

# DAPCO®

## Guide Retainer Sets

## GRS / GRS.HD Series



### Combined Guidance and Retention

- Cost savings over common pins, bushings and spools
- Seven rod diameters: 20, 25, 30, 36, 45, 50 and 65 mm
- Robust one-piece housing with top and bottom wipers
- Various stroke lengths to suit application requirements



DADCO produces top quality products at competitive prices and provides a superior level of customer service. Founded in 1958, DADCO's products are widely approved and used in global operations for many industries including metal stamping, automotive and plastic injection molding.

### Guide Retainer Sets

Designed for use in dies as a replacement for common pins, bushings and spools, the standard Guide Retainer Set (GRS) and Heavy Duty (GRS.HD) Series feature high quality guided components to ensure exceptionally long service life.

The standard GRS is available in four rod diameter models with pad mass capacity up to 175 kg (386 lb.) when two or more units are used together. The GRS.HD is a more robust configuration, designed to meet strenuous automotive tooling specifications. This version is available in seven rod diameter models with pad mass capacity up to 1134 kg (2500 lb.) when two or more units are used together.

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### Retainer Mount Choices

To provide additional mounting flexibility, Guide Retainer Sets are available with three different retainer mount options; Flange Mount, Toe Clamp and Heavy Duty.

The Flange Mount option (FM / FH), offered for five rod diameters, is an integral one-piece Mount and Guide Retainer that is machined to close tolerances. Each Flange Mount has four mounting holes and two dowel holes to facilitate installation.

The Toe Clamp option, offered for the GRS.30.T and GRS.36.T guide retainers, permits close mounting configurations. Wide Toe Clamps (W2) in sets of two, or Narrow Toe Clamps (N3) in sets of three, may be ordered with the Guide Rod and Guide Retainer. Additional Toe Clamps may be purchased separately to accommodate personalized mount configurations.

The Heavy Duty mount options are the most durable; offered for the GRS.20, 25, 30, 36, 45, 50 and 65 models. Each integrated heavy duty mount has 2-8 oversized mounting holes to provide optimal rigidity. The construction of these heavy duty models permits up to 10 times the attachment mass and increased operation speed over the standard GRS construction.

### Warranty

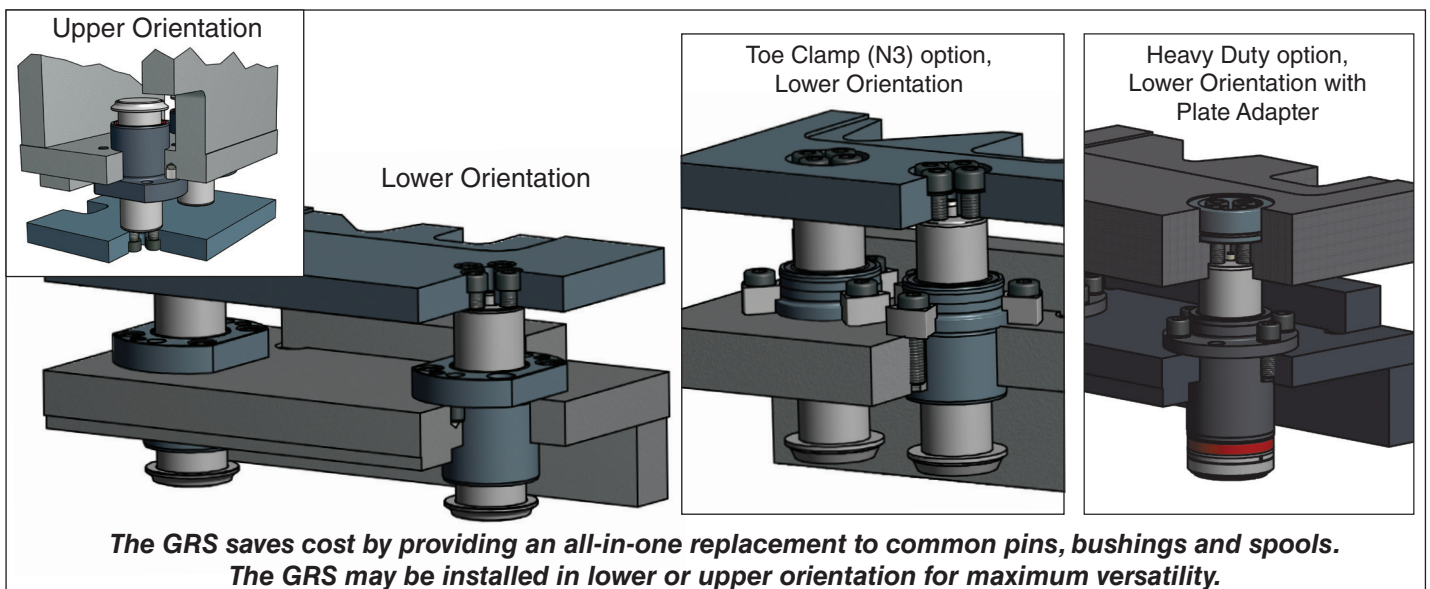
DADCO warrants its Guide Retainer Sets to be free from defects in workmanship or materials for a period of one year from date of manufacture.

### CAD Templates On-line

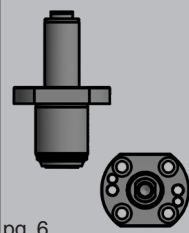
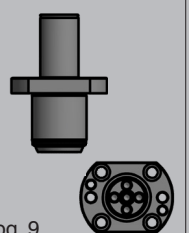
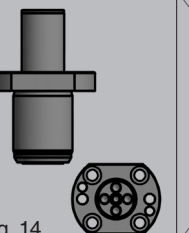
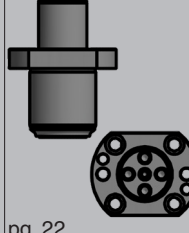
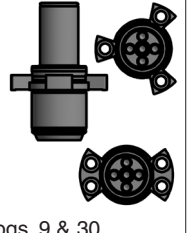
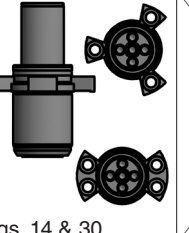
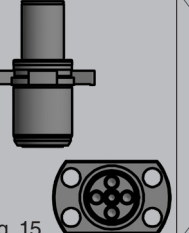
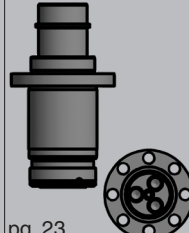
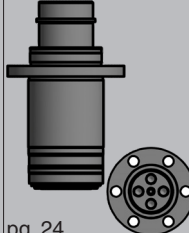
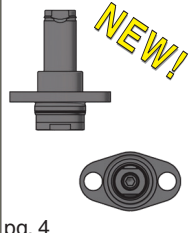

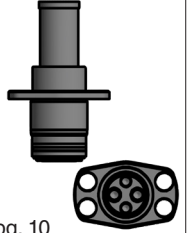
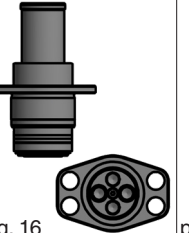
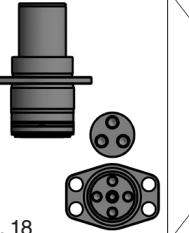
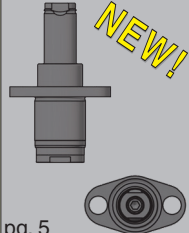
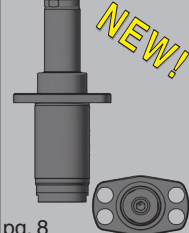
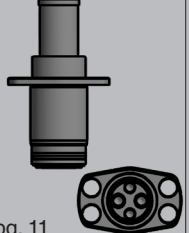
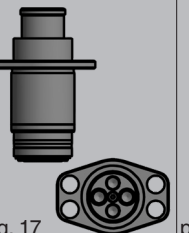
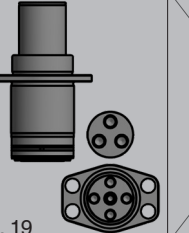
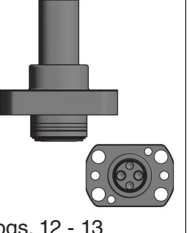
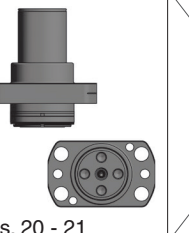
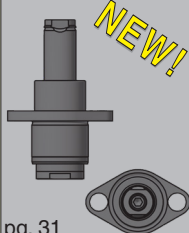
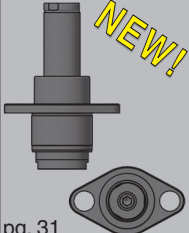
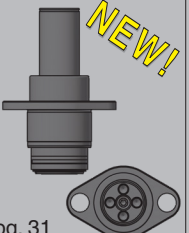


DADCO's entire product line is available on-line in solid models and 2D CAD formats. For more information, visit our website, [www.dadco.net](http://www.dadco.net), or contact DADCO.

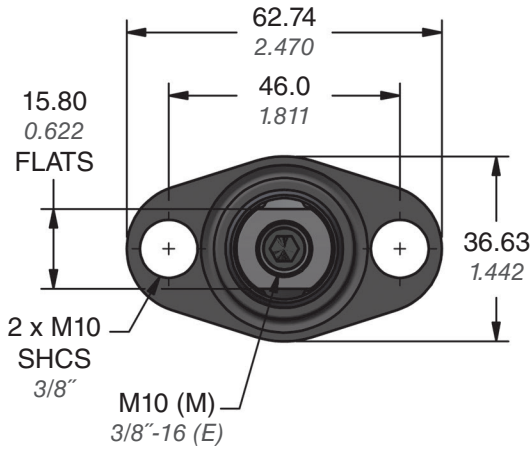
### Installation Examples



Guide Retainer Set Profiles

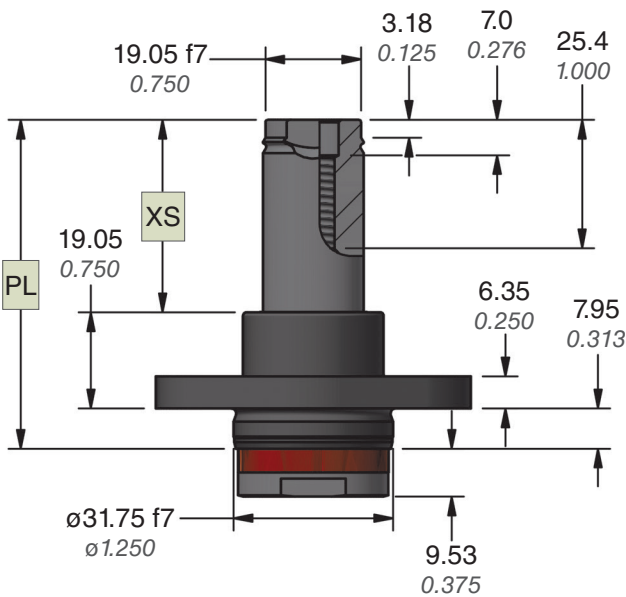
	Rod Diameter						
	ø20	ø25	ø30	ø36	ø45	ø50	ø65
FM		 pg. 6	 pg. 9	 pg. 14		 pg. 22	
N3 W2			 pgs. 9 & 30	 pgs. 14 & 30			
HD FH				 pg. 15		 pg. 23	 pg. 24
HD1	 pg. 4	 pg. 7	 pg. 10	 pg. 16	 pg. 18		
HD2	 pg. 5	 pg. 8	 pg. 11	 pg. 17	 pg. 19		
HD4 / HD5			 pgs. 12 - 13		 pgs. 20 - 21		
HA2	 pg. 31	 pg. 31	 pg. 31				

**NEW!**



Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	47.0	1.850	0254	25.4	1.000	52.40	2.063
0300	30.0	1.181	57.0	2.244	0318	31.75	1.250	58.75	2.313
0350	35.0	1.378	62.0	2.441	0381	38.1	1.500	65.10	2.563
0400	40.0	1.575	67.0	2.638	0445	44.45	1.750	71.45	2.813
0450	45.0	1.772	72.0	2.835	0508	50.8	2.000	77.80	3.063
0500	50.0	1.969	77.0	3.032	0572	57.15	2.250	84.15	3.313
0550	55.0	2.165	82.0	3.228	0635	63.5	2.500	90.50	3.563
0600	60.0	2.362	87.0	3.425	0699	69.85	2.750	96.85	3.813
0700	70.0	2.756	97.0	3.819	0762	76.2	3.000	103.20	4.063
0750	75.0	2.953	102.0	4.016	0826	82.55	3.250	109.55	4.313
0800	80.0	3.150	107.0	4.213	0889	88.9	3.500	115.90	4.563

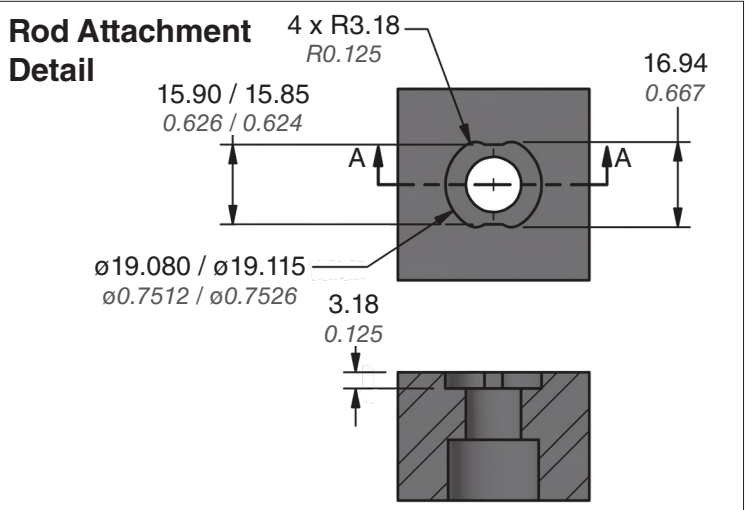
\*XS = PL - GRL  
Guide Retainer Length (GRL) = 2700 mm (1.063 in)



Velocity Estimate	(m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS	max (lb.)	35	24	18	14	11	9	7	6
	max (kg)	16	11	8	6	5	4	3	3

Pad Mass		GRS.20.HD1 Quantity							
lb.	kg								
5	2	2	2	2	2	2	2	2	2
10	5	2	2	2	2	2	3	3	3
20	9	2	2	3	3	3	4	4	5
30	14	2	3	3	4	4	5	6	6
40	18	3	3	4	4	5	6	7	8
50	23	3	4	4	5	6	7		
70	32	3	4	5	7	8			
90	41	4	5	7	8				



### Ordering Example:

**GRS.20.HD1. M. 0500**

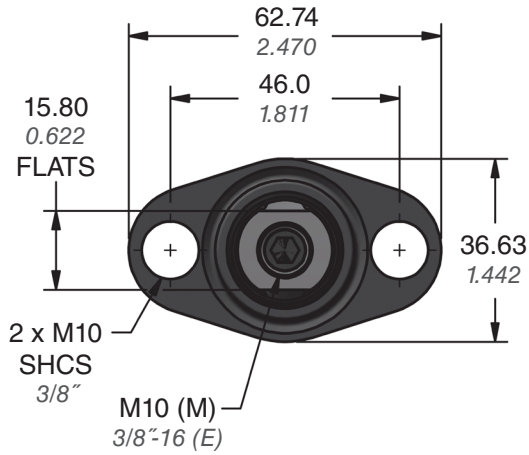
**Part Number:**  
Includes Series, Guide Rod Diameter and Retainer Mount Type

**Guide Rod Option:**  
M = M10, Metric;  
E = 3/8"-16, Imperial

**Pin Extension Code:** 0200 - 0889  
Example:  
0500 = 50.0 mm = XS Dimension

GRS.20.HD2

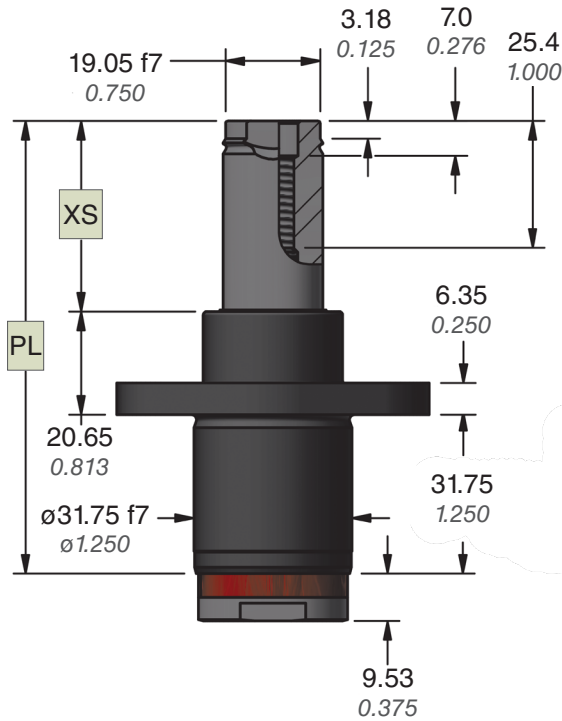
**NEW!**



Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	72.4	2.850	0254	25.4	1.000	77.80	3.063
0300	30.0	1.181	82.4	3.244	0318	31.75	1.250	84.15	3.313
0400	40.0	1.575	92.4	3.638	0381	38.1	1.500	90.50	3.563
0500	50.0	1.969	102.4	4.031	0445	44.45	1.750	96.85	3.813
0550	55.0	2.165	107.4	4.228	0508	50.8	2.000	103.20	4.063
0600	60.0	2.362	112.4	4.425	0572	57.15	2.250	109.55	4.313
0700	70.0	2.756	122.4	4.819	0635	63.5	2.500	115.90	4.563
0750	75.0	2.953	127.4	5.016	0699	69.85	2.750	122.25	4.813
0800	80.0	3.150	132.4	5.213	0762	76.2	3.000	128.60	5.063
0900	90.0	3.543	142.4	5.606	0826	82.55	3.250	134.95	5.313
0950	95.0	3.740	147.4	5.803	0889	88.9	3.500	141.30	5.563
1000	100.0	3.937	152.4	6.000	0953	95.25	3.750	147.65	5.813
1100	110.0	4.331	162.4	6.394	1016	101.6	4.000	154.00	6.063
1200	120.0	4.724	172.4	6.787	1143	114.3	4.500	166.70	6.563
1300	130.0	5.118	182.4	7.181	1270	127.0	5.000	179.40	7.063
1400	140.0	5.512	192.4	7.575	1397	139.7	5.500	192.10	7.563
1500	150.0	5.906	202.4	7.969	1524	152.4	6.000	204.80	8.063

\*XS = PL - GRL

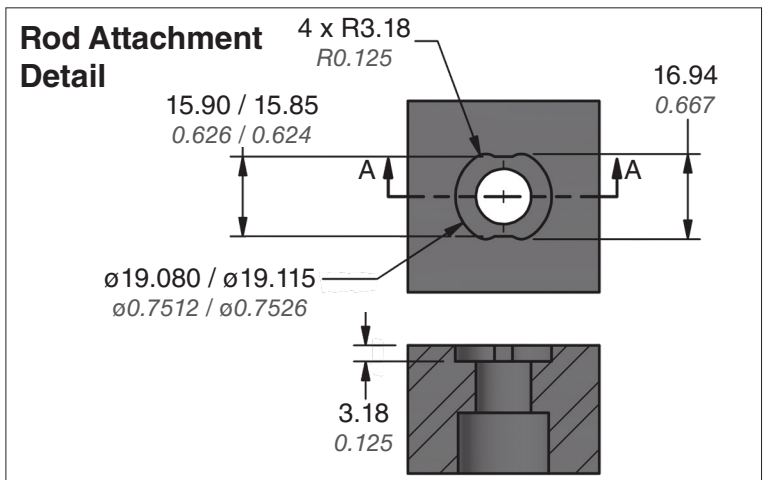
Guide Retainer Length (GRL) = 52.40 mm (2.063 in)



