-channel, 16-bit data interface with RS232 interface.

+/- 5 Volts supply voltage is available individually for each transducer.

The interface has 8 gain ranges per channel, which may be set via the PC to match the output of transducer being used. Input ranges available on each channel are +/-10V, +/-5V, +/-1V, +/-200mV, +/-100mV, +/-30mV, +/-20mV, +/-10mV.

Includes Power and RS232 comms cable, RS232 USB Dual Converter

AIM 075

Note - A Windows 7 enabled computer is to be provided by the user for the installation of the GDS Lab software, the specifications for the same are available on request from Aimil



Load Cell

- Display of Displacement, load and pore pressure
- Digital Read-out minimizes operator error
- Reduces operator time and involvement
- Plug-in transducer module system
- Easy to install
- Inbuilt DAQ (on order at extra cost)
- Facility for connecting read-out units to PC for Data Acquisition

With an external load cell, 10 kN capacity, Pore Pressure Transducer, 20 kg/cm² capacity, an LVDT (Displacement Sensor) having a range of 0-20mm mm and a 4/3 - Channel Digital Indicator which has been specially designed to meet the requirements of Triaxial Test.

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

The equipment consist of the following replaceable parts :

AIM 08501

Mode of Display

Digital Indicator

: Micro controller based multi line alpha numeric LCD display for monitoring simultaneously four / three parameters.

AIM 08502

Capacity

: 10 kN

Max. overload capacity

: 10% of the rated

Load Cell excitation

: 5 V, DC

Resolution

: 0.01 kN

Sensing element

: Strain gauges in full bridge configuration

AIM 08503

Capacity

: 20 kg/cm²

Max. overload capacity

: 150% of rated

Pressure Cell Excitation

: 5V, DC.

Resolution

: (0.01 kg/cm²).

Sensing element

: Strain Gauges in full bridge configuration.

AIM 08504

Range

: 0-20 mm

Sensing element

: LVDT

Pore Pressure Transducer

Displacement Transducer

GDS Linear Displacement Transducer with 2m Cable and DIN plug to suit GDS Data Loggers. Linear Strain Type (Strain gauge based). Range: 50mm Accuracy:<0.075%
Full Scale Output voltages at 10V excitation (Nominal): 50mm=74-79mV



GDS Software

GDS LAB Control Software

The GDSLAB control and acquisition software is a highly developed, yet extremely flexible software platform. Starting with the Kernel module and the ability to perform data acquisition only, additional modules may be chosen for your testing requirements.

The standard Aimil - GDS system includes the following modules:

- GDSLAB - The initial Kernel Module
- Standard Saturation & Consolidation Module
- Standard Triaxial Module with UU, CU, CD and Pore Pressure Measurement
- GDSLAB Reporting Software for easy reporting of test results

Using the modules mentioned above it is possible to conduct computer controlled tests and to measure, record and analyze all the main Triaxial tests, namely, UU, CU and CD tests

Some advanced modules that are available on request at an additional cost are:

- Stress Path Testing (p , q and s , t)
- Advanced Loading Tests
- Unsaturated Testing
- K_0 Consolidation
- Permeability Evaluation

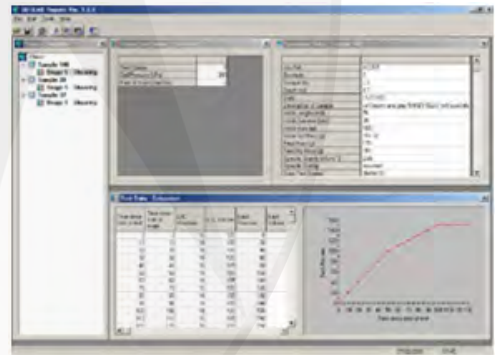
A text file (*.ini) or initialisation file is created that describes the hardware connectivity to the PC. The hardware layout is available in graphical format via the GDSLAB 'object display'. This makes setting up the devices and checking the connectivity extremely simple.

GDSLAB Reports

GDSLAB Reports is a presentation package conforming to international standards.

This program is used to present data which is saved in a GDSLAB data file or input by hand.

GDSLAB REPORTS is a program which combines the simplicity of a MS Windows® user interface, with the power of MS Excel®. Data obtained using GDSLAB control and data acquisition software may be selected, viewed and manipulated where necessary before being exported directly as an MS Excel® spreadsheet for easy user-friendly analysis.



Ordering Information:

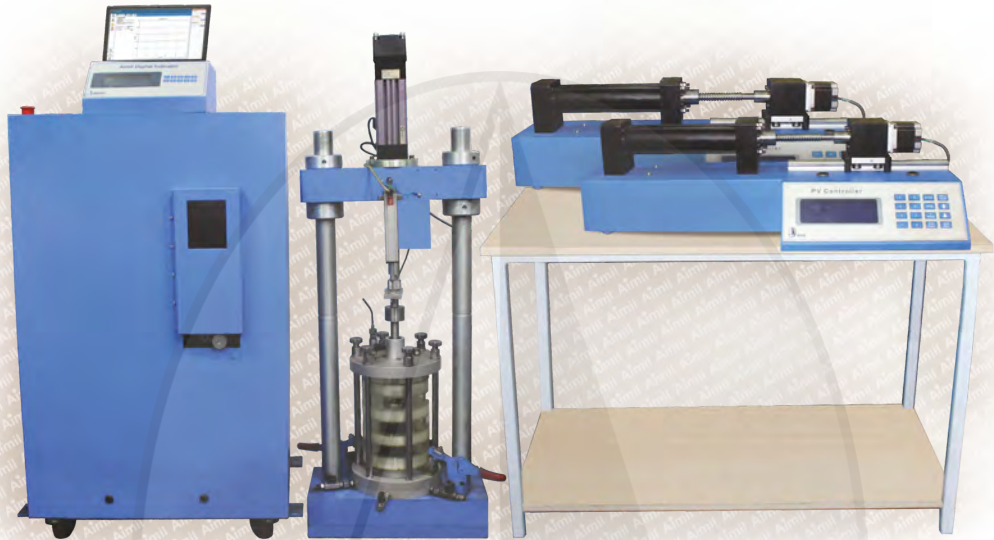
AIM 096-GDS

Aimil-GDS Automatic Triaxial Testing System



Cyclic / Static Triaxial Apparatus

AIM 096-CYC



AIM 096-CYC

Static Triaxial Testing IS: 2720 (Part XII)

Cyclic Triaxial Testing ASTM D5311 /ASTM D3999

Aimil brings to you a highly advanced Cyclic/Static Triaxial Test Apparatus. It is a computer controlled servo-hydraulic system, designed to perform static as well as cyclic loading stage of a triaxial test. The data acquisition & control system is provided with the same which is used for controlling hydraulic actuator together with a hydraulic power pack for applying dynamic pressure to perform close loop vertical load and displacement, to measure load, displacement and also pore water pressure. It is also provided with an air/water or pressure volume controller system which helps in controlling cell pressure and back pressure of system.

Servo-hydraulic dynamic (cyclic) Triaxial apparatus has the following features:

- PID vertical load/displacement closed loop loading. The system manages three closed loop axis.
- Vertical load/displacement: up to 10kN / ± 25 mm
- Cell pressure up to 1000 kPa
- Back pressure up to 1000 kPa
- Online Monitoring with measurement through graph
- Suitable for Specimen's size upto 100mm (150mm dia. as an option is also available on request)

Technical Specification :

Maximum frequency	0.01 Hz to 10Hz
Maximum Dynamic Load	up to 10 kN
Waveform	Sine, Triangular, Square
No. of control points	1 kHz
Control	Servo hydraulic
Back pressure controller	1000 kPa
Cell pressure controller	1000 kPa
Triaxial load frame	100 kN
Transducers	Load cell (type submersible) – up to 10kN
	Displacement – 50mm
	Pore Pressure 2 Mpa



Cyclic/Static Triaxial apparatus consists of the following components:

- Load Frame
- Hydraulic Power Pack
- Actuator
- Triaxial Cell
- Pressure volume controller / Constant Pressure System
- Transducer
- Data acquisition & control system
- Software
- Calibration

Load Frame

The Loading frame feature is a microprocessor controlled driven system, specifically designed to perform both static and dynamic tests. The Cross head is adjustable manually and has locking tests facility. It also has Provision to incorporate specimen's size upto 100mm with an option to increase upto 200mm

The Load Frame has the following specifications:

Capacity	100kN
Max. Horizontal Clearance	364 mm
Max. Vertical Clearance	910 mm
Specimen's size	upto 100 (150mm dia. as an option)
Dimension (LxWxH)	600x500x1440 mm
Weight	85 kg

Hydraulic Power Pack is supplied with the following specifications:

Max. working pressure	300 bar
Max. Oil delivery	70 LPM
Oil Tank capacity	500 ltrs
Hydraulic ports for connection of test frames	
Oil flow control via servo-controlled proportional valve	
Oil water cooling system with forced ventilation	
Operating temperature range for servo valve	-29°C to 135°C
Burst pressure	250% max. supply pressure
External leakage	zero
Vibration	30g, 3 axes
Power supply	220VAC, 3 phase

Actuator

The double acting hydraulic actuators are digitally controlled and include an external LVDT displacement transducer to control the position and the displacement of the position during the test.

- Dynamic loading capacity: up to 10 kN
- Dynamic vertical displacement ± 25 mm
- Nominal Operating frequency up to 10Hz

Triaxial Cell

Triaxial Cell of size 38mm, 50mm and 100mm dia is suitable for both static and dynamic test (compression and extension). Seal friction less cell with submersible load cell is connected to transfer bar, Sensor connectivity from bottom of cell like pore pressure, cell pressure etc.

Specimen's size ranges from 38 mm dia to 100mm dia. (150mm dia is also available as an optional extra)

Pressure volume controllers

Pressure/volume controllers are supplied to control the cell pressure and back pressure. Pressure/volume controllers are a robust stepper motor controlled system with a pressure range of up to 1Mpa.

Pressure/Volume Controller is a general-purpose water pressure source and volume change for the precise regulation and measurement of fluid pressure and volume change.

Salient Features

- Confining pressure - 0.1% of FRO
- Back pressure - 0.1% of FRO
- Volume change - 0.1% of FRO
- De-airing apparatus (optional item)
- Vacuum pump (optional item)



Soil Testing

The equipment is supplied with two options

a. Constant Pressure System Air Water Type with self-compensation with the following specs:

Range	0 to 1000kPa
Resolution	1Kpa
Accuracy	±1% of the indicated pressure

b. Pressure Volume Controllers

The Pressure/Volume Controller is a general-purpose water pressure source and volume change gauge.

Note: PV controller is for back pressure & Air water type system is for cell pressure, we can supply both with both the options.

Transducer

The equipment is supplied with following transducer specifications:

Submersible load cell available in various ranges such as 2kN, 5kN, 10kN

Displacement transducer ±25mm

Pore pressure transducer 2Mpa

Data acquisition & control system

The unit manages the three-closed loop axis (vertical load/displacement, cell and back pressure) with a control loop rate of 10 kHz. It provides the automatic control of the system and drives the servo-valve units of the three axis and two on/off valves, one connected to the drainage line and one connected to the air main supply of the triaxial cell. PID control an extremely efficient algorithm with larger gain ranges gives enhanced sensitivity, making it easier to tune the system and achieving a more accurate wave shape.

Software

Multitasking, User-friendly window-based software pre-installed on the computer is provided with the system. The software provided controls the following utilities and stages of a static & cyclic triaxial test:

- Specimen input parameter
- Type of control and its range

A. Static Triaxial Testing

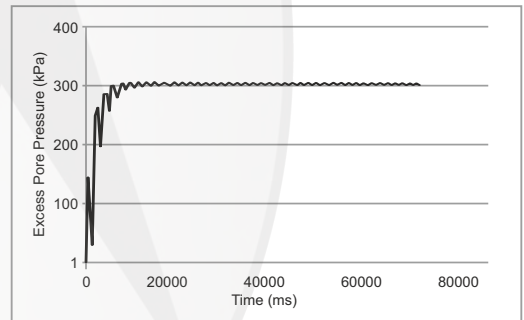
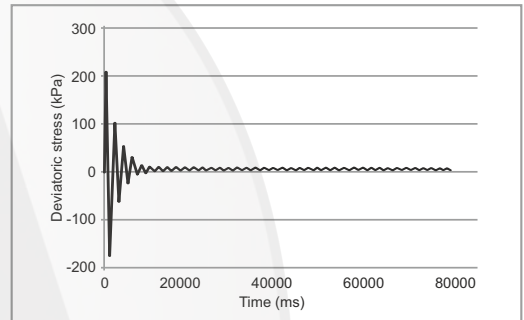
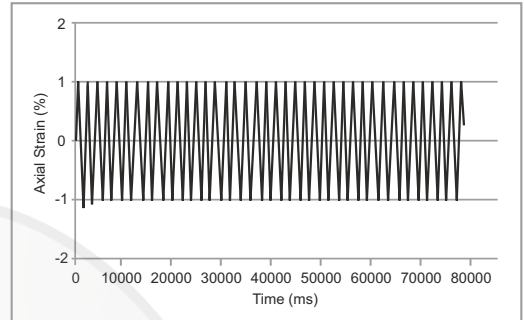
The analysis and reporting of following Tests can be performed on

- Unconsolidated Undrained Triaxial Test
- Consolidated Undrained Triaxial Test
- Consolidated Drained Test

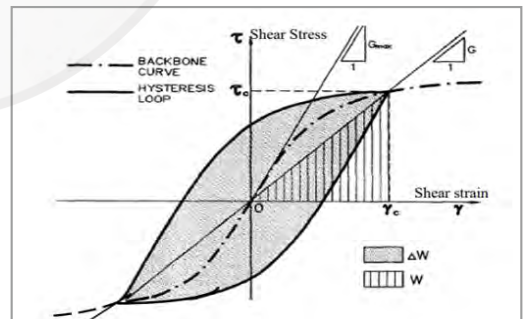
B. Cyclic Triaxial Testing

This test has the following features:

- Dynamic cyclic loading tests at required frequency
- Provides sinusoidal cyclic control of axial displacement or axial force.
- Plotting saved results gives cyclic stress paths based on average cross-sectional area i.e. the area of the volumetrically equivalent right cylinder
- A complete cycle of data can be saved every N cycles where the value of N is defined by the user



(Hysteresis Loop) Curve





Wave Forms



Ordering Information :

AIM 096-CYC Cyclic/Static Triaxial Apparatus

De-Aired Water Apparatus

AIM 097-1

The equipment has been designed specifically to meet the demand for de-aired water for use with

- Soil Testing Apparatus for reduction of time and labour to consolidate soil samples.
- For simultaneous flushing of many hydraulic Piezometer lines in dams and earth works to considerably reduce labour and disturbance at the top ends.

It is particularly important that only de-aired water is used in the Pore Pressure measurement system. Any dissolved air in the water leads to error in measurement of Pore Pressure, particularly at low pressure.

Salient Features :

- Fully Microprocessor Controlled
- Real Time clock Function included
- Oil Free Vacuum pump
- The unit is fully automatic and shut itself off when the de-airing program is complete

It is compact self contained unit, will de-air quickly and efficiently reduce levels of dissolved oxygen, acceptable for geotechnical test methods.

Air is removed from the water by a vacuum system which continuously circulates the water in the tank.

The unit is supplied with Perspex Water Container which will hold a maximum of 15 ltr of water. Input and output lines are fixed with 4mm (approx.) and 6mm (approx.) ID of plastic tubing respectively.

Suitable for operation on 220 V, 50 Hz, Single phase, AC Supply.



AIM 097-1

Ordering Information :

AIM 097-1 De-Aired Water Apparatus



Geotechnical Software for Testing, Analysis and Reporting

AIM 10121-1, AIM 10122-1, & AIM 10123-1

The analysis and reporting of following Tests can be performed

- Unconsolidated Undrained Triaxial Test
- Consolidated Undrained Triaxial Test
- Consolidated Drained Test

Common Features:

- The Software allows selection of Indian Standards for analysis as required.
- Tests can be performed in SI, Imperial or metric Units.
- Clear and easy to use. Test information is presented on menu driven screen.
- Each package guides through the test procedure in a very user-friendly way.
- The software directly reads the data format for analysis from Aimil DAQ.
- An option to enter the data manually and save it in a format understood by "Aimil" makes the system so flexible for those, who have only the experimental setup without the automatic Data Acquisition or Data logging system.
- Extensive search functions are available based on Date of Analysis, Analysis done by different user accounts, or search based on duration etc. For easy retrieval of old data.
- The default reports are generated automatically, in crystal reports and can be printed directly. The reports can also be exported to Word, Excel or pdf formats and the usage is governed by the third-party license that are available with the users.
- Customizable Report Header / Footer.
- Database backup and restore facilities are available.
- Complete User activity logging is available.

Special features for all Triaxial Test (UU, CU, CD)

- Test information format
- Sample information format
- Graph editing facility
- Show all Graph along with related data
- Scale setting facility for graph
- Manual data entry facility
- Shear stage data, graph along with data shown in one page
- Direct print of Analysis data
- Compliance to Indian standard.
- Facility to export to pdf and Excel format easily

UU Test Module

Graphs available with UU Test Module

Deviator Stress Vs Axial Strain (single data)
Deviator Stress Vs Axial Strain (All)
Mohr Circle with Fine and coarse adjustment
Facility of Stress path parameter graph along with related data (it is also called (P,q plot)
Online graph load Vs Displacement (working with DAQ only)
Online stress and strain curve (working with DAQ only)

CU Test Module

Special Features available with CU Test Module

Fine and coarse adjustment in Mohr Circle graph
Consolidation stage data facility Saturation stage data facility (manual)

Graphs available with CU Test Module

Deviator stress Vs axial strain (single specimen data)
Volume Change Vs Square Root time
Effective Principal stress ratio Vs Axial strain
Pore pressure Vs Axial strain (single specimen data)
Deviator stress Vs Axial strain (All Specimen)
Effective Principal stress ratio Vs Axial strain (All Specimen)
Facility of Stress path parameter graph along with related data
Online graph - Load Vs Displacement (working with DAQ only)
Online stress and strain curve (working with DAQ only)

CD Test Module

Special Features available with CD Test Module

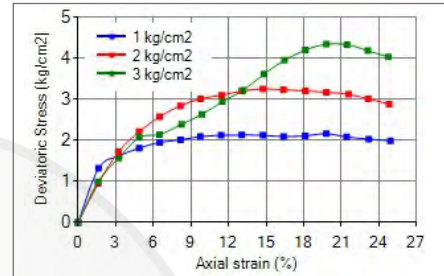
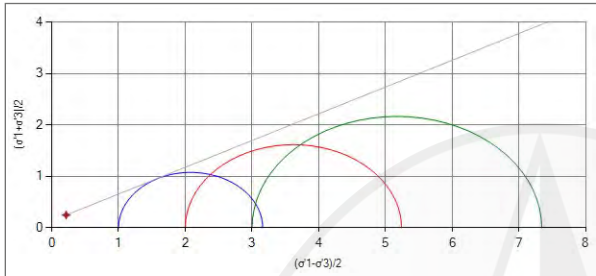
Fine and coarse adjustment in Mohr Circle graph
Consolidation stage data facility
Saturation stage data facility (manual)
Shear stage data, graph along with data shown in one page
Manual data entry facility for (shear stage, Consolidation stage, saturation stage)

Graphs available with CD Test Module

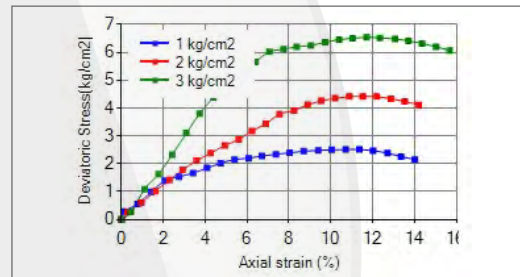
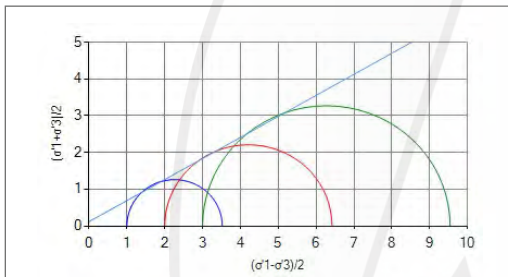
Membrane Correction Volumetric strain Vs Root of time
Deviator stress Vs Axial strain (single specimen data)
Principal stress ratio Vs Axial strain (single specimen data)
Axial strain Vs Volumetric strain
Deviator stress Vs Axial strain (All Specimen)
Principal stress ratio Vs Axial strain (All Specimen)
Facility of Stress path parameter graph along with related data
Online graph - Load Vs Displacement
Online stress and strain curve



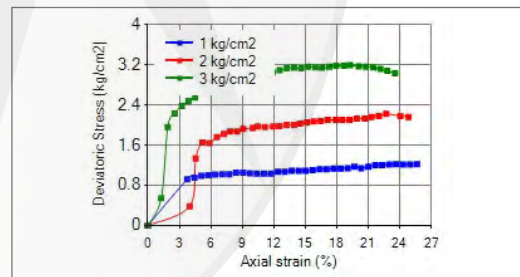
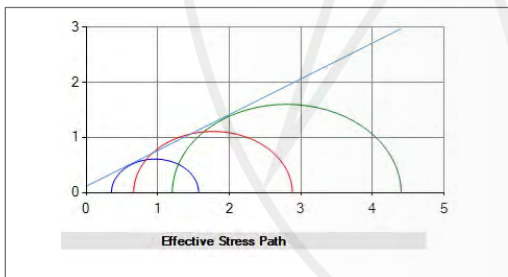
Unconsolidated Undrained Triaxial Test



Consolidated Drained Triaxial Test



Consolidated Undrained Triaxial Test



Analysis and Reporting software module Ordering Information:

AIM 10121-1	Aimil Analysis and Reporting software Module for Consolidated Undrained Triaxial Test for single user license
AIM 10122-1	Aimil Analysis and Reporting software Module for Unconsolidated Undrained Triaxial Test for single user license
AIM 10123-1	Aimil Analysis and Reporting software Module for Consolidated Drained Triaxial Test for single user license



Direct Shear

Ref. Standards IS:2720 (Part 13), BS 1377, ASTM D 3080

The Direct Shear test is carried out with an apparatus consisting of a square divided into two halves. The specimen, contained in the box, is subjected to a constant normal load while an increasing horizontal force is applied to one of the sections of the shear box. This force causes a shear failure along the junction between the box sections. The shear force and the normal load are measured directly. The rate of strain is adjusted by the speed of the horizontal force applied. The loading unit has V-strips on which the shear box housing rests. Suitable for specimens of size 60×60×25mm.

The precalibrated load yoke helps counter balance the loading system. The load yoke with direct and through lever system for applying normal load upto 3 kg/cm² capacity, fixtures for proving ring, brackets for holding consolidation and strain dial gauges are provided. The lead screw connected to the shear box housing helps application of shear stress.

