Aimil Ltd.

Instrumentation & Technologies

Concrete

Concrete

Testing Equipment

Compressive Strength

Concrete is a man-made material, essentially mixed at site. The properties of concrete depend on the properties of its ingredients and their proportion and it is likely to vary from mix to mix. Tests must be conducted, therefore, to ensure that the concrete used is in accordance with design specifications. A frequent test, is the test of compressive strength, in which concrete samples are tested to failure.

Compression Testing Machines :

Aimil Series Compression Testing Machines are the finest of their types available. Their rugged construction and extreme simplicity makes it possible for even non-technical personnel to operate them with ease and complete dependability. In particular, the portable units, which are small in dimensions, sturdy and light in weight, make quality control testing possible in areas where commercial testing facilities are not available and where the transportation of larger and much heavier machines would be difficult.

Aimil Compression Testing Machines conform to IS: 14858(2000) and calibrated with an accuracy of ± 1% as per the requirement of 1828(Class1) . It can also be supplied as per BS : 1881 and other associated International Standards. These machines are available in 50kN, 100kN, 500kN, 1000kN, 2000kN, 3000kN & 5000kN Capacities.

Compression Testing Machines Classification :

- Analogue models.
- Digital models with pace rate indicators.
- Micro Controller based models with automatic pace rate controllers.
- Fully Automatic models.

Salient Features of Compression Testing Machines are :

- High stability.
- Self-aligning platen assembly.
- Load Gauges are calibrated in kN against certified Proving Rings, traceable to NPL / NCCBM.
- Suitable for testing cubes and cylinders of various sizes.
- Using special platens, bricks can also be tested.
- Logged data printing facility through a parallel port interface available in digital and micro controller based versions.
- Calibration process accreditated by NABL (National Accreditation Board for Laboratories).
- Machines with CE mark also available, on special request.
- Operator's safety features like metal door with a perspex window and overload tripping device are provided in all models.

Analogue Compression Testing Machines

Loading Unit :

The loading unit is of fully welded construction having a cross head, base and solid side plates. The hydraulic jack is fixed to the base. The platens of the machine are hardened, ground and polished. The upper platen is provided with self-aligning action. To facilitate testing of various size specimens, suitable sized spacers are provided.

Pumping Unit :

The hydraulic pumping unit can be either :

- Manually operated • Electrically operated

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.

Both the Pumping units, Manually operated and Electrically operated, are of two-speed design. The two speed pump facilitates fast approach of the platens for daylight closure, thus eliminating the need for the lead screw. In the Electrically Operated Pumping Units, load gauge is fitted with micro switches to switch-off the motor when the load approaches the maximum capacity of the gauge, to avoid any over-loading. Relays are incorporated so that the motor does not restart on its own after a power breakdown.

The electrically operated pumping units are provided with a control knob to adjust the pace rate which can be effectively controlled by an experienced operator during the course of testing, by observing the progress of the load gauge reading.

314E-AN-1

Portable Compression Testing Machine

The equipment consists of a Loading Unit, 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 the Loading Unit.

Specifications:

Capacity	:	1000kN
Max Vertical Clearance	:	340mm
Max. Horizontal Clearance	:	220mm
Platen Size	:	Dia 222mm
Piston Dia	:	157mm
Piston Stroke	:	25mm

AIM 314H-AN

Ordering Information :

50kN

AIM 302H-AN Analogue Compression Testing Machine, Capacity 50kN, Hand Operated

AIM 302E-AN Analogue Compression Testing Machine, Capacity 50kN, Electrically Operated

100kN

AIM 305H-AN Analogue Compression Testing Machine, Capacity 100kN, Hand Operated

AIM 305E-AN Analogue Compression Testing Machine, Capacity 100kN, Electrically Operated

250kN

AIM 308H-AN Analogue Compression Testing Machine, Capacity 250kN, Hand Operated

AIM 308E-AN Analogue Compression Testing Machine, Capacity 250kN, Electrically Operated

500kN

AIM 311H-AN Analogue Compression Testing Machine, Capacity 500kN, Hand Operated

AIM 311E-AN Analogue Compression Testing Machine, Capacity 500kN, Electrically Operated

1000kN

AIM 314H-AN Analogue Compression Testing Machine, Capacity 1000kN, Hand Operated (Portable Model)

AIM 314E-AN Analogue Compression Testing Machine, Capacity 1000kN, Electrically Operated

2000kN

AIM 317E-AN Analogue Compression Testing Machine, Capacity 2000kN, Electrically Operated

3000kN

AIM 320E-AN Analogue Compression Testing Machine, Capacity 3000kN, Electrically Operated

Machines with other specification are also available

For more details, please refer to the table on the next page.

Aimil Range of Compression Testing Machines (Analogue)

CAPACITY	MODELS		SPECS OF LOAD MEASURING DEVICE (ANALOGUE)		GENERAL SPECIFICATIONS					
	ANALOGUE Cat. No.		Load Gauge For Analogue models		Maximum Clearance Between Platens	Maximum Distance Between Side Plates	Platen Size	Piston Dia	Piston Stroke	Specimen Size
(kN)	Hand Op.	Elec. Op.	Range(kN)	L.C.(kN)	(mm)	(mm)	(mm)	(mm)	(mm)	
50	302H-AN	302E-AN	50	0.2	390	260	140 Square	50	50	50.0mm & 70.6mm Cube
100	305H-AN	305E-AN	100	0.5	390	260	140 Square	78.7	50	50.0mm & 70.6mm Cube
250	308H-AN	308E-AN	250	1	390	260	140 Square	78.7	50	50.0mm, 70.6mm& 100mm Cube
500	311H-AN	311E-AN	500	2	435	260	140 Square	111.2	50	50.0mm, 70.6mm& 100mm Cube
1000		314E-AN	1000	5	390	260	222.0 Dia	157	50	100mm & 150mm Cube, 100mm & 150mm Dia Cylinder
	*314H-AN		1000	5	340	220	222.0 Dia	157	**25**	100mm & 150mm Cube, 100mm & 150mm Dia Cylinder
2000		317E-AN	2000	10	370	340	222.0 Dia	222.2	50	100mm & 150mm Cube, 100mm & 150mm Dia Cylinder
3000		320E-AN	3000	10	400	400	320 Square	272.2	50	150mm to 300mm Cube & 300mm Dia X300mm High Cylinder

NOTE : • ***To select the model of compresssion Testing Machine, first select the capacity as per your requirement, then identify the type of machine required. For further detailed specifications of the model identified, just scroll through the "Row" which will also have the corresponding catalogue number and other details of the equipment. For analogue models, refer to the details provided under column - "Load Gauge for Analogue models". General specifications mentioned in the last column are common to all types.***

- **Electrical Specifications :** Standard units are suitable for operation on 220 V/230 V, single phase, 50 Hz, AC supply. Three phase unit if required must be separately mentioned in your order for the required capacity.
- **Brick Platens :** Appropriate brick platens can be provided at extra cost.
- **Spacers :** Set of spacers to suit specimen sizes mentioned against each model is supplied alongwith the machine

*__AIM 314H-AN__ is a portable four pillar type model

Machines of higher capacities can be manufactured as per customer requirements. Models with two load gauges and three gauges are also available on special request.

Digital Compression Testing Machines

The Digital Compression Testing Machine has been designed to meet the need for a simple, economic and reliable means to test concrete for its compressive strength. The design emphasizes simplicity both of construction and operation and makes the machine easy to use and maintain.

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.

Key Features

- Meets the key specifications of IS -516 & IS 14858, and other ASTM, EN and BS standards depending on platens and accessories chosen.
- Pace deviation bar graph.
- Automatic stress determination and display.
- Overload safety protection.
- Self aligning platen with fast accessory change capability.
- Configurable Engineering Unit for machine selection.
- Predefined Machine capacities for each engineering unit. Specific capacity can be selected from the drop down menu.
- Flexible Calibration Points. Calibration can be done on 5 to 10 points.
- Peak Load, Peak Stress, Unique Record No. is displayed.
- EDI has provision to configure more than one Mode.
- Mode1-Compression/Mode2-Flexure/Mode3-Prism Testing/Mode4-Tensile Splitting strength. Each mode will have independent calibration points and calibration points are also flexible.
- Mode-4 runs with Mode-1 calibration.
- Dynamic Calibration
- Any Centronics dot matrix Printer.
- Menu Driven sample details.
- Data storage approx. 2000 records
- Data Download thru RS232 in ASCII format.
- User can set break point.
- Store records can be viewed & print.
- Peak stress calculation based on sample type and shape.
- CVT supplied to ensure constant voltage to digital indicator.
- 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

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. The upper platen comes with a self-aligning action and suitably sized spacers are also provided as standard to accommodate a variety of different sizes of specimen – the specification table shows which platen set comes with the machine.

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.

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 +/- 1% of the applied load.

Ordering Information :

50kN
AIM 302E-DG-1 Digital Compression Testing Machine, Capacity 50kN

100kN
AIM 305E-DG-1 Digital Compression Testing Machine, Capacity 100kN

250kN
AIM 308E-DG-1 Digital Compression Testing Machine, Capacity 250kN

500kN
AIM 311E-DG-1 Digital Compression Testing Machine, Capacity 500kN

1000kN
AIM 314E-DG-1 Digital Compression Testing Machine, Capacity 1000kN

2000kN
AIM 317E-DG-1 Digital Compression Testing Machine, Capacity 2000kN

3000kN
AIM 320E-DG-1 Digital Compression Testing Machine, Capacity 3000kN

For more details, please refer to the table on the next page.

AIM 317E-DG-1

Aimil Range of Compression Testing Machines (Digital)

CAPACITY	MODELS	SPECS OF LOAD MEASURING DEVICE (DIGITAL)		GENERAL SPECIFICATIONS					
	Digital	Digital Indicator		Maximum Clearance Between Platens	Maximum Distance Between Side Plates	Platen Size	Piston Dia	Piston Stroke	Specimen Size
	Cat. No.								
(kN)		Range(kN)	L.C.(kN)	(mm)	(mm)	(mm)	(mm)	(mm)	
50	302E-DG-1	50	0.002	390	260	140 Square	50	50	50.0mm & 70.6mm Cube
100	305E-DG-1	100	0.01	390	260	140 Square	78.7	50	50.0mm & 70.6mm Cube
250	308E-DG-1	250	0.01	390	260	140 Square	78.7	50	50.0mm, 70.6mm& 100mm Cube
500	311E-DG-1	500	0.02	435	260	140 Square	111.2	50	50.0mm, 70.6mm& 100mm Cube
1000	314E-DG-1	1000	0.1	390	260	222.0 Dia	157	50	100mm & 150mm Cube, 100mm & 150mm Dia Cylinder
2000	317E-DG-1	2000	0.1	370	340	222.0 Dia	222.2	50	100mm & 150mm Cube, 100mm & 150mm Dia Cylinder
3000	320E-DG-1	3000	0.1	400	400	320 Square	272.2	50	150mm to 300mm Cube & 300mm Dia X300mm High Cylinder

NOTE : • ***To select the model of compresssion Testing Machine, first select the capacity as per your requirement, then identify the type of machine required. For further detailed specifications of the model identified, just scroll through the "Row" which will also have the corresponding catalogue number and other details of the equipment. For Digital types refer to the column "Digital Indicator". General specifications mentioned in the last column are common to all types.***

- **Electrical Specifications :** Standard units are suitable for operation on 220 V/230 V, single phase, 50 Hz, AC supply. Three phase unit if required must be separately mentioned in your order for the required capacity.
- **Brick Platens :** Appropriate brick platens can be provided at extra cost.
- **Spacers :** Set of spacers to suit specimen sizes mentioned against each model is supplied alongwith the machine

Machines of higher capacities can be manufactured as per customer requirements.

Micro Controller Based Compression Testing Machine with Automatic Pace Rate Controller

Operation of a Micro Controller based Compression Testing Machine 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 feed back 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 Compression Testing Machine is available in all models from 50kN to 5000kN capacity. In addition to all the features of Compression Testing Machine 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.