Velocity Estimate	(m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS	max (lb.)	35	24	18	14	11	9	7	6
	max (kg)	16	11	8	6	5	4	3	3

Pad Mass	GRS.20.HD2 Quantity								
lb.	kg								
5	2	2	2	2	2	2	2	2	2
10	5	2	2	2	2	2	3	3	3
20	9	2	2	3	3	3	4	4	5
30	14	2	3	3	4	4	5	6	6
40	18	3	3	4	4	5	6	7	8
50	23	3	4	4	5	6	7		
70	32	3	4	5	7	8			
90	41	4	5	7	8				



Ordering Example:

GRS.20.HD2. M. 0500

Part Number:

Includes Series, Guide Rod Diameter and Retainer Mount Type

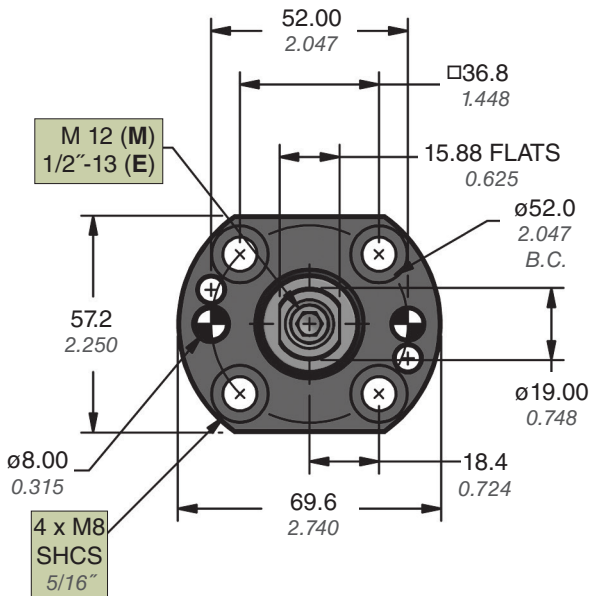
Guide Rod Option:

M = M10, Metric;  
E = 3/8"-16, Imperial

Pin Extension Code: 0200 - 1524

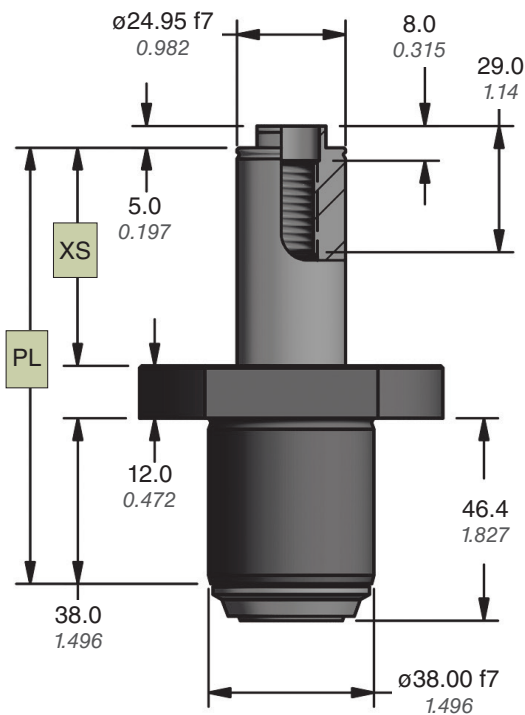
Example:

0500 = 50.0 mm = XS Dimension



Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	70.0	2.756	0800	80.0	3.150	130.0	5.118
0300	30.0	1.181	80.0	3.150	0850	85.0	3.346	135.0	5.315
0400	40.0	1.575	90.0	3.543	0900	90.0	3.543	140.0	5.512
0450	45.0	1.772	95.0	3.740	0950	95.0	3.740	145.0	5.709
0500	50.0	1.969	100.0	3.937	1000	100.0	3.937	150.0	5.906
0550	55.0	2.165	105.0	4.134	1100	110.0	4.331	160.0	6.299
0600	60.0	2.362	110.0	4.331	1200	120.0	4.724	170.0	6.693
0650	65.0	2.559	115.0	4.528	1300	130.0	5.118	180.0	7.087
0700	70.0	2.756	120.0	4.724	1400	140.0	5.512	190.0	7.480
0750	75.0	2.953	125.0	4.921	1500	150.0	5.906	200.0	7.874

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 50 mm (1.969 in)



Velocity Estimate	(m/sec)	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Per GRS	max (lb.)	67	38	24	17	12	9	7	6
	max (kg)	31	17	11	8	6	4	3.4	2.8
Pad Mass		GRS.25 Quantity							
lb.	kg	2	2	2	2	2	2	2	2
5.5	2.5	2	2	2	2	2	2	2	2
11	5	2	2	2	2	3	3	3	3
22	10	2	2	2	3	3	4	4	5
44	20	2	3	3	4	5	6	7	
66	30	2	3	4	5	7	8		
99	45	3	4	6	7				

### Ordering Example:

**GRS.25. M. 0500. FM.**

**Part Number:**  
Includes Series and Guide Rod Diameter

**Guide Rod Option:**  
M = M12, Metric;  
E = 1/2"-13, Imperial

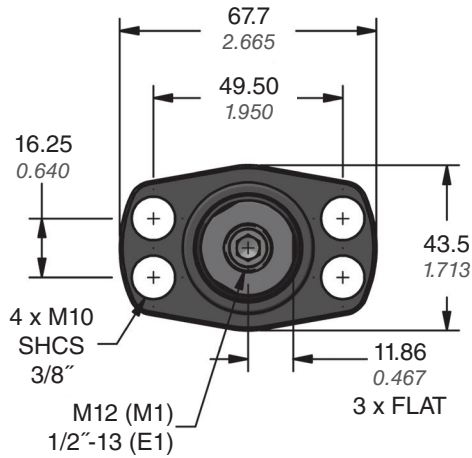
For optional plate adapter cap add **AC**.  
See page 29 for AC options.

**Guide Retainer Option:**  
FM = Flange Mount

**Pin Extension Code:** 0200 - 1500  
Example:  
0500 = 50.0 mm = XS Dimension

GRS.25.HD1

**NEW!**



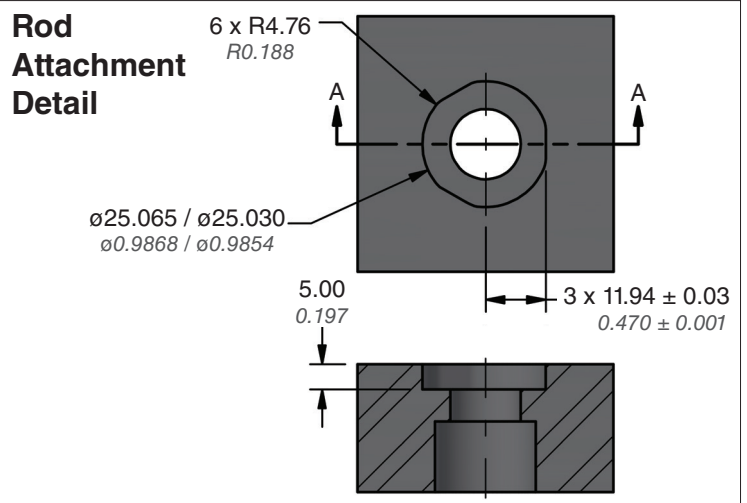
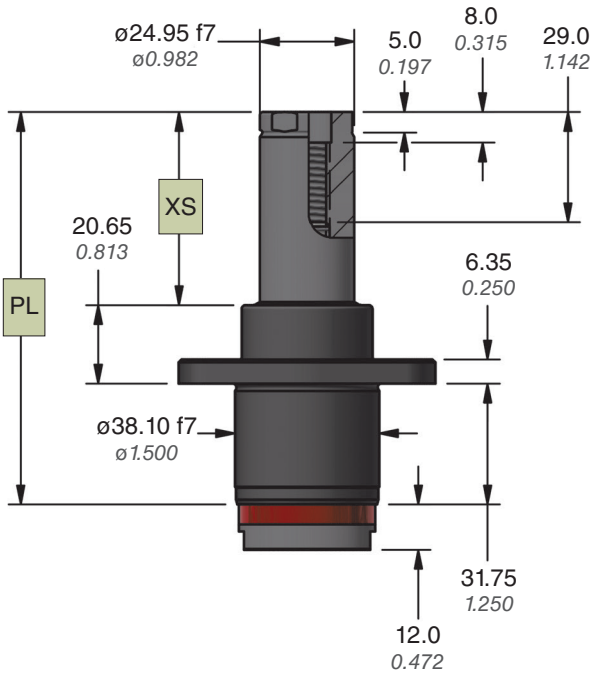
Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	72.4	2.850	0254	25.4	1.000	77.80	3.063
0300	30.0	1.181	82.4	3.244	0318	31.75	1.250	84.15	3.313
0400	40.0	1.575	92.4	3.638	0381	38.1	1.500	90.50	3.563
0500	50.0	1.969	102.4	4.031	0445	44.45	1.750	96.85	3.813
0550	55.0	2.165	107.4	4.228	0508	50.8	2.000	103.20	4.063
0600	60.0	2.362	112.4	4.425	0572	57.15	2.250	109.55	4.313
0700	70.0	2.756	122.4	4.819	0635	63.5	2.500	115.90	4.563
0750	75.0	2.953	127.4	5.016	0699	69.85	2.750	122.25	4.813
0800	80.0	3.150	132.4	5.213	0762	76.2	3.000	128.60	5.063
0900	90.0	3.543	142.4	5.606	0826	82.55	3.250	134.95	5.313
0950	95.0	3.740	147.4	5.803	0889	88.9	3.500	141.30	5.563
1000	100.0	3.937	152.4	6.000	0953	95.25	3.750	147.65	5.813
1100	110.0	4.331	162.4	6.394	1016	101.6	4.000	154.00	6.063
1200	120.0	4.724	172.4	6.787	1143	114.3	4.500	166.70	6.563

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 52.40 mm (2.063 in)

Velocity Estimate	(m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS	max (lb.)	63	44	32	25	20	16	13	11
	max (kg)	29	20	15	11	9	7	6	5

Pad Mass		GRS.25.HD1 Quantity							
lb.	kg								
10	5	2	2	2	2	2	2	2	2
25	11	2	2	2	3	3	3	3	4
50	23	2	3	3	4	4	5	5	6
75	34	3	3	4	5	5	6	7	8
100	45	3	4	5	6	7	8		
125	57	3	4	5	7	8			
150	68	4	5	6	8				
175	79	4	5	7					



Ordering Example:

GRS.25.HD1. E1. 0500

Part Number:

Includes Series, Guide Rod Diameter and Retainer Mount Type

Guide Rod Option:

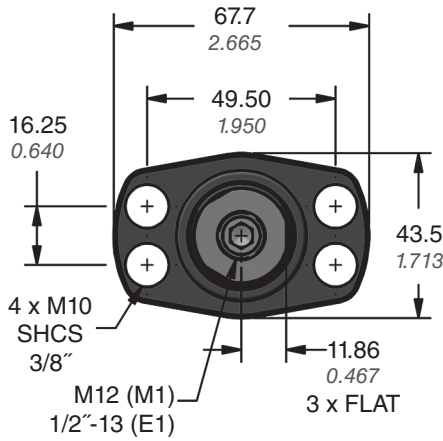
M1 = M12, Metric;  
E1 = 1/2"-13, Imperial

Pin Extension Code: 0200 - 1200

Example:  
0500 = 50.0 mm = XS Dimension

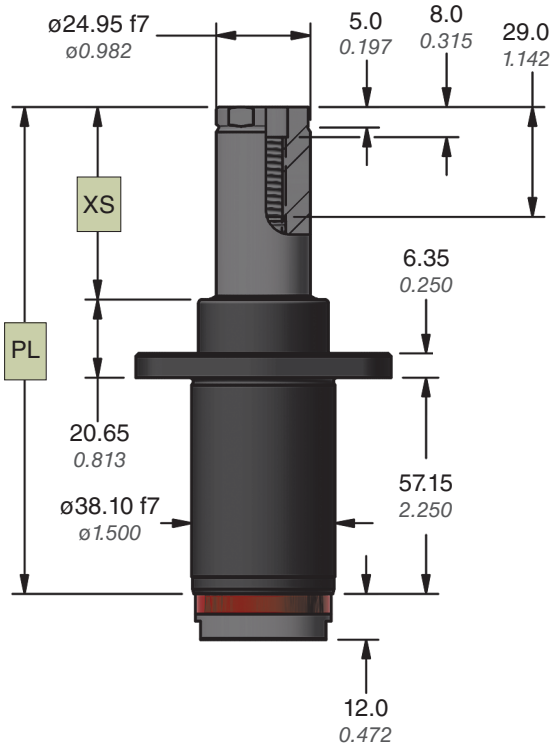
## GRS.25.HD2

**NEW!**

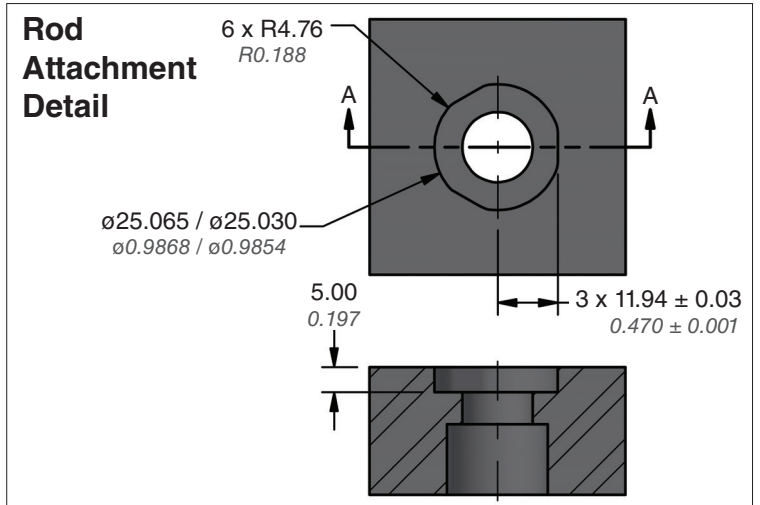


Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	97.8	3.850	0254	25.4	1.000	103.20	4.063
0300	30.0	1.181	107.8	4.244	0318	31.75	1.250	109.55	4.313
0400	40.0	1.575	117.8	4.638	0381	38.1	1.500	115.90	4.563
0500	50.0	1.969	127.8	5.031	0445	44.45	1.750	122.25	4.813
0550	55.0	2.165	132.8	5.228	0508	50.8	2.000	128.60	5.063
0600	60.0	2.362	137.8	5.425	0572	57.15	2.250	134.95	5.313
0700	70.0	2.756	147.8	5.819	0635	63.5	2.500	141.30	5.563
0800	80.0	3.150	157.8	6.213	0699	69.85	2.750	147.65	5.813
0900	90.0	3.543	167.8	6.606	0762	76.2	3.000	154.00	6.063
1000	100.0	3.937	177.8	7.000	0889	88.9	3.500	166.70	6.563
1100	110.0	4.331	187.8	7.394	1016	101.6	4.000	179.40	7.063
1200	120.0	4.724	197.8	7.787	1143	114.3	4.500	192.10	7.563
1300	130.0	5.118	207.8	8.181	1270	127.0	5.000	204.80	8.063
1400	140.0	5.512	217.8	8.575	1397	139.7	5.500	217.50	8.563
1500	150.0	5.906	227.8	8.969	1524	152.4	6.000	230.20	9.063

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 77.80 mm (3.063 in)



Velocity Estimate (m/sec)		0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS	max (lb.)	63	44	32	25	20	16	13	11
	max (kg)	29	20	15	11	9	7	6	5
Pad Mass		GRS.25.HD2 Quantity							
lb.	kg	2	2	2	2	2	2	2	2
10	5	2	2	2	2	2	2	2	2
25	11	2	2	3	3	3	3	3	4
50	23	2	3	3	4	4	5	5	6
75	34	3	3	4	5	5	6	7	8
100	45	3	4	5	6	7	8		
125	57	3	4	5	7	8			
150	68	4	5	6	8				
175	79	4	5	7					



### Ordering Example:

**GRS.25.HD2. E1. 0500**

**Part Number:**

Includes Series, Guide Rod Diameter and Retainer Mount Type

**Guide Rod Option:**

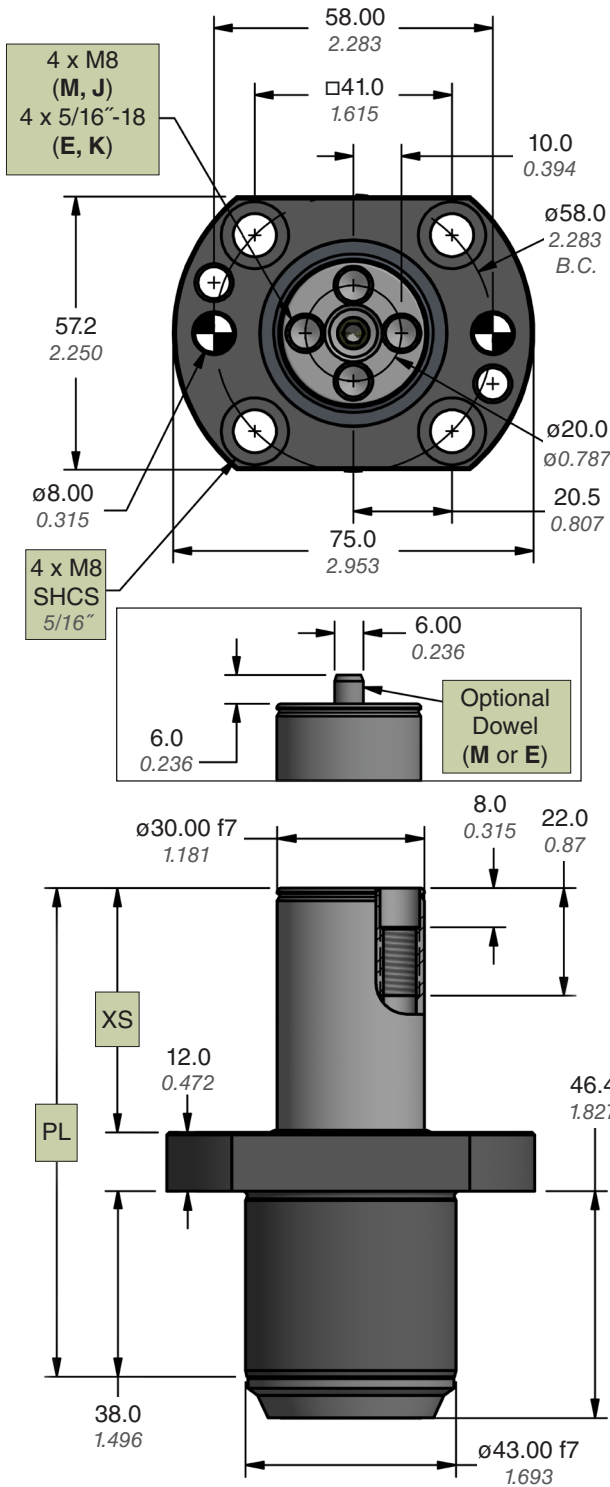
M1 = M12, Metric;  
E1 = 1/2"-13, Imperial

