



ITM000EN03

# IT Series

## HIGH CAPACITY

Impact Testing Machines

# Impact Testers **HIGH CAPACITY**

Tinius Olsen's pendulum impact testers are versatile and reliable machines designed to fully comply with the specifications outlined in ASTM E23, EN10045-2 and ISO 148. Today, the Model IT406 and the Model IT542 are widely recognized as the standards for the industry for impact testing.

The Model IT406 provides maximum testing versatility. Easy insertion of interchangeable striking bits in the pendulum head quickly adapts the machine for either Charpy or Izod testing. A notch on the rear of the pendulum head allows optional tooling to be fitted for performing tension impact tests.

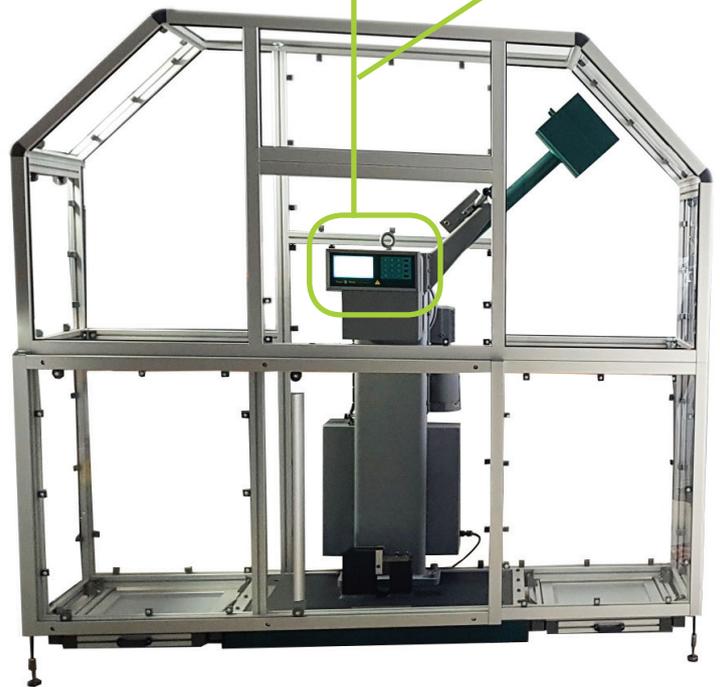
A safety lock holds the pendulum in its raised position and ensures a vibration-free release when activated. Once released, the pendulum quickly reaches the impact velocity of 5.47m/s (17.0ft/s) and has a maximum available energy of 406J (300ft.lbf) to impact the sample.

The superior design and construction of the Model IT406 ensures maximum testing accuracy and repeatability. When the machine is properly installed and leveled, total frictional and windage losses during the pendulum swing are guaranteed not to exceed 0.5% of the energy range.

Direct indication of the energy absorbed by the broken sample is given by a mechanical pointer on a graduated scale. This scale can be supplied in ft.lbf, J or kg.m. For ease of use, a digital display can be fitted to the machine to provide more results on the test. It is recommended that this display be added at the time of order.

Tinius Olsen offers a number of options to make the operation of the impact tester easier – from a simple electric brake to stop the swinging pendulum, to an automatic motorized return, eliminating the need for any operator involvement other than releasing the pendulum. The digital display is included in this last option and

**Touch screen display for machine and test set-up and display of results.**



provides the trigger to energize the motor, which stops the swinging pendulum at the optimal position and returns it to the latched starting point. The time from pendulum release to return can be as little as 10 seconds, which means more than 400 tests per day can be made with minimal effort.

Tinius Olsen can also provide a low blow fixture that allows Charpy, Izod or tension impact tests to be performed at any of 55 velocity/energy levels from the maximum of 5.47m/s (17.9ft/s) down to 0.13m/s (0.4ft/s).

For high traffic areas, Tinius Olsen can supply a complete enclosure for the machine so that the swinging hammer and broken specimens do not pose any concerns. The enclosure is completely interlocked so that the machine cannot operate unless all the guards are in place.

