

## MultiTest-dV

Tensile  
& Compression  
Tester ...at  
the heart of  
your solution



Exploit the full potential  
of the MultiTest-dV by  
adding VectorPro™ software

# MultiTest-dV

## Tension and Compression Tester ... precision & control

### Key Features

The MultiTest-dV provides outstanding value as a superior motorised force tester up to 2.5 kN. Designed for precision compression and tension testing, its simple controls, backed by sophisticated electronics, make it the ideal choice as the central platform of your test solution.

Combine the MultiTest-dV with a digital force gauge for routine testing or a precision loadcell (ELS) for more advanced materials testing.

Choose from an extensive range of grips and fixtures from Mecmesin to deliver an affordable solution which doesn't break your budget.

#### 3 models

Load rating  
0.5 kN, 1.0 kN, 2.5 kN

#### 4 test modes

- manual up/down control
- to or between target displacement
- to or between limit switches
- to or between pre-set gauge loads

#### Versatile and precise

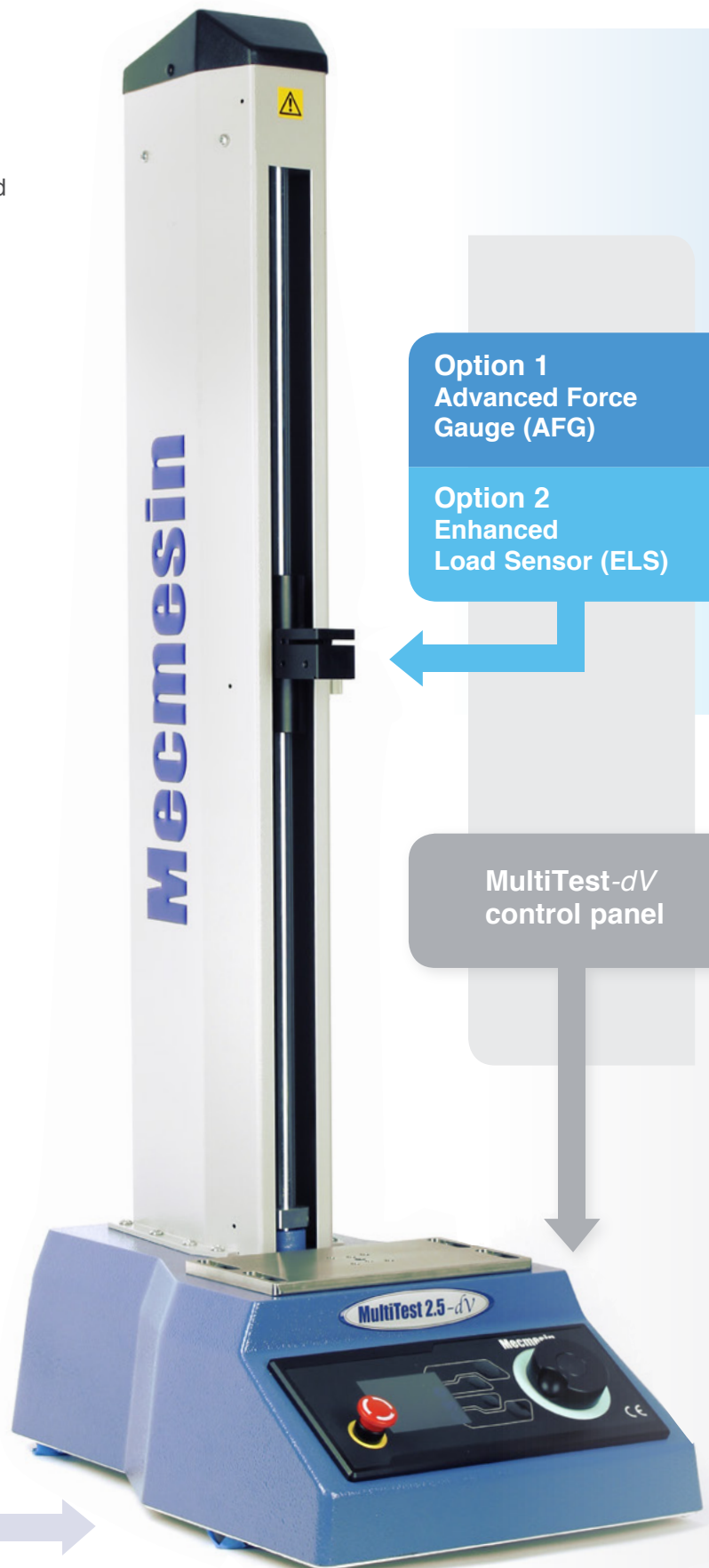
Crosshead speed from 0.1 to 1200 mm/min  
Positional resolution to 0.001 mm

