CELL INSTRUMENTS

Material Testing Solutions

TLT-01
Top Load Tester

Top-Load Confidence for Packaged Products

Know Load Limits, Avoid Failures

www.bottletest.com

Decades of Innovation in Material Testing

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Application

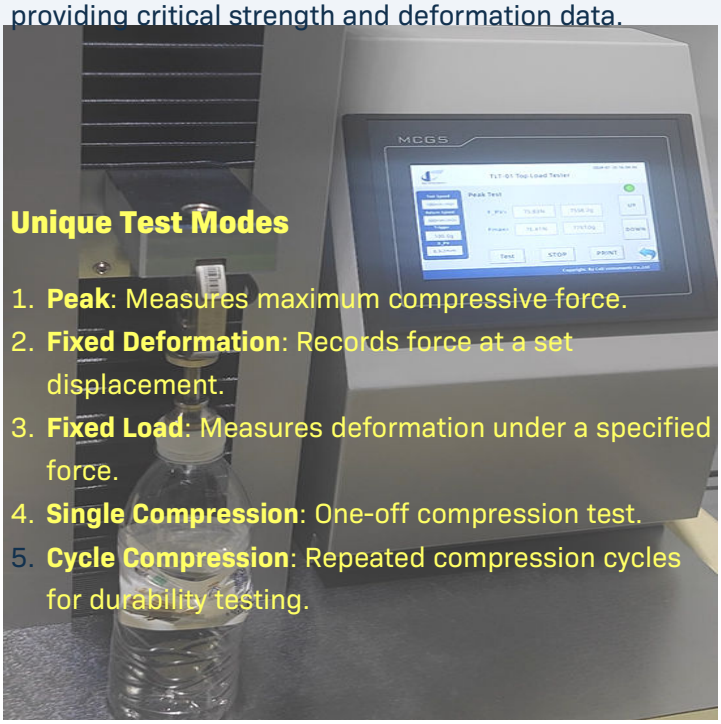
The **TLT-01 Top Load Tester** automates compressive strength testing for packaging—bottles, drums, cartons, trays, and boxes—simulating stack, transport, and storage stresses. With PLC control, 7″ HMI touchscreen, precision ball-lead screw mechanism, and versatile test programs (Peak, Fixed-Deformation, Fixed-Load, Single, and Cyclic), the TLT-01 delivers accurate, repeatable data up to 1,000 N. It helps optimize packaging design, reduce material usage, prevent product damage, and cut return costs while ensuring brand reliability supported by international standards like ASTM D642, D4577, D2659, D4169, and ISO 8113.

Significance

Protects Contents – Confirms structural integrity under vertical loads, preventing crushing or buckling.
Ensures Packaging Safety – Verifies compliance with compression and performance standards, enhancing transportation safety.
Optimizes Design – Enables lightweighting through iterative testing and material efficiency without compromising strength.
Reduces Costs – Minimizes returns and damaged goods, building brand reputation and ROI.

Principle

Load is applied vertically through aligned compression platens until the container deforms or collapses. Force and displacement are measured continuously, providing critical strength and deformation data.



Unique Test Modes

1. **Peak**: Measures maximum compressive force.
2. **Fixed Deformation**: Records force at a set displacement.
3. **Fixed Load**: Measures deformation under a specified force.
4. **Single Compression**: One-off compression test.
5. **Cycle Compression**: Repeated compression cycles for durability testing.

Technical Features & Benefits

Feature	Benefit
PLC & 7″ HMI Touchscreen	Easy to configure, store recipes, monitor.
Ball-Lead Screw Drive	Ensures consistent, accurate load application.
Adjustable Speed (1–500 mm/min)	Adapts to varied package types and test protocols.
Interchangeable Platens	Supports round, square, or custom fixtures.
Overload Protection, Auto-Return	Prevents damage, enables higher test throughput.
Real Time Display of Force Curve	Direct observation on the test process
Optional Micro-Printer & RS-232	Provides reports and digital archiving.

Standards

- **ASTM D2659** – "Standard Test Method for Column Crush Properties of Blown Thermoplastic Containers"
- **ASTM D4577** – "Standard Test Method for Compression Resistance of a Container Under Constant Load"
- **ASTM D642** – "Standard Test Method for Determining Compressive Resistance of Shipping Containers, Components, and Unit Loads"
- **ISO 8113**:– "Glass Containers — Resistance to Vertical Load — Test Method"
- **ASTM D4169** – "Standard Practice for Performance Testing of Shipping Containers and Systems"

Specifications

Parameter	Value
Load Range	0 – 1,000 N (customizable)
Stroke Capacity	Up to 700 mm
Sample Diameter	≤ 120 mm
Compression Plate	φ60mm
Speed Range	1 – 500 mm/min
Displacement Accuracy	0.01 mm
Force Accuracy	±0.5 % F.S.
Control System	PLC + HMI
Data Output	Screen, micro-printer (opt.), RS-232 (opt.)
Power Supply	AC 110–220 V 50/60 Hz

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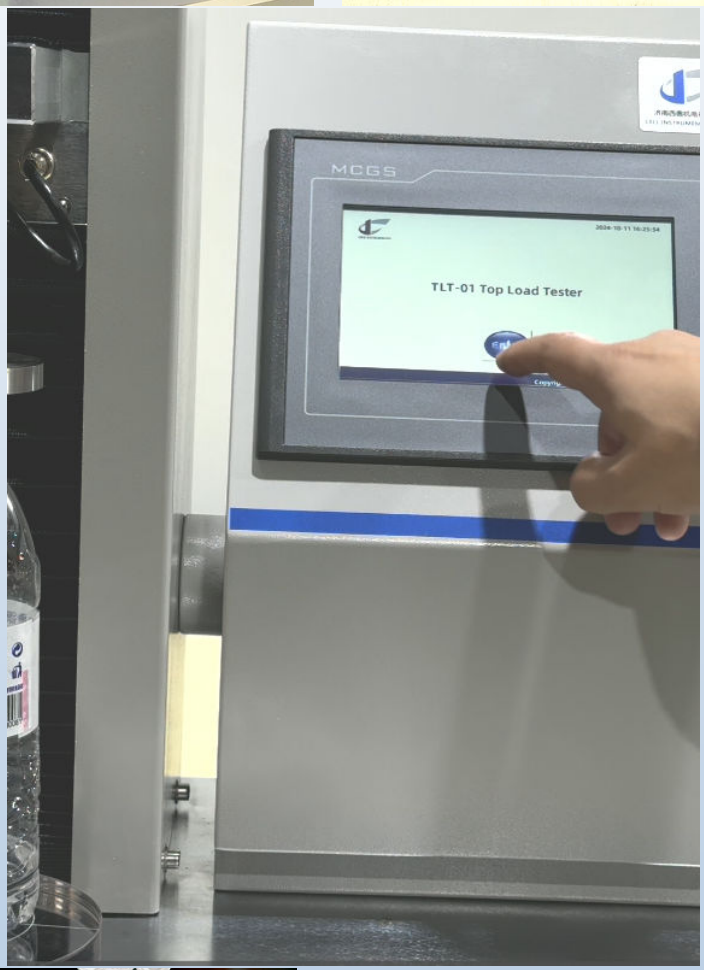

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