

Pendulum Impact Testing Machine

Application:

- Impact on metals, Charpy and Izod, both non-instrumented and instrumented
- Wedge impact test of adhesive bonds
- Brugger method test of toothed gear wheels
- Servo motor driven pendulum can stop at any position, realizing different angle/energy impact test for R&D use
- Equipped with cooling system, I can perform low temperature test down to -180

Standards

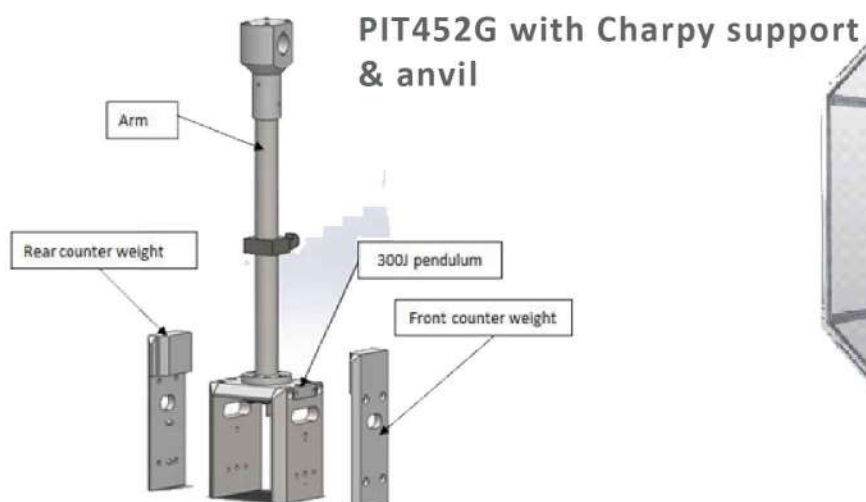
ASTM E23, ASTM E1820, ASTM E2298, AS 1544, ISO 148, EN10045, ISO 14556, ZF 15-53, ISO 11343, JIS Z 2242, JIS B 7722, GOST 9454

Machine structure

The basic model consists of a heavy solid steel base on which the specimen holder (anvil) and a heavy-duty cast steel upright are mounted. The machine is constructed with main frame, driving system, pendulum lock/release system, angle encoder, display, protection shield and other accessories.

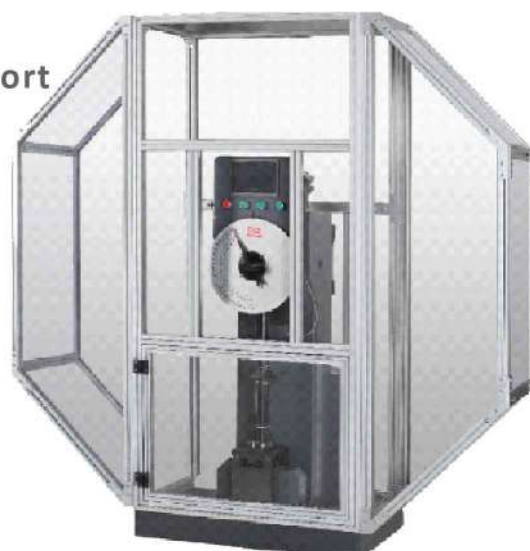


PIT452G with multi-purpose fixture for Charpy & Izod test



Pendulum

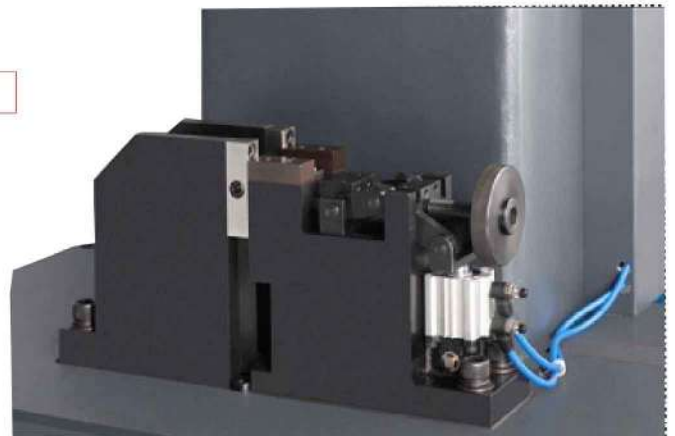
3D CAD software provides advanced design and analysis, ensuring accurate striking point and pendulum moment. High stiffness pendulum rod ensures no vibration after impact. Customer can change striking knife according to test standard requirements, such as R2 for ISO/GB standard, R8 for ASTM, or R2/R8 instrumented knife, or Izod knife complying with ASTM E23. 300J and 450J pendulum is a combined design. It consists of 300J pendulum, and two counter weights. It can reach 450J when assembling 300J pendulum head with two counter weights. This flexible design facilitates switching impact energy, simple and high efficiency.