#### USB connection:

Connect to a PC with VectorPro™ Lite software, for test settings and results storage, streaming data, graph plotting, calculations, and basic statistics.

#### Grips and fixtures

Mecmesin offers a wide range of grips and fixtures to suit your needs.



## Use with either:

### Option 1

#### Advanced Force Gauge (AFG)\*

The AFG interacts with the MultiTest-dV to enable controlled testing to a load limit or break.

**Configuration A:** An AFG digital force gauge for stand-alone peak load tests

**Configuration B:** An AFG + VectorPro Lite software to plot data graphically

#### Advanced Force Gauge (AFG) ▶



◀ Enhanced Load Sensor (ELS)

### Option 2

#### Enhanced Load Sensor (ELS)\*

The ELS communicates with the MultiTest-dV for precision testing of materials when combined with VectorPro MT software\*.

An ELS load cell + VectorPro MT software for fully-controlled materials testing

\*Order separately

## MultiTest-dV Controls

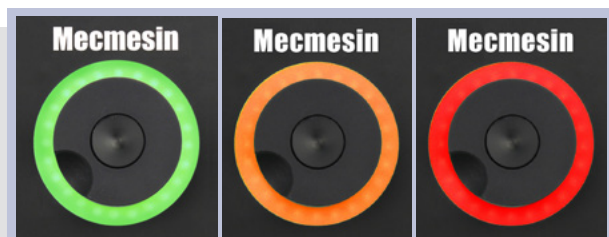
The MultiTest-dV has been designed specifically for ease-of-use and precision when selecting test parameters. Based on the tried and tested MultiTest frame, it has completely new control electronics to deliver superior performance at an affordable price.



▲ Clear colour display of speed, displacement and load



▲ Four multifunction buttons for all settings and operation. Multi-language display



▲ Lights indicate stand status



# Stand-alone Tester

Option 1

## MultiTest-dV with the Advanced Force Gauge (AFG)

### Configuration A: Stand alone tester

The MultiTest-dV range integrates perfectly with the Mecmesin AFG, a versatile and fully-featured digital force gauge, available in 10 load capacities from 2.5 N to 2.5 kN with an outstanding accuracy of  $\pm 0.1\%$  of full scale.



- Testing to a pre-defined load or crosshead displacement limit
- Testing until a sample break is detected



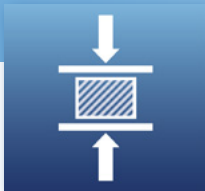
In its most popular configuration, the combination of MultiTest-dV and AFG are ideal for stand-alone applications requiring the **capture on a display of a peak load value**.



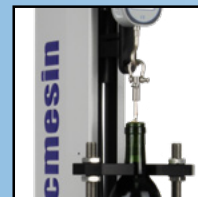
Top load



Compression: Push in



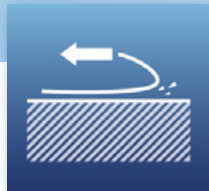
Tensile strength



Pull off / Pull out



Peel



### Configuration B: Expand product testing capabilities with VectorPro Lite software

With the appropriate communications cables, data can be streamed from the AFG via the MultiTest-dV to VectorPro Lite data-acquisition software to collect the values of load, displacement and time.

