

Product Information

Amsler HIT1100F / HIT2000F drop weight testers

CTA: 171150 217079



Amsler HIT1100F, multiaxial impact test



Amsler HIT2000F, multiaxial impact test

Materials and component testing with a single instrument

Testing components often places particular demands on a drop weight tester. The impact surfaces of the component are often not exactly at right angles to the impact direction, necessitating sturdy guides for the mass carriage. Many components have to be secured in special holders; the drop weight tester is equipped with a T-slotted platform for this purpose, enabling flexible fixture positioning. If tests are to be performed at low or elevated temperatures, the entire test arrangement must be accommodated in a temperature chamber. The Amsler HIT1100F and HIT2000F drop-weight testers are optimized for this situation; with the appropriate fixtures they can additionally be used for many standardized materials tests.

Application

- Components testing
- Puncture test on plastics to ISO 6603-2 and ASTM D3763
- Puncture test on films to ISO 7765-2
- Accelerated puncture test on plastics in accordance with various automotive standards

- Charpy test to ISO 179-2
- Izod test to ISO 180 and ASTM D256

Advantages and features

Reliable test results

- Sturdy guides make these drop weight testers ideal for components testing
- High natural frequency measurement enables exact test results

Flexibility

- Mounting platform with T-slots allows flexible mounting of various test arrangements.
- The drop weight tester can be optionally equipped with an acceleration unit.
- The modular design enables a wide range of applications:
 - Multiaxial puncture on plates
 - Charpy, IZOD
 - Components testing
 - CAI-testing

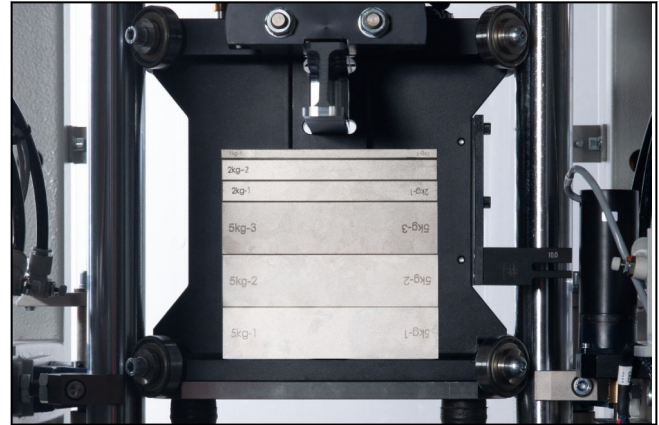
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Accessories for components testing

Components testing imposes particular demands on a drop weight tester. Due to the solid construction of the guides for the mass carriage, this drop weight tester is ideal for these tests.

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Mass carriage with single masses

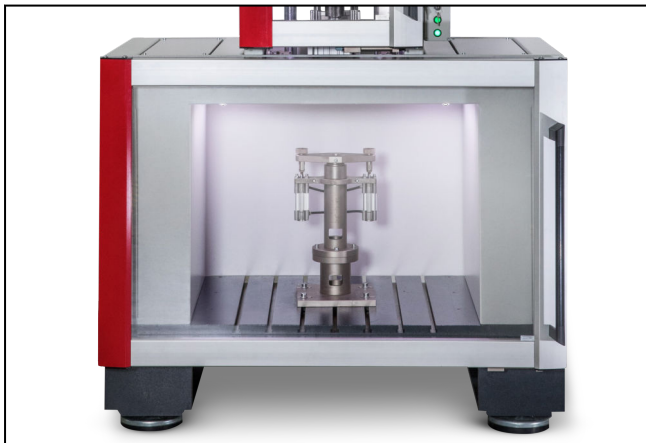
Individual test tasks

We are ready to meet your individual test tasks. From helmets to airbag housing to gloves, this drop weight tester provides the flexibility it needs to be the right testing solution for your application.

T-slotted platform

The drop weight tester is standard equipped with a T-slotted platform in the test area. This allows for a flexible arrangement of fixtures.

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Amsler HIT2000F drop weight tester, T-slotted platform for flexible fixture arrangement

Acceleration unit

The acceleration unit can be used for higher speeds and energies. It mainly consists of a bungee cord that is tensioned, thereby providing additional energy to the testing system (see mass-energy-speed table).

