



## Series 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 Series 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 Series 647 grips and are sold separately. These grips are also available in axial-torsional models.

## Options

### SPIRAL WASHERS

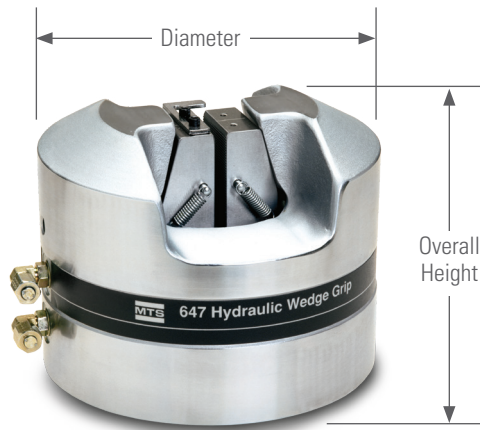
- » Use anywhere you need a backlash free connection to your load frame.

### 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
<b>647.02B</b>	25 kN (5.5 kip)	31 kN (7 kip)	21 MPa (3000 psi)	-40°C/177°C (-40°F/350°F)	131 mm (5.2 in)	150 mm (6.0 in)
<b>647.10A</b>	100 kN (22 kip)	120 kN (27 kip)	21 MPa (3000 psi)	-40°C/177°C (-40°F/350°F)	188 mm (7.4 in)	203 mm (8.0 in)
<b>647.25A</b>	250 kN (55 kip)	333 kN (75 kip)	70 MPa (10,000 psi)	-40°C/177°C (-40°F/350°F)	249 mm (9.8 in)	266 mm (10.5 in)
<b>647.50A</b>	500 kN (110 kip)	550 kN (120 kip)	70 MPa (10,000 psi)	-18°C to 65°C (0°F to 150°F)	291 mm (11.5 in)	330 mm (13.0 in)
<b>647.100A</b>	1000 kN (220 kip)	1200 kN (264 kip)	70 MPa (10,000 psi)	-18°C to 65°C (0°F to 150°F)	414 mm (16.2 in)	444 mm (17.5 in)
<b>647.250</b>	2500 kN (550 kip)	2750 kN (610 kip)	70 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	Wedge Height	Metric/US Customary Stud Size	Part Number
<b>647.02B</b>	7 kg (15 lb)	38 mm (1.5 in)	M12 x 1.25 (1/2"-20)	056-078-605
<b>647.10A</b>	30 kg (67 lb)	63.5 mm (2.5 in)	M27 x 2 (1"-14)	047-080-605
<b>647.25A</b>	77 kg (170 lb)	89 mm (3.5 in)	M36 x 2 (1 1/2"-12)	047-080-905
<b>647.50A</b>	148 kg (325 lb)	95.3 mm (3.75 in)	M52 x 2 (2"-12)	047-595-505
<b>647.100A</b>	386 kg (850 lb)	127 mm (5 in)	M76 x 2	053-137-201
<b>647.250</b>	1153 kg (3335 lb)	165.1 mm (6.5 in)	N/A	Contact MTS

Wedges and attachment kits sold separately.

Specimen insertion depth in grip wedge from 3/4 of wedge height to full wedge height.

Specimen to not contact grip piston at full wedge height insertion.

## Axial-Torsional Model 647 Grip Specifications

Model	Axial Force	Torsional Force	Pressure	Temperature* Min/Max	Overall Height	Diameter
<b>647.02B-22</b>	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)
<b>647.10A-05</b>	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)
<b>647.10A-11</b>	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)
<b>647.25A-22</b>	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
<b>647.02B-22</b>	8 kg (16 lb)	40 mm dia.	100-026-042
<b>647.10A-05</b>	27 kg (60 lb)	M68 x 2 (LH)	049-157-301
<b>647.10A-11</b>	34 kg (75 lb)	M68 x 2 (LH)	049-817-001
<b>647.25A-22</b>	95 kg (210 lb)	M92 x 3 (LH)	056-124-001

