

Accessories for MTS Exceed® Electromechanical Systems

Address a full spectrum of standard and unique monotonic testing requirements



be certain.

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Introduction to Grips and Test Fixtures

Application of Grips and Fixtures

Grips and fixtures are critical components to material testing. Testing results might be compromised if incorrect grips or fixtures are used. MTS offers a large variety of grips and fixtures and this catalog includes popular items that are compatible with specimens defined by commonly adopted testing standards such as ASTM, ISO, DN, GB, BS, JIS and etc. For additional grips and fixtures not listed or custom design needs, please contact MTS sales or application engineers.

System Compatibility

The grips and fixtures in this catalog can be directly used on MTS Exceed 4X series of electromechanical models: E42.503, E43.104, E44.104, E44.304, E54.105, and E45.305.

To use them with MTS Criterion® 4X series models, conversion adapters need to be used. Please refer to Page 6 for adapter choices.

Selection of Grips and Fixtures

Selecting grips and fixtures is complex but largely focused on 3 areas:

A) TEST LOAD

The grip capacity is recommended to be 1.25 times more than the estimated maximum test load, which means the grip will work under 80% of its capacity. The capacity of the load cell should match the grip (i.e. a 30 kN grip should be used with 30 kN rated load cell). This is preferred to ensure result accuracy and decent useful life.

B) TEST STANDARD

Test standards define the dimensions and shape of specimens. It is common to have a large selection of grips that can be used. If you are not certain, please consult MTS by providing the specific test standard code.

C) SPECIMEN AND TEST METHOD

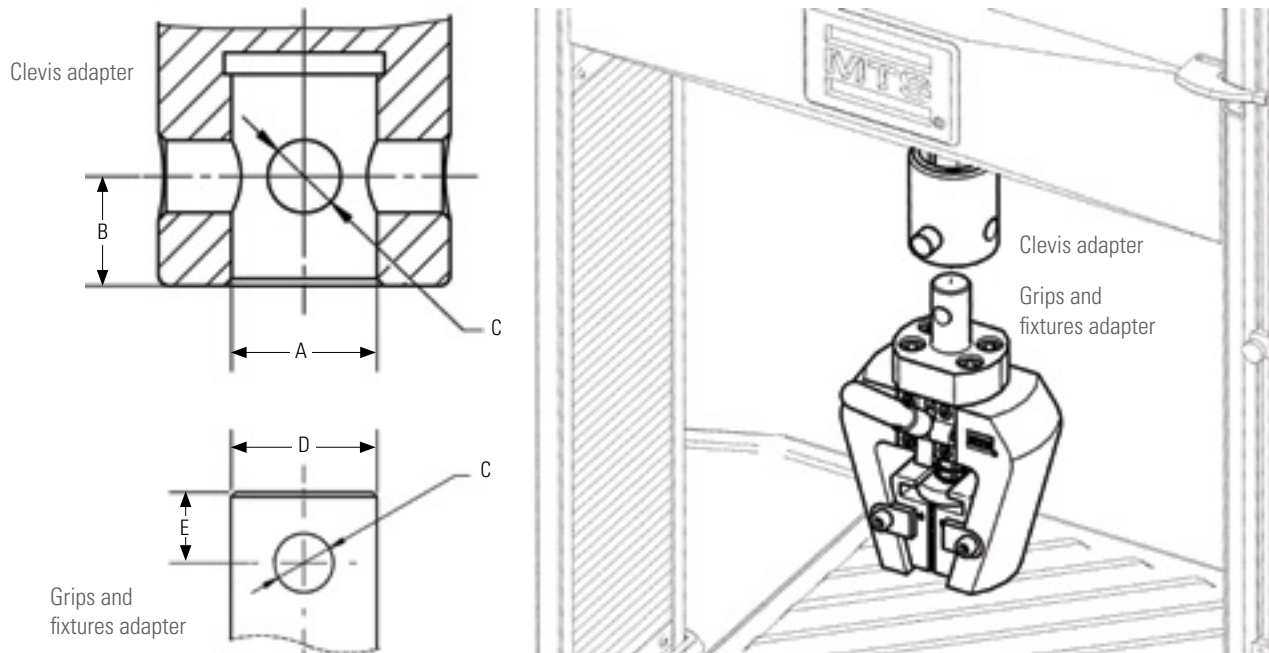
Besides the dimension and shape of specimens, the surface texture is an important factor in grip selections. For tensile tests, slipping, premature damage and cracking in the grip are quite common due to incorrect grip selection. For help determining the right grip, send the specimen samples and detailed testing method to MTS and we will help identify the correct grip for you.



Installation Method for Grips and Fixtures

Standard Adapters

Generally grips and fixtures will be equipped with adapters of standard dimensions to be used with clevis adapters of the frames. The advantages of using standard adapters are easy installation and accurate mounting. Selecting grips or fixtures with standard adapters can achieve maximum compatibility.



Standard Adapters

Type	ø20 mm	ø40 mm	ø60 mm*
Load Range	5 N-30 kN	50 kN-100 kN	200 kN-300 kN
Compatible Frame	E42.503, E43.104, E44.104, E44.304	E45.105	E45.305
A	ø20 ^{+0.041} _{+0.020} mm	ø40 ^{+0.050} _{+0.025} mm	ø60 ^{+0.06} _{+0.03} mm
B	15 mm	25 mm	35 mm
C	ø10 ^{+0.028} _{+0.013} mm	ø18 ^{+0.034} _{+0.016} mm	ø28 ^{+0.041} _{+0.020} mm
D	ø20 ^{-0.007} _{-0.028} mm	ø40 ^{-0.009} _{-0.034} mm	ø60 ^{-0.01} _{-0.04} mm
E	15 mm	25 mm	35 mm
Lock Nut	M24 × 1.5	M45 × 2	M64 × 2

*Note: The specifications of the ø60 mm adapter are the same as those of the Criterion type E adapter; therefore, this category of grips and fixtures can be directly applied to the Criterion C45.305 and Exceed E45.305.

Additionally, the grip used with E45.605 frames is of non-standard specifications. Contact the MTS service department for more details on relevant grips and fixtures.

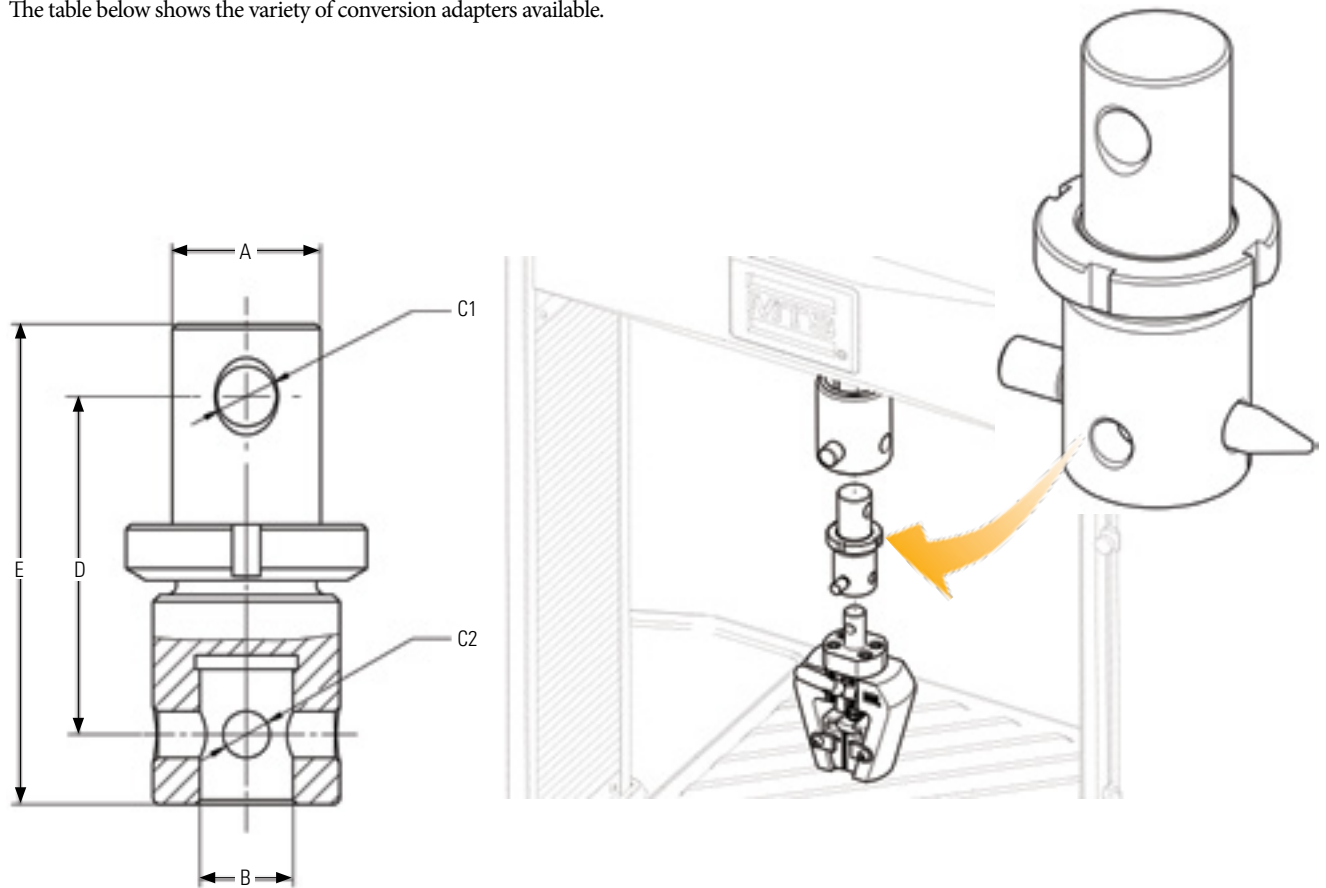
Installation Method for Grips and Fixtures

Conversion Adapters

Grips and fixtures with smaller standard adapters can be used on the frames with larger standard clevis adapters with a set of suitable conversion adapters.

The conversion adapters allows you to use the same stand grips and fixtures on both the Exceed and Criterion series frames.

The table below shows the variety of conversion adapters available.



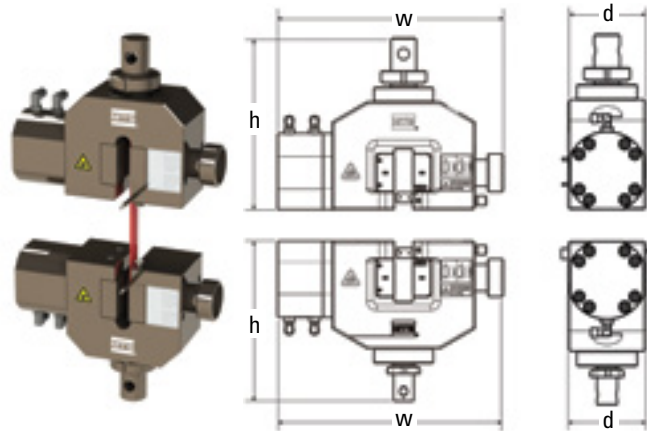
Specifications

Adapter Type	40-20	60(E)-20	60(E)-40	20-D	40-D	D-20	D-40
Maximum Load	30 kN	30 kN	100 kN	30 kN	100 kN	30 kN	100 kN
Compatible Frame	E45.105	E45.305 C45.305	E45.305 C45.305	E42.503 E43.104 E44.104 E44.304	E45.105	C41.103, C42.503, C43.104, C43.304, C44.304, C43.504, C45.504, C45.105, C45.504W	C41.103, C42.503, C43.104, C43.304, C44.304, C43.504, C45.504, C45.105, C45.504W
A	$\varnothing 40_{-0.009}^{-0.034}$ mm	$\varnothing 60_{-0.01}^{-0.4}$ mm	$\varnothing 60_{-0.01}^{-0.4}$ mm	$\varnothing 20_{-0.007}^{-0.028}$ mm	$\varnothing 40_{-0.009}^{-0.034}$ mm	$\varnothing 31.75_{-0.03}^{-0.06}$ mm	$\varnothing 31.75_{-0.03}^{-0.06}$ mm
B	$\varnothing 20_{+0.020}^{+0.041}$ mm	$\varnothing 20_{+0.020}^{+0.041}$ mm	$\varnothing 40_{+0.025}^{+0.050}$ mm	$\varnothing 31.75_{+0}^{+0.05}$ mm	$\varnothing 31.75_{+0}^{+0.05}$ mm	$\varnothing 20_{+0.020}^{+0.041}$ mm	$\varnothing 40_{+0.025}^{+0.050}$ mm
C1	$\varnothing 18_{+0.016}^{+0.034}$ mm	$\varnothing 28_{+0.020}^{+0.041}$ mm	$\varnothing 28_{+0.020}^{+0.041}$ mm	$\varnothing 10_{+0.013}^{+0.028}$ mm	$\varnothing 18_{+0.016}^{+0.034}$ mm	$\varnothing 12.83_{+0}^{+0.05}$ mm	$\varnothing 12.83_{+0}^{+0.05}$ mm
C2	$\varnothing 10_{+0.013}^{+0.028}$ mm	$\varnothing 10_{+0.013}^{+0.028}$ mm	$\varnothing 18_{+0.016}^{+0.034}$ mm	$\varnothing 12.83_{+0}^{+0.05}$ mm	$\varnothing 12.83_{+0}^{+0.05}$ mm	$\varnothing 10_{+0.013}^{+0.028}$ mm	$\varnothing 18_{+0.016}^{+0.034}$ mm
D	58 mm	80 mm	90 mm	68.5 mm	91 mm	72.5 mm	89.5 mm
E	98 mm	125 mm	150 mm	109.5 mm	142 mm	103 mm	130 mm
Lock Nut	M45 × 2	M64 × 2	M64 × 2	M24 × 1.5	M45 × 2	M35 × 1.5	M35 × 1.5

Tension Grips

Hydraulic Single Side-Action Grips

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials with proper grip force
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » A variety of gripping faces are available to suit specimens varying by shape, material and surface texture
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » Customized wider faces available (Except FDYA305A)
- » Available for off-center specimen tests



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Applicable Standards

Code	Description
ASTM E8M-13	Standard test methods for tension testing of metallic materials
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
EN 10002-1:2001	Test methods for tensile testing of metallic materials
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products
ASTM E517-00	Standard test methods for plastic strain ratio of metal sheet
ASTM E646-07	Metallic materials – Sheet and strip – Determination of tensile strain hardening exponent
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature

Optional Faces

Model	Description	Width	Opening Range	Compatible Grip
FDYA504A.03	Flat	98 mm	0-28 mm	FDYA504A
FDYA504A.04	Vee	98 mm	ø4-ø12 mm	FDYA504A
FDYA504A.05	Vee	98 mm	ø12-ø20 mm	FDYA504A
FDYB105A.03	Flat	100 mm	0-28 mm	FDYB105A
FDYB105A.04	Vee	100 mm	ø4-ø12 mm	FDYB105A
FDYB105A.05	Vee	100 mm	ø12-ø28 mm	FDYB105A
FDYA305A.01	Flat	100 mm	0-36 mm	FDYA305A
FDYA305A.02	Vee	100 mm	ø4-ø10 mm	FDYA305A
FDYA305A.03	Vee	100 mm	ø10-ø22 mm	FDYA305A
FDYA305A.04	Vee	100 mm	ø22-ø36 mm	FDYA305A

Specifications

Model	FDYA504A	FDYB105A	FDYA305A
Description	50 kN Hydraulic single side-action grip	100 kN Hydraulic single side-action grip	300 kN Hydraulic single side-action grip
Rated Force	50 kN	100 kN	300 kN
Temperature Range	Room temperature	Room temperature	Room temperature
Weight (Upper part)	26 kg	41 kg	99 kg
Weight (Lower part)	26 kg	41 kg	99 kg
Adapter Style (Upper part)	40 mm	40 mm	60 mm
Adapter Style (Lower part)	40 mm	40 mm	60 mm
Dimensions (h*w*d) (Upper part)	210 mm × 302 mm × 160 mm	253 mm × 358 mm × 173 mm	355 mm × 470 mm × 203 mm
Dimensions (h*w*d) (Lower part)	210 mm × 302 mm × 160 mm	253 mm × 358 mm × 173 mm	355 mm × 470 mm × 203 mm
Application	Tensile test	Tensile test	Tensile test
Applicable Specimens	Metal, plastic	Metal, plastic	Metal, plastic
Compatible Frames	E45.105, E45.305	E45.105, E45.305	E45.305
Maximum Input Pressure	40 MPa	40 MPa	40 MPa

Tension Grips

100 kN Hydraulic Double Side-Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » A variety of gripping faces are available to suit specimens varying by shape, material and surface texture
- » Clamping ability on both sides; faces move synchronously to ensure accurate centering of specimens
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side

Additional Information

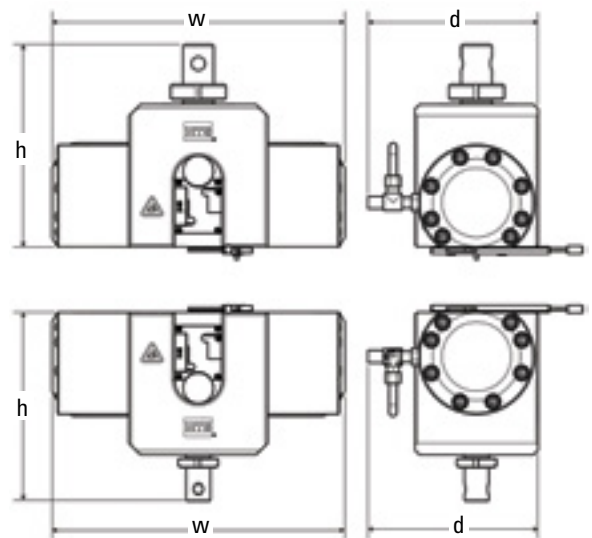
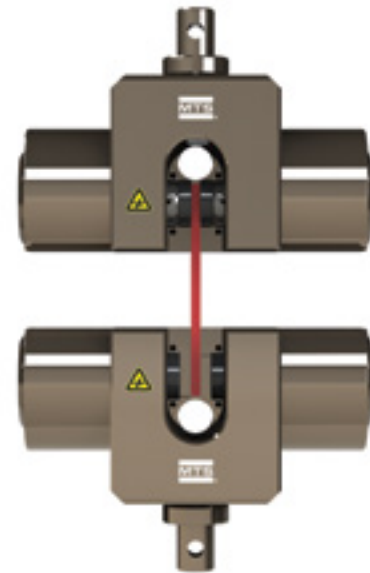
The universal hydraulic tensile grip is applicable to tensile tests of metal plates and bars. The shortest distance between grips is 55 mm. Corresponding faces can be selected and changed according to the shape of the specimens.

Applicable Standards

Code	Description
ASTM E8M-13	Standard test methods for tension testing of metallic materials
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
EN 10002-1:2001	Test methods for tensile testing of metallic materials
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products
ASTM E517-00	Standard test method for plastic strain ratio for sheet metal
ASTM E646-07	Metallic sheet materials – Determination of tensile strain hardening exponent
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature

Optional Faces

Model	Description	Diameter	Opening Range
FDYA105B.02	Flat	50 mm	0-28 mm
FDYA105B.03	Vee	50 mm	∅4-∅12 mm
FDYA105B.04	Vee	50 mm	∅12-∅20 mm



Specifications

Model	FDYA105B
Description	100 kN Hydraulic double side-action grip
Rated Force	100 kN
Temperature Range	Room temperature
Weight	(Upper part) 60 kg/(Lower part) 60 kg
Adapter Style	(Upper part) 40 mm/(Lower part) 40 mm
Dimensions (h*w*d)	(Upper part) 245 mm × 380 mm × 221 mm (Lower part) 245 mm × 380 mm × 221 mm
Application	Tensile test
Applicable Specimens	Metal; plastic
Compatible Frames	E45.105, E45.305
Maximum Input Pressure	40 MPa

Tension Grips

10 N Pneumatic Vise Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Threaded upper adapters are designed in small capacity grips or fixtures to reduce the preload of the load cell
- » Corrosion resistant aluminum grips are lightweight and easy to operate
- » Specimen center block allows for simple installation and centering of wire stock specimens
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency

Additional Information

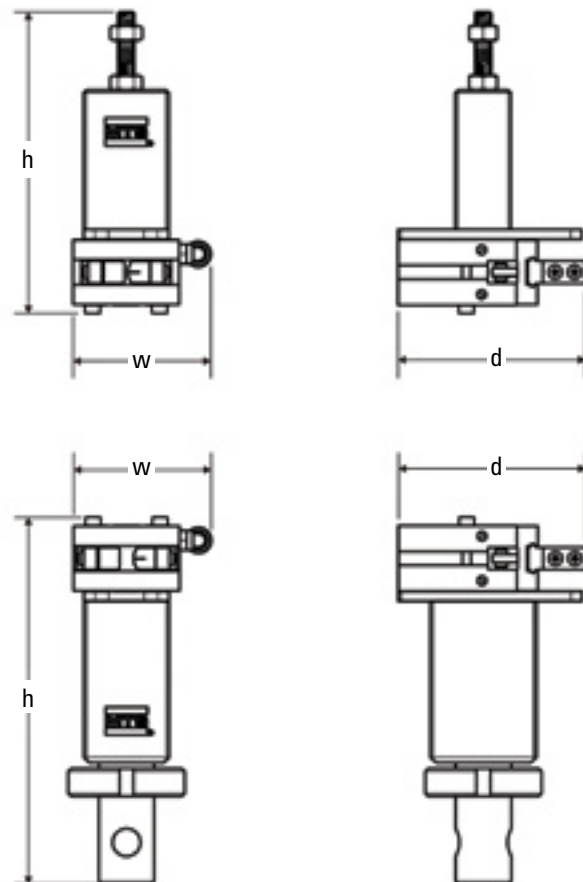
14 mm line contact clamping faces. The widest opening of the grip is 5 mm. Applicable to spandex specimens with a diameter of less than 0.2 mm.

Applicable Standards

Code	Description
FZ/T 50007-2012	Testing method for elasticity of spandex filament yarns



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Specifications

Model	DQD101B
Description	10 N Pneumatic vise action grip
Rated Force	10 N
Temperature Range	Room temperature
Weight	(Upper part) 210 g/(Lower part) 420 g
Adapter Style	(Upper part) M6x1.0/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 108 mm x 51 mm x 66 mm (Lower part) 132 mm x 51 mm x 66 mm
Application	Tensile test
Applicable Specimens	Spandex
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Input Pressure	0.8 MPa

Tension Grips

100 N Pneumatic Vise Action Grip

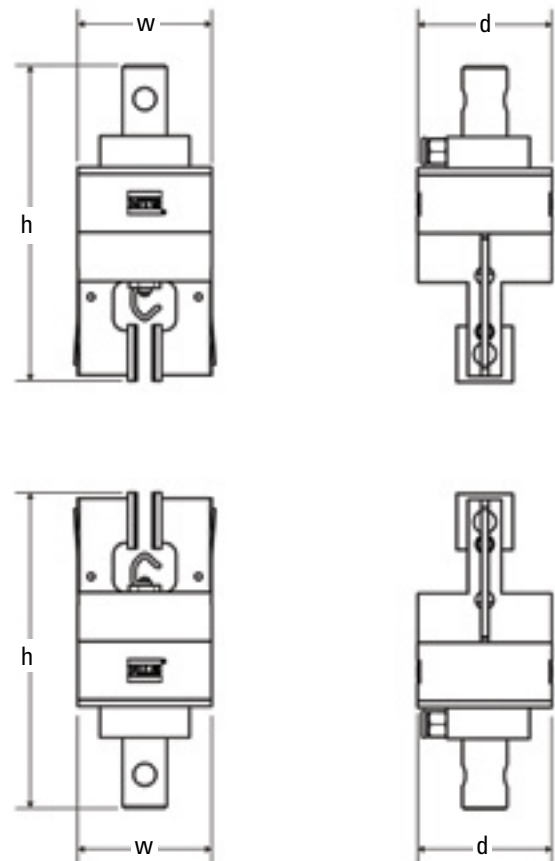
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Corrosion resistant aluminum grips are lightweight and easy to operate
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » Specimen center block allows for simple installation and centering of wire stock specimens

Applicable Standards

Code	Description
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ISO 527-3:1995/C or 2:2001	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ASTM D1004-07	Standard test method for tear resistance (graves tear) of plastic film and sheeting
QB/T 1130-1991	Plastics – Determination of tear strength – Right-angle test pieces

Specifications

Model	DQA102B
Description	100 N Pneumatic vise action grip
Rated Force	100 N
Temperature Range	Room temperature
Weight	(Upper part) 630 g/(Lower part) 630 g
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 141 mm × 60 mm × 60 mm (Lower part) 141 mm × 60 mm × 60 mm
Application	Tensile test, tear test
Applicable Specimens	Plastic film, textile wire
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces Surface Material	Rubber
Grip Opening	0-7 mm
Faces Width	25 mm
Maximum Input Pressure	0.8 MPa



Tension Grips

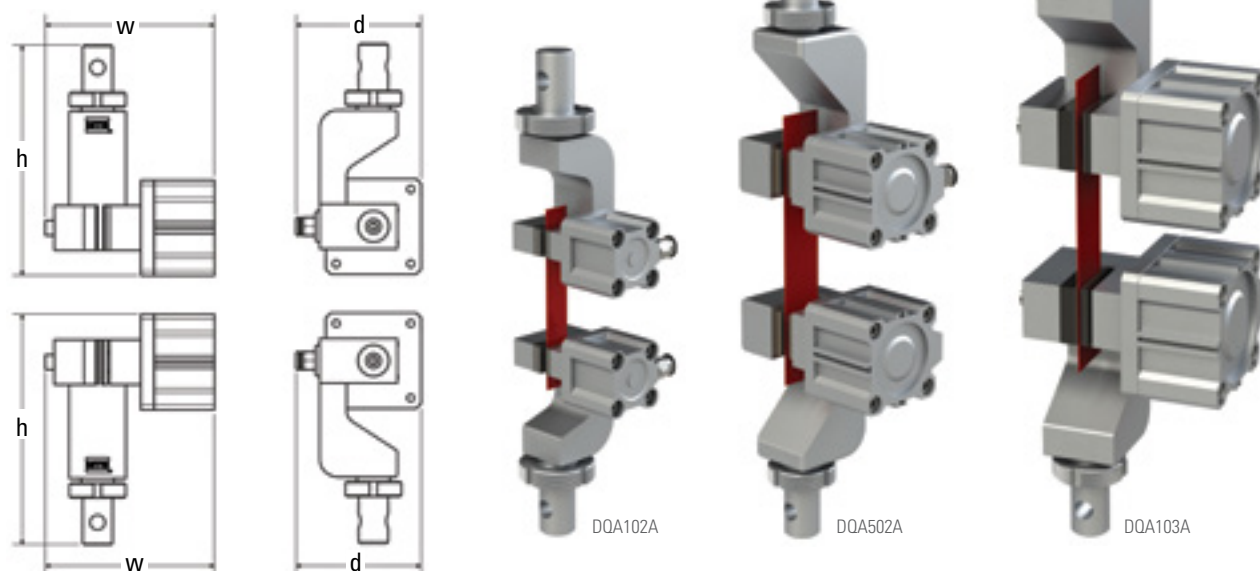
Pneumatic Vise Action Grips

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Corrosion resistant aluminum grips are lightweight and easy to operate
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency

Applicable Standards

Code	Description
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ISO 527-3:2003	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ASTM D1004-07	Standard test method for tear resistance (graves tear) of plastic film and sheeting
QB/T 1130-1991	Plastics – Determination of tear strength – Right-angle test pieces

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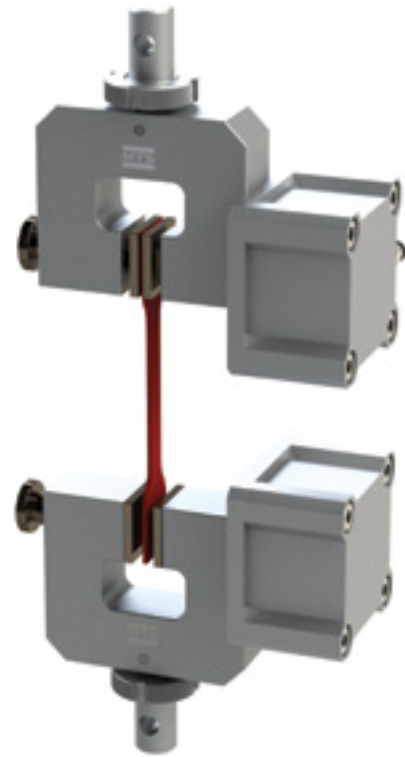
Specifications

Model	DQA102A	DQA502A	DQA103A
Description	100 N Pneumatic vise action grip	500 N Pneumatic vise action grip	1 kN Pneumatic vise action grip
Rated Force	100 N	500 N	1 kN
Temperature Range	Room temperature	Room temperature	Room temperature
Weight (Upper part)	380 g	850 g	1.1 kg
Weight (Lower part)	380 g	850 g	1.1 kg
Adapter Style (Upper part)	20 mm	20 mm	20 mm
Adapter Style (Lower part)	20 mm	20 mm	20 mm
Dimensions (h*w*d) (Upper part)	119 mm × 85 mm × 53 mm	146 mm × 105 mm × 70 mm	155 mm × 114 mm × 84 mm
Dimensions (h*w*d) (Lower part)	119 mm × 85 mm × 53 mm	146 mm × 105 mm × 70 mm	155 mm × 114 mm × 84 mm
Application	Tensile test, tear test	Tensile test, tear test	Tensile test, tear test
Applicable Specimen	Plastic film, metal foil, rubber sheet		
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305		
Faces Surface Material	Rubber	Rubber	Rubber
Grip Opening	0-3 mm	0-6 mm	0-4 mm
Faces Width	22 mm	30 mm	32 mm
Maximum Input Pressure	0.8 MPa	0.8 MPa	0.8 MPa

Tension Grips

2 kN Pneumatic Vise Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grip faces are removable and can be customized to special size requirements
- » Improved application performance with manual side face adjustment and adjustable clamping position inside the vise
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » Customizable wider faces
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » Corrosion resistant aluminum grips are lightweight and easy to operate

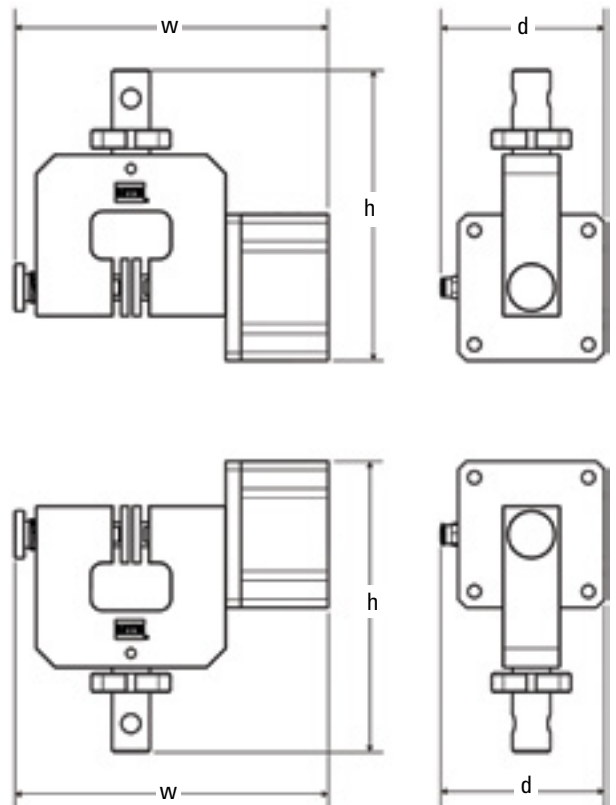


Applicable Standards

Code	Description
ISO 527-3:1995	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ASTM D882-10	Standard test method for tensile properties of thin plastic sheeting
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets

Specifications

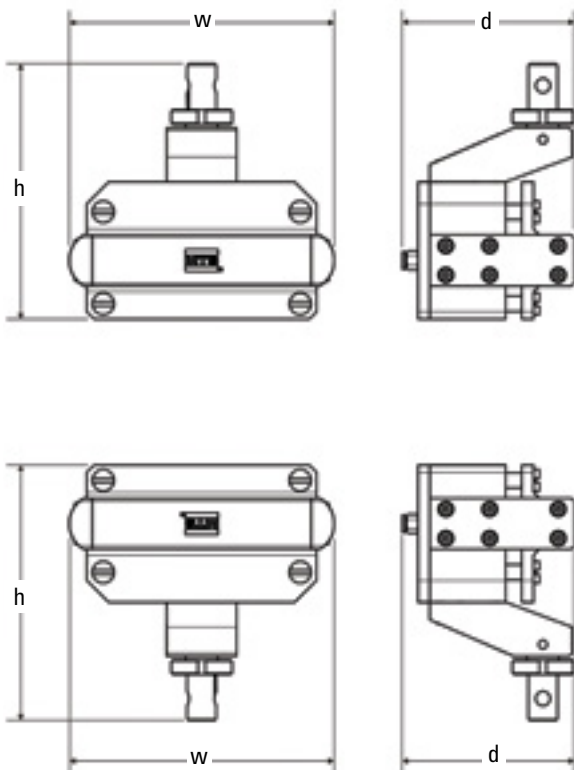
Model	DQC203A
Description	2 kN Pneumatic vise action grip
Rated Force	2 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.53 kg/(Lower part) 1.53 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 150 mm × 170 mm × 77 mm (Lower part) 150 mm × 170 mm × 77 mm
Application	Tensile test, tear test
Applicable Specimens	Thin film, sheet, tearing specimen
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Driving Structure	Double-action cylinder
Faces Surface Material	Rubber
Grip Opening	0-10 mm
Faces Width	30 mm
Maximum Input Pressure	0.8 MPa



Tension Grips

3 kN Pneumatic Vise Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency



Additional Information

Minimum specimen length is 125 mm.

Applicable Standards

Code	Description
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ISO 527-3:2003	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheet
ASTM D1004-07	Standard test method for tear resistance (graves tear) of plastic film and sheeting
QB/T 1130-1991	Plastics – Determination of tear strength – Right-angle test pieces
GB/T 16578.1-2008	Plastics – Film and sheeting – Determination of tear resistance – Part 1: Trouser tear method
ISO 6383-1:1983	Plastics – Film and sheeting – Determination of tear resistance – Part 1: Trouser tear method
GB/T 3923.1-2013	Textiles – Tensile properties of fabrics – Part 1: Determination of maximum force and elongation at maximum force using the strip method
ISO 13934-1:1999	Textiles – Tensile properties of fabrics – Part 1: Determination of maximum force and elongation at maximum force using the strip method
GB/T 13773.1-2008	Textiles – Seam tensile properties of fabrics and made-up textile articles – Part 1: Determination of maximum force to seam rupture using the strip method
ISO 13935-1:1999	Textiles – Seam tensile properties of fabrics and made-up textile articles – Part 1: Determination of maximum force to seam rupture using the strip method

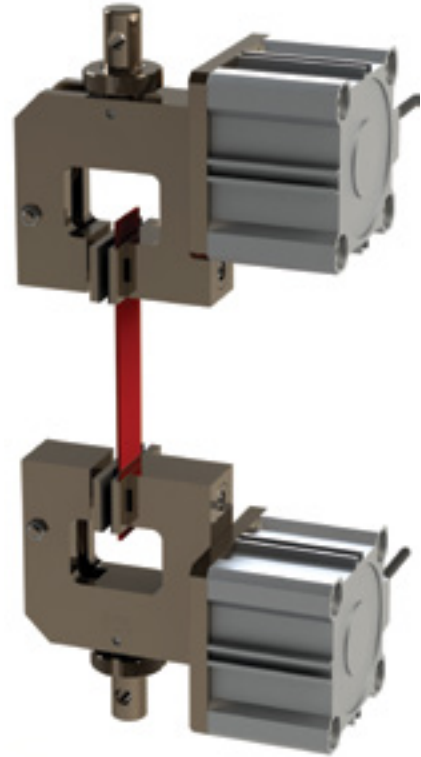
Specifications

Model	DQC303A
Description	3 kN Pneumatic vise action grip
Rated Force	3 kN
Temperature Range	Room temperature
Weight	(Upper part) 6.72 kg/(Lower part) 6.72 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 175 mm × 182 mm × 118 mm (Lower part) 175 mm × 182 mm × 118 mm
Application	Tensile test, tear test
Applicable Specimens	Textile fiber, plastic
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Input Pressure	0.8 MPa
Faces Surface Material	Rubber
Grip Opening	0-13 mm
Faces Width	70 mm

Tension Grips

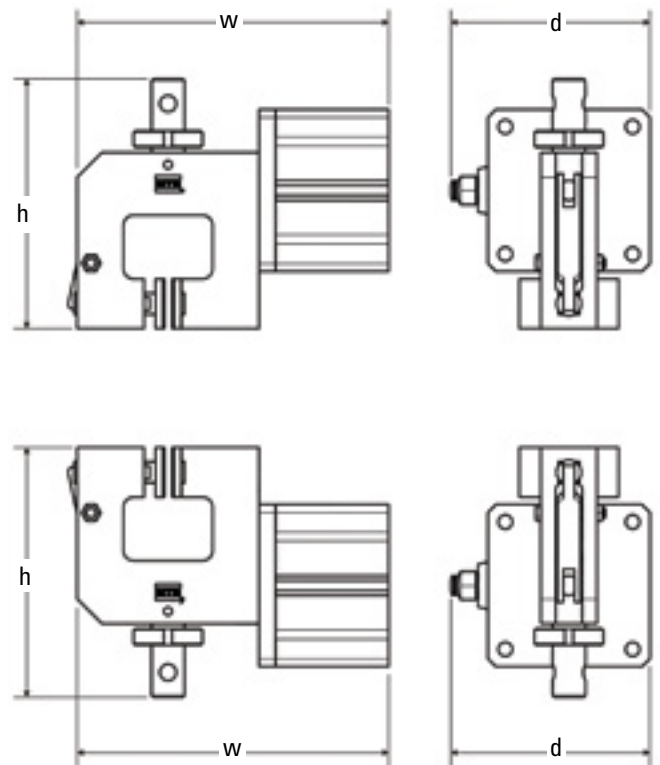
5 kN Pneumatic Vise Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping stable to avoid slipping failure and measurement inconsistency
- » Lever structure designed to provide higher clamping force
- » Optional faces with different specifications are available for a variety of specimens



Specifications

Model	DQC503C
Description	5 kN Pneumatic vise action grip
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 4.78 kg/(Lower part) 4.78 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 151 mm × 200 mm × 120 mm (Lower part) 151 mm × 200 mm × 120 mm
Application	Tensile test, tear test
Applicable Specimens	Textile fiber, plastic
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Input Pressure	0.8 MPa



Tension Grips

Applicable Standards

Code	Description
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ISO 527-3:1995	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ASTM D1004-07	Standard test method for tear resistance (graves tear) of plastic film and sheeting
QB/T 1130-1991	Plastics – Determination of tear strength – Right-angle test pieces
GB/T 16578.1-2008	Plastics – Film and sheeting – Determination of tear resistance – Part 1: Trouser tear method
ISO 6383-1:1983	Plastics – Film and Sheetting – Determination of tear resistance – Part 1: Trouser tear method
GB/T 3923.1-2013	Textiles – Tensile properties of fabrics – Part 1: Determination of maximum force and elongation at maximum force using the strip method
GB/T 3923.2-2013	Textiles – Tensile properties of fabrics – Part 2: Determination of maximum force using the grab method
ISO 13934-1:1999	Textiles – Tensile properties of fabrics – Part 1: Determination of maximum force and elongation at maximum force using the strip method
ISO 13934-2:1999	Textiles – Tensile properties of fabrics – Part 2: Determination of maximum force using the grab method
GB/T 13772.1-2008	Textiles – Determination of the slippage resistance of yarns at a seam in woven fabrics – Part 1: Fixed seam opening method
GB/T 13772.2-2008	Textiles – Determination of the slippage resistance of yarns at a seam in woven fabrics – Part 2: Fixed load method
ISO 13936-1:2004	Textiles – Determination of the slippage resistance of yarns at a seam in woven fabrics – Part 1: Fixed seam opening method
ISO 13936-2:2004	Textiles – Determination of the slippage resistance of yarns at a seam in woven fabrics – Part 2: Fixed load method
GB/T 13773.1-2008	Textiles – Seam tensile properties of fabrics and made-up textile articles – Part 1: Determination of maximum force to seam rupture using the strip method
GB/T 13773.2-2008	Textiles – Seam tensile properties of fabrics and made-up textile articles – Part 2: Determination of maximum force to seam rupture using the grab method
ISO 13935-1:1999	Textiles – Seam tensile properties of fabrics and made-up textile articles – Part 1: Determination of maximum force to seam rupture using the strip method
ISO 13935-2:1999	Textiles – Seam tensile properties of fabrics and made-up textile articles – Part 2: Determination of maximum force to seam rupture using the grab method
ASTM D1683-07	Standard test method for failure in sewn seams of woven apparel fabrics
ASTM D5034-09	Standard test method for breaking strength and elongation of textile fabrics (grab test)

Optional Faces

Model	Description	Width	Opening Range
DQC503C-05/07	Rubber	60 mm	0-11.5 mm
DQC503C-06/08a	Corrugated & Trapezoidal	60 mm	0-6.5 mm
DQC503C-09/ DQA503C-15	Rubber	25 mm	0-11.5 mm
DQC503C-09/ DQA503C-14	Rubber	25 mm 50 mm*	0-11.5 mm
DL13022.01	Diamond tip	60 mm	0-11.5 mm

* 25 mm x 50 mm grip is special for fabric grab method.