Accessories for multiaxial puncture test

Accessories for the multiaxial puncture test consist of a mass carriage with single masses, impactor, appropriate clamping rings and mountings. Based on the application, there is an option to extend the speed and energy ranges with an acceleration unit.

Mass carriage with single masses

The mass carriage with single masses is required for multiaxial puncture tests. The drop weight of the mass carriage can be arbitrarily assembled according to testing application. This allows for variation in potential energy. The single masses can be easily changed.

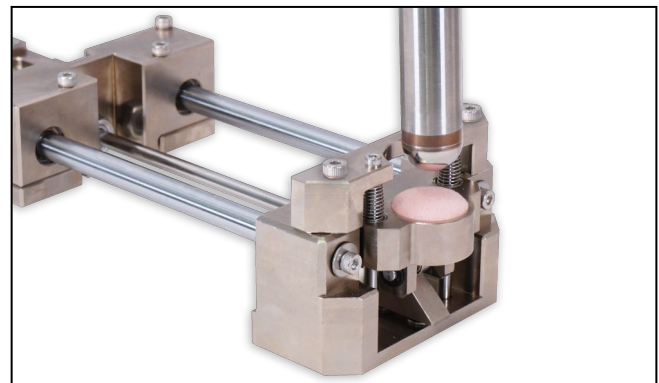
Impactor

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.

Automatic lubrication of the impactor

For testing to ISO 6603-2 it is necessary to lubricate the hemispherical surface of the impactor to reduce friction between the impactor and the specimen. The drop weight tester allows for automatic lubrication of the impactor before every impact. The impactor is lowered into the oil impregnated foam element before the test, and after being lubricated it returns back to the set drop height.

CTA: 261997



Automatic lubrication of the impactor

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Mountings & clamping rings

Depending on the diameter of the impactor, a pair of 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.

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Clamping unit, pneumatic

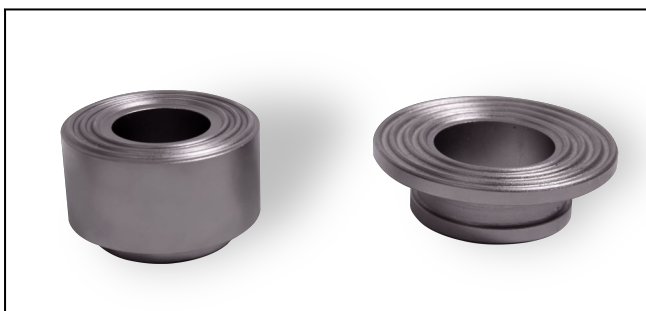
Accessories for Charpy and Izod impact tests

Appropriate fixtures are required to mount the specimen for the Charpy and Izod impact tests. Depending on the standard and specimen shape, anvils have to be selected for the Charpy test. In addition, impactors including a Piezoelectric sensor and corresponding tip must be selected based on the application. To avoid plastic deformation, all impactors are manufactured from hardened steel, which eliminates the influence of changes in surface geometry or quality on the test results.



Charpy test tool

CTA: 277926



Clamping rings

Clamping unit

The clamping unit holds the clamping rings for testing to ISO 6603-2, ASTM D3763 and ISO 7765-2 and to clamp the specimen. The upper clamping ring is fastened in the upper crosshead and the lower clamping ring in the lower crosshead. Based on the test temperature and clamping force requirements, a choice must be made between a manual and a pneumatic clamping unit. If the temperature is between -40 and 70 °C, we recommend the pneumatic clamping unit.

CTA: 217071

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Clamping unit, manual

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Izod test tool

Accessories for pre-damaging of plates (CAI)

The accessories for pre-damaging of plates (CAI) consist of a mass carriage with single masses, anti-rebound device, impactor, CAI drawer unit and clamping device.

Mass carriage

The mass carriage with single masses of 2 kg to 10.5 kg in 0.5 kg increments and the variation in drop height enable accurate setting of the damage energy. The mass carriage also includes a single mass holder that is attached to the drop weight tester profile. It can be used for safe storage of single masses that are not installed.

CTA: 261995



Mass carriage with single masses and Impactor

Anti-rebound device

A mechanical device stops the drop weight after first impact, preventing multiple impacts. This ensures that the defined damage energy is only applied once.