Key Features

- Meets the Exceeds specifications of IS 14858 (2000), Machines Conforing to ASTM C-39, AASHTO T-22,BS, EN and other ASTM standards can be supplied on request.
- Automatic Pace Rate Control at a preset value.
- Pace deviation bar graph.
- Automatic stress determination and display.
- Overload safety protection.
- Self aligning platen with fast accessory change capability.
- Configurable Engineering Unit for machine selection.
- Predefined Machine capacities for each engineering unit. Specific capacity can be selected from the drop down menu.
- Flexible Calibration Points. Calibration can be done on 5 to 10 points.
- Peak Load, Peak Stress, Unique Record No. is displayed.
- EDI has provision to configure more than one Mode.
- Mode1-Compression/Mode2-Flexure/Mode3-Prism Testing/Mode4-Tensile Splitting strength. Each mode will have independent calibration points and calibration points are also flexible.
- Mode-4 runs with Mode-1 calibration.
- Dynamic Calibration
- Any Centronics dot matrix Printer.
- Menu Driven sample details.
- CVT supplied to ensure constant voltage to digital indicator.
- Data storage approx 2000 records.
- Data Download thru RS232 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
- Over travel safety protection in 1000, 2000 & 3000 kN CTM

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; the upper platen comes with a self-aligning action and suitably sized spacers to accommodate a variety of different sizes of specimen - the specification table shows which platen set comes with the machine.

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 an RS232 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 +/- 1% of the applied load.

AIM 317E-MU-1

Ordering Information :

50kN

AIM 302E-MU-1 Mu Compression Testing Machine with Automatic Pace Rate Controller, Capacity 50kN

100kN

AIM 305E-MU-1 Mu Compression Testing Machine with Automatic Pace Rate Controller, Capacity 100kN

250kN

AIM 308E-MU-1 Mu Compression Testing Machine with Automatic Pace Rate Controller, Capacity 250kN

500kN

AIM 311E-MU-1 Mu Compression Testing Machine with Automatic Pace Rate Controller, Capacity 500kN

1000kN

AIM 314E-MU-1 Mu Compression Testing Machine with Automatic Pace Rate Controller, Capacity 1000kN

2000kN

AIM 317E-MU-1 Mu Compression Testing Machine with Automatic Pace Rate Controller, Capacity 2000kN

3000kN

AIM 320E-MU-1 Mu Compression Testing Machine with Automatic Pace Rate Controller, Capacity 3000kN

5000kN

AIM 320E-MU 5000 Mu Compression Testing Machine with Automatic Pace Rate Controller, Capacity 5000kN

For more details, please refer to the table on the next page.

Aimil Range of Compression Testing Machines (Micro Controller Based)

CAPACITY	MODELS	SPECS OF LOAD MEASURING DEVICE (DIGITAL)		GENERAL SPECIFICATIONS					
	Digital	Digital Indicator		Maximum Clearance Between Platens	Maximum Distance Between Side Plates	Platen Size	Piston Dia	Piston Stroke	Specimen Size
	Cat. No.								
(kN)		Range(kN)	L.C.(kN)	(mm)	(mm)	(mm)	(mm)	(mm)	
50	302E-Mu-1	50	0.002	390	260	140 Square	50	50	50.0mm & 70.6mm Cube
100	305E-Mu-1	100	0.01	390	260	140 Square	78.7	50	50.0mm & 70.6mm Cube
250	308E-Mu-1	250	0.01	390	260	140 Square	78.7	50	50.0mm, 70.6mm& 100mm Cube
500	311E-Mu-1	500	0.02	435	260	140 Square	111.2	50	50.0mm, 70.6mm& 100mm Cube
1000	314E-Mu-1	1000	0.1	390	260	222.0 Dia	157	50	100mm & 150mm Cube, 100mm & 150mm Dia Cylinder
2000	317E-Mu-1	2000	0.1	370	340	222.0 Dia	222.2	50	100mm & 150mm Cube, 100mm & 150mm Dia Cylinder
3000	320E-Mu-1	3000	0.1	400	400	320 Square	272.2	50	150mm to 300mm Cube & 300mm Dia X300mm High Cylinder

NOTE : • ***To select the model of compresssion Testing Machine, first select the capacity as per your requirement, then identify the type of machine required. For further detailed specifications of the model identified, just scroll through the "Row" which will also have the corresponding catalogue number and other details of the equipment. For micro controller based types refer to the column "Micro Controller Based". General specifications mentioned in the last column are common to all types.***

- **Electrical Specifications :** Standard units are suitable for operation on 220 V/230 V, single phase, 50 Hz, AC supply. Three phase unit if required must be separately mentioned in your order for the required capacity.
- **Brick Platens :** Appropriate brick platens can be provided at extra cost.
- **Spacers :** Set of spacers to suit specimen sizes mentioned against each model is supplied alongwith the machine

Machines of higher capacities can be manufactured as per customer requirements.

Automatic Compression Testing Machine

Key Features

General

- Conforms to IS 516 and IS : 14858
- Machines conforming to ASTM C39, AASHTO T22, BS, EN and other ASTM standards can be supplied on request.
- "CE" certification on request.
- Fully Auto Controlled – Operable with EDI through
  - Laptop
  - Desktop P.C
  - Standalone EDI

Minimum Recommended Computer Hardware

- 2 GHz Pentium Dual Core or equivalent
- 2 GB RAM, although using multiple testing machines may require additional memory and/or a faster
- processor
- 256 MB DirectX 9.0 capable video card
- 250 GB HD Drive
- CD-ROM Drive
- Mouse or pointing device and keyboard supported by Windows
- Monitor that supports at least 1024 x 768 resolution and 32-bit color
- 1 serial port per testing machine or 1 USB Serial Port adapter per machine
- 1 USB Port for the software key
- Windows compatible printer recommended for reporting capabilities
- Windows compatible sound card and speakers (for audio playback)
- Additional USB ports for measuring devices, barcode scanners, etc.
- At least 1 integrated serial port (not USB) where possible
- An active Internet connection, required to log on to the Help Desk feature provided (to access expert opinion).

Software Requirements

Aimil Horizon Software is designed for 32-bit operating systems running on Windows XP with

Service Pack 2 / Windows Vista /Windows 7.

Aimil Horizon does NOT support Windows XP with Service Pack 1 or less, Windows 2000, NT, 98, ME, 95, or 3.1systems.

Internet Explorer 7 is recommended.

Aimil Scope of Supply of Software include :

- Aimil Horizon Software
- Desktop Computer with licensed Windows XP-Service Pack 2 or Windows7
- USB Cable (USB to Serial Connector)

Note : Any Third Party software required has to be purchased by the Customer directly.

Enhanced Digital Indicator (EDI)

- Configurable Engineering Unit for machine selection.
- Predefined Machine capacities for each engineering unit. Specific capacity can be selected from the drop down menu.
- Flexible Calibration Points. Calibration can be done on 5 to 10 points.
- Peak Load, Peak Stress, Unique Record No. is displayed.
- EDI has provision to configure more than one Mode. Mode1-Compression/Mode2-Flexure/Mode3-Prism Testing/Mode4-Tensile Splitting strength. Each mode will have independent calibration points and calibration points are also flexible.
- Mode-4 runs with Mode-1 calibration.
- Dynamic Calibration
- Any Centronics dot matrix Printer.
- Menu Driven sample details.
- Data storage approx 2000 records.
- Data Download thru RS232 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
- Pace rate can be changed during test also.
- Auto close / release of Dump Valve.
- Communication with Aimil Horizon thru Serial Port (Rs232).
- Machine can be operated with software through computer
- CVT supplied to ensure constant voltage to digital indicator.

Aimil ACTM is a fully automated version of the manual/ semiautomatic Compression testing Machine. The Machine is available from 50kN to 5000kN range. Machine can be operated as a standalone with EDI as well as with Aimil Horizon 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 Horizon 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. The load resolution varies from 0.002kN – 0.2kN based on Machine Capacity.

Compression Testing Machines:

Aimil Series of Compression Testing Machines are the finest of their types available. The rugged construction and extreme simplicity makes it possible for personnel with minimum Training to operate them with ease and complete dependability.

AIM 320E-FA-1

Automatic Compression Testing Machine

Aimil Fully Automatic Compression Testing Machine is a fully automated version of the manual/semi automatic Compression testing Machine. The Machine is available in 50kN to 5000kN ranges. 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 beginning of every test. The pace rate is maintained by means of full three term PID feedback control using high torque stepper motors and driver sets. Data acquisition, storage, management and analysis are all fully automated.

The complete unit comprises of :

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.

The upper platen is provided with self-aligning action. 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.

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 Serial Port 232 or any converter using serial to USB if serial port is not available. **(Caution : Use only original FTDI part no. FS-U-1001-R10 or US232R-10 under Farnell Part no.1615-838)**
- 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 provides various Functions to Operator

Introduction and Launch Page

Aimil is proud to introduce you to the next evolution of testing software with our Horizon package. As part of our development process, we have taken the best features of our existing software offerings, added a host of report writing and data manipulation capabilities and in the process, created a new, unparalleled testing platform that will make easy work of your materials testing programs, whether they're designed for the demanding rigors of R&D or the charting and analysis functions of QC testing. One of the first features you see within the Aimil Horizon software is its use of the most current Windows environments. These familiar formats make it easy to use and learn, especially since the same familiar functionality is maintained throughout the program.

Key features of Aimil Horizon software include:

- Test Method Library
- Test Editor
- Tabbed Test and Recall Area
- Multiple Machine Control
- Output Editor
- Multilingual
- Method Editor
- Result Editor
- Multifaceted Security

Method Library and Test Editor

If your testing regimen follows a quality control analysis to a variety of National / International Standards, then going to the Test Method Library is, most likely, the first place you want to visit; here you can select your desired test method that we have written in accordance with different National/International Test Standards i.e IS/BS-EN/ ASTM. So, for example, if you need to test for the Cube Mould as per IS516 simply select that routine from the list in the library.

Similarly, if you need to determine the Split Tensile strength as per IS simply select from list in the library.

If, on the other hand, you want to develop your own calculated result from a test, using a national standard as a template for your unique test,it is a simple task of adding the result (and calculation) to the output, and saving the test set-up with your unique name.

Alternatively, you can develop your own test method where you have complete control over how the test machine performs over the course of the test. You can program the control segments, control options, specimen parameters, the report output, and how the test machine and software communicate with each other.

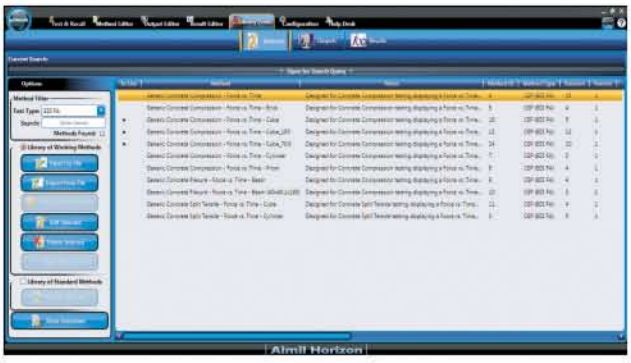


Fig. 3. Library search result, looking for a standardized tensile test routine.

Fig. 4. Control Segments setup within the Method Editor section of Horizon software. The number of control segments available for each test, and test type, is unlimited, although experience indicates that typically no more than five are generally used.

Notable Features of Tabbed Test and Recall Area

- Examine test results from previous tests while performing live tests.
- Ability to test multiple machines and machine types.
- Multiple graph types can be used for each test.

Fig -5 Test Complete

The next feature you may notice is that Horizon can perform multiple tests at one time, controlling and gathering test data from multiple machines (provided your PC has the necessary hardware to control multiple machines). This is true whether you're controlling and gathering data from multiple attachments like Split Tensile Attachment/ Flexural/Strain Measurement apart from Compressions.

Fig. 6. Test Screen showing the tab labeled for multiple machines CTM1 & CTM2. The software is ready to start the tests on multiple machines at the same time while controlling the tests being performed.