It is ideal for applications **where the true physical characteristics of the specimen cannot be detected by peak-load only and require a graphical presentation to highlight specific events during the test.**



See pages 6-8 for more details of VectorPro Lite software

# Basic Materials Tester

Option 2

## MultiTest-dV with Enhanced Load Sensor (ELS)

By selecting an Enhanced Load Sensor (ELS) coupled with VectorPro MT software and optional extensometer, the MultiTest-dV range is **transformed into a basic Materials Tester**.



The ELS is available in 10 load capacities from 2.5 N to 2.5 kN. Featuring exceptional accuracy of  $\pm 0.5\%$  of displayed reading it gives an extra level of precision for the more demanding materials testing applications.



The full power of VectorPro software comes to the fore in the MT (Materials Testing) version. Its additional ability to connect extensometers for elongation measurement directly on the specimen allows true measurement of strain. It is the ideal choice for quality assurance checks in the QC lab or, for more in-depth analysis of material properties, in the R&D laboratory.



Elongation at break



Compression



Bend / flexure



Stress



High Strain



Lap shear



## Versatile materials testing capabilities with VectorPro™ MT software

An impressive suite of software commands provide all the power and flexibility for you to maintain complete control of how you set up materials tests ... in exactly the way that you and your operators fully understand.

Complex control algorithms allow the MultiTest-dV to **run to load/displacement or stress/strain values with the capability to hold for a given time**. Materials requiring a constant rate of loading (Newtons per second) are easily accommodated by the **load-ramping function**.

Analysis of data is seamless with the common materials testing calculations being available as standard. **Young's Modulus, Offset Yield, % Elongation at Break and many more**.

Setting up tests need hold no fear ... **drag-and-drop functionality ensures programme configuration is easy** by guiding you at various stages from preparing and running the test through to analysing results and generating reports.

Whether you are looking to test various materials and composites in tension, compression, bending or shear the combination of MultiTest-dV, ELS load cell and VectorPro MT software represents **exceptional value as a simple yet powerful Materials Testing system**.



See pages 6-7, 9 for more details of VectorPro MT software

# VectorPro™ Software

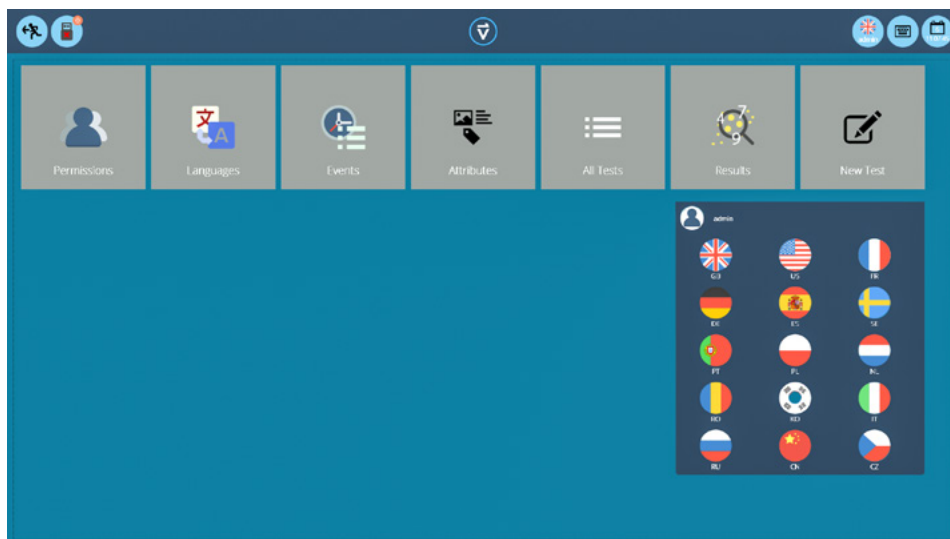
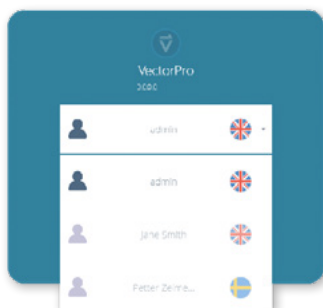
## Core functionality

VectorPro™ is dedicated software for use with compatible Mecmesin force test systems. It builds and stores test routines, acquires data from force sensors and instrumentation, performs calculations and passes data and results to export, file or report.

