

Mecmesin

testing to perfection

Top-load Testing



What can a Top-load Tester do for your business?

Test Methods and Standards

Why test 'Top-load' strength and how should it be done?

'Lightweighting' or 'downgauging' is an essential cost concern for all packaging manufacturers. Lightweighting is achieved by reducing the volume of raw material used in the creation of packaging. It is essential that using less raw material does not lead to weaker, poor-quality containers, which collapse and fail during their life-cycle.

Top-load testing has proven to be one of the most accurate methods for reliably determining container integrity.

Manufacturers of all types of containers, particularly plastic, must ensure their products can withstand the expected forces they will experience during:

- a) the filling/capping process
- b) warehouse stacking

Mecmesin understands the importance and necessity of lightweighting (or 'downgauging'), so have developed a range of affordable Top-load Testers that allow manufacturers to test their products for 'axial load strength' in accordance with international and industry standards.

Below is a selection of the standards regulating top-load (axial load strength) testing:



Compliance with Standards

ASTM D2659-11 Standard Test Method for Column Crush Properties of Blown Thermoplastic Containers

ASTM D642-00 (2010) Standard Test Method for Determining Compressive Resistance of Shipping Containers, Components, and Unit Loads

ASTM D4577-05 (2010) Standard Test Method for Compression Resistance of a Container Under Constant Load

ASTM D4169-09 Standard Practice for Performance Testing of Shipping Containers and Systems

ISBT Plastic Bottle Test Methods 2004

ISO 8113:2004 Glass Containers - Resistance to Vertical Load - Test Method

DIN 55440-1:1991-11 Packaging Test; Compression Test; Test with a Constant Conveyance-speed

DIN 55526-1 Packaging Test; Compression Test; Dynamical Test for Plastic Containers, with a Capacity up to 10 liters

DIN 53757:1977-08 Testing of Plastics Articles; Determination of the Behaviour by Stacking by Long-time-test, Boxes for Transport and Storage

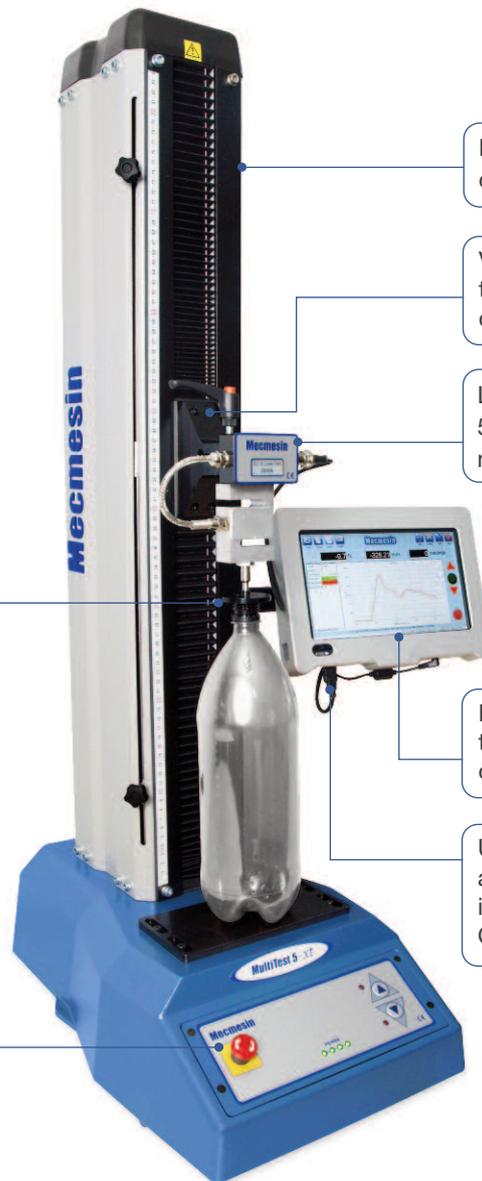
Top-load Tester

Save time and money by measuring bottle-height and top-load strength - ALL IN ONE!

How is it configured?

The power and versatility of Mecmesin's range of Top-load Testers make them ideal for testing both 'axial load strength' and 'bottle-height', all in one affordable instrument.

