L&W Autoline Burst measures bursting strength of paper and board from the bottom or top side of a sample. It is available in two different models depending on what sample should be measured (P-model for paper, and B-model for board). Bursting strength (Mullen test) is a method with a very long tradition and is a general indicator of the strength and toughness properties of paper. Bursting strength is commonly seen in product specifications, on paper and boards used in packaging, such as linerboard and sack paper.

**Why measure bursting strength?**
Bursting strength is a measurement of a sample’s resistance to rupturing. It is a function of various processes performed in the papermaking process. Increased use of fillers decreases bursting strength, but grammage/basis weight, wet pressing, MD/CD ratio, refining, use of longer fibers and surface sizing increases a paper’s bursting strength.

**Measurement results**
Three different test results can be reported after a single measurement: standard bursting strength, bursting strength compensated, and bursting energy absorption (BEA). For standard bursting strength, the pressure resistance by the diaphragm is included in the test result. After intensive use and over time, the diaphragm will age and wear out. L&W Autoline Burst can eliminate the influence of the diaphragm in the software and report compensated bursting strength. Bursting Energy Absorption (BEA) is used for determining the energy absorption capability of a material. Strong, flexible paper has higher energy absorption values, while brittle and stiff paper has lower values. L&W Autoline Burst reports BEA according to the SCAN P 24 standard (applies to the paper version). The sturdy C-frame is designed to withstand strong forces and ensures correct board values.

**BENEFITS**
- Conform to paper and board industry standards
- Measurement reliability and reproducibility
- Consistent measurement independent of ageing diaphragm

**FEATURES**
- Based on proven L&W Bursting Strength Tester
- Robust C-design to withstand strong forces (handle testing according to board standards)
- Unique technology – automatic compensation for diaphragm’s own stiffness
Testing procedure
The paper sample, placed over a circular elastic diaphragm, is rigidly clamped at the periphery but free to bulge with the diaphragm (see principle sketch below). Hydraulic fluid is pumped at a constant rate, bulging the diaphragm until the sample ruptures. The bursting strength of the test piece is the maximum value of the applied hydraulic pressure.

Measurement principle

DEFINITION:
Bursting strength is expressed as the maximum uniformly distributed pressure, applied at right angles to its surface, that a single sample piece can withstand under test conditions. The Burst index is the bursting strength divided by the grammage (ISO 2758).

Bursting strength compensated: The bursting strength value with the diaphragm resistance subtracted.

Bursting Energy Absorption (BEA): The total work done per unit area of a paper or board when it is stretched to rupture. The bursting energy absorption is expressed in J/m².

P = hydraulic pressure during measurement
V = volume acting on the test piece
BEA = A1/a2
A1 = area under the pressure/volume curve
a2 = area of opening in the bursting strength tester

Technical specifications – L&W Autoline Burst
– code 619 U, P-model, (bursting strength from upper side)
– code 619 L, P-model, (bursting strength from lower side)
– code 620 U, B-model, (bursting strength from upper side)
– code 620 L, B-model, (bursting strength from lower side)

Measurement
Method: Measurement of bursting strength
Range
Paper version: 70–2000 kPa, 10–290 psi, 0.7–20.4 kg/cm²
Board version: 170–5000 kPa, 25–725 psi, 1.74–51 kg/cm²

Instrument
Pump flow
Paper version: 95 ± 5 ml/min
Board version: 170 ± 15 ml/min
Clamping force
Adjustable between 1000–6000 N (225–1350 lbf)

Results
Measurement values
– Bursting strength standard
– Bursting strength adjusted to compensate for the stiffness of the diaphragm
– Bursting energy absorption (BEA) (only for paper version)

Installation requirements
Power
average 10 W (max. 25 W)
Air pressure
min. 400 kPa (max. 1 Mpa)
Air consumption
10 NI/min (max. 52 NI/min)
Dimensions
0.2 × 0.6 × 0.7 m (8 × 24 × 28 in)
Net weight
31 kg (68 lb)

Possible combination modules
L&W Autoline Tear (possible to combine with bursting strength from lower side)

Applicable standards
Paper version:
ISO 2758, APPITA AS, 1301.403, ASTM D774, CPPA D.8, JIS 8112, SCAN P 24, TAPPI T 403
Board version:
ISO 2759, APPITA AS, 1301.438, FEFCO no. 4, SCAN, P 25, TAPPI T 807, T 810

Sample showing after test of bursting strength from lower side.