WANCE Testing Machine

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Testing Machines and Systems

Plastics&Rubber&Composite

WANCE Testing Machine

Shenzhen WANCE Testing Machine Co., Ltd.

Contents

Representative Customers

NUCOR Steel, VarSteel, AMERI-PRECISION METALS, Solaxis, Lincoln Structural, University of Arkansas, Friends University, Whitewater, Simwon Texas, Bingham
North America

MPI, Lonestar Fasteners, LIBERTY STEEL, IRIS NDT, OIS Engineering, Rotech, JW Kane, IRIS, SGS, WQIC, WRR Pedley, BST, Cal-Test, RMR, MTD, Red Roosta, Alloy Wire International, Mainetti
UK

UNIME, UNINA, UNIPG, UNISA, Carisma, Plastica Gambardella, University of Enna , CNR IPCB
Italy

HABAS, TCDD, TOSCELIK, GEMCILER, ERDEMIR, MAKIM, OZYEGIN, AKIN, TULOMSAS, EMIN, BAKU, ASEN METAL, KORFEZ DOKUM, TNC, MAKERSAN MAKINA, SPINTEKS
Turkey

Melbourne Testing, ACM LABORATORY, ONESTEEL, DSTO, PIHA, BISALLOY, MECHTEST, Annex Products, Pope Packaging, Alliance Geotechnical, TORO, Curtin University, University of WA, SGS NZ, ANCHOR WIRE, Reoco, Taranaki, Thorpe, CLS, RSM, Brilliant steel, MEGABOLT
Australia / New Zealand

Plastics App, Tosaf, Manna, Fiber Technik, SHAHAF, Infimer, Topgreen, Keter (Israel)
Almeer, ITCO LAB (Kuwait), Exova (Oman),Element (Doha) Gulf Acrylic, Anchor (UAE)
GCIR, Group Five Pipe, Global Pipe, SMI, Global Resource, Jawdah Cables, Element (KSA)
GST, Mahindra, Air Springs Private Limited, Ramaiah Institute, Yanfeng India (India)
Middle East

Vitzromiltec, KIST, KCL, Shinjin Chemical, Molex, Showa, Molex Korea, Daehan i.m, KITECH, PPI Pipe
Korea, Japan

Lock&Key Hardware, CHRS Samawira Mesh, Perusahaan Chew Hur, Deho Industries, WeiDat Steel Wire, Element (Singapore), R.A.K. Materials Consultants, SETSCO SERVICES
Malaysia/Singapore

BUET, RUET, KUET, BSRM, GPH, RAHIM, ANWAR, MOHSTEEL, CSRM, RRM, SALAM, MOHAMMADI, MAGNUM, COPPERTECH, FORTUNA, KDA, RFL
Bangladesh

ATLANTA, UNITEC, TANAY, LACKO, ALASCO, PGA, TESTLAB, Maccaferri, Fibritecture
Philippines

FHS, ITST, HUST, QUATEST, Thien Long Group, ABC Chemical, KMV, UHM, EUROSTARK, DEKKO COR., VESTGAARD,BENKAN,VICOSTONE, UL, RF Thai, BA AN JSC, ARITEX
Vietnam

Dextra, Danieli, SGS, Fisher & Paykel, GCPC, Omyai Sirichai (1991), Thai OPP, SUMITOMO ELECTRIC WINTEC (THAILAND) , BYD Auto Components (Thailand)
Thailand

POLNES, PNK, ITM, UNILON, MITSUBISHI JAYA, PLASTICOLORS, Avia Avian, GUNUNG STEEL, PT. PLASTICOLORS EKA PERKASA, PT.HO WAH GENTING, PT DSI UNDERGROUND
Indonesia

Pekay Adhesives, Allan Maskew, Milson Engineering, PFISTERER, ROCK MECHANICS, Myplas, Chep, Kasodur, Geotech, Johannesburg University, SCAW METAL
South Africa

Egyptian Steel, Al Ezz Dekheila, National Port Said Steel, AL MAADI STEEL, CMRDI, Hiteknofal, Hegazy, Nassar Plastic Factories, LAMINTEC, Premier plastics, Hakim Misr Paco
Egypt

CASTCO, FUGRO, Hong Kong Testing, STANGER, QCC, PROMETLAB, Material Tech, TRINSEO, TECHNOFORM, PolyU, City University, LECM
Hong Kong / Macau

Company Profile

WANCE was founded in 2011, is a collection of research and development, manufacturing, sales, services and professional mechanical performance testing solutions to provide, implementation as one of the national high-tech enterprises. Its subsidiaries include Shenzhen WANCE, Shanghai WANCE, Hubei WANCE and Beijing WANCE.

WANCE has total more than 500 staffs. Headquarter is located in Shenzhen. WANCE has R&D centers and manufacturing facilities in Shenzhen, Wuhan and Shanghai respectably.

The company has passed and obtained ISO9001 quality system certification, ISO14000 environmental management system certification, occupational health and safety management system certification, CE certification. WANCE has participated in draft, compilation, revision of more than 50 industry standards. Around 200 patents were filed and granted. With its powerful technology, professional services and rapid development, WANCE has been fully recognized by governments at all levels and all sectors of society.

Our products, services, and solutions are widely used in R&D, quality analysis and quality control field, covering testing equipment, testing technology and transfer system of a quantitative value. Customers cover aero-space, mechanical manufacture, vehicle, ship, construction, biological materials, college, universities, research institutes, national quality inspection institutes, export and import inspection institutes. We are keeping tight cooperation with all factories, research institutes, and quality inspection organizations, and providing high quality products and services along with customer uptime demands.

From small melt flow indexer to big 100000J drop weight impact testing machine, WANCE relies on years of industrial expertise and creative technical team, delivering the greatest test support and confidence to customers across a wide range of fields. WANCE is committed to accelerating the innovation of test technology and test equipment, to supporting research projects, to motivating enterprises in brand development and improvement, and products selling in global market.

We are committed to providing complete products and solutions deeply and widely. WANCE will be your primary and reliable partner!

Wuhan factory

Shenzhen factory

Electromechanical Universal Testing Machine

TSE-A Series

Typical specimens

Plastics, fine wires, fibers and threads, biomaterials, thin films, adhesives, foams, packaging, paper products, consumer products.

Features

● Pre-loaded ball screws and heavy duty bearings assure long life with zero backlash as well as linear low force and through zero performance. The result is accurate and repeatable measurements that truly represents the specimen characteristics rather than load frame deficiencies.

● Robust linear motion guide increases lateral stiffness and ensure linear crosshead travel. This results in accurate crosshead alignment thus reducing variability in measurement data and producing better overall accuracy.

Model	TSE503, TSE203, TSE103, TSE502, TSE202, TSE102
Type	Type A, single column
Capacity	5kN, 2kN, 1kN, 0.5kN, 0.2kN, 0.1kN
Accuracy	0.5%
Force range	0.4% ~ 100%FS
Force accuracy	±0.5% of reading
Force resolution	1/500000FS
Position accuracy	±0.5% of reading
Position resolution (μm)	0.03
Crosshead speed (mm/min)	0.005 ~ 500
Crosshead speed accuracy	±0.5% of set speed
Crosshead travel (without grip) (mm)	1000
Distance from loading center to dust cover (mm)	100
Dimension (mm) (w x d x h)	560x550x1660
Power requirement	Single-phase, 220±10% VAC, 50/60Hz, 500W
Weight (kg)	100

TSE-B Series

Typical specimens

Small components, reinforced plastics, metals, wires, composites, elastomers, wood products, textiles, biomaterials, paper products, adhesives, foams, consumer products.

Features

● Pre-loaded ball screws and heavy duty bearings assure long life with zero backlash as well as linear low force and through zero performance.

● Fully-protected lead screw covers provide longer life and greater operator protection.

Model	TSE104,TSE503,TSE203,TSE103,TSE502,TSE202,TSE102,TSE501,TSE201,TSE101
Type	Type B, dual column
Capacity (kN)	10kN,5kN,2kN,1kN,500N,200N,100N,50N,20N,10N
Accuracy	0.5%
Force measurement range	0.4%-100%FS
Force accuracy	±0.5% of reading
Force resolution	1/500000FS
Position accuracy	±0.5% of reading
Position resolution (μm)	0.02
Crosshead speed (mm/min)	0.005~500
Crosshead speed accuracy	±0.5% of setting
Crosshead travel (mm)	1000
Test width (mm)	420
Machine dimension (mm) (w x d x h)	784x547x1500
Power requirement	Single-phase, 220V±10% VAC, 50/60Hz, 500W
Weight (kg)	150

Electromechanical Universal Testing Machine

TSE-C Series

Typical specimens

Small components, reinforced plastics, metals, wires, composites, elastomers, wood products, textiles, biomaterials, paper products, adhesives, foams, consumer products.

