

**Impact energy:**

150J, 300J, 450J

**Functions:**

This machine is used for measuring the Charpy impact resistance of metal and other materials

**Standards:**

ISO 148, EN10045, ASTM E23, GB/T 229, GB/T 12778, GOST 9454

**Advantages:**

- **Pneumatic brake** enables pendulum stop at power off or emergency, greatly improving safety;
- Pneumatic action to lock pendulum when raised to top, greatly improving efficiency and safety;
- Full-enclosed aluminum protection cover features split type, easy to remove for maintenance. Glass window is convenient to watch test and metal mesh in the lower part ensures highest safety to prevent broken specimen to split;
- Pneumatic centering device enables fast aligning of specimen, greatly improving working efficiency, especially useful for low temperature test when feeding specimen to lower heat loss;
- Safety pin to lock pendulum during maintenance, extremely improving safety during maintenance;
- Optional computer with software control is available to realize semiautomatic operation. Operator only need charge specimens. Others can be controlled by software;
- Optional specimen feeding system is available. Combined with computer and software, fully automatic operation can be realized;
- Optional cooling system is available to satisfy cold specimen test down to -180°C.

## Frame

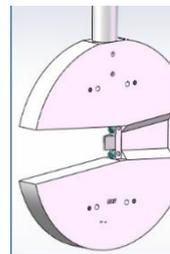
One-body cast frame design of seat and column provide high stability and rigidity. Front and rear columns are symmetrical. Pendulum arm is designed of cantilever beam support, with simple structure and high machined precision. Apply high precision bearing with small friction. Absorbing energy without loading is less than 0.3%. Double reduction gear system replaces old style drive system with high efficiency and avoiding transmission failure.

The main frame is made of ductile iron material, which not only has high strength and good rigidity, but also can effectively absorb and prevent vibration, so that the equipment runs more smoothly and the measurement data is more accurate.

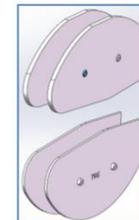


## Pendulum

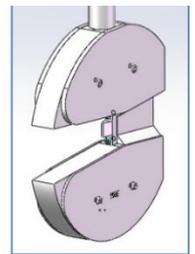
- Round pendulum head design reduces windage losses to the most.
- High rigid pendulum arm prevents axial and transverse vibrations.
- Striking head is combined design. 300J plus counter weights becomes 450J. It is convenient to perform different energy tests with frequent changing pendulums.
- The striker is made of wear-resistant high-speed tool steel with a hardness greater than HRC60, and has high strength, high toughness and good wear resistance.



600J pendulum



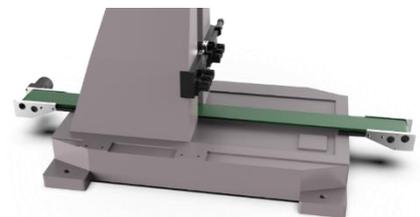
Counter weights



750J pendulum

## Specimen collection and filtering device

- Motorized device is used for collecting broken specimens after impact, instead of manual cleaning, which fully prevents striker from getting stuck
- Unique specimen filtering function: automatically judge and transport qualified and unqualified specimens to different collecting box



## Pneumatic brake

The brake of this machine is a pneumatic brake, which offers simple structure, stable action, easy installation, no noise, no no-load torque, fast heat dissipation, light weight, easy adjustment and high temperature resistance under high load

- Auto brake after power off
- Auto brake after door open
- Pendulum is braked first after test, then raised by clutch, which greatly reduce wearing on clutch and prolong the service life.



## Support and anvil

Anvil shape is rhombus. So each jaw can be used 4 times after changing the direction, which means that its working life is 4 times longer. The anvil is made of wear-resistant high-speed tool steel with a hardness greater than HRC60, with high strength, high toughness and good wear resistance. The anvil is easy to change with high interchangeability.



## Pneumatic centering device

It is equipped with specimen centering device, which can place the specimen faster and more convenient, and improve the test efficiency; Especially when the specimen is sent with low temperature, the specimen can be quickly positioned to the correct position, greatly improving the specimen feeding time, ensuring the accuracy of the specimen position, reducing heat loss, and improving the accuracy of the test.



## Safety protective cover

The safety protective cover includes the main protective cover and the left and right side protective cover. The left and right side protective cover can be opened and disassembled to facilitate.

