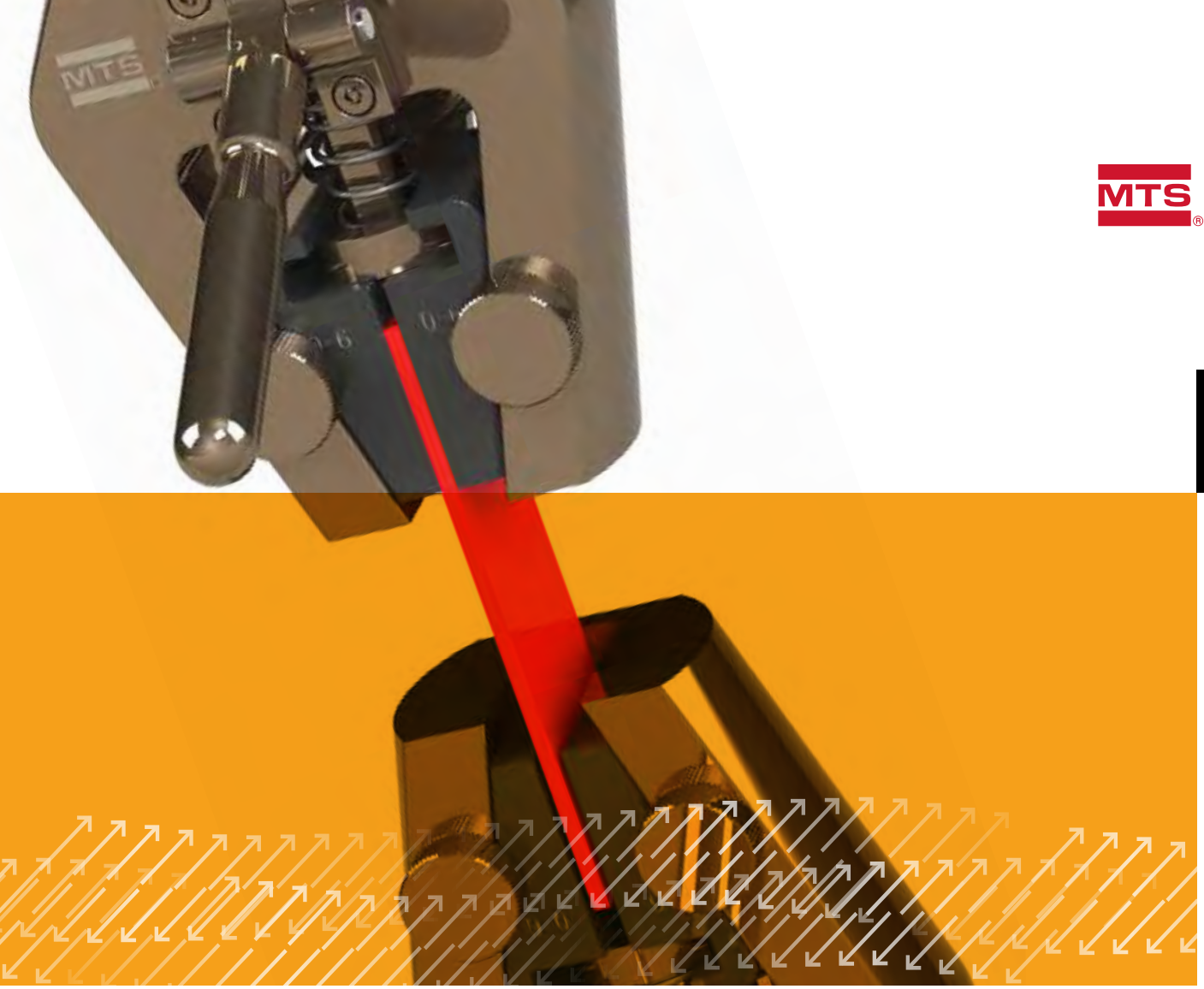


Accessories for MTS Exceed® Electromechanical Systems

Address a full spectrum of standard and unique monotonic testing requirements






be certain.

Table of Contents

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 more. For additional grips and fixtures or custom designs, please contact MTS sales or application engineers.

System Compatibility

The grips and fixtures in this catalog can be directly used on MTS Exceed® electromechanical load frame models: E42.503, E43.104, E43.504, E44.304, E45.105, and E45.305.

Conversion adapters allow these grips to be used with MTS Criterion® load frames as well.

Selection of Grips and Fixtures

Three main criteria to consider when selecting grips and fixtures:

1. **TEST LOAD**
   The grip capacity should be 1.25 times more than the estimated maximum test load, which means the grip will work at less than 80% of its capacity. Load cell capacity should match grip capacity (e.g. a 30 kN rated load cell should be used with a 30 kN grip) to help ensure measurement accuracy and maximize grip life.

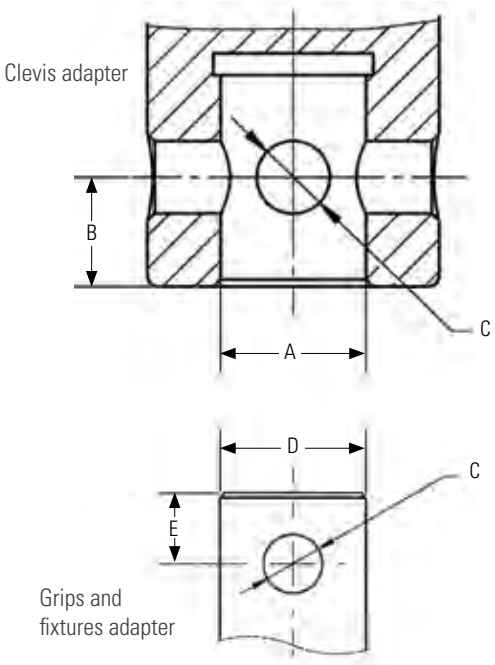
2. **TEST STANDARD**
   Test standards define the dimensions and shape of specimens. Often, there are many different grips that can be used to address a single test standard. If you are not certain about which grip to use for your application, please contact us.

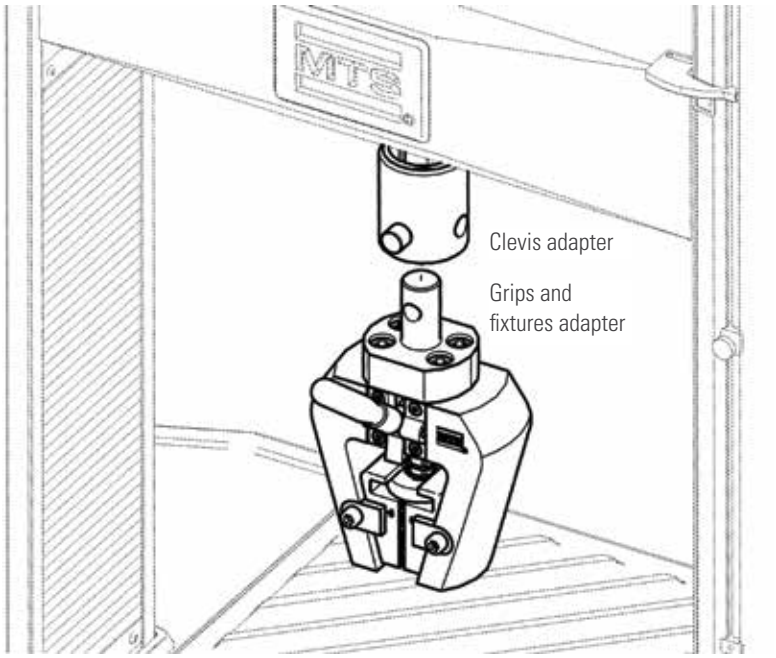
3. **SPECIMEN AND TEST METHOD**
   Besides the dimension and shape of specimens, the surface texture is an important factor in grip selections. For tensile tests, slipping, premature damage and cracking in the grip are quite common due to incorrect grip selection. For help determining the right grip, 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 adapter are easy installation, accurate mounting and maximum compatibility.





Specifications

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, E44.304	E43.504, 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	$ø40^{-0.01}_{-0.04}$ mm
E	15 mm	25 mm	35 mm
Lock Nut	M24 × 1.5	M45 × 2	M64 × 2

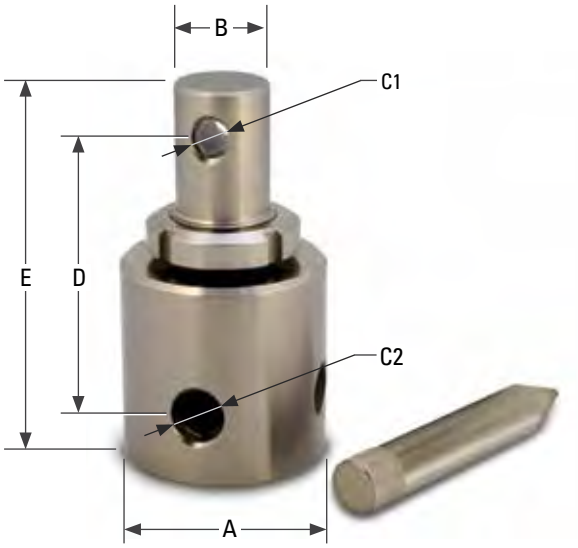
**Note: The specifications of the ø60 mm adapter are the same as those of the Criterion type E adapter; therefore, this category of grips and fixtures can be directly applied to the Criterion C45.305 and Exceed E45.305.*

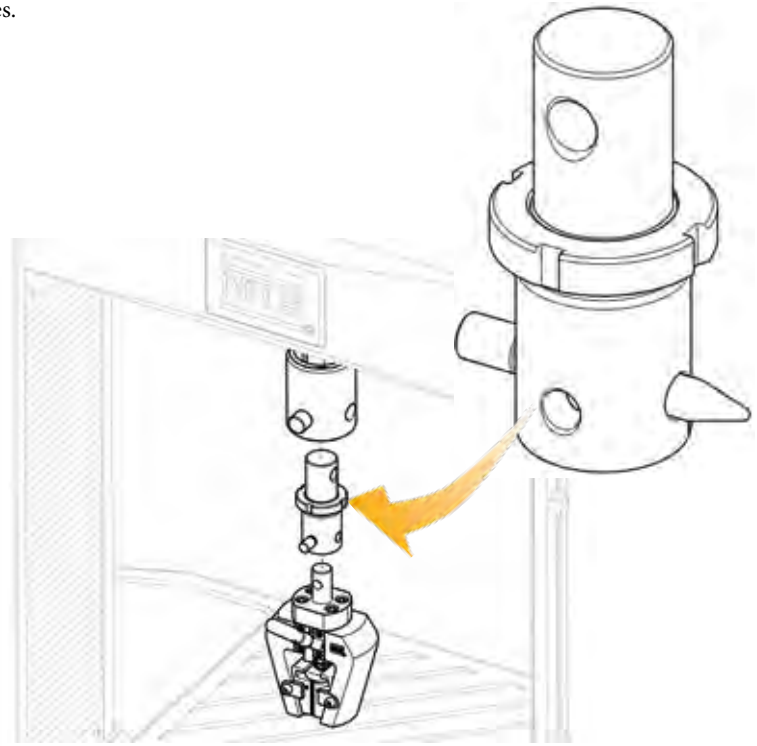
Additionally, the grip used with E45.605 frames is of non-standard specifications. Contact the MTS service department for more details on relevant grips and fixtures.

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.

Conversion adapters allow you to use the same grips and fixtures on both MTS Exceed and MTS Criterion load frames.





Specifications

Part Number	100-302-947	100-302-948	100-302-949	100-302-950	100-302-951	100-302-952	100-302-953
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	E43.504 E45.105	E45.305 C45.305	E45.305 C45.305	E42.503 E43.104 E44.304	E43.504 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	$\varnothing 20^{+0.041}_{+0.020}$ mm	$\varnothing 20^{+0.041}_{+0.020}$ mm	$\varnothing 40^{+0.050}_{+0.025}$ mm	$\varnothing 31.75^{+0.05}_{+0}$ mm	$\varnothing 31.75^{+0.05}_{+0}$ mm	$\varnothing 20^{+0.041}_{+0.020}$ mm	$\varnothing 40^{+0.050}_{+0.025}$ mm
B	$\varnothing 40^{-0.009}_{-0.034}$ 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
C1	$\varnothing 18^{+0.034}_{+0.016}$ mm	$\varnothing 28^{+0.041}_{+0.020}$ mm	$\varnothing 28^{+0.041}_{+0.020}$ mm	$\varnothing 10^{+0.028}_{+0.013}$ mm	$\varnothing 18^{+0.034}_{+0.016}$ mm	$\varnothing 12.83^{+0.05}_{+0}$ mm	$\varnothing 12.83^{+0.05}_{+0}$ mm
C2	$\varnothing 10^{+0.028}_{+0.013}$ mm	$\varnothing 10^{+0.028}_{+0.013}$ mm	$\varnothing 18^{+0.034}_{+0.016}$ mm	$\varnothing 12.83^{+0.05}_{+0}$ mm	$\varnothing 12.83^{+0.05}_{+0}$ mm	$\varnothing 10^{+0.028}_{+0.013}$ mm	$\varnothing 18^{+0.034}_{+0.016}$ 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

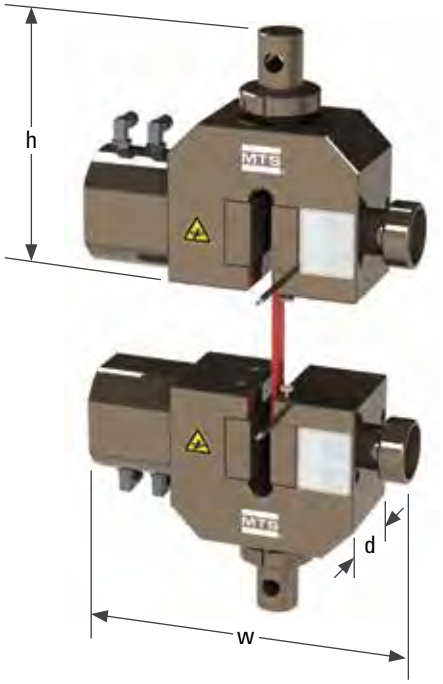
**Note: The specifications of the ø60 mm adapter are the same as those of the Criterion type E adapter; therefore, this category of grips and fixtures can be directly applied to the Criterion C45.305 and Exceed E45.305.*

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.

Tension Grips

Hydraulic Single Side-Action Grips

- Stable clamping force minimizes slipping and maximizes accuracy and repeatability
- Adjustable pressure provides proper grip force for a variety of materials
- Various grip faces to suit differing specimen shapes, materials and surface textures
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance
- Capable of off-center specimen tests



Specifications

Model		FDYA504A	FDYB105A	FDYA305A
Part Number		100-302-637	100-302-638	100-304-290
Rated Force		50 kN (11,250 lbf)	100 kN (22,500 lbf)	300 kN (67,500 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	26 kg (57.3 lb) 26 kg (57.3 lb)	41 kg (90.4 lb) 41 kg (90.4 lb)	99 kg (218.3 lb) 99 kg (218.3 lb)
Adapter style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in)	40 mm (1.6 in) 40 mm (1.6 in)	60 mm (2.4 in) 60 mm (2.4 in)
Dimensions (h*w*d)	(Upper grip)	210 mm × 302 mm × 160 mm (8.3 in x 11.9 in x 6.3 in)	253 mm × 358 mm × 173 mm (10 in x 14.1 in x 6.8 in)	355 mm × 470 mm × 203 mm (10 in x 18.5 in x 8 in)
	(Lower grip)	210 mm × 302 mm × 160 mm (8.3 in x 11.9 in x 6.3 in)	253 mm × 358 mm × 173 mm (10 in x 14.1 in x 6.8 in)	355 mm × 470 mm × 203 mm (10 in x 18.5 in x 8 in)
Application		Tensile test	Tensile test	Tensile test
Applicable Specimens		Metal, plastic	Metal, plastic	Metal, plastic
Maximum Input Pressure		E40 MPa (5801.5 psi)	40 MPa (5801.5 psi)	40 MPa (5801.5 psi)

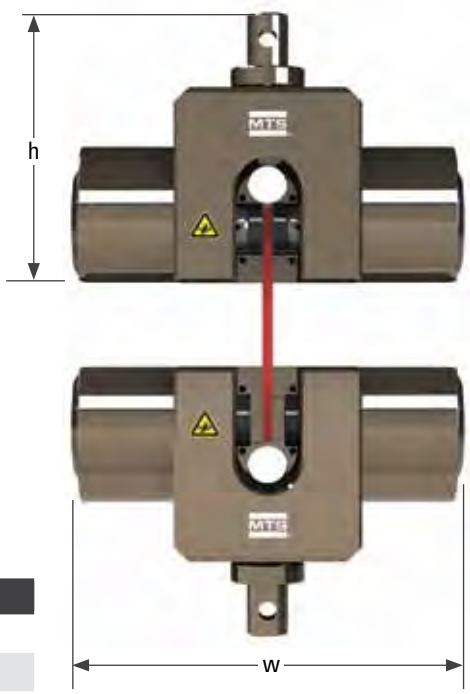
Optional Faces

Model	Description	Width	Opening Range	Compatible Grip	Part Number
FDYA504A.03	Flat	98 mm (3.8 in)	0-18 mm (0-1.1 in)	FDYA504A	100-302-842
FDYA504A.04	Vee	98 mm (3.8 in)	ø4-ø12 mm (0.2-0.5 in)	FDYA504A	100-302-843
FDYA504A.05	Vee	98 mm (3.8 in)	ø12-ø20 mm (0.5-0.8 in)	FDYA504A	100-302-844
FDYB105A.03	Flat	100 mm (3.9 in)	0-28 mm (0-1.1 in)	FDYB105A	100-302-845
FDYB105A.04	Vee	100 mm (3.9 in)	ø4-ø12 mm (0.2-0.5 in)	FDYB105A	100-302-846
FDYB105A.05	Vee	100 mm (3.9 in)	ø12-ø28 mm (0.5-1.1 in)	FDYB105A	100-302-847
FDYA305A.01	Flat	100 mm (3.9 in)	0-36 mm (0-1.4 in)	FDYA305A	100-404-957
FDYA305A.02	Vee	100 mm (3.9 in)	ø4-ø10 mm (0.2-0.4 in)	FDYA305A	100-404-958
FDYA305A.03	Vee	100 mm (3.9 in)	ø10-ø22 mm (0.4-0.9 in)	FDYA305A	100-404-959
FDYA305A.04	Vee	100 mm (3.9 in)	ø22-ø36 mm (0.9-1.4 in)	FDYA305A	100-404-960

Tension Grips

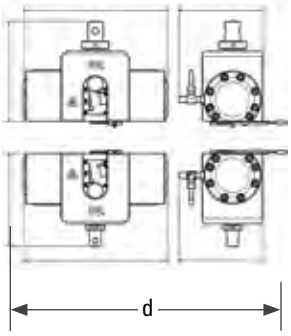
100 kN Hydraulic Double Side-Action Grip

- Stable clamping force minimizes slipping and maximizes accuracy and repeatability
- Adjustable pressure provides proper grip force for a variety of materials
- Various grip faces to suit differing specimen shapes, materials and surface textures
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance



Specifications

Model		FDYA105B
Part Number		100-302-641
Rated Force		100 kN (22.500 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	60 kg (132.3 lb) 60 kg (132.3 lb)
Adapter Style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	245 mm × 380 mm × 221 mm (9.7 in x 15 in x 8.7 in) 245 mm × 380 mm × 221 mm (9.7in x 15 in x 8.7 in)
Application		Tensile test
Applicable Specimens		Metal; plastic
Maximum Input Pressure		40 MPa (5801.5 psi)

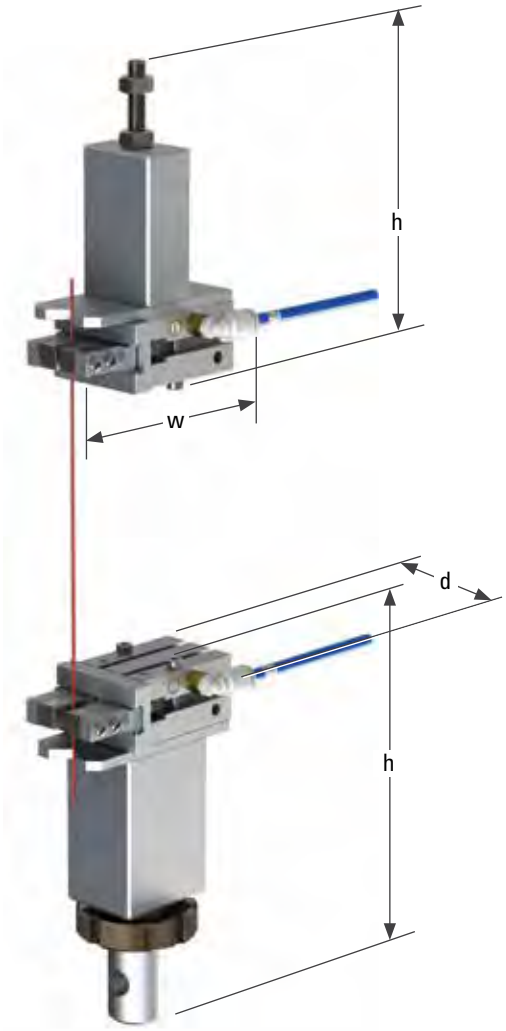


Optional Faces

Model	Description	Diameter	Opening Range	Part Number
FDYA105B.02	Flat	50 mm (2 in)	0-26 mm (1.1 in)	100-302-848
FDYA105B.03	Vee	50 mm (2 in)	ø4-ø12 mm (0.2-0.5 in)	100-302-849
FDYA105B.04	Vee	50 mm (2 in)	ø12-ø20 mm (0.5-0.8 in)	100-302-850

10 N Pneumatic Vise Action Grip

- Stable clamping force minimizes slipping and maximizes accuracy and repeatability
- Threaded upper adapters are designed 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 provides proper grip force for a variety of materials

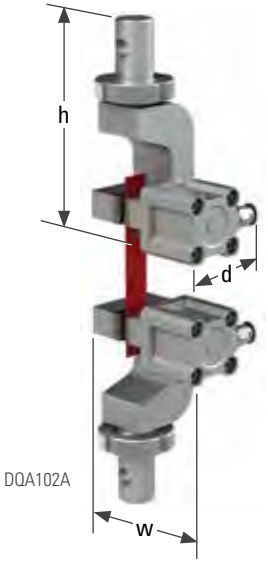


Specifications

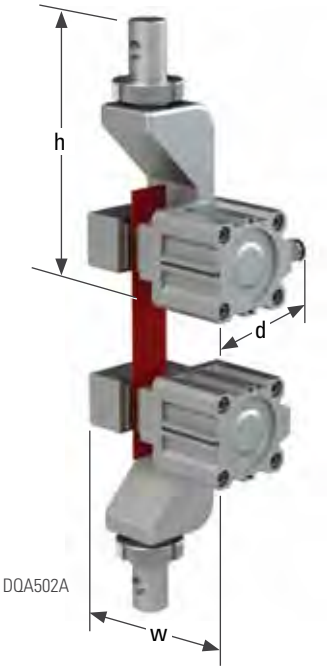
Model		DQD101B
Part Number		100-302-644
Rated Force		10 N (2.25 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	210 g (5 lb) 420 g (9 lb)
Adapter Style	(Upper grip) (Lower grip)	M6 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	108 mm × 51 mm × 66 mm (4.3 in x 2 in x 5.6 in) 132 mm × 51 mm × 66 mm (5.2 in x 2 in x 5.6 in)
Application		Tensile test
Applicable Specimens		Spandex
Maximum Input Pressure		0.8 MPa (116 psi)
Specimen Dimensions *Maximum Diameter*		0.2 mm (0.08 in)

