

REPLACEABLE PAD OVERVIEW

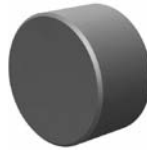
Rest Pads & Gripper Pads



Solid Carbide
High impact carbide pads. Can be brazed or bonded into place.



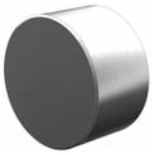
Carbide Tipped
Constructed with a high impact carbide pad brazed to a heat treated alloy steel body. Mounts with tapped hole or a flat on the outside diameter for set screw mounting.



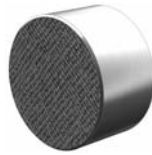
Hardened Steel
Made from 8620 steel, carburized and hardened to Rc 58/60 .050" case with black oxide finish. Mounts with tapped hole or counter bored hole.



Non-Marring Delrin
Manufactured from white Delrin. Mounts with counter bored or tapped hole.



Stainless Steel
The pad is made from 17-4 stainless steel, hardened to Rc 43/46. Mounts with tapped or counter bored hole.



Abrasive Diamond Surface
The abrasive surface is permanently fused to a 17-4 stainless steel pad, hardened to Rc 43/46. The surface texture is comparable to a 100 grit abrasive. Mounts with tapped or counter bored hole.

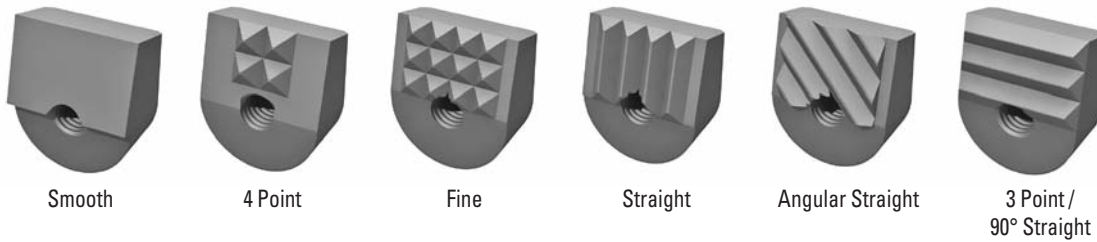


Sof-Top™ Urethane Surface
The urethane surface is permanently bonded to a 300 series stainless steel pad. The urethane provides excellent protection against damage on delicate work surfaces. They are available in three durometers. Tapped hole mounting.

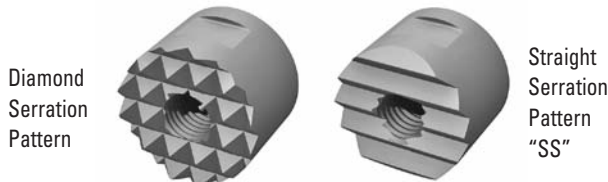
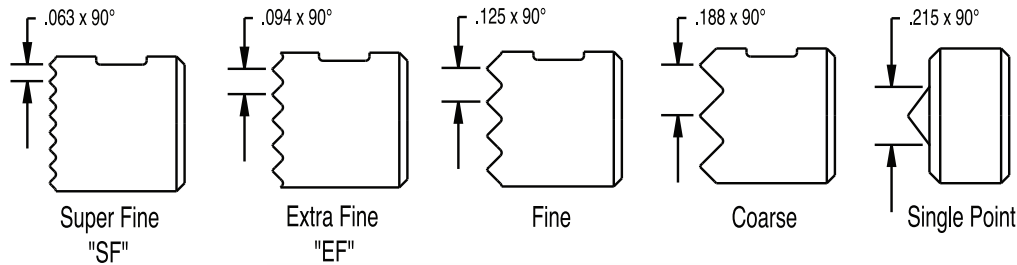
TOOTH PATTERN SPECIFICATIONS

Throughout this catalog, you will find reference to tooth patterns on all serrated grippers. Please use the chart below for specific information regarding these tooth patterns. If additional information is required, please contact us.

Angle Grippers

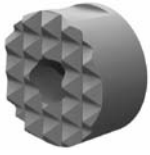


Round and Square Grippers



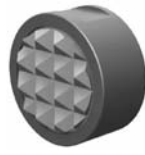
REPLACEABLE PAD OVERVIEW

Serrated Gripper Pads



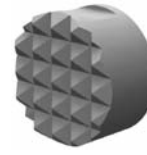
High Speed Tool Steel

Round, square, edge, and angle grippers manufactured from M-2 high speed tool steel, hardened to Rc 60/62 with black oxide finish. Mounts with tapped hole, counter bored hole or a flat on the outside diameter for set screw mounting.