Impactor

The innovative design of the force measurement chain delivers very low-noise measured values. The targeted pre-damage application can thereby be monitored in detail.

Light barriers

The actual impact velocity is precisely determined shortly before the point of impact.

Accessories

The appropriate clamping device must be selected based on the standard or specimen shape. A distinction is made between Boeing and Airbus.

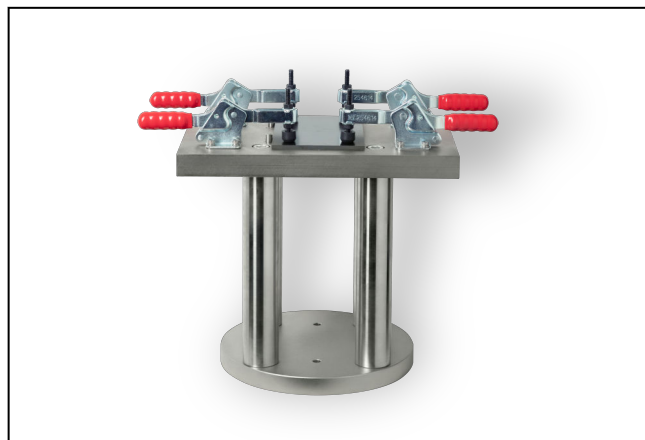
CAI Compression Test

The specimens that are pre-damaged in the drop weight tester are tested using a special compression test fixture in a static materials testing machine to determine residual strength. The compressive forces that arise are typically very high.

A special compression test fixture is used to load the test plates so they do not buckle. These test plates differ according to standard:

- ASTM, Boeing, SACMA and DIN: all four sides are guided, but not gripped.
- ISO, EN and Airbus standards: the upper and lower ends of the specimen are gripped. The sides are guided with linear contact.

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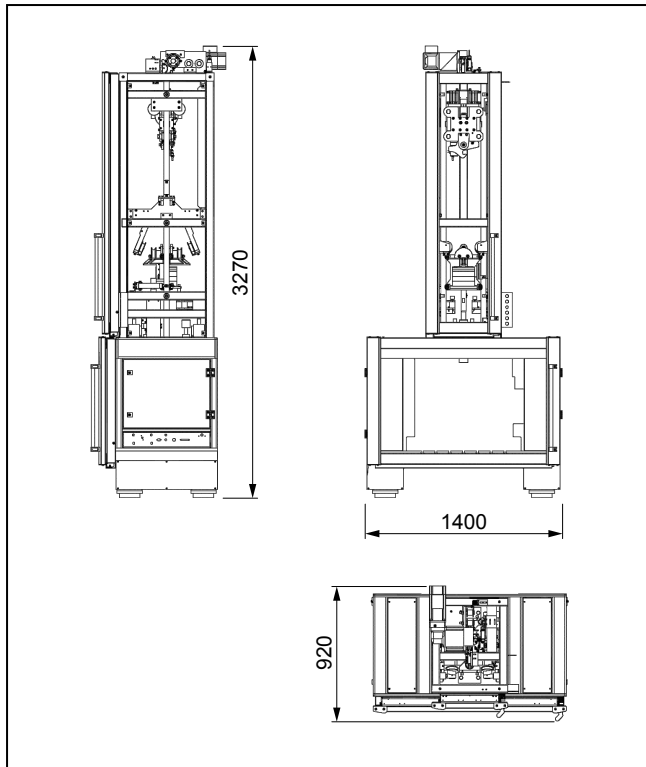