Pneumatic Vise Action Grips

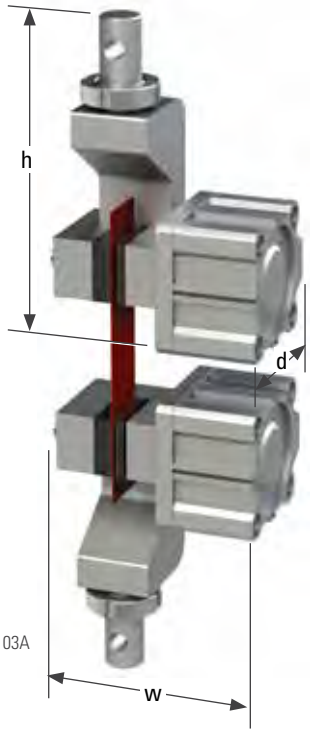
- Corrosion resistant aluminum grips are lightweight and easy to operate
- Grips clamp onto the specimen with a same force for every test to minimize operator errors
- Adjustable pressure provides proper grip force for a variety of materials
- Stable clamping force minimizes slipping and maximizes accuracy and repeatability



DQA102A



DQA502A



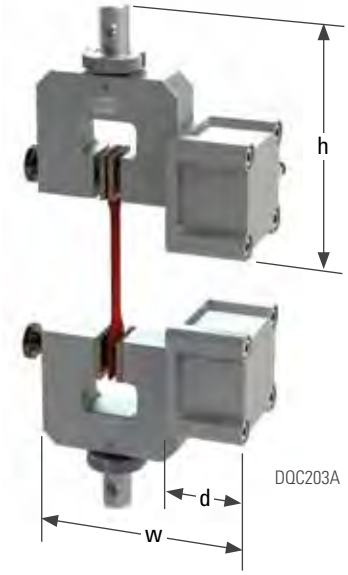
DQA103A

Specifications

Model		DQA102A	DQA502A	DQA103A
Part Number		100-302-645	100-302-647	100-302-648
Rated Force		100 N (22.5 lbf)	500 N (112 lbf)	1 kN (225 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	380 g (0.8 lb) 380 g (0.8 lb)	850 g (1.9 lb) 850 g (1.9 lb)	1.1 kg (2.4 lb) 1.1 kg (2.4 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip)	119 mm × 85 mm × 53 mm (4.7 in x 3.4 in x 2.1 in)	146 mm × 105 mm × 70 mm (5.8 in x 4.1 in x 2.8 in)	155 mm × 114 mm × 84 mm (6.1 in x 4.3 in x 3.3 in)
	(Lower grip)	119 mm × 85 mm × 53 mm (4.7 in x 3.4 in x 2.1 in)	146 mm × 105 mm × 70 mm (5.8 in x 4.1 in x 2.8 in)	155 mm × 114 mm × 84 mm (6.1 in x 4.3 in x 3.3 in)
Application		Tensile test, tear test	Tensile test, tear test	Tensile test, tear test
Applicable Specimens		Plastic film, metal foil, rubber sheet		
Faces Surface Material		Rubber	Rubber	Rubber
Faces Width		22 mm (0.9 in)	30 mm (1.2 in)	32 mm (1.3 in)
Maximum Input Pressure		0.8 MPa (116 psi)	0.8 MPa (116 psi)	0.8 MPa (116 psi)
Specimen Dimensions				
	Maximum Thickness *Maximum Width*	3 mm (0.1 in) 22 mm (0.9 in)	6 mm (0.2 in) 30 mm (1.2 in)	4 mm (0.2 in) 32 mm (1.3 in)

2 kN Pneumatic Vise Action Grip

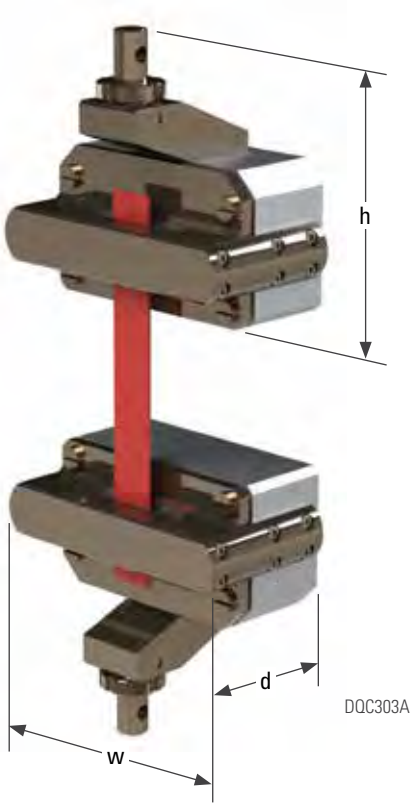
- Grip faces are removable and can be customized to special size requirements
- Manual side face adjustment and adjustable clamping position inside the vise to improve performance
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance
- Stable clamping force minimizes slipping and maximizes accuracy and repeatability
- Adjustable pressure provides proper grip force for a variety of materials
- Corrosion-resistant aluminum grips are lightweight and easy to operate



DQC203A

3 kN Pneumatic Vise Action Grip

- Stable clamping force minimizes slipping and maximizes accuracy and repeatability
- Adjustable pressure provides proper grip force for a variety of materials



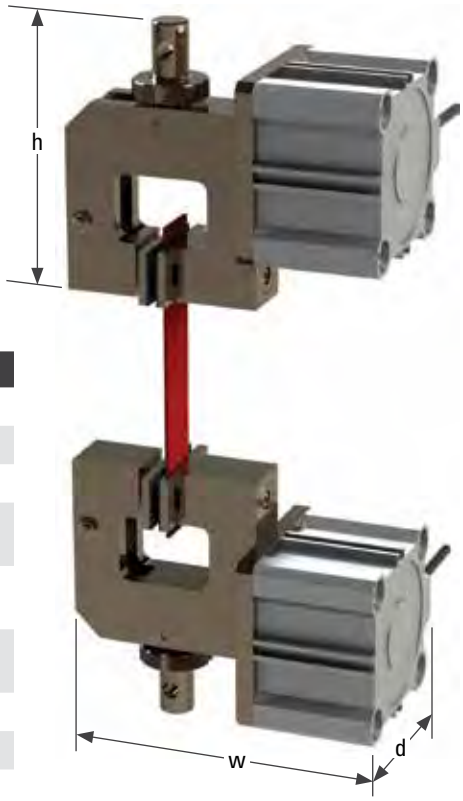
DQC303A

Specifications

Model		DQC203A	DQC303A
Part Number		100-302-652	100-302-650
Rated Force		2 kN (450 lbf)	3 kN (675 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	1.53 kg (3.4 lb) 1.53 kg (3.4 lb)	6.72 kg (15.8 lb) 6.72 kg (15.8 lb)
Adapter Style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	150 mm × 170 mm × 77 mm (5.9 in x 6.7 in x 3 in) 150 mm × 170 mm × 77 mm (5.9 in x 6.7 in x 3 in)	175 mm × 182 mm × 118 mm (6.9 in x 7.2 in x 4.7 in) 175 mm × 182 mm × 118 mm (6.9 in x 7.2 in x 4.7 in)
Application		Tensile test, tear test	Tensile test, tear test
Applicable Specimens		Thin film, sheet, tearing specimen	Textile fiber, plastic
Driving Structure		Double-action cylinder	NA
Faces Surface Material		Rubber	Rubber
Faces Width		30 mm (1.2 in)	70 mm (2.8 in)
Maximum Input Pressure		0.8 MPa (116 psi)	0.8 MPa (116 psi)
Specimen Dimensions:			
	Maximum Thickness *Maximum Width*	10 mm (0.4 in) 30 mm (1.2 in)	13 mm (0.5 in) 70 mm (2.8 in)

5 kN Pneumatic Vise Action Grip

- Stable clamping force minimizes slipping and maximizes accuracy and repeatability
- Adjustable pressure provides proper grip force for a variety of materials
- Optional faces with different specifications are available for a variety of specimens



Specifications

Model		DQC503C
Part Number		100-399-777
Rated Force		5 kN (1,125 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	4.78 kg (16.5 lbf) 4.78 kg (16.5 lbf)
Adapter Style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	151 mm × 200 mm × 120 mm (5.9 in x 7.9 in x 4.7 in) 151 mm × 200 mm × 120 mm (5.9 in x 7.9 in x 4.7 in)
Application		Tensile test, tear test
Applicable Specimens		Textile fiber, plastic
Maximum Input Pressure		0.8 MPa (116 psi)

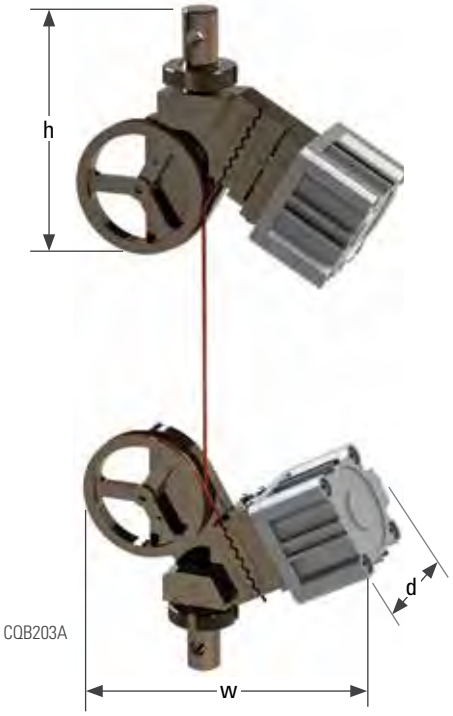
Optional Faces

Model	Description	Width	Opening Range	Part Number
DQC503C-05/07	Flat (Rubber)	60 mm (2.4 in)	0-11.5 mm (0-0.5 in)	100-311-695
DQC503C-06/08a	Corrugated & Trapezoidal	60 mm (2.4 in)	0-6.5 mm (0-0.3 in)	100-311-696
DQC503C-09/DQA503C-15	Flat (Rubber)	25 mm (1 in)	0-11.5 mm (0-0.5 in)	100-311-699
DQC503C-09/DQA503C-14	Flat (Rubber)	25 mm (1 in)	0-11.5 mm (0-0.5 in)	100-311-701
DL13022.01	Diamond tip	60 mm (2.4 in)	0-11.5 mm (0-0.5 in)	100-380-297

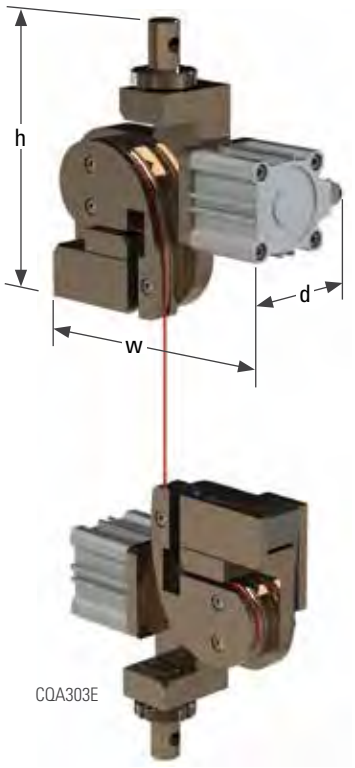
2 kN Pneumatic Capstan Grip & 3 kN Pneumatic Bollard Grip

» Stable clamping force minimizes slipping and maximizes accuracy and repeatability

» Adjustable pressure provides proper grip force for a variety of materials



CQB203A



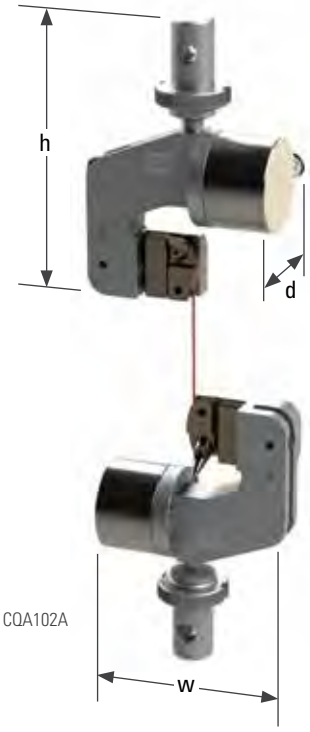
CQA303E

Specifications

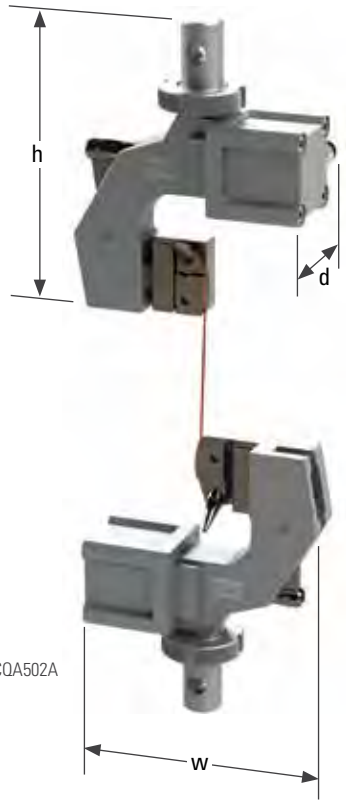
Model		CQB203A	CQA303E
Part Number		100-302-654	100-302-655
Rated Force		2 kN (450 lbf)	3 kN (675 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	1.77 kg (3.9 lb) 1.77 kg (3.9 lb)	5 kg (11 lb) 5 kg (11 lb)
Adapter Style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	146 mm × 187 mm × 82 mm (5.8 in x 7.4 in x 3.2 in) 146 mm × 187 mm × 82 mm (5.8 in x 7.4 in x 3.2 in)	195 mm × 181 mm × 100 mm (7.7 in x 7.1 in x 3.9 in) 195 mm × 181 mm × 100 mm (7.7 in x 7.1 in x 3.9 in)
Application		Tensile test	Tensile test
Applicable Specimens		Textile fibers, special fiber	Textile fibers, special fiber
Faces		Corrugated	Flat
Maximum Input Pressure		0.8 MPa (116 psi)	0.8 MPa (116 psi)
Specimen Dimensions			
	Minimum Length	694 mm (27.3 in)	532 mm (20.9 in)
	Maximum Diameter	ø3 mm (0.1 in)	ø4 mm (0.2 in)

Pneumatic Bollard Grips

- Stable clamping force minimizes slipping and maximizes accuracy and repeatability
- Wound up specimen clamping helps prevent stress concentration and damage out of test range
- Adjustable pressure provides proper grip force for a variety of materials



CQA102A



CQA502A

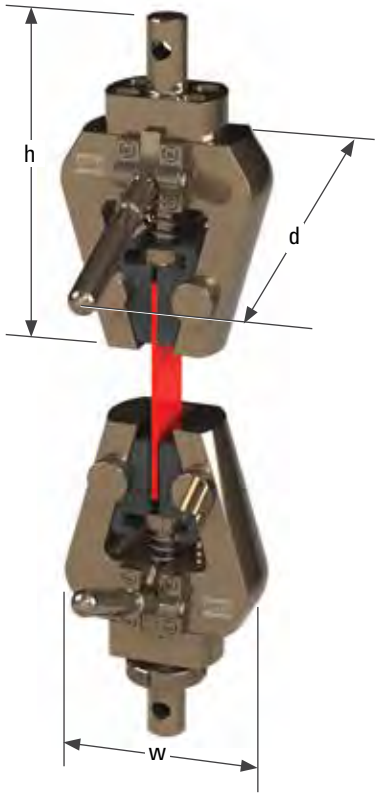
Specifications

Model		CQA102A	CQA502A
Part Number		100-302-657	100-302-656
Rated Force		100 N (22.5 lbf)	500 N (112.5 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	700 g (1.5 lb) 700 g (1.5 lb)	625 g (1.4 lb) 625 g (1.4 lb)
Adapter Style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	135 mm × 95 mm × 60 mm (5.3 in x 3.7 in x 2.4 in) 135 mm × 95 mm × 60 mm (5.3 in x 3.7 in x 2.4 in)	146 mm × 117 mm × 55 mm (5.8 in x 4.6 in x 2.2 in) 146 mm × 117 mm × 55 mm (5.8 in x 4.6 in x 2.2 in)
Application		Tensile test	Tensile test
Applicable Specimens		Wire, cord	Wire, cord
Faces		Flat	Flat
Maximum Input Pressure		0.8 MPa (116 psi)	0.8 MPa (116 psi)
Maximum Specimen Diameter		ø2 mm (0.08 in)	ø1.5 mm (0.06 in)
Minimum Specimen Length		230 mm (9.0 in)	250 mm (9.8 in)

Tension Grips

Wedge Action Grips (Manual)

- Prevents slipping failure caused by the specimen shrinking
- Grip faces move synchronously allowing specimens to be clamped in the same position of the force axis center
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance
- Depth-stop design on flat faces makes it easy to center the specimen



Specifications

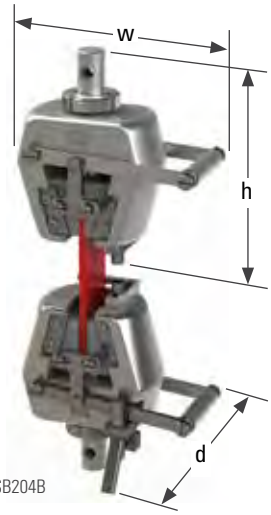
Model		XSA104B	XSD204B
Part Number		100-302-664	100-302-658
Rated Force		10 kN (2,250 lbf)	20 kN (4,500 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	3.08 kg (6.8 lb) 3.14 kg (6.9 lb)	3.96 kg (8.1 lb) 4.03 kg (8.9 lb)
Adapter Style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	167 mm × 104 mm × 120 mm (6.6 in x 4.1 in x 4.7 in) 176 mm × 104 mm × 120 mm (6.9 in x 4.1 in x 4.7 in)	167 mm × 113 mm × 154 mm (6.6 in x 4.1 in x 4.7 in) 175 mm × 113 mm × 154 mm (6.9 in x 4.1 in x 4.7 in)
Application		Tensile test	Tensile test
Applicable Specimens		Plate	Bar, plate

Optional Faces

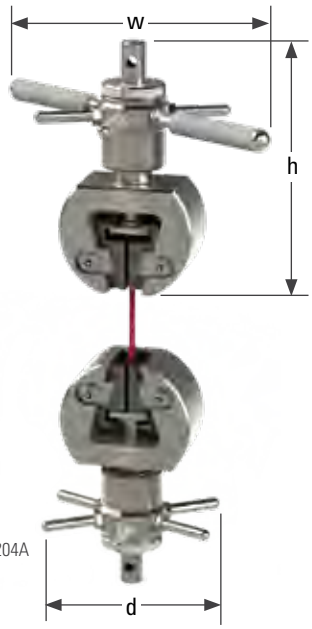
Model	Description	Width	Opening Range	Compatable Grip	Part Number
XSD204B-09	Flat (sawtooth)	40 mm (1.6 in)	0-6 mm (0-0.2 in)	XSD204B	100-302-851
XSD204B-10	Flat (sawtooth)	40 mm (1.6 in)	6-12 mm (0.2-0.5 in)	XSD204B	100-302-852
XSD204B-11	Vee	40 mm (1.6 in)	ø4-ø9 mm (ø0.2-ø0.4 in)	XSD204B	100-302-853
XSD204B-12	Vee	40 mm (1.6 in)	ø9-ø14 mm (ø0.4-ø0.6 in)	XSD204B	100-302-854
XSA204B-14/15	File	18 mm (0.7 in)	0-6 mm (0-0.2 in) (ø1-ø3 mm steel wire specimen)	XSD204B	100-302-855
XSA204B-17	Flat (sawtooth, coarse)	40 mm (1.6 in)	0-6 mm (0-0.2 in)	XSD204B	100-311-712
XSA204B-18	Flat (sawtooth, coarse)	40 mm (1.6 in)	6-12 mm (0.2-0.5 in)	XSD204B	100-311-713

20 kN Wedge Action Grip (Manual)

- Prevents slipping failure caused by the specimen shrinking
- Grip faces move synchronously allowing specimen to be clamped in the same position of the force axis center
- Centering device provides fast and accurate specimen center force axis positioning
- Optional faces with different specifications are available for a variety of specimens, upon request
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance



XSB204B



XSF204A

Specifications

Model		XSB204B	XSF204A
Part Number		100-302-659	100-302-660
Rated Force		20 kN (4,500 lbf)	20 kN (4,500 lbf)
Temperature Range		–70°C to –350°C (–94°F to –662°F)	–70°C to 350°C (–94°F to 662°F)
Weight	(Upper grip) (Lower grip)	2.37 kg (5.2 lb) 2.45 kg (5.4 lb)	5.05 kg (11.1 lb) 5.05 kg (11.1 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	156 mm × 145 mm × 82 mm (5.1 in x 5.7 in x 3.3 in) 156 mm × 145 mm × 101 mm (5.1 in x 5.7 in x 4 in)	196 mm × 172 mm × 172 mm (7.7 in x 6.8 in x 6.8 in) 196 mm × 172 mm × 172 mm (7.7 in x 6.8 in x 6.8 in)
Application		Tensile test	Tensile test
Applicable Specimens		Plate, bar	Plate, bar

Optional Faces

Model	Description	Width	Opening Range	Part Number
XSB204B-09	Flat	40 mm (1.6 in)	0-6 mm (0-0.2 in)	100-302-856
XSB204B-10	Flat	40 mm (1.6 in)	6-12 mm (0.2-0.4 in)	100-302-857
XSB204B-11	Vee	40 mm (1.6 in)	ø4-ø9 mm (ø0.2-ø0.4 in)	100-302-858
XSB204B-12	Vee	40 mm (1.6 in)	ø9-ø14 mm (ø0.4-ø0.6 in)	100-302-859
XSF204A-13a	Flat	40 mm (1.6 in)	0-6 mm (0-0.2 in)	100-302-860
XSF204A-14a	Flat	40 mm (1.6 in)	6-12 mm (0.2-0.4 in)	100-302-861
XSF204A-15a	Vee	40 mm (1.6 in)	ø4-ø9 mm (ø0.2-ø0.4 in)	100-302-862
XSF204A-16a	Vee	40 mm (1.6 in)	ø9-ø14 mm (ø0.4-ø0.6 in)	100-302-863