Carbide Tipped

Round, square, and angle grippers constructed with a high impact carbide pad brazed to a heat treated alloy steel body. Mounts with tapped hole or a flat on the outside diameter for set screw mounting.



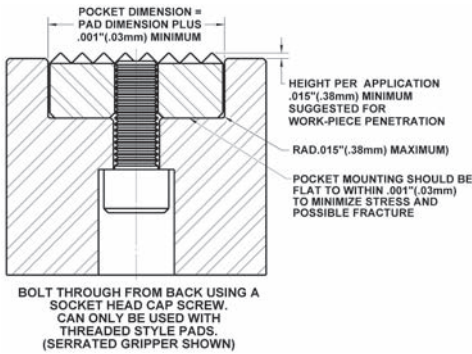
Solid Carbide

Round and square grippers manufactured from high impact carbide in a solid gripper pad or as a solid gripper body with a threaded brazed-in steel insert. Mounts with tapped hole or a flat on the outside diameter for set screw mounting.

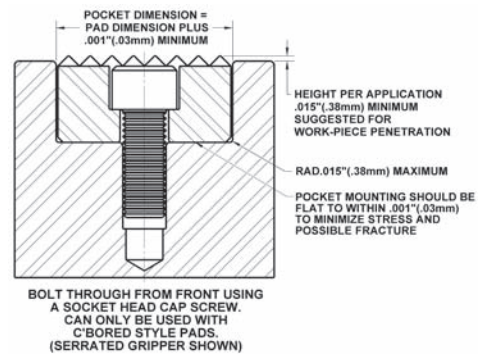
GRIPPER PAD AND REST PAD MOUNTING APPLICATIONS AND SPECIFICATIONS

Below are some of the more common mounting applications for fixed grippers, rest pads and carbide pads shown in this catalog.

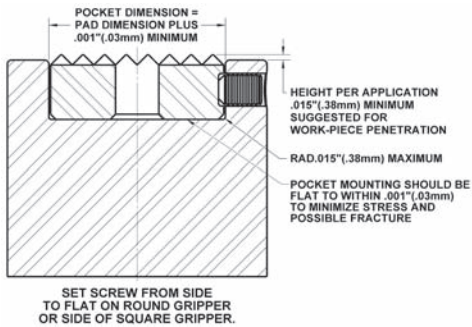
Round or square grippers and rest pads with tapped blind-hole or through hole tap.



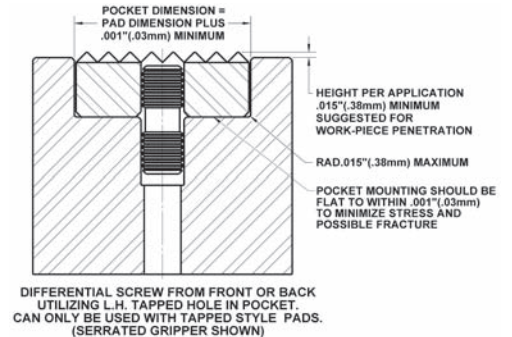
Round or square grippers and rest pads with counter-bored hole.



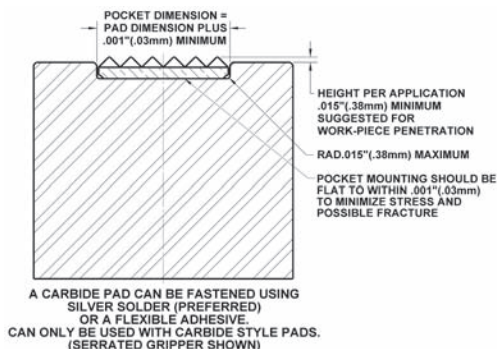
Round grippers with flat on the O.D. for set screw mounting, or square gripper.



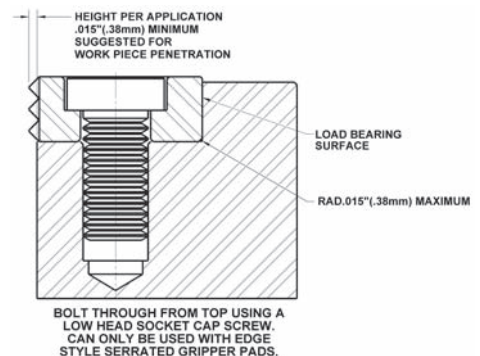
Round or square grippers with through tapped hole.



