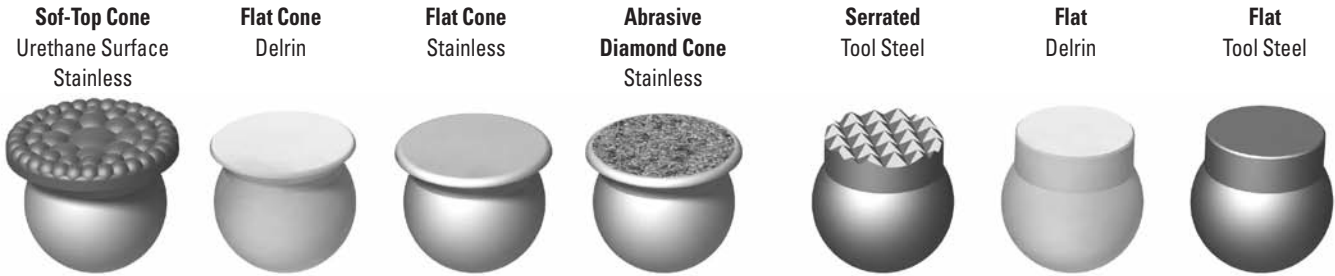


**SWIVOTS® - REPLACEABLE SWIVEL BALL**

# Swivots® Replaceable Swivel Ball Style

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

**REPLACEABLE BALLS**



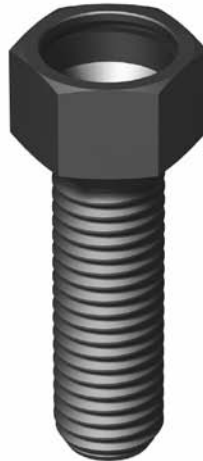
**VITON O-RING**



**HOUSINGS**



Base Design



Hex Head Design



Threaded Body Design

**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.

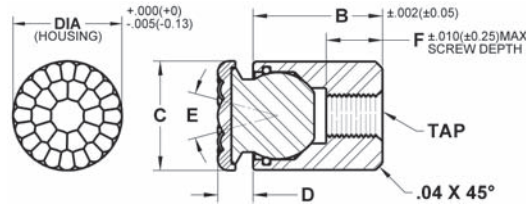
INCH			
Thread	Factor	Thread	Factor
#10-24	0.036	1/2-13	0.093
#10-32	0.035	1/2-20	0.091
1/4-20	0.047	5/8-11	0.116
1/4-28	0.046	5/8-18	0.113
5/16-18	0.059	3/4-10	0.138
5/16-24	0.058	3/4-16	0.135
3/8-16	0.070	1-8	0.183
3/8-24	0.068	1-14	0.180

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 BALL

### Base Design | Stainless Ball | Sof-Top Urethane Surface | Inch & Metric



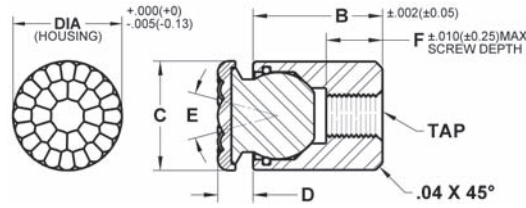
Cylindrical body allows for installation in tight areas. The housing is tapped for backside fastening. The replaceable ball swivels to allow for self-alignment on uneven surfaces. A Viton O-ring holds the ball in place while keeping contaminants out and providing smooth ball movement. The housing is made from alloy steel, heat treated to Rc 43/46 with black oxide finish. The urethane surface is permanently bonded to a 300 series stainless steel ball. The non-marking, non-staining urethane provides excellent protection against damage on delicate work surfaces. The “bubbled” texture of the urethane top offers firm holding and allows air to escape so no suction is created between the contact surface and the top of the rest pad as it is compressed. Because the top is made of urethane it offers superior abrasion and wear resistance. They are available in three durometers to meet a wide variety of application needs. Replacement balls and O-rings can be ordered separately. See page 117 for diagram of components.