Tension Grips

Wedge Action Grips (Manual)

- Prevents slipping failure caused by the specimen shrinking
- Grip faces move synchronously allowing specimen to be clamped in the same position of the force axis center
- Depth-stop design on flat faces makes it easy to center the specimen
- Optional faces with different specifications are available for a variety of specimens, upon request
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance

XSA305A

Specifications

Model		XSA304A	XSA105A	XSA305A
Part Number		100-302-661	100-302-662	100-302-663
Rated Force		30 kN (6,750 lbf)	100 kN (22,500 lbf)	300 kN (67,500 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	7.44 kg (16.4 lb) 7.44 kg (16.4 lb)	14.7 kg (32.4 lb) 14.7 kg (32.4 lb)	35.6 kg (78.5 lb) 35.6 kg (78.5 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	40 mm (1.6 lb) 40 mm (1.6 lb)	60 mm (2.4 lb) 60 mm (2.4 lb)
Dimensions (h*w*d)	(Upper grip)	233 mm × 247 mm × 70 mm (9.2 in x 9.7 in x 2.8 in)	304 mm × 370 mm × 90 mm (12 in x 14.6 in x 3.5 in)	350 mm × 400 mm × 130 mm (13.8 in x 15.8 in x 5.1 in)
	(Lower grip)	233 mm × 247 mm × 70 mm (9.2 in x 9.7 in x 2.8 in)	304 mm × 370 mm × 90 mm (12 in x 14.6 in x 3.5 in)	350 mm × 400 mm × 130 mm (13.8 in x 15.8 in x 5.1 in)
Application		Tensile test, tear test	Tensile test, tear test	Tensile test, tear test
Applicable Specimens		Plate, bar	Plate, bar	Plate, bar

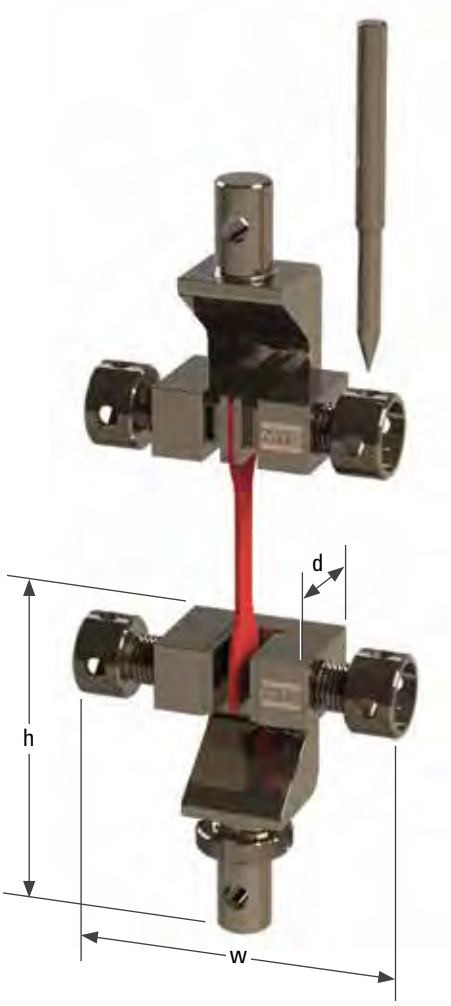
Optional Faces

Model	Description	Width	Opening Range	Compatible Grip		Part Number
XSA105A-13	Flat	40 mm (1.6 in)	0-7 mm (0-0.3 in)	XSA304A	XSA105A	100-302-864
XSA105A-14	Flat	40 mm (1.6 in)	7-14 mm (0.3-0.6 in)	XSA304A	XSA105A	100-302-865
XSA105A-15	Flat	40 mm (1.6 in)	14-21 mm (0.6-0.8 in)	XSA304A	XSA105A	100-302-866
XSA105A-16	Vee	40 mm (1.6 in)	ø4-ø9 mm (ø0.2-ø0.4 in)	XSA304A	XSA105A	100-302-867
XSA105A-17	Vee	40 mm (1.6 in)	ø9-ø14 mm (ø0.4-ø0.6 in)	XSA304A	XSA105A	100-302-868
XSA105A-18	Vee	40 mm (1.6 in)	ø14-ø19 mm (ø0.6-ø0.7 in)	XSA304A	XSA105A	100-302-869
XSA105A-19/20	File	25 mm (1.0 in)	0-7 mm (0-0.3 in) (ø1-ø3 mm steel wire specimen)	XSA304A	XSA105A	100-302-870
XSA305A-14A	Flat	50 mm (2.0 in)	0-8 mm (0-0.3 in)	XSA305A		100-302-871
XSA305A-15A	Flat	50 mm (2.0 in)	8-16 mm (0.3-0.6 in)	XSA305A		100-302-872
XSA305A-16A	Flat	50 mm (2.0 in)	16-24 mm (0.6-0.9 in)	XSA305A		100-302-873
XSA305A-17A	Flat	50 mm (2.0 in)	24-32 mm (0.9-1.3 in)	XSA305A		100-302-874
XSA305A-18A	Vee	50 mm (2.0 in)	ø4-ø9 mm (ø0.2-ø0.4 in)	XSA305A		100-302-875
XSA305A-19A	Vee	50 mm (2.0 in)	ø9-ø16 mm (ø0.4-ø0.6 in)	XSA305A		100-302-876
XSA305A-20A	Vee	50 mm (2.0 in)	ø16-ø23 mm (ø0.6-ø0.9 in)	XSA305A		100-302-877
XSA305A-21A	Vee	50 mm (2.0 in)	ø23-ø30 mm (ø0.9-ø1.3 in)	XSA305A		100-302-878
XSA305A-23/24	File	25 mm (1.0 in)	0-8 mm (0-0.3 in) (ø1-ø4 mm steel wire specimen)	XSA305A		100-302-879

1 kN Screw Action Grips

» 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



Specifications

Model		DSA103B
Part Number		100-302-669
Rated Force		1 kN (225 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	0.08 kg (1.8 lb) 0.91 kg (2 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	98 mm × 106 mm × 40 mm (3.8 in x 4.2 in x 1.6 in) 111 mm × 106 mm × 40 mm (4.4 in x 4.2 in x 1.6 in)
Application		Tensile test, tear test, peel test, shear test
Applicable Specimens		Metal wire, foil, plastic plate, sheet

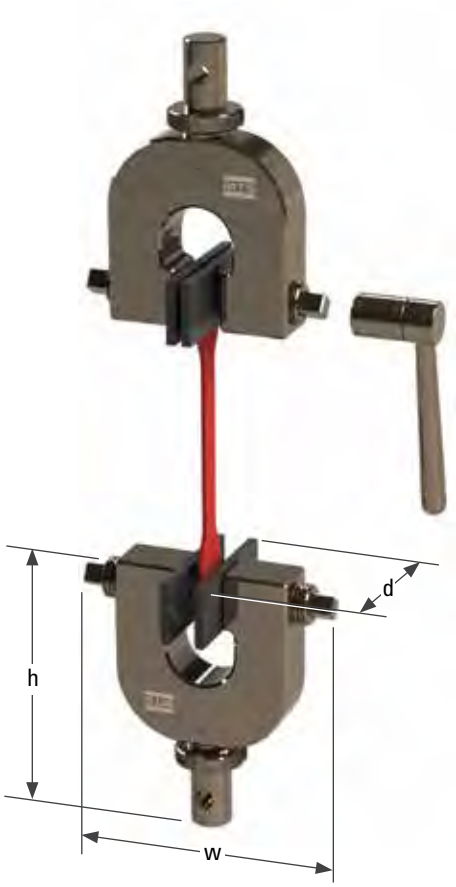
Optional Faces

Model	Description	Width	Opening Range	Part Number
DSA103B-02	Smooth metal surface	26 mm (1 in)	0-12 mm (0-0.5 in)	100-311-702
DSA103B-02A	Saw-tooth	26 mm (1 in)	0-12 mm (0-0.5 in)	100-311-703

3 kN & 5 kN Screw Action Grips

» Quick-acting U-shaped grips allow specimen loading from the side for better test performance

» Optional customizable faces are available



Specifications

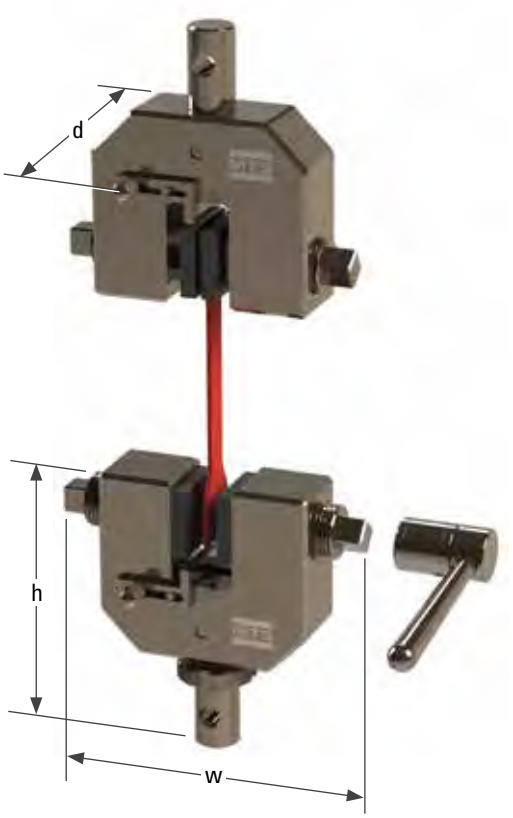
Model		DSA303B	DSA503B
Part Number		100-302-672	100-302-670
Rated Force		3 kN (675 lbf)	5 kN (1,12 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	2.46 kg (2.5 lb) 2.46 kg (2.5 lb)	1.51 kg (3.31 lb) 1.51 kg (3.31 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	154 mm × 143 mm × 50 mm (6.1 in x 5.6 in x 2 in) 154 mm × 143 mm × 50 mm (6.1 in x 5.6 in x 2 in)	135 mm × 110 mm × 70 mm (5.3 in x 4.3 in x 2.8 in) 135 mm × 110 mm × 70 mm (5.3 in x 4.3 in x 2.8 in)
Application		Grab test	Tensile test, tear test
Applicable Specimens		Textile	Plate, sheet, tearing specimen

Optional Faces

Model	Description	Height x Width	Opening Range	Compatible Grip	Part Number
DSA503B-05A/06A	Sawtooth	30 mm x 70 mm (1.2 in x 2.8 in)	0-12 mm (0-0.5 in)	DSA503B	100-311-707
DSA503B-05B/06B	Corrugated	32 mm x 30 mm (1.3 in x 1.2 in)	0-10 mm (0-0.4 in)	DSA503B	100-311-708
DSA503B-05C/06C	Corrugated	32 mm x 70 mm (1.3 in x 2.8 in)	0-10 mm (0-0.4 in)	DSA503B	100-311-710

10 kN Screw Action Grips

- Optional faces are available for a variety of specimens, upon request
- Improved applications performance with manual side face adjustment and adjustable clamping position inside the vise
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance
- Centering device provides fast and accurate specimen center force axis positioning



Specifications

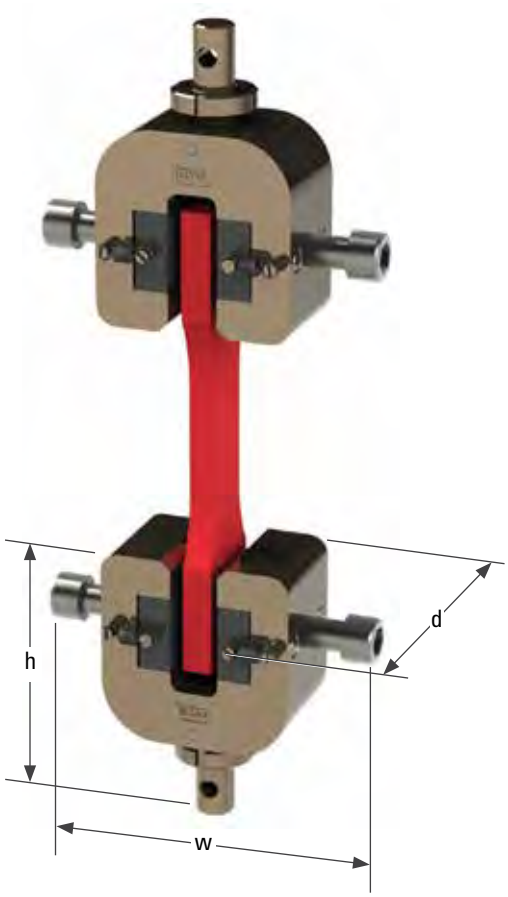
Model		DSA104B	DSC104B
Part Number		100-302-671	100-302-676
Rated Force		10 kN (2,250 lbf)	10 kN (2,250 lbf)
Temperature Range		Room temperature	–70°C to 350°C° (–94°F to 662°F)
Weight	(Upper grip) (Lower grip)	1.90 kg (4.2 lb) 1.97 kg (4.3 lb)	1.87 kg (4.1 lb) 1.87 kg (4.1 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	117 mm × 123 mm × 48 mm (4.6 in x 4.8 in x 1.9 in) 123 mm × 123 mm × 48 mm (5 x in 4.8 in x 1.9 in)	127 mm × 123 mm × 48 mm (5 in x 4.8 in x 1.9 in) 127 mm × 123 mm × 48 mm (5 in x 4.8 in x 1.9 in)
Application		Tensile test, tear test, peel test, shear test	
Applicable Specimens		Plastic plate, tearing specimen, shearing specimen	

Optional Faces

Model	Description	Width	Opening Range	Compatible Grip	Part Number
DSA104B-09/11	Sawtooth	34 mm (1.3 in)	0-14 mm (0-0.6 in)	DSA503B	100-311-704
DSA104B-10	Corrugated	34 mm (1.3 in)	0-13 mm (0-0.5 in)	DSA503B	100-311-705
DSA104B-12	Corrugated	72 mm (2.8 in)	0-12 mm (0-0.5 in)	DSA503B	100-311-706

10 kN Screw Action Grip

- Switching structure allows faces to be moved synchronously or separately
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance

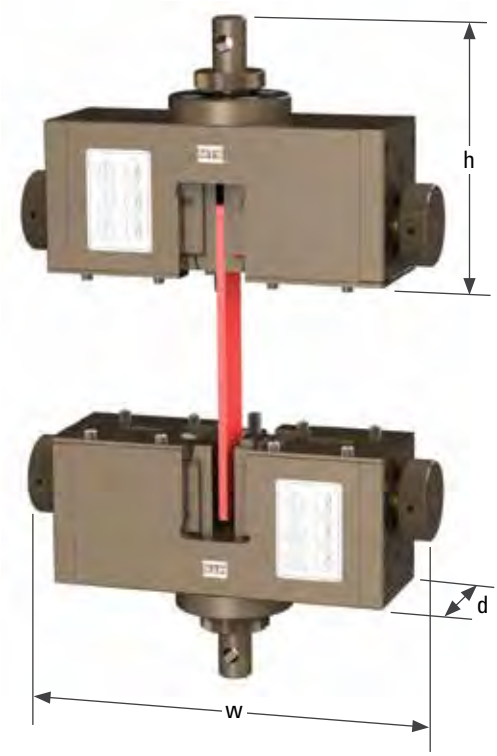


Specifications

Model		DSB104B
Part Number		100-302-675
Rated Force		10 kN (2,250 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	3.92 kg (8.6 lb) 3.92 kg (8.6 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	148 mm × 174 mm × 84 mm (5.8 in x 6.9 in x 3.3 in) 148 mm × 174 mm × 84 mm (5.8 in x 6.9 in x 3.3 in)
Application		Tensile test
Applicable Specimens		Wood-based panels
Faces		Sawtooth
Specimen Dimensions *Maximum Thickness* *Maximum Width*		 25 mm (1 in) 60 mm (2.4 in)

10 kN Screw Action Grip

- Customizable wider faces
- Optional faces are available for a variety of specimens, upon request
- Switching structure allows faces to be moved synchronously or separately
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance
- Centering device provides fast and accurate specimen center force axis positioning



Specifications

Model		DX104A
Part Number		100-302-665
Rated Force		10 kN (2,250 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	9.80 kg (21.6 lb) 9.80 kg (21.6 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	164 mm × 250 mm × 72 mm (6.5 in x 9.8 in x 2.8 in) 164 mm × 250 mm × 72 mm (6.5 in x 9.8 in x 2.8 in)
Application		Tensile test
Applicable Specimens		Metal plate, sheet, plastic plate, sheet

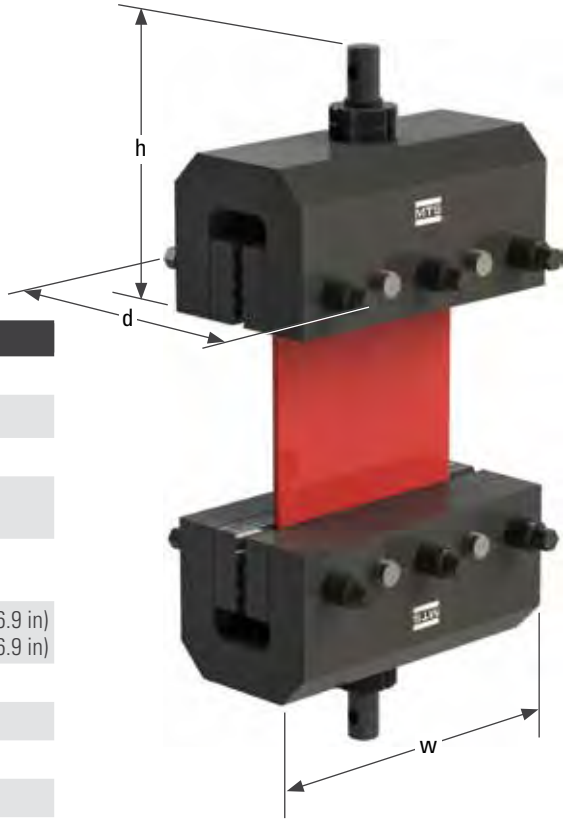
Optional Faces

Model	Description	Width	Opening Range	Part Number
DX104A-07	Flat (sawtooth)	40 mm (1.6 in)	0-20 mm (0-0.8 in)	100-302-880
DX104A-07a	Flat (SiC coating)	40 mm (1.6 in)	0-20 mm (0-0.8 in)	100-311-711
DX104A-23	Vee	40 mm (1.6 in)	ø4-ø9 mm (0.2-0.4 in)	100-302-881
DX104A-24	Vee	40 mm (1.6 in)	ø9-ø14 mm (0.4-0.6 in)	100-302-882

20 kN Screw Action Grip

» Calibration line provides reference for specimen positioning

» Improved textile tension performance with high rigidity faces, customizable upon request

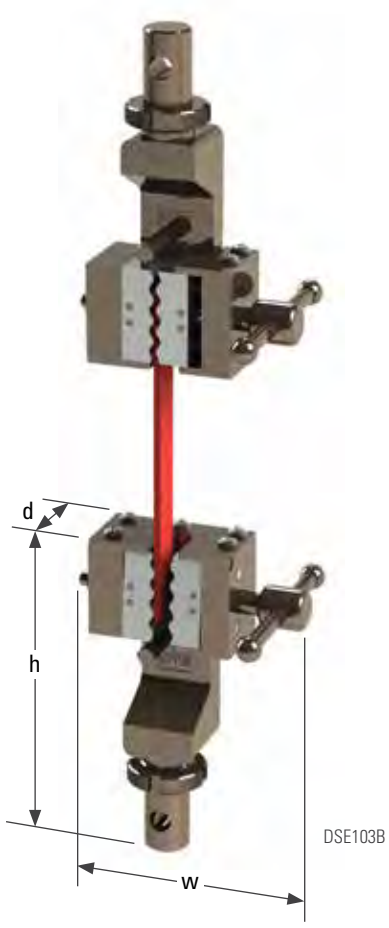


Specifications

Model		DSA204B
Part Number		100-302-673
Rated Force		20 kN (4,500 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	15.61 kg (34.4 lb) 15.61 kg (34.4 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	156 mm × 210 mm × 174 mm (6.1 in x 8.3 in x 6.9 in) 156 mm × 210 mm × 174 mm (6.1 in x 8.3 in x 6.9 in)
Application		Tensile test
Applicable Specimens		Geo-textile
Faces		Corrugated
Faces Width		210 mm (8.3 in)
Specimen Dimensions		
Maximum Thickness		10 mm (0.4 in)
Maximum Width		210 mm (8.3 in)

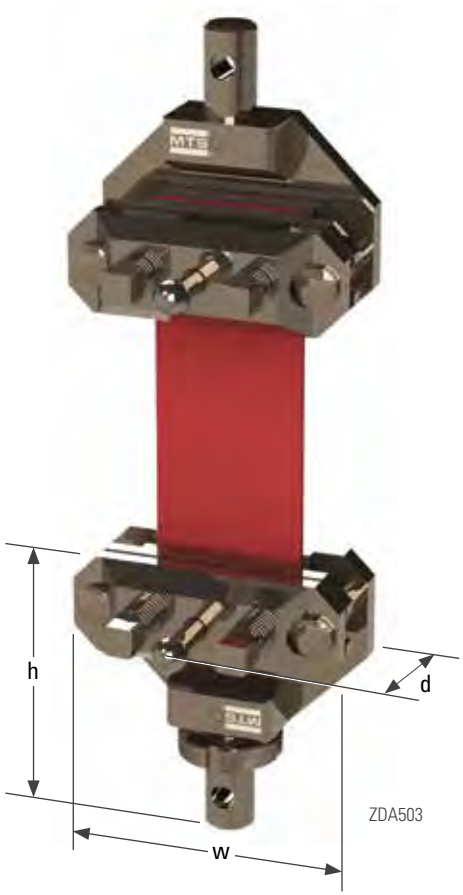
1 kN Vise Action Grip

- High efficiency clamping performance for thin specimens
- Highly rigid, semi-closed structure enables a lighter and smaller grip to support a higher allowable load



5 kN Vise Action Grip

- Calibration line provides reference for specimen positioning
- High efficiency clamping performance for thin specimens
- Improved textile tension performance with high rigidity faces, customizable upon request



