



HYDRAULIC CYLINDERS



Overview

Introduction

Our concept is to offer our customers a large variety of hydraulic cylinders at reasonable prices and prompt deliveries. We offer quality construction on all cylinder models, with bore sizes ranging from ¾" to 24". Operating pressures range from 2000 PSI to 10,000 PSI. There are no restrictions in stroke, and we have many styles and sizes of mounting types to choose from. Our cylinders are divided into different model series, each with its own unique characteristics to suit a wide variety of applications.

To achieve our price and delivery goals, cylinder accessories and components such as pistons, head glands, rings, mounts and others standard parts, are manufactured in large quantities on our CNC machines and stocked in our warehouse. As a result, only the barrel and rod need to be made to order.

We will also manufacture custom cylinders to our customers requirements.

Quality

Our experience, engineering and quality manufacturing are the main features of our cylinders. It is the responsibility of all our employees to maintain the high quality that our customers expect. Every cylinder is tested at its rated pressure, and cycled through its stroke, and the basic dimensions are confirmed. We are currently in the process of ISO 900 certification.

Mountings

Mountings such as trunnions, flanges, clevises, and spherical bearings, are welded to the barrel, or blind end of the cylinder. Similarly, mountings are threaded or welded to the rod end.

To eliminate side loads, the axis of the cylinder must be aligned to the axis of the attachments. For the welded accessories, this is accomplished by using a ¼" diameter spring pin inserted into machined centering holes that are in the accessory and the end of the barrel. For the threaded accessories, the thread is machined accurately to the pin axis to ensure concentricity to the rod. To reduce side loads, we recommend using spherical bearing mounting.

Since we manufacture the barrel and rod to order, any size and type of accessories shown can be supplied with any of our cylinders, allowing an abundance of choices. Special mounts can also be manufactured.

Cushions

There are many ways of reducing the momentum of a cylinder load at the end of the stroke. A cost effective method is to reduce the flow of oil near the end of the stroke by means of a plunger or cushion. This cushion can be fixed, or adjustable. We offer fixed cushions because of their simplicity. Cushions can be supplied for the rod end, blind end, or both ends. Cushions are standard for Series EX and TH. They are optional for Series B and TM.

We do not, as a standard, offer cushions for any other series of cylinder.

Overall Length

If necessary, the overall retracted length of a cylinder can be increased by:

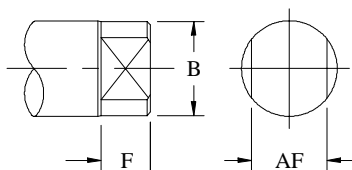
- Adding a stop tube between the piston and the head gland.
- Adding an extension to the blind end of the barrel.
- Increasing the rod extension.

Overview

Rod Specifications

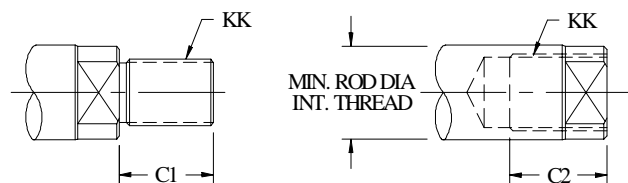
Standard rod material is CPO (C1045 steel with 0.0005 thick hard chrome plating). We also offer IHCP (Induction hardened chrome plated) or else stainless steel SS (S316L stainless with 0.001 thick hard chrome) as readily available options. Rod accessories can be welded or threaded to the rod. Usually, a female thread is recommended over a male thread because a broken end can be easily replaced as opposed to changing a rod that had a male thread. Also, a female thread can be converted to a male thread by using a rod stud (see page 02-16). Note that the thread size is governed by the pin size "CD" of the threaded accessory being used on the rod end.

Rod End Wrench Flats



Rod Dia.	F	AF	B
0.38	0.25	0.25	0.31
0.50	0.25	0.38	0.44
0.63	0.38	0.50	0.56
0.75	0.38	0.63	0.69
1.00	0.63	0.81	0.94
1.25	0.63	1.06	1.19
1.38	0.63	1.13	1.31
1.50	0.75	1.25	1.44
1.75	0.75	1.44	1.69
2.00	0.88	1.69	1.94
2.50	0.88	2.06	2.44
3.00	0.88	2.44	2.94
3.50	1.00	3.00	3.44
4.00	1.00	3.38	3.94
4.50	1.00	3.75	4.44
5.00	1.25	4.25	4.94
6.00	1.25	5.00	5.94

Threaded Rod Ends



CD Pin Dia	KK	C1	C2	MIN ROD DIA.
0.25	1/4-28	0.94	0.91	0.50
0.31	5/16-24	1.13	1.06	0.50
0.38	3/8-24	1.19	1.13	0.63
0.44	7/16-20	1.25	1.13	0.63
0.50	1/2-20	0.88	0.69	0.75
0.63	5/8-18	1.63	1.38	1.00
0.75	3/4-16	1.13	0.81	1.00
1.00	1-14	1.63	1.25	1.38
1.25	1 1/4-12	2.00	1.38	1.75
1.38	1 1/4-12	2.00	1.38	1.75
1.50	1 1/2-12	2.00	1.38	2.50
1.75	1 1/2-12	2.00	1.38	2.50
2.00	1 7/8-12	3.00	2.31	3.00
2.50	2 1/4-12	3.50	2.63	3.50
3.00	2 1/2-12	3.50	2.50	3.50
3.50	3 1/4-12	4.50	3.25	4.50
4.00	3 1/2-12	5.00	3.63	5.00

Proximity Switch

A high pressure GO proximity switch can be installed at the ends of the cylinder. This signals the extended or the retracted positions. These are available as an option only on the series B and EX.

Valves

Valves such as directional, counterbalance, flow control and many others can be added to the cylinder in many ways. We normally mount the valve in a manifold, and mount the manifold to the cylinder with SAE Code 61 or Code 62 connections, and then run a steel tube to the other end.

Overview

Ports

Cylinder ports are machined into the barrel end and barrel ring. This eliminates the local distortion and stress concentration due to welding a half coupling on the outside of the barrel. The result is a strong, clean cylinder barrel. However, the downside is that because we pre-manufacture and stock these parts, changing the port size is difficult. Therefore, it is more cost effective to use an adapter to change the port type and size.

Port sizes and threads

Dash Size	NPT	ORB & JIC	BSPP	ORFS
-02	1/8"-27	5/16"-24	1/8"-28	
-03		3/8"-24		
-04	1/4"-18	7/16"-20	1/4"-19	9/16"-18
-05		1/2"-20		
-06	3/8"-18	9/16"-18	3/8"-19	11/16"-16
-08	1/2"-14	3/4"-16	1/2"-14	13/16"-16
-10		7/8"-14	5/8"-14	1"-14
-12	3/4"-14	1-1/16"-12	3/4"-14	1-3/16"-12
-14		1-3/16"-12		
-16	1"-11.5	1-5/16"-12	1"-11	1-7/16"-12
-20	1-1/4"-11.5	1-5/8"-12	1-1/4"-11	1-11/16"-12
-24	1-1/2"-11.5	1-7/8"-12	1-1/2"-11	2"-12
-32	2"-11.5	2-1/2"-12	2"-11	

Seals

All of our cylinders utilize the latest in seal design from major manufacturers. Seals are one of the most critical components in a hydraulic cylinder. It is very important to keep the nearby operating environment as clean as possible and to keep the oil as contaminant free as possible.

Our piston seals are carefully chosen to perform in the requirements of each individual series of cylinder. Most of our piston seals will be of the "slipper" style, while the Series B offers the option of using a loaded "u-cup" style. In general, u-cup seals are used where the cylinder must support a load without creeping. The slipper style of seals offer low friction and are more tolerant of contamination. Materials range from hard plastic to urethane to glass filled PTFE, all with nitrile energizers.

Our rod seals are a loaded u-cup style with back beveled sealing lips. They also have a greater depth than cross section to resist roll over in the groove under pressure.

Our rod wipers are polyurethane either of the metal encased style or the snap in style. The metal encased rod wipers are used on the Series B, EX and TH.

All wear rings are reinforced nylon.

All O'rings and backup rings are nitrile.

Overview

Torque Specifications

The torque on a bolt or nut must be sufficient to create a preload that is greater than the load to be carried. The values given in the charts are for SAE Gr.8 bolts and C1045 rod material and a nut material with a minimum yield strength of

Head Gland bolts

Bolt size	Preload (lb)	Torque (lb-ft) ±10%
1/4"-20	2860	12
5/16"-18	4720	24
3/8"-16	7000	45
7/16"-14	9550	70
1/2"-13	12,750	105
9/16"-12	16,400	155
5/8"-11	20,350	210
3/4"-10	30,100	375
7/8"-14	45,800	675
1"-14	61,000	1015

Piston Nut (use Loctite #262)

Nut size	Preload (lb)	Torque (lb-ft) ±10%
1/2"-20	11,510	70
3/4"-16	26,850	250
1"-14	48,950	610
1 1/4"-12	57,325	960
1 3/8"-12	75,740	1300
1 1/2"-12	91,100	1710
1 5/8"-12	118,200	2400
1 3/4"-12	131,400	2875
1 7/8"-12	151,800	3560
2"-12	169,650	4240
2 1/4"-12	221,400	6230
2 1/2"-12	230,900	7215
3"-12	381,700	14,300
3 1/2"-12	471,250	20,620

Thread locking compound

All threaded components of the cylinder should be assembled using a thread locking compound. This will ensure that items such as head gland bolts and piston nuts stay tight. We use products such as Loctite Threadlocker. It is important to closely follow the manufacturers instructions regarding cleaning and priming before applying these threadlocking compounds.

Request for Quotation

At the end of this section is a Request for Quotation form. Fill this out and fax it to Sealum Industries Ltd.

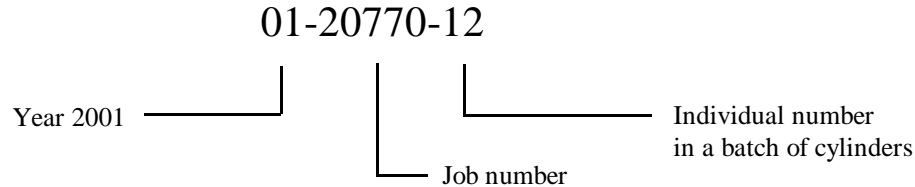
The fax # is (604-522-0070). We will then contact you with a price and delivery or for any further information.

If the cylinder is one that has been ordered before, write in the model number on the comments line at the bottom of the page (include any changes that may have been made since the original delivery).

Overview

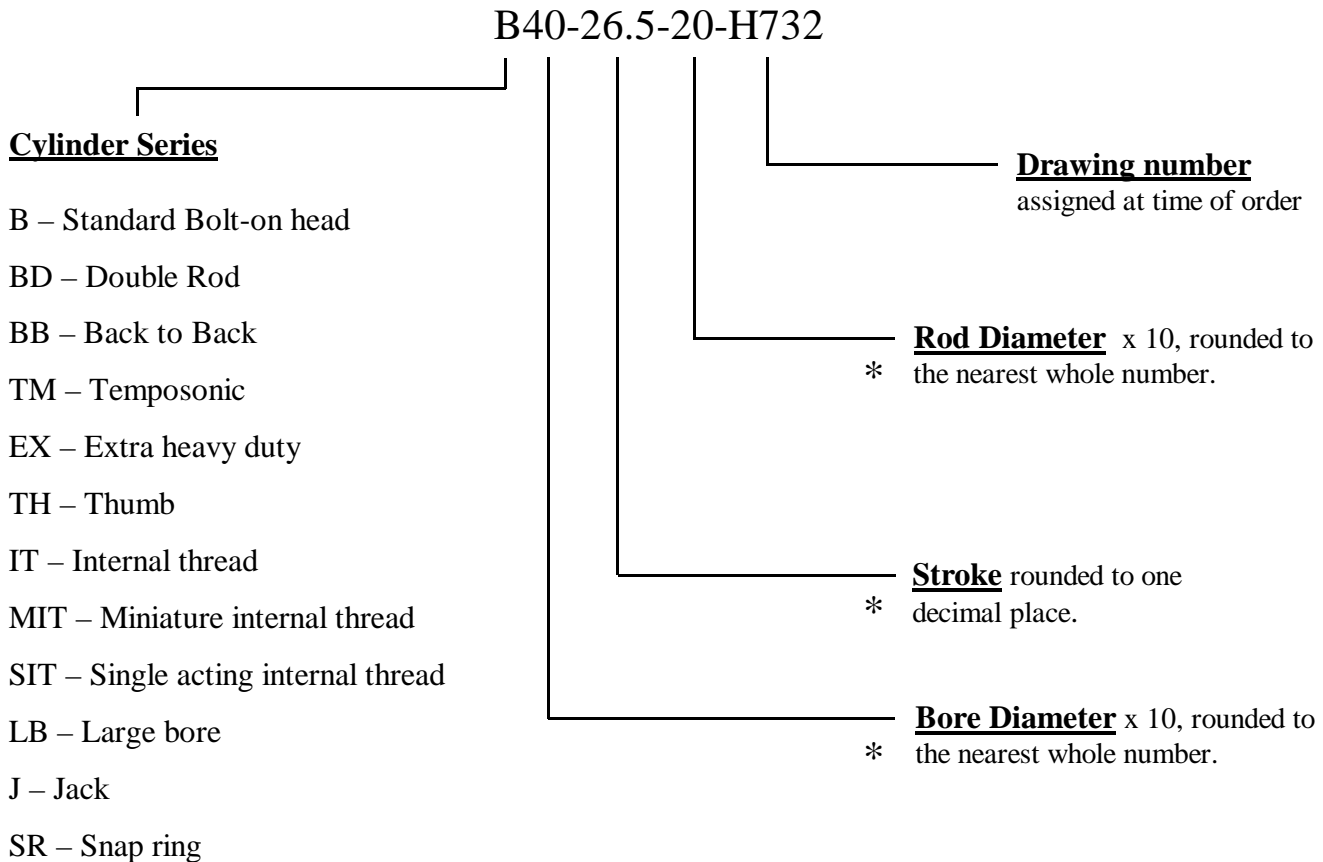
Serial Number

The serial number consists of a group of either two or three sets of numbers. The first set describes the year the cylinder was manufactured. The second set gives our internal manufacturing job number. If there is a third set, it gives the individual number of a cylinder in a batch of cylinders.