#### INCH

Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Durometer	Ball Only Part #
<b>3/8" Dia - #4-40 Tap</b>								
BBU-100-FC-35UR	5/16	.315	.143	28	1/4	3/16	35	BUB-187-FC-35UR
BBU-100-FC-60UR	5/16	.315	.143	28	1/4	3/16	60	BUB-187-FC-60UR
BBU-100-FC-80UR	5/16	.315	.143	28	1/4	3/16	80	BUB-187-FC-80UR
BBU-105-FC-35UR	7/16	.315	.143	28	5/16	3/16	35	BUB-187-FC-35UR
BBU-105-FC-60UR	7/16	.315	.143	28	5/16	3/16	60	BUB-187-FC-60UR
BBU-105-FC-80UR	7/16	.315	.143	28	5/16	3/16	80	BUB-187-FC-80UR
BBU-107-FC-35UR	11/16	.315	.143	28	5/16	3/16	35	BUB-187-FC-35UR
BBU-107-FC-60UR	11/16	.315	.143	28	5/16	3/16	60	BUB-187-FC-60UR
BBU-107-FC-80UR	11/16	.315	.143	28	5/16	3/16	80	BUB-187-FC-80UR
<b>7/16" Dia - 8-32 Tap</b>								
BBU-200-FC-35UR	3/8	.394	.174	28	5/32	9/32	35	BUB-200-FC-35UR
BBU-200-FC-60UR	3/8	.394	.174	28	5/32	9/32	60	BUB-200-FC-60UR
BBU-200-FC-80UR	3/8	.394	.174	28	5/32	9/32	80	BUB-200-FC-80UR
BBU-201-FC-35UR	15/16	.394	.174	28	1/2	9/32	35	BUB-200-FC-35UR
BBU-201-FC-60UR	15/16	.394	.174	28	1/2	9/32	60	BUB-200-FC-60UR
BBU-201-FC-80UR	15/16	.394	.174	28	1/2	9/32	80	BUB-200-FC-80UR
<b>1/2" Dia - 10-32 Tap</b>								
BBU-300-FC-35UR	1/2	.512	.205	28	5/32	3/8	35	BUB-300-FC-35UR
BBU-300-FC-60UR	1/2	.512	.205	28	5/32	3/8	60	BUB-300-FC-60UR
BBU-300-FC-80UR	1/2	.512	.205	28	5/32	3/8	80	BUB-300-FC-80UR
BBU-301-FC-35UR	1	.512	.205	28	5/8	3/8	35	BUB-300-FC-35UR
BBU-301-FC-60UR	1	.512	.205	28	5/8	3/8	60	BUB-300-FC-60UR
BBU-301-FC-80UR	1	.512	.205	28	5/8	3/8	80	BUB-300-FC-80UR
<b>5/8" Dia - 1/4-28 Tap</b>								
BBU-500-FC-35UR	3/4	.630	.205	28	1/4	1/2	35	BUB-500-FC-35UR
BBU-500-FC-60UR	3/4	.630	.205	28	1/4	1/2	60	BUB-500-FC-60UR
BBU-500-FC-80UR	3/4	.630	.205	28	1/4	1/2	80	BUB-500-FC-80UR
<b>13/16" Dia - 5/16-24 Tap</b>								
BBU-600-FC-35UR	7/8	.827	.236	32	11/32	5/8	35	BUB-600-FC-35UR
BBU-600-FC-60UR	7/8	.827	.236	32	11/32	5/8	60	BUB-600-FC-60UR
BBU-600-FC-80UR	7/8	.827	.236	32	11/32	5/8	80	BUB-600-FC-80UR
<b>15/16" Dia - 3/8-24 Tap</b>								
BBU-700-FC-35UR	7/8	.906	.236	32	9/32	3/4	35	BUB-700-FC-35UR
BBU-700-FC-60UR	7/8	.906	.236	32	9/32	3/4	60	BUB-700-FC-60UR
BBU-700-FC-80UR	7/8	.906	.236	32	9/32	3/4	80	BUB-700-FC-80UR

# SWIVOTS® - REPLACEABLE SWIVEL BALL

Base Design | Stainless Ball | Sof-Top Urethane Surface | Inch & Metric (continued)

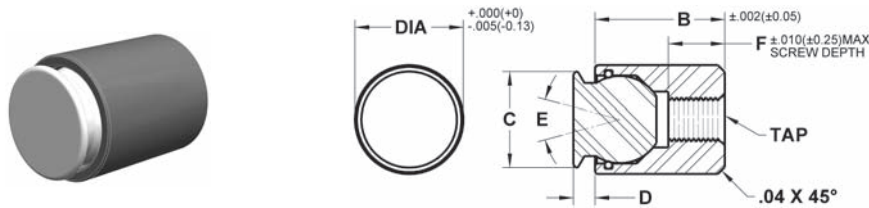


## METRIC

Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Durometer	Ball Only Part #
<b>10mm Dia - M4x0.7 Tap</b>								
MBBU-1012-FC-35UR	10.5	10	4	28	3.5	7	35	MBUB-070-FC-35UR
MBBU-1012-FC-60UR	10.5	10	4	28	3.5	7	60	MBUB-070-FC-60UR
MBBU-1012-FC-80UR	10.5	10	4	28	3.5	7	80	MBUB-070-FC-80UR
MBBU-1025-FC-35UR	23.5	10	4	28	9	7	35	MBUB-070-FC-35UR
MBBU-1025-FC-60UR	23.5	10	4	28	9	7	60	MBUB-070-FC-60UR
MBBU-1025-FC-80UR	23.5	10	4	28	9	7	80	MBUB-070-FC-80UR
<b>13mm Dia - M5x0.8 Tap</b>								
MBBU-1316-FC-35UR	14.5	13	5	28	6.5	10	35	MBUB-100-FC-35UR
MBBU-1316-FC-60UR	14.5	13	5	28	6.5	10	60	MBUB-100-FC-60UR
MBBU-1316-FC-80UR	14.5	13	5	28	6.5	10	80	MBUB-100-FC-80UR
MBBU-1325-FC-35UR	23.5	13	5	28	9	10	35	MBUB-100-FC-35UR
MBBU-1325-FC-60UR	23.5	13	5	28	9	10	60	MBUB-100-FC-60UR
MBBU-1325-FC-80UR	23.5	13	5	28	9	10	80	MBUB-100-FC-80UR
<b>17mm Dia - M6x1.0 Tap</b>								
MBBU-1722-FC-35UR	18	16	5	28	7.5	13	35	MBUB-130-FC-35UR
MBBU-1722-FC-60UR	18	16	5	28	7.5	13	60	MBUB-130-FC-60UR
MBBU-1722-FC-80UR	18	16	5	28	7.5	13	80	MBUB-130-FC-80UR
<b>19mm Dia - M8x1.25 Tap</b>								
MBBU-1924-FC-35UR	20	21	6	24	8.5	15	35	MBUB-150-FC-35UR
MBBU-1924-FC-60UR	20	21	6	24	8.5	15	60	MBUB-150-FC-60UR
MBBU-1924-FC-80UR	20	21	6	24	8.5	15	80	MBUB-150-FC-80UR
<b>24mm Dia - M10x1.50 Tap</b>								
MBBU-2428-FC-35UR	24	23	6	24	9	20	35	MBUB-200-FC-35UR
MBBU-2428-FC-60UR	24	23	6	24	9	20	60	MBUB-200-FC-60UR
MBBU-2428-FC-80UR	24	23	6	24	9	20	80	MBUB-200-FC-80UR

## SWIVOTS® - REPLACEABLE SWIVEL BALL

### Base Design | Delrin Ball | Flat Cone | Inch & Metric



Cylindrical body allows for installation in tight areas. The housing is tapped for backside fastening. The replaceable ball swivels to allow for self-alignment on uneven surfaces and is made from non-marring white delrin. The flat cone design provides a large contact surface for greater force distribution. A Viton O-ring holds the ball in place while keeping contaminants out and providing smooth ball movement. The housing is made from alloy steel, heat treated to Rc 43/46 with black oxide finish. Replacement balls and O-rings can be ordered separately. See page 117 for diagram of components.