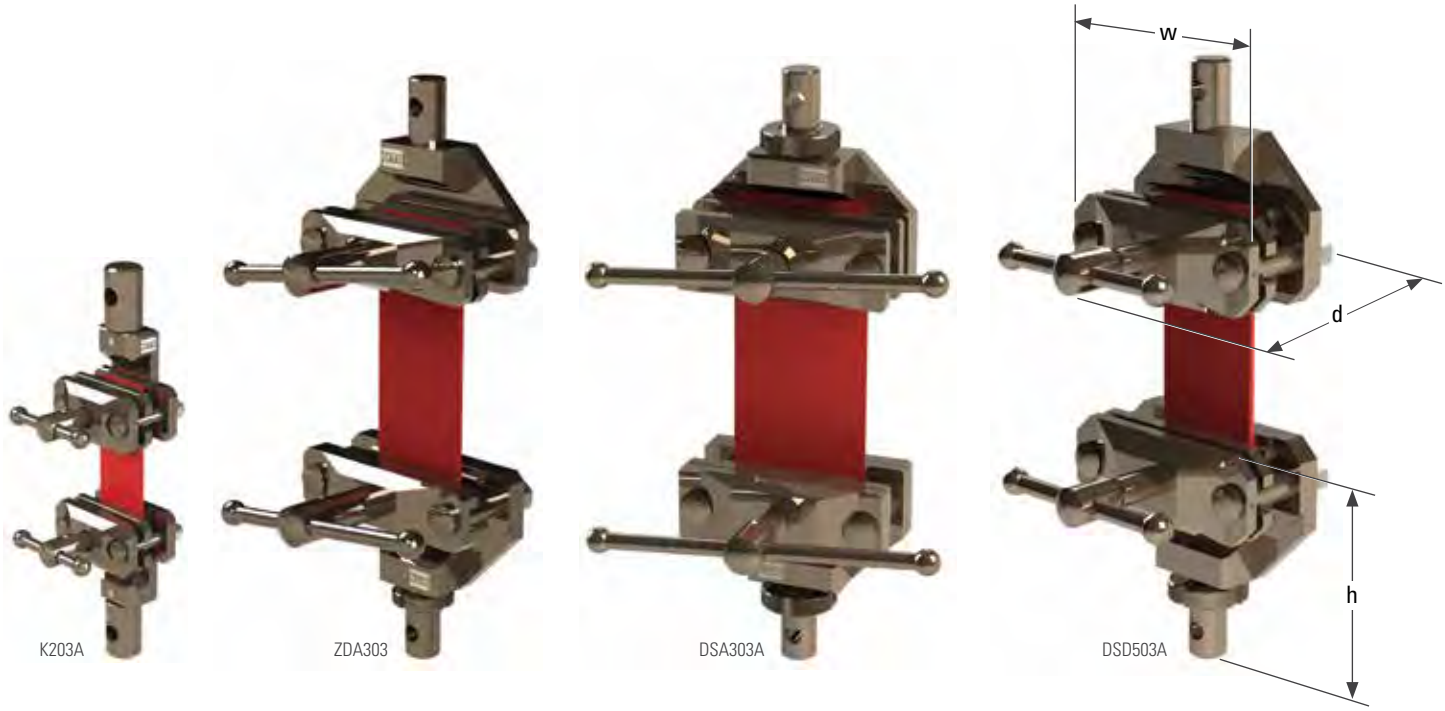
Specifications

Model		DSE103B	ZDA503
Part Number		100-302-678	100-302-683
Rated Force		1 kN (225 lbf)	5 kN (1,125 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	1.21 kg (2.7 lb) 1.21 kg (2.7 lb)	1.73 kg (3.8 lb) 1.83 kg (4.0 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	143 mm × 105 mm × 50 mm (5.6 in x 4.1 in x 2 in) 143 mm × 105 mm × 50 mm (5.6 in x 4.1 in x 2 in)	110 mm × 110 mm × 90 mm (4.3 in x 4.3 in x 3.5 in) 120 mm × 110 mm × 90 mm (4.7 in x 4.3 in x 3.5 in)
Application		Tensile test	Tensile test
Applicable Specimens		Sheath of cable	Fiberglass mesh
Faces Surface Material		Corrugated	Rubber
Specimen Dimensions			
	Maximum Thickness *Maximum Width*	6 mm (0.2 in) 22 mm (0.9 in)	10 mm (0-0.4 in) 65 mm (2.6 in)

Vise Action Grips

» Improved textile tension performance with high rigidity faces, customizable upon request

» High efficiency clamping performance for thin specimens

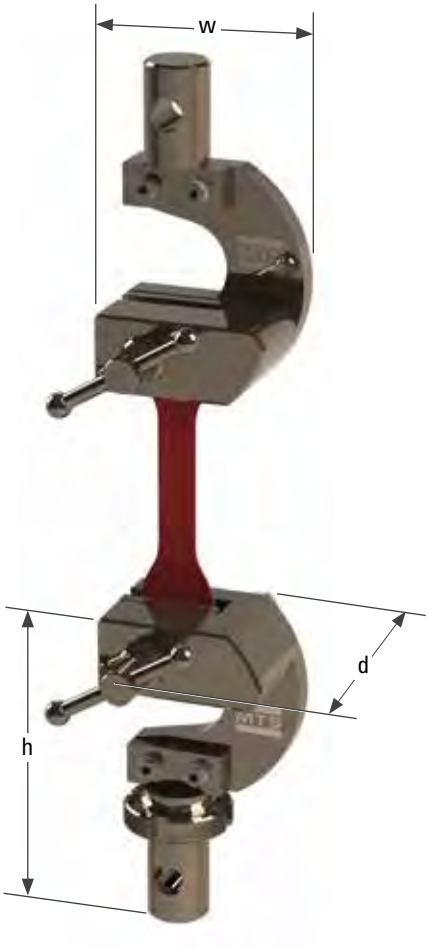


Specifications

Model		K203A	ZDA303	DSA303A	DSD503A
Part Number		100-302-680	100-302-682	100-302-679	100-302-681
Rated Force		2 kN (450 lbf)	3 kN (675 lbf)	3 kN (675 lbf)	5 kN (1,125 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	0.6 kg (1.3 lb) 0.6 kg (1.3 lb)	1.99 kg (1.4 lb) 2.06 kg (4.5 lb)	2.35 kg (5.2 lb) 2.35 kg (5.2 lb)	2.17 kg (4.8 lb) 2.28 kg (5.0 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip)	91 mm × 60 mm × 78 mm (3.6 in x 2.4 in x 3.1 in)	110 mm × 145 mm × 135 mm (4.3 in x 5.7 in x 5.3 in)	115 mm × 202 mm × 111 mm (4.5 in x 8 in x 4.4 in)	116 mm × 120 mm × 135 mm (4.6 in x 4.7 in x 5.3 in)
	(Lower grip)	91 mm × 60 mm × 78 mm (3.6 in x 2.4 in x 3.1 in)	119 mm × 145 mm × 135 mm (4.6 in x 5.7 in x 5.3 in)	115 mm × 202 mm × 111 mm (4.5 in x 8 in x 4.4 in)	126 mm × 120 mm × 135 mm (5 in x 4.7 in x 5.3 in)
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
Faces		Corrugated	Trapezoidal & Corrugated	Corrugated	Corrugated
Specimen Dimensions					
Maximum Thickness		10 mm (0.4 in)	12 mm (0.5 in)	10 mm (0.4 in)	12 mm (0.5 in)
Maximum Width		32 mm (1.3 in)	80 mm (3.1 in)	75 mm (3 in)	80 mm (3.1 in)

500 N Vise Action Grip

- High efficiency clamping performance for thin specimens
- Highly rigid, semi-closed structure enables a lighter and smaller grip to support a higher allowable load
- Quick-acting U-shaped grips allow specimen loading from the side for better test performance



Specifications

Model		DSA502A
Part Number		100-302-684
Rated Force		500 N (112 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	500 g (1.1 lb) 580 g (1.3 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	96 mm × 56 mm × 56 mm (3.8 in x 2.2 in x 2.2 in) 105 mm × 56 mm × 56 mm (4.1 in x 2.2 in x 2.2 in)
Application		Tensile test, tear test
Applicable Specimens		Thin film, sheet, tearing specimen
Faces Surface Material		Rubber
Specimen Dimensions *Maximum Thickness* *Maximum Width*		 5 mm (0.2 in) 32 mm (1.3 in)

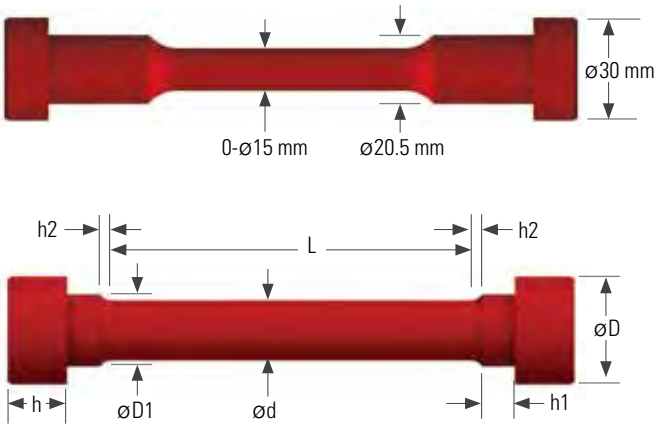
100 kN & 300 kN Shoulder Grips

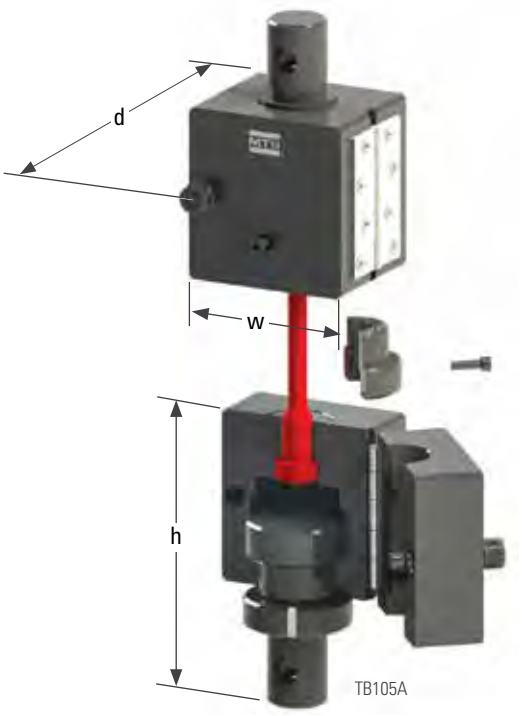
» No slipping failure for materials with higher hardness

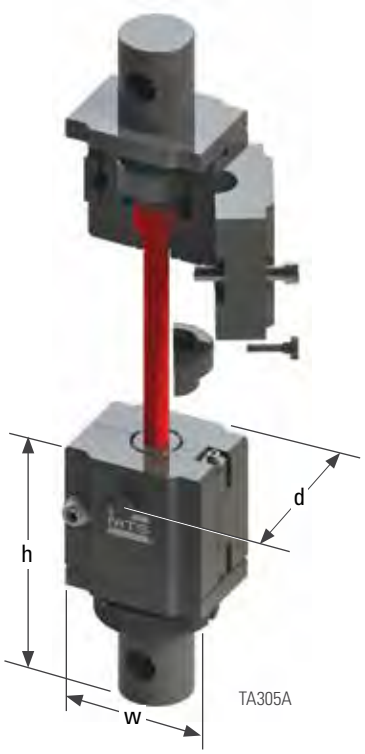
Recommended Specimen Specifications for Optional Shoulder Blocks

Shoulder Block	d (mm)	D (mm)	D1 (mm)	h (mm)	h1 (mm)	h2 (mm)	L (mm)	F max (mm)	Part Number
TA305A-05	6	13	$8^{0}_{-0.1}$	6	4	3	36	30	100-465-639
TA305A-06	8	16	$11^{0}_{-0.1}$	8	4	3	48	60	100-465-637
TA305A-07	10	20	$13^{0}_{-0.1}$	10	5	4	60	100	100-375-023
TA305A-08	15	28	$18^{0}_{-0.1}$	15	7.5	4	90	200	100-465-636
TA305A-09	20	36	$24^{0}_{-0.1}$	20	10	5	120	300	–

Recommended Specimen Specifications







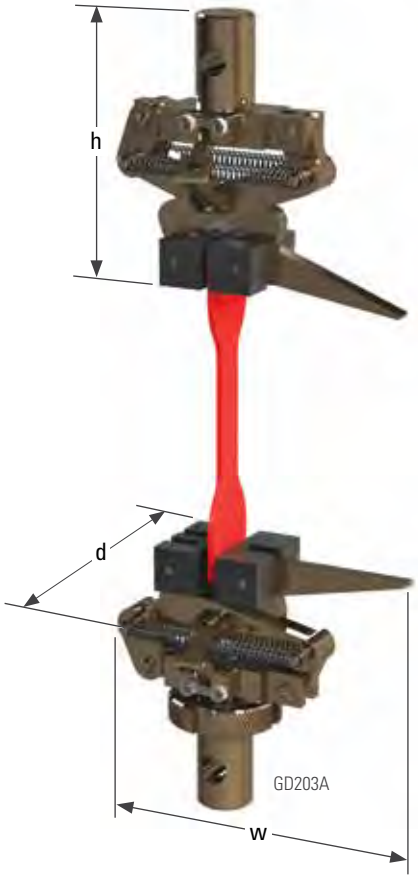
Specifications

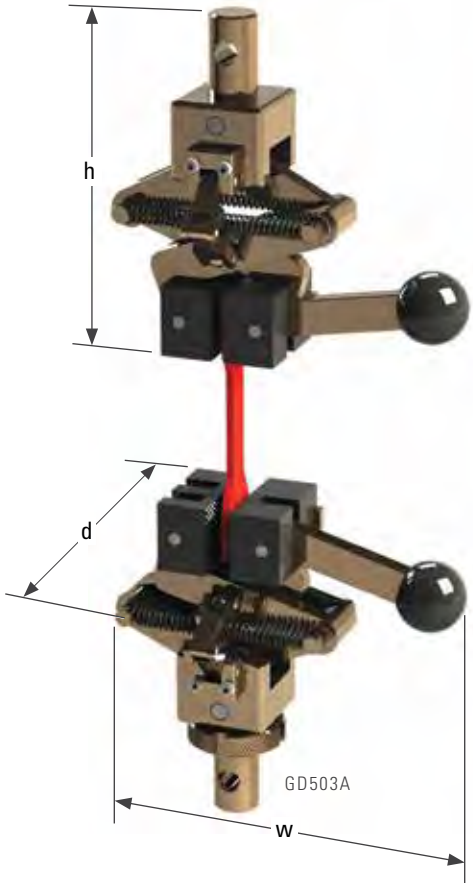
Model		TB105A	TA305A
Part Number		100-302-685	100-302-686
Rated Force		100 kN (22,500 lbf)	300 kN (67,500 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	9.12 kg (20.1 lb) 9.75 kg (21.5 lb)	11.8 kg (26.0 lb) 11.7 kg (25.8 lb)
Adapter style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in)	60 mm (2.4 in) 60 mm (2.4 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	173 mm × 115 mm × 108 mm (6.8 in x 4.5 in x 4.3 in) 192 mm × 115 mm × 108 mm (7.6 in x 4.5 in x 4.3 in)	204 mm × 120 mm × 116 mm (8 in x 4.7 in x 4.6 in) 227 mm × 120 mm × 116 mm (8.9 in x 4.7 in x 4.6 in)
Application		Tensile test	Tensile test
Applicable Specimens		Metal bar shoulder specimen	Specimens of metallic bar with shoulder

2 kN & 5 kN Scissor Action Grip

» 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





Specifications

Model		GD203A	GD503A
Part Number		100-302-687	100-302-688
Rated Force		2 kN (450 lbf)	5 kN (1,125 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	0.44 kg (1 lb) 0.53 kg (1.2 lb)	1.41 kg (3.1 lb) 1.51 kg (3.3 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	102 mm × 104 mm × 46 mm (4 in x 4.1 in x 1.8 in) 114 mm × 104 mm × 46 mm (4.5 in x 4.1 in x 1.8 in)	146 mm × 146 mm × 72 mm (5.7 in x 5.7 in x 2.8 in) 156 mm × 146 mm × 72 mm (6.1 in x 5.7 in in x 2.8 in)
Application		Tensile test, tear test	Tensile test, tear test
Applicable Specimens		Rubber; sheet	Rubber; sheet
Faces		Sawtooth	Sawtooth
Specimen Dimensions			
	Maximum Thickness *Maximum Width*	10 mm (0.4 in) 30 mm (1.2 in)	10 mm (0.4 in) 40 mm (1.6in)

100 kN Thread Grip

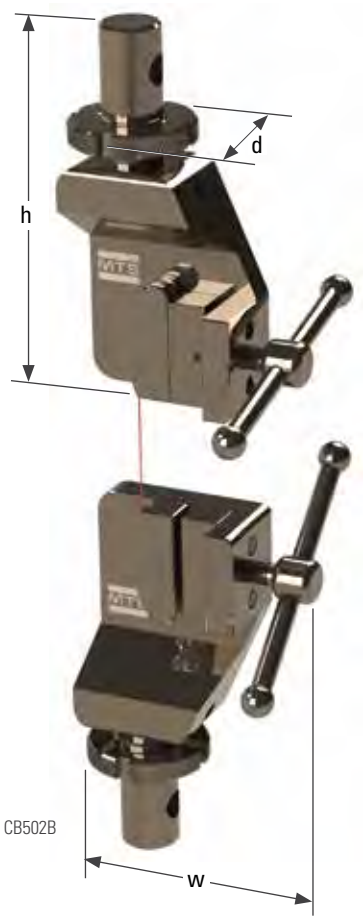
» Recommended for threaded-head products or materials with higher hardness

Specifications

Model		ZLA105A
Part Number		100-302-693
Rated Force		100 kN (22.500 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	2.67 kg (5.9 lb) 2.67 kg (5.9 lb)
Adapter style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	182 mm × 72 mm × 72 mm (7.2 in x 2.8 in x 2.8 in) 182 mm × 72 mm × 72 mm (7.2 in x 2.8 in x 2.8 in)
Application		Tensile test
Applicable Specimens		Threaded end tension specimen
Specimen Screw		M12x1.75

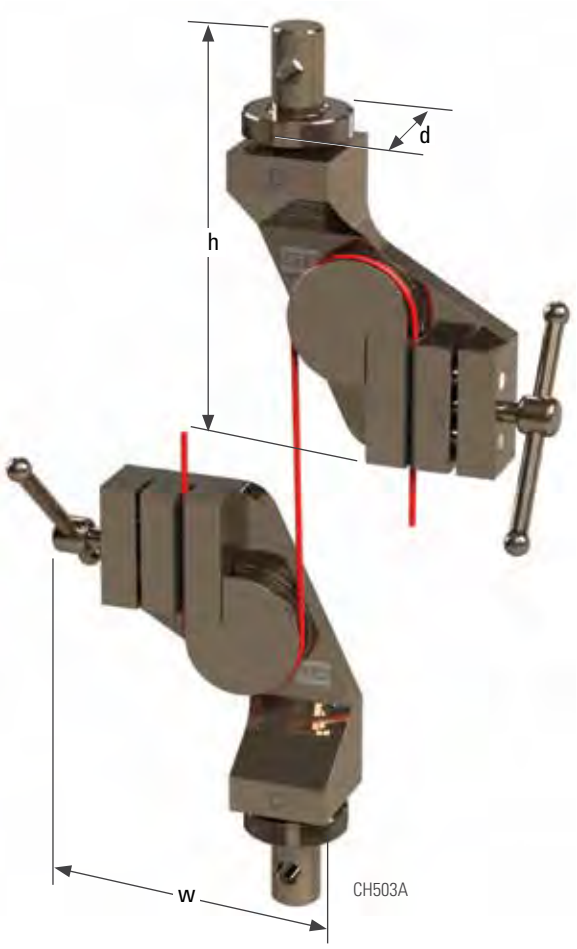
500 N Bollard Grip

» Wound up specimen clamping to prevent stress concentration and damage out of test range. Provides the highest clamping force of all the manual grips



5 kN Bollard Grip

» Wound up specimen clamping to prevent stress concentration and damage out of test range



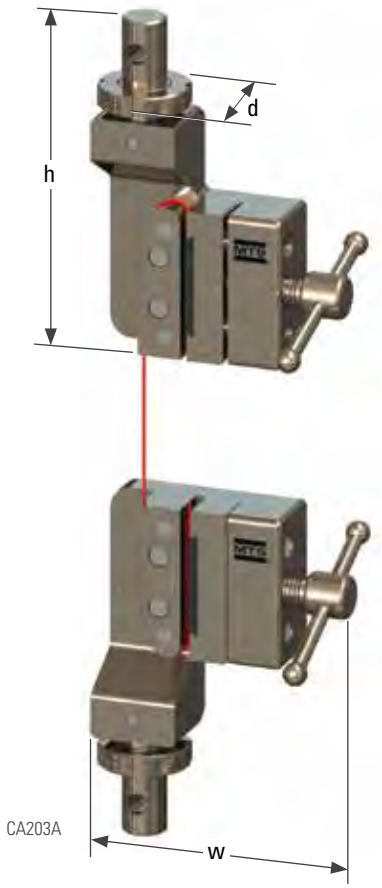
Specifications

Model		CB502B	CH503A
Part Number		100-302-696	100-302-697
Rated Force		500 N (112 lbf)	5 kN (1,125 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	0.87 kg (1.9 lb) 0.87 kg (1.9 lb)	1.6 kg (3.5 lb) 1.6 kg (3.5 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	126 mm × 81 mm × 42 mm (5 in x 3.2 in x 1.7 in) 126 mm × 81 mm × 42 mm (5 in x 3.2 in x 1.7 in)	166 mm × 119 mm × 52 mm (6.5 in x 4.7 in x 2.1 in) 166 mm × 119 mm × 52 mm (6.5 in x 4.7 in x 2.1 in)
Application		Tensile test	Tensile test
Applicable Specimens		Wire, cord	Wire, cord
Faces		Flat	Rubber
Specimen Dimensions			
	Minimum Length *Maximum Diameter*	176 mm (6.9 in) ø0.5 mm (0.02 in)	335 mm (13.2 in) ø2 mm (0.08 in)

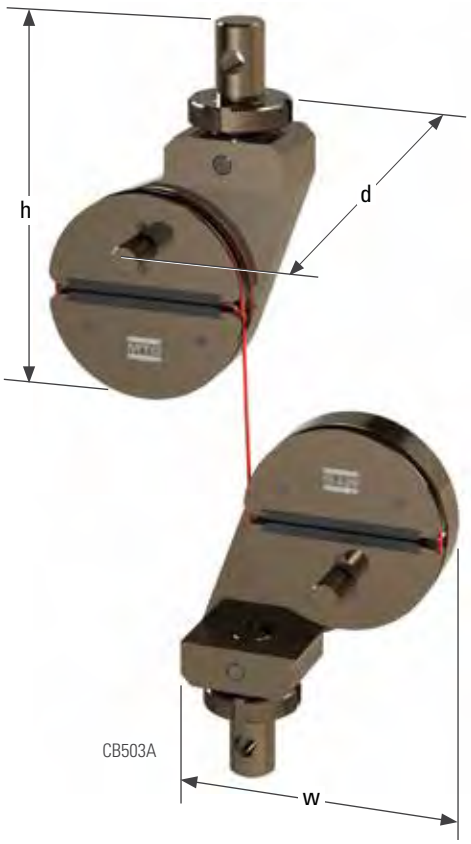
2 kN & 5 kN Bollard Grips

» Wound up specimen clamping to prevent stress concentration and damage out of test range