Suitable for operation on 220V, 50Hz, Single phase, AC Supply.

Models offered are:

Direct Shear Test Apparatus, 2 kN

AIM 104

Ref. Standards IS :11229, 2720 (Part 13)

Type of Shear	:	Direct / Residual Measurement
Operation	:	Motorised
Rates of Strain	:	1.25, 0.625, 0.25, 0.125, 0.05, 0.025, (mm/min)
	:	0.01, 0.005, 0.002, 0.001, 0.0004, 0.0002
Specimen Size	:	60 x 60 x 25 mm



AIM 104

The equipment consist of the following replaceable parts :

AIM 10401	Shear Box Assembly	
This assembly comprises of :		
AIM 1040101	Halves of the Shear Box	2 Nos.
AIM 1040102	Plane Gripper Plate	2 Nos.
AIM 1040103	Perforated Gripper Plate	2 Nos.
AIM 1040104	Porous Stone	1 No.
AIM 1040105	Top Loading Pad	1 No.
AIM 1040106	Base Plate	1 No.
AIM 10402	Shear Box Housing with two linear bearing case with steel ball	1 No.
AIM 10405	Specimen Cutter	1 No.
AIM 10410	Surcharge Weights to attain normal stress of 3 kg/cm ²	1 Set
This surcharge weight set comprises of following weights :		
	0.05 kg/cm ²	4 Nos.
	0.10 kg/cm ²	1 No.
	0.20 kg/cm ²	1 No.
	0.50 kg/cm ²	3 Nos.
	1.00 kg/cm ²	1 No.
AIM 264	Compression Proving Ring, 2 kN capacity	1 No.
AIM 072	Dial Gauge 0-25 × 0.01mm	2 Nos.



Digital Direct Shear Test Apparatus, 2kN

AIM 105

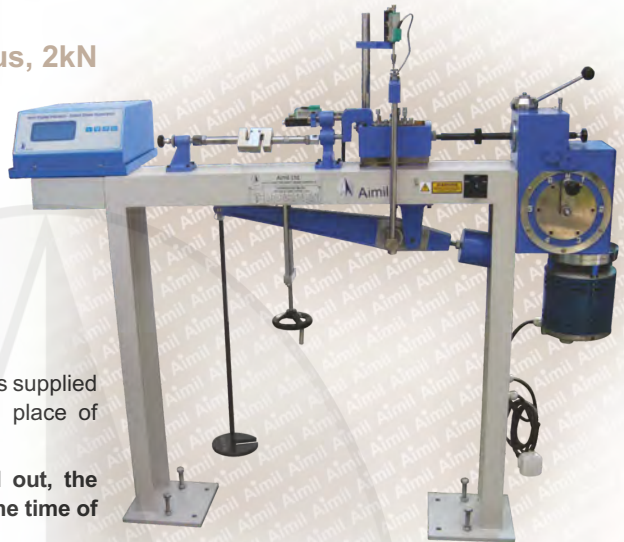
Ref. Standards IS:2720 (Part 13), IS:11229

Salient Features :

- Digital readout minimises operator error.
- Reduces operator time and involvement.
- Direct reading in engineering units.
- Pre-calibrated before despatch.
- Plug-in transducer module system.

The apparatus is similar to AIM 104 model but it is supplied with the AIM 10501 Digital Conversion Kit, in place of Proving Ring and Dial Gauges.

Note: If residual shear test is to be carried out, the request for modification should be raised at the time of placing order.



AIM 105

AIM 10501 Digital Conversion Kit consists of :

AIM 1050101	Digital Indicator	1 No.
Mode of Display	: Micro controller multi line alpha numeric LCD display for all channel simultaneously (No need for channel selection)	
No of channels		3 Nos.
AIM 1050102	Load Cell	1 No.
Capacity	: 2 kN Universal Type	
Max. overload	: 110% of the rated capacity.	
Sensing element	: Strain Gauges in full bridge configuration.	
AIM 1050103	Displacement Sensor	2 Nos.
Range	: 0-20mm.	
Sensing element	: LVDT	

Digital Direct Shear Test Apparatus, 2kN, with Aimil 'DAQ' and Aimil Analysis Software

AIM 105-6

The apparatus is similar to AIM 105 model but it is supplied with the AIM 10501-D Digital Conversion Kit with controller chip & AIM 10124-1 instead of AIM 10501



Mu Direct Shear Test Apparatus, 2kN

AIM 105-2

Ref: Standard IS : 2720 (Part XIII); ASTM D3080; BS 1377

The Loading head with motor drive system, enclosed in a robust case, contain integral measurement electronics for the measurement of load, vertical and horizontal displacements has been designed for floor mounting. Supplied complete with carriage, loading hanger and 10:1 lever loading device. Suitable for specimens of size 60×60×25mm.

Safety forward and reverse travel limit switches are fitted as standard and monitored through the electronics system control. The parameter entry through keypad and the LCD display provide the user utmost comfort and simplicity in operation and allows the user a host of features, which include pause and speed reset during a test, RS232 for computer control. A return to start datum provides a positive means of reversing the shear box when either preparing for a new test or continuing with residual testing procedures. The stepper drive mechanism uses a microprocessor to achieve a precision loading rate of 0.00001 to 9.99999mm / minute.



AIM 105-2

Suitable for operation on 220 V, 50 Hz, Single phase, AC Supply.

Salient Features :

- Microprocessor control
- Large on-board LCD screen display
- Direct data entry via key pad.
- Rapid approach and return to start datum
- Fully variable speed, 0.00001 to 9.99999mm/minute
- Specimen size 60x60x25mm

Specifications :

Electronics :

Mode of Display : Micro controller multi line alpha numeric LCD display for all channels simultaneously
(No need for channel selection)

Channels 3 Nos.

Transducers

Load : Universal type load cell, 2kN capacity 1 No.

Displacements : LVDT with measurement range 0-20mm travel, 2 Nos.

Speed Range

Standard Speeds : 0.00001 to 9.99999 mm / minute

Fast forward/reverse : 15mm / minute

The equipment consists of the following replaceable parts :

AIM 10401 Shear Box Assembly 1 Set

AIM 10402 Shear Box Housing with two linear bearing case with steel ball 1 Set

AIM 10405 Specimen Cutter 1 No.

AIM 10410 Surcharge Weights to attain normal stress of 3 kg/cm² 1 Set



Mu Direct Shear Test Apparatus, 2kN, with DAQ & Aimil Analysis Software

AIM 105-5

In addition to the specifications & items mentioned above in AIM 105-2. It has the following items also.

AIM 101-1	DAQ controller chip	1 No.
AIM 10124-1	Aimil Analysis and Reporting software Module for Direct Shear Test for single user license	1Set



AIM 105-5

Large Direct Shear Apparatus, Motorised, 50 kN

AIM 106 & AIM 106-1

Ref. Standards IS:2720 (Part 39, Section 1) IS:11593

For testing sands, gravel, gravelly clays and clay gravels for use in rolled fill embankments.

Operation	: Motorised
Rates of Strain	: 72 speeds ranging from 0.0014 to 10.16 mm/min.
Specimen Size	: 30 x 30 x 15 cm
Change gears	: 12
Shear Load capacity	: 50 kN
Vertical stress	: 500 kN/m ²

Suitable for operation on 415V, 50Hz, Three phase, AC Supply.

The equipment (AIM 106) consist of the following replaceable parts :

AIM 10601	Shear Box Assembly	1 No.
This assembly comprises of :		
AIM 1060101	Plane Gripper Plate	2 Nos.
AIM 1060102	Perforated Gripper Plate	2 Nos.
AIM 1060103	Perforated Spacer Plate	2 Nos.
AIM 1060104	Base Plate	1 No.
AIM 1060105	Top Loading Pad	1 No.
AIM 10607	Shear Box Housing with two Ball Roller Strips	1 No.
AIM 10605	Surcharge Weights 9 Nos, each to give 50 kN/m ² (0.5 kg/cm ²) and 2 Nos, each to give 25 kN/m ² (0.25 kg/cm ²)	1 Set
AIM 073	Dial Gauge 50 mm travel, 0.01 mm least count	2 Nos.
AIM 274	Compression Proving Ring capacity 50 kN	1 No.

Digital Large Direct Shear Test Apparatus, 50kN

AIM 106-1

The apparatus is similar to AIM 106 but it is supplied with AIM 10604 Digital conversion kit in-place of dial gauge & proving ring.



AIM 106-1



Geotechnical Software for Testing, Analysis and Reporting

Analysis and Reporting Software Module for Direct Shear Test for single user license

AIM 10124-1

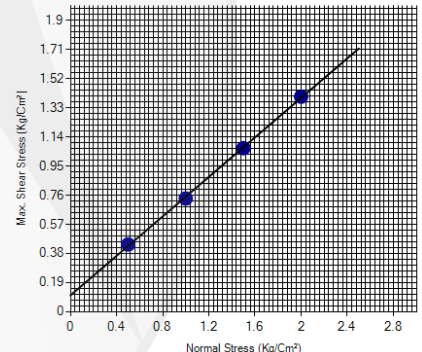
Common Features for all the tests:

- The Software allows selection of Indian Standards for analysis as required.
- Tests can be performed in SI, Imperial or metric Units.
- Clear and easy to use. Test information is presented on menu driven screen.
- Each package guides through the test procedure in a very user friendly way.
- A database is set up to store and manage completed analysis records. Currently MS – Access is offered as default database. For other database systems like SQL etc. such third party license is required to be obtained by the user.
- The software directly reads the data format for analysis from Aimil DAQ
- An option to enter the data manually and save it in a format understood by "Aimil Soil Software" makes the system so flexible for those, who have only the experimental setup without the automatic Data Acquisition or Data logging system.
- Extensive search functions are available based on Date of Analysis, Analysis done by different user accounts, or search based on duration etc. For easy retrieval of old data.
- The default reports are generated automatically, in crystal reports and can be printed directly. The reports can also be exported to Word, Excel or pdf formats and the usage is governed by the third party license that are available with the users.
- Customizable Report Header / Footer.
- The inbuilt utilities include Master Unit Converter, Unit conversion Calculator, besides the normal and scientific system calculators.
- Database backup and restore facilities are available.
- Complete User activity logging is available.

Special Features & graphs for Direct Shear Analysis Software

AIM 10124-1

- Sample information
- Test information
- Consolidation stage
- Shearing stage
- Stress path parameters
- Horizontal Displacement VS Vertical Displacement graph
- Height Vs Sq. root of time graph
- Shear stress Vs Horizontal Displacement
- Horizontal Displacement Vs Vertical Displacement (All)
- Shear stress Vs Horizontal Displacement (All)



Direct Shear Test

Ordering Information:

AIM 104	Direct Shear Test apparatus, 2 kN
AIM 105	Digital Direct Shear Test Apparatus, 2 kN
AIM 105-6	Digital Direct Shear Test Apparatus, 2kN with Aimil 'DAQ' & Aimil Analysis Software
AIM 105-2	Mu Direct Shear Test Apparatus, 2kN
AIM 105-5	Mu Direct Shear Test Apparatus, 2kN with Aimil DAQ & Aimil Analysis Software
AIM 106	Large Direct Shear Test Apparatus, 50 kN
AIM 106-1	Digital Large Direct Shear Test Apparatus, 50 kN
AIM 10124-1	Aimil Analysis and Reporting software Module for Direct Shear Test for single user license

Note: As per BS/ASTM is also available.



Vane Shear

Vane Shear Tests are conducted where it is difficult to obtain suitable specimens or where intrusion from a sampling tube may cause too much of a disturbance.

The validity of strength test results carried out on soils which have a shear strength in the order of 15 kN/m^2 or lower, is very largely dependent on the care and skill with which the operator conducts the test. Disturbance of these types of soft soil, particularly the sensitive clays, takes place when sampling tubes are pushed into them. Experience has shown that carefully controlled compression test results can be related to figures obtained by pushing a small vane into the soil rotating at the controlled rate and measuring the force required to maintain a maximum reading of resistance.

Laboratory Vane Shear Apparatus, Motorised

AIM 108-1

Ref. Standard IS:2720 (Part 30)

Consists of a special motor, adjustable in height by means of a lead screw rotated by a drive wheel to enable the vane to be lowered into the specimen. Rotation of the vane is by means of an electric motor turns the upper end of a calibrated torsion spring to give a rotation of $0.1^\circ/\text{sec}$. The vane shaft is attached through the hollow upper shaft to a resettable pointer which indicates the angle of torque on a dial graduated in degrees. The dial reading multiplied by spring factor gives the torque.

Rate of rotation : $1/60$ rpm

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



AIM 108-1

The equipment consist of the following replaceable parts :

AIM 10801	Container	1 No.
AIM 10802	Set of 4 Springs, (one each of capacity 2 kg-cm, 4 kg-cm, 6 kg-cm and 8 kg-cm)	

Ordering Information:

AIM 108-1 Laboratory Vane Shear Apparatus Motorised

Note: • As per BS/ASTM is also available.
• Springs are supplied without Calibration Certificate.



Compaction

AIM 110, AIM 111, AIM 112, AIM 112-H, AIM 113-L & AIM 113

Soil compaction is a fundamental requirement for the construction of earth fill for dams, reservoirs, canal embankments, highways, railways and runways. The relationship between soil moisture content and compacted dry density is very useful for deciding construction specifications and quality control of compacted earthfill. While designing a soil retaining structure, the strength and deformation behaviour of soil is evaluated by testing soil specimen compacted to the density as would be achieved during construction. The construction quality control is essentially to check the density of compacted soil achieved in the field, thereby checking its strength.

Compaction Test Apparatus, Manual

Ref. Standards IS:2720 (Part 7), IS:2720 (Part 8) IS:9198, IS:10074, BS:1377 ASTM D 698, D 1557

Details of various models of manual Compaction Test Apparatus are given in table below :



AIM 110

Cat. No.	Compaction mould, complete with Collar and Base Plate, made of Gunmetal	Rammer	Remarks
AIM 110 Compaction Test Apparatus for light compaction	AIM 11001 100 mm ID, 127.3 mm height 1,000 ml volume (IS:10074)	AIM 11002 2.6 kg x 310 mm fall as per IS: 9198	Ref. Standard IS:2720 (Part VII) for light compaction test
AIM 111 Compaction Test Apparatus for heavy compaction	AIM 11101 150 mm ID, 127.3 mm height 2,250 ml volume (IS:10074)	AIM 11102 4.9 kg x 450 mm fall as per IS: 9198	Ref. Standard IS:2720 (Part VIII) for heavy compaction test
AIM 112 Proctor Compaction Apparatus as per BS code	AIM 11201 Proctor Mould 105 mm ID, 115.5 mm height 1,000 ml volume	AIM 11202 2.5 kg x 300 mm fall	Ref. Standard BS:1377-4 for light compaction test.
AIM 112-H Compaction Apparatus for heavy Compaction as per BS code	AIM 11201-H Proctor Mould 152 mm ID, 127 mm height 2305 ml volume	AIM 11202-H 4.5 kg x 450 mm fall	Ref. Standard BS:1377-4 for heavy compaction test.
AIM 113-L Compaction Apparatus for light Compaction as per ASTM code	AIM 11301-L Compaction Mould 101.60 mm ID, 116.40 mm height 944 ml volume	AIM 11302-L 2.49 kg x 305 mm fall	Ref. Standard ASTM D 698 for light compaction test
AIM 113 Proctor Compaction Apparatus as per ASTM code	AIM 11301 Compaction Mould 152 mm ID, 116.4 mm height 2,124 ml volume	AIM 11302 4.54 kg x 457 mm fall	Ref. Standard ASTM D1557 for heavy compaction test

Note: Compaction mould complete with collar, baseplate in mild steel, can also be supplied

Ordering Information:

AIM-110	Compaction Test Apparatus for light compaction
AIM 110-MS	Compaction Test Apparatus, Manual -Light Compaction made of Mild Steel
AIM-111	Compaction Test Apparatus for heavy compaction
AIM-111-MS	Compaction Test Apparatus, Manual-Heavy Compaction made of Mild Steel
AIM-112	Proctor Compaction Apparatus as per BS code
AIM-112-H	Compaction Apparatus for heavy compaction as per BS code
AIM-113	Proctor Compaction Apparatus as per ASTM code
AIM-113-L	Compaction Apparatus for Light Compaction as per ASTM Code



Universal Automatic Compactor

AIM 114-2, AIM 114-2-BS & AIM 114-2-ASTM

Ref Standard IS: 2720 (Part 7 & 8), BS: 1377-4, ASTM: D698 & D1557
Invariably in every soil laboratory, compaction and penetration tests on soils are carried out regularly. The electrically operated mechanical compaction process eliminates the tedious hand compaction process and results in a considerable saving of time. Two rammers with two different stroke lengths are provided. This makes the apparatus suitable to carry out all the normal compaction operations required in soil testing laboratories including the CBR tests.

This is a new design motor driven mechanical compactor, useful for soil compaction moulds as per IS, BS & ASTM. The rammer travels across the mould and the table rotates the mould in equal steps on a stable base. The number of blows per layer can be set at the beginning of the test.

Rammer - Circular faced adjustable weight as per IS, BS & ASTM

Drop - Adjustable as per IS, BS & ASTM

Supplied with mild steel mould

The equipment is suitable for operation on 220 V, 50 Hz, Single Phase, AC supply.



AIM 114-2

Ordering Information:

AIM 114-2	Universal Automatic Compactor with mild steel compaction mould as per IS, AIM-11001-S & AIM-11101-S
AIM 114-2-BS	Universal Automatic Compactor with mild steel compaction mould as per BS, AIM-11201-S & AIM-11201-H-S
AIM 114-2-ASTM	Universal Automatic Compactor with mild steel compaction mould as per ASTM, AIM-11301-L-S & AIM-11301-S
AIM 114-3	Universal Automatic Compactor with gun metal compaction mould as per IS, AIM-11001 & AIM-11101



Relative Density

Relative density relates the dry density of cohesionless soil to the maximum and minimum densities. The degree of compaction of cohesionless soil can be stated in terms of relative density.

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

Relative Density Apparatus

AIM 115-1

Ref Standard IS: 2720 (Pt XIV)

The equipment consist of the following replaceable parts :

AIM 11501	Vibrating Table, Size 750 x750 mm	
AIM 11502	Cylindrical Metal Unit Weight Mould, 3000ml capacity	1 No.
AIM 11503	Guide Sleeve with clamp assembly, for AIM 11502	1 No.
AIM 11504	Surcharge base plate for AIM 11502	1 No.
AIM 11505	Handle for AIM 11504 & AIM 11509	2 No.
AIM 11506	Surcharge Weight for AIM 11502. The total weight together with AIM 11504 & AIM 11505 is equivalent to 140g/cm ² for the mould being used	1 No.
AIM 11507	Cylindrical Metal Unit Weight Mould 15000 ml capacity	1 No.
AIM 11508	Guide Sleeve with clamp Assembly for AIM 11507	1 No.
AIM 11509	Surcharge base plate, for AIM 11507	
AIM 11510	Surcharge weight for AIM 11507. The total weight together with AIM 11509 & AIM 11505 is equivalent to 140g/cm ² for the mould being used	1 No.
AIM 11511	Dial Gauge Holder	1 No.
AIM 11512	Calibration Bar, 75x300x3 mm	1 No.
AIM 072	Dial Gauge 25 mm travel, 0.01 mm least count, with an extension piece	1 No.



AIM 115-1

Ordering Information:

AIM 115-1 Relative Density Apparatus

Optional Accessories :

AIM 11513 Weight Handling Equipment

AIM-9491 Standard Sand Grade-I

AIM-9492 Standard Sand Grade-II

AIM-9493 Standard Sand Grade-III



California Bearing Ratio

Ref: Standards IS : 2720 (Part XVI), BS 1377; 1924; EN 13286-47/ASTM D 1883; AASHTO 193

The California Bearing Ratio test, (usually called CBR test) is an empirical test developed in California, USA for determining the Relative Bearing Ratio and expansion characteristics under known surcharge weight of base, sub-base and sub grade soils for the design of roads, pavements and runways. The CBR test is used extensively in selection of materials and control of subgrades.

The test can be performed in the laboratory on prepared samples or in-situ on location. It is important to appreciate that this test, being of an empirical in nature, is valid only for the application for which it was developed i.e., the design of highway base thickness.

Salient Features :

- Compact, bench top design
- Rapid Platen Adjustment
- Complete with stabilizing bar
- Options for mechanical or electronic measurement

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

Laboratory California Bearing Ratio Test Apparatus, Three speed

AIM 120

Ref. Standards IS:9669, IS : 2720 (Part XVI), BS 1377; 1924; EN 13286-47/ ASTM D 1883; AASHTO 193

The equipment consist of the following replaceable parts :

AIM 062-1	Load Frame, 50 kN Capacity, Three Speed 1.5, 1.25 & 2.5 mm/min
AIM 12001-GM	Mould-Gun Metal 150mm IDx175 mm H
AIM 12002-GM	Perforated Base Plate - Gun Metal, for AIM 12001 Mould
AIM 12003-GM	Extension Collar - Gun Metal 150 mm ID x 50 mm high
AIM 12004	Penetration Piston 50 mm face dia
AIM 12005	Adjustable Bracket for Penetration Dial Gauge
AIM 12006	Circular Metal Spacer Disc, with detachable handle, 148 mm dia x 47.7 mm high
AIM 12007	Annular Metal Weight 2.5 kg, 147 mm dia with 53 mm dia central hole
AIM 12008	Slotted Metal Weight 2.5 kg, 147 mm dia, with 53 mm dia slot
AIM 12009	Perforated Plate 148 mm dia, with adjustable stem and lock nut
AIM 12010	Metal Tripod for Dial Gauge
AIM 12011	Cutting Collar
AIM 11002	Rammer 2.6 kg, 310 mm controlled drop
AIM 11102	Rammer 4.9 kg, 450 mm controlled drop
AIM 274	Proving Ring Capacity 50 kN
AIM 072	Dial Gauge 25 mm travel, 0.01 mm least count

Laboratory California Bearing Ratio Test Apparatus, Three Speed with Mild Steel Moulds

AIM 120-MS

The outfit of this equipment is same as AIM 120 except for the moulds. The mould assembly i.e. mould, perforated base plate and extension collar are made out of Mild Steel (Zinc Plated instead of Gun Metal).