By connecting the MultiTest-dV to a PC running in a VectorPro environment you can take advantage of these features to create a more sophisticated test system. Your configuration is automatically detected and the software guides you through the whole process with only the relevant parameters presented.

### User access

VectorPro utilises separate user accounts for individuals, enabling personalised workspaces, in the language of choice. This provides security for the organisation and simplicity for the user.

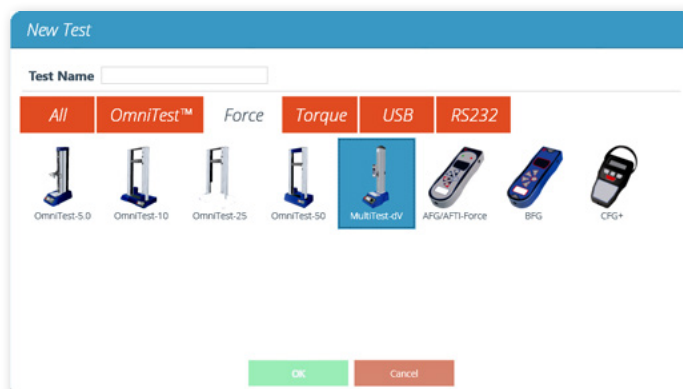


▲ User login to a clean, customised workspace

### Control

VectorPro has a drag and drop approach to test building, to enable rapid and intuitive creation of:

- operational sequences, relevant to your system
- calculation additions with pass/fail validation criteria
- report compiling



▲ Selected test system ensures all VectorPro screens are contextually relevant



▲ Drag and drop - operations test designer

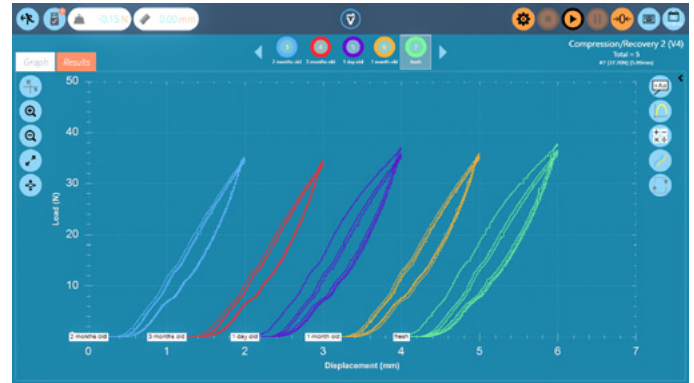


▲ Drag and drop – test calculations

## Analysis

View real-time graph plotting of tests as they run, with instant calculation results. Sophisticated graph examination and comparison tools enable you to analyse the data further.

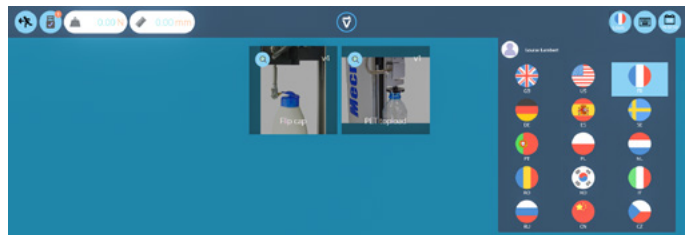
- switch axes
- zoom in
- pan across
- examine data point values
- offset sample traces for clarity and comparison



▲ Graphical output with tagged curves

## Recall

A complete version history of every test profile is retained. Profiles can be edited, uploaded and run, with the available tests being relevant to the logged-in user.