» Clamping force may be increased by winding the specimen around the movable part of the grip



CA203A



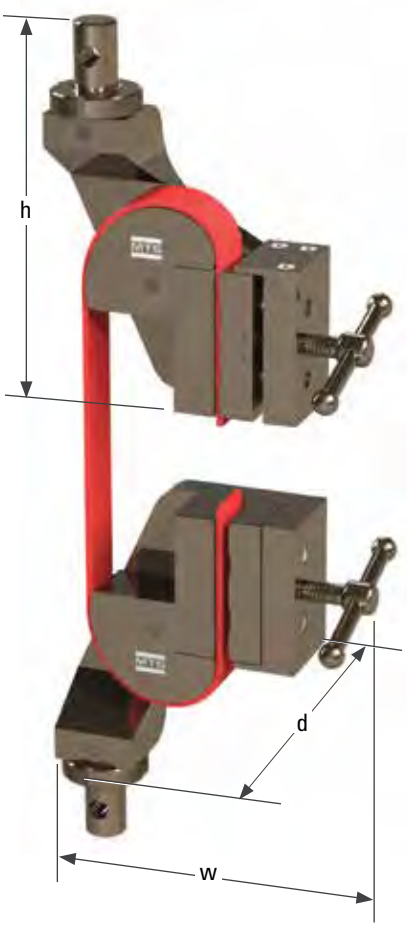
CB503A

Specifications

Model		CA203A	CB503A
Part Number		100-302-694	100-302-710
Rated Force		2 kN (450 lbf)	5 kN (1,125 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	2.02 kg (4.5 lb) 2.02 kg (4.5 lb)	1.82 kg (4 lb) 1.83 kg (4 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	156 mm × 120 mm × 46 mm (6.1 in x 4.7 in x 1.8 in) 156 mm × 120 mm × 46 mm (6.1 in x 4.7 in x 1.8 in)	165 mm × 110 mm × 60 mm (6.5 in x 4.3 in x 2.4 in) 156 mm × 110 mm × 60 mm (6.5 in x 4.3 in x 2.4 in)
Application		Tensile test	Tensile test
Applicable Specimens		Steel Wire	Steel Wire
Faces		File	File
Specimen Dimensions			
	Minimum Length	360 mm (14.2 in)	950 mm (37.4 in)
	Maximum Diameter	ø4 mm (0.2 in)	ø3 mm (0.1 in)

5 kN Bollard Grip

» Wound up specimen clamping to prevent stress concentration and damage out of test range

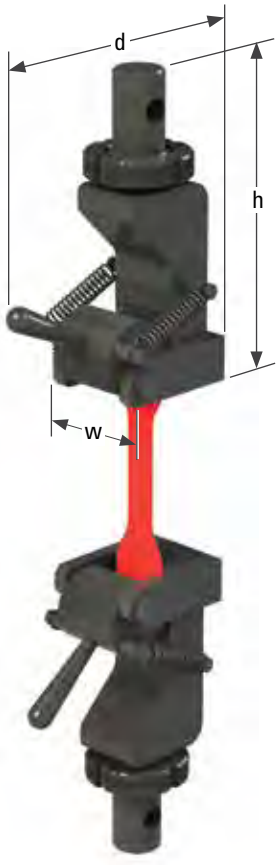


Specifications

Model		CD503B
Part Number		100-302-708
Rated Force		5 kN (1,125 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	2.96 kg (6.5 lb) 2.96 kg (6.5 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	177 mm × 160 mm × 51 mm (7 in x 6.3 in x 2 in) 177 mm × 160 mm × 51 mm (7 in x 6.3 in x 2 in)
Application		Tensile test
Applicable Specimens		Fiberglass geogrid
Faces		Diamond tip
Specimen Dimensions *Maximum Thickness* *Maximum Width*		 7 mm (0.3 in) 30 mm (1.8 in)

1 kN Roller Action Grip

» Stable clamping force minimizes slipping and maximizes accuracy and repeatability



Specifications

Model		PA103A
Part Number		100-302-717
Rated Force		1 kN (225 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	1 kg (2.2 lb) 1 kg (2.2 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	125 mm × 58 mm × 105 mm (4.9 in x 2.3 in x 4.1 in) 125 mm × 58 mm × 105 mm (4.9 in x 2.3 in x 4.1 in)
Application		Tensile test, tear test
Applicable Specimens		Rubber, sheet
Roller Surface		Serrated
Roller Length		30 mm (1.2 in)
Maximum Specimen Thickness		10 mm (0.4 in)

30 kN & 50 kN Roller Action Grips

» Wound up specimen clamping to prevent stress concentration and damage out of test range

» Clamping force may be increased by winding the specimen around the movable part of the grip

CSA304C

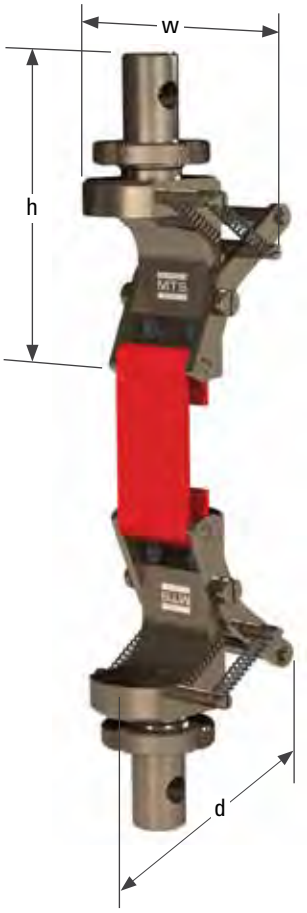
CB504E

Specifications

Model		CSA304C	CB504E
Part Number		100-302-701	100-302-702
Rated Force		30 kN (6,750 lbf)	50 kN (11,250 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	4.6 kg (10.1 lb) 4.72 kg (10.4 lb)	8.34 kg (18.4 lb) 8.34 kg (18.4 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	40 mm (1.6 in) 40 mm (1.6 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	166 mm × 172 mm × 99 mm (6.5 in x 6.8 in x 3.9 in) 166 mm × 172 mm × 120 mm (6.5 in x 6.8 in x 4.7 in)	200 mm × 182 mm × 110 mm (7.9 in x 7.2 in x 4.3 in) 200 mm × 182 mm × 110 mm (7.9 in x 7.2 in x 4.3 in)
Application		Tensile test	Tensile test, tear test
Applicable Specimens		Mesh belt, safety belt	Mesh belt, safety belt
Specimen Dimensions			
	Minimum Length	575 mm (22.6 in)	650 mm (25.6 in)
	Maximum Thickness	5 mm (0.2 in)	4 mm (0.2 in)
	Maximum Width	70 mm (2.8 in)	100 mm (3.9 in)

1 kN Roller Action Grip

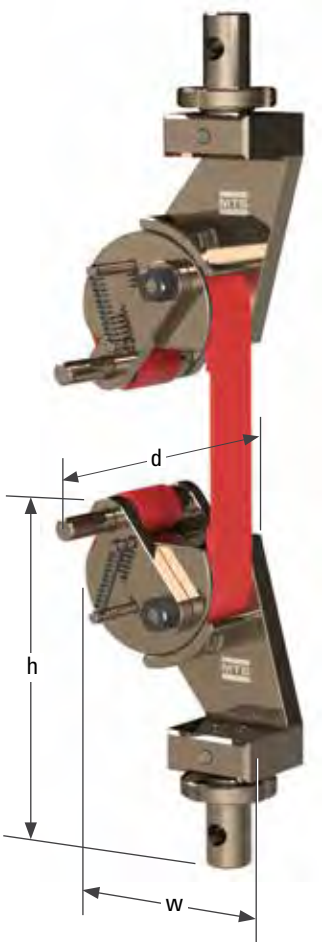
» Wound up specimen clamping to prevent stress concentration and damage out of test range



20 kN Roller Action Grip

» Wound up specimen clamping to prevent stress concentration and damage out of test range

» Clamping force may be increased by winding the specimen around the movable part of the grip



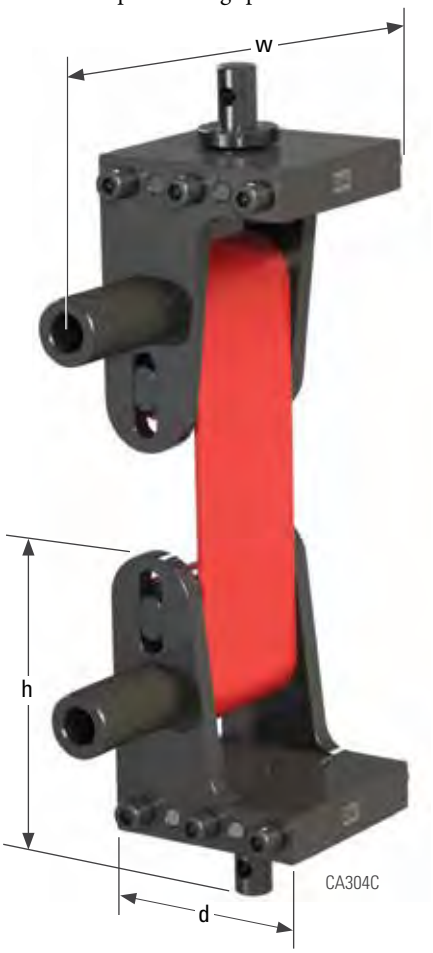
Specifications

Model		CA103A	CSA204C
Part Number		100-302-707	100-302-703
Rated Force		1 kN (225 lbf)	20 kN (4,500 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	0.66 kg (1.5 lb) 0.66 kg (1.5 lb)	1.20 kg (2.7 lb) 1.20 kg (2.7 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	118 mm × 67 mm × 76 mm (4.7 in x 2.6 in x 3 in) 118 mm × 67 mm × 76 mm (4.7 in x 2.6 in x 3 in)	152 mm × 88 mm × 97 mm (6 in x 3.5 in x 3.8 in) 152 mm × 88 mm × 97 mm (6 in x 3.5 in x 3.8 in)
Application		Tensile test	Tensile test
Applicable Specimens		Rubber, sheath of cable	Plastic packing belt
Specimen Dimensions			
	Minimum Length	89 mm (3.5 in)	755 mm (29.7 in)
	Maximum Thickness	2 mm (0.08 in)	2 mm (0.08 in)
	Maximum Width	35 mm (1.4 in)	28 mm (1.1 in)

30 kN & 100 kN Roller Action Grips

» Wound up specimen clamping to prevent stress concentration and damage out of test range

» Clamping force may be increased by winding the specimen around the movable part of the grip



Specifications

Model		CA304C	CA105C
Part Number		100-302-699	100-302-700
Rated Force		30 kN (6,750 lbf)	100 kN (22,500 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	5.29 kg (11.7 lb) 5.29 kg (11.7 lb)	11.2 kg (24.7 lb) 11.2 kg (24.7 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	40 mm (1.6 in) 40 mm (1.6 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	195 mm × 187 mm × 122 mm (7.7 in x 7.4 in x 4.8 in) 195 mm × 187 mm × 122 mm (7.7 in x 7.4 in x 4.8 in)	272 mm × 197 mm × 132 mm (10.7 in x 7.8 in x 5.2 in) 272 mm × 197 mm × 132 mm (10.7 in x 7.8 in x 5.2 in)
Application		Tensile test	Tensile test
Applicable Specimens		Braid, safety belt	Braid, safety belt
Specimen Dimensions			
	Minimum Length *Maximum Thickness* *Maximum Width*	735 mm (28.9 in) 4 mm (0.2 in) 80 mm (3.2 in)	1100 mm (43.3 in) 4 mm (0.2 in) 80 mm (3.2 in)

10 kN Capstan Grip

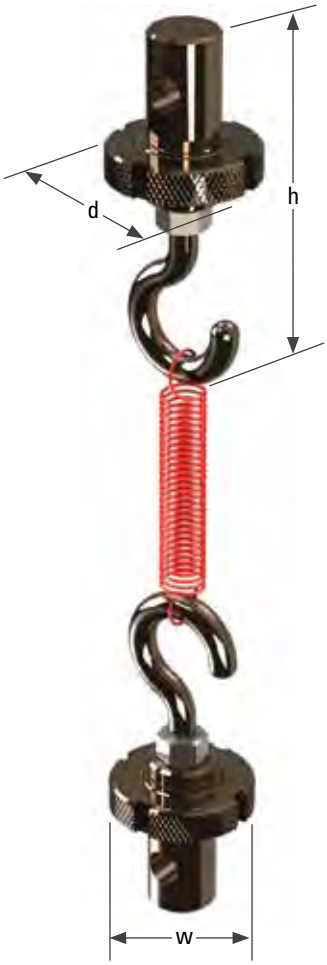
- Wound up specimen clamping to prevent stress concentration and damage out of test range
- Clamping force may be increased by winding the specimen around the movable part of the grip
- Corrugated tooth between the clamping parts helps ensure a stable clamping function

Specifications

Model		CA104A
Part Number		100-302-704
Rated Force		10 kN (2,250 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	950 g (2.1 lb) 950 g (2.1 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	150 mm × 102 mm × 52 mm (5.9 in x 4 in x 2.1 in) 150 mm × 102 mm × 52 mm (5.9 in x 4 in x 2.1 in)
Application		Tensile test
Applicable Specimens		Wire
Specimen Dimensions		
Minimum Length		755 mm (29.7 in)
Maximum Diameter		ø3 mm (0.1 in)

10 kN Specialty Spring Tension Grip

» Recommended as a cost effective means of measuring tension in springs

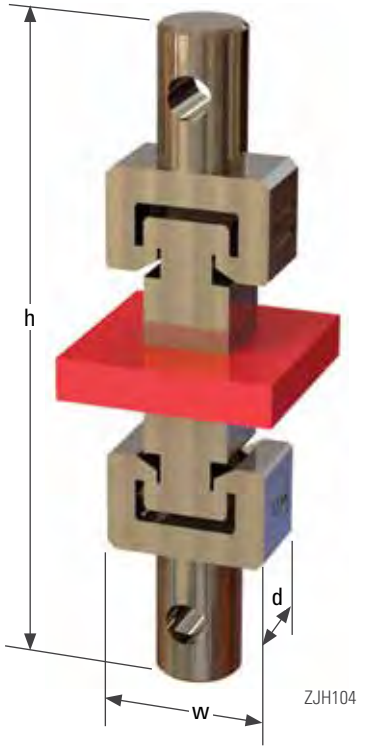


Specifications

Model		ZGGA104
Part Number		100-302-718
Rated Force		10 kN (2,250 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	230 g (0.5 lb) 230 g (0.5 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	102 mm × 42 mm × 42 mm (4 in x 1.7 in x 1.7 in) 102 mm × 42 mm × 42 mm (4 in x 1.7 in x 1.7 in)
Application		Tension
Applicable Specimens		Helical Tension Spring
Hook Diameter		ø8 mm (0.3 in)

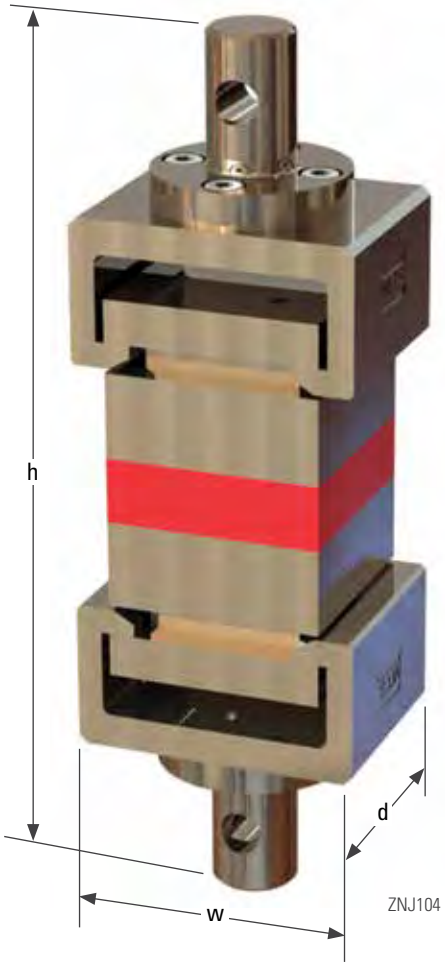
10 kN Specialty Surface Bonding Strength Test Fixture

» Evaluates the properties of wood-based panels and surface decorated wood-based panels



10 kN Test Fixture to Test Surface Bonding Strength Methods

» Evaluates the properties of wood-based panels and surface decorated wood-based panels

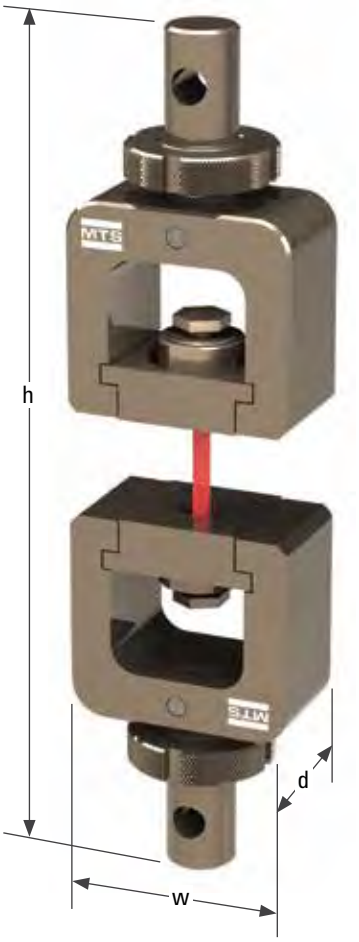


Specifications

Model		ZJH104	ZNJ104
Part Number		100-302-745	100-302-748
Rated Force		10 kN (2,250 lbf)	10 kN (2,250 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	0.25 kg (0.6 lb) 0.25 kg (0.6 lb)	1.2 kg (2.6 lb) 1.2 kg (2.6 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	56 mm × 38 mm × 20 mm (2.2 in x 1.5 in x 0.8 in) 56 mm × 38 mm × 20 mm (2.2 in x 1.5 in x 0.8 in)	95 mm × 66 mm × 50 mm (3.7 in x 2.6 in x 2 in) 95 mm × 66 mm × 50 mm (3.7 in x 2.6 in x 2 in)
Application		Pull-out test	Pull-off test
Applicable Specimens		Wood-based panels, surface decorated wood-based panels	
Specimen Dimensions			
	Maximum Width	50 mm (2 in)	50 mm (2 in)
	Maximum Height	50 mm (2 in)	50 mm (2 in)

20 kN Specialty Wedge Action Grip, Small Flat Specimen

- Prevents slipping failure caused by specimen shrinking
- Grip 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
- Designed for thin metal sheet tension test

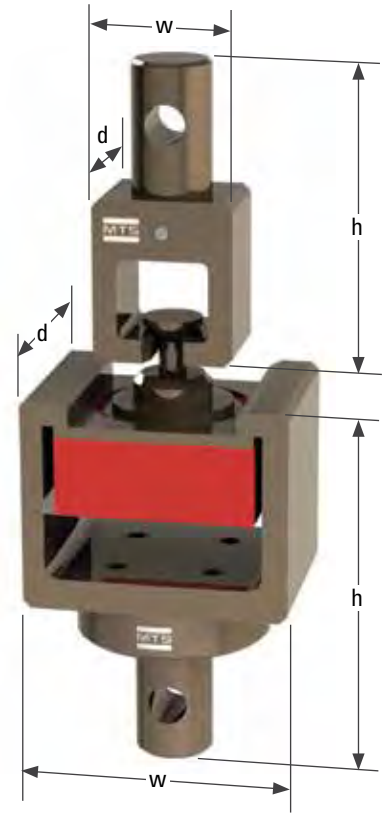


Specifications

Model		ZLA204B
Part Number		100-302-725
Rated Force		20 kN (4,500 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	900 g (2 lb) 900 g (2 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	108 mm × 65 mm × 42 mm (4.3 in x 2.6 in x 1.7 in) 108 mm × 65 mm × 42 mm (4.3 in x 2.6 in x 1.7 in)
Application		Tension
Applicable Specimens		Metal Plate, sheet
Faces		Sawtooth
Faces Width		10 mm (0.4 in)
Specimen Dimensions		
	Maximum Thickness *Maximum Width*	1.8 mm (0.7 in) 10 mm (0.4 in)

10 kN Test Fixture Wood-based Panels – Surface Soundness

- These fixtures are used to measure the structural properties of commercial wood-based products for use in load bearing timber structures.