Model Number

The model number consists of a group of numbers. The first set gives the cylinder model and the bore size. The second set gives the stroke. The third set is the rod diameter. The fourth set is the drawing number.



For telescopic model numbers see section #13
TS – Telescopic single acting
TD – Telescopic double acting

* May not apply to certain models of double rod or back to back.

Overview

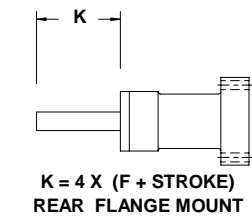
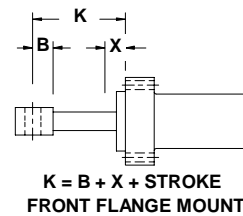
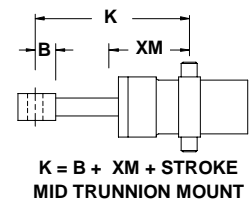
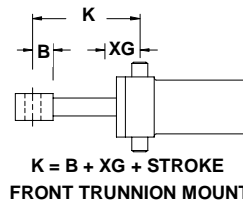
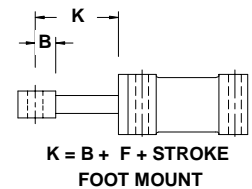
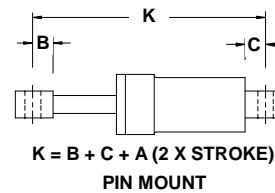
Buckling

A major concern with long stroke cylinders under a compressive load is the buckling of the rod. This can be reduced or eliminated by various means:-

- Use a stop tube to increase the overlap between the piston and the head gland.
- Use spherical bearings to reduce eccentricity.
- Use a mounting style that will reduce the "K" dimension.

The chart below should be used as a reference guide only. The customer will have to consider the cylinder application to select a rod size and stop tube to avoid any cylinder buckling.

THRUST (in lbs.)	VALUE OF 'K' IN INCHES												
	5/8	1	1 3/8	1 3/4	2	2 1/2	3	3 1/2	4	5	5 1/2	7	
400	35	84	134										
700	30	68	119										
1,000	26	60	105	156	190								
1,400	24	54	93	144	175	244	308						
1,800	23	48	84	127	160	230	294	366					
2,400	18	45	75	114	145	214	281	347					
3,200	16	40	68	103	131	196	262	329	398				
4,000	12	38	63	93	119	174	240	310	373				
5,000	9	36	60	87	112	163	225	289	359				
6,000		30	56	82	102	152	209	274	342	476			
8,000		25	51	76	93	136	186	244	310	448			
10,000		21	45	70	89	125	172	221	279	412			
12,000		17	41	64	85	117	155	210	270	388	455		
16,000			35	57	75	110	141	188	233	350	421		
20,000			28	52	66	103	136	173	218	325	385		
30,000				39	56	87	120	156	190	285	330		
40,000				24	43	75	108	142	177	248	293		
50,000					30	66	97	131	165	234	268	408	
60,000						57	88	119	154	226	256	384	
80,000						36	71	104	136	204	240	336	
100,000							56	91	120	199	224	324	
120,000							45	76	108	174	207	313	
140,000								64	98	162	194	301	
160,000								47	87	149	182	279	
200,000									65	131	160	260	
250,000										109	143	236	
300,000										85	120	212	
350,000										53	100	195	
400,000											72	182	



DIMENSIONS

K = Column Length

A = Dimension added to stroke to determine collapsed cylinder length. See Cylinder dimensional data pages.

B = Length to center of rod mounting accessory. Equal to dimension L, LS, CE, or E, depending on rod accessory selected. See Mounting Accessory data pages

C = Length to center of barrel mounting accessory. Equal to dimensions L, LS, or E, depending on mounting accessory selected. See Mounting Accessory data pages .

F = Length of rod extension when cylinder is collapsed. 'F' is included in dimensions A, X, XG, and XM. See Cylinder dimensional data pages.

When a rod extension is used, the extra length must be added to 'K'.

Overview

Cylinder Force

THEORETICAL CYLINDER FORCES (values do not reflect losses due to friction or other variables)

Force (lb) = Pressure (psi) x Piston Area (sq.in.)

BORE SIZE	ROD DIA	FORCE (lbs)	SYSTEM PRESSURE (psi)									VOLUME Gallons per inch of Stroke
			1000	1500	2000	2500	3000	3500	4000	4500	5000	
1 1/2	3/4	PUSH	1,770	2,650	3,530	4,420	5,300	6,180	7,070	7,950	8,830	0.0076
		PULL	1,320	1,990	2,650	3,310	3,970	4,640	5,300	5,960	6,630	0.0057
2	1	PUSH	3,140	4,710	6,280	7,850	9,420	11,000	12,560	14,140	15,700	0.0136
		PULL	2,360	3,530	4,710	5,890	7,070	8,250	9,420	10,600	11,780	0.0102
2 1/2	1 3/8	PUSH	1,660	2,480	3,310	4,140	4,970	5,800	6,630	7,450	8,280	0.0072
		PULL	4,910	7,360	9,820	12,270	14,720	17,180	19,630	22,090	24,540	0.0213
3	1 3/8	PUSH	4,120	6,180	8,250	10,300	12,370	14,430	16,490	18,550	20,610	0.0179
		PULL	3,420	5,130	6,850	8,560	10,270	11,980	13,700	15,400	17,120	0.0148
3 1/4	1 3/4	PUSH	2,500	3,750	5,010	6,260	7,510	8,760	10,010	11,260	12,510	0.0108
		PULL	7,070	10,600	14,130	17,670	21,200	24,740	28,270	31,810	35,340	0.0306
4	1 3/8	PUSH	5,580	8,370	11,160	13,960	16,750	19,540	22,330	25,120	27,920	0.0242
		PULL	4,660	6,990	9,330	11,660	13,990	16,320	18,650	20,980	23,310	0.0202
3 1/2	2	PUSH	3,930	5,890	7,850	9,820	11,780	13,740	15,700	17,670	19,630	0.0170
		PULL	8,300	12,440	16,590	20,740	24,900	29,030	33,180	37,330	41,480	0.0359
4 1/2	1 3/8	PUSH	6,810	10,210	13,620	17,020	20,430	23,840	27,240	30,650	34,050	0.0295
		PULL	5,890	8,830	11,780	14,720	17,670	20,610	23,560	26,500	29,450	0.0255
5 1/2	2	PUSH	5,150	7,730	10,300	12,880	15,460	18,040	20,610	23,190	25,770	0.0223
		PULL	9,620	14,430	19,240	24,050	28,860	33,670	38,480	43,290	48,100	0.0416
6 1/2	1 3/8	PUSH	8,130	12,200	16,270	20,340	24,410	28,470	32,540	36,610	40,680	0.0352
		PULL	7,210	10,820	14,430	18,040	21,650	25,250	28,860	32,470	35,080	0.0312
7 1/2	2	PUSH	6,480	9,720	12,960	16,200	19,440	22,680	25,910	29,160	32,400	0.0280
		PULL	4,710	7,070	9,420	11,780	14,140	16,490	18,850	21,200	23,560	0.0204
8 1/2	2 1/2	PUSH	12,550	18,850	25,130	31,410	37,700	43,980	50,260	56,550	62,830	0.0544
		PULL	10,160	15,240	20,320	25,400	30,480	35,560	40,640	45,720	50,800	0.0440
9 1/2	2	PUSH	9,420	14,130	18,850	23,560	28,270	32,980	37,700	42,410	47,120	0.0408
		PULL	7,660	11,480	15,310	19,140	22,970	26,800	30,630	34,460	38,290	0.0332
10 1/2	3	PUSH	5,500	8,250	11,000	13,740	16,490	19,240	21,990	24,740	27,490	0.0238
		PULL	15,900	23,850	31,810	39,760	47,710	55,660	63,610	71,570	79,520	0.0688
11 1/2	2	PUSH	12,760	19,140	25,520	31,900	38,290	44,670	51,050	57,430	63,810	0.0552
		PULL	10,990	16,490	21,990	27,490	32,980	38,480	43,980	49,480	54,980	0.0476
12 1/2	3	PUSH	8,830	13,250	17,670	22,090	26,500	30,920	35,340	39,760	44,180	0.0383
		PULL	19,630	29,450	39,270	49,090	58,900	68,720	78,540	88,360	98,170	0.0850
13 1/2	2	PUSH	16,490	24,740	32,980	41,230	49,480	57,720	65,970	74,220	82,460	0.0714
		PULL	12,560	18,850	25,130	31,410	37,700	43,980	50,260	56,550	62,830	0.0544
14 1/2	3 1/2	PUSH	10,010	15,020	20,030	25,030	30,040	35,050	40,050	45,060	50,070	0.0434
		PULL	23,760	35,640	47,510	59,390	71,270	83,150	95,030	106,910	118,790	0.1028
15 1/2	3 1/2	PUSH	14,130	21,200	28,270	35,340	42,410	49,480	56,550	63,610	70,680	0.0162
		PULL	28,270	42,410	56,550	70,680	84,820	98,960	113,100	127,230	141,370	0.1224
16 1/2	2 1/2	PUSH	23,360	35,050	46,730	58,410	70,100	81,780	94,460	105,140	116,830	0.1011
		PULL	21,200	31,810	42,410	53,010	63,610	74,220	84,820	95,420	106,030	0.0918
17 1/2	3 1/2	PUSH	18,650	27,980	37,300	46,630	55,960	65,280	74,610	83,940	93,260	0.0807
		PULL	15,700	23,560	31,410	39,270	47,120	54,980	62,830	70,680	78,540	0.0680
18 1/2	4	PUSH	33,180	49,770	66,360	82,960	99,550	116,140	132,730	149,320	165,910	0.1436
		PULL	20,610	30,920	41,230	51,540	61,850	72,159	82,460	92,770	103,080	0.0892
19 1/2	4	PUSH	38,480	57,720	76,970	96,210	115,450	134,690	153,940	173,180	192,420	0.1666
		PULL	31,410	47,120	62,830	78,540	94,250	109,950	125,660	141,370	157,080	0.1360
20 1/2	4	PUSH	25,920	38,870	51,800	64,800	77,750	90,710	103,670	116,630	129,590	0.1122
		PULL	18,850	28,270	37,700	47,120	56,550	65,970	75,400	84,820	94,250	0.0816
21 1/2	3 1/2	PUSH	50,260	75,400	100,530	125,660	150,800	175,930	201,060	226,200	251,330	0.2176
		PULL	40,640	60,960	81,290	101,610	121,930	142,250	162,580	182,900	203,220	0.1760
22 1/2	4	PUSH	37,700	56,550	75,400	94,250	131,100	131,940	150,800	169,640	188,500	0.1632
		PULL	30,630	45,940	61,260	76,570	91,890	107,200	122,520	137,840	153,150	0.1326
23 1/2	5 1/2	PUSH	26,500	39,760	53,010	66,270	79,520	92,770	106,030	119,280	132,530	0.1148
		PULL	78,540	117,810	158,080	196,350	235,620	274,890	314,160	353,430	392,700	0.3400
24 1/2	5	PUSH	58,900	88,360	117,810	147,260	176,710	206,170	235,620	265,070	294,520	0.2550
		PULL	50,260	75,400	100,530	125,660	150,800	175,930	201,060	226,200	251,330	0.2176
25 1/2	7	PUSH	40,050	60,080	80,110	100,140	120,160	140,190	160,220	180,250	200,270	0.1734

Overview

Cylinder Speed

THEORETICAL CYLINDER SPEEDS (inches per second)

$$\text{Speed (in/sec)} = 3.85 \times \text{Flow (GPM)} \div \text{Area (sq.in.)}$$

