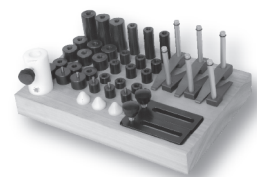




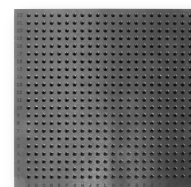
CMM INSPECTION FIXTURING

Manual Clamps	9
TriMax Vises	81
Pneumatic Workholding	121
Supports, Stops & Set Up Accessories	137
Precision Tooling Plates, Blocks & Locators	189
Workholding & Positioning Grippers	231
CMM Inspection Fixturing	305
Quick Release Ball Lock Pins & Fasteners	315
Spring & Ball Plungers	377
Indexing Plungers	393
Adjustable Levers & Handles	407
Knobs	445
Pull Handles	473
Hand Wheels & Crank Handles	483
Machine Accessories	509
Rollers	517
Bumpers	547

SETS



PLATES



COLUMNS



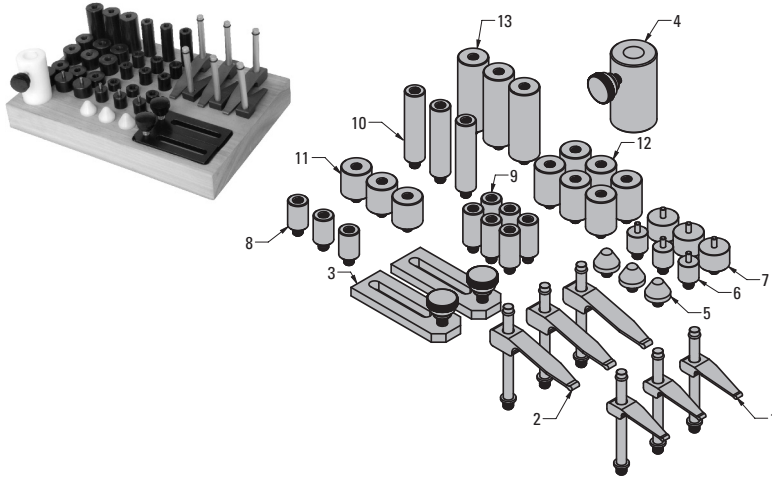
ACCESSORIES



MAGNETS



CLAMP SET - BASIC



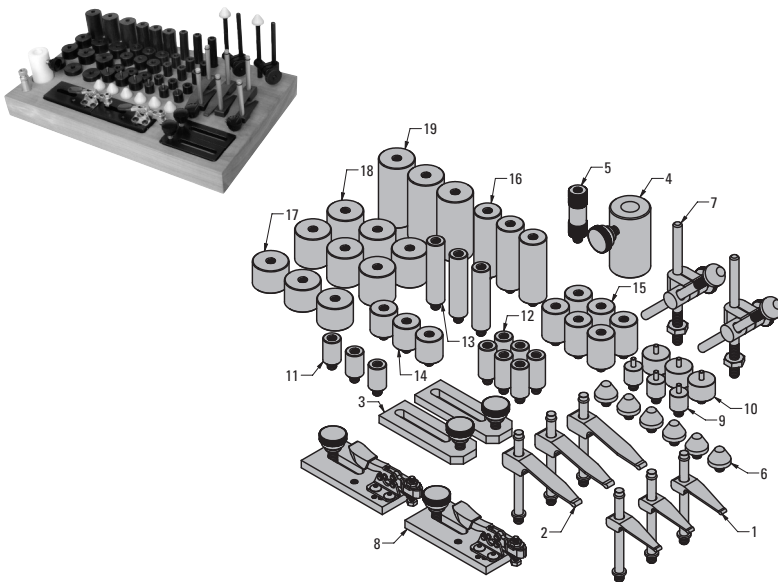
Set Components

Item	Part #	Description	Qty
1	F018-0124	Spring Clamp - 1.5" Length	3
2	F018-0137	Spring Clamp - 2.3" Length	3
3	F010-0103	Adjustable Positioner Plate - 3" Length	2
4	F019-0201	Delrin® Height Adjuster	1
5	F021-0114	Support Tip - Delrin® Cone	3
6	F017-0108	Pin Rest - 1/2" Diameter x 1/2" Height	3
7	F017-0112	Pin Rest - 3/4" Diameter x 1/2" Height	3
8	F019-0412	Standoff - Steel - 1/2" Diameter x 3/4" Height	3
9	F019-0416	Standoff - Steel - 1/2" Diameter x 1" Height	6
10	F019-0432	Standoff - Steel - 1/2" Diameter x 2" Height	3
11	F019-0512	Standoff - Steel - 3/4" Diameter x 3/4" Height	3
12	F019-0516	Standoff - Steel - 3/4" Diameter x 1" Height	6
13	F019-0532	Standoff - Steel - 3/4" Diameter x 2" Height	3
—	F013-0901	Clamp Set Component Holder (not shown)	1

Basic CMM clamp set with 1/4-20 thread size components. The kit is recommended for use with plastic, aluminum and steel parts. Includes a wooden holder to keep the set components together.