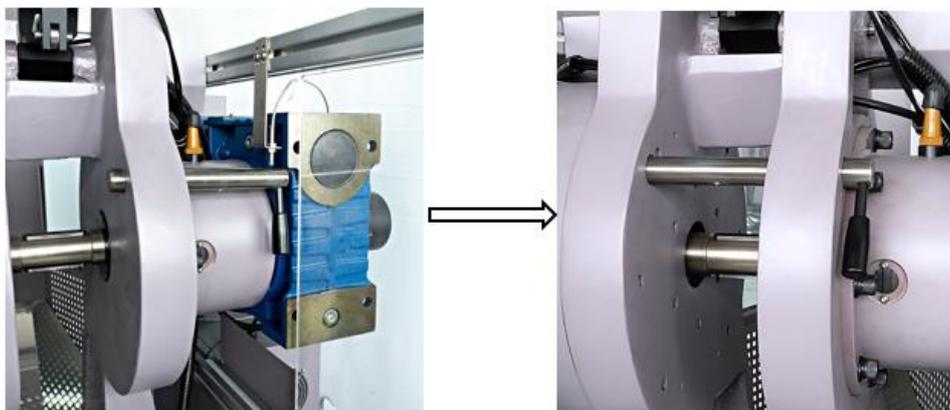
The safety shield is a fully enclosed with door interlock, which greatly improves the safety of the equipment.

The safety shield adopts the form of sheet metal and PC endurance plate, and the lower part of the sheet metal can prevent the scratch of the protective cover when the broken sample splashes; the top half is the PC endurance board, which can observe the operation inside the shield. The lower part of the safety shield is provided with the sample guide plate, which can ensure that all the specimens can be smoothly dropped onto the test recovery belt and sent out.



## Safety pin

When the pendulum is locked on the top, manually insert safety pin. When open the protection shield, this safety pin can ensure pendulum not drop even at clutch and brake failure. At the end of pin there is a proximity switch to prevent pendulum raise/release/impact operation.



**Pneumatic hook device**

It is equipped with a pneumatic hook device, when the pendulum is raised to the top, the pendulum hook can be firmly hung on the pneumatic hook device, which improves the stability of the pendulum and the convenience of maintenance; Two proximity switches on the device can detect whether the pendulum is successfully hung on and prevent the danger and equipment damage.



**Dial display**

Machine has direct dial gauge display. Inner displays angle and outer displays energy.



**Wide view touch screen display**

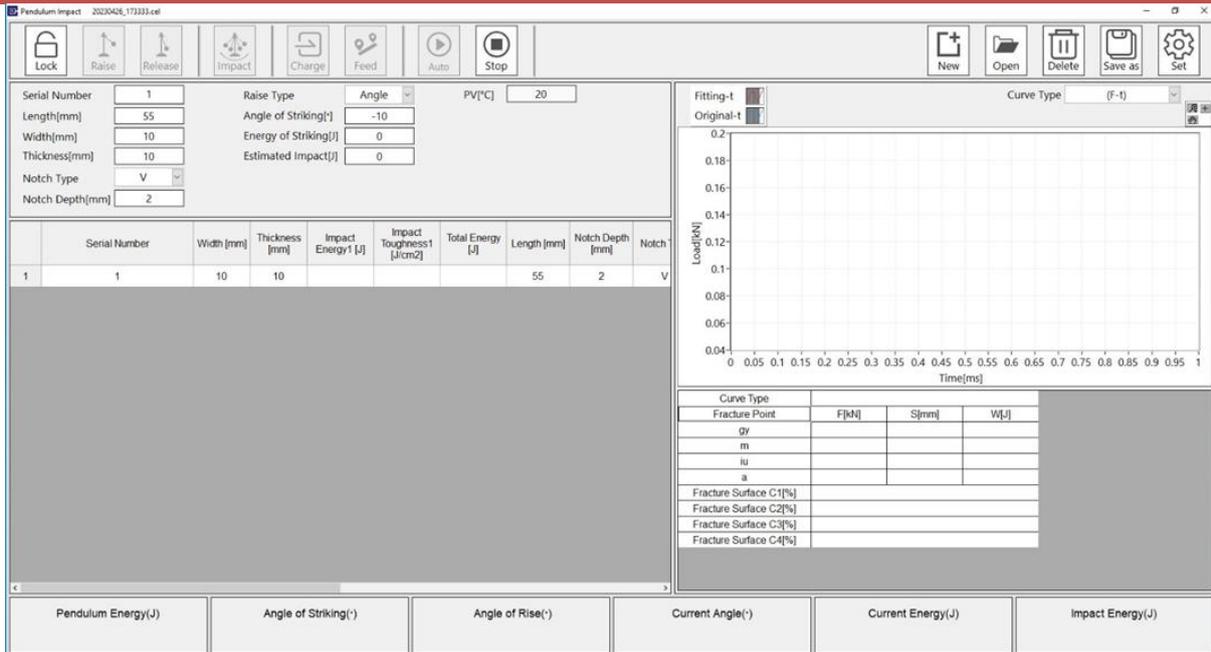
7" color touch screen for easy operation. Working with SIEMENS PLC, it can realize raise/release/impact operation, and real-time display of angle and energy.

