



AUTOMATED • COMPUTERIZED • WIDE RANGE • ECONOMICAL SPRING TESTING MACHINES

UNIVERSAL | COMPRESSION | TENSILE | ENDURANCE | TORSION | MULTI-AXIS



5~10000 kgf Capacity
250~1500mm Daylight
0.1~1000mm/min Speed
Inbuilt Computerized Control

ARMS & AMMUNITION
AUTOMOTIVE COMPONENTS
RUBBER PARTS
SHEET METAL COMPONENT
COIL & LEAF SPRINGS
WIRES & HARNESSSES
MOULEDED PLASTIC PARTS

AG Measurematics
testing is simple, now!



AG Measurematics manufactures STM series of Computerized Spring Testing Machines for automated testing springs, materials, components, subassemblies and assemblies. These machines are capable of testing in various modes such as monotonic compression or tension, Cyclic Tension or compression or push-pull, Sample break for tensile strength etc. AG Measurematics has also a wide experience in design, manufacturing an supply of custom designed machines with special accessories and grips. The application software supplied with the Machine can either be a standard version or customized version. Emergence of new applications and unique requirements of our customers help us expand and grow our capabilities through adoption of latest technologies and development of both hardware and software. Intelligent Load Cell recognition system developed by AG Measurematics is now incorporated in every material testing machine.

FEATURES

- **Intelligent auto load cell detection - plug and play.**
- **Backlash free precision ball screws.**
- **High stiffness loading frame.**
- **Advanced vector control variable frequency variable speed drive.**
- **Auto touch load detection.**
- **Auto return crosshead control with Multispeed testing**
- **Inbuilt computerized control with 500gb storage.**
- **Calibration traceable to NABL.**
- **Attractive power coated finish.**
- **Industrial grade push button control.**
- **Manual & auto testing mode with Local 4 line 20 char backlit data display.**
- **Inbuilt safety features - front interlocked thick perspex door, over limit , over travel protection, over load protection.**
- **Inbuilt memory for test procedure storage.**
- **Multi format standard and customized test report generation.**

APPLICATION AREAS

- **Adhesives, Tapes**
- **Ammunition, Shells**
- **Arms & Ordnance**
- **Automotive Lock Assemblies**
- **Automotive Steering Wheel**
- **Automotive Dampers(Shockers)**
- **Cable Lugs**
- **Flexible Membrane**
- **Multilayer Films**
- **Printed Circuit Boards (PCB)**
- **Rubber Components**
- **Springs- Compression/ Tension/ Torsion**
- **Stationary Items, Stapler, Punch, Pens**
- **Wires, Cables, Cords, Ropes**
- **Bonding Strength**
- **Bonding Strength, Load Profile**
- **Testing of multiple components**
- **Feeling Test**
- **Impact force detection**
- **Load Vs Deflection, Endurance, Multistation**
- **Crimping Strength**
- **Puncture resistance, Endurance**
- **Peeling Strength**
- **Flexure Strength, Endurance**
- **Load Vs Deflection, Endurance**
- **Spring Rate, Load / Displacement Characteristic, Endurance.**
- **Force Vs Deflection, Endurance**
- **Tensile Breaking Strength**

STM series Material Testing Machines are designed to cater wide application range. Apart from these mentions, the machines can be configured and designed for any type of specific customer application for any type of material



MODEL SELECTOR GUIDE

STM-**F**-**CHT**-**CS**-**T**-**EX**

F Force Rating (Max)

- 1 5 kgf (50N)
- 2 50 kgf (500N)
- 3 700 kgf (7kN)
- 4 7000 kgf (70kN)
- 5 10000 kgf (100kN)

CHT Crosshead Travel (Daylight)

- 025 250mm
- 050 500mm * Standard
- 075 750mm
- 100 1000mm
- 150 1500mm

CS Column to Column Spacing

- 25 25 cm *Standard
- 40 40 cm
- 60 60 cm
- 90 90 cm

T Test Speed

- S 0.1 ~ 300mm/min
- N 20~500mm/min *Standard
- W 2~500mm/min
- H 1~1000mm/min

EX Controller & Computerization

AR Intel processor, 500GB HDD, Ethernet, USB, 18.5"LED, Wireless KB+Mouse, Windows 7 , Application Software-sTest preloaded