Features

● Robust guidance columns with self-lubrication increase lateral stiffness and ensure linear crosshead travel.

● Pre-loaded ball screws and heavy duty bearings assure long life with zero backlash as well as linear low force and through zero performance.

● Fully-protected lead screw covers provide longer life and greater operator protection.

Model	TSE504,TSE254,TSE104,TSE503
Type	Type C, table-top / floor-standing
Capacity (kN)	50, 25, 10, 5
Test space	Single / dual test space
Accuracy	0.5%
Force measurement range	0.4%-100%FS
Force accuracy	±0.5% of reading
Force resolution	1/500000FS
Extension accuracy	±0.5% of reading
Crosshead travel (mm)	1050
Test width(mm)	400
Position accuracy	±0.5% of reading
Position resolution (μm)	0.03
Crosshead speed (mm/min)	0.005~1000
Crosshead speed accuracy	±0.5% of setting
Power requirement	Single-phase, 220V±10% VAC, 50/60Hz
Power consumption (kW)	1.3
Dimension (mm) (w x d x h)	800x680x1840
Weight (kg)	400

TSE-D Series

Typical specimens

Metals, building components, large fasteners, composites, wood products.

Features

●Robust guidance columns with self-lubrication increase lateral stiffness and ensure linear crosshead travel.

●Pre-loaded ball screws and heavy duty bearings assure long life with zero backlash as well as linear low force and through zero performance.

●Fully-protected lead screw covers provide longer life and greater operator protection.

Model	TSE254/TSE504/TSE105	TSE255
Type	Type D, floor-standing	
Capacity (kN)	25/50/100	250
Test space	Single / dual test space	
Accuracy	0.5%	
Force measurement range	0.4%-100%FS	
Force accuracy	±0.5% of reading	
Force resolution	1/500000FS	
Extension accuracy	±0.5% of reading	
Position accuracy	±0.5% of reading	
Crosshead travel (mm)	1150	1150
Test width (mm)	600	650
Position resolution (μm)	0.02	0.02
Crosshead speed (mm/min)	0.005~1000	0.005~500
Crosshead speed accuracy	±0.5% of setting	
Power requirement	Single-phase,220V±10% VAC 50/60Hz	Three-phase,380±10% VAC 50/60Hz
Power consumption (kW)	2	5
Dimension (mm)	1150×800×2350	1220×890×2465
Weight (kg)	1200	1500

WANCE offers various kinds of environmental chamber to address the needs of non-ambient t tensile, compression and bending tests.

Model	EMC003A-1	EMC003A-2
Compatible with model	TSE-C, ETM-C	TSE-D, ETM-D
Temperature range	-70~+350℃	
Wind circulation method	centrifugal blower	
Temperature fluctuation	≤±1℃	
Temperature accuracy	-70~200℃: ≤±2℃	
	200~350℃: ≤±3.5℃	
Temperature uniformity	-70~200℃: ≤±2℃	
	200~350℃: ≤±3.5℃	
Temperature reading accuracy	0.1℃	
Heating time	3℃/min	
Cooling time	2℃/min	
Cooling method	Liquid nitrogen	
Heat insulating material	Aluminum silicate wool	
Inside dimension	D240×W200×H600 mm	D320×W300×H600 mm
Outside dimension	D900×W350×H760 mm	D950×W450×H760 mm
Weight	100kg	120kg
Heating power	1.6 kW	2.4 kW
Power supply	1-phase, AC220V±10%, 50Hz	3-phase 5-line, AC380V±10%, 50Hz
Maximum specimen length after break	L=specimen clamp length between two grips +200	
Working environment	Temperature: +5℃~+35℃	
	Humidity:≤85%	
	Atmospheric pressure: 86~106KPa	

WANCE offers various kinds of environmental chamber to address the needs of non-ambient tensile, compression and bending tests.

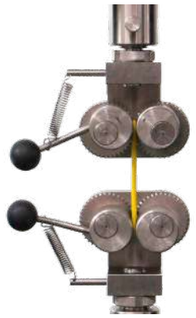
EMC003B-1: -70 ~ +350℃ for TSE-C, ETM-C
EMC003B-2: -70 ~ +350℃ for TSE-D, ETM-D
EMC004B-1: -40 ~ +350℃ for TSE-C, ETM-C
EMC004B-2: -40 ~+350℃ for TSE-D, ETM-D

Model	EMC003B-1, EMC003B-2	EMC004B-1, EMC004B-2
Compatible with model	TSE-C, ETM-C, TSE-D, ETM-D	TSE-C, ETM-C, TSE-D, ETM-D
Temperature range	-70~+350℃	-40~+350℃
Wind circulation method	Centrifugal blower	
Temperature fluctuation	≤±1℃	
Temperature accuracy	≤±2℃ (≤200℃), ≤±3.5℃ (> 200℃)	
Temperature uniformity	≤2℃ (≤200℃), ≤3.5℃ (> 200℃)	
Temperature reading accuracy	≤±0.1℃	
Heating time	≥3℃/min	
Cooling time	≥2℃/min	
Cooling method	Compressor	
Inside dimension (DxWxH)	240×200×600mm	240×200×600mm
	320×300×600mm	320×300×600mm
Outside dimension (LxWxH)	1820×650×930mm	1820×650×930mm
	1900×710×930mm	1900×710×930mm
Weight	320kg, 350kg	310kg, 330kg
Heating power consumption	4.7kW, 5.3kW	4.3Kw, 4.9kW
Power supply	3-phase, AC380V±10%, 50Hz	
Pull rod hole diameter	Φ48mm	Φ48mm

Grips and Fixtures

Film COF fixture

Geotextile puncture fixture



Eccentric grip

Geotextile tensile fixture

Lever type tensile grip

Foam compression fixture

Wedge tensile grip

90° peeling grip

Screw side action tensile grip

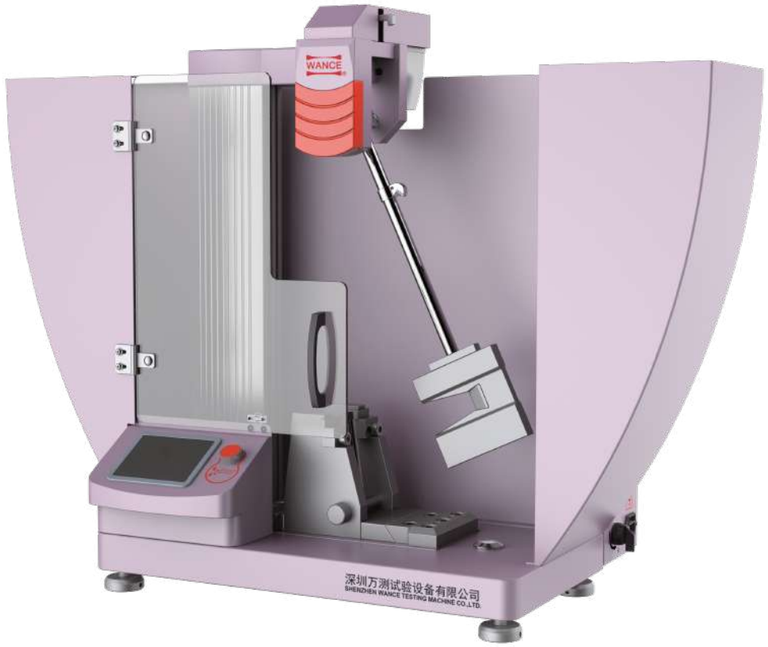
Bending fixture

Pneumatic tensile grip

Compression fixture

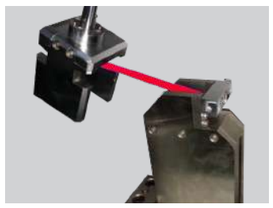
Pendulum Impact Testing Machine

PIT501J



Charpy

Izod



Tensile impact test

Functions

This series is widely used for Izod and Charpy impact test on plastics and plastic pipes. Equipped with tensile impact pendulum and fixtures, it can carry on tests on plastic film and sheet. Newly designed model offers the most cost-effective configuration to address Charpy test from 1J to 50J, and Izod test from 1J to 22J.