Tension Grips

2 kN Pneumatic Capstan Grip

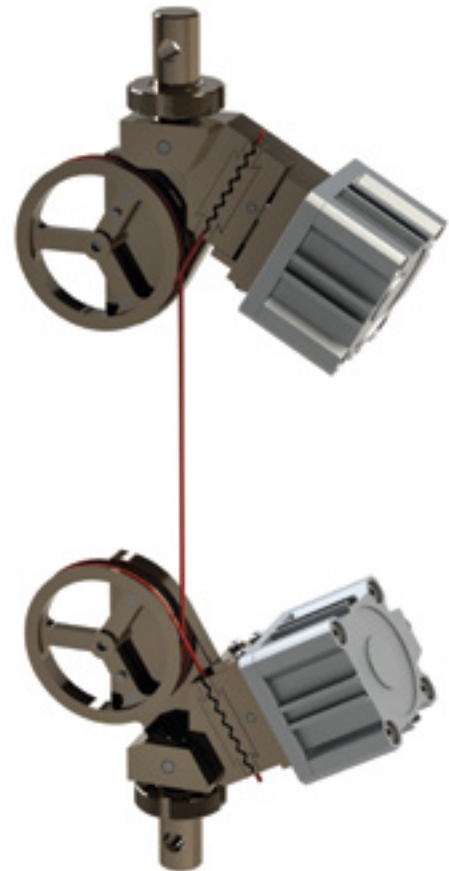
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » Wound up specimen clamping to prevent stress concentration and damage out of test range

Additional Information

Minimum specimen length: 694 mm

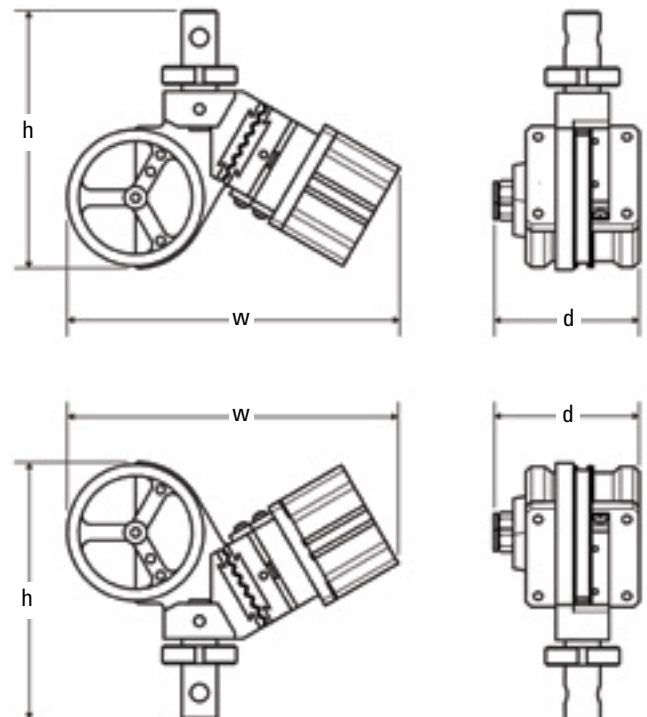
Applicable Standards

Code	Description
GB/T 30311-2013	Test method for tensile properties of dipped aramid yarns and cords



Specifications

Model	CQB203A
Description	2 kN Pneumatic capstan grip
Rated Force	2 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.77 kg/(Lower part) 1.77 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 146 mm × 187 mm × 82 mm (Lower part) 146 mm × 187 mm × 82 mm
Application	Tensile test
Applicable Specimens	Textile fibers, special fiber
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Corrugated
Maximum Specimen Diameter	∅3 mm
Maximum Input Pressure	0.8 MPa



Tension Grips

3 kN Pneumatic Bollard Grip

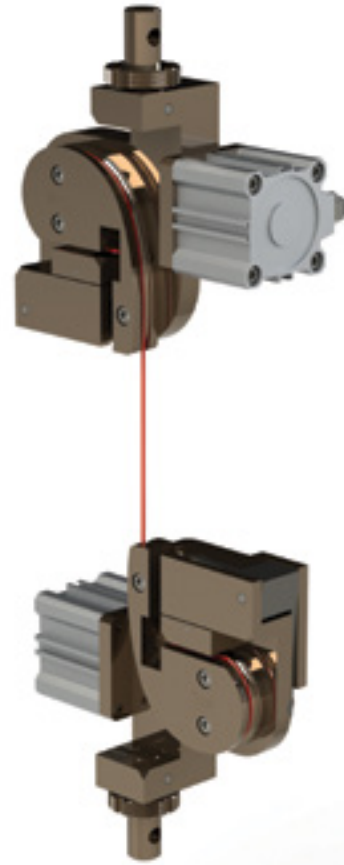
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials.
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » Wound up specimen clamping to prevent stress concentration and damage out of test range

Additional Information

Minimum specimen length: 532 mm

Applicable Standards

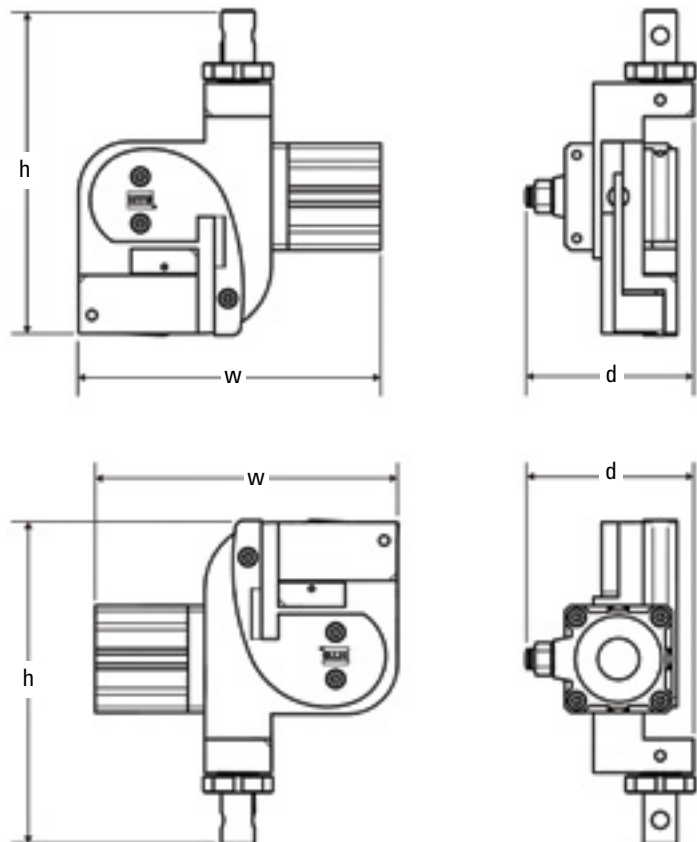
Code	Description
GB/T 14344-2008	Testing method for tensile of man-made filament yarns



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Specifications

Model	CQA303E
Description	3 kN Pneumatic bollard grip
Rated Force	3 kN
Temperature Range	Room temperature
Weight	(Upper part) 5 kg/(Lower part) 5 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 195 mm × 181 mm × 100 mm (Lower part) 195 mm × 181 mm × 100 mm
Application	Tensile test
Applicable Specimens	Textile fibers, special fiber
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Flat
Grip Opening	0-4 mm
Faces Width	20 mm
Maximum Input Pressure	0.8 MPa



Tension Grips

3 kN Pneumatic Bollard Grip

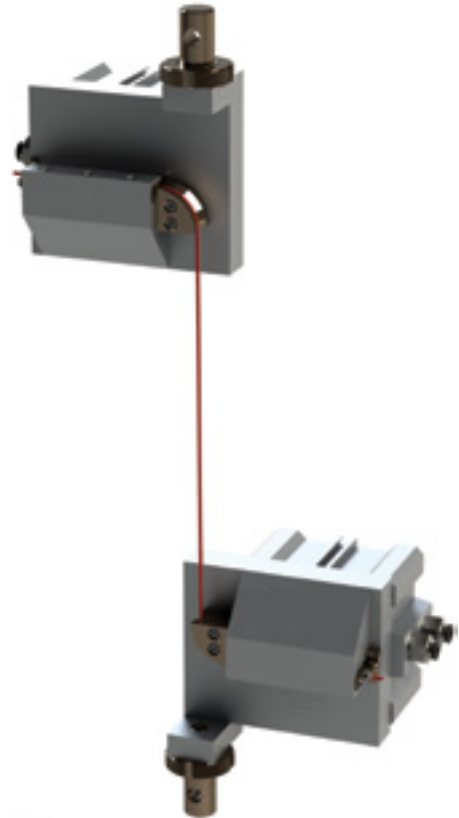
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » Wound up specimen clamping to prevent stress concentration and damage out of test range

Additional Information

Minimum specimen length: 314 mm

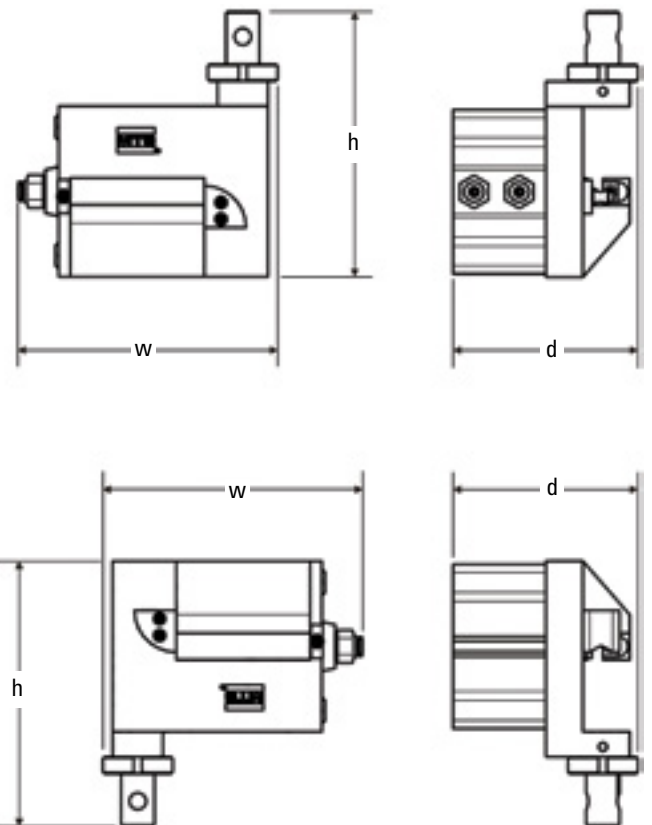
Applicable Standards

Code	Description
GB/T 14344-2008	Testing method for tensile of filament yarn
GB/T 30311-2013	Test method for tensile properties of dipped aramid yarns and cords



Specifications

Model	DQB303A
Description	3 kN Pneumatic bollard grip
Rated Force	3 kN
Temperature Range	Room temperature
Weight	(Upper part) 2.82 kg/(Lower part) 2.82 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 159 mm × 156 mm × 111 mm (Lower part) 159 mm × 156 mm × 111 mm
Application	Tensile test
Applicable Specimens	Textile fiber
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Input Pressure	0.8 MPa
Faces	Multi-slots
Maximum Specimen Diameter	∅4 mm



Tension Grips

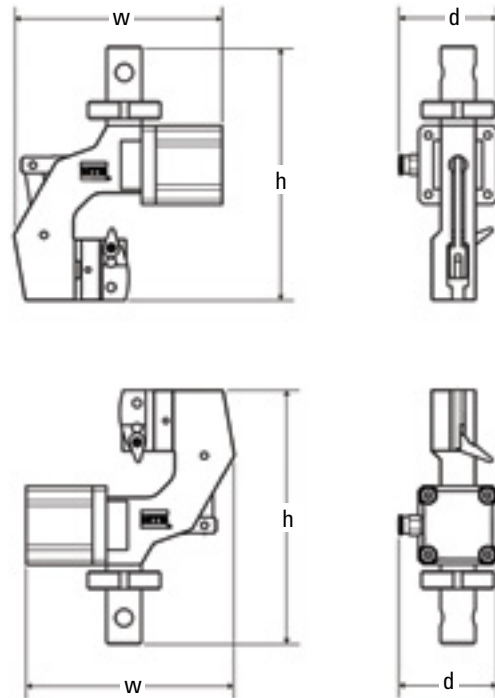
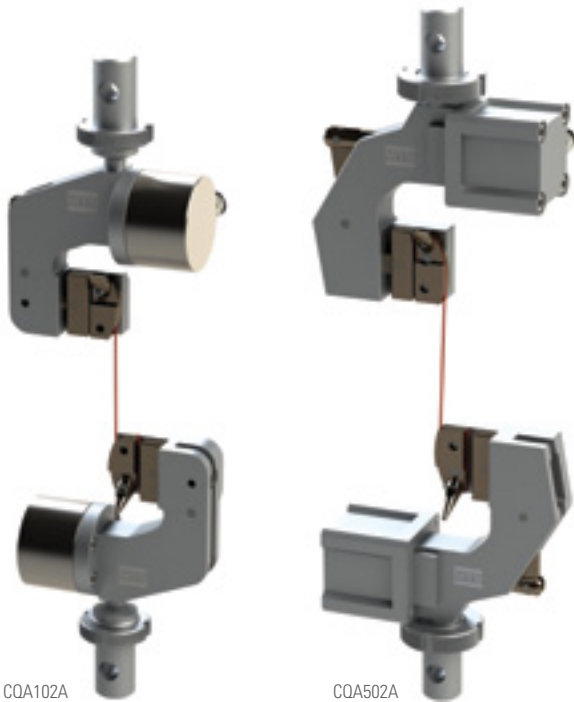
Pneumatic Horn Grips

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Grips clamp onto the specimen with a same force for every test to minimize operator errors
- » Adjustable pressure allows grips to test a variety of materials
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » Wound up specimen clamping to prevent stress concentration and damage out of test range

Applicable Standards

Code	Description
GB/T 14344-2008	Testing method for tensile of filament yarn
GB/T 19975-2005	Test method of tensile properties for high tenacity filament yarn
GB/T 3916-1997	Textile package single yarn breaking strength and breaking elongation tests
ISO 2062:1993	Textiles – Yarns from packages – Determination of single-end breaking force and elongation at break
ISO 3341:2000	Textile glass – Yarns – Determination of breaking force and breaking elongation
GB 7690.3-2001	Reinforcements – Test method for yarns – Part 3: Determination of breaking force and breaking elongation for glass fibre
ASTM D2343-1995	Standard test method for tensile properties of glass fiber strands, yarns, and rovings used in reinforced plastics

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Specifications

Model	CQA102A	CQA502A
Description	100 N Pneumatic horn grip	500 N Pneumatic horn grip
Rated Force	100 N	500 N
Temperature Range	Room temperature	Room temperature
Weight	(Upper part) 700 g / (Lower part) 700 g	(Upper part) 625 g / (Lower part) 625 g
Adapter Style	(Upper part) 20 mm / (Lower part) 20 mm	(Upper part) 20 mm / (Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 135 mm × 95 mm × 60 mm (Lower part) 135 mm × 95 mm × 60 mm	(Upper part) 146 mm × 117 mm × 55 mm (Lower part) 146 mm × 117 mm × 55 mm
Application	Tensile test	Tensile test
Applicable Specimens	Wire, cord	Wire, cord
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Flat	Flat
Maximum Specimen Diameter	∅2 mm	∅1.5 mm
Maximum Input Pressure	0.8 MPa	0.8 MPa

Tension Grips

Wedge Action Grips (Manual)

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Prevents slipping failure caused by the specimen shrinking
- » The faces move synchronously allowing specimens to be clamped in the same position of the force axis center
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » High rigidity semi-closed structure enables a lighter and smaller grip to support a higher allowable load
- » Flat faces depth-stop design for easy to center specimen positioning

Applicable Standards

XSA104B Code	Description
ISO 527-2:1997	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
ASTM D638-08	Standard test method for tensile properties of plastics (this standard is also available for XSA204B)
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
GB/T 1040.4-2006	Plastics – Determination of tensile properties – Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites
GB/T 1040.5-2008	Plastics – Determination of tensile properties – Part 5: Test conditions for unidirectional fibre-reinforced plastic composites
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
EN 10002-1:2001	Test methods for tensile testing of metallic materials
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products
ASTM E517-00(2010)	Standard test method for plastic strain ratio for sheet metal
ASTM E646-2007	Standard test method for tensile strain – Hardening exponents (n-values) of metallic sheet materials

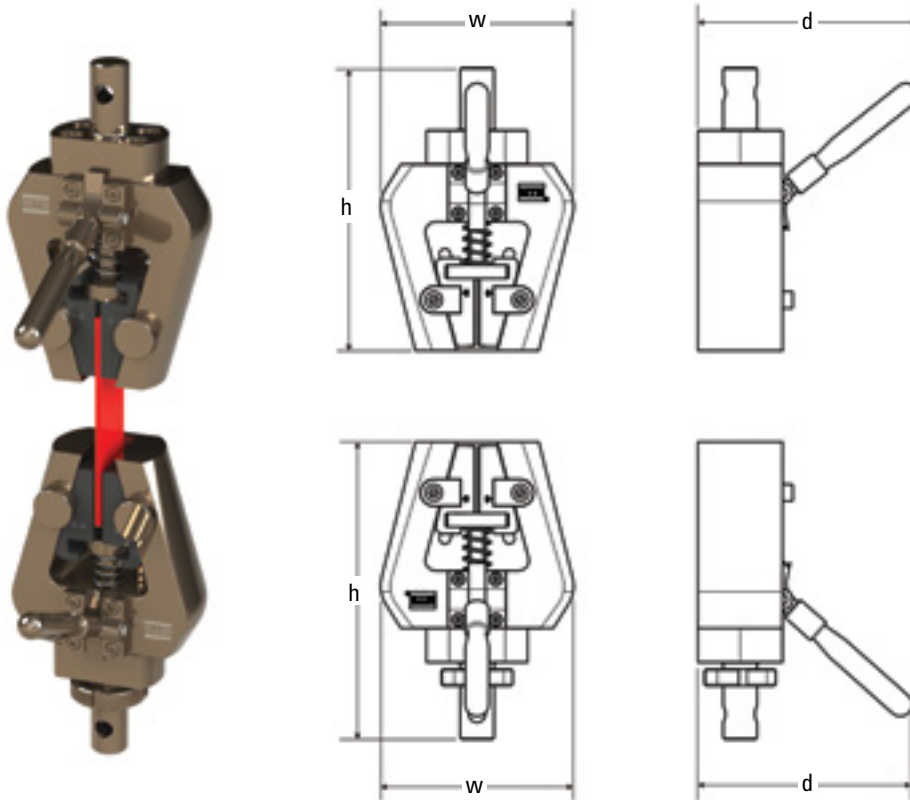
XSD204B Code	Description
ISO 527-2:1997	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
GB/T 10654-2001	Flexible cellular polymeric materials – Determination of tensile strength and elongation at break
GB/T 2651-2008	Tensile test method on welded joints
GB/T 2652-2008	Tensile test methods on weld and deposited metal
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
GB/T 1040.4-2006	Plastics – Determination of tensile properties – Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
EN 10002-1:2001	Test methods for tensile testing of metallic materials
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products
ASTM E517-00(2010)	Standard test method for plastic strain ratio for sheet metal
ASTM E646-2007	Standard test method for tensile strain – Hardening exponents (n-values) of metallic sheet materials

Optional Faces

Models	Description	Width	Opening Range	Compatible Grip
XSD204B-09	Flat (sawtooth)	40 mm	0-6 mm	XSD204B
XSD204B-10	Flat (sawtooth)	40 mm	6-12 mm	XSD204B
XSD204B-11	Vee	40 mm	∅4-∅9 mm	XSD204B
XSD204B-12	Vee	40 mm	∅9-∅14 mm	XSD204B
XSA204B-14/15	File	18 mm	0-6 mm (∅1-∅3 mm steel wire specimen)	XSD204B
XSA204B-17	Flat (sawtooth, coarse)	40 mm	0-6 mm	XSD204B
XSA204B-18	Flat (sawtooth, coarse)	40 mm	6-12 mm	XSD204B

Tension Grips

Wedge Action Grips (Manual)



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Specifications

Model	XSA104B	XSD204B
Description	10 kN Wedge action grip	20 kN Wedge action grip
Rated Force	10 kN	20 kN
Temperature Range	Room temperature	Room temperature
Weight	(Upper part) 3.08 kg/(Lower part) 3.14 kg	(Upper part) 3.96 kg/(Lower part) 4.03 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 167 mm × 104 mm × 120 mm (Lower part) 176 mm × 104 mm × 120 mm	(Upper part) 167 mm × 113 mm × 154 mm (Lower part) 175 mm × 113 mm × 154 mm
Application	Tensile test	Tensile test
Applicable Specimens	Plate	Bar, plate
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305

Tension Grips

20 kN Wedge Action Grip (Manual)

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Corrosion resistant stainless grips can test in temperatures of -70°C to 350°C
- » Prevents slipping failure caused by the specimen shrinking
- » The faces move synchronously allowing specimens to be clamped in the same position of the force axis center
- » Optional faces with different specifications are available for a variety of specimens, upon request
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » High rigidity semi-closed structure enables a lighter and smaller grip to support a higher allowable load
- » Fast and accurate specimen center force axis positioning with centering device

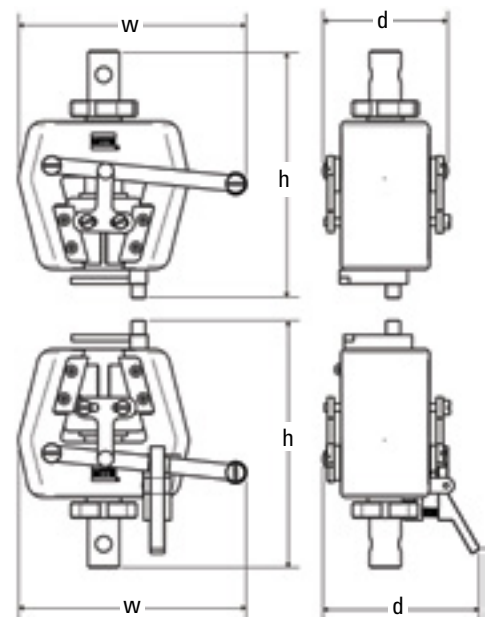


Applicable Standards

Code	Description
GB/T 1040.4-2006	Plastics – Determination of tensile properties – Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites
ASTM E8M-2013	Standard test methods for tension testing of metallic materials
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
EN 10002-1:2001	Test methods for tensile testing of metallic materials
ASTM A370-10	Tensile test method for metallic materials
ASTM E517-2000	Standard test method for plastic strain ratio for sheet metal
ASTM E646-2007	Standard test method for tensile strain – Hardening exponents (n-Values) of metallic sheet materials
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
ISO 527-2:1997	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
GB/T 1040.2-2006	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics

Optional Faces

Model	Description	Width	Opening Range
XSB204B-09	Flat	40 mm	0-6 mm
XSB204B-10	Flat	40 mm	6-12 mm
XSB204B-11	Vee		$\varnothing 4$ - $\varnothing 9$ mm
XSB204B-12	Vee		$\varnothing 9$ - $\varnothing 14$ mm



Specifications

Model	XSB204B
Description	20 kN Wedge action grip
Rated Force	20 kN
Temperature Range	-70°C to 350°C
Weight	(Upper part) 2.37 kg/(Lower part) 2.45 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 156 mm \times 145 mm \times 82 mm (Lower part) 156 mm \times 145 mm \times 101 mm
Application	Tensile test
Applicable Specimens	Bar, plate
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305

Tension Grips

20 kN Wedge Action Grip (Manual)

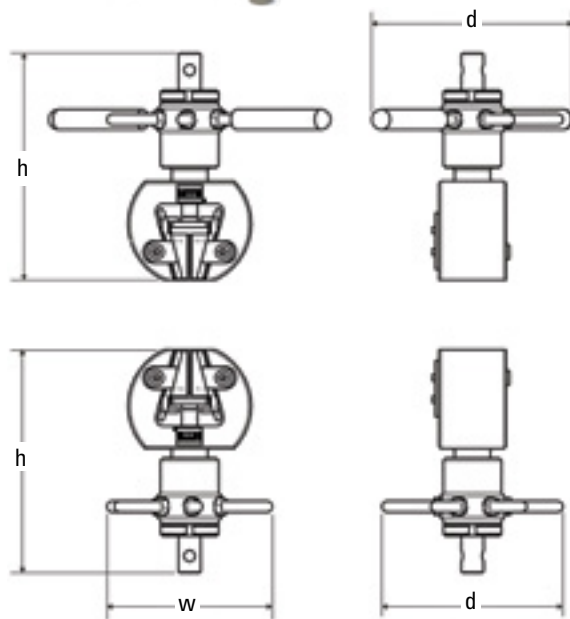
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Corrosion resistant stainless grips can test in temperatures of -70°C to 350°C
- » Prevents slipping failure caused by the specimen shrinking
- » The faces move synchronously allowing specimens to be clamped in the same position of the force axis center
- » Optional faces with different specifications are available for a variety of specimens, upon request
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » High rigidity semi-closed structure enables a lighter and smaller grip to support a higher allowable load

Applicable Standards

Code	Description
ASTM E8/E8M-13a	Standard test methods for tension testing of metallic materials
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
EN 10002-1:2001	Test methods for tensile testing of metallic materials
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products
ASTM E517-00(2010)	Standard test method for plastic strain ratio for sheet metal
ASTM E646-2007	Standard test method for tensile strain – Hardening exponents (n-values) of metallic sheet materials
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature

Optional Faces

Model	Description	Width	Opening Range
XSF204A-13a	Flat	40 mm	0-6 mm
XSF204A-14a	Flat	40 mm	6-12 mm
XSF204A-15a	Vee	40 mm	∅4-∅9 mm
XSF204A-16a	Vee	40 mm	∅9-∅14 mm



Specifications

Model	XSF204A
Description	20 kN Wedge action grip
Rated Force	20 kN
Temperature Range	-70°C to 350°C
Weight	(Upper part) 5.05 kg/(Lower part) 5.05 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 196 mm × 172 mm × 172 mm (Lower part) 196 mm × 172 mm × 172 mm
Application	Tensile test
Applicable Specimens	Plate, bar
Compatible Frames	E44.104, E44.304, E45.105, E45.305

Tension Grips

Wedge Action Grips (Manual)

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Prevents slipping failure caused by the specimen shrinking
- » The faces move synchronously allowing specimens to be clamped in the same position of the force axis center
- » Optional faces with different specifications are available for a variety of specimens, upon request
- » Flat faces depth-stop design for easy to center specimen positioning
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » High rigidity semi-closed structure enables a lighter and smaller grip to support a higher allowable load

Applicable Standards

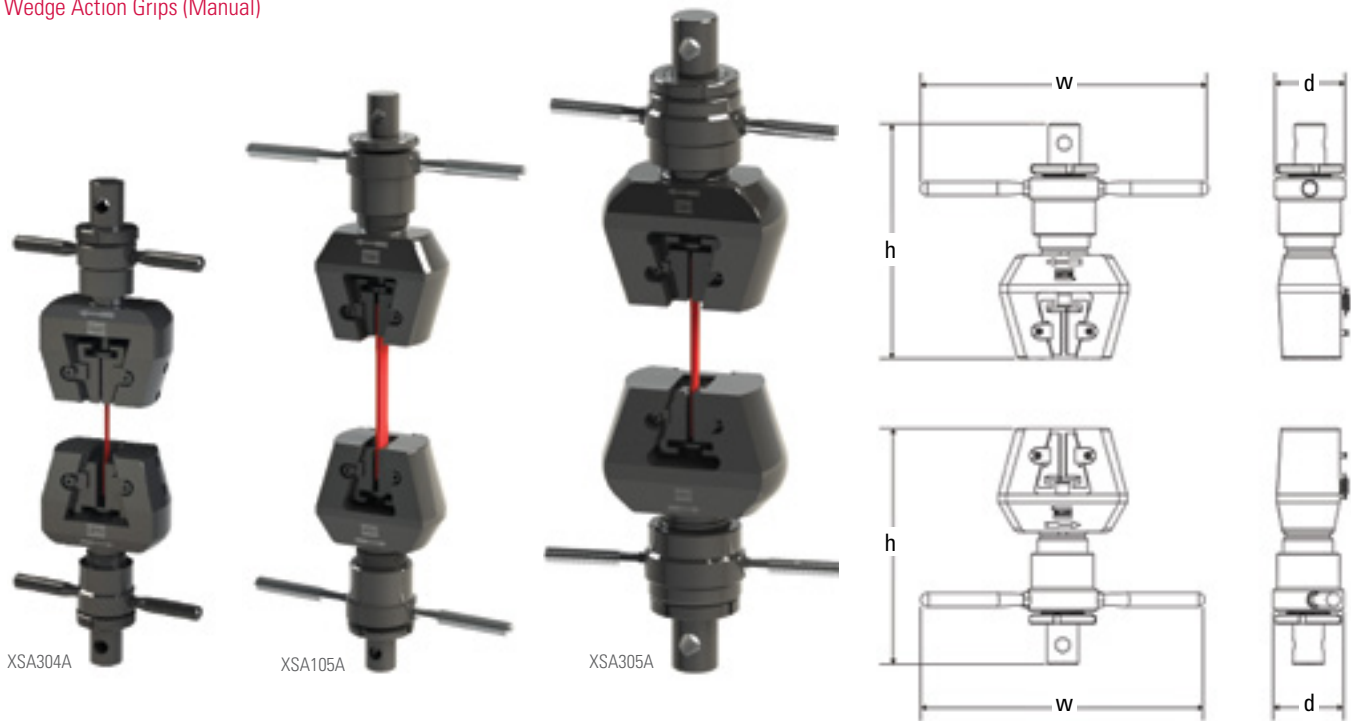
Code	Description
ASTM E8/E8M-13a	Standard test methods for tension testing of metallic materials
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
EN 10002-1:2001	Test methods for tensile testing of metallic materials
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products
ASTM E517-00(2010)	Standard test method for plastic strain ratio for sheet metal
ASTM E646-2007	Standard test method for tensile strain – Hardening exponents (n-values) of metallic sheet materials
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature

Optional Faces

Model	Description	Width	Opening Range	Compatible Grip
XSA105A-13	Flat	40 mm	0-7 mm	XSA304A XSA105A
XSA105A-14	Flat	40 mm	7-14 mm	XSA304A XSA105A
XSA105A-15	Flat	40 mm	14-21 mm	XSA304A XSA105A
XSA105A-16	Vee	40 mm	ø4-ø9 mm	XSA304A XSA105A
XSA105A-17	Vee	40 mm	ø9-ø14 mm	XSA304A XSA105A
XSA105A-18	Vee	40 mm	ø14-ø19 mm	XSA304A XSA105A
XSA105A-19/20	File	18 mm	0-7 mm (ø1-ø3 mm steel wire specimen)	XSA304A XSA105A
XSA305A-14A	Flat	50 mm	0-8 mm	XSA305A
XSA305A-15A	Flat	50 mm	8-16 mm	XSA305A
XSA305A-16A	Flat	50 mm	16-24 mm	XSA305A
XSA305A-17A	Flat	50 mm	24-32 mm	XSA305A
XSA305A-18A	Vee	50 mm	ø4-ø9 mm	XSA305A
XSA305A-19A	Vee	50 mm	ø9-ø16 mm	XSA305A
XSA305A-20A	Vee	50 mm	ø16-ø23 mm	XSA305A
XSA305A-21A	Vee	50 mm	ø23-ø30 mm	XSA305A
XSA305A-23/24	File	18 mm	0-8 mm (ø1-ø4 mm steel wire specimen)	XSA305A

Tension Grips

Wedge Action Grips (Manual)



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Specifications

Model	XSA304A	XSA105A	XSA305A
Description	30 kN Wedge action grip	100 kN Wedge action grip	300 kN Wedge action grip
Rated Force	30 kN	100 kN	300 kN
Temperature Range	Room temperature	Room temperature	Room temperature
Weight (Upper part)	7.44 kg	14.7 kg	35.6 kg
Weight (Lower part)	7.44 kg	14.7 kg	35.6 kg
Adapter Style (Upper part)	20 mm	40 mm	60 mm
Adapter Style (Lower part)	20 mm	40 mm	60 mm
Dimensions (h*w*d) (Upper part)	233 mm × 247 mm × 70 mm	304 mm × 370 mm × 90 mm	350 mm × 400 mm × 130 mm
Dimensions (h*w*d) (Lower part)	233 mm × 247 mm × 70 mm	304 mm × 370 mm × 90 mm	350 mm × 400 mm × 130 mm
Application	Tensile test	Tensile test	Tensile test
Applicable Specimens	Plate, bar	Plate, bar	Plate, bar
Compatible Frames	E44.104, E44.304, E45.105, E45.305	E45.105, E45.305	E45.305

Tension Grips

1 kN Screw Action Grips

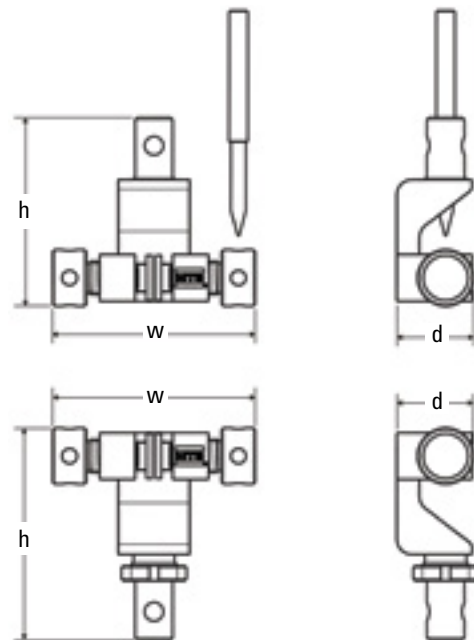
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Optional faces with different specifications are available for a variety of specimens, upon request
- » Provides the highest clamping force of all the manual grips
- » Improved application performance with manual side face adjustment and adjustable clamping position inside the vise

Applicable Standards

Code	Description
ISO 527-2:1997	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion
ISO 527-3:1995	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ASTM D638-08	Standard test method for tensile properties of plastics
ASTM D882-10	Standard test method for tensile properties of thin plastic sheeting
GB/T 1040.2-2006	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
GB-T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets

Optional Faces

Model	Description	Width	Opening Range
DSA103B-02	Smooth metal surface	26 mm	0-12 mm
DSA103B-02A	Saw-tooth	26 mm	0-12 mm



Specifications

Model	DSA103B
Description	1 kN Screw action grip
Rated Force	1 kN
Temperature Range	Room temperature
Weight	(Upper part) 0.83 kg/(Lower part) 0.91 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 98 mm × 106 mm × 40 mm (Lower part) 111 mm × 106 mm × 40 mm
Application	Tensile test, tear test, peel test, shear test
Applicable Specimens	Metal wire, foil, plastic plate, sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305

Tension Grips

Screw Action Grips

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » Customizable wider faces

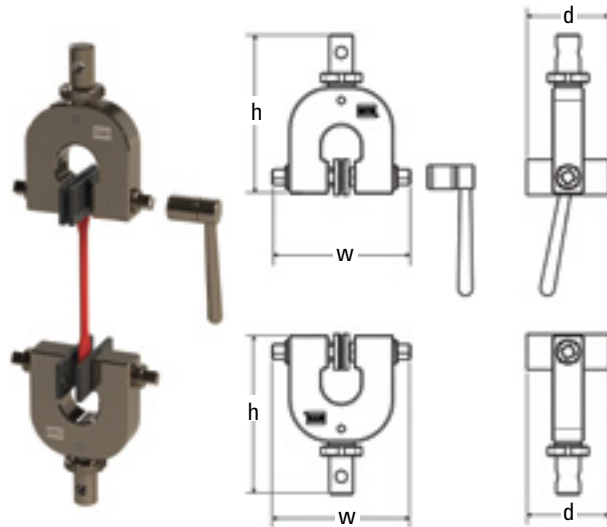
Additional Information

DSA303B: The custom manual tensile grip is applicable to tensile properties grab tests of textile fabric. Grip specifications: 25 x 25 mm, 25 x 50 mm. Flat sticky rubber.

DSA503B: The universal manual tensile grip is applicable to tensile tests of specimens with various specifications. Grips feature either square or multiple wave-form faces. Height is 30 mm.

