Top-load Testing

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

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 and Graph
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
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

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

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