▲ User-specific test available for recall

## Report generation

Export raw data, or results, to delimited or Excel files, email a table of results. Create a report of results, graphs and notes to print or save as PDF.

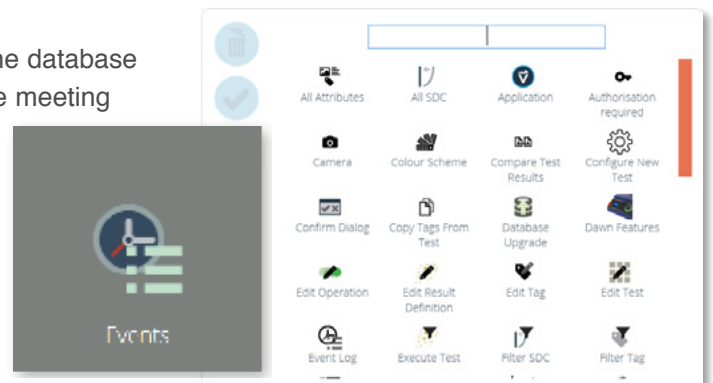
Sample	Area(N/mm)	First Peak(N)	Last Peak(N)
#1	1678.26	36.60	37.53
#2	1566.00	36.10	35.25
#3	1413.70	32.70	31.60
#4	1668.98	38.30	35.25
#5	1612.00	37.40	37.10
#6	1505.87	36.95	36.65
#7	1462.30	36.00	35.15
#8	1612.88	36.95	35.85

Data export and report designer user-defined templates ▶

## Audit trail

Particularly useful for medical and pharmaceutical clients the database architecture provides audit trail functionality to help facilitate meeting FDA 21 CFR Part 11 requirements.

- Time-stamped Event Log entries:
  - Operator ID
  - Description of action
  - Supervisor comment
- Supervisor authorisation
- Only viewable by the administrator
- Storage and auto-archive of event log



▲ Events are stored in the database for audit trail purposes

# VectorPro™ Lite

## Data Acquisition Software

VectorPro Lite captures load, displacement and time data from the AFG-equipped MultiTest-dV system and plots it live in a graph. It is ideal for applications where you need to know more from a test than just the peak load shown on the force gauge display.

From the collected data it provides test results from pre-defined calculations, generates a basic statistical analysis and allows you to create a customised report. The test routines and associated results are automatically stored together so you can recall and make comparisons between different batches.



### Limited control

The test routine stored in VectorPro Lite is primarily limited by the functionality of the Advanced Force Gauge (AFG). An AFG is able to set force limits or detect a specimen break, at which the MultiTest-dV test stand can stop or reverse. VectorPro Lite does not have the power or flexibility to create more complex multi-stage test routines – for this you will need VectorPro MT software.

### Operations

VectorPro Lite operations are equivalent to MultiTest-dV stand control panel Test Types:



Cycle between displacement positions



Move under AFG control to a load limit / break point. Once detected either stop or reverse to a limit switch



Cycle between physical limit switches



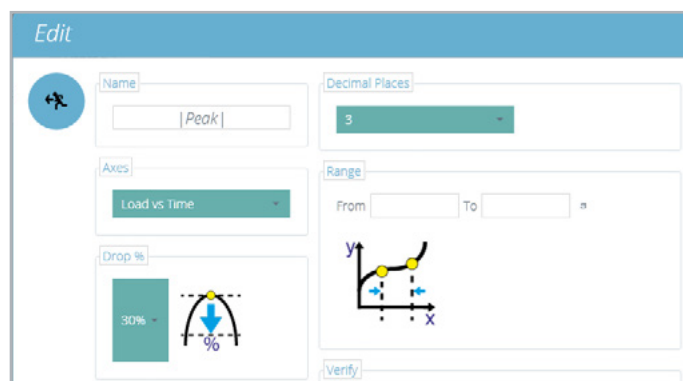
Move to a precise displacement position.