Mecmesin's most popular model for Top-Load testing is the 'MultiTest 5-xt', which can apply forces up to 5000N (1100lbf, 500kgf) - sufficient for small and medium sized containers. It is operated via a simple-to-use touch-screen and fits neatly on most production line or laboratory benches.



Rugged construction allows testing of various heights of container

Variable-speed crosshead makes testing possible at the user's choice of speed

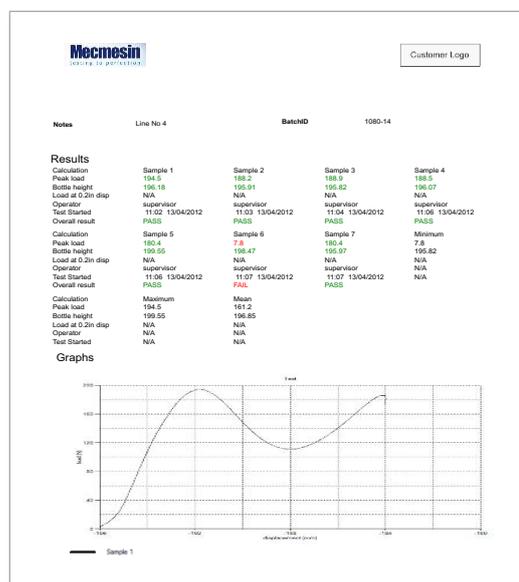
Loadcell provides top-load force of 5000N (1100lbf, 500kgf) - ideal for most containers

Dedicated compression plates for top-load testing of standard, oversized or irregular containers

Easy-to-use touch screen panel for test selection and storage / export of test data

USB ports enable data-transfer to an external PC or network for integration into a Statistical Process Control (SPC) System

Manual controls - Emergency Stop and up/down jog for simpler crosshead control



Versatility

- Measure peak compressive strength
- Measure load at a specified deflection
- Measure bottle-height

Key Features

- Quick-and-easy operation - ideal for all operators of all skill-levels
- Immediate operator access to five pre-set favourite tests
- Results displayed clearly colour-coded as 'Pass/Fail'
- Password-protected login for operators to ensure full traceability
- Automatic report generation - customisable to suit your needs