**Pin Extension Code:** 0200 - 1524

Example:  
0500 = 50.0 mm = XS Dimension



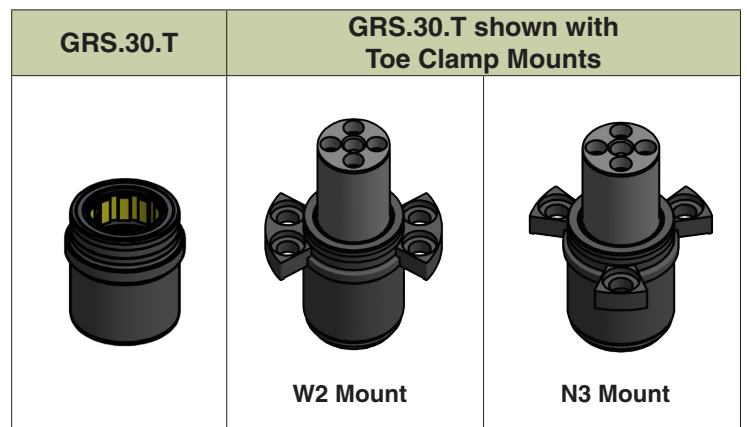
GRS.30



Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	70.0	2.756	0800	80.0	3.150	130.0	5.118
0300	30.0	1.181	80.0	3.150	0850	85.0	3.346	135.0	5.315
0400	40.0	1.575	90.0	3.543	0900	90.0	3.543	140.0	5.512
0450	45.0	1.772	95.0	3.740	0950	95.0	3.740	145.0	5.709
0500	50.0	1.969	100.0	3.937	1000	100.0	3.937	150.0	5.906
0550	55.0	2.165	105.0	4.134	1100	110.0	4.331	160.0	6.299
0600	60.0	2.362	110.0	4.331	1200	120.0	4.724	170.0	6.693
0650	65.0	2.559	115.0	4.528	1300	130.0	5.118	180.0	7.087
0700	70.0	2.756	120.0	4.724	1400	140.0	5.512	190.0	7.480
0750	75.0	2.953	125.0	4.921	1500	150.0	5.906	200.0	7.874

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 50 mm (1.969 in)

Velocity Estimate (m/sec)	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	
Per GRS max (lb.)	91	51	33	23	17	13	10	8	
Per GRS max (kg)	41	23	15	10	8	6	5	4	
Pad Mass		GRS.30 Quantity							
lb.	kg	2	2	2	2	2	2	3	3
11	5	2	2	2	2	3	3	4	4
22	10	2	2	3	3	4	5	6	7
44	20	2	3	4	5	6	8		
77	35	3	4	5	6	8			
110	50	3	4	6	8				
143	65	3	4	6	8				



Ordering Example:

GRS.30. J. 0500. FM

Part Number:

Includes Series and Guide Rod Diameter

Guide Rod Option:

J = 4 x M8, Metric; K = 4 x 5/16"-18, Imperial;

M = 4 x M8, Metric with Rod End Dowel;

E = 4 x 5/16"-18, Imperial with Rod End Dowel

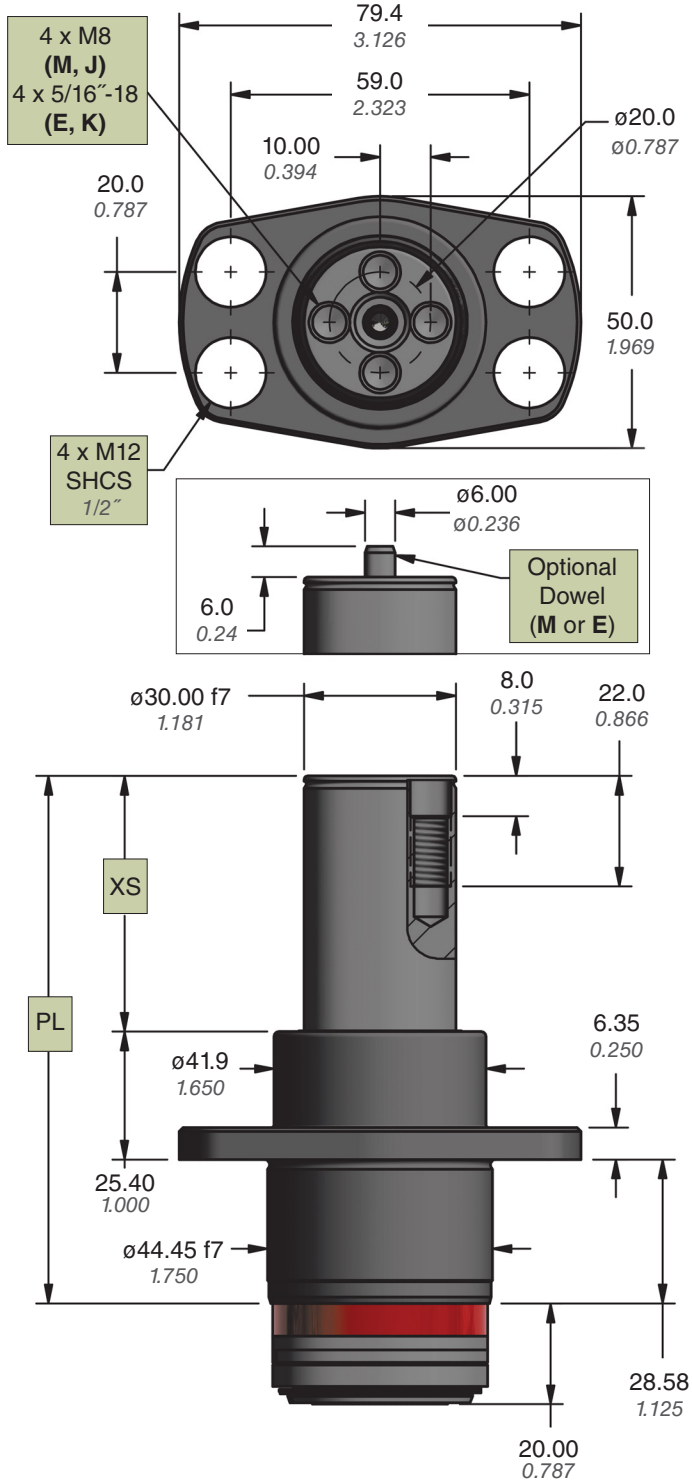
Guide Retainer Mount Option:

FM = Flange Mount, W2 or N3 Mount

Pin Extension Code: 0200 - 1500

Example:

0500 = 50.0 mm = XS Dimension



Pin Extension Code	*XS		PL	
	mm	inch	mm	inch
0200	20.0	0.787	73.98	2.912
0254	25.4	1.000	79.38	3.125
0300	30.0	1.181	83.98	3.306
0318	31.75	1.250	85.73	3.375
0381	38.1	1.500	92.08	3.625
0400	40.0	1.575	93.98	3.700
0445	44.45	1.750	98.43	3.875
0500	50.0	1.969	103.98	4.094
0508	50.8	2.000	104.78	4.125
0572	57.15	2.250	111.13	4.375
0600	60.0	2.362	113.98	4.487
0635	63.5	2.500	117.48	4.625
0700	70.0	2.756	123.98	4.881
0762	76.2	3.000	130.18	5.125
0800	80.0	3.150	133.98	5.275
0889	88.9	3.500	142.88	5.625
0900	90.0	3.543	143.98	5.668

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 53.98 mm (2.125 in)

Velocity Estimate	(m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS	max (lb.)	141	98	72	55	44	35	29	24
	max (kg)	64	44	33	25	20	16	13	11

Pad Mass		GRS.30.HD1 Quantity							
lb.	kg								
50	23	2	2	2	2	3	3	3	4
100	45	2	3	3	3	4	4	5	6
150	68	3	3	4	4	5	6	7	8
200	91	3	4	4	5	6	7	8	
250	113	3	4	5	6	7			
300	136	4	5	6	7	8			
350	159	4	5	6	8				
400	181	4	6	7					

### Ordering Example:

**GRS.30.HD1. M. 0500**

Part Number:

Includes Series, Guide Rod Diameter and Retainer Mount Type

Guide Rod Option:

J = 4 x M8, Metric; K = 4 x 5/16"-18, Imperial;

M = 4 x M8, Metric with Rod End Dowel;

E = 4 x 5/16"-18, Imperial with Rod End Dowel

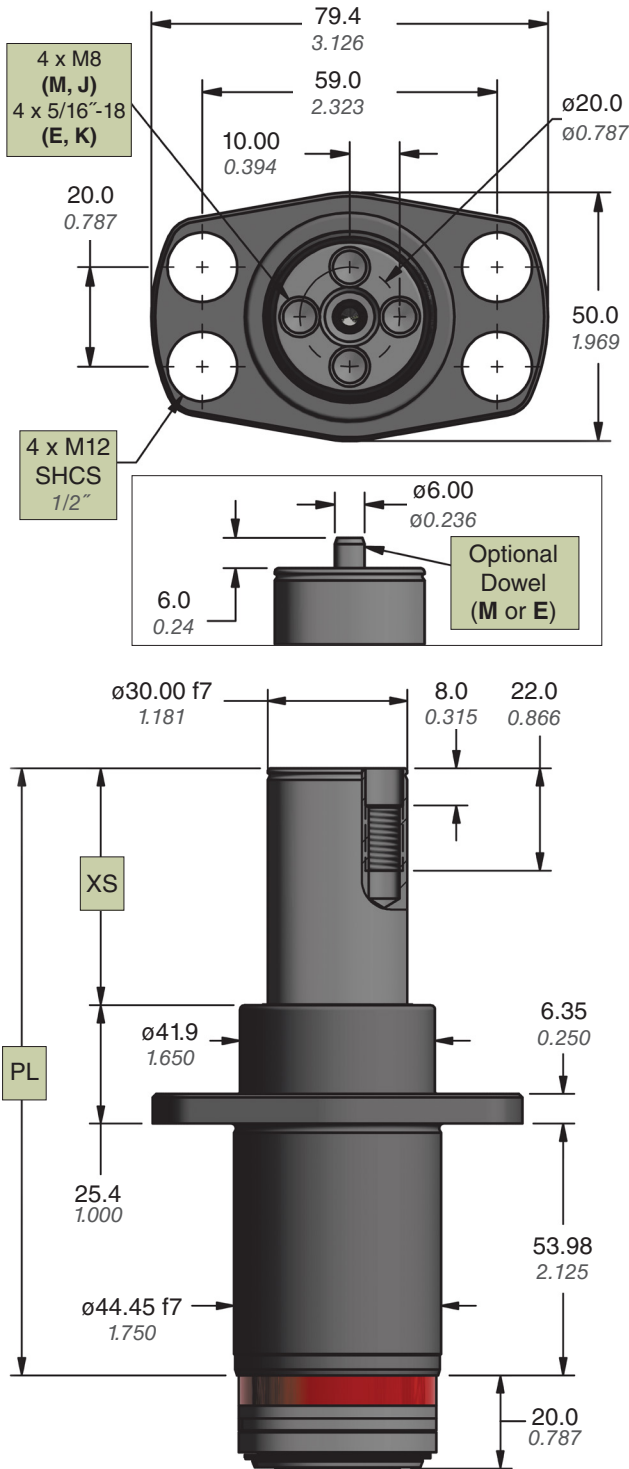
See page 28 for alternative rod ends.

Pin Extension Code: 0200 - 0900

Example:

0500 = 50.0 mm = XS Dimension

GRS.30.HD2



Pin Extension Code	*XS		PL	
	mm	inch	mm	inch
0200	20.0	0.787	99.38	3.912
0254	25.4	1.000	104.78	4.125
0300	30.0	1.181	109.38	4.306
0318	31.75	1.250	111.13	4.375
0381	38.1	1.500	117.48	4.625
0400	40.0	1.575	119.38	4.700
0445	44.5	1.750	123.83	4.875
0500	50.0	1.969	129.38	5.094
0508	50.8	2.000	130.18	5.125
0572	57.15	2.250	136.53	5.375
0600	60.0	2.362	139.38	5.487
0635	63.5	2.500	142.88	5.625
0700	70.0	2.756	149.38	5.881
0762	76.2	3.000	155.58	6.125
0800	80.0	3.150	159.38	6.275
0889	88.9	3.500	168.28	6.625
0900	90.0	3.543	169.38	6.668
1000	100.0	3.937	179.38	7.062
1016	101.6	4.000	180.98	7.125
1100	110.0	4.331	189.38	7.456
1143	114.3	4.500	193.68	7.625
1200	120.0	4.724	199.38	7.849
1270	127.0	5.000	206.38	8.125
1300	130.0	5.118	209.38	8.243
1397	139.7	5.500	219.08	8.625
1400	140.0	5.512	219.38	8.637
1500	150.0	5.906	229.38	9.031
1524	152.4	6.000	231.78	9.125

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 79.38 mm (3.125 in)

Velocity Estimate (m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	
Per GRS max (lb.)	141	98	72	55	44	35	29	24	
Per GRS max (kg)	64	44	33	25	20	16	13	11	
Pad Mass		GRS.30.HD2 Quantity							
lb.	kg	2	2	2	2	3	3	3	4
50	23	2	3	3	3	4	4	5	6
100	45	3	3	4	4	5	6	7	8
150	68	3	4	4	5	6	7	8	
200	91	3	4	5	6	7			
250	113	4	5	6	7	8			
300	136	4	5	6	7	8			
350	159	4	5	6	8				
400	181	4	6	7					

Ordering Example:

GRS.30.HD2. M. 0500

Part Number:

Includes Series, Guide Rod Diameter, and Retainer Mount Type

Guide Rod Option:

J = 4 x M8, Metric; K = 4 x 5/16"-18, Imperial;

M = 4 x M8, Metric with Rod End Dowel;

E = 4 x 5/16"-18, Imperial with Rod End Dowel

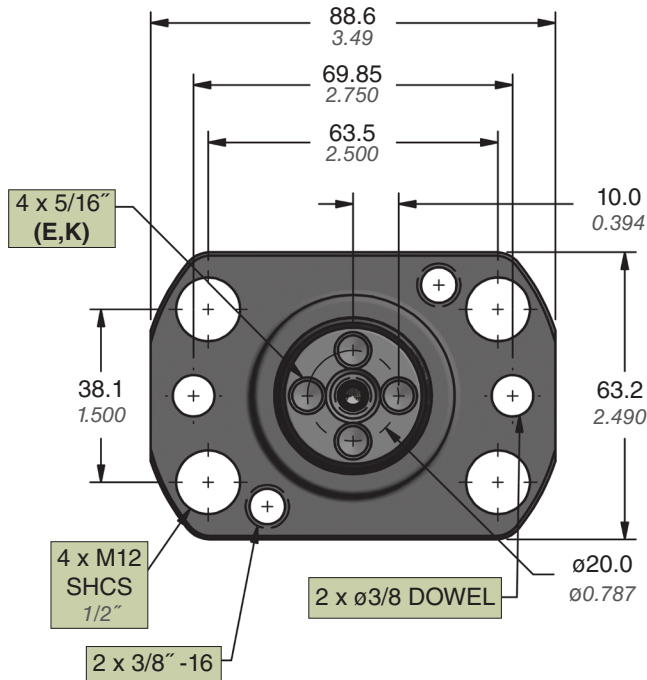
See page 28 for alternative rod ends.

Pin Extension Code: 0200 - 1524

Example:

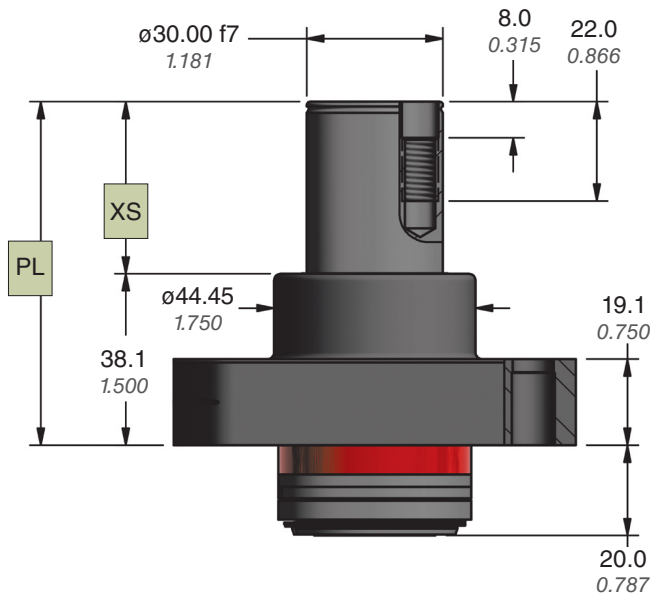
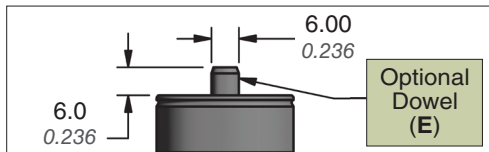
0500 = 50.0 mm = XS Dimension

## GRS.30.HD4 – Imperial



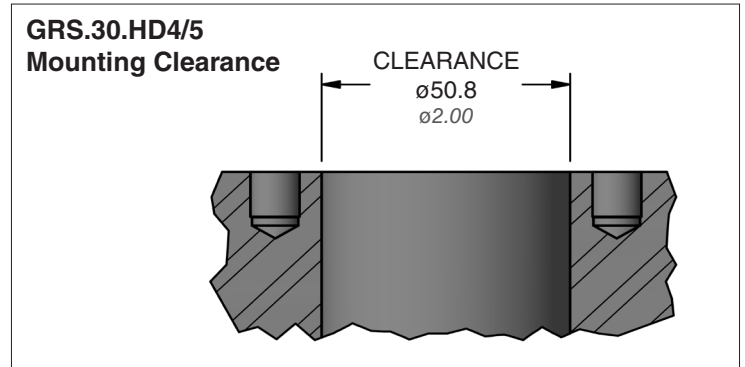
Pin Extension Code	*XS		PL	
	mm	inch	mm	inch
0200	20.00	0.787	58.10	2.287
0254	25.40	1.000	63.50	2.500
0300	30.00	1.181	68.10	2.681
0318	31.75	1.250	69.85	2.750
0381	38.10	1.500	76.20	3.000
0400	40.00	1.575	78.10	3.075
0445	44.45	1.750	82.55	3.250
0500	50.00	1.969	88.10	3.469
0508	50.80	2.000	88.90	3.500
0572	57.15	2.250	95.25	3.750
0600	60.00	2.362	98.10	3.862
0635	63.50	2.500	101.60	4.000
0700	70.00	2.756	108.10	4.256
0762	76.20	3.000	114.30	4.500
0800	80.00	3.150	118.10	4.650
0889	88.90	3.500	127.00	5.000
0900	90.00	3.543	128.10	5.043

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 38.10 mm (1.500 in)



Velocity Estimate (m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS max (lb.)	141	98	72	55	44	35	29	24
Per GRS max (kg)	64	44	33	25	20	16	13	11

Pad Mass		GRS.30.HD4 Quantity							
lb.	kg								
50	23	2	2	2	2	3	3	3	4
100	45	2	3	3	3	4	4	5	6
150	68	3	3	4	4	5	6	7	8
200	91	3	4	4	5	6	7	8	
250	113	3	4	5	6	7			
300	136	4	5	6	7	8			
350	159	4	5	6	8				
400	181	4	6	7					



### Ordering Example:

**GRS.30.HD4. K. 0500**

**Part Number:**

Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Guide Rod Option:**

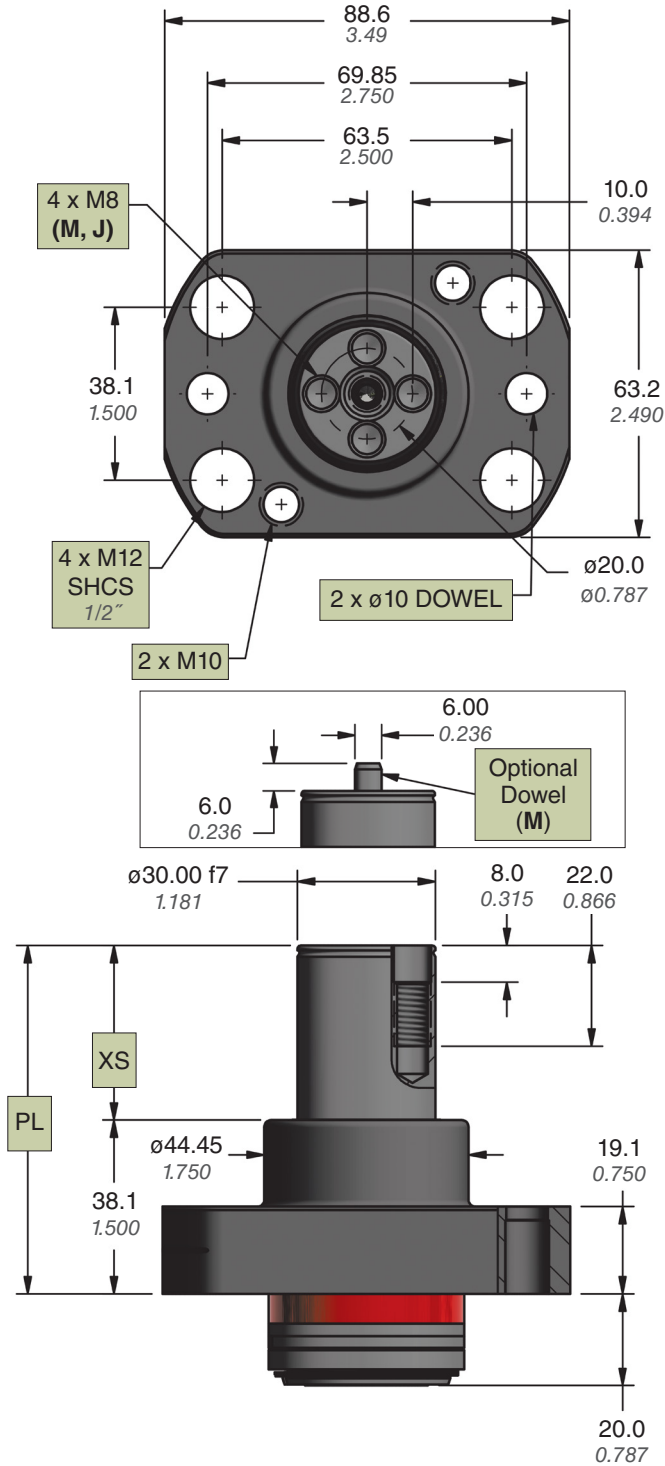
**K** = 4 x 5/16"-18, Imperial;  
**E** = 4 x 5/16"-18, Imperial with Rod End Dowel  
See page 28 for alternative rod ends.