BORE SIZE	ROD DIA.	FLOW (GPM)																	
		1	2	5	7	10	12	15	20	25	30	35	40	45	50	60	70	90	100
1 1/2	3/4	2.2	4.4	10.9	15.3	21.8													
		2.9	5.8	14.5	20.3	29.1													
2	1	1.2	2.5	6.1	8.6	12.3	14.7	18.4											
	1 3/8	1.6	3.3	8.2	11.4	16.4	19.6	24.5											
	1 3/8	2.3	4.7	11.6	16.3	23.3	27.9	34.9											
2 1/2	1	0.8	1.6	3.9	5.5	7.9	9.4	11.8	15.7	19.6									
	1 3/8	0.9	1.9	4.7	6.5	9.3	11.2	14.0	18.7	23.5									
	1 3/4	1.1	2.3	5.6	7.9	11.3	13.5	16.9	22.5	28.1									
	1 3/4	1.5	3.1	7.7	10.8	15.4	18.5	23.1	30.8	38.5									
3	1 3/8	0.5	1.1	2.7	3.8	5.5	6.5	8.2	10.9	13.6	16.4	19.1							
	1 3/4	0.7	1.4	3.5	4.8	6.9	8.3	10.4	13.8	17.3	20.7	24.2							
	1 3/4	0.8	1.7	4.1	5.8	8.3	9.9	12.4	16.5	20.7	24.8	28.9							
	2	1.0	2.0	5.0	6.9	9.8	11.8	14.7	19.6	24.5	29.4	34.3							
3 1/4	1 3/8	0.5	0.9	2.3	3.3	4.6	5.6	7.0	9.3	11.6	13.9	16.3	18.6						
	1 3/8	0.6	1.1	2.8	3.9	5.7	6.8	8.5	11.3	14.1	17.0	19.8	22.6						
	1 3/4	0.7	1.3	3.3	4.6	6.5	7.9	9.8	13.1	16.4	19.6	22.9	26.2						
	2	0.8	1.5	3.7	5.2	7.5	9.0	11.2	15.0	18.7	22.4	26.1	29.9						
3 1/2	1 3/4	0.4	0.8	2.0	2.8	4.0	4.8	6.0	8.0	10.0	12.0	14.0	16.0	18.0					
	1 3/4	0.5	1.1	2.7	3.7	5.3	6.4	8.0	10.7	13.4	16.0	18.7	21.4	24.0					
	2	0.6	1.2	3.0	4.2	5.9	7.1	8.9	11.9	14.7	17.8	20.8	23.8	26.8					
	2 1/2	0.8	1.6	4.1	5.7	8.2	9.8	12.3	16.4	20.4	24.5	28.6	32.7	36.8					
4	1 3/4		0.6	1.5	2.2	3.1	3.7	4.6	6.1	7.7	9.2	10.7	12.3	13.8	15.3	18.4			
	2		0.8	1.9	2.7	3.8	4.6	5.7	7.6	9.5	11.4	13.3	15.2	17.1	19.0	22.8			
	2		0.8	2.0	2.9	4.1	4.9	6.1	8.2	10.2	12.3	14.3	16.4	18.4	20.4	24.5			
	3		1.4	3.5	4.9	7.0	8.4	10.5	14.0	17.5	21.0	24.5	28.0	31.5	35.0	42.0			
4 1/2	2		0.5	1.2	1.7	2.4	2.9	3.6	4.8	6.1	7.3	8.5	9.7	10.9	12.1	14.5	17.0		
	2 1/2		0.6	1.5	2.1	3.0	3.6	4.5	6.0	7.6	9.1	10.6	12.1	13.6	15.1	18.1	21.1		
	2 1/2		0.7	1.8	2.5	3.5	4.2	5.3	7.0	8.8	10.5	12.3	14.0	15.8	17.5	21.0	24.5		
	3		0.9	2.2	3.1	4.4	5.2	6.5	8.7	10.9	13.1	15.3	17.4	19.6	21.8	26.2	30.5		
5	2		0.4	1.0	1.4	2.0	2.4	2.9	3.9	4.9	5.9	6.9	7.9	8.8	9.8	11.8	13.7	17.7	
	3		0.5	1.2	1.6	2.3	2.8	3.5	4.7	5.8	7.0	8.2	9.3	10.5	11.7	14.0	16.4	21.0	
	3		0.6	1.5	2.2	3.1	3.7	4.6	6.1	7.7	9.2	10.7	12.3	13.8	15.3	18.4	21.5	27.6	
	3 1/2		0.8	1.9	2.7	3.9	4.6	5.8	7.7	9.6	11.5	13.5	15.4	17.3	19.2	23.0	26.9	34.6	
6	2 1/2			0.7	1.0	1.4	1.6	2.0	2.7	3.4	4.1	4.8	5.5	6.1	6.8	8.2	9.5	12.3	13.6
	2 1/2			0.8	1.2	1.7	2.0	2.5	3.3	4.1	5.0	5.8	6.6	7.4	8.2	9.9	11.5	14.8	16.5
	3			0.9	1.3	1.8	2.2	2.7	3.6	4.5	5.5	6.4	7.3	8.2	9.1	10.9	12.7	16.4	18.2
	4			1.2	1.7	2.5	2.9	3.7	4.9	6.1	7.4	8.6	9.8	11.0	12.3	14.7	17.2	22.0	24.5
7	3			0.5	0.7	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	9.0	10.0
	3			0.6	0.9	1.2	1.5	1.8	2.5	3.1	3.7	4.3	4.9	5.5	6.1	7.4	8.6	11.0	12.3
	4			0.7	1.0	1.5	1.8	2.2	3.0	3.7	4.5	5.2	5.9	6.7	7.4	8.9	10.4	13.4	14.9
	5			1.0	1.4	2.0	2.5	3.1	4.1	5.1	6.1	7.2	8.2	9.2	10.2	12.3	14.3	18.4	20.4
8	3 1/2				0.5	0.8	0.9	1.2	1.5	1.9	2.3	2.7	3.1	3.5	3.8	4.6	5.4	6.9	7.7
	3 1/2				0.7	1.0	1.1	1.4	1.9	2.4	2.8	3.3	3.8	4.3	4.7	5.7	6.6	8.5	9.5
	4				0.7	1.0	1.2	1.5	2.0	2.6	3.1	3.6	4.1	4.6	5.1	6.1	7.2	9.2	10.2
	5 1/2				1.0	1.5	1.7	2.2	2.9	3.6	4.4	5.1	5.8	6.5	7.3	8.7	10.2	13.1	14.5
10	5					0.5	0.6	0.7	1.0	1.2	1.5	1.7	2.0	2.2	2.5	2.9	3.4	4.4	4.9
	5					0.7	0.8	1.0	1.3	1.6	2.0	2.3	2.6	2.9	3.3	3.9	4.6	5.9	6.5
	6					0.8	0.9	1.2	1.5	1.9	2.3	2.7	3.0	3.5	3.8	4.6	5.4	6.9	7.7
	7					1.0	1.2	1.4	1.9	2.4	2.9	3.4	3.9	4.3	4.8	5.8	6.7	8.7	9.6

Request for Quotation

Company _____
 City _____
 Province/State _____
 Contact name _____
 Telephone No. _____
 Fax No. _____
 Email address _____
 Delivery Req'd _____
 Shipping Req'd _____

Office Use Only

Quotation No. _____
 Quoted by _____
 Quote date _____
 Unit price _____
 Remarks _____

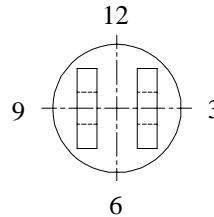
Qty. Req'd
 Series
 Bore Dia.
 Stroke
 Rod dia.
 Stop tube
 Retracted length

Rod material: CPO
 IHCP
 SS

B series only
 Piston seal type: Slipper,
 U-cup, optional

	Blind end	Rod end
Cushion	<input type="text"/>	<input type="text"/>
Port size	<input type="text"/>	<input type="text"/>
Port orientation	<input type="text"/>	<input type="text"/>
Extension	<input type="text"/>	<input type="text"/>
Mounting acc.	<input type="text"/>	<input type="text"/>
Mounting brkt.	<input type="text"/>	<input type="text"/>
Pin type	<input type="text"/>	<input type="text"/>

Both ends No cushions B-series only



Port Orientation

Viewed from blind end with the pin ends at 3 o'clock and 9 o'clock

Notes:

Standard blind end extension is "L" or "LS" from tables.
 Standard rod end extension is "F" from tables.
 See accessories pages for mounting brackets and pin types.

Additional requirements _____

Mounting Accessories



Introduction

Part number

For most accessories, we have organized the charts by the pin hole diameter 'CD' which is the controlling dimension. The first set of numbers "Bxxxx" is our drawing number and describes the type of accessory. This is followed by a dash number which is the size of the pin diameter 'CD' x 16 and will give the size of the pin in sixteenths of an inch, eg. a 1" diameter pin is a "-16"

Specifications

Unless otherwise specified, all accessories are manufactured from CSA G40.21-44W or AISI C1045 steel and all dimensions are specified in inches. The strength of the accessories is based on the strength of a C1045 pin of diameter 'CD'. All male threaded accessories have an adjustable dimension of "LS". The maximum adjustment is "+ADJ". This is based on three-quarters thread engagement.

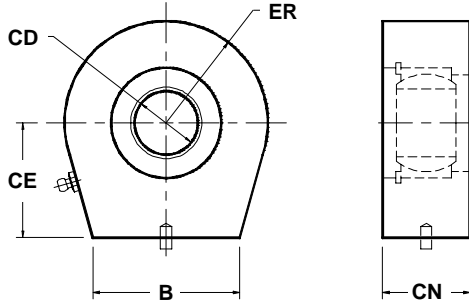
Because our cylinder barrels and rods are always manufactured to order, any type and size of accessory is available with any cylinder. Other barrel mounting types such as trunnions, flange mounts, and foot mounts are given in the section pertaining to each series of cylinders. For any custom types and sizes not shown in this catalogue, feel free to contact our engineering department.

Recommendations

The use of spherical bearings is recommended because they reduce side loads created by any mounting misalignment. They are also easily replaced when worn or damaged.

If a threaded accessory is required, a male thread on the accessory is preferred to a female thread which would use a male thread on the rod. Aside from buckling, the weakest part of a rod or accessory is at the base of the thread. If it happens to break off, it is easier to replace an accessory than a complete rod.

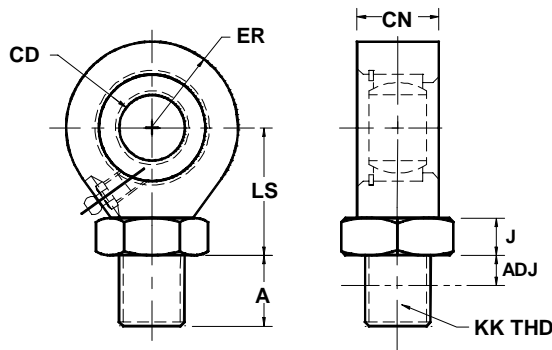
Sph. Brg. – Standard Width, Welded



- c/w bearing, snap ring and grease fitting.
- use two spacers (B993-dash) to center bearing.
- the bare housing part no. is B1591-dash.
- old part no. was SW-dash.

Part No.	CD	CE	ER	CN	B	S/R	BRG.
B3295-12	0.75	1.25	1.00	1.00	1.63	12111	12110
B3295-16	1.00	1.50	1.31	1.25	2.00	12052	10334
B3295-20	1.25	1.88	1.63	1.50	2.50	10792	11687
B3295-22	1.38	2.13	1.88	1.50	2.88	11582	11581
B3295-24	1.50	2.25	2.00	1.75	3.25	10826	10803
B3295-28	1.75	2.38	2.13	2.00	3.25	11946	10204
B3295-32	2.00	2.63	2.43	2.25	3.50	11739	10804
B3295-36	2.25	2.88	2.75	2.50	4.25	11588	10805
B3295-40	2.50	3.00	2.88	2.50	4.50	10327	11808
B3295-44	2.75	3.25	3.25	2.75	4.50	12499	10807
B3295-48	3.00	3.75	3.63	2.75	4.50	11732	10228
B3295-56	3.50	4.50	4.18	3.50	5.38	11750	11551
B3295-64	4.00	5.25	4.50	4.00	6.90	12219	12218

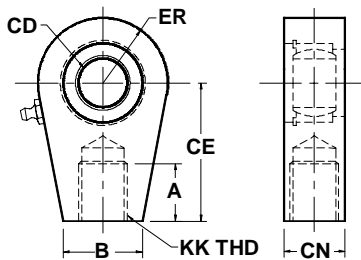
Sph. Brg. – Standard Width, Male Thread



- c/w bearing, snap ring, grease fitting and jam nut.
- use two spacers (B993-dash) to center bearing.
- the bare housing part no. is B1569-dash.
- old part no. was ST-dash.

Part No.	CD	A	ER	CN	LS	J	ADJ	KK	S/R	BRG.
B3673-12	0.75	1.33	1.00	1.00	1.67	0.42	0.77	3/4-16	12111	12110
B3673-16	1.00	1.45	1.31	1.25	2.05	0.55	0.70	1-14	12052	10334
B3673-20	1.25	1.78	1.63	1.50	2.60	0.72	0.84	1 1/4-12	10792	11687
B3673-22	1.38	1.78	1.88	1.50	2.85	0.72	0.84	1 1/4-12	11582	11581
B3673-24	1.50	2.03	2.00	1.75	3.09	0.84	0.91	1 1/2-12	10826	10803
B3673-28	1.75	2.03	2.13	2.00	3.22	0.84	0.91	1 1/2-12	11946	10204
B3673-32	2.00	2.67	2.43	2.25	3.46	0.83	1.27	1 7/8-12	11739	10804
B3673-40	2.50	3.00	2.88	2.50	4.00	1.00	1.31	2 1/4-12	10327	11808
B3673-48	3.00	3.38	3.63	2.75	4.88	1.13	1.50	2 1/2-12	11732	10228
B3673-56	3.50	4.25	4.18	3.50	5.88	1.38	1.81	3 1/4-12	11750	11551
B3673-64	4.00	5.25	4.50	4.00	6.75	1.50	2.63	3 1/2-12	12219	12218

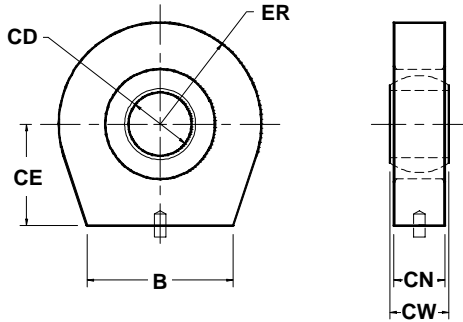
Sph. Brg. – Standard Width, Female Thread



- c/w bearing, snap ring and grease fitting.
- use two spacers (B993-dash) to center bearing.
- the bare housing part no. is B2250-dash.
- old part no. was SI-dash.

Part No.	CD	A	ER	CN	CE	B	KK	S/R	BRG.
B3672-16	1.00	1.63	1.31	1.25	3.13	1.63	1-14	12052	10334
B3672-20	1.25	2.00	1.63	1.50	3.88	2.00	1 1/4-12	10792	11687
B3672-22	1.38	2.00	1.88	1.50	4.13	2.00	1 1/4-12	11582	11581
B3672-24	1.50	2.25	2.00	1.75	4.50	2.50	1 1/2-12	10826	10803
B3672-28	1.75	2.25	2.13	2.00	4.50	2.50	1 1/2-12	11946	10204
B3672-32	2.00	2.75	2.43	2.25	5.50	3.00	1 7/8-12	11739	10804
B3672-40	2.50	3.25	2.88	2.50	6.50	3.75	2 1/4-12	10327	11808

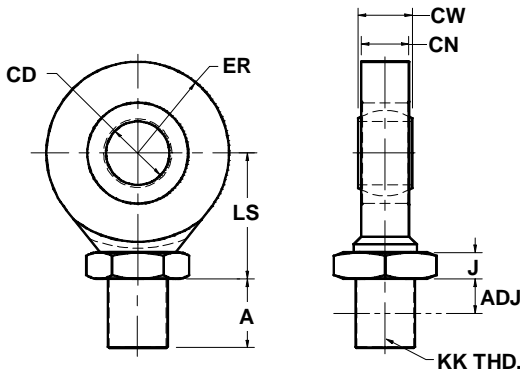
Sph. Brg. – Narrow Width, Welded



- c/w bearing.
- the bare housing is B3431-dash.