#### INCH

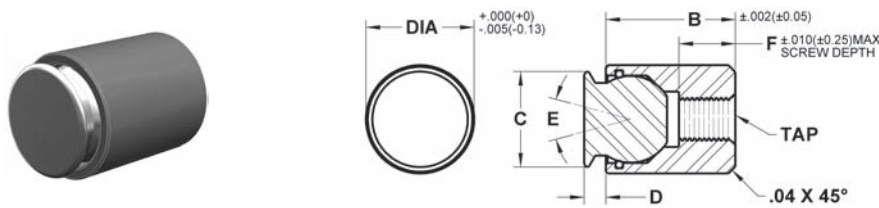
Part #	B Length	C Contact Dia	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #
<b>3/8" Dia - #4-40 Tap</b>							
BBU-100-DC	5/16	.236	.063	28	1/4	3/16	BUB-187-DC
BBU-105-DC	7/16	.236	.063	28	5/16	3/16	BUB-187-DC
BBU-107-DC	11/16	.236	.063	28	5/16	3/16	BUB-187-DC
<b>7/16" Dia - #8-32 Tap</b>							
BBU-200-DC	3/8	.315	.094	28	5/32	9/32	BUB-200-DC
BBU-201-DC	15/16	.315	.094	28	1/2	9/32	BUB-200-DC
<b>1/2" Dia - #10-32 Tap</b>							
BBU-300-DC	1/2	.433	.125	28	5/32	3/8	BUB-300-DC
BBU-301-DC	1	.433	.125	28	5/8	3/8	BUB-300-DC
<b>5/8" Dia - 1/4-28 Tap</b>							
BBU-500-DC	3/4	.551	.125	28	1/4	1/2	BUB-500-DC
<b>13/16" Dia - 5/16-24 Tap</b>							
BBU-600-DC	7/8	.748	.156	32	11/32	5/8	BUB-600-DC
<b>15/16" Dia - 3/8-24 Tap</b>							
BBU-700-DC	7/8	.827	.156	32	9/32	3/4	BUB-700-DC

#### METRIC

Part #	B Length	C Contact Dia	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #
<b>10mm Dia - M4x0.7 Tap</b>							
MBBU-1012-DC	10.5	8	2	28	3.5	7	MBUB-070-DC
MBBU-1025-DC	23.5	8	2	28	9	7	MBUB-070-DC
<b>13mm Dia - M5x0.8 Tap</b>							
MBBU-1316-DC	14.5	11	3	28	6.5	10	MBUB-100-DC
MBBU-1325-DC	23.5	11	3	28	9	10	MBUB-100-DC
<b>17mm Dia - M6x1.0 Tap</b>							
MBBU-1722-DC	18	14	3	28	7.5	13	MBUB-130-DC
<b>19mm Dia - M8x1.25 Tap</b>							
MBBU-1924-DC	20	19	4	24	8.5	15	MBUB-150-DC
<b>24mm Dia - M10x1.5 Tap</b>							
MBBU-2428-DC	24	21	4	24	9	20	MBUB-200-DC

# SWIVOTS® - REPLACEABLE SWIVEL BALL

## Base Design | Stainless Ball | Flat Cone | Inch & Metric



Cylindrical body allows for installation in tight areas. The housing is tapped for backside fastening. The replaceable ball is made from 300 series stainless steel and swivels to allow for self-alignment on uneven surfaces. The flat cone design provides a large contact surface for greater force distribution. A Viton O-ring holds the ball in place while keeping contaminants out and providing smooth ball movement. The housing is made from alloy steel, heat treated to Rc 43/46 with black oxide finish. Replacement balls and O-rings can be ordered separately. See page 117 for diagram of components.

### INCH

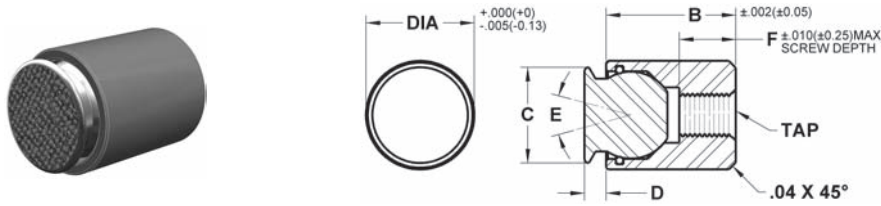
Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #	Load Rating Lbs.
<b>3/8" Dia - #4-40 Tap</b>								
BBU-100-FC	5/16	.236	.063	28	1/4	3/16	BUB-187-FC	1,835
BBU-105-FC	7/16	.236	.063	28	5/16	3/16	BUB-187-FC	1,835
BBU-107-FC	11/16	.236	.063	28	5/16	3/16	BUB-187-FC	1,835
<b>7/16" Dia - #8-32 Tap</b>								
BBU-200-FC	3/8	.315	.094	28	5/32	9/32	BUB-200-FC	3,339
BBU-201-FC	15/16	.315	.094	28	1/2	9/32	BUB-200-FC	3,339
<b>1/2" Dia - #10-32 Tap</b>								
BBU-300-FC	1/2	.433	.125	28	5/32	3/8	BUB-300-FC	4,697
BBU-301-FC	1	.433	.125	28	5/8	3/8	BUB-300-FC	4,697
<b>5/8" Dia - 1/4-28 Tap</b>								
BBU-500-FC	3/4	.551	.125	28	1/4	1/2	BUB-500-FC	5,849
<b>13/16" Dia - 5/16-24 Tap</b>								
BBU-600-FC	7/8	.748	.156	32	11/32	5/8	BUB-600-FC	10,925
<b>15/16" Dia - 3/8-24 Tap</b>								
BBU-700-FC	7/8	.827	.156	32	9/32	3/4	BUB-700-FC	13,325