Result Editor and Output Editor

Up to three different graphs can be produced per test, using different measurement axes.

Once all the data has been gathered, Horizon can consolidate it into reports that you can customize to your, or your customer's, individual needs. The output editor allows unprecedented formatting of your data. You can select what live data can be shown during the test; the acceptable limits of the results; the graphical representation of the test – in multiple formats; the layout of the report including the use of your, or your customer's, logo on the report; and also if you need the resultant data available in another format, it can be readily exported or converted to that desired format.

These reports can be distributed across one PC, multiple PCs, or even across a network; the presentation of these test reports are compatible with multiple common formats, including an ERP format.

Fig. 7. Graph setup in the Output Editor function of Horizon software.

Notable Features of Result Editor and Output Editor

- Multiple graph types can be used per test
- Reports can be generated using your customer's logo
- Reports can be created in the precise format you desire.
- Data can be exported to a variety of different formats.
- An overview is always available to preview what has been created

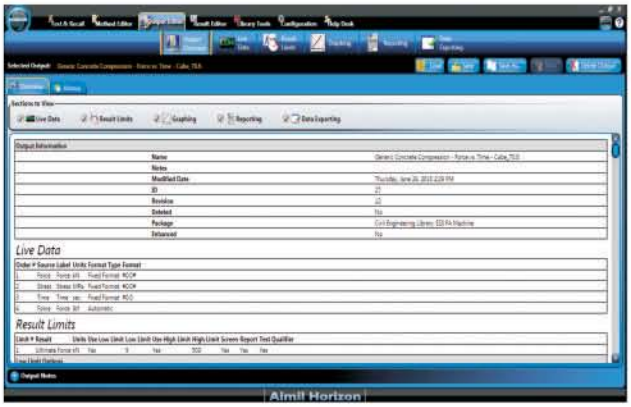


Fig 8. At every stage of the test set-up, an overview of what has been instructed and how data is to be recorded, used, saved, and output can be seen and checked.

RESULT EDITOR.

Fig-9. Customized formulae can be written to create your own unique results. In this particular example, the result calculation is a "standard" result and consequently uneditable and greyed out

Fig-10. To make Aimil Horizon truly universal, the software has a Translations section where phrases used as titles and commands can be translated into any International Languages. Note: Translation is limited to some International Languages only not to any Indian regional Language.

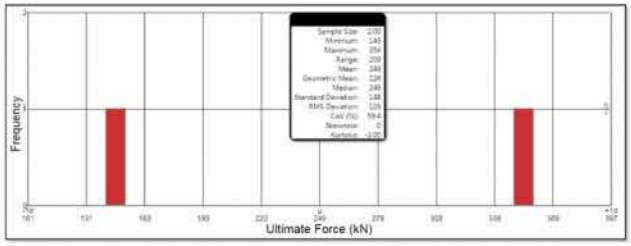


Fig 11. Statistical options for Parameter selected

Helpdesk and Support

Aimil Horizon is one of the most technologically advanced testing software suites, but throughout the design process two key criteria of value and simplicity were maintained. If at any time you have questions on the operation of the software or how to make different reports, the program has built-in tutorials, on-line help, and Aimil Help Desk access

Fig12 - Help Desk launch page. Here you can see the access to the on-disk / on-line tutorials, details of the program key, and email able access to our manned Help Desk.

Fig 13. As an additional resource, you can also link directly to our application-based micro sites which feature an Ask-The-Expert forum where users can ask questions of our market and application technologists..

Primary Platform

Primary Platform Includes:

- Method library application focused
- Test environment
- Recall
- Regeneration
- Basic statistics
- Exporting (printing, Ascii)
- Edit & creating methods
- Translation

- Security
- Central server capability
- Closed loop control for bench machines
- Help Desk Access
- Knowledge centre (requires internet connection)

AFM's

Additional Functional Modules which are available at additional costs are :

- Multiple machines
- Connectivity (Other)
- Formula generation

Strain Measurement with the Automatic Testing Machine

In addition to measuring the stress on the specimen, a version of the machine is also available with the option of measuring the strain on the sample. This is achieved by installing displacement measuring device including compressometer to measure the compression and extensometer to measure lateral expansion of the sample from which the strains can be calculated. With this option, the software features of the Automatic Compression Testing Machine are expanded to include the following:

- Compression Vs Time Plot.
- Axial Strain Vs Time Plot.
- Stress Vs Axial Strain Plot.
- Calculation of Young's Modulus of the sample.
- Lateral Strain Vs Time Plot.
- Calculation of Poisson's Ratio

It has the facility to list load, compression, stress, Axial strain, lateral strain & time on a single table.

Flexural Strength Measurement with Digital Microprocessor Controlled Automatic Compression Testing Machine

In addition to compressive strength an attachment for measuring Flexural strength of beam can also be supplied at an extra cost. This is accomplished by providing a frame for testing flexural strength along with the dedicated software which can be used as an attachment to the existing system.The software features of flexure attachment include the provision for calibration.

Split Tensile Strength Measurement for Cylindrical & Cubical samples

In addition to compression strength attachments for Split Tensile Strength Test of Cylindrical & Cubical samples can be supplied at extra cost. This is accomplished by providing attachments which can be mounted on the Compression Testing Frame for Split Tensile Strength Test. The software features of Split Tensile Strength attachment include the provision for calibration.

Ordering Information :

AIM 302E-FA-1	Automatic Compression Testing Machine Windows Based, Capacity 50kN
AIM 305E-FA-1	Automatic Compression Testing Machine Windows Based, Capacity 100kN
AIM 308E-FA-1	Automatic Compression Testing Machine Windows Based, Capacity 250kN
AIM 311E-FA-1	Automatic Compression Testing Machine Windows Based, Capacity 500kN
AIM 314E-FA-1	Automatic Compression Testing Machine Windows Based, Capacity 1000kN
AIM 317E-FA-1	Automatic Compression Testing Machine Windows Based, Capacity 2000kN
AIM 320E-FA-1	Automatic Compression Testing Machine Windows Based, Capacity 3000kN
***AIM 320E-FA 5000**	Automatic Compression Testing Machine Windows Based, Capacity 5000kN
***AIM 320E-FA 5000-1**	Automatic Compression Testing Machine Windows Based, Capacity 5000kN- Compact

Optional Accessories :

AIM 31727-1	Axial Strain Measuring attachment with software
AIM 31727-2	Lateral Strain Measuring attachment with software
AIM 31727-3	Axial & Lateral Strain Measuring attachment with software
AIM 31728	Split tensile strength attachment with software
AIM 33202	Flexure Test Attachment with software

* Calibration is done against Proving Ring upto 3000kN only. Reading are extrapolated above 3000kN (up to 5000kN)

	Model	Specs of Load Measuring Device		General Specifications					
Capacity	ACTM FA			Maximum Clearance between Platens	Maximum Distance between Side Plates	Platen Size	Piston Diameter	Piston Stroke	Specimen Size
kN	CAT No.	Range	Resolution(kN)	mm	mm	mm	mm	mm	
50	302E-FA-1	50	0.002	390	260	140 Square	50	50	50.0 mm & 70.6 mm Cube
100	305E-FA-1	100	0.01	390	260	140 Square	78.7	50	50.0 mm & 70.6 mm Cube
250	308E-FA-1	250	0.01	390	260	140 Square	78.7	50	50.0 mm, 70.6 mm & 100 mm Cube
500	311E-FA-1	500	0.02	435	260	140 Square	111.2	50	50.0 mm, 70.6 mm & 100 mm Cube
1000	314E-FA-1	1000	0.1	390	260	222.2 Dia	157.0	50	100 mm , 150 mm Cube & 100 mm, 150 mm Dia Cylinder
2000	317E-FA-1	2000	0.1	370	340	222.2 Dia	222.20	50	100 mm , 150 mm Cube & 100 mm, 150 mm Dia Cylinder
3000	320E-FA-1	3000	0.1	400	400	320 Square	272.2	50	150 mm to 300 mm Cube & 300 mm Dia x 300 mm High Cylinder
5000	320E-FA5000	5000	0.2	1050	620	535 Square	341	50	150 mm to 500 mm Cube & 150 mm x 300 mm Cylinder to 500 mm x 1000 mm Cylinder
5000	320E-FA5000-1	5000	0.2	620	600	320 Square	341	50	150 mm to 300 mm Cube & 150 mm x 300 mm Cylinder to 300 mm x 600 mm Cylinder

Note:

1. To select the model of compression Testing Machine, first select the capacity as per your requirement, then identify the type of machine required - Digital/Microprocessor based or Fully Automatic. For further detailed specifications of the model identified, just scroll through the "Row" which will also have the corresponding catalogue number and other details of the equipment and for all other types refer to the column " Digital Indicator. General specifications mentioned in the last column are common to all types.
2. Brick Platens :Appropriate brick platens can be provided at extra cost.
3. Spacers : Set of spacers to suit specimen sizes mentioned against each model is supplied alongwith the machine
4. Machines of higher capacities can be manufactured as per customer requirements.
5. AIM-33202 Flexure Test Attachment - for use with compression testing machine for testing Beams of size 100x100x500 mm and 150x150x700 mm.
6. Strain measuring attachment for 150 mm dia x 300 mm cylindrical specimen is supplied as optional item with 2000kN & 3000kN.

Conversion Kits and Optionals :

Electrical Pumping Unit with Load Sensor and
Digital Indicator for Analogue Machines
Following kits are available

Ordering Information :

AIM 325 - 1 for	50 kN	Compression Testing Machine	–	This unit is available as a conversion kit to the existing range of Aimil's Compression Testing Machine, However, recalibration is a must
AIM 325 - 2 for	100 kN	Compression Testing Machine		
AIM 325 - 3 for	250 kN	Compression Testing Machine		
AIM 325 - 4 for	500 kN	Compression Testing Machine		
AIM 325 - 5 for	1000 kN	Compression Testing Machine		
AIM 325 - 6 for	2000 kN	Compression Testing Machine		
AIM 325 - 7 for	3000 kN	Compression Testing Machine		
OPTIONALS :				
AIM 32501	50 kN	Load Sensor and Digital Indicator	–	This unit is available as a conversion kit to fit with the existing type of pumping unit in place of the Load Gauge. Renovation of Pumping Unit if required and for recalibration of unit, it may be necessary to send the unit to our works at Naimex House.
AIM 32502	100 kN	Load Sensor and Digital Indicator		
AIM 32503	250 kN	Load Sensor and Digital Indicator		
AIM 32504	500 kN	Load Sensor and Digital Indicator		
AIM 32505	1000 kN	Load Sensor and Digital Indicator		
AIM 32506	2000 kN	Load Sensor and Digital Indicator		
AIM 32507	3000 kN	Load Sensor and Digital Indicator		
AIM 33101	Flexure Test Attachment		–	For use with Aimil Compression Testing Machines for testing Beam of sizes 100x100x500 mm and 150x150x700 mm.
AIM327	Electrical Pumping Unit with Hand Pump			
AIM32701	Electrical Pumping Unit without Hand Pump			
AIM32702	Hand Pumping Unit		–	This pumping unit is used with the Electrical pumps as an option.

Flexural Strength

Ref. Std. : IS:516, BS:1881 and ASTM C78.

The Flexure Strength Testing Machines are designed to test flexural strength of concrete beams. The design provide maximum rigidity throughout their working range.

The load is applied by the downward movement of the piston.

A spacer is provided for testing different size of beams.

The load is indicated on a calibrated bourdon tube type load gauge of range : 0 -100 kN x 0.5 kN

The load gauge is calibrated against National Physical Laboratory / National Council for Cement and Building Materials certified proving ring.

Flexure Testing Machines Salient Features:

- Light weight, rugged high strength frame
- Double action hydraulic pump
- Self-aligning roller assembly
- Hydraulic jack provided with retraction spring
- For testing beams of 100X100X500mm and 150X150X 700mm.