Part No.	CD	ER	CE	CW	CN	B	BRG
B3676-12	0.75	1.13	1.25	0.66	0.56	1.63	12110
B3676-16	1.00	1.44	1.50	0.88	0.75	2.00	10334
B3676-20	1.25	1.75	1.88	1.09	0.94	2.50	11687
B3676-22	1.38	2.00	2.13	1.19	1.03	2.88	11581
B3676-24	1.50	2.19	2.25	1.31	1.13	3.25	10803
B3676-28	1.75	2.50	2.38	1.53	1.31	3.25	10204
B3676-32	2.00	2.88	2.63	1.75	1.50	3.50	10804
B3676-36	2.25	3.25	2.88	1.97	1.69	4.25	10805
B3676-40	2.50	3.44	3.00	2.19	1.88	4.50	11808
B3676-44	2.75	3.75	3.25	2.41	2.06	4.50	10807
B3676-48	3.00	4.13	3.75	2.63	2.25	4.50	10228
B3676-56	3.50	4.75	4.50	3.06	2.63	5.38	11551
B3676-64	4.00	5.31	5.25	3.50	3.00	6.90	12218

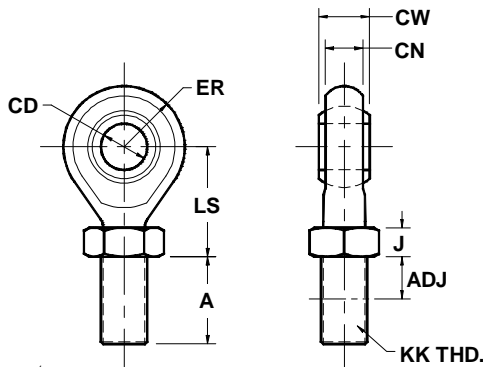
Sph. Brg. – Narrow Width, Male Thread



- c/w bearing and jam nut.
- the bare housing is B3677-dash.

Part No.	CD	ER	A	CW	CN	LS	ADJ	J	KK	BRG
B3678-16	1.00	1.44	1.08	0.88	0.75	2.30	0.33	0.55	1-14	10334
B3678-20	1.25	1.75	1.28	1.09	0.94	3.10	0.34	0.72	1 1/4-12	11687
B3678-22	1.38	2.00	1.28	1.19	1.03	3.22	0.34	0.72	1 1/4-12	11581
B3678-24	1.50	2.19	1.41	1.31	1.13	3.59	0.28	0.84	1 1/2-12	10803
B3678-28	1.75	2.50	1.41	1.53	1.31	3.72	0.28	0.84	1 1/2-12	10204
B3678-32	2.00	2.88	2.17	1.75	1.50	3.96	0.77	0.83	1 7/8-12	10804
B3678-40	2.50	3.44	2.50	2.19	1.88	4.75	0.81	1.00	2 1/4-12	11808
B3678-48	3.00	4.13	2.38	2.63	2.25	5.63	0.50	1.13	2 1/2-12	10228
B3678-56	3.50	4.75	3.13	3.06	2.63	6.63	0.69	1.38	3 1/4-12	11551
B3678-64	4.00	5.31	3.50	3.50	3.00	7.50	0.88	1.50	3 1/2-12	12218

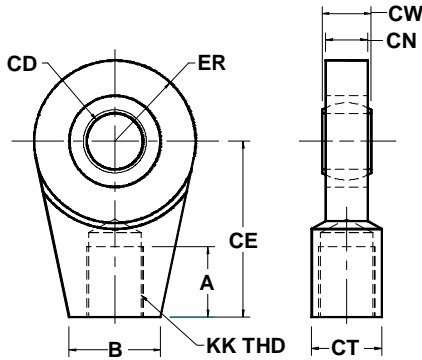
Sph. Brg. – Narrow Width, Male Thread Miniature



- c/w jam nut.

Part No.	CD	ER	A	CW	CN	LS	ADJ	J	KK
B3678-4	0.25	0.38	0.88	0.38	0.28	0.69	0.69	0.16	1/4-28
B3678-5	0.31	0.44	1.13	0.44	0.34	0.75	0.89	0.19	5/16-24
B3678-6	0.38	0.50	1.19	0.50	0.41	0.75	0.91	0.22	3/8-24
B3678-7	0.44	0.56	1.13	0.56	0.44	1.00	0.80	0.25	7/16-20
B3678-8	0.50	0.66	1.25	0.63	0.50	1.19	0.88	0.31	1/2-20
B3678-10	0.63	0.75	1.31	0.75	0.56	1.31	0.84	0.38	5/8-18
B3678-12	0.75	0.88	1.44	0.88	0.69	1.44	0.88	0.42	3/4-16

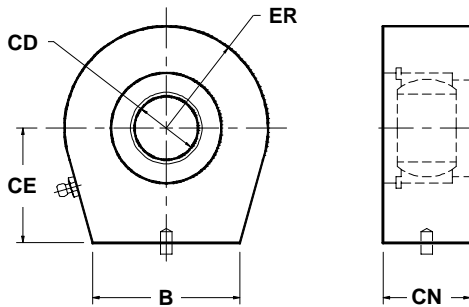
Sph. Brg. – Narrow Width, Female Thread



Part No.	CD	A	ER	CW	CN	CE	B	CT	KK	BRG.
B3697-12	0.75	0.81	1.13	0.66	0.56	2.38	1.00	1.00	3/4-16	12110
B3697-16	1.00	1.25	1.44	0.88	0.75	3.13	1.25	1.25	1-14	10334
B3697-20	1.25	1.38	1.75	1.09	0.94	3.69	1.50	1.50	1 1/4-12	11687
B3697-22	1.38	1.38	2.00	1.19	1.03	3.94	1.75	1.75	1 1/4-12	11581
B3697-24	1.50	1.50	2.19	1.31	1.13	4.25	2.00	2.00	1 1/2-12	10803
B3697-28	1.75	1.50	2.50	1.53	1.31	4.25	2.50	2.00	1 1/2-12	10204
B3697-32	2.00	2.31	2.88	1.75	1.50	5.75	2.50	2.50	1 7/8-12	10804
B3697-40	2.50	2.63	3.44	2.19	1.88	6.13	3.00	3.00	2 1/4-12	11808

- c/w bearing.
- the bare housing part no. is B3671-dash.

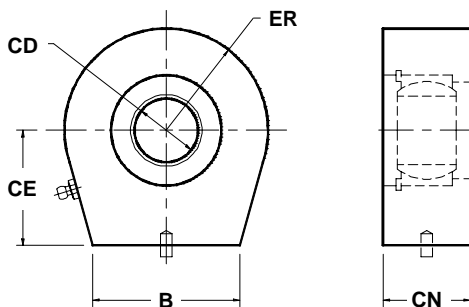
Sph. Brg. – Heavy Duty, Welded



Part No.	CD	ER	CE	CN	B	S/R	BRG.
B3296-20	1.25	2.00	2.25	1.75	3.25	10826	12503
B3296-24	1.50	2.13	2.38	2.00	3.25	11946	12504
B3296-28	1.75	2.43	2.63	2.25	3.75	11739	12505
B3296-32	2.00	2.75	2.88	2.50	4.25	11588	12506
B3296-36	2.25	2.88	3.00	2.50	4.50	10327	12507
B3296-40	2.50	3.25	3.25	2.75	4.50	12499	12508
B3296-44	2.75	3.63	3.75	2.75	4.50	11732	12509

- includes bearing, snap ring and grease fitting.
- the bare housing part no. is B1591-dash one size bigger than assembly.

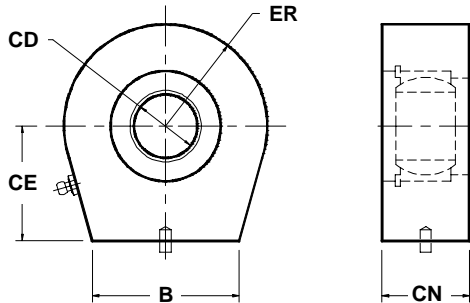
Sph. Brg. Metric – Heavy Duty, Welded



Part No.	CD	ER	CE	CN	B	S/R	BRG.
B3255-20	20	30	35	25	44	12199	12520
B3255-25	25	35	41	29	51	12500	12521
B3255-30	30	44	51	32	64	11582	12522
B3255-35	35	54	57	35	76	10826	12523
B3255-40	40	60	64	38	83	12153	12524
B3255-45	45	62	67	44	89	10133	12525
B3255-50	50	70	76	54	102	11588	12526
B3255-60	60	83	89	57	114	12502	12527
B3255-70	70	95	102	64	127	11732	12528
B3255-80	80	102	114	70	140	10797	12529
B3255-90	90	114	127	76	152	12501	12530
B3255-100	100	127	133	76	165	12219	12531

- includes bearing, snap ring and grease fitting.
- the bare housing part no. is B3297-dash one size bigger than assembly.
- note: All dimensions in this table are in millimeters (mm).

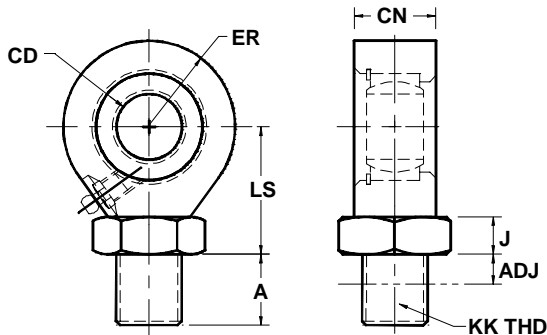
Sph. Brg. Metric – Standard Width, Welded



Part No.	CD	ER	CE	CN	B	S/R	BRG.
B3073-20	20	27	32	19	38	10043	12510
B3073-25	25	30	35	25	44	12199	12511
B3073-30	30	35	41	29	51	12500	10237
B3073-35	35	44	51	32	64	11582	12512
B3073-40	40	54	57	35	76	10826	12513
B3073-45	45	60	64	38	83	12153	12152
B3073-50	50	62	67	44	89	10133	12514
B3073-60	60	70	76	54	102	11588	12515
B3073-70	70	83	89	57	114	12502	12516
B3073-80	80	95	102	64	127	11732	12517
B3073-90	90	102	114	70	140	10797	12518
B3073-100	100	114	127	76	152	12501	12519

- c/w bearing, snap ring and grease fitting.
- the bare housing part no. is B3297-dash.
- use two B993-dash spacers to center bearings.
- note: all dimensions in this table are in millimeters (mm).

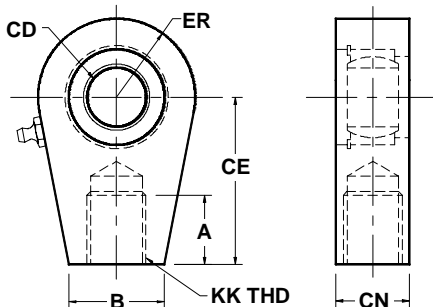
Sph. Brg. Metric – Standard Width, Male Thread



Part No.	CD	A	ER	CN	LS	ADJ	J	KK	S/R	BRG.
B3683-20	20	37	27	19	41	22	10	M20-1.5	10043	12510
B3683-25	25	30	30	25	50	12	12	M24-2	12199	12511
B3683-30	30	32	35	29	62	9	15	M30-2	12500	10237
B3683-35	35	38	44	32	72	11	17	M36-3	11582	12512
B3683-40	40	39	54	35	76	10	19	M39-3	10826	12513
B3683-45	45	40	60	38	83	8	22	M42-3	12153	12152
B3683-50	50	47	62	44	92	13	25	M45-3	10133	12514
B3683-60	60	52	70	54	105	13	29	M52-3	11588	12515
B3683-70	70	58	83	57	127	16	32	M56-4	12502	12516
B3683-80	80	52	95	64	133	4	38	M64-4	11732	12517

- c/w bearing, snap ring, grease fitting and jam nut.
- the bare housing part no. is B3682-dash.
- use two B993-DASH spacers to center bearings.
- note: All dimensions in this table are in millimeters (mm).

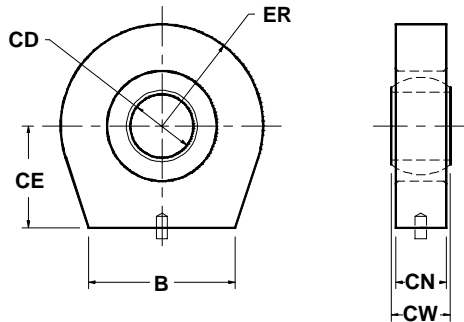
Sph. Brg. Metric – Standard Width, Female Thread



Part No.	CD	A	ER	CN	CE	B	KK	S/R	BRG.
B3699-20	20	24	27	19	56	32	M16-1.5	10043	12510
B3699-25	25	30	30	25	67	41	M20-1.5	12199	12511
B3699-30	30	35	35	29	78	51	M22-1.5	12500	10237
B3699-35	35	43	44	32	90	51	M28-1.5	11582	12512
B3699-40	40	49	54	35	103	64	M33-2	10826	12513
B3699-45	45	54	60	38	110	64	M36-3	12153	12152
B3699-50	50	64	62	44	129	76	M42-2	10133	12514
B3699-60	60	78	70	54	152	95	M52-3	11588	12515
B3699-70	70	84	83	57	171	102	M56-4	12502	12516
B3699-80	80	95	95	64	191	102	M64-4	11732	12517

- c/w bearing, snap ring, grease fitting.
- the bare housing part no. is B3698-dash.
- use two B993-dash spacers to center bearings.
- note: All dimensions in this table are in millimeters (mm).

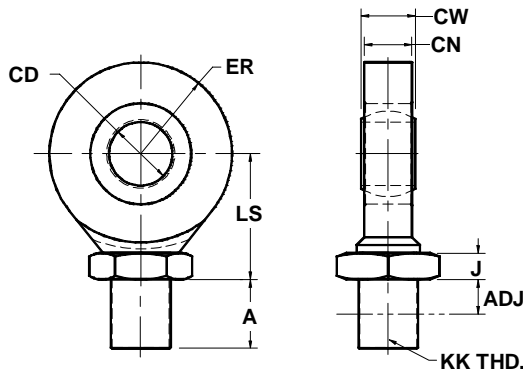
Sph. Brg. Metric – Narrow Width, Welded



- c/w bearing.
- the bare housing part no. is B3684-dash.
- note: all dimensions in this table are in millimeters (mm).

Part No.	CD	ER	CE	CW	CN	B	BRG.
B3432-20	20	33	25	16	12	38	12510
B3432-25	25	38	27	20	16	44	12511
B3432-30	30	44	30	22	18	51	10237
B3432-35	35	56	38	25	20	64	12512
B3432-40	40	68	44	28	22	76	12513
B3432-45	45	76	48	32	25	83	12152
B3432-50	50	78	57	35	28	89	12514
B3432-60	60	87	67	44	36	102	12515
B3432-70	70	103	76	49	40	114	12516
B3432-80	80	119	90	55	45	127	12517

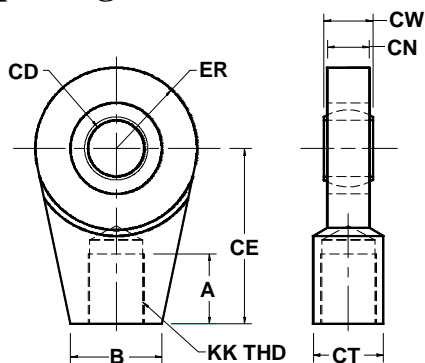
Sph. Brg. Metric – Narrow Width, Male Thread



- c/w bearing and jam nut.
- the bare housing part no. is B3681-dash.
- note: all dimensions in this table are in millimeters (mm).