**Pin Extension Code: 0200 - 0900**

Example:

0318 = 31.75 mm (1.250 in) = XS Dimension

GRS.30.HD5 – Metric



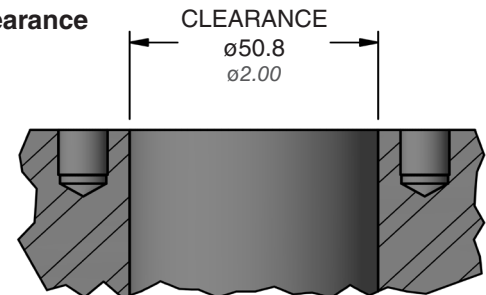
Pin Extension Code	*XS		PL	
	mm	inch	mm	inch
0200	20.00	0.787	58.10	2.287
0254	25.40	1.000	63.50	2.500
0300	30.00	1.181	68.10	2.681
0318	31.75	1.250	69.85	2.750
0381	38.10	1.500	76.20	3.000
0400	40.00	1.575	78.10	3.075
0445	44.45	1.750	82.55	3.250
0500	50.00	1.969	88.10	3.469
0508	50.80	2.000	88.90	3.500
0572	57.15	2.250	95.25	3.750
0600	60.00	2.362	98.10	3.862
0635	63.50	2.500	101.60	4.000
0700	70.00	2.756	108.10	4.256
0762	76.20	3.000	114.30	4.500
0800	80.00	3.150	118.10	4.650
0889	88.90	3.500	127.00	5.000
0900	90.00	3.543	128.10	5.043

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 38.10 mm (1.500 in)

Velocity Estimate (m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS max (lb.)	141	98	72	55	44	35	29	24
Per GRS max (kg)	64	44	33	25	20	16	13	11

Pad Mass		GRS.30.HD5 Quantity							
lb.	kg								
50	23	2	2	2	2	3	3	3	4
100	45	2	3	3	3	4	4	5	6
150	68	3	3	4	4	5	6	7	8
200	91	3	4	4	5	6	7	8	
250	113	3	4	5	6	7			
300	136	4	5	6	7	8			
350	159	4	5	6	8				
400	181	4	6	7					

GRS.30.HD4/5 Mounting Clearance



Ordering Example:

GRS.30.HD5. J. 0500

**Part Number:** \_\_\_\_\_  
Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Pin Extension Code:** 0200 - 0900

Example:

0500 = 50.0 mm = XS Dimension

**Guide Rod Option:** \_\_\_\_\_

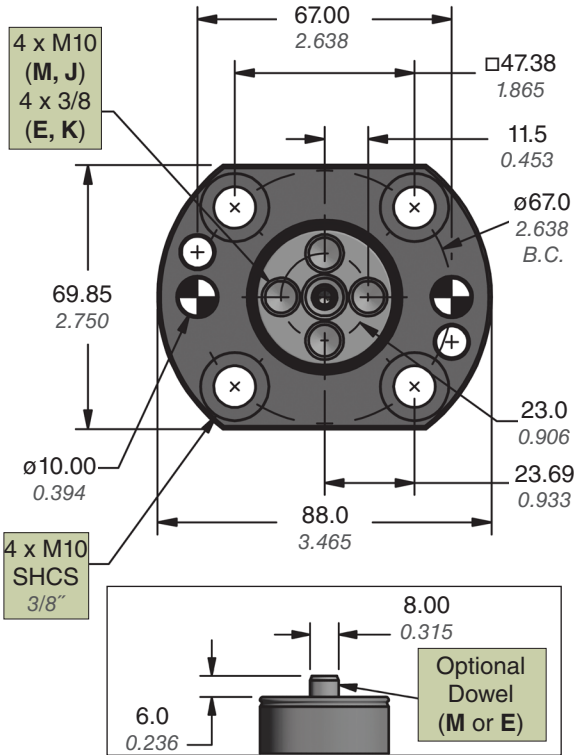
J = 4 x M8, Metric;

M = 4 x M8, Metric with Rod End Dowel

See page 28 for alternative rod ends.

# Guide Retainer Sets

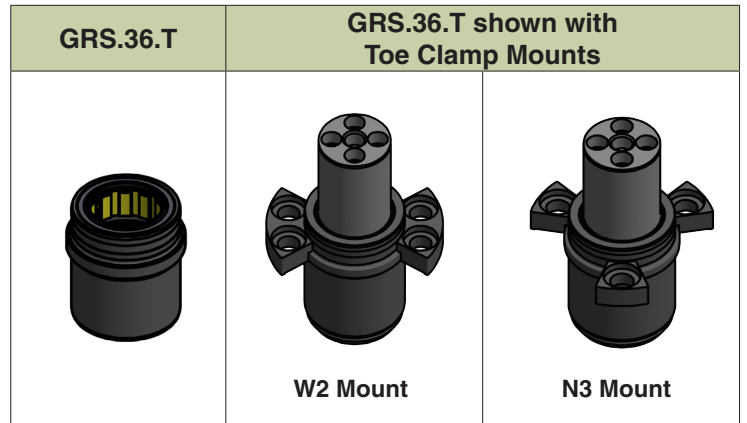
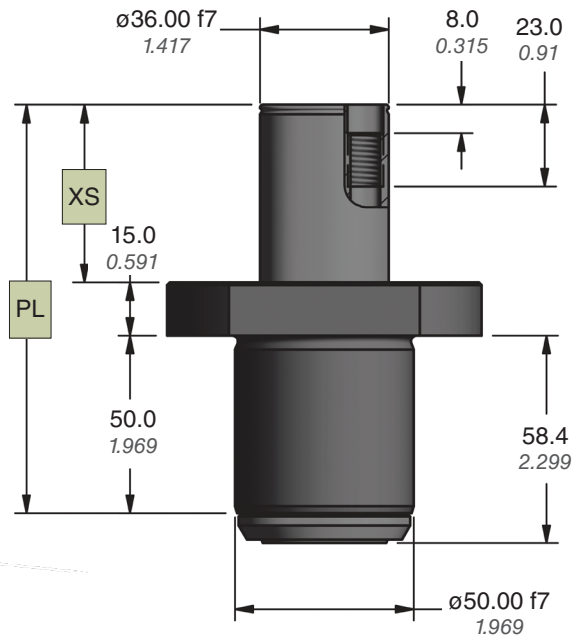
## GRS.36



Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	85.0	3.346	0800	80.0	3.150	145.0	5.709
0300	30.0	1.181	95.0	3.740	0850	85.0	3.346	150.0	5.906
0400	40.0	1.575	105.0	4.134	0900	90.0	3.543	155.0	6.102
0450	45.0	1.772	110.0	4.331	0950	95.0	3.740	160.0	6.299
0500	50.0	1.969	115.0	4.528	1000	100.0	3.937	165.0	6.496
0550	55.0	2.165	120.0	4.724	1100	110.0	4.331	175.0	6.890
0600	60.0	2.362	125.0	4.921	1200	120.0	4.724	185.0	7.283
0650	65.0	2.559	130.0	5.118	1300	130.0	5.118	195.0	7.677
0700	70.0	2.756	135.0	5.315	1400	140.0	5.512	205.0	8.071
0750	75.0	2.953	140.0	5.512	1500	150.0	5.906	215.0	8.465

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 65 mm (2.559 in)

Velocity Estimate	(m/sec)	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Per GRS	max (lb.)	178	100	64	44	33	25	20	16
	max (kg)	81	45	29	20	15	11	9	7
Pad Mass		GRS.36 Quantity							
lb.	kg								
22	10	2	2	2	2	2	2	3	3
55	25	2	2	2	3	3	4	4	5
110	50	2	3	3	4	5	6	7	8
165	75	2	3	4	5	7	8		
220	100	3	4	5	6	8			
276	125	3	4	6	8				



### Ordering Example:

**GRS.36. J. 0500. FM**

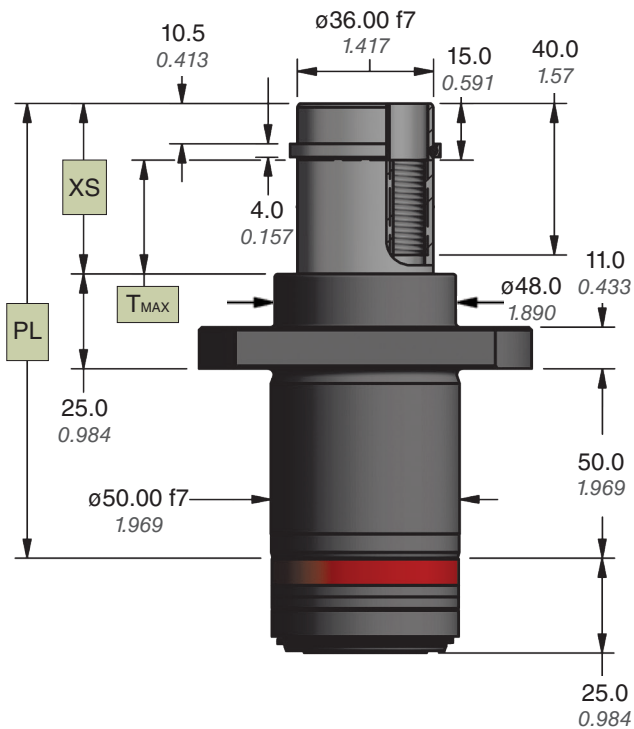
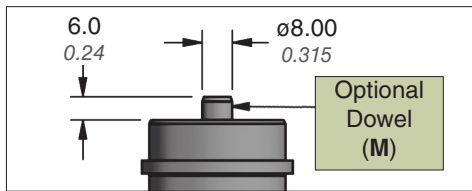
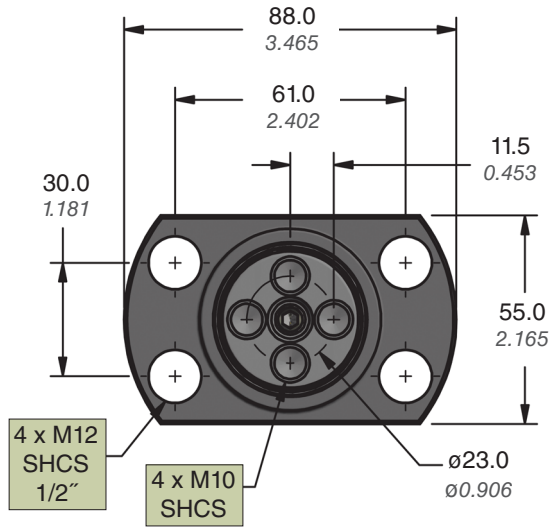
**Part Number:**  
Includes Series and Guide Rod Diameter

**Guide Rod Option:**  
**J** = 4 x M10, Metric; **K** = 4 x 3/8"-16, Imperial;  
**M** = 4 x M10, Metric with Rod End Dowel;  
**E** = 4 x 3/8"-16, Imperial with Rod End Dowel

**Guide Retainer Mount Option:**  
 FM = Flange Mount, W2 or N3 Mount

**Pin Extension Code:** 0200 - 1500  
 Example:  
 0500 = 50.0 mm = XS Dimension

GRS.36.HD



Pin Extension Code	*XS		PL		Max Travel (T <sub>MAX</sub> )	
	mm	inch	mm	inch	mm	inch
0450	45.0	1.772	120.0	4.724	30.0	1.181
0550	55.0	2.165	130.0	5.118	40.0	1.575
0650	65.0	2.559	140.0	5.512	50.0	1.969
0750	75.0	2.953	150.0	5.906	60.0	2.362
0850	85.0	3.346	160.0	6.299	70.0	2.756
0950	95.0	3.740	170.0	6.693	80.0	3.150
1050	105.0	4.134	180.0	7.087	90.0	3.543
1150	115.0	4.528	190.0	7.480	100.0	3.937
1250	125.0	4.921	200.0	7.874	110.0	4.331
1350	135.0	5.315	210.0	8.268	120.0	4.724
1450	145.0	5.709	220.0	8.661	130.0	5.118

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 75 mm (2.953 in)

Velocity Estimate	(m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
		Per GRS	max (lb.)	265	184	135	103	82	66
	max (kg)	120	83	61	47	37	30	25	21

Pad Mass		GRS.36.HD Quantity							
lb.	kg								
150	68	2	2	3	3	3	4	4	5
200	91	2	3	3	3	4	5	5	6
250	113	2	3	3	4	5	5	6	7
300	136	3	3	4	4	5	6	7	8
350	159	3	3	4	5	6	7	8	
400	181	3	4	4	5	6	8		
450	204	3	4	5	6	7	8		
500	227	3	4	5	6	8			
550	249	4	4	6	7	8			
600	272	4	5	6	7				

Ordering Example:

GRS.36.HD. J. 0550. FH.

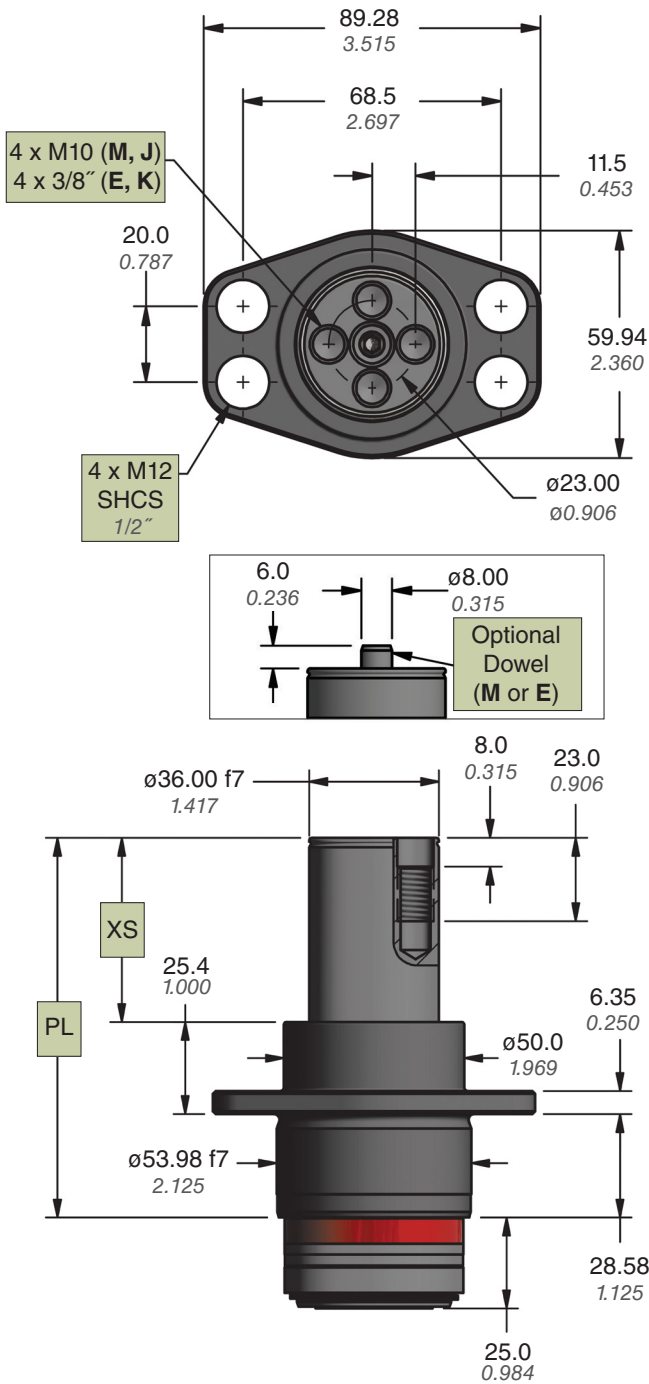
**Part Number:**  
Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Guide Rod Option:**  
J = Metric;  
M = Metric, with Rod End Dowel

For optional plate adapter add **AC**.  
See page 29 for AC options.

**Guide Retainer Mount Option:**  
FH = Flange Mount

**Pin Extension Code:** 0450 - 1450  
Example:  
0550 = 55.0 mm = XS Dimension



Pin Extension Code	*XS		PL	
	mm	inch	mm	inch
0200	20.0	0.787	73.98	2.912
0254	25.4	1.000	79.38	3.125
0300	30.0	1.181	83.98	3.306
0318	31.75	1.250	85.73	3.375
0381	38.1	1.500	92.08	3.625
0400	40.0	1.575	93.98	3.700
0445	44.45	1.750	98.43	3.875
0500	50.0	1.969	103.98	4.094
0508	50.8	2.000	104.78	4.125
0572	57.15	2.250	111.13	4.375
0600	60.0	2.362	113.98	4.487
0635	63.5	2.500	117.48	4.625
0700	70.0	2.756	123.98	4.881
0762	76.2	3.000	130.18	5.125
0800	80.0	3.150	133.98	5.275
0889	88.9	3.500	142.88	5.625
0900	90.0	3.543	143.98	5.668

**\*XS = PL - GRL**  
 Guide Retainer Length (GRL) = 53.98 mm (2.125 in)

Velocity Estimate (m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS max (lb.)	185	129	94	72	57	46	38	32
Per GRS max (kg)	84	58	43	33	26	21	17	15

Pad Mass		GRS.36.HD1 Quantity							
lb.	kg								
50	23	2	2	2	2	2	3	3	3
100	45	2	2	3	3	3	4	4	5
150	68	2	3	3	4	4	5	5	6
200	91	3	3	4	4	5	6	7	8
250	113	3	3	4	5	6	7	8	
300	136	3	4	5	6	7	8		
350	159	3	4	5	6	8			
400	181	4	5	6	7	8			
450	204	4	5	6	8				
500	227	4	5	7	8				

### Ordering Example:

**GRS.36.HD1. M. 0500.**

**Part Number:**

Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Guide Rod Option:**

**J** = 4 x M10, Metric; **K** = 4 x 3/8"-16, Imperial;  
**M** = 4 x M10, Metric with Rod End Dowel;  
**E** = 4 x 3/8"-16, Imperial with Rod End Dowel  
 See page 28 for alternative rod ends.