Part #	Thread
F013-0101	1/4-20

CLAMP SET - BASIC PLUS



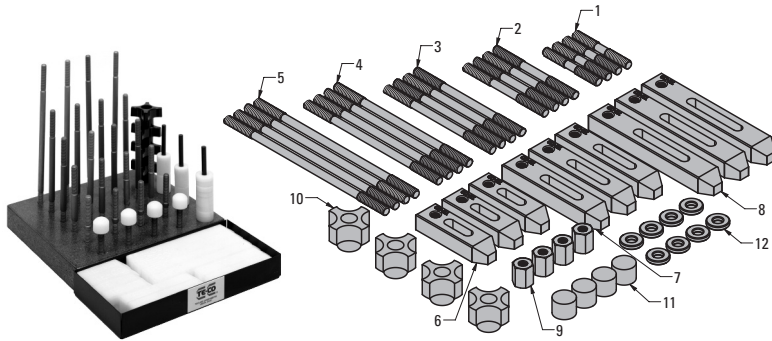
Set Components

Item	Part #	Description	Qty
1	F018-0124	Spring Clamp - 1.5" Length	3
2	F018-0137	Spring Clamp - 2.3" Length	3
3	F010-0103	Adjustable Positioner Plate - 3" Length	2
4	F019-0201	Delrin Height Adjuster (use with 1/2" Diameter Standoff)	1
5	F019-0301	Screw Jack Assembly - 1/2" Diameter x 1-3/4" Height	1
6	F021-0114	Support Tip - Delrin® Cone	6
7	F010-0204	Mini Articulating Arm - 4" Rod	2
8	F020-0100	Toggle Clamp - Small - with Pad	2
9	F017-0108	Pin Rest - 1/2" Diameter x 1/2" Height	3
10	F017-0112	Pin Rest - 3/4" Diameter x 1/2" Height	3
11	F019-0412	Standoff - Steel - 1/2" Diameter x 3/4" Height	3
12	F019-0416	Standoff - Steel - 1/2" Diameter x 1" Height	6
13	F019-0432	Standoff - Steel - 1/2" Diameter x 2" Height	3
14	F019-0512	Standoff - Steel - 3/4" Diameter x 3/4" Height	3
15	F019-0516	Standoff - Steel - 3/4" Diameter x 1" Height	6
16	F019-0532	Standoff - Steel - 3/4" Diameter x 2" Height	3
17	F019-0612	Standoff - Steel - 1" Diameter x 3/4" Height	3
18	F019-0616	Standoff - Steel - 1" Diameter x 1" Height	6
19	F019-0632	Standoff - Steel - 1" Diameter x 2" Height	3
—	F013-0902	Clamp Set Component Holder (not shown)	1

Basic Plus clamp set with 1/4-20 thread size components. The kit is recommended for use with plastic, aluminum and steel parts. Includes a wooden holder to keep the set components together.

Part #	Thread
F013-0102	1/4-20

CLAMP SET - PLASTIC



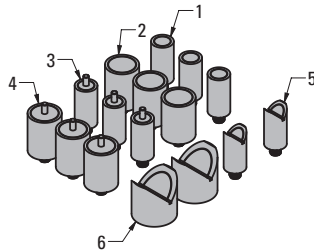
Set Components

Item	Description	Qty
1	Steel Stud - 2"	4
2	Steel Stud - 3"	4
3	Steel Stud - 4"	4
4	Steel Stud - 5"	4
5	Steel Stud - 6"	4
6	Plastic Clamp - 2.5"	4
7	Plastic Clamp - 3.5"	4
8	Plastic Clamp - 4.5"	4
9	Coupling Nuts	4
10	Plastic Hand Knobs	4
11	Plastic Rest Feet	4
12	Washers	8
-	Wooden Holder	1

The plastic clamping set is intended for CMM inspection and gaging applications. Plastic helps to prevent damage to delicate or painted workpieces. The hand-tightened clamps allow the user to apply force while minimizing the distortion of a pliable work piece. The clamps and rest feet are made from non-marring Delrin®. The studs, coupling nuts and washers are made from steel with a black oxide finish. Not for use in machining applications. Includes a metal holder to keep the set components together.

Part # **Thread**
F013-0201 1/4-20

MAGNET SET



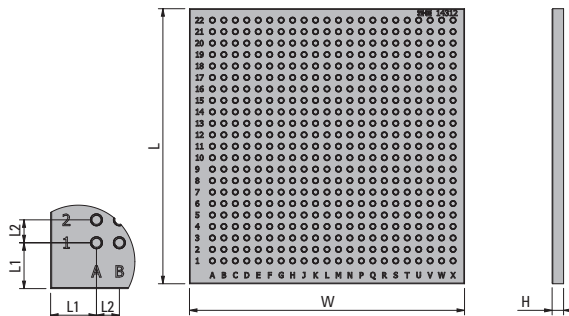
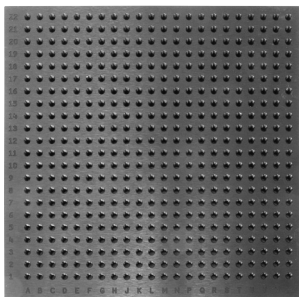
Set Components

Item	Part #	Description	Qty
1	F014-0108	Magnetic Rest Pad - 1/2" Diameter x 1" Height	3
2	F014-0112	Magnetic Rest Pad - 3/4" Diameter x 1" Height	3
3	F014-0208	Magnetic Pin Rest - 1/2" Diameter x 1" Height	3
4	F014-0212	Magnetic Pin Rest - 3/4" Diameter x 1" Height	3
5	F014-0308	Magnetic V-Support - 1/2" Diameter x 1" Height	2
6	F014-0316	Magnetic V-Support - 1" Diameter x 1" Height	2
-	F013-0903	Component Holder	1

Magnetic fixturing set with 1/4-20 thread size components. The kit is recommended for use with iron and steel parts. Includes a wooden holder to keep the set components together.