Part No.	CD	ER	A	CW	CN	LS	ADJ	J	KK	BRG
B3680-10	10	13	24	14	11	24	17	5	M10-1.5	—
B3680-12	12	17	27	16	12	27	18	6	M12-1.75	—
B3680-15	15	19	29	19	14	31	19	7	M14-1.5	—
B3680-20	20	22	37	25	18	41	22	10	M20-1.5	12510
B3680-25	25	38	30	20	16	56	12	11	M24-2	12511
B3680-30	30	44	32	22	18	75	9	14	M30-2	10237
B3680-35	35	56	38	25	20	81	11	17	M36-3	12512
B3680-40	40	68	39	28	22	89	10	19	M39-3	12513
B3680-45	45	76	40	32	25	95	8	22	M42-3	12152
B3680-50	50	78	47	35	28	105	13	25	M45-3	12514
B3680-60	60	87	52	44	36	124	13	29	M52-3	12515
B3680-70	70	103	58	49	40	146	16	32	M56-4	12516
B3680-80	80	119	52	55	45	152	4	38	M64-4	12517

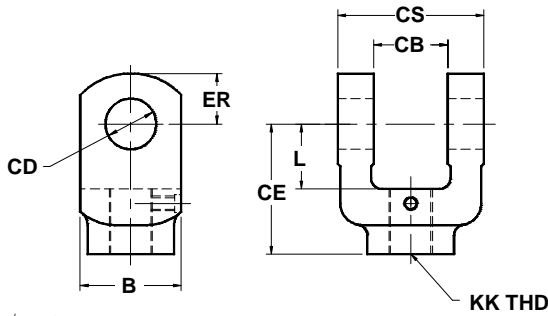
Sph. Brg. Metric – Narrow Width, Female Thread



- c/w bearing.
- the bare housing part no. is B3686-dash.
- note: all dimensions in this table are in millimeters (mm).

Part No.	CD	ER	A	CW	CN	CE	B	CT	KK	BRG
B3685-20	20	33	24	16	12	60	32	25	M16-1.5	12510
B3685-25	25	38	30	20	16	68	41	25	M20-1.5	12511
B3685-30	30	44	35	22	18	81	51	32	M22-1.5	10237
B3685-35	35	56	43	25	20	98	51	38	M28-1.5	12512
B3685-40	40	68	49	28	22	111	64	44	M33-2	12513
B3685-45	45	76	54	32	25	122	64	51	M36-3	12152
B3685-50	50	78	64	35	28	137	76	51	M42-2	12514
B3685-60	60	87	78	44	36	162	95	64	M52-3	12515
B3685-70	70	103	84	49	40	184	102	76	M56-4	12516
B3685-80	80	119	95	55	45	205	102	83	M64-4	12517

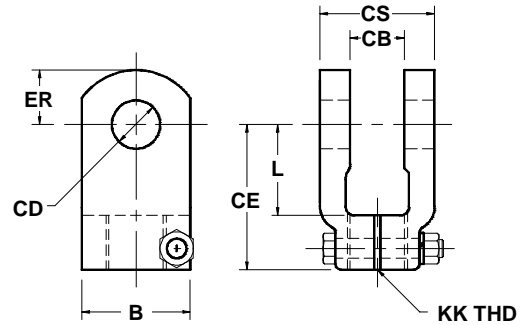
Clevis – JIC, Threaded



- c/w set screw.
- old part no. was CT-dash.

Part No.	CD	L	CE	ER	CS	CB	KK	B
B1772-12	0.75	1.38	2.38	0.75	2.57	1.31	3/4-16	1.50
B1772-16	1.00	1.63	3.13	1.00	3.06	1.56	1-14	2.00
B1772-20	1.25	2.13	3.88	1.25	3.31	1.81	1 1/4-12	2.50
B1772-22	1.38	2.25	4.13	1.38	4.06	2.06	1 1/4-12	2.75
B1772-24	1.50	2.50	4.50	1.50	4.06	2.06	1 1/2-12	3.00
B1772-28	1.75	2.50	4.50	1.75	5.06	2.56	1 1/2-12	3.50
B1772-32	2.00	2.75	5.50	2.00	5.06	2.56	1 7/8-12	4.00
B1772-40	2.50	3.13	6.50	2.50	6.06	3.06	2 1/4-12	5.00

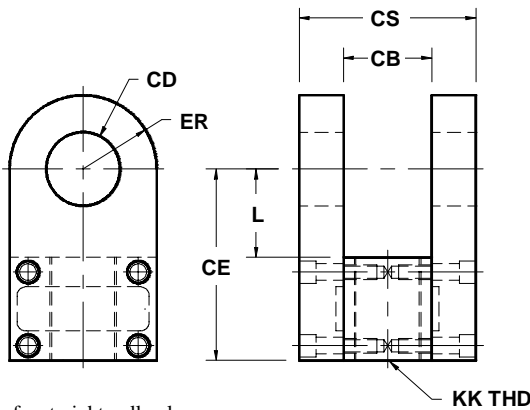
Clevis – ASAE, Threaded



- c/w bolt and nut.

Part No.	CD	L	CE	ER	CS	CB	KK	B
B2796-1	0.75	1.50	2.50	0.88	1.88	0.88	3/4-16	1.50
B2796-2	1.00	1.75	2.88	1.13	2.38	1.13	1-14	2.00
B2796-3	1.00	1.75	2.88	1.13	2.38	1.13	1 1/4-12	2.25
B2796-4	1.25	1.88	3.13	1.25	2.88	1.38	1 1/4-12	2.25
B2796-5	1.25	1.88	3.13	1.38	2.88	1.38	1 1/2-12	2.50
B2796-6	1.50	2.13	3.50	1.63	3.63	1.63	1 3/4-12	3.00

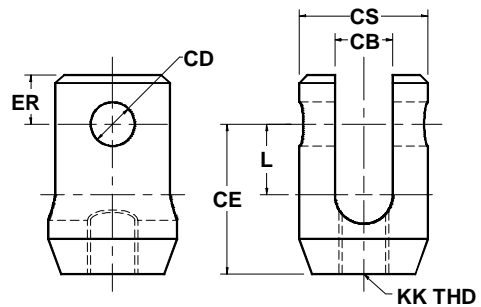
Clevis – Threaded Bolted



- Note: for straight pull only.
- no side load allowed

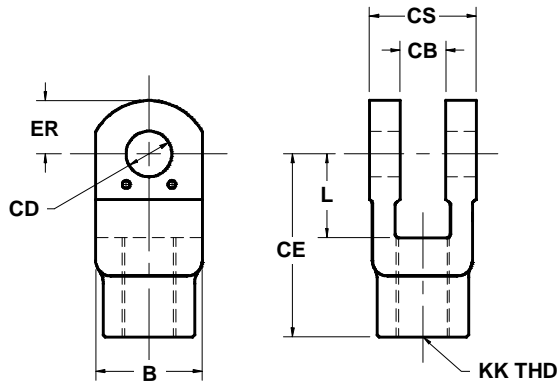
Part No.	CD	L	CE	ER	CS	CB	KK
B3208	2.50	3.00	6.50	2.50	6.00	3.01	2 1/4-12
B3209	3.00	3.25	6.75	3.00	6.00	3.01	2 1/2-12
B3706	3.50	4.00	8.50	3.50	8.00	4.01	3 1/4-12
B3707	4.00	4.50	9.13	4.00	8.50	4.51	3 1/2-12

Clevis – Miniature, Threaded



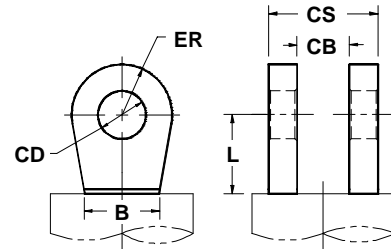
Part No.	CD	L	CE	ER	CS	CB	KK
B3668-4	0.25	0.41	1.00	0.31	0.81	0.39	1/4-28
B3668-5	0.31	0.44	1.13	0.38	0.94	0.48	5/16-24
B3668-6	0.38	0.50	1.25	0.44	1.19	0.52	3/8-24
B3668-7	0.44	0.63	1.50	0.50	1.31	0.66	7/16-20
B3668-8	0.50	0.69	1.63	0.56	1.47	0.69	1/2-20
B3668-10	0.63	0.75	1.88	0.69	1.69	0.78	5/8-18
B3668-12	0.75	0.94	2.06	0.75	1.97	0.94	3/4-16
B3668-16	1.00	1.00	2.31	1.06	2.47	1.13	1-14

Clevis – Narrow, Threaded



Part No.	CD	L	CE	ER	CS	CB	KK	B
B3227-1	1.50	3.50	6.00	1.75	3.50	1.50	1 3/4-12	3.50
B3227-2	2.00	3.50	6.00	2.25	4.50	2.25	2-12	4.00

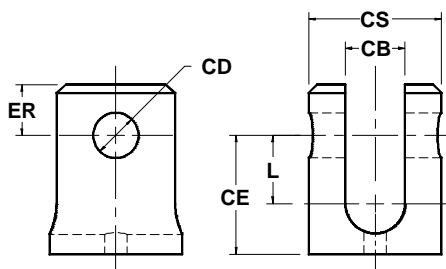
Clevis – NFPA, Welded



- the "CB" and "CS" dimensions can be readily changed.
- old part no. was CW-dash.

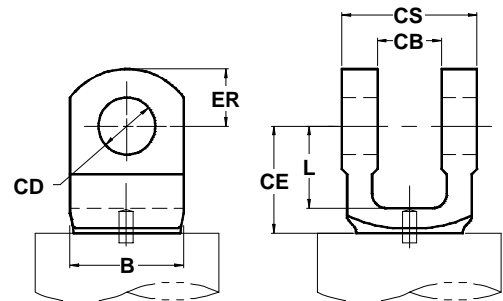
Part No.	CD	L	ER	CS	CB	B
B1607-8	0.50	0.75	0.50	1.57	0.81	0.81
B1607-12	0.75	1.25	0.75	2.57	1.31	1.13
B1607-16	1.00	1.50	1.00	3.06	1.56	1.50
B1607-20	1.25	1.88	1.25	3.31	1.81	1.94
B1607-22	1.38	2.13	1.38	4.06	2.06	2.06
B1607-24	1.50	2.25	1.50	4.06	2.06	2.25
B1607-28	1.75	2.38	1.75	5.06	2.56	2.75
B1607-32	2.00	2.63	2.00	5.06	2.56	3.25
B1607-40	2.50	3.00	2.25	6.06	3.06	3.50
B1607-48	3.00	3.25	2.75	6.06	3.06	4.50
B1607-56	3.50	4.00	3.25	8.06	4.06	5.25
B1607-64	4.00	4.50	3.75	8.56	4.56	6.00

Clevis – Miniature, Welded



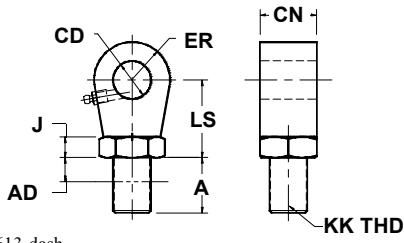
Part No.	CD	L	CE	ER	CS	CB
B3757-4	0.25	0.41	0.81	0.31	0.81	0.39
B3757-5	0.31	0.44	0.88	0.38	0.94	0.48
B3757-6	0.38	0.50	1.00	0.44	1.19	0.52
B3757-7	0.44	0.63	1.19	0.50	1.31	0.66
B3757-8	0.50	0.69	1.31	0.56	1.47	0.69
B3757-10	0.63	0.75	1.50	0.69	1.69	0.78
B3757-12	0.75	0.94	1.63	0.75	1.97	0.94
B3757-16	1.00	1.00	1.88	1.06	2.47	1.13

Clevis – ASAE, Welded



Part No.	CD	L	CE	ER	CS	CB	B
B3347-12	0.75	1.31	1.63	0.88	1.88	0.88	1.75
B3347-16	1.00	1.44	1.88	1.06	2.38	1.13	2.00
B3347-20	1.25	2.00	2.50	1.38	2.88	1.38	2.50
B3347-24	1.50	2.25	2.63	1.63	3.63	1.63	3.00

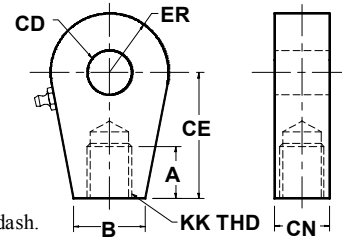
Eye – Male Thread



- c/w jam nut and grease fitting.
- the bare housing part no. is B1613-dash.
- old part no. was ET-dash.

Part No.	CD	LS	ER	CN	A	J	KK	ADJ
B3689-8	0.50	1.06	0.50	0.75	1.00	0.31	1/2-20	0.63
B3689-12	0.75	1.67	0.75	1.25	1.27	0.42	3/4-16	0.70
B3689-16	1.00	2.05	1.00	1.50	1.45	0.55	1-14	0.70
B3689-20	1.25	2.60	1.25	1.75	1.78	0.72	1 1/4-12	0.84
B3689-22	1.38	2.85	1.38	2.00	1.78	0.72	1 1/4-12	0.84
B3689-24	1.50	3.09	1.50	2.00	2.03	0.84	1 1/2-12	0.91
B3689-28	1.75	3.22	1.75	2.50	2.03	0.84	1 1/2-12	0.91
B3689-32	2.00	3.46	2.00	2.50	2.67	0.83	1 7/8-12	1.27
B3689-40	2.50	4.00	2.25	3.00	3.00	1.00	2 1/4-12	1.31
B3689-48	3.00	4.38	2.75	3.00	3.38	1.13	2 1/2-12	1.50
B3689-56	3.50	5.38	3.25	4.00	4.25	1.38	3 1/4-12	1.81
B3689-64	4.00	6.00	3.75	4.50	5.25	1.50	3 1/2-12	2.63

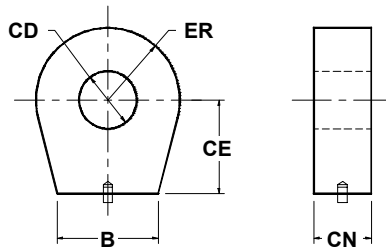
Eye – Female Thread



- c/w grease fitting.
- old part no. was EI-dash.