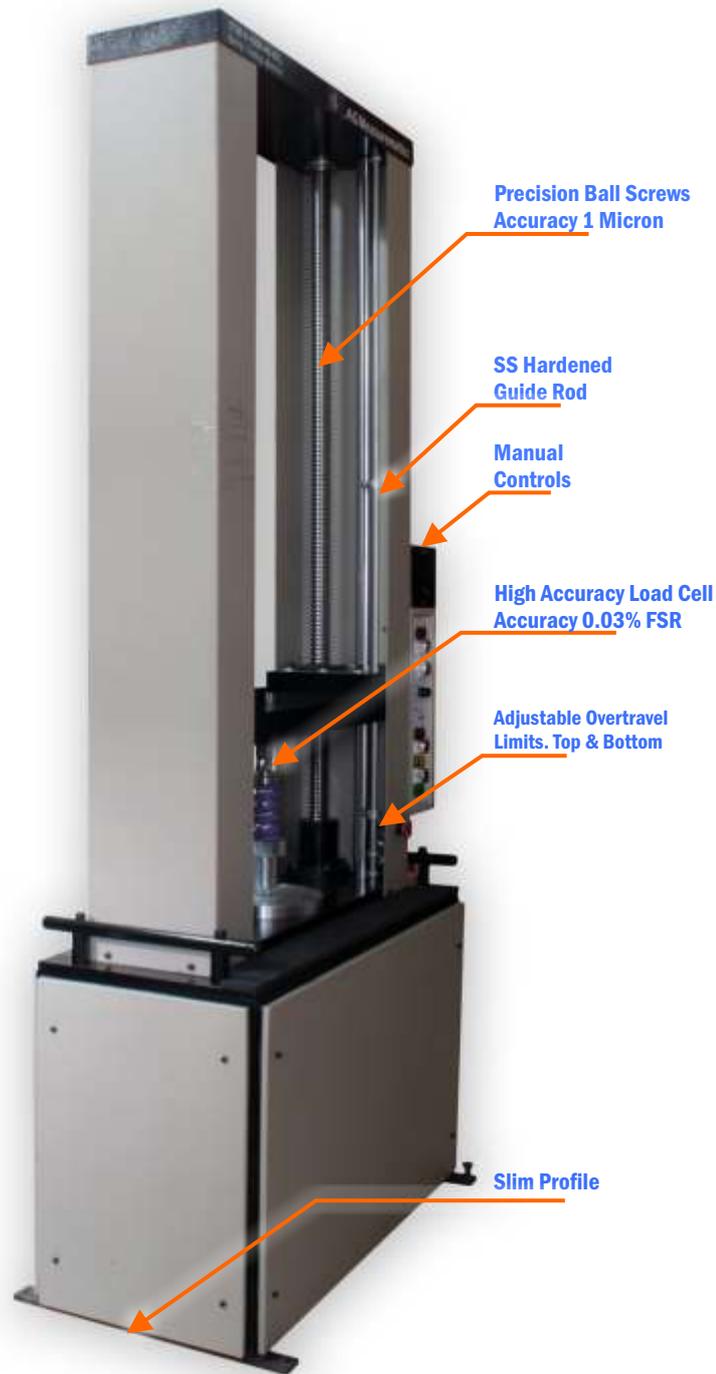
ST Only Application Software sTest. (external pc required)

Example:

Model : **STM-3-075-40-W-AR**
 Maximum force Rating- **3** - 700 kgf
 Crosshead travel - **075** - 750 mm
 Max Specimens Dia/ Width- **40** - 40 cm
 Test Speed Range - **W** - 2 to 50 mm/minute
 Extras- **AR** - Inbuilt Computer

Common to all models

Manual Push Button Controls, Local 4x20 Backlit LCD display, 1 Set Compression Plates, Load Cell of Rated Capacity