### Calculations

The power of VectorPro Lite lies in its data analysis, enabling deeper insight into the test by setting your own tolerance criteria and clearly indicating values as pass/fail.

The main calculations available for the MultiTest-dV with AFG are:

- Peak and Trough
- Break point
- Average value (mean)
- Min and Max values
  
- Gradient
- Area under the curve
- Value of load at a displacement
- Value of displacement at a load



- ▲ **VectorPro Lite provides standard calculations against which samples can be determined as Pass or Fail**



# VectorPro™ MT

## Materials Testing Software

VectorPro MT adds materials testing calculations and sophisticated programmed control to the data acquisition and reporting features of the VectorPro environment. It is ideal for applications requiring extensive load and positional control of the test stand plus the analysis capability only delivered by a comprehensive array of materials testing calculations.



### Multi-stage control

It both acquires data from and sends control commands to the test stand to obtain readings from the ELS load cells and extensometer in order to enable stress-strain testing of a variety of materials. Multi-stage test routines are easily constructed by using drag-and-drop icons in a simple step-by-step approach.

### Operations

Select the appropriate measurement device to measure displacement from the stands internal encoder or strain from an extensometer.

Take advantage of user-prompts and icons to guide your operators at every stage of the testing process. Makes testing simple and improves repeatability.

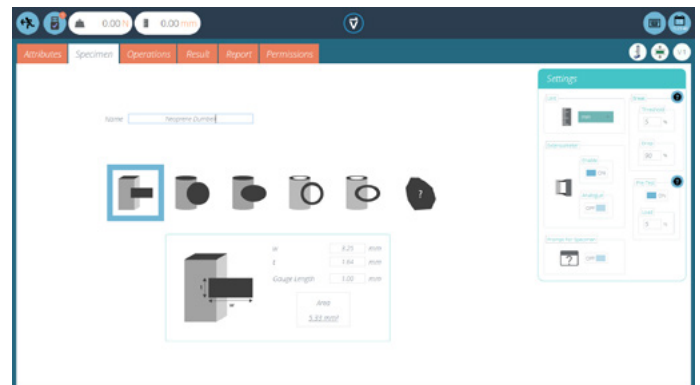


▲ **Complex test routines are made simple with an extensive set of control icons**

### Calculations

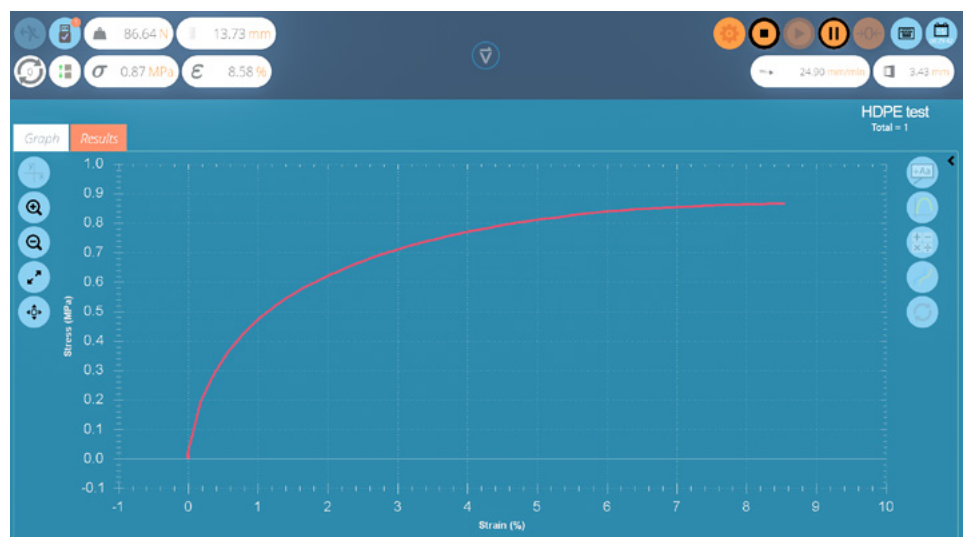
In addition to all the standard calculations within VectorPro Lite, use the dedicated Materials Testing calculations to fully analyse your specimens characteristics.