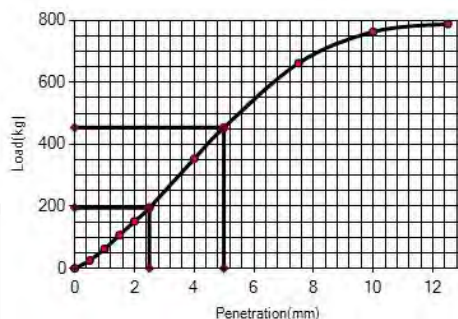


AIM 120-MS



Common Features for all the tests:

- The Software allows selection of British / Indian Standards for analysis as required.
- Tests can be performed in SI, Imperial or metric Units
- Clear and easy to use. Test information is presented on menu driven screen.
- Each package guides through the test procedure in a very user friendly way.
- A database is set up to store and manage completed analysis records. Currently MS – Access is offered as default database. For other database systems like SQL etc.. such third party license is required to be obtained by the user.
- The software directly reads the data format for analysis from Aimil DAQ
- An option to enter the data manually and save it in a format understood by “Aimil Soil Lab” makes the system so flexible for those, who have only the experimental setup without the automatic Data Acquisition or Data logging system.
- Extensive search functions are available based on Date of Analysis, Analysis done by different user accounts, or search based on duration etc. For easy retrieval of old data.
- The default reports are generated automatically, in crystal reports and can be printed directly. The reports can also be exported to Word, Excel or pdf formats and the usage is governed by the third party license that are available with the users.
- Customisable Report Header / Footer.
- The inbuilt utilities include Master Unit Converter, Unit conversion Calculator, besides the normal and Scientific system calculators.
- Database back up and restore facilities are available.
- Complete User activity logging is available.



Special Features & Graphs available for CBR Analysis Software

- Manual data entry facility
- Find out CBR value in % at 2.5mm and 5mm Penetration
- Graph for load vs Penetration (top side, bottom side and both)
- Graph correction facility available
- Graph expand facility

Ordering Information:

AIM-120	Analogue Laboratory California Bearing Ratio Test Apparatus, Three Speed, with Gun Metal Mould Assembly
AIM-120-MS	Analogue Laboratory California Bearing Ratio Test Apparatus, Three speed, with Mild Steel Mould Assembly
AIM-120-1	Analogue Laboratory California Bearing Ratio Test Apparatus, Four Speed, with Gun Metal Mould Assembly
AIM-120-MS-3	Analogue Laboratory California Bearing Ratio Test Apparatus, Four Speed, with Mild Steel Mould Assembly
AIM-121	Digital Laboratory California Bearing Ratio Test Apparatus, Three Speed, with Gun Metal Mould Assembly
AIM-121-MS	Digital Laboratory California Bearing Ratio Test Apparatus, Three Speed, with Mild Steel Mould Assembly
AIM-121-2	Digital Laboratory California Bearing Ratio Test Apparatus, Four Speed, with Gun Metal Mould Assembly
AIM-121-2-MS	Digital Laboratory California Bearing Ratio Test Apparatus, Four Speed with Mild Steel Mould Assembly
AIM-121-4	Digital Laboratory California Bearing Ratio Test Apparatus with Aimil DAQ & Aimil Analysis Module, Three Speed, with Gun Metal Mould Assembly
AIM-121-4-MS	Digital Laboratory California Bearing Ratio Test Apparatus with Aimil DAQ & Aimil Analysis Module, Three Speed, with Mild Steel Mould Assembly



Soil Testing

AIM-121-5 Digital Laboratory California Bearing Ratio Test Apparatus with Aimil DAQ & Aimil Analysis Module, Four Speed, with Gun Metal Mould Assembly

AIM-121-5-MS Digital Laboratory California Bearing Ratio Test Apparatus with Aimil DAQ & Aimil Analysis Module, Four Speed, with Mild Steel Mould Assembly

Optional Accessories :

AIM 12014 Annular Metal Weight 5 kg, 147 mm dia with 53 mm dia central hole.

AIM 12015 Slotted Metal Weight 5 kg, 147 mm dia with 53 mm dia slot.

AIM 12016 Soaking Tank for 6 Nos. CBR Moulds

AIM 12101 Digital Conversion Kit for CBR Test

AIM 12101-D Digital Conversion Kit with Aimil Data Acquisition Controller Chip

AIM 10116-1 Aimil Analysis and Reporting software Module for California Bearing Ratio Test for single user license

Note: As per BS/ASTM is also available.

The constituents of various models are detailed in the table.



Soil Testing

Cat. No.	AIM 120	AIM 120-MS	AIM-120-1	AIM-120-MS-3	AIM-121	AIM-121-MS	AIM-121-2	AIM-121-2-MS	AIM-121-4	AIM-121-4-MS	AIM-121-5	AIM-121-5-MS
AIM 062-1 Load Frame, Three Speed	1	1	-	-	1	1	-	-	1	1	-	-
AIM 062-E Load Frame, Four Speed	-	-	1	1	-	-	1	1	-	-	1	1
AIM 12001-GM Mould - Gun Metal	1	-	1	-	1	-	1	-	1	-	1	-
AIM 12002-GM Perforated Base Plate - Gun Metal	1	-	1	-	1	-	1	-	1	-	1	-
AIM 12003-GM Extension Collar - Gun Metal	1	-	1	-	1	-	1	-	1	-	1	-
AIM 12001-MS Mould -Mild Steel	-	1	-	1	-	1	-	1	-	1	-	1
AIM 12002-MS Perforated Base Plate - Mild Steel	-	1	-	1	-	1	-	1	-	1	-	1
AIM 12003-MS Extension Collar - Mild Steel	-	1	-	1	-	1	-	1	-	1	-	1
AIM 12004 Penetration Piston	1	1	1	1	1	1	1	1	1	1	1	1
AIM 12005 Adjustable Bracket	1	1	1	1	1	1	1	1	1	1	1	1
AIM 12006 Circular Metal Spacer Disc, with detachable handle,	1	1	1	1	1	1	1	1	1	1	1	1
AIM 12007 Annular Metal Weight	1	1	1	1	1	1	1	1	1	1	1	1
AIM 12008 Slotted Metal Weight	1	1	1	1	1	1	1	1	1	1	1	1
AIM 12009 Perforated Plate	1	1	1	1	1	1	1	1	1	1	1	1
AIM 12010 Metal Tripod for Dial Gauge.	1	1	1	1	1	1	1	1	1	1	1	1
AIM 12011 Cutting Collar	1	1	1	1	1	1	1	1	1	1	1	1
AIM 11002 Rammer	1	1	1	1	1	1	1	1	1	1	1	1
AIM 11102 Rammer	1	1	1	1	1	1	1	1	1	1	1	1
AIM 274 Proving Ring	1	1	1	1	-	-	-	-	-	-	-	-
AIM 072 Dial Gauge	1	1	1	1	-	-	-	-	-	-	-	-
AIM 12101 Digital Conversion Kit	-	-	-	-	1	1	1	1	-	-	-	-
AIM 12101-D Digital Conversion Kit with Aimil DAQ Controller Chip	-	-	-	-	-	-	-	-	1	1	1	1
AIM 10116-1 Aimil Analysis Software	-	-	-	-	-	-	-	-	1	1	1	1



Consolidation

Ref. Standards : IS:2720 (Part-XV), IS:12287, BS:1377, ASTM D2435

Consolidation of clay deposit leads to distress in buildings such as cracks and failures. Consolidation is reduction of volume of soil due to expulsion of water from its pore space caused by sustained loading. This phenomenon is time dependent. The one dimensional consolidation test performed on an undisturbed sample of clay is useful for understanding the history of the soil deposit. The test results can be used for calculating the settlement of structures built on clayey soil.

Consolidation Apparatus :

AIM 125, AIM 125-1, AIM 126, AIM 126-1, AIM 127, AIM 127-2, AIM 127-6, AIM 127-7, AIM 129, AIM 129-2, AIM 129-4 & AIM 129-5

The standard outfit comprises of a fixed ring type of consolidometer cell for testing specimens of 60 mm dia x 20 mm thick, but the unit is so designed that specimens of varying sizes from 50 mm dia to 100 mm dia can also be tested. Besides, the same loading unit can be used with floating ring consolidometer cells, which are supplied at extra cost.

The standard outfit is supplied with a set of weights to give a total pressure of 10 kg/cm^2 (besides a seating load of 0.05 kg/cm^2 on the specimen), but an additional set of weights is required to reach the full capacity of 20 kg/cm^2 .

The outfits for three-gang and six-gang are available in which three / six consolidometers can be mounted on a single frame. The consolidation may be measured by the conventional dial gauges or using the transducers and electronic readout unit.

Electronic Measurement System :

- Digital readout reduces the possibility of operator error.
- Direct reading in mm.
- Plug-in transducer module system.
- Facility for connecting readout unit to compatible logging or printing system.
- Compatible to existing Aimil Models.

Electronic measurement of the vertical consolidation of soil specimen, using a displacement transducer connected to a precalibrated readout unit, offers the operator all the advantages of a digital display without the errors which can occur while reading conventional dial gauges.

The basic equipment for monitoring the test comprises of a readout unit and a transducer module for connection to a consolidation frame. Consolidation is measured by mounting the transducer in the same position as a conventional dial gauge. The movement of the transducer stem performs exactly the same function as would the dial gauge spindle and the output is converted into an electrical signal. The signal is then displayed in true engineering units on the readout unit. For three gang unit or six gang unit, 3 or 6 transducer modules are used, but the readout unit is of three or six channel type.



AIM 125



AIM 126-1



Geotechnical Software for Testing, Analysis and Reporting

Analysis and Reporting Software Module for one dimensional consolidation (Oedometer) test for single use license.

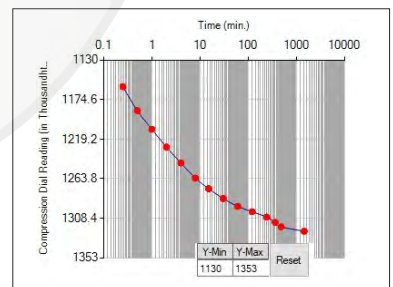
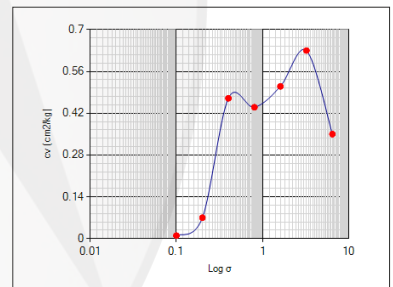
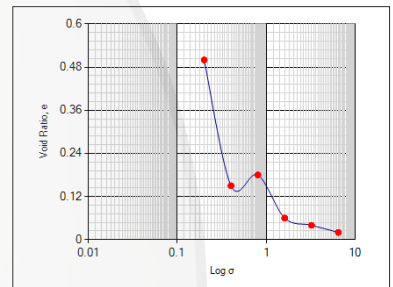
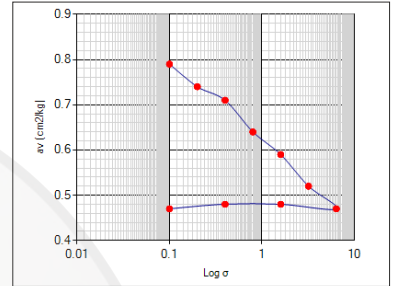
AIM 10125-1

Common Features for all the tests:

- The Software allows selection of Indian Standards for analysis as required.
- Tests can be performed in SI, Imperial or metric Units.
- Clear and easy to use. Test information is presented on menu driven screen.
- Each package guides through the test procedure in a very user friendly way.
- A database is set up to store and manage completed analysis records. Currently MS – Access is offered as default database. For other database systems like SQL etc. such third party license is required to be obtained by the user.
- The software directly reads the data format for analysis from Aimil DAQ
- An option to enter the data manually and save it in a format understood by "Aimil" makes the system so flexible for those, who have only the experimental setup without the automatic Data Acquisition or Data logging system.
- Extensive search functions are available based on Date of Analysis, Analysis done by different user accounts, or search based on duration etc. For easy retrieval of old data.
- The default reports are generated automatically, in crystal reports and can be printed directly. The reports can also be exported to Word, Excel or pdf formats and the usage is governed by the third party license that are available with the users.
- Customizable Report Header / Footer.
- The inbuilt utilities include Master Unit Converter, Unit conversion Calculator, besides the normal and scientific system calculators.
- Database backup and restore facilities are available.
- Complete User activity logging is available.

Special features & graphs available with consolidation software:

- Calculate dry density, initial void ratio and moisture content of specimen
- Calculate the pre consolidation pressure of the soil
- Software should be user friendly with option for manual as well as automatic recording system
- Plot time Vs Deformation readings and give the value of t_{50}
- Plots void ratio Vs effective stress increments. It should the C_c , M_v , A_v , C_v and C_s values for the desired loading cycles





Consolidation Apparatus : The constituents of various models are detailed in the table.

	AIM 125 Single gang	AIM 125-1 Single gang	AIM 126 3-gang	AIM 126-1 3-gang	AIM 127 Single gang Digital	AIM 127-2 Single gang Digital	AIM 129 3-gang Digital	AIM 129-2 3-gang Digital	AIM 127-6 Single gang Digital with Aimil DAQ & Aimil Software	AIM 127-7 single gang Digital with Aimil DAQ & Aimil Software	AIM 129-4 3-gang Digital with Aimil DAQ & Aimil Software	AIM 129-5 3-gang Digital with Aimil DAQ & Aimil Software
No. of Loading Units mounted on frame	1	1	3	3	1	1	3	3	1	1	3	3
AIM12502 Consolidation Cell Assembly consists of the following :												
AIM 1250201 Fixed ring with Guide ring	1	1	3	3	1	1	3	3	1	1	3	3
AIM 1250202 Top Porous stone	1	1	3	3	1	1	3	3	1	1	3	3
AIM 1250203 Bottom Porous stone	1	1	3	3	1	1	3	3	1	1	3	3
AIM1250204 Pressure Pad	1	1	3	3	1	1	3	3	1	1	3	3
AIM 1250205 Channelled base with water inlet	1	1	3	3	1	1	3	3	1	1	3	3
AIM 1250206 Gasket	1	1	3	3	1	1	3	3	1	1	3	3
AIM 1250207 Water Jacket	1	1	3	3	1	1	3	3	1	1	3	3
AIM 12503 Set of weights : 7 x 0.05 kg/cm ² 5 x 0.1 kg/cm ² , 6 x 0.2 kg/cm ² , 6 x 0.5 kg/cm ² , 5 x 1.0 kg/cm ²	1	1	3	3	1	1	3	3	1	1	3	3
AIM 12504 Water Reservoir with plastic tube, T - connection and a pinch cock	1	1	3	3	1	1	3	3	1	1	3	3
AIM 070 Dial Gauge, 5 mm travel, 0.002 mm least count	1	1	3	3	-	-	-	-	-	-	-	-
Electronic Instrumentation System												
AIM 128 Digital Conversion Kit, Single channel	-	-	-	-	1	1	-	-	-	-	-	-
AIM 128-D Digital Conversion Kit with Aimil DAQ Controller Chip, Single channel	-	-	-	-	-	-	-	-	1	1	-	-
AIM 130 Digital Conversion Kit, Three channel	-	-	-	-	-	-	1	1	-	-	-	-
AIM 130-D Digital Conversion Kit with Aimil DAQ Controller Chip, Three channel	-	-	-	-	-	-	-	-	-	-	1	1
AIM 10125-1 Aimil Analysis and Reporting Software Module for One Dimensional Consolidation (Odeometer) Test for single user license	-	-	-	-	-	-	-	-	-	1	1	1

Note: Consolidation Apparatus with six cell will be provided on request.



Soil Testing

Ordering Information:

AIM-125	Analogue Consolidation Apparatus, Single Gang with Dial Gauge 0.002 X 5mm
AIM-125-1	Analogue Consolidation Apparatus, Single Gang New Bench Model with Dial Gauge 0.002 X 5mm
AIM-126	Analogue Consolidation Apparatus, Three Gang with Three Dial Gauges 0.002 X 5mm
AIM-126-1	Analogue Consolidation Apparatus, Three Gang New Bench Model with Three Dial Gauges 0.002 X 5mm
AIM-127	Digital Consolidation Apparatus, Single Gang
AIM-127-2	Digital Consolidation Apparatus, Single Gang New bench Model
AIM-129	Digital Consolidation Apparatus, Three Gang Consisting of Indicator 1 No. & Displacement Sensor Range 0-20mm 3 Nos.
AIM-129-2	Digital Consolidation Apparatus, Three gang, New Bench Model Consisting of Indicator 1 No. & Displacement Sensor Range 0-20mm 3 Nos.
AIM-127-6	Digital Consolidation Apparatus Single Gang with Aimil DAQ & Aimil Analysis Software
AIM-127-7	Digital Consolidation Apparatus, Single Gang New Bench Model with Aimil DAQ & Aimil Analysis Software
AIM-129-4	Digital Consolidation Apparatus, Three Gang, New Bench Type Model with Aimil DAQ & AIMIL Analysis Software
AIM-129-5	Digital Consolidation Apparatus, Three Gang with Aimil DAQ & Aimil Analysis Software
AIM 10125-1	Aimil Analysis and Reporting software Module for one dimensional Consolidation Test for single user licence

Note: As per BS/ASTM is also available.

Optional Extras :

	Specimen Size			
	60mm dia x 20mm thick	50mm dia x 20mm thick	70mm dia x 20mm thick	100mm dia x 25mm thick
Consolidation Cell Assembly : Complete with Fixed Ring, Guide Ring, Pair of Porous Stones, Perforated Pressure Pad, Channeled Base, Gasket and Flanged Water Jacket	AIM 12502	AIM 12511	AIM 12512	AIM12513
Set of Weights to give 10 kg/cm ² Pressure (Comprising 29 assorted weights)	AIM 12520	AIM 12521	AIM12522	AIM 12523
Floating Ring type Consolidometer : Consolidation Cell Assembly complete with Fixed Ring and Guide Ring, Pair of Porous Stones, Pressure Pad and Cutting Collar	AIM 12530	AIM 12531	AIM 12532	AIM 12533
Set of Weights to give 10 kg/cm ² Pressure (Comprising 10 weights of 1.0 kg/cm ²)	AIM 12540	AIM 12541	AIM 12542	AIM 12543
Varying Head Stand Pipe 50 cm long with mm scale	AIM 12550	AIM 12550	AIM 12550	AIM 12550
Water Trough	AIM 12560	AIM 12560	AIM 12560	AIM 12560
Specimen Cutting Ring	AIM 12570	AIM 12571	AIM 12572	AIM 12573



Consolidation Apparatus, Automatic with Touchscreen

AIM 127-4-T

Ref. Std. : IS : 2720-15

The Automatic Consolidation Apparatus eliminates the use of the traditional hanging weight system. It is a compact, table top system with low power consumption and highly accurate output of results. The instrument minimises the human factor/error associated with the conventional testing method. The Instrument perform the test as per ASTM.

Technical Specification:

Loading Type	: Electromechanical
Load Capacity	: 5 kN
Displacement	: 0-10mm
Form Factor	: Compact, Table Top
Interface	: 7 inch resistive touchscreen with stylus
Loading Modes	: Manual and Automatic
No. of Steps for Loading	: 24
Data Logging	: Square Root and Logarithmic
Displacement resolution	: 0.001mm
Displacement Accuracy	: Within 1% of working range
Effective Pressure Resolution	: 0.01Kg/cm ²
Data Downloading	: Via Pen Drive
Dimensions	: 28cm x 34.5cm x 40.8cm without consolidation assembly
Net Weight	: 15Kgs (Approx.)
Gross Weight	: 40Kgs (Approx.) Excluding battery
Power	: 220VAC, 50 Hz
Battery Voltage	: 12V, 150Ah (2Nos)
Charging and Discharging Rate	: C/10
Battery Backup	: 4 days continuous operation without charging

Salient Features:

- Full Touchscreen based system
- No hanging weight system
- High accuracy
- Table top
- Virtually noise less operation

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



AIM 127-4-T



AIM 127-4-T-3

Ordering Information :

AIM 127-4-T Automatic Touchscreen Consolidation Apparatus, Single Gang with Aimil Analysis Software

AIM 127-4-T-3 Automatic Touchscreen Consolidation Apparatus, Three Gang with Aimil Analysis Software



Permeability

Permeability is a property of soil which permits flow of water through its interconnecting voids. Permeability is an important engineering property which governs the rate of settlement of saturated compressible soil layers and the rate of flow of aquifer. Permeability is taken into account for pumping ground water, spacing well points for de-watering foundation sites for excavation, retention of water in reservoirs, design of dams and selection of soils to be used for various zones of embankments of dams and reservoirs.

Coefficient of permeability can be computed from effective diameter of particles, porosity, specific surface and from consolidation test results. But permeability depends on numerous factors; hence, determination of permeability by direct laboratory method using an apparatus called Permeameter is considered more accurate. Specimen used in a permeameter is small, time taken is less and results obtained are accurate.

There are two types of Permeameters, namely Constant Head Permeameter and Falling Head Permeameter. Falling Head Permeameters are used for testing remoulded or undisturbed fine grained soil having less than 10^{-2} cm/sec coefficient of permeability and Constant Head Permeameters are used for coarse grained cohesion less soils.

Permeability Apparatus :

Ref. Standards IS:2720 (Part 17), IS:11209



Soil Permeability Apparatus (Falling Head Method)

AIM 131

For testing soil with coefficient of permeability in the range of 10^{-3} to 10^{-7} cm / sec and maximum particle size of 10 mm.

The equipment consist of the following replaceable parts:

- AIM 13101** Stand with three glass tubes of 6 mm, 10 mm and 20 mm dia approx.
- AIM 13110** Rubber Connection Tube 3m long, with Pinch Cock
- AIM 13116** Soil Permeability Cell Assembly

Ordering Information :

AIM 131 Soil Permeability Apparatus

Optional Accessories for Constant Head Method

AIM 13111 Overhead tank required for the constant head method made of steel, approx. 37.5 cm dia and 1m high. It is provided with an inlet port at the top, six outlets at the bottom with cocks, air inlet and water filling tube at the top. An arrangement to indicate the water level is also provided.

AIM 11002 Rammer 2.6 kg X 310 mm controlled fall

AIM 11102 Rammer 4.9 kg X 450 mm controlled fall

Note: As per BS is also available.



Swell Pressure

More than 20% of India's surficial deposits consist of expansive black cotton soil having swelling pressure, varying from 1 kg/cm² to as high as 3.5 kg/cm². These soil deposits heave considerably when they get wet and lose shear strength. Thus it is important to know about this property of the swelling soil at a given site specially where projects on roads, railways, irrigation, buildings, etc. are envisaged. Aimil provides the instrument required for determining this parameter.

Swell Test Apparatus

AIM 132

Ref. Standards IS: 2720, Part: 16

It is designed to determine the swelling pressure developed by soil specimens moulded to desired densities at known moisture contents, when soaked in water. The load applied to restrain the swelling is transferred on to a load measuring proving ring through a perforated swell plate and a load transfer bar. The proving ring is attached to the lead screw of hand operated load frame. A soaking tank is provided for saturating the specimen and the base of the mould provided has channels and radial grooves with connecting holes.