Standards

ISO 179, ISO 180, ISO13802, ISO 8256, ISO 9854.1, ASTM D256, ASTM D1822, ASTM D6110

- **Maximum impact energy:** 1J, 2J, 4J, 7.5J, 15J, 25J, 50J
- **Charpy for plastic pipe:** 15J, 50J
- **Izod:** 2.75J, 5.5J, 11J, 22J
- **Tensile impact:** 7.5J, 15J, 25J

Notch making machine

Functions

- **Motor speed:** n=1440r/min
- **Machine dimension (LxWxH):** 326×376×460mm
- **Power requirements:** Single-phase, 220V±10%, 1A, 180W, 50Hz
- **Weight:** 30kg

Specimen maximum thickness: 25mm

Cutting tooth

- **Type A:** comply with GB/T1043, GB/T 1843, ISO 179, ISO 180, ASTM D6110, ASTM D256
- **Type B:** comply with GB/T1043, GB/T 1843, ISO 179, ISO 180
- **Type C:** comply with GB/T1043, ISO 179

DIT-A series

● **Standards:**
ISO 3127, ISO 4422.1, BS EN 12608, ASTM D2444

● **Maximum impact energy:**
300J

● **Maximum pipe diameter:**
Φ400mm, Φ630mm, Φ1200mm, Φ1600mm

Striker & dead weights

Model	DIT302			
Type	A-1	A-2	A-3	A-4
Maximum impact energy (J)	300			
Maximum impact height (mm)	2000			
Maximum pipe diameter (mm)	Φ400	Φ630	Φ1200	Φ1600
Striker lifting speed (m/min)	8			
Height measurement accuracy (mm)	≤±10			
Distance between striking point and specimen center (mm)	≤±2.5			
Dimension (LxWxH, mm)	600x 500x3200	880x520x3500	1700x1100x4400	1700x1100x4400
Control cabinet dimension(LxWxH, mm)	420X500x890			
Power supply	1-phase, 220V±10%, 50Hz, 300W		3-phase, 380V±10%, 50Hz, 1.2kW	
Weight (kg)	500	600	1000	1200

TSV302

Functions

This series of HDT/VICAT testing machine is mainly used to determine temperature of deflection under load and Vicat softening temperature of thermoplastic plastics, pipes and fittings .

Standards

ISO2507, ISO75, ISO306, ASTM D648, ASTM D1525
GB/T 8802, GB/T 1633, GB/T 1634

Model		TSV302A	TSV302B	TSV302C
Test station		3	4	6
Immersion bath volume		9L	9L	9L
Heat transfer medium		Dimethyl silicone oil, temperature to 300℃ Viscosity: 300 cSt, or 300 mm2/s Known silicon oil brand: DON CORNING PMX-200 350 cSt, Shin-Etsu KF96-300		
		Or transformer oil, 10#, temperature to 200℃		
Temperature sensor		3	4	6
Temperature range		Ambient ~ 300℃		
Temperature accuracy		±0.5℃		
Heating speed	Speed A	5±0.5℃/6min		
	Speed B	12±1℃/6min		
Micrometer		3	4	6
Deformation measurement range		0~10mm		
Deformation resolution		0.001mm		
Deformation measurement accuracy		0.003mm		
Vicat Loading capacity:		GA=10N±0.2N, GB=50N±1N		
HDT test		Method A: USE FIBRE STRESS 1.80Mpa		
		Method B: USE FIBRE STRESS 0.45Mpa		
		Method C: USE FIBRE STRESS 8.00Mpa		
HDT test span		Outer span: 100mm, ASTM D648		
		Inner span: 64mm, ISO 75		
Maximum heating power		4.5kW		
Power requirements		3-phase AC380V±10% 50Hz 16A		
Dimension (LxWxH)		816×620×720mm		1020×620×720mm
Weight		115kg		180kg
Cooling (optional with chiller)		45min (280℃ to 25℃, chiller is equipped)		

Hydrostatic and Burst Testing Machine

HTM-A Series

Model	HTM107	HTM167	HTM207
Type	Type A		
Max pressure	10MPa	16MPa	20MPa
Test stations	1~20		
Constant pressure accuracy	-1%~+2%		
Constant pressure range	5%~100%		
Timing range	0~10000h		
Timing accuracy	≤±0.1%		
Power requirements	3-phase, AC 380V, 50Hz; 1.5kW (1~6 stations); 5kW (7~20 stations)		
Control cabinet dimension (A x B x C)	700mm×600mm×1800mm (1~6 stations) 1050mm×900mm×1840mmmm (7~20 stations)		
Control cabinet weight	100kg (1~6 stations); 210kg (7~20 stations)		

Functions

HTM series type A hydrostatic and burst testing machine features compact structure design and simple to use. It is specifically used for time-to-failure test of plastic pipe under constant internal pressure, and for test of resistance to short-time hydraulic pressure of plastic pipe, tubing, and fittings.

Standards

GB/T 6111, GB/T 15560, GB/T 18997.1, GB/T 18997.2, ISO1167, EN921, ASTM F1335, ASTM D1598

Water tank

Type	A	B	C	D	E
ID dimension (mm)	1100×700×700	1700×700X700	2000x1100x1100	1100x700x1100	1100×900×1500
OD dimension (mm)	1500×1000×1020	2100x1000x1020	2400×1400×1420	1500×1000×1420	1500×1200×1820
Specimen diameter (mm)	<Φ250	≤Φ400	≤Φ630	≤Φ110	≤Φ250
Water tank type	Horizontal			Vertical	
Temperature range	Ambient~95℃ 15~95℃ (optional cooling system)				
Temperature accuracy	≤±1℃ (water tank)				
Temperature uniformity	≤±1℃ (water tank)				
Test stations	One station can be divided to 1~5 branches, to connect 1~5 samples. Standard is one station and one branch				
High pressure hose	Quantity: test station number N+1 Length: A, B, D: 1 meter, C, E, F: 1.5 meter				
Quick coupling	Station number N+1				
Input connecter	M14×1.5-6g (Φ5×1.8 O-ring face seal)				
Power supply	3-phase 5-line, AC380V±10%, 50Hz				
Heating power	12kW	12kW	24kW	12kW	12kW
Weight	220 kg	310 kg	380 kg	260 kg	380 kg

Cooling system

Type	A	B	C
Cooling capacity	3600W	5200W	7200W
Power supply	Single-phase, AC220V±10%, 50Hz		
Power consumption	1.5kW	2.2 kW	2.75kW
Weight	63.5 kg	66 kg	72 kg
Outside dimension (L x W x H)	728×420×670mm	728×420×670mm	748×440×725mm

Melt Flow Indexer

MFI452B

Functions

This type of melt flow indexer is a high precise melt testing instrument for the measurement of melt flow rate (MFR)/ (MI) or melt volume rate (MVR) in quality control and research applications.

Standards

ISO1133, ASTM D1238, ASTM D3364, BS2782, DIN53735, JIS K7210

Model	Unit	MFI452
Type		B
Temperature range	℃	50~450
Temperature variation in 4 hours	℃	≤±0.5
Maximum permitted deviation from the required test temperature: 75mm above the top surface of the standard die	℃	≤0.25
Temperature Resolution	℃	0.1
Measurement range	g/10min	Method A: 0.1~50 Method B: 0.1~2000
Displacement error	mm	≤±0.02
Displacement resolution	mm	0.003
Displacement measurement range	mm	25.5
Interval of temperature recovering after changing testing samples	minute	≤3
Resolution of timing	second	0.01
Inner diameter of die	mm	Φ2.095±0.005
Inner diameter of cylinder	mm	Φ9.550±0.007
Weights accuracy		≤±0.5%
Possible Combination of the Standard Weights	g	325, 1200, 2160, 3800, 5000, 10000, 21600
Dimension	mm	350×435×660
Weight	kg	35
Power Supply		220V±10%, AC, 50Hz,1.5kW

Dumbbell Specimen Making Machine

Parameters

- **Cutter diameter:** 25mm
- **Motor speed:** 1400 r/min
- **Power supply:** AC220V±10%, 50Hz, 180 W
- **Dimension (LxWxH):** 570 x 500 x 440 mm
- **Weight:** 50kg

DSM251

Functions

- **This machine is capable of making following specimens:**

Dumbbell specimen for plastic pipe tensile test: ISO 6259-2 type 1, ISO 6259-3 type 1, ISO 6259-3 type 2