SPECIFICATIONS

COMPRESSION | TENSION | TENSILE

Force

Ratings	5,50,700,7000,10000 kgf - Universal Load Cell with Compression & Tension * Any one
Accuracy	Better then 0.05% of Load Capacity
Units	kgf, N,kN - User Selectable
Resolution	Least Count

	kgf	N	kN
5 kgf	0.001kgf	0.01 N	Not Applicable
50 kfg	0.01 kgf	0.1 N	Not Applicable
700 kgf	0.1 kgf	1N	0.001kN
7000kgf	1kgf	Not Applicable	0.01kN
10000kgf	10kgf	Not Applicable	0.1 kN

ILRS - Intelligent Load Cell Recognition System

As soon as the machine is powered up it 'reads' the rating of the connected load cell and sets the calibration factor and overload limits automatically. This reduces the possibility of load cell getting damaged due to overload. A Machine can be supplied with more than one load cell of different ratings up to the machine capacity. This facility enables better resolution of force measurement.

E.g. In a test machine of 700 kgf force rating a force resolution of 0.1 kg (100 gm) is available with 700 kgf rating load cell while a resolution of 0.01 kg (10 gm) is available if a 50 kg load is used. So, smaller springs can also be tested in higher capacity machines by using lower capacity load cells.

Load Cell Connection Status Interlock.

Every Machine has also the facility to detect if a load cell is connected. If the Load cell connection malfunctions the machine stops and any further testing gets disabled.

Overload protection

Machine testing stops automatically as soon as an overload condition on the load cell is detected. Over loaded limit is set automatically based on the load Cell capacity 'read' by the controller. This feature protects the Load Cell and the specimen from getting damaged.

Displacement

Maximum Crosshead Travel	250, 500, 750,1000,1500mm *Any one
Column~Column Spacing	250,400,600,900 mm * Any one . Spacing should be atleast 1.5 times more then maximum specimen dia/width. If required machines with wider spacing can also be designed.
Position Measurement Resolution	0.01 mm over entire range of crosshead travel. 0.001mm - optional * At extra cost

Crosshead Over-travel limiters.

User adjustable. Two. one for upward and on for downward over travel. Stops crosshead motion automatically in case it reaches over-travel limit. Protects load cell as well as the specimen under test.

General

Test Speeds	0.1~300 mm/min - AC Servo Motor & Servo Drive . Only Available with AR Model Controllers 2~500 mm/min - High performance AC Motor & Variable frequency Drive 20~500 mm /min- High performance AC Motor & Variable frequency Drive 1~1000 mm /min - AC Servo Motor & Servo Drive . Only Available with AR Model Controllers
Crosshead Drive	PRECISION BALL SCREWS driven by AC motor/ Servo Motor with Variable frequency Vector Control AC speed Drive/ Servo Drive
Dimensions	Width: Space between columns + 460mm • Depth: 500 mm • Height: Crosshead travel + 1000 mm (Approx.)
Power Source	230 V+/-10%, 50 Hz, Single-phase.
Ambient Environment	Up to 45 deg C, 90% RH – Non-condensing
Computer Connectivity	RS 232(Serial) link/ USB.
Finish	3 Layer Powder coated. Color - As per user requirements



MACHINE DESIGN & OPERATION

Test Machine Controller

All standard machines incorporate a microcontroller based test machine controller with 4-line x 20 character backlit alphanumeric LCD display and four keys through which many different types of test can be setup. Testing can be performed in automatic mode and result can be obtained.



Display:

LCD, 4 line x 20 character, backlit, alphanumeric. During testing, the force and displacement (or spring height) are displayed in real-time on the LCD display.

Test Setup and testing control: Though PUSH BUTTONS mounted on the front panel.

Testing modes:

- Displacement Control Tension or compression
- Height Control Compression
- Height Control Tension
- Force control Tension or compression
- Sample Break Tension
- Sample Break Compression
- Cyclic Compression or tension

Load Cell Interface:

Includes Load Cell Bridge Excitation of 5VDC, Stable high gain signal amplifier, Low pass filter, Intelligent Load Cell Recognition circuit, Load Cell connection status detection circuit.