Optional Faces

Model	Description	H x W	Opening Range	Compatible Grip
DSA503B-05A/06A	Sawtooth	30 x 70 mm	0-12 mm	DSA503B
DSA503B-05B/06B	Corrugated	32 x 30 mm	0-10 mm	DSA503B
DSA503B-05C/06C	Corrugated	32 x 70 mm	0-10 mm	DSA503B



Applicable Standards

DSA303B Code	Description	DSA503B Code	Description
GB/T 3923.2-2013	Textiles – Tensile properties of fabrics – Part 2: Determination of maximum force using the grab method	ISO 527-2:1997	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
GB/T 13773-92	Woven fabric and its products – Testing method for seam strength and seam efficiency	ASTM D638-08	Standard test method for tensile properties of plastics
ISO 13934-2:1999	Textiles – Tensile properties of fabrics – Part 2: Determination of maximum force using the grab method	GB/T 10808-2006	Flexible cellular polymeric materials – Determination of tear strength
ISO 13935-2:1999	Textiles – Seam tensile properties of fabrics and made-up textile articles – Part 2: Determination of maximum force to seam rupture using the grab method	ASTM D882-10	Standard test method for tensile properties of thin plastic sheeting
ASTM D5034-09	Standard test method for breaking strength and elongation of textile fabrics (grab test)	GB/T 6759-2002	Textile conveyor belts – Adhesive strength between constitutive elements – Test methods
ASTM D1683-07	Standard test method for failure in sewn seams of woven apparel fabrics	GB/T 1040.1-2006	Plastics – Determination of tensile properties – Part 1: General principles
		GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
		GB/T 1040.4-2006	Plastics – Determination of tensile properties – Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites

Specifications

Model	DSA303B	DSA503B
Description	3 kN Screw action grip	5 kN Screw action grip
Rated Force	3 kN	5 kN
Temperature Range	Room temperature	Room temperature
Weight	(Upper part) 2.46 kg/(Lower part) 2.46 kg	(Upper part) 1.51 kg/(Lower part) 1.51 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 154 mm x 143 mm x 50 mm (Lower part) 154 mm x 143 mm x 50 mm	(Upper part) 135 mm x 110 mm x 70 mm (Lower part) 135 mm x 110 mm x 70 mm
Application	Grab test	Tensile test, tear test
Applicable Specimens	Textile	Plate, sheet, tearing specimen
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305

Tension Grips

10 kN Screw Action Grips

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Optional faces with different specifications are available for a variety of specimens, upon request
- » Improved application performance with manual side face adjustment and adjustable clamping position inside the vise
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » Customizable wider faces
- » Fast and accurate specimen center force axis positioning with centering device

Additional Information

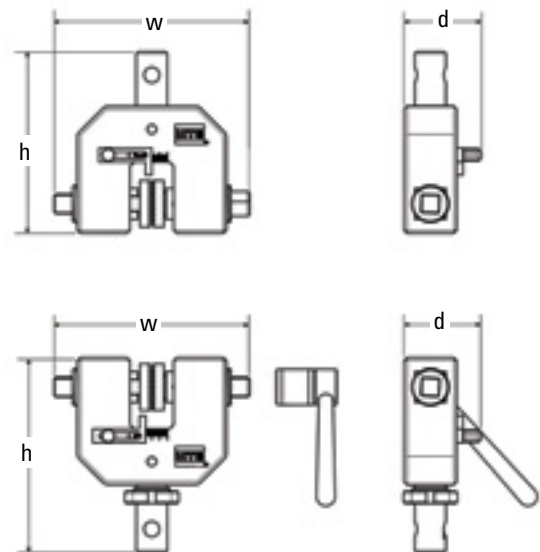
DSC104B: Corrosion resistant stainless grips can test in temperatures of -70°C to 350°C

Applicable Standards

Code	Description
ISO 527-2:1997	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
ISO 527-3:1995	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ASTM D638-08	Standard test method for tensile properties of plastics
GB/T 1040.2-2006	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
GB/T 7124-2008	Adhesives – Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies
GB/T 10808-2006	Flexible cellular polymeric materials – Determination of tear strength
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
GB/T 1040.4-2006	Plastics – Determination of tensile properties – Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites

Optional Faces

Code	Description	Width	Opening Range	Compatible Grip
DSA104B-09/11	Sawtooth	34 mm	0-14 mm	DSA503B
DSA104B-10	Corrugated	34 mm	0-13 mm	DSA503B
DSA104B-12	Corrugated	72 mm	0-13 mm	DSA503B



Specifications

Model	DSA104B	DSC104B
Description	10 kN Screw action grip	10 kN Screw action grip, SST
Rated Force	10 kN	10 kN
Temperature Range	Room temperature	-70°C to 350°C
Weight	(Upper part) 1.9 kg/(Lower part) 1.97 kg	(Upper part) 1.87 kg/(Lower part) 1.87 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 117 mm x 123 mm x 48 mm (Lower part) 127 mm x 123 mm x 48 mm	(Upper part) 127 mm x 123 mm x 48 mm (Lower part) 127 mm x 123 mm x 48 mm
Application	Tensile test, tear test, peel test, shear test	
Applicable Specimens	Plastic plate, tearing specimen, shearing specimen	
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305	

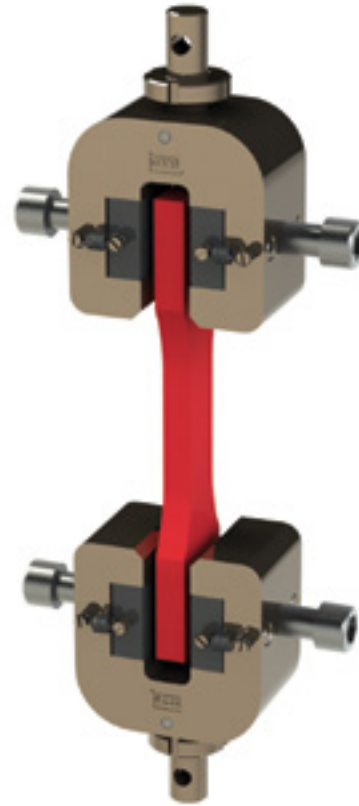
Tension Grips

10 kN Screw Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » The switching structure allows faces to be moved synchronously or separately
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side

Applicable Standards

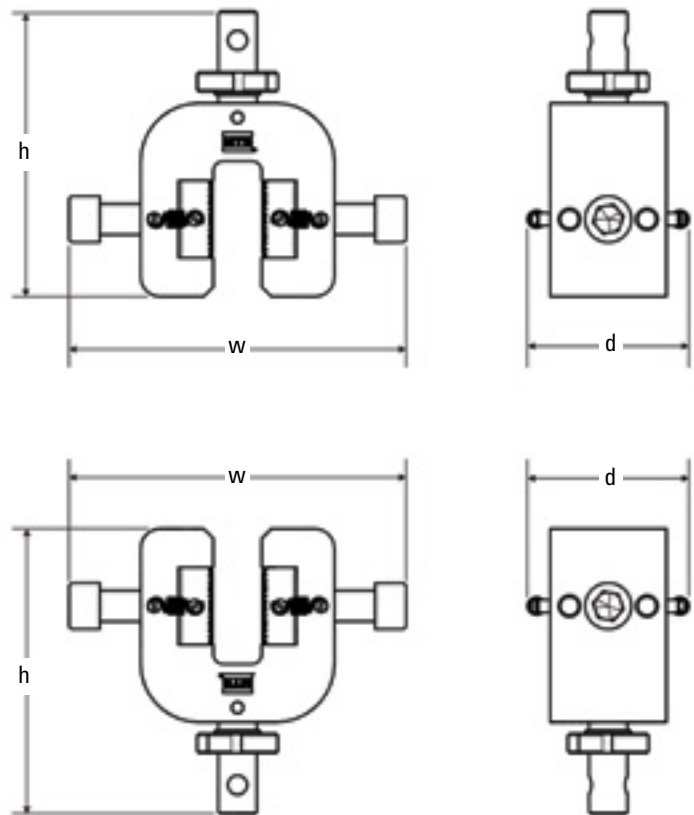
Code	Description
GB/T 17657-2013	Test methods of evaluating the properties of wood-based panels and surface decorated wood-based panels



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Specifications

Model	DSB104B
Description	10 kN Screw action grip
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 3.92 kg/(Lower part) 3.92 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 148 mm × 174 mm × 84 mm (Lower part) 148 mm × 174 mm × 84 mm
Application	Tensile test
Applicable Specimens	Wood-based panels
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Sawtooth
Grip Opening	0-25 mm
Faces Width	60 mm



Tension Grips

10 kN Screw Action Grip

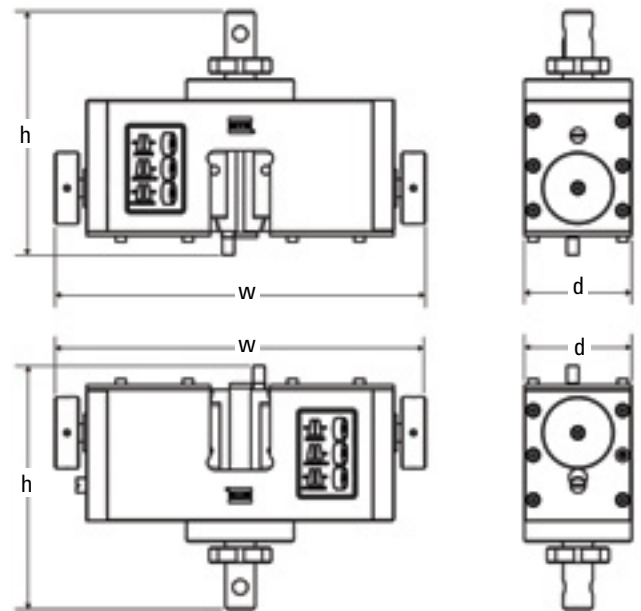
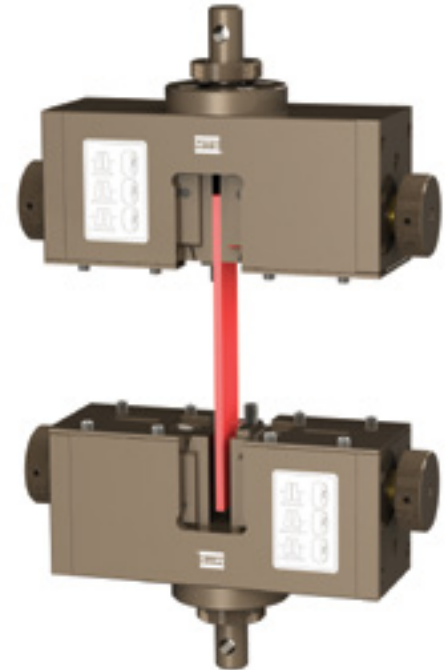
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Optional faces with different specifications are available for a variety of specimens, upon request
- » The switching structure allows faces to be moved synchronously or separately
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » Customizable wider faces
- » Fast and accurate specimen center force axis positioning with centering device

Applicable Standards

Code	Description
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
ASTM E8-2004	Standard test methods for tension testing of metallic materials
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
GB/T 1040.2-2006	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics
ASTM D638-08	Standard test method for tensile properties of plastics
ISO 527-2:1997	Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics

Optional Faces (Jaws)

Model	Description	Width	Opening Range
DX104A-07	Flat (sawtooth)	40 mm	0-20 mm
DX104A-07a	Flat (SiC coating)	40 mm	0-20 mm
DX104A-23	Vee		Ø4-Ø9 mm
DX104A-24	Vee		Ø9-Ø14 mm



Specifications

Model	DX104A
Description	10 kN Screw action grip
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 9.80 kg/(Lower part) 9.80 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 164 mm × 250 mm × 72 mm (Lower part) 164 mm × 250 mm × 72 mm
Application	Tensile test
Applicable Specimens	Metal plate, sheet, plastic plate, sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305

Tension Grips

20 kN Screw Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Calibration line provides reference for specimen positioning
- » Improved textile tension performance with high rigidity faces, customizable upon request

Applicable Standards

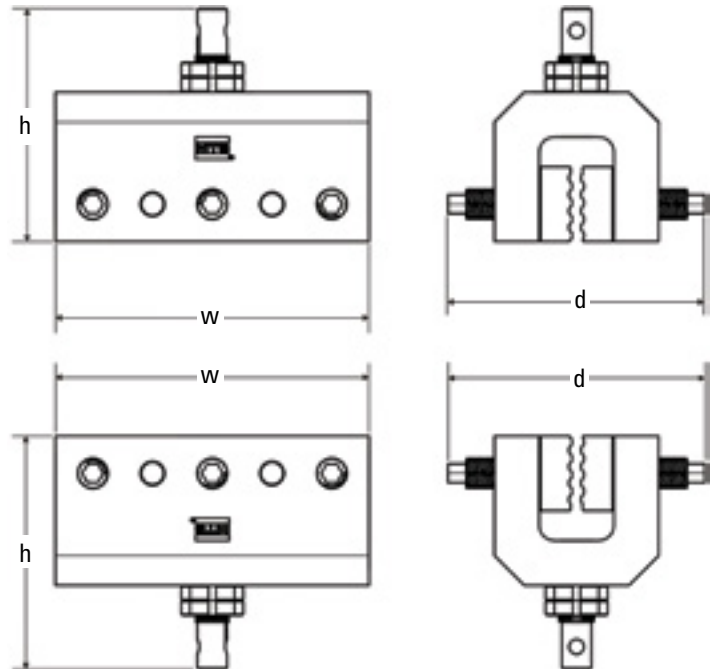
Code	Description
GB/T 15788-2005	Geo-textiles and Geo-textile-related products – Wide-width tensile test



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Specifications

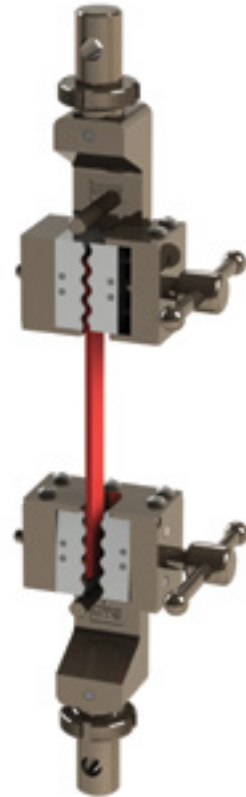
Model	DSA204B
Description	20 kN Screw action grip
Rated Force	20 kN
Temperature Range	Room temperature
Weight	(Upper part) 15.61 kg/(Lower part) 15.61 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 156 mm × 210 mm × 174 mm (Lower part) 156 mm × 210 mm × 174 mm
Application	Tensile test
Applicable Specimens	Geo-textile
Compatible Frames	E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Corrugated
Grip Opening	0-10 mm
Faces Width	210 mm



Tension Grip

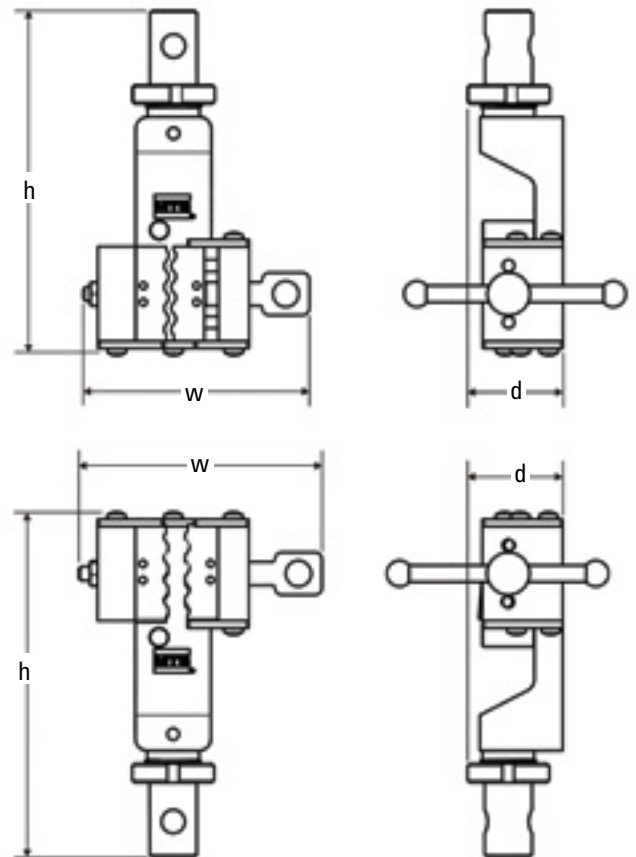
1 kN Vise Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » High efficiency clamping performance for thin specimens
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » High rigidity semi-closed structure enables a lighter and smaller grip to support a higher allowable load



Specifications

Model	DSE103B
Description	1 kN Vise action grip
Rated Force	1 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.21 kg/(Lower part) 1.21 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 143 mm × 105 mm × 50 mm (Lower part) 143 mm × 105 mm × 50 mm
Application	Tensile test
Applicable Specimens	Sheath of cable
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces Surface Material	Corrugated
Grip Opening	0-6 mm
Faces Width	22 mm



Tension Grips

5 kN Vise Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Calibration line provides reference for specimen positioning
- » Improved textile tension performance with high rigidity faces, customizable upon request
- » High efficiency clamping performance for thin specimens

Applicable Standards

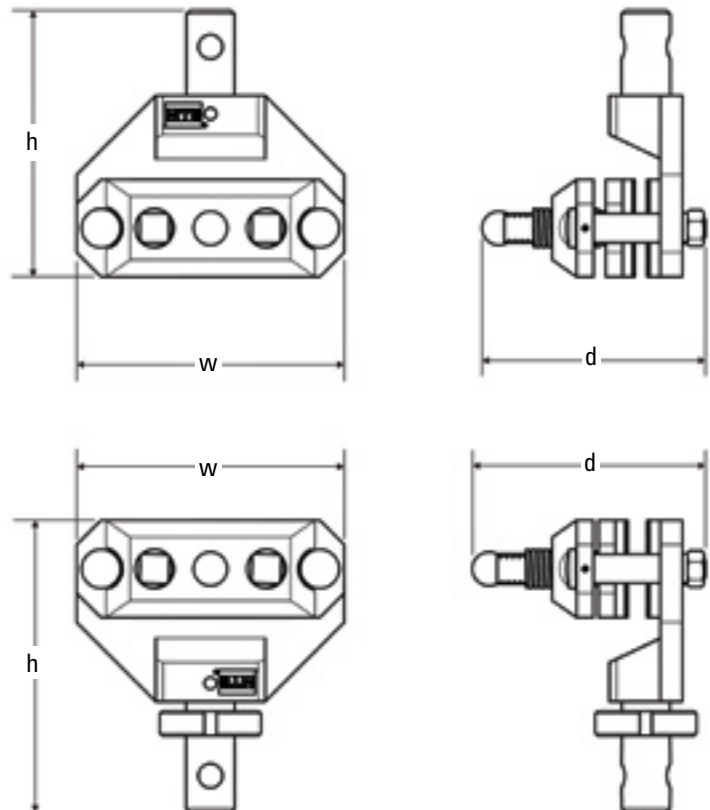
Code	Description
GB/T 7689.5-2013	Reinforcements – Test method for woven fabrics – Part 5: Determination of glass fiber tensile breaking force and elongation at break
ISO 4606:1995	Textile glass-woven fabric – Determination of tensile breaking force and elongation at break by the strip method



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Specifications

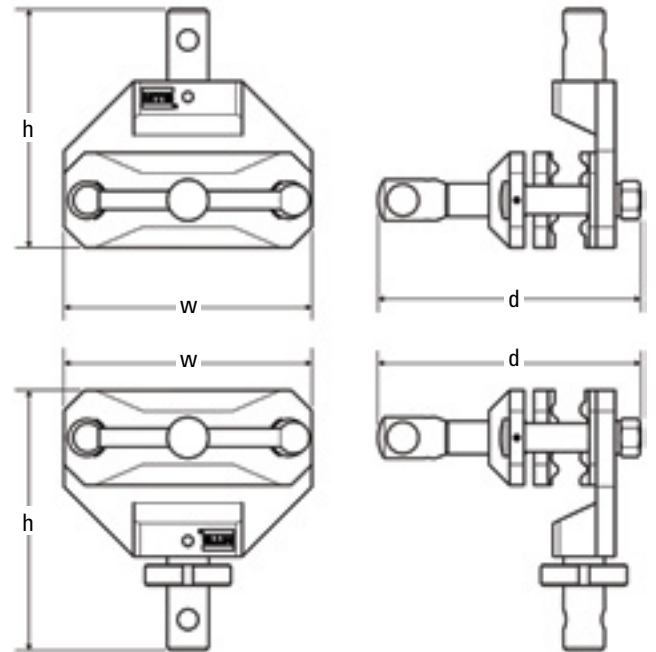
Model	ZDA503
Description	5 kN Vise action grip
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.73 kg/(Lower part) 1.83 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 110 mm × 110 mm × 90 mm (Lower part) 120 mm × 110 mm × 90 mm
Application	Tensile test
Applicable Specimens	Fiberglass mesh
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces Surface Material	Rubber
Grip Opening	0-10 mm
Faces Width	65 mm



Tension Grips

Vise Action Grips

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Improved textile tension performance with high rigidity faces, customizable upon request
- » High efficiency clamping performance for thin specimens



Applicable Standards

DSD503A Code	Description
ASTM D5035-2011	Standard test method for breaking force and elongation of textile fabrics (strip method)
ISO 13937-2:2000	Textiles – Tear properties of fabrics – Determination of tear force of trouser-shaped test specimens (single tear method)
GB/T 3917.2-2009	Textiles – Tear properties of fabrics – Part 2: Determination of tear force of trouser-shaped test specimens (single tear method)
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets

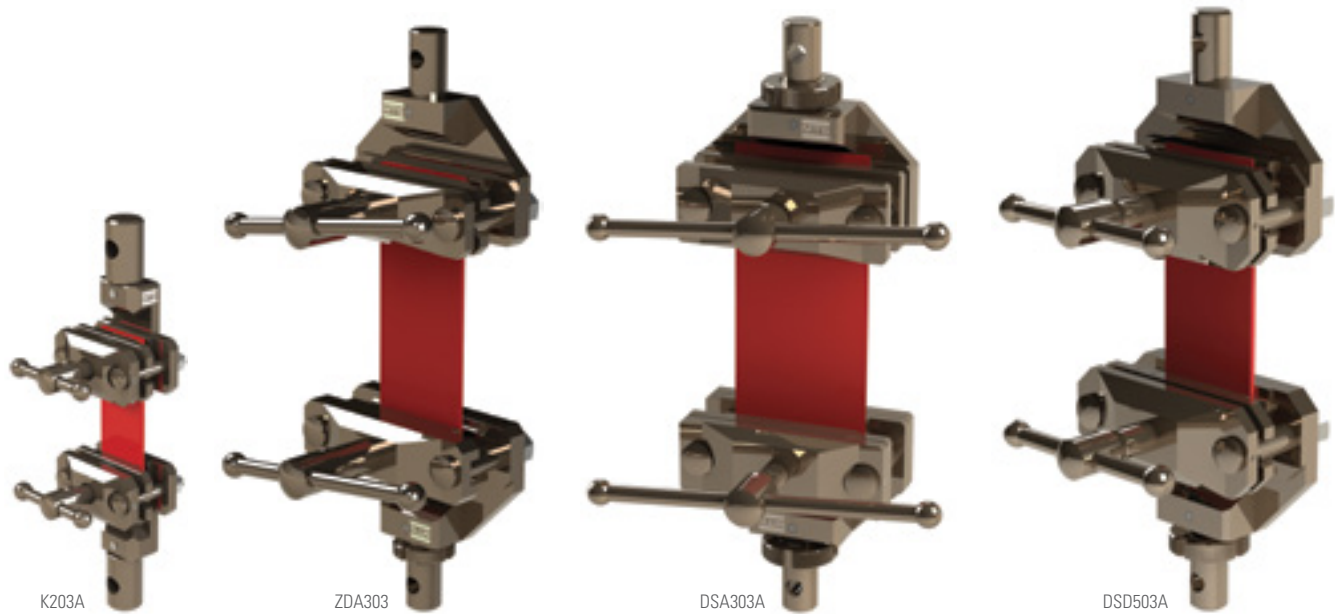
DSA303A Code	Description
ASTM D5035-2011	Standard test method for breaking force and elongation of textile fabrics (strip method)
ISO 13937.2:2000	Textiles – Tear properties of fabrics – Determination of tear force of trouser-shaped test specimens (single tear method)
GB/T 3917.2-2009	Textiles – Tear properties of fabrics – Part 2: Determination of tear force of trouser-shaped test specimens (single tear method)
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets

ZDA303 Code	Description
GB/T 328.8-2007	Methods for building sheets for waterproofing – Part 8: Bitumen sheets for waterproofing-tensile properties

K203A Code	Description
GB/T 2951.1-1997	Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application section – One: Measurement of thickness and overall dimensions – Tests for determining the mechanical properties

Tension Grips

Vise Action Grips



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Specifications

Model	K203A	ZDA303	DSA303A	DSD503A
Description	2 kN Vise action grip	3 kN Vise action grip	3 kN Vise action grip	5 kN Vise action grip
Rated Force	2 kN	3 kN	3 kN	5 kN
Temperature Range	Room temperature	Room temperature	Room temperature	Room temperature
Weight (Upper part)	0.6 kg	1.99 kg	2.35 kg	2.17 kg
Weight (Lower part)	0.6 kg	2.06 kg	2.35 kg	2.28 kg
Adapter Style (Upper part)	20 mm	20 mm	20 mm	20 mm
Adapter Style (Lower part)	20 mm	20 mm	20 mm	20 mm
Dimensions (h*w*d) (Upper part)	91 mm × 60 mm × 78 mm	110 mm × 145 mm × 135 mm	115 mm × 202 mm × 111 mm	116 mm × 120 mm × 135 mm
Dimensions (h*w*d) (Lower part)	91 mm × 60 mm × 78 mm	119 mm × 145 mm × 135 mm	115 mm × 202 mm × 111 mm	126 mm × 120 mm × 135 mm
Application	Tensile test	Tensile test, tear test	Tensile test, tear test	Tensile test, tear test
Applicable Specimens	Sheath of cable	Asphalt, waterproof roll	Textile	Textile
Compatible Frames		E42.503, E43.104, E44.104, E44.304, E45.105, E45.305		
Faces	Corrugated	Trapezoidal & Corrugated	Corrugated	Corrugated
Grip Opening	0-10 mm	0-12 mm	0-10 mm	0-12 mm
Faces Width	32 mm	80 mm	75 mm	80 mm

Tension Grips

20 N Vise Action Grip

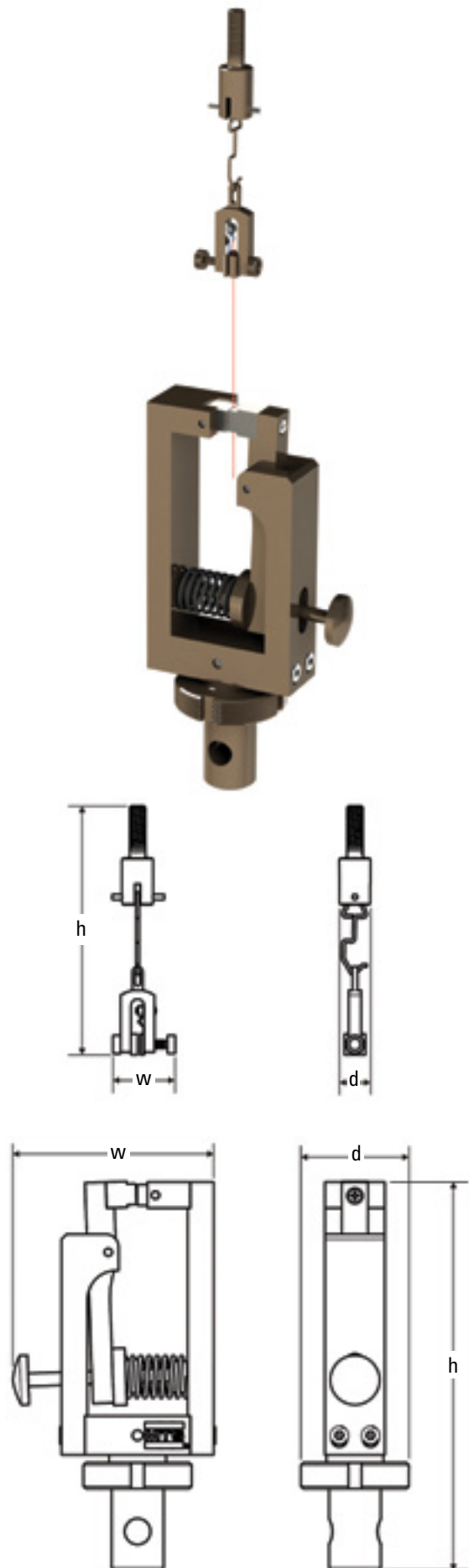
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Threaded upper adapters are designed in small capacity grips or fixtures to reduce the preload of the load cell
- » Prevents slipping failure caused by the specimen shrinking and high preload

Applicable Standards

Code	Description
FZ/T 50006-2013	Testing method for tenacity of spandex filament yarns
FZ/T 50007-2012	Testing method for elasticity of spandex filament yarns

Specifications

Model	DSA201A
Description	20 N Vise action grip
Rated Force	20 N
Temperature Range	Room temperature
Weight	(Upper part) 60 g/(Lower part) 750 g
Adapter Style	(Upper part) M6×1 (Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 96 mm × 24 mm × 12 mm (Lower part) 150 mm × 86 mm × 40 mm
Application	Tensile test
Applicable Specimens	Spandex
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Flat
Maximum Specimen Diameter	∅.2 mm



Tension Grips

500 N Vise Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » High efficiency clamping performance for thin specimens
- » Better test performance with quick acting U-shaped grips that allow specimen loading from the side
- » High rigidity semi-closed structure enables a lighter and smaller grip to support a higher allowable load

Applicable Standards

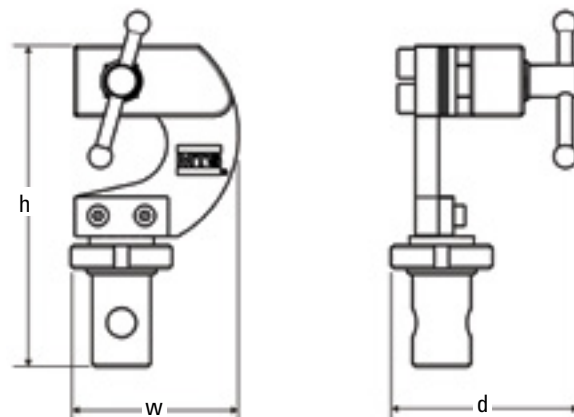
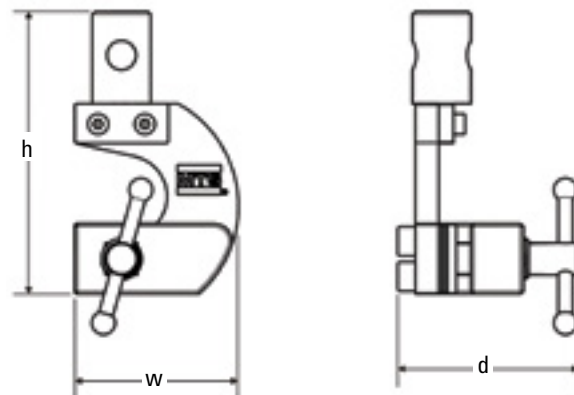
Code	Description
ISO 527-3:1995	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets
ASTM D882-10	Standard test method for tensile properties of thin plastic sheeting
GB/T 1040.3-2006	Plastics – Determination of tensile properties – Part 3: Test conditions for films and sheets



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Specifications

Model	DSA502A
Description	500 N Vise action grip
Rated Force	500 N
Temperature Range	Room temperature
Weight	(Upper part) 500 g/(Lower part) 580 g
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 96 mm × 56 mm × 56 mm (Lower part) 105 mm × 56 mm × 56 mm
Application	Tensile test, tear test
Applicable Specimens	Thin film, sheet, tearing specimen
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces Surface Material	Rubber
Grip Opening	0-5 mm
Faces Width	32 mm



Tension Grips

100 kN Shoulder Grip

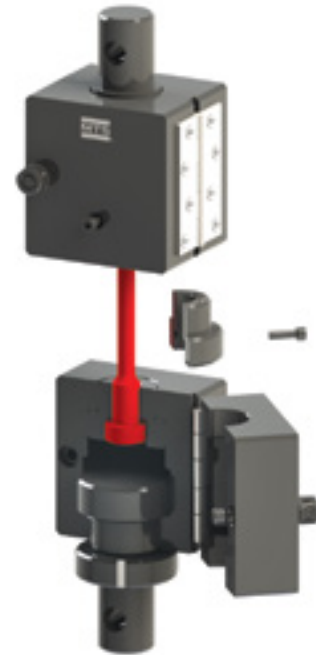
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Created for specimens with shoulder-end
- » No slipping failure for materials with higher hardness

Additional Information

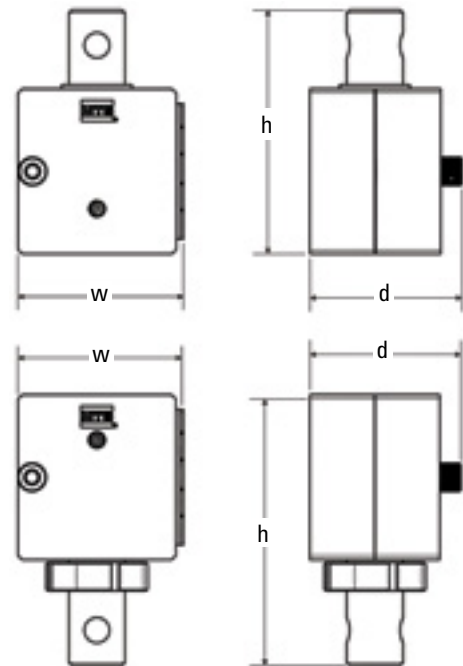
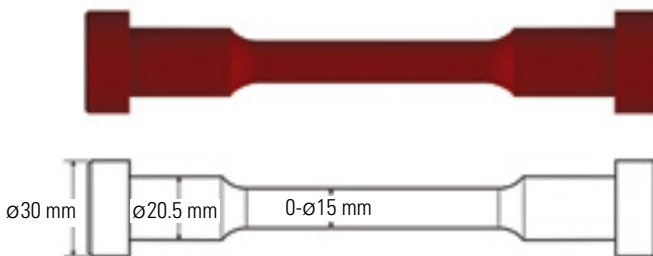
The shoulder blocks can be customized and changed for specimens with different dimensions, according to ASTM A370 -03a.

Applicable Standards

Code	Description
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature



Recommended Specimen Specifications



Specifications

Model	TB105A
Description	100 kN Shoulder grip
Rated Force	100 kN
Temperature Range	Room temperature
Weight	(Upper part) 9.12 kg/(Lower part) 9.75 kg
Adapter Style	(Upper part) 40 mm/(Lower part) 40 mm
Dimensions (h*w*d)	(Upper part) 173 mm × 115 mm × 108 mm (Lower part) 192 mm × 115 mm × 108 mm
Application	Tensile test
Applicable Specimens	Metal bar shoulder specimen
Compatible Frames	E45.105, E45.305

Tension Grips

300 kN Shoulder Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Designed for specimens with shoulder-end
- » No slipping failure for materials with higher hardness

Additional Information

The shoulder blocks can be customized and changed for specimens with different dimensions, according to ASTM A370 -03a.