Clamping fixture for specimen pre-damaging to Airbus AITM 1-0010

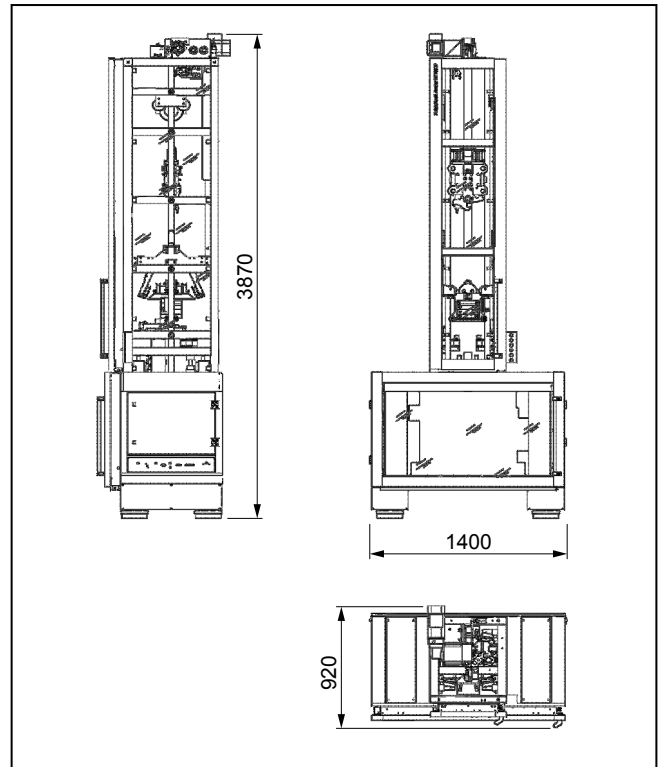
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CTA: 180274 213379



Amsler HIT1100F drop weight tester, dimensions



Amsler HIT2000F drop weight tester, dimensions

Technical data for Amsler HIT1100F / HIT2000F basic instrument

Type	Drop weight tester Amsler HIT1100F	Drop weight tester Amsler HIT2000F	
Item No.	1050792	1050814	
Potential energy, without acceleration unit, max.	287	442	J
Potential energy, with acceleration unit, max.	1121	2050	J
Potential energy, min.	4.6	5	J
Drop height, dependent upon the testing equipment, max.	1000	1500	mm
Drop height, dependent upon the testing equipment, min.	50	50	mm
Drop weight, max.	29.3	30.1	kg
Drop weight, min.	9.3	10.1	kg
Weight level, min.	1	1	kg
Impact velocity, dependent upon the testing equipment, max.	4.4	5.4	m/s
Impact velocity, dependent upon the testing equipment, min.	1	1	m/s

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Type Item No.	Drop weight tester Ams- ler HIT1100F 1050792	Drop weight tester Ams- ler HIT2000F 1050814	
Impact velocity, dependent upon the testing equipment, with acceleration (accessory), max.			
With 9.3 kg	14.1		m/s
With 29.3 kg	8.75		m/s
With 10.1 kg		19.4	
With 30.1 kg		11.7	
Force signal resolution	16	16	bit
Measured-value rate (force signal), max.	3	3	MHz
Test area			
Height	650	650	mm
Width	880	880	mm
Depth	740	740	mm
Dimensions			
Height	3270	3870	mm
Width	1400	1400	mm
Depth	920	920	mm
Widthwith instrument electronics and open safety door	2600	2600	mm
Weight, with typical accessories, approx.	1450	1600	kg
Specific floor load (applied via the machine footprint)			
Floor load (applied via the load frame surface)			
Static, Based on typical accessories	11	12	kN/m ²
Scope of delivery		Ethernet cable Light barrier for determination of impact velocity Remote control Shock absorbing unit Anti-rebound device for avoidance of multiple impacts	
Power input specifications			
Power plug	CEE 7 (ground contact)	CEE 7 (ground contact)	
Power supply	230	230	V
Phases	1Ph/N/E	1Ph/N/E	
Permissible voltage fluctuation	±10	±10	%
Power consumption (full load), approx.	2	2	kVA
Power frequency	50/60	50/60	Hz
Compressed air			
Supply pressure	6 ... 8	6 ... 8	bar
Operating pressure	6 ... 8	6 ... 8	bar
Compressed air consumption (compressed air) per impact or test	10	20	l
Required air-supply output-rate	100	100	l/min

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Type Item No.	Drop weight tester Ams- ler HIT1100F 1050792	Drop weight tester Ams- ler HIT2000F 1050814
Compressed air connector plug	DN 7	DN 7
Maintenance unit	Mounted on instrument	Mounted on instrument

Masse-Energie-Geschwindigkeit Tabelle

Amsler HIT1100F with acceleration unit, standard-mass carriage

Mass [kg]	Speed [m/s]	Energy [J]
9,3	14,1	924,5
14,3	11,7	973,5
19,3	10,3	1022,5
24,3	9,4	1071,5
29,3	8,7	1120,5