- **Dumbbell specimen for plastic tensile test:**

ISO 527-2 type 1A, ISO 527-3 type 2

- **Rectangle specimen for HDT and other tests:**

specimen length≤170mm, width 16~30mm, 3mm≤ thickness≤25mm

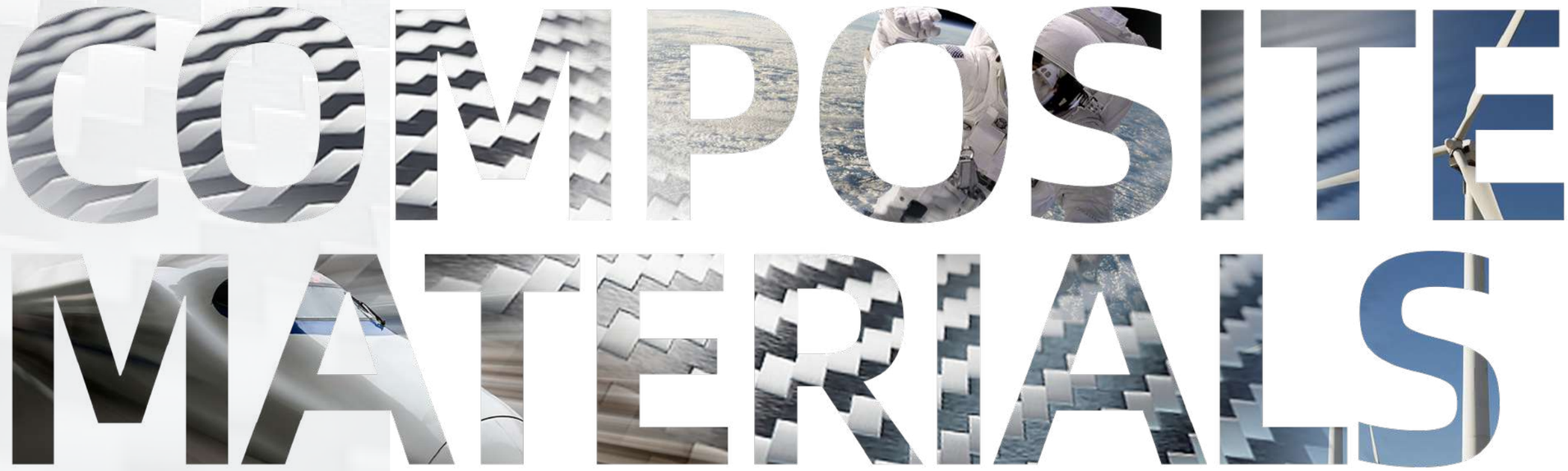
DSM251A

Functions

DSM251A full-automatic dumbbell specimen making machine is mainly used for the preparation of dumbbell specimen, including nonmetallic plastic pipes ,sheets, aluminum, magnesium, etc.

Type	DSM251A
Specimen model	IA, IB, II
Specimen thickness	3~25mm
Pipe diameter	50~250mm
Specimen length	≤250mm
Specimen width	≤250mm
X-Axis Travel	280mm
Y-Axis Travel	310mm
Z-Axis Travel	70mm
Frame material	aluminum alloy 6061/6063
Motor speed	20000 r/min
Repeatability	0.05mm
Principal axis accuracy	≤0.04mm
Motor power (W)	1500 (motor), 1200 (vacuum cleaner), 750 (air pump)
Power	220V±10% 16A 50Hz
Dimension(L×W×H)	950 ×710×1000 mm
Weight	80 kg

CHARACTERISTICS & APPLICATION



Composite materials are composed of two or more materials mixed by reinforcing fibers to improve the strength and toughness of the material. Fiber Reinforced composites are at the heart of the modern materials revolution. Composite materials not only have the advantages of high specific modulus and specific strength, but also light weight. The design is flexible and has strong designability.

Composite technology is developing rapidly and is widely used in aerospace, wind power, construction, sports and biomedical industries. Therefore, it is very important to test its mechanical properties. Generally, it can be tested in tension, compression, shear, and peel.

WANCE has a complete set of systematic testing programs in the mechanical properties of composite materials, which is a reliable partner in the research field of composite testing methods. No matter how special the material you need to test for mechanical properties or how complex the test method is, we can always cope with these test requirements through modular design and can well meet the future test needs.

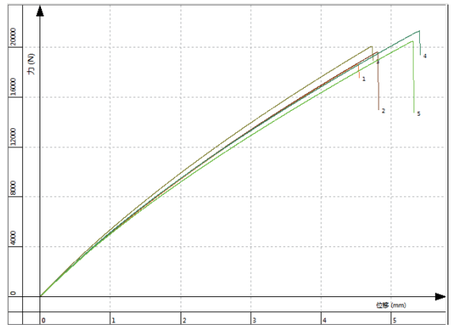
Machine

Equipped with different fixtures, environmental chamber and measuring devices,etc., it can meet the composite material static tests. If equipped with hydraulic grip, high and low environmental chamber, the machine height need to be extended to meet the test space. Equipped with center alignment fixture, calibrated by instruments developed by us, it can meet ASTM E1012, ISO 23788 and other standards. Center alignment is required to ensure that the entire test load chain is on the same axis. TSE-D series electromechanical universal testing machine adopts four column structure with high stiffness, good guidance. Preloaded ball screw pair and heavy load bearing ensure long-term clearance-free operation, with high accuracy and repeatability. The testing of mechanical properties of composite materials requires very high center alignment. For example ASTMD3039 requires that the bending degree of the sample be controlled within 5%. Not good alignment will lead to early failure of the sample during the test process, and good results can't be obtained.

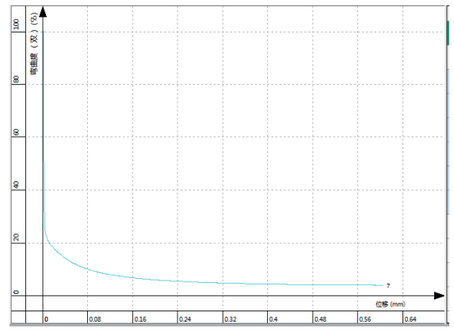
Technical parameters

Model	TSE503A-F	TSE104B-F	TSE504C-F	TSE105D-F	TSE255D-F	TSE605D-F
Capacity（kN）	5	10	50	100	250	600
Force range	0.4% ~ 100%FS					
Extension range	2% ~ 100%FS					
Position resolution（μm）	0.06	0.04	0.06	0.04	0.04	0.02
Crosshead speed (mm/min)	0.005 ~ 500	0.005 ~ 500	0.005 ~ 1000	0.005 ~ 1000	0.005 ~ 500	0.005 ~ 250
Force control speed	0.05% ~ 5%FS/s					
Extension control speed	0.02% ~ 5%FS/s					
Crosshead travel（mm）	1000	1000	1100	1700	1700	1000
Test width（mm）	/	420	420	600	650	700
Weight（kg）	100	150	400	1200	1500	4000
Dimension（mm）	560×550 ×1660	728×470 ×1520	800×680 ×1840	1150×800 ×2950	1210×890 ×3150	1250×758 ×3040