The equipment consist of the following replaceable parts :

- AIM 13201** Perforated Swell Plate 100 mm dia x 16 mm thick.
- AIM 13202** Spacer 100 mm dia x 12.7 mm thick.
- AIM 13203** Pair of Porous Stones 100 mm dia x 12.7 mm thick.
- AIM 13204** Load Transfer Bar
- AIM 13205** Steel Ball
- AIM 13206** Soaking Tank, 250 mm dia x 210 mm high
- AIM 13207** Load Frame, Hand operated, Capacity 5 kN
- AIM 13209** Mould 100 mm dia x 127.3 mm height
(1,000 ml volume) with base plate and collar.
- AIM 265** Proving Ring, 2.5 kN capacity.
- AIM 072** Dial Gauge 25 mm travel, 0.01 mm least count.



AIM 132

Ordering Information:

AIM 132 Swell Test Apparatus

Standard Penetration

Standard Penetration Test Set

AIM 133

Ref. Standards IS:2131, IS:9640

Standard Penetration Test is a powerful tool for measuring the penetration resistance of the ground and for relating it to the degree of compactness of cohesionless soil and consistency of cohesive soil. The results can be used for design of foundations. SPT is widely used for measuring the undisturbed strength of the soil and for assessing its resistance to liquefaction due to ground vibrations caused by earthquakes or other dynamic forces.

The Standard Penetration Resistance is measured as the number of blows 'N' required to drive a split spoon sampler to a depth of 300 mm using a 63.5 kg weight falling freely through a height of 750 mm.



AIM 133



The equipment consist of the following replaceable parts :

AIM 016 Split Spoon Sampler 50.8 mm OD and 38 mm ID. 1 No.

This sampler consists of :

AIM 01601	Body split lengthwise.	
AIM 01602	Shoe hardened with an inside cutting edge.	
AIM 01603	Head fitted with a ball check valve and adapter to connect 'A' type drill rod.	
AIM 019 - 1	Drive Weight Cast Iron, 63.5 kg, 78 mm bore ID approx.	1 No.
AIM 021	Guide Pipe Assembly Bore 73 mm OD approx.	1 No.
AIM 022	Tripod with Pulley and built-in Ladder.	1 No.
AIM 02404	'A' Type Drill Rods 0.5 mtrs.	2 Nos.
AIM 13301	Manila Rope 19mm dia 10 meter long	1 No.

Optional Accessories :

AIM 017 Split Spoon Sampler with Brass Liner, 50.8 mm OD and 35 mm ID

This sampler consists of :

AIM 01701	Body split lengthwise.
AIM 01702	Shoe hardened with an inside cutting edge.
AIM 01703	Head of split spoon sampler with adapter to connect A-type drill rod.
AIM 01704	Brass Liner.

Ordering Information:

AIM 133 Standard Penetration Test Set (with AIM 016, AIM 019-1, AIM 021, AIM 022, AIM 02404 & AIM 13301)

Optional Accessories

AIM-13302 Auger SPT Size 75mm dia

Dynamic Cone Penetration

Dynamic Cone Penetration Test Apparatus

AIM 134

Ref. Standard IS:4968 (Part - 1)

For determining the resistance of different types of soil strata to dynamic penetration of a 50 mm cone and thereby obtain an indication regarding their relative strength or density or both. The method helps reconnaissance survey of large area in a short time.

In some cases, especially if the depth is great, it may be difficult to pull out the cone after the completion of the test. Hence the cone without threads should be used in case of deep soundings as it may be left in the ground. For shallow depths, generally upto 15 m, if the conditions permit, the cone with threads may be used.

The equipment consist of the following replaceable parts :

AIM 13401	Dynamic Cone plain 50 mm base dia and cone angle of 60°	
AIM 13402	Cone Adapter which fits on AIM 13401 Cone, with standard threads for type 'A' drill rod coupling	
AIM 13403	Dynamic Cone threaded for type 'A' rod coupling, 60° cone angle, 50 mm base dia	
AIM 13404	Stand for keeping the rods vertical	
AIM 022	Tripod with built-in ladder-	1No.
AIM 019	Drive Weight Steel 65 kg Bore 45 mm ID approx.	1No.
AIM 021 - 1	Guide Pipe Assembly 43 mm OD approx.	1No.
AIM 02402	'A' Type Drill Rods 1mtr	1No.
AIM 13301	Manila Rope 19mm dia 10 meter long	1No.

Ordering Information:

AIM 134 Dynamic Cone Penetration Test Apparatus



Static Cone Penetration

Dutch Sounding Methods

Ref. Standard IS:4968 (Part 3)

- Provides essential information for Foundation Engineers.
- Reduces cost of expensive boring and sampling.
- Precise control for sounding speed (Engine Driven Model).

Extensive use of Static Cone Penetrometers originated in Holland where buildings are constructed in areas mostly reclaimed from the sea-bed. In the recent past, a number of research projects in the country have been undertaken in order to correlate Static Cone Test results with the Standard (Dynamic) Penetration Test results, resulting in widely different correlation factors depending upon local geological history.

The Static Cone Penetration Test is also found to be a handy tool for predetermining the length and estimating the load carrying capacities of piles passing through soft compressible strata and resting upon hard clays, sands or gravel. The penetration resistance of the cone has nearly the same value as the load which can be carried by the actual pile per unit area of the pile tip. By using the additional friction jacket with the standard equipment, identification of various soil types is also possible.

To use the Static Cone Penetrometer, a truncated steel cone (60° angle, 10 cm^2 at base) is forced vertically into the soil by static thrust, required to cause a bearing capacity failure of the soil immediately surrounding the point where measurements are required to be made.

Such measurements made at suitably desired intervals, provide a continuous bearing capacity profile and hence a shear strength profile of the soil at the sounding location.

The cone point is advanced with a two rod system. The outer casing protects the inner rod from soil friction and buckling. The protected inner rod advances the cone during the sounding operation and the pressure is measured on pressure gauges. The friction jacket helps in obtaining additional information like static soil friction (skin friction) against the steel sleeve. Two types of mantle tubes each 1 m long are available.

The mantle tube with uniform dia of 36 mm enables the determination of total cumulative skin friction of the soil in addition to the cone resistance. If cone resistance is the main requirement and cumulative skin friction is not to be measured, then mantle tubes of non-uniform dia are to be used.

The judicious combination of both types of tubes would be an ideal one, the number of each depending upon local geological history.

Static Cone Penetrometer 30kN Capacity, Hand Operated

AIM 135

Ref. Standard IS:4968 (Part-3)

The drive is made possible with the help of a rack and pinion driven manually through a gearing arrangement. The gear box and pinion are fixed on two handles. sprockets and chain arrangement. The movement of the rack is guided by a bracket (attached on the rack) and two pillars. The penetration resistance i.e. the pressure, is indicated on hydraulic gauges through a hydraulic measuring head. Two pressure gauges of 15 cm dia dial and capacities $0-160 \text{ kg/cm}^2$ are provided. An automatic cut-off valve, to protect the low capacity gauge from being overloaded, is also provided. The valve can be adjusted and locked at desirable values between 20 to 60 kg/cm^2 .

A provision is made to anchor the unit to the ground (with the help of four anchors supplied with the unit) and there is also a provision for lateral movement of the unit, so that subsequent tests can be performed without shifting the entire anchorage. A 10 cm^2 penetration cone with friction jacket is provided along with fifteen mantle tubes (non-uniform) having an effective length of 1 m each with sounding rods for finding out the cone (point) resistance or jacket friction.



AIM 135



Soil Testing

The equipment consist of the following replaceable parts :

AIM 13501	Penetration Cone steel, 60° angle, 10 cm ² base area, with friction jacket	1 No.
AIM 13502	Mantle Tube non-uniform 36 mm OD at the two ends and reduced dia in between with sounding rod, working length 1m	15 Nos.
AIM 13504	Load Measuring Head with Automatic Cut-off Valve, and Oil Can without Pressure Gauges	1 No.
AIM 13505	Pressure Gauge 0-160 kg/cm ²	1 No.
AIM 13506	Pressure Gauge 0-60 kg/cm ²	1 No.
AIM 13507	Screw Anchor with Bolt	4 No.
AIM 13508	Anchor Driving Handle	1 No.
AIM 13509	T-Rod	1 No.
AIM 13510	Spanner	1 No.
AIM 13511	Extension Pipe 0.5 m long for Anchor Driving Handle	1 No.

Note: Mantle Tubes with uniform diameter can be ordered at extra Cost.

Ordering Information:

AIM 135 Static Cone Penetrometer 30 kN Capacity, Hand Operated

Static Cone Penetrometer Digital Capacity 100 kN (Engine Driven)

AIM 136-DG

Ref. Standard IS:4968 (Part 3)

For reaching greater depths and to facilitate easy and constant rate of penetration of 1 to 2.5 cm/sec of the cone, the engine-driven Static Cone Penetrometer of 100 kN capacity is preferable.

The equipment consists of a hydraulic pump driven by a Diesel Engine by 10HP. The whole system is mounted on a towable trolley fitted with pneumatic wheels. The pumping unit and ram are connected by means of flexible pipes through a direction control valve. The hydraulic ram moves on a two pillar stand mounted on a trolley.

The equipment consists of the following replaceable parts :

AIM 13601	Penetration Cone steel, 60° cone angle, 10 cm ² base area, with friction jacket -	1 No.
AIM 13602	Mantle Tube 36 mm uniform OD with Sounding Rod working length 1 m	30 Nos.
AIM 13606	Trusses	2 Nos.
AIM 13607	Screw Anchor 45 cm	6 Nos.
AIM 13608	Screw Anchor 30 cm	6 Nos.
AIM 13609	Screw Anchor 20 cm	6 Nos.
AIM 13610	Screw Anchor Rod with Cone	6 Nos.
AIM 13611	Driving handle for Screw Anchor	1 No.
AIM 13612	Extension Pipe for Handle	4 Nos.
AIM 13613	Clamping Screw with Nuts	6 Nos.
AIM 13614	Extractor Tube with Connector	1 No.
AIM 13615	Tool Box	1 No.
AIM 13621	Digital Indicator Capacity, 100x0.01kN (Battery Operated) with load cell	1 No.



AIM 136-DG

Ordering Information:

AIM 136-DG Static Cone Penetrometer Digital, Capacity 100 kN (Engine Driven)



Static Cone Penetrometer Capacity 200kN (Engine Driven)

AIM 136-20

20 ton capacity static cone penetrometer machine with standard accessories for 30 meter depth. Digital read out for load and displacement. 12 volt electronics operated sensors and transducers. Hydraulic Operated anchor driving system provided.

Technical Specifications :

It is trailer mounted machine with two wheel properly aligned and can be towed with any vehicle to field area. It has 8 points anchoring system with independent hydraulic motor driving control valve fitted on movable driving assembly.

PRIME MOVER: 20 HP air cooled diesel engine mounted on anti vibration pad.

HYDRAULIC CYLINDERS: Two cylinders having 100mm ID and 1100 mm stroke working simultaneously. To achieve optimum load required.

MASTER CONTROL PANEL: Located at front of the cylinders and driving unit. It has digital read out panels for Load applied on cone and displacement in mm along with directional control valves, pressure relief valves and pressure gauges.

DISPLACEMENT SYSTEM: It is digital system to check the travelling of cone in the soil in millimeters. The whole electronics system is operated by 12 volt DC battery provided with engine.

The equipment consist of the following replaceable parts :

AIM 13601	Penetration Cone with friction jacket	1 No.
AIM 13602	Mantle tube with sounding rod 1 mt. length	30 Nos.
AIM 136-2002	Hyd. motorised Anchor driving Assly	1 No.
AIM 136-2003	Anchors 150 mm dia	8 Nos.
AIM 136-2004	220 mm dia	8 Nos.
AIM 136-2005	350 mm dia	8 Nos.
AIM 136-2006	Anchor pipes	8 Nos.
AIM 136-2007	Anchors bottom shoe bolt.	8 Nos.
AIM 136-2008	Locking Bolts	8 Nos.
AIM 136-2009	Mantle tube extractor assembly	1 No.
AIM 136-2011	Pin for Static load checking	1 No.
AIM 136-2012	Tarpauline cover	1 No.
AIM 136-2013	Load cell with digital indicator	1 No.
AIM 13606-20	Trusses	2 Nos.



AIM 136-20

Ordering Information :

AIM 136-20 Static Cone Penetrometer Capacity 200 kN (Engine Driven)



Field Vane Shear

AIM 138

Ref. Standard IS:4434

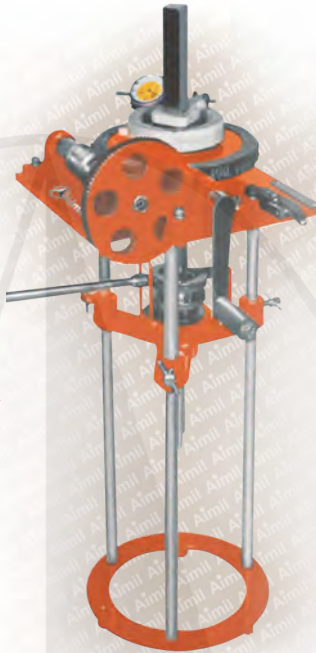
This apparatus is designed for conducting in-situ Vane Shear test from the bottom of bore hole in saturated cohesive deposits, for determining their in-place shearing resistance.

The equipment consists of a torque applicator assembly mounted on a base. A gear wheel, which is marked in degrees, holds a torque ring and is geared to a crank.

The torque ring has a section cut from it and deforms as torque is applied and the resultant deformation is indicated by a dial gauge. A pointer is provided for registering the rotation of the vane.

A detachable stand is provided to anchor the instrument. An attachment to securely hold the string of rods is provided.

A calibration curve to convert the dial gauge readings to kg-cm of torque is also supplied.



AIM 138



AIM 138-M

The equipment consist of the following replaceable parts :

AIM 13801	Torque Applicator Assembly, Capacity 2,000 kg-cm. Complete with stand	1 No
AIM 13802	Vane (with Vane Rod), 37.5 mm dia x 75 mm high	1 No
AIM 13803	Vane (with Vane Rod), 50 mm dia x 100 mm high	1 No.
AIM 13804	Torque Rod (Square cross section) 60 cm long	1 No.
AIM 13805	Rods (Quick coupling type) 1 m long	25 Nos.
AIM 13806	Rods (Quick coupling type) 0.5 m long	10 Nos.
AIM 13807	Dummy Rod	1 No.
AIM 070	Dial gauge 0.002 mm x 5 mm	1 No.

Ordering Information:

AIM 138 In-situ Vane Shear Test Apparatus

AIM 138-M In-situ Vane Shear Test Apparatus, Motorised

Optional Accessories :

AIM 13808 Vane (with Vane Rod), 65 mm dia x 130 mm high

AIM 13809 Vane (with Vane Rod), 75 mm dia x 150 mm high

AIM 13810 Vane (with Vane Rod), 100 mm dia x 200 mm high

AIM 13811 Guide with ball bearing arrangement, for alignment of the string of rods, for use with 10 cm casing pipe

AIM 13812 Guide with ball bearing arrangement, for alignment of the string of rods, for use with 15 cm casing pipe

Note: The drilling equipment and casing for borehole and jacking arrangement which are required for performing the test, do not form part of the above outfit.



Deformation Modulus

Pressuremeter :

Conventional methods, like Standard Penetration Test, Static Cone Test, Dynamic Cone Test, etc. are well established and do reflect the maximum strength of a given layer of soil, but they give no idea of stress deformation behaviour of the concerned layer. Pressuremeter test fills this void.

Description :

The pressuremeter is an instrument for "in-situ" measurements of soil load / deformation parameters.

It consists of two main components :

Probe

A cylindrical metal body covered over its whole length by a radially deformable cover after initially covering the central section with a rubber membrane, thus forming three independent cells.

The central cell or measuring cell is filled with water under controlled pressure from the volumeter whilst the other two guard cells are inflated with gas automatically maintained at a slightly lower pressure.

Volumeter :

A fibre glass box with a front panel, on which are fixed various regulators, pressure gauges, valves, etc. Within the box is the volumeter which contains the central measuring cell; the volume variations during the test are read on the sight tube. The range of pressure is 0 to 80 bar. The pressure is supplied from a compressed gas cylinder.

The Volumeter is connected to the probe by what appears to be a single flexible plastic tubing which in fact contains two coaxial tubings.

Procedure :

The Probe is placed within a previously drilled borehole at the desired elevation. However, in certain types of soil below the water table, it can be driven directly provided it is protected by a special "slotted pipe".

Pressure is then applied in equal increments and the corresponding volume variations noted at 30 and 60 sec. By plotting volumes at each increment versus pressure, an in-situ stress-strain curve is obtained.

The test is fully described in the Ponts and Chaussees manual 'Test Procedure n° MS IS:2' (French equivalent to ASTM) and in IS:1892.

Results :

The 'limit pressure P_L ' or pressure at which failure occurs, reflects directly on the bearing capacity; with 'modulus of deformation E ', the settlements can be calculated.

Applications :

An efficient and economical tool for the evaluation of most ground engineering problems and in particular :

- bearing capacity of shallow and deep foundations, piles or caissons
- settlement calculations of all foundations
- determination of earth pressures on retaining structures
- behaviour of laterally loaded piles

Pressuremeter type 'GA' 80 bar capacity (AX Probe Outfit)

AIM 141

The equipment consist of the following replaceable parts :

AIM 14101	Control Panel complete with 100 bar pressure Gauges and Pressure Regulator	1 No.
AIM 14102	Coaxial Connector	1 No
AIM 14103	Coaxial High Pressure Hose with End Connectors (for pressure upto 80 bar)	1 No.
AIM 14104	Coaxial Nylon Hose with End Connectors (for pressure upto 25 bar)	1 No.





Soil Testing

AIM 14105	Connecting Rod	1 No.
AIM 14106	Drill Rod, 1 m long	15 No.
AIM 14107	Pressure Inlet Hose with End Connectors	1 No.
AIM 14108	Bentonite Pump hand operated complete with Hoses	1 No.
AIM 14109	Swivel Handle	1 No.
AIM 14110	Thumb Spanner	2 Nos.
AIM 14111	Wheel Top	2 Nos.
AIM 14113	AX Probe without rubber parts	1 No.
AIM 14114	Inner Membrane for AX Probe	3 Nos.
AIM 14115	Metallic Cover for AX Probe	3 Nos.
AIM 14116	Rubber Cover for AX Probe	3 Nos.
AIM 14117	'O' Ring for AX Probe (Pair)	3 Nos.
AIM 14118	AX Probe Crown	1 No.
AIM 14119	AX Size Auger	2 Nos.
AIM 14120	Plain Pressure Testing Pipe for AX Probe	1 No.
AIM 14121	Perforated Pressure Testing Pipe for AX Probe (Set)	1 No.

Pressuremeter type 'GA' 80 bar Capacity (BX Probe Outfit)

AIM 142

The equipment consist of the following replaceable parts :

AIM 14101	Control Panel complete with 100 bar Pressure Gauges and Pressure Regulator	1 No.
AIM 14102	Coaxial Connectors	1 No.
AIM 14103	Coaxial High Pressure Hose with End Connectors (for pressure upto 80 bar)	1 No.
AIM 14104	Coaxial Nylon Hose with End Connectors (for pressure upto 25 bar)	1 No.
AIM 14105	Connecting Rod	1 No.
AIM 14106	Drill Rod 1 m long	15 Nos.
AIM 14107	Pressure Inlet Hose with End Connectors	1 No.
AIM 14108	Bentonite Pump hand operated, complete with Hoses	1 No.
AIM 14109	Swivel Handle	1 No.
AIM 14110	Thumb Spanner	2 Nos.
AIM 14111	Wheel Top	2 Nos.
AIM 14201	BX Probe without rubber parts	1 No.
AIM 14202	Inner Membrane for BX Probe	3 Nos.
AIM 14203	Metallic Cover for BX Probe	3 Nos.
AIM 14204	Rubber Cover for BX Probe	3 Nos.
AIM 14205	'O' Ring for BX Probe (Pair)	3 Nos.
AIM 14206	BX Probe Crown	1 No.
AIM 14207	BX Size Auger	2 Nos.
AIM 14208	Plain Pressure Testing Pipe for BX Probe (Set)	1 No.
AIM 14209	Perforated Pressure Testing Pipe for BX Probe (Set)	1 No.

Pressuremeter 'GA' 80 bar Capacity (AX and BX Probe Outfit)

AIM 143

The equipment consist of the following replaceable parts :

AIM 14101	Control Panel complete with 100 bar Pressure Gauges and Pressure Regulator	1 No.
AIM 14102	Coaxial Connector	1 No.
AIM 14103	Coaxial High Pressure Hose with End Connectors (upto 80 bar capacity)	1 No.
AIM 14104	Coaxial Nylon Hose with End Connectors (for pressure upto 25 bar)	1 No.
AIM 14105	Connecting Rod	1 No.



AIM 14106	Drill Rod 1 m long	15 Nos.
AIM 14107	Pressure Inlet Hose with End Connectors	1 No.
AIM 14108	Bentonite Pump hand operated, complete with Hoses	1 No.
AIM 14109	Swivel Handle	1 No.
AIM 14110	Thumb Spanner	2 Nos.
AIM 14111	Wheel Top	2 Nos.
AIM 14113	AX Probe without rubber parts	1 No.
AIM 14114	Inner Membrane for AX Probe	3 Nos.
AIM 14115	Metallic Cover for AX Probe	3 Nos.
AIM 14116	Rubber Cover for AX Probe	3 Nos.
AIM 14117	'O' Rings for AX Probe (Pair)	3 Nos.
AIM 14118	AX Probe Crown	1 No.
AIM 14119	AX size Auger	2 Nos.
AIM 14120	Plain Pressure Testing Pipe for AX Probe	1 No.
AIM 14121	Perforated Pressure Testing Pipes for AX Probe (Set)	1 No.
AIM 14201	BX Probe without rubber parts	1 No.
AIM 14202	Inner Membranes for BX Probe	3 Nos.
AIM 14203	Metallic Cover for BX Probe	3 Nos.
AIM 14204	Rubber Cover for BX Probe	3 Nos.
AIM 14205	'O' Rings for BX Probe	3 Pair
AIM 14206	BX Probe Crown	1 No.
AIM 14207	BX size Auger	2 Nos.
AIM 14208	Plain Pressure Testing Pipe for BX Probe	1 No.
AIM 14209	Perforated Pressure Testing Pipe for BX Probe (Set)	1 No.

Pressuremeter 'GA' (AX Probe Outfit, Low Capacity)

AIM 144

The outfit is similar to AIM 141 but with a pressure capacity of 25 bar. AIM 14103, AIM 14115 and 100 bar Pressure Gauges are not supplied with the unit.

Pressuremeter 'GA' (BX Probe Outfit, Low Capacity)

AIM 145

The outfit is similar to AIM 142 but with a pressure capacity of 25 bar. AIM 14103 AIM 14203 and 100 bar Pressure Gauges are not supplied with the unit.