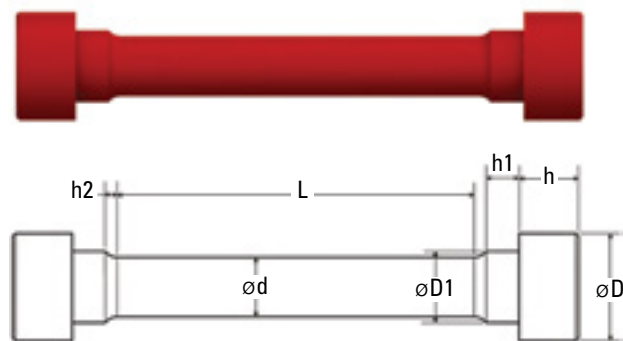
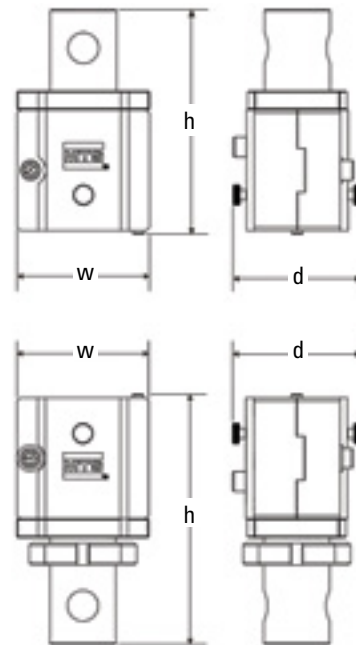
Applicable Standards

Code	Description
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature



Recommended Specimen Specifications for Optional Shoulder Blocks

Shoulder Block	d(mm)	D(mm)	D1(mm)	h(mm)	h1(mm)	h2(mm)	L(mm)	Fmax(kN)
TA305A-05	6	13	8 ⁰ _{-0.1}	6	4	3	36	30
TA305A-06	8	16	11 ⁰ _{-0.1}	8	4	3	48	60
TA305A-07	10	20	13 ⁰ _{-0.1}	10	5	4	60	100
TA305A-08	15	28	18 ⁰ _{-0.1}	15	7.5	4	90	200
TA305A-09	20	36	24 ⁰ _{-0.1}	20	10	5	120	300



Specifications

Model	TA305A
Description	300 kN Shoulder grip
Rated Force	300 kN
Temperature Range	Room temperature
Weight	(Upper part) 11.8 kg/(Lower part) 13 kg
Adapter Style	(Upper part) 60 mm/(Lower part) 60 mm
Dimensions (h*w*d)	(Upper part) 204 mm × 120 mm × 116 mm (Lower part) 227 mm × 120 mm × 116 mm
Application	Tensile test
Applicable Specimens	Specimens of metallic bar with shoulder
Compatible Frames	E45.305

Tension Grips

2 kN Scissor Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Improved performance with preloaded springs on soft material tension test with high efficiency and large tracking space
- » Prevents slipping failure caused by the specimen shrinking and high preload

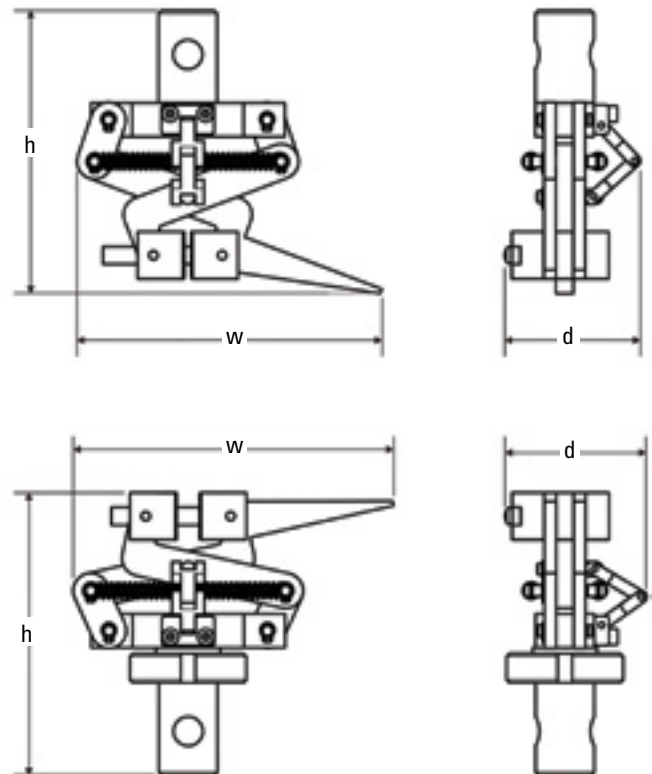
Applicable Standards

Code	Description
ASTM D412-06a(2013)	Standard test methods for vulcanized rubber and thermoplastic elastomers – tension
ASTM D624-2007	Standard test method for tear strength of conventional vulcanized rubber and thermoplastic elastomers
GB/T 528-2009	Rubber – vulcanized or thermoplastic – Determination of tensile stress-strain properties
GB/T 529-2008	Rubber – vulcanized or thermoplastic – Determination of tear strength (trouser, angle and crescent test pieces)
GB 7543-2006	Single-use sterile rubber surgical gloves – Specifications
GB/T 6759-2002	Textile conveyor belts – Adhesive strength between constitutive elements – Test methods



Specifications

Model	GD203A
Description	2 kN Scissors action grip
Rated Force	2 kN
Temperature Range	Room temperature
Weight	(Upper part) 0.44 kg/(Lower part) 0.53 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 102 mm × 104 mm × 46 mm (Lower part) 114 mm × 104 mm × 46 mm
Application	Tensile test, tear test
Applicable Specimens	Rubber; sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Sawtooth
Grip Opening	0-10 mm
Faces Width	30 mm



Tension Grips

5 kN Scissor Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Improved performance with preloaded springs on soft material tension test with high efficiency and large tracking space
- » Prevents slipping failure caused by the specimen shrinking and high preload

Applicable Standards

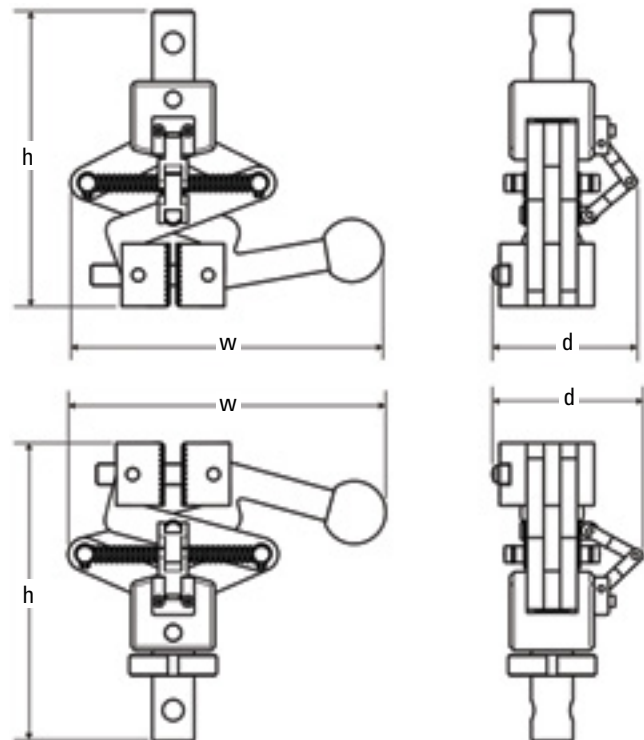
Code	Description
ASTM D412-06a(2013)	Standard test methods for vulcanized rubber and thermoplastic elastomers – tension
ASTM D624-2007	Standard test method for tear strength of conventional vulcanized rubber and thermoplastic elastomers
GB/T 528-2009	Rubber – vulcanized or thermoplastic – Determination of tensile strength-strain properties
GB/T 529-2008	Rubber – vulcanized or thermoplastic – Determination of tear strength (trouser, angle and crescent test pieces)
GB 7543-2006	Single-use sterile rubber surgical gloves – Specifications
GB/T 6759-2002	Textile conveyor belts – Adhesive strength between constitutive elements – Test methods
GB/T 10654-2001	Flexible cellular polymeric materials – Determination of tensile strength and elongation at break



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Specifications

Model	GD503A
Description	5 kN Scissors action grip
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.41 kg/(Lower part) 1.51 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 146 mm × 146 mm × 72 mm (Lower part) 156 mm × 146 mm × 72 mm
Application	Tensile test, tear test
Applicable Specimens	Rubber, sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Sawtooth
Grip Opening	0-12 mm
Faces Width	40 mm



Tension Grips

100 kN Thread Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Recommended for threaded-head products or materials with higher hardness

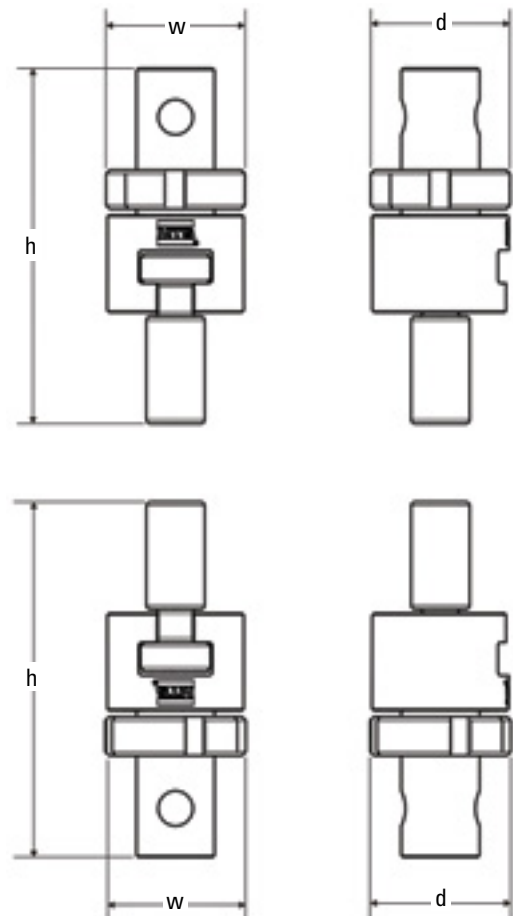
Applicable Standards

Code	Description
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature



Specifications

Model	ZLA105A
Description	100 kN Thread grip
Rated Force	100 kN
Temperature Range	Room temperature
Weight	(Upper part) 2.67 kg/(Lower part) 2.67 kg
Adapter Style	(Upper part) 40 mm/(Lower part) 40 mm
Dimensions (h*w*d)	(Upper part) 182 mm × 72 mm × 72 mm (Lower part) 182 mm × 72 mm × 72 mm
Application	Tensile test
Applicable Specimens	Threaded end tension specimen
Compatible Frames	E45.105, E45.305
Specimen Screw	M12x1.75



Tension Grips

500 N Bollard Grip

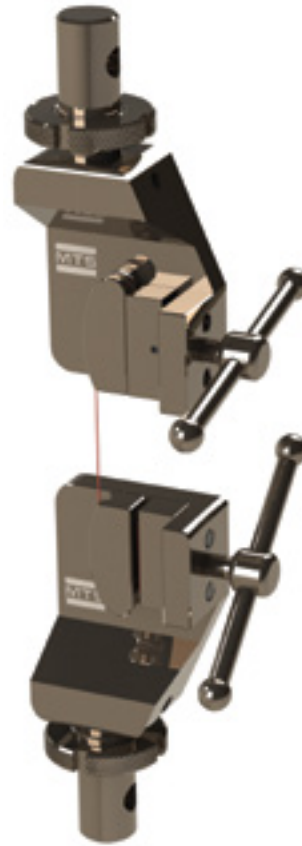
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range
- » Provides the highest clamping force of all the manual grips

Additional Information

Specimen length should be more than 176 mm to easily twine and clamp to the grip.

Applicable Standards

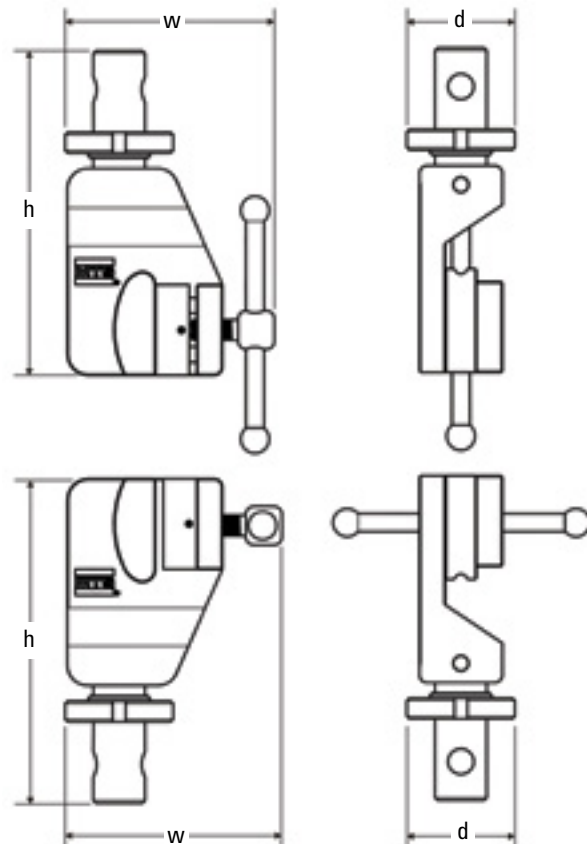
Code	Description
GB/T 19975-2005	Test method of tensile properties for high tenacity filament yarn



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Specifications

Model	CB502B
Description	500 N Bollard grip
Rated Force	500 N
Temperature Range	Room temperature
Weight	(Upper part) 0.87 kg/(Lower part) 0.87 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 126 mm × 81 mm × 42 mm (Lower part) 126 mm × 81 mm × 42 mm
Application	Tensile test
Applicable Specimens	Wire, cord
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Flat
Maximum Specimen Diameter	∅0.5 mm



Tension Grips

2 kN Bollard Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range

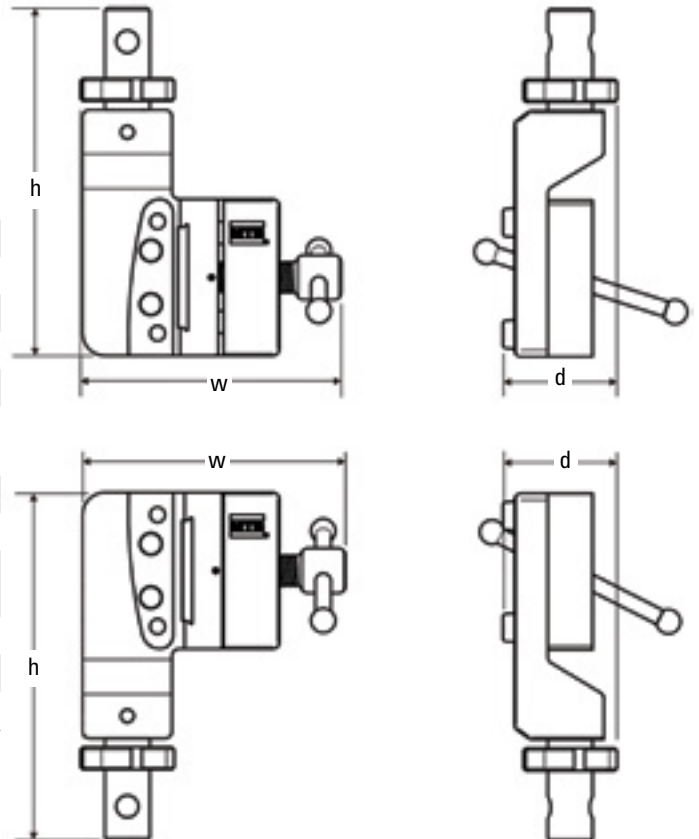
Applicable Standards

Code	Description
ASTM E8/E8M-13a	Standard test methods for tension testing of metallic materials



Specifications

Model	CA203A
Description	2 kN Bollard grip
Rated Force	2 kN
Temperature Range	Room temperature
Weight	(Upper part) 2.02 kg/(Lower part) 2.02 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 156 mm × 120 mm × 46 mm (Lower part) 156 mm × 120 mm × 46 mm
Application	Tensile test
Applicable Specimens	Steel Wire
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	File
Grip Opening	0-4 mm
Faces Width	20 mm



Tension Grips

5 kN Bollard Grip

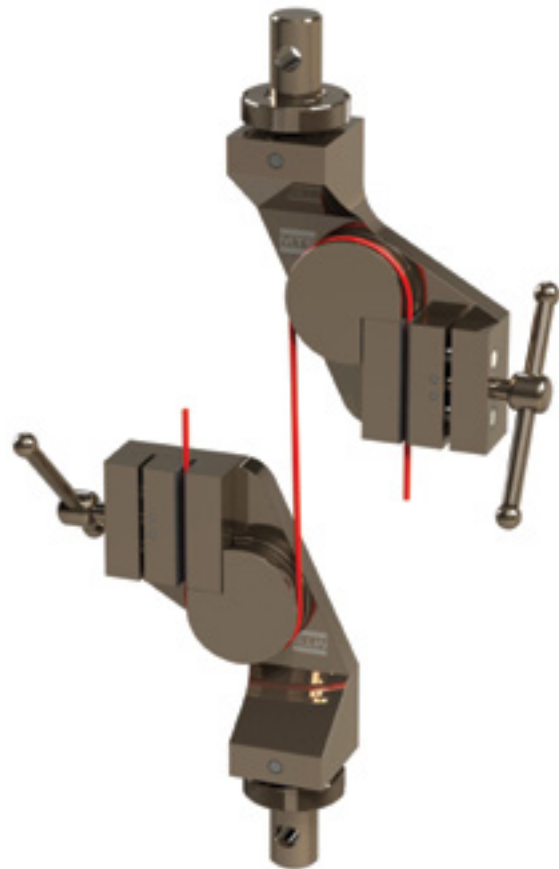
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range

Additional Information

Specimen length should be more than 335 mm to easily twine and clamp to the grip.

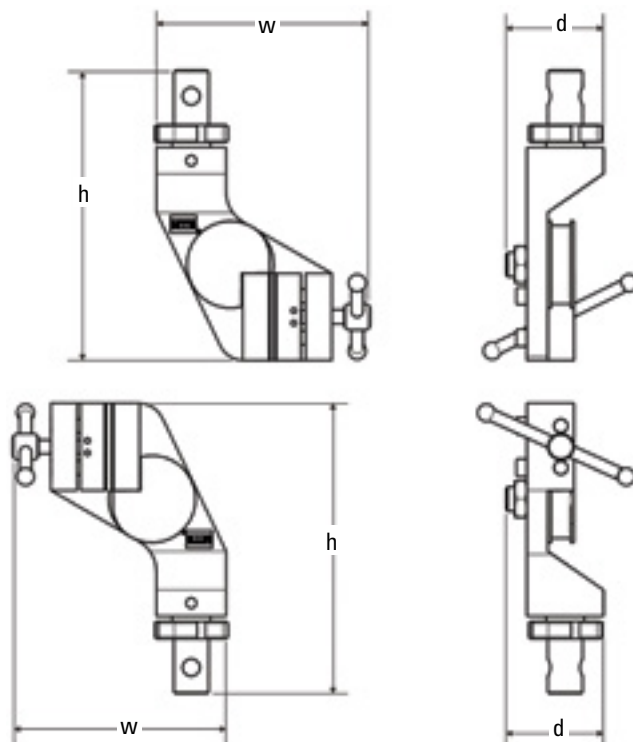
Applicable Standards

Code	Description
GB/T 14344-2008	Testing method for tensile of man-made filament
GB/T 19975-2005	Test method of tensile properties for high tenacity filament yarn
GB/T 3916-1997	Textile package single yarn breaking strength and breaking elongation tests
ISO 2062:1993	Textiles – Yarns from packages – Determination of single-end breaking force and elongation at break
ISO 3341:2000	Textile glass – Yarns – Determination of breaking force and breaking elongation
GB 7690.3-2001	Reinforcements – Test method for yarns – Part 3: Determination of breaking force and breaking elongation for glass fibre
ASTM D2343-1995	Standard test method for tensile properties of glass fiber strands, yarns, and rovings used in reinforced plastics



Specifications

Model	CH503A
Description	5 kN Bollard grip
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.6 kg/(Lower part) 1.6 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 166 mm × 119 mm × 52 mm (Lower part) 166 mm × 119 mm × 52 mm
Application	Tensile test
Applicable Specimens	Wire, cord
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces Surface Material	Rubber
Grip Opening	0-5 mm
Faces Width	15 mm



Tension Grips

5 kN Bollard Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range

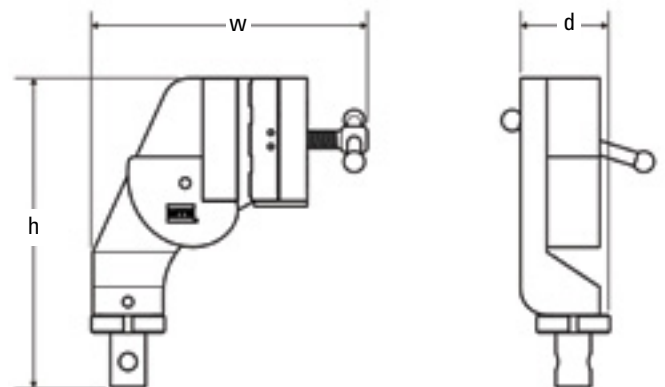
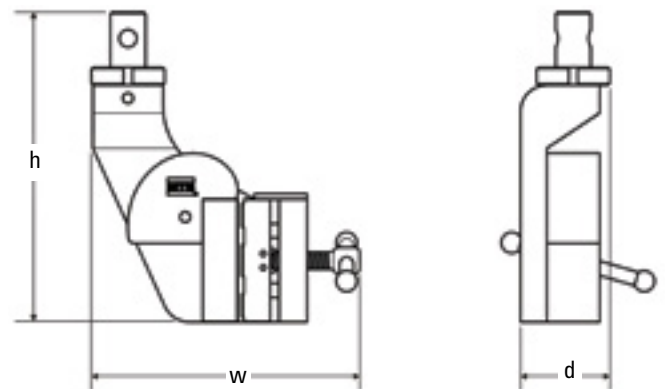
Applicable Standards

Code	Description
GB/T 21825-2008	Glass fibre geo-grid



Specifications

Model	CD503B
Description	5 kN Bollard grip
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 2.96 kg/(Lower part) 2.96 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 177 mm x 160 mm x 51 mm (Lower part) 177 mm x 160 mm x 51 mm
Application	Tensile test
Applicable Specimens	Fiberglass geogrid
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Diamond tip
Grip Opening	0-7 mm
Faces Width	30 mm



Tension Grips

5 kN Bollard Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range
- » Increase clamping force by winding the specimen around the movable part of the grip

Additional Information

Specimen length should be more than 720 mm to easily twine and clamp to the grip.

Applicable Standards

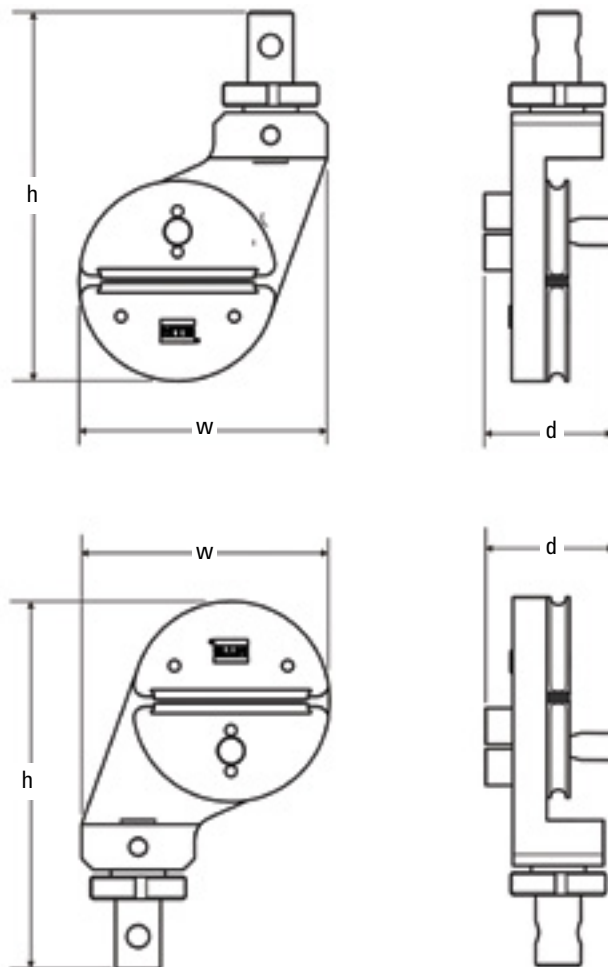
Code	Description
ASTM E8/E8M-13a	Standard test methods for tension testing of metallic materials



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Specifications

Model	CB503A
Description	5 kN Bollard grip
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.82 kg/(Lower part) 1.83 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 165 mm x 110 mm x 60 mm (Lower part) 165 mm x 110 mm x 60 mm
Application	Tensile test
Applicable Specimens	Steel wire
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	File
Maximum Specimen Diameter	∅3 mm



Tension Grips

30 kN Bollard Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range
- » Increase clamping force by winding the specimen around the movable part of the grip

Additional Information

Specimen length should be no less than 575 mm to easily twine and clamp to the grip.

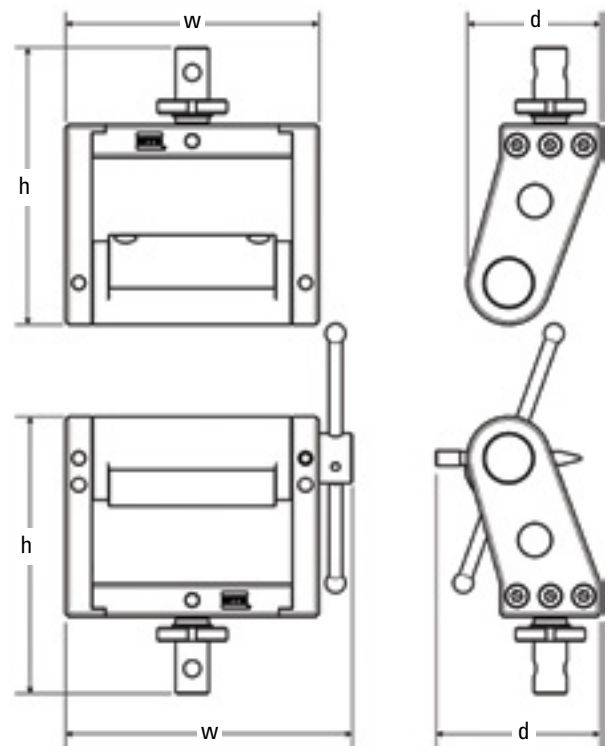
Applicable Standards

Code	Description
GB 14166-93	Motor vehicles – Safety belt assemblies – Performance requirements and test methods



Specifications

Model	CSA304C
Description	30 kN Roller action grip
Rated Force	30 kN
Temperature Range	Room temperature
Weight	(Upper part) 4.6 kg/(Lower part) 4.72 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 166 mm × 172 mm × 99 mm (Lower part) 166 mm × 172 mm × 120 mm
Application	Tensile test
Applicable Specimens	Mesh belt, safety belt
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Specimen Width	70 mm
Maximum Specimen Thickness	5 mm



Tension Grips

1 kN Roller Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range

Additional Information

Specimen length should be no less than 89 mm to easily twine and clamp to the grip.

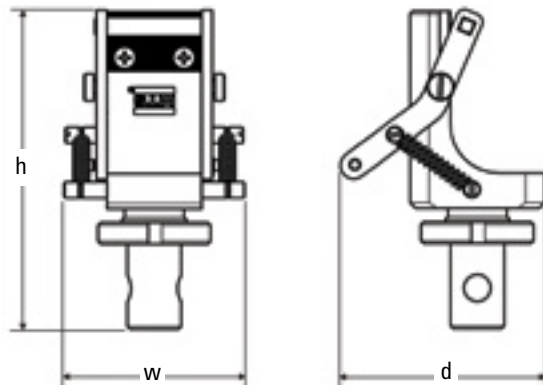
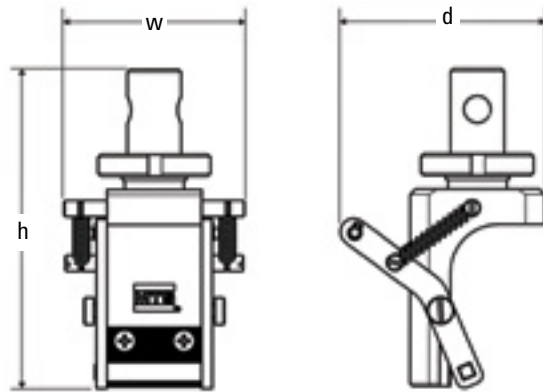
Applicable Standards

Code	Description
ASTM D412-06a(2013)	Standard test methods for vulcanized rubber and thermoplastic elastomers – tension



Specifications

Model	CA103A
Description	1 kN Roller action grip
Rated Force	1 kN
Temperature Range	Room temperature
Weight	(Upper part) 0.66 kg/(Lower part) 0.66 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 118 mm × 67 mm × 76 mm (Lower part) 118 mm × 67 mm × 76 mm
Application	Tensile test
Applicable Specimens	Rubber, sheath of cable
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Specimen Width	35 mm
Maximum Specimen Thickness	2 mm



Tension Grips

20 kN Roller Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range
- » Increase clamping force by winding the specimen around the movable part of the grip

Additional Information

Specimen length should be no less than 755 mm to easily twine and clamp to the grip.

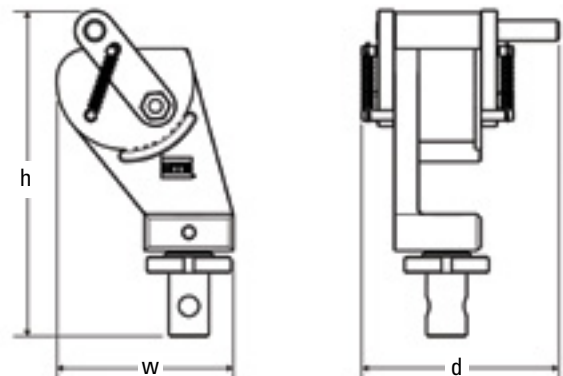
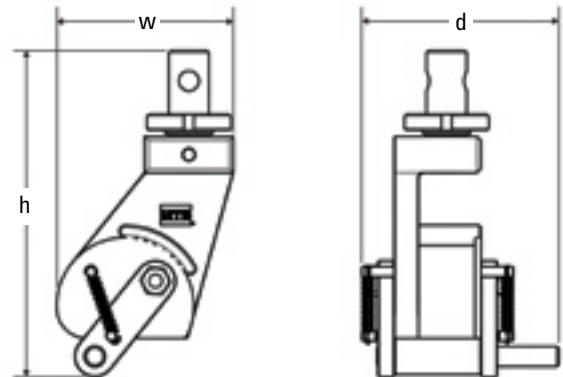
Applicable Standards

Code	Description
QB/T 3811-1999	Plastic pack belt



Specifications

Model	CSA204C
Description	20 kN Roller action grip
Rated Force	20 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.20 kg/(Lower part) 1.20 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 152 mm × 88 mm × 97 mm (Lower part) 152 mm × 88 mm × 97 mm
Application	Tensile test
Applicable Specimens	Plastic packing belt
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Specimen Width	28 mm
Maximum Specimen Thickness	2 mm



Tension Grips

50 kN Roller Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range
- » Increase clamping force by winding the specimen around the movable part of the grip

Additional Information

Specimen length should be no less than 650 mm to easily twine and clamp to the grip.

Applicable Standards

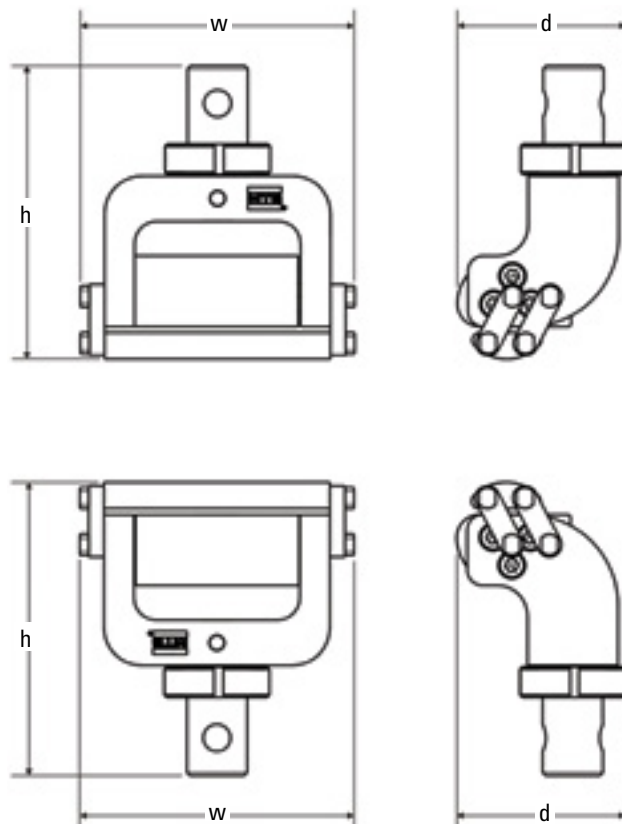
Code	Description
GB 14166-93	Motor vehicles – Safety belt assemblies – Performance requirements and test methods



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Specifications

Model	CB504E
Description	50 kN Roller action grip
Rated Force	50 kN
Temperature Range	Room temperature
Weight	(Upper part) 8.34 kg/(Lower part) 8.34 kg
Adapter Style	(Upper part) 40 mm/(Lower part) 40 mm
Dimensions (h*w*d)	(Upper part) 200 mm × 182 mm × 110 mm (Lower part) 200 mm × 182 mm × 110 mm
Application	Tensile test, tear test
Applicable Specimen	Mesh belt, safety belt
Compatible Frames	E45.105, E45.305
Maximum Specimen Width	100 mm
Maximum Specimen Thickness	4 mm



Tension Grips

Roller Action Grips

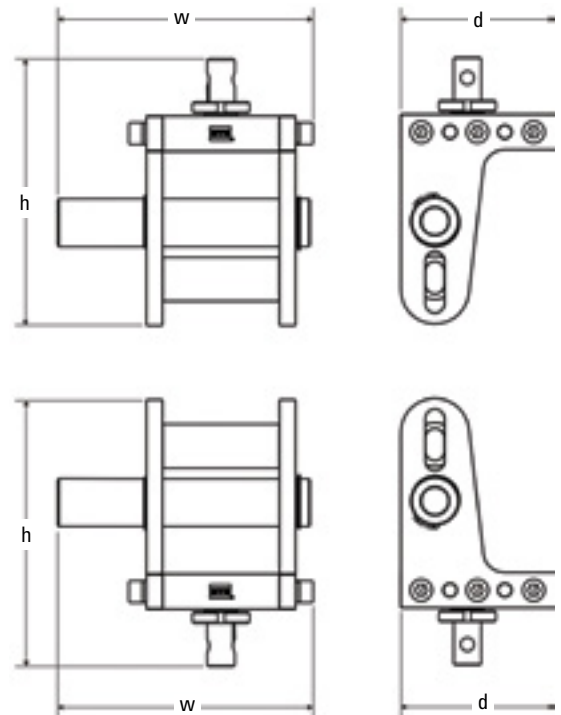
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range
- » Increase clamping force by winding the specimen around the movable part of the grip

Additional Information

Specimen length should be no less than 1100 mm (CA105A)/735 mm (CA304C) to easily twine and clamp to the grip.

Applicable Standards

Code	Description
GB 14166-93	Motor vehicles – Safety belt assemblies – Performance requirements and test methods



Specifications

Model	CA304C	CA105C
Description	30 kN Roller action grip	100 kN Roller action grip
Rated Force	30 kN	100 kN
Temperature Range	Room temperature	Room temperature
Weight (Upper part)	5.29 kg	11.2 kg
Weight (Lower part)	5.29 kg	11.2 kg
Adapter Style (Upper part)	20 mm	40 mm
Adapter Style (Lower part)	20 mm	40 mm
Dimensions (h*w*d) (Upper part)	195 mm × 187 mm × 122 mm	272 mm × 197 mm × 132 mm
Dimensions (h*w*d) (Lower part)	195 mm × 187 mm × 122 mm	272 mm × 197 mm × 132 mm
Application	Tensile test	Tensile test
Applicable Specimen	Braid, safety belt	Braid, safety belt
Compatible Frames	E44.304, E45.105, E45.305	E45.105, E45.305
Maximum Specimen Width	80 mm	80 mm
Maximum Specimen Thickness	4 mm	4 mm

Tension Grips

10 kN Capstan Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range
- » Increase clamping force by winding the specimen around the movable part of the grip
- » Corrugated tooth between the clamping parts ensure a stable clamping function

Additional Information

Specimen length should be no less than 755 mm to easily twine and clamp to the grip.

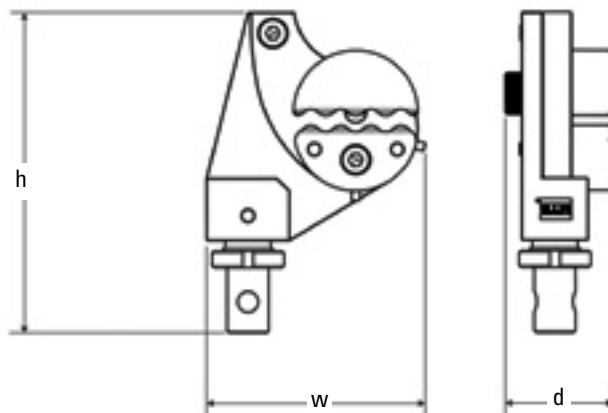
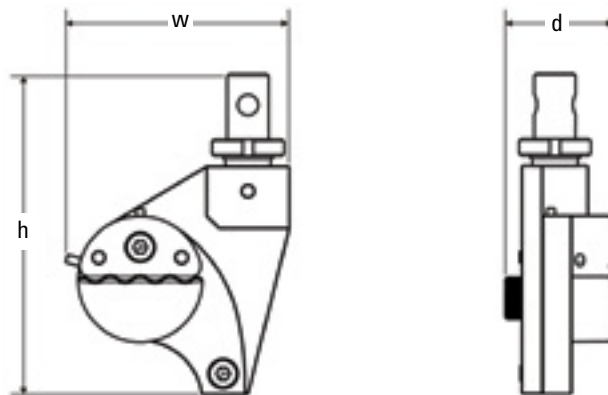
Applicable Standards

Code	Description
ASTM E8/E8M-13a	Standard test methods for tension testing of metallic materials
ISO 6892-1:2009	Metallic materials – Tensile testing – Part 1: Method of test at room temperature



Specifications

Model	CA104A
Description	10 kN Capstan grip
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 950 g/(Lower part) 950 g
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 150 mm × 102 mm × 52 mm (Lower part) 150 mm × 102 mm × 52 mm
Application	Tensile test
Applicable Specimens	Wire
Compatible Frames	E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Specimen Diameter	ø3 mm



Tension Grips

20 kN Capstan Grip

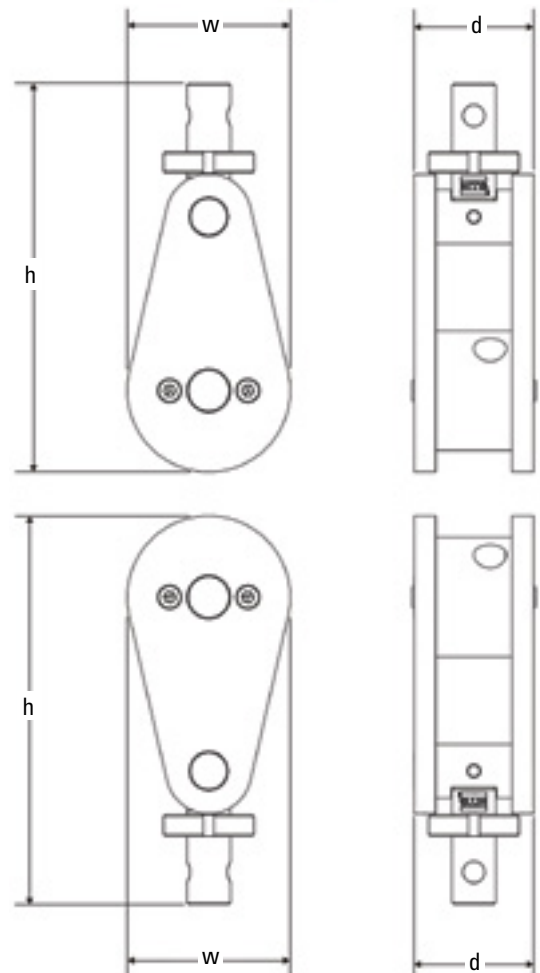
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Wound up specimen clamping to prevent stress concentration and damage out of test range
- » Applicable to tensile tests of thick ropes with smooth surfaces

Additional Information

Specimen length should be more than 1040 mm to easily twine and clamp to the grip.