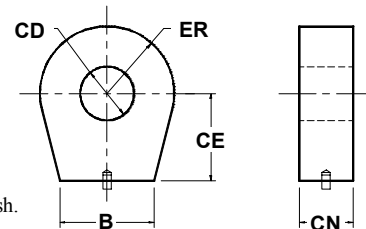
Part No.	CD	A	ER	CN	CE	B	KK
B2322-16	1.00	1.63	1.00	1.50	2.81	1.63	1-14
B2322-20	1.25	1.75	1.25	1.75	3.13	2.00	1 1/4-12
B2322-22	1.38	2.00	1.38	2.00	3.44	2.00	1 1/4-12
B2322-24	1.50	2.00	1.50	2.00	3.75	2.50	1 1/2-12
B2322-28	1.75	2.25	1.75	2.50	4.00	2.50	1 1/2-12
B2322-32	2.00	3.00	2.00	2.50	5.00	3.00	1 7/8-12
B2322-40	2.50	3.50	2.25	3.00	5.81	3.75	2 1/4-12
B2322-48	3.00	3.50	2.75	3.00	6.13	4.00	2 1/2-12
B2322-56	3.50	4.50	3.25	4.00	7.63	5.25	3 1/4-12
B2322-64	4.00	5.50	3.75	4.50	9.13	5.75	3 1/2-12

Eye – Welded, ASAE



Part No.	CD	CE	ER	CN	B
B3862-12	0.75	1.25	0.88	0.75	1.25
B3862-16	1.00	1.63	1.25	1.00	1.75
B3862-20	1.25	2.00	1.50	1.25	2.00
B3862-24	1.50	2.25	1.75	1.50	2.50

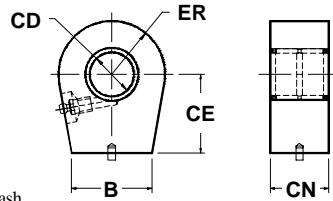
Eye – Welded



- c/w grease fitting.
- old part no. was EW-dash.

Part No.	CD	CE	ER	CN	B
B1603-8	0.50	0.75	0.50	0.75	0.81
B1603-12	0.75	1.25	0.75	1.25	1.13
B1603-16	1.00	1.50	1.00	1.50	1.50
B1603-20	1.25	1.88	1.25	1.75	1.88
B1603-22	1.38	2.13	1.38	2.00	2.00
B1603-24	1.50	2.25	1.50	2.00	2.25
B1603-28	1.75	2.38	1.75	2.50	2.75
B1603-32	2.00	2.63	2.00	2.50	3.13
B1603-40	2.50	3.00	2.25	3.00	3.50
B1603-48	3.00	3.25	2.75	3.00	4.50
B1603-56	3.50	4.00	3.25	4.00	5.25
B1603-64	4.00	4.50	3.75	4.50	6.00

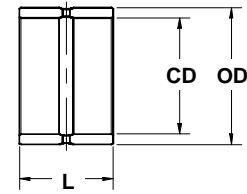
Eye – with Steel Bushing, Welded



- c/w bushing, seals and grease fitting
- the bare housing part no. is B3650-dash.

Part No.	CD	CE	ER	CN	B	SEAL
B3662-12	0.75	1.25	0.99	1.25	1.13	12675
B3662-16	1.00	1.50	1.24	1.50	1.50	12677
B3662-20	1.25	1.88	1.49	1.75	1.88	12678
B3662-22	1.38	2.13	1.61	2.00	2.00	12679
B3662-24	1.50	2.25	1.86	2.00	2.25	12680
B3662-28	1.75	2.38	2.11	2.50	2.75	12681
B3662-32	2.00	2.63	2.36	2.50	3.13	12682
B3662-40	2.50	3.00	2.98	3.00	3.50	12683
B3662-48	3.00	3.25	3.48	3.00	4.50	12684
B3662-56	3.50	4.00	3.98	4.00	5.25	12685
B3662-64	4.00	4.50	4.48	4.50	6.00	12686

Bushing – Hardend Steel

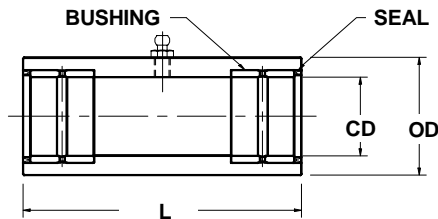


STANDARD LENGTH

SHORT LENGTH

Part No.	CD	OD	L	Part No.	CD	OD	L
B3628-12-1.00	0.75	1.00	1.00	B3628-12-0.50	0.75	1.00	0.50
B3628-16-1.25	1.00	1.25	1.25	B3628-16-0.75	1.00	1.25	0.75
B3628-20-1.63	1.25	1.50	1.63	B3628-20-1.00	1.25	1.50	1.00
B3628-22-1.88	1.38	1.63	1.88	B3628-22-1.13	1.38	1.63	1.13
B3628-24-1.88	1.50	1.88	1.88	B3628-24-1.13	1.50	1.88	1.13
B3628-28-2.00	1.75	2.13	2.00	B3628-28-1.38	1.75	2.13	1.38
B3628-32-2.25	2.00	2.38	2.25	B3628-32-1.63	2.00	2.38	1.63
B3628-40-2.50	2.50	3.00	2.50	B3628-40-2.00	2.50	3.00	2.00
B3628-48-2.75	3.00	3.50	2.75	B3628-48-2.50	3.00	3.50	2.50
B3628-56-3.50	3.50	4.00	3.50	B3628-56-3.00	3.50	4.00	3.00
B3628-64-4.00	4.00	4.50	4.00	B3628-64-3.50	4.00	4.50	3.50

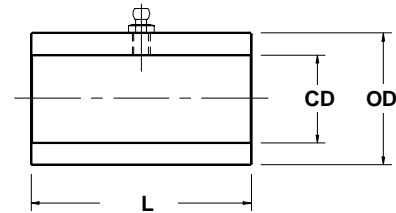
Eye – Tube c/w Steel Bushing, Welded



- c/w bushings, seals and grease fitting
- the last dash number in the part no. is the length of the tube rounded off to one decimal place.

Part No.	CD	OD	L	BUSHING	SEAL
B3674-12-2.8	0.75	1.38	2.75	B3628-12-0.50	12675
B3674-16-4.1	1.00	1.75	4.13	B3628-16-0.75	12677
B3674-20-4.4	1.25	2.00	4.38	B3628-20-1.00	12678
B3674-22-4.9	1.38	2.13	4.88	B3628-22-1.13	12679
B3674-24-5.4	1.50	2.50	5.38	B3628-24-1.13	12680
B3674-28-6.1	1.75	2.75	6.13	B3628-28-1.38	12681
B3674-32-7.1	2.00	3.00	7.13	B3628-32-1.63	12682
B3674-40-8.4	2.50	3.75	8.38	B3628-40-2.50	12683
B3674-48-9.4	3.00	4.50	9.38	B3628-48-2.75	12684

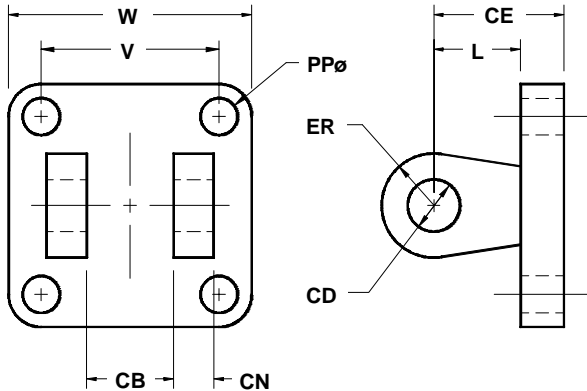
Eye – Tube, Standard Welded



- c/w grease fitting
- the last dash number in the part no. is the length of the tube rounded off to one decimal place.
- different lengths are available.
- old part no. was TR-dash and TB-dash

Part No.	CD	OD	L
B1011-12-2.0	0.75	1.25	2.00
B1011-16-3.0	1.00	1.75	3.00
B1011-20-3.5	1.25	2.00	3.50
B1011-22-4.0	1.38	2.13	4.00
B1011-24-4.3	1.50	2.25	4.25
B1011-28-4.5	1.75	2.50	4.50
B1011-32-5.0	2.00	3.00	5.00
B1011-40-6.0	2.50	3.50	6.00
B1011-48-6.5	3.00	4.00	6.50
B1011-56-7.0	3.50	4.50	7.00

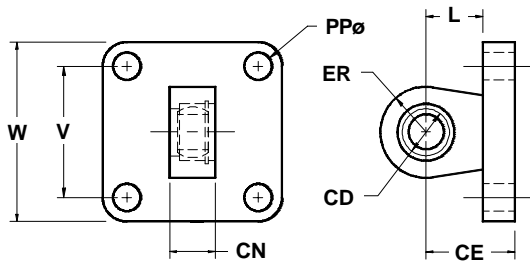
Bracket – Clevis



- spherical bearings used with this bracket require spacers B993.
- old part no. was CB-dash.

Part No.	CD	ER	L	CE	CB	CN	W	V	PP
B3573-8	0.50	0.50	0.75	1.13	0.81	0.50	2.75	1.75	0.41
B3573-12	0.75	0.75	1.25	1.88	1.31	0.63	3.75	2.56	0.53
B3573-16	1.00	1.00	1.50	2.25	1.56	0.75	4.75	3.25	0.66
B3573-20	1.25	1.25	1.88	2.63	1.81	0.75	5.25	3.63	0.66
B3573-22	1.38	1.38	2.13	3.00	2.06	1.00	5.50	4.00	0.66
B3573-24	1.50	1.50	2.25	3.13	2.06	1.00	6.50	4.75	0.78
B3573-28	1.75	1.75	2.38	3.25	2.56	1.25	7.00	5.25	0.91
B3573-32	2.00	2.00	2.63	3.63	2.56	1.25	8.00	5.75	1.06
↓ NOT SUITABLE FOR SPHERICAL BEARING ↓									
B3573-40	2.50	2.25	3.00	4.25	3.06	1.50	9.25	6.63	1.19
B3573-48	3.00	2.75	3.25	4.50	3.06	1.50	10.50	7.50	1.31
B3573-56	3.50	3.25	4.00	5.75	4.06	2.00	13.50	9.63	1.81
B3573-64	4.00	3.75	4.50	6.50	4.56	2.00	15.75	11.44	2.06
↓ USED WITH SPHERICAL BEARING ↓									
B3709-40	2.50	2.25	3.25	4.50	3.06	1.50	9.25	6.63	1.19
B3709-48	3.00	2.75	4.00	5.25	3.06	1.50	10.50	7.50	1.31
B3709-56	3.50	3.25	4.63	6.38	4.06	2.00	13.50	9.63	1.81
B3709-64	4.00	3.75	5.00	7.00	4.56	2.00	15.75	11.44	2.06

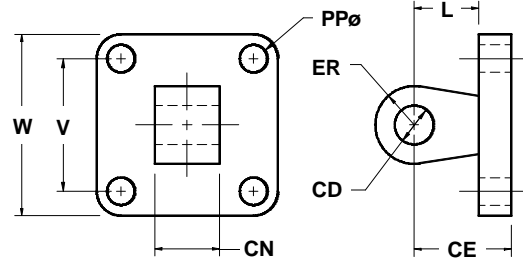
Bracket – Sph. Brg



- bracket shown with eye part no. B3295
- also available with B3432, B3073, B3255, B3296 or B3676..
- for the bearing and snap ring part no. see B3295.
- old part no. was SB-dash.

Part No.	CD	ER	L	CE	CN	W	V	PP
B3502-12	0.75	1.00	1.25	1.88	1.00	3.75	2.56	0.53
B3502-16	1.00	1.31	1.50	2.25	1.25	4.75	3.25	0.66
B3502-20	1.25	1.63	1.88	2.63	1.50	5.25	3.63	0.66
B3502-22	1.38	1.88	2.13	3.00	1.50	5.50	4.00	0.66
B3502-24	1.50	2.00	2.25	3.13	1.75	6.50	4.75	0.78
B3502-28	1.75	2.13	2.38	3.25	2.00	7.00	5.25	0.91
B3502-32	2.00	2.43	2.63	3.63	2.25	8.00	5.75	1.06
B3502-40	2.50	2.88	3.00	4.25	2.50	9.25	6.63	1.19
B3502-48	3.00	3.63	3.75	5.00	2.75	10.50	7.50	1.31
B3502-56	3.50	4.18	4.50	6.25	3.50	13.50	9.63	1.81
B3502-64	4.00	4.50	5.25	7.25	4.00	15.75	11.44	2.06

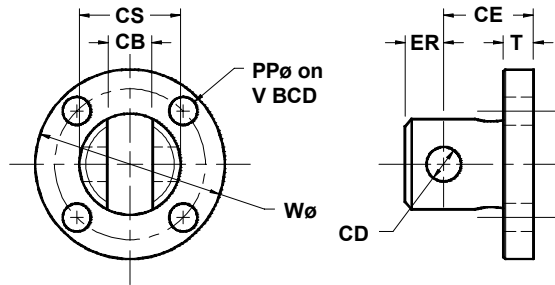
Bracket – Eye



- bracket shown with eye part no. B1603.
- also available with B3662 or B3862
- old part no. was EB-dash.