Suitable for operation on 220V, 50Hz, Single Phase, AC supply (For Electrically Operated Flexure Testing Machine).

AIM 332

Ordering Information :

AIM 331	100 kN Flexure Testing Machine Hand operated
AIM 332	100 kN Flexure Testing Machine Electrically operated
AIM 332E-DG-1	Digital Flexure Testing Machine New
AIM 332E-MU-1	MU Flexure Testing Machine with automatic pace rate controller New
AIM 332E-FA-1	Automatic Flexure Testing Machine Windows based New

The following models of Flexural Strength Testing Machines are offered :

Cat. No.	Capacity	Type Of Pumping	Loading Capacity	Least Count	Type Of Loading	Centre Distance Between Supporting Rollers For Beam Size (mm) 150 x 150 x 700,	100 x 100 x 500	Centre Distance Between Loading Rollers For Beam Size (mm) 150 x 150 x 700,	100 x 100 x 500
AIM 331	100 kN	Manual	0-100 kN	0.5 kN	Third Point Loading	600 mm	400 mm	200 mm	133 mm
AIM 332	100 kN	Electrical	0-100 kN	0.5 kN	Third Point Loading	600 mm	400 mm	200 mm	133 mm
AIM 332E-DG-1	100 kN	Electrical	0-100 kN	0.01	Third Point Loading	600 mm	400 mm	200 mm	133 mm
AIM 332E-MU-1	100 kN	Electrical	0.100 kN	0.01	Third Point Loading	600 mm	400 mm	200 mm	133 mm
AIM 332E-FA-1	100 kN	Electrical	0.100 kN	0.01	Third Point Loading	600 mm	400 mm	200 mm	133 mm

Refurbish Services

Aimil has had a long experience of manufacturing Compression Testing Machines. Our machines are the finest of the types available in the market today.

They are known for their quality and performance.

Through 'Refurbish Services' we would like to extend our expertise to all our customers. We have the technology and ability to upgrade, digitize, service and calibrate most common makes of Compression Testing Machines be it national or international brands.

With Refurbish services provided by us you get the benefit of working with the leading manufacturer recognized for the most reliable Compression Testing Machines to take your manufacturing performance to a higher level.

Our service packages include :

- Conversion of Analogue machine to Digital model
- Conversion of Digital machine to Microprocessor based model
- Conversion of Microprocessor Machine to fully Automatic model & even from Analogue to Fully Automatic or any order of your choice/need

We can help you ensure conformance to standards, enhance your Hardware and software capabilities and streamline operations.

We have dedicated team of experienced engineers that will help you select the retrofit solution best suited for your requirement.

For all your CTM re-engineering requirements, you can depend on our in-house engineering and manufacturing capabilities.

We will refurbish your existing Compression Testing Machine to look new, all geared to meet your needs of date.

Talk or Mail your requirements to our Product Specialist at +911130810200/231/ 245
or e-mail at : webmaster@aimil.com

Consistency and Workability

Consistency is a general term related to the relative fluidity of the concrete. It is an indication of the amount of mixed water in relation to the amount of dry materials. Workability indicates whether or not concrete can be placed easily in some desired shape or location. To ensure that concrete achieves its maximum possible strength and yet retains its ease of placing on site, it is essential that the design of the concrete mix in relation to the water-cement ratio and workability is closely controlled.

Following are the methods for determining the consistency of concrete.

Slump Test

This test is considered suitable for cohesive and plastic mixes of concrete containing aggregate smaller than 50 mm.

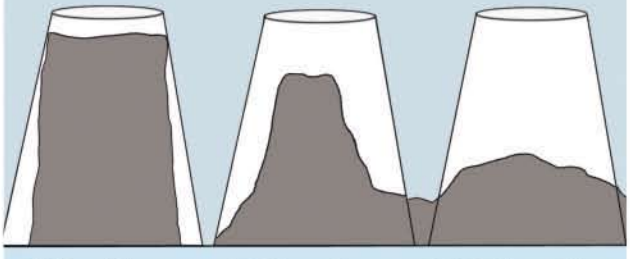
Slump Test Apparatus

Ref. Standards IS:7320, BS:1881, ASTM C 143, AASHTO T119

The slump cone is filled with freshly mixed concrete and is tamped with a tamping bar in four layers. The top of the concrete is levelled off with the top of the slump cone, the cone is lifted vertically up and the slump of the sample is immediately measured.

- Base has cleats on its underside to help dig into the ground surface.
- Positive clamping of slump cone to the base while filling and tamping the concrete.
- A combination swivel carrying handle also serves as the datum making the conventional and somewhat awkward measuring procedure of using a foot rule and a datum bar, a thing of the past.

Type of Slump



(A) True Slump **(B)** Shear Slump **(C)** Collapse Slump

Degree of workability	Slump	Compacting factor
Very low	0 - 25 mm	0.75-0.80
Low	25 - 50 mm	0.80-0.85
Medium	50 - 100 mm	.085-0.92
High	100 - 150 mm	Above 0.92
Very High	Collapse	Not applicable

The equipment consist of the following replaceable parts :

AIM 33401 Slump Cone
AIM 33402 Base plate with swivel handle
AIM 345 Tamping rod steel, 10 mm dia x 600 mm length with ISI certification mark IS : 10086

AIM 334

Ordering Information :

AIM 334 Slump Test Apparatus with testing rod & base plate

Self Consolidating Concrete (SCC) Flowability

Ref. Standards - ASTM C1621

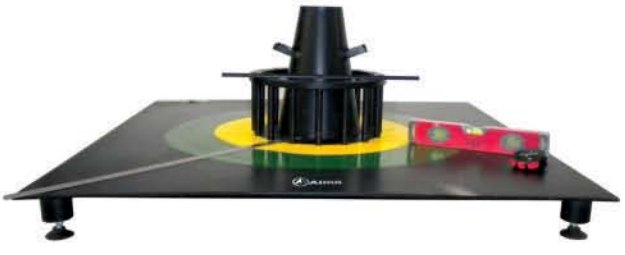
These tests are used to determine the flowability and passing ability of Self-Consolidating Concrete (SCC) as defined in ASTM C1621. Passing ability refers to the ability of SCC, under its own weight (without vibration), to flow into and completely fill the spaces within an intricate framework, containing obstacles such as reinforcement bars.

J-Ring New

This test method provides a procedure to determine the passing ability of self-consolidating concrete mixtures. The difference between the slump flow and J-Ring flow is an indication of the passing ability of the concrete. The test method is applicable for laboratory use in comparing the passing ability of different concrete mixture. It is also applicable in the field as a quality control test. It can also be used to investigate the resistance of SCC to segregation by comparing test results from two different portions of sample. The J-Ring test measures three parameters: flow spread, flow time and blocking step. The J-Ring flow spread indicates the restricted deformability of SCC due to blocking effect of reinforcement bars and the flow time indicates the rate of deformation within a defined flow distance. The blocking step quantifies the effect of blocking.

The equipment consist of the following replaceable parts :

AIM 334J01	Base plate of size 1000mm x 1000mm	1No.
AIM 334J02	Slump cone	
AIM 334J03	Straight rod of at least one flat side with flexure less than 1mm	1 No.
AIM 334J04	Measuring scale 0-600mm	1 No.
AIM 334J05	Sprit level.	1 No.
AIM 334J06	Stop watch with accuracy of 0.1 second	1 No.



AIM 334J

L-Box New

L Box to investigating the flow rate and passing ability of SCC (self-consolidating concrete) in confined spaces. It measures the reached height of fresh SCC after passing through the specified gaps of steel bars flowing within a defined flow distance. With this reached height, the passing or blocking behavior of SCC can be estimated.

The equipment consist of the following replaceable parts :

AIM 334L01	L-Box with three smooth bars equally spaced and a gate
AIM 334L02	Bucket capacity of 14 litre
AIM 334J04	Measuring scale 0-600mm
AIM 334J05	Spirit level
AIM 334J06	Stop watch with accuracy of 0.1 second

AIM 334L

U-Box New

The U Shape Box is used to determine the confined flowablity and the capacity of SCC concrete to flow within confined space. The box is made of steel frame consisting of three bars.

In this test the degree of compatibility can be indicated by the height that the concrete reaches after flowing through an obstacle. The quality of the concrete can be judged by the height reached.

The equipment consist of the following replaceable parts :

AIM 334L02	Bucket capacity of 14 litres
AIM 334J04	Measuring scale 0-600mm
AIM 334J05	Sprit level
AIM 334J06	Stopwatch with the accuracy 0.1 second

AIM 334U

V-Funnel New

The V- Funnel flow time is the period a defined volume of SCC (self-consolidating concrete) needs to pass a narrow opening and gives an indication of the filing ability of SCC provided that blocking and or segregation do not take place, the flow time of the V-Funnel test is to some degree related to the plastic viscosity.

The equipment consist of the following replaceable parts :

AIM 334L02 Bucket capacity 14 litres.

AIM 334J05 Sprit level.

AIM 334J06 Stopwatch with accuracy 0.1 second for recording the flow time.

AIM 334V

Flow Table for Self Compacting Concrete New

Flow table is used to determine the flow of fresh mixed super plasticized concrete to high working. The slump cone is placed centrally on the table of to be held position by standing on the two foot pieces. A wooden tamping bar is provided for lightly tamping for each layer.

The equipment consist of the following replaceable parts :

AIM 334F01 Flow table

AIM 334F02 Slump cone

AIM 334F03 Wooden tamping bar

334-F

Ordering Information :

AIM 334J J-Ring

AIM 334U U-Box

AIM 334L L-Box

AIM 334V V-Funnel

AIM 334-F Flow table for self compacting Concrete

Consistency Test

This method is a mechanical variation of the simple slump test which includes determination of the workability of concrete. The concrete is formed in a slump cone positioned in a container and it is vibrated after removing the cone on a small vibrating table operating at a fixed amplitude and frequency.

A plastic spacer disc, in which, contact with the upper surface of the wet concrete guides the operator to judge when the compaction is complete. The time to complete the required vibrations gives an indication of the workability of concrete, which is expressed in Vee-Bee degrees.

Aimil Consistometer

Ref. Standards - IS:10510, IS:1199, BS 1881 (Part 104), AASHTO T126, EN. 12350-3

Consists of a vibrating table, specimen pot, slump cone, graduated rod and acrylic plate.

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

AIM 335

Ordering Information :

AIM 335 Aimil Consistometer

Flow Test

Ref. Standard - IS:1199, AASHTO T126

The Flow Table is designed for determining the workability of portland cement concrete.

Flow Table, Motorised

The Flow Table top is 76.2 cm dia, finely machined from a solid brass casting. The integrally cast ribs are designed for support and strength. The stand is fabricated of cast iron and is of sturdy construction. Holes for mounting on foundations are drilled in the base plate. The ground and hardened steel cam is designed to drop the table by 12.5 mm with an electric geared motor.

The equipment is supplied along with flow mould.

suitable for operation with 220 volts, 50 Hz, single phase, AC Supply.

AIM 336

Ordering Information :

AIM 336 Flow Table, Motorised

Compaction Factor

Compaction factor is the ratio of the weight of partially compacted concrete to the weight of the concrete when fully compacted in the same mould. The weight of partially compacted concrete in relation to its fully compacted state is a reasonably good indication of the workability of concrete.

Compaction Factor Apparatus

Ref. Standard IS:5515

A useful tool for determination of workability determination of concrete mixes of very low workability such as those normally used with concrete, compacted by vibration. Concrete mix having maximum size of aggregate not exceeding 38 mm, can be tested for workability.

Compaction Factor Apparatus is complete with hoppers and receiver assembly, AIM 345 Tamping Rod of 16 mm dia x 60 cm long having a Hooper and two trowels.

AIM 337

Ordering Information :

AIM 337 Compaction Factor Apparatus

Setting Time By Penetration Resistance

The method as detailed in ASTM C403 and AASHTO T197 is for the determination of setting time of mortar fraction of concrete mixes. The hardening of concrete is a gradual process and any definition of setting time is arbitrary and the method is suitable only for mortar mixtures with a value greater than zero. The initial and final setting times are the periods starting from the time cement and water are mixed together until the penetration resistance is 35 kg/cm^2 and 280 kg/cm^2 respectively.