For optional plate adapter add **AC**.  
 See page 29 for AC options.

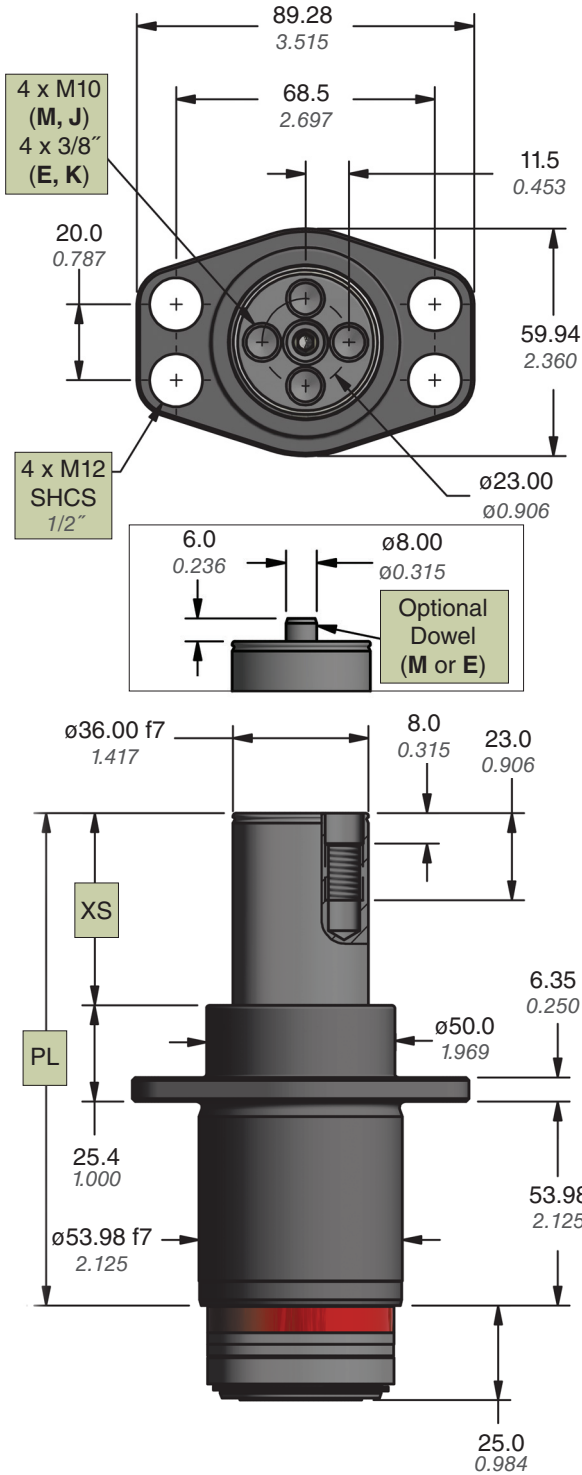
**Pin Extension Code:** 0200 - 0900

Example:

0500 = 50.0 mm = XS Dimension



GRS.36.HD2



Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	99.38	3.912	0254	25.4	1.000	104.78	4.125
0300	30.0	1.181	109.38	4.306	0318	31.75	1.250	111.13	4.375
0400	40.0	1.575	119.38	4.700	0381	38.1	1.500	117.48	4.625
0500	50.0	1.969	129.38	5.094	0445	44.45	1.750	123.83	4.875
0600	60.0	2.362	139.38	5.487	0508	50.8	2.000	130.18	5.125
0700	70.0	2.756	149.38	5.881	0572	57.15	2.250	136.53	5.375
0800	80.0	3.150	159.38	6.275	0635	63.5	2.500	142.88	5.625
0900	90.0	3.543	169.38	6.668	0762	76.2	3.000	155.58	6.125
1000	100.0	3.937	179.38	7.062	0889	88.9	3.500	168.28	6.625
1100	110.0	4.331	189.38	7.456	1016	101.6	4.000	180.98	7.125
1200	120.0	4.724	199.38	7.849	1143	114.3	4.500	193.68	7.625
1300	130.0	5.118	209.38	8.243	1270	127.0	5.000	206.38	8.125
1400	140.0	5.512	219.38	8.637	1397	139.7	5.500	219.08	8.625
1500	150.0	5.906	229.38	9.031	1524	152.4	6.000	231.78	9.125

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 79.38 mm (3.125 in)

Velocity Estimate (m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS max (lb.)	185	129	94	72	57	46	38	32
Per GRS max (kg)	84	58	43	33	26	21	17	15

Pad Mass		GRS.36.HD2 Quantity							
lb.	kg								
50	23	2	2	2	2	2	3	3	3
100	45	2	2	3	3	3	4	4	5
150	68	2	3	3	4	4	5	5	6
200	91	3	3	4	4	5	6	7	8
250	113	3	3	4	5	6	7	8	
300	136	3	4	5	6	7	8		
350	159	3	4	5	6	8			
400	181	4	5	6	7	8			
450	204	4	5	6	8				
500	227	4	5	7	8				

Ordering Example:

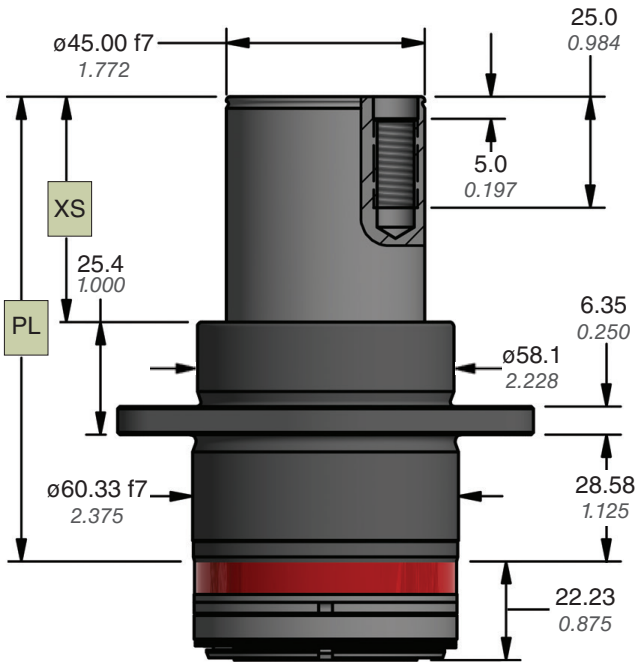
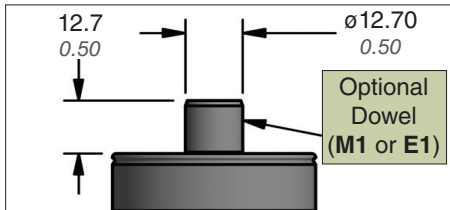
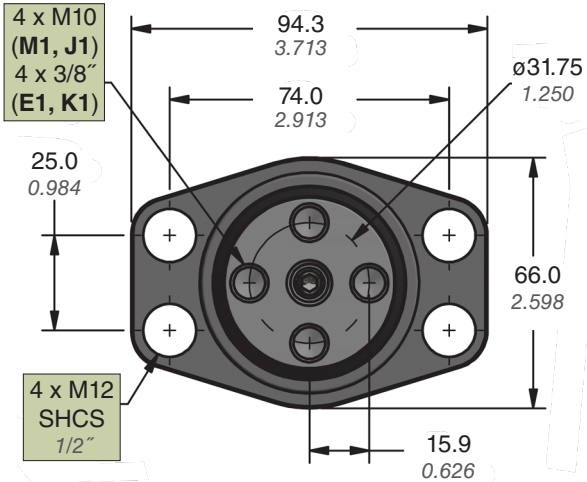
**Part Number:** GRS.36.HD2. M. 0500.  
Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Guide Rod Option:** M.  
J = 4 x M10, Metric; K = 4 x 3/8"-16, Imperial;  
M = 4 x M10, Metric with Rod End Dowel;  
E = 4 x 3/8"-16, Imperial with Rod End Dowel  
See page 28 for alternative rod ends.

**Pin Extension Code:** 0200 - 1524  
Example:  
0500 = 50.0 mm = XS Dimension

*For optional plate adapter add AC.  
See page 29 for AC options.*

GRS.45.HD1



Pin Extension Code	*XS		PL	
	mm	inch	mm	inch
0200	20.0	0.787	73.98	2.912
0254	25.4	1.000	79.38	3.125
0300	30.0	1.181	83.98	3.306
0318	31.75	1.250	85.73	3.375
0381	38.1	1.500	92.08	3.625
0400	40.0	1.575	93.98	3.700
0445	44.45	1.750	98.43	3.875
0500	50.0	1.969	103.98	4.094
0508	50.8	2.000	104.78	4.125
0572	57.15	2.250	111.13	4.375
0600	60.0	2.362	113.98	4.487
0635	63.5	2.500	117.48	4.625
0700	70.0	2.756	123.98	4.881
0762	76.2	3.000	130.18	5.125
0800	80.0	3.150	133.98	5.275
0889	88.9	3.500	142.88	5.625
0900	90.0	3.543	143.98	5.668

\*XS = PL - GRL  
 Guide Retainer Length (GRL) = 53.98 mm (2.125 in)

Velocity Estimate (m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS max (lb.)	289	201	148	113	89	72	60	50
Per GRS max (kg)	131	91	67	51	40	33	27	23

Pad Mass		GRS.45.HD1 Quantity							
lb.	kg								
150	68	2	2	3	3	3	4	4	4
200	91	2	2	3	3	4	4	5	5
250	113	2	3	3	4	4	5	6	6
300	136	3	3	4	4	5	6	7	7
350	159	3	3	4	5	5	6	7	8
400	181	3	3	4	5	6	7	8	
450	204	3	4	5	5	7	8		
500	227	3	4	5	6	7	8		
550	249	3	4	5	6	7	8		
600	272	4	4	6	7	8			
650	295	4	5	6	7				
700	318	4	5	6	8				

Ordering Example:

GRS.45.HD1. J1. 0500.

Part Number:

Includes Series, Guide Rod Diameter, and Retainer Mount Type

Guide Rod Option:

J1 = 4 x M10, Metric; K1 = 4 x 3/8"-16, Imperial;

M1 = 4 x M10, Metric with Dowel;

E1 = 4 x 3/8"-16, Imperial with Dowel;

See page 28 for alternative rod ends.

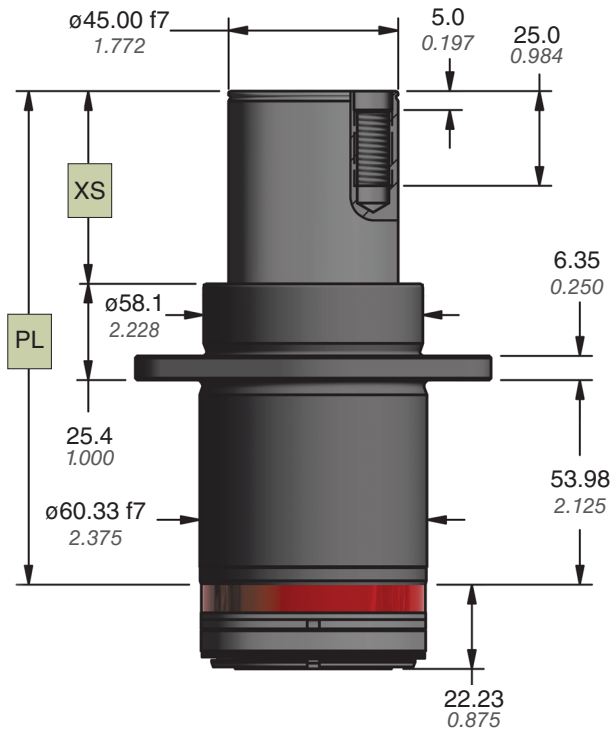
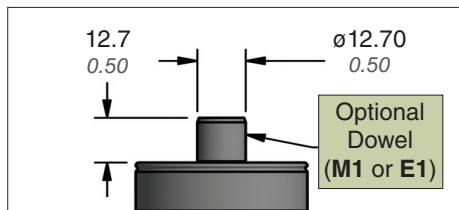
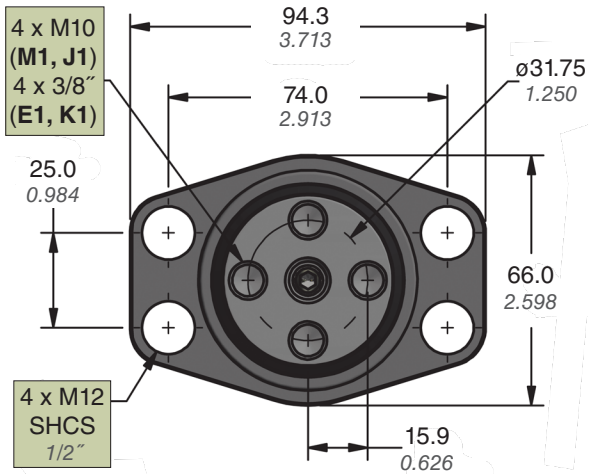
For optional plate adapter cap, add AC4. See page 29 for AC options.

Pin Extension Code: 0200 - 0900

Example:

0500 = 50.0 mm = XS Dimension

GRS.45.HD2



Pin Extension Code	*XS		PL		Pin Extension Code	*XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	99.38	3.912	0254	25.4	1.000	104.78	4.125
0300	30.0	1.181	109.38	4.306	0318	31.75	1.250	111.13	4.375
0400	40.0	1.575	119.38	4.700	0381	38.1	1.500	117.48	4.625
0500	50.0	1.969	129.38	5.094	0445	44.45	1.750	123.83	4.875
0600	60.0	2.362	139.38	5.487	0508	50.8	2.000	130.18	5.125
0700	70.0	2.756	149.38	5.881	0572	57.15	2.250	136.53	5.375
0800	80.0	3.150	159.38	6.275	0635	63.5	2.500	142.88	5.625
0900	90.0	3.543	169.38	6.669	0762	76.2	3.000	155.58	6.125
1000	100.0	3.937	179.38	7.062	0889	88.9	3.500	168.28	6.625
1100	110.0	4.331	189.38	7.456	1016	101.6	4.000	180.98	7.125
1200	120.0	4.724	199.38	7.849	1143	114.3	4.500	193.68	7.625
1300	130.0	5.118	209.38	8.243	1270	127.0	5.000	206.38	8.125
1400	140.0	5.512	219.38	8.637	1397	139.7	5.500	219.08	8.625
1500	150.0	5.906	229.38	9.031	1524	152.4	6.000	231.78	9.125

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 79.38 mm (3.125 in)

Velocity Estimate	(m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS	max (lb.)	289	201	148	113	89	72	60	50
	max (kg)	131	91	67	51	40	33	27	23

Pad Mass		GRS.45.HD2 Quantity							
lb.	kg								
150	68	2	2	3	3	3	4	4	4
200	91	2	2	3	3	4	4	5	5
250	113	2	3	3	4	4	5	6	6
300	136	3	3	4	4	5	6	7	7
350	159	3	3	4	5	5	6	7	8
400	181	3	3	4	5	6	7	8	
450	204	3	4	5	5	7	8		
500	227	3	4	5	6	7	8		
550	249	3	4	5	6	8			
600	272	4	4	6	7	8			
650	295	4	5	6	7				
700	318	4	5	6	8				

Ordering Example:

GRS.45.HD2. J1. 0500.

Part Number:

Includes Series, Guide Rod Diameter, and Retainer Mount Type

Guide Rod Option:

J1 = 4 x M10, Metric; K1 = 4 x 3/8"-16, Imperial;

M1 = 4 x M10, Metric with Dowel;

E1 = 4 x 3/8"-16, Imperial with Dowel;

See page 28 for alternative rod ends.

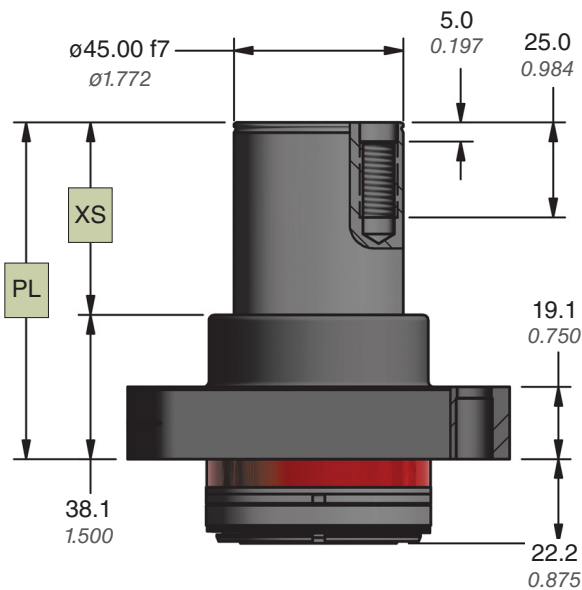
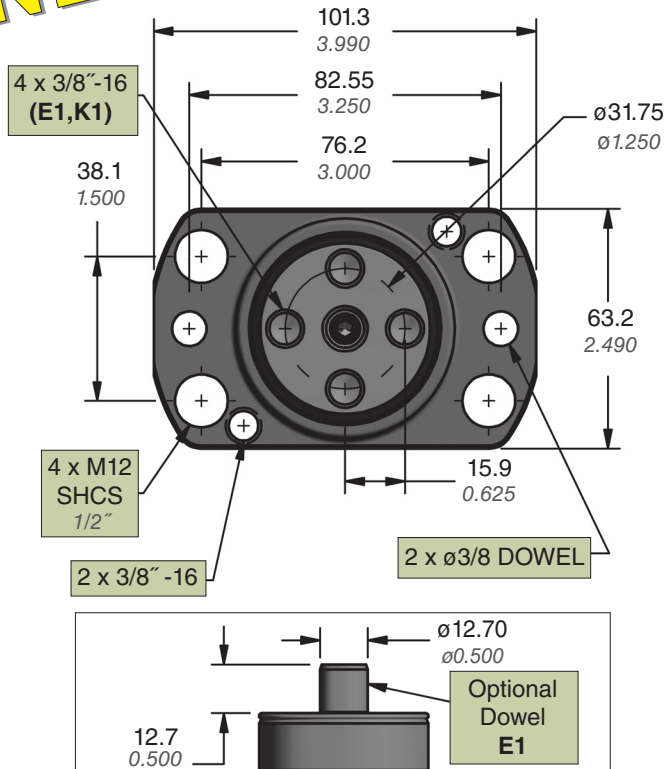
For optional plate adapter cap, add AC4.  
See page 29 for AC options.

Pin Extension Code: 0200 - 1524

Example:

0500 = 50.0 mm = XS Dimension

**NEW!**



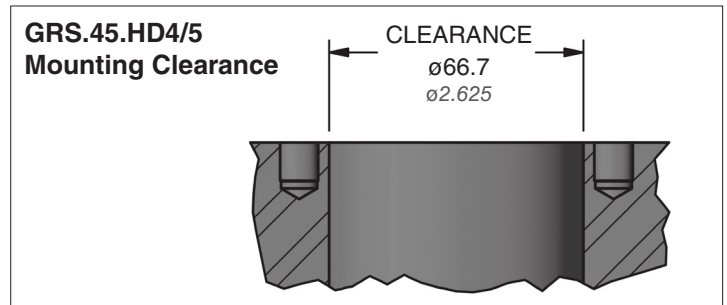
Pin Extension Code	*XS		PL	
	mm	inch	mm	inch
0200	20.0	0.787	58.1	2.287
0254	25.4	1.000	63.5	2.500
0300	30.0	1.181	68.1	2.681
0318	31.75	1.250	69.85	2.750
0381	38.1	1.500	76.2	3.000
0400	40.0	1.575	78.1	3.075
0445	44.45	1.750	82.55	3.250
0500	50.0	1.969	88.1	3.469
0508	50.8	2.000	88.9	3.500
0572	57.15	2.250	95.25	3.750
0600	60.0	2.362	98.1	3.862
0635	63.5	2.500	101.6	4.000
0700	70.0	2.756	108.1	4.256
0762	76.2	3.000	114.3	4.500
0800	80.0	3.150	118.1	4.650
0889	88.9	3.500	127.0	5.000
0900	90.0	3.543	128.1	5.043

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 38.10 mm (1.500 in)

Velocity Estimate (m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	
Per GRS	max (lb.)	289	201	148	113	89	72	60	50
	max (kg)	131	91	67	51	40	33	27	23

Pad Mass		GRS.45.HD4 Quantity							
lb.	kg								
150	68	2	2	3	3	3	4	4	4
200	91	2	2	3	3	4	4	5	5
250	113	2	3	3	4	4	5	6	6
300	136	3	3	4	4	5	6	7	7
350	159	3	3	4	5	5	6	7	8
400	181	3	3	4	5	6	7	8	
450	204	3	4	5	5	7	8		
500	227	3	4	5	6	7	8		
550	249	3	4	5	6	8			
600	272	4	4	6	7	8			
650	295	4	5	6	7				
700	318	4	5	6	8				



### Ordering Example:

**GRS.45.HD4. K1. 0500**

**Part Number:**

Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Guide Rod Option:**

**K1** = 4 x 3/8"-16, Imperial;  
**E1** = 4 x 3/8"-16, Imperial with Rod End Dowel  
See page 28 for alternative rod ends.