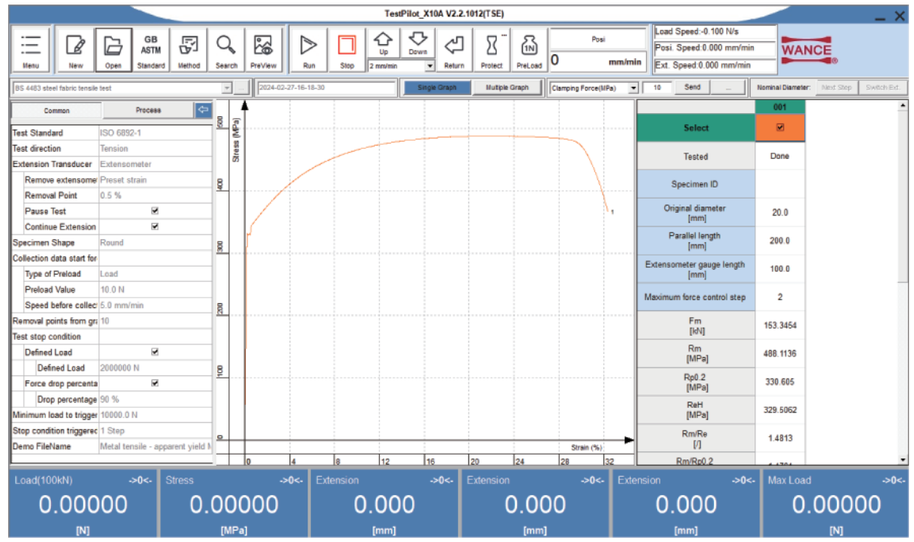
TestPilot software



Carbon fiber unidirectional board 0° tensile test graph



Bending graph



TestPilot software

DTC-500 Controller

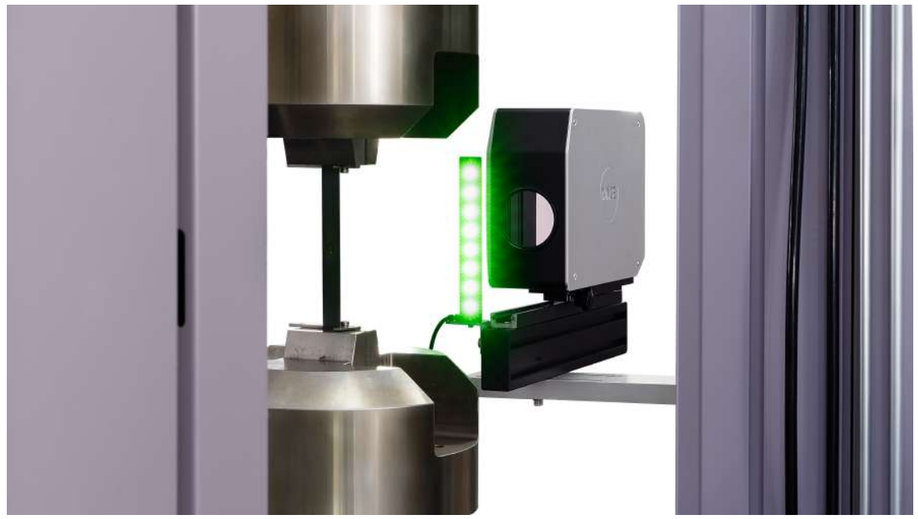
DTC-500 Handset

The newly designed operation handset is made of aluminum alloy housing, which is beautiful and durable, ergonomic design, and can be operated by both left and right hands. 11 buttons are powerful, supporting fast/slow crosshead movement, run, stop, return, specimen protect, zero and other operations; tuning knob provides fine tuning and speed adjustment function. The LCD display shows the sensor values and the operating status, so you can run simple tests quickly and independently with the handset without the computer.

DTC-500 Controller Front panel

- Four-layer PCB wiring, strong anti-interference ability, high stability;
- With locking function connector, durable, not easy to fall off;
- Six 24-bit AD measurement channels, maximum sampling frequency 1200Hz (standard configuration) /2500Hz (optional) /5000Hz (optional);
- Three high-speed digital acquisition channels, the highest signal acquisition frequency up to 4MHz;
- Digital output interface can output 0~2MHz pulse signal, analog output interface can output 16-bit precision -10V~+10V voltage signal;
- Support Ethernet /USB interface mode to support higher sampling frequency, with high reliability, good security and other significant advantages;
- With sensor self-identification (TEDS) function;
- Through the static strain gauge independently developed by us, the strain signal is connected to realize the real real-time strain control;
- Optional BNC output card, force, deformation, displacement and other signals through the BNC interface with ±10V DC signal real-time output for third-party instrument acquisition.

Video extensometer

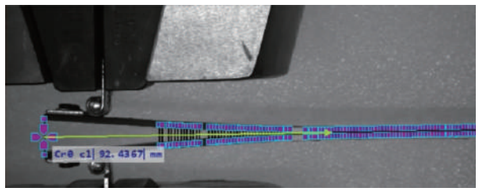


Video extensometer is a non-contact type developed for strain measurement in material mechanics testing.

Technical parameters

Model	VE-025	VE-060	VE-150	VE-500
Resolution(μm)	0.1	0.3	0.5	1
Camera resolution	5Mpx		8.9Mpx	
Strain measurement range	0.002%-100%			
FOV(mm)	≤25	≤60	≤150	≤500
Communication	USB3.0			

DCB fracture toughness test



Fracture video

Equipped with additional probe for fracture opening detection.

Strain gauge converter

In the testing of mechanical properties of composite materials, resistance strain gauges are often used to measure the strain.When it is used, it is firmly pasted on the measuring point of the sample.After the specimen is stressed, the measuring point deforms, and thesensitive grid of the strain gauge deforms accordingly, causing its resistanceto change. The resistance change is measured by the strain gauge and converted to the strain value at the measuring point. The WSG strain gauge is independently developed by WANCE, and the strain signal can be directly connected to WANCE controller, so as to realize real real-time strain control.

- Applicable strain gauge resistance: 120 ohms or 350 ohms, only one type;
- Number of channels: 4 (built into the controller, fully synchronized with the force and displacement channels), more than 4 (built outside the controller);
- The strain signal is directly connected to the controller to realize real real-time strain control.
- The differential signal is transmitted between the strain gauge and the controller, which has excellent anti-interference property.
- The measuring range is ±60000με, the maximum sampling frequency is 1200Hz, the resolution is 0.1με, and the minimum strain rate is 0.1 με/s.
- The strain gauge is connected in 1/4 bridge mode, supports two-wire and three-wire connection, can eliminate the influence of cable resistance, and supports a variety of compensation methods.

Clip-on extensometer

WANCE developed axial extensometer is mainly used for axial extension measurement.

Excitation voltage: DC 5V~10V, DC 5V is recommended.
Sensitivity: 1~3mV/V
Accuracy: class 0.5

Technical parameters

Model	Gauge length/mm	Travel/mm
EX02505	25	5
EX05005	50	5
EX05010	50	10
EX10010	100	10
EX10025	100	25

Environmental chamber

Accessories in chamber

Composite materials are widely used in various environments, and their mechanical properties must be tested in the corresponding simulated environment. The electronic universal testing machine equipped with hydraulic fixture and environmental chamber can meet the above test requirements. The hydraulic fixture can be used to complete the tensile test by holding the specimen at the jaws, or to complete other tests by mounting different fixtures directly on its end surface.

Environmental chamber

Chamber Liquid nitrogen cooling

Chamber Compressor cooling

Technical parameters

Model	EMC003AF-2	EMC003BF-2
Cooling method	Liquid nitrogen	Compressor
Temperature range (℃)	-70℃ ~ 350℃	
Temperature fluctuation(℃)	±0.5℃	
Heating speed(℃/min)	≈3	
Cooling speed(℃/min)	≈2	
Inside dimension (WxDxH, mm)	300×320×750（suitable for 100kN hydraulic grip）	
Outside dimension (WxDxH, mm)	1000×450×910	1850×650×930
Maximum tensile space (mm)	400（For 100kN hydraulic grip）	

Alignment device

Alignment verification device

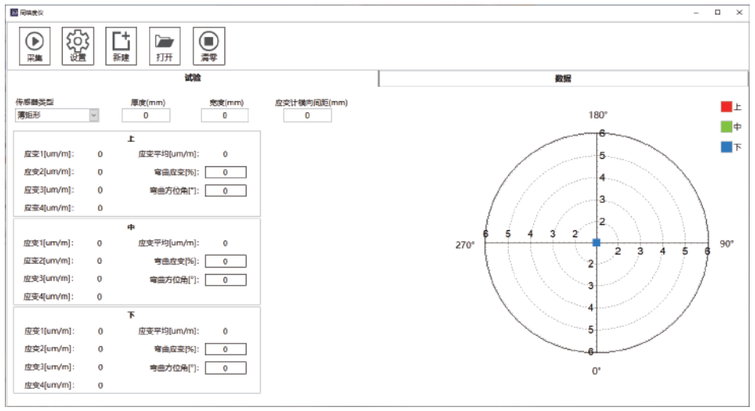
When the mechanical properties of composite materials are tested, the different alignment of the testing machine will cause the specimen to bend during the test, resulting in the failure of the specimen in advance. The alignment fixture and the alignment electronics are used to adjust the center alignment to ensure that the alignment accuracy meets the requirements of the standards (ASTM E1012, ISO 23788, etc.). CD404A alignment electronics independently developed by WANCE has 12 strain outputs, up, middle and down, and can display the alignment of testing machine in real time during testing.

Alignment device

Strain gauge for alignment verification

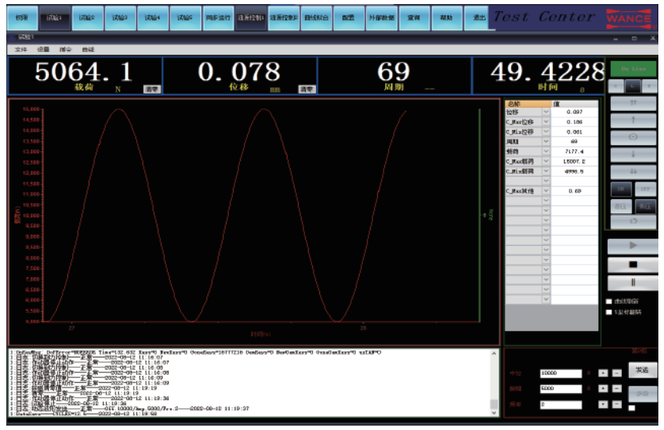
Alignment fixture

Alignment verification software



Dynamic testing machine

Test
software



Dynamic testing machine

HDT series fatigue testing machine can be used to test the dynamic mechanical properties of composite materials, and can be loaded with sine wave, triangular wave, trapezoid wave and other test waveforms by stress or strain control. With different fixtures, dynamic mechanical properties such as tensile, compression, bending and crack propagation can be tested. For the test in a specific environment, it can be met by configuring an environmental chamber and a and an extended hydraulic tensile grip.