Part # **Thread**
F013-0103 1/4-20

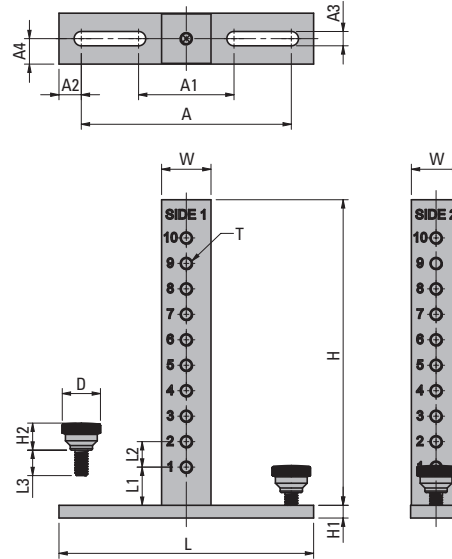
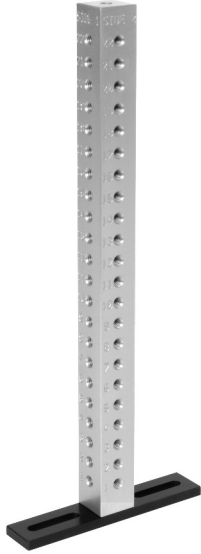
CMM GRID PLATE - ALUMINUM



Typically used in CMM fixturing applications, these fixture grid plates are mounted to the frame or table on a coordinate measuring machine using step blocks and toe clamps, or by drilling mounting holes in the fixture plate that correspond to the inserts in the surface plate. Grid plate holes are equally spaced, and each hole is numbered and lettered for easy addressing. The plates are made from cast aluminum and have a black anodized finish.

Part #	T	L	Center-Center		W	H
			L1	L2		
F015-0112	1/4-20	12	1.00	1/2	12	1/2
F015-0118	1/4-20	18	1.00	1/2	18	1/2
F015-0224	1/4-20	24	1.00	1/2	24	3/4
F015-0228	1/4-20	28	1.00	1/2	40	3/4
F015-0230	1/4-20	30	1.00	1/2	30	3/4

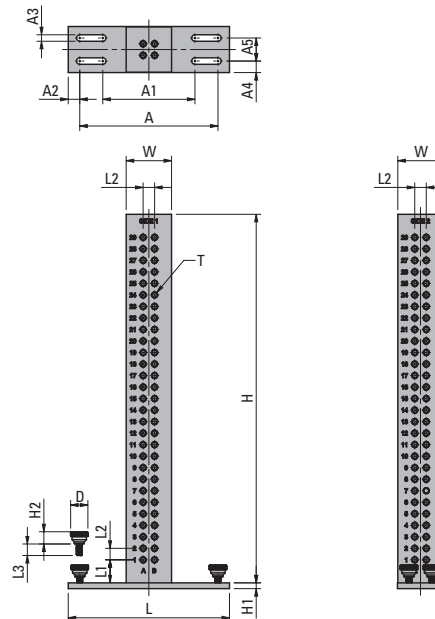
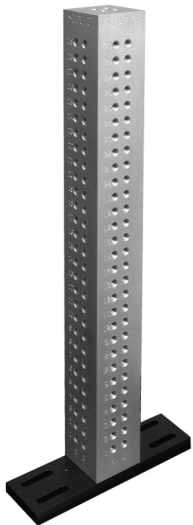
FIXTURE COLUMN - SINGLE ROW - ALUMINUM



Aluminum fixture columns are typically used in vertical CMM fixturing applications where large or long parts need to be oriented in an upright position. Column holes are equally spaced, and each hole is numbered and lettered for easy addressing. Knurled knob studs are used to fasten the base to a fixture plate. The column is made from 6061 aluminum with a clear anodized finish. The base is made from steel with a black oxide finish.

Part #	T	D	L	L1	Center-Center			W	H	H1	H2	A	A1	A2	Bolt Size	
					L2	L3	A3								A4	
F016-0106	1/4-20	1/2	5.00	3/4	1/2	1/2	1	6	1/4	.59	4-1/8	1-7/8	7/16	1/4-20 or M6	1/2	
F016-0112	1/4-20	1/2	5.00	3/4	1/2	1/2	1	12	1/4	.59	4-1/8	1-7/8	7/16	1/4-20 or M6	1/2	

