



## 647 Side-Loading Hydraulic Wedge Grips

Precision, easy-to-load grips for a wide range of tensile and fatigue applications

### Benefits

#### EASY SPECIMEN INSERTION

- » Side-loading lets you quickly and easily insert specimens.

#### EXCELLENT REPEATABILITY

- » These grips clamp onto your specimen in the same position, test after test, to minimize the bending strains that can invalidate your test results.

#### TENSION & FATIGUE CAPABILITY

- » You can use the 647s for both tensile and fatigue tests.

#### ADJUSTABLE PRESSURE

- » Hydraulic pressure can be adjusted, allowing these grips to be used for testing a variety of materials.

#### MULTIPLE WEDGE SELECTION

- » A wide variety of wedges are available to meet your requirements.

Test after test, MTS 647 Side-Loading Hydraulic Wedge Grips clamp your specimen in exactly the same way for consistent, repeatable testing results. Their superior alignment and constant, lateral gripping force minimize the bending strains, vertical loading forces and slippage that can invalidate test results and cost you time.

The hydraulic pressure to these grips is supplied by an external grip supply and is adjustable. This allows the grips to be used for testing a variety of materials, including plastics and ceramics. An adjustable gripping force prevents damage to your specimens from grip or specimen slippage during your tests.

Your specimens are also protected by the 647's preload chamber which locks all moving grip parts in position, eliminating backlash when cycling between tension and compression.

These grips can be mounted on non-hydraulic frames when used with an optional, stand-alone hydraulic pump and valve assembly. They can also be mounted in environmental chambers when equipped with optional, high-temperature hydraulic fluid and seals.

A variety of wedges are available for the 647 grips and are sold separately. These grips are also available in axial-torsional models.

be certain.

## Options

### SPIRAL WASHERS

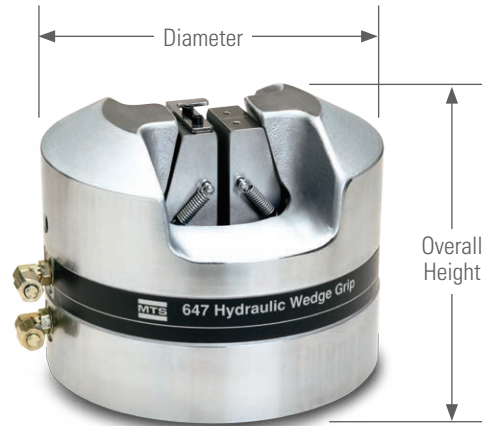
- » Use anywhere you need a backlash free connection to your load frame.

### WEDGE VARIETY

- » Flat, round or vee-shaped wedges with surfaces available for brittle or soft specimens. Water cooled wedges also available in certain sizes.

### HIGH TEMPERATURE OPTIONS

- » Model 602 extension rods and a hardline supply can be purchased for high temperature testing.



## Axial Model 647 Grip Specifications

Model	Dynamic Force	Static Force	Pressure	Temperature* Min/Max	Overall Height	Diameter
647.02B	25 kN (5.5 kip)	31 kN (7,000 lb)	21MPa (3000 psi)	-40°C/177°C (-40°F/350°F)	131 mm (5.2 in)	150 mm (6.0 in)
647.10A	100 kN (22 kip)	120 kN (27,000 lb)	21MPa (3000 psi)	-40°C/177°C (-40°F/350°F)	188 mm (7.4 in)	203 mm (8.0 in)
647.25A	250 kN (55 kip)	333 kN (75,000 lb)	69 MPa (10,000 psi)	-40°C/177°C (-40°F/350°F)	249 mm (9.8 in)	266 mm (10.5 in)
647.50A	500 kN (110 kip)	550 kN (120,000 lb)	69 MPa (10,000 psi)	-18°C to 65°C (0°F to 150°F)	291 mm (11.5 in)	330 mm (13.0 in)
647.100A	1000 kN (220 kip)	1200 kN (264,000 lb)	69 MPa (10,000 psi)	-18°C to 65°C (0°F to 150°F)	414 mm (16.2 in)	444 mm (17.5 in)
647.250	2500 kN (550 kip)	2750 kN (610 kip)	69 MPa (10,000 psi)	-18°C to 65°C (0°F to 150°F)	819 mm (32.3 in)	737 mm (29.0 in)

\*Temperatures above 77°C/150°F require a stand-alone grip supply and extension rods.