		<b>Test</b>		2022-07-20 10:14:33	
Current angle	0.000 °	Pendulum capacity	0.0 J	Angle zero	
Current energy	0.00 J			Raise	
Absorbed energy	0.00 J			Release	
Angle of fall	0.000 °			Impact	
Angle of rise	0.000 °				
Test setup	Energy losses	Center of percussion	Auto feeding	Back	

**Professional test software**

This software is designed specifically for testing metals to Charpy standards. Software provides an easy-to-use method for gathering, calculating and storing impact test results. The test result can be printed and exported to EXCEL for review.

# Pendulum Impact | Charpy | TSP452D1 series



## Specifications

Model	TSP452D1	
Maximum energy	450J	
Optional pendulum	150J, 300J	
Angle of striking	150°±1°	
Angle measurement resolution	0.025°	
Distance from the axis of support to the center of percussion	750mm	
Velocity of striking	5.24m/s	
Absorbed energy under free swing	≤0.4%	
Support	Support span	40mm
	Radius of curvature of supports	1mm
	Angle of taper of supports	11°±1°
Striking tup	Radius of striking edge	2mm
	Angle of striking tip	30°
	Thickness of striker	16mm
Specimen dimension	55×10×10mm 55×10×7.5mm 55×10×5mm	
Weight	1400kg	
Dimension(A x B x C) Including protection shield	2150×2150×860	
Power requirements	3-phase, 5-line, AC 380V±10% 50Hz 1 kW	
Pendulum moment	150J	80.3848 Nm
	300J	160.7695 Nm
	450J	241.1543 Nm

## Standard configurations

Name	Description	Model: TSP452D1		
		-2	-3	-4
Pneumatic brake		✓	✓	✓
Dial gauge display		✓	✓	✓
Touch screen		✓	✓	✓
Software			✓	✓
Instrumented impact system (model: IIS105)	Data sampling card			
	Data Conditioner			✓
	Instrumented test software			
Framework	Frame	✓	✓	✓
	Pendulum lock/release system	✓	✓	✓
	Driving system	✓	✓	✓
	Angle measurement system	✓	✓	✓
	Siemens PLC control	✓	✓	✓
	Dial gauge display	✓	✓	✓
	Touch screen	✓	✓	✓
	Protection shield	✓	✓	✓
Communication cable to PC	LAN		✓	✓
Accessories	Span block			
	Specimen centering block			
	Centering tongs	✓	✓	✓
	inside-hexagonal spanner			
	Anchor bolts wedge block			

## Optional pendulums

Name	Description
Charpy pendulum & specimen support (striking tup: R2/R8)	150J
	300J
	450J
Please specify ISO striker or ASTM striker	

## Optional instrumented pendulums

Name	Description
Instrumented Charpy pendulum & specimen support (striking tup with 30kN force transducer: R2/R8)	150J
	300J
	450J
Please specify ISO striker or ASTM striker	

**Optional cooling system**

Name	Model	Description	Accessories
Automatic cooling system with specimen auto-feeding system	LTC601A-2	-60°C~ambient Cooling method: air compressor	Specimen auto-feeding system Low temperature chamber Air compressor
	LTC182B-2	-180°C~ambient Cooling method: liquid nitrogen	Specimen auto-feeding system Low temperature chamber Liquid nitrogen cylinder
Manual cooling system	CDW-60-05	-60°C~ambient Cooling method: air compressor	Low temperature chamber Air compressor
	CDW-80-05	-80°C~ambient Cooling method: air compressor	

**Optional heating and feeding system**

Name	Model	Description	Accessories
High temperature auto-feeding system	AUF902	12 specimens can be tested at one time continuously, used with high temperature furnace	Furnace Specimen charging system Specimen feeding system Specimen rack Temperature control system Air pump