

Functions

This type of machine is specially for conducting drop-weight test to determine nil-ductility transition (NDT) temperature of ferritic steels

Standards: GB/T 6803, ASTM E208

Features

- SIMENS PLC controls and touch screen provide high reliability and versatility.
- Automatic specimen feeding and automatic positing
- Frame structure is made of solid steel plate with high stability under impact
- Striker is made of high strength steel plate with high impact resistance
- Use chain to lift striker with high precision in height
- Self-lock design for striker clamping
- Full-closed guard screen
- Special design tools for support change

Description

This machine is built with main frame, striking system, striker lifting system, striker release/clamp system, specimen auto-feeding system, safety protection device and control system.

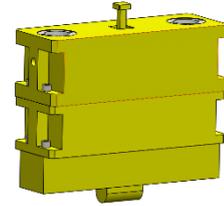
Main frame

Main frame is constructed with bottom plate, four columns, and top plate. Bottom plate is made of 45# steel plate; four columns are steel pipes for four-point support to ensure the stability, top plate is made of LY12 aluminium plate. Connections between columns and bottom and top plate are used with flange. Though the whole frame is high, the center of gravity is low with better stability. The top plate is made of light aluminium with easy installation. Guide rail is constructed with precise smooth bar, with surface chrome plated and hardened, with good linearity and high precision. Two ends of smooth bar are tightened by screw and bolts, ensuring high rigidity of main frame and rail, avoiding any loosen components caused by vibration.



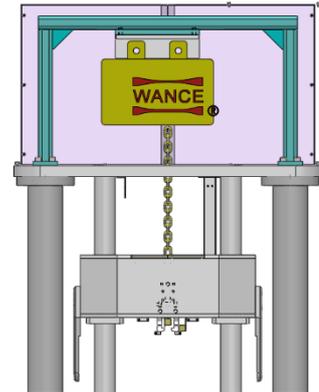
Striker

Striker is made of whole machined steel plate, ensuring the striker stiffness and improving the safety, not loosening after long time use. Striker tup is made of alloy steel, with good impact resistance, little abrasion, long service life, and easy to change.



Lifting system

Lifting system consists of motor, crosshead, chain wheel, chain, and encoder. Lifting motor is equipped with brake, featuring small size, light weight, high efficiency, low noise and high stability. It will lock when power is off, the striker will not accidentally fall down. Compared with steel wire rope, chain features small elasticity with precise height measurement. Also chain has higher strength with little abrasion, and safer than wire rope. Motor is mounted at the bottom of the main frame, easy to mount and service.

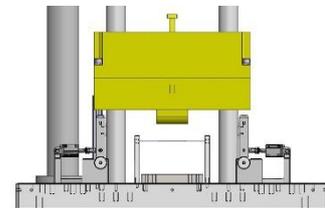


Striker release/clamp device

It is specially design and will automatically lock after clamping the striker. This device won't open caused by gravity even when the power is off. It is equipped with approach switch to detect the position. If striker is not clamped, crosshead won't move.

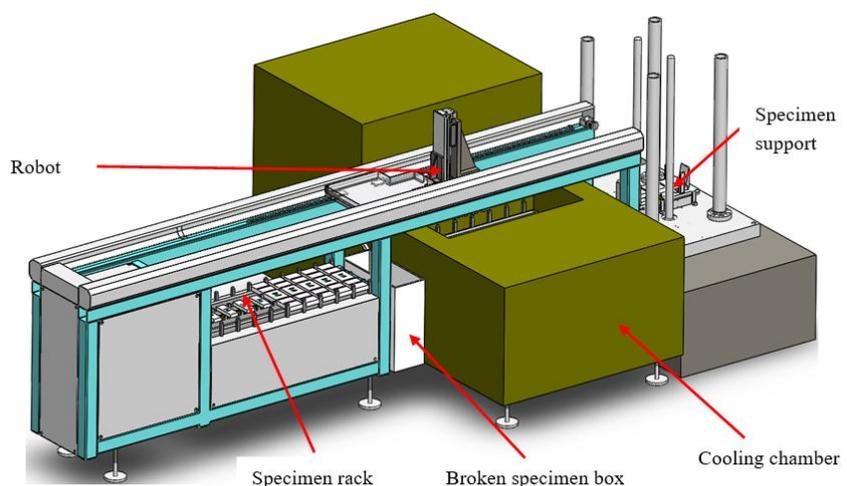
Anti-rebound catcher

The device is to raise the striker tup after impacting to prevent secondary impact on specimen.