Pressuremeter 'GA' 80 bar Capacity (NX Probe Outfit)

AIM 146

The outfit has a pressure capacity of 80 bar.

The equipment consist of the following replaceable parts :

AIM14101	Control Panel complete with 100 bar Pressure Gauges and Pressure Regulator	1 No.
AIM 14102	Coaxial Connector	1 No.
AIM 14103	Coaxial High Pressure Hose with end connectors (upto 80 bar)	1 No.
AIM 14104	Coaxial Nylon Hose, with End Connectors (for pressure upto 25 bar)	1 No.



AIM 146



Soil Testing

AIM 14105	Connecting Rod	1 No.
AIM 14106	Drill Rod 1 m long	15 Nos.
AIM 14107	Pressure Inlet Hose with End Connectors	1 No.
AIM 14108	Bentonite Pump hand operated, complete with Hoses	1 No.
AIM 14109	Swivel Handle	1 No.
AIM 14110	Thumb Spanner	2 Nos.
AIM 14111	Wheel Top	2 Nos.
AIM 14601	NX Probe without rubber parts	1 No.
AIM 14602	Inner Membrane for NX Probe	3 Nos.
AIM 14603	Metallic Cover for NX Probe	3 Nos.
AIM 14604	Rubber Cover for NX Probe	3 Nos.
AIM 14605	'O' Rings for NX Probe	3 Pair
AIM 14606	NX Probe Crown	1 No.
AIM 14607	NX size Auger	2 Nos.
AIM 14608	Plain Pressure Testing Pipe for NX Probe	1 No.
AIM 14609	Perforated Pressure Testing Pipe for NX Probe (Set)	1 No.

Pressuremeter 'GA' 25 Bar Capacity (NX Probe Outfit)

AIM 147

The outfit is similar to AIM 146, but AIM 14103, AIM 14603 & 100 bar Pressure gauges are not supplied with the unit.

Ordering Information :

AIM 141	Pressuremeter type 'GA' 80 bar capacity (AX Probe Outfit)
AIM 142	Pressuremeter type 'GA' 80 bar Capacity (BX Probe Outfit)
AIM 143	Pressuremeter 'GA' 80 bar Capacity (AX and BX Probe Outfit)
AIM 144	Pressuremeter 'GA' (AX Probe Outfit, Low Capacity)
AIM 145	Pressuremeter 'GA' (BX Probe Outfit, Low Capacity)
AIM 146	Pressuremeter 'GA' 80 bar Capacity (NX Probe Outfit)
AIM 147	Pressuremeter 'GA' 25 bar capacity (NX Probe Outfit)

Optional Accessories : (To be ordered extra)

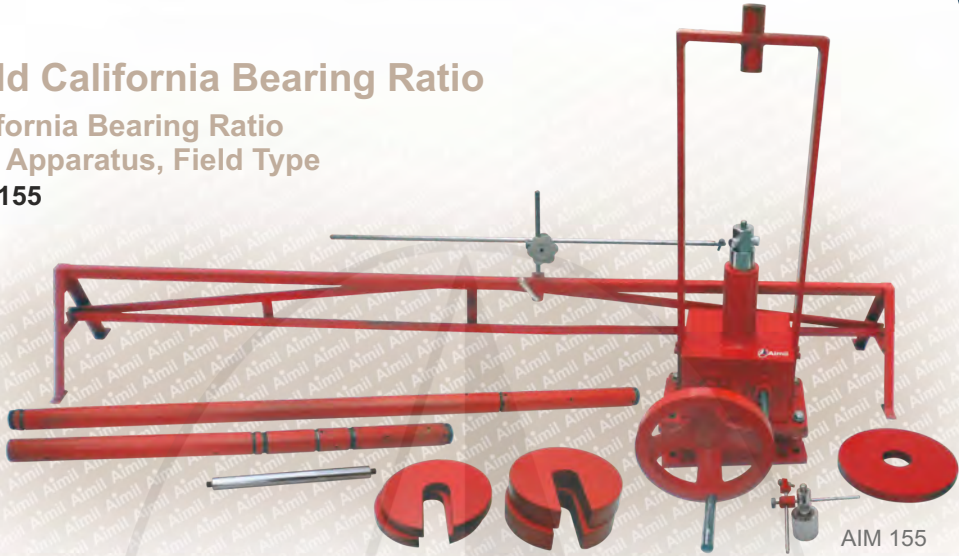
AIM 14112	Plate Jig
AIM 14125	Casing Pipe for AX Probe, 1.5 m long (10 Nos. required)
AIM 14126	Casing Shoe for AX Casing
AIM 14128-1	Nitrogen Cylinder 5 Ltr
AIM 14130	Nylon Cap with Mild Steel Ring for metallic cover for AX probe outfit
AIM 14212	Casing Pipe for BX probe 1.5 m long (10 Nos. required)
AIM 14213	Casing Shoe for BX Casing
AIM 14231	Nylon Cap with Mild Steel Ring for metallic cover for BX probe outfit (2 Nos.)
AIM 14612	NX size Casing Pipe 1.5 m long (10 Nos. required)
AIM 14613	Casing Shoe for NX size Casing Pipe
AIM 14631	Nylon Cap with Mild Steel Ring for metallic cover for NX probe outfit (2 Nos.)



Field California Bearing Ratio

California Bearing Ratio Test Apparatus, Field Type

AIM 155



Ref. Standard IS:2720 (Part 31)

The use of the in-situ CBR apparatus in large road construction projects has increased considerably in the recent years.

This apparatus, mounted on a rolled steel joist cantilevered from the back of the truck or fitted to the underside of a mobile frame, can be used to determine the bearing ratio (generally known as the California Bearing ratio) of soils quickly and efficiently for the evaluation of strengths of sub-grade & bases for roads & runway pavements. A bit of depth sufficient to accommodate the extra frame height can be used.

This method of testing in-situ, using piston penetration, is useful for determining the load carrying capacity in the field, when the in-place density and water contents are such that the degree of saturation is 80% or greater, when the material is coarse grained and cohesionless so that it is not affected by changes in the water content when the material has been in-place.

The equipment consist of the following replaceable parts :

- AIM 15501** Loading Jack with U-bracket, capacity 50 kN. This is specially designed for use with Field CBR test apparatus. It consists of a hand operated, two speed, screw jack fitted with a U-bracket. A hexagonal adapter is provided to fix a proving ring. A thrust bar, which passes through the U-bracket, is screwed on to a proving ring (supplied at extra cost) which protects the proving ring when the loading is eccentric.
- AIM 15502** Swivel Head for the Loading Jack.
- AIM 15503** Penetration Piston 50 mm dia threaded at the upper end, to connect to the various lengths of extension sleeves, through a connector.
- AIM 15504** Extension Set consisting of 1 length of 5 cm, 2 lengths of 10 cm, 1 length of 30 cm, 1 length of 50 cm and One length of 100 cm used as spacers between the proving ring and penetration piston. The lengths are machined from steel tubing.
- AIM 15505** Connector Set consists of eight connectors for coupling the penetration piston and proving ring assembly, either directly or through extension pieces.
- AIM 15506** Datum Bar Assembly consisting of two stands and 1 m long Bar.
- AIM 15507** Adjustable Bracket for mounting the Dial Gauge.
- AIM 15508** Annular Metal Weight 5 kg, 250 mm dia with 53 mm dia central hole.
- AIM 15509** Slotted Metal Weight 5 kg, 215 mm to 250 mm dia with 53 mm dia slot - 2 Nos.
- AIM 15510** Slotted Metal Weight 10 kg, 215 mm to 250 mm dia with 53 mm dia slot - 2 Nos.

Ordering Information :

AIM 155 California Bearing Ratio Test Apparatus, Field Type w/o Proving Ring & dial gauge

Essential Extras:

AIM 072 Dial Gauge 0.01x25 mm

AIM 274 Proving Ring 50 kN capacity



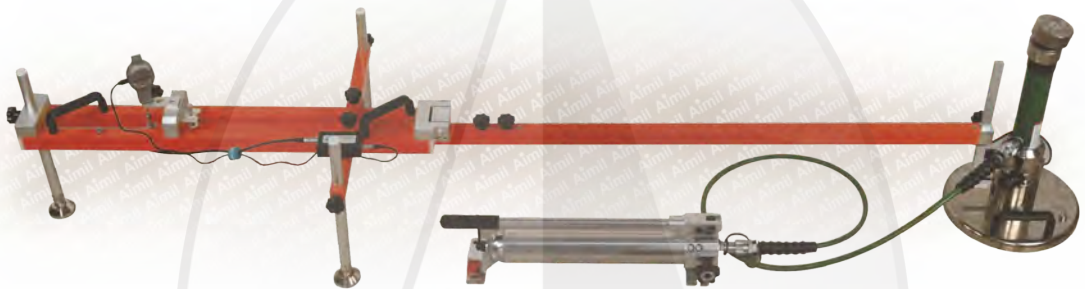
Static Plate Load Tester

AIM 157-ST

Reference Standard DIN 18134:2012-04

The plate load test permits the relationship between load and settlement (load-settlement curve) to be determined, the aim being to assess the deformation and strength characteristics of soil, using the load settlement curves to determine the strain modulus E_v and the modulus of subgrade reaction k_s .

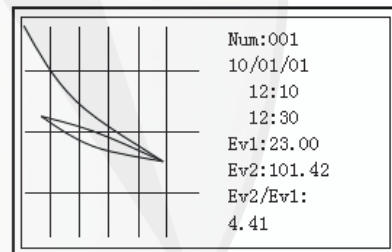
It is suitable for monitoring the quality of foundation construction of railways, highways, airports, urban transportation, ports, terminals and industrial and civil buildings subject to static loads.



AIM 157-ST

Salient Features

- High accuracy and more reliable test data
- Robust and heavy-duty displacement sensors with three-point support design for field use.
- LCD display with backlight
- E_{v1} , E_{v2} and E_{v2} / E_{v1} are automatically calculated and display curve.
- USB transmission interface is convenient for connection with computer.



Technical Specification

- Pressure sensor range : 100kN
- Displacement sensor range : 25mm, resolution 0.01mm
- Test influence depth : 0~500mm
- Operating temperature : -10°C to $+40^{\circ}\text{C}$
- Memory : 400 tests
- Power : Lithium battery, working time >18 hours

Ordering Information :

AIM 157-ST Digital Static Plate Load Tester

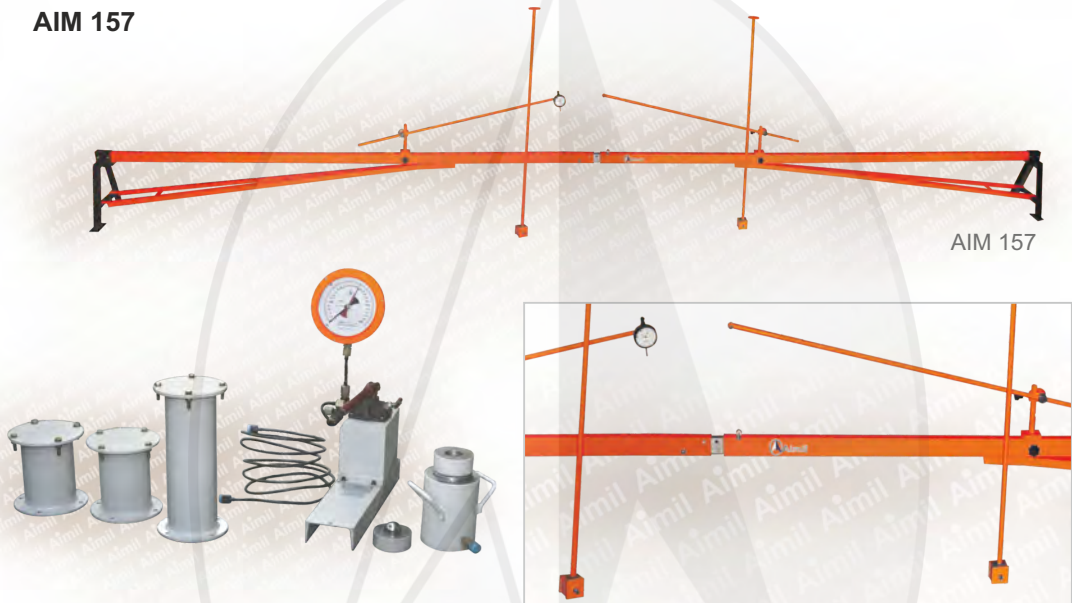


Plate Bearing Test

The Plate Bearing Test is essentially a model test of foundations. It gives the load deformation characteristics for determining the ultimate bearing capacity of foundations. This test is a standard technique for determining bearing capacity of soils and the results of other methods are compared and calibrated with the values obtained with plate bearing test. In this method, a steel plate is subjected to a gradual increment of load and the corresponding settlement is noted. The Ultimate Bearing Capacity is taken as the load at which the settlement increases at a rapid rate.

Plate Bearing Test Apparatus, Analogue

AIM 157



Ref. Standard IS:1888

The equipment consist of the following replaceable parts :

AIM 46801	Hand Operated Hydraulic Jack, Capacity 500 kN.	1 No.
AIM 475	Hydraulic Hand Operated Pump	1 No.
AIM 47503	High Pressure Flexible Metallic Pipe 5 m long.	1 No.
AIM 15702	Ball and Socket Arrangement consisting of two steel plates, with one steel ball in-between the plates.	1 No.
AIM 15703	Extension Rod long, 12 mm dia x 25 cm for taking Dial Gauge readings.	16 Nos.
AIM 15704	Magnetic base with female thread on top, for holding extension rod.	4 Nos.
AIM 15705	Top End Plate 50 mm dia with male thread, for fitting on to the Extension Rods and positioning the Dial Gauge Plunger.	4 Nos.
AIM 15706	Column 15 cm dia x 25 cm long, with flanges, complete with four bolts and nuts.	2 Nos.
AIM 15707	Column 15 cm dia x 50 cm long, with flanges, complete with four bolts and nuts.	1 No.
AIM 15708	Datum Bar light weight, portable, total span 5m height approx. 30 cm, mounted on two removable legs. (It is made in two parts. Provision exists for Datum Bar of 2.5m span to be used. A spare leg is provided for the purpose. Complete with two quick release clamps for positioning and holding the dial gauge brackets).	2 Nos.
AIM 15709	Anchor Spikes	10 Nos.
AIM 15711	Quick Release Clamp for positioning dial gauge bracket	
AIM 072	Dial Gauge 25 mm travel, 0.01 mm least count	4 Nos.
AIM 311-LG-500-HO	Load Gauge 500kN	1 No.



Plate Bearing Test Apparatus, Digital

AIM 157-DG

This apparatus is similar to AIM 157 but supplied with AIM 15720 Digital Indicator, battery operated, 4 Nos. LVDT (25mm) & one No. Loadcell 500kN (in place of dial gauge & load gauge)

Ordering Information :

AIM 157 Plate Bearing Test Apparatus, Analogue

AIM 157-DG Plate Bearing Test Apparatus, Digital

Optional Accessories :

AIM 15715 Grooved MS Plate 30 cm x 30 cm square x 25 mm thick

AIM 15716 Grooved MS Plate 45 cm x 45 cm square x 25 mm thick

AIM 15717 Grooved MS Plate 60 cm x 60 cm square x 25 mm thick

AIM 15718 Grooved MS Plate 75 cm x 75 cm square x 25 mm thick

AIM 15721 Plain MS Plate 30 cm x 30 cm square x 25 mm thick

AIM 15722 Plain MS Plate 45 cm x 45 cm square x 25 mm thick

AIM 15723 Plain MS Plate, 60 cm x 60 cm square x 25 mm thick

AIM 15724 Plain MS Plate 75 cm x 75 cm square x 25 mm thick

AIM 15720 Digital Indicator, Battery operated, with 4 Nos. LVDT (25 mm) & one number Loadcell 500kN

Note :

- As a wide range of bearing plates are manufactured, the customer is advised to select the plates from the following list according to his specific requirements.
- Grooved and plain plates of circular shape can be supplied on request.
- When a plate bigger than 30 cm square is used, a series of smaller plates should be used concentrically in order to reduce the deflection of the edges of plate resting on the soil and ensure proper distribution of the load on the bottom plate.
- **For carrying out actual tests on site, load trusses and soil anchors may be needed. These will be supplied at an extra cost.**



Load Truss

This truss is of welded I-Girder construction in two halves which can be bolted together when required. The lower chord, the cross pieces for holding the truss down and the vertical thrust members are all of welded box type construction with two channels enclosed and welded to an I-girder.

The anchorages are of a design tried out and perfected at the Central Building Research Institute, Roorkee. They consist of semi-cylindrical pieces, each held down by 1 m long steel spikes, driven in through holes drilled in the semi cylinder. The spikes enter the ground at about 60° horizontally, four from each side spaced along the length of the anchorage. The cross pieces are moored to the anchorages by channel straps and bolts. Eight such anchorages are supplied with 200 kN Truss. Guy wires with turn-buckles are supplied to keep the Truss erect.

Supplied complete with anchorages, guy wire and spikes as described above.

The equipment consist of the following replaceable parts :

Description	AIM-158	AIM-159	AIM-160
1. Truss	2 parts	2 parts	2 parts
2. Joists	2 Nos.	2 Nos.	2 Nos.
3. Anchor spikes	102	150	200
4. Semi-cylindrical anchors	8	12	16
5. Bolts with nuts for anchor straps	16	24	32
6. Anchor straps	8	12	16
7. Guy wires with six turn buckles	6	6	6
8. Top Flange splice plate	1	1	1
9. Small bolts with nuts for item (8)	8	8	8
10. Jointing bolts with nuts	8	8	8
11. Bolts with nuts for bottom splice plate	8	6	6
12. Sledge hammer	1	1	1
13. Spanners	2	2	2

Ordering Information :

AIM 158 Load Truss, Capacity 200 kN

AIM 159 Load Truss, Capacity 300 kN

AIM 160 Load Truss, Capacity 500 kN



In-Situ Density

For quality control of compacted earthfill, the measurement of in-situ density is essential. All types of earthwork constructions like embankments, dams, roads, airfields and trenches need density determination. Equipment for quick determination of density are listed here.

Core Cutter Method

Core Cutter

AIM 161

Ref. Standard IS:2720 (Part 29)

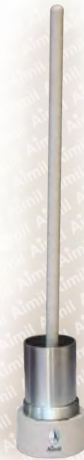
Core Cutter of known volume is driven into the soil by a rammer. The core cutter is dug out, trimmed and the soil inside weighed and dried for moisture and density check.

The equipment consist of the following replaceable parts :

AIM 16101 Cylindrical Core Cutter made of steel, 100 mm dia x 130 mm long

AIM 16102 Steel Dolly 25 mm high and 100 mm dia, fitted with a lip, to enable it to be located on top of the Core-Cutter

AIM 16103 Rammer with Steel Rod



AIM 161

Ordering Information :

AIM 161 Core Cutter

Optional Accessories :

AIM 16104 Cylindrical Core Cutter 100 mm dia x 175 mm long

AIM 16105 Cylindrical Core Cutter 100 mm dia x 250 mm long

AIM 16106 Cylindrical Core Cutter 150 mm dia x 300 mm long

AIM 16107 Dolly for AIM16106

AIM 16108 Rammer with steel rod for AIM16106

Note: As per BS/ASTM is available.

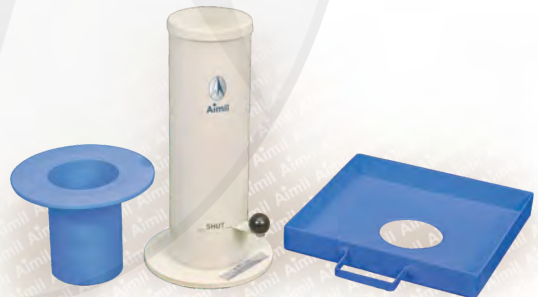
Sand Replacement Method

Sand Pouring Cylinder Apparatus

AIM 162

Ref. Standard IS:2720 (Part 28)

This Apparatus is used for determination of the dry density of compact, fine, medium grained soils and for layers not exceeding 50 cm thickness. A circular hole is dug into the ground, all the soil from within it collected, weighed and dried, and the hole back-filled with a standard uniform sand or fine gravel, poured from a calibrated container for calculating the volume of hole.



AIM 162

The equipment consist of the following replaceable parts :

AIM 16201	Sand Pouring Cylinder fitted with Conical Funnel and Shutter, capacity 3 litre	1 No.
AIM 16202	Cylindrical Calibration Container 100 mm ID x 150 mm height	1 No.
AIM 16203	Metal Tray size 30 x 30 x 4 cm, with 10 cm central hole	1 No.



Sand Pouring Cylinder Apparatus, Large

AIM 162-1

Ref. Standard IS:2720 (Part 28)

This is used for the in-place determination of the dry density of natural or compact soil containing stones, fine, medium grained soils for layer exceeding 15 cm but not exceeding 25cm thickness. It may also be used for measuring the density of base materials.

The equipment consist of the following replaceable parts :

- AIM 162-101** Large sand Pouring cylinder, 16.5ltr. capacity fitted with conical funnel and shutter
- AIM 16202-1** Cylindrical calibrating container, internal diameter 200 mm and internal depth 250mm
- AIM 16203-1** Metal tray size, 45x45x5 cm deep with hole

Ordering Information :

- AIM 162** Sand Pouring Cylinder Apparatus
- AIM 162-1** Sand Pouring Cylinder Apparatus, Large,

Optional Accessories :

- AIM 16204** Metal Tray size 30 x 30 x 4 cm, without central hole
- AIM 16304** Metal Tray 45cm square and 5cm deep without hole.
- AIM 29-4000** 100 mm Sand Pouring Cylinder as per BS standard
- AIM 29-4020** 100 mm Calibrating Container 100 mm inside diameter x 150 mm deep with 200 mm diameter rim
- AIM 29-4040** Metal Tray 300 mm square x 40 mm deep with a 100 mm diameter hole
- AIM 29-4100** 150 mm Sand Pouring Cylinder as per BS standard BS: 1377-9:1990
- AIM 29-4120** 150 mm Calibrating Container 150 mm deep with 250 mm diameter rim
- AIM 29-4140** Metal Tray 300mm square x 40 mm deep with 150 diameter hole
- AIM 29-4200** 200 mm Sand Pouring Cylinder as per BS standard
- AIM 29-4220** 200 mm Calibrating Container 200mm inside diameter x 250 mm deep with a 350 mm diameter rim
- AIM 29-4240** Metal Tray 500 mm x 50 mm deep with 200 mm dia hole

Note: For BS models, it is recommended that sand pouring cylinders, metal tray & Calibrating Container Should be ordered together only

Proctor Penetration Method

Proctor Penetrometer

AIM 164

Ref. Standard ASTM D 1558

Compaction control in the field is exercised by determining the moisture content and dry density. Quick evaluation of this is done by developing curves in the laboratory, showing the relationship between moisture content versus dry density and penetration resistance, using Proctor Needles while conducting the Standard Compaction tests.