Concrete Penetrometer, Spring Type

Ref. Standard IS:8142, ASTM C 403

It consists of a cylindrical spring housing with a plunger attached to the top of the spring. Penetration needle is attached to the other end of the spring housing. The plunger is graduated in 1 kg divisions, to a maximum capacity of 60 kg, which can be read with respect to the top end of the spring housing. A set of six needle points with areas of 645, 323, 161, 65, 32 and 16 mm^2 are provided.

Supplied complete in a carrying case.

AIM 338

Ordering Information :

AIM 338 Concrete Penetrometer, Spring Type

Bulk Density

Ref. Standard - IS:1199, IS:10079, BS:1881, EN1097-3, 12350-6

For determining the weight per cubic metre, of freshly mixed concrete. Formulae are provided for calculating the volume of concrete per batch, the yield per bag of cement and the cement factor.

Bulk Density Measures

Set of two, conforming to IS:1199 The Set comprises one each of :

AIM 33901 Bulk Density Measure, 20 litres.

AIM 33902 Bulk Density Measure, 10 litres.

Ordering Information :

AIM 339 Bulk Density

Air Entrainment

Entrainment of a small amount of air in the cement/ concrete has been found to improve considerably the durability of concrete. The recommended limits specified for the air content are between 3% and 6.5%. Smaller percentages may result in deterioration taking place more quickly and larger percentages may reduce the strength without any improvement in the durability of concrete.

Further, when use of admixtures is made to increase workability of concrete, a check of the air content is required to ensure that the percentage of air remains between 1 to 2 % to get the optimum performance of the concrete structure. For determining these percentages, Air Entrainment Meter, as specified in IS:9799, is used.

Air Entrainment

Ref. Standard - IS:1199, IS:10079, BS:1881, EN 12350-7

It consists of a pressure-tight flanged cylindrical measuring bowl, fitted with a removeable flanged and a conical cover assembly with a seal in-between. The conical cover has an air valve and a pet cock for bleeding-off the water. A cylindrical stand pipe, which is graduated in per cent air content, is fixed on the conical cover assembly.

Required pressure is applied to the specimen with the help of a pressure bulb. The whole assembly is mounted on a flat base. Each apparatus is supplied complete with a calibrating cylinder, pressure gauge, funnel, trowel and tamping bar.

AIM 341

Ordering Information :

AIM 340 Air Entrainment Meter, Capacity 0.005 m^3 (5 litres), suitable for aggregate size upto 38 mm .

AIM 341 Air Entrainment Meter, Capacity 0.01 m^3 (10 litres), suitable for aggregate size upto 75 mm.

AIM 342 Air Entrainment Meter, Capacity 0.1m^3 (100 litres), suitable for aggregate size upto 150mm. Supplied with Foot Pump in place of Pressure Bulb as supplied with other models.

Mixing Equipment

For quality specimens to be manufactured efficient mixing of concrete, prior to moulding is essential. Mixing helps in coating the surface of all aggregate particles with cement paste and bring uniformity in the mixture .

We offer both Drum type and Pan type models of concrete mixture. They are suitable for mixing small quantities of concrete, generally used in the laboratories.

Concrete Mixer, Drum Type, Capacity 30 Litre

The mixer consists of a steel vessel of 30 litres, mounted on a frame. The vessel is rotated at 20-24 RPM with the help of a motor and a pulling. The vessel can be tilted to any angle by a handle. This facilitates mixing and discharge. Blades are provided inside the vessel to mix the material thoroughly. The large handle strip facilitates manual rotation of the drum during power failure. The drum, handle and motor etc. are mounted on a steel frame. This model is provided with two large wheels for carting away.

Supplied complete, with motor of 1 HP along with lead wire.

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

AIM 9701

Ordering Information :

AIM 9701 Concrete Mixer, Drum Type, Capacity 30 Litre

Concrete Mixer, Pan Type, Capacity 40 L

The Concrete Mixer has been designed for mixing small quantities of concrete used in preparation of concrete cubes, for testing in laboratories. The purpose of the mixer is to smear mechanically the aggregate surface with cement paste uniformly & produce a mix of uniform consistency. This in turn gives consistent quality of cube specimens when casted in the moulds.

The Concrete Mixer developed is transportable on wheels. The design of mixing paddles ensure uniform & efficient mixing of cement & aggregate both in dry & wet conditions. This machine is suitable for aggregate size upto 20mm. The equipment can also be put to use for mixing of any other material in dry / wet conditions. The arrangement helps the operators to access the pan contents conveniently & emptying the mixture after completion of the operation. The drum is driven off the ribbed base. The lid with mixing paddles clears off the top of the drum to provide maximum access to the operator.

Specifications :

Mixing Capacity	: 40 ltrs.
Overall Dimension	: 910mm X 875 mm X 1250mm
Motor	: 2 HP, 960 RPM

Special Features :

- Portable & Compact.
- Adjustable Blades.
- Simple to clean & maintain.
- Easy to operate.

Suitable for operation on 440V, 50Hz, Three Phase, AC supply.

AIM 9891

Ordering Information :

AIM 9891 Concrete Mixer, Pan Type, Capacity 40 L

Concrete Mixer Pan Type with higher Capacity available on request

Moulding

International specifications for concrete strength testing require test specimens to be cast in a number of standard sizes for compression and flexural strength determination.

Aimil moulds are made of high quality metal and are strong enough to resist distortion and retain their shape and size under rugged conditions. These moulds are given internal surface finish of a very high order, to comply with requirements laid down in IS:10086, BS:1881, ASTM C31 and ASTM C192, EN 12390-6-2

The design is such that during dismantling and re-assembly, these moulds attain accuracy of alignment.

Aimil offers Cube Moulds, Cylindrical Moulds and Beam Moulds of various sizes as listed below :

Cube Moulds

Four standard sizes of cube moulds are offered and supplied complete with base plate.

Ordering Information :

AIM 343	Mould, Cast Iron, for 100 mm Cube with ISI Certification Mark, IS:10086
AIM 344	Mould, Cast Iron, for 150 mm Cube with ISI Certification Mark, IS:10086

Optional Accessories :

AIM 345	Tamping Rod, Steel, 16 mm dia x 600 mm length rounded at the lower end. Carries ISI Certification Mark IS:10086. For use with Cube and Cylindrical Moulds.

Cube moulds of 200mm & 300mm also available on request

Beam Moulds

Ref. : EN 12390-1-2

Two standard sizes of beam moulds are offered for casting concrete specimens for flexural strength testing. These moulds are made of steel and are supplied complete with a base plate.

Ordering Information :

AIM 346	Beam Mould 100 mm x 100 mm x 500 mm size
AIM 347	Beam Mould 150 mm x 150 mm x 700 mm size

Optional Accessories :

AIM 348	Tamping Bar, Steel, 25 mm x 25 mm square ramming face, 400 mm long, 2kg in weight. Carries ISI Certification Mark IS:10086. For use with Beam Moulds.

Cylindrical Moulds

Moulds for testing concrete cylinders for compressive strength testing are offered in two different sizes. These moulds are made of cast iron and split into two parts longitudinally. These are supplied complete with a base plate and top plate, and meet the requirements of IS:10086 and other international standards, EN 12390-1-2

Ordering Information :

AIM 349	Mould , Cast Iron, Split length wise 150 mm x 300 mm high with ISI certification mark IS:10086
AIM 350	Mould, Cast Iron, Split length wise 100 mm dia x 200 mm high
AIM 351	Mould, Cast Iron, Split length wise 100 mm dia x 100 mm high
AIM 352	Mould, Cast Iron, Split length wise 150 mm dia x 150 mm high
AIM 354	Mould, Cast Iron, Split length wise 300 mm dia x 300 mm high

Moulds

Curing

- 24-hour cycle from time of mixing.
- Temperature range : Ambient + 5°C to 95~100°C

Curing Temperature for Concrete in lab environment for Temperature range - 23±2°C & Relative humidity - 50±10%

The tank has been designed to accommodate 150 mm/70.6 mm casted cubes upto 36/72 cubes and fully insulated, complete with a hinged lid, heater, thermostat and recirculation pump. Provision of two removeable racks allowing free circulation of water around each cube. The pump, drain valves and electrical equipment are housed in a compartment located at one end of the tank.

AIM 355-1

Ordering Information :

Curing Tank:

AIM 355-1	Curing Tank for 6/12 cubes of 150 mm/ 70.6 mm size
AIM 355-2	Curing Tank for 12/24 cubes of 150 mm/70.6 mm size
AIM 355-3	Curing Tank for 24/48 cubes of 150 mm/70.6 mm size
AIM 355-4	Curing Tank for 36/72 cubes of 150 mm/ 70.6 mm size

Accelerated curing (for warm water method)

Temp. Range : 55 ± 2° C.

AIM 355-1 ACW	Accelerated curing Tank for 6 moulds of 150 mm size.
AIM 355-2 ACW	Accelerated curing Tank for 12 moulds of 150mm size.

Accelerated curing (for boiling water method)

Temp. Range 100± 2° C.

AIM 355-1 ACB	Accelerated curing Tank for 6 moulds of 150 mm size.
AIM 355-2 ACB	Accelerated curing Tank for 12 moulds of 150mm size

Note: For applications in the Cement plants, cooling-cum-heating type humidity chamber are only recommended.

Accelerated curing (for cooling and boiling water method)

Temp. Range : 10°C to 100°C

AIM 355-1 ACB-C	Curing Tank for 6 cubes of 150 mm, 10°C to 100°C (with cooling & heating system) New
AIM 355-2 ACB-C	Curing Tank for 12 cubes of 150 mm, 10°C to 100°C (with cooling & heating system) New

Capping

Cylindrical Specimen Capping Equipment :

Ref. Standards - IS:516, BS:1881, ASTM C31, ASTM C617

It is essential that the ends of the concrete cylinder specimens are flat and parallel when conducting a compressive strength test. If it is not so, the end surfaces are required to be capped with capping compound, using capping sets to obtain these conditions. These capping sets are for use in the field and in the laboratory.

The vertical capping set comprises of a base with an upright, which serves as a guide for positioning the capping plate and a cylinder. Precisely machined capping plate is for keeping molten compound and to position the cylinder. Supplied complete with a cylinder carrier and a laddle.

AIM 357

Ordering Information :

AIM 357	Capping Set, Vertical, for Capping 150 mm dia Cylinders and Cores.
AIM 358	Capping Set, Vertical, for Capping 100 mm dia Cylinders and Cores

Optional Accessories :

AIM 359	Capping Mould, for Capping 150 mm dia Concrete Cylinders
AIM 35701	Capping Compound, Pack of 5 kg, for capping the ends of the Concrete Test Cylinders
AIM 35702	Warmer, for melting the capping compound. Consists of an electrically heated bath with a temperature regulator. Complete with a cover and carrying handle.

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

AIM 35703	Bowl, Metallic bowl for carrying the capping compound
AIM 35704	Laddle, Metallic laddle for pouring the molten capping compound into the grooves between the cylinder and the capping plate

Creep Test Rig

Ref. Standard : ASTM -C512

This Apparatus is designed to determine the Creep of Mould Concrete Cylinder subjected to sustained longitudinal compressive load.

This test method is limited to Concrete in which the maximum aggregate size does not exceed 2 inch (50mm)

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

The equipment consist of the following replaceable parts :

- One reaction frame suitable for 3 Nos. 150 dia x 300mm long cylindrical sample
- One pumping unit electrically operated
- One hydraulic jack
- One load gauge

Reaction Frame

Reaction frame consists of Upper & Lower Jack plates and Upper & Lower Loading Plates bearing on the ends of the Loaded specimen, load maintaining elements (springs), threaded rods & nuts to take the reaction of loaded system.