Model	Weight	Metric/US Customary	
		Stud Size	Part Number
647.02B	7 kg (15 lb)	M12 x 1.25 (1/2"-20)	056-078-605
647.10A	30 kg (67 lb)	M27 x 2 (1"-14)	047-080-605
647.25A	77 kg (170 lb)	M36 x 2 (1 1/2"-12)	047-080-905
647.50A	148 kg (325 lb)	M52 x 2 (2"-12)	047-595-505
647.100A	386 kg (850 lb)	M76 x 2	053-137-201
647.250	1153 kg (3335 lb)	N/A	Contact MTS

Wedges and attachment kits sold separately.

## Axial-Torsional Model 647 Grip Specifications

Model	Axial Force	Torsional Force	Pressure	Temperature* Min/Max	Overall Height	Diameter
647.02B-22	25 kN (5.5 kip)	220 N.m (2000 in.lb)	21 MPa (3000 psi)	-40°C/150°C (-40°F/300°F)	135 mm (5.3 in)	150 mm (6.0 in)
647.10A-05	100 kN (22 kip)	550 N.m (5000 in.lb)	21 MPa (3000 psi)	-40°C/121°C (-40°F/250°F)	188 mm (7.4 in)	203 mm (8.0 in)
647.10A-11	100 kN (22 kip)	1,100 N.m (10,000 in.lb)	21 MPa (3000 psi)	-40°C/121°C (-40°F/250°F)	224 mm (8.8 in)	203 mm (8.0 in)
647.25A-22	250 kN (55 kip)	2,200 N.m (20,000 in.lb)	69 MPa (10,000 psi)	-18°C/65°C (0°F/150°F)	343 mm (13.5 in)	266 mm (10.5 in)

\*Temperatures above 77°C/150°F require a stand-alone grip supply and extension rods.

Model	Weight	Mounting	Part Number
647.02B-22	8 kg (16 lb)	40 mm dia.	100-026-042
647.10A-05	27 kg (60 lb)	M68 x 2 (LH)	049-157-301
647.10A-11	34 kg (75 lb)	M68 x 2 (LH)	049-817-001
647.25A-22	95 kg (210 lb)	M92 x 3 (LH)	056-124-001