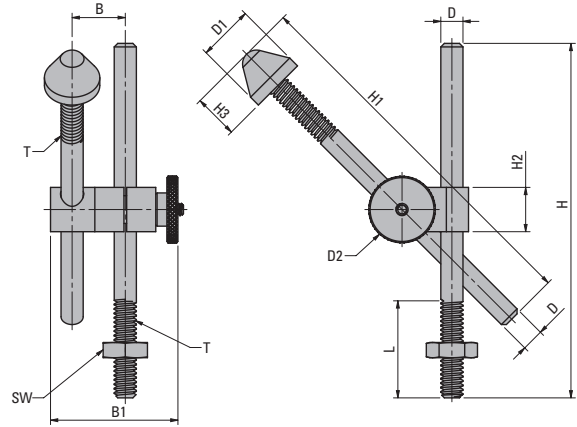
FIXTURE COLUMN - DOUBLE ROW - ALUMINUM



Aluminum fixture columns are typically used in vertical CMM fixturing applications where large or long parts need to be oriented in an upright position. Column holes are equally spaced, and each hole is numbered and lettered for easy addressing. Knurled knob studs are used to fasten the base to a fixture plate. The column is made from 6061 aluminum with a clear anodized finish. The base is made from steel with a black oxide finish.

Part #	T	D	L	L1	Center-Center			W	H	H1	H2	A	A1	A2	Bolt Size		
					L2	L3	A3								A4	A5	
F016-0216	1/4-20	3/4	7.00	1	1/2	1/2	2	16	1/4	.59	6.00	4.00	1/2	1/4-20 or M6	1/2	1.00	
F016-0220	1/4-20	3/4	7.00	1	1/2	1/2	2	20	1/4	.59	6.00	4.00	1/2	1/4-20 or M6	1/2	1.00	
F016-0230	1/4-20	3/4	7.00	1	1/2	1/2	2	30	1/4	.59	6.00	4.00	1/2	1/4-20 or M6	1/2	1.00	

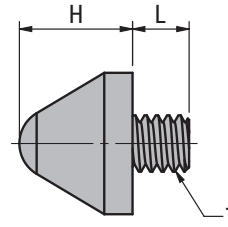
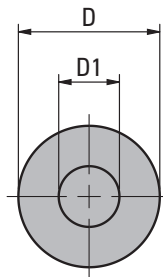
MINI ARTICULATING ARM



The mini articulating arm provides for a wide range of mounting positions. It rotates 360 degrees, pivots up and down, and extends and retracts to accommodate the workpiece. Made from steel with black oxide finish. Tip made from non-marring Delrin®.

Part#	T	D	D1	D2	L	B	B1	H	H1	H2	H3	SW
F010-0204	1/4-20	1/4	5/8	3/4	1	5/8	1-7/16	4	4-1/4	1/2	1/2	1/2

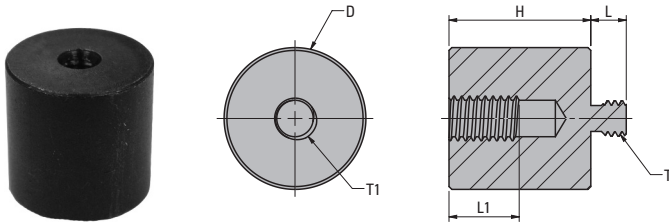
SUPPORT TIPS - DELRIN® CONE



Cone-shaped support tips provide support to cylindrical or curved work pieces during inspection. The non-marring Delrin® material is ideal for use with finished parts.

Part#	T	D	D1	L	H	+/- .005
F021-0114	1/4-20	5/8	.27	1/4	.500	

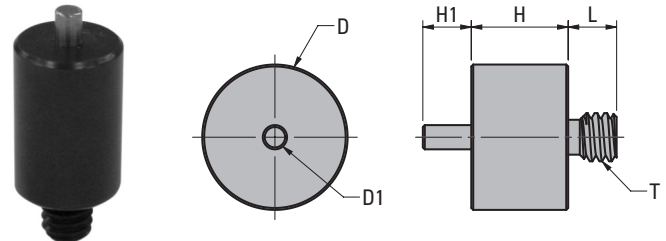
STANDOFF ADAPTERS - STEEL



Adapts threads between 1/4-20 and 5/16-18. Made from mild carbon steel with a black oxide finish.

Part#	T	T1	D	L	L1	H
F019-0145	1/4-20	5/16-18	1	1/4	.50	1.00
F019-0154	5/16-18	1/4-20	1	1/4	.50	1.00

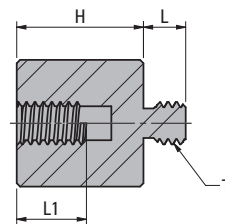
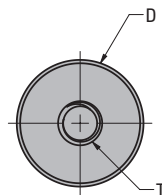
PIN RESTS - STEEL



The pin rest serves as a resting point and side stop for locating and elevating parts during inspection. Made from mild carbon steel with a black oxide finish.