Pumping Unit

Motorised pumping unit of 1000kN is housed in an elegant cabinet and is of two speed design driven by an electric motor. The motor of the pump is connected to mains through ON-OFF Push Button Switch. There is slow and fast lever, which is fitted with a knob. By doing to and fro movement of this lever, coarse adjustment of rate of loading can be done.

Fine adjustment can be done by rotating the knob fitted on this lever. A release valve is provided on the top of the pump. Pressure can be released by unscrewing the knob. Pumping unit is submersed in oil tank& it is fitted with oil filler plug cum dipstick & drain plug.

Hydraulic Jack

It consists of a cylinder and a piston. Lifting handle is fixed on the cylinder body. An inlet nipple is fixed for coupling with the connecting pipe. A Teflon Seal is provided on the hydraulic jack to prevent leakage of the oil under pressure. The capacity of the jack is 1000kN. An air vent is provided in the piston for bleeding out air from the system before the jack is put to use for conducting a test. For bleeding out air the Allen Screw for airvent should be loosened. Pump oil to Jack. First air will come out when continuous stream of oil starts coming out tighten the allen screw. A retraction spring is provided in the hydraulic jack so that the piston comes back to its original position after load is released. The travel of the piston of the hydraulic jack is 100mm. If the piston is pushed out beyond this travel, the retraction spring will get damaged.

Load Gauge

The load is indicated on 20cm dial Load gauge 1000kN capacity. The Load gauge can be fixed to the Load gauge adaptor. A red maximum pointer is fitted to the Load gauge to indicate the maximum load applied on the specimen. A drag knob is provided to operate the maximum pointer.

The equipment consist of the following replaceable parts :

AIM 23901	Reaction Frame
AIM 32701	Electrical Pumping Unit without hand pump
AIM 314-LG 1000-1	Load gauge 0-1000 kN & 5 kN on 157mm ram dia, electrical operated

AIM 239

Ordering Information :

AIM 239 Creep Test Rig, 1000 kN

Buoyancy Balance

The Density of Hardened concrete specimens like Cubes & Cylinders can be quickly & accurately checked using Buoyancy Balance. The Buoyancy Balance consists of a rigid support Frame , incorporating a Water Tank ,mounted on a platform. A mechanical lifting device is used to raise the Water Tank thru the Frame height immersing the specimen suspended below the balance .The Balance supplied may also be used as a standard weighing system in the laboratory .

Buoyancy Balance—15 kg x 0.5g

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

AIM 9933

Ordering Information :

AIM 9933 Buoyancy Balance

Vibratory Compaction

Vibrating Table

Ref. : EN 12350-6, 7, 12390-2, 13286-50

Proper compaction of cement concrete while casting specimens for compression testing is essential to achieve higher compressive strength .

AIMIL Vibrating Table is ideally suited for this purpose. The table top is suitable to hold cube moulds and has stops along its edges to prevent moulds from sliding off the table during operation.

The specially designed vibro motor for operating the vibretor.

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

AIM 365-1

AIM 367-1

Ordering Information :

AIM 365-1	Vibrating Table, 50 x 50cm for 4 moulds of 150mm cube
AIM 364-1	Vibrating Table, Table top 75cm x 75cm for 6 moulds of 150mm cube
AIM 366-1	Vibrating Table, Table top 2m x 1m for 32 moulds of 150mm cube
AIM 367-1	Vibrating Table, Table top 1m x 1m for 16 moulds of 150mm cube

Sample Collection

Core Case

Core Case is the first innovation in Concrete core drilling. Connected to the core drill assembly with a flexible rubber coupling, the heavy duty, hand held, rotary drill easily produces cores upto 100 mm in dia without the use of cumbersome frame and feed.

The Water Jacket surrounding the core barrel is flanged, enabling it to be clamped to the surface to be drilled. For added support, clamping pliers and anchors are supplied. A rubber O-Ring fitted with the flange seals the water jacket core barrel assembly against concrete surface, enabling the return flushing water containing the cuttings to be hosed away from the drill site.

Water is fed into the upper water jacket nipple, from there the water flows, through a manifold, into the drill spindle and continues to the inside of the diamond core bit. A steady feed pressure can be maintained on the drill bit by turning the capstan wheel with one hand, while holding the electric drill steady on the coupling with the other. The drill feed assembly, common to all models, makes the system adaptable to all core diameters with additional conversion kit. Core Case is a completely portable, self-contained system, easily carried by a person in a standard brief case.

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

The equipment consist of the following replaceable parts :

AIM 36819	Electrical drill for core case	1 No.
AIM 36807	Feed Assembly	1 No.
AIM 36813	Hammer drill 8 mm	
AIM 36816	Anchor bolts	1 Set
AIM 36817	Rubber coupling for core case	2 Nos.
AIM 36820	Clamp for holding water jacket	1set
AIM 36823	Nut & bolts	15 Nos.

AIM 368 and Accessories

Note: Core Case is not supplied with any bit or water jacket. Core Bits and Water Jacket are to be ordered separately, as required.

Ordering Information :

AIM 368	Core Case

Optional Accessories :

Core Bits with the Water Jacket are offered in the following sizes :

AIM 36801	Core Bit and Water Jacket 25 mm dia x 75 mm long
AIM 36802	Core Bit and Water Jacket 38 mm dia x 100 mm long
AIM 36803	Core Bit and Water Jacket 50 mm dia x 100 mm long
AIM 36804	Core Bit and Water Jacket 75 mm dia x 100 mm long
AIM 36810	Core Bit 50 mm dia x 200 mm long
AIM 36811	Core Bit 75 mm dia x 200 mm long

Note : To obtain 200 mm long Core Samples, Core Bits of 100 mm length of the corresponding dia should be used first and replaced with 200 mm long Core Bit in the same Water Jacket to advance the core length.

Caution :

1. **Coring cannot be done if reinforcement steel is encountered, which should be located using suitable techniques and avoided.**
2. **Core bits larger than 50mm dia may be avoided if concrete with strength M40 is encountered, as this may overload the motor and damage the bit.**

Tests on Hardened Concrete

Strain Measurement

Demountable Mechanical Strain Gauges

- Suitable for use on a loading member under adverse conditions
- Demountable measuring head
- Portable
- High accuracy
- Reference Test Bar incorporated

These are designed for gauge lengths of 100, 150 or 200 mm of the reference pins.

AIM 370

Supplied complete with AIM 070 dial gauge 0.002×5mm or AIM 072-DG Dial gauge Digital 0.001×25 mm.

Complete in a wooden case.

Ordering Information :

AIM 369	Demountable Mechanical Strain Gauge, 100 mm, Analogue
AIM 369-DG	Demountable Mechanical Strain Gauge, 100 mm, Digital
AIM 370	Demountable Mechanical Strain Gauge, 150 mm, Analogue
AIM 370-DG	Demountable Mechanical Strain Gauge, 150 mm, Digital
AIM 371	Demountable Mechanical Strain Gauge, 200 mm, Analogue
AIM 371-DG	Demountable Mechanical Strain Gauge, 200 mm, Digital

Optional Accessories :

AIM 36901	Reference Pins, pack of 100, for use with any of the above
AIM 070	Dial Gauge, 0.002x5mm
AIM 072-DG	Digital Dial Gauge, 0.001x25mm

Modulus of Elasticity

Longitudinal Compressometer

Ref. : ASTM-C469

This apparatus is used for determination of the strain and deformation characteristics of cement concrete cylindrical specimens of 150 mm dia x 300 mm length.

The Compressometer consists of two frames for clamping to the specimen by means of five tightening screws with hardened and tapered ends. Two spacers hold the two frames in position. An adjustable pivot rod rests on pivot screws.

A spring enables the pivot rod to remain in contact with pivot screws. The ball chain is for adjusting the tension of the spring. A dial gauge, fixed to a bracket, fitted to the top frame, is used for taking deformation measurement. Supplied complete with AIM 070 dial gauge 0.002×5mm or AIM 072-DG Dial Gauge Digital 0.001×25 mm.

AIM 372

Ordering Information :

AIM 372	Longitudinal Compressometer, Analogue
AIM 372-DG	Longitudinal Compressometer, Digital

Note: Longitudinal Compressometer for other size cylindrical samples can be provided on request

Lateral Extensometer

Ref. : ASTM-C469

This equipment is for the determination of lateral extension of 150 mm dia x 300 mm high cement concrete cylinders while testing them in compression.

The extensometer consists of two movable frames pivoted at one end. A dial gauge measures the lateral extension, and a removable spacer strip is for the initial setting of the dial gauge. Mounting of extensometer on the specimen is with the help of screws.

Supplied complete with AIM 070 dial gauge 0.002×5mm or AIM 072-DG dial gauge digital 0.001×25 mm.

AIM 373

Ordering Information :

AIM 373	Lateral Extensometer, Analogue
AIM 373-DG	Lateral Extensometer, Digital

Drying, Shrinkage and Moisture Movement

Ref. Standards IS:4031, IS:9459, ASTM C490 and BS:1881, EN-1367-4

For determination of change in size of a concrete or cement sample, brought about by a change in moisture content, following apparatus has been designed.

Tests can be performed on freshly made specimens or specimens taken from existing structures.

Length Comparator

The apparatus can be used for three basic tests :

Initial drying shrinkage

The difference between the length of the cured specimen and the length when it is dried.

Drying shrinkage

The difference between the length of the specimen from existing structure and its length when completely dried.

Moisture movement

The difference between the length of the dried specimen and its length when again saturated with water.

The equipment consist of the following replaceable parts :

AIM 37401	Length Comparator Frame
AIM 37404	Reference Bar
AIM 072-DG	Digital Dial Gauge 0-25cm x 0.001mm

AIM 374-1 DG

Ordering Information :

AIM 374-1-DG	Length Comparator, Digital

Analogue dial gauge AIM-072 can be provided on request

Volume Change Apparatus

Ref. Standard : ASTM - C490

This apparatus is used for determining the volume change of cement / concrete. The apparatus consists of a mould 100 x 100 x 250 mm effective gauge length (Distance between the innermost points of the reference points) complete with base plate and four reference points of standard length. Supplied complete, with AIM 374 Length Comparator.

Ordering Information :

AIM 375	Volume Change Apparatus

Prism Mould

Prism mould size is 75mm x 75mm x 285 mm.

AIM 376

Ordering Information :

AIM 376	Prism Mould

Permeability

The design of concrete mix aims at maximum durability for the conditions prevailing at the site where it is to be used. ability to resist the flow of water through, is one of the important durability characteristics. The permeability is determined on cement. mortar and concrete specimens, either cast in the laboratory or obtained by cutting out cores from existing structures.

The Permeability test is carried out as per the standard IS:3085 and US Bureau of Reclamation.

Permeability Testers

High Pressure Permeability Test can be conducted on different size specimens using different cells. Each cell is made of steel and provided with a top plate and funnel at the bottom having gasket seals held in position through bolts and nuts. The concrete specimens are sealed in the cells to prevent any leakage along the side walls. The permeated water is collected in glass bottles attached at the bottom.

Each test stall has its own control valves. The control Value are mounted on a sturdy welded structural stand. All multi-units are provided with end pressure gauges. Each unit is provided with chamber pressure gauges of 0-21 kg/cm^2 and test pressure gauge of 0-17.5kg/cm^2.

Pressures are applied using any available pressure line at the site for a compressor.

Note:

1. **The Compressor is not supplied as a part of the outfit.**
2. **Although IS doesn't cover cubes. Machine has been designed for testing of cubes keeping in mind customer requirements.**

AIM 384

Ordering Information :

AIM 379	Concrete Permeability Apparatus, 3 cell model for 100 mm cube
AIM 380	Concrete Permeability Apparatus, 3 cell model for 100 mm cylinder
AIM 381	Concrete Permeability Apparatus, 3 cell model for 150 mm cube
AIM 382	Concrete Permeability Apparatus, 1 cell model for 150 mm cylinder
AIM 383	Concrete Permeability Apparatus, 1 cell model for 300 mm cylinder
AIM 384	Concrete Impermeability Apparatus, 3 cell model for 150 mm cube as per DIN Std.

