



DWT-1800 Computer Controlled Drop Weight Impact Testing Machine

Standards: [UL 651](#), [UL 1](#), [UL 360](#), [UL 1660](#), [UL 797](#), [UL 6](#), [UL 1242](#)



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Description

The [DWT-1800 Computer Controlled Drop Weight Impact Testing Machine](#) is a high-performance, PLC-driven system that is designed to assess the impact resistance of a diverse array of metal and non-metal materials. The DWT-1800 is an extremely versatile tool for product validation, quality assurance, and material certification processes, as it is capable of performing high-energy impact tests up to 1800 joules and low-energy tests as small as 3.72 joules.



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This drop weight impact tester is commonly used to assess the nil-ductility transition (NDT) temperature of ferritic steel, which includes plates, profiles, forged steel, and cast components. It is also equally effective in testing materials such as rigid PVC conduits, metal conduits, electrical tubing, cable support hardware, and flush-mounted electrical enclosures. The machine is fully compliant with an extensive number of UL impact testing standards, such as [UL651](#), [UL1](#), [UL360](#), [UL1660](#), [UL797](#), [UL6](#), [UL1242](#), UL1569, UL514C, UL514D, and UL2239. This allows laboratories and manufacturers to conduct certified impact resistance testing within a range of industrial applications.



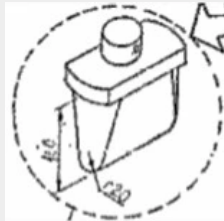
The DWT-1800's intuitive software interface enables users to pre-set hammer weight, target energy, and drop height with its advanced computer-controlled system. Through the use of a precision wire encoder, touchscreen controls, and photoelectric sensors, the system executes and calculates test sequences automatically, guaranteeing real-time monitoring and highly accurate energy readings. The hammer lift, release, and grasp functions are fully automated to guarantee a safe and efficient operation.

The machine's frame is robust and includes a heavy-duty base, an adjustable sample seat (with a height tolerance of up to 50 mm), guidance columns, and multiple interchangeable impact hammers and anvils that can handle an array of specimen geometries. The testing integrity is guaranteed by a built-in anti-secondary impact device, which prevents rebound strikes. Additionally, the adjustable locking rings support an effortless shift between high-energy and UL-specific low-energy tests. More context and real-world applications are covered in our blog.

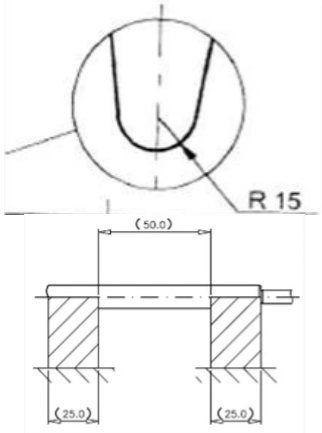
The DWT-1800 was built for long-term durability, low maintenance, and installation on a stable concrete foundation, and is constructed from industrial-grade 45# steel. The modular components of the system, such as hammers, anvils, and protective elements, are easily serviceable or replaceable, thereby guaranteeing long-term performance and minimal downtime in rigorous testing environments.



Technical Specifications of the DWT-1800 Impact Testing Machine

Specification	Values
Sample Length Specification	Standard UL651
Sample Length	6 inches (152.4 mm)
Sample Size	16 mm – 152.4 mm
Anvil Size	13 mm steel plate
Test Temperature	23°C ±2°C
Impact Hammer – Heavy Hammers	397 lb (180 kg), 600 lb (272 kg)
Impact Hammer – Light Hammers	9.1 kg, 34 kg, 1.36 kg, 4.54 kg, 22.7 kg, 2.72 kg
UL Standard Impact Hammers	Right Cylindrical (Flat Face): Diameter: 1", 1-1/8", 2", 6" Rectangular: 3/4" × 6" (Width: 3/8") (Polyurethane), 2" × 6", 3" × 6"
Sample Seat	According to customer requirements in compliance with UL standards 



Specification	Values
Impact Hammer Knife Radius	<p>R25 mm or R50 mm (Produced according to customer requirements)</p> 
Deviation Between Central Line of Drop Hammer and Sample Seat	$\leq \pm 2.5 \text{ mm}$
Lifting Height of Falling Weight	<p>3.94" – 131.9" (100 mm – 3350 mm)</p>
Precision of Falling Weight Lifting Height	$\pm 0.5\%$
Rockwell Hardness of the Drop Hammer Blade and Supporting Table	HRC ≥ 50
Machine Size	<p>50.4" × 51.2" × 177.2" (1280 × 1300 × 4500 mm)</p>
Machine Weight	Approx. 5512 lb (2500 kg)



Watch Video



Watch the DWT-1800 Computer Controlled Drop Weight Impact Testing Machine product video.