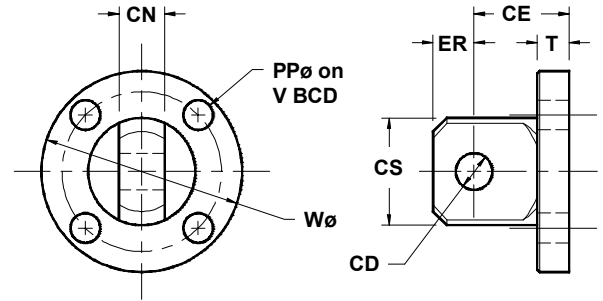
Part No.	CD	ER	L	CE	CN	W	V	PP
B3503-8	0.50	0.50	0.75	1.13	0.75	2.75	1.75	0.41
B3503-12	0.75	0.75	1.25	1.88	1.25	3.75	2.56	0.53
B3503-16	1.00	1.00	1.50	2.25	1.50	4.75	3.25	0.66
B3503-20	1.25	1.25	1.88	2.63	1.75	5.25	3.63	0.66
B3503-22	1.38	1.38	2.13	3.00	2.00	5.50	4.00	0.66
B3503-24	1.50	1.50	2.25	3.13	2.00	6.50	4.75	0.78
B3503-28	1.75	1.75	2.38	3.25	2.50	7.00	5.25	0.91
B3503-32	2.00	2.00	2.63	3.63	2.50	8.00	5.75	1.06
B3503-40	2.50	2.25	3.00	4.25	3.00	9.25	6.63	1.19
B3503-48	3.00	2.75	3.25	4.50	3.00	10.50	7.50	1.31
B3503-56	3.50	3.25	4.00	5.75	4.00	13.50	9.63	1.81
B3503-64	4.00	3.75	4.50	6.50	4.50	15.75	11.44	2.06

Bracket – Clevis, Miniature



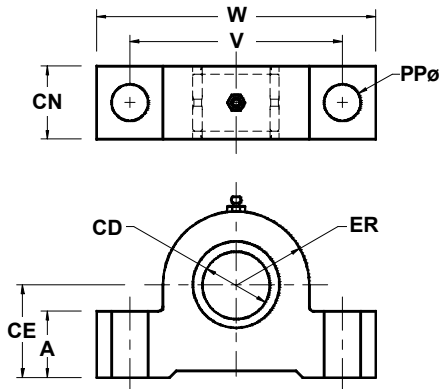
Part No.	CD	ER	T	CB	CE	CS	W	V	PP
B3412-4	0.25	0.31	0.31	0.38	0.81	0.81	1.88	1.44	0.28
B3412-5	0.31	0.38	0.31	0.45	0.88	0.94	2.00	1.56	0.28
B3412-6	0.38	0.44	0.38	0.51	1.00	1.19	2.38	1.88	0.34
B3412-7	0.44	0.50	0.38	0.57	1.19	1.31	2.50	2.00	0.34
B3412-8	0.50	0.56	0.44	0.66	1.31	1.47	2.75	2.19	0.41
B3412-10	0.63	0.69	0.50	0.76	1.50	1.69	3.00	2.44	0.41
B3412-12	0.75	0.75	0.50	0.88	1.69	1.97	3.38	2.75	0.47

Bracket – Eye, Miniature



Part No.	CD	ER	T	CE	CN	CS	W	V	PP
B3413-4	0.25	0.31	0.31	0.81	0.38	0.81	1.88	1.44	0.28
B3413-5	0.31	0.38	0.31	0.88	0.44	0.94	2.00	1.56	0.28
B3413-6	0.38	0.44	0.38	1.06	0.50	1.19	2.38	1.88	0.34
B3413-7	0.44	0.50	0.38	1.19	0.56	1.31	2.50	2.00	0.34
B3413-8	0.50	0.56	0.44	1.31	0.63	1.47	2.75	2.19	0.41
B3413-10	0.63	0.69	0.50	1.63	0.75	1.69	3.00	2.44	0.41
B3413-12	0.75	0.75	0.50	1.88	0.88	1.97	3.38	2.75	0.47

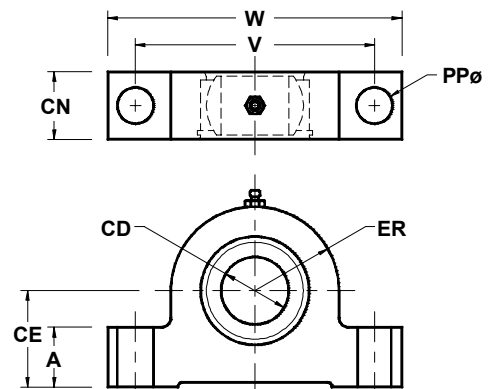
Bracket – Trunnion, Steel Bushing



• c/w bushing, seals and grease fitting

Part No.	CD	ER	CN	W	CE	A	V	PP	BUSHING	SEAL
B3690-16	1.00	1.06	1.00	4.00	1.25	0.88	3.13	0.56	B3628-16-0.75	12677
B3690-22	1.38	1.38	1.38	5.25	1.75	1.25	4.00	0.69	B3628-22-1.13	12679
B3690-28	1.75	1.75	1.75	6.88	2.00	1.50	5.25	0.94	B3628-28-1.38	12681
B3690-32	2.00	2.13	2.00	8.00	2.50	1.75	6.25	1.19	B3628-32-1.63	12682
B3690-40	2.50	2.50	2.50	9.50	3.00	2.00	7.25	1.31	B3628-40-2.00	12683

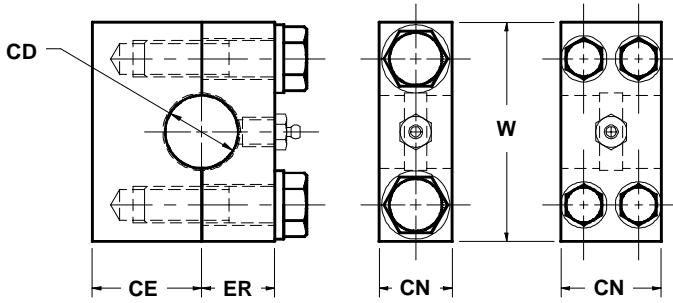
Bracket – Trunnion, Sph. Brg.



• c/w bearing, snap ring and grease fitting

Part No.	CD	ER	CN	W	CE	A	V	PP	S/R	BRG.
B3691-16	1.00	1.25	1.25	4.18	1.59	0.96	3.44	0.56	12052	10334
B3691-22	1.38	1.69	1.50	6.04	2.17	1.43	4.95	0.69	11582	11581
B3691-28	1.75	2.18	2.00	7.48	2.50	1.55	6.20	0.94	11946	10204
B3691-32	2.00	2.49	2.25	8.51	3.09	2.25	7.00	1.19	11739	10804
B3691-40	2.50	3.09	2.50	10.59	3.85	2.80	8.64	1.31	10327	11808

Bracket – Trunnion, Split



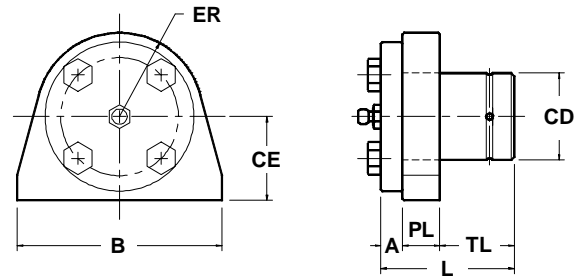
- c/w bolts and grease fitting.

B3429
(-16,-22,-28)

B3430
(-32,-40)

Part No.	CD	CN	W	CE	ER
B3429-16	1.00	1.00	3.00	1.50	1.00
B3429-22	1.38	1.38	4.00	2.00	1.25
B3429-28	1.75	1.75	4.00	2.50	1.50
B3430-32	2.00	2.00	4.00	3.00	1.75
B3430-40	2.50	2.50	5.00	3.50	2.00

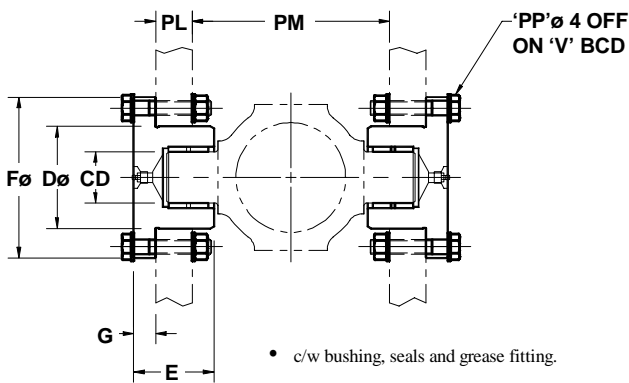
Bracket – Female Trunnion, Boss



- c/w pin and grease fitting.

Part No.	CD	L	A	PL	TL	CE	ER	B
B3873-16	1.00	1.63	0.31	0.50	0.81	1.13	1.13	2.75
B3873-22	1.38	2.13	0.38	0.50	1.25	1.44	1.44	3.50
B3873-28	1.75	2.69	0.44	0.75	1.50	1.69	1.69	4.13
B3873-32	2.00	3.00	0.50	0.75	1.75	1.94	1.94	4.75
B3873-40	2.50	3.81	0.63	1.00	2.19	2.19	2.19	5.38

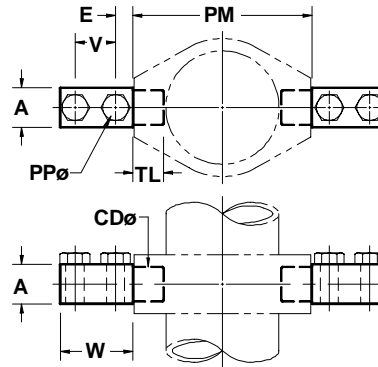
Bracket – Trunnion, Boss



- c/w bushing, seals and grease fitting.

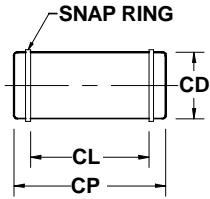
Part No.	CD	Dø	E	Fø	G	V	PP	CYL BORE	PL	PM
B3692-22	1.38	2.75	2.13	4.13	0.50	3.50	0.41	2.00	0.75	5.13
								2.50	0.75	5.63
								3.00	0.75	6.13
B3692-28	1.75	3.50	2.63	5.25	0.75	4.38	0.53	3.25	1.00	6.76
								3.50	1.00	7.01
								4.00	1.00	7.26
								4.50	1.00	8.01
								5.00	1.00	8.76
B3692-32	2.00	3.87	3.13	5.50	0.75	4.75	0.53	6.00	1.25	10.76

Bracket – Female Trunnion



Part No.	CD	A	W	E	V	TL	PP	CYL BORE	PM
B3874-16	1.00	1.25	2.38	0.50	1.38	0.88	0.56	1 1/2	3.38
								2	3.88
								2 1/2	4.38
								3	5.50
B3874-22	1.38	1.50	2.81	0.63	1.63	1.31	0.69	3 1/4	5.75
								3 1/2	6.00
								4	7.38
B3874-28	1.75	2.00	3.69	0.88	2.06	1.56	0.94	4 1/2	7.88
								5	9.13
								5 1/2	9.63
B3874-32	2.00	2.50	4.13	1.00	2.25	1.81	1.06	6	10.13
								7	11.63
B3874-40	2.50	3.00	5.00	1.25	2.69	2.25	1.31	8	13.63

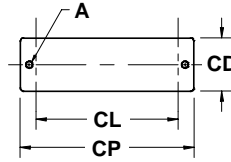
Pin – Snap Ring



- c/w snap rings.
- tube eyes require special pins.

Part No.	CD	CL	CP
B1611-8	0.50	1.94	2.13
B1611-12	0.75	2.69	2.94
B1611-16	1.00	3.19	3.50
B1611-20	1.25	3.44	3.78
B1611-22	1.38	4.19	4.56
B1611-24	1.50	4.19	4.59
B1611-28	1.75	5.19	5.63
B1611-32	2.00	5.19	5.69
B1611-40	2.50	6.25	6.88
B1611-48	3.00	6.25	6.94
B1611-56	3.50	8.31	9.13
B1611-64	4.00	8.81	9.69

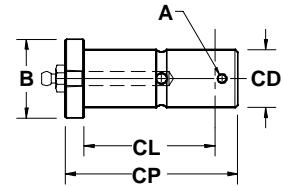
Pin – Cotter, JIC



- c/w cotter pins.
- tube eyes require special pins.

Part No.	CD	CL	CP	A ϕ
B981-8	0.50	1.94	2.25	0.13
B981-12	0.75	2.69	3.25	0.13
B981-16	1.00	3.19	3.88	0.19
B981-20	1.25	3.44	4.13	0.19
B981-22	1.38	4.19	4.88	0.19
B981-24	1.50	4.19	4.88	0.19
B981-28	1.75	5.19	5.88	0.19
B981-32	2.00	5.19	5.88	0.19
B981-40	2.50	6.25	7.13	0.25
B981-48	3.00	6.25	7.13	0.25
B981-56	3.50	8.31	9.31	0.31

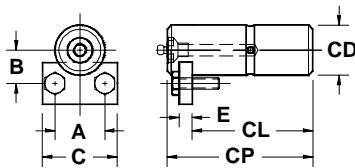
Pin – Shoulder



- c/w cotter pin and grease fitting.

Part No.	CD	CL	CP	A ϕ	B
B2910-12	0.75	2.69	3.06	0.16	1.00
B2910-16	1.00	3.19	3.75	0.20	1.25
B2910-20	1.25	3.44	4.00	0.20	1.50
B2910-22	1.38	4.19	4.94	0.20	1.63
B2910-24	1.50	4.19	5.13	0.20	1.75
B2910-28	1.75	5.19	6.00	0.20	2.00
B2910-32	2.00	5.19	6.06	0.20	2.25
B2910-40	2.50	6.25	7.13	0.20	2.75
B2910-48	3.00	6.25	7.31	0.27	3.38
B2910-56	3.50	8.31	9.38	0.27	4.00
B2910-64	4.00	8.81	9.75	0.27	4.50

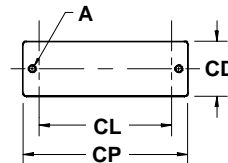
Pin – Keeper



- c/w keeper, capscrews and grease fitting.

Part No.	CD	CP	A	B	C	E	CL
B3585-24	1.50	4.38	1.50	1.00	2.25	0.38	3.63
B3585-28	1.75	4.88	1.50	1.13	2.25	0.38	4.13
B3585-32	2.00	5.63	2.00	1.25	3.00	0.50	4.63
B3585-40	2.50	6.63	2.00	1.50	3.00	0.50	5.63
B3585-48	3.00	7.63	2.50	1.75	3.50	0.50	6.63

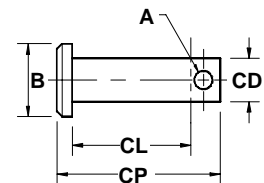
Pin – Cotter, ASAE



- c/w cotter pins.