- Young's modulus (Elastic modulus)
- Yield strength
- Offset yield
- Ultimate Tensile Strength (UTS)
- Stress and strain at break
- Flexural modulus (3 point)



▲ **Select the appropriate form of your specimen and the extensometer setting**

**VectorPro MT**  
clearly displays  
stress-strain curves ▶



## The MultiTest-dV Range

The MultiTest-dV range comprises three superior motorised force testers representing outstanding value for money. Each employs a single ballscrew for precision linear motion, upper and lower limit switches, and can be mounted with an AFG force gauge or ELS load cell depending on the requirements of your application. **They offer an ideal solution for routine Quality Control tests with the possibility to upgrade to become a more powerful yet affordable Materials Tester.**



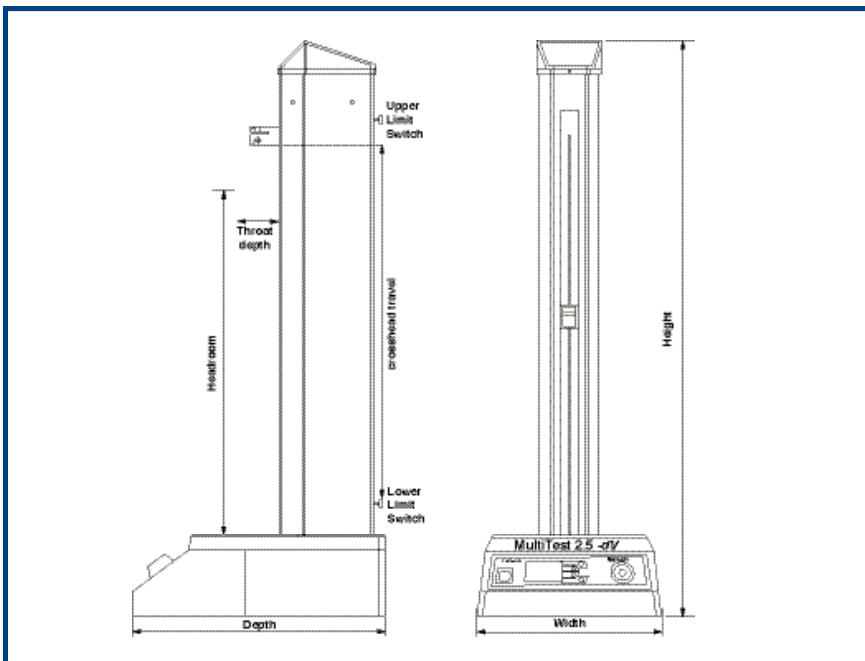
◀ **MultiTest 2.5-dV** suitable for tension and compression applications up to 2.5 kN, this is the ideal choice for a wide range of routine testing



◀ **MultiTest 1-dV** for tension and compression applications up to 1 kN. The long column height of 1510 mm (59.4"), makes the MultiTest 1-dV a preferred choice for the elongation testing of moderately elastic materials and products



◀ **MultiTest 0.5-dV** for applications up to 500 N. An extended column height of 1710 mm (67.3"), makes it best suited to elongation testing of highly elastic materials such as rubber and film