Part#	T	D	D1	L	H	H1	+/- .005
F017-0108	1/4-20	1/2	.125	1/4	.500	1/4	
F017-0112	1/4-20	3/4	.125	1/4	.500	1/4	

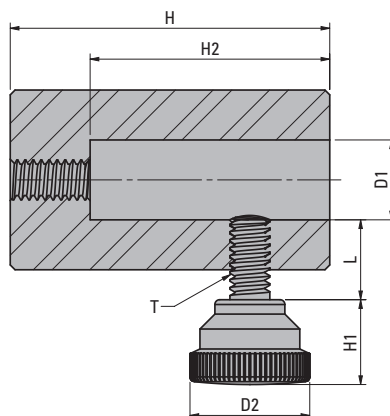
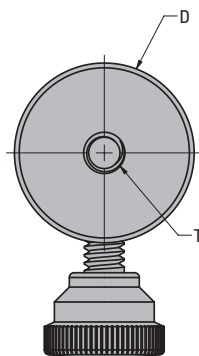
STANDOFFS - STEEL



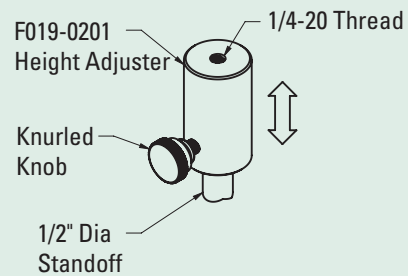
The standoff functions as a resting point to elevate workpieces during inspection. It is made from mild carbon steel with a black oxide finish.

Part #	T	D	L	L1	+/- .005 H
F019-0408	1/4-20	1/2	1/4	1/4	.500
F019-0412	1/4-20	1/2	1/4	3/8	.750
F019-0416	1/4-20	1/2	1/4	5/8	1.000
F019-0432	1/4-20	1/2	1/4	3/4	2.000
F019-0448	1/4-20	1/2	1/4	3/4	3.000
F019-0508	1/4-20	3/4	1/4	1/4	.500
F019-0512	1/4-20	3/4	1/4	3/8	.750
F019-0516	1/4-20	3/4	1/4	5/8	1.000
F019-0532	1/4-20	3/4	1/4	3/4	2.000
F019-0548	1/4-20	3/4	1/4	3/4	3.000
F019-0608	1/4-20	1	1/4	1/4	.500
F019-0612	1/4-20	1	1/4	3/8	.750
F019-0616	1/4-20	1	1/4	5/8	1.000
F019-0632	1/4-20	1	1/4	3/4	2.000
F019-0648	1/4-20	1	1/4	3/4	3.000

HEIGHT ADJUSTER - DELRIN®



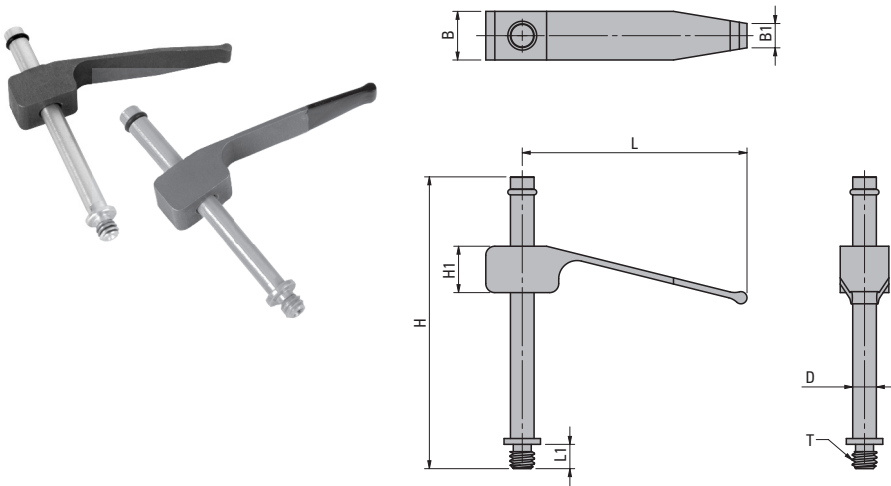
How To Use



The Delrin® height adjuster fits over a 1/2" standoff and allows for fine adjustment. Locks into place by tightening the knurled knob.

Part #	T	D	D1	D2	L	H	H1	H2
F019-0201	1/4-20	1-1/8	1/2	3/4	1/2	2	.59	1.50

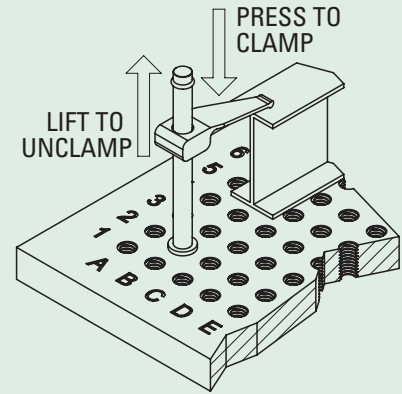
SPRING CLAMPS - ONE PIECE - ALUMINUM



How To Use

Actuate the clamp by pressing down on the clamping arm until it flexes back against the clamp rod.

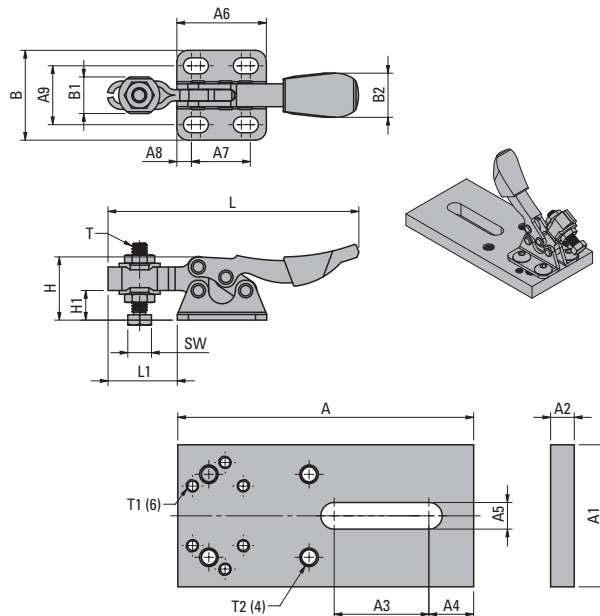
Release the clamp by pulling up on the back of the clamp arm and slide the clamp up the rod.