### METRIC

Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #	Load Rating Lbs.
<b>10mm Dia - M4x0.7 Tap</b>								
MBBU-1012-FC	10.5	8	2	28	3.5	7	MBUB-070-FC	2,585
MBBU-1025-FC	23.5	8	2	28	9	7	MBUB-070-FC	2,585
<b>13mm Dia - M5x0.8 Tap</b>								
MBBU-1316-FC	14.5	11	3	28	6.5	10	MBUB-100-FC	4,452
MBBU-1325-FC	23.5	11	3	28	9	10	MBUB-100-FC	4,452
<b>17mm Dia - M6x1.0 Tap</b>								
MBBU-1722-FC	18	14	3	28	7.5	13	MBUB-130-FC	6,170
<b>19mm Dia - M8x1.25 Tap</b>								
MBBU-1924-FC	20	19	4	24	8.5	15	MBUB-150-FC	8,688
<b>24mm Dia - M10x1.5 Tap</b>								
MBBU-2428-FC	24	21	4	24	9	20	MBUB-200-FC	13,117

## SWIVOTS® - REPLACEABLE SWIVEL BALL

### Base Design | Stainless Ball | Abrasive Diamond Surface | Inch & Metric



Cylindrical body allows for installation in tight areas. The housing is tapped for backside fastening. The replaceable ball swivels to allow for self-alignment on uneven surfaces. A Viton O-ring holds the ball in place while keeping contaminants out and providing smooth ball movement. The housing is made from alloy steel, heat treated to Rc 43/46 with black oxide finish. The abrasive surface is permanently fused to a 300 series stainless steel pad. The surface texture is comparable to a 100 grit abrasive. They are ideal for holding smooth or slippery applications with a minimum of clamping pressure. Individual diamond particles transfer holding pressure to a very small and well distributed area, providing superior holding with minimal surface marking. The diamond surface provides unparalleled wear resistance. Replacement balls and O-rings can be ordered separately. See page 117 for diagram of components.

#### INCH

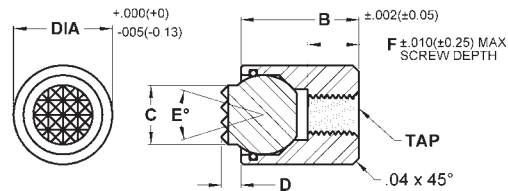
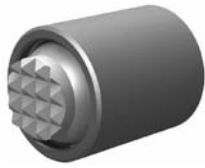
Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #	Load Rating Lbs.
<b>3/8 Dia - #4-40 Tap</b>								
BBU-100-FC-DS	5/16	.236	.063	28	1/4	3/16	BUB-187-FC-DS	1,835
BBU-105-FC-DS	7/16	.236	.063	28	5/16	3/16	BUB-187-FC-DS	1,835
BBU-107-FC-DS	11/16	.236	.063	28	5/16	3/16	BUB-187-FC-DS	1,835
<b>7/16 Dia - #8-32 Tap</b>								
BBU-200-FC-DS	3/8	.315	.094	28	5/32	9/32	BUB-200-FC-DS	3,339
BBU-201-FC-DS	15/16	.315	.094	28	1/2	9/32	BUB-200-FC-DS	3,339
<b>1/2 Dia - #10-32 Tap</b>								
BBU-300-FC-DS	1/2	.433	.125	28	5/32	3/8	BUB-300-FC-DS	4,697
BBU-301-FC-DS	1	.433	.125	28	5/8	3/8	BUB-300-FC-DS	4,697
<b>5/8 Dia - 1/4-28 Tap</b>								
BBU-500-FC-DS	3/4	.551	.125	28	1/4	1/2	BUB-500-FC-DS	5,849
<b>13/16 Dia - 5/16-24 Tap</b>								
BBU-600-FC-DS	7/8	.748	.156	32	11/32	5/8	BUB-600-FC-DS	10,925
<b>15/16 Dia - 3/8-24 Tap</b>								
BBU-700-FC-DS	7/8	.827	.156	32	9/32	3/4	BUB-700-FC-DS	13,325

#### METRIC

Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #	Load Rating Lbs.
<b>10mm Dia - M4x0.7 Tap</b>								
MBBU-1012-FC-DS	10.5	8	2	28	3.5	7	MBUB-070-FC-DS	2,585
MBBU-1025-FC-DS	23.5	8	2	28	9	7	MBUB-070-FC-DS	2,585
<b>13mm Dia - M5x0.8 Tap</b>								
MBBU-1316-FC-DS	14.5	11	3	28	6.5	10	MBUB-100-FC-DS	4,452
MBBU-1325-FC-DS	23.5	11	3	28	9	10	MBUB-100-FC-DS	4,452
<b>17mm Dia - M6x1.0 Tap</b>								
MBBU-1722-FC-DS	18	14	3	28	7.5	13	MBUB-130-FC-DS	6,170
<b>19mm Dia - M8x1.25 Tap</b>								
MBBU-1924-FC-DS	20	19	4	24	8.5	15	MBUB-150-FC-DS	8,688
<b>24mm Dia - M10x1.5 Tap</b>								
MBBU-2428-FC-DS	24	21	4	24	9	20	MBUB-200-FC-DS	13,117

# SWIVOTS® - REPLACEABLE SWIVEL BALL

## Base Design | Tool Steel Ball | Serrated | Inch & Metric

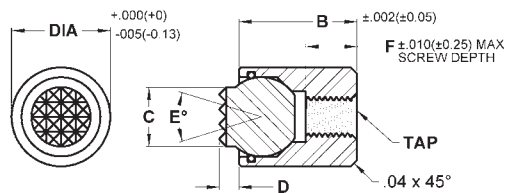


Cylindrical body allows for installation in tight areas. The housing is tapped for backside fastening. The replaceable serrated ball swivels to allow for self-alignment on uneven surfaces. A Viton O-ring holds the ball in place while keeping contaminants out and providing smooth ball movement. The housing is made from alloy steel, heat treated to Rc 43/46 with black oxide finish. The replaceable ball is made from M-2 high speed steel heat treated to Rc 60/62. Replacement balls and O-rings can be ordered separately. See page 117 for diagram of components. See page 90 for tooth pattern specifications.

Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #	Tooth Pattern	Load Rating Lbs.
<b>3/8" Dia - #4-40 Tap</b>									
BBU-100-S	5/16	5/32	1/16	28	1/4	3/16	BUB-187-S	SF	1,835
BBU-105-S	7/16	5/32	1/16	28	5/16	3/16	BUB-187-S	SF	1,835
BBU-107-S	11/16	5/32	1/16	28	5/16	3/16	BUB-187-S	SF	1,835
<b>7/16" Dia - #8-32 Tap</b>									
BBU-200-S	3/8	1/4	1/16	28	5/32	9/32	BUB-200-S	SF	3,339
BBU-200-S-T	3/8	1/4	1/8	28	5/32	9/32	BUB-200-S-T	SF	3,339
BBU-201-S	15/16	1/4	1/16	28	1/2	9/32	BUB-200-S	SF	3,339
BBU-201-S-T	15/16	1/4	1/8	28	1/2	9/32	BUB-200-S-T	SF	3,339
<b>1/2" Dia - #10-32 Tap</b>									
BBU-300-S	1/2	5/16	1/16	28	5/32	3/8	BUB-300-S	EF	4,697
BBU-300-S-T	1/2	5/16	1/8	28	5/32	3/8	BUB-300-S-T	EF	4,697
BBU-300-SF	1/2	5/16	1/16	28	5/32	3/8	BUB-300-SF	SF	4,697
BBU-300-SF-T	1/2	5/16	1/8	28	5/32	3/8	BUB-300-SF-T	SF	4,697
BBU-301-S	1	5/16	1/16	28	5/8	3/8	BUB-300-S	EF	4,697
BBU-301-S-T	1	5/16	1/8	28	5/8	3/8	BUB-300-S-T	EF	4,697
BBU-301-SF	1	5/16	1/16	28	5/8	3/8	BUB-300-SF	SF	4,697
BBU-301-SF-T	1	5/16	1/8	28	5/8	3/8	BUB-300-SF-T	SF	4,697
<b>5/8" Dia - 1/4-28 Tap</b>									
BBU-500-S	3/4	3/8	1/8	40	1/4	1/2	BUB-500-S	EF	5,849
BBU-500-S-T	3/4	3/8	1/4	40	1/4	1/2	BUB-500-S-T	EF	5,849
BBU-500-SF	3/4	3/8	1/8	40	1/4	1/2	BUB-500-SF	SF	5,849
BBU-500-SF-T	3/4	3/8	1/4	40	1/4	1/2	BUB-500-SF-T	SF	5,849
<b>13/16" Dia - 5/16-24 Tap</b>									
BBU-600-S	7/8	1/2	1/8	40	11/32	5/8	BUB-600-S	Fine	10,925
BBU-600-S-T	7/8	1/2	1/4	40	11/32	5/8	BUB-600-S-T	Fine	10,925
BBU-600-EF	7/8	1/2	1/8	40	11/32	5/8	BUB-600-EF	EF	10,925
BBU-600-EF-T	7/8	1/2	1/4	40	11/32	5/8	BUB-600-EF-T	EF	10,925
BBU-600-SF	7/8	1/2	1/8	40	11/32	5/8	BUB-600-SF	SF	10,925
BBU-600-SF-T	7/8	1/2	1/4	40	11/32	5/8	BUB-600-S-T	SF	10,925
<b>15/16" Dia - 3/8-24 Tap</b>									
BBU-700-S	7/8	5/8	1/8	34	9/32	3/4	BUB-700-S	Fine	13,325
BBU-700-S-T	7/8	5/8	1/4	34	9/32	3/4	BUB-700-S-T	Fine	13,325
BBU-700-EF	7/8	5/8	1/8	34	9/32	3/4	BUB-700-EF	EF	13,325
BBU-700-EF-T	7/8	5/8	1/4	34	9/32	3/4	BUB-700-EF-T	EF	13,325

## SWIVOTS® - REPLACEABLE SWIVEL BALL

### Base Design | Tool Steel Ball | Serrated | Inch & Metric (continued)



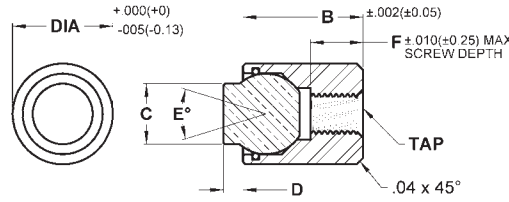
#### METRIC

Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #	Tooth Pattern	Load Rating Lbs.
<b>10mm Dia - M4x0.7 Tap</b>									
MBBU-1012-S	10.5	6	1.5	28	3.5	7	MBUB-070-S	SF	2,585
MBBU-1012-S-T	10.5	6	3	28	3.5	7	MBUB-070-S-T	SF	2,585
MBBU-1025-S	23.5	6	1.5	28	9	7	MBUB-070-S	SF	2,585
MBBU-1025-S-T	23.5	6	3	28	9	7	MBUB-070-S-T	SF	2,585
<b>13mm Dia - M5x0.8 Tap</b>									
MBBU-1316-S	14.5	8.5	1.5	24	6.5	10	MBUB-100-S	EF	4,452
MBBU-1316-S-T	14.5	8.5	3	24	6.5	10	MBUB-100-S-T	EF	4,452
MBBU-1325-S	23.5	8.5	1.5	24	9	10	MBUB-100-S	EF	4,452
MBBU-1325-S-T	23.5	8.5	3	24	9	10	MBUB-100-S-T	EF	4,452
<b>17mm Dia - M6x1.0 Tap</b>									
MBBU-1722-S	18	10	4	42	7.5	13	MBUB-130-S	EF	6,170
MBBU-1722-S-T	18	10	6	42	7.5	13	MBUB-130-S-T	EF	6,170
<b>19mm Dia - M8x1.25 Tap</b>									
MBBU-1924-S	20	12	4	45	8.5	15	MBUB-150-S	Fine	8,688
MBBU-1924-S-T	20	12	6	45	8.5	15	MBUB-150-S-T	Fine	8,688
<b>24mm Dia - M10x1.5 Tap</b>									
MBBU-2428-S	24	16	4	40	9	20	MBUB-200-S	Fine	13,117
MBBU-2428-S-T	24	16	6	40	9	20	MBUB-200-S-T	Fine	13,117