Applicable Standards

Code	Description
GB/T 8834-2006	Ropes – Determination of certain physical and mechanical properties



Specifications

Model	ZLD204
Description	20 kN Capstan grip
Rated Force	20 kN
Temperature Range	Room temperature
Weight	(Upper part) 900 g/(Lower part) 900 g
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 175 mm × 75 mm × 55 mm (Lower part) 175 mm × 75 mm × 55 mm
Application	Tensile test
Applicable Specimens	Rope
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105
Maximum Specimen Diameter	∅15 mm

Tension Grips

1 kN Roller Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency

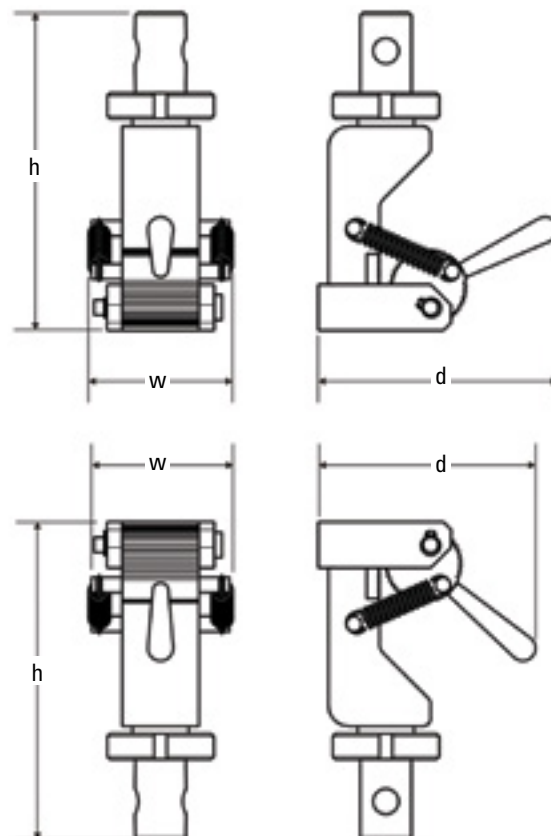
Applicable Standards

Code	Description
ASTM D412-06a(2013)	Standard test methods for vulcanized rubber and thermoplastic elastomers – tension
ASTM D624-2007	Standard test method for tear strength of conventional vulcanized rubber and thermoplastic elastomers
GB/T 528-2009	Rubber – vulcanized or thermoplastic – Determination of tensile stress-strain properties
GB/T 529-2008	Rubber – vulcanized or thermoplastic – Determination of tear strength (trouser, angle and crescent test pieces)
GB 7543-2006	Single-use sterile rubber surgical gloves – Specification



Specifications

Model	PA103A
Description	1 kN Roller action grip
Rated Force	1 kN
Temperature Range	Room temperature
Weight	(Upper part) 1 kg/(Lower part) 1 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 125 mm × 58 mm × 105 mm (Lower part) 125 mm × 58 mm × 105 mm
Application	Tensile test, tear test
Applicable Specimens	Rubber, sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Roller Surface	Serrated
Grip Opening	0-10 mm
Roller Length	30 mm



Tension Grips

500 N Roller Action Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Keep the clamping force stable to avoid slipping failure and measurement inconsistency
- » The rollers move synchronously to ensure specimen can be clamped in the same position of the force axis center

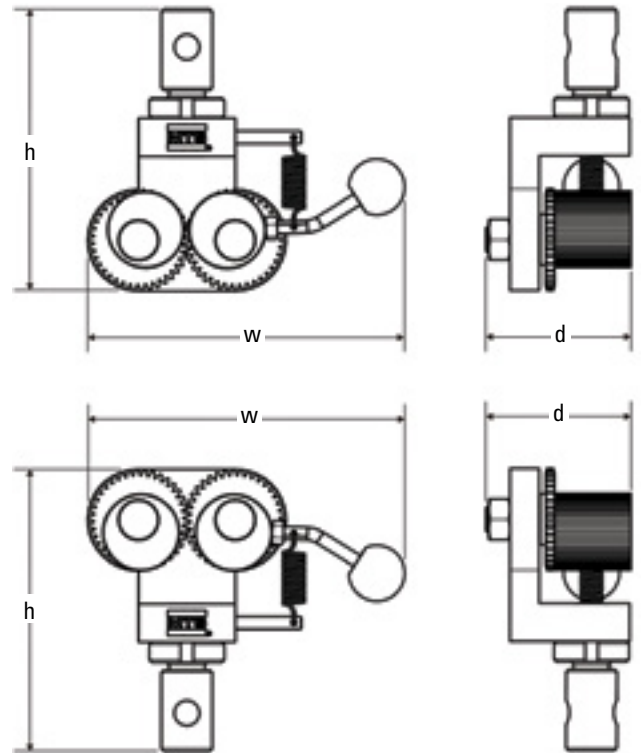
Applicable Standards

Code	Description
ASTM D412-06a(2013)	Standard test methods for vulcanized rubber and thermoplastic elastomers – tension
ASTM D624-2007	Standard test method for tear strength of conventional vulcanized rubber and thermoplastic elastomers
GB/T 528-2009	Rubber – vulcanized or thermoplastic – Determination of tensile strength-strain properties
GB/T 529-2008	Rubber – vulcanized or thermoplastic – Determination of tear strength (trouser, angle and crescent test pieces)
GB 7543-2006	Single-use sterile rubber surgical gloves – Specification



Specifications

Model	PA502B
Description	500 N Roller action grip
Rated Force	500 N
Temperature Range	Room temperature
Weight	(Upper part) 1.06 kg/(Lower part) 1.06 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 111 mm × 125 mm × 57 mm (Lower part) 111 mm × 125 mm × 57 mm
Application	Tensile test, tear test
Applicable Specimens	Sheath of cable, rubber, tube, sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Roller Surface	Serrated
Grip Opening	0-5 mm
Roller Length	30 mm



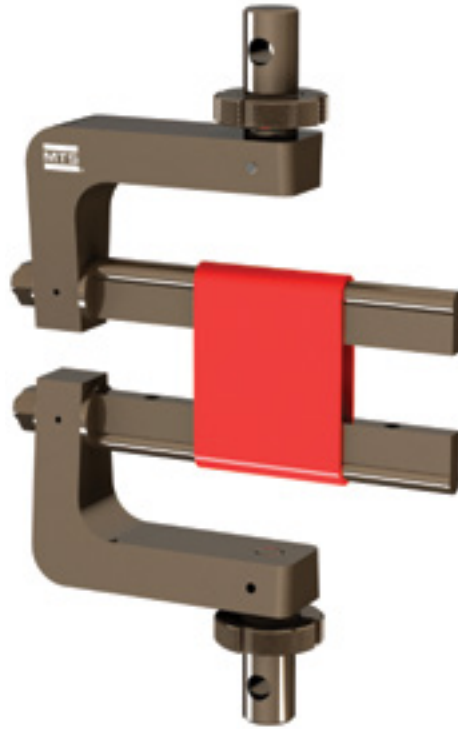
Tension Grips

100 kN Specialty Circular Ring Tension Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

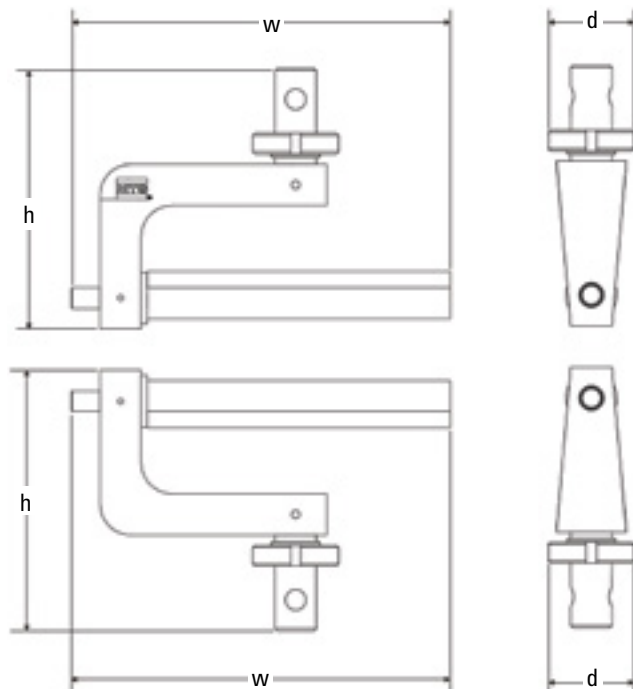
Additional Information

The minimum distance between pins is 56 mm



Specifications

Model	ZYH102
Description	100 N Circular ring tension grip
Rated Force	100 N
Temperature Range	Room temperature
Weight	(Upper part) 1.22 kg/(Lower part) 1.22 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 127 mm x 184 mm x 42 mm (Lower part) 127 mm x 184 mm x 42 mm
Application	Tensile test
Applicable Specimens	Rubber, plastic, thin film, pipe
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Pin Diameter	10 mm
Pin Length	156 mm



Tension Grips

500 N Specialty Locking Pliers Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

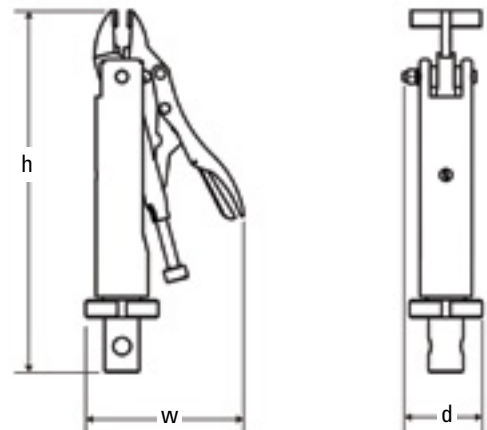
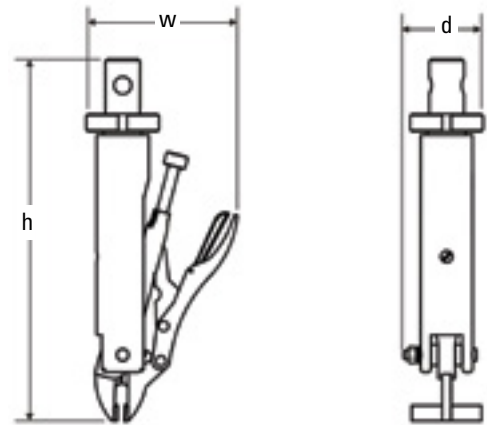
Applicable Standards

Code	Description
ISO 1798:2008	Flexible cellular polymeric materials – Determination of tensile strength and elongation at break
GB/T 6344-2008	Flexible cellular polymeric materials – Determination of tensile strength and elongation at break



Specifications

Model	GSB502A
Description	500 N Locking pliers grip
Rated Force	500 N
Temperature Range	Room temperature
Weight	(Upper part) 1.05 kg/(Lower part) 1.05 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 230 mm × 90 mm × 42 mm (Lower part) 230 mm × 90 mm × 42 mm
Application	Tensile test, tear test
Applicable Specimens	Sponge, insole, sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Serrated
Grip Opening	0-35 mm
Faces Width	30 mm



Tension Grips

500 N Specialty Screw Withdrawal Test Fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

Additional Information

The maximum screw diameter is 5 mm

Applicable Standards

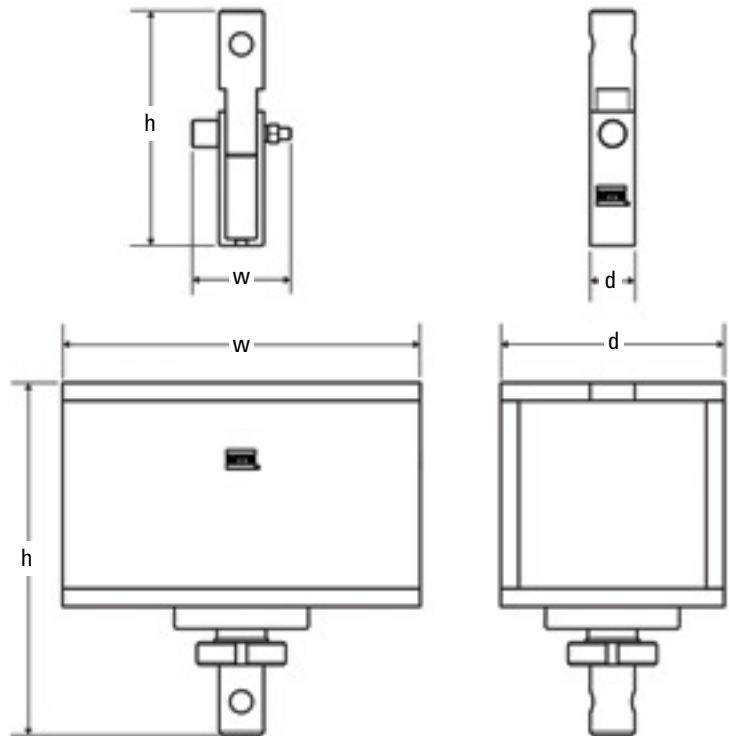
Code	Description
EN 320:1993	Fibre boards – Determination of resistance to axial withdrawal of screws
GB/T 17657-1999	Test methods of evaluating the properties of wood-based panels and surface decorated wood-based panels



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Specifications

Model	ZJm502
Description	500 N Test fixture, screw withdrawal
Rated Force	500 N
Temperature Range	Room temperature
Weight	(Upper part) 210 g/(Lower part) 3.9 kg
Adapter Diameter	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 105 mm x 44 mm x 20 mm (Lower part) 158 mm x 160 mm x 100 mm
Application	Pull-off test
Applicable Specimens	Screw withdrawal specimen
Compatible Frames	E42.503 E43.104 E44.104 E44.304 E45.105, E45.305



Tension Grips

10 kN Specialty Spring Tension Grip

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

Additional Information

The minimum inner spring's diameter is 8 mm

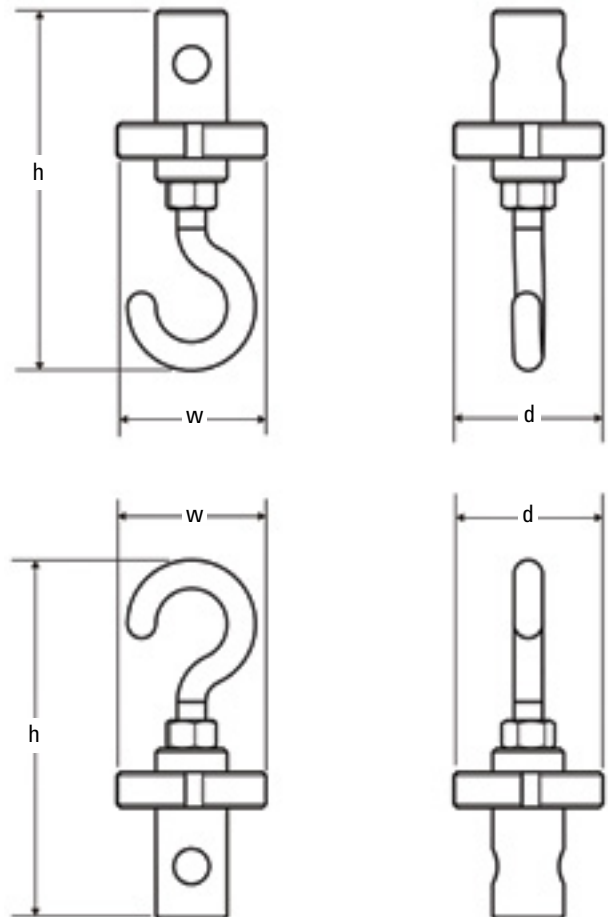
Applicable Standards

Code	Description
JJG 609-1989	Verification regulation of spring tension and compression testing machine
JB/T 7796-2005	Tension and compression spring testing machines
JISB 7738-1993	Verification of helical compression and extension springs testing machines



Specifications

Model	ZGgA104
Description	10 kN Spring tension grip
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 230 g/(Lower part) 230 g
Adapter Diameter	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 102 mm × 42 mm × 42 mm (Lower part) 102 mm × 42 mm × 42 mm
Application	Tension
Applicable Specimens	Helical Tension Spring
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Tension Grips

10 kN Specialty Surface Bonding Strength Test Fixture

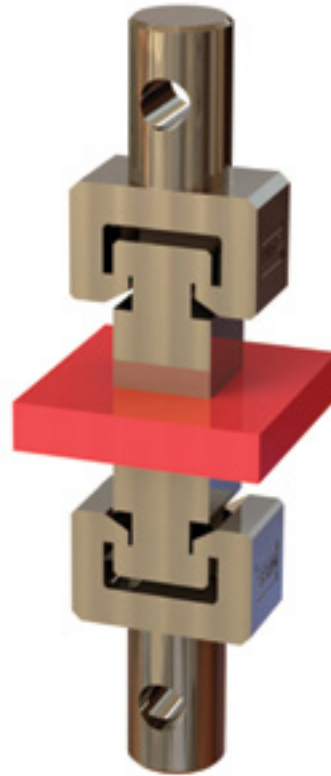
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » This is a custom manual pull-out grip

Additional Information

The dimension of the specimen is 50 mm x 50 mm. The dimension of the adhesive joint of specimen is 20 mm x 20 mm.

Applicable Standards

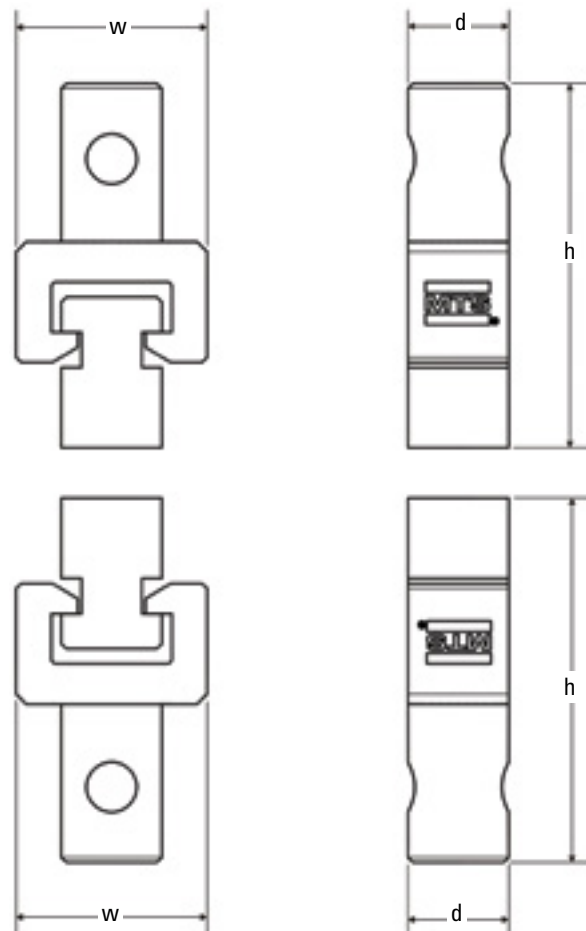
Code	Description
GB/T 17657-1999	Test methods for evaluating the properties of wood-based panels and surface decorated wood-based panels



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Specifications

Model	ZJH104
Description	10 kN Test fixture, surface bonding strength, method 2
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 0.25 kg/(Lower part) 0.25 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 56 mm x 38 mm x 20 mm (Lower part) 56 mm x 38 mm x 20 mm
Application	Pull-out test
Applicable Specimens	Wood-based panels, surface decorated wood-based panels
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Tension Grips

10 kN Specialty Surface Bonding Strength Test Fixture

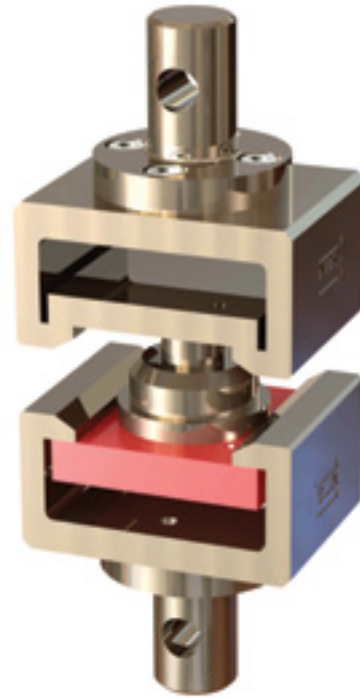
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » This is a custom pull-off grip

Additional Information

Dimensions are 50 mm × 50 mm with a groove diameter of $\Phi 35.7$ mm on the adhesive joint. If the thickness of the specimen is less than 10 mm, 2 or 3 specimens need to be bonded together for the test.

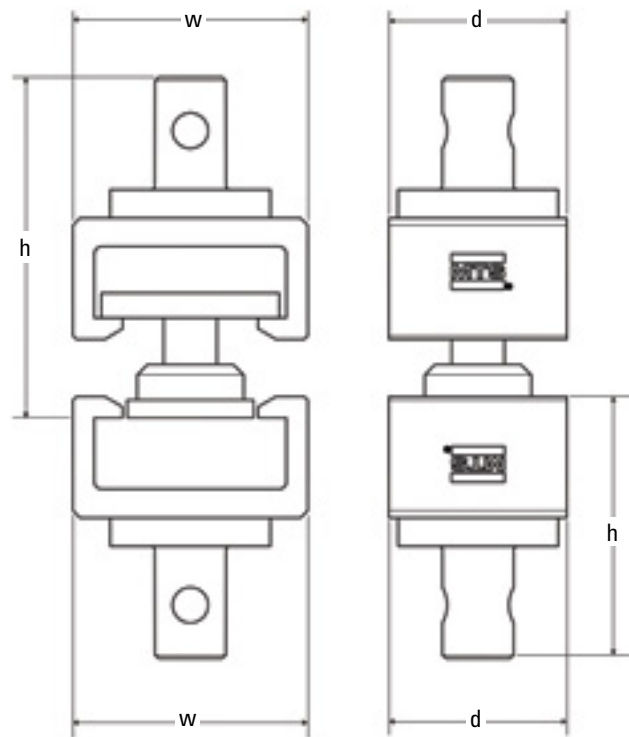
Applicable Standards

Code	Description
GB/T 17657-1999	Test methods for evaluating the properties of wood-based panels and surface decorated wood-based panels



Specifications

Model	ZBM104
Description	10 kN Test fixture, surface bonding strength, method 1
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 0.75 kg/(Lower part) 0.52 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 75 mm x 50 mm x 50 mm (Lower part) 59 mm x 50 mm x 50 mm
Application	Pull-off test
Applicable Specimens	Wood-based panel, surface decorated wood-based panel
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Tension Grips

10 kN Specialty Internal Bonding Strength Test Fixture

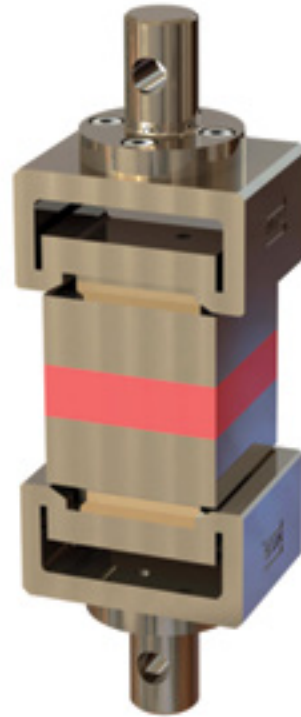
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » This is a manual pull-off grip

Additional Information

Specimen dimensions are 50 mm × 50 mm and adhesive joint dimensions are 50 mm × 50 mm.

Applicable Standards

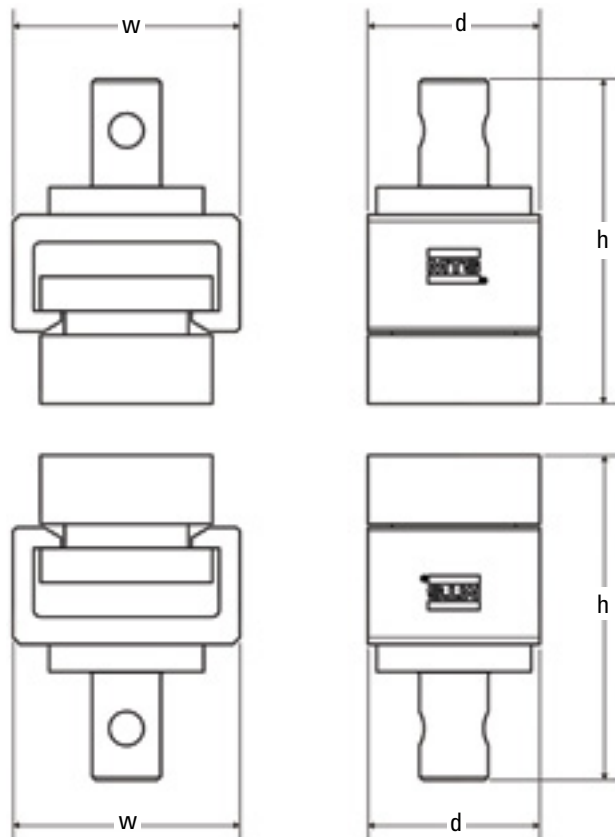
Code	Description
GB/T 17657-1999	Test methods for evaluating the properties of wood-based panels and surface decorated wood-based panels



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Specifications

Model	ZNJ104
Description	10 kN Test fixture, internal bond strength
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.2 kg/(Lower part) 1.2 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 95 mm × 66 mm × 50 mm (Lower part) 95 mm × 66 mm × 50 mm
Application	Pull-off test
Applicable Specimens	Wood-based panel, surface decorated wood-based panel
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Tension Grips

20 kN Specialty Wedge Action Grip (Small Flat Specimen)

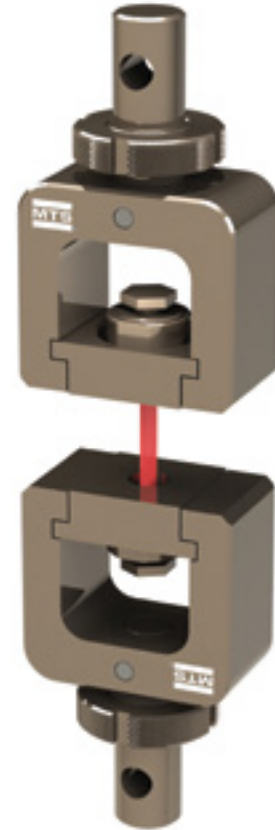
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Prevents slipping failure caused by specimen shrinking
- » The faces move synchronously allowing specimens to be clamped in the same position of the force axis center
- » Optional faces with different specifications are available for a variety of specimens, upon request

Additional Information

Designed for thin metal sheet tension test.

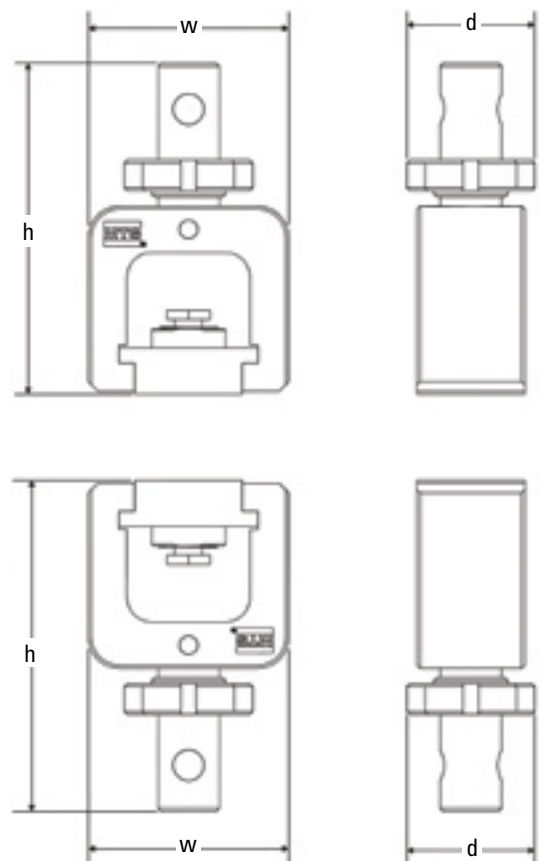
Applicable Standards

Code	Description
GB/T 228.1-2010	Metallic materials – Tensile testing – Part 1: Method of test at room temperature
ASTM A370-10	Standard test methods and definitions for mechanical testing of steel products



Specifications

Model	ZLA204B
Description	20 kN Specialty wedge action grip, small flat specimen
Rated Force	20 kN
Temperature Range	Room temperature
Weight	(Upper part) 900 g/(Lower part) 900 g
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 108 mm x 65 mm x 42 mm (Lower part) 108 mm x 65 mm x 42 mm
Application	Tensile test
Applicable Specimens	Metal Plate, sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Faces	Sawtooth
Grip Opening	0-1.8 mm
Faces Width	10 mm



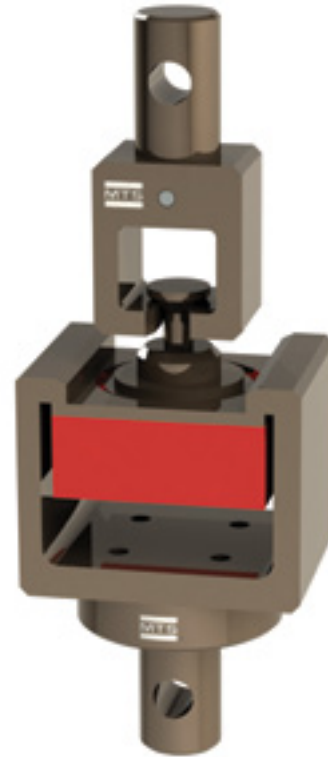
Tension Grips

10 kN Specialty Wood-based Panels – Surface Soundness Test Fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

Applicable Standards

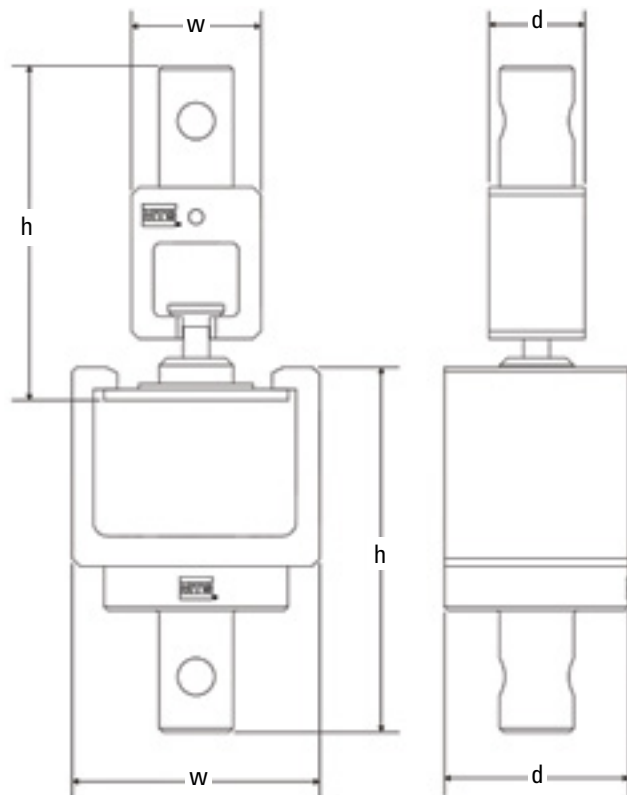
Code	Description
ISO/DIS 16895-2:2010	Wood-based panels – Dry-process fiber board – Part 2: Requirements
EN 311-2002	Wood-based panels – Surface soundness-test method
GB/T 11718-2009	Medium density fiber board
GB/T 17657-2013	Test methods of evaluating the properties of wood-based panels and surface decorated wood-based panels



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Specifications

Model	ZBJ104
Description	10 kN Test fixture, wood-based panels – Surface soundness
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 0.4 kg/(Lower part) 0.7 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 90 mm × 35 mm × 26 mm (Lower part) 99 mm × 67 mm × 50 mm
Application	Pull-off test
Applicable Specimens	Wood, wood-based panels
Compatible Frames	E42.503, E43.104, E44.104, E44.304



Tension Grips

50 kN Specialty Balsa Wood and Foams Surface Soundness Test Fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

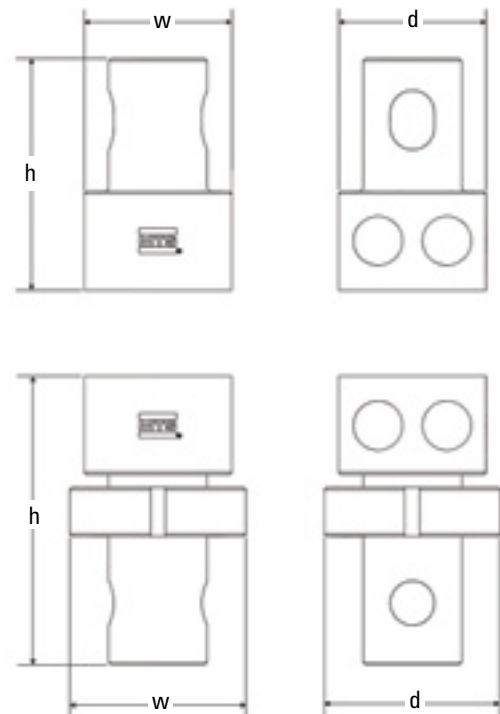
Applicable Standards

Code	Description
ASTM C297/C297M-04(2010)	Standard test method for flatwise tensile strength of sandwich constructions



Specifications

Model	DKF1005089.01
Description	50 kN Test fixture, balsa wood and foams surface soundness
Rated Force	50 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.26 kg/(Lower part) 2.07 kg
Adapter Style	(Upper part) 40 mm/(Lower part) 40 mm
Dimensions (h*w*d)	(Upper part) 94 mm x 60 mm x 60 mm (Lower part) 117 mm x 72 mm x 72 mm
Application	Pull-off test
Applicable Specimens	Wood-based panels, surface decorated wood-based panels
Compatible Frames	E45.105, E45.305



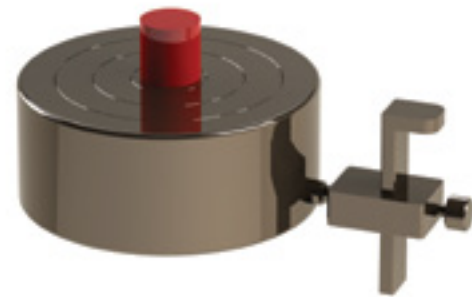
Compression Platens

20 kN Round Compression Platen (with Dial Gage)

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » The dial gage can be attached as a measuring device for more accurate deformation measurement results
- » Durable alloy tool steel construction with reliable surface hardness
- » Easier center specimen loading with the round or cross-line scales
- » Cycle style compression platens are applicable for most materials

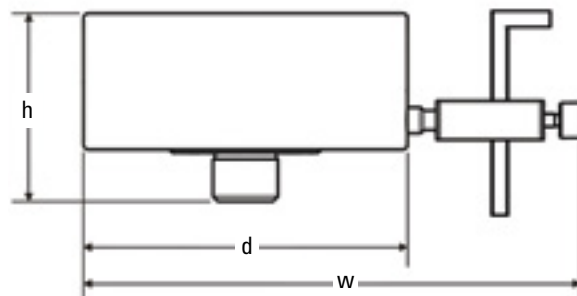
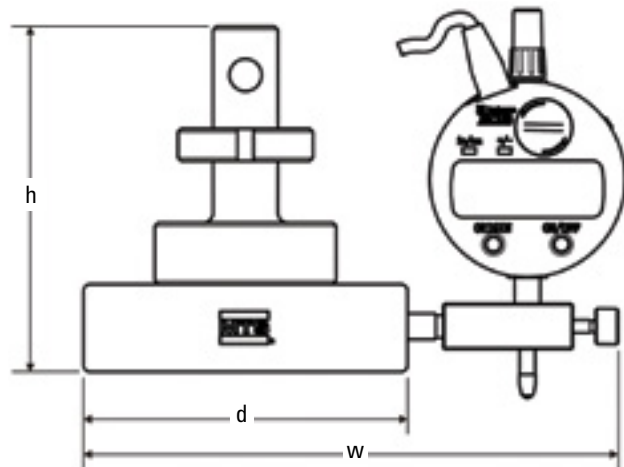
Applicable Standards

Code	Description
GB/T 1041-1992	Plastics – Determination of compressive properties
ISO 604-2009	Plastics – Determination of compressive properties



Specifications

Model	ZYA204
Description	20 kN \varnothing 100 mm Compression platen, with dial gage
Rated Force	20 kN
Temperature Range	Room temperature
Weight	(Upper part) 2.18 kg/(Lower part) 2.64 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 107 mm \times 166 mm \times 100 mm (Lower part) 58 mm \times 155 mm \times 100 mm
Maximum Specimen Height (with dial gage)	55 mm
Dial Gage Travel Range	<12.5 mm
Dial Gage Resolution	0.001 mm
Application	Compression test
Applicable Specimens	Metal, plastic, rubber
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Compression Platens

Round Compression Platens

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Durable alloy tool steel construction with reliable surface hardness
- » Easier center specimen loading with the round or cross-line scales
- » Disc compression grip style is applicable to requirements of compression tests of most materials

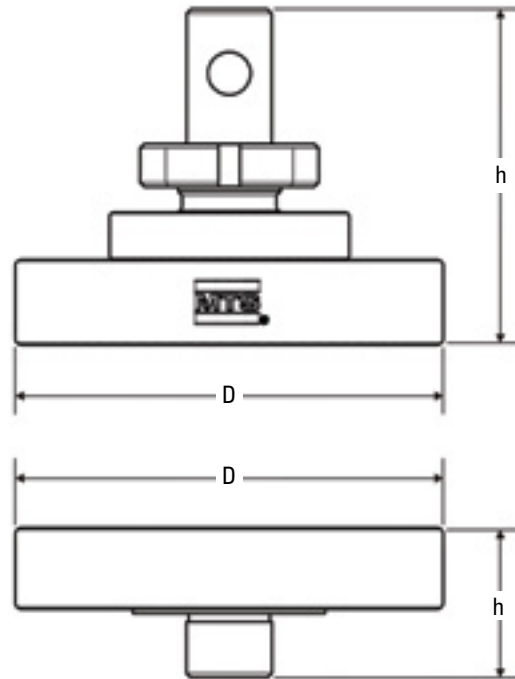
Applicable Standards

YA503A, YA104A, YA204A

Code	Description
GB/T1041-1992	Plastics – Determination of compressive properties
ISO 604-2009	Plastics – Determination of compressive properties
GB/T 17657-2013	Test methods of evaluating the properties of wood-based panels and surface decorated wood-based panels

YB504A, YD105A, YF105A, YC305A

Code	Description
GB/T 246-2007	Metal materials tube flattening test
GB/T 7314-2005	Metallic materials – Compression testing at ambient temperature
GB/T 1041-1992	Plastics – Determination of compressive properties
ISO 604-2009	Plastics – Determination of compressive properties
ASTM E9-2002	Metallic materials – Compression testing at ambient temperature



Specifications

Model	YA503A	YA104A	YA204A	YB504A	YD105A	YF105A	YC305A
Description	5 kN \varnothing 150 mm	10 kN \varnothing 150 mm	20 kN \varnothing 100 mm	50 kN \varnothing 200 mm	100 kN \varnothing 100 mm	100 kN \varnothing 150 mm	300 kN \varnothing 150 mm
Rated Force	5 kN	10 kN	20 kN	50 kN	100 kN	100 kN	300 kN
Temperature Range	Room temperature						
Weight (Upper part)	3.23 kg	3.5 kg	1.59 kg	11.4 kg	2.31 kg	5.26 kg	6.95 kg
Weight (Lower part)	3.11 kg	3.1 kg	1.19 kg	9.78 kg	1.62 kg	3.98 kg	3.93 kg
Adapter Style (Upper part)	20 mm	20 mm	20 mm	40 mm	40 mm	40 mm	60 mm
Adapter Style (Lower part)	20 mm	20 mm	20 mm	40 mm	40 mm	40 mm	60 mm
Dimensions (D*h)/mm (Upper part)	\varnothing 150 \times 73	\varnothing 150 \times 81	\varnothing 100 \times 78	\varnothing 200 \times 127	\varnothing 100 \times 96	\varnothing 150 \times 116	\varnothing 150 \times 141
Dimensions (D*h)/mm (Lower part)	\varnothing 150 \times 48	\varnothing 150 \times 38	\varnothing 100 \times 35	\varnothing 200 \times 52	\varnothing 100 \times 37	\varnothing 150 \times 53	\varnothing 150 \times 50
Application	Compression test						
Applicable Specimens	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305,	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305,	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305,	E45.105, E45.305,	E45.105, E45.305,	E45.105, E45.305,	E45.305,

Compression Platens

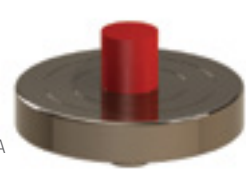
Round Compression Platens



YA503A



YA104A



YA204A



YB504A



YD105A



YF105A



YC305A

Compression Platens

5 kN Round Compression Platen

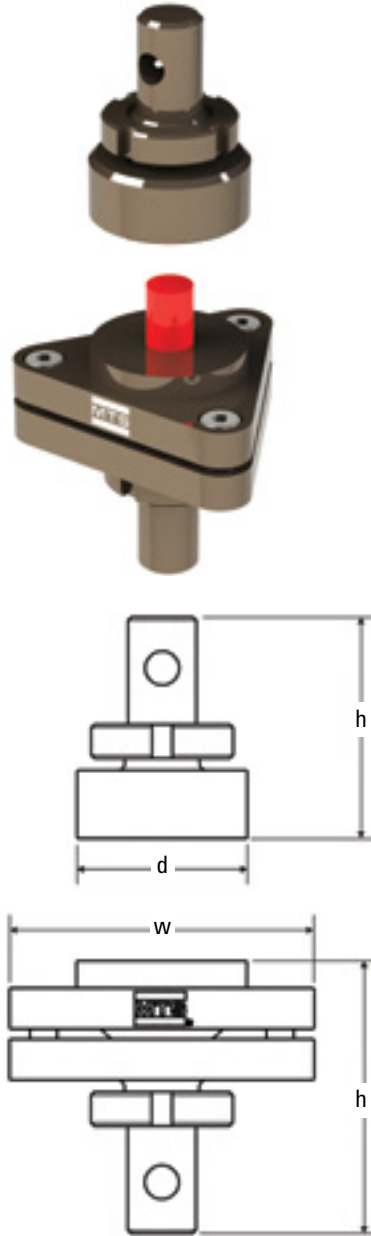
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Minimize system errors with self-aligning mechanism that secures the specimen
- » Ability to be pre-aligned to obtain better rigidity and parallelism
- » Durable alloy tool steel construction with reliable surface hardness
- » Easily center specimen loading with the round or cross-line scales
- » Cycle style compression platens are applicable for most materials

Additional Information

The lower platen aligning mechanism can be locked to ensure the parallelism between platens in tests, which is preferred to be used with spoke-type load cells.