Spring clamps provide light-pressure clamping with limited deflection. They are actuated and released with the press of a finger. The rubber-tipped styles offer added protection against workpiece marring. The post has a 1/4-20 thread is made from 6061 aluminum with a clear anodized finish. Spring clamps are made from 7075 aluminum with a blue anodized finish.

Part #	T	D	L	L1	B	B1	H	H1	Tip Coating
F018-0124	1/4-20	.243	1.55	1/4	1/2	3/16	3.00	.312	none
F018-0137	1/4-20	.243	2.31	1/4	1/2	1/4	3.00	.477	none
F018-0224	1/4-20	.243	1.55	1/4	1/2	3/16	3.00	.312	rubber
F018-0237	1/4-20	.243	2.31	1/4	1/2	1/4	3.00	.477	rubber

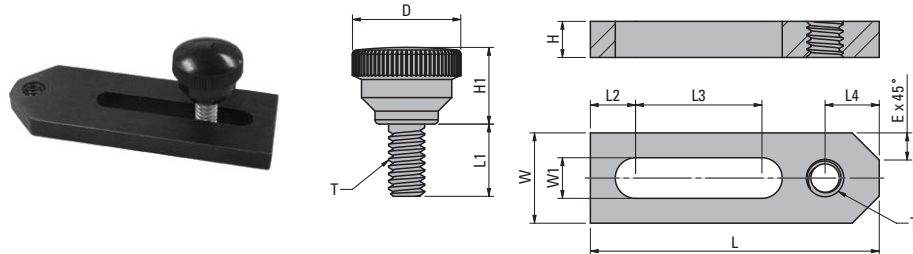
TOGGLE CLAMP - SMALL



The small toggle clamp holds parts during inspection. The clamp includes an adjustable base for exact positioning and alignment. The plate is secured in place using a knurled knob with a 1/4-20 threaded stud. Clamp is made from steel. Plate is made from mild carbon steel with a black oxide finish.

Part #	T	T1	T2	L	L1	B	B1	B2	H	H1	SW	A	A1	A2	A3	A4	Bolt Size		A6	A7	A8	A9
F020-0100	8-32	6-32	10-32	3	3/4	1	1/2	5/8	1.00	3/8	1/4	3-1/8	1-1/2	1/4	1	7/16	1/4-20 or M6	1	5/8	5/32	5/8	

ADJUSTABLE POSITIONER PLATES

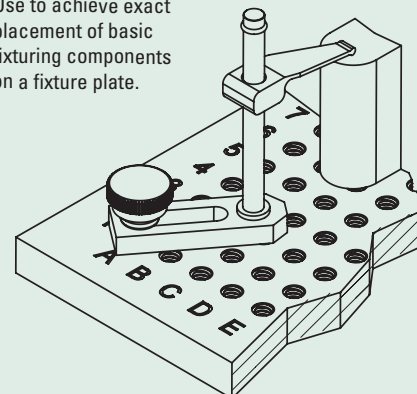


Adjustable positioner plates allow for exact placement of fixturing supports and positioning elements on a fixture plate when the holes in the standard grid patterns do not provide ideal placement. Positioner plates include a knurled knob with a 1/4-20 threaded stud to lock it in place. Made from mild carbon steel with a black oxide finish.

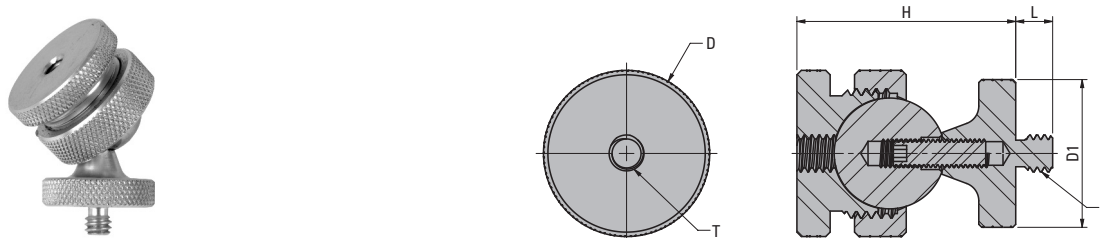
Part #	T	D	L	L1	L2	L3	L4	W	W1	H	H1	Ex 45°
F010-0102	1/4-20	3/4	2	1/2	.313	.875	.38	.625	.281	.25	.59	3/16
F010-0103	1/4-20	3/4	3	1/2	.313	1.75	.38	1.00	.281	.25	.59	1/4

How To Use

Use to achieve exact placement of basic fixturing components on a fixture plate.



