

647 All-Temperature Hydraulic Wedge Grips



Benefits

Rapid Specimen Changeover

► Because these grips are opened and closed remotely, specimens can be changed quickly without cooling or touching the hot grip head.

Excellent Repeatability

► Bending strains on your specimen are minimized because these grips clamp onto your specimen in the same position each time.

Low Thermal Gradients

► When used with MTS environmental chambers, you can achieve thermal gradients as low as $\pm 3^{\circ}\text{F}$ (1.6°C). This gives you accurate results on temperature-sensitive materials and minimizes any risk from thermal stress on your sample.

Model 647 All-Temperature grips provide all the advantages of our popular 647 line in a design that can be operated within an environmental chamber at temperatures up to 1000°F (540°C). Two models are available. One has a range of from -200°F to $+600^{\circ}\text{F}$ (-130 to 315°C), the other from -200°F to $+1000^{\circ}\text{F}$ (-130 to 540°C).

Because these grips are opened and closed remotely, there is no need to cool them down before changing specimens. Thus, specimen changeover is rapid and can be accomplished without touching the hot gripping device.

In addition, because the grip head operates within the chamber—at test temperatures—thermal gradients between the grip and specimen are minimized. In fact, when these grips are used within an MTS environmental chamber, gradients as low as $\pm 3^{\circ}\text{F}$ (1.6°C) can be achieved.

As with all MTS hydraulic grips, these provide a constant, adjustable gripping force, regardless of the test loads applied. This prevents damage to soft specimens and specimen slippage during testing. When actuated, all moving parts of the grips are hydraulically locked in place so the specimen can be cycled from full tension to full compression without backlash.

Wedges for these grips are available in a number of configurations for testing both flat and round specimens. To minimize damage to your specimen shaft, you can order our flat wedges with an optional Surfalloy™ finish. This rough, tungsten-carbide surface coating provides firm gripping of even the most brittle composites without grip-induced failures.



Specifications

Model Number	Temp. Range	Force Rating		Weight		Stud Size
		Dynamic	Monotonic	Upper	Lower	
647.02A-31	-200 to 600°F	5.5 kip	7.0 kip	31 lb	36 lb	1/2-20
647.02A-32	-130 to 315°C	25 kN	31 kN	14 kg	17 kg	M12 x 1.25
647.02A-51	-200 to 1000°F	5.5 kip	7.0 kip	31 lb	36 lb	1/2-20
647.02A-52	-130 to 540°C	25 kN	31 kN	14 kg	17 kg	M12 x 1.25
647.10A-31	-200 to 600°F	22 kip	27 kip	125 lb	142 lb	1-14
647.10A-32	-130 to 315°C	100 kN	120 kN	57 kg	65 kg	M27 x 2
647.10A-51	-200 to 1000°F	22 kip	27 kip	125 lb	142 lb	1-14
647.10A-52	-130 to 540°C	100 kN	120 kN	57 kg	65 kg	M27 x 2
647.25A-31	-200 to 600°F	55 kip	75 kip	269 lb	289 lb	1-1/2-12
647.25A-32	-130 to 315°C	250 kN	333 kN	122 kg	131 kg	M36 x 2
647.25A-51	-200 to 1000°F	55 kip	75 kip	269 lb	289 lb	1-1/2-12
647.25A-52	-130 to 540°C	250 kN	333 kN	122 kg	131 kg	M36 x 2