▲ Range of extensometers available

## Specifications

MultiTest-dV		0.5	1	2.5
Rated capacities	kN	0.5	1.0	2.5
	kgf	50	100	250
	lbf	110	220	550
<b>Displacement</b>				
Crosshead travel*		1200 mm (47.3")	1000 mm (39.4")	500 mm (19.7")
Maximum headroom*		1230 mm (48.4")	1030 mm (40.6")	530 mm (20.9")
Displacement resolution	mm	0.001	0.001	0.001
	in	0.000025	0.000025	0.000025
Positional accuracy		±0.130/300 mm (±0.005/11.81")	±0.130/300 mm (±0.005/11.81")	±0.130/300 mm (±0.005/11.81")
<b>Speed</b>				
Speed range†	mm/min	0.1 to 1200	0.1 to 1200	0.1 to 1200 ††
	in/min	0.004 to 47.2	0.004 to 47.2	0.004 to 47.2
Speed accuracy		±0.2% of indicated speed or ±20 µ/min whichever is greatest		
Speed resolution	mm/min	0.1	0.1	0.1
	in/min	0.004	0.004	0.004
Maximum no. of cycles per test		9999		
<b>Dimensions</b>				
Height		1710 mm (67.3")	1510 mm (59.4")	941 mm (37")
Width		290 mm (11.4")	290 mm (11.4")	290 mm (11.4")
Depth		414 mm (16.3")	414 mm (16.3")	414 mm (16.3")
Vertical daylight		1359 mm (53.5")	1159 mm (45.6")	590 mm (23.2")
Throat depth**		70.5 mm (2.8")	70.5 mm (2.8")	70.5 mm (2.8")
Weight		26 kg (57 lb)	25 kg (55 lb)	24 kg (53 lb)
<b>Electrical supply</b>				
Voltage		230 V AC 50 Hz / 110 V AC 60 Hz	230 V AC 50 Hz / 110 V AC 60 Hz	230 V AC 50 Hz / 110 V AC 60 Hz
Maximum power requirements		120 W	200 W	250 W
<b>Advanced Force Gauge (AFG), 10 models from 2.5 N to 2500 N</b>				
Accuracy		±0.1% of full-scale		
<b>Enhanced Load Sensors (ELS), 13 models from 2.5 N to 2500 N</b>				
Accuracy		+/- 0.5% of reading down to 5% of range		

\* Measured with force gauge and short extension rod fitted \*\* Measured on centreline of gauge/sensor † Where mains voltage is reliable

†† 2.5 kN : recommended maximum speed = 750 mm/min (30 in/min) above 2 kN

Common Specifications	
Operating temperature	10°C – 35°C (50°F – 95°F)
Digital display of Load/Position/Speed	Yes
Output of test results to PC/Printer	Yes, via USB

Interface Cables	
Part no.	Description
351-092	Interface cable, AFG (15-pin RS232), to MultiTest-dV stands (RJ11) – 2 m long
352-275-V01	Interface cable, ELS (HR10), to MultiTest 0.5-dV and MultiTest 1-dV stand (HR10) – 1.2 m long
352-275	Interface cable, ELS (HR10), to MultiTest 2.5-dV stands (HR10) – 0.6 m long
351-093	Interface cable, MultiTest-dV test stands (USB B) to PC (USB A) – 2 m long

Software and communications	
PC requirements (recommended)	Intel Core i5 processor, 8 GB RAM, one USB 2.0 or 3.0 port, SSD hard drive with 10 GB free space, screen resolution 1920x1080 full HD
PC requirements (minimum)	Intel/AMD dual core processor with 2 GHz or faster clock speed, 4 GB RAM, one USB 2.0 or 3.0 port, hard drive with 10 GB free space, screen resolution 1080x720

## Mecmesin - a world leader in affordable force and torque testing solutions

Since 1977, Mecmesin has assisted thousands of companies achieve enhanced quality control in design and production. The Mecmesin brand represents excellence in accuracy, build, service, and value. In production centres and research labs worldwide, designers, engineers, operators, and quality managers endorse Mecmesin force and torque testing systems for their high performance across countless applications.

[www.mecmesin.com](http://www.mecmesin.com)



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The Mecmesin global distribution network guarantees your testing solution is rapidly delivered and efficiently serviced, wherever you are.



FS 58553

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