Round or square carbide pads.



Counter-bored edge grippers.



THREADED ADJUSTABLE GRIPPER OVERVIEW



Carbide Tipped

Round and Hex head styles constructed with a steel body. Carbide tipped for positive holding and wear resistance.



High Speed Steel

Manufactured from M-2 high speed tool steel, hardened to Rc 55/58. Internal hex on backside allows for positioning adjustment.



AdjustaGrip™

The gripper pad can be replaced when it becomes worn. Uses tapped through hole grippers.



AccuGrip™

Designed to fit within chuck jaws to adjust concentricity. Carbide tipped for wear resistance.

SWIVOTS® & THRUST SCREW OVERVIEW

Swivots® & Thrust Screw Replaceable Balls



Sof-Top™ Urethane Surface Cone

The urethane surface is permanently bonded to a stainless steel ball. Provides excellent protection and non-slip grip on finished and other delicate surfaces. Available in 3 durometers.



Non-Marring Delrin Cone

Made from white Delrin plastic. Non-marring and non-staining for finished and other delicate surfaces.



Stainless Steel Cone

Made from stainless steel. Provides excellent corrosion resistance in harsh environments.



Abrasive Diamond Surface

The diamond surface is permanently bonded to stainless steel ball. The surface texture is comparable to a 100 grit abrasive. Provides excellent grip on a variety of surfaces with minimal penetration.



High Speed Steel -Serrated

Made from hardened M-2 high speed tool steel. Available in 3 different serration patterns.



Non-Marring Delrin

Made from white Delrin plastic. Non-marring and non-staining for finished and other delicate surfaces. Available with different stand off heights.



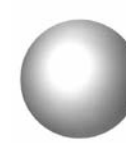
Flat Tool Steel

Made from hardened M-2 high speed tool steel. Heat treated to Rc 60/62. Available with different stand off heights.



Round Delrin Ball

Made from white Delrin plastic. Non-marring and non-staining.

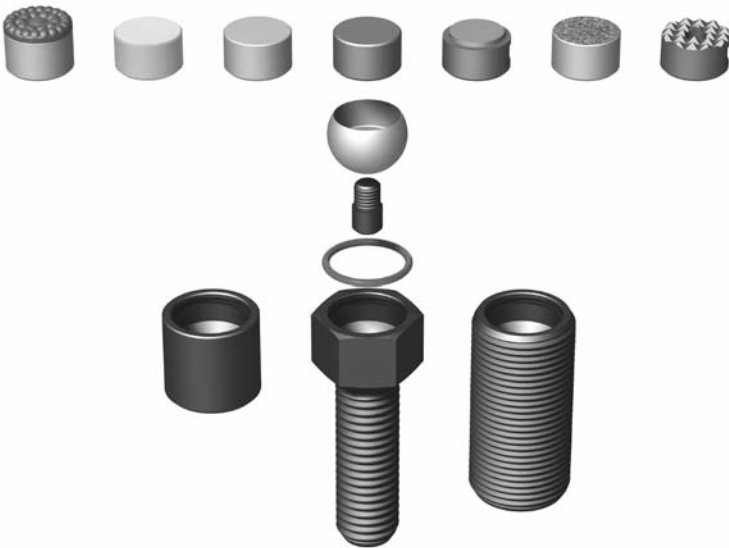


Round Stainless Steel Ball

Made from 440c stainless steel. Heat treated to Rc 58/62.