Pendulum Impact Testing Machine

Charpy support & anvil

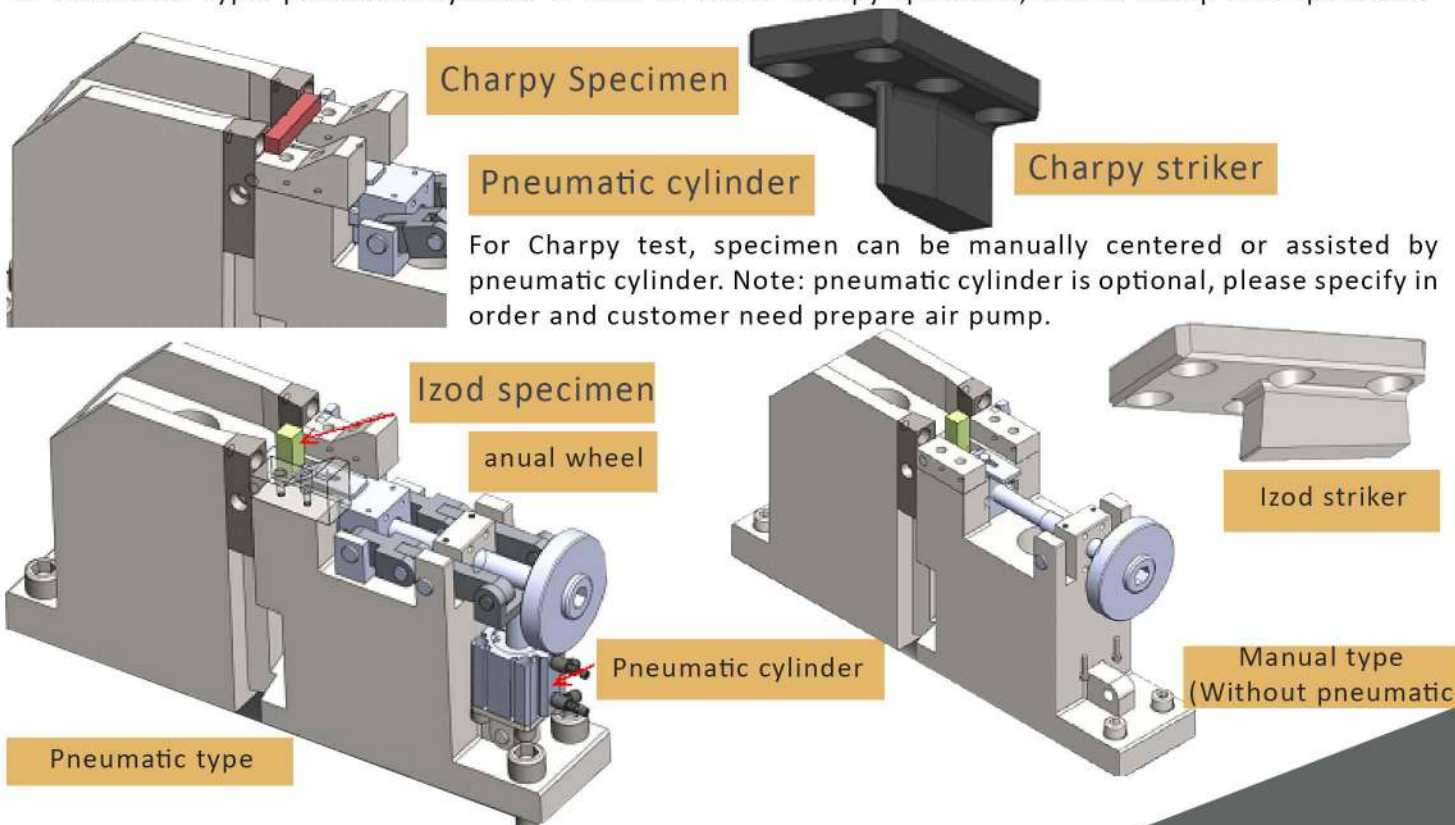
Standard configured Charpy support and anvil comply with ISO148, EN10045, and ASTM E23. Smart design of anvil is easy to assemble, simplifying maintenance.