## Flat Wedge Specimen Specifications

Model Number	Specimen Thickness (T)		Narrow Wedge Set Assembly* Width* Part Numbers				Wide Wedge Set Assembly* Width* Part Numbers			
	mm	in	mm	in	Diamond Serations	Surfallooy Coating	mm	in	Diamond Serations	Surfallooy Coating
647.02B	0.00 mm to 7.2 mm	0.00 in to 0.28 in	25.4 mm	1.00 in	050-507-906	050-507-917	38.1 mm	1.50 in	054-585-001	054-585-005
647.02B	7.1 mm to 14.4 mm	0.28 in to 0.57 in	25.4 mm	1.00 in	050-507-907	050-507-918	38.1 mm	1.50 in	054-585-002	054-585-006
647.10	0.00 mm to 7.6 mm	0.0 in to 0.30 in	44.5 mm	1.75 in	041-842-101	041-842-108	76.2 mm	3.00 in	046-198-604	046-198-602
647.10	7.1 mm to 14.2 mm	0.28 in to 0.56 in	44.5 mm	1.75 in	041-842-102	041-842-111	76.2 mm	3.00 in	046-198-603	046-198-601
647.10	11.7 mm to 19.1 mm	0.46 in to 0.75 in	44.5 mm	1.75 in	041-842-109	041-842-121	76.2 mm	3.00 in	–	–
647.25	1.0 mm to 11.9 mm	0.04 in to 0.47 in	50.8 mm	2.00 in	041-842-201	041-842-207	101.6 mm	4.00 in	046-198-804	046-198-817
647.25	6.10 mm to 17.0 mm	0.24 in to 0.67 in	50.8 mm	2.00 in	041-842-202	041-842-208	101.6 mm	4.00 in	046-198-806	046-198-802
647.25	15.0 mm to 25.9 mm	0.59 in to 1.02 in	50.8 mm	2.00 in	041-842-203	041-842-209	101.6 mm	4.00 in	046-198-805	046-198-803
647.50	0.00 mm to 10.9 mm	0.00 in to 0.43 in	101.6 mm	4.00 in	047-641-606	047-641-611	203.2 mm	8.00 in	048-966-302	048-966-307
647.50	10.1 mm to 21 mm	0.40 in to 0.83 in	101.6 mm	4.00 in	047-641-607	047-641-612	203.2 mm	8.00 in	048-966-303	–
647.50	20.3 mm to 31.2 mm	0.80 in to 1.23 in	101.6 mm	4.00 in	047-641-608	047-641-613	203.2 mm	8.00 in	048-966-304	048-966-301
647.50	30.4 mm to 41.4 mm	1.20 in to 1.63 in	101.6 mm	4.00 in	047-641-609	047-641-614	203.2 mm	8.00 in	048-966-305	–
647.50	40.6 mm to 51.5 mm	1.60 in to 2.03 in	101.6 mm	4.00 in	047-641-610	047-641-615	203.2 mm	8.00 in	048-966-306	–
647.100	0.00 mm to 23.0 mm	0.00 in to 0.89 in	–	–	053-137-403	–	–	–	–	–
647.100	23.0 mm to 45.0 mm	0.89 in to 1.77 in	–	–	053-137-402	–	–	–	–	–
647.100	45.0 mm to 67.0 mm	1.77 in to 2.64 in	–	–	053-137-401	–	–	–	–	–

\* The wedge set assembly consists of a matched set of four wedges, two specimen guides and socket head cap screws.

## Round Wedge Specimen Specifications

Model Number	Specimen Diameter	Round Wedge Part Number
647.02B	10.0 mm	050-507-912
647.02B	15.0 mm	050-507-913
647.02B	0.5 in	050-507-915
647.02B	1.0 in	050-507-916
647.10	12 mm	041-842-134
647.10	15 mm	041-842-135
647.10	20 mm	041-842-136
647.10	0.5 in	041-842-132
647.10	0.75 in	041-842-133
647.10	1.0 in	041-842-149
647.10	12 mm	046-838-716 (water cooled)
647.10	15 mm	046-838-717 (water cooled)
647.10	0.5 in	046-838-714 (water cooled)
647.10	0.75 in	046-838-715 (water cooled)
647.25	15 mm	041-842-231
647.25	20 mm	041-842-232
647.25	30 mm	041-842-233
647.25	0.5 in	041-842-234
647.25	1.0 in	041-842-235

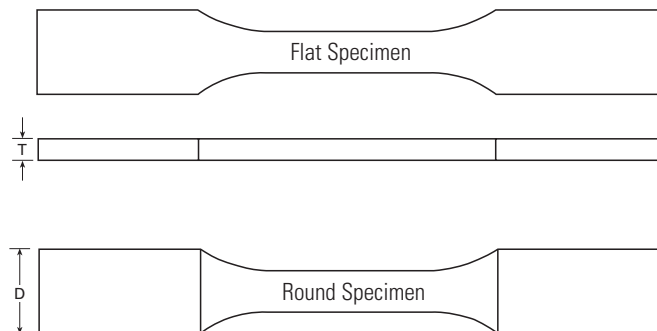
\* The wedge set assembly consists of a matched set of four wedges.