Concrete Permeability Apparatus

Cat.	Ref Standard	No. of Cells	Specimen	Size	Optional Extras
AIM 379	IS:3085	Three	Cube	100 mm Cube	AIM 343 Mould Cast Iron for 100 mm Cubes
AIM 380	IS:3085	Three	Cylinder	100 mm dia	AIM 351 Cylindrical mould, Cast Iron, split 100 mm high lengthwise for 100 mm dia x 100 mm high specimens
AIM 381	IS:3085	Three	Cube	150 mm Cube	AIM 344 Mould, Cast Iron for 150 mm Cube.
AIM 382	IS:3085	One	Cylinder 150 mm high	150 mm dia Iron split lengthwise for 150mm dia x 150 mm specimens	AIM 352 Cylindrical Mould, 150mm x 150mm, Cast Iron
AIM 383	IS:3085	One	Cylinder 300 mm high	300 mm dia lengthwise for 300mm dia x specimens 300mm high	AIM 354, Cylindrical Mould, Cast Iron 300mm x 300mm

Concrete Impermeability Apparatus

AIM 384	DIN Standard 1048	Three	Cube	150 mm Cube	AIM 344 Mould, Cast Iron for 150 mm Cube.

Abrasion Resistance of Concrete (Underwater Method) New

Ref. Std. : ASTMC1138

This test method covers a procedure for determining the relative resistance of concrete(including concrete overlays and impergnated concrete) to abrasion under water. This procedure simulates the abrasive action of waterborne particles (silt,sand,gravel, and other solids).

This test method is intended to qualitatively simulate the behavior of swirling water containing suspended and transported solid objects that produce abrasion of concrete and cause potholes and related effects such as the flow of water containing debris over spillways during monsoons. This test method should provide a relative evaluation of the resistance of concrete to such action. The results are expected to be useful in selection of materials, mixtures, and construction practices for use where such action is to be expected. The test method is not intended to provide a quantitative measurement of the length of service that may be expected from a specific concrete.

Steel balls tumbling in a circular orbit in swirling water on the concrete specimen.

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

AIM 385

The equipment consist of the following replaceable parts :

AIM 38501 **Rotating Device** - A drill machine with a chuck capable of holding and rotating the agitation paddle under test condition at a speed of 1200 ± 100 rpm

AIM 38502 **Agitation Paddle**

AIM 38503 **Test Container** - A steel pipe, 305 ± 6mm inside diameter, 450 ± 25mm fitted with a watertight steel base is used. A six steel blocks is welded on the base plate to support the specimen

AIM 38504 **Abrasive Charges** - 1" dia ball 10no, 0.75" dia ball 35no, 0.50" dia ball 25no 1 Set

Ordering Information :

AIM 385 Abrasion Resistance of Concrete

Optional Accessories :

AIM 38505 Mould – A cylindrical in shape, having a diameter approximately 6mm less than that of the inside diameter of the test container and a height of 100mm

Concrete Test Hammer

Ref. Std. : BIS 1311 - 1992 (Part 2) and ASTM C805, D5873.

The concrete test hammer is an instrument used for the non destructive testing of concrete. It allows one to have a quick estimate of the strength of concrete. Since it simply gives an indication based on surface properties.

Measuring Range New

10 to 70 N/mm^2

Impact energy = 2.207Nm.

AIM 388

Ordering Information :

AIM 388 Concrete Test Hammer with NCCBM certificate

Hydraulic Jacks

Hydraulic Jacks have multipurpose utility, i.e. application of loads while engaged in field investigation, determination of load carrying capacity of piles in the field, tensioning of wires in pre-stressed structures, loading of members of any structure for deformation characteristics etc. The jacks are supplied complete with manually operated pumping units fitted with bourdon tube type load gauge and high pressure flexible hose pipe.

All the jacks have a piston travel of 50 mm and jacks upto 1000 kN capacity are provided with retraction springs. These are available in the different ranges.

Note: Piston Travel upto 150mm can be provided on request

AIM 468

Aimil Range of Hydraulic Jacks (Analogue)

Capacity (kN)	Model No.	Specs of Load Gauge		General Specs	
		Range (kN)	L.C. (kN)	Piston Dia. (mm)	Piston Stroke (mm)
50	AIM 465	50	0.2	50.0	50
100	AIM 466	100	0.5	78.7	50
250	AIM 467	250	1	78.7	50
500	AIM 468	500	2	111.2	50
1000	AIM 469	1000	5	157.0	50
2000	AIM 470	2000	10	222.2	50
3000	AIM 471	3000	10	272.2	50

Ordering Information :

AIM 465 Hydraulic Jack 50kN capacity with gauge & hand pump
AIM 466 Hydraulic Jack 100kN capacity with gauge & hand pump
AIM 467 Hydraulic Jack 250kN capacity with gauge & hand pump
AIM 468 Hydraulic Jack 500kN capacity with gauge & hand pump
AIM 469 Hydraulic Jack 1000kN capacity with gauge & hand pump
AIM 470 Hydraulic Jack 2000kN capacity with gauge & hand pump
AIM 471 Hydraulic Jack 3000kN capacity with gauge & hand pump

Optional Accessories :

AIM 475 Hydraulic hand operated pump without gauge
AIM 47501 High pressure flexible hose pipe 1 meter
AIM 47503 High pressure flexible hose pipe 5 meter

Natural Frequency Tester

New

The Natural Frequency Tester is used to identify the active frequencies of any structure. This equipment is particularly useful for structural testing of bridges and other structures in earthquake affected regions. Using this equipment, a building's or structure's design can be simulated depending on the natural frequencies found at the design stage, in cases where the natural frequencies coincide with potential seismic frequencies.

This equipment allows all multiple frequencies to be used to excite a model structure and facilities the online measurement and storage of all results of the impact of the structure under such dynamic seismic like loading.

The equipment consists of a Dynamic Signal Source, Power Amplifier, Exciter & Sensors along with a Data Acquisition System.

The Dynamic Signal Source can generate variable frequencies with variable amplitudes. The selection of different signal types such as square, sinusoidal, triangular and random, etc. is also possible.

The Power Amplifier provides sufficient energy to drive the exciter which will feed the required energy to the structure through a plunger and impact sensor.

The Dynamic Data Acquisition System has a resolution of 16 bits with a very high sampling rate to sense the required parameters such as impact force and accelerometers to sense the effect of impact on the structure.

Technical Specification :

Various Type of Inputs Signal: Sine, Triangular, Square & Random

Frequency Range: 0.01Hz to 200Hz
Variable Amplitude

The equipment consist of the following replaceable parts :

AIM 38901 Dynamic Signal Source
AIM 38902 Power Amplifier
AIM 38903 Dynamic Data Acquisition System
AIM 38904 Exciter
AIM 38905 Accelerometer (0-100Hz, ±5g)
AIM 38906 Cable Set
a) Accelerometer cable
b) Power cable for signal generator
c) Power case for amplifier
d) Exciter cable

Power Amplifier

Signal Source

Data Acquisition System

Ordering Information :

AIM 389 Natural Frequency Tester for testing frequency of structures.

Universal Testing Machine New

Salient Features

- Loading accuracy as high as ± 1% of the indicating value
- Strain measurement at variable speed to cover a wide range of materials adjustable by the manual control valve.
- High reading accuracy and rugged design of digital display.
- Simple control to facilitate ease of operation.
- Fully enclosed and protected load measuring system.
- Robust load frame with extremely rigid construction.
- Large effective clearance between columns enable testing of standard specimen as well as structures.
- Motor driven threaded columns for UP/DOWN movement of lower crosshead for quick change over of specimen, grips and attachment.
- Wide range of standard and special accessories including load stabilizer (Optional).

Application

Aimil Universial Testing Machine is designed for testing metals under tension, compression, bending, transverse and shear load, both in the form of test pieces and as finished product (optional).

Principle of Operation

The load is applied by a hydrostatically lubricated ram. The cylinder in turns receives pressure from the power pack. The load is transmitted to the test specimen and is displayed by a separately housed load indicator.

Loading Units

It consists of a hydraulic cylinder & piston mounted on a robust base. The loading frame consists of an upper crosshead, middle crosshead and lower table. The upper cross-head and lower table are fitted on two hard crome plated columns. The middle cross-head is fitted on two hard plated threaded columns. A reduction gear motor drives the chain and sprockets fixed at the bottom of the threaded columns for height adjustments. The cylinder and ram are individually lapped to eliminate friction. Axial loading of the system is ensured by provision of a ball seating under the lower table. An elongation scale with a least count of 1mm is provided for measurement of deformation of various samples. Tensile test is conducted by gripping the test specimen between the upper and middle cross-heads. Compression, Transverse, Bending and Shear test are conducted between the middle crosshead and the lower table.

Hydraulic System

The power pack has a directly driven pump which generates a maximum pressure of 200 kgf/cm^2. The hydraulic pump produces a continuous non-pulsating oil flow. Hence the load application is very smooth. A pressure compensated flow control valve is provided which controls oil flow to the main cylinder. This maintains a constant rate of piston movement and hence straining rate is kept constant. This valve is hand operated and gives infinitely variable oil flow to obtain different rates of straining.

Measuring Control Panel

This includes high precision, sealed and very accurate pressure transducer mounted in the hydraulic pressure line of the loading unit. A stable data acquisition system converts the analog output of pressure transduer into equivalent digital figures.

Key Board / Display Panel

This is ergonomically designed for better interaction between the operator and the machine. This incorporates sealed membrane type keyboard for data feeding and a large display for load & displacement.

Computerised Universal Testing Machine

It has a micro processor based electronic panel, Precision strain gauge type pressure transducer for load measurement, Rotary encoder with rack for crosshead displacement/Extension indication, RS 232 COM port for PC interface, Data entry for specimen dimension, serial number, gauge length. Unit selection for load, displacement. Results include Load vs Displacement Curve, Maximum displacement, UTS, % Elongation, Youngs Modulus & Proof Stress (if Extensometer is used).

Accuracy And Calibration

Aimil Universal Testing Machines are controlled for precision, accuracy and reliable calibration during every stage of manufacturing. The machines are calibrated in accordance with BS:1610 and IS standards. Aimil UTM comply with grade A of BS 1610 : 1964 and grade 1 of IS : 1828 - 1991. An accuracy of ± 1% is guaranteed from 20% of the load range selected to full load. Below 20% of the selected range the maximum permissible error is 0.2% of the full load reading Calibration process accreditated by NABL (National Accreditation Board for Laboratory) in compression only.