Generate your own report with full test data

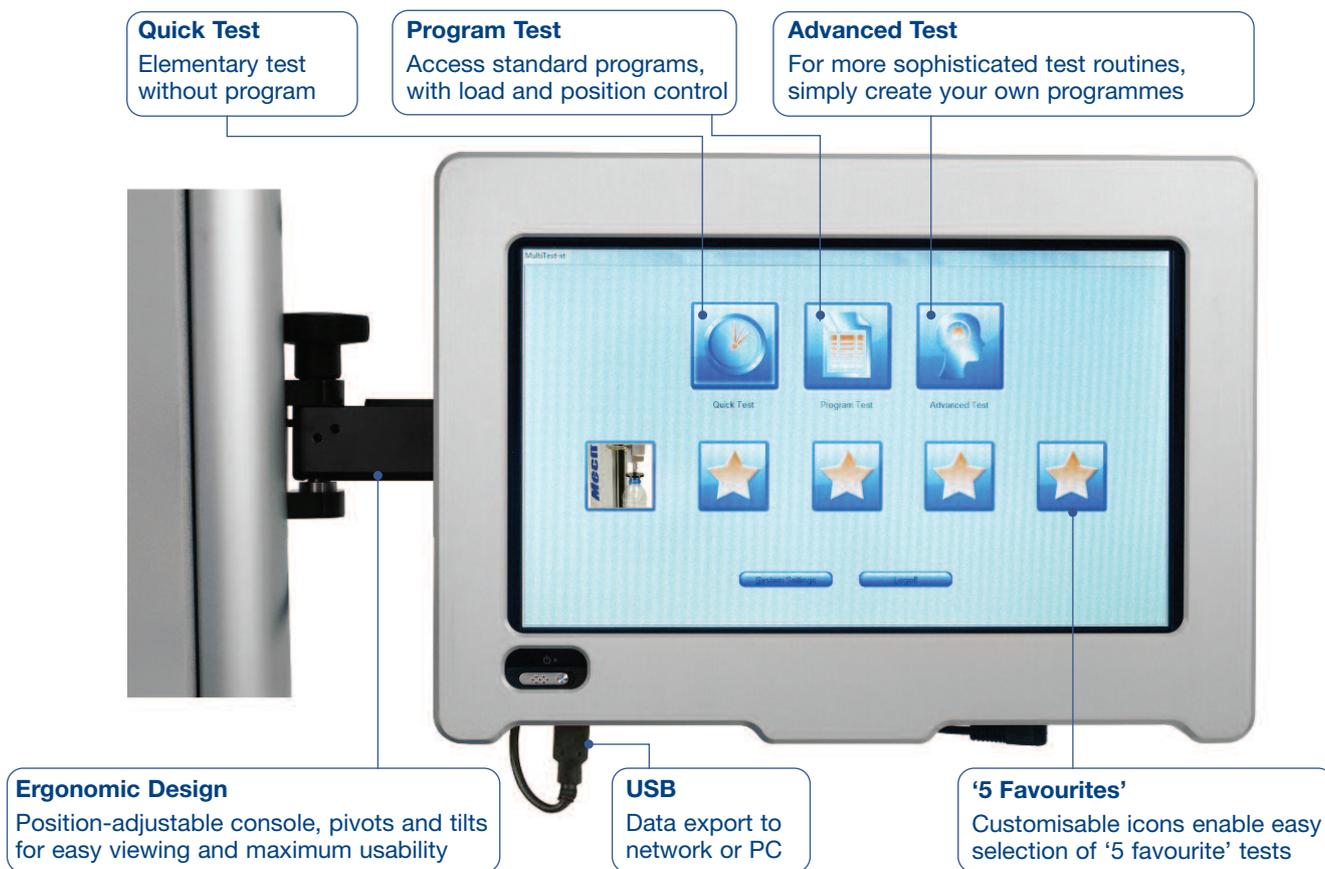
Usability

How easy is it for operators to use?

Top-load testing is a simple three-step process that any operator can perform:

1. Select a test programme by pressing the relevant 'Favourite Test' icon
2. Press the 'Start' button
3. View colour-coded Pass/Fail results, print a report or store them to PC/network

Don't forget that every Mecmesin Top-load Tester allows you to perform both 'axial load strength' and 'bottle height' tests using a single tester - save time and money without the need for extensive training.

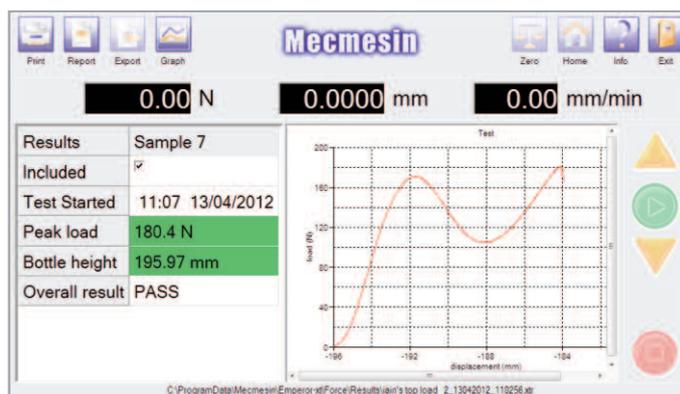


Choose from 2 display modes...

Results Only

Results	Sample 7	Sample 6	Sample 5	Sam
Included	✓	✓	✓	✓
Test Started	11:07 13/04/2012	11:07 13/04/2012	11:06 13/04/2012	11:06 13/04/2012
Peak load	180.4 N	7.8 N	180.4 N	188.4 N
Bottle height	195.97 mm	198.47 mm	199.55 mm	196.47 mm
Overall result	PASS	FAIL	PASS	PASS

Results and Graph



Testimonials

What our satisfied customers say

“Our investment in the MultiTest 5-xt top-load test unit has paid for itself time and time again. The unit is so easy to use that no outside training was needed at start-up and training new operators was very minimal. This has resulted in no misjudgments from equipment set-up.