## 647.250 Wedge and Liner Sets

Wedge Type	Specimen Size Range	Part Number	
Flat*	0 – 29.5 mm 26.8 – 54 mm 51.8 – 79 mm 76.8 – 104 mm	0 – 1.16 in 1.06 – 2.16 in 2.04 – 3.11 in 3.02 – 4.09 in	057-367-101
Vee**	30 – 44.0/57.2 mm 55.8 – 68.9/80.5 mm 78.6 – 93.7/104 mm	1.18-1.73/2.25 in 2.20 – 2.71/3.17 in 3.10 – 3.69/4.09 in	057-367-102
Flat & Vee	Includes the flat and vee wedges described above and single set of liners		057-367-103

\* Flat wedge size ranges refer to specimen thickness

\*\* Vee wedge diameter ranges refer to top/Side-Loading



## Vee Wedge Specimen Specifications

Model Number	Specimen Diameter (D)	Vee Wedge Set Assembly* Part Number	
647.02B	3.0 mm to 8.1 mm Side-Loading 9.4 mm Top-Loading	0.12 in to 0.32 in Side-Loading 0.37 in Top-Loading	050-507-908
647.02B	8.9 mm to 10.9 mm Side-Loading 15.2 mm Top-Loading	0.35 in to 0.43 in Side-Loading 0.60 in Top-Loading	050-507-909
647.10	5.8 mm to 10.2 mm Side-Loading 11.9 mm Top-Loading	0.23 in to 0.40 in Side-Loading 0.47 in Top-Loading	041-842-103
647.10	10.9 mm to 12.8 mm Side-Loading 16.5 mm Top-Loading	0.43 in to 0.50 in Side-Loading 0.65 in Top-Loading	041-842-104
647.10	No Side-Loading 12.7 mm to 19.0 mm Top-Loading	No Side-Loading 0.50 in to 0.75 in Top-Loading	041-842-107
647.10	No Side-Loading 17.0 mm to 22.9 mm Top-Loading	No Side-Loading 0.67 in to 0.90 in Top-Loading	041-842-110
647.25	10.7 mm to 16.8 mm Side-Loading 19.9 mm Top-Loading	0.42 in to 0.66 in Side-Loading 0.78 in Top-Loading	041-842-204
647.25	16.8 mm to 20.0 mm Side-Loading 26.2 mm Top-Loading	0.66 in to 0.79 in Side-Loading 1.03 in Top-Loading	041-842-205
647.25	6.4 mm to 10.2 mm Side-Loading 13.5 mm Top-Loading	0.25 in to 0.40 in Side-Loading 0.53 in Top-Loading	041-842-206
647.50	6.4 mm to 12.7 mm Side-Loading 15.5 mm Top-Loading	0.25 in to 0.50 in Side-Loading 0.61 in Top-Loading	047-641-601
647.50	15.2 mm to 18.3 mm Side-Loading 24.4 mm Top-Loading	0.60 in to 0.72 in Side-Loading 0.96 in Top-Loading	047-641-602
647.50	24.1 mm to 25.1 mm Side-Loading 33.5 mm Top-Loading	0.95 in to 0.99 in Side-Loading 1.32 in Top-Loading	047-641-603
647.50	33.0 mm to 33.0 mm Side-Loading 42.4 mm Top-Loading	1.30 in to 1.30 in Side-Loading 1.67 in Top-Loading	047-641-604
647.50	41.9 mm to 41.9 mm Side-Loading 51.3 mm Top-Loading	1.65 in to 1.65 in Side-Loading 2.02 in Top-Loading	047-641-605
647.100	6.0 mm to 10.0 mm Side-Loading -	0.24 in to 0.39 in Side-Loading -	053-137-407
647.100	10.0 mm to 25.0 mm Side-Loading -	0.39 in to 0.99 in Side-Loading -	053-137-406
647.100	25.0 mm to 44.0 mm Side-Loading -	0.99 in to 1.75 in Side-Loading -	053-137-405
647.100	44.0 mm to 63.0 mm Side-Loading -	1.75 in to 2.5 in Side-Loading -	053-137-404

\* The wedge set assembly consists of a matched set of four wedges.



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