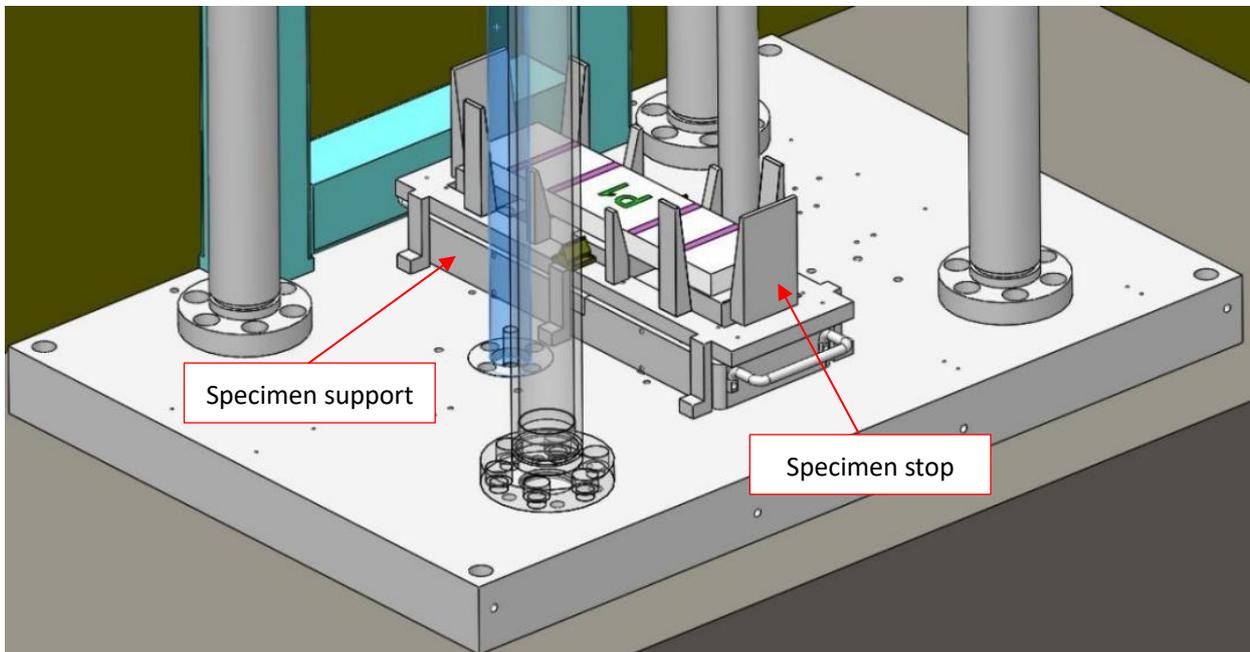
Specimen auto-feeding device

It is designed of four-bar linkage structure and pneumatic driving, featuring fast specimen feeding in only 5 seconds with high accuracy and simple operation. Meanwhile, it has auto center-aligning function. Only put the specimen onto this device, press the button on the control panel, this device will automatically feed the specimen onto the anvil and align the center, without labor work, improving efficiency and safety. After finishing impact, this device will push the specimen out with simple operation and high reliability.



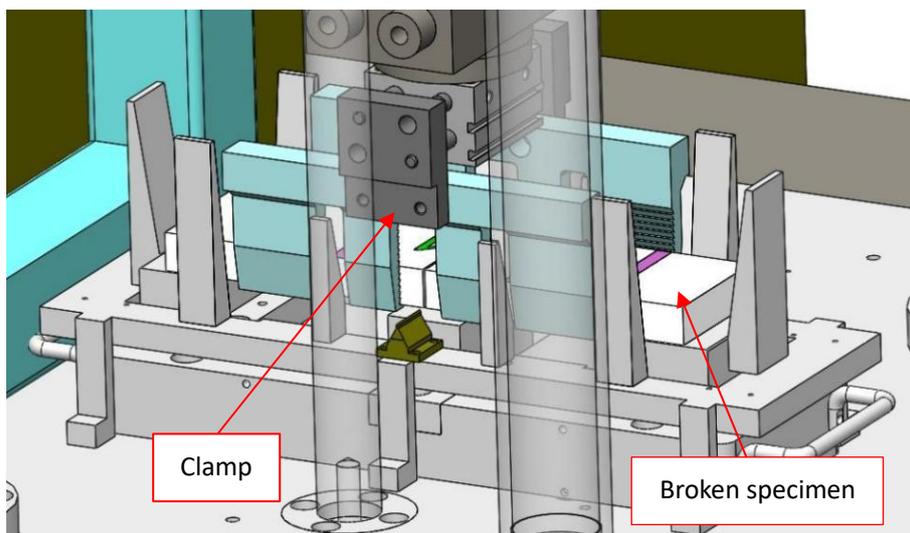
Specimen support

Various supports are equipped for NDT test. There is anti-rebound block, to prevent specimen to fly out and protect operator.



Specimen collection

After impact, the collecting clamp will remove broken specimen.