Part No.	CD	CL	CP	A ϕ
B3799-12	0.75	2.01	2.56	0.13
B3799-16	1.00	2.51	3.25	0.29
B3799-20	1.25	3.01	3.75	0.19
B3799-24	1.50	3.76	4.50	0.19

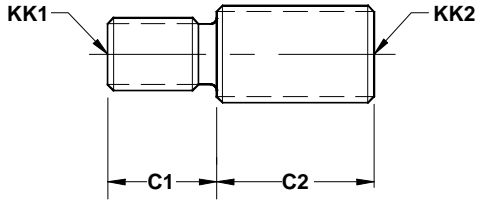
Pin – Miniature



- c/w cotter pin.

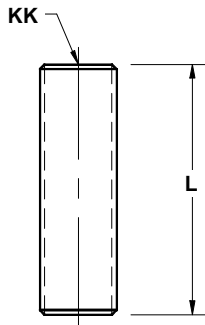
Part No.	CD	CL	CP	A ϕ	B
B3708-4	0.25	0.98	1.19	0.09	0.38
B3708-5	0.31	1.03	1.34	0.14	0.43
B3708-6	0.38	1.27	1.63	0.16	0.50
B3708-8	0.50	1.52	1.91	0.16	0.63
B3708-10	0.63	1.77	2.19	0.16	0.81
B3708-12	0.75	2.27	2.75	0.16	0.94

Rod Stud – Jump Size



Part No.	KK1	C1	KK2	C2
B2078-8-10	1/2-20	0.88	5/8-18	1.38
B2078-10-12	5/8-18	1.63	3/4-16	0.81
B2078-12-16	3/4-16	1.13	1-14	1.25
B2078-16-20	1-14	1.63	1 1/4-12	1.38
B2078-20-24	1 1/4-12	2.00	1 1/2-12	1.50
B2078-24-30	1 1/2-12	2.25	1 7/8-12	2.31
B2078-30-36	1 7/8-12	3.00	2 1/4-12	2.63
B2078-36-40	2 1/4-12	3.50	2 1/2-12	2.50
B2078-40-52	2 1/2-12	3.50	3 1/4-12	3.25

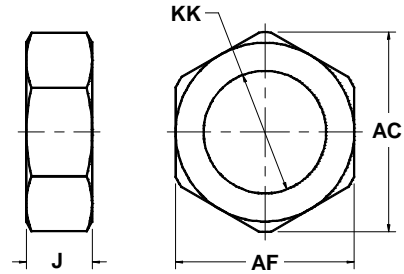
Rod Stud – Standard



Part No.	KK	L
B2078-4-4	1/4-28	1.25
B2078-5-5	5/16-24	1.50
B2078-6-6	3/8-24	1.75
B2078-7-7	7/16-20	2.19
B2078-8-8	1/2-20	2.38
B2078-10-10	5/8-18	2.88
B2078-12-12	3/4-16	3.38
B2078-16-16	1-14	2.88
B2078-20-20	1 1/4-12	3.38
B2078-24-24	1 1/2-12	3.75
B2078-30-30	1 7/8-12	5.31
B2078-36-36	2 1/4-12	6.13
B2078-40-40	2 1/2-12	6.00
B2078-52-52	3 1/4-12	7.75

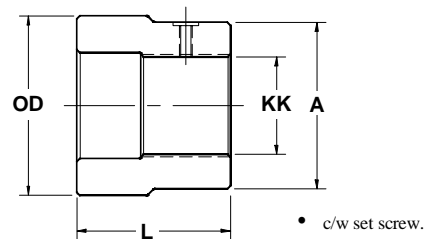
• old part no. was RS.

Jam Nut



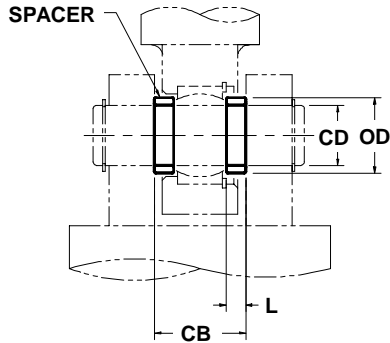
Part No.	KK THD	AC	AF	J
B3022-4	1/4-28	0.51	0.44	0.16
B3022-5	5/16-24	0.58	0.50	0.19
B3022-6	3/8-24	0.65	0.56	0.22
B3022-7	7/16-20	0.72	0.63	0.25
B3022-8	1/2-20	0.87	0.75	0.31
B3022-10	5/8-18	1.08	0.94	0.38
B3022-12	3/4-16	1.27	1.13	0.42
B3022-16	1-14	1.69	1.50	0.55
B3022-20	1 1/4-12	2.12	1.88	0.72
B3022-24	1 1/2-12	2.54	2.25	0.84
B3022-26	1 5/8-12	2.90	2.56	0.70
B3022-30	1 7/8-12	3.32	2.94	0.83
B3022-32	2-12	3.53	3.13	0.89
B3022-36	2 1/4-12	3.95	3.50	1.00
B3022-40	2 1/2-12	4.38	3.88	1.13
B3022-48	3-12	5.22	4.63	1.25
B3022-52	3 1/4-12	5.65	5.00	1.38
B3022-56	3 1/2-12	6.07	5.38	1.50
B3022-64	4-12	6.91	6.13	1.75

Stroke Adjuster



Part No.	KK THD.	A	OD	L
B3386	2-12	3.25	3.50	3.00
B3521	2 1/2-12	3.63	4.00	3.25
B3025	3-12	5.00	5.63	5.13

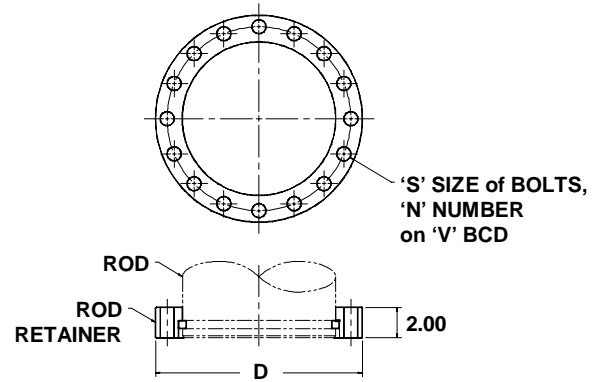
Spacer – Spherical Bearing



- Used in pairs to center standard size spherical bearings.

Part No.	CD	OD	CB	L
B993-12	0.75	0.98	1.25	0.31
B993-16	1.00	1.25	1.50	0.32
B993-20	1.25	1.46	1.75	0.34
B993-22	1.38	1.60	2.00	0.43
B993-24	1.50	1.72	2.00	0.36
B993-28	1.75	1.96	2.50	0.50
B993-32	2.00	2.32	2.50	0.38
B993-40	2.50	2.82	3.00	0.41
B993-48	3.00	3.42	3.00	0.19
B993-56	3.50	3.90	4.00	0.47

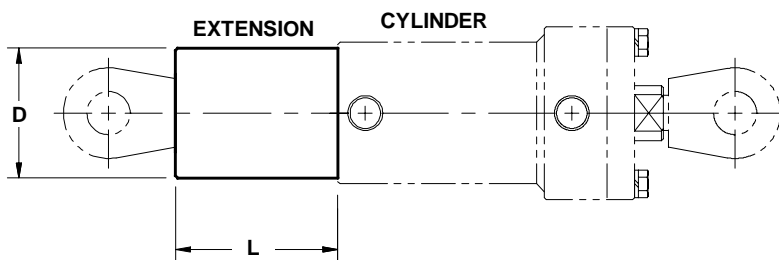
Rod Retainer



- used to mount a load to the flat end of the rod. The rod end carries the load.
- the retract force is limited

Part No.	Rod Dia	Push Capacity	N	S	V	D
B3806-60	6.00	250,000	8	0.94	8.00	9.50
B3806-70	7.00	300,000	10	0.94	9.00	10.50
B3806-80	8.00	350,000	12	0.94	10.00	11.50
B3806-90	9.00	400,000	14	0.94	11.00	12.50
B3806-100	10.00	450,000	16	0.94	12.00	13.50
B3806-120	12.00	500,000	18	0.94	14.00	15.50
B3806-140	14.00	600,000	20	0.94	16.00	17.50
B3806-160	16.00	700,000	16	1.06	18.25	20.00
B3806-180	18.00	750,000	18	1.06	20.25	22.00
B3806-200	20.00	850,000	20	1.06	22.25	24.00

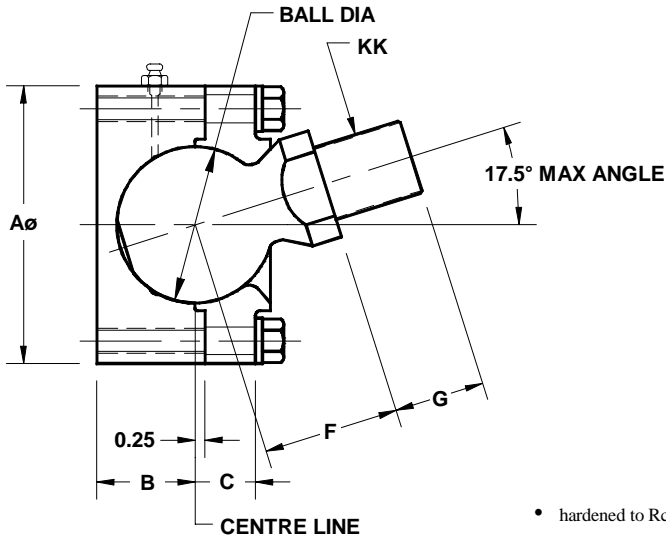
Blind End Extension



- Used when a large overall length is required for a given stroke.

Part No.	D	Cyl. Bore
B3790-15- L	1.90	1 1/2
B3790-20- L	2.38	2
B3790-25- L	2.88	2 1/2
B3790-30- L	3.50	3, 3 1/4
B3790-35- L	4.00	3 1/2
B3790-40- L	4.50	4, 4 1/2
B3790-50- L	5.56	5, 5 1/2
B3790-60- L	6.63	6, 7
B3790-80- L	8.63	8

Ball Joint

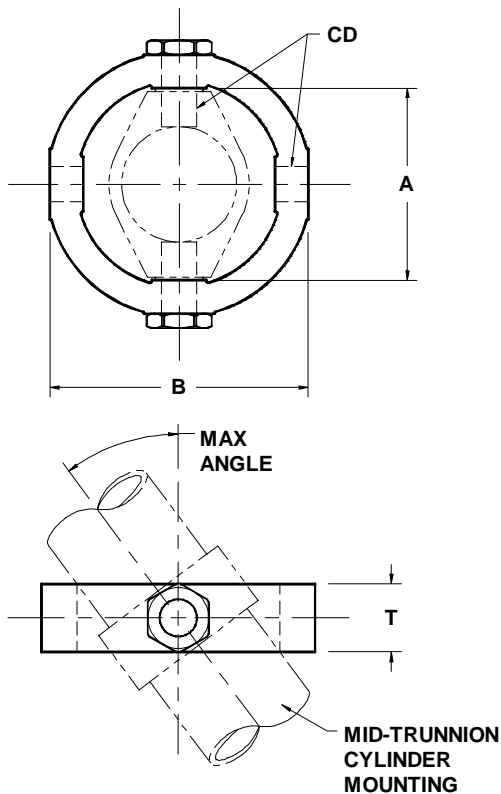


'D' C'Screw – GR 8
8 off on 'E' BCD
holes are tapped thru
for mounting assembly
on bottom.

• hardened to Rc 50.

Part No.	Ball Dia	A	B	C	D	E	F	G	KK	MAX PUSH FORCE (lbs)
B3875-48	3.00	5.38	1.88	1.06	1/2-13	4.50	2.50	1.88	1 1/2-12	60,000
B3875-64	4.00	6.88	2.44	1.50	5/8-11	5.75	3.38	2.25	1 7/8-12	85,000
B3875-80	5.00	8.38	3.06	1.63	3/4-10	6.88	4.50	2.75	2 1/2-12	150,000

Gimbal



Part No.	CYL BORE	CD	A	B	T	ANGLE
B3819-20	2.00	0.75	4.00	5.25	1.50	35.6°
B3819-25	2.50	0.75	4.50	5.75	1.50	34.2°
B3819-30	3.00	1.00	5.63	7.38	1.75	36.2°
B3819-33	3.25	1.00	5.88	7.63	1.75	35.6°
B3819-35	3.50	1.00	6.13	7.88	1.75	35.1°
B3819-40	4.00	1.38	7.50	10.13	2.50	36.8°
B3819-45	4.50	1.38	8.00	10.63	2.50	36.0°
B3819-50	5.00	1.75	9.25	12.38	3.00	35.7°
B3819-55	5.50	1.75	9.75	12.88	3.00	35.1°
B3819-60	6.00	1.75	10.25	13.38	3.00	34.4°
B3819-70	7.00	2.00	11.75	15.38	3.50	34.2°
B3819-80	8.00	2.50	13.75	18.25	4.50	34.6°

• used with female style mid-trunnion cylinders. see page 3-09.



Series B Hydraulic Cylinder Bolt-on head heavy duty



Series B Cylinder – Introduction

Series-B is our standard heavy duty hydraulic cylinder. The bolt on head design and all welded construction results in a simple and strong cylinder which is easy to assemble and disassemble. These cylinders are a reliable choice for industrial, marine or mobile equipment applications.

- Pressure rating is 3000 psi (5000 psi non-shock)
- Ductile iron piston and head
- Rods are available in C1045 chrome plated or C1045 induction hardened chrome plate or 316 stainless steel chrome plated
- Cushions are available on either end or both ends
- SAE O-ring boss ports are standard
- Every cylinder is individually tested before shipment
- Wide range of mounting accessories and brackets

Seals

Series-B cylinders offer a choice of two types of piston seals:-

- 1) Loaded U-cup seals are preferable for cylinders which must hold a load without creeping.
- 2) Slipper seals are low friction seals preferable for cylinders that cycle frequently and are not required to hold a load. They are more tolerant of contamination than a U-cup type of seal. These seals will be provided as standard unless otherwise specified.

U-cup polyurethane rod seals provide dry rod sealing performance.

Metal-clad polyurethane wiper seals keep contaminants out of the cylinder.

Wear rings are reinforced nylon.

All o-rings and back-up rings are nitrile

All seals are good for a temperature range of -65F to +225F (-54C to +107C)

Mounting dimensions

Our cylinders conform to NFPA mounting dimensions with the following exceptions:

- NFPA clevis mounting "MP1" uses different dimensions