Applicable Standards

Code	Description
JB/T 7796-2005	Tension and compression spring testing machines
GB/T 1972-2005	Disc spring
GB/T 1973.1-1989	Small cylindrically coiled springs specification
JISB 7738-1993	Verification of helical compression and extension springs testing machines
GB/T 1041-1992	Plastics – Determination of compressive properties
ISO 604:2009	Plastics – Determination of compressive properties



Specifications

Model	ZYA503A
Description	5 kN \varnothing 50 mm Compression platen, lockable spherical self-aligning
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 480 g/(Lower part) 1.12 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 65 mm \times 50 mm \times 50 mm (Lower part) 80 mm \times 90 mm \times 90 mm
Application	Compression test
Applicable Specimens	Spring, plastic, rubber
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305

Compression Platens

10 kN Round Compression Platen

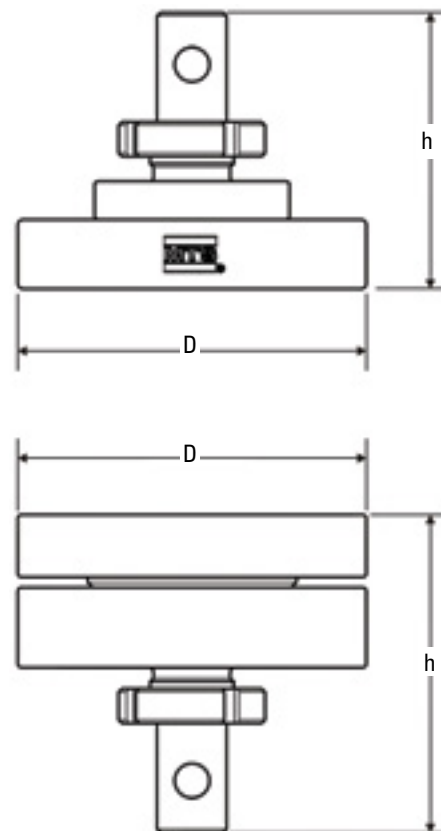
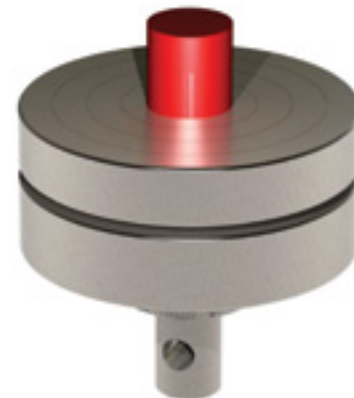
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Minimize system errors with self-aligning mechanism that secures the specimen
- » Corrosion resistant stainless grips can test in temperatures of -70°C to 350°C
- » Stainless steel construction with reliable surface hardness
- » Easily center specimen loading with the round or cross-line scales
- » Cycle style compression platens are applicable for most materials

Applicable Standards

Code	Description
GB/T 1041-1992	Plastics – Determination of compressive properties
ISO 604:2009	Plastics – Determination of compressive properties
GB/T 17657-2013	Test methods for evaluating the properties of wood-based panels and surface decorated wood-based panels

Specifications

Model	Y104B
Description	10 kN \varnothing 100 mm Compression platen, spherical self-aligning, SST
Rated Force	10 kN
Temperature Range	-70°C to 350°C
Weight	(Upper part) 1.59 kg/(Lower part) 2.75 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (D*h)	(Upper part) \varnothing 100 mm \times 79 mm (Lower part) \varnothing 100 mm \times 91 mm
Application	Compression test
Applicable Specimens	Metal, plastic, rubber
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



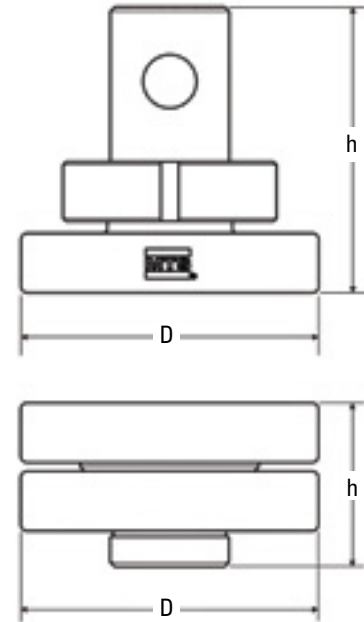
Compression Platens

Round Compression Platens

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Minimize system errors with self-aligning mechanism that secures the specimen
- » Durable alloy tool steel construction with reliable surface hardness
- » Easily center specimen loading with the round or cross-line scales
- » Disk style compression platens is applicable for most materials

Applicable Standards

Code	Description
GB/T 246-2007	Metal materials tube flattening test
GB/T 7314-2005	Metallic materials – Compressing testing at ambient temperature
GB/T 1041-1992	Plastics – Determination of compressive properties
ISO 604:2009	Plastics – Determination of compressive properties
ASTM E9-2002	Test method for compression test of metallic materials at ambient temperature 6.2.2



Specifications

Model	YA105A	YB105A	YA305A	YB305A
Description (Compression platen, spherical self-aligning)	100 kN ϕ 100 mm	100 kN ϕ 150 mm	300 kN ϕ 100 mm	300 kN ϕ 150 mm
Rated Force	100 kN	100 kN	300 kN	300 kN
Temperature Range	Room temperature	Room temperature	Room temperature	Room temperature
Weight (Upper part)	2.31 kg	5.21 kg	3.82 kg	6.95 kg
Weight (Lower part)	2.61 kg	7.74 kg	3.06 kg	7.68 kg
Adapter Style (Upper part)	40 mm	40 mm	60 mm	60 mm
Adapter Style (Lower part)	40 mm	40 mm	60 mm	60 mm
Dimensions (D*h)/mm (Upper part)	ϕ 100 \times 96	ϕ 150 \times 115	ϕ 100 \times 120	ϕ 150 \times 141
Dimensions (D*h)/mm (Lower part)	ϕ 100 \times 55	ϕ 150 \times 69	ϕ 100 \times 68	ϕ 150 \times 79
Application	Compression test	Compression test	Compression test	Compression test
Applicable Specimens	Metal, plastic, rubber	Metal, plastic, rubber	Metal, plastic, rubber	Metal, plastic, rubber
Compatible Frames	E45.105, E45.305	E45.105, E45.305	E45.305	E45.305

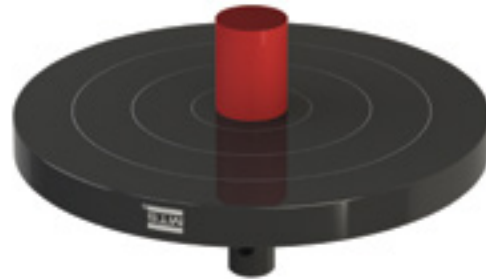
Compression Platens

20 kN Round Compression Platen

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Durable alloy tool steel construction with reliable surface hardness
- » Easily center specimen loading with the round or cross-line scales
- » Cycle style compression platens are applicable for most materials

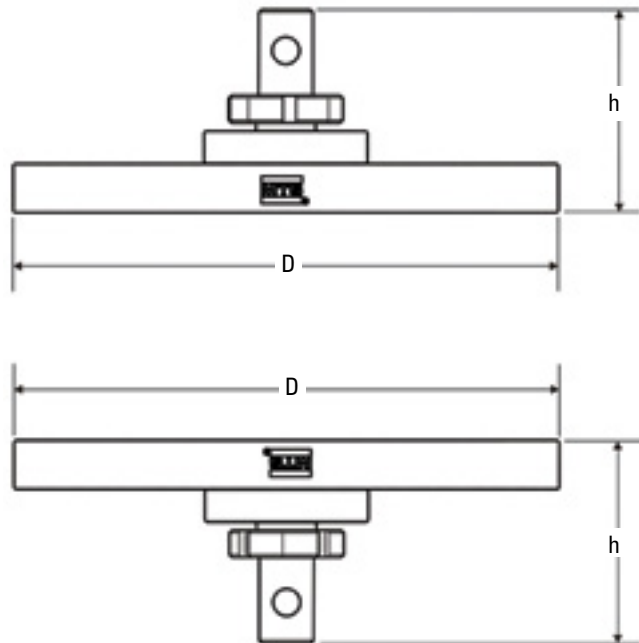
Applicable Standards

Code	Description
GB/T 1041-1992	Plastics – Determination of compressive properties
ISO 604:2009	Plastics – Determination of compressive properties
GB/T 17657-2013	Test methods for evaluating the properties of wood-based panels and surface decorated wood-based panels



Specifications

Model	YC204A
Description	20 kN \varnothing 200 mm Compression platen
Rated Force	20 kN
Temperature Range	Room temperature
Weight	(Upper part) 4.8 kg/(Lower part) 4.8 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (D*h)/mm	(Upper part) \varnothing 200 mm \times 74 mm (Lower part) \varnothing 200 mm \times 74 mm
Application	Compression test
Applicable Specimens	Metal, plastic, rubber
Compatible Frames	E43.104, E44.104, E44.304, E45.105, E45.305



Compression Platens

Square Compression Platens

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Durable alloy tool steel construction with reliable surface hardness
- » Easily center specimen loading with the round or cross-line scales
- » Applicable to tests product specimens with larger dimensions, e.g., ring stiffness test

Additional Information

YB104B, YA104B, YB304A, DL07589.01:
Applicable to ring stiffness tests of pipes.

Applicable Standards

ZYN104, ZYA203, ZYL104, ZYK304, ZYE204, YC104B, ZYG304:

Code	Description
GB/T 1041-1992	Plastics – Determination of compressive properties
ISO 604:2009	Plastics – Determination of compressive properties

YB104B, YA104B, YB304A, DL07589.01:

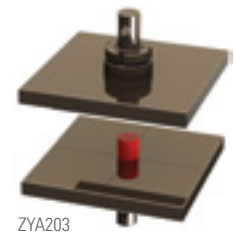
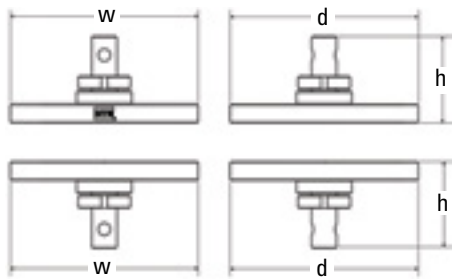
Code	Description
GB/T 9647-2003	Thermoplastic pipes – Determination of ring stiffness
ISO 9969:2007	Thermoplastic pipes – Determination of ring stiffness
GB/T 1041-1992	Plastics – Determination of compressive properties
ISO 604:2009	Plastics – Determination of compressive properties

Specifications

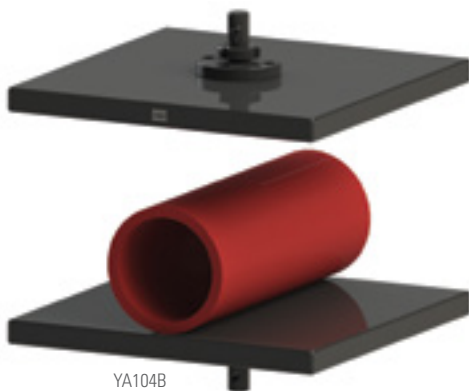
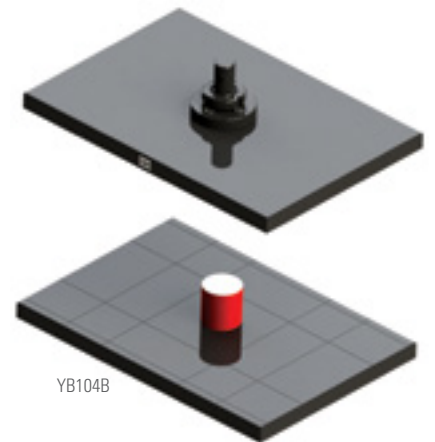
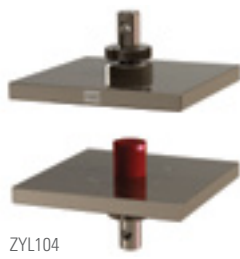
Model	ZYN104	ZYA203	ZYL104	ZYK304	ZYE204	YC104B	ZYG304	YB104B	YA104B	YB304A	DL07589.01	
Description	kN mm	10 100 x 100	2 150 x 150	10 160 x 160	30 220 x 120	20 200 x 200	10 210 x 210	30 300 x 300	10 320 x 220	10 320 x 320	30 350 x 350	200 450 x 450
	Compression platens											
Rated Force	10 kN	2 kN	10 kN	30 kN	20 kN	10 kN	30 kN	10 kN	10 kN	30 kN	200 kN	
Temperature Range	Room temperature											
Weight (Upper part)	2.96 kg	3 kg	3.32 kg	4.04 kg	5.9 kg	8.4 kg	16.9 kg	10.5 kg	19.2 kg	22 kg	60.2 kg	
Weight (Lower part)	2.96 kg	3 kg	3.32 kg	4.04 kg	5.9 kg	8.4 kg	16.9 kg	10.5 kg	19.2 kg	22 kg	60.2 kg	
Adapter Style (Upper part)	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	60 mm	
Adapter Style (Lower part)	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	20 mm	60 mm	
Dimensions (h*w*d) (Upper part)	71 mm x 100 mm x 100 mm	69 mm x 150 mm x 150 mm	71 mm x 160 mm x 160 mm	71 mm x 220 mm x 120 mm	72 mm x 200 mm x 200 mm	79 mm x 210 mm x 210 mm	79 mm x 300 mm x 300 mm	76 mm x 320 mm x 220 mm	76 mm x 320 mm x 320 mm	84 mm x 350 mm x 350 mm	155 mm x 420 mm x 450 mm	
Dimensions (h*w*d) (Lower part)	71 mm x 100 mm x 100 mm	69 mm x 150 mm x 150 mm	71 mm x 160 mm x 160 mm	71 mm x 220 mm x 120 mm	72 mm x 200 mm x 200 mm	79 mm x 210 mm x 210 mm	79 mm x 300 mm x 300 mm	76 mm x 320 mm x 220 mm	76 mm x 320 mm x 320 mm	84 mm x 350 mm x 350 mm	155 mm x 420 mm x 450 mm	
Application	Compression test											
Applicable Specimens	Plastic, rubber	Plastic, rubber	Plastic, rubber	Plastic, rubber	Plastic, rubber	Plastic, rubber	Plastic, rubber	Plastic, rubber, syphon bellows	Plastic, rubber, syphon bellows	Plastic, rubber, syphon bellows	Plastic, rubber, syphon bellows	
Compatible Frames	E42.503,E43.104,E44.104, E44.304,E45.105, E45.305				E43.104,E44.104,E44.304, E45.105,E45.305			E44.104, E44.304, E45.105,E45.305			E45.305	

Compression Platens

Square Compression Platens



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Compression Platens

10 kN Specialty Test Fixture

- » Fixture must be used with a larger sized compression platen
- » Durable alloy tool steel construction with reliable surface hardness
- » The dial gage can be attached as a measuring device resulting in more accurate deformation measurement results

Additional Information

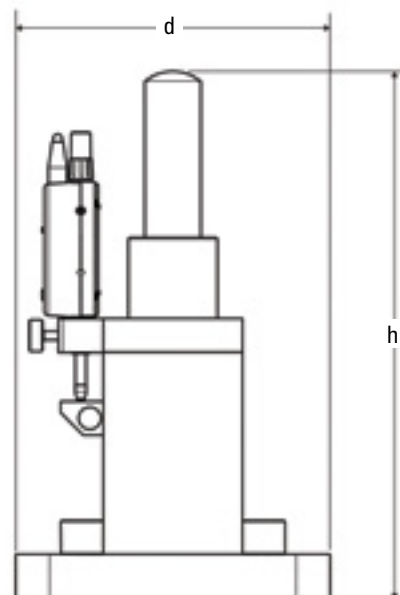
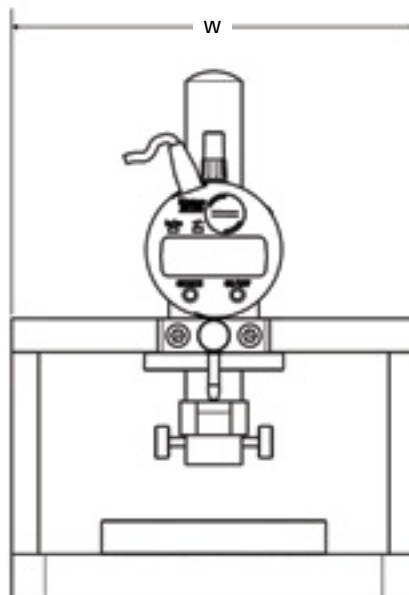
Four upper compression platens with different sizes are included: $\phi 6.4$ mm, $\phi 11.29$ mm, $\phi 25$ mm, $\phi 80$ mm. Additional sizes available upon request.

Applicable Standards

Code	Description
JB/T 9141.4-1999	Test method for compressibility and recovery of flexible graphite sheets

Specifications

Model	ZYM104
Description	10 kN Test fixture, flexible graphite sheets compressibility and recovery
Rated Force	10 kN
Temperature Range	Room temperature
Weight	8.8 kg
Adapter	No adapter; requires compression platens to use together
Dimensions (h*w*d)	229 mm \times 180 mm \times 140 mm
Gage Maximum Travel	12.5 mm
Lower Platen Diameter	$\phi 100$ mm
Application	Compression test
Applicable Specimens	Flexible graphite sheets
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Compression Platens

50 kN Specialty Compression Platen

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Durable alloy tool steel construction with reliable surface hardness

Applicable Standards

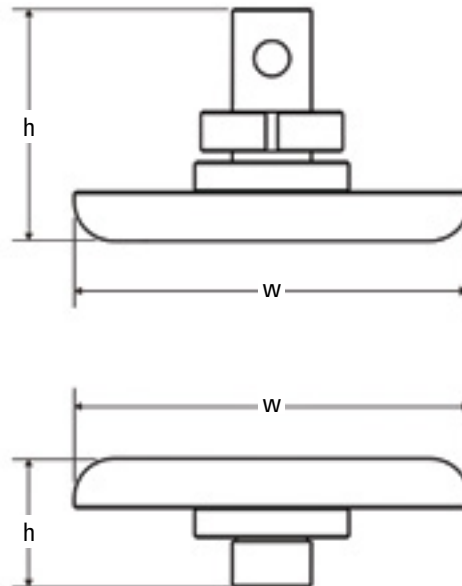
Code	Description
GB/T 19806-2005	Plastics pipes and fittings – Crushing decohesion test for polyethylene (PE) electrofusion assemblies
ISO 13955:1997	Plastics pipes and fittings – Crushing decohesion test for polyethylene (PE) electrofusion assemblies



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Specifications

Model	DLB12129.01
Description	50 kN \varnothing 200 mm Compression platen, crushing decohesion test
Rated Force	50 kN
Temperature Range	Room temperature
Weight	(Upper part) 7.45 kg/(Lower part) 6.58 kg
Adapter Style	(Upper part) 40 mm/(Lower part) 40 mm
Dimensions (D*h)	(Upper part) \varnothing 200 mm \times 118 mm (Lower part) \varnothing 200 mm \times 65 mm
Application	Other pressure test, compression test
Applicable Specimens	Polyethylene electrofusion assemblies
Compatible Frames	E45.105, E45.305
Filet Edge	R20 mm



Compression Platens

50 kN Specialty Compression Fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Minimize system errors with self-aligning mechanism that secures the specimen

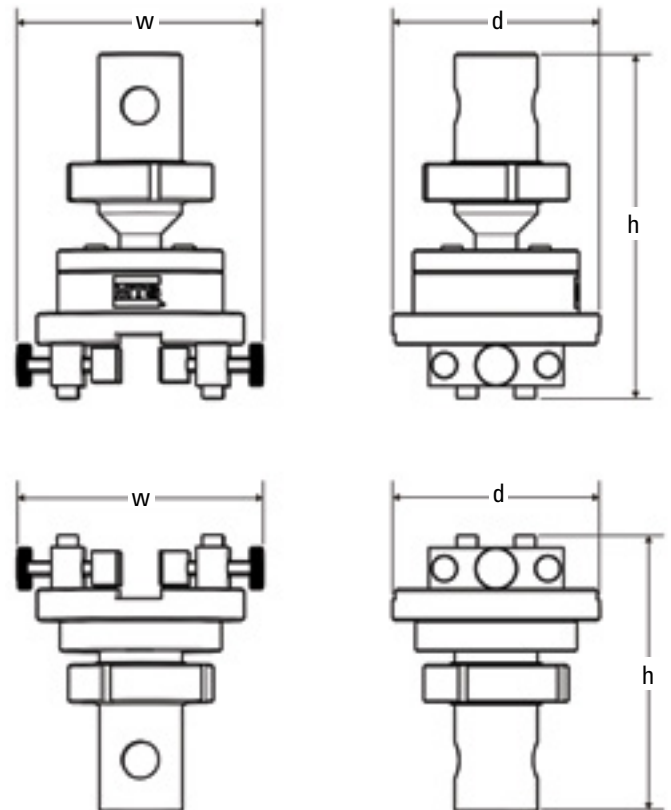
Applicable Standards

Code	Description
ASTM C364/C364M-07(2012)	Standard test method for edgewise compressive strength of sandwich constructions



Specifications

Model	DKF1005089.03
Description	50 kN Compression fixture
Rated Force	50 kN
Temperature Range	Room temperature
Weight	(Upper part) 3.7 kg/(Lower part) 3.1 kg
Adapter Style	(Upper part) 40 mm/(Lower part) 40 mm
Dimensions (h*w*d)	(Upper part) 160 mm × 118 mm × 100 mm (Lower part) 126 mm × 118 mm × 100 mm
Application	Compression test
Applicable Specimens	Sandwich material
Compatible Frames	E45.105, E45.305
Faces Surface Material	Rubber
Faces Opening	0-22 mm
Faces Width	65 mm



Compression Platens

300 kN Specialty Compression Fixture

- » The grip must be used with the compression platens
- » Durable alloy tool steel construction with reliable surface hardness

Additional Information

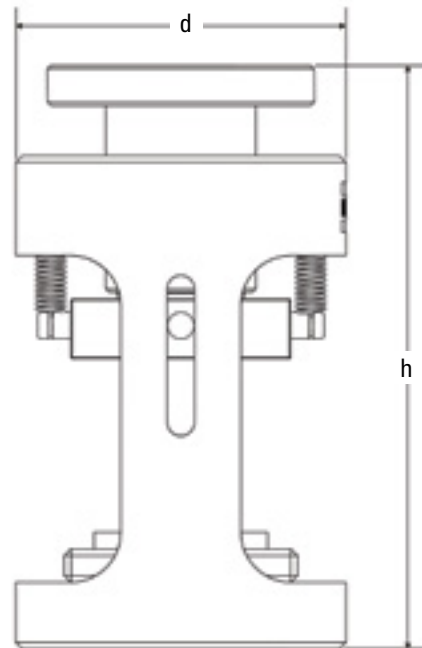
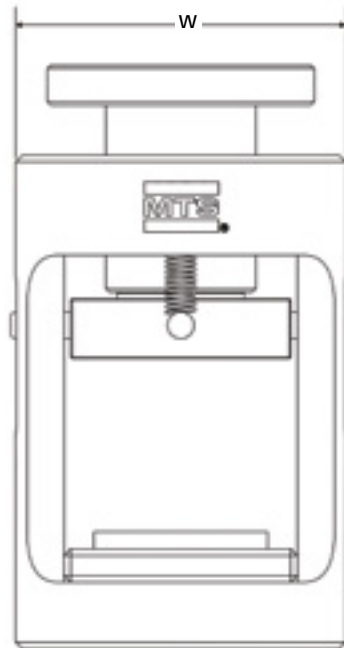
The dimension of specimen is 50.8 mm x 50.8 mm x 50.8 mm, minimal high is 37 mm.

Applicable Standards

Code	Description
GB 10238-2005	Oil well cement
ISO 10426-1:2001	Petroleum and natural gas industries. Cements and materials for well cementing. Part 1: Specification

Specifications

Model	ZYS305
Description	300 kN Compression fixture, oil well cement
Rated Force	300 kN
Temperature Range	Room temperature
Weight	5.6 kg
Adapter	No adapter; requires compression platens to use together
Dimensions (h*w*d)	175 mm x 99 mm x 99 mm
Application	Compression test
Applicable Specimen	Oil well cement
Compatible Frames	E45.105, E45.305, E45.605



Bend Fixtures

Metal Bend Fixtures

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Loading edge and supports can be changed to optional parts or customized designs
- » Adjustable stepless lower span on the support beam
- » The support and loading edges are constructed of alloy tool steel with reliable surface hardness and durability
- » The rollers can rotate to minimize errors caused by friction

Additional Information

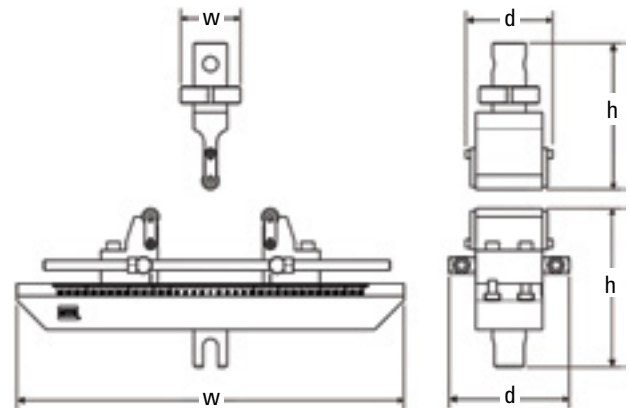
The two adjustable supports (WA305A) should be placed in the surface of the base beam but not on the rubber mat, so the two pieces of square rubber mat by the sides of clevis can be cut off and removed.

Applicable Standards

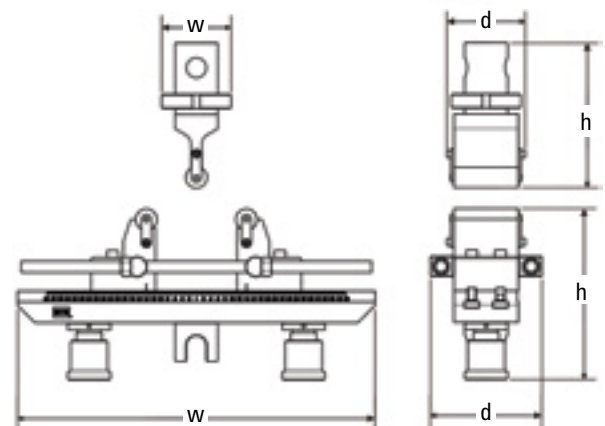
Code	Description
GB/T 14452-1993	Metallic materials – Determination of bending mechanical properties
ISO 7438:2005	Metallic materials – Bend test
ASTM E290-09	Standard test methods for bend testing of material for ductility

Specifications

Model	WA105A	WA305A
Description	100 kN Bend fixture, metal	300 kN Bend fixture, metal
Rated Force	100 kN	300 kN
Temperature Range	Room temperature	Room temperature
Weight (Upper part)	2.5 kg	4.8 kg
Weight (Lower part)	20.5 kg	27 kg
Adapter Style (Upper part)	40 mm	60 mm
Adapter Style (Lower part)	40 mm	60 mm
Dimensions (h*w*d) (Upper part)	175 × 70 × 104 mm	205 × 98 × 110 mm
Dimensions (h*w*d) (Lower part)	190 × 464 × 144 mm	230 × 500 × 156 mm
Application	Bend test	Bend test
Applicable Specimens	Metal plate	Metal plate
Compatible Frames	E45.105, E45.305	E45.305
Loading Edge	R10	R15
Supporting	R10	R15
Span	340 mm	340 mm
Maximum Specimen Width	80 mm	90 mm



WA105A

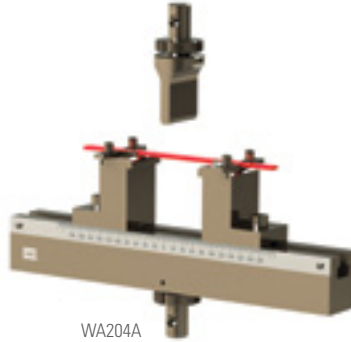
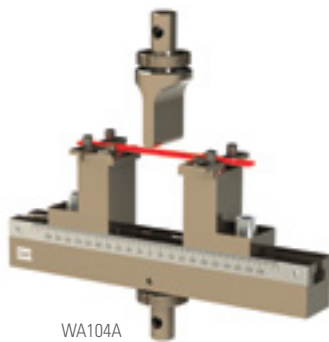
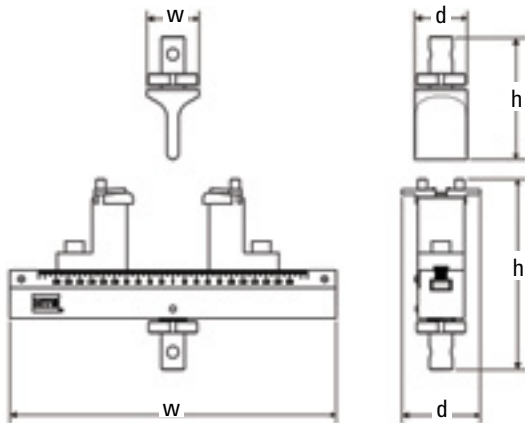


WA305A

Bend Fixtures

Plastics Bend Fixtures

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Loading edge and supports can be changed to optional parts or customized designs
- » Fast and accurate specimen positioning with centering device
- » Adjustable stepless lower span on the support beam



Applicable Standards

Code	Description
GB/T 9341-2008	Plastics – Determination of flexural properties
GB/T 1449-2005	Fiber-reinforced plastic composites – Determination of flexural properties
ISO 178:2003	Plastics – Determination of flexural properties

Optional Loading Edge

Model	Edge Radius	Width	Compatible Fixture
WA104A-06Ab	R2	40 mm	WA104A
WA104A-06Bb	R3	40 mm	WA104A
WA104A-06Cb	R7.6	40 mm	WA104A
WA204A-10Ac	R2	45 mm	WA204A
WA204A-10Bb	R10	45 mm	WA204A

Optional Supporting

Model	Edge Radius	Width	Compatible Fixture
WA104A-08Ab	R5	40 mm	WA104A
WA204A-06Ab	R5	45 mm	WA204A
ZWA304-04A	R5	45 mm	WA304A

Specifications

Model	WA104A	WA204A	ZWA304
Description	10 kN Bend fixture, plastics	20 kN Bend fixture, plastics	30 kN Bend fixture, SST
Rated Force	10 kN	20 kN	30 kN
Temperature Range	Room temperature	Room temperature	-70°C to 350°C
Weight (Upper part)	500 g	670 g	510 g
Weight (Lower part)	4.95 kg	9.22 kg	4.7 kg
Adapter Style (Upper part)	20 mm	20 mm	20 mm
Adapter Style (Lower part)	20 mm	20 mm	20 mm
Dimensions (h*w*d) (Upper part)	106 mm × 42 mm × 42 mm	108 mm × 42 mm × 42 mm	108 mm × 42 mm × 42 mm
Dimensions (h*w*d) (Lower part)	151 mm × 280 mm × 77 mm	180 mm × 340 mm × 88 mm	180 mm × 190 mm × 88 mm
Application	Bend test	Bend test	Bend test
Applicable Specimens	Plastic plate, sheet	Plastic plate, sheet	Plastic plate, sheet
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305		
Loading Edge	R5	R5	R5
Supporting	R2	R2	R2
Maximum Span	160 mm	200 mm	80 mm
Maximum Specimen Width	40 mm	45 mm	45 mm

Bend Fixtures

10 kN Wood Bend Fixtures

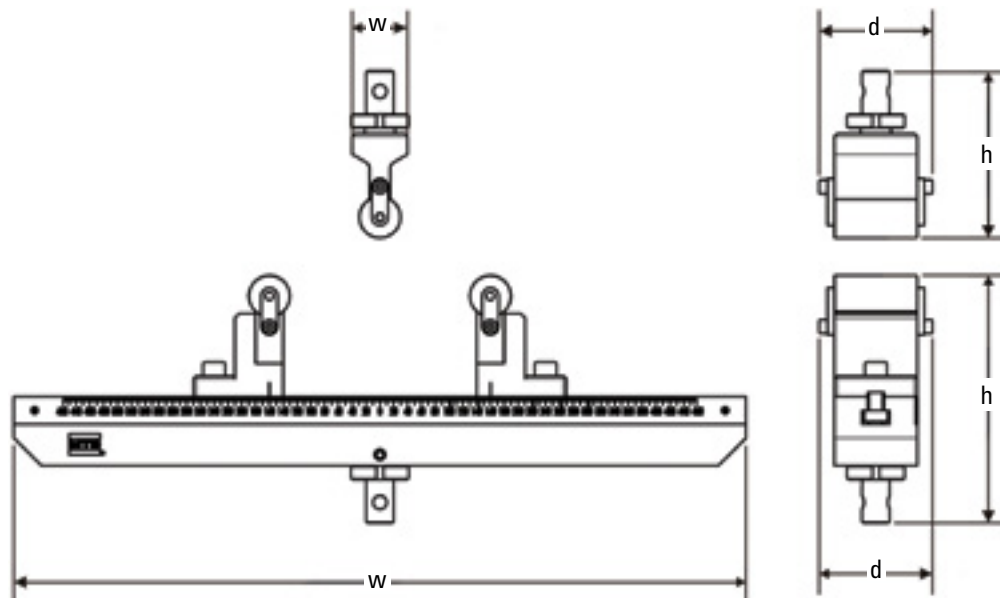
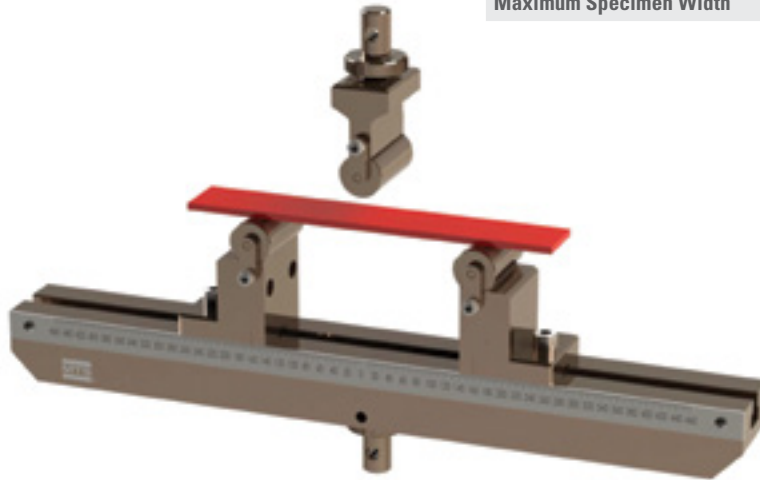
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Loading edge and supports can be changed to optional parts or customized designs
- » Adjustable stepless lower span on the support beam
- » The support and loading edges are constructed of alloy tool steel with reliable surface hardness and durability
- » The rollers can rotate to minimize errors caused by friction

Applicable Standards

Code	Description
GB/T 17657-1999	Test methods for evaluating the properties of wood-based panels and surface decorated wood-based panels

Specifications

Model	ZWC104A
Description	10 kN Bend fixture, wood
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.1 kg/(Lower part) 14.27 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 120 mm × 42 mm × 82 mm (Lower part) 180 mm × 530 mm × 82 mm
Application	Bend test
Applicable Specimens	Wood-based panel, surface decorated wood-based panel
Compatible Frames	E45.105, E45.305
Loading Edge	R15
Optional Loading Edge	R7.5
Supporting	R15
Optional Supporting	R7.5
Maximum Span	400 mm
Maximum Specimen Width	60 mm



Bend Fixtures

Dial Gage Bend Fixtures

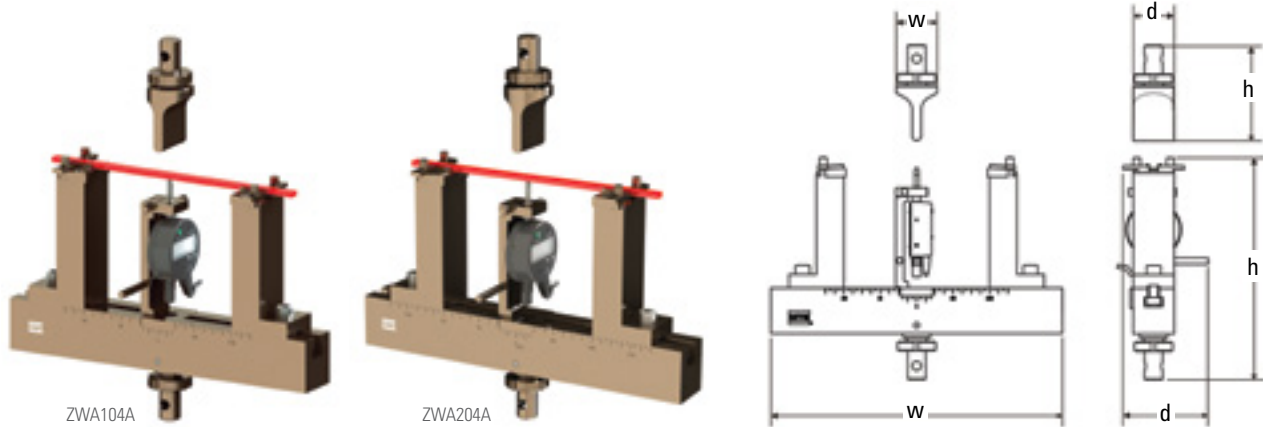
- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Loading edge and supports can be changed to optional parts or customized designs
- » Fast and accurate specimen positioning with centering device
- » Adjustable stepless lower span on the support beam
- » The dial gage can be attached as a measuring device providing more accurate deformation measurement results

Applicable Standards

Code	Description
GB/T 9341-2008	Plastics – Determination of flexural properties
GB/T 1449-2005	Fiber-reinforced plastic composites - Determination of flexural properties
ISO 178:2003	Plastics – Determination of flexural properties

Optional Supporting

Model	Edge Radius	Maximum Specimen Width	Compatible Fixture
ZWA104A-18	R5	45 mm	ZWA104A
ZWA204A-03	R5	45 mm	ZWA204A



Specifications

Model	ZWA104A	ZWA204A
Description	10 kN Dial gage bend fixture	20 kN Dial gage bend fixture
Rated Force	10 kN	20 kN
Temperature Range	Room temperature	Room temperature
Weight (Upper part)	670 g	670 g
Weight (Lower part)	8.92 kg	9.22 kg
Adapter Style (Upper part)	20 mm	20 mm
Adapter Style (Lower part)	20 mm	20 mm
Dimensions (h*w*d) (Upper part)	108 mm × 45 mm × 45 mm	108 mm × 45 mm × 45 mm
Dimensions (h*w*d) (Lower part)	255 mm × 320 mm × 88 mm	255 mm × 340 mm × 88 mm
Application	Bend test	Bend test
Applicable Specimen	Plastics plate	Plastics plate
Compatible Frame	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Loading Edge	R5	R5
Supporting	R2	R2
Maximum Span	160 mm	200 mm
Maximum Specimen Width	45 mm	45 mm
Gage Maximum Travel	12.5 mm	12.5 mm
Dial Gage Resolution	0.001 mm	0.001 mm

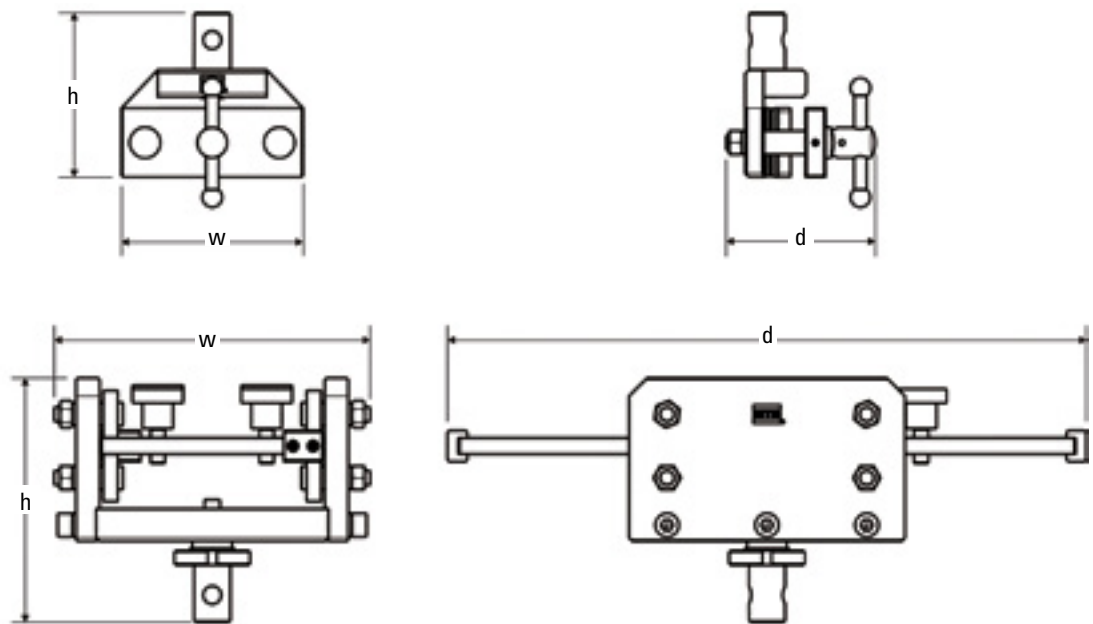
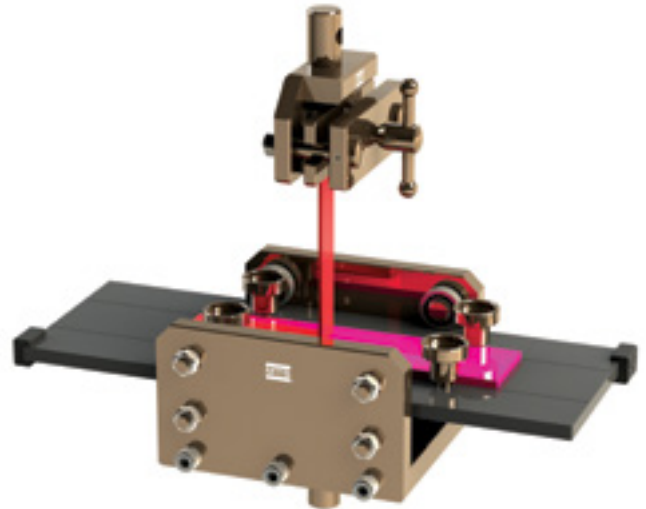
Peel Fixtures

200 N Peel Fixtures, 90°

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

Additional Information

This is a custom manual peeling fixture, which is applicable to 90° peel tests of bonded assembly specimens. The table is 200 mm in length and 50 mm in width, with a maximum peeling length of 185 mm and a peeling width of 30 mm.