# SWIVOTS® - REPLACEABLE SWIVEL BALL

## Base Design | Delrin Ball | Flat | Inch & Metric



Cylindrical body allows for installation in tight areas. The housing is tapped for backside fastening. The replaceable flat ball swivels to allow for self-alignment on uneven surfaces and is made from non-marring white delrin. A Viton O-ring holds the ball in place while keeping contaminants out and providing smooth ball movement. The housing is made from alloy steel, heat treated to Rc 43/46 with black oxide finish. Replacement balls and O-rings can be ordered separately. See page 117 for diagram of components.

### INCH

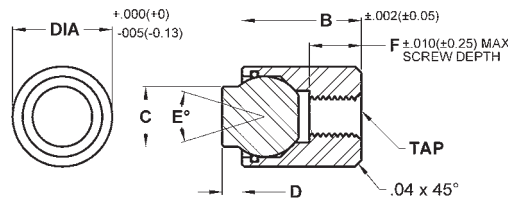
Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #
<b>3/8" Dia - #4-40 Tap</b>							
BBU-100-D	5/16	5/32	1/16	28	1/4	3/16	BUB-187-D
BBU-105-D	7/16	5/32	1/16	28	5/16	3/16	BUB-187-D
BBU-107-D	11/16	5/32	1/16	28	5/16	3/16	BUB-187-D
<b>7/16" Dia - #8-32 Tap</b>							
BBU-200-D	3/8	1/4	1/16	28	5/32	9/32	BUB-200-D
BBU-200-D-T	3/8	1/4	1/8	28	5/32	9/32	BUB-200-D-T
BBU-201-D	15/16	1/4	1/16	28	1/2	9/32	BUB-200-D
BBU-201-D-T	15/16	1/4	1/8	28	1/2	9/32	BUB-200-D-T
<b>1/2" Dia - #10-32 Tap</b>							
BBU-300-D	1/2	5/16	1/16	28	5/32	3/8	BUB-300-D
BBU-300-D-T	1/2	5/16	1/8	28	5/32	3/8	BUB-300-D-T
BBU-301-D	1	5/16	1/16	28	5/8	3/8	BUB-300-D
BBU-301-D-T	1	5/16	1/8	28	5/8	3/8	BUB-300-D-T
<b>5/8" Dia - 1/4-28 Tap</b>							
BBU-500-D	3/4	3/8	1/8	40	1/4	1/2	BUB-500-D
BBU-500-D-T	3/4	3/8	1/4	40	1/4	1/2	BUB-500-D-T
<b>13/16" Dia - 5/16-24 Tap</b>							
BBU-600-D	7/8	1/2	1/8	40	11/32	5/8	BUB-600-D
BBU-600-D-T	7/8	1/2	1/4	40	11/32	5/8	BUB-600-D-T
<b>15/16" Dia - 3/8-24 Tap</b>							
BBU-700-D	7/8	5/8	1/8	34	9/32	3/4	BUB-700-D
BBU-700-D-T	7/8	5/8	1/4	34	9/32	3/4	BUB-700-D-T

### METRIC

Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #
<b>10mm Dia - M4x0.7 Tap</b>							
MBBU-1012-D	10.5	6	1.5	28	3.5	7	MBUB-070-D
MBBU-1012-D-T	10.5	6	3	28	3.5	7	MBUB-070-D-T
MBBU-1025-D	23.5	6	1.5	28	9	7	MBUB-070-D
MBBU-1025-D-T	23.5	6	3	28	9	7	MBUB-070-D-T
<b>13mm Dia - M5x0.8 Tap</b>							
MBBU-1316-D	14.5	8.5	1.5	24	6.5	10	MBUB-100-D
MBBU-1316-D-T	14.5	8.5	3	24	6.5	10	MBUB-100-D-T
MBBU-1325-D	23.5	8.5	1.5	24	9	10	MBUB-100-D
MBBU-1325-D-T	23.5	8.5	3	24	9	10	MBUB-100-D-T
<b>17mm Dia - M6x1.0 Tap</b>							
MBBU-1722-D	18	10	4	42	7.5	13	MBUB-130-D
MBBU-1722-D-T	18	10	6	42	7.5	13	MBUB-130-D-T
<b>19mm Dia - M8x1.25 Tap</b>							
MBBU-1924-D	20	12	4	45	8.5	15	MBUB-150-D
MBBU-1924-D-T	20	12	6	45	8.5	15	MBUB-150-D-T
<b>24mm Dia - M10x1.5 Tap</b>							
MBBU-2428-D	24	16	4	40	9	20	MBUB-200-D
MBBU-2428-D-T	24	16	6	40	9	20	MBUB-200-D-T

## SWIVOTS® - REPLACEABLE SWIVEL BALL

### Base Design | Tool Steel Ball | Flat | Inch & Metric



Cylindrical body allows for installation in tight areas. The housing is tapped for backside fastening. The replaceable flat ball swivels to allow for self-alignment on uneven surfaces. A Viton O-ring holds the ball in place while keeping contaminants out and providing smooth ball movement. The housing is made from alloy steel, heat treated to Rc 43/46 with black oxide finish. The replaceable ball is made from M-2 high speed steel heat treated to Rc 60/62. Replacement balls and O-rings can be ordered separately. See page 117 for diagram of components.