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

Universal Testing Machine Model Available:

- Computerised (capacity 400 kN, 600 kN & 1000kN)
- Digital Models (capacity 400 kN, 600 kN & 1000kN)

Specifications

MODEL NO	AIM-UT 40 C AIM-UT 40 DG	AIM-UT 60 C AIM-UT 60 DG	AIM-UT 100 C AIM-UT 100 DG
Machine capacity	**400 kN**	**600 kN**	**1000 kN**
Resolution	0.01 kN	0.01 kN	0.01 kN
Max Clearance for tensile test	50 - 700mm	50 - 800mm	50 - 850mm
Max Clearance for Compression test	0 - 700mm	0 - 800mm	0 - 850mm
Clearance between columns	500mm	600mm	750mm
Ram Stroke	200mm	250mm	250mm
Straining/piston speed at no load	0 - 150mm	0 - 100mm	0 - 80mm
For Tension Test Clamping jaws for round specimens	10 - 25mm 25 - 40mm	10 - 25mm 25 - 40mm 40 - 55mm	10 - 25mm 25 - 45mm 45 - 70mm
Clamping jaws for flat specimens thickness	0 - 15mm 15 - 30mm	0 - 15mm 15 - 30mm	0 - 22mm 22 - 44mm 44 - 65mm
Flat specimen width	65mm	70mm	70mm
For Compression Test: Pair of compression plates	160mm	222mm	222mm
For Transverse Test: Table with the adjustable rollers			
Width of rollers	160mm	160mm	160mm
Diameter of rollers	30mm	50mm	50mm
Max clearance between supports	500mm	600mm	800mm
Radius of punch tops	12mm, 16mm.	16mm, 22mm.	16mm, 22mm.
Data sampling rate	50 sample/sec	50 sample/sec	50 sample/sec
Calibration counts	20000 counts	20000 counts	20000 counts
Crosshead geared motor	0.5HP	1HP	1HP
Power pack motor	2.5HP	2.5HP	3.0HP
Dimension (approx)	L - 2030mm, W - 750mm, H - 2180mm.	L - 2270mm, W - 750mm, H - 2540mm.	L - 2420mm, W - 820mm, H - 2900mm.
Weight (approx)	2500kg	3500kg	4500kg

The equipment consist of the following replaceable parts :

Universal Testing Machine			
Item Decription	**400 kN**	**600 kN**	**1000 kN**
Clamping Jaws for round specimen	10-25 mm 25-40 mm ---	10-25 mm 25-40 mm 40-55 mm	10-25 mm 25-45 mm 45-70 mm
Clamping Jaws for Flat specimen	0-15 mm 15-30 mm ---	0-15 mm 15-30 mm ----	0-22 mm 22-44 mm 44-65 mm
Pair of compression plates	160 mm	160 mm	222 mm
Transverse test attachment a. Roller - Pair b. Radius of Punch Tops	 30 mm Dia 12 mm & 16 mm	 50 mm Dia 16 mm & 22 mm	 50 mm Dia 16 mm & 22 mm

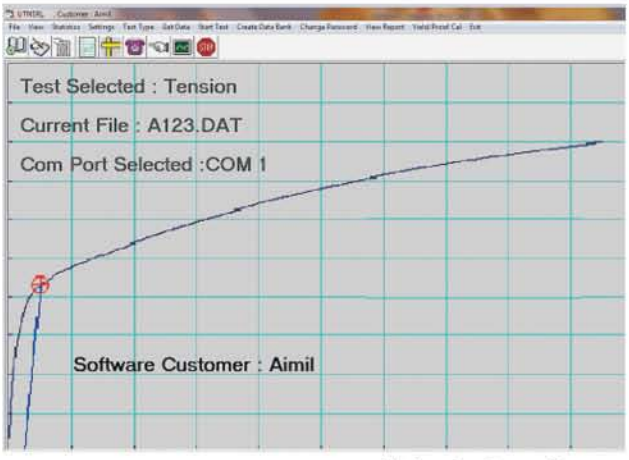
Software for UTM

Aimil recognizes 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.

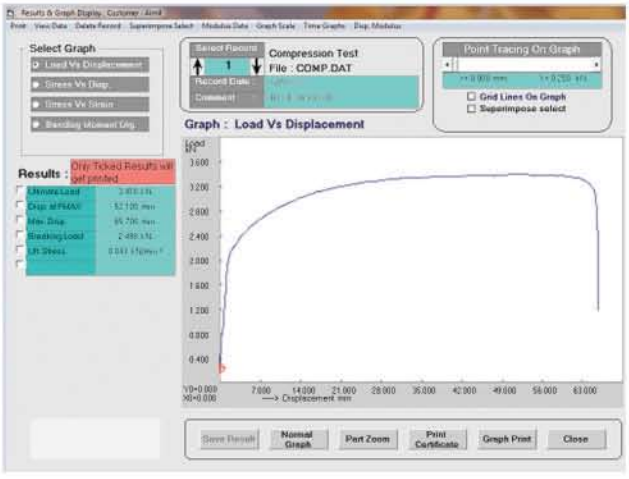
Features

- Tensile Testing
- Compression Testing
- Bending Test
- Shear Test
- Torsion Test
- Rubber/Textile Test
- Spring Test
- Extensometer Test

The bright, large and prominent display for the load and displacement adds to the readability of the software and hence effortless observation of the online tests.



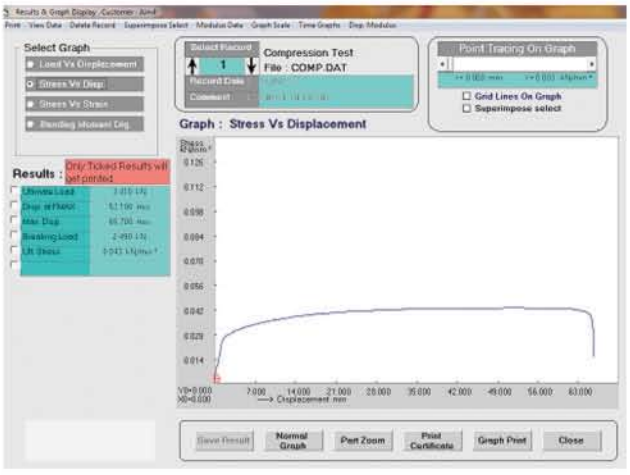
Introductory Screen



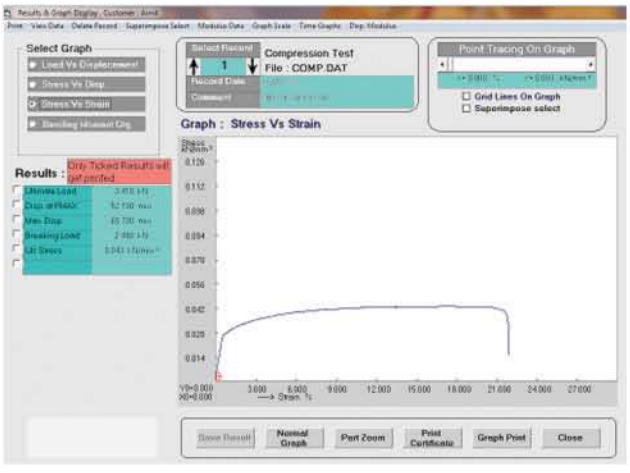
Load vs. Displacement Test Screen

Test Screen

The enhanced display of the test screen displays the value of the load and displacement and the online graphs as it is generated during the tests. The selection of the scale on graph enables you to view the graph more prominently on the screen. The extensometer test screen incorporates the results of the normal Load Vs Displacement. Test as well as the Load Vs Extension online graphical view simultaneously, a unique facility on its own. Alarm can be set up to remind the operator for disengaging the extensometer from the specimen: a unique safety feature of the Aimil software for protecting the precise and delicate accessories.



Stress vs. Displacement Test Screen



Stress vs. Strain Test Screen

Statistical Analysis:

This powerful tool enables the user to compare and study the results in a statistical format.

Most useful in places where the Batch Reports are studied for the production.

This extraordinary feature has been designed keeping in mind the ever changing needs of the industry to achieve higher standards.

This flexibility can be achieved with the Aimil Software with an assurance of lifetime quality service and updates as per the latest industry standards.

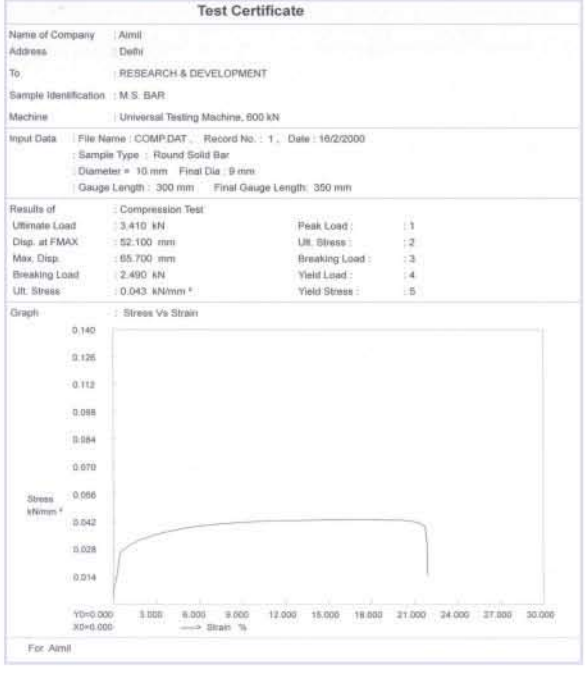
The test data can be analysed for following graphical presentations :

I Water Fall Diagram
II Mean Deviation
III Frequency Distribution
IV Skew Diagram
V Histogram

- **Security Manager :** This helps the user to protect and save the test data of all the previous tests with help of Password Protection feature.
- **Graph Tracing :** The resultant graph can be traced in various resolution of displacement with special zoom mode for time related behavior of the specimen.
- **Additional Feature** include the facility to incorporate the users Company Logo on the Test Report and can provide wide variety of customization of the software features as per the needs of the customer.

Minimum Recommended Computer Hardware

- 2 GHz Pentium Dual Core or equivalent
- 2 GB RAM, although using multiple testing machines may require additional memory and/or a faster
- Processor
- 256 MB DirectX 9.0 capable video card
- 250GB HD Drive
- CD-ROM Drive
- Mouse or pointing device and keyboard supported by Windows
- Monitor that supports at least 1024 x 768 resolution and 32-bit color
- 2 USB Serial Port adapter per machine
- 1 USB Port for the software key
- Windows compatible printer recommended for reporting capabilities
- Windows compatible sound card and speakers (for audio playback)
- Additional USB ports for measuring devices, barcode scanners, printer etc.
- At least 1 integrated serial port (not USB) where possible



Test Certificate

Name of Company	: Aimil
Address	: Delhi
To	: RESEARCH & DEVELOPMENT
Sample Identification	: M.S. BAR
Machine	: Universal Testing Machine, 600 kN
Input Data	: File Name : COMP.DAT , Record No. : 1 , Date : 16/2/2000
	: Sample Type : Round Solid Bar
	: Diameter = 10 mm Final Dia : 9 mm
	: Gauge Length : 300 mm Final Gauge Length: 350 mm
Results of	: Compression Test
Ultimate Load	: 3.410 kN
Disp. at FMAX	: 52.100 mm
Max. Disp.	: 65.700 mm
Breaking Load	: 2.490 kN
Ult. Stress	: 0.043 kN/mm ²
Peak Load	: 1
Ult. Stress	: 2
Breaking Load	: 3
Yield Load	: 4
Yield Stress	: 5
Graph	: Stress Vs Strain

For Aimil

Ordering Information

AIM-UT 40 C	Universal Testing Machine, Computerised, Capacity 400kN
AIM-UT 60 C	Universal Testing Machine, Computerised, Capacity 600kN
AIM-UT 100 C	Universal Testing Machine, Computerised, Capacity 1000kN

Optional Accessories:

AIM-UT001	Electronic extensometer strain gauge type with 2.5mm extension and gauge length 25mm & 50mm
AIM-UT002	Brinell test attachment
AIM-UT003	Bend test attachment 180°
AIM-UT005	Shear test attachment 5-20mm dia
AIM-UT006	Shear test attachment 25-40mm dia
AIM-UT007-6	Pair of threaded holding heads 6mm
AIM-UT007-8	Pair of threaded holding heads 8mm
AIM-UT007-10	Pair of threaded holding heads 10mm
AIM-UT007-12	Pair of threaded holding heads 12mm
AIM-UT007-16	Pair of threaded holding heads 16mm
AIM-UT007-18	Pair of threaded holding heads 18mm
AIM-UT007-20	Pair of threaded holding heads 20mm
AIM-UT008	Gripping device for threaded & shouldered specimen
AIM-UT009-6	Pair of split ring for shouldered specimen 6mm
AIM-UT009-8	Pair of split ring for shouldered specimen 8mm
AIM-UT009-10	Pair of split ring for shouldered specimen 10mm
AIM-UT009-12	Pair of split ring for shouldered specimen 12mm
AIM-UT009-14	Pair of split ring for shouldered specimen 16mm
AIM-UT009-18	Pair of split ring for shouldered specimen 18mm
AIM-UT009-20	Pair of split ring for shouldered specimen 20mm
AIM-UT-COM	Computer (on request)

Note

1 Computerised models will be supplied with Aimil UTM Software. Computer will be Supplied at extra cost.

2 Digi does not have a computer for logging of data or saving and software based reporting.