SWIVOTS® & THRUST SCREW OVERVIEW

Replaceable Pad Style Swivots®



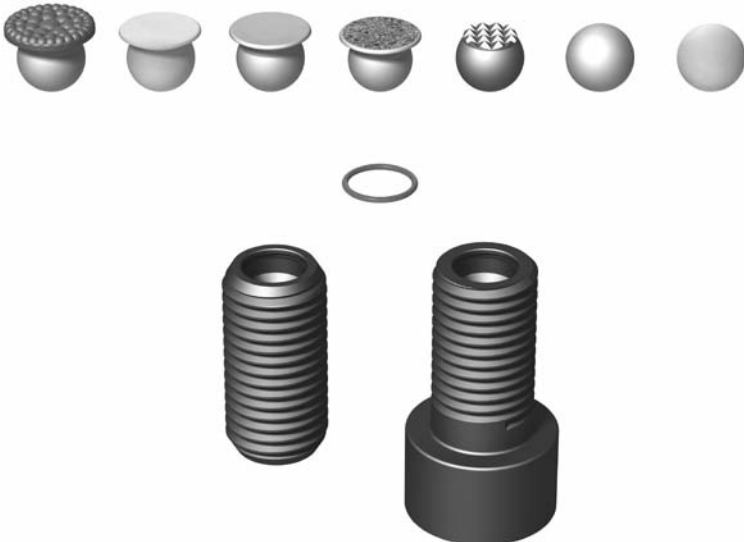
- Unique design allows the pad and ball cup to swivel, tilt, clamp, grip, hold position and secure a work piece.
- The internal ball cup allows the pad to rotate 360 degrees and tilt at varying degrees from center.
- Interchangeable parts speed setups and changeovers.
- O-ring holds the ball in place and keeps out dirt and other contaminants.
- Replaceable pad design allows for easy change out when the pad is worn or a different contact surface is required.

Replaceable Swivel Ball Style Swivots®



- The unique design of the Swivots prevent the ball from exceeding the specified degree of swivel which stops the ball from rolling over in the housing.
- The replaceable ball can be changed when it is worn or another contact surface is required.
- The ball is held in place with a Viton o-ring which allows for smooth movement and keeps out dirt and contaminants.
- The replaceable balls are available in several different styles to meet a wide range of workholding and positioning applications.

Replaceable Swivel Ball Style Thrust Screw Assemblies



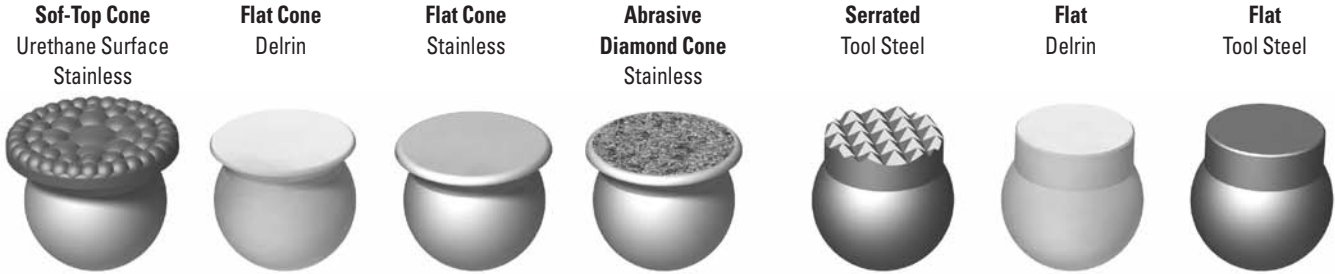
- The free floating ball design allows the thrust screw to continue rotating while the ball remains stationary against the contact surface.
- They are ideal for holding and positioning irregular shaped or contoured work pieces.
- The different housing styles allow for a variety of mounting options.
- The ball is held in place with a Viton o-ring which allows for smooth movement and keeps out dirt and other contaminants.

SWIVOTS® - REPLACEABLE SWIVEL BALL

Swivots® Replaceable Swivel Ball Style

These Replaceable Ball Style Swivots® are found on the following pages.

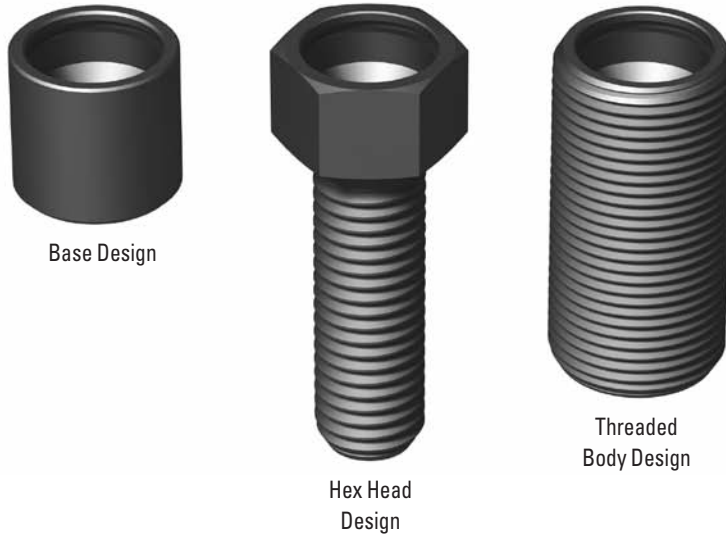
REPLACEABLE BALLS



VITON O-RING



HOUSINGS



Load Calculator

To calculate the load on the contact surface, divide the torque applied (in/lbs) by a factor shown below. Assumes no lubrication threaded into steel. Use as a guideline only.