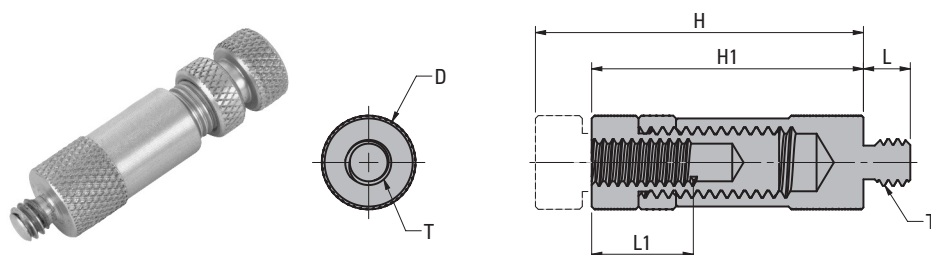
VARIABLE ANGLE BALL POSITIONER



The positioner pivots to approximately 45 degrees for a wide range of angled positioning. Tighten the collar to lock the positioner in place. Receives fixturing components with a 1/4-20 threaded stud. The positioner is made from 6160 aluminum with a clear anodized finish. The ball is made from ball bearing steel.

Part #	T	D	D1	L	H
F010-0314	1/4-20	1-1/8	1"	1/4	1-1/2

SCREW JACK ASSEMBLY - ALUMINUM

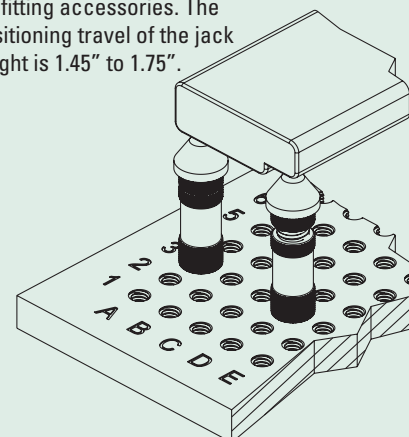


The screw jack assembly allows for fine height adjustment. The positioning travel of the jack is 1.45" – 1.75". The jack is made from aluminum with a clear anodized finish.

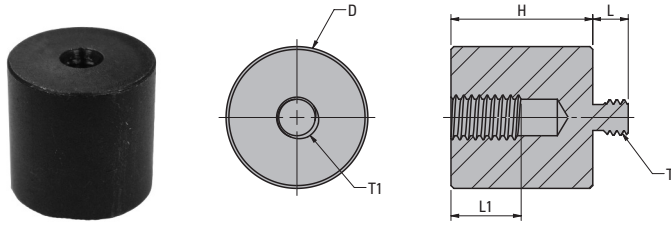
Part #	T	D	L	L1	H	H1
F019-0301	1/4-20	1/2	1/4	1/2	1.75	1.45

How To Use

The top of the jack is tapped for fitting accessories. The positioning travel of the jack height is 1.45" to 1.75".



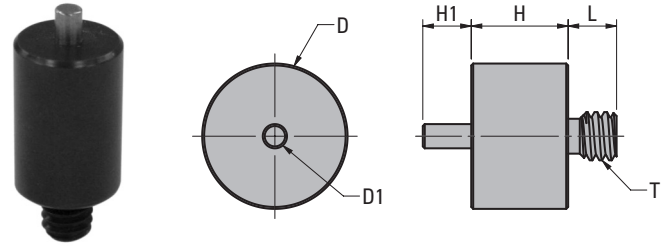
STANDOFF ADAPTERS - STEEL



Adapts threads between 1/4-20 and 5/16-18. Made from mild carbon steel with a black oxide finish.

Part #	T	T1	D	L	L1	H
F019-0145	1/4-20	5/16-18	1	1/4	.50	1.00
F019-0154	5/16-18	1/4-20	1	1/4	.50	1.00

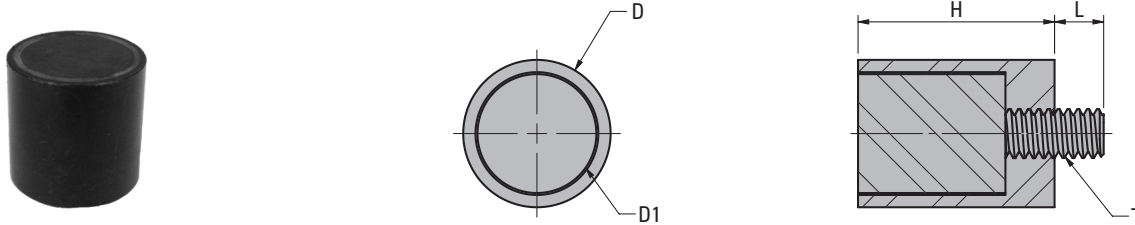
PIN RESTS - STEEL



The pin rest serves as a resting point and side stop for locating and elevating parts during inspection. Made from mild carbon steel with a black oxide finish.