Optional multi-purpose fixture (patent pending)

Wance patented design of multiple purpose fixture is able to perform Charpy, Izod and tensile impact test without changing the specimen fixture, greatly reducing the labor and improving efficiency. There are two types of fixture:

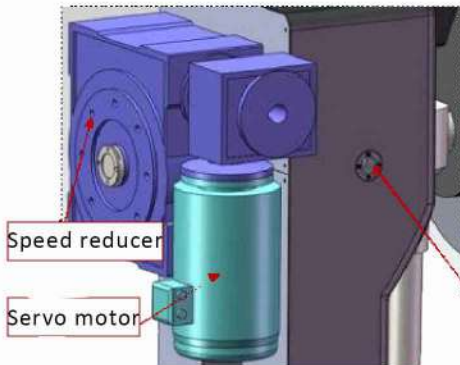
1. Manual type: manually center the Charpy specimen, manually clamp the Izod specimen.
2. Pneumatic type: pneumatic cylinder is used to center Charpy specimen, and to clamp Izod specimen.



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Pendulum holding & releasing mechanism

It features damping design during pendulum holding to prevent any damages, lower noises and improve durability and safety.

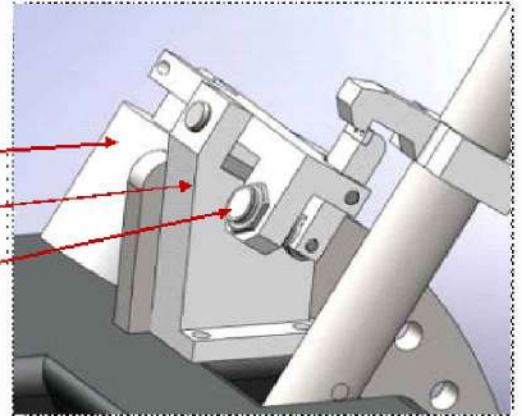


Electromagnet

Lock/release

Damping cylinder

Clutch



Driving system:

This series adapts standard double speed reducer instead of old complicated driving system, featuring simple structure, easy repair, and high durability and free of maintenance.

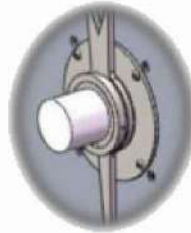
Safety system:

This series of machine has fully closed protection shield to protect operator against specimen splitting during test, and to deny any access to the inside during test. Built-in door interlock further ensures operator safety. The protection shield is constructed with aluminum alloy profile for frame and fiber glass for easy observation. Split-type door design is simple to repair and change pendulum.

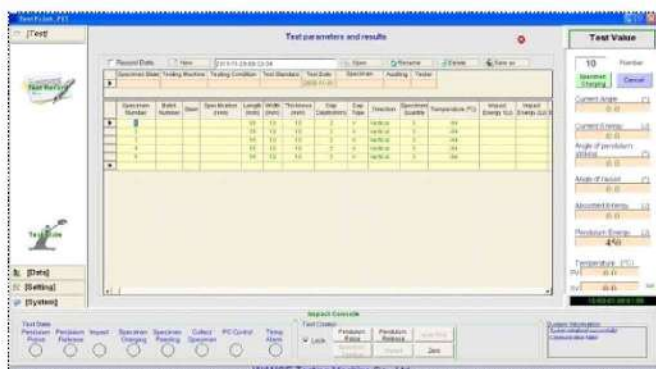
Energy display system

Three types of energy display are available:

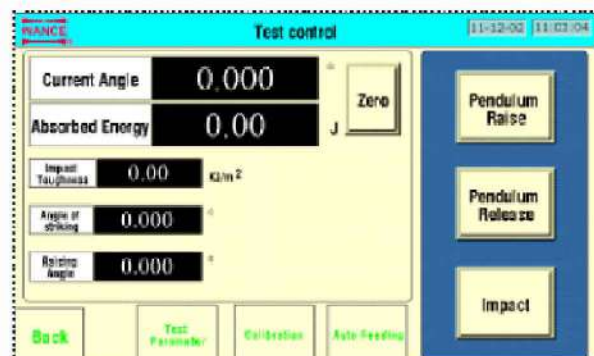
- Analogue: simple and direct to read impact energy
- Wide view touch screen
- Computer with test software