Specifications

Model		ZBJ104
Part Number		100-302-720
Rated Force		10 kN (2,250 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	0.4 kg (0.9 lb) 0.7 kg (1.5 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	90 mm × 35 mm × 26 mm (3.5 in x 1.4 in x 1 in) 99 mm × 67 mm × 50 mm (3.9 in x 2.6 in x 2 in)
Application		Pull-off test
Applicable Specimens		Wood, wood-based panels
Specimen Dimensions		50 mm x 50 mm (2 in x 2 in)

50 kN Balsa Wood and Foams Surface Soundness

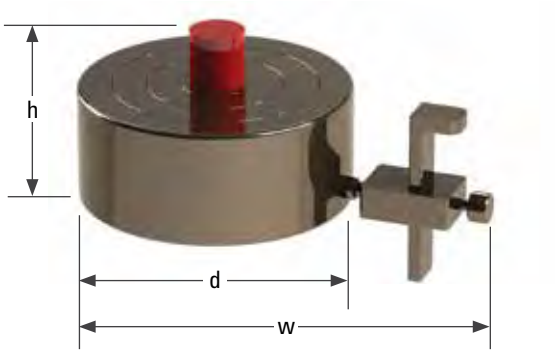
» These fixtures are used to measure flatwise tensile strength

Specifications

Model		DKF1005089.01
Part Number		100-302-723
Rated Force		50 kN (11,250 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	1.26 kg (2.8 lb) 2.07 kg (4.6 lb)
Adapter style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	94 mm × 60 mm × 60 mm (3.7 in x 2.4 in 2.4 in) 117 mm × 72 mm × 72 mm (4.6 in x 2.8 in x 2.8 in)
Application		Pull-off test
Applicable Specimens		Wood-based panels, surface decorated wood-based panels
Specimen Dimensions		
	Maximum Thickness	60 mm x 60 mm
	Maximum Width	60 mm x 60 mm

20 kN Round Compression Platen (with Dial Gage)

- Comes with dial gage that 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

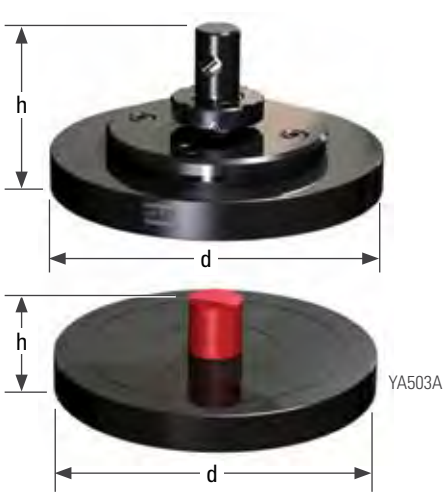


Specifications

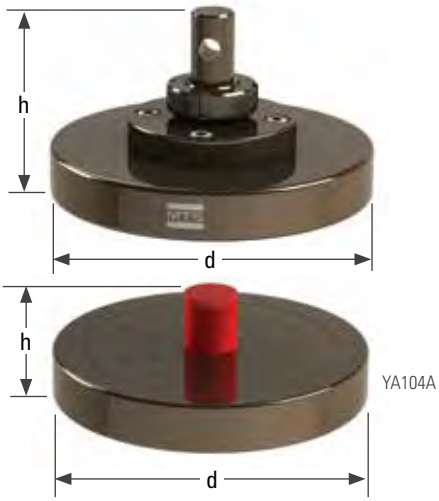
Model		ZYA204
Part Number		100-302-749
Rated Force		20 kN (4,500 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	2.18 kg (4.8 lb) 2.64 kg (5.8 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	107 mm × 166 mm × 100 mm (4.2 in x 6.5 in x 3.9 in) 58 mm × 155 mm × 100 mm (2.3 in x 6.1 in x 3.9 in)
Maximum Specimen Height *(with dial gage)*		55 mm (2.2 in)
Dial Gage Travel Range		<12.5 mm (0.5 in)
Dial Gage Resolution		0.001 mm (0.00004 in)
Application		Compression test
Applicable Specimens		Metal, plastic, rubber
Specimen Dimensions *Maximum Height* *Maximum Diameter*		 55 mm (2.2 in) ø100 mm (3.9 in)

Round Compression Platens

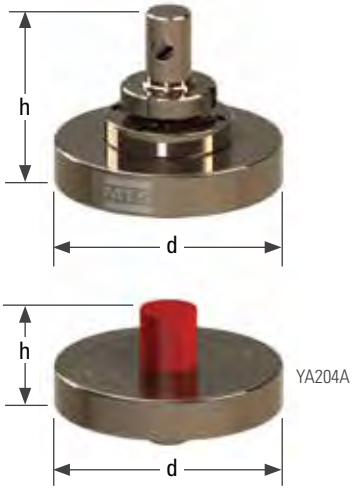
- Durable alloy tool steel construction with reliable surface hardness
- Easier center specimen loading with the round or cross-line scales
- Disc compression platens are applicable to compression testing requirements for most materials



YA503A



YA104A



YA204A

Specifications

Model		YA503A	YA104A	YA204A
Part Number		100-302-753	100-302-750	100-302-751
Rated Force		5 kN (1,250 lbf)	10 kN (2,500 lbf)	20 kN (4,500 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	3.23 kg (7.1 lb) 3.11 kg (6.9 lb)	3.5 kg (7.7 lb) 3.1 kg (6.9 lb)	1.59 kg (3.5 lb) 1.19 kg (2.6 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (d*h)	(Upper grip) (Lower grip)	ø150 x 73 mm (5.9 x 2.9 in) ø150 x 48 mm (5.9 x 1.9 in)	ø150 x 81 mm (5.9 x 3.2 in) ø150 x 38 mm (5.9 x 1.5 in)	ø100 x 78 mm (3.9 x 3.1 in) ø100 x 35 mm (3.9 x 1.4 in)
Application		Compression test	Compression test	Compression test
Applicable Specimens		Metal, plastic, rubber, wood	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood
Maximum Specimen Diameter		ø150 mm (5.9 in)	ø150 mm (5.9 in)	ø100 mm (3.9 in)

Compression Platens

YB504A

YC305A

YD105A

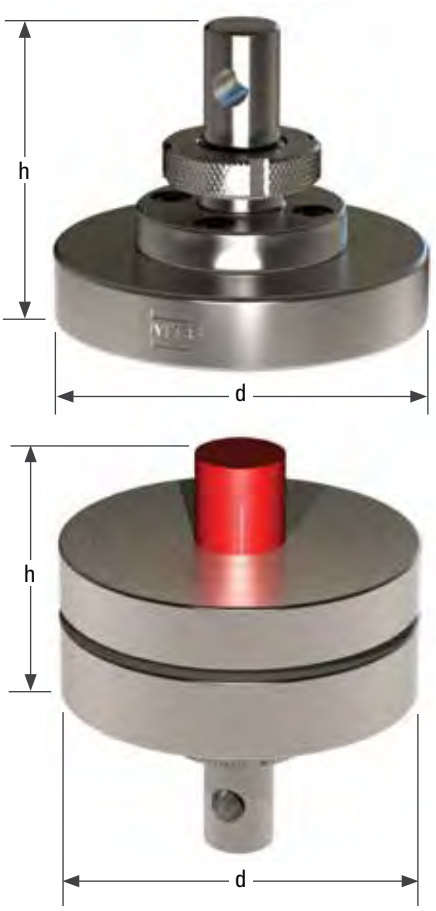
YF105A

Specifications

Model		YB504A	YD105A	YF105A	YC305A
Part Number		100-302-759	100-302-756	100-302-757	100-302-762
Rated Force		50 kN 11,250 lbf)	100 kN (22,500 lbf)	100 kN (22,500 lbf)	300 kN (67,500 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	11.4 kg (25.1 lb) 9.78 kg (21.6 lb)	2.31 kg (5.1 lb) 1.62 kg (3.6 lb)	5.26 kg (11.6 lb) 3.98 kg (8.8 lb)	6.95 kg (15.3 lb) 3.93 kg (8.7 lb)
Adapter style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in)	40 mm (1.6 in) 40 mm (1.6 in)	40 mm (1.6 in) 40 mm (1.6 in)	60 mm (2.4 in) 60 mm (2.4 in)
Dimensions (d*h)	(Upper grip) (Lower grip)	ø200 x 127 mm (7.9 x 5 in) ø200 x 52 mm (7.9 x 2 in)	ø100 x 96 mm (3.9 x 3.8 in) ø100 x 37 mm (3.9 x 1.5 in)	ø150 x 116 mm (5.9 x 4.6 in) ø150 x 53 mm (5.9 x 2.1 in)	ø150 x 141 mm (5.9 x 5.6 in) ø150 x 50 mm (5.9 x 2 in)
Application		Compression test	Compression test	Compression test	Compression test
Applicable Specimens		Metal, plastic, rubber, wood	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood	Metal, plastic, rubber, wood
Maximum Specimen Diameter		ø200 mm (7.9 in)	ø100 mm (3.9 in)	ø150 mm (5.9 in)	ø150 mm (5.9 in)

10 kN Round Compression Platen

- Minimize system errors with self-aligning mechanism that secures the specimen
- 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



Specifications

Model		Y104B
Part Number		100-302-754
Rated Force		10 kN (2,250 lbf)
Temperature Range		–70°C to 350°C (–94°F to –662°F)
Weight	(Upper grip) (Lower grip)	1.59 kg (3.5 lb) 2.75 kg (6.1 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*d)	(Upper grip) (Lower grip)	ø100 mm × 79 mm (3.9 in x 3.1 in) ø100 mm × 91 mm (3.9 in x 3.6 in)
Application		Compression test
Applicable Specimens		Metal, plastic, rubber
Maximum Specimen Diameter		ø100 mm (3.9 in)

Round Compression Platens

- 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

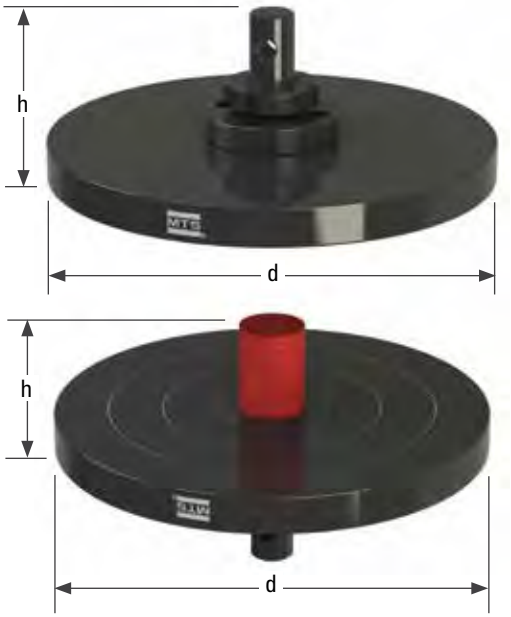
Specifications

Model		YA105A	YB105A	YA305A	YB305A
Part Number		100-302-755	100-302-758	100-302-760	100-302-761
Rated Force		100 kN (22,500 lbf)	100 kN (22,500 lbf)	300 kN (67,500 lbf)	300 kN (67,500 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	2.31 kg (5.1 lb) 2.61 kg (5.8 lb)	5.21 kg (11.5 lb) 7.74 kg (17.1 lb)	3.82 kg (8.4 lb) 3.06 kg (6.7 lb)	6.95 kg (15.3 lb) 7.68 kg (16.9 lb)
Adapter style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in)	40 mm (1.6 in) 40 mm (1.6 in)	60 mm (2.4 in) 60 mm (2.4 in)	60 mm (2.4 in) 60 mm (2.4 in)
Dimensions (d*h)	(Upper grip)	ø100 mm x 96 mm (3.9 in x 3.8 in)	ø150 mm x 115 mm (5.9 in x 4.5 in)	ø100 mm x 120 mm (3.9 in x 4.7 in)	ø150 mm x 141 mm (5.9 in x 5.6 in)
	(Lower grip)	ø100 mm x 55 mm (3.9 in x 2.2 in)	ø150 mm x 69 mm (5.9 in x 2.7 in)	ø100 mm x 68 mm (3.9 in x 2.7 in)	ø150 mm x 79 mm (5.9 in x 3.1 in)
Application		Compression test	Compression test	Compression test	Compression test
Applicable Specimens		Metal, plastic, rubber	Metal, plastic, rubber	Metal, plastic, rubber	Metal, plastic, rubber
Maximum Specimen Diameter		ø100 mm (3.9 in)	ø150 mm (5.9 in)	ø100 mm (3.9 in)	ø150 mm (5.9 in)

20 kN Round Compression Platen

» Durable alloy tool steel construction with reliable surface hardness

» Easily center specimen loading with the round or cross-line scales



Specifications

Model		YC204A
Part Number		100-302-752
Rated Force		20 kN (4,500 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	4.8 kg (10.6 lb) 4.8 kg (10.6 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*d)	(Upper grip) (Lower grip)	ø200 mm × 74 mm (7.9 in x 2.9 in) ø200 mm × 74 mm (7.9 in x 2.9 in)
Application		Compression test
Applicable Specimens		Metal, plastic, rubber
Maximum Specimen Diameter		ø200 mm (7.9 in)

Square Compression Platens

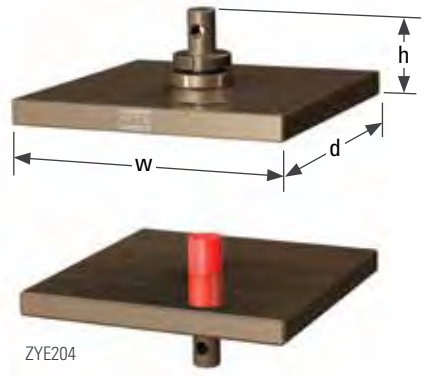
- Durable alloy tool steel construction with reliable surface hardness
- Easily center specimen loading with the round or cross-line scales
- Applicable to ring stiffness tests of pipes


ZYN104


ZYA203


ZYL104


ZYK304



ZYE204

Specifications

Model		ZYN104	ZYA203	ZYL104	ZYK304	ZYE204
Part Number		100-302-771	100-302-774	100-302-772	100-302-775	100-302-769
Rated Force		10 kN (2,500 lbf)	2 kN (450 lbf)	10 kN (2,500 lbf)	30 kN (6,750 lbf)	20 kN (4,500 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature	Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	2.96 kg (6.5 lb) 2.96 kg (6.5 lb)	3 kg (6.6 lb) 3 kg (6.6 lb)	3.32 kg (7.3 lb) 3.32 kg (7.3 lb)	4.04 kg (8.9 lb) 4.04 kg (8.9 lb)	5.9 kg (13 lb) 5.9 kg (13 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip)	71 x 100 x 100 mm (2.8 x 3.9 x 3.9 in)	69 x 150 x 150 mm (2.7 x 5.9 x 5.9 in)	71 x 160 x 160 mm (2.8 x 6.3 x 6.3 in)	71 x 220 x 120 mm (2.8 x 8.7 x 4.7 in)	72 x 200 x 200 mm (3.1 x 7.9 x 7.9 in)
	(Lower grip)	71 x 100 x 100 mm (2.8 x 3.9 x 3.9 in)	69 x 150 x 150 mm (2.7 x 5.9 x 5.9 in)	71 x 160 x 160 mm (2.8 x 6.3 x 6.3 in)	71 x 220 x 120 mm (2.8 x 8.7 x 4.7 in)	72 x 200 x 200 mm (3.1 x 7.9 x 7.9 in)
Application		Compression test	Compression test	Compression test	Compression test	Compression test
Applicable Specimens		Plastic, rubber	Plastic, rubber	Plastic, rubber	Plastic, rubber	Plastic, rubber
Specimen Dimensions						
Maximum Thickness		100 mm (3.9 in)	150 mm (5.9 in)	160 mm (6.3 in)	220 mm (8.7 in)	200 mm (7.9 in)
Maximum Width		100 mm (3.9 in)	150 mm (5.9 in)	160 mm (6.3 in)	220 mm (8.7 in)	200 mm (7.9 in)

Square Compression Platens

- Durable alloy tool steel construction with reliable surface hardness
- Easily center specimen loading with the round or cross-line scales
- Applicable to ring stiffness tests of pipes


YC104B


ZYG304


YB104B


YA104B


YB304A


DL07589.01

Specifications

Model		YC104B	ZYG304	YB104B	YA104B	YB304A	DL07589.01
Part Number		100-302-766	100-302-768	100-302-765	100-302-773	100-302-764	100-302-770
Rated Force		10 kN (2,500 lbf)	30 kN (6,750 lbf)	10 kN (2,500 lbf)	10 kN (2,500 lbf)	30 kN (6,750 lbf)	200 kN (45,000 lbf)
Temperature Range		Room temperature	Room temperature	Room temperature	Room temperature	Room temperature	Room temperature
Weight	(Upper grip)	8.4 kg (18.5 lb)	16.9 kg (37.3 lb)	10.5 kg (23.1 lb)	19.2 kg (42.3 lb)	22 kg (48.5 lb)	60.2 kg (132.7 lb)
	(Lower grip)	8.4 kg (18.5 lb)	16.9 kg (37.3 lb)	10.5 kg (23.1 lb)	19.2 kg (42.3 lb)	22 kg (48.5 lb)	60.2 kg (132.7 lb)
Adapter style	(Upper grip)	20 mm (0.8 in)	20 mm (0.8 in)	20 mm (0.8 in)	20 mm (0.8 in)	20 mm (0.8 in)	60 mm (2.4 in)
	(Lower grip)	20 mm (0.8 in)	20 mm (0.8 in)	20 mm (0.8 in)	20 mm (0.8 in)	20 mm (0.8 in)	60 mm (4.4 in)
Dimensions (h*w*d)	(Upper grip)	79 x 210 x 210 mm (3.1 x 8.3 x 8.3 in)	79 x 300 x 300 mm (3.1 x 11.8 x 11.8 in)	76 x 320 x 220 mm (3 x 12.6 x 8.7 in)	76 x 320 x 320 mm (3 x 12.6 x 12.6 in)	84 x 350 x 350 mm (3.3 x 13.8 x 13.8 in)	155 x 420 x 450 mm (6.1 x 16.5 x 17.7 in)
	(Lower grip)	79 x 210 x 210 mm (3.1 x 8.3 x 8.3 in)	79 x 300 x 300 mm (3.1 x 11.8 x 11.8 in)	76 x 320 x 220 mm (3 x 12.6 x 8.7 in)	76 x 320 x 320 mm (3 x 12.6 x 12.6 in)	84 x 350 x 350 mm (3.3 x 13.8 x 13.8 in)	155 x 420 x 450 mm (6.1 x 16.5 x 17.7 in)
Application		Compression test	Compression test	Compression test	Compression test	Compression test	Compression test
Applicable Specimens		Plastic, rubber	Plastic, rubber	Plastic, rubber, sylphon bellows	Plastic, rubber, sylphon bellows	Plastic, rubber, sylphon bellows	Plastic, rubber, sylphon bellows
Specimen Dimensions							
Maximum Thickness		210 mm (8.3 in)	300 mm (11.8 in)	320 mm (12.6 in)	320 mm (12.6 in)	350 mm (13.8 in)	450 mm (17.7 in)
Maximum Width		210 mm (8.3 in)	300 mm (11.8 in)	320 mm (12.6 in)	320 mm (12.6 in)	350 mm (13.8 in)	450 mm (17.7 in)

50 kN Specialty Compression Fixture

» Minimize system errors with self-aligning mechanism that secures the specimen

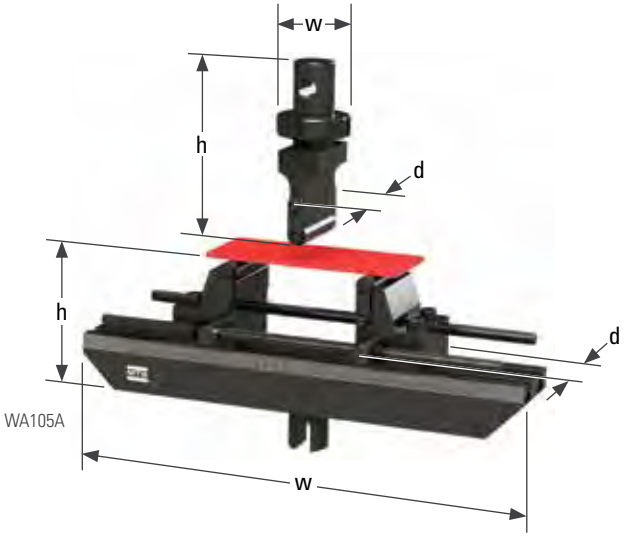
» Measures the compressive properties of structural sandwich construction in the direction parallel to the sandwich facing plane

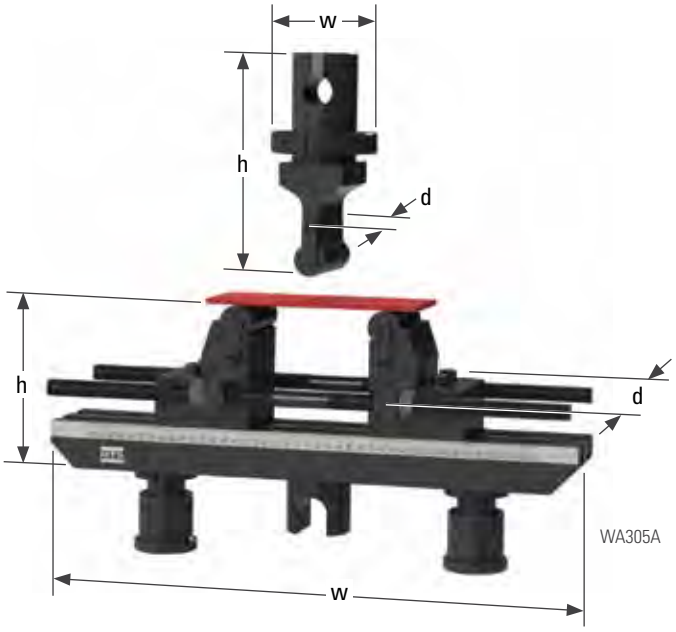
Specifications

Model		DKF1005089.03
Part Number		100-302-784
Rated Force		50 kN (11,250 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	3.7 kg (8.2 lb) 3.1 kg (6.8 lb)
Adapter style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in)
Dimensions (h*d)	(Upper grip) (Lower grip)	160 mm × 118 mm x 100 mm (6.3 in x 4.6 in x 3.9 in) 126 mm × 118 mm x 100 mm (4.9 in x 4.6 in x 3.9 in)
Application		Compression test
Applicable Specimens		Sandwich material
Faces Surface Material		Rubber
Faces Opening		22 mm (0.87 in)
Faces Width		65 mm (2.6 in)
Specimen Dimensions *Maximum Thickness* *Maximum Width*		 22 mm (0.87 in) 65 mm (2.6 in)

Metal Bend Fixtures

- 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
- 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



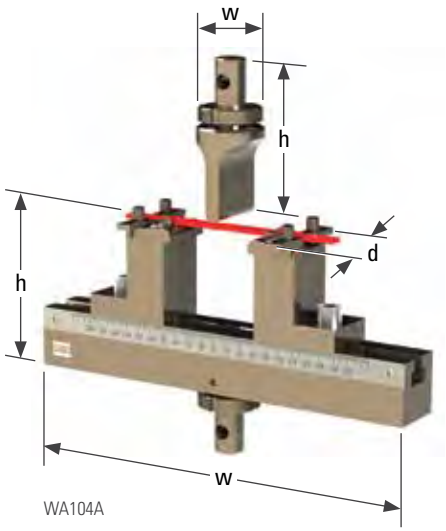


Specifications

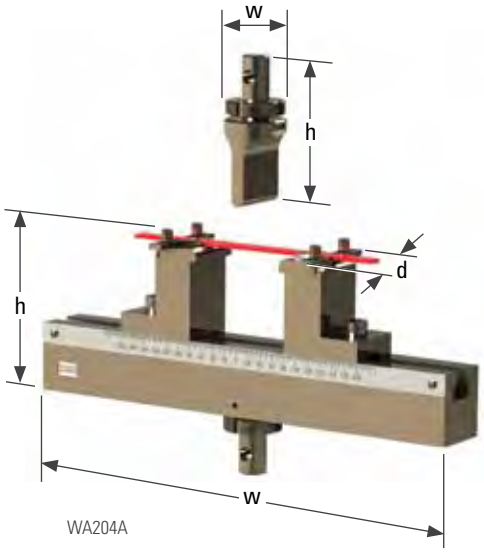
Model		WA105A	WA305A
Part Number		100-302-799	100-302-800
Rated Force		100 kN (22,500 lbf)	300 kN (67,500 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	2.5 kg (5.5 lb) 20.5 kg (45.2 lb)	4.8 kg (10.6 lb) 27 kg (59.5 lb)
Adapter style	(Upper grip) (Lower grip)	40 mm (1.6 in) 40 mm (1.6 in) U bracket	60 mm (2.4 in) 60 mm (2.4 in) U bracket
Dimensions (h*w*d)	(Upper grip) (Lower grip)	175 × 70 × 104 mm (6.9 x 2.8 x 4.1 in) 190 × 464 × 144 mm (7.5 x 18.3 x 5.7 in)	205 × 98 × 110 mm (8.2 x 3.9 x 4.3 in) 230 × 500 × 156 mm (9.1 x 19.7 x 6.1 in)
Application		Bend test	Bend test
Applicable Specimens		Metal plate	Metal plate
Loading Edge		R10	R15
Supporting		R10	R15
Span		340 mm (13.4 in)	340 mm (13.4 in)
Maximum Specimen Width		80 mm (3.1 in)	90 mm (3.5 in)