[WATCH ON YOUTUBE](#)



Specification Comparison: Low vs High Impact Hammer

Specification	DWT-1800 LIH (Low Impact Hammer)	DWT-1800 HIH (High Impact Hammer)
Hammer Size	Diameter: 2" (50.8 mm)	Diameter: 6" (152.4 mm)
Hammer Weight	20.1lb (9.1kg)	74.9lb (34 kg)
Impact Height	3.94" – 131.9" (100 mm – 3350 mm)	3.94" – 83.9" (100 mm – 2130 mm)
Impact Energy	6.57 – 220.3 ft-lbf (8.9 J – 298.7 J)	24.6 – 523.3 ft-lbf (33.3 J – 709.7 J)

Working Principle and Structural Overview

The DWT-1800 Drop Weight Impact Testing Machine was built with a focus on durability, safety, and precision. A steel-reinforced base, dual guide columns, a configurable hammer assembly, and a dependable lifting mechanism comprise the system's robust mechanical structure. The hammer is dropped along a strictly controlled linear path by the vertical guide rail, which is perfectly aligned with the base.

The crossbeam can be raised or lowered by an anchor chain mechanism to adjust the testing height. The hammer body is equipped with a mechanical locking block and reinforced side protection to prevent debris projection in the event of specimen failure. This feature is required for the safety of the operator.

The microcomputer-controlled pre-set system is a critical functional component that enables users to program precise hammer weights and impact energy values. The machine achieves consistent test conditions by automatically lifting the hammer to the calculated height before initiating the drop once the parameters have been defined.

The DWT-1800 is equipped with an integrated electric winding engine that is mounted to the side of the frame for better operational efficiency. The total vertical footprint of the equipment



is reduced, structural stability is improved, and routine maintenance procedures are simplified by this compact motorized system.

How to Operate the DWT-1800 Impact Testing Machine

Operating the DWT-1800 Computer Controlled Drop Weight Impact Testing Machine is a streamlined process, combining automation with high precision. The system is equipped with an intuitive touchscreen interface and a PLC-driven measurement and control unit that manages the entire test cycle – from pre-setting parameters to capturing final energy readings.

To begin, the operator inputs key test parameters into the control software, including the hammer weight, target impact energy, and local gravitational acceleration. The system automatically calculates the required drop height based on these settings. The hammer is then raised by the motorized winding engine, with its position monitored by a wire encoder and photoelectric sensors to guarantee precise height alignment. Once the hammer reaches the programmed height, it pauses automatically. With the specimen in place, a single click of the “Impact” button releases the hammer to execute the test.

Throughout the test cycle, impact energy values are calculated and displayed in real time, while the anti-secondary impact device prevents rebound errors. Safety is reinforced by features such as a lockable safety pin for setup phases, an enclosed impact zone, and automatic grasping of the hammer post-impact via pneumatic control.

The DWT-1800 also supports multiple UL test setups. Operators can easily swap hammer types and anvils, adjust sample seat height up to 50mm with built-in leveling gauges, and reconfigure locked ring positions for high- or low-energy tests. Detailed guidance is provided in the software interface, and first-time users are prompted to perform a blank drop to calibrate the system.

Please note that custom solutions with varying impact energy, hammer weights, and lift heights are available and customizable to match your specific testing requirements.



Who Can Benefit from the DWT-1800 Drop Weight Impact Testing Machine

Many sectors rely on drop weight impact testing to evaluate how materials behave under real-world conditions. The DWT-1800 is particularly useful in:

- **Metal manufacturing and steel processing**, where it's used to determine the nil-ductility transition (NDT) temperature of ferritic steels such as plates, profiles, cast steel, and forged components.
- **Electrical and cable conduit production**, where manufacturers test PVC and metallic/non-metallic conduits for compliance with UL standards like UL 651, UL 1, UL 360, and others.
- **Electrical enclosure and hardware industries**, where the impact resistance of device boxes, outlet covers, and support fittings must meet requirements such as UL 514C, UL 514D, and UL 2239.
- **Construction and infrastructure**, where conduit systems, cable supports, and related components are expected to maintain integrity under mechanical stress or impact.
- **Automotive and aerospace sectors**, which require in-depth analysis of how structural and shielding materials perform under dynamic loading and crash-like conditions.
- **Packaging and logistics**, where drop impact tests help evaluate packaging materials and designs for strength and shock resistance under ASTM-related standards.

The DWT-1800 is also built to serve testing labs, R&D teams, and production environments. It's regularly used by:

- **Materials engineers and lab technicians**, to gather reliable data on impact energy absorption and fracture behavior.
- **Quality assurance and regulatory professionals**, to confirm product compliance with standardized testing methods.
- **Designers and product developers**, who use test results to improve material selection, safety margins, and long-term performance.



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