Model 647.02B Grips

Part Number*	Profile	Surface	Height	Width	Temperature Range	Specimen Range
050-507-906	Flat	Sawtooth	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	0-7.1 mm (0-0.28 in)
054-585-001	Flat	Sawtooth	38 mm (1.5 in)	50.8 mm (2.0 in)	-40° C (-40° F) to 177° C (350° F)	0-7.1 mm (0-0.28 in)
050-507-907	Flat	Sawtooth	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	7.1-14.5 mm (0.28-0.57 in)
054-585-002	Flat	Sawtooth	38 mm (1.5 in)	50.8 mm (2.0 in)	-40° C (-40° F) to 177° C (350° F)	7.1-14.5 mm (0.28-0.57 in)
050-507-901	Flat	Sawtooth	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	13.5-20.6 mm (0.53-0.81 in)
054-585-003	Flat	Sawtooth	38 mm (1.5 in)	50.8 mm (2.0 in)	-40° C (-40° F) to 177° C (350° F)	13.5-20.6 mm (0.53-0.81 in)
054-585-004	Flat	Sawtooth	38 mm (1.5 in)	50.8 mm (2.0 in)	-40° C (-40° F) to 177° C (350° F)	16.8-24.1 mm (0.66-0.95 in)
050-507-905	Flat	Sawtooth	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	18.8-25.9 mm (0.74-1.02 in)
052-818-701	Flat**	Sawtooth	38 mm (1.5 in)	25.4 mm (1.0 in)	-130° C (-200° F) to 315° C (600° F)	0-7.1 mm (0-0.28 in)
050-507-917	Flat	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	0-7.1 mm (0-0.28 in)
054-585-005	Flat	Surfallo	38 mm (1.5 in)	50.8 mm (2.00 in)	-40° C (-40° F) to 177° C (350° F)	0-7.1 mm (0-0.28 in)
050-507-918	Flat	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	7.1-14.5 mm (0.28-0.57 in)
054-585-006	Flat	Surfallo	38 mm (1.5 in)	50.8 mm (2.00 in)	-40° C (-40° F) to 177° C (350° F)	7.1-14.5 mm (0.28-0.57 in)
050-507-904	Flat	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	13.4-20.6 mm (0.53-0.81 in)
052-818-702	Flat**	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-130° C (-200° F) to 315° C (600° F)	0-7.1 mm (0-0.28 in)
050-507-912	Round	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø10.0 mm
050-507-934	Round	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø12.0 mm
050-507-913	Round	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø15.0 mm
050-507-914	Round	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø25.0 mm
050-507-915	Round	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø0.5000 in
050-507-916	Round	Surfallo	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø1.000 in
050-507-908	Vee	Diamond Tip	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø3-8.1 mm (0.12-0.32 in) Side, ø9.4 mm (0.37 in) Top
050-507-909	Vee	Diamond Tip	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø8.9-10.9 mm (0.35-0.43 in) Side, ø15.2 mm (0.60 in) Top
050-507-910	Vee	Diamond Tip	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø14-18 mm (0.55-0.71 in) Side, ø20.8 mm (0.82 in) Top
050-507-911	Vee	Diamond Tip	38 mm (1.5 in)	25.4 mm (1.0 in)	-40° C (-40° F) to 177° C (350° F)	ø20.1-22.9 mm (0.79-0.90 in) Side, ø27.2 mm (1.07 in) Top