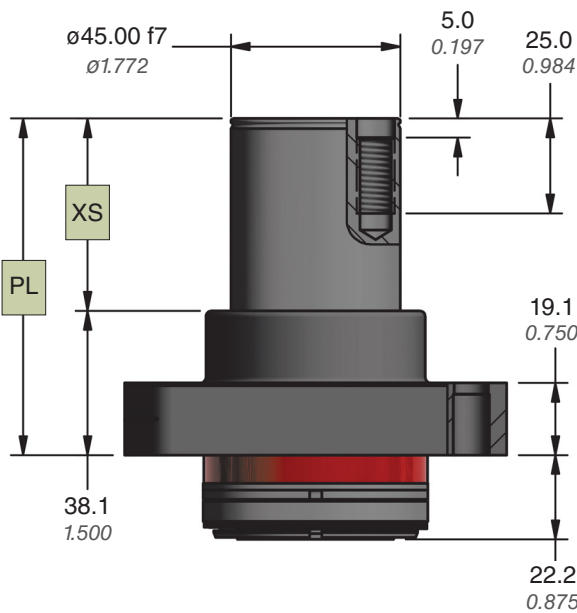
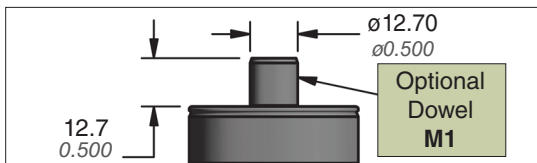
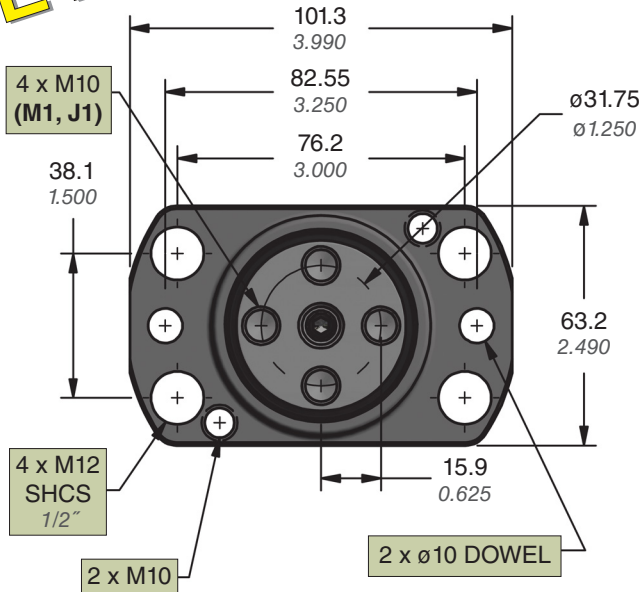
**Pin Extension Code:** 0200 - 0900

Example:

0318 = 31.75 mm (1.250 in) = XS Dimension

GRS.45.HD5 - Metric

**NEW!**



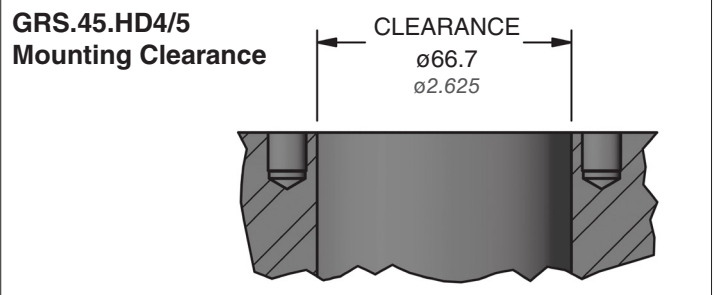
Pin Extension Code	*XS		PL	
	mm	inch	mm	inch
0200	20.0	0.787	58.1	2.287
0254	25.4	1.000	63.5	2.500
0300	30.0	1.181	68.1	2.681
0318	31.75	1.250	69.85	2.750
0381	38.1	1.500	76.2	3.000
0400	40.0	1.575	78.1	3.075
0445	44.45	1.750	82.55	3.250
0500	50.0	1.969	88.1	3.469
0508	50.8	2.000	88.9	3.500
0572	57.15	2.250	95.25	3.750
0600	60.0	2.362	98.1	3.862
0635	63.5	2.500	101.6	4.000
0700	70.0	2.756	108.1	4.256
0762	76.2	3.000	114.3	4.500
0800	80.0	3.150	118.1	4.650
0889	88.9	3.500	127.0	5.000
0900	90.0	3.543	128.1	5.043

**\*XS = PL - GRL**

Guide Retainer Length (GRL) = 38.10 mm (1.500 in)

Velocity Estimate	(m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
		Per GRS	max (lb.)	289	201	148	113	89	72
	max (kg)	131	91	67	51	40	33	27	23

Pad Mass		GRS.45.HD5 Quantity							
lb.	kg	2	2	3	3	3	4	4	4
150	68	2	2	3	3	3	4	4	4
200	91	2	2	3	3	4	4	5	5
250	113	2	3	3	4	4	5	6	6
300	136	3	3	4	4	5	6	7	7
350	159	3	3	4	5	5	6	7	8
400	181	3	3	4	5	6	7	8	
450	204	3	4	5	5	7	8		
500	227	3	4	5	6	7	8		
550	249	3	4	5	6	8			
600	272	4	4	6	7	8			
650	295	4	5	6	7				
700	318	4	5	6	8				



**Ordering Example:**

**GRS.45.HD5. J1. 0500**

**Part Number:**

Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Guide Rod Option:**

**J1** = 4 x M10, Metric;

**M1** = 4 x M10, Metric with Rod End Dowel  
See page 28 for alternative rod ends.

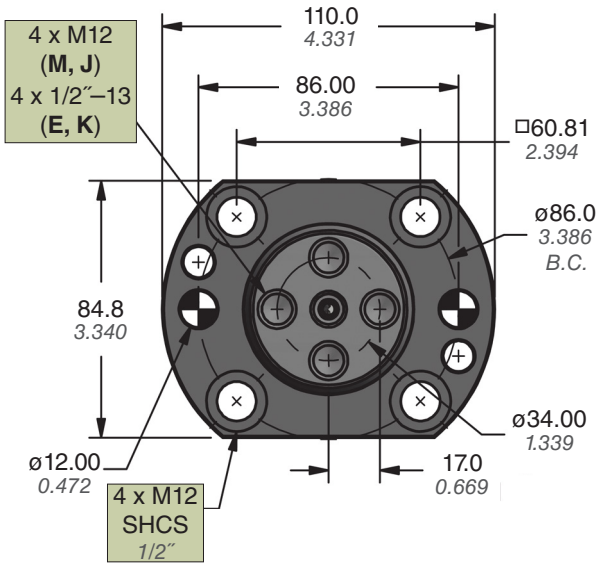
**Pin Extension Code:** 0200 - 0900

Example:

0500 = 50.0 mm = XS Dimension

# Guide Retainer Sets

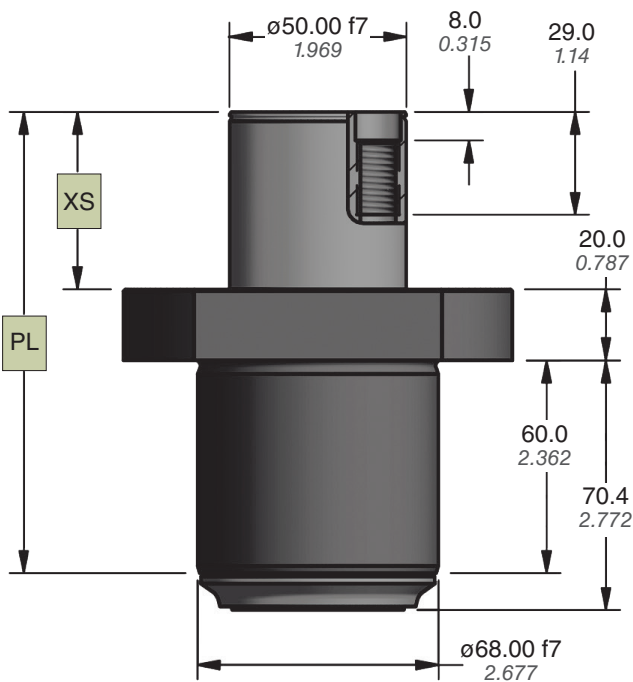
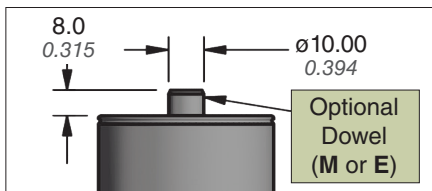
## GRS.50



Pin Extension Code	XS		PL		Pin Extension Code	XS		PL	
	mm	inch	mm	inch		mm	inch	mm	inch
0200	20.0	0.787	100.0	3.937	0800	80.0	3.150	160.0	6.299
0300	30.0	1.181	110.0	4.331	0850	85.0	3.346	165.0	6.496
0400	40.0	1.575	120.0	4.724	0900	90.0	3.543	170.0	6.693
0450	45.0	1.772	125.0	4.921	0950	95.0	3.740	175.0	6.890
0500	50.0	1.969	130.0	5.118	1000	100.0	3.937	180.0	7.087
0550	55.0	2.165	135.0	5.315	1100	110.0	4.331	190.0	7.480
0600	60.0	2.362	140.0	5.512	1200	120.0	4.724	200.0	7.874
0650	65.0	2.559	145.0	5.709	1300	130.0	5.118	210.0	8.268
0700	70.0	2.756	150.0	5.906	1400	140.0	5.512	220.0	8.661
0750	75.0	2.953	155.0	6.102	1500	150.0	5.906	230.0	9.055

\*XS = PL - GRL

Guide Retainer Length (GRL) = 80 mm (3.150 in)



Velocity Estimate	(m/sec)	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Per GRS	max (lb.)	269	152	97	67	49	38	30	24
	max (kg)	122	69	44	31	22	17	14	11
Pad Mass		GRS.50 Quantity							
lb.	kg	2	2	2	2	2	2	2	2
22	10	2	2	2	2	3	3	3	4
55	25	2	2	3	3	4	4	5	6
110	50	2	3	3	4	5	6	7	8
165	75	3	3	4	6	7			
276	125	3	4	5	7				
386	175								

### Ordering Example:

**GRS.50. J. 0500. FM**

**Part Number:**

Includes Series and Guide Rod Diameter

**Guide Rod Option:**

**J** = 4 x M12, Metric, **K** = 4 x 1/2"-13, Imperial;

**M** = 4 x M12, Metric with Rod End Dowel;

**E** = 4 x 1/2"-13, Imperial with Rod End Dowel

**Guide Retainer Mount Option:**

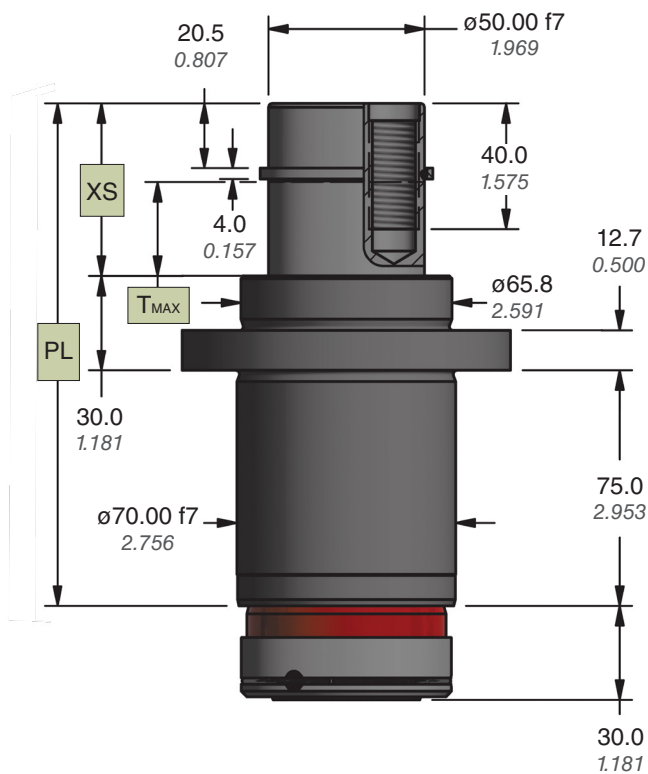
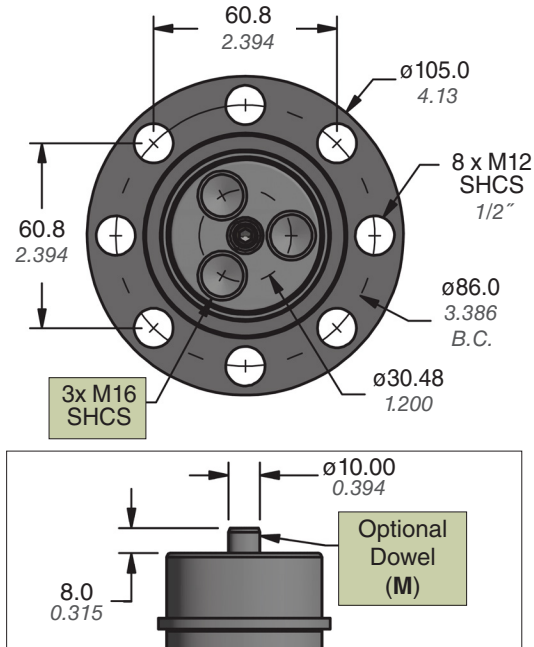
FM = Flange Mount

**Pin Extension Code: 0200 - 1500**

Example:

0500 = 50.0 mm = XS Dimension

GRS.50.HD



Pin Extension Code	*XS		PL		Max Travel (T <sub>MAX</sub> )	
	mm	inch	mm	inch	mm	inch
0550	55.0	2.165	160.0	6.299	30.0	1.181
0650	65.0	2.559	170.0	6.693	40.0	1.575
0750	75.0	2.953	180.0	7.087	50.0	1.969
0850	85.0	3.346	190.0	7.480	60.0	2.362
0950	95.0	3.740	200.0	7.874	70.0	2.756
1050	105.0	4.134	210.0	8.268	80.0	3.150
1150	115.0	4.528	220.0	8.661	90.0	3.543
1250	125.0	4.921	230.0	9.055	100.0	3.937
1350	135.0	5.315	240.0	9.449	110.0	4.331
1450	145.0	5.709	250.0	9.843	120.0	4.724
1550	155.0	6.102	260.0	10.236	130.0	5.118

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 105 mm (4.133 in)

Velocity Estimate (m/sec)	Per GRS	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
		max (lb.)	1058	735	540	413	327	265	219
max (kg)	480	333	245	188	148	120	99	83	

Pad Mass		GRS.50.HD Quantity							
lb.	kg	2	2	2	2	2	3	3	3
250	113	2	2	2	2	2	2	3	3
500	227	2	2	2	3	3	3	4	4
750	340	2	3	3	3	4	4	5	6
1000	454	2	3	3	4	5	5	6	7
1250	567	3	3	4	5	5	6	7	8
1500	680	3	4	4	5	6	7	8	
1750	794	3	4	5	6	7	8		
2000	907	3	4	5	6	8			
2250	1021	4	5	6	7	8			
2500	1134	4	5	6	8				

Ordering Example:

GRS.50.HD. J. 0550. FH.

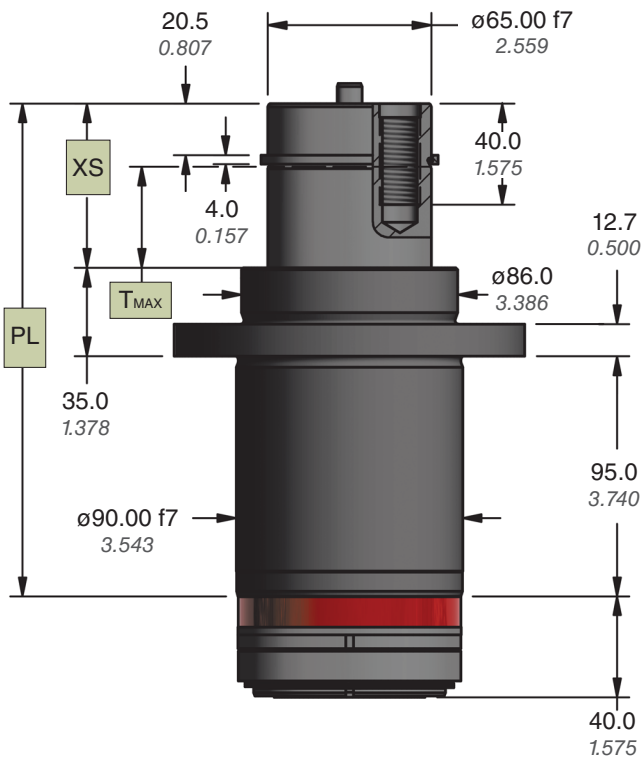
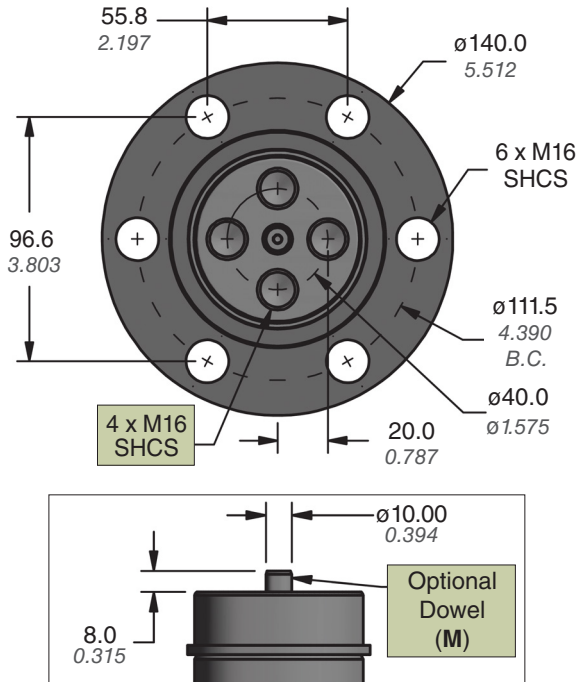
**Part Number:**  
Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Guide Rod Option:**  
J = Metric;  
M = Metric, with Rod End Dowel

For optional plate adapter add **AC**.  
See page 29 for AC options.