Mass-energy-speed table

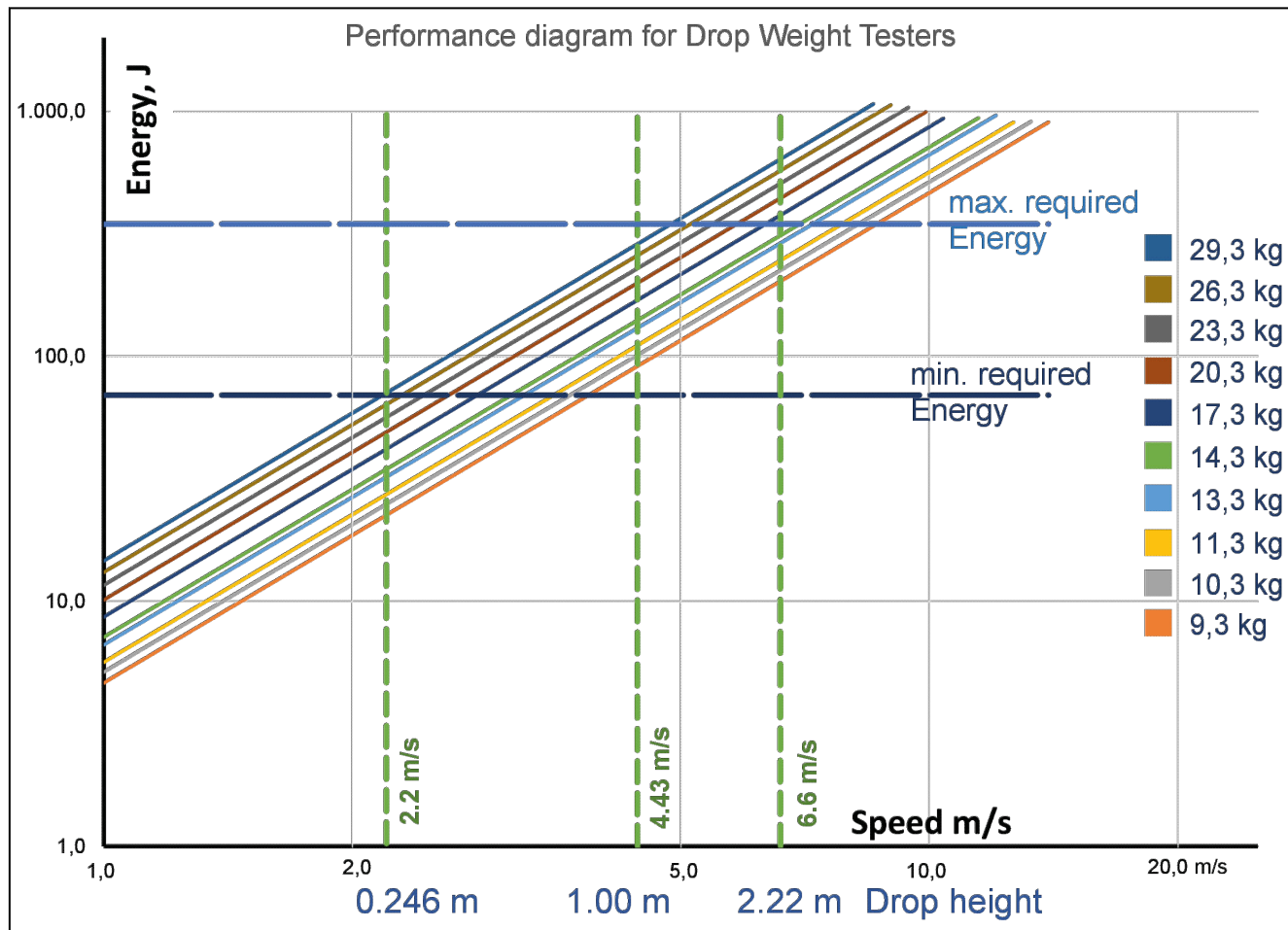
Amsler HIT2000F with acceleration unit, standard-mass carriage

Mass[kg]	Speed [m/s]	Energy [J]
10.1	19.4	1901
15.1	16.4	2031
20.1	14.28	2049
25.1	12.78	2050
30.1	11.67	2050