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

\*\* Water Cooled

Model 647.10 Grips

Part Number*	Profile	Surface	Height	Width	Temperature Range	Specimen Range
041-842-101	Flat	Diamond Tip	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	0-7.6 mm (0-0.3 in)
046-198-604	Flat	Diamond Tip	63.5 mm (2.5 in)	76.2 mm x (3.0 in)	-40° C (-40° F) to 177° C (350° F)	0-7.6 mm (0-0.3 in)
041-842-102	Flat	Diamond Tip	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	7.1-14.2 mm (0.28-0.56 in)
046-198-603	Flat	Diamond Tip	63.5 mm (2.5 in)	76.2 mm x (3.0 in)	-40° C (-40° F) to 177° C (350° F)	7.1-14.2 mm (0.28-0.56 in)
046-198-610	Flat	Diamond Tip	63.5 mm (2.5 in)	76.2 mm x (3.0 in)	-40° C (-40° F) to 177° C (350° F)	11.4-18.9 mm (0.45-0.75 in)
041-842-109	Flat	Diamond Tip	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	11.7-19.1 mm (0.46-0.75 in)
046-198-606	Flat	Diamond Tip	63.5 mm (2.5 in)	76.2 mm x (3.0 in)	-40° C (-40° F) to 177° C (350° F)	17-25.4 mm (0.67-1.0 in)
046-838-702	Flat**	Diamond Tip	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	0-7.6 mm (0-0.3 in)
046-838-701	Flat**	Diamond Tip	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	7.1-14.2 mm (0.28-0.56 in)
046-838-713	Flat**	Diamond Tip	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	11.7-19.1 mm (0.46-0.75 in)
041-842-108	Flat	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	0-7.6 mm (0-0.30 in)
046-198-602	Flat	Surfallo	63.5 mm (2.5 in)	76.2 mm x (3.0 in)	-40° C (-40° F) to 177° C (350° F)	0-7.6 mm (0-0.3 in)
041-842-111	Flat	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	7.1-14.2 mm (0.28-0.56 in)
046-198-601	Flat	Surfallo	63.5 mm (2.5 in)	76.2 mm x (3.0 in)	-40° C (-40° F) to 177° C (350° F)	7.1-14.2 mm (0.28-0.56 in)
041-842-121	Flat	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	11.7-19.1 mm (0.46-0.75 in)
046-838-705	Flat**	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	0-7.6 mm (0-0.3 in)
046-838-706	Flat**	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	7.1-14.2 mm (0.28-0.56 in)
041-842-134	Round	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø12.0 mm
041-842-132	Round	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø0.5000 in
041-842-135	Round	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø15.0 mm
041-842-133	Round	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø0.7500 in
041-842-136	Round	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø20.0 mm
041-842-149	Round	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø1.0000 in
046-838-714	Round**	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	ø0.5000 in
046-838-715	Round**	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	ø0.7500 in
046-838-716	Round**	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	ø12.0 mm
046-838-717	Round**	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	ø15.0 mm
046-838-718	Round**	Surfallo	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	ø20.0 mm
041-842-103	Vee	Serrated	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø5.8-10.2 mm (0.23-0.4 in) Side, ø11.9 mm (0.47 in) Top
041-842-104	Vee	Serrated	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø10.9-12.7 mm (0.43-0.5 in) Side, ø16.5 mm (0.65 in) Top
041-842-107	Vee	Serrated	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø12.7-19.1 mm (0.5-0.75 in) Side & Top
041-842-110	Vee	Serrated	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-40° C (-40° F) to 177° C (350° F)	ø17-22.9 mm (0.67-0.9 in) Side & Top
046-838-703	Vee**	Serrated	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	ø5.8-10.2 mm (0.23-0.4 in) Side, ø11.9 mm (0.47 in) Top
046-838-704	Vee**	Serrated	63.5 mm (2.5 in)	44.5 mm x (1.75 in)	-130° C (-200° F) to 315° C (600° F)	ø10.9-12.7 mm (0.43-0.5 in) Side, ø16.5 mm (0.65 in) Top