Consists of a body housing a spring a plunger calibrated to read 0-40 kg x 1 kg and a handle. Two stems are provided, a larger stem and a shorter stem, both graduated at 12.5 mm intervals, to indicate the depth of penetration. The larger stem and the smaller stem are used with needles of larger and smaller areas respectively.

The equipment consist of the following replaceable parts :

- AIM 16401** Needle Point Set comprising one each of 0.25, 0.5, 1.0, 2.0, 3.5 & 6cm² Cross sectional area and a Tommy Pin Complete as above in a carrying case.

Ordering Information :

- AIM 164** Proctor Penetrometer

Note: As per BS/ASTM is available.



AIM 164



Stacked Deep Resistivity Meter

AIM-9880

- Portable, Compact, easy to use
- Measurement of electrical resistivity & optionally chargeability (IP)
- Transmitter : 400 V – 125 W – 2A

Outstanding Features

- Microprocessor controlled measurement of electrical resistivity and chargeability
- LCD display
- Display of voltage, current, apparent resistivity, SP, standard deviations, IP (optional)
- Depth of Penetration more than 600 Meter under favorable Geological Conditions
- Computation of resistivity for most electrode arrays: Schlumberger, Wenner, Gradient, Dipole-Dipole, Pole-Dipole, Pole-Pole...
- 16 GB Internal memory, and data transfer to PC through USB

Applications

Resistivity sounding and profiling for:

- Salinity control
- Shallow groundwater exploration
- Depth-to-rock determination
- Weathered bedrock localization
- Depth and thickness of aquifers

Resistivity Surveying

- To locate underground geological structures through surface electrical measurements
- Principle: transmitting a current I through two electrodes and measuring a voltage V with two other electrodes
- Apparent resistivity: $\rho = K \cdot V/I$, K depending on the chosen electrode array and the electrode separation
- Electrical sounding: determining the depths and thickness of layers through the variations of the electrical resistivity with depth
- Electrical profiling: delineating anomalous areas through the lateral variations of the resistivity
- Applications: environmental studies, groundwater investigation, civil engineering, archaeology...

Accuracy

- 24 bit voltage and current measurements
- Noise monitoring before injection with $>95\text{dB}$
- SP compensation including linear drift
- Digital stacking for noise reduction
- Standard deviation computation

Reliability

- Shock resistant case
- Protection From Solar Radiation, Lightning, Current Leakage, Temperature, Humidity, Voltage/current Fluctuation



AIM-9880

Data Interpretation Software

- IX1D or WINSEV (PC), for electrical sounding interpretation (horizontally layered earth hypothesis) (Optional)
- RES2DINV for pseudo-section inversion to true resistivity 2D section (Optional)
- RES3DINV (PC) for resistivity inversion of 3D surveys (Optional)

Output Current Specifications

- Current upto 2A
- Voltage up to 400V (800V peak to peak)
- Power up to 125 W
- Selectable cycle time of 0.25, 0.5, 1, 2, 4 or 8s
- Current measurement precision: 0.5%

Input Voltage Specifications

- Automatic ranging and calibration
- Input impedance : 50 M Ω
- Rejection filters for 50 Hz and 60 Hz $>95\text{dB}$
- Voltage measurement precision: 0.1%
- Noise reduction: continuous stacking
- SP compensation through linear drift correction
- Resistivity accuracy: 1%
- Chargeability (IP) optional
- Resistance Range 10-5 to 104 Ohms

General Specifications

- Error Signal for Poor Current and Potential electrode grounding and Discontinuity
- Built in GPS for coordinates
- USB Link for data download
- Data memory : 16GB
- Power supply: Receiver (Rechargeable Lithium Ion), Transmitter - internal rechargeable 12V, 7 AH battery or external 12V car battery
- Emergency push button for Security
- Weight: ~10 kg



Specification for Resistivity meter

Signal Stacking Resistivity Meter should be Microprocessor controlled and should measure Resistivity, SP & IP.

Input power source	: 12V rechargeable batteries (internal & provision for external connection)
Output	: 125 Watts, Current 2 Amp, 400V Output (800V peak to peak); or more, with automatic voltage selection facility.
Frequency	: 0.125Hz or less
Noise rejection	: 95 db
Potential measuring range	: Microprocessor based unit with measurement resolution of 10 micro volts
Range selection	: Automatic
Resistance range	: 10^{-5} to 10^4 ohms
Self potential cancellation	: Automatic
Self-Potential	: should record SP value for each recording
Dynamic range	: 24 bits ADC
Data averaging/ stacking	: 250 cycles or more
Input impedance	: 50 Mega Ohm
Accuracy	: $\pm 1\%$
System Display & Keypad	: Built-in color display 8cm x 10cm and keypad
Internal Memory	: Internal data Storage 8GB or more
Measurement display	: Stack No./Stacks selected, next line current and running average of average of resistance, Resistivity, SP, IP & Standard Deviation
Facility	: To measure RS (Contact Resistance) between the electrodes
Output	: Date, Time, Display of Electrode spacing, Resistance, Apparent Resistivity, S.P., Standard Deviation
Depth penetration	: up to 500 m under favorable geological / field conditions
Protection	: Protected against circuit overloads
Error Signals for	: Poor Current and Potential electrode grounding and discontinuity
Software	: 1D Inverse Interpretation software

Schedule of requirement:

• Resistivity Meter complying the above technical specifications	2Nos
• Continues contact cable for Current (AB), 400 mtrs with winches	2Nos
• Continues contact cable for Voltage (MN), 100 mtrs with winches	6 Nos
• Stainless steel Electrodes	2Nos
• Hammers	1No. each
• Battery & charger	
• Field training need to be provided at user site	

Optional: 1-D Data Inversion Software

Ordering Information :

AIM-9880 Stacked Deep Resistivity Meter

Rock

Testing Equipment



Instrumentation & Technologies



INDEX

Rock Testing Range

A

Advanced Rock Direct Shear Test Equipment for
Testing of Rock Joints & Gravelly Soil Samples B15

B

Brazilian Test Apparatus B4

C

Constant Pressure System for Rock Testing B11
Core Cutting & Grinding Machine B1
Core Drilling Machine B1

D

Direct Shear Apparatus for Rock Testing B14

E

Electronic Kit for Rock Triaxial Test B12

F

Flat Jack Outfit B12

H

Hoek Cell B10
Hydro Frac System B17

M

Miniature High Pressure Permeameter B3

P

Point Load Index Tester B3
Polishing & Lapping Machine B2
Point Load Index Tester B3
Polishing & Lapping Machine B2

T

Triaxial Testing for Rocks B9

U

Unconfined Compression Tester for Rocks B13

INDEX



AIM 201-2	B1
AIM 202	B1
AIM 202-2	B1
AIM 202-100	B1
AIM 202-150	B1
AIM 203	B2
AIM 205	B3
AIM 206-1	B3
AIM 206-DG	B3
AIM 207 to AIM 207E-FA	B4-B8
AIM 208	B9
AIM 066	B9
AIM 211	B10
AIM 212	B10
AIM 211 (EX, AX, BX, NX & 38)	B10
AIM 213	B11
AIM 213-1	B11
AIM 214	B12
AIM 215	B12
AIM 216	B12
AIM 218	B12
AIM 217-S2	B13
AIM 221	B14
AIM-221-1-DG-100	B15
AIM-221-1-DG-200	B15
AIM 240	B17



Rock Testing Equipment



Sample Preparation

Core Drilling Machine

AIM 201-2

- Heavy duty, pillar type frame with 1500W.
- 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.
- Water tank 5ltr. is Standard outfit.

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



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

Note: HILTI BITS available on request including BITS for 75 & 100 mm dia

Core Cutting & Grinding Machine

AIM 202, AIM 202-2, AIM 202-100 & AIM 202-150

Salient Features :

- Stable Construction
- Feed arrangement for cutting & Polishing
- Cooling water arrangement.
- Two models available
 - Floor mounted
 - Table mounted

This unit is designed for cutting and grinding cylindrical rock specimens upto 150mm size. The outfit includes diamond impregnated cutter (size as per model), a fine diamond impregnated grinding wheel and sample holder.



AIM 202



AIM 202-2



Rock Testing

For floor mounted models. water pipe with necessary valve is provided for connecting to a source of water. For table mounted model, a water tank along with coolant pump, pipe & necessary valves is provided.

A V-Vice, to hold the sample to be cut parallel and square to the longitudinal axis is provided. To set correct length of sample, it is to be reversed and held in the same vice. A hand feed arrangement is provided to facilitate the specimen with a uniform and smooth feeding motion in floor mounted model. In table top model, provision is made for both manual & automatic feed.

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

Ordering Information :

AIM 202	Core Cutting & Grinding Machine, 35 to 75 mm dia
AIM 202-2	Core Cutting & Grinding Machine, Table Top Model 35 mm to 150 mm dia
AIM 202-100	Core Cutting & Grinding Machine, 50 to 100 mm dia
AIM 202-150	Core Cutting & Grinding Machine, 75 to 150 mm dia

Polishing & Lapping Machine

AIM 203

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

AIM 205

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	1 No.
AIM 20502	Top Plate 1 No.	
AIM 20503	Base Plate with recess for Porous Stone	1 No.
AIM 20504	Pipette 6 mm x 300 mm long	1 No.
AIM 20505	Reservoir Tank. fitted with 7 kg/cm ² Gauge, Valves, Flow Control Regulator & Foot pump	1 No.
AIM 20506	Porous Stone to fit into Base Plate	1 No.



AIM 205

Ordering Information :

AIM 205 Miniature High Pressure Permeameter

Optional Accessories :

AIM 38106 Compressor 7 kg/cm² (Working Pressure)

Strength Index

Point Load Index Tester

AIM 206-1 & AIM 206-DG

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.

Based on type of load measuring device, we have two model available for point load Index Tester

- Analogue
- Digital



AIM 206-1



AIM 206-DG



Rock Testing

The equipment consist of the following replaceable parts :

AIM 20601	Digital Indicator with sensor 100kN capacity with a least count of 0.01kN (For Digital Model)
AIM 20602	Load Gauge 0 - 25kN x 0.25kN (For Analogue Model)
AIM 20603	Load Gauge 0 - 100kN x 0.50kN (For Analogue Model)
AIM 20604	Conical Loading Platens
AIM 20606	Loading Frame fitted with Hydraulic Jack, capacity 100kN & Hand Pump

Ordering Information :

AIM 206-1	Point Load Index Tester, Analogue, Hand Operated
AIM 206-DG	Point Load Index Tester, Digital, Hand Operated

Brazilian Test Apparatus

AIM 207, AIM 207-DG, AIM 207E-DG, AIM 207E-MU & AIM 207E-FA

Ref. Standard – IS: 10082

The instruments is designed to test specimen of various dia having thickness equal to half of the diameter for determination of indirect tensile strength. A pair of loading jaws, designed so as to contact a disc shaped sample a diametrically opposed surface over an arc of contact of about 10 degree a failure, is supplied. The set of jaws is supplied with equipment is designed for 50 mm dia specimen and therefore it is essential to order jaws for required sizes, if the sample of other diameters are to be tested. The design emphasizes simplicity both of construction and operation and makes the machine easy to use and maintain.

Brazilian Test Apparatus Classification:

- Analogue model, Hand operated
- Digital Model, Hand operated
- Digital model with pace rate indicator, Electrically Operated
- Micro controller based model with automatic pace rate controller
- Fully Automatic window based model



Cat. No.	Capacity	Type of Pumping	Least Count	Piston Diameter	Piston Stroke	Horizontal Clearance	Max. Vertical Clearance
AIM 207	200 kN	Manual	1 kN	111.2	50 mm	180 mm	450 mm
AIM 207-DG	200 kN	Manual	0.1 kN	111.2	50 mm	180 mm	450 mm
AIM 207E-DG	500 kN	Electrical	0.02kN	111.2	50 mm	250 mm	435 mm
AIM 207E-MU	500 kN	Electrical	0.02 kN	111.2	50 mm	250 mm	435 mm
AIM 207E-FA	500 kN	Electrical	0.02 kN	111.2	50 mm	250 mm	435 mm



Analogue Brazilian Test Apparatus, Hand Operated Capacity 200kN

AIM 207

An integral double acting manually operated pumping unit fitted to the base of the machine and a calibrated Load Gauge fitted on the top. It has a detachable Handle. The hydraulic cylinder is placed on the base of two pillar type Loading Unit. The loads are measured on Bourdon tube type load gauges which are calibrated against certified proving rings. The load gauges are fitted with a maximum load pointer.

Digital Brazilian Test Apparatus, Hand Operated Capacity 200kN

AIM 207-DG

The apparatus is similar to AIM-207 but it is supplied with Digital Indicator (battery operated) in place of Load Gauge.

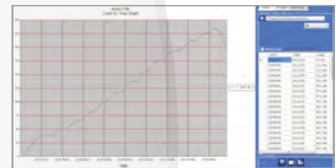
Technical specifications of digital unit:

(Data acquisition cum data logging system)

- Least count 0.1kN
- System having analog 16-bit resolution and inbuilt LCD display
- Inbuilt Real Time Clock for real time operation & display in stand - alone mode
- Windows Based Software for unloading data and generating reports
- Data download through RS232 in text, excel & csv format.
- Online & offline graphs.
- Date and time setting facility
- Clear memory facility
- Operating Power supply –12V DC
- Input Voltage Range: 0 -5 V
- Accuracy: 0.1% of full scale
- Internal storage capacity of 2MB
- RS 232 communication
- Display peak load and instantaneous load value
- Converter RS232 to USB



Digital Indicator



Offline Graph

Digital Brazilian Test Apparatus, Electrically operated, Capacity 500kN

AIM 207E-DG

The unit is compact, making it useful for site applications. The digital machines are provided with a pace rate indicator to indicate pace rate on a Bar Graph. With a little experience, the pace rate can be controlled manually while the test is in progress.

System Description

The loading frame has a fully welded construction with a top crosshead, base and solid side walls. The precision ground hydraulic piston is fixed to the base and the machine's platens are hardened, ground, and polished. Suitably sized spacers are provided as standard to accommodate a variety of different sizes of specimens.

The two-speed pump allows the fast approach of the platens for daylight closure, and also allows precise control over the load application using a control lever and valve. A pace rate bar on the display gives operator feedback on the loading rate.



AIM 207E-DG



Rock Testing

The controller incorporates a digital display, with values of force and stress in English/Imperial, metric, or SI units and features the integral load pacing bar display in kN/sec or lbf/sec. Maximum load is held and retained for approximately 15 minutes, unless cancelled, using the panel mounted reset switch. Results from approx. 2000 complete runs/tests can be stored in the memory and logged data can be printed directly via the built-in parallel port. The calibrated operating range of the machines is between 10% to 100% of the machine capacity, over which range the accuracy is $\pm 1\%$ of the applied load.

Enhanced Digital Indicator (EDI)

- Configurable Engineering Unit for machine selection.
- Flexible Calibration Points. Calibration can be done on 5 to 10 points.
- Peak Load, Peak Stress, Unique Record No. is displayed.
- In addition to compression, EDI has provision to configure more than one mode such as Flexure, Prism testing & Tensile Splitting strength. Each mode will have independent calibration points & calibration points are also flexible.
- Mode-4 runs with Mode-1 calibration.
- Menu Driven sample details.
- Data storage approx. 2000 records.
- Data Download through USB in ASCII format.
- User can set break point.
- Store records can be viewed & print.
- Peak stress calculation based on sample type and shape.
- Easy to operate.
- Password protection for system & calibration setup.
- 2% overload facility to calibrate the machine upto full capacity.
- Start, Stop, Pause & Reset.
- Multifunction Keyboard.
- Automatic Pace rate control to set value
- Auto close / release of Dump Valve.
- Communication with Aimil Horizon thru USB
- Machine can be operated with software through computer
- In-built SMPS to ensure constant voltage to digital indicator.

Mu Brazilian Test Apparatus, Capacity 500kN

AIM 207E-MU

Operation of a Micro Controller based Brazilian Test Apparatus is controlled by an intelligent Pace Rate Controller. This facilitates Automatic Pace Rate Control, Data Logging, Data Printing, Load Hold etc. It has a full 3 term PID feedback control which uses a high torque Stepper Motor.

It consists of a Loading Unit, an Electrically Operated Hydraulic Pump & an Intelligent Pace Rate Controller. Micro Controller based Brazilian Test Apparatus is available in 500kN capacity. In addition to all the features of Brazilian Test Apparatus with digital display, this machine has automatic pace rate control with the facility of data logging, storage & printing for analysis. The operation of the machine is detailed in the operating manual supplied with the machine. The operation is user friendly with a menu driven interface and prompts for an operator.

System Description

The loading frame has a fully welded construction with a top crosshead, base, and solid side walls with the precision ground hydraulic piston fixed to the base. The machine's platens are hardened, ground, and polished, suitably sized spacers to accommodate a variety of different sizes of specimen. The two speed pump allows the fast approach of the platens, for daylight closure, and also allows the automatic, precise control over the load application; a pace rate bar on the display gives operator feedback on the loading rate.

The controller incorporates a four line digital display and features the integral load pacing bar display, maximum load and stress result display, parallel port output, and USB output. Results from approximately 2000 completed tests can be stored in the memory and these results can be in Imperial/English, Metric, or SI units. The calibrated operating range of the machines is from 10% to 100% of the machine capacity, over which range the accuracy is $\pm 1\%$ of the applied load.

Enhanced Digital Indicator (EDI)

- Configurable Engineering Unit for machine selection.
- Flexible Calibration Points. Calibration can be done on 5 to 10 points.
- Peak Load, Peak Stress, Unique Record No. is displayed.
- In addition to compression, EDI has provision to configure more than one mode such as Flexure, Prism testing & Tensile Splitting strength. Each mode will have independent calibration points & calibration points are also flexible.
- Mode-4 runs with Mode-1 calibration.



- Menu Driven sample details.
- Data storage approx. 2000 records.
- Data Download through USB in ASCII format.
- User can set break point.
- Store records can be viewed & print.
- Peak stress calculation based on sample type and shape.
- Easy to operate.
- Password protection for system & calibration setup.
- 2% overload facility to calibrate the machine upto full capacity.
- Start, Stop, Pause & Reset.
- Multifunction Keyboard.
- Automatic Pace rate control to set value
- Auto close / release of Dump Valve.
- Communication with Aimil Horizon thru USB
- Machine can be operated with software through computer
- In-built SMPS to ensure constant voltage to digital indicator.

Fully Automatic Brazilian Test Apparatus

AIM 207E-FA

Aimil Brazilian Test Apparatus is a fully automated version of the manual/ semiautomatic Brazilian Test Apparatus. The Machine is available in 500kN capacity. Machine can be operated as a standalone with EDI as well as with Aimil Brazilian software installed in a Desktop PC or Laptop. When Machine is operated with software then all operation relating to machine control and functioning is done thru software only. It has provision for automatically turning the pump on and off, controlling the set pace rate and switching the machine off under predetermined conditions. The Control releases the pressure at the end of every run and reinitializes the machine at the end of every test. The pace rate is maintained by means of PID control using high torque stepper motors and driver sets. EDI controls the machine and gives the appropriate command based on requirements.

Loading Unit: The Loading unit is of fully welded construction having a cross head, base and solid side plates. A hydraulic jack is fixed to the base. The platens of the machine are hardened, ground and polished. To facilitate testing of various size specimens, suitable size spacers are provided.

Pumping Unit: This has a 0.5 hp, 1 Ph., 220V AC motor driven two-speed hydraulic pump and a bonded strain gauge based Pressure transducer.

Enhanced Digital Indicator (EDI)

- Configurable Engineering Unit for machine selection.
- Flexible Calibration Points. Calibration can be done on 5 to 10 points.
- Peak Load, Peak Stress, Unique Record No. is displayed.
- In addition to compression, EDI has provision to configure more than one mode such as Flexure, Prism testing & Tensile Splitting strength. Each mode will have independent calibration points & calibration points are also flexible.
- Mode-4 runs with Mode-1 calibration.
- Menu Driven sample details.
- Data storage approx. 2000 records.
- Data Download through USB in ASCII format.
- User can set break point.
- Store records can be viewed & print.
- Peak stress calculation based on sample type and shape.
- Easy to operate.
- Password protection for system & calibration setup.
- 2% overload facility to calibrate the machine upto full capacity.
- Start, Stop, Pause & Reset.
- Multifunction Keyboard.
- Automatic Pace rate control to set value
- Auto close / release of Dump Valve.
- Communication with Aimil Horizon thru USB
- Machine can be operated with software through computer
- In-built SMPS to ensure constant voltage to digital indicator.

Electronic Hardware

- The compression testing machine is fully controlled by IBM or IBM compatible personal computer running under Microsoft Windows operating System
- The Pump control is facilitated thru PID controlled EDI. EDI is connected to PC thru USB



Rock Testing

- Displacement Measuring device interface is available for Strain measurements (Optional)
- Machine hardware is easily configurable through software, making the field upgradation easy i.e., a Standard Compression machine can easily be upgraded to Compression plus flexure or Compression plus Flexure plus Split Tensile or for that matter two Compression frames of different Capacities
- An intuitive and easy to use Graphical User Interface
- Login and Access control
- Online help file
- Multiple calibration files for different machine configuration
- Least count of 0.002kN – 0.2kN based on machine capacities

The software also provides below Functions to the Operator

Software:

Aimil recognize that the most efficient way of testing is with the help of software and the ease of its operation. The Aimil Test Software has been ergonomically designed to suit the various needs of the customers as per their requirements and operation of the software is extremely user friendly and the features are self-explanatory

Features:

- Load vs Time graph
- Data backup and restored facilities are available
- The default report is generated automatically, in crystal reports and can be printed directly. The report can be exported to Excel and PDF format
- It provides the data acquisition in real time throughout the test execution up to the specimen failure

Test Screen:

The enhanced display of the test screen displays the value of the Load, Peak Load, Stress, and the online graph as it is generated during tests. The selection of the scale on graph enables you to view the graph more prominently on the screen. The test screen incorporates the results of the normal Load Vs Time, Stress Vs Time, Axial strain vs Lateral expansion (configurable) online graphical view simultaneously, a unique facility on its own.