Dimensions

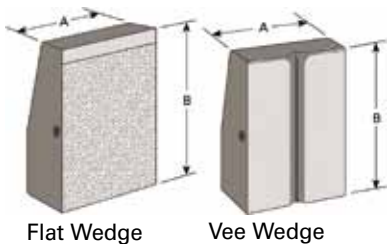
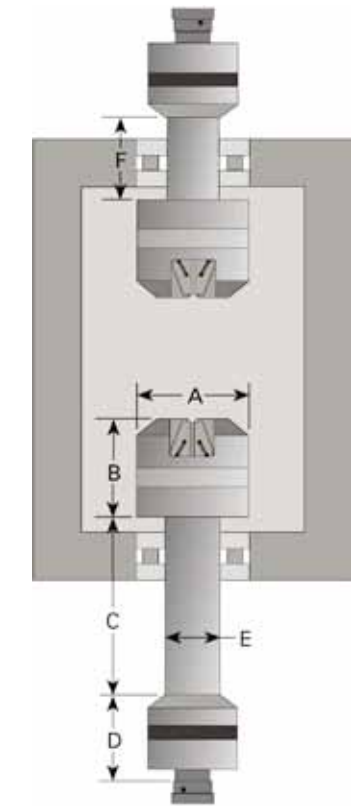
Model Number	Dimensions: in (mm)					
	A	B	C*	D	E	F*
647.02	4.5 in (114)	4.4 (112)	10.5 (267)	3.8 to 4.4 (94 to 112)	2.6 (66)	5.9 (150)
647.10	8.0 (203)	6.3 (160)	11.7 (297)	4.6 to 5.2 (125 to 132)	3.9 (99)	6.1 (155)
647.25	10.5 (267)	8.9 (226)	11.2 (285)	5.6 to 6.6 (142 to 168)	4.8 (122)	6.5 (168)

*Note: Other grip extension lengths are available. Contact MTS for more information.

Wedge Selection

Grip Model	Wedge Shape	Specimen Thickness or Diameter (Vee)*		Wedge Dimensions	
		Inches	Millimeters	A	B
647.02	Flat	0 to 0.28	0 to 7.1	1.0 in (25 mm)	1.0 in (25 mm)
647.02	Flat	0.16 to 0.43	4.1 to 10.9	1.0 in (25 mm)	1.0 in (25 mm)
647.02	Vee	0.25 to 0.37/0.47	6.4 to 9.4/12.0	1.0 in (25 mm)	1.0 in (25 mm)
647.02	Vee	0.40 to 0.53/0.63	10.2 to 13.5/16.0	1.0 in (25 mm)	1.0 in (25 mm)
647.10	Flat	0 to 0.30	0 to 7.6	1.75 in (45 mm)	2.5 in (64 mm)
647.10	Flat	0.28 to 0.56	7.1 to 14.2	1.75 in (45 mm)	2.5 in (64 mm)
647.10	Vee	0.23 to 0.40/0.47	5.84 to 10.2/11.9	1.75 in (45 mm)	2.5 in (64 mm)
647.10	Vee	0.43 to 0.50/0.65	10.9 to 12.7/16.5	1.75 in (45 mm)	2.5 in (64 mm)
647.10	Flat	0.46 to 0.75	11.7 to 19.0	1.75 in (45 mm)	2.5 in (64 mm)
647.25	Flat	0.04 to 0.47	1.0 to 11.9	2.0 in (50 mm)	3.5 in (89 mm)
647.25	Flat	0.24 to 0.67	6.1 to 17.0	2.0 in (50 mm)	3.5 in (89 mm)
647.25	Flat	0.59 to 1.02	15.0 to 25.9	2.0 in (50 mm)	3.5 in (89 mm)
647.25	Vee	0.42 to 0.66/0.78	10.7 to 20.1/19.8	2.0 in (50 mm)	3.5 in (89 mm)
647.25	Vee	0.66 to 0.79/1.03	16.8 to 20.1/26.1	2.0 in (50 mm)	3.5 in (89 mm)
647.25	Vee	0.25 to 0.40/0.53	6.4 to 10.2/13.4	2.0 in (50 mm)	3.5 in (89 mm)

* Maximum specimen diameter for vee wedges is based on loading specimen from top, not side.



Options

Attachment Kits

- Two studs and two sets of spiral washers.

SurfAlloy™ Wedges

- Provides firm gripping with minimal damage to specimen shank.

Extra-Wide Wedges

- For uniform, full-width gripping of wide specimens.

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