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

Model 647.25 Grips

Part Number*	Profile	Surface	Height	Width	Temperature Range	Specimen Range
041-842-201	Flat	Diamond Tip	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	1-11.9 mm (0.04-0.47 in)
046-198-804	Flat	Diamond Tip	89 mm (3.5 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	1-11.9 mm (0.04-0.47 in)
041-842-202	Flat	Diamond Tip	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	6.1-17 mm (0.24-0.67 in)
046-198-806	Flat	Diamond Tip	89 mm (3.5 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	6.1-17 mm (0.24-0.67 in)
041-842-203	Flat	Diamond Tip	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	15-25.9 mm (0.59-1.02 in)
046-198-805	Flat	Diamond Tip	89 mm (3.5 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	15-25.9 mm (0.59-1.02 in)
045-966-201	Flat**	Diamond Tip	89 mm (3.5 in)	50.8 mm x (2.0 in)	-130° C (-200° F) to 315° C (600° F)	1-11.9 mm (0.04-0.47 in)
045-966-202	Flat**	Diamond Tip	89 mm (3.5 in)	50.8 mm x (2.0 in)	-130° C (-200° F) to 315° C (600° F)	6.1-17 mm (0.24-0.67 in)
045-966-204	Flat**	Diamond Tip	89 mm (3.5 in)	50.8 mm x (2.0 in)	-130° C (-200° F) to 315° C (600° F)	15-25.9 mm (0.59-1.02 in)
046-198-801	Flat	Surfallo	89 mm (3.5 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	0-10.1 mm (0-0.40 in)
041-842-207	Flat	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	1-11.9 mm (0.04-0.47 in)
046-198-817	Flat	Surfallo	89 mm (3.5 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	1-11.9 mm (0.04-0.47 in)
041-842-208	Flat	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	6.1-17 mm (0.24-0.67 in)
046-198-802	Flat	Surfallo	89 mm (3.5 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	6.1-17 mm (0.24-0.67 in)
041-842-209	Flat	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	15-25.9 mm (0.59-1.02 in)
046-198-803	Flat	Surfallo	89 mm (3.5 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	15-25.9 mm (0.59-1.02 in)
045-966-205	Flat**	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-130° C (-200° F) to 315° C (600° F)	1-11.9 mm (0.04-0.47 in)
041-842-234	Round	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	ø0.5000 in
041-842-231	Round	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	ø15.0 mm
041-842-232	Round	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	ø20.0 mm
041-842-235	Round	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	ø1.0000 in
041-842-233	Round	Surfallo	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	ø30.0 mm
041-842-206	Vee	Serrated	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	ø6.4-10.2mm (0.25-0.4 in) Side, 13.5 mm (0.53 in) Top
041-842-204	Vee	Serrated	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	ø10.7-16.8 mm (0.42-0.66 in) Side 19.9 mm (0.78 in) Top
041-842-205	Vee	Serrated	89 mm (3.5 in)	50.8 mm x (2.0 in)	-40° C (-40° F) to 177° C (350° F)	ø16.8-20.0mm (0.66-0.79 in) Side 26.2 mm (1.03 in) Top
045-966-206	Vee**	Serrated	89 mm (3.5 in)	50.8 mm x (2.0 in)	-130° C (-200° F) to 315° C (600° F)	ø6.4-10.2mm (0.25-0.4 in) Side, 13.5 mm (0.53 in) Top
045-966-207	Vee**	Serrated	89 mm (3.5 in)	50.8 mm x (2.0 in)	-130° C (-200° F) to 315° C (600° F)	ø10.7-16.8 mm (0.42-0.66 in) Side 19.9 mm (0.78 in) Top
045-966-203	Vee**	Serrated	89 mm (3.5 in)	50.8 mm x (2.0 in)	-130° C (-200° F) to 315° C (600° F)	ø16.8-20.0mm (0.66-0.79 in) Side 26.2 mm (1.03 in) Top

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

\*\* Water Cooled

Model 647.50 Grips

Part Number*	Profile	Surface	Height	Width	Temperature Range	Specimen Range
047-641-606	Flat	Diamond Tip	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	0-10.9 mm (0-0.43 in)
047-641-607	Flat	Diamond Tip	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	10.2-21.1 mm (0.40-0.83 in)
048-966-303	Flat	Diamond Tip	95.3 mm (3.75 in)	203.2 mm x (8.0 in)	-40° C (-40° F) to 177° C (350° F)	10.2-21.1 mm (0.40-0.83 in)
047-641-608	Flat	Diamond Tip	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	20.3-31.2 mm (0.80-1.23 in)
048-966-304	Flat	Diamond Tip	95.3 mm (3.75 in)	203.2 mm x (8.0 in)	-40° C (-40° F) to 177° C (350° F)	20.3-31.2 mm (0.80-1.23 in)
047-641-609	Flat	Diamond Tip	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	30.5-41.4 mm (1.20-1.63 in)
048-966-305	Flat	Diamond Tip	95.3 mm (3.75 in)	203.2 mm x (8.0 in)	-40° C (-40° F) to 177° C (350° F)	30.5-41.4 mm (1.20-1.63 in)
047-641-610	Flat	Diamond Tip	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	40.6-51.6 mm (1.60-2.03 in)
048-966-306	Flat	Diamond Tip	95.3 mm (3.75 in)	203.2 mm x (8.0 in)	-40° C (-40° F) to 177° C (350° F)	40.6-51.6 mm (1.60-2.03 in)
047-641-611	Flat	Surfallo	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	0-10.9 mm (0-0.43 in)
048-966-307	Flat	Surfallo	95.3 mm (3.75 in)	203.2 mm x (8.0 in)	-40° C (-40° F) to 177° C (350° F)	0-10.9 mm (0-0.43 in)
047-641-612	Flat	Surfallo	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	10.2-21.1 mm (0.40-0.83 in)
047-641-613	Flat	Surfallo	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	20.3-31.2 mm (0.80-1.23 in)
048-966-301	Flat	Surfallo	95.3 mm (3.75 in)	203.2 mm x (8.0 in)	-40° C (-40° F) to 177° C (350° F)	20.3-31.2 mm (0.80-1.23 in)
047-641-601	Vee	Serrated	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	ø6.4-12.7 mm (0.25-0.50in) Side 15.5 mm (0.61 in) Top
047-641-602	Vee	Serrated	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	ø15.2-18.3 mm (0.60-0.72 in) Side 24.4 mm (0.96 in) Top
047-641-603	Vee	Serrated	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	ø24.1-25.1 mm (0.95 - 0.99 in) Side 33.5 mm (1.32 in) Top
047-641-604	Vee	Serrated	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	ø33.0 mm (1.30 inch) Side 42.4 mm (1.67 in) Top
047-641-605	Vee	Serrated	95.3 mm (3.75 in)	101.6 mm x (4.0 in)	-40° C (-40° F) to 177° C (350° F)	ø41.9 mm (1.65 in) Side 51.3 mm (2.02 in) Top