Computer System (optional)

Minimum Recommended Computer Hardware

- 2 GHz Pentium Dual Core or equivalent
- 4 GB RAM, although using multiple testing machines may require addition memory or/and a faster processor
- 32- or 64-bit operating system type.
- 500 GB HD Drive
- Mouse or pointing device and keyboard supported by windows
- Monitor that support at least 1024 x 768 resolution.
- Min. 2 USB Serial Port
- Window compatible printer recommended for reporting capabilities

Ordering Information :

AIM 207	Brazilian Test Apparatus, Capacity 200kN Hand Operated
AIM 207-DG	Digital Brazilian Test Apparatus, Capacity 200kN Hand Operated
AIM 207E-DG	Digital Brazilian Test Apparatus, Capacity 500kN Electrically Operated
AIM 207E-MU	Mu Brazilian Test Apparatus with Automatic Pace Rate Controller, Capacity 500kN
AIM 207E-FA	Fully Automatic Brazilian Test Apparatus Windows Based, Capacity 500kN

Optional Accessories :

AIM 20704	Pair of Jaws for 60mm dia samples
AIM 20704	Pair of Jaws for 70mm dia samples
AIM 20704	Pair of Jaws for 80mm dia samples
AIM 20704	Pair of Jaws for 90mm dia samples
AIM 20704	Pair of Jaws for 100mm dia samples



Slake Durability Apparatus

AIM 208

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.



AIM 208

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.

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/four drum and tank assemblies.

Ordering Information :

AIM 208 Slake Durability Apparatus with 2 drum & tank assemblies

AIM 208-1 Slake Durability Apparatus with 4 drum & tank assemblies

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, 0-30 Minute

Triaxial Testing of Rocks

Ref. Standard: IS 13047

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.

Load Frame, Motorised, 12 Speeds, 500kN

AIM 066

Salient Features :

- Two pillar type
- Enclosed motor and Gear System
- Operational ease
- Jewel lamps indicating direction of motion

The Load Frame is designed for conducting triaxial shear tests on rock specimens, but its use can be extended to any field where there is a requirement of the rates of strain of this load frame to be applied. This load frame gives a choice of twelve rates of strain from a maximum of 5 mm/min to 0.000125 mm/min.

It consists of a cabinet housing the electric motor, reduction gear and the turret gear box. Two pillars are fitted on the base over the cabinet. The load is applied by advancement of a lead screw. A suitable adapter is provided for fixing a 500 kN capacity proving ring which is supplied at extra cost. This load frame has a platen of about 25 cm dia to house the high pressure Triaxial Cell for testing rock specimens.

Suitable for operation on 415 V, 50 Hz, 3 Phase, AC supply.



AIM 066



Rock Testing

Cat. No.	AIM 066
Capacity	500 kN
Types of Operation	Electrical-cum manual
Rates of Strain mm/min	Twelve Rates 0.000125 to 5mm/min
Horizontal Clearance	545 mm
Vertical clearance	1200 mm
Maximum Platen dia	250 mm
Maximum Platen Travel	160 mm
Specimen dia	38 to 100 mm
Application	Routine tests on Rocks Unconfined on medium & coarse grained stablized soil

Ordering Information :

AIM 066 Load Frame, Motorised, 12 speeds, 500 kN

Triaxial Cells

AIM 211 & AIM 212

Ref. Standard: IS 13047-1991

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 75mm dia & 150mm H, 100mm dia & 200mm H, 150mm dia & 150mm H

Hoek Cell

AIM 211 (EX, AX, BX, NX & 38)



AIM 211-AX

Hoek Cells are designed for Testing Triaxial strengths of Rock or Concrete samples upto a Pressure of 70MPa. These are designed to accept sample of EX, AX, BX, NX and 38mm Sizes.

Tests carried out on a series of samples under different confining pressures allow the user to determine:

- Strength & Elastic properties
- Shear strength at different confining pressures
- Angle of Shearing Resistance & Cohesion
- Modulus of Elasticity & Poisson's Ratio



Testing of Samples with Hoek Cells is much simpler & convenient as compared to conventional Cells. Cell comprises a Steel body having top & bottom caps screwed on to the main body. A urethane rubber sleeve incorporating U-shaped seals to form a pressurization chamber for the hydraulic fluid is mounted within the cell. Plunger & Spherical seat - duly hardened & ground are provided for self alignment & application of axial load

Features:

- Suitable for Triaxial Testing of Rock & Concrete
- Pressure upto 70MPa
- Available in five standard sizes
- Simple to use as compared to conventional Cells

Model No.	Nominal Conventional Size	Specimen dia	Wt
AIM 211-EX	EX	22mm	9 kg
AIM 211-AX	AX	30mm	9 kg
AIM 211-BX	BX	42mm	12 kg
AIM 211-NX	NX	55mm	15 kg
AIM 211-38	-	38mm	12 kg

Ordering Information :

AIM 211 - EX	Hoek Cell for Triaxial Testing of Rock Samples of exact EX size
AIM 211 - AX	Hoek Cell for Triaxial Testing of Rock Samples of exact AX size
AIM 211 - BX	Hoek Cell for Triaxial Testing of Rock Samples of exact BX size
AIM 211 - NX	Hoek Cell for Triaxial Testing of Rock Samples of exact NX size
AIM 211 - 38	Hoek Cell for Triaxial Testing of Rock Samples of exact dia 38 mm

Constant Pressure System for Rocks

AIM 213 & AIM 213-1

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 : $\pm 1\%$ of Indicated Load.

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



Ordering Information :

AIM 213	Constant Pressure System for Rocks - 160 kg/cm ²
AIM 213-1	Constant Pressure System for Rocks - 600 kg/cm ²



Rock Testing

Electronic Kit for Rock Triaxial Test

AIM 214

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)
-----------------	--

No. of Channels	: Two
-----------------	-------

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



AIM 214

Ordering Information :

AIM 214	Electronic Kit for Rock Triaxial Test
----------------	---------------------------------------

Constituents of Triaxial Test Apparatus:

Cat No.	AIM 215	AIM 216
Samples Dia	BX & NX	75 dia x 150 (H), 100 dia x 200 (H) & 150 dia x 150 (H)
Triaxial Cell	AIM 211	AIM 212
Load Frame	AIM 066	AIM 066
Constant Pressure System	AIM 213	AIM 213
Triaxial Electronic System	AIM 214	AIM 214

Note: Triaxial Cell for 150 ϕ x 300 (H) Can be Supplied on request.

Ordering Information :

AIM-215	Triaxial Testing Outfit for BX & NX samples- 160kg/cm ²
AIM-216	Triaxial Testing Outfit for 75, 100 & 150 mm dia samples- 160kg/cm ²
AIM-218	Triaxial Testing Outfit - 600 kg/cm ² capacity



Unconfined

Unconfined Compression Tester for Rocks

AIM 217-S2

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 25 mm travel, 0.01 mm least count.
AIM-21701	Platen Set as per ASTM 2938 requirements



AIM 217-S2

Ordering Information :

AIM 217-S2	Unconfined Compression Tester for Rocks
-------------------	---

Optional Accessories :

AIM 276	Proving Ring 200kN
----------------	--------------------

Note:

- Unconfined Compression Tester with 200 kN Capacity can be supplied on request
- Digital Unconfined Compression Tester can be supplied on request.



Rock Direct Shear

Direct Shear Apparatus, Hand operated for Rocks

AIM 221

Ref. Standard : ASTM D-5607-95, IS 12634

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.



AIM 221

The equipment consist of the following replaceable parts :

AIM 22101	Shear Box (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 47502	Flexible hose pipe 2 meter	3 Nos.
AIM 22103	Moulds for Casting the samples (Wooden)	2 Nos.
AIM 10610	Magnetic Stand	6 Nos.

Ordering Information :

AIM 221	Direct Shear Apparatus, hand operated for Rocks
---------	---

Note: Electrical Pump's can be supplied at an extra cost.



Advanced Rock Direct Shear Test Equipment for Testing of Rock Joints & Gravelly Soil Samples

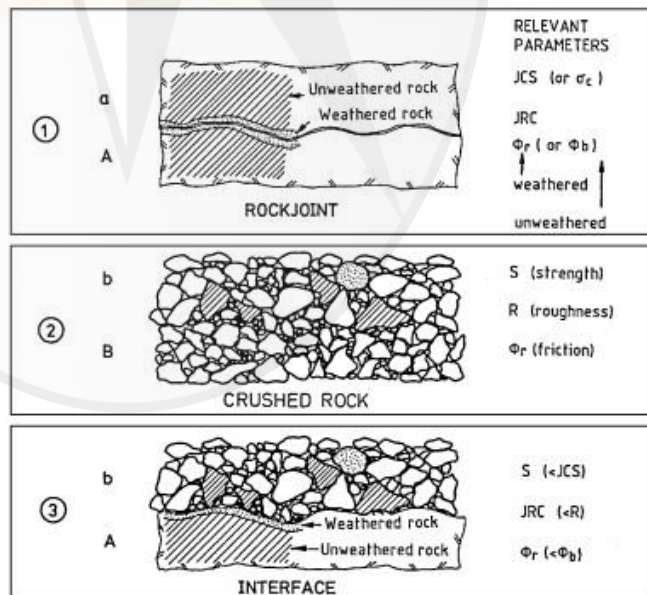
AIM-221-1-DG-100 & AIM-221-1-DG-200



Objective

To determine undrained Shear Strength under Constant Normal Load at High Overburden for following Geo Materials:

- Rock Joints or Foliations
- Clay filled or saw cut plane joints
- Gravelly Soil
- Aggregates
- Rock-Fill Material with Parallel Gradation



Typical types of Samples can be tested



Rock Testing

Ref. Standards:

- IS 12634:1969, (Reaffirmed 1995) "Rock Joints - Direct Shear Strength - Laboratory Method of Determination"
- IS 2720:1986, (Reaffirmed 1997) "Methods of Test For Soils -Part 13 - Direct Shear Test"

General Features of Equipment

- Direct Shear strength Testing under Constant Normal Load
- Semi-Automatic control of normal and shear load application
- Unconsolidated Undrained testing condition; CU and CD option can also be provided on order
- Operation : Motorized Hydraulic Pumps
- Shear box Size: 300mm x 300mm x 200mm (height)
- Maximum sample size that can be tested is,
 - For Rock Joints core of dia. 250mm OR rock chunks of max. dimension 250mm
 - For Gravelly Soil or Rockfill material Max. allowable particle size – 30mm
- Digital Measurement (Load Cells & LVDTs)
- Double acting Jacks for forward & backward movement
- Micro controller Multi Line Alpha Numeric VFD display for all channels, i.e. both types of loads and displacements can be seen simultaneously (No need of manual selection).
- Connectivity with PC or laptop with serial to USB adaptor.
- Windows based Software for real time test data monitoring and acquisition in CSV format.
- Heavy duty steel housing with high strength posts for normal load reactions and roller arrangement on lower half of shear box.

Technical Specifications of Equipment

- Normal & Shear Load Capacity: 100kN and 200kN
- Manual control of Shear Strain rate in range of 0.1mm/min to 1.0mm/min
- Displacement Measurement by LVDTs of 50mm travel for Shear and Normal, LC: 0.01mm
- Hydraulic Pumps: 01 no. for Normal load with control valve to maintain constant flow
01 no. for Shear load with relief valve
- Hydraulic Jacks: 02 nos. Double acting type.
- Maximum travel of loading plunger is 100mm for both jacks.
- Load measurement by Universal type Load Cells with least count: 0.1kN
- Suitable for operation on 220V, 50Hz, Single Phase, AC Supply.

Accessories

The equipment consists of the following replaceable parts

- Shear Box Assembly - This assembly comprises of:
 - Shear box MS mold of 25mm thick - 02 Nos.
 - Top Loading Platen - 01 No.
 - Plungers Platens – 01 set of 02 no.
- A Flexible plunger with SS ball to take care of eccentricity and non-linearity in loading platens
- LVDT stands and clamps
- High pressure hydraulic tubing with manifold
- Adaptor rod for shear load transfer with SS ball on reaction side.

Ordering Information :

AIM-221-1-DG-100	Advanced Rock Direct Shear Test Equipment, 100kN
AIM-221-1-DG-200	Advanced Rock Direct Shear Test Equipment, 200kN



Hydro Fracture

Hydro Frac System

AIM 240

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.



AIM 240

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	: Typically greater than 350 kg/cm ² pressure (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/cm ²	
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.



Rock Testing

Ordering Information :

AIM 240 Hydro Frac System

Essential Accessories :

AIM 24007	Installation Rod hollow stainless steel tube dual line 36 mm dia, 1500 mm long	20 Nos.
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.



Geotextile

Testing Equipment



Instrumentation & Technologies



INDEX

Geotextile Testing Range

C

Cone Drop Test Appratus	C3
Cross Permeability Test Appratus	C4

D

Dry Sieve Test Appratus	C1
-------------------------	----

G

Geotextile Permeameter	C6
Geo-synthetics Test Equipment for Horizontal / Inclined Pullout	C9
Gradient Ratio Test Apparatus	C5

H

Hydrodynamic Sieve Test Apparatus	C2
-----------------------------------	----

I

In-Plane Permeability Test Apparatus	C4
Interface Friction	C3

L

Long Term Flow Test Apparatus	C5
Large Pullout Test Apparatus	C7

T

Thickness Gauge for Geotextile	C1
--------------------------------	----

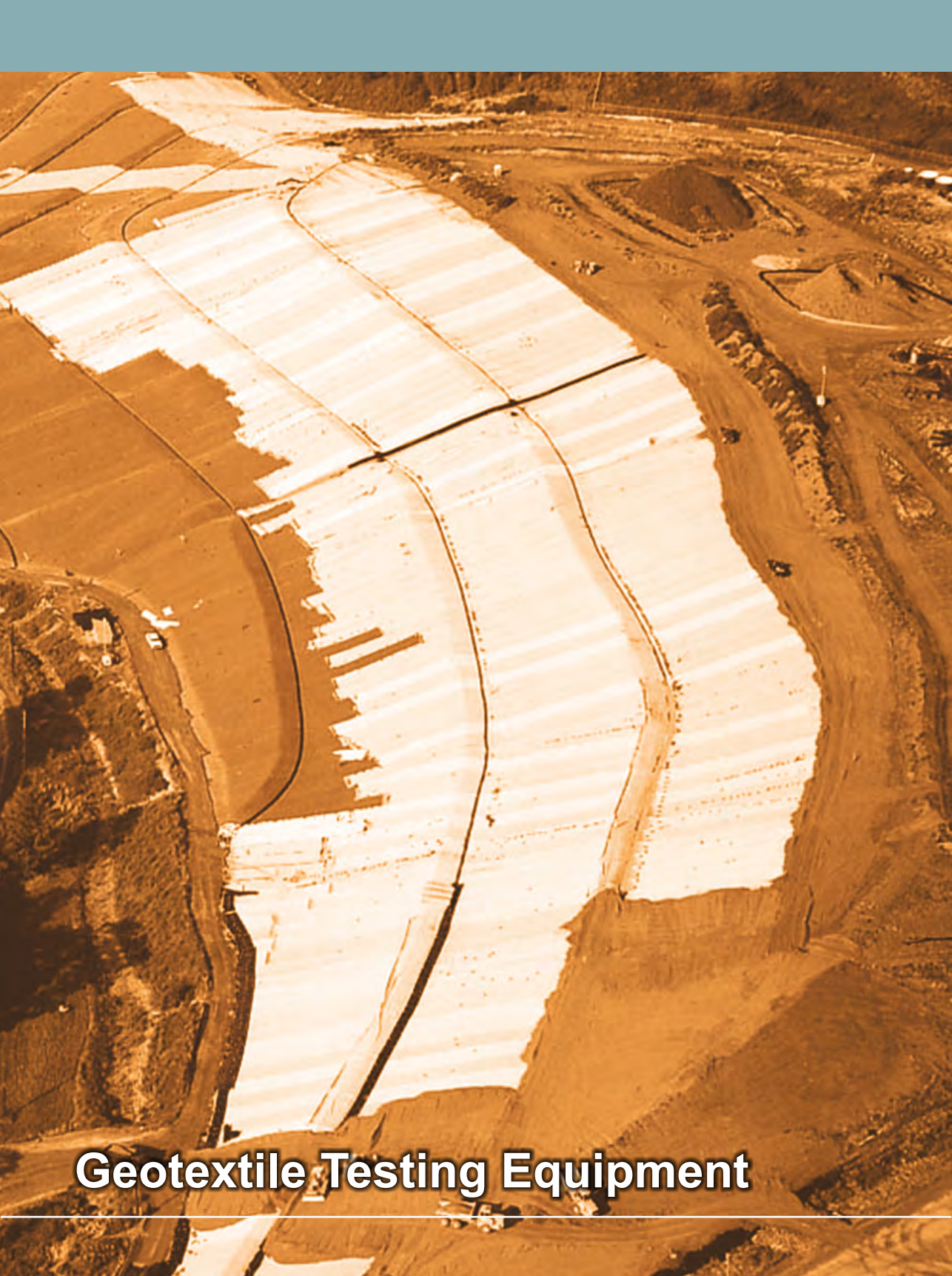
S

Servo-Hydraulic Static and Dynamic Actuator	C10
---	-----

INDEX



AIM 241	C1
AIM 242	C1
AIM 243	C2
AIM 244	C3
AIM 245	C3
AIM 247	C3
AIM 248	C4
AIM 249	C4
AIM 250	C5
AIM 251	C5
AIM 254	C6
AIM 255	C7
AIM 255-S1	C9
AIM 308-SERV-S-1	C10



Geotextile Testing Equipment



Geotextile Test Equipment

Geotextile comprises of nonwovens, wovens and multi layer composite materials made up of synthetic (polypropylene, polyester, etc.) or natural (jute, coir, textile, fibres). They may be in the form of sheets or strips and are used world over in a multitude of civil engineering construction end uses. In India too, their potential has begun to be realised. Several successful trials have already been made and several are under way.

AIMIL's R & D Wing, under guidance from IIT Delhi, has made a breakthrough in developing equipment for conducting relevant tests to evaluate the physical properties of geotextiles for reinforcement and stability application for soil retaining structures, steep slopes, embankments on soft soils, pavement system etc. for drainage and erosion control, separators between ballast subgrade in railways and other general applications. Such testing will help in the choice of geotextiles based on rational criteria.

Thickness Gauge

AIM 241

Thickness is one of the basic physical properties used to control the quality of many geotextiles and geosynthetics.

This equipment is simple to operate and thickness of the geosynthetics/ reinforcing material can be measured with an accuracy of 0.001 mm for thickness upto 25 mm. Simple mechanism is provided to apply desired foot pressure varying from 1 to 10kPa as per various international standards. Surface plate is grounded and is rust free to enable reproducible results.



AIM 241

Ordering Information :

AIM 241 Thickness Gauge

Dry Sieve Test Apparatus

AIM 242



AIM 242

Soil retention is a predominant function of geotextiles in drainage and filtering applications. Pore size is the key parameter that controls the ability of the geotextile to retain the soil. The Apparent Opening Size (AOS) also called the Equivalent Opening Size (EOS) was developed by US Army Corps of Engineers for evaluating

this property. AOS is the size of the holes in the geotextiles and it provides an index to the size of the largest opening through the geotextile. In conducting this test, the geotextile fabric is placed (instead of a wire mesh) in a sieving frame by using a special clamping arrangement. The test involves sieving rounded particle sizes for which 5% or less by weight, pass through the geotextile. The AOS is defined as 'Retained On' size of that fraction expressed as a standard sieve number (size).

The test is widely used for relative comparison amongst the geotextiles. Thus AOS is a means of correlating geotextile pore structure to an equivalent screen mesh size. This test is standardised by ASTM, ISO, IGS (International Geotextile Society). The apparatus consists of a 20 cm dia brass frame with clamp, a receiver and a lid.



Geotextile Testing

Ordering Information :

AIM 242 Dry Sieve Test Apparatus

Optional Accessories :

AIM 24201 Rounded Beads made of glass, size 0.85mm (passing 1 mm and retained at 0.85 mm)

AIM 24202 Rounded Beads made of glass, size 0.425 mm (passing 0.85 mm and retained at 0.425 mm)

AIM 24203 Rounded Beads made of glass, size 0.25mm (passing 0.425 mm and retained at 0.25 mm)

AIM 24204 Rounded Beads made of glass, size 0.18mm (passing 0.25 mm and retained at 0.18 mm)

AIM 24205 Rounded Beads made of glass, size 0.15mm (passing 0.18 mm and retained at 0.15 mm)

AIM 24206 Rounded Beads made of glass, size 0.075mm (passing 0.15 mm and retained at 0.075 mm)

AIM 054-1 Sieve Shaker, Motorised

Note: Sieve Shaker and Rounded Beads are to be ordered separately.

Hydrodynamic Sieve Test Apparatus

AIM 243



AIM 243

The percentage passing of different fractions determines the porometry of the geotextile being investigated. In the Hydrodynamic Sieving Method, the geotextile specimen loaded with a certain quantity of glass bead fraction, is continuously rotated in a water trough, forcing the glass beads to pass through the geotextile openings.

The apparatus consists of two test drums of 14 cm dia and 7 cm effective length with 16 nos. of 4 mm dia rods provided circumferentially at equal spacing to hold the geotextile specimen in position. Two troughs to contain the test drums are supported on horizontal axis, facilitating free rotation and capable of being filled with distilled water to a level of 20 mm below the drum axis. The clearance between the trough and the geotextile can be maintained at about 40 mm.

The apparatus is provided with a motor drive and a change gear assembly to enable rotation of the drums at a speed of 5 rpm to 30 rpm.

For conducting the test, the geotextile specimen is cut and stitched to get a shape of 14 cm dia and 10 cm length to insert over the drum tightly, after immersing the specimen in distilled water for one hour, duly secured by rubber 'O' rings. After placing 50 g of the smallest size glass beads inside the drum, the lid is secured and the drum with the geotextile placed in distilled water to the desired level and rotated at 20 rpm for 1,500 cycles. In order to get the optimum filtration opening size, the drum is rotated at a speed of 5, 7, 12, 20 & 30 rpm for 250 to 2,500 revolutions. Five different speeds 5, 7, 12, 20 & 30 rpm can be selected by using the gears provided. The percentage of beads passed through the geotextile by dry weight is determined. The test is repeated with increasing size of glass beads till less than 5% of the beads by weight pass through the geotextile.

Suitable for operation on 220v, 50Hz. Single Phase, AC Supply.

Ordering Information :

AIM 243 Hydrodynamic Sieve Test Apparatus with two Drums

Optional Accessories :

AIM 24201 Rounded Beads made of glass, size 0.85 mm (passing 1 mm and retained at 0.85 mm)

AIM 24202 Rounded Beads made of glass, size 0.425 mm (passing 0.85 mm and retained at 0.425 mm)

AIM 24203 Rounded Beads made of glass, size 0.25 mm (passing 0.425 mm and retained at 0.25 mm)

AIM 24204 Rounded Beads made of glass, size 0.18 mm (passing 0.25 mm and retained at 0.18 mm)

AIM 24205 Rounded Beads made of glass, size 0.15 mm (passing 0.18 mm and retained at 0.15 mm)

AIM 24206 Rounded Beads made of glass, size 0.075 mm (passing 0.15 mm and retained at 0.075 mm)

AIM 24301 Pair of drums & tank assemblies including coupling

Note: Rounded Beads are to be ordered separately.