INCH			
Thread	Factor	Thread	Factor
#10-24	0.036	1/2-13	0.093
#10-32	0.035	1/2-20	0.091
1/4-20	0.047	5/8-11	0.116
1/4-28	0.046	5/8-18	0.113
5/16-18	0.059	3/4-10	0.138
5/16-24	0.058	3/4-16	0.135
3/8-16	0.070	1-8	0.183
3/8-24	0.068	1-14	0.180

METRIC			
Thread	Factor	Thread	Factor
M6x1.00	0.044	M16x2.00	0.116
M8x1.25	0.058	M20x2.50	0.144
M10x1.50	0.073	M24x3.00	0.173
M12x1.75	0.087		

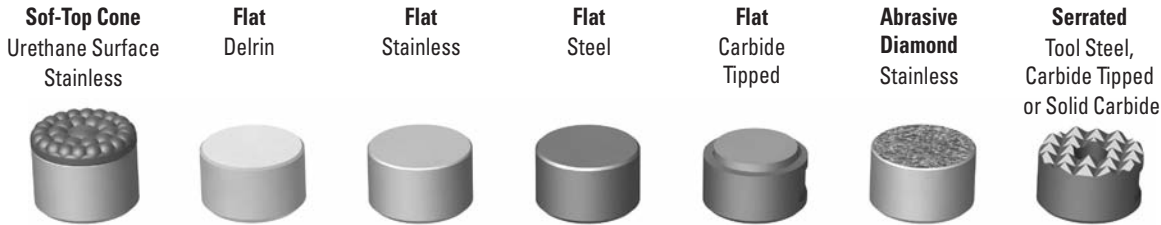
- These Replaceable Ball Style Swivots are a modular component system that allows the ball to swivel, tilt, pivot, grip, hold, position or secure work pieces. The ball rotates 360 degrees and tilts at varying degrees in any direction from the centerline.
- The different housing styles allows for a variety of mounting options.
- These Replaceable Ball Style Swivots allow you to easily change the ball when worn or another style is needed for an application.
- Unique design prevents the ball from exceeding the specified degree of swivel - preventing the ball from rolling over in the housing.
- The ball is held in place with a Viton O-ring which allows the ball to be easily changed and keeps out dirt and other contaminants.
- Replacement balls and O-rings can be ordered separately. It is recommended the O-ring be replaced when the ball is replaced. Please call for replacement parts.

SWIVOTS® - REPLACEABLE SWIVEL PAD

Swivots® Replaceable Swivel Pad Style

These Replaceable Pad Style Swivots® are found on the following pages.

REPLACEABLE PADS

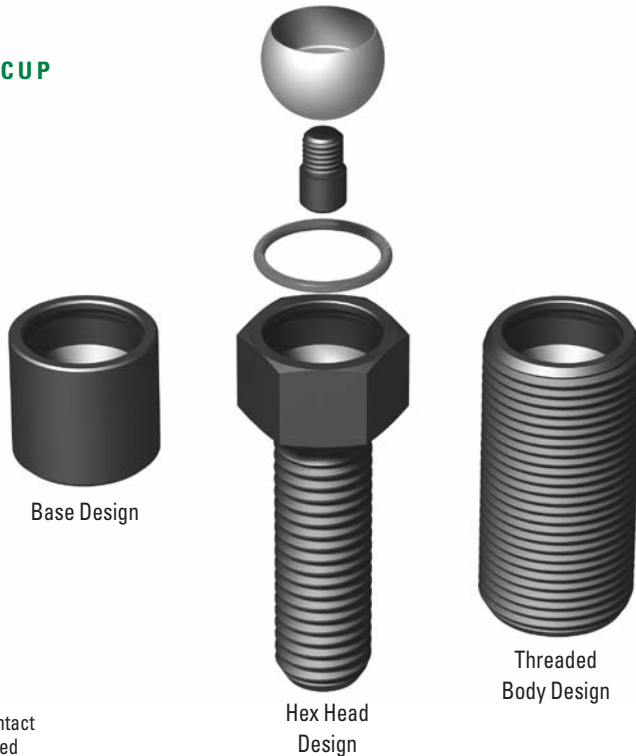


STAINLESS BALL CUP

LOCK SCREW

VITON O-RING

HOUSINGS



Load Calculator

To calculate the load on the contact surface, divide the torque applied (in/lbs) by a factor shown below. Assumes no lubrication threaded into steel. Use as a guideline only.