The displayed graph makes it very easy to understand what is occurring during the test and aids in troubleshooting and correcting issues. The touch screen/computer combination reduces the footprint to less than half the size of our older unit. Overall the unit gives great performance at a very competitive price.”

Dan McMillin
Quality Manager at Silgan Plastics
Kentucky, USA



Mecmesin test systems are used worldwide by bottlers for multi-national beverage companies, and are renowned for their affordability and multiple benefits, which include:

- **Economy** - ensuring consistency in product quality and minimising material wastage and expense
- **Practicality** - designed with the production floor in mind
- **Usability** - single push-button operability for quick and easy use by any operator
- **Versatility** - a single test system performs two functions: bottle-height testing and top-load testing - optimises investment in quality-control equipment and minimises training time
- **Compactness and portability** - fits on a bench-top, providing the flexibility to locate the tester where it best suits you

Capacity and Affordability

Which tester to choose?



Crush test on cardboard packaging using a MultiTest 10-i Top-load tester



Top-load test on a water-cooler bottle



Top-load test on a PET bottle using a MultiTest 2.5-xt Top-load Tester

Larger samples, higher capacity

Test systems vary according to capacity. Larger containers may not have a high compressive strength but they might require the physically greater dimensions of a twin-column frame. Alternatively, containers with high compressive strength, such as cardboard cartons, might not be large but will require the high capacity that a twin-column tester provides - up to 25kN (5500lbf).

Smaller samples, lower capacity

The majority of commonly-used containers can be tested using a single-column Top-load Tester with models available rated up to a capacity of 5kN (1100lbf). This range of testers fit neatly onto a laboratory or production line bench and are an excellent value-for-money investment.



Loadcells

Containers vary in strength, so loadcells come in a range of capacities to best suit the range of forces being applied.

Simply fit the loadcell to the test frame and recognition of it's calibration data is automatic and instantaneous... true 'Plug and Play'.

Recognition of the loadcell's calibration data is automatic and total compatibility with all Mecmesin Top-Load testers and accessories is assured.

Accessories

Mecmesin offers a range of standard and custom fixtures to meet your top-load testing requirements

Vented Compression Plate (with nose cone)

- Integrated nose cone stabilises and secures the container, preventing slippage of the sample during the test
- Two circular vents allow air to escape from container during compression (as stipulated in several test standards)

Slotted Compression Plate

- Crossed slotted vents allow air to escape from container during compression (as stipulated in several test standards)

Circular Compression Plate

- Large circular plate covers the complete surface area of the container top
- Self-levelling mechanism available for absolute parallelism
- Rigid plate for heavy duty applications
- Suitable for use on both single-column and twin-column frames



Top-load test using a circular compression plate



“Provide a vent to allow equalization of air pressure during the crushing test.”

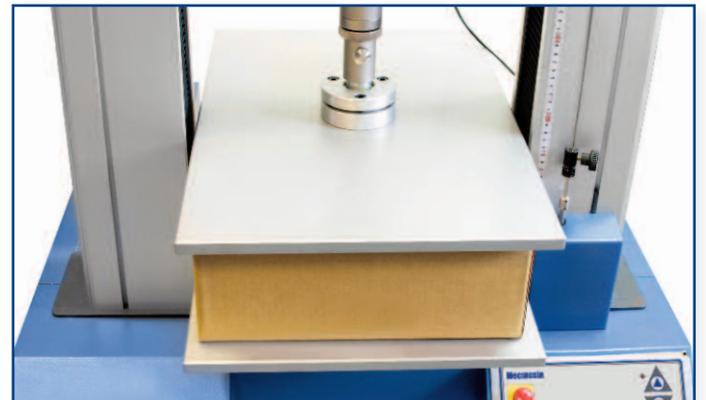
“Venting of the specimens is necessary, not only to ensure accuracy and precision of measurements, but, also, as a safety precaution, and to ensure a correct basis for obtaining comparable measurement data.”

(ASTM D2659-11)



Square Compression Plate

- Large square plate covers the complete surface area of the container top
- Self-levelling mechanism available for absolute parallelism
- Thick, rigid plate for heavy duty applications
- Suitable for use on twin-column frames only



Top-load test on a cardboard carton using a square compression plate

Mecmesin

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Mecmesin Ltd - 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.

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