Interface Friction

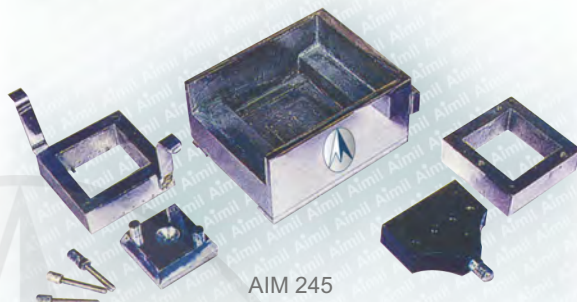
AIM 244 & AIM 245

Soil reinforcement is a recent and fast developing technique to improve soil behaviour for a variety of civil engineering works; e.g. earth retaining structures, slope stability, land slides protection works, pavement, etc.

In order to utilise fully the strength of reinforcement material while transferring load and forces via soil or aggregate to the reinforcement, a correct assessment of the soil/reinforcement frictional

relationship is essential. The frictional properties can be assessed by means of a shear box which is modified either to conduct a 'Modified Shear Test' or 'Pullout Test'. In the former test, reinforcement material is placed and clamped in the plane of shear with soil above the fabric, whereas in the latter test, the fabric placed between the top and bottom shear boxes, is covered on both sides with soil and is then pulled out to evaluate the frictional resistance. This interface friction measurement apparatus has been specially designed to evaluate both 'frictional' as well as 'pull out resistance' of soil reinforcing materials at a shear rate and drainage condition as desired by the designer

These are 60x60x25 mm assemblies which can be used for soils with D85 not greater than 4.75 mm. These apparatus are to be fitted in conventional Direct Shear Test Frame



Note: The equipment offered is only an attachment to Aimil Direct Shear Apparatus which is to be ordered separately.

Ordering Information :

AIM 244 Interface Friction Measurement Apparatus (Shear Box Assembly) for Modified Direct Shear Apparatus

AIM 245 Interface Friction Measurement Apparatus (Shear Box Assembly) for Pullout Test Apparatus

Cone Drop Test Apparatus

AIM 247

This test was developed by the Norwegian Road Research Laboratory (NRRL) and is widely used in Europe in evaluating the resistance of geosynthetics / geotextiles to damage during installation due to dropping of sharp edged or sharp pointed stones on a geosynthetic/geotextile directly. In this test, a geosynthetic or geotextile is clamped to yield a clear diameter of 150 mm and a brass cone of 45 degree angle included, having a weight of 1 kg, is dropped through a height of 500 mm. The diameter of the resultant hole is measured with a graduated conical device.

The smaller the hole, the greater the resistance of geosynthetic/ geotextile to damage. When used in combination with other direct tensile test results, it provides a convenient means of qualitative comparison.

The equipment consists of the following replaceable parts :

AIM 24701 Graduated Conical Measure

AIM 24702 Brass Cone



AIM 247

Ordering Information :

AIM 247 Cone Drop Test Apparatus



Cross Permeability Test Apparatus

AIM 248

Permeability of a geotextile must be substantially greater than that of the protected soil, so that water can pass freely from the soil through the fabric without build-up of hydrostatic pressure. A high value of the permeability of the geotextile also infers that partial clogging will not reduce the permeability.

Both Constant and Falling Head Permeameters are generally used for measuring normal permeability known as permittivity. Permeability is defined as the volumetric rate of flow of water per unit cross sectional area under unit hydraulic head across the plain of the geotextile. ASTM D 4491 specifies permeability test using Constant Head and Falling Head Permeameters. The constant head test is carried out using a head of 50 mm of water. Specimen diameter is 100 mm.



AIM 248

Ordering Information :

AIM 248 Cross Permeability Test Apparatus

Essential Accessories : (Excluded In Outfit)

AIM 13111 Overhead Tank 110 lts. capacity

AIM 24801 Loading unit, Dead weight type, 300 kPa capacity

In-Plane Permeability Test Apparatus

AIM 249

This test is necessary for drainage applications. The permeameters can be of parallel flow or radial flow type. In either case, flow occurs along the plane of the permeameters. In the apparatus, flow occurs radially outwards, from a central hole to the periphery of a circular specimen. The inplane permeability is known as transmissivity which is defined as the volumetric rate of flow per unit width of geotextile and unit hydraulic head.

Specimen diameter is 100 mm.



AIM 249

Ordering Information :

AIM 249 In-Plane Permeability Test Apparatus

Essential Accessories : (Excluded In Outfit)

AIM 13111 Overhead Tank 110 lts capacity

AIM 24801 Loading unit dead weight type 300 kPa capacity



Long Term Flow Test Apparatus

AIM 250

The tests for permittivity and transmissivity help in comparing one fabric to another, but gives no indication of the hydraulic behaviour of the composite soil-fabric system. Under steady state and reversing flow conditions, fabric clogging or binding causes a decrease in water flow rate and corresponding increase in hydraulic head loss through the geotextile. When the potential for fabric clogging is significant, clogging resistance of filter fabrics should be evaluated to ensure adequate long term filter performance. As the clogging is highly soil dependent, soil fabric permeability test is suggested to determine the long term flow capability of a geotextile.

Specimen diameter : 100 mm Mould for compaction
of soil 10 cm dia x 11.2 cm high

Head of water : Upto 37.5 cm



AIM 250

Ordering Information :

AIM 250 Long Term Flow Test Apparatus

Essential Accessories : (Excluded In Outfit)

AIM 13111 Overhead Tank 110 lts. capacity

Gradient Ratio Test Apparatus

AIM 251

Ref. Standard: ASTM D5101-12

The US Army Corps of Engineers established a direct measure of geotextile clogging potential. They defined it as gradient ratio which is the ratio of hydraulic gradient through the geotextile plus 25.4 mm of the soil to that of hydraulic gradient through the adjacent 50.8 mm of the soil. It is determined after 24 hours of flow.

Specimen diameter : 100 mm Mould for compaction
of soil 10 cm dia x 11.2 cm high

Head of water : Upto 37.5 cm



AIM 251

Ordering Information :

AIM 251 Gradient Ratio Test Apparatus

Essential Accessories : (Excluded In Outfit)

AIM 13111 Overhead Tank 110 lts. capacity



Geotextile Permeameter

AIM 254



AIM 254

Ref. Standard : ASTM-D4491-92

The Geotextile Permeameter has been designed to meet the test requirements of water permeability of Geotextile. It has been made keeping in view the growing requirement of testing of coir geotextile. The geotextile is tested in the uncompressed state for permittivity. The determination of permittivity of geotextile is carried out, either by using constant head or falling head test procedures.

The equipment comprises of specimen holder assembly suitable for 73mm & 100mm dia sample, complete with interconnecting tubes housed inside a metal housing & mounted on a table along with a pump for delivering de-aired water from de-airing below the specimen holder assembly unit. A water tank of 100 ltrs. capacity is placed alongside the main equipment on a steel stand to store & supply de-aired water continuously, as required, during the test. Geotextile permeameter comprises of specimen holder assembly for holding specimen of dia 73mm. Housing for specimen holder complete with inlet & outlet valves, Head differential measurement arrangement mounted on a stand and a Water Tank, complete with water level gauges suitable for falling head and constant head tests.

The equipment consist of the following replaceable parts :

AIM 25401	Specimen Holder Assembly for 100mm dia specimens
AIM 097-1	De-Aired Water Apparatus
AIM 25403	Blanking Die for 73mm dia sample
AIM 25404	Blanking Die for 100mm dia sample
AIM 25405	Sample collection beaker - 500ml

Ordering Information :

AIM 254	Geotextile Permeameter
----------------	------------------------



Large Pull Out Test Apparatus for Geo Synthetics

Ref. Std. :ASTMD 6706-01

Pull out Test Apparatus is being especially designed to measure the interface friction between GI Strips / Geosynthetics and Soil.

The use of reinforcements provides additional shear stress in the soil mass through the tensile force in the reinforcement. The considerable increase in the use of geosynthetics in the reinforced soil structures led to the development of testing procedures to evaluate their interaction properties.

Pullout apparatus is mainly used for finding the interfacial friction between GI Strips / Geosynthetics with soil.

The interfacial friction coefficient is most important parameter for design of reinforced earth walls, reinforced earth slopes and other reinforcement applications.

This test is carried out to find pullout interface properties of geogrids used as reinforcement in the Soil structures.

In this method, a geosynthetic is embedded between two layers of soil. For conducting the pullout test Normal compressive stress is applied to the top soil layer & horizontal force is applied to the geosynthetic & the force required to pull the geosynthetic out of the soil is recorded.

Pullout resistance is obtained by dividing the maximum load by the test specimen width.

A plot of maximum pullout resistance versus applied normal stress is obtained by conducting a series of such tests.

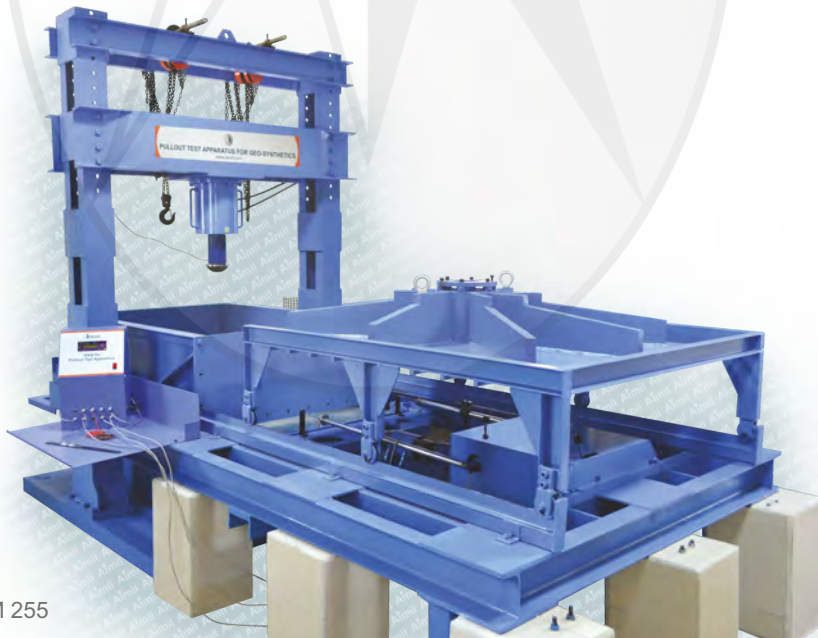
The test method is applicable to all geosynthetics and all soils.

Features

- Suitable for testing Pull Out Interface properties of Geogrids in Soil structures.
- Normal Load upto 250 kN.
- Pull Out force upto 100 kN.
- Variable Sample Size.
- Rugged & sturdy Construction to ensure Accuracy of results.
- Variable Pull speeds available.
- Used in the design of geosynthetic reinforced retaining walls slopes & embankments
- Robust & accurate data acquisition system
- 25 Channels Data acquisition System (Feasible for expansion)

Large Pull Out Test Apparatus for Geo Synthetics (Horizontal)

AIM 255



AIM 255



The major components of Pullout Test Apparatus are:

- Steel Test Box – where sample is embedded between two layers of Soil.
- Hydraulic Jack mounted on Vertical Frame for application of Normal Load.
- Pulling Arrangement mounted on a Horizontal Frame along with the Steel Box.
- Loading Pad / Plate.
- Chain Pulley Arrangement for lifting Loading Pad.
- LVDT's to measure Sample Displacements.
- Load Cells for vertical load & pull out
- Strain Gauges.
- Stand alone data acquisition system

Brief Specifications:

- **Steel Box :**
Variable Sizes
Material - Steel plates. Reinforcements are provided in all the plates to strengthen them.
- **Load Frame:**
 - Vertical Frame
 - Horizontal Frame
- **Loading Pad**
- **Hydraulic Jack for Vertical/Normal Load**
- **Spherical Seat**
- **Power pack for operating Jack**
- **Measurement of Normal Load:** Load Cell
- **Measurement of Geosynthetics or GI Strips Displacements(Pull):**
Linear Variable Differential Transformer (LVDT)
- **Measurement of Pullout force:** Load cell
- **Application of Pull Out Force on front face:**
Strain Controlled through Geared system.
- Arrangement for pulling out the GI Strips / Geo-synthetics:
Motorized arrangement with displacement rates
- **Data Logger:**
Electronic Data Acquisition System (All readings – Pullout load, displacement & strain to be recorded automatically & stored at six second intervals by an electronic data acquisition system & the data can be downloaded in Excel format).
- **Foundation work:**
- **General requirement:**
 - Chain Pulley Block – 2 Ton Capacity – 2nos.
- **Optional Requirement**
Strain Gauges

Note- 1: Foundation Work To Be Arranged By The Customer.

Note-2: The Instrument can be customised as per Customer requirement

Ordering Information :

AIM 255

Large Pull Out Test Apparatus for Geo Synthetics



Geo-synthetics Test Equipment for Horizontal / Inclined Pullout

New

AIM 255-S1

Test Box (Variable size)

Comprising :

- With Perspex sheets bolted to steel framework.
- Provision for altering the size of the box.
- Provision for detachable Perspex sheets on all sides.
- Detachable steel plates to facilitate different inclinations at the front of the box.

Guide assembly for horizontal and inclined pull-out of geo-synthetics

Comprising :

- Mounting facility for Load Cell and LVDT in the system.
- Inextensible cable for attachment to pullout load application unit.

Pullout load application unit with Gear-box

Comprising:

- Guide assembly mounting facility.
- Variable speed motorized Gear box (displacement rate variable upto 4 decimal places) ranging from 0.0001 to 9.9999mm/min.
- Pull capacity 50kN in Horizontal & inclined direction.
- Pull Travel 100mm.
- Provision for adjustment of level of platform.
- Provision for movement of frame along with platform on the Base.

Load Frame

- Vertical Frame
- Horizontal Frame

Vertical Stress Application Unit

Comprising:

- Air Bag for vertical load up to 100kPa.
- Air compressor with Pressure regulator and indicator.
- Reaction plate attached to the top of the box.

Measurement /Display/Data logging Device

Comprising:

- L.V.D.T - 100mm travel with ($\pm$) 1 % accuracy – 2Nos
- Load Cell 50 kN capacity with ($\pm$) 0.1% accuracy & least count-5N – 1No
- Aimil Data Acquisition System with following specification - 1 No
 - Eight channel
 - Display for 3 channels simultaneously.
 - 2MB internal storage capacity
 - Interface facility through RS-232 for PC/Laptop.

Note -The Instrument can be customised as per Customer requirement



Ordering Information :

AIM 255-S1 Geo-synthetics Test Equipment for Horizontal/Inclined Pullout

Optional Accessories

AIM 38106 Compressor for Permeability Apparatus 7kg/cm² (working pressure)



Servo-Hydraulic Static and Dynamic Actuator

New

AIM 308-SERV-S-1

Actuator Assembly Capacity 70kN

1No

- Actuator with Servo valve Manifold Swivel Top Assembly
- Frequency range 0.1 Hz - 5Hz
- Load Cell (Capacity 70kN)
- Load accuracy : $\pm 1\%$ of indicated value of load
- Stroke Length 100mm (+/-50mm)
- Displacement Transducer for accurate displacement control – LVDT Displacement total 25mm and resolution - 0.001mm
- Displacement accuracy: $\pm 1\%$ of indicated value of the displacement
- Providing and fixing of circular steel plate of diameter 150 mm and 300 mm having thickness 50 mm on the bottom piston rod. Bottom of the plate is provided with buffer base
- System has Two types of Loading- Dynamic (for fatigue test) and Static (for Ramp)
- System has Computer controlled operation to Start and Stop the actuator during the test.

Hydraulic Servo Power Pack

1No

- Max. working pressure: 300 bar
- Electrical control cabinet
- Max. Oil delivery: 40LPM
- Oil Tank capacity: 150 Ltrs.
- Hydraulic ports for connection of test frames
- Oil flow control via servo-controlled proportional valve
- Cooling system with forced ventilation to maintain the temperature of the hydraulic oil to run the whole machine to continually for 2 million cycles
- Hysteresis not be more than 3.0%
- Threshold not be less than 0.5%
- Supply Pressure: Constant

Computer(Desktop/Laptop) based Control system and control software Controller which includes

1No each

Computer Desktop or laptop

16 channel Data acquisition system

1No

Load cell Input card/ Pressure Sensor input card

- 8-channel (4 for pressure and 4 for Load), 18-bit, 1kilosample/second per channel, strain gage analog input, data acquisition board
- 18-bit resolution

Strain Gage Input Board

- 4-Channel High Speed, Strain Gage Input Board
- 18-bit resolution, 1 kilosample/second
- Simultaneous sampling on all channels

Displacement Input board

- 4-channel (for Displacement), 18-bit, 1 kilosample/second per channel, strain gage analog input, data acquisition board
- 18-bit resolution

Note: 1kilosample/sec = 1000sample/sec

Controlling unit system

1 No

- Controlled by Computer/Laptop
- System has PID operation with auto-zeroing, auto-tuning and auto-adjustment feature of servo operation





- Control Maximum Pace rate for load and displacement- 10kN/sec and 5mm/sec
- Control Minimum pace rate for load and displacement -0.01kn/sec and 0.001mm/sec.
- Key pad for Data logger Configuration
- Easy Configurable Windows Based Software to configure the DAQ through PC.
- Stand Alone & Real Time Data Acquisition, Keypad has capability to configure the system.
- Display functions – channel data
- Power supply – 230V, 50 Hz
- Inbuilt battery for real time clock

Aimil Control and analysis software

1No

- Software has Facility for apply different types of loading on a specimen like a heavier sine, Sine, Triangular, Square, Random waveform frequency range from 0.1Hz to 5Hz and Ramp signal under static loading.
- Software has facility for On-line display of Load v/s Displacement, Load v/s Time, Displacement v/s Time graphs, Load, Displacement, Nos. of cycles and additional channels readings.
- Has facility to monitor the data of channels
- Programmable Loading parameters – Frequency, Amplitude (load and displacement) etc
- Facility for programmable Safety limits for each load & displacement.
- Facility for able to define test sequences.
- Labels of channels are configurable
- Facility to save the data after the test, database backup and restore
- Report in excel & PDF for storing the data.
- Facility for Storing of each channel data by user defined file/directory and opened in Excel and Analysis Software.
- Generates graphs in effective mode.

Loading Frame 250KN Capacity

1No

Loading frame has two pillars with hydraulic adjustable cross head. Cross head can be set over length of the pillar to adjust height of specimen and locked manually at desired position. Actuator is mounted on the crosshead for loading from the top.

Capacity : 250kN
Horizontal Clearance : 1200mm
Vertical Clearance : 1200mm
Base plate Length : 1500mm

Crosshead height adjustment: vertical clearance adjustment from 400mm to top of the tank after fixing actuator

Soil Tank

1No

Inside Diameter : 1000mm
Depth : 1000mm
Plate thickness : 18mm

Half side of tank made of Mild steel and half side of tank made of Acrylic material.

Linear variable displacement transducer

4 No

- 100mm travel with measurement Accuracy 1% of indicated value of the displacement
- (With mounting arrangement on tank)

Power Supply

- Voltage: 440V, Three Phase, AC supply

Note -The Instrument can be customised as per Customer requirement,

Ordering Information :

AIM 308-SERV- S-1 Servo-Hydraulic static and dynamic Actuator with hydraulic power pack, control unit and cooling system 70 KN Capacity

Corporate Office



Delhi

Naimex House,
A-8, Mohan Cooperative Industrial Estate,
Mathura Road, New Delhi - 110 044,
Tel : 011-61310200 Fax : 011-26950011
Email : info@aimil.com

Branch Offices



Bengaluru

Naimex House, 88/1, Outer Ring Road,
Nagavara, Bengaluru - 560 045,
Tel : 080-61940000 Fax : 080-61940002
Email : bangalore@aimil.com



Mumbai

Naimex House, BSEL Tech Park, B Wing,
11th Floor, Sector 30A, Plot No. 39/5 & 39/5A,
Opp. Vashi Railway Station, Vashi,
Navi Mumbai - 400 705,
Tel : 022-68256600 Fax 022-68256666
Email : mumbai@aimil.com



Kolkata

Shrachi Tower, 6th Floor, C&D Block,
686 Anandapur, E.M. Bypass,
(Near Ruby General Hospital) Kolkata - 700 107,
Tel : 033-40846418/15 Fax : 033-24433305
Email : kolkata@aimil.com



Vadodara

6th Floor, Mayfair Atrium, Opp. Delhi Public School,
Kalali Vadsar Ring Road, Vadodara - 390012
Tel: 0265-6730000 Fax: 0265-3050010
Email : vadodara@aimil.com



Hyderabad

314-316, 3rd Floor, Swapnalok Complex,
S.D. Road, Secunderabad - 500 003,
Tel : 040-45916666 Fax : 040-4591 6624
Email : hyderabad@aimil.com



Chennai

L-19, Dr VSI Estate, Phase II,
Thiruvanniyur, Chennai - 600 041,
Tel : 044-66080200 / 65120200
Fax : 044-66080250 Email: chennai@aimil.com



Chandigarh

652, Industrial Area, Phase- 9, Mohali
(Chandigarh Tricity), Punjab -160062
Tel : 0172-5139000/70 Fax : 0172-5139099
Email : chandigarh@aimil.com



Guwahati

House No-2, August Kranti Path,
Beltola Bazaar Road, Beltola, Guwahati -781028
Tel: 0361 2225008 Fax: 0361 2225008
Email : guwahati@aimil.com



Bhubaneswar

First Floor (West Side), Plot no.- 636 & 635/2588,
Beherasahi, Nayapalli, Bhubaneswar - 751012
(Landmark-Infront of NABARD, Backside of Kasturba School)
Tel: 0674-2745530 Fax: 0674-2745530
Email : aimilbbsr@aimil.com



Indore

Office No. 216, 2nd Floor, Krishna Business Centre,
Indore - 452010 (M.P.)
Tel : 731-4061161 Fax : 731-4061161
Email : indore@aimil.com



Nagpur

Mai Duchakke Mansion, 1st Floor, Plot No. U-24,
Narendra Nagar, Ujjwal Co-op Housing Society,
Nagpur - 440015, Tel : 0712-2786600/01
Fax : 0712-2786611 Email : nagpur@aimil.com



Pune

C-307, Baner Biz Bay, Laxman Nagar,
Opp Amar Paradigm,
Baner, Pune - 411045, Maharashtra
Tel : 020-68180000 Email : pune@aimil.com



Bangladesh

58/10-A, Free School Street (Kanthal Bagan Box-Culvert)
Panthapath, PS-Kalabagan Dhaka-1205, Bangladesh
Tel : +8801755040478 /+8801784 895205
Email : bangladesh@aimil.com

Also Resident Representatives at

Lucknow : Telefax: 0522-4007163 Email : aimillkw@aimil.com
Kochi : Tel : 0484-2577292 Email : mdnair@aimil.com

Manufacturing Units :

Naimex House, Delhi (Domestic Market)
Naimex House, Noida (International Market)