The small drop weight tester for puncture tests
With a maximum impact speed of 4.4 m/s and a drop weight of 23.5 kg, this drop weight tester is ideally suited for puncture tests to ISO 6603-2. One impressive feature is the excellent test area accessibility, enabling rapid completion of test series including direct feeding of temperature-conditioned test plates. When it comes to efficiency and ergonomics, this drop weight tester can’t be beat.

Applications
The Amsler HIT230F is ideally equipped for multiaxial impact puncture tests on plastics. The range of application includes material characterization using standard specimens in accordance with established research and development and quality assurance standards.

- Multiaxial puncture test to ISO 6603-2, ASTM D3763, at ambient temperature and in extended temperature range

Advantages and features Amsler HIT230F

Ergonomics & Efficiency
- Excellent test area accessibility, enabling rapid completion of test series.
- Easy, manual feeding of cooled specimens without installation of a temperature chamber.

- No manual opening of safety devices in the test area.
- Automatic series mode in testXpert III allows for series testing without operator interaction between the individual specimens.

Intuitive and workflow oriented touch operation
- All test-related settings are grouped logically and are separated from higher-level system settings. The operator is guided through test configuration step by step.
- Optimal coordination of testing and evaluations between drop weight tester and software.
- Display of measuring graphs on the instrument to allow for direct and timesaving selection of the type of damage.

Reliable test results
- High natural frequency allows for accurate test results.
- High data acquisition rate of 4MHz for all measurement channels ensures measuring graphs at the best resolution.
- Large transient memory enables measurement values to be saved in full resolution for brittle and ductile materials.
Advantages of a temperature conditioning box relative to a temperature chamber for testing of plates

At low temperatures impact strength is a critical characteristic value of the material used. For cooling of the specimens, ZwickRoell offers a temperature conditioning box for the Amsler HIT230F and Amsler HIT600F.

For testing at low temperatures the specimens are first conditioned in this temperature conditioning box. The specimens are then placed one after the other directly from the temperature conditioning box into the drop weight tester and tested within a time period of 5 sec. (per specimen).

This method is significantly faster when compared to the installation of a temperature chamber. The temperature conditioning box can also be easily moved and used to cool other specimens.

Accessories

For performance of a multiaxial puncture test, necessary accessories are based on the corresponding standard. The selection of an impactor and appropriate mountings and clamping rings is required.

Impactor

The innovative design of the entire force measurement chain delivers very low-noise measured values. This ensures reliable detection of characteristic material properties in the force-deformation curve. Every impactor is instrumented with a Piezoelectric sensor. It is used to measure the force and calculate the deformation of the specimen (travel). A separate travel measurement is not necessary. The impactor is selected according to standard or the expected maximum force, and must always be combined with the corresponding clamping ring. All impactors are manufactured with hardened steel.

Mountings & clamping rings

Depending on the diameter of the impactor, a pair of clamping rings has to be selected, which includes a support ring (bottom) and a clamping ring (top). A specimen is securely gripped between the two clamping rings with use of the drop weight tester’s pneumatic clamping mechanism. Depending on the test standard or the inner diameter of the clamping rings, a corresponding mounting is selected. The mounting has a solid structure to minimize deformation of the specimen support, whereby reliable test results are achieved. In addition, the mounting collects the specimen remains in the inner free space. The mounting also provides a fixture for unclamped testing.
## Technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>Drop weight tester Amsler HIT230F 1078760</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item No.</td>
<td></td>
</tr>
<tr>
<td>Potential energy, without acceleration unit, max.</td>
<td>230 J</td>
</tr>
<tr>
<td>Potential energy, min.</td>
<td>25.4 J</td>
</tr>
<tr>
<td>Drop height, dependent upon the testing equipment, max.</td>
<td>1000 mm</td>
</tr>
<tr>
<td>Drop height, dependent upon the testing equipment, min.</td>
<td>110 mm</td>
</tr>
<tr>
<td>Drop weight</td>
<td>23.5 kg</td>
</tr>
<tr>
<td>Specimen thickness, max.</td>
<td>10 mm</td>
</tr>
<tr>
<td>Impact velocity, dependent upon the testing equipment, max.</td>
<td>4.4 m/s at 1 m drop height</td>
</tr>
<tr>
<td>Impact velocity, dependent upon the testing equipment, min.</td>
<td>1.5 m/s</td>
</tr>
<tr>
<td>Gripping force of clamping unit</td>
<td>6 ... 9 kN</td>
</tr>
<tr>
<td>Force signal resolution</td>
<td>16 bit</td>
</tr>
<tr>
<td>Measured-value rate (force signal), max.</td>
<td>4 MHz</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>2600 mm</td>
</tr>
<tr>
<td>Width</td>
<td>1000 mm</td>
</tr>
<tr>
<td>Width with instrument electronics</td>
<td>1500 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>600 mm</td>
</tr>
<tr>
<td>Weight, with typical accessories, approx.</td>
<td>400 kg</td>
</tr>
<tr>
<td>Average noise level at $v_{\text{max}}$ measured at 1 m distance from the front of the machine</td>
<td>60 dB(A)</td>
</tr>
</tbody>
</table>

### Display
- Capacitive touch display

### Scope of delivery
- Ethernet cable
- Drop weight of 23.5 kg
- Light barrier for determination of impact velocity
- Pneumatic clamping unit

### Electrical supply data
- Power supply
  - 100 to 240 V
  - 1Ph/N/E
- Permissible voltage fluctuation | ± 10 % |
- Power consumption (full load), approx. | 0.5 kVA |
- Power supply frequency | 50/60 Hz |

### Compressed air supply
- Pressure | 5 to 8 bar |
- Compressed air consumption (compressed air) per impact or test | 2 l |
- Required air-supply output-rate | 600 l/min |
- Compressed air connection side | DN 7 |
- Maintenance unit | mounted on instrument |

*All data at ambient temperature.*

*We reserve the right to make technical changes in the course of ongoing development.*
Product Information
Amsler HIT230F drop weight tester for multiaxial puncture test

Performance diagram for Amsler drop weight tester HIT230F

- All data at ambient temperature.
- We reserve the right to make technical changes in the course of ongoing development.