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

Model 647.100 Grips

Part Number*	Profile	Surface	Height	Width	Temperature Range	Specimen Range
053-137-403	Flat	Diamond Tip	127 mm (5.0 in)	127 mm (5.0 in)	-18° C (0° F) to 65° C (150° F)	0.00-23 mm (0.00-0.89 in)
053-137-402	Flat	Diamond Tip	414 mm (16.2 in)	444 mm x (17.5 in)	-18° C (0° F) to 65° C (150° F)	23-45 mm (0.89-1.77 in)
053-137-401	Flat	Diamond Tip	414 mm (16.2 in)	444 mm x (17.5 in)	-18° C (0° F) to 65° C (150° F)	45-67 mm (1.77-2.64 in)
053-137-407	Vee	Serrated	127 mm (5.0 in)	127 mm (5.0 in)	-18° C (0° F) to 65° C (150° F)	ø6.0-9.9 mm (0.24-0.39 in) Side, 9.9 mm (0.39 in) Top
053-137-406	Vee	Serrated	414 mm (16.2 in)	444 mm x (17.5 in)	-18° C (0° F) to 65° C (150° F)	ø9.9-20.8 mm (0.39-0.82 in) Side, 25.1 mm (0.99 in) Top
053-137-405	Vee	Serrated	414 mm (16.2 in)	444 mm x (17.5 in)	-18° C (0° F) to 65° C (150° F)	ø25.1-29.8 mm (0.99-1.16 in) Side, 44.4 mm (1.74 in) Top
053-137-404	Vee	Serrated	414 mm (16.2 in)	444 mm x (17.5 in)	-18° C (0° F) to 65° C (150° F)	ø44.4-50.8 mm (1.75-2.0 in) Side, 63.5 mm (2.50 in) Top

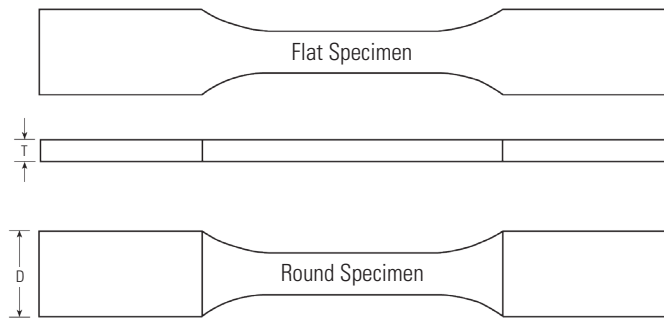
\* The wedge set assembly consists of a matched set of four wedges.

647.250 Wedge and Liner Sets

Part Number*	Profile	Surface	Height	Width	Specimen Range
057-367-101	Flat**	Diamond Tip	165 mm (6.50 in)	305 mm (12.00 in)	0-29.5 mm (0-1.16 in) 26.8-54 mm (1.06-2.16 in) 51.8-79 mm (2.04-3.11 in) 76.8-104 mm (3.02-4.09 in)
057-367-102	Vee**	Serrated	165 mm (6.50 in)	305 mm (12.00 in)	30-44.0/57.2 mm (1.18-1.73/2.25 in) 55.8-68.9/80.5 mm (2.20-2.71/3.17 in) 78.6-93.7/104 mm (3.10-3.69/4.09 in)
057-367-103	Flat & Vee	Diamond Tip & Serrated	165 mm (6.50 in)	305 mm (12.00 in)	Includes the flat and vee wedges described above and single set of liners

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

\*\* Specimen range accommodated using different liners with one wedge set.





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