Logic Control and interlocking Circuits:

Accepts signals from Over travel limit switches and provided control signals to the AC speed drive to select crosshead motion direction and speed.

Download parameters from Computer:

All the above parameters can also be downloaded from a computer. This makes the test setup for standalone operation very quick and easy.

User programmable test machine parameters:

(For a machine these parameters are kept fixed and are called configuration parameters; editing is password protected)

- Load cell Output
- Displacement Calibration Factor
- Maximum Speed
- Write default values
- Total Power up time
- Version

User programmable test setup parameters:

- Device to test — Non-destructive or sample break
- Control Mode — Force, Displacement or Height
- Type of test — Compression or Tension mode,
- Force Display unit
- Touch Force
- Crosshead speed till touch
- Target push or pull limit
- Crosshead Speed during test
- Crosshead slowdown from
- Return Speed
- Result — Force at user specified displacement or
- Force at user specified Height or
- Displacement at user specified force
- Gauge Length
- Force Drop for peak or breaking force
- No. of cycles for cyclic test
- Dwell time before changing direction of travel

Test Result:

- (Depends upon selected test mode)
- Force at one user specified displacement or Height
 - Displacement or Height at one user specified force.
 - Breaking Force and % elongation.

Computerized Operation:

To operate the test machine through a computer via an RS232(Serial) link. Interconnecting cable is supplied with the machine. Application software – sTEST- V5 converts the machine into a fully computerized testing station. Machines can be supplied with Specially built ruggedized Computer suitable for shop floor operation, any standard Desktop or a Laptop computer preloaded with Applications software.

Features and facilities of sTEST-V5 include following:

More details are available in datasheet " F-11"

- Creation and editing of unlimited setup files — one for each type of test.
- Numerical values and graphic display of force and displacement values in real time.
- Display of results after completion of test.
- Saving of data in data files.
- Generation of test reports.
- View of old test data and generation of test reports.



All in One Touch Controller



Inbuilt PC



thousands more ...

ACCESSORIES

STM Series material testing machines are designed to test any type of component or parts. For these we design custom specific attachments and grips. Shown here are most widely used attachments for testing of specimens, that have been supplied before.

STANDARD FIXTURES & ATTACHMENTS



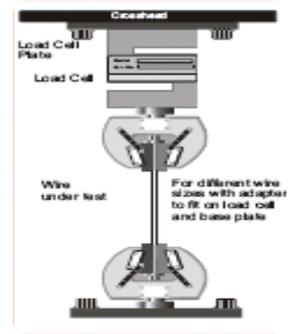
Parallel Compression Plates
100~300mm dia
SS304 or Carbon Steel



Tension Hooks
For 1~50mm Wire Dia



Bollard Grip
For Tensile Samples
Break Testing of thin wires
& Ropes



Mechanical Wedge Grips
For testing of thin wires & strips

CUSTOM DESIGNED FIXTURES



Pull-out Grip
For Bofors Ammunition
Shells
Capacity 2500 kgf



Specimen Incline Adjustor
For Passenger Car Steering
Wheels
Capacity 2000kgf • 30~90 Deg



Fixture for 3-point and 4-point flexure testing of beams
Determination of flexural modulus,
flexural strength and flexural yield strn.
Capacity 70kN • Span 25mm to 250mm



Electronic Extensometer (LVDT) based
Gauge Length: 25 to 100 mm
Elongation Range: 10 mm
Measuring Resolution: 0.001 mm

CALIBRATION

The heart of any measurement system is its sensors. AGMPL machines comes prefitted with best sensors available worldwide. We use Vishay/Sensortronics UK Load Cells. These Load Cells are recalibrated in our in-house NABL traceable calibration labs.

We also provide calibration services for any make or model sensors with full NABL traceable certificate.

A regular schedule of calibrations will keep your instruments & sensors in optimal condition to support your design, troubleshooting, and manufacturing work.