Specifications

Model	BA202A
Description	200 N Peel fixture, 90°
Rated Force	200 N
Temperature Range	Room temperature
Weight	(Upper part) 1.35 kg/(Lower part) 6.58 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 91 mm × 100 mm × 82 mm (Lower part) 135 mm × 174 mm × 352 mm
Application	Tensile test, 90° Peel test
Applicable Specimens	Adhesive bonds
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Flexible Layer Width	30 mm
Rigid Layer Width	50±1 mm
Maximum Peeling Length	185 mm

Peel Fixtures

200 N Floating Roller Peel fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Fixture must be used with a right grip, e.g., DSA502A

Additional Information

The custom manual peeling grip contains only an upper grip, which can be used with a lower part, e.g., DSA502A. Peeling arc radius is 12.5 mm. The maximum peeling width is 30 mm.

Applicable Standards

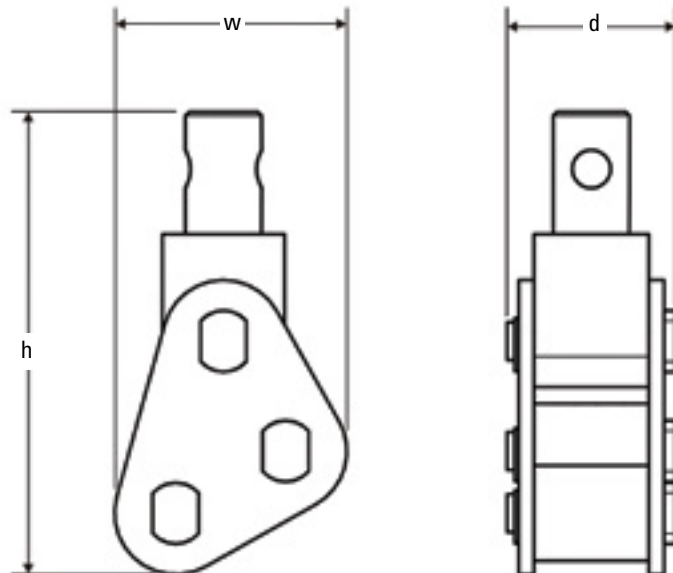
Code	Description
ISO 4578:1997	Determination of peel resistance of high-strength adhesive bonds – Floating roller method
EN 1464:2010	Adhesives – Determination of peel resistance of adhesive bonds – Floating roller method
GB/T 7122-1996	Adhesives – Determination of peel resistance of high-strength adhesive bonds – Floating roller method



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Specifications

Model	BB202A
Description	200 N Floating roller peel fixture
Rated Force	200 N
Temperature Range	Room temperature
Weight	(Upper part) 760 g
Adapter Style	(Upper part) 20 mm
Dimensions (h*w*d)	(Upper part) 123 mm × 56 mm × 44 mm
Application	Peel test
Applicable Specimens	Adhesive, peel specimen
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Width	30 mm
Peeling Radius	12.5 mm



Peel Fixtures

2 kN Peel fixture, 90°

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

Additional Information

Applicable to peel tests of cross-linked pressure pipe with an inner diameter of 12 mm, 16 mm, 20 mm, 26 mm, 33 mm, 42 mm, 53 mm, 63 mm, 76 mm or 94 mm. It can be customized according to the requirements. The maximum peeling width is 10 mm.

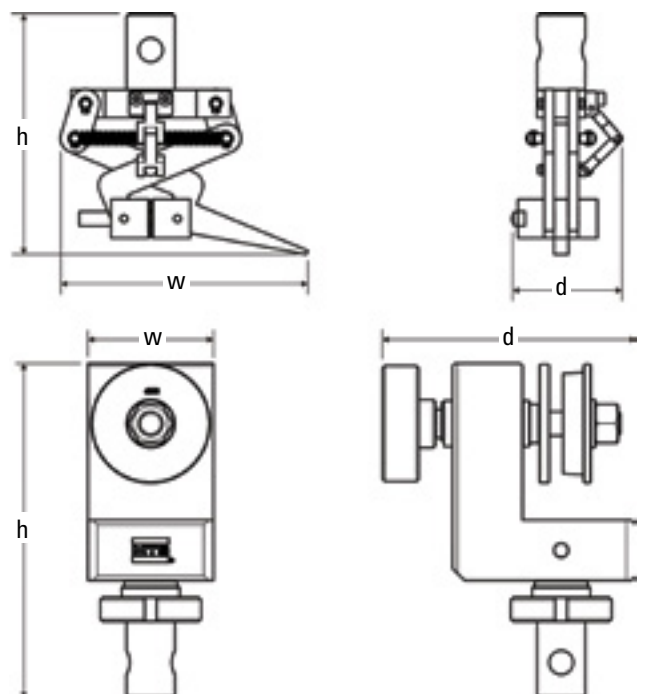
Applicable Standards

Code	Description
ASTM F1281-03	Standard specification for cross-linked polyethylene/aluminum/cross-linked polyethylene (pex-al-pex) pressure pipe
ASTM F1282-06	Standard specification for cross-linked polyethylene/aluminum/polyethylene (pex-al-pex) composite pressure pipe
GB/T 18997.1-2003	Polyethylene/Aluminium/Polyethylene composite pressure pipe – Part 1: PE/AL/PE pipe overlap-welded by aluminium pipe



Specifications

Model	BA203B
Description	2 kN Peel fixture, 90°, polyethylene/aluminum composite pressure pipe
Rated Force	2 kN
Temperature Range	Room temperature
Weight	(Upper part) 440 g/(Lower part) 1.85 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 102 mm × 104 mm × 46 mm (Lower part) 156 mm × 53 mm × 105 mm
Application	Peel test
Applicable Specimens	Cross-linked pressure pipe, composite pressure pipe
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Peel Fixtures

3 kN Peel Fixtures, 90°

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Flexible layer is peeled from rigid layer in a constant angle from the gap between roles

Applicable Standards

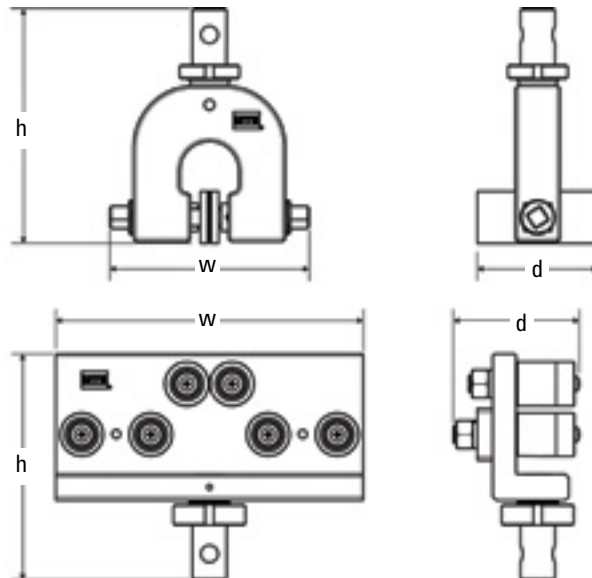
Code	Description
HB 5165-1981	Metal bonding 90° peel strength test method



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Specifications

Model	BA303B
Description	3 kN Peel fixture, 90°
Rated Force	3 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.51 kg/(Lower part) 3.53 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 136 mm × 116 mm × 70 mm (Lower part) 131mm × 178 mm × 73 mm
Application	Peel test
Applicable Specimens	Adhesive, peel specimen
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305
Maximum Specimen Width	20 mm
Peeling Radius	12.8 mm



Peel Fixtures

5 kN Specialty Peel Fixture, 180°

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

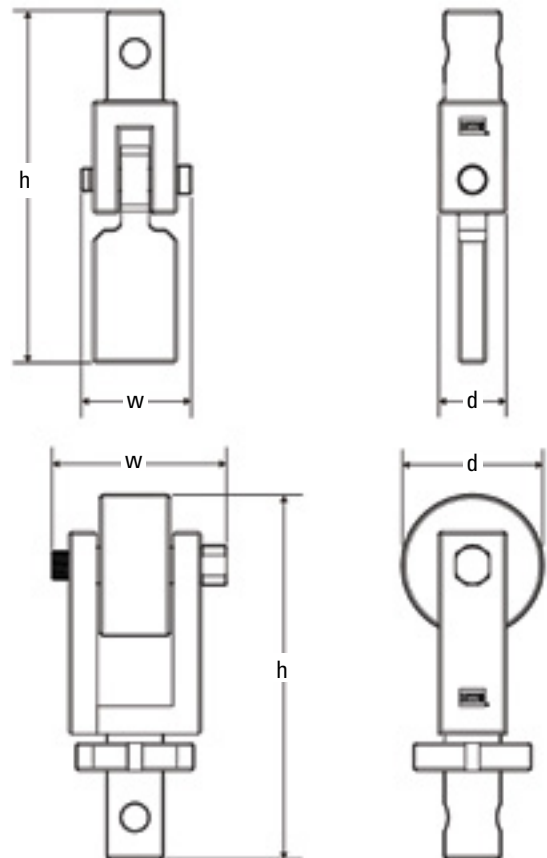
Additional Information

Customized peel fixture according to customer requirement.



Specifications

Model	DL12179.01
Description	5 kN Peel fixture, 180°, customized
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 380 g/(Lower part) 700 g
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 125 mm × 39 mm × 24 mm (Lower part) 130 mm × 62 mm × 50 mm
Application	Peel test
Applicable Specimens	Plastic, rubber, glass, adhesive
Compatible Frames	E42.503, E43.104, E44.104, E44.304



Shear Fixtures

1 kN Fiberglass Reinforced Plastic Shear Fixture

- » Fixture must be used with a right grip compression platen

Additional Information

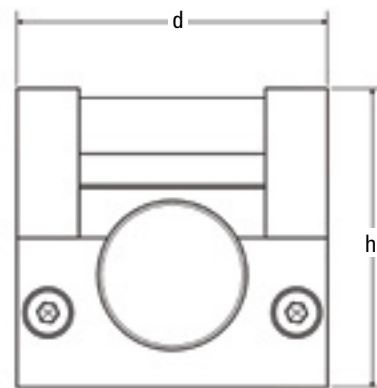
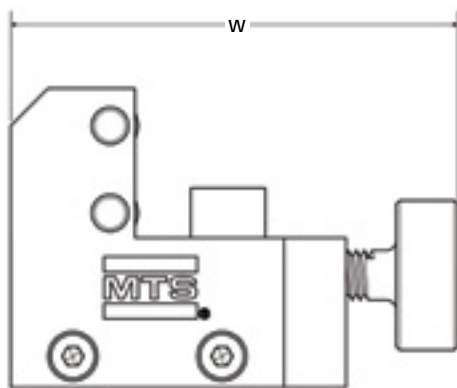
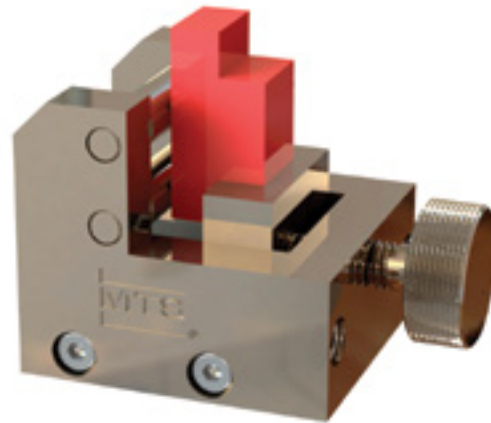
The manual shearing fixture is applicable to shear tests of specimens with various specifications. The maximum clamping width is 30 mm and the maximum clamping thickness is 10 mm.

Applicable Standards

Code	Description
GB/T 1450.1-2005	Fiber-reinforced plastic composites – Determination of interlaminar shear strength
GB/T 17657-1999	Test methods for evaluating the properties of wood-based panels and surface decorated wood-based panels
GB/T 17657-2013	Test methods for evaluating the properties of wood-based panels and surface decorated wood-based panels

Specifications

Model	JB103A
Description	1 kN Shear fixture, fiberglass reinforced plastics
Rated Force	1 kN
Temperature Range	Room temperature
Weight	550 g
Adapter Style	No adapter
Dimensions (h*w*d)	48 mm × 75 mm × 50 mm
Application	Shear test
Applicable Specimens	Glass fiber-reinforced plastic, wood-based panels
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Shear Fixtures

10 kN Wood Shear Fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

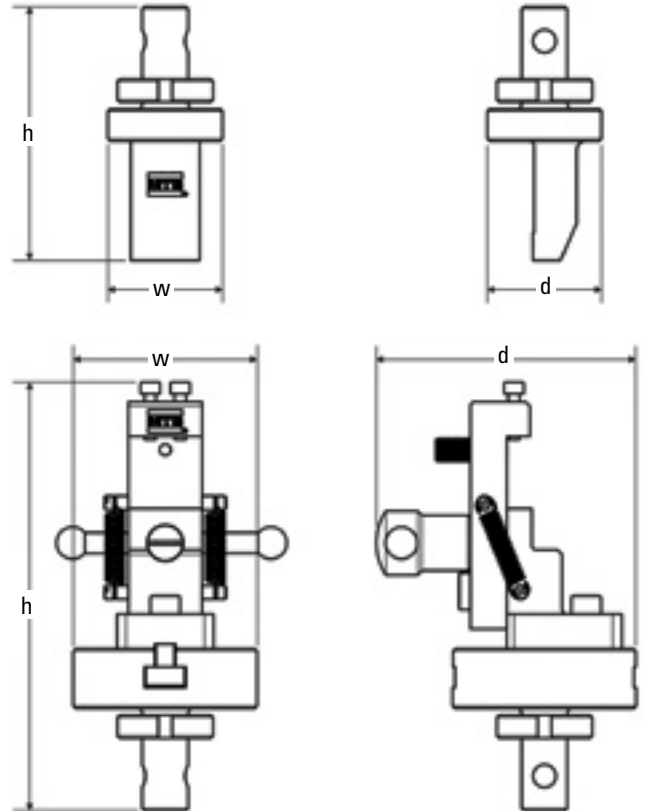
Applicable Standards

Code	Description
HG/T 2727-2010	Polyvinyl acetate emulsion adhesives for woods
GB/T 17517-1998	Adhesives – Wood to wood adhesive bonds – Determination of shear strength by compression loading
ISO 6238:1987	Adhesives – Wood-to-wood – Determination of compression shearing strength



Specifications

Model	JA104B
Description	10 kN Wood shear fixture
Rated Force	10 kN
Temperature Range	Room temperature
Weight	(Upper part) 590 g/(Lower part) 2.17 kg
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 111 mm × 50 mm × 50 mm (Lower part) 187 mm × 101 mm × 114 mm
Application	Compression shear test
Applicable Specimens	Natural wood, artificial board
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Shear Fixtures

30 kN Metal Shear Fixture (double faces)

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

Additional Information

Grip consists of four sharing panels for specimens of differing dimensions. The panels can be customized.

Array Panel Models

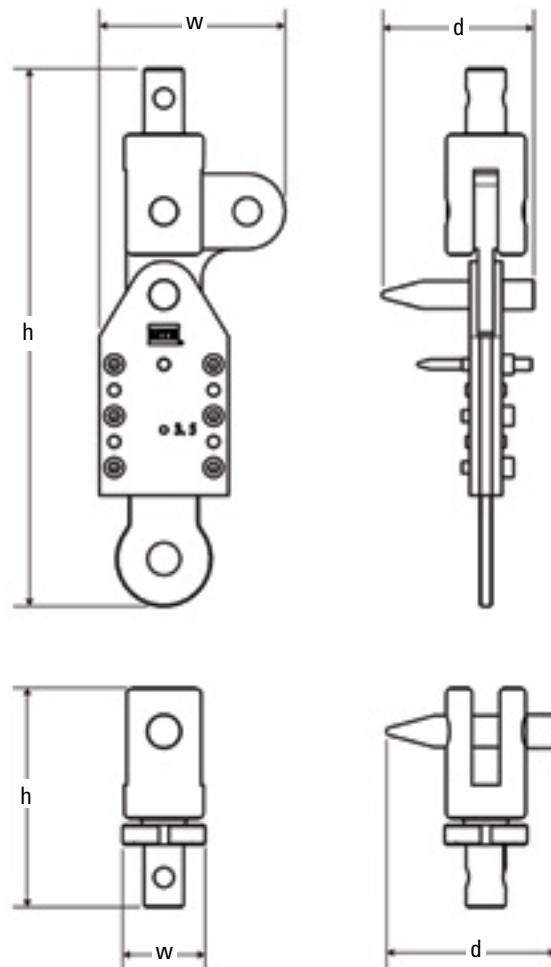
Model	Diameter of Pin Hole	Minimum Specimen Length
JA504A.01	∅3.6 mm	16 mm
JA504A.02	∅4.9/5.1/7.5/7.8 mm	20 mm
JA504A.03	∅5.8/6.0/6.5/7.0 mm	20 mm
JA504A.04	∅9.0/9.5/10.0 mm	30 mm

Applicable Standards

Code	Description
ISO 8749:1986	Pins and grooved pins – Shear test
GB/T 13683-1992	Pins and grooved pins – Shear test

Specifications

Model	JA504A
Description	30 kN Metal shear fixture (double faces)
Rated Force	30 kN
Temperature Range	Room temperature
Weight	(Upper part) 2.27 kg/(Lower part) 690 g
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 271 mm × 91 mm × 77 mm (Lower part) 111 mm × 42 mm × 87 mm
Application	Shear test
Applicable Specimens	Pin, bar
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Shear Fixtures

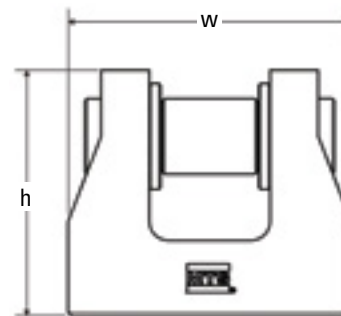
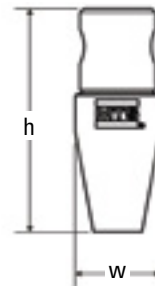
100 kN Metal Shear Fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Shear blocks can be customized according to requirements
- » Fixture must be used with a compression platen



Specifications

Model	JA105B
Description	100 kN Metal shear fixture
Rated Force	100 kN
Temperature Range	Room temperature
Weight	(Upper part) 1.61 kg/(Lower part) 9.79 kg
Adapter Style	(Upper part) 40 mm/(Lower part – no adapter)
Dimensions (h*w*d)	(Upper part) 118 mm × 45 mm × 70 mm (Lower part) 130 mm × 150 mm × 120 mm
Application	Compression shear test
Applicable Specimens	Metallic bar
Compatible Frames	E45.105,E45.305
Specimen Diameter	ø10 mm



Tear Fixtures

1 kN Leather Double Edge Tear Fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters

Applicable Standards

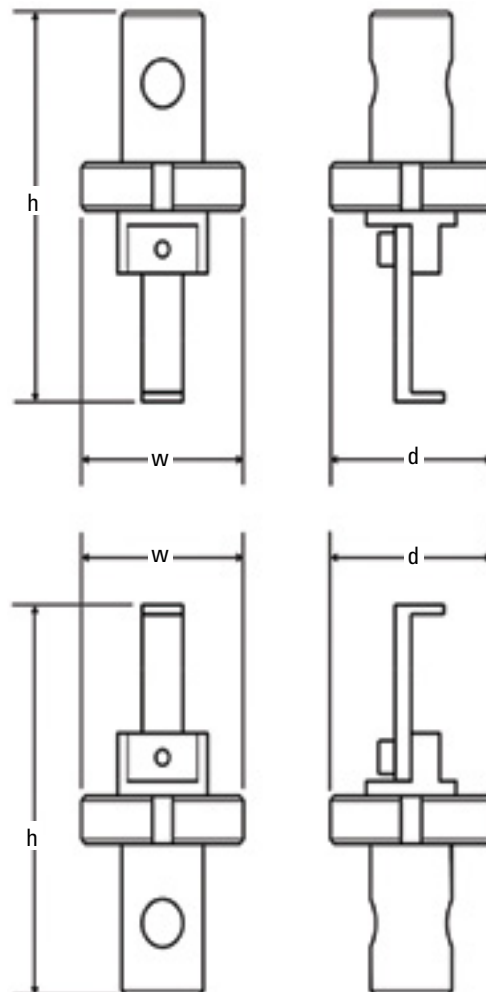
Code	Description
ISO 3377-2:2002	Leather – Physical and mechanical tests – Determination of tear load – Part 2: Double edge tear
QB/T 2711-2005	Leather – Physical and mechanical tests – Determination of tear load – Double edge tear



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Specifications

Model	ZSL103
Description	1 kN Leather double edge tear fixture
Rated Force	1 kN
Temperature Range	Room temperature
Weight	(Upper part) 190 g/(Lower part) 190 g
Adapter Style	(Upper part) 20 mm/(Lower part) 20 mm
Dimensions (h*w*d)	(Upper part) 82 mm × 42 mm × 42 mm (Lower part) 82 mm × 42 mm × 42 mm
Application	Tension test, tear test
Applicable Specimen	Leather
Compatible Frames	E42.503, E43.104, E44.104, E44.304, E45.105, E45.305



Puncture Fixtures

5 kN Geotextile Puncture Fixture

- » Designed to use with MTS Exceed load frames; can also be used on Criterion load frames with appropriate conversion adapters
- » Plungers or clamping rings can be customized

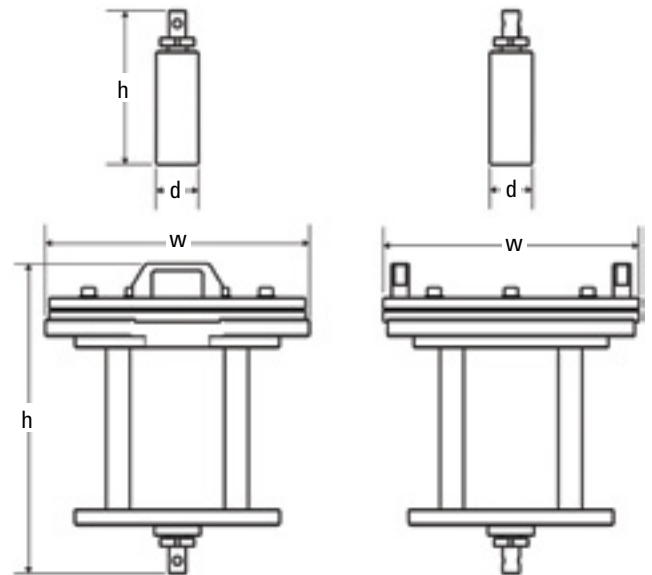
Applicable Standards

Code	Description
ISO 12236:2006	Geosynthetics – Static puncture test (CBR test)
GB/T 14800-2010	Geosynthetics – Static puncture test (CBR test)
GB/T 17639-2008	Geosynthetics – Synthetic filament spunbond and needlepunched nonwoven geotextiles
GB/T 17640-2008	Geosynthetics – Synthetic filament woven geotextiles



Specifications

Model	ZDPA503
Description	5 kN Geotextile puncture fixture
Rated Force	5 kN
Temperature Range	Room temperature
Weight	(Upper part) 2.17 kg/(Lower part) 30.4 kg
Adapter Style	20 mm
Dimensions (h*w*d)	(Upper part) 180 mm × 42 mm × 42 mm (Lower part) 362.5 mm × 310 mm × 310 mm
Plunger	∅50 mm cylinder with 2.5 mm leading edge radius
Clamping Ring	∅150 mm internal diameter
Application	Puncture test
Applicable Specimen	Geotextile
Compatible Frames	E43.104 E44.104 E44.304 E45.105



Grip Supplies and Intensifiers

MTS Model 685 self-contained, Hydraulic Grip Supplies have been engineered for both performance and ease of use. There are two grip supplies and one grip intensifier to choose from.

Standard Features Include:

- » Directional control valve for each grip
- » Center valve detent, allowing unparalleled control over gripping
- » Continuous positive pressure design, providing high pressure stability over the entire operating range
- » Separate flow control valve for control of grip engagement speed
- » Independent grip circuits eliminate crosstalk
- » Easy to maintain and service
- » Accommodate a wide range of electrical connections

Model 685.22 and Model 685.10 Standalone Hydraulic Grip Supplies

The 685.22 and 685.10 units feature a self-contained hydraulic pump, a 0.75 kW (1 hp) electric motor, a 11.3 l (3 gal) reservoir, a 10-micron absolute return line filter, and hoses for connection to grips. These units are furnished with individual directional control valves for upper and lower grips. The grip supplies use a special hydraulic fluid which allows the grips to be used in environmental chambers at elevated temperatures. They are designed to run continuously, which results in good pressure stability and easy adjustment of the output pressure. Grip closure rate is also adjustable. Since the grip supplies are self-contained systems, they allow the use of hydraulic grips on non-hydraulic test systems.



Model 685.60 Hydraulic Grip Intensifier

The 685.60 Hydraulic Grip Intensifier, which utilizes an innovative fluid-to-fluid intensification system, is used with grips that require a pressure higher than the normal system hydraulic pressure. Two versions are available with factory adjusted output pressures of 45 MPa (6,500 psi) and 69 MPa (10,000 psi). The output pressure is adjustable from 10 MPa (1,500 psi) up to the grip supply output rating.

To minimize the set-up time of larger grips, a high volume upgrade kit is available.

Force Transducers for Exceed Series 40 Electromechanical Systems

S-Beam

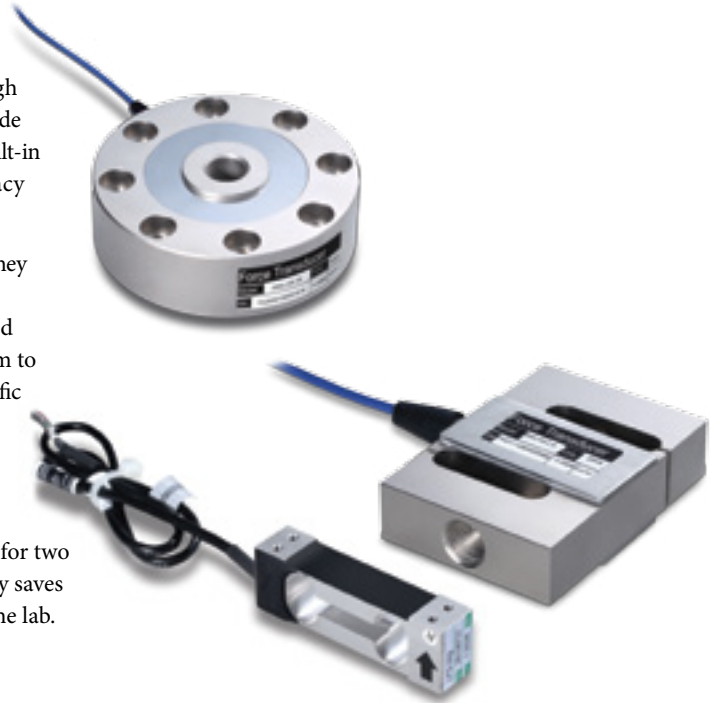
- » Measures axial loads using S-shaped design with a single embedded strain gage
- » Offers exceptional value and extreme simplicity for low-capacity testing with minimal side loads
- » Ideal for low-force tension and compression testing of plastics, rubber and paper
- » Designed for accuracy and linearity
- » Available in a range of force capacities (1 N to 5 kN)



Precision, TEDS-enabled load cells

Highly accurate MTS load cells are designed to offer high stiffness and stability with low non-linearity. They provide overload and side load protection and are designed with built-in shunt resistors to facilitate regular verification of accuracy using calibration routines featured in MTS software.

To increase efficiency and reduce potential operator error, they feature TEDS (Transducer Electronic Data Sheets) self-identification capabilities that follow the recently adopted IEEE 1451.4 standard. This enables an MTS Exceed system to automatically detect installed load cells and download specific calibration information.



Load cell savings

The dual-test zone design allows one load cell to be used for two types of test on the same load frame. This feature not only saves testing time, but it reduces overall load cell expense for the lab.

Part Number	Type	Force Rating	Compatible Load Frame	TEDS ID	Overload Protection	Connections
100302923	single cantilever beam	5 N	E42/E43	YES	150% of Capacity	M3
100302924	single cantilever beam	10 N	E42/E43	YES	150% of Capacity	M3
100302925	single cantilever beam	20 N	E42/E43	YES	150% of Capacity	M3
100302926	S Beam	50 N	E42/E43	YES	150% of Capacity	M8
100302927	S Beam	100 N	E42/E43/E44.104	YES	150% of Capacity	M8
100302928	S Beam	200 N	E42/E43/E44.104	YES	150% of Capacity	M6
100302929	S Beam	500 N	E42/E43/E44.104	YES	150% of Capacity	M6
100302930	S Beam	1 kN	E42/E43/E44.104	YES	150% of Capacity	M10
100302931	S Beam	2 kN	E42/E43/E44.104	YES	150% of Capacity	M12
100302932	S Beam	5 kN	E42/E43/E44.104	YES	150% of Capacity	M12
100302933	S Beam	10 kN	E43/E44.104	YES	150% of Capacity	M12
100302934	S Beam	25 kN	E44.204	YES	150% of Capacity	M18X1.5
100302935	S Beam	50 kN	E44.304	YES	150% of Capacity	M18X1.5
100302939	Low Profile Mount	30 kN	E43.304/E44.304	YES	150% of Capacity	M24X1.5/M10
100302940	Low Profile Mount	50 kN	E43.504	YES	150% of Capacity	M24X1.5/M10
100302937	Low Profile Mount	100 kN	E45.105	YES	150% of Capacity	M24X1.5/M10
100302944	Low Profile Mount	300 kN	E45.305	YES	150% of Capacity	M36X2
100302946	Low Profile Mount	600 kN	E45.605	YES	150% of Capacity	M72X2

Contacting Extensometers

635 Monotonic Tensile Extensometers

MTS 635 Series Extensometers are specially designed for popular monotonic axial tensile strain measurement. They are the economic choices, ideally for large volume QA/QC testing.

Like all MTS extensometers, these feature our unique design of proprietary strain gaged elements using a special heat treated alloy. They are designed with a ground profile, dual-member flexure that provides for very low activation force with excellent strength. The design assures true center-point bending resulting in low hysteresis and exceptionally accurate strain readings.

Mechanical stops on these extensometers make it possible to leave them attached through specimen failure without damaging the unit. They also feature a zero-set pin for accurate and consistent determination of the initial gage length.

MTS Fundamental Series 635 Extensometers come standard with hardened, replaceable knife edges for flat and round specimens. These units come standard with patented MTS Quick-attach springs which make attachment to specimens fast and easy. Each extensometer is packed in a storage case containing the instrument and attached cable.

Features

- » Designed for monotonic tensile test
- » Proven MTS reliability and can be left in place through specimen failure
- » Easy to use with MTS patented Quick Attach springs

Linearity¹

Typical: 0.08% of range

Immersibility

Not intended for immersion in water or other liquids

Cable Length

Standard 1.5 m (60 in)

Adapters

Extensometer adapter: Bendix PT01A-10-6P. All zero-balancing circuitry is situated in the adapter to reduce unit weight

Accuracy²

Designed to meet ASTM E83 Class B1 and ISO 9513 Class 0.5 standards

Temperature Range

4°C to 50°C (40°F to 120°F)



Specifications

Model	Part Number	Gage Length	Maximum Travel	Maximum Strain	Length (from knife edge to back of housing)	Height (from bottom to top)
635.25F-05	057-863-506	25 mm	+ 5 mm	20%	77.5 mm (3.1 in)	39.6 mm (1.1 in)
635.50F-05	057-863-505	50 mm	+ 5 mm	10%	77.5 mm (3.1 in)	59.2 mm (2.3 in)
635.50F-10	057-863-504	50 mm	+ 10 mm	20%	77.5 mm (3.1 in)	61.5 mm (2.4 in)
635.50F-25	057-863-503	50 mm	+ 25 mm	50%	153.7 mm (6.1 in)	69.1 mm (2.7 in)
635.100F-10	057-863-502	100 mm	+ 10 mm	10%	77.5 mm (3.1 in)	111.8 mm (4.4 in)
635.100F-25	057-863-501	100 mm	+ 25 mm	25%	153.7 mm (6.1 in)	119.1 mm (4.7 in)

Notes:

¹ Linearity stated is for ascending data and is the deviation from best fit straight line thru zero expressed as a percent of full scale.

² Calibrations are separate. These extensometers leave the factory with a quality validation and verification by sampling three measurement points to validate performance. The 635 series extensometers are intended to meet ASTM class B-1 and ISO class 0.5.