Wide view touch screen



Professional test software



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Instrumented impact system – IIS105

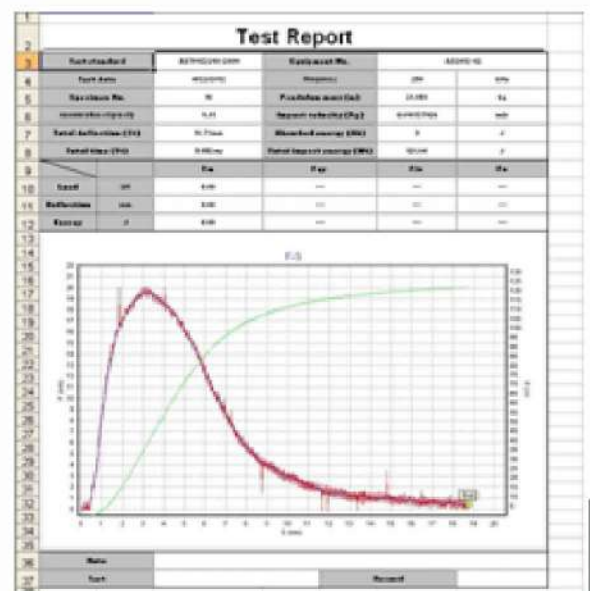
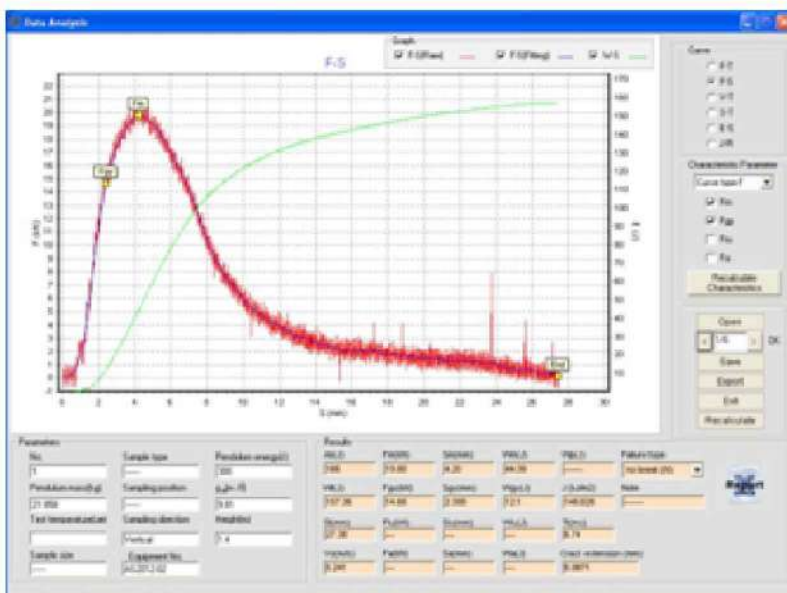
Instrumented impact system consists of striking knife with force transducer, data sampling card, signal conditioner and professional test software. Instantaneous force signal from transducer assembled on the striker is transferred to and enlarged by high speed signal conditioner. Enlarged signal is A/D converted by high speed data sampling card, then transferred to computer for storage and analysis. After calculating and analyzing original force vs. displacement curve, more characteristic parameters could be determined, furthermore specimen deformation and fracture property could be precisely judged.



Model	PIT452G PIT752H
Force transducer	30kN, 50kN
A/D sampling resolution	16bits
Maximum sampling frequency	1.25MHz
Frequency band width	500kHz
Power supply	AC220V±10%, 50Hz, 100W