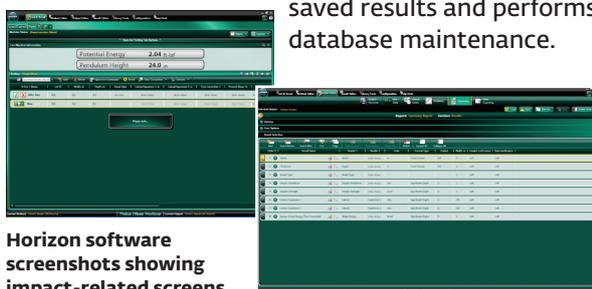
Tinius Olsen can also supply a higher capacity model, the Model IT542, which shares all the same features as the IT406 but has an available energy of 542J (400ft.lbf). The IT542 is also supplied complete with the electric brake, motorized return and digital display.

The range of capacities has been increased further with the Model IT800 offering 800J of available energy. This machine incorporates a number of unique features including a follower arm that tracks the swinging pendulum without contact and, if the test area safety doors are opened (or optional light curtain broken), immediately stops any further motion of the pendulum. This follower arm also acts as the pendulum return carrier and safely returns the pendulum to its latched release point once a test is complete. Other features include a touchscreen display to set up the test and display the results.

## HORIZON SOFTWARE



- User-selected reporting and exporting formats.
- Built-in SPC programs for X-bar, R and frequency distribution chart/histograms.
- Test mode allows configuring, running and saving of tests and results.
- Recall mode permits viewing of previously saved results and performs database maintenance.



**Horizon software screenshots showing impact-related screens.**



SPECIFICATIONS		IT406	IT542	IT800
Pendulum capacity	J	406	542	800
	ft.lb	300	400	590
Drop height	m	1.5	1.5	1.5
	ft	5	5	5
Pendulum weight	kg	27	36	62
	lb	60	80	136
Impact velocity	m/s	5.5	5.5	5.5
	ft/s	18	18	18
Dimensions* (WxDxH)	mm	2108 x 508 x 1854	2108 x 508 x 1854	2560 x 910 x 2320
	in	83 x 20 x 73	83 x 20 x 73	101 x 36 x 92
Weight	kg	736	785	2631
	lb	1620	1730	5800

\*Width includes total swing clearance.  
Specifications are subject to change without notice

## Key features

- Precision, friction compensated, robust test frames.
- Digital display option allows test set-up and result display.
- Digital display option allows simple connection to PC for full test SPC analysis.
- Safety features ensure repetitive secure testing.

Right: Model IT406. Shown with analog display.  
Centre: Model IT542. Shown with digital display.  
Far right: Model IT542, CE enclosed version.  
Features electric brake and motorised pendulum return.



## CONFIGURATIONS

**Charpy**— Replaceable shrouds prevent the specimen from rebounding against the pendulum. The striker is bolted to the pendulum and available in 8mm (ASTM E23) or 2mm (BS, DIN, JIS, EN, and ISO) nose radius sizes. An optional set of self-centering tongs is useful for accurately centering specimens, especially those subjected to temperature extremes before the test.

**Izod**—The Izod striker is easily secured in the pendulum while the specimen is clamped in the close clearance slots in the vise. This ensures the specimen has the correct vertical alignment while the setting gage ensures the specimen is at correct height. A wrench is provided for tightening and loosening the specimen in the vise. This configuration is not available on the Model IT800.

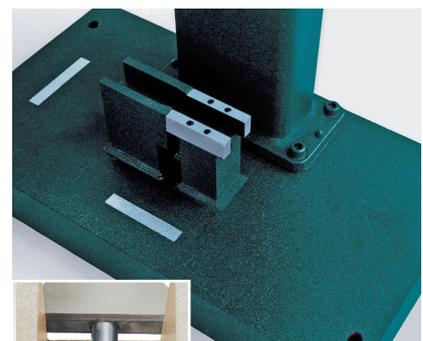
**Tension Impact**—The tension impact specimen is threaded into the specimen holder in the pendulum head. Tension is instantaneously applied to the specimen when the holding bar strikes the anvils. This method of support provides uniform distribution of the impact energy over the cross-section of the test specimen. This configuration is not available on the Model IT800.



The specimen rests horizontally on the Charpy supports. Centering tongs can be seen in front.



The specimen is clamped vertically at one end, using the front screw/vise. Left: The striker.



The specimen is threaded into the holder using the striker (left) and the holding bar at the rear of the pendulum head.



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