#### INCH

Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #	Load Rating Lbs.
<b>3/8" Dia - #4-40 Tap</b>								
BBU-100-F	5/16	5/32	1/16	28	1/4	3/16	BUB-187-F	1,835
BBU-105-F	7/16	5/32	1/16	28	5/16	3/16	BUB-187-F	1,835
BBU-107-F	11/16	5/32	1/16	28	5/16	3/16	BUB-187-F	1,835
<b>7/16" Dia - #8-32 Tap</b>								
BBU-200-F	3/8	1/4	1/16	28	5/32	9/32	BUB-200-F	3,339
BBU-200-F-T	3/8	1/4	1/8	28	5/32	9/32	BUB-200-F-T	3,339
BBU-201-F	15/16	1/4	1/16	28	1/2	9/32	BUB-200-F	3,339
BBU-201-F-T	15/16	1/4	1/8	28	1/2	9/32	BUB-200-F-T	3,339
<b>1/2" Dia - #10-32 Tap</b>								
BBU-300-F	1/2	5/16	1/16	28	5/32	3/8	BUB-300-F	4,697
BBU-300-F-T	1/2	5/16	1/8	28	5/32	3/8	BUB-300-F-T	4,697
BBU-301-F	1	5/16	1/16	28	5/8	3/8	BUB-300-F	4,697
BBU-301-F-T	1	5/16	1/8	28	5/8	3/8	BUB-300-F-T	4,697
<b>5/8" Dia - 1/4-28 Tap</b>								
BBU-500-F	3/4	3/8	1/8	40	1/4	1/2	BUB-500-F	5,849
BBU-500-F-T	3/4	3/8	1/4	40	1/4	1/2	BUB-500-F-T	5,849
<b>13/16" Dia - 5/16-24 Tap</b>								
BBU-600-F	7/8	1/2	1/8	40	11/32	5/8	BUB-600-F	10,925
BBU-600-F-T	7/8	1/2	1/4	40	11/32	5/8	BUB-600-F-T	10,925
<b>15/16" Dia - 3/8-24 Tap</b>								
BBU-700-F	7/8	5/8	1/8	34	9/32	3/4	BUB-700-F	13,325
BBU-700-F-T	7/8	5/8	1/4	34	9/32	3/4	BUB-700-F-T	13,325

#### METRIC

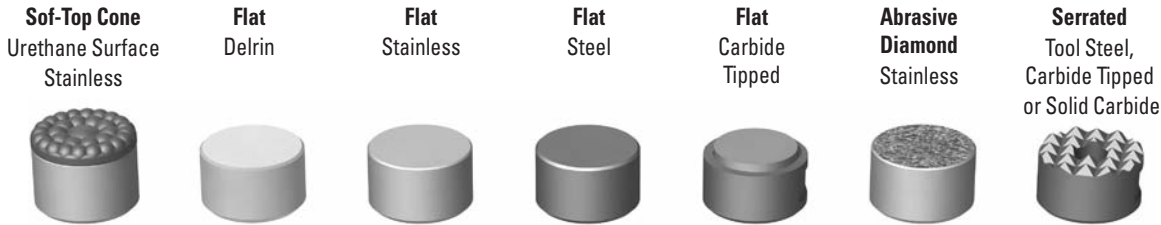
Part #	B Length	C Contact Dia.	D Stand Off	E Degree Swivel	F Thread Depth	Ball Dia.	Ball Only Part #	Load Rating Lbs.
<b>10mm Dia - M4x0.7 Tap</b>								
MBBU-1012-F	10.5	6	1.5	28	3.5	7	MBUB-070-F	2,585
MBBU-1012-F-T	10.5	6	3	28	3.5	7	MBUB-070-F-T	2,585
MBBU-1025-F	23.5	6	1.5	28	9	7	MBUB-070-F	2,585
MBBU-1025-F-T	23.5	6	3	28	9	7	MBUB-070-F-T	2,585
<b>13mm Dia - M5x0.8 Tap</b>								
MBBU-1316-F	14.5	8.5	1.5	24	6.5	10	MBUB-100-F	4,452
MBBU-1316-F-T	14.5	8.5	3	24	6.5	10	MBUB-100-F-T	4,452
MBBU-1325-F	23.5	8.5	1.5	24	9	10	MBUB-100-F	4,452
MBBU-1325-F-T	23.5	8.5	3	24	9	10	MBUB-100-F-T	4,452
<b>17mm Dia - M6x1.0 Tap</b>								
MBBU-1722-F	18	10	4	42	7.5	13	MBUB-130-F	6,170
MBBU-1722-F-T	18	10	6	42	7.5	13	MBUB-130-F-T	6,170
<b>19mm Dia - M8x1.25 Tap</b>								
MBBU-1924-F	20	12	4	45	8.5	15	MBUB-150-F	8,688
MBBU-1924-F-T	20	12	6	45	8.5	15	MBUB-150-F-T	8,688
<b>24mm Dia - M10x1.5 Tap</b>								
MBBU-2428-F	24	16	4	40	9	20	MBUB-200-F	13,117
MBBU-2428-F-T	24	16	6	40	9	20	MBUB-200-F-T	13,117