Contacting Extensometers

632 & 634 Advantage Axial Extensometers

- » Fatigue rated high performance extensometers for both monotonic and dynamic testing
- » Available in many gage lengths (10 to 50 mm) and travel ranges (± 1.5 to 50 mm)
- » Meet and/or exceed ASTM E83 Class B1 and ISO 9513 Class 0.5 calibration requirements
- » *See Gage Length Extenders for 634.11 / .12 / .25 Axial Extensometers...page 99*

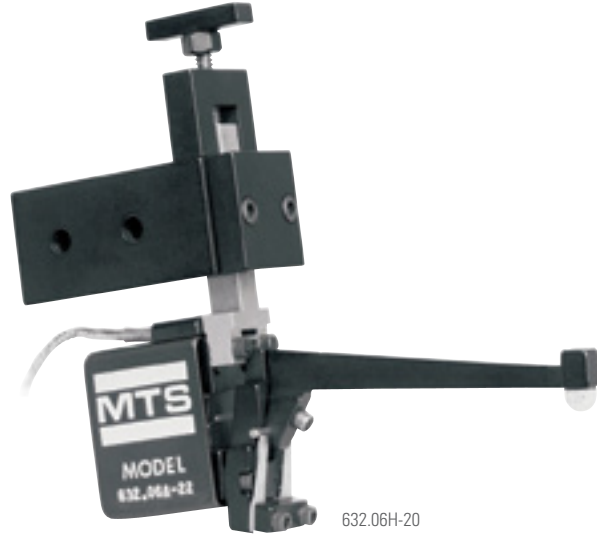


Model	Type	Gage Length(s)	Travel	Accuracy	Temperature Range
632.13F-20	Axial	10 mm	+/- 1.5 mm	class 0.5	-100°C to 150°C
632.26E-30	Axial	0.3 in	+/- 0.018 in	class 0.5	-150°F to 350°F
632.26E-31	Axial	0.3 in	+/- 0.018 in	class 0.5	-452°F to 150°F
632.26E-33	Axial	0.3 in	+/- 0.018 in	class 0.5	-150°F to 350°F
632.26E-40	Axial	0.5 in	+/- 0.045 in	class 0.5	-150°F to 300°F
632.26E-41	Axial	0.5 in	+/- 0.045 in	class 0.5	-452°F to 150°F
632.26E-43	Axial	0.5 in	+/- 0.045 in	class 0.5	-150°F to 350°F
632.26F-20	Axial	8 mm	+/- 1.2 mm	class 0.5	-100°C to 150°C
632.26F-21	Axial	8 mm	+/- 1.2 mm	class 0.5	-269°C to 65°C
632.26F-23	Axial	8 mm	+/- 1.2 mm	class 0.5	-100°C to 175°C
632.26F-30	Axial	8 mm	+/- 0.48 mm	class 0.5	-100°C to 150°C
632.26F-31	Axial	8 mm	+/- 0.48 mm	class 0.5	-269°C to 65°C
632.26F-33	Axial	8 mm	+/- 0.48 mm	class 0.5	-100°C to 175°C
632.26F-40	Axial	12 mm	+/- 1.08 mm	class 0.5	-100°C to 150°C
632.26F-41	Axial	12 mm	+/- 1.08 mm	class 0.5	-269°C to 65°C
632.26F-43	Axial	12 mm	+/- 1.08 mm	class 0.5	-100°C to 175°C
634.11F-24	Axial	25 mm	+/- 2.5 mm	class 0.5	-85°C to 120°C
634.11F-54	Axial	25 mm	5 mm	class 0.5	-85°C to 120°C
634.12F-24	Axial	25 mm	-2.5 mm to 12.5 mm	class 0.5	-85°C to 120°C
634.12F-54	Axial	25 mm	12.5 mm	class 0.5	-85°C to 120°C
634.25F-24	Axial	50 mm	-5 mm to 25 mm	class 0.5	-85°C to 120°C
634.25F-54	Axial	50 mm	25 mm	class 0.5	-85°C to 120°C
634.31F-24	Axial/Multiple Gage Length	10, 15, 20, 25, 30, 35, 40, 45, 50 mm	-2 mm to 4 mm	class 0.5	-85°C to 120°C

Contacting Extensometers

Compression Gage

- » Ideal for testing advanced materials and composites
- » Extremely versatile: designed for measuring small deformations, bend testing or specimens with unusual geometries
- » Measures displacement in contact with specimen or on an active component in the force train
- » Meets and/or exceeds ASTM E83 Class B1 and ISO 9513 Class 0.5 calibration requirements



Model	Type	Height	Length	Travel	Accuracy	Temperature Range
632.06H-20	Displacement Gage	101 mm	101 mm	-4 mm to 4 mm	class 0.5	-100°C to 150°C

Gage Length Extenders

GAGE LENGTH EXTENDERS FOR 634.11 / .12 / .25 AXIAL EXTENSOMETERS

634.11F-24
(with extender)

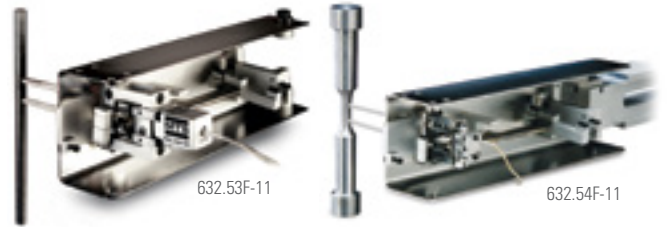


Model	Type	Compatible Extensometer(s)	Gage Dimension(s)
634.15C-31	Gage Length Extenders	634.11F, 634.12F	100 mm
634.15C-32	Gage Length Extenders	634.11F, 634.12F	150 mm
634.15C-33	Gage Length Extenders	634.11F, 634.12F	200 mm
634.15C-37	Gage Length Extender Kit	634.11F, 634.12F	50, 100, 150, 200 mm
634.15C-40	Gage Length Extenders	634.25 (C/F)	100 mm
634.15C-41	Gage Length Extenders	634.25 (C/F)	150 mm
634.15C-42	Gage Length Extenders	634.25 (C/F)	200 mm
634.15C-47	Gage Length Extender Kit	634.25 (C/F)	100, 150, 200 mm
634.15C-4X	Gage Length Extenders	634.25 (C/F)	80 mm

Contacting Extensometers

Axial High-Temperature Extensometers

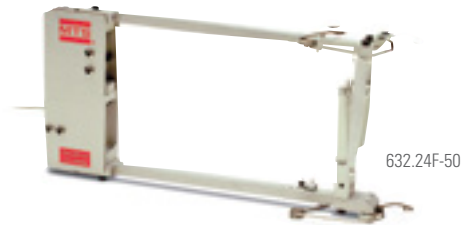
- » Lightweight, low-contact-force devices for measuring strain in tests up to 2200°F (1200°C) in furnaces or induction heaters
- » Designed for high-temperature tension and compression testing applications, typically for round metal and ceramic specimens
- » Maximize accuracy in complex high-temperature materials tests that require precise measurement of thermal gradients
- » Meet and/or exceed ASTM E83 Class B1 and ISO 9513 Class 0.5 calibration requirements



Model	Type	Gage Length(s)	Travel	Accuracy	Temperature Range
632.53F-11	Axial High-Temperature	25 mm	-1.25 mm to 2.5 mm	class 0.5	Max: 1200°C
632.53F-14	Axial High-Temperature	12 mm	-1.2 mm to 2.4 mm	class 0.5	Max: 1200°C
632.54F-11	Axial High-Temperature	25 mm	-1.25 mm to 2.5 mm	class 0.5	Max: 1200°C
632.54F-14	Axial High-Temperature	12 mm	-1.2 mm to 2.4 mm	class 0.5	Max: 1200°C

Axial Enhanced Travel Extensometers

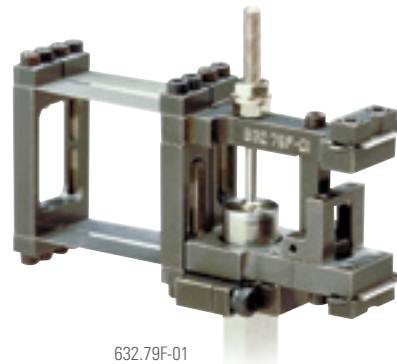
- » Available in 25 and 50 mm gage lengths to enable measurement over a longer travel range without compromising accuracy
- » Suited for tension testing with +100% strain capability, typically for flat or round metal and plastic specimens



Model	Type	Gage Length(s)	Travel	Accuracy	Temperature Range
632.24F-50	Axial – Enhanced Travel	25 mm	25 mm	class 1.0	-100°C to 150°C
634.28F-24	Axial – Enhanced Travel	50 mm	50 mm	class 0.5	-100°C to 150°C

Axial Immersible Extensometer

- » Designed to accurately measure axial strain while completely submerged in water or saline solution
- » Ideal for tension testing of biomaterials
- » Patented parallel flexure system accurately translates specimen displacement to a hermetically sealed LVDT
- » Meet and/or exceed ASTM E83 Class B1 and ISO 9513 Class 0.5 calibration requirements



Model	Type	Gage Length(s)	Travel	Accuracy	Temperature Range
632.79F-01	Axial Immersible	25 mm	+/- 6.25 mm	class 0.5	-15°C to 85°C

Contacting Extensometers

Axial Sub-miniature Extensometers

- » Designed for accurately measuring axial strain on specimens that require a smaller device, such as short or thin wires, delicate materials and small organics
- » Available in gage lengths of 3, 5 and 6 mm and travel ranges of ± 0.24 mm and 0.5 to 1.5 mm
- » Meet and/or exceed ASTM E83 Class B1 and ISO 9513 Class 0.5 calibration requirements



632.29F-20

Model	Type	Gage Length(s)	Travel	Accuracy	Temperature Range
632.29F-20	Axial Sub-miniature	3 mm	+/- 0.24 mm	class 0.5	-100°C to 150°C
632.29E-30	Axial Sub-miniature	6 mm	+/- 0.24 mm	class 0.5	-100°C to 150°C
632.29F-30	Axial Sub-miniature	5 mm	-0.5 mm to 1.5 mm	class 0.5	-100°C to 150°C

Cross Sectional Strain Extensometer

- » Dedicated, single-purpose extensometer for measuring cross-sectional strain
- » Can be paired with other axial extensometers to measure the “R” value of plastics and sheet metal
- » Unique design allows one-hand mounting
- » Free-floating feature enables it to travel with the specimen as it is elongated during axial loading
- » Meets and/or exceeds ASTM E83 Class B1 and ISO 9513 Class 0.5 calibration requirements



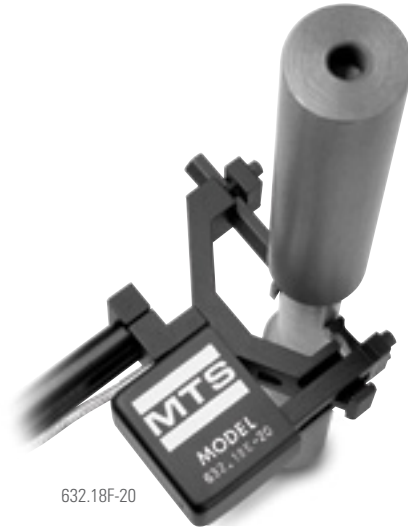
632.23F-30

Model	Type	Gage Width	Specimen Thickness	Travel	Accuracy	Temperature Range
632.23F-30	Cross Sectional Strain	20 mm	.5 mm to 5 mm	-4 mm	class 0.5	-100°C to 150° C

Contacting Extensometers

Diametral Extensometers

- » Ideal for tension and compression testing of round specimens, determining Poisson's ratio or measuring cross-sectional area change
- » Available in gage diameters of 6.1 to 26 mm
- » Models optimized for ambient temperature, cryogenic and elevated temperature testing
- » Meet and/or exceed ASTM E83 Class B1 and ISO 9513 Class 0.5 calibration requirements

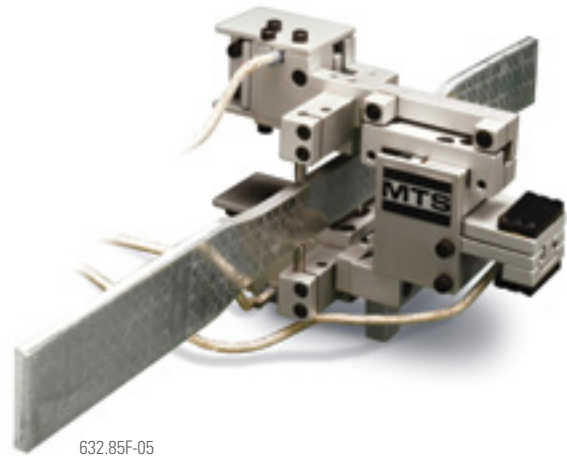


632.18F-20

Model	Type	Gage Diameter	Travel	Accuracy	Temperature Range
632.18F-20	Diametral	6.1 mm to 26 mm	-2 mm to 2 mm	class 0.5	-100°C to 150°C
632.18F-21	Diametral	6.1 mm to 26 mm	-2 mm to 2 mm	class 0.5	-270°C to 65°C
632.18F-23	Diametral	6.1 mm to 26 mm	-2 mm to 2 mm	class 0.5	-100°C to 175°C

Biaxial Extensometer

- » Designed to accurately measure cross-sectional, diametral and average axial strain to help find Poisson's ratio
- » Ideal for tension and compression testing of plastic and composite specimens in many shapes and sizes
- » Minimizes mechanical crosstalk between axial and transverse channels
- » Meets and/or exceeds ASTM E83 Class B1 and ISO 9513 Class 0.5 calibration requirements



632.85F-05

Model	Type	Gage Length	Travel Axial	Travel Transverse	Accuracy	Temperature Range
632.85F-05	Biaxial	25 mm	1.2 mm to -1.5 mm	+/- .5 mm	class 0.5	-100°C to 150°C

Contacting Extensometers

LTX 850 Long Travel Extensometer

Equipped only for Exceed Family EM systems, the LTX 850 long travel extensometer is used to measure tension of materials with large displacement such as polymers and other elastomers.

Features

- » Durable high strength aluminum alloy structure for long useful life
- » High resolution digital encoder to ensure accurate and repeatable measurement
- » Optimized mechanical design for smooth reliable operation
- » Changeable contact knife, adjustable gripping force and balanced arm and head weight design to allow smooth following of the material strain change and prevent stickiness
- » Choice of fixed or swivel mounts for user convenience

Standards Compliance

- » ASTM E83 Class B1 and ISO 9513 Class 0.5
- » ASTM D412 and ISO 37 requirements

Mounting Options

Description	E42	E43	E44	E45.105
Fixed Mount		100-302-888	100-302-888	
Swivel Mount	100-302-889	100-302-891	100-302-890	100-302-892

Specifications

Model	LTX 850
Part Number	100-302-887
Maximum Travel	850
Effective Measuring Range	10-850
Standard Gage Length	10, 15, 20, 25, 50, 75, 100
Minimum Gage Length	10
Allowed Specimen Size (within)	20 mm (width), 30 mm (thickness)
Accuracy	<0.5%



Non-Contacting Extensometers

LX Laser Extensometers

- » Utilize scanning laser and reflective targets to measure axial strain
- » Analog output port for closed loop strain control or input to a data acquisition board or chart recorder
- » Self-contained, easily portable, user-friendly design
- » Meet accuracy requirements as stated in ASTM E83 Class B1
- » Certified with the Center for Devices and Radiological Health as Class II products



LX 500

Model	Type	Travel	Accuracy	Voltage	Non-linearity	Repeatability	Resolution
LX 500	Laser	5 mm to 127 mm	class B1	110 V	0.009 mm	0.003 mm	0.001 mm
LX 500	Laser	5 mm to 127 mm	class B1	220 V	0.009 mm	0.003 mm	0.001 mm
LX 1500	Laser	8 mm to 381 mm	class B2	110 V	0.05 mm	0.05 mm	0.01 mm
LX 1500	Laser	8 mm to 381 mm	class B2	220 V	0.05 mm	0.05 mm	0.01 mm

MTS Fundamental Video Extensometers (FVX)

- » Utilize single high-resolution digital video camera and reflective targets to perform edge-to-edge strain measurements
- » Value-priced solutions for gaining axial and axial-transverse strain measurements
- » Multiple optional lenses provide field of view (FOV) flexibility
- » Integrates measurements into results and reports via TestWorks software
- » Conforms with ASTM E83, ISO 9513 and EN 10002-4 standards



FVX

Model	Axis of Measurement	Software Platform	Typical Applications	Strain Measurement Segment(s)	Video Camera	Lens	Gage Length	Accuracy	Resolution
FVX01	Axial	TestWorks®	Rubbers / Plastics	1	1380 x 1024 pixel	Tamron M118 FM25	Up to 100 mm	class 1.0	1 µm
FVX02	Axial-transverse	TestWorks	Soft Metals / Composites	2	1380 x 1024	Tamron pixel M118 FM50	Up to 100 mm	class 1.0	1 µm

Environmental Chambers

Model 653 Furnaces for Series 40 (EM) Systems

MODEL 653.XX FURNACE

- » Capable of achieving temperatures up to 1400°C (2550°F) (non-testing environment)
- » Capable of achieving 1000°C (1800°F) in validated testing conditions with standard solution
- » Single or multiple zone heating
- » Clamshell design streamlines test setup, furnace alignment, and specimen changeover
- » Silicon carbide heating elements and alumina fiber insulation system for low heat loss and long life
- » Multiple furnace heights to accommodate diverse test requirements
- » Mounting bracket for a variety of MTS load frames is included
- » Designed to accommodate MTS high-temperature axial extensometers



105

MODEL 409.83 TEMPERATURE CONTROLLER

- » Multiple mounting options – on included furnace mounting bracket or optional stand for floor or table
- » Compact, ergonomic design
- » Multiple level, self-tuning PID control
- » SCR power relays included
- » Digital communications available

Specifications

Model	Temperature Max/Min*	Overall Height	Hot Zone Height	Hot Zone Width & Depth	Number of Zones
653.01	1400°C/100°C	55 mm	19 mm	50 x 50 mm	1
653.02	1400°C/100°C	85 mm	50 mm	50 x 50 mm	2
653.03	1400°C/100°C	126 mm	90 mm	62.5 x 62.5 mm	2
653.04**	1400°C/100°C	220 mm	185 mm	62.5 x 62.5 mm	3

* Nominal temperatures may vary depending on specimen geometry and material. 1400°C is achieved in a non-testing environment.

** Supports testing to ASTM E606-04e1, BSI 7270, JIS Z2279, AFNOR A03-403 or ISO 12106 requirements.

Note: When ordering, please indicate voltage requirements and provide necessary load frame dimensions in order to determine system integration requirements

Environmental Chambers

Chambers

The MTS FEC Series Chambers enable the testing of materials and components within various ranges of high and low temperatures. Two electrical heating elements are used for high temperature testing. An electric motor-driven fan with a baffle provides diffused convection heat for uniform temperatures. The specimen is shielded from direct radiant heat by the fan baffle and fan blades.

Use of liquid nitrogen (at 22 psi) allows temperature control between ambient and -70°C (-94°F). Chambers may be provided for carbon dioxide operation between ambient and -70°C (-94°F) as an option (specify either 300 psi or 900 psi carbon dioxide supply).

The chambers will maintain a constant temperature within a few degrees (see specifications) of the desired setting with very little temperature gradient across the specimen. Temperature gradient across the specimen, while heating or cooling, depends mainly on the geometry, mass, and material of the specimen.

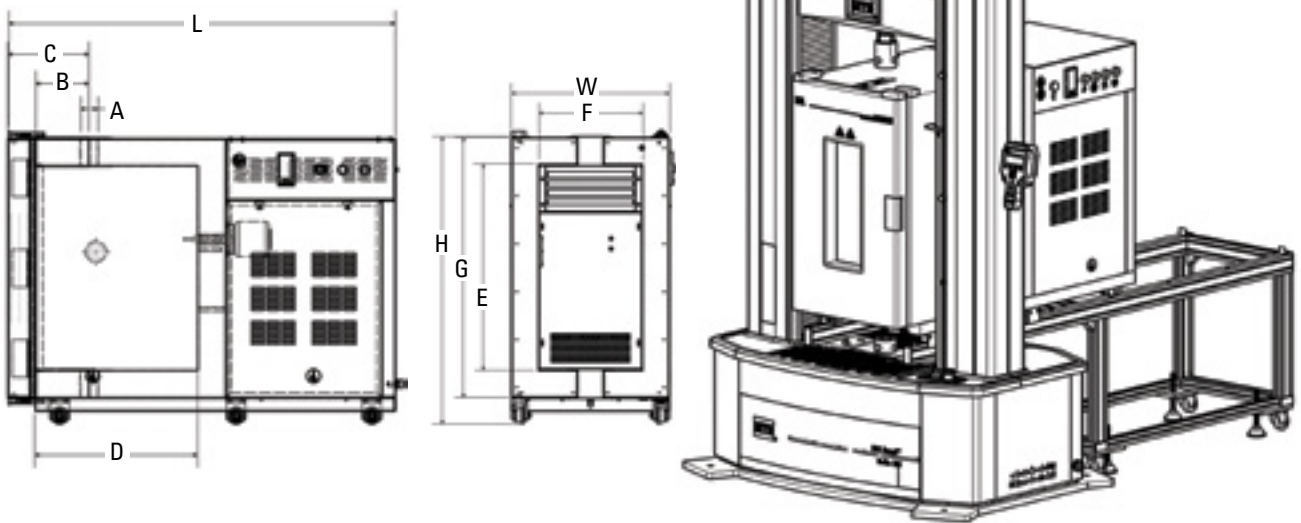
Typical uses are elastomer material studies, body and engine mount tests, shock absorber tests, tire cord tests, plastics, composite material tests, laminate tests, and vibration isolator tests. These chambers are used in research, in reliability testing, quality control, and production testing.

Chambers are of all-welded construction. The door opens to 180° , or it may be lifted from the chamber if that is more convenient. The window is multipane, tempered glass, sealed to keep moisture out and to prevent fogging and frosting.

MTS can also supply special chambers designed for use with mechanical refrigeration, humidity control, or salt spray applications and in special sizes to suit your unique requirements. Contact your MTS sales engineer for more information about these options.

Features

- » Temperature ranges from -70°C (-94°F) to 350°C (662°F)
- » Forced convection heating provides rapid heat transfer, over-shoot protection
- » Large circulating fan helps ensure small specimen temperature gradients; fan baffle minimizes radiant heat on specimen
- » Cooling ranges available from ambient to: -70°C (-94°F) when equipped for liquid nitrogen (standard)
- » Built-in high quality temperature controller, with digital communications
- » Removable "U-plug" sections for top and bottom walls allow the chamber to be put in place for testing after mounting the specimen and all instrumentation in the load frame
- » Local protection against thermal run away (additional protection is provided by the temperature controller)
- » Internal light illuminates the test area
- » Temperature sensor can be located anywhere in test area
- » CE certified



Dimensions of Environmental Chambers

Model	A	B	C	D	E	F	H	G	L	W
FEC1200	45 mm	110 mm	170 mm	200 mm	600 mm	200 mm	835 mm	760 mm	1050 mm	360 mm
FEC1300	45 mm	150 mm	225 mm	265 mm	600 mm	300 mm	865 mm	760 mm	1150 mm	460 mm

Environmental Chambers

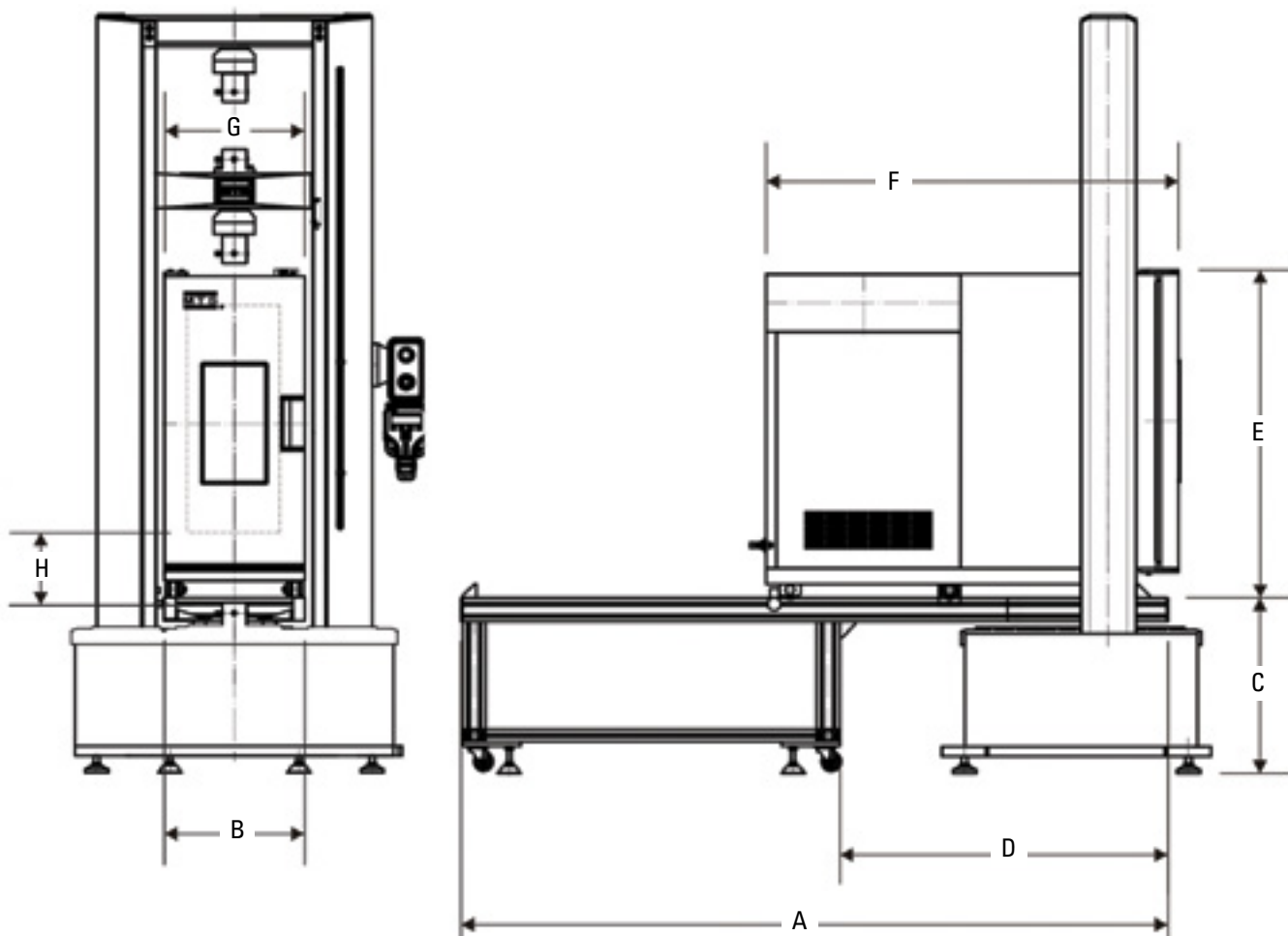
Applicable Grips and Fixtures

Model	Description	Application	Chambers	Compatible Adapter	Occupation Height*	page
XSB204B	20 kN Wedge action grip	Tensile Test	FEC1200, FEC1300	20 mm	282 mm	24
XSF204A	20 kN Wedge action grip	Tensile Test	FEC1200, FEC1300	20 mm	362 mm	25
DSC104B	10 kN Screw action grip,SST	Tensile Test	FEC1200, FEC1300	20 mm	224 mm	30
Y104B	10 kN \varnothing 100 Compression platen, spherical self-aligning, SST	Compression Test	FEC1200, FEC1300	20 mm	140 mm	73
ZWA304	30kN Bend Fixture,SST	Bend Test	FEC1200, FEC1300	20 mm	258 mm	83

* Occupation height: The total height from upper grip pin hole to the lower grip pin hole when there is no gap between the grips or fixtures.

Dimensions of FEC Chamber Mounted in Exceed Frame

Bracket Model	169000	169100	169200	
Chamber	FEC1200	FEC1300	FEC1300	FEC1300
Frame	E44	E45.105	E45.205	E45.305
A	1870 mm	1870 mm	1870 mm	1870 mm
B	361 mm	461 mm	461 mm	461 mm
C	420 mm	590 mm	685 mm	682 mm
D	900 mm	900 mm	900 mm	900 mm
E	835 mm	835 mm	835 mm	835 mm
F	1060 mm	1060 mm	1060 mm	1060 mm
G	360 mm	460 mm	460 mm	460 mm
H	196 mm	184 mm	179 mm	179 mm



Environmental Chambers

Optional Pull Rods

Description	Capacity	A	B	C	D	Compatible Frame	Available as 1 Lower Rod**
		Upper Adapter	Lower Adapter	Length (pin to pin)	Travel*		
Pull Rod, 2020, 175	30 kN	20 mm	20 mm	175 mm	15 mm	E44.104, E44.304	NO
Pull Rod, 2020, 200	30 kN	20 mm	20 mm	200 mm	40 mm	E44.104, E44.304	NO
Pull Rod, 2020, 225	30 kN	20 mm	20 mm	225 mm	65 mm	E44.104, E44.304	NO
Pull Rod, 2020, 250	30 kN	20 mm	20 mm	250 mm	90 mm	E44.104, E44.304	YES
Pull Rod, 2020, 275	30 kN	20 mm	20 mm	275 mm	115 mm	E44.104, E44.304	YES
Pull Rod, 2020, 300	30 kN	20 mm	20 mm	300 mm	140 mm	E44.104, E44.304	YES
Pull Rod, 2020, 325	30 kN	20 mm	20 mm	325 mm	165 mm	E44.104, E44.304	YES
Pull Rod, 2020, 350	30 kN	20 mm	20 mm	350 mm	190 mm	E44.104, E44.304	YES
Pull Rod, 2020, 375	30 kN	20 mm	20 mm	375 mm	215 mm	E44.104, E44.304	YES
Pull Rod, 2020, 400	30 kN	20 mm	20 mm	400 mm	240 mm	E44.104, E44.304	YES
Pull Rod, 2020, 425	30 kN	20 mm	20 mm	425 mm	265 mm	E44.104, E44.304	YES
Pull Rod, 2020, 450	30 kN	20 mm	20 mm	450 mm	290 mm	E44.104, E44.304	YES
Pull Rod, 2020, 475	30 kN	20 mm	20 mm	475 mm	315 mm	E44.104, E44.304	YES
Pull Rod, 2020, 500	30 kN	20 mm	20 mm	500 mm	340 mm	E44.104, E44.304	YES
Pull Rod, 2020, 525	30 kN	20 mm	20 mm	525 mm	365 mm	E44.104, E44.304	YES
Pull Rod, 2020, 550	30 kN	20 mm	20 mm	550 mm	390 mm	E44.104, E44.304	YES
Pull Rod, 2020, 575	30 kN	20 mm	20 mm	575 mm	415 mm	E44.104, E44.304	YES
Pull Rod, 2020, 600	30 kN	20 mm	20 mm	600 mm	440 mm	E44.104, E44.304	YES
Pull Rod, 2020, 625	30 kN	20 mm	20 mm	625 mm	465 mm	E44.104, E44.304	YES
Pull Rod, 2020, 650	30 kN	20 mm	20 mm	650 mm	490 mm	E44.104, E44.304	YES
Pull Rod, 4020, 200	30 kN	40 mm	20 mm	200 mm	20 mm	E45.105	NO
Pull Rod, 4020, 225	30 kN	40 mm	20 mm	225 mm	45 mm	E45.105	NO
Pull Rod, 4020, 250	30 kN	40 mm	20 mm	250 mm	70 mm	E45.105	YES
Pull Rod, 4020, 275	30 kN	40 mm	20 mm	275 mm	95 mm	E45.105	YES
Pull Rod, 4020, 300	30 kN	40 mm	20 mm	300 mm	120 mm	E45.105	YES
Pull Rod, 4020, 325	30 kN	40 mm	20 mm	325 mm	145 mm	E45.105	YES
Pull Rod, 4020, 350	30 kN	40 mm	20 mm	350 mm	170 mm	E45.105	YES
Pull Rod, 4020, 375	30 kN	40 mm	20 mm	375 mm	195 mm	E45.105	YES
Pull Rod, 4020, 400	30 kN	40 mm	20 mm	400 mm	220 mm	E45.105	YES
Pull Rod, 4020, 425	30 kN	40 mm	20 mm	425 mm	245 mm	E45.105	YES
Pull Rod, 4020, 450	30 kN	40 mm	20 mm	450 mm	270 mm	E45.105	YES
Pull Rod, 4020, 475	30 kN	40 mm	20 mm	475 mm	295 mm	E45.105	YES
Pull Rod, 4020, 500	30 kN	40 mm	20 mm	500 mm	320 mm	E45.105	YES
Pull Rod, 4020, 525	30 kN	40 mm	20 mm	525 mm	345 mm	E45.105	YES
Pull Rod, 4020, 550	30 kN	40 mm	20 mm	550 mm	370 mm	E45.105	YES
Pull Rod, 4020, 575	30 kN	40 mm	20 mm	575 mm	395 mm	E45.105	YES
Pull Rod, 4020, 600	30 kN	40 mm	20 mm	600 mm	420 mm	E45.105	YES
Pull Rod, 4020, 625	30 kN	40 mm	20 mm	625 mm	445 mm	E45.105	YES
Pull Rod, 4020, 650	30 kN	40 mm	20 mm	650 mm	470 mm	E45.105	YES
Pull Rod, 4020, 675	30 kN	40 mm	20 mm	675 mm	495 mm	E45.105	YES
Pull Rod, 4040, 250	100 kN	40 mm	40 mm	250 mm	35 mm	E45.105	NO
Pull Rod, 4040, 300	100 kN	40 mm	40 mm	300 mm	85 mm	E45.105	YES

Environmental Chambers

Optional Pull Rods (continued)

Description	Capacity	A Upper Adapter	B Lower Adapter	C Length (pin to pin)	D Travel*	Compatible Frame	Available as a Lower Rod**
Pull Rod, 4040, 350	100 kN	40 mm	40 mm	350 mm	135 mm	E45.105	YES
Pull Rod, 4040, 400	100 kN	40 mm	40 mm	400 mm	185 mm	E45.105	YES
Pull Rod, 4040, 450	100 kN	40 mm	40 mm	450 mm	235 mm	E45.105	YES
Pull Rod, 4040, 500	100 kN	40 mm	40 mm	500 mm	285 mm	E45.105	YES
Pull Rod, 4040, 550	100 kN	40 mm	40 mm	550 mm	335 mm	E45.105	YES
Pull Rod, 4040, 600	100 kN	40 mm	40 mm	600 mm	385 mm	E45.105	YES
Pull Rod, 4040, 650	100 kN	40 mm	40 mm	650 mm	435 mm	E45.105	YES
Pull Rod, 4040, 700	100 kN	40 mm	40 mm	700 mm	485 mm	E45.105	YES
Pull Rod, 6020, 250	30 kN	60 mm	20 mm	250 mm	60 mm	E45.305	NO
Pull Rod, 6020, 300	30 kN	60 mm	20 mm	300 mm	110 mm	E45.305	YES
Pull Rod, 6020, 350	30 kN	60 mm	20 mm	350 mm	160 mm	E45.305	YES
Pull Rod, 6020, 400	30 kN	60 mm	20 mm	400 mm	210 mm	E45.305	YES
Pull Rod, 6020, 450	30 kN	60 mm	20 mm	450 mm	260 mm	E45.305	YES
Pull Rod, 6020, 500	30 kN	60 mm	20 mm	500 mm	310 mm	E45.305	YES
Pull Rod, 6020, 550	30 kN	60 mm	20 mm	550 mm	360 mm	E45.305	YES
Pull Rod, 6020, 600	30 kN	60 mm	20 mm	600 mm	410 mm	E45.305	YES
Pull Rod, 6020, 650	30 kN	60 mm	20 mm	650 mm	460 mm	E45.305	YES
Pull Rod, 6020, 700	30 kN	60 mm	20 mm	700 mm	510 mm	E45.305	YES
Pull Rod, 6040, 300	100 kN	60 mm	40 mm	300 mm	75 mm	E45.305	YES
Pull Rod, 6040, 350	100 kN	60 mm	40 mm	350 mm	125 mm	E45.305	YES
Pull Rod, 6040, 400	100 kN	60 mm	40 mm	400 mm	175 mm	E45.305	YES
Pull Rod, 6040, 450	100 kN	60 mm	40 mm	450 mm	225 mm	E45.305	YES
Pull Rod, 6040, 500	100 kN	60 mm	40 mm	500 mm	275 mm	E45.305	YES
Pull Rod, 6040, 550	100 kN	60 mm	40 mm	550 mm	325 mm	E45.305	YES
Pull Rod, 6040, 600	100 kN	60 mm	40 mm	600 mm	375 mm	E45.305	YES
Pull Rod, 6040, 650	100 kN	60 mm	40 mm	650 mm	425 mm	E45.305	YES
Pull Rod, 6040, 700	100 kN	60 mm	40 mm	700 mm	475 mm	E45.305	YES

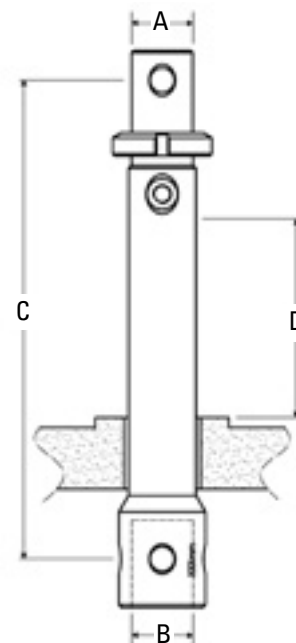
Note:

All of these rods are compatible for use with both FEC1200 and FEC1300.

Other sizes on request.

* D Travel: The biggest travel range in theory, not the final parameter. A higher frame or chamber might be required.

** Available as a lower rod: Some of the rods are too short to be used as lower rod.



MTS Exceed Series 40 Electromechanical Load Frames

Model	E42.503	E43.104	E44.104
Maximum rated force capacity	5 kN (1100 lbf)	10 kN (2200 lbf)	10 kN (2200 lbf)
Force capacity options	5 N, 10 N, 20 N, 50 N, 100 N, 200 N, 500 N, 1 kN, 2 kN, 5 kN 1 lbf, 2 lbf, 5 lbf, 10 lbf, 20 lbf, 45 lbf, 110 lbf, 220 lbf, 450 lbf, 1100 lbf	5 N, 10 N, 20 N, 50 N, 100 N, 200 N, 500 N, 1 kN, 2 kN, 5 kN, 10 kN 1 lbf, 2 lbf, 5 lbf, 10 lbf, 20 lbf, 45 lbf, 110 lbf, 220 lbf, 450 lbf, 1100 lbf, 2200 lbf	100 N, 250 N, 500 N, 1 kN, 2 kN, 5 kN, 10 kN 20 lbf, 50 lbf, 110 lbf, 220 lbf, 450 lbf, 1100 lbf, 2200 lbf
Frame type	Table top	Table top	Floor-standing
Test zones (single/dual)	Single	Single	Single/Dual
Maximum test speed	500 mm/min (19.7 in/min)	500 mm/min (19.7 in/min)	500 mm/min (19.7 in/min)
Minimum test speed	0.001 mm/min (0.00004 in/min)	0.001 mm/min (0.00004 in/min)	0.001 mm/min (0.00004 in/min)
Position resolution	0.000051 mm (0.0000022 in)	0.000041 mm (0.0000016 in)	0.000036 mm (0.0000014 in)
Vertical test space crosshead travel <i>Standard</i> <i>Extended</i>	700 mm (27.6 in) 1000 mm (39.4 in)	1000 mm (39.4 in) 1300 mm (51.2 in)	1150 mm (45.28 in) 1450 mm (57.09 in)
Space between columns	100 mm (3.94 in)	340 mm (13.4 in)	400 mm (15.75 in)
Frame height <i>Standard</i> <i>Extended</i>	1300 mm (51.18 in) 1600 mm (63.0 in)	1617 mm (63.7 in) 1917 mm (75.5 in)	1862 mm (73.3 in) 2162 mm (85.12 in)
Frame width	642 mm (25.28 in)	681 mm (26.81 in)	845 mm (33.27 in)
Frame depth	582 mm (22.91 in)	588 mm (23.15 in)	716 mm (27.19 in)
Weight <i>Standard</i> <i>Extended</i>	120 kg (265 lb) 130 kg (287 lb)	120 kg (265 lb) 130 kg (287 lb)	435 kg (959 lb) 450 kg (992 lb)
Power requirement	Single-phase 200-230 V AC, 3 Amp 50/60 Hz, 600 W	Single-phase 200-230 V AC, 3 Amp 50/60 Hz, 600 W	Single-phase 200-230 V AC, 3 Amp 50/60 Hz, 600 W

Model	E44.304	E45.105	E45.305	E45.605
Maximum rated force capacity	30 kN (6600 lbf)	100 kN (22000 lbf)	300 kN (66000 lbf)	600 kN (132000 lbf)
Force capacity options	100 N, 250 N, 500 N, 1 kN, 2 kN, 5 kN, 10 kN, 20 kN, 30 kN 20 lbf, 50 lbf, 110 lbf, 220 lbf, 450 lbf, 1100 lbf, 2200 lbf, 4400 lbf, 6600 lbf	50 kN, 100 kN 11000 lbf, 22000 lbf	200 kN, 300 kN 44000 lbf, 66000 lbf	200 kN, 300 kN, 600 kN 44000 lbf, 66000 lbf, 132000 lbf
Frame type	Floor-standing	Floor-standing	Floor-standing	Floor-standing
Test zones (single/dual)	Single/Dual	Single/Dual	Single/Dual	Single/Dual
Maximum test speed	500 mm/min (19.7 in/min)	500 mm/min (19.7 in/min)	250 mm/min (9.84 in/min)	254 mm/min (10 in/min)
Minimum test speed	0.001 mm/min (0.00004 in/min)	0.001 mm/min (0.00004 in/min)	0.001 mm/min (0.00004 in/min)	0.001 mm/min (0.00004 in/min)
Position resolution	0.000040 mm (0.0000015 in)	0.000041 mm (0.0000016 in)	0.000017 mm (0.0000007 in)	0.000016 mm (0.0000006 in)
Vertical test space crosshead travel <i>Standard</i> <i>Extended</i>	1150 mm (45.28 in) 1450 mm (57.09 in)	1050 mm (41.34 in) 1350 mm (53.15 in)	1100 mm (43.30 in) 1400 mm (55.12 in)	1300 mm (51.2 in)
Space between columns	400 mm (15.75 in)	600 mm (23.62 in)	580 mm (22.83 in)	750 mm (29.52 in)
Frame height <i>Standard</i> <i>Extended</i>	1862 mm (73.3 in) 2162 mm (85.12 in)	2133 mm (83.98 in) 2433 mm (95.79 in)	2360 mm (92.91 in) 2660 mm (104.72 in)	2820 mm (111.02 in)
Frame width	845 mm (33.27 in)	1230 mm (48.43 in)	1215 mm (47.83 in)	1660 mm (65.35 in)
Frame depth	716 mm (27.19 in)	870 mm (34.25 in)	960 mm (37.80 in)	1272 mm (50.08 in)
Weight <i>Standard</i> <i>Extended</i>	435 kg (959 lb) 450 kg (992 lb)	1400 kg (3086 lb) 1450 kg (3197 lb)	1700 kg (3748 lb) 1750 kg (3758 lb)	3500 kg (7716)
Power requirement	Single-phase 200-230 V AC, 6 Amp 50/60 Hz, 1200 W	Single-phase 200-230 V AC, 10 Amp 50/60 Hz, 2000 W	Three-phase 380-415 V AC, or 440-480 V AC, 6.8 Amp 50/60 Hz, 5000 W	Three-phase 380-415 V AC, or 440-480 V AC, 7.2 Amp 50/60 Hz, 5000 W

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