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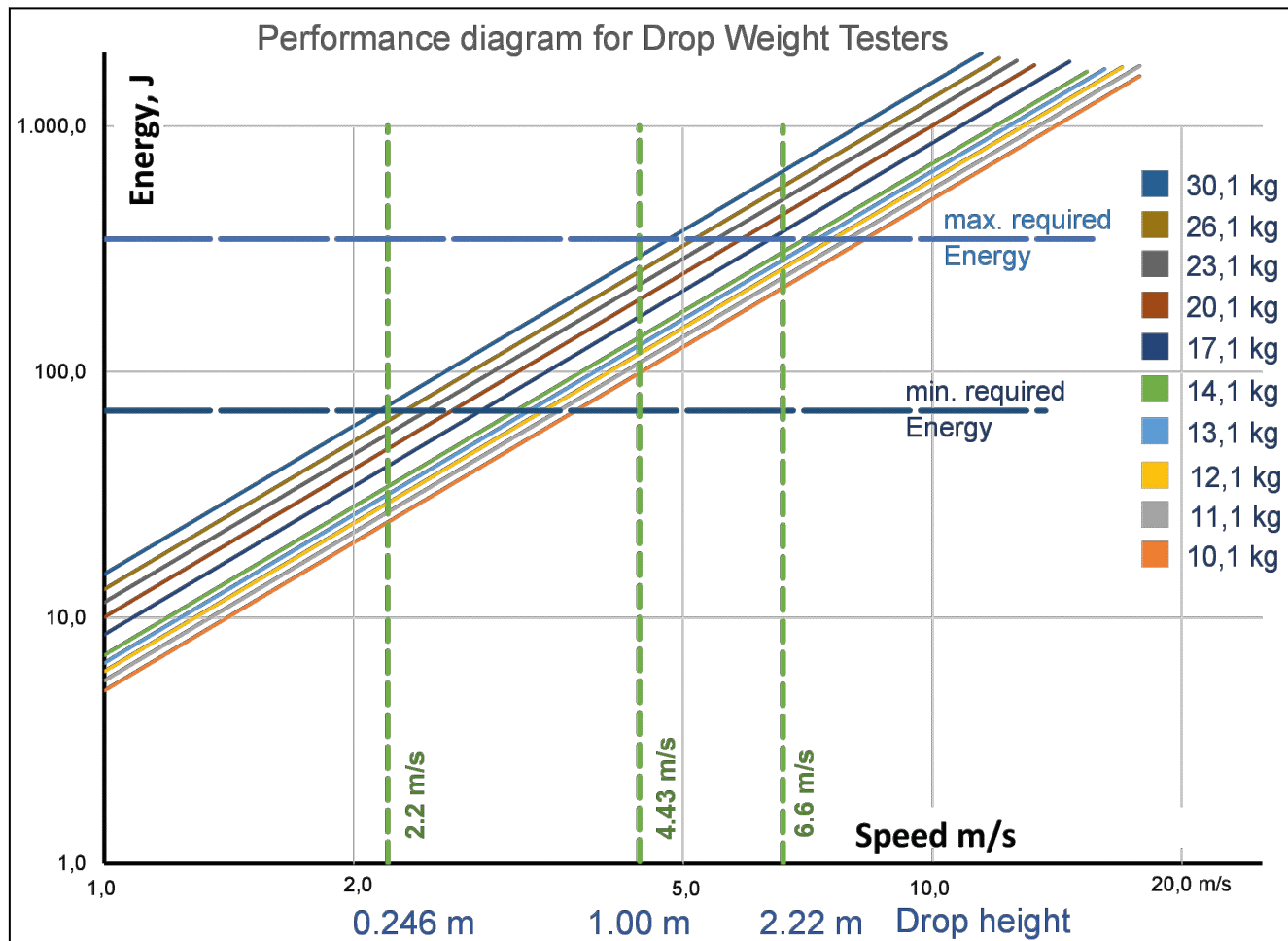


Performance diagram Amsler HIT1100F with mass carriage up to 29,3 kg. Minimum and maximum required energy for average plastics in multiaxial puncture test.

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Performance diagram Amsler HIT2000F with mass carriage up to 30.1 kg. Minimum and maximum required energy for average plastics in multiaxial puncture test.