Standards

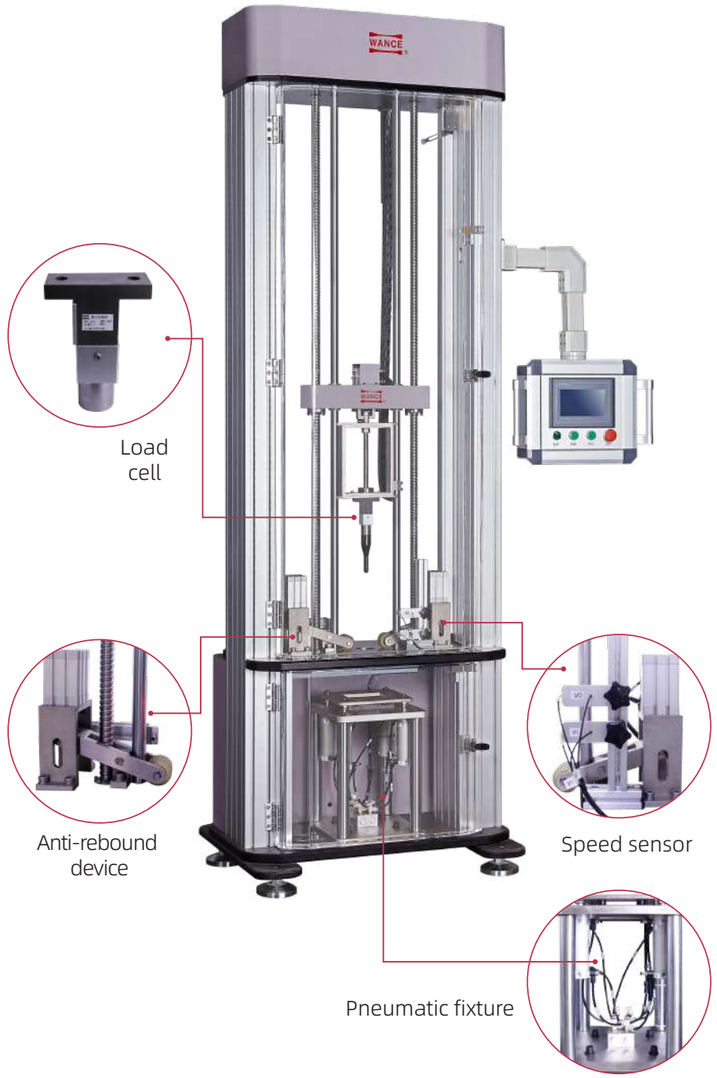
GB/T 35465, GB/T 16779, GB/T 27595,
ASTM D3479, ASTM D671, ASTM D6115, ASTM D2990, ASTM C480,
ISO 13003

Technical parameters

Model	HDT504B	HDT105B	HDT255B
Maximum static force (kN)	±50	±100	±250
Maximum dynamic force (kN)	±50	±100	±250
Force range (kN)	1 ~ 50	2 ~ 100	5 ~ 250
Force reading accuracy	0.5%		
Piston travel(mm)	150		
Displacement range(mm)	0 ~ 150(±75)		
Displacement resolution(mm)	0.001		
Displacement accuracy	0.5%		
Test frequency(Hz)	0.01 ~ 50		
Test waveform	Sine wave, triangular wave, square wave, etc		
Maximum test space(mm)	730	710	800
Column distance(mm)	570	550	650
Machine dimension(mm)	1050×780×2800	1050×780×3050	1200×900×3250
Machine weight(kg)	1600	1800	3800
HPU dimension(mm)	800×1300×1150	800×1300×1150	800×1550×1150
HPU weight(kg)	460	460	540
Control cabinet dimension(mm)	800×600×1800	800×600×1800	800×600×1800
Power consumption(kW)	25	40	60

Remark: All dimension and weights are for standard machine without chamber.

Drop weight impact testing machine



It is used for prefabrication damage test of composite sheet metal and meets various aerospace specifications. Through high speed acquisition system, the velocity sensor and the impact force sensor, the initial velocity of the sample is measured.Without the transient values of velocity and load, the force-deformation analysis of the specimen during the impact process is realized, and the material ability to withstand shock loads is measured.

Drop weight impact testing machine

Features

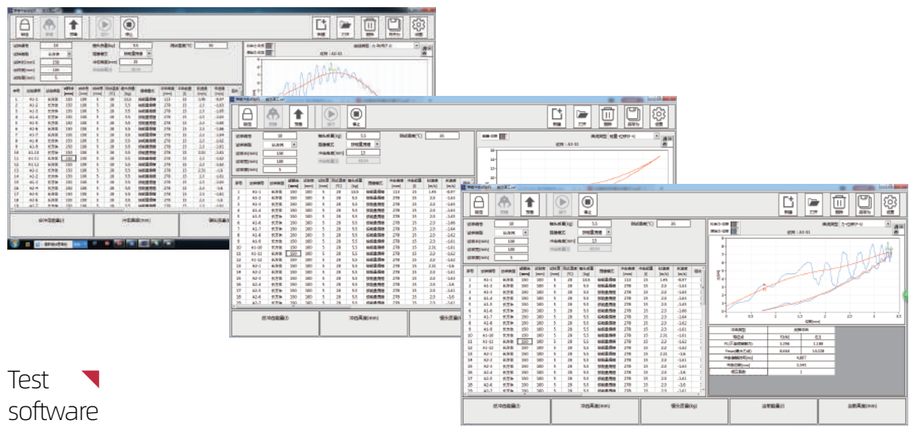
- The test results can be quantitatively analyzed
- The anti-rebound system can effectively prevent the hammer from hitting the sample twice
- Hammer clamping device can be self-locking, high safety
- The lifting speed of the hammer body is fast and the precision is high
- The pneumatic fixture is convenient and fast for sample mounting

Standards

ASTM D7136, GB/T21239, EN6038, ISO 18352

Technical parameters

Model	DIT302E
Energy range(J)	6 ~ 300
Impact speed(m/s)	1.4 ~ 4.65
Impact height（mm）	110 ~ 1100
Mass range（kg）	5.5 ~ 29.5
Load cell（kN）	25, 100
Striker dimension（mm）	D16/D12.7
Dimension（mm）	1450x670x2630
Weight（kg）	550



Test software

Tensile test

Standards

GB/T 3354, GB/T 3355,
GB/T 1040, GB/T 3362, GB/T 1447,
ASTM D3039, ASTM D5083, ASTM D3518
ISO 527-4, ISO 527-5, ISO 14129,
BS EN 6031, BS EN 2597, EN 2561

Test result

Tensile strength, elastic modulus, Poisson's ratio, elongation

Grips

Hydraulic wedge action grip is recommended, high stability and accuracy, gripping force is adjustable, and good center alignment.

Hydraulic wedge grip

Parameter

Name	Hydraulic wedge grip
Model	WXYC105G
Capacity/kN	100
Jaw/mm	Flat jaw 0 ~ 8 / 8 ~ 16 / 16 ~ 24 Vee jaw ϕ4 ~ ϕ10 / ϕ10 ~ ϕ15 ϕ15 ~ ϕ20
Specimen	Metal, composite, reinforced plastic
Temperature/°C	-70 ~ 350

Hydraulic wedge grip

Due to the special forming process and mechanical properties of composite materials, high center alignment is often required to ensure the accuracy of the test results when mechanical properties are tested.

Parameter

Name	Hydraulic wedge grip
Model	WXYC105B
Capacity/kN	100
Jaw/mm	Flat jaw: 0 ~ 8 / 8 ~ 16 / 16 ~ 24
	Vee jaw: ϕ4 ~ ϕ10 / ϕ10 ~ ϕ15 / ϕ15 ~ ϕ20
Specimen	Metal, composite, reinforced plastic
Temperature/°C	0 ~ 40

Pneumatic side action grip

For the tensile test of single or compound filament, the force value is small, so it is recommended to choose the pneumatic side action grip.

Parameter

Name	Pneumatic side action grip
Model	WDQA104D
Capacity/kN	10
Jaw/mm	Flat jaw: 0 ~ 10
Specimen	Single or compound filament, plastic
Temperature/°C	0 ~ 40

Compression test

Standards

GB/T 5258, GB/T 3856, ASTM D6641, ASTM D3410, ASTM D695, ASTM D3846, ASTM D7137, ISO 14126, DIN EN 2850

Test result

Tensile strength and compression modulus.

Grips

The compression test requires that the axial force be accurately transferred to the specimen and that the specimen be prevented from buckling. Different standards specify different sample sizes and loading methods, generally there are three loading methods: end loading, shear loading and combination loading.

