

DROP WEIGHT TEAR TESTER - DWTT



The advanced and popular Drop Weight Tear Impact Testing Machines - DWTT-API-30/40/50K series can test 10 samples consecutively, utilizing a user-friendly and automatic feeding and control system.

By initiating the test process by the operator, the samples are automatically inserted via a manipulator from the low-temperature chamber to the impact area, and then the test is carried out and the broken samples are being collected with a fully automatic cycle.

DWTT-API-30/40/50K series system also can be operated manually, thus making it easy to maintain the machine and control the step by step test procedure.

APPLICATIONS

Steel Pipe and medium thickness ferrite steel sheet production lines with requirements for Drop Weight Tear Impact Testing Machines equipment. This is a fully automatic procedure consisting of feeding, testing, and fractured sample collecting. With multi channel protection system, this unit represents the highest security and safety features while in operation.

FEATURES

Low temperature Control System of Drop Weight Tear Impact Testing Machines - DWTT-API-30/40/50K series

- Constructed from 304 stainless steel tank and sprayed cold-rolled plates
- Precision of Japanese Fujitsu
- Refrigerator: Italy - Fujitsu closed-cooled

- Refrigeration accessories: Electromagnetic valve oil, condensed evaporator

Technical parameters of Drop Weight Tear Impact Testing Machines - DWTT-API-30/40/50K series

- Size: 840x500x150(mm) (width x depth x height)
- Liquid capacity: 88 liters
- Temperature range: 20°C–100°C
- Temperature volatility: $\leq \pm 0.5^\circ\text{C}$
- Temperature uniformity: $\leq \pm 2^\circ\text{C}$
- Cooling rate: Central temperature $\rightarrow$ 70°C Less than 2 hours
- Ambient temperature: 5°C–38.2°C
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Automatic Specimen Feeding System (FESTO capturing manipulator) of Drop Weight Tear Impact Testing Machines - DWTT-API-30/40/50K series

The specimen is manipulated using an SPC200 servo controller, which is mounted on an aluminum structure.

The x axis is for servo positioning and multi-spot localization, and works in conjunction with a built-in belt sensor. It uses a single DGPL linear drive. The Y axis uses two air cylinders to clear the frame gate. Aluminum blocks can be added to the cylinders' slides to increase the height. The Z axis uses an HMP pneumatic cylinder and a gripping device to capture the test specimen.

The gripping device uses a Y axis movement to bring the captured test specimen to position A. The X axis air cylinder then moves the manipulator to position B and deposits it in the testing area. After the successful test, the Y axis air cylinder then

captures the fractured specimen and lays it aside in position C.

THEORY & METHOD

Standards

- API RP 5L3-Pipe Line Steel Drop Weight Tear Test Recommended
- ASTM E436-Ferrite Steel Drop Weight Tear Test Method

TECHNICAL SPECIFICATIONS

Standards

- Impact Energy 30,000J; 40,000J; 50,000J & 75,000J
- Impact Energy range 10,000-30,000J; 40,000J; 50,000J & 75,000J
- Convenient weight or height adjustment for energy change
- Impact speed: 5-8 m/s
- Hammer Body Error tolerance: $\pm 0.5\%$
- Hammer edged down center with the bearing span deviation: +1mm
- Sample specifications: $(300 \pm 5) \times (75 \pm 1.5) \times 40\text{mm}$
- Low temperature cooling tank (20--100°C) with automatic cooling.
- Volume: 10 samples
- Temperature tolerance: $\leq \pm 1^\circ\text{C}$
- Temperature uniformity: $\leq \pm 2^\circ\text{C}$
- Temperature resolution $\leq 0.1^\circ\text{C}$, deviation $\leq \pm 0.5^\circ\text{C}$

- Automatic feeding and collection of the specimens
- Cycle time: 8.54 seconds
- Automatic system ensures proper specimen alignment and accuracy consistent with GB8363 requirements
- Automatic lifting, weight can safely be lifted to different heights.
- Reliable and rapid release of weights to enhance the accuracy of 0.3% displacement measurement device, the whole measurement range resolution: 1mm
- Fractured specimens can be automatically delivered to the testing machine foundation
- Hammer edge hardness HRC55~60. Hammer blade curvature radius and tolerance test standards meet ASTM E436 GB8363, API requirements
- Hammer face impact consistent with support center. Deviation conforms to GB8363, API, and ASTM E436 standard requirements
- Hammer and base made with high rigidity
- Hammer head equipped with self-locking mechanism
- Support HRC58~62 hardness
- Failure control system with audio alarm function. Activates if sample is not in place and machine setup is not correct
- High-resolution Japanese LCD screen and Germany's Siemens PLC optical encoder PLC.
- Four columns, polished Chrome plated with precision linear axis
- Slant Preventing Fixture on the mainframe anvil bed



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