Overview
ABB’s L&W Autoline Burst module comes in four different options, depending on sample testing side and grade: paper upper side, paper lower side, board upper side, or board lower side (see specification chart on back for details).

Why measure bursting strength?
Bursting strength is commonly seen in product specifications for both paper and boards used in packaging, such as linerboard and sack paper. Bursting strength determines the amount of pressure a sample can handle before rupturing and is influenced by the raw material used. For example, increased use of fillers decreases bursting strength, while the use of longer fibers and surface sizing increases bursting strength. It can be costly to increase strength properties and difficult to optimize production without detailed CD information. Manufacturers can use L&W Autoline Burst’s quick and precise measurements to optimize raw material use and meet specifications in a more cost effective way.

Measurement results
L&W Autoline Burst can provide three different test results for a single measurement:

- **Standard bursting strength**: includes the pressure resistance by the diaphragm in the result.
- **Bursting strength compensated**: eliminates the influence of the diaphragm’s age, wear and stiffness and reports the compensated value.
- **Bursting energy absorption (BEA)**: determines the sample’s energy absorption capability. Strong, flexible paper has higher energy absorption values, while brittle and stiff paper has lower values. For paper, BEA is reported according to the SCAN P 24 standard.

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
- Conforms to paper and board industry standards

Benefits
- No correlation needed
- Reliable and reproducible measurements
- Consistent measurement independent of ageing diaphragm

Bursting strength, as traditionally measured by the Mullen test, is a prime factor in determining the strength characteristics of paper or board. It helps determine the toughness of a product to estimate its behavior against environmental factors, like transit and storage. L&W Autoline Burst automates the measurement of bursting strength, faster and more precisely than manual methods.
Testing procedure
The 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.

\[ P = \text{hydraulic pressure during measurement} \]
\[ V = \text{volume acting on the test piece} \]
\[ \text{BEA} = \frac{A_1}{a_2} \]
\[ A_1 = \text{area under the pressure/volume curve} \]
\[ a_2 = \text{area of opening in the bursting strength tester} \]

Results

Installation requirements

Power
average 10W (max. 25 W)

Air pressure
min. 400 kPa (max. 1 Mpa)

Air consumption
10 Nl/min (max. 52 Nl/min)

Dimensions
0.2 × 0.6 × 0.7 m (8 × 24 × 28 in)

Net weight
31 kg (68 lb)

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

<table>
<thead>
<tr>
<th>Method</th>
<th>Measurement of bursting strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>Paper version: 70–2000 kPa, 10–290 psi, 0.7–20.4 kg/cm²</td>
</tr>
<tr>
<td></td>
<td>Board version: 170–5000 kPa, 25–725 psi, 1.74–51 kg/cm²</td>
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</tbody>
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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)

Optional 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 after bursting strength test from lower side.