Parameter

Name	Hydraulic compression fixture
Model	WZYB105A
Standards	ASTM D6641, ASTM D3410, ISO 14126（Method1,2）, GB/T 5258（Specimen1）
Capacity(kN)	100
Loading method	Multiple loading methods
Specimen size (L×W×T)(mm)	Different size according to different standards
Temperature(℃)	0 ~ 40

In-plane shear fixture

Comply with ASTM D695

Parameter

Model	WZYB204J
Standards	ASTM D3846, ASTM D695, EN 2850 (type B1&B2 Specimen)
Capacity(kN)	20
Loading method	End loading
Specimen size (L×W×T)(mm)	79.5×12.7×(2 ~ 6)
Temperature(℃)	(75 ~ 80)×12.5×2
	-70 ~ 350

Combined compression fixture

Comply with ASTM D6641

Parameter

Model	WZYB204I
Standards	ASTM D6641
Capacity(kN)	20
Loading method	Combined loading
Specimen size (L×W×T)(mm)	140×12×(1 ~ 4)
Temperature(℃)	-70 ~ 350

Open-hole compression fixture

Comply with ASTM D6484

Parameter

Model	WZYA204A
Standards	ASTM D6484
Capacity(kN)	20
Loading method	Combined loading
Specimen size (L×W×T)(mm)	300×36×4
Temperature(℃)	-70 ~ 350

In-plane shear fixture

Comply with GB/T 5258 type C

Parameter

Model	WZYB204F
Standards	GB/T5258 (type C fixture)
Capacity(kN)	20
Loading method	End loading
Specimen size (L×W×T)(mm)	125×25×(4 ~ 10)
Temperature(℃)	-70 ~ 350

Wedge compression fixture

Comply with ASTM D3410

Parameter

Model	WZYB204A
Standards	ASTM D3410, GB/T 5258(type A2 fixture)
Capacity(kN)	20
Loading method	Shear loading
Specimen size (L×W×T)(mm)	140×12×(1 ~ 2) 110×10×2
Temperature(℃)	-70 ~ 350

Wedge compression fixture

Comply with GB/T 3856

Parameter

Model	WZYB304K
Standards	GB/T 3856
Capacity(kN)	30
Loading method	Shear loading
Specimen size (L×W×T)(mm)	140×6×(2 ~ 3)
Temperature(℃)	0 ~ 40

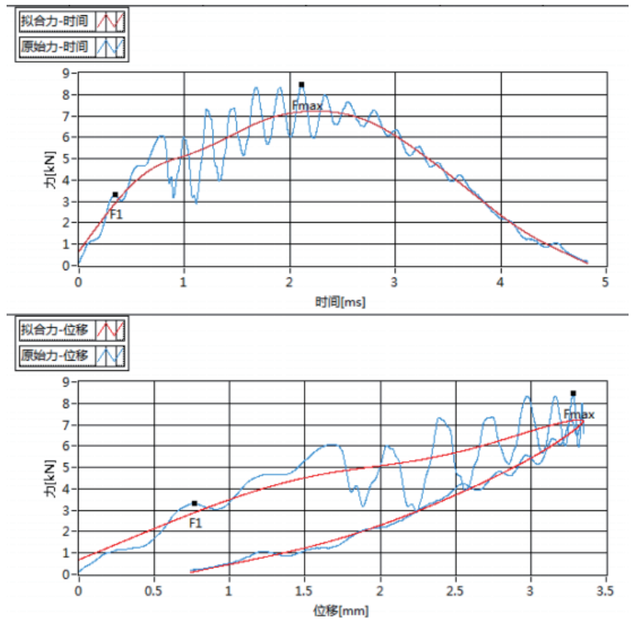
Compression after impact

In the direction of sample thickness, the impact energy is specified to impact the composite sample. Then the compression test of the sample after impact is carried out by the special compression fixture, and the residual compressive strength is measured.

Drop weight impact tester

Comply with ASTM D7136

Impact graph



Compression fixture after impact (CAI)

Comply with ASTM D7137

Parameter

Name	Compression fixture after impact
Model	WZYB104A
Standards	ASTM D7137
Capacity(kN)	10
Loading method	Compression
Specimen size(L×W×T)(mm)	150×100×(4 ~ 6)
Specimen type	Composite
Temperature(℃)	-70 ~ 350

Shear test

Standards

GB/T28889, ASTM D7078, ASTM D5379, GB/T30970

Test results

Shear strength and shear modulus

Fixtures

Different standards for different materials and test needs, there are differences in sample size, test methods, fixture and other aspects.

V-notched rail shear test fixture

Comply with ASTM D7078

Parameter

Name	V-notched rail shear test fixture
Model	WZJB204F
Standards	ASTM D7078, GB/T28889
Capacity(kN)	20
Specimen type	Fiber reinforced composite material
Specimen size(L×W×T)(mm)	76×56×(2 ~ 5)
Temperature(℃)	-70 ~ 350

V-notched beam test fixture

Comply with ASTM D5379

The shear properties of unidirectional laminates or fabric fiber composites can be tested by the test method of V-notched beams. When the sample is prepared, the fiber should be parallel or perpendicular to the loading direction, and the strain gauge can be attached to the shear plane 45° direction. The ultimate shear stress, strain and directional shear modulus of fiber reinforced composites can be measured by this test.

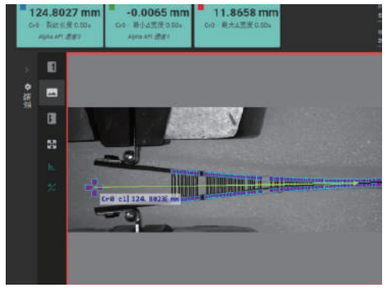
Parameter

Name	V-notched beam test fixture
Model	WZJB204E
Standards	ASTM D5379, GB/T30970
Capacity(kN)	20
Specimen type	Fiber reinforced composite material
Specimen size(L×W×T)(mm)	76×19×(3 ~ 4)
Temperature(℃)	-70 ~ 350

Interlaminar fracture toughness

Mode I interlaminar fracture toughness test system (DCB)

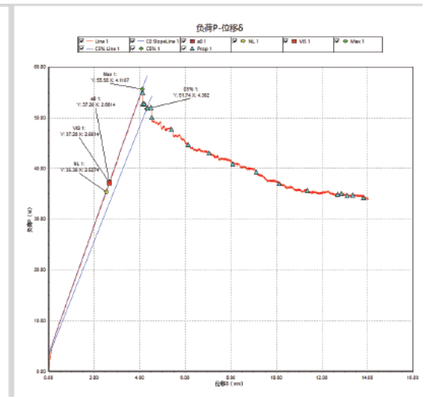
Comply with
ASTM D5528
GB/T 28891

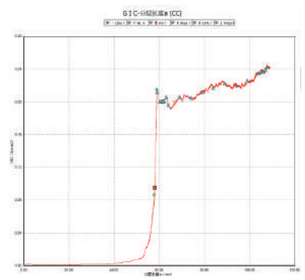


Delamination sensitivity is one of the main design problems of many advanced laminate composite structures, and understanding the resistance of laminate composite to interlayer fracture is helpful for product development and material selection. The method of double cantilever beam (DCB) for determination of type I interlaminate fracture toughness GIC is suitable for carbon fiber and glass fiber unidirectional laminates.

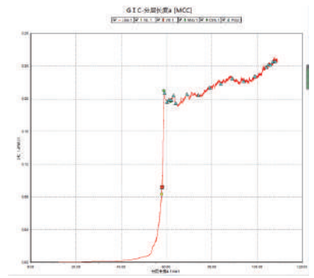
Test graph

	a0(mm)	b(mm)	P(N)	δ/a0	GIC(KJ/m2) [MBT]	GIC(KJ/m2) [CC]	GIC(KJ/m2) [MCC]
NL	57.806	2.527	35.36	0.044	0.085	0.096	0.083
VIS	58.005	2.661	37.2	0.046	0.094	0.095	0.092
5%	58.835	4.111	55.58	0.07	0.212	0.215	0.21
	a(mm)	b(mm)	P(N)	δ/a	GIC(KJ/m2) [MBT]	GIC(KJ/m2) [CC]	GIC(KJ/m2) [MCC]
Prop1	59.029	4.125	54.91	0.07	0.21	0.212	0.207
Prop2	60.224	4.131	52.71	0.069	0.198	0.2	0.196
Prop3	61.012	4.191	52.76	0.069	0.199	0.201	0.199
Prop4	62.109	4.339	51.92	0.07	0.199	0.201	0.199
Prop5	63.006	4.493	52.02	0.071	0.204	0.206	0.204
Prop6	64.007	4.521	50.05	0.071	0.194	0.196	0.195
Prop7	69.021	5.381	47.76	0.078	0.206	0.206	0.205
Prop8	74.032	6.128	44.62	0.083	0.205	0.205	0.204
Prop9	79.032	7.038	43.01	0.089	0.214	0.212	0.214
Prop10	84.011	8.079	40.9	0.096	0.22	0.218	0.219
Prop11	89.019	9.106	39.35	0.102	0.226	0.223	0.225
Prop12	94.008	10.113	36.97	0.108	0.223	0.22	0.222
Prop13	99.011	11.365	35.59	0.115	0.23	0.226	0.228
Prop14	104.061	12.696	34.91	0.122	0.24	0.235	0.239
Prop15	105.005	12.868	35.04	0.123	0.242	0.237	0.242
Prop16	106.029	13.109	34.65	0.124	0.242	0.237	0.242
Prop17	107.01	13.351	34.76	0.125	0.245	0.239	0.246
Prop18	108.022	13.836	34.23	0.128	0.248	0.242	0.246

