

Tinius  **Olsen**

Impact Test Systems for Plastics



Model IT 503

The model IT 503 plastics impact tester, together with the model IT 504, continues to set the industry standard for versatility, ease of operation, and display of information with high resolution.

These machines are capable of determining the impact resistance using either a Charpy or Izod configuration, without changing the entire pendulum.

The user attaches the appropriate striking tup on the pendulum and the specimen clamp or anvils in the base of the unit, to test plastics in accordance with ASTM D256 (Izod impact), ISO 179 (Charpy impact), ISO 180 (Izod impact), ASTM D6110 (Charpy Impact), ASTM D4812 (Unnotched Cantilever Beam Impact), ASTM D4508 (Chip Impact), ASTM D950 (Adhesive Bond Impact), and other similar standards.

The aerodynamically designed compound pendulum provides maximum rigidity in the direction of the impact and virtually eliminates any windage losses. Pendulum capacity is easily changed by adding on any one of seven optional weight sets.

The energy absorbed in breaking the specimen can be configured in SI, metric, or English units and is determined by an optical encoder mounted on the shaft of the machine and is based on the latched height of the hammer (relative to the zero potential energy point), the maximum

post-impact height of the hammer, and the frictional losses of the machine. Energies of less than 0.03% of the pendulum capacity can be resolved and this resolution is vastly superior to dial type displays and other currently available displays.

The IT 503 is supplied as standard with a "low blow" feature which provides a convenient and reliable means for releasing the pendulum from a lower than usual height, so allowing testing at lower impact velocities and energy levels. Additionally, the model IT 503 is supplied with all necessary interlocked safety shielding to protect the operator and bystanders from the broken samples.

To make impact testing on plastics easier and more flexible, the machines can be connected to a pc running Tinius Olsen's Horizon software for data capture and analysis.

The standard capacity range of the machine using the compound pendulum is from 2J to 2.82J; this can be increased to a maximum of 25J on the compound pendulum, using different weight sets to take you to capacities of 5J, 50in.lb, 7.5J, 100 in.lb, 15J, 200in.lb, and 25J. Outside of this range, the compound pendulum needs to be replaced by individual pendulums.

Optional pendulums available have capacities of 0.5J, 1J, and on the other end of the spectrum, 50J.

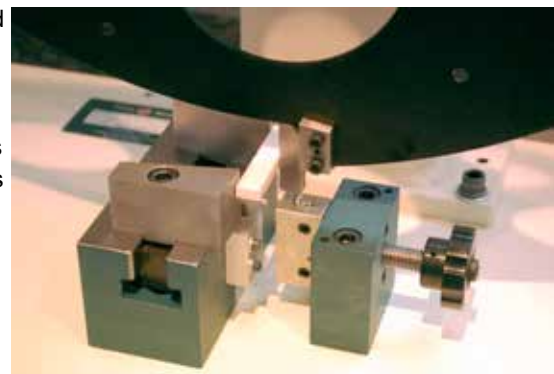


Fig. 1 Close-up of Charpy test setup.

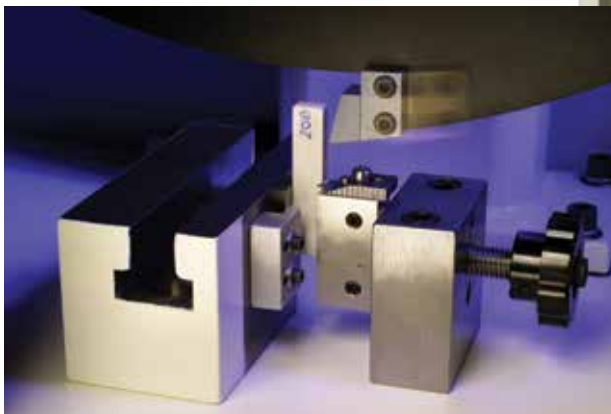


Fig. 3 Close-up of Izod test setup.

Fig. 2 Model IT 503
Plastics
Impact Tester.



Model IT 504

The primary difference between the IT503 and the IT504 is that the model IT504 is supplied without the interlocking safety shielding.

Key Features

- Aerodynamic compound pendulum
- Selectable energy units of J, in.lbf, ft.lbf, kgf.m and kgf.cm
- Selectable impact resistance / strength calculations in ft.lbf/in, J/m, in.lbf/in, kgf.m/m, ft.lbf/in², kJ/m², in.lbf/in², or kgf.m/m²
- Break type input options of Complete, Hinge, Partial, Non-break, and Necking
- Automatic or manual Toss correction
- Auto calibration for bearing windage and friction
- Automatic or manual update of specimen number
- Real time display of energy is available for verifying the display accuracy against traceable measurements of pendulum height and weight.
- On the model IT503, interlocked safety doors to ensure pendulum cannot be released with these doors open.