Instrument data analysis system - Software

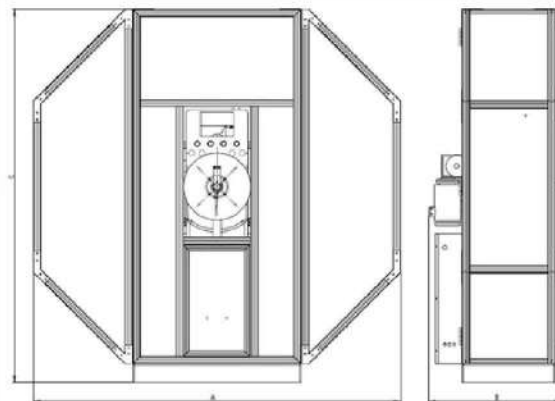
- Automatic curve fitting of force vs. displacements
- Automatically determine F_{gy} , F_m , F_{iu} , F_a , and other characteristic parameter, further determine after calculation S_{gy} , S_m , S_{iu} , S_a , S_t , W_m , W_{iu} , W_a , W_t and others.
- Fully automatic data processing permits to get test results and report after each test immediately.
- Curve and raw data can be exported



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Specifications:

Name		Description
Maximum impact energy		450J (300J, 150J)
Angle resolution		0.025°
Distance from the axis of support to the center of percussion		750mm
Velocity of striking		1.40~5.24m/s
Angle of striking		30°~150°, adjustable
Pendulum moment	150J	80.8348N·m
	300J	160.7695N·m
	450J	241.15 N·m
Charpy anvil	Span	40mm
	Radius of curvature of supports	1mm
	Angle of taper of supports	11°±1°
Charpy striking knife	Radius of striking edge	2mm(R2) or 8mm(R8)
	Angle of striking tip	30°
	Thickness of striker	16mm
Izod Striking knife	Radius of striking edge	0.8±0.2
	Angle of striking tip	75±1°
Dimension (with protection shield) AxBxC		1960mm×680mm×2000mm
Weight		800kg
Power supply		1-phase, 220±10%VAC, 50Hz
Power consumption		800W



Standard configurations:

Name	Description	Model		
		PIT452G-2	PIT452G-3	PIT452G-4
Framework	Frame	✓	✓	✓
	Pendulum holding and releasing mechanism	✓	✓	✓
	Driving system	✓	✓	✓
	Angle measurement system	✓	✓	✓
	SIMENS PLC control	✓	✓	✓
	Analogue display	✓	✓	✓
	Touch screen	✓	✓	✓
	Protection shield	✓	✓	✓
	Servo motor	✓	✓	✓
Charpy support & anvil	Only for Charpy, comply with ISO and ASTM	✓	✓	✓
Instrumented impact system (model: IIS105)	Data sampling card			✓
	Data Conditioner			✓
	Instrumented test software			✓
Software			✓	✓
Accessories	Span adjusting device			
	specimen center alignment device			
	inside-hexagonal spanner	✓	✓	✓
	foundation bolts			
	wedge block			

Optional accessories

Name	Specifications
Manual multi-purpose fixture	Manually clamp Charpy or Izod specimen
Pneumatic multi-purpose fixture	Pneumatically clamp Charpy or Izod specimen
Air pump (YH-04)	Air capacity: >60L/min, Air pressure: 0.45~0.75MPa
Pendulum *	150J, 300J, 450J
Striker knife	ISO148 R2, or ASTM E23 R8
Instrumented striker knife	ISO148 R2, or ASTM E23 R8

* 450J pendulum is assembled by 300J pendulum with two

Pendulum Impact Testing Machine



Stiker knife with load cell inside



Instrumented pendulum

Optional notch broacher

Name	MODEL	Specifications
Notch making machine	NSM201B	V2 and U5 notch Comply with ISO148 and ASTM E23

Optional cooling system

Name	Model	Description	Accessories
Automatic cooling and feeding system	LTC601A-2	-60°C~ambient Cooling method: compressor	Specimen auto-feeding system Low temperature chamber Compressor Air pump
	LTC102B-2	-100°C~ambient Cooling method: liquid nitrogen	Specimen auto-feeding system Low temperature chamber Liquid nitrogen cylinder Air pump
	LTC182B-2	-180°C~ambient Cooling method: liquid nitrogen	Specimen auto-feeding system Low temperature chamber Liquid nitrogen cylinder Air pump
Manual cooling system	LTC601A-1	-60°C~ambient Cooling method: compressor	Low temperature chamber Compressor
	LTC801A-1	-80°C~ambient Cooling method: compressor	Low temperature chamber Compressor
	LTC102B-1	-100°C~ambient Cooling method: liquid nitrogen	Low temperature chamber Liquid nitrogen cylinder
	LTC182B-1	-180°C~ambient Cooling method: liquid nitrogen	Low temperature chamber Liquid nitrogen cylinder