Plastics Bend Fixtures

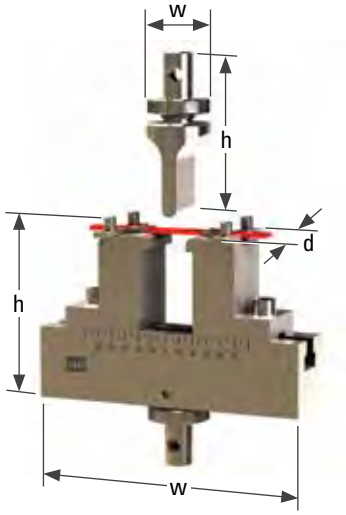
- Loading edge and supports can be changed to optional parts or customized designs
- Fast and accurate specimen positioning with centering device
- Adjustable stepless lower span on the support beam



WA104A



WA204A



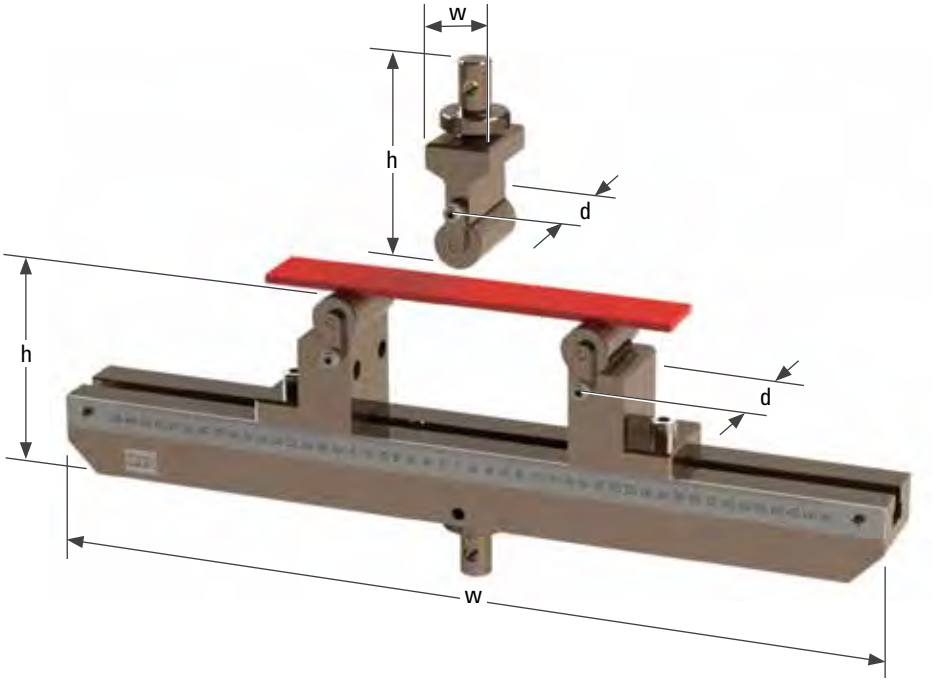
ZWA304

Specifications

Model		WA104A	WA204A	ZWA304
Part Number		100-302-794	100-302-795	100-302-798
Rated Force		10 kN (2,500 lbf)	20 kN (4,500 lbf)	30 kN (6,750 lbf)
Temperature Range		Room temperature	Room temperature	–70°C to 350°C (–94°F to 662°F)
Weight	(Upper grip) (Lower grip)	500 g (1.1 lb) 4.95 kg (10.1 lb)	670 g (1.5 lb) 9.22 kg (20.3 lb)	510 g (1.1 lb) 4.7 kg (10.4 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	106 × 42 × 42 mm (4.2 x 1.7 x 1.7 in) 151 × 280 × 77 mm (5.9 x 11 x 3 in)	108 × 42 × 42 mm (4.3 x 1.7 x 1.7 in) 180 × 340 × 88 mm (7.1 x 13.4 x 3.5 in)	108 × 42 × 42 mm (4.3 x 1.7 x 1.7 in) 180 × 190 × 88 mm (7.1 x 7.5 x 3.5 in)
Application		Bend test	Bend test	Bend test
Applicable Specimens		Plastic plate, sheet	Plastic plate, sheet	Plastic plate, sheet
Loading Edge		R5	R5	R5
Supporting		R2	R2	R2
Maximum Span		160 mm (6.3 in)	200 mm (7.9 in)	80 mm (3.1 in)
Maximum Specimen Width		40 mm (1.6 in)	45 mm (1.8 in)	45 mm (1.8 in)

10 kN Wood Bend Fixtures

- 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

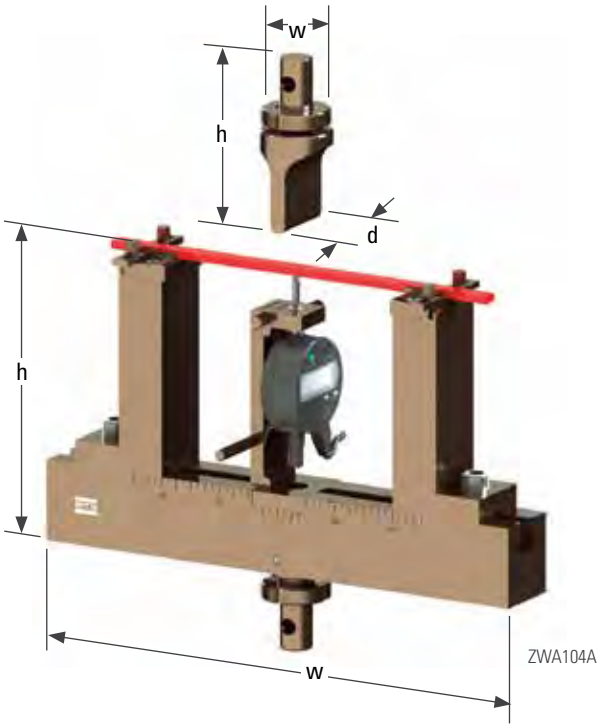


Specifications

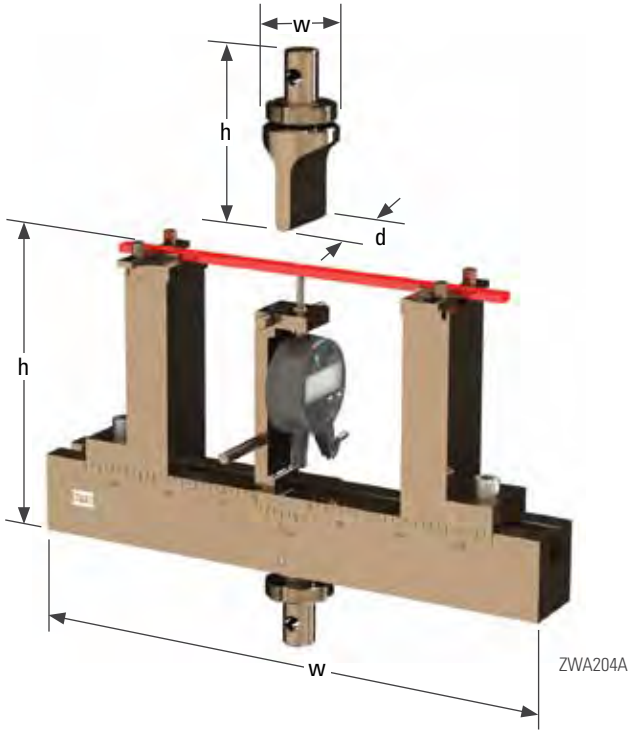
Model		ZWC104A
Part Number		100-302-802
Rated Force		10 kN (2,250 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	1.1 kg (2.4 lb) 14.27 kg (31.5 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	120 mm × 42 mm x 42 mm (4.7 in x 1.7 in x 1.7 in) 180 mm × 530 mm x 82 mm (7.1 in x 20.9 in x 3.2 in)
Application		Bend test
Applicable Specimens		Wood-based panel, surface decorated wood-based panel
Loading Edge		R15
Optional Loading Edge		R7.5
Supporting		R15
Optional Supporting		R7.5
Maximum Span		400 mm (15.7 in)
Maximum Specimen Width		60 mm (2.4 in)

Dial Gage Bend Fixtures

- 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



ZWA104A



ZWA204A

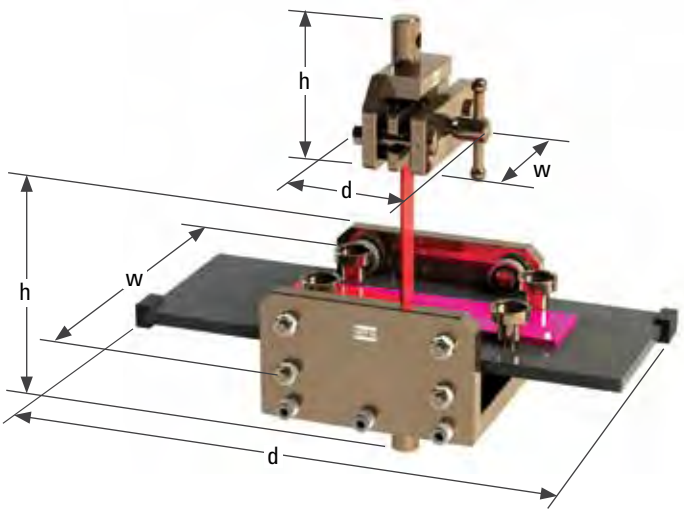
Specifications

Model		ZWA104A	ZWA204A
Part Number		100-302-796	100-302-797
Rated Force		10 kN (2,250 lbf)	20 kN (4,500 lbf)
Temperature Range		Room temperature	Room temperature
Weight	(Upper grip) (Lower grip)	670 g (1.5 lb) 8.92 kg (19.7 lb)	670 g (1.5 lb) 9.22 kg 20.3lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	108 mm × 45 mm × 45 mm (4.3 in x 1.8 in x 1.8 in) 255 mm × 320 mm × 88 mm (10 in x 12.6 in x 3.5 in)	108 mm × 45 mm × 45 mm (4.3 in x1 .8 in x 1.8 in) 255 mm × 340 mm × 88 mm (10 in x 13.4 in x 3.5 in)
Application		Bend test	Bend test
Applicable Specimens		Plastics plate	Plastics plate
Loading Edge		R5	R5
Supporting		R2	R2
Maximum Span		160 mm (6.3 in)	200 mm (7.9 in)
Maximum Specimen Width		45 mm (1.8 in)	45 mm (1.8 in)
Gage Maximum Travel		12.5 mm (0.5 in)	12.5 mm (0.5 in)
Dial Gage Resolution		0.001 mm	0.001 mm

200 N Peel Fixtures, 90°

Specifications

Model		BA202A
Part Number		100-302-819
Rated Force		200 N (45 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	1.35 kg (3 lb) 6.58 kg (14.5 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip)	91 mm × 100 mm x 82 mm (3.6 in x 3.9 in x 3.2 in)
	(Lower grip)	135 mm × 174 mm x 352 mm (5.3 in x 6.9 in x 13.9 in)
Application		Tensile test, 90° Peel test
Applicable Specimens		Adhesive bonds
Maximum Flexible Layer Width		30 mm (1.2 in)
Rigid Layer Width		50±1 mm
Maximum Peeling Length		185 mm (7.3 in)
Specimen Dimensions		
Maximum Length		185 mm (7.3 in)
Maximum Width		30 mm (1.2 in)



200 N Floating Roller Peel Fixture

Specifications

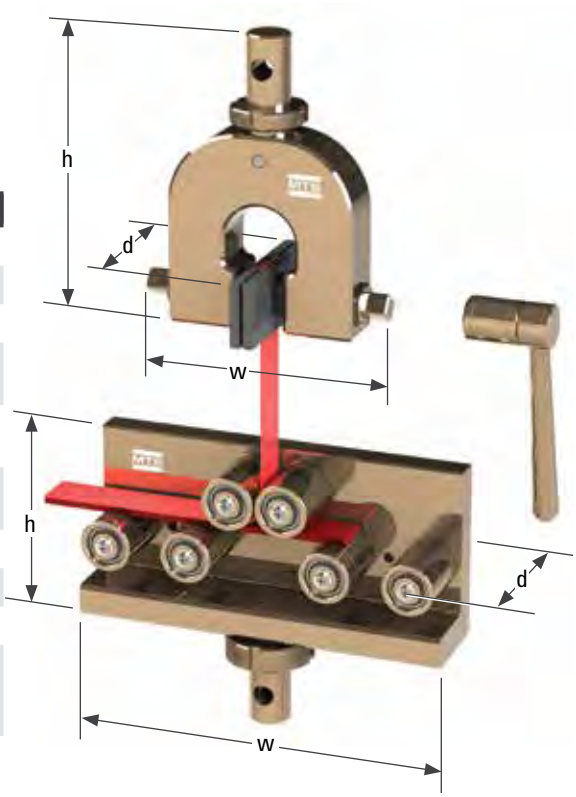
Model	BB202A
Part Number	100-302-820
Rated Force	200 N (45 lbf)
Temperature Range	Room temperature
Weight	760 g (1.7 lb)
Adapter style	20 mm (0.8 in)
Dimensions (h*w*d)	123 mm × 56 mm x 44 mm (4.8 in x 2.2 in x 1.7 in)
Application	Peel test
Applicable Specimens	Adhesive, peel specimen
Maximum Width	30 mm (1.2 in)
Peeling Radius	12.5 mm (0.5 in)
Maximum Specimen Width	30 mm (1.2 in)

3 kN Peel Fixtures, 90°

» Flexible layer is peeled from rigid layer in a constant angle from the gap between rollers

Specifications

Model		BA303B
Part Number		100-302-822
Rated Force		3 kN (675 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	1.35 kg (3 lb) 6.58 kg (14.5 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	136 mm × 116 mm × 70 mm (5.4 in x 4.6 in x 2.8 in) 131 mm × 178 mm × 73 mm (5.2 in x 7.0 in x 2.9 in)
Application		Peel test
Applicable Specimens		Adhesive, peel specimen
Peeling Radius		12.8 mm (0.5 in)
Specimen Dimensions *Maximum Width* *Maximum Diameter*		 20 mm (0.8 in) ø15.6 mm (0.6 in)



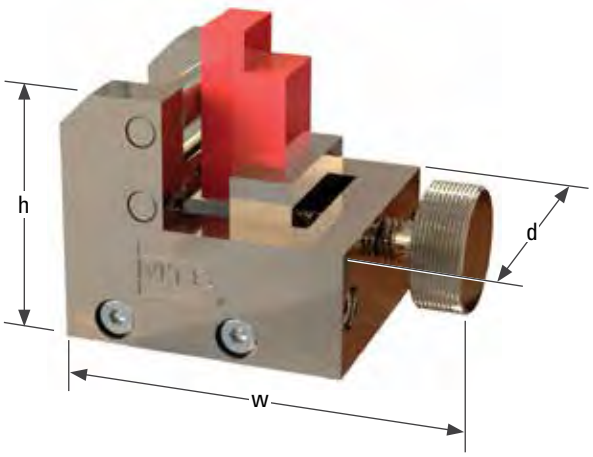
Shear Fixtures

1 kN Fiberglass Reinforced Plastic Shear Fixture

» Fixture must be used with a right grip compression platen

Specifications

Model	JB103A
Part Number	100-302-834
Rated Force	1 kN (225 lbf)
Temperature Range	Room temperature
Weight	550 g (1.2 lb)
Adapter style	No adapter
Dimensions (h*w*d)	48 mm × 75 mm × 50 mm (1.9 in x 3 in x 2 in)
Application	Shear test
Applicable Specimens	Glass fiber-reinforced plastic, wood-based panels
Maximum Width	30 mm (1.2 in)
Peeling Radius	12.5 mm (0.5 in)



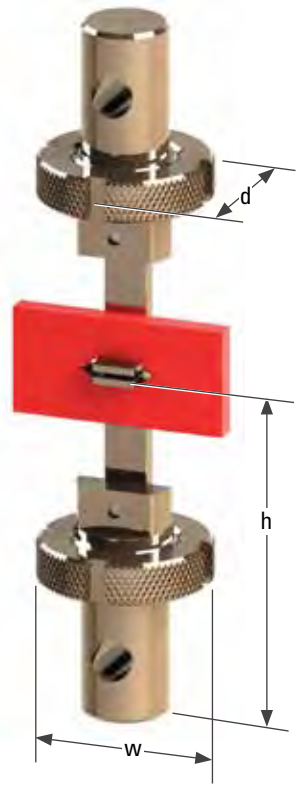
Tear Fixtures

1 kN Leather Double Edge Tear Fixture

» Used to determine the tear strength of learning, using a single edge tear

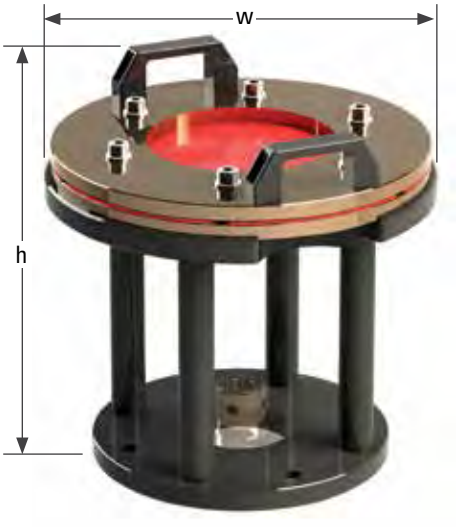
Specifications

Model		ZSL103
Part Number		100-302-818
Rated Force		1 kN (225 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	190 g (0.4 lb) 190 g (0.4 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	82 mm × 42 mm × 42 mm (3.2 in x 1.7 in x 1.7 in) 82 mm × 42 mm × 42 mm (3.2 in x 1.7 in x 1.7 in)
Application		Tension test, tear test
Applicable Specimens		Leather
Maximum Specimen Thickness		8 mm (0.3 in)



5 kN Geotextile Puncture Fixture

» Plungers or clamping rings can be customized



Specifications

Model		ZDPA503
Part Number		100-302-835
Rated Force		5 kN (1,125 lbf)
Temperature Range		Room temperature
Weight	(Upper grip) (Lower grip)	2.17 kg (4.8 lb) 30.4 kg (67 lb)
Adapter style	(Upper grip) (Lower grip)	20 mm (0.8 in) 20 mm (0.8 in)
Dimensions (h*w*d)	(Upper grip) (Lower grip)	180 mm × 42 mm × 42 mm (7.1 in x 1.7 in x 1.7 in) 82 mm × 42 mm × 42 mm (3.2 in x 1.7 in x 1.7 in)
Application		Puncture test
Applicable Specimens		Geotextile
Plunger		ø50 mm (2 in) cylinder with 2.5 mm (0.1in) leading edge radius
Clamping Ring		ø150 mm internal diameter (5.9 in)

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 value 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.

S-Beam

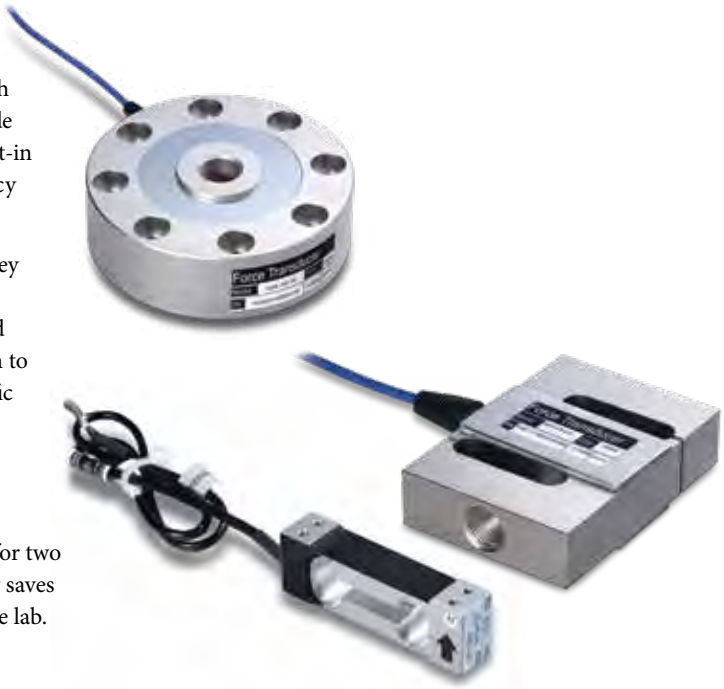
- Measures axial loads using S-shaped design with a single embedded strain gage
- Offers exceptional value and extreme simplicity for low-capacity testing with minimal side loads
- Ideal for low-force tension and compression testing of plastics, rubber and paper
- Designed for accuracy and linearity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

LSB.100

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	YES	150% of Capacity	M8
100302928	S Beam	200 N	E42/E43	YES	150% of Capacity	M6
100302929	S Beam	500 N	E42/E43	YES	150% of Capacity	M6
100302930	S Beam	1 kN	E42/E43	YES	150% of Capacity	M10
100302931	S Beam	2 kN	E42/E43	YES	150% of Capacity	M12
100302932	S Beam	5 kN	E42/E43	YES	150% of Capacity	M12
100302933	S Beam	10 kN	E43	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

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

Linearity[1]
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

Accuracy[2]
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.