**SWIVOTS® - REPLACEABLE SWIVEL PAD**

# Swivots® Replaceable Swivel Pad Style

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

**REPLACEABLE PADS**

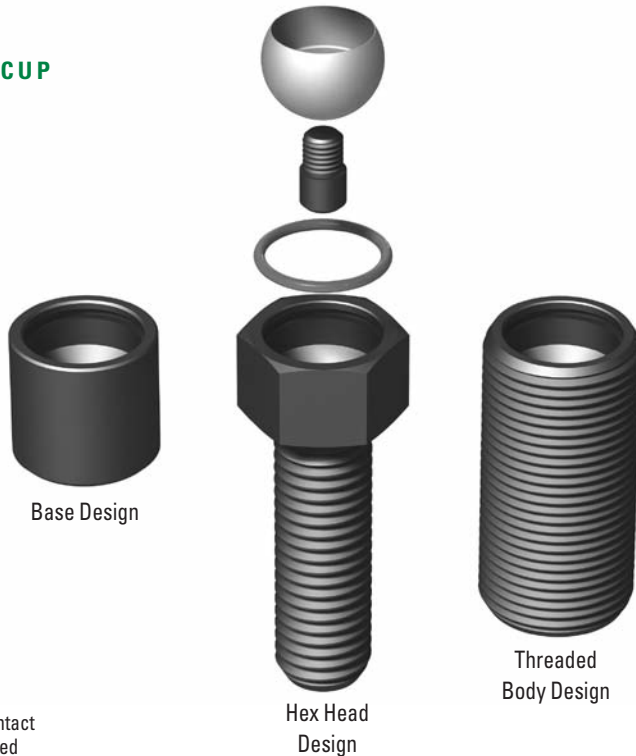


**STAINLESS BALL CUP**

**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.

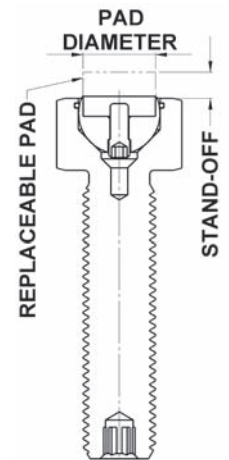
INCH			
Thread	Factor	Thread	Factor
#10-24	0.036	1/2-13	0.093
#10-32	0.035	1/2-20	0.091
1/4-20	0.047	5/8-11	0.116
1/4-28	0.046	5/8-18	0.113
5/16-18	0.059	3/4-10	0.138
5/16-24	0.058	3/4-16	0.135
3/8-16	0.070	1-8	0.183
3/8-24	0.068	1-14	0.180

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 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:



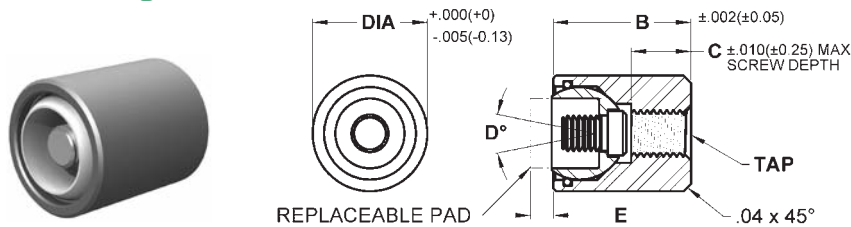
- 3/8" Pad Height provides 1/8" Stand Off
- 1/2" Pad Height provides 1/4" Stand Off
- 10mm Pad Height provides 4mm Stand Off
- 12mm Pad Height provides 6mm Stand Off

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.

## SWIVOTS® - REPLACEABLE SWIVEL PAD

### Base Design | Inch & Metric



The replaceable pad swivels to allow for self-alignment on uneven surfaces. Cylindrical body allows for installation in tight areas. The housing is tapped for backside fastening. The replaceable pad fits in a hardened (Rc 58/60) 440c stainless ball cup and is held in place with a lock screw. The pad can be replaced when worn or a different style pad is required. The housing is made from alloy steel, heat treated to Rc 43/46 with black oxide finish. The parts below are for the Swivot assembly only and do not include a pad. Pads must be ordered separately. See page 161 for diagram of components.

#### INCH

Part #	B Length	C Screw Depth	D Degree Swivel	E* Stand Off 1	E* Stand Off 2	Ball Dia.	Replaceable Pad Dia.**	Load Rating Lbs.
<b>5/8" Dia - 1/4-28 Tap</b>								
BBU-500	3/4	15/64	20	1/8	1/4	1/2	3/8	5,849
<b>13/16" Dia - 5/16-24 Tap</b>								
BBU-600	7/8	11/32	24	1/8	1/4	5/8	1/2	10,925
<b>15/16" Dia - 3/8-24 Tap</b>								
BBU-700	7/8	9/32	22	1/8	1/4	3/4	5/8	13,325
<b>1-1/8" Dia - 1/2-20 Tap</b>								
BBU-800	15/16	17/64	20	1/8	1/4	7/8	3/4	18,863
<b>1-1/2" Dia - 1/2-20 Tap</b>								
BBU-1100	1-1/4	7/16	20	1/8	1/4	1-1/8	1	34,619

\*E1 – Stand off with 3/8" height pad; E2 – Stand off with 1/2" height pad.

\*\* Select any fixed gripper or rest pad with the proper diameter and tapped hole.

#### METRIC

Part #	B Length	C Screw Depth	D Degree Swivel	E* Stand Off 1	E* Stand Off 2	Ball Dia.	Replaceable Pad Dia.**	Load Rating Lbs.
<b>17mm Dia - M6x1.0 Tap</b>								
MBBU-1722	18	7.5	20	4	6	13	10	6,170
<b>19mm Dia - M8x1.25 Tap</b>								
MBBU-1924	20	8.5	20	4	6	15	12	8,688
<b>24mm Dia - M10x1.50 Tap</b>								
MBBU-2428	24	9	20	4	6	20	16	13,122
<b>30mm Dia - M12x1.75 Tap</b>								
MBBU-3030	26	8.5	20	4	6	23	20	21,348
<b>36mm Dia - M12x1.75 Tap</b>								
MBBU-3636	32	12	20	4	6	28	25	30,558

\*E1 – Stand off with 10mm height pad; E2 – Stand off with 12mm height pad.

\*\* Select any fixed gripper or rest pad with the proper diameter and tapped hole.