Part #	T	D	D1	L	+/- .005 H	H1
F017-0108	1/4-20	1/2	.125	1/4	.500	1/4
F017-0112	1/4-20	3/4	.125	1/4	.500	1/4

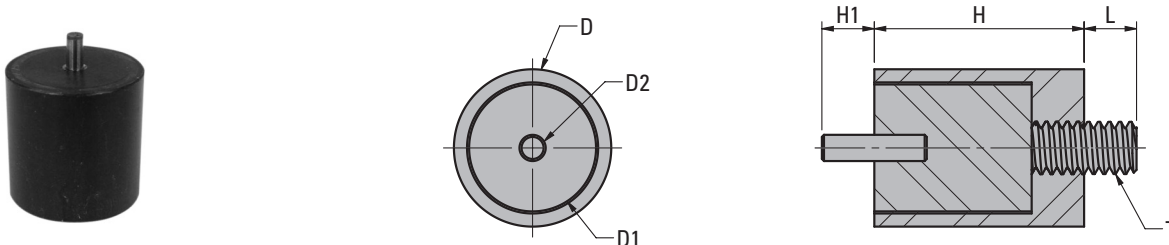
MAGNETIC REST PAD



Magnetic rest pads are used to position and hold steel or iron parts for inspection. The alnico magnet is pressed into body with brass sleeve. Body made from mild carbon steel with black oxide finish.

Part #	T	D	D1	L	+/- .005 H
F014-0104	1/4-20	1/4	.168	1/4	1.00
F014-0108	1/4-20	1/2	.355	1/4	1.00
F014-0112	1/4-20	3/4	.605	1/4	1.00
F014-0116	1/4-20	1	.730	1/4	1.00

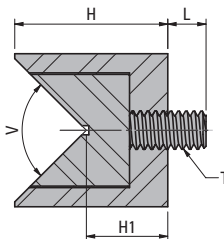
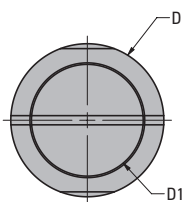
MAGNETIC PIN RESTS



The magnetic pin rest is used to position and hold steel or iron parts for inspection. Made from mild carbon steel with black oxide finish.

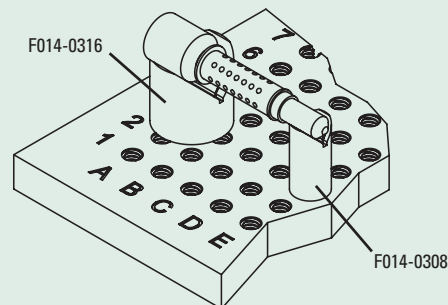
Part #	T	D	D1	D2	L	+/- .005 H	H1
F014-0208	1/4-20	1/2	.355	.125	1/4	1.00	1/4
F014-0212	1/4-20	3/4	.605	.125	1/4	1.00	1/4
F014-0216	1/4-20	1	.730	.125	1/4	1.00	1/4

MAGNETIC V-SUPPORTS



How To Use

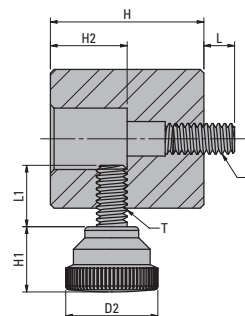
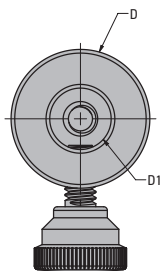
Holds and supports cylindrical steel or iron parts.



The magnetic V-support is used to hold and support cylindrical steel or iron parts for inspection. Delrin® alignment holders are available separately. Made from mild carbon steel with black oxide finish.

Part #	T	D	D1	L	H	H1	V	Holding Capacity Diameter	Use Holder
F014-0308	1/4-20	1/2	.355	1/4	1	.235	90°	.125 - .625	F014-0508
F014-0316	1/4-20	1"	.730	1/4	1	.465	90°	.125 - 1.25	F014-0516

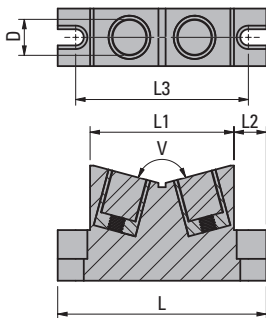
HOLDERS FOR MAGNETIC V-SUPPORTS - DELRIN®



The Delrin® holder is used to align and lock a magnetic V-support. V-supports cradle cylindrical parts during inspection.

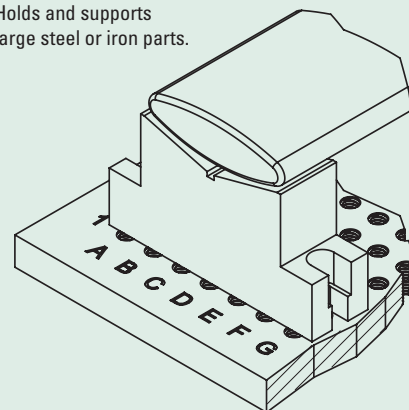
Part #	T	D	D1	D2	L	L1	H	H1	H2	Use With Part #
F014-0508	1/4-20	1.13	.50	3/4	1/4	1/2	1.25	.59	.63	F014-0308
F014-0516	1/4-20	1.63	1.00	3/4	1/4	1/2	1.25	.59	.50	F014-0316

MAGNETIC V-SUPPORT BLOCK



How To Use

Holds and supports large steel or iron parts.



The magnetic V-support block is used to hold and support large cylindrical steel or iron parts. The block is mounted to the fixture plate using two cap screws (included) with 1/4-20 threads. The body is made from aluminum with a blue anodized finish.

Part #	D	D1	L	L1	L2	L3	W	H	H1	H2	H3	Holding Capacity Diameter
F014-0440	.605	1/4-20 or M6	3.63	2.5	.56	3.00	1	2	1.70	.69	3/8	2.00-6.25