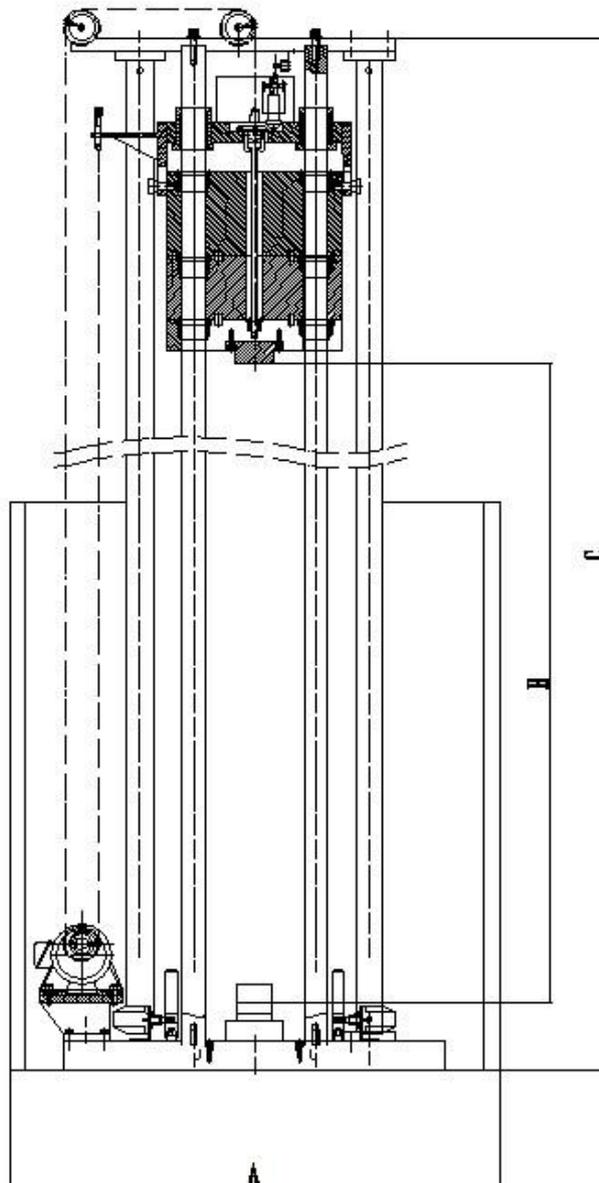


Safety protection device

There is guard screen around the main frame to prevent broken specimen from splitting, and also prevent operators from entry to the main frame. Guard screen is equipped with door position limit switch. The machine will lock when the door is open, eventually preventing any fault operations and guaranteeing the safety of operator.

Control system

Control system in this machine provides automatic operations for striker lifting, zero positioning, specimen auto-feeding, impact, and striker clamping, which greatly reduces labor intensity and improves working efficiency and operating safety. Simens PLC programmable controller is used for the whole control system, touch screen is used for terminal operating interface, rotary encoder is used for sampling and controlling the height. PLC features high stability and reliability and strong anti-interference ability, avoiding any fault operation and improving safety of operators. Meanwhile this control system has alarm functions for such errors: specimen is not in the right position, striker is not locked, and guard screen is wrong, striker is not lifted to the correct position.



Dimension (A×B×C, mm)	Maximum drop height (H, mm)
1080×1700×4660	3062

Parameters for machine

Model	DIT203B	DIT303B	DIT603B
Maximum energy (J)	2000	3000	6000
Minimum energy(J)	300	350	350
Maximum tup mass (kg)	70 (40+30)	100 (45+55)	200 (100+100)
Tup mass accuracy	±1%		
Drop height(mm)	750~3062		
Velocity of drop (m/s)	3.8~7.8		
Speed of tup raise (m/min)	7		
Height accuracy(mm)	≤±10		
Hardness of tup nose	HRC58~62		
Radius of tup nose(mm)	R25±0.1		
Hardness of support anvil	HRC58~62		
Alignment accuracy of center of tup nose, specimen and anvil center (mm)	≤±2.5		
Support anvil span (mm)	P-1: 305	P-2,P-3: 100	
Specimen dimension (mm) (length x width x thickness)	P-1: (360±1)×(90±2)×(25±2.5) P-2: (130±1)×(50±1)×(20±1) P-3: (130±1)×(50±1)×(16±0.5)		
Weight (kg)	1500		
Power requirements	3-phase, 5-line, AC 380V 10A 50Hz		
Air supply	0.4~0.7MPa, Φ6 quick coupler for air pipe		

Parameters for auto-feeding and cooling system

Name	Specifications
Cooling	Ambient ~ -80°C
Cooling medium	Anhydrous ethanol (purity above 99%), 70 L
Cooling method	Compressor cooling
Temperature accuracy	0.5°C
Temperature fluctuation	±2°C
Temperature uniformity	±2°C
Specimen capacity	6 pcs for P1, P5 and P6 10 pcs for P2, P3 and P4
Specimen alignment	Align by notch

Standard accessories

No.	Name	Description	QTY
1	Frame	DIT603B	1
1.1	Frame		1
1.2	Striker body and tup	Striker body: 1 set Tup: 2 sets (one for spare use)	1
1.3	Lifting device		1
1.4	Striker release/clamp device		1
1.5	Safety protection		1
1.6	Specimen collection system		1
2	Auto-feeding and cooling system		1
2.1	Auto-feeding system		1
2.2	Cooling chamber	Ambient ~ -80°C	1
2.3	Compressor		1
2.4	Specimen clamp		1
3	Controlling system		1
4	Accessories	4 sets of anchor bolts 1 set of Allen key	1
5	Test software	Saved in U-disk	1



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