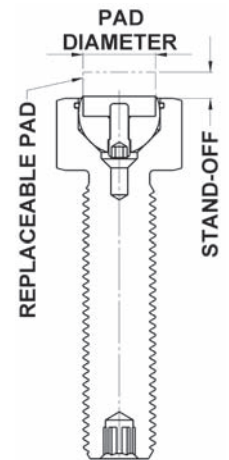
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#10-24	0.036	1/2-13	0.093
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3/8-16	0.070	1-8	0.183
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M6x1.00	0.044	M16x2.00	0.116
M8x1.25	0.058	M20x2.50	0.144
M10x1.50	0.073	M24x3.00	0.173
M12x1.75	0.087		

- These Replaceable Pad Style Swivots are a modular component system that allows the pad and ball cup to swivel, tilt, clamp, grip, hold, position or secure work pieces. The internal ball cup allows the pad to rotate 360 degrees and tilt at varying degrees in any direction from the centerline.
- The interchangeable parts help to speed set ups and changeovers. The Replaceable Pads allow you to easily change the pad when worn or another style is needed for an application. The swivel assemblies include the housing, O-ring, lock screw and ball cup. Pads must be ordered separately.
- The ball cup is held in place with an O-ring which allows the pad to swivel and keeps out dirt and other contaminants.
- The pad can easily be replaced by pulling the ball cup out of the housing and unscrewing the lock screw which holds the pad into the ball cup.

To select the proper pad:

1. Determine the diameter of the pad for the housing assembly. This can be found on the following pages under "Replaceable Pad Dia."
2. Determine the "Stand Off" dimension required using the information below:



- 3/8" Pad Height provides 1/8" Stand Off
- 1/2" Pad Height provides 1/4" Stand Off
- 10mm Pad Height provides 4mm Stand Off
- 12mm Pad Height provides 6mm Stand Off

3. Select any Round Fixed Gripper or Rest Pad with the proper diameter and stand off that has a tapped hole.

If you need additional assistance selecting the proper pad or ordering replacement parts, please contact us.

THRUST SCREW ASSEMBLIES

Replaceable Ball Thrust Screw Assemblies

These Replaceable Ball Thrust Screw Assemblies are found on the following pages.

REPLACEABLE BALLS

Sof-Top Cone
Urethane Surface
Stainless



Flat Cone
Delrin



Flat Cone
Stainless



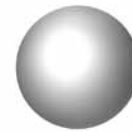
**Abrasive
Diamond Cone**
Stainless



Serrated
Tool Steel



Round Ball
Stainless



Round Ball
Delrin



VITON O-RING



HOUSINGS



Threaded Body Design



Socket Head Design

Tightening Torque Calculator

To calculate the approximate tightening torque (in/lb) required to achieve a required force, multiply the force by the appropriate factor listed below. Assumes no lubrication threaded into steel. Use as a guideline only.

INCH			
Thread	Factor	Thread	Factor
#10-24	0.036	1/2-13	0.093
#10-32	0.035	1/2-20	0.091
1/4-20	0.047	5/8-11	0.116
1/4-28	0.046	5/8-18	0.113
5/16-18	0.059	3/4-10	0.138
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3/8-16	0.070	1-8	0.183
3/8-24	0.068	1-14	0.180

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Thread	Factor	Thread	Factor
M6x1.00	0.044	M16x2.00	0.116
M8x1.25	0.058	M20x2.50	0.144
M10x1.50	0.073	M24x3.00	0.173
M12x1.75	0.087		

- These Replaceable Ball Thrust Screw Assemblies are a modular component system that allows the ball to swivel, tilt, pivot, grip, hold, position or secure work pieces.
- The different housing styles allows for a variety of mounting options.
- Unique design prevents the ball from exceeding the specified degree of swivel -preventing the ball from rolling over in the housing.
- The replaceable ball can be changed when it is worn or another style is needed for a job.
- The ball is held in place with a Viton O-ring which allows for smooth movement and keeps out dirt and other contaminants.
- Replacement balls and o-rings can be ordered separately. It is recommended the o-ring be replaced when the ball is replaced.