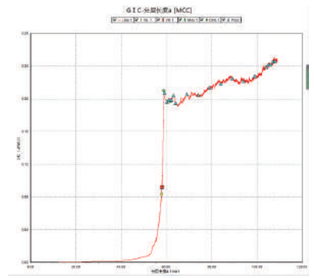




CC Method



MCC Method



MBT Method

Parameter

Name	Fixture (loading block)	Fixture (hinge)
Model	WZJA202B	WDSA502A
Standards	ASTM D5528	ASTM D5528
Capacity(kN)	0.2	0.5
Temperature(°C)	0 ~ 40	0 ~ 40
Configuration	There are two methods for measuring crack length: manual measurement and automatic measurement. When choosing manual measurement,configure HD professional camera for recording and manual sampling;When automatic measurement is selected, a visual measurement system is configured to measure crack length in real time without human intervention.	

Interlaminar fracture toughness test

Mode II interlaminar fracture toughness test fixture (ENF)

Comply with ASTM D7905

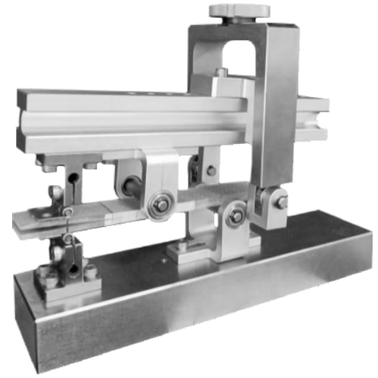
The Type II fracture toughness GIIC of end-notched composites can be measured by three-point bending test. The delamination crack propagation is caused by the shear force of the delamination surface during the test.

Parameter

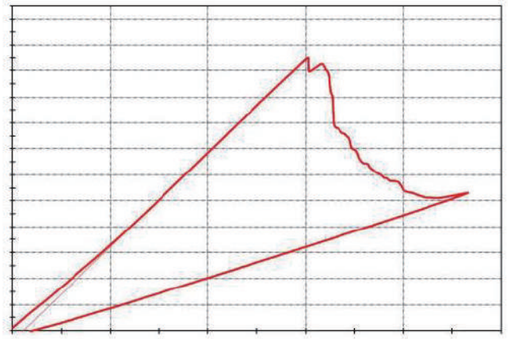
Name	Mode II interlaminal fracture toughness test fixture
Model	WZWA204A
Standards	ASTM D7905
Capacity(kN)	20
Temperature(℃)	0 ~ 40

Mixed mode I and II test fixture (MMB)

Comply with ASTM D6671



Test graph



Parameter

Name	Mixed mode I and II test fixture
Model	WZJA502B
Standards	ASTM D6671
Capacity(kN)	0.5
Temperature(℃)	0 ~ 40
Configuration	There are two methods for measuring crack length: manual measurement and automatic measurement. When choosing manual measurement, configure HD professional camera for recording and manual sampling; When automatic measurement is selected, a visual measurement system is configured tomeasure crack length in real time without human intervention

Sandwich materials

Tensile test

Standards
ASTM C363, ASTM C297

Node tensile grip

Comply with ASTM C363

Parameter

Name	Node tensile grip
Model	WZTA502A
Standards	ASTM C363
Capacity(kN)	0.5
Specimen type	Honeycomb core
Specspecimen size(L×W×T)(mm)	260×130×12(16)
Temperature(℃)	0～40

Flatwise tensile test

Comply with ASTM C297

Parameter

Name	Flatwise tensile grip
Model	WZJA104C
Standards	ASTM C297
Capacity(kN)	10
Specimen type	Sandwich
Specimen size(L×W×T)(mm)	50×50×T
Temperature(℃)	0～40

Compression test

Standard
ASTM C364

Edgewise compression fixture

Parameter

Model	WZYB303A
Standards	ASTM C364
Capacity(kN)	3
Specimen type	Sandwich
Specimen size (L×W×T)(mm)	(≥40)×(≤75)×(≤40)
Temperature(℃)	0～40

Bending test

Standard
ASTM C393

Bending fixture

Parameter

Model	WZWA204E
Standards	ASTM C393
Capacity(kN)	20
Specimen type	Sandwich
Specimen size (L×W×T)(mm)	200×75×T
Temperature(℃)	0～40

Shear test

Standard
ASTM C273

Compression shear fixture

Parameter

Model	WZJB104C
Standards	ASTM C273 GB/T 1455
Capacity(kN)	10
Specimen type	Sandwich
Temperature(℃)	0～40

Shear test

Standard
ASTM C273

Tensile shear fixture

Parameter

Model	WZJA104D
Standards	ASTM C273 GB/T 1455
Capacity(kN)	10
Specimen type	Sandwich
Temperature(℃)	0～40

Peel test

Standard
GB/T1457, ASTM D1781

Climbing drum peel test fixture

Parameter

Model	WZBB303A(ASTM D1781) WZBB303F(GB/T 1457)
Standards	ASTM D1781, GB/T 1457
Capacity(kN)	3
Specimen type	Sandwich
Temperature(℃)	0～40

Peel test

Standard
ASTM D3167

Floating roller peel test fixture

Parameter

Model	WZBB202A
Standards	ASTM D3167
Capacity(kN)	0.2
Specimen type	\
Temperature(℃)	0～40

Short-beam interlaminar shear test

Standards

ASTM D2344, ISO 14130, BS EN 2563, BS EN 2377, JC/T773

Test results

Interlaminar shear strength

Fixture

The test method of three-point bending is adopted, the span to thickness ratio is very small, and the sample is mainly subjected to shear load. The loading nose and support adopt a guide structure, and the nose is loaded on the sample through the guide beam to ensure the center alignment and stability.

Short-beam shear test

Parameter

Name	Short-beam shear test fixture
Model	WZWA204D
Standards	ASTM D2344, ISO 14130, EN 2563, EN 2377, JC/T773
Capacity(kN)	20
Specimen type	polymer matrix composite
Loading nose (mm)	R3 (R5 for ISO14130)
Support roller (mm)	R1.5, optional R2, R3 and arc type (R2 for ISO14130)
Span (mm)	6 ~ 50
Temperature(℃)	-70 ~ 350

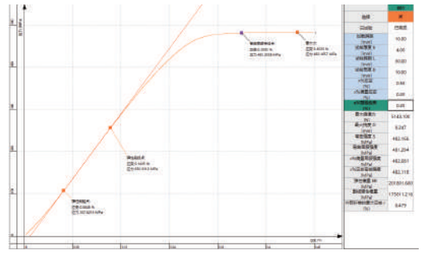
Bend test

Standards

GB/T 9341, ASTM D7264, ASTM D6272

Test results

Bending strength and modulus



Fixture

There are three or four point bending, the span is adjustable, for different standards, can choose different diameter of the bending nose and support roller.

3-point bending fixture

Parameter

Name	3-point bending fixture
Model	WZWA104A
Standards	GB/T 9341, ISO 14125（3-point bending） ASTM D7264（3-point bending）
Capacity(kN)	10
Specimen type	Polymer matrix composites, plastics
Loading nose (mm)	R5
Support roller (mm)	R2,R5
Span (mm)	10 ~ 160
Temperature(℃)	0 ~ 40

4-point bending fixture

Parameter

Name	Bending fixture (3/4 point)
Model	WZWC204A
Standards	ISO 14125, ASTM D7264, ASTM D6272
Capacity(kN)	20
Specimen type	Polymer matrix composites, plastics
Loading nose (mm)	R5
Support roller (mm)	R2,R5
Span (mm)	Loading span: 30~200 Support span: 30~280
Temperature(℃)	0 ~ 40