Optional Features

- Low temperature chambers
- Separate 1J, 0.5J and 50J hammers



Fig. 7 Optional weight sets, clamps, anvils, and striking tups.

TECHNICAL SPECIFICATIONS		
BASIC PENDULUM CAPACITY	J ft.lb in.lb	2.82 2.08 25
– WITH LOW BLOW	J ft.lb in.lb	2.75 to 2 2.03 to 1.475 24.38 to 17.73
INCREASED PENDULUM CAPACITY	J ft.lb in.lb	add-on weights available for up to 25 J add-on weights available for up to 18.44 ft.lb add-on weights available for up to 221.63 in.lb
DROP HEIGHT	m ft	0.61 2
IMPACT VELOCITY	m/s ft/s	3.46 11.35
POWER		110/220 VAC, 50/60 Hz, 1ph
DIMENSIONS W x D x H	mm in	660 x 380 x 840 26 x 15 x 33
WEIGHT	kg lb	110 (90) 240 (200)

Fig. 4 Model IT 504 shown with optional 50J pendulum.

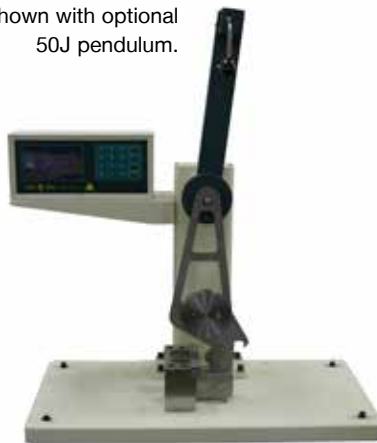


Fig 5. Model IT 504 shown with temperature chamber.

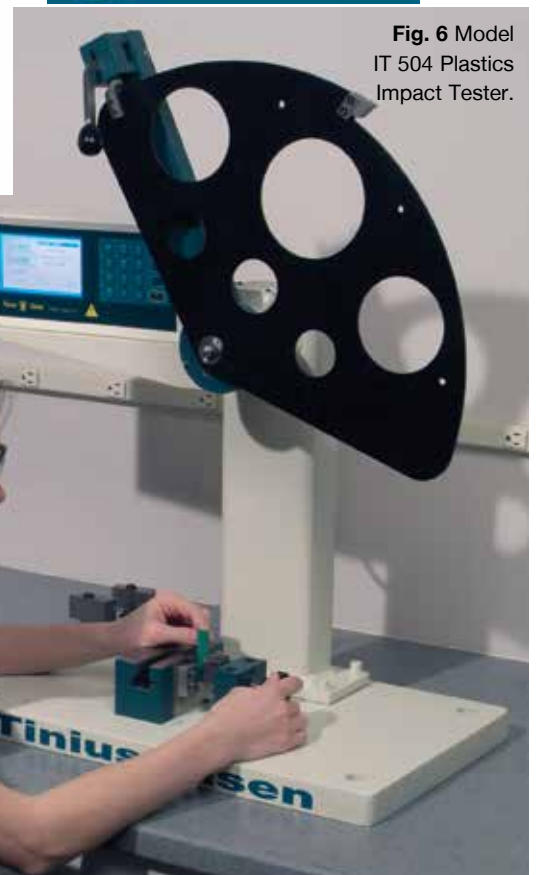


Fig. 6 Model IT 504 Plastics Impact Tester.

Impact Specimen Notcher

The Tinius Olsen Model 899 Impact Specimen Notcher for Plastics is designed to machine a notch in a plastic specimen in accordance with ISO 179, ISO 180 (type A notch specimen), ASTM D256 and ASTM 6110.

Prior to performing tests, the specimens must be notched in order to create a stress riser and to predict the point of fracture. The Tinius Olsen Model 899 Impact Specimen Notcher for plastics can accurately machine up to 28 3.2 mm (1/8") thick specimens at one time.

The Model 899 Specimen notcher features an air cooling system that directs air flow at the cutting area to reduce the risk of thermal degradation of the specimens. A clear safety

cover over the cutting area protects the operator, while doubling as an attachment for a vacuum system (not supplied) to remove chips from the cutting area.

After samples are loaded, the operator initiates the automatic notching cycle by simply pressing a button. Both cutter speed and feed rate are adjustable to work with a variety of materials.

After the notching process is completed, the notch depth can be verified by using the Model 799 Notch Depth Verification Device.

Optional cutting tools are available to produce ISO type B and C notches.



Fig. 8 Model 899 Impact Specimen Notcher.



Fig. 9 Model 799 Notch Depth Verification Device.

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



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