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 62*

632.13F-20 | 632.26F-20 | 634.12F-54 | 634.25F-24 | 634.31F-24 – Multiple Gage Lengths

Model	Type	Gage Length(s)	Travel	Accuracy	Temperature Range
632.13F-20	Axial	10 mm	+/- 1.5 mm	class 0.5	Range
6.32E-28	Axial	0.3 in	+/- 0.018 in	class 0.5	-150°F to 350°F
6.32E-29	Axial	0.3 in	+/- 0.018 in	class 0.5	-452°F to 150°F
6.32E-31	Axial	0.3 in	+/- 0.018 in	class 0.5	-150°F to 350°F
6.32E-38	Axial	0.5 in	+/- 0.045 in	class 0.5	-150°F to 300°F
6.32E-39	Axial	0.5 in	+/- 0.045 in	class 0.5	-452°F to 150°F
6.32E-41	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

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

632.06H-20

Model	Type	Height	Length	Travel	Accuracy	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

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	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	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	Travel	Accuracy	Temperature Range
632.79F-01	Axial Immersible	25 mm	+/- 6.25 mm	class 0.5	-15°C to 85°C

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	Travel	Accuracy	Temperature Range
632.29F-20	Axial Sub-miniature	3 mm	+/- 0.24 mm	class 0.5	-100°C to 150°C
6.32E-28	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

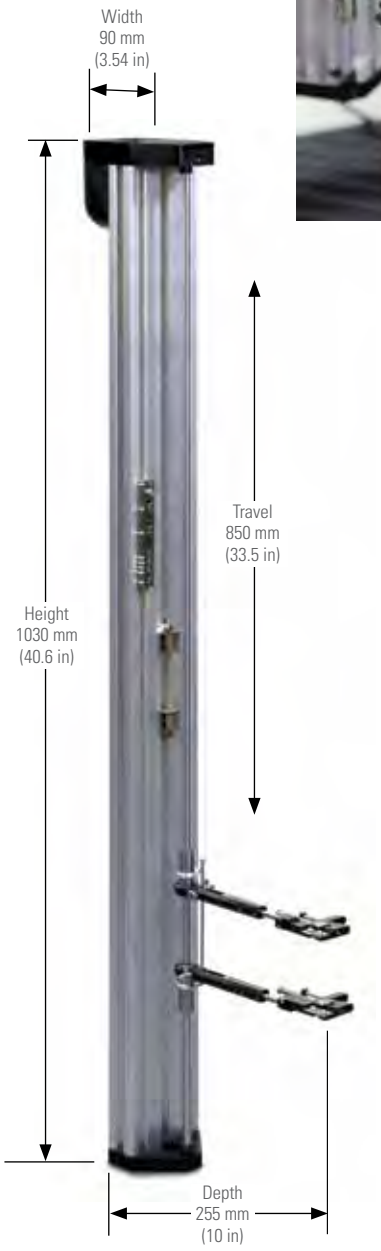
Model	Type	Gage Length	Travel Axial	Travel Tranverse	Accuracy	Temperature Range
632.85F-05	Biaxial	25 mm	1.2 mm to -1.5 mm	+/- .5 mm	class 0.5	-100°C to 150°C

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

- Used to measure displacement of materials, such as polymers and elastomers, which exhibit high elongation while in tension
- Durable high strength aluminum structure
- Dual independent digital input channels for upper and lower arms ensure accurate and reliable measurement
- Changeable knife edges, adjustable gripping forces, and balance head and arm weight allow smooth following of material strain change with minimal stickiness
- Six preset gage lengths: 10 mm (0.4 in), 20 mm (0.8 in), 25 mm (1.0 in), 50 mm (2.0 in), 75 mm (2.95 in), 100 mm (3.9 in)
- Choose fixed or rotational mounts
- Compatible with Exceed® Universal Test Systems
- Meets or exceeds requirements for calibration according to ASTM E83 Class B1 and ISO 9513 Class 0.5 standards



Specifications

Model	LTX 850
Part Number	100-302-887
Maximum Travel	850
Effective Measuring Range	10-850
Standard Gage Length	10 mm (0.4 in) 20 mm (0.8 in) 25 mm (1.0 in) 50 mm (2.0 in) 75 mm (2.95 in) 100 mm (3.9 in)
Minimum Gage Length	10 mm (0.4 in)
Allowed Specimen Size (*within*)	20 mm (*width*), 30 mm (*thickness*)
Accuracy	<0.5%

Model	Gage Length	Measurement Range	Height	Length	Weight	Temperature Range	Gripping Force	Allowed Specimen Size
LTX 850	10 mm (0.4 in) to 100 mm (3.9 in)	850 mm (33.95 in)	1030 mm (40.6 in)	90 mm (3.54 in)	5.3 kg (11.7 lb)	5°C to 50°C (41°F to 122°F)	Adjustable Spring	Width: 20 mm (0.8 in) Thickness: 30 mm (1.2 in)

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 Advantage Video Extensometers

- Magnetic-return support arm for easy specimen access and precise positioning
- Sixteen quick-attach measurement heads supporting a wide array of gage lengths and strain ranges
- Pass/fail calibration verification blocks and software calibration wizard to confirm setup to desired ASTM
- E83 or ISO 9513 class
- Mounting options on left, right, front of back of load frame

Measurement Head Specifications

Each AVX Measurement Head includes an inspected, traceable validation block, which can be used to confirm calibration at the beginning of a series of tests. Validation blocks are serialized and include an ISO 17025 Accreditation Calibration Report.

XT-100 Series Measurement Heads

Ideal for determining higher strain (>10%) materials properties such as yield point & elongation, and for long gage lengths. All models are capable of meeting Class B-2 (ASTM E-83) & Class 0.5 (ISO 9513) at the specified gage lengths and strain ranges (>10%). They are also capable of meeting Class B-1 (ASTM E-83) over most of their operating range (gage lengths where maximum axial tensile strain less than 600%).

The XT-100 series operate at measurement rates from 0.1 - 500 Hz.

AVX Measurement Head	Maximum Axial Tensile Strain Range (%) at Specified Gage Length (mm) [1]					Maximum Axial Compressive Strain Range (%) at Specified Gage Length (mm) [1]					Maximum Transverse Gage Length (mm) [2]	Typical Extension Resolution (µm) [3]	Minimum Specimen Width for Measurements (mm) [4]		Maximum Tracking Speed (mm /min) [2]	Field of View (mm)
	10	25	50	100	200	10	25	50	100	200			Axial	Transverse		
XT-101	280	70	-	-	-	40	40	-	-	-	10	0.3	1.5	4	1350	57 x 16
XT-102	530	170	50	-	-	40	40	40	-	-	19	0.4	2.4	7	2100	98 x 27
XT-103	840	300	120	25	-	-	40	40	40	-	29	0.6	3.4	10	3200	150 x 42
XT-104	1000	460	200	65	-	-	40	40	40	-	43	0.9	5	14	4600	220 x 62
XT-105	-	800	360	150	40	-	-	40	40	40	70	1.4	8	23	7200	350 x 100
XT-106	-	1000	500	220	70	-	-	40	40	40	65	1.8	11	30	9400	460 x 100
XT-107	-	-	800	360	150	-	-	-	40	40	-	2.8	16	-	14000	700 x 100

1. Strain ranges assume a distance between the grips of twice the GL, with a centrally positioned gage. Actual strain ranges may be greater or less than these values, depending on gage positioning, grip separation and specimen behavior.
2. Maximum transverse GL and tracking speed is quoted at a measurement rate of 100 Hz.
3. Resolution is based on typical lab performance.
4. For Class B-1, minimum specimen width for transverse gage lengths should be increased by 65%.

Note: Working distance is 480 mm.

XT-200 Series Measurement Heads

Ideal for determining low strain materials properties (from 0.01%), such as tensile & compressive modulus, Poisson's ratio & R-value. All models are capable of meeting Class B-1 (ASTM E-83) & Class 0.5 (ISO 9513) at the specified gage lengths and strain ranges.

The XT-200 series are our highest accuracy measurement heads. These models operate at measurement rates from 0.1 - 30 Hz.

The XT-250 series are suitable for many high accuracy dynamic applications, and operate at measurement rates from 0.1 - 500 Hz.

AVX Measurement Head	Maximum Axial Tensile Strain Range (%) at Specified Gage Length (mm) [1]			Maximum Axial Compressive Strain Range (%) at Specified Gage Length (mm) [1]			Maximum Transverse Gage Length (mm) [2]	Typical Extension Resolution (µm) [3]	Minimum Specimen Width for Measurements (mm)		Maximum Tracking Speed (mm /min) [2]	Field of View (mm)
	10	25	50	10	25	50			Axial	Transverse		
XT-204	300	80	10	40	40	25	45	0.18	1.0	4.6	250	61 x 51
XT-205	460	145	40	40	40	40	63	0.25	1.4	6.4	350	86 x 72
XT-254	390	120	25	40	40	40	15	0.3	1.7	8	1900	76 x 21
XT-255	580	190	65	40	40	40	21	0.4	2.4	11	2600	107 x 30

1. Specified strain ranges assume a distance between the grips of twice the GL, with a centrally positioned gage. Actual strain ranges may be greater or less than these values, depending on gage positioning, grip separation and specimen behavior.
2. Maximum transverse GL and tracking speed is quoted at a measurement rate of 15Hz (XT-20x series) and 100 Hz (XT-25x series).
3. Resolution based on typical lab performance.

Note:. Working distance is 273 mm and is subject to +/- 5% tolerance.

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

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

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.

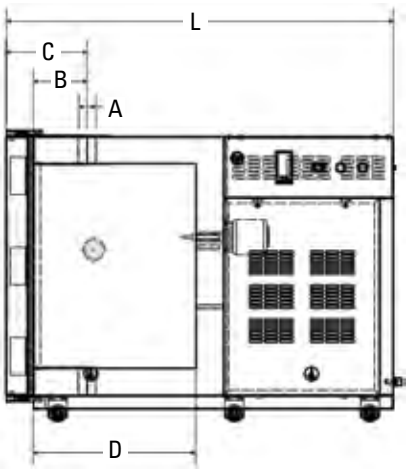
Typical uses are elastomer material studies, body and engine mount tests, shock absorber tests, tire cord tests, plastics, composite material tests, laminate tests, and vibration isolator tests. These chambers are used in research, in reliability testing, quality control, and production testing.

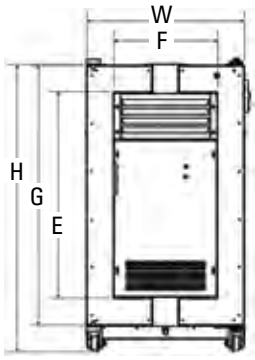
Chambers are of all-welded construction. The door opens to 180°, or it may be lifted from the chamber if that is more convenient. The window is multipane, tempered glass, sealed to keep moisture out and to prevent fogging and frosting .

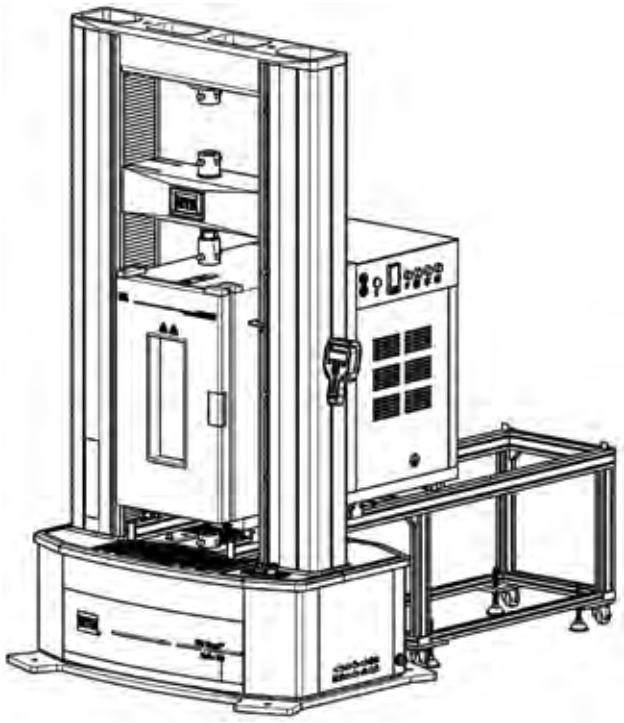
MTS can also supply special chambers designed for use with mechanical refrigeration, humidity control, or salt spray applications and in special sizes to suit your unique requirements. Contact your MTS sales engineer for more information about these options.

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

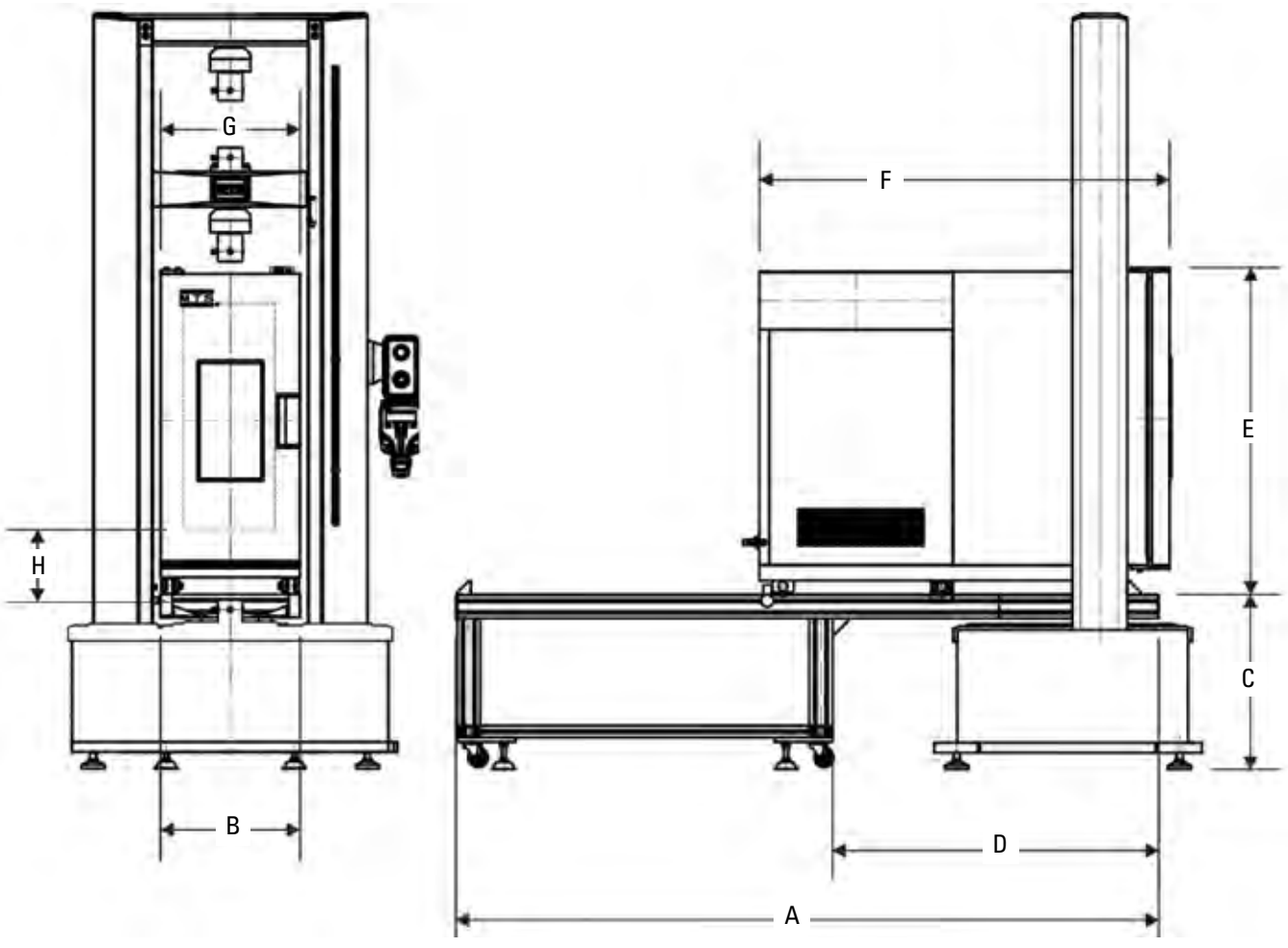
Specifications

Model	Description	Application	Chambers	Adapter	Compatible Height*	Occupation Page
XSB204B	20 kN Wedge action grip	Tensile Test	FEC1200, FEC1300	20 mm	282 mm	16
XSF204A	20 kN Wedge action grip	Tensile Test	FEC1200, FEC1300	20 mm	362 mm	16
DSC104B	10 kN Screw action grip,SST	Tensile Test	FEC1200, FEC1300	20 mm	224 mm	20
Y104B	10 kN ø100 Compression platen, spherical self-aligning, SST	Compression Test	FEC1200, FEC1300	20 mm	140 mm	44
ZWA304	30kN Bend Fixture,SST	Bend Test	FEC1200, FEC1300	20 mm	258 mm	51

** 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



Optional Pull Rods

Description	Capacity	A Upper Adapter	B Lower Adapter	C Length (pin to pin)	D Travel*	Compatible Frame	Available as 1 Lower Rod**
Pull Rod, 2020, 175	30 kN	20 mm	20 mm	175 mm	15 mm	E44.304	NO
Pull Rod, 2020, 200	30 kN	20 mm	20 mm	200 mm	40 mm	E44.304	NO
Pull Rod, 2020, 225	30 kN	20 mm	20 mm	225 mm	65 mm	E44.304	NO
Pull Rod, 2020, 250	30 kN	20 mm	20 mm	250 mm	90 mm	E44.304	YES
Pull Rod, 2020, 275	30 kN	20 mm	20 mm	275 mm	115 mm	E44.304	YES
Pull Rod, 2020, 300	30 kN	20 mm	20 mm	300 mm	140 mm	E44.304	YES
Pull Rod, 2020, 325	30 kN	20 mm	20 mm	325 mm	165 mm	E44.304	YES
Pull Rod, 2020, 350	30 kN	20 mm	20 mm	350 mm	190 mm	E44.304	YES
Pull Rod, 2020, 375	30 kN	20 mm	20 mm	375 mm	215 mm	E44.304	YES
Pull Rod, 2020, 400	30 kN	20 mm	20 mm	400 mm	240 mm	E44.304	YES
Pull Rod, 2020, 425	30 kN	20 mm	20 mm	425 mm	265 mm	E44.304	YES
Pull Rod, 2020, 450	30 kN	20 mm	20 mm	450 mm	290 mm	E44.304	YES
Pull Rod, 2020, 475	30 kN	20 mm	20 mm	475 mm	315 mm	E44.304	YES
Pull Rod, 2020, 500	30 kN	20 mm	20 mm	500 mm	340 mm	E44.304	YES
Pull Rod, 2020, 525	30 kN	20 mm	20 mm	525 mm	365 mm	E44.304	YES
Pull Rod, 2020, 550	30 kN	20 mm	20 mm	550 mm	390 mm	E44.304	YES
Pull Rod, 2020, 575	30 kN	20 mm	20 mm	575 mm	415 mm	E44.304	YES
Pull Rod, 2020, 600	30 kN	20 mm	20 mm	600 mm	440 mm	E44.304	YES
Pull Rod, 2020, 625	30 kN	20 mm	20 mm	625 mm	465 mm	E44.304	YES
Pull Rod, 2020, 650	30 kN	20 mm	20 mm	650 mm	490 mm	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

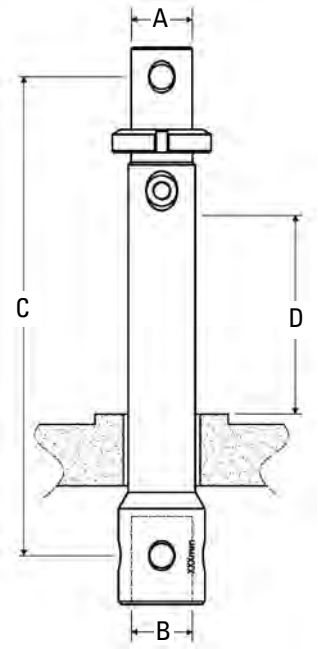
Optional Pull Rods (*continued*)

Description	Capacity	A Upper Adapter	B Lower Adapter	C Length (pin to pin)	D Travel*	Compatible Frame	Available as 1 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	E43.504
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			
Standard	700 mm (27.6 in)	1000 mm (39.4 in)	1150 mm (45.28 in)
Extended	1000 mm (39.4 in)	1300 mm (51.2 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			
Standard	1300 mm (51.18 in)	1617 mm (63.7 in)	1862 mm (73.3 in)
Extended	1600 mm (63.0 in)	1917 mm (75.5 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			
Standard	120 kg (265 lb)	120 kg (265 lb)	435 kg (959 lb)
Extended	130 kg (287 lb)	130 kg (287 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				
Standard	1150 mm (45.28 in)	1050 mm (41.34 in)	1100 mm (43.30 in)	1300 mm (51.2 in)
Extended	1450 mm (57.09 in)	1350 mm (53.15 in)	1400 mm (55.12 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				
Standard	1862 mm (73.3 in)	2133 mm (83.98 in)	2360 mm (92.91 in)	2820 mm (111.02 in)
Extended	2162 mm (85.12 in)	2433 mm (95.79 in)	2660 mm (104.72 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				
Standard	435 kg (959 lb)	1400 kg (3086 lb)	1700 kg (3748 lb)	3500 kg (7716)
Extended	450 kg (992 lb)	1450 kg (3197 lb)	1750 kg (3758 lb)	
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

Material Number	Description	Compatible Frames	Load Cell Model
100303310	E42/E43(5N) add on load cell assembly	E42.503, E43.104, E43.504	5 N Add On
100303311	E42/E43(10N) add on load cell assembly	E42.503, E43.104, E43.504	10 N Add On
100303312	E42/E43(20N) add on load cell assembly	E42.503, E43.104, E43.504	20 N Add On
100303313	Add on Load Cell Assembly-E42/E43(50N)	E42.503, E43.104, E43.504	50 N Add On
100303454	add on load cell assembly-E42/E43(100N)	E42.503, E43.104, E43.504	100 N Add On
100303455	E42/E43(200N) add on load cell assembly	E42.503, E43.104, E43.504	200 N Add On M8
100303456	Add on load cell assembly-E42/E43(500N)	E42.503, E43.104, E43.504	500 N Add On M8
100303457	E42/E43(1kN) add on load cell assembly	E42.503, E43.104, E43.504	1 kN Add On
100303458	E42/E43(2kN) add on load cell assembly	E42.503, E43.104, E43.504	2 kN Add On
100303459	E43(5kN) add on load cell assembly	E43.104, E43.504	5 kN Add On
100303460	E44(50N) add on load cell assembly	E44.304	50 N Add On
100303461	E44(100N) add on load cell assembly	E44.304	100 N Add On
100303462	E44(200N) add on load cell assembly	E44.304	200 N Add On M8
100303463	Add on load cell assembly-E44(500N)	E44.304	500 N Add On M8
100303464	E44(1kN) add on load cell assembly	E44.304	1 kN Add On
100303465	Add on load cell assembly-E44(2kN)	E44.304	2 kN Add On
100303466	E44(5kN) add on load cell assembly	E44.304	5 kN Add On
100303467	Add on load cell assembly-E45.105(200N)	E45.105	200 N Add On M6
100303468	add on load cell assembly-E45.105(500N)	E45.105	500 N Add On M6
100303469	E45.105(1kN) add on load cell assembly	E45.105	1 kN Add On
100303470	E45.105(2kN) add on load cell assembly	E45.105	2 kN Add On
100303471	E45.105(5kN) add on load cell assembly	E45.105	5 kN Add On
100303472	ADD ON LOAD CELL ASSY- E45.105(1t)	E45.105	10 kN Add On
100303473	Add on Load Cell Assembly-E45.105(2t)	E45.105	20 kN Add On
100303474	E45.105(5t) add on load cell assembly	E45.105	50 kN Add On
100303475	E45.305(500N) add on load cell assembly	E45.305	500 N Add On M6
100303476	E45.305(1kN) add on load cell assembly	E45.305	1 kN Add On
100303477	E45.305(2kN) add on load cell assembly	E45.305	2 kN Add On
100303478	E45.305(5kN) add on load cell assembly	E45.305	5 kN Add On
100303479	E45.305(1t) add on load cell assembly	E45.305	10 kN Add On
100303480	E45.305(2t) add on load cell assembly	E45.305	20 kN Add On
100303481	E45.305(5t) add on load cell assembly	E45.305	50 kN Add On

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