**Guide Retainer Mount Option:**  
FH = Flange Mount

**Pin Extension Code:** 0550 - 1550  
Example:  
0550 = 55.0 mm = XS Dimension



Pin Extension Code	XS		PL		Max Travel (T <sub>MAX</sub> )	
	mm	inch	mm	inch	mm	inch
0550	55.0	2.165	185.0	7.283	30.0	1.181
0650	65.0	2.559	195.0	7.677	40.0	1.575
0750	75.0	2.953	205.0	8.071	50.0	1.969
0850	85.0	3.346	215.0	8.465	60.0	2.362
0950	95.0	3.740	225.0	8.858	70.0	2.756
1050	105.0	4.134	235.0	9.252	80.0	3.150
1150	115.0	4.528	245.0	9.646	90.0	3.543
1250	125.0	4.921	255.0	10.039	100.0	3.937
1350	135.0	5.315	265.0	10.433	110.0	4.331
1450	145.0	5.709	275.0	10.827	120.0	4.724
1550	155.0	6.102	285.0	11.220	130.0	5.118

\*XS = PL - GRL  
Guide Retainer Length (GRL) = 130 mm (5.118 in)

Velocity Estimate	(m/sec)	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
Per GRS	max (lb.)	1411	980	720	551	435	353	292	245
	max (kg)	640	444	327	250	198	160	132	111
Pad Mass		GRS.65.HD Quantity							
lb.	kg								
250	113	2	2	2	2	2	2	2	3
500	227	2	2	2	2	3	3	3	4
750	340	2	2	3	3	3	4	4	5
1000	454	2	3	3	3	4	4	5	6
1250	567	2	3	3	4	4	5	6	7
1500	680	3	3	4	4	5	6	7	8
1750	794	3	3	4	5	6	6	8	
2000	907	3	4	4	5	6	7	8	
2250	1021	3	4	5	6	7	8		
2500	1134	3	4	5	6	7			

## Ordering Example:

**GRS.65.HD. J. 0550. FH.**

**Part Number:**  
Includes Series, Guide Rod Diameter, and Retainer Mount Type

**Guide Rod Option:**  
J = Metric;  
M = Metric, with Rod End Dowel

For optional plate adapter add **AC**.  
See page 29 for AC options.

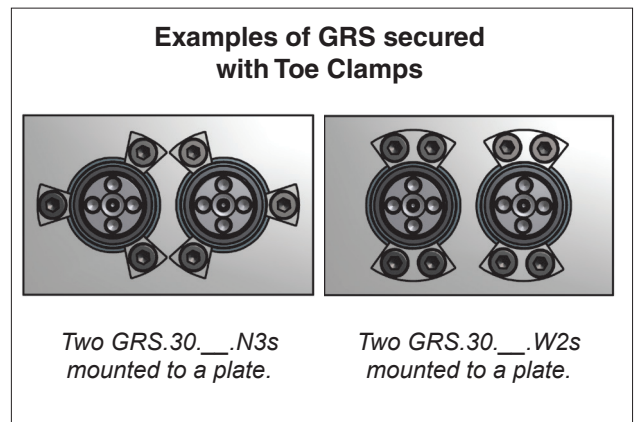
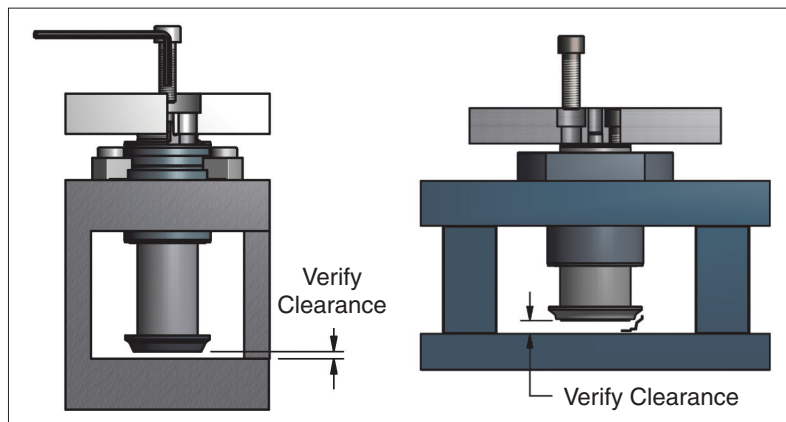
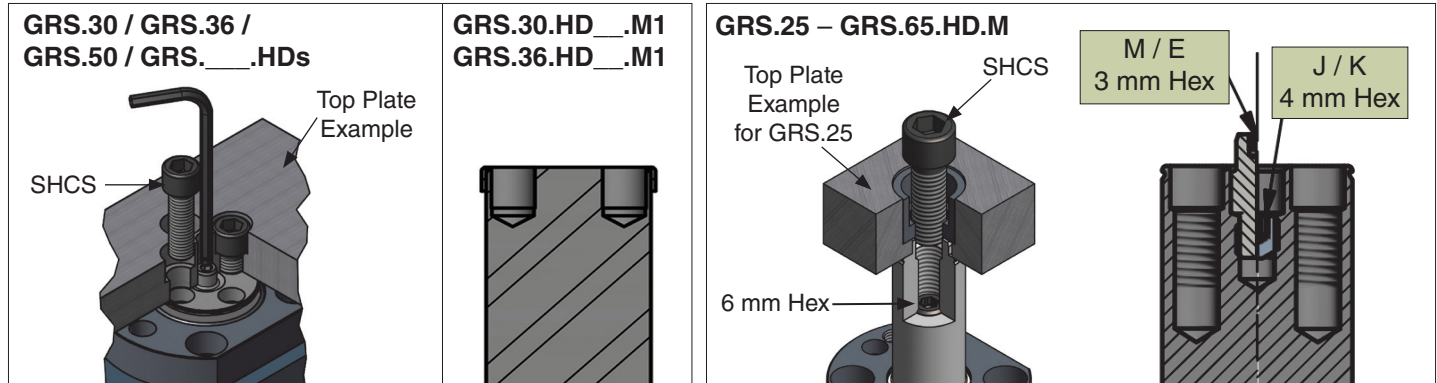
**Guide Retainer Mount Option:**  
FH = Flange Mount

**Pin Extension Code: 0550 - 1550**  
Example: 0550 = 55.0 mm  
= XS Dimension



# Design Considerations

The GRS series requires machining from only one side of the plate. Most models have a small hex socket located in the center of the Guide Rod that facilitates alignment through the plate during installation and removal. The GRS.25 Guide Rod has flats to prevent rotation and may be installed with the Plate Adapter Cap (*sold separately*).



Verify that there is adequate clearance for travel during operation. Overstroking the rod or impacting the bottom of the Guide Retainer Set will cause permanent damage.

DADCO Toe Clamp Mounts are compact, permitting GRS to be located in close proximity to one another. Toe Clamps should be evenly spaced around the retainer to balance the load.

## Pad Flex

Minimum Distance		
GRS	A	B
GRS.20.HD__	45 mm 1.772	75 mm 2.953
GRS.25 / GRS.25.HD__	50 mm 1.969	80 mm 3.150
GRS.30 / GRS.30.HD__	60 mm 2.362	85 mm 3.346
GRS.36 / GRS.36.HD__	65 mm 2.559	100 mm 3.937
GRS.45.HD__	70 mm 2.756	110 mm 4.331
GRS.50 / GRS.50.HD	70 mm 2.756	115 mm 4.528
GRS.65.HD	90 mm 3.543	150 mm 5.906

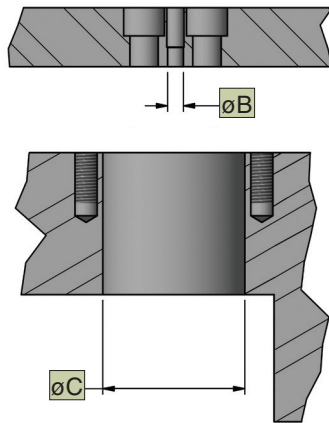
Deceleration of the pad may cause pad flexing to occur. Add additional GRS to the center to prevent side load from inertial deflection at end of stroke travel. Lighter pads may result in a flexible structure requiring center support. Heavier pads will require additional GRS to distribute the weight according to the shape and die steel attachments.

## Machining Details

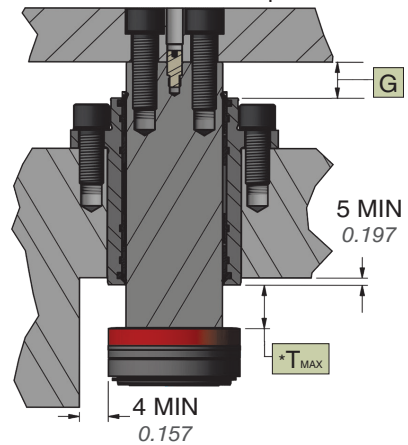
Verify that there is adequate clearance for the GRS.HD during operation. Allow for clearance at the bottom of the stroke and avoid overstroking the rod or impacting the bottom of the Guide Retainer Set; both will cause permanent damage.

Model	øB H7	øC H8	øD1	øD2	F <sub>MAX</sub>	G
GRS.20.HD1 / HD2	–	31.75 1.250	19.08 – 19.115 0.7512 – 0.7526	–	3.18 0.125	≥6.00 mm 0.236
GRS.25	19.00 0.748	38.00 1.496	25.030 – 25.065 0.9854 – 0.9868	25.00 0.984	10.00 0.394	≥3.00 mm 0.118
GRS.25.HD1 / HD2	–	38.1 1.500	25.030 – 25.065 0.9854 – 0.9868	25.00 0.984	5.00 0.197	≥6.00 mm 0.236
GRS.30	6.00 0.236	43.00 1.693	30.045 – 30.085 1.1829 – 1.1844	–	10.00 0.394	≥3.00 mm 0.118
GRS.30.HD __.M/E/J/K	6.00 0.236	44.45 1.750	30.045 – 30.085 1.1829 – 1.1844	–	10.00 0.394	≥3.00 mm 0.118
GRS.30.HD1 / HD2.M1	–	44.45 1.750	31.795 – 31.835 1.2518 – 1.2533	–	5.00 0.197	≥6.00 mm 0.236
GRS.30.HD4 / HD5.M1	–	See page 12	31.795 – 31.835 1.2518 – 1.2533	–	5.00 0.197	≥6.00 mm 0.236
GRS.36	8.00 0.315	50.00 1.969	36.045 – 36.085 1.4191 – 1.4207	–	10.00 0.394	≥3.00 mm 0.118
GRS.36.HD __.M/E/J/K	8.00 0.315	53.98 2.125	36.045 – 36.085 1.4191 – 1.4207	50.00 1.969	10.00 0.394	≥3.00 mm 0.118
GRS.36.HD	8.00 0.315	50.00 1.969	36.045 – 36.085 1.4191 – 1.4207	50.00 1.969	10.00 0.394	≥15.00 mm 0.591
GRS.36.HD1 / HD2.M1/E1	–	53.98 2.125	38.145 – 38.185 1.5018 – 1.5033	–	5.00 0.197	≥6.00 mm 0.236
GRS.45.HD1 / HD2.J1 / K1	12.7 0.500	60.33 2.375	45.045 – 45.100 1.7734 – 1.7756	57.2 2.25	15.00 0.591	≥3.00 mm 0.118
GRS.45.HD1 / HD2.J2 / K2	–	60.33 2.375	44.495 – 44.550 1.7518 – 1.7539	50.80 2.000	6.35 0.250	≥10.00 mm 0.394
GRS.50	10.00 0.394	68.00 2.677	50.045 – 50.100 1.9703 – 1.9724	–	15.00 0.591	≥3.00 mm 0.118
GRS.50.HD	10.00 0.394	70.00 2.756	50.045 – 50.100 1.9703 – 1.9724	58.00 2.283	20.00 0.787	≥25.00 mm 0.984
GRS.65.HD	10.00 0.394	90.00 3.543	65.045 – 65.100 2.5608 – 2.5630	90.00 3.543	20.00 0.787	≥25.00 mm 0.984

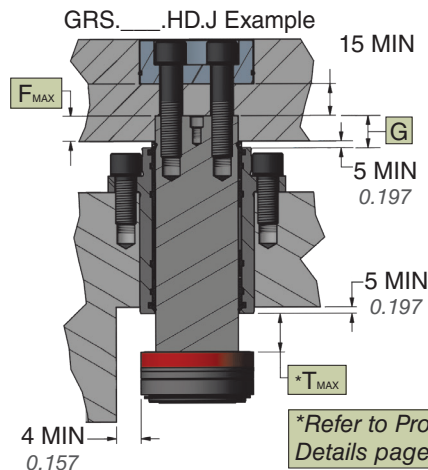
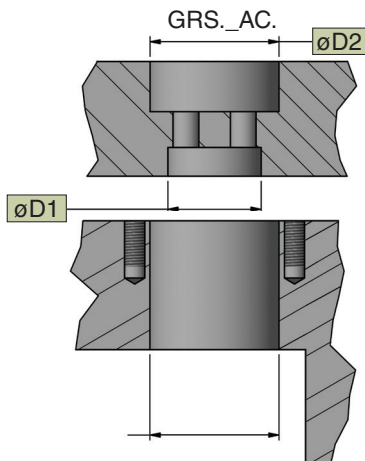
### Pocket and Clearance Dimensions



### GRS.\_\_.HD.M Example



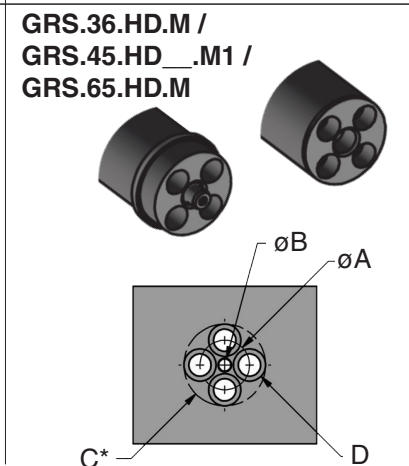
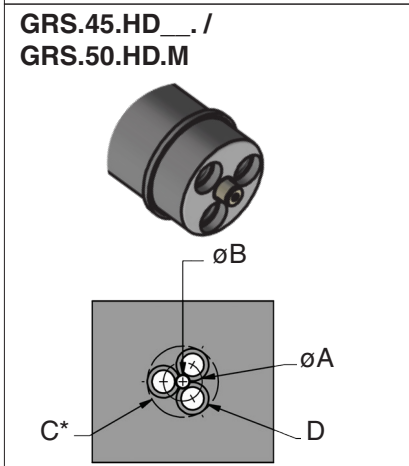
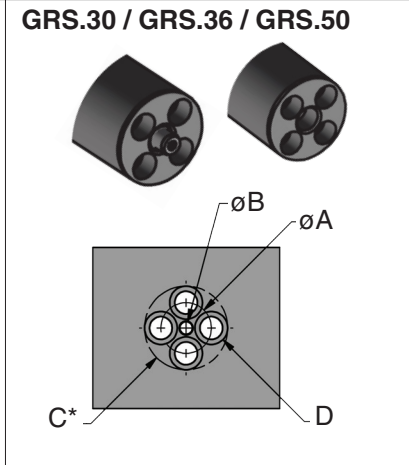
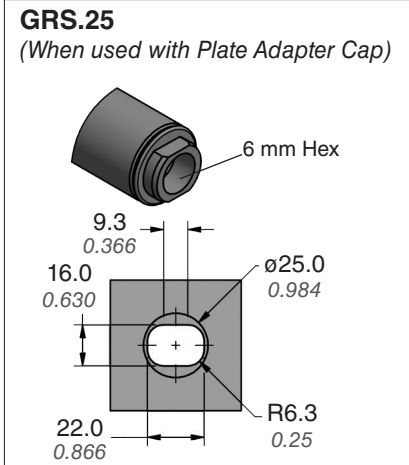
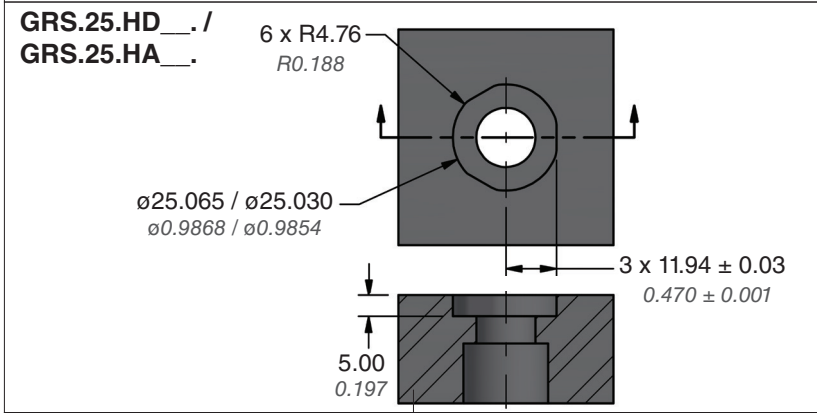
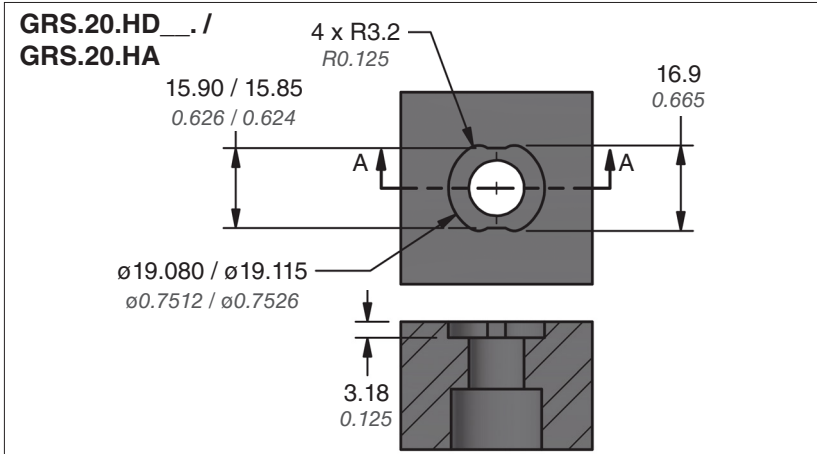
### Pocket and Clearance Dimensions when using Optional Plate Adapter



\*Refer to Product Details pages for T<sub>MAX</sub>

Machining Details

Guide Rod Attachment Details



GRS Model	A	øB H7	C	D
<b>GRS.30.J</b>	20.00 0.787	-	ø34.0 1.339	4 x M8 SHCS
<b>GRS.30.M</b>		6.00 0.236		4 x 5/16"-18
<b>GRS.30.K</b>		-		4 x 5/16"-18
<b>GRS.30.E</b>		6.00 0.236		4 x 5/16"-18
<b>GRS.30.HD</b> ___ .J	20.00 0.787	-	ø34.0 1.339	4 x M8 SHCS
<b>GRS.30.HD</b> ___ .M		6.00 0.236		4 x 5/16"-18
<b>GRS.30.HD</b> ___ .K		-		4 x 5/16"-18
<b>GRS.30.HD</b> ___ .E		6.00 0.236		4 x 5/16"-18
<b>GRS.36.J</b>	23.00 0.906	-	ø41.0 1.614	4 x M10 SHCS
<b>GRS.36.M</b>		8.00 0.315		4 x 3/8"-16
<b>GRS.36.K</b>		-		4 x 3/8"-16
<b>GRS.36.E</b>		8.00 0.315		4 x 3/8"-16
<b>GRS.36.HD.J</b>	23.00 0.906	-	ø41.0 1.614	4 x M10 SHCS
<b>GRS.36.HD.M</b>		8.00		4 x M10 SHCS
<b>GRS.36.HD</b> ___ .J	23.00 0.906	-	ø41.0 1.614	4 x M10 SHCS
<b>GRS.36.HD</b> ___ .M		8.00 0.315		4 x 3/8"-16
<b>GRS.36.HD</b> ___ .K		-		4 x 3/8"-16
<b>GRS.36.HD</b> ___ .E		8.00 0.315		4 x 3/8"-16
<b>GRS.45.HD</b> ___ .M1	31.75 1.250	12.70 0.500	ø50.0 1.970	4 x M10 SHCS
<b>GRS.45.HD</b> ___ .J1		-		4 x 3/8"-16
<b>GRS.45.HD</b> ___ .K1		-		4 x 3/8"-16
<b>GRS.45.HD</b> ___ .E1		12.70 0.500		4 x 3/8"-16
<b>GRS.45.HD</b> ___ .J2	25.40 1.000	-	ø46.0 1.813	3 x M12 SHCS
<b>GRS.45.HD</b> ___ .K2		-		4 x 1/2" SCHS
<b>GRS.50.J</b>	34.00 1.339	-	ø54.0 2.126	4 x M12 SHCS
<b>GRS.50.M</b>		10.00 0.394		4 x 1/2"-13
<b>GRS.50.K</b>		-		4 x 1/2"-13
<b>GRS.50.E</b>		10.00 0.394		4 x 1/2"-13
<b>GRS.50.HD.M</b>	30.48 1.200	10.00 0.394	ø56.5 2.224	3 x M16 SHCS
<b>GRS.65.HD.M</b>	40.00 1.575	10.00 0.394	ø66.0 2.599	4 x M16 SHCS

\* Optional Single Counterbore

Optional Rod Ends

GRS.30.HD__M1/E1	GRS.36.HD__M1/E1	GRS.45.HD__J2/K2																																																																																																									
<table border="1"> <thead> <tr> <th colspan="3">Attachment Load Limits</th> </tr> <tr> <th rowspan="2">Velocity Estimate</th> <th colspan="2">Per GRS</th> </tr> <tr> <th>max (lb.)</th> <th>max (kg)</th> </tr> </thead> <tbody> <tr> <td>(m/sec)</td> <td></td> <td></td> </tr> <tr> <td>0.50</td> <td>102</td> <td>46</td> </tr> <tr> <td>0.60</td> <td>71</td> <td>32</td> </tr> <tr> <td>0.70</td> <td>52</td> <td>24</td> </tr> <tr> <td>0.80</td> <td>40</td> <td>18</td> </tr> <tr> <td>0.90</td> <td>32</td> <td>14</td> </tr> <tr> <td>1.00</td> <td>26</td> <td>12</td> </tr> <tr> <td>1.10</td> <td>21</td> <td>10</td> </tr> <tr> <td>1.20</td> <td>18</td> <td>8</td> </tr> </tbody> </table>	Attachment Load Limits			Velocity Estimate	Per GRS		max (lb.)	max (kg)	(m/sec)			0.50	102	46	0.60	71	32	0.70	52	24	0.80	40	18	0.90	32	14	1.00	26	12	1.10	21	10	1.20	18	8	<table border="1"> <thead> <tr> <th colspan="3">Attachment Load Limits</th> </tr> <tr> <th rowspan="2">Velocity Estimate</th> <th colspan="2">Per GRS</th> </tr> <tr> <th>max (lb.)</th> <th>max (kg)</th> </tr> </thead> <tbody> <tr> <td>(m/sec)</td> <td></td> <td></td> </tr> <tr> <td>0.50</td> <td>185</td> <td>84</td> </tr> <tr> <td>0.60</td> <td>129</td> <td>58</td> </tr> <tr> <td>0.70</td> <td>94</td> <td>43</td> </tr> <tr> <td>0.80</td> <td>72</td> <td>33</td> </tr> <tr> <td>0.90</td> <td>57</td> <td>26</td> </tr> <tr> <td>1.00</td> <td>46</td> <td>21</td> </tr> <tr> <td>1.10</td> <td>38</td> <td>17</td> </tr> <tr> <td>1.20</td> <td>32</td> <td>15</td> </tr> </tbody> </table>	Attachment Load Limits			Velocity Estimate	Per GRS		max (lb.)	max (kg)	(m/sec)			0.50	185	84	0.60	129	58	0.70	94	43	0.80	72	33	0.90	57	26	1.00	46	21	1.10	38	17	1.20	32	15	<table border="1"> <thead> <tr> <th colspan="3">Attachment Load Limits</th> </tr> <tr> <th rowspan="2">Velocity Estimate</th> <th colspan="2">Per GRS</th> </tr> <tr> <th>max (lb.)</th> <th>max (kg)</th> </tr> </thead> <tbody> <tr> <td>(m/sec)</td> <td></td> <td></td> </tr> <tr> <td>0.50</td> <td>289</td> <td>131</td> </tr> <tr> <td>0.60</td> <td>201</td> <td>91</td> </tr> <tr> <td>0.70</td> <td>148</td> <td>67</td> </tr> <tr> <td>0.80</td> <td>113</td> <td>51</td> </tr> <tr> <td>0.90</td> <td>89</td> <td>40</td> </tr> <tr> <td>1.00</td> <td>72</td> <td>33</td> </tr> <tr> <td>1.10</td> <td>60</td> <td>27</td> </tr> <tr> <td>1.20</td> <td>50</td> <td>23</td> </tr> </tbody> </table>	Attachment Load Limits			Velocity Estimate	Per GRS		max (lb.)	max (kg)	(m/sec)			0.50	289	131	0.60	201	91	0.70	148	67	0.80	113	51	0.90	89	40	1.00	72	33	1.10	60	27	1.20	50	23
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1.00	72	33																																																																																																									
1.10	60	27																																																																																																									
1.20	50	23																																																																																																									

Optional Plate Adapter Caps

GRS.25.AC	GRS.36.AC	GRS.45.AC3
GRS.45.AC4	GRS.50.AC	GRS.65.AC
<b>Ordering Example:</b>	<b>GRS with Cap:</b> GRS.50.HD.J.0550.FH.AC	<b>Cap Only:</b> GRS.50.AC

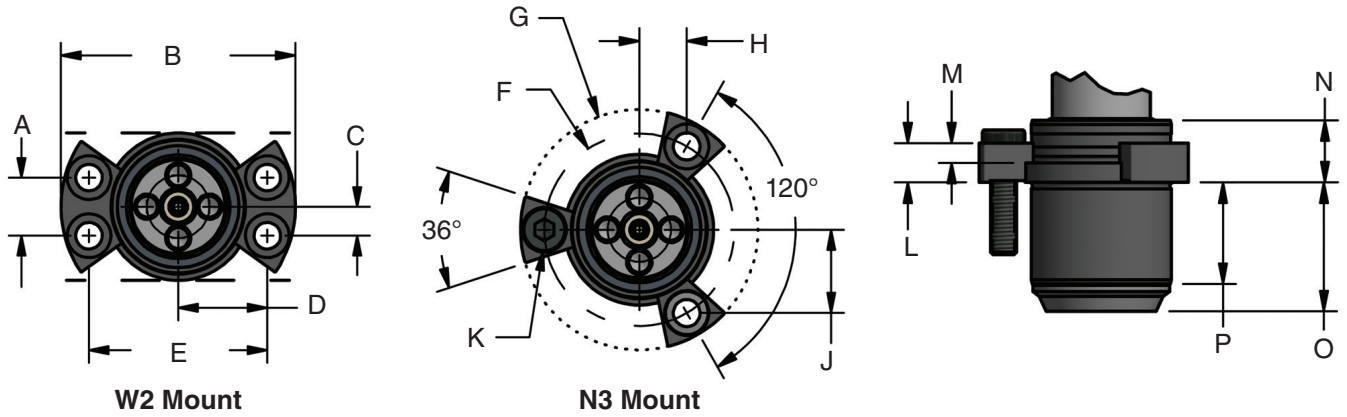
Repair Kits

Includes bushings, rod wiper, dampener and a maintenance manual.

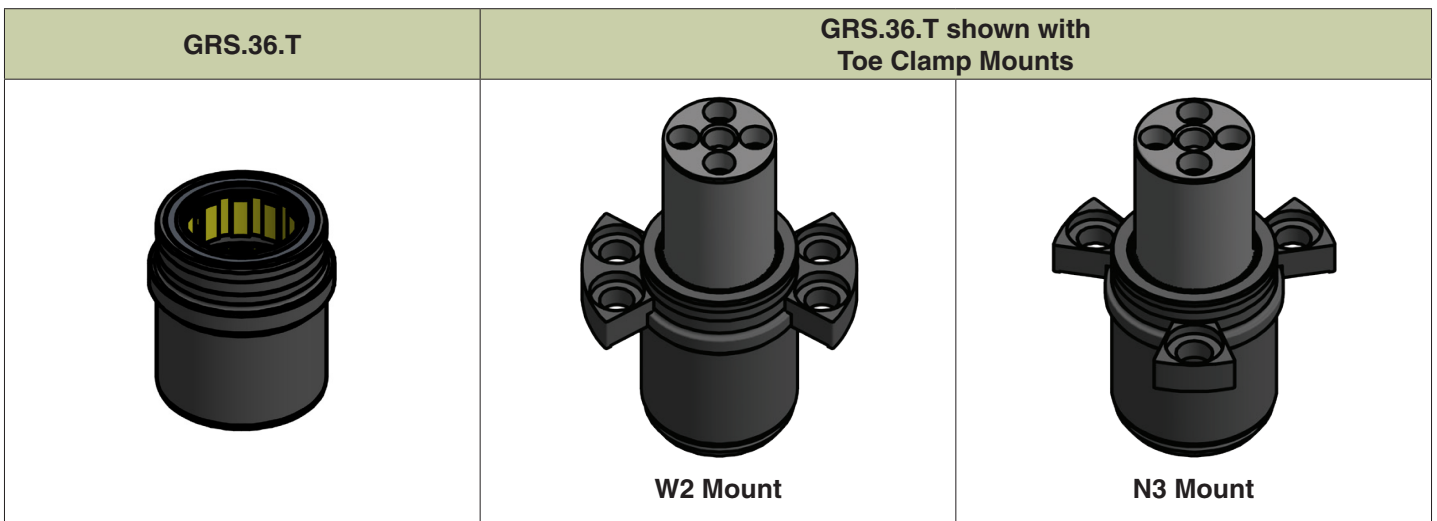
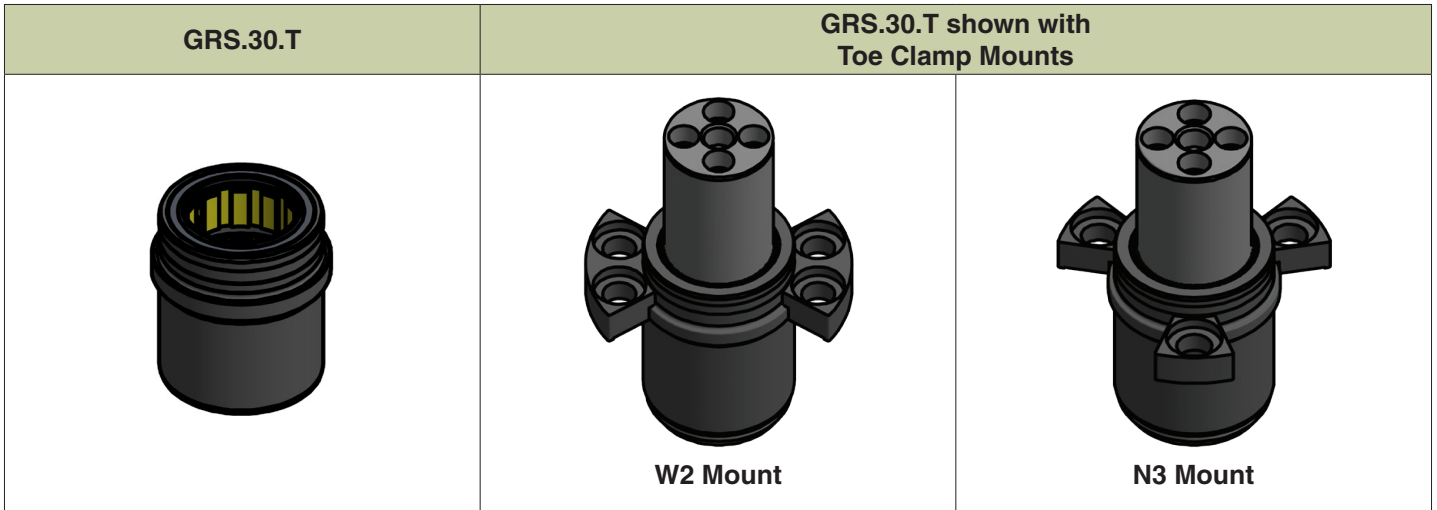
Model	Kit Number	Model	Kit Number
GRS.20.HD1	GRS.20.HD1.RK	GRS.30.HA2	GRS.30.HA2.RK
GRS.20.HD2	GRS.20.HD2.RK	GRS.36	GRS.36.RK
GRS.20.HA2	GRS.20.HA2.RK	GRS.36.HD	GRS.36.HD.RK
GRS.25	GRS.25.RK	GRS.36.HD1	GRS.36.HD1.RK
GRS.25.HD1	GRS.25.HD1.RK	GRS.36.HD2	GRS.36.HD2.RK
GRS.25.HD2	GRS.25.HD2.RK	GRS.45.HD1	GRS.45.HD1.RK
GRS.25.HA2	GRS.25.HA2.RK	GRS.45.HD2	GRS.45.HD2.RK
GRS.30	GRS.30.RK	GRS.45.HD4	GRS.45.HD.RK
GRS.30.HD1	GRS.30.HD1.RK	GRS.45.HD5	GRS.45.HD5.RK
GRS.30.HD2	GRS.30.HD2.RK	GRS.50	GRS.50.RK
GRS.30.HD4	GRS.30.HD4.RK	GRS.50.HD	GRS.50.HD.RK
GRS.30.HD5	GRS.30.HD5.RK	GRS.65.HD	GRS.65.HD.RK



Toe Clamp Mount Options for GRS.30.T / GRS.36.T

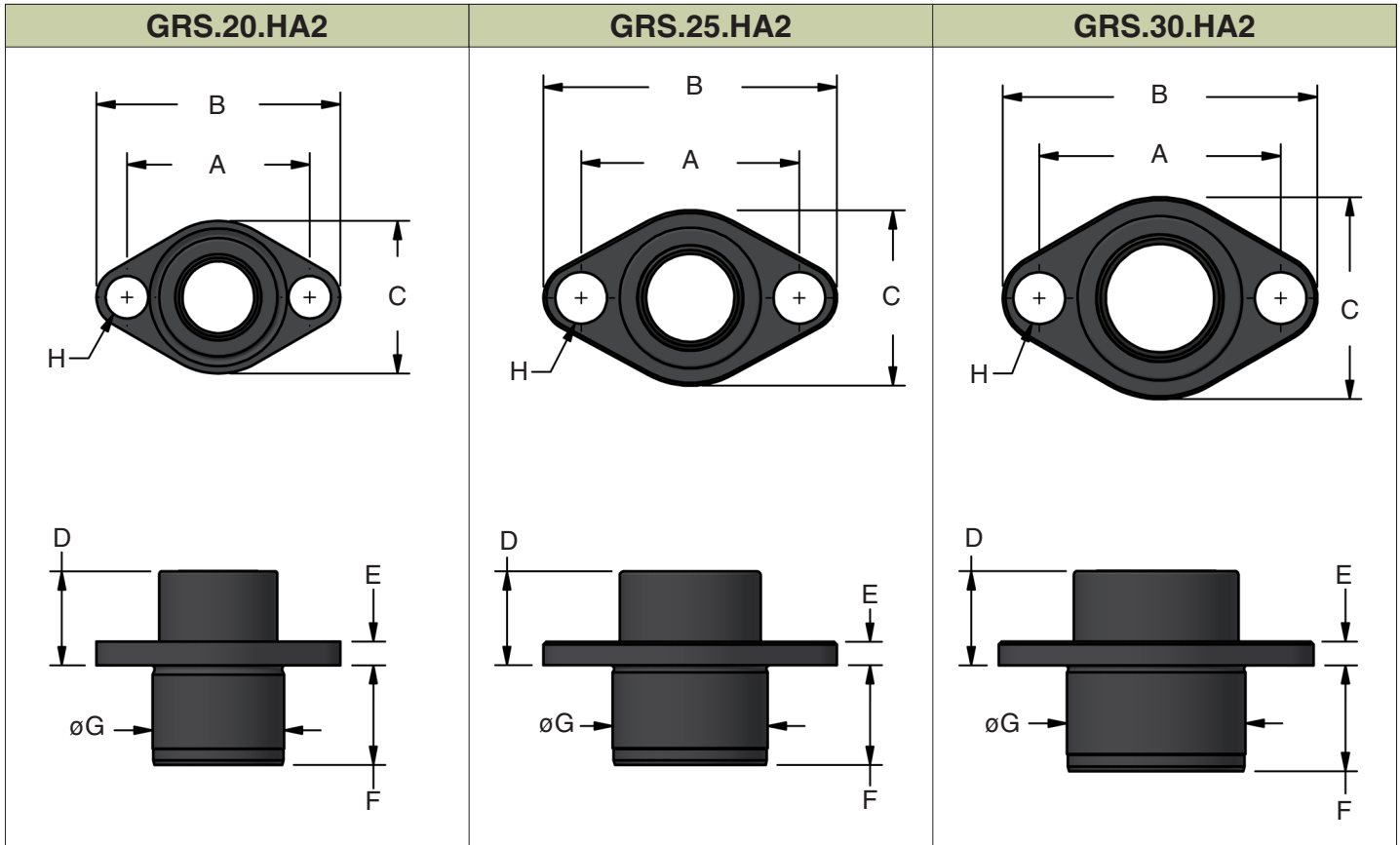


GRS	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
GRS.30.T	18.54	ø75.0	9.27	28.53	57.06	ø60.0	ø75.0	15.0	25.98	M8 SHCS	12.0	6.0	19.0	39.4	31.0
	0.730	2.953	0.365	1.123	2.246	2.362	2.953	0.591	1.023	5/16"	0.472	0.236	0.748	1.551	1.220
GRS.36.T	21.32	ø88.0	10.66	32.81	65.62	ø69.0	ø88.0	17.25	29.88	M10 SHCS	12.0	6.0	21.0	52.4	44.0
	0.839	3.465	0.420	1.292	2.583	2.717	3.465	0.679	1.176	3/8"	0.472	0.236	0.827	2.063	1.732



Guide Retainer Sets

Optional Guide Retainers



GRS	A	B	C	D	E	F	øG	H	Pin Extension Code
GRS.20.HA2	49.53 1.950	66.04 2.60	41.3 1.625	25.4 1.000	6.35 0.250	27.00 1.063	ø35.56 ø1.400	2 x M10 2 x 3/8"	0200 - 1524
GRS.25.HA2	58.93 2.320	79.25 3.12	47.5 1.87	25.4 1.000	6.35 0.250	27.00 1.063	ø41.91 ø1.650	2 x M12 2 x 1/2"	0200 - 1143
GRS.30.HA2	65.28 2.570	85.09 3.35	54.6 2.15	25.4 1.000	6.35 0.250	28.58 1.125	ø48.26 ø1.900	2 x M12 2 x 1/2"	0200 - 0900

Ordering Example:

**GRS. .HA2. M. 0500**

**Part Number:**

Includes Series, Guide Rod Diameter (20 mm, 25 mm, or 30 mm) and Retainer Mount Type

**Guide Rod Option (GRS.20.HA2):**

**M** = M10, Metric;

**E** = 3/8"-16, Imperial

**Guide Rod Option (GRS.25.HA2)**

**M1** = M12, Metric with Rod End Dowel;

**E1** = 1/2"-13, Imperial with Rod End Dowel

**Guide Rod Option (GRS.30.HA2)**

**J** = M8, Metric; **K** = 4 x 5/16"-18, Imperial

**M1** = M8, Metric with Rod End Dowel

**E1** = 4 x 5/16"-18, Imperial with Rod End Dowel

**Pin Extension Code (GRS.20.HA2):** 0200 - 1524  
Example: 0500 = 50.0 mm = XS Dimension

**Pin Extension Code (GRS.25.HA2):** 0200 - 1143  
Example: 0500 = 50.0 mm = XS Dimension

**Pin Extension Code (GRS.30.HA2):** 0200 - 0900  
Example: 0500 = 50.0 mm = XS Dimension

# Side-by-Side GRS Feature Comparison

Patented

Available in seven rod diameter sizes: 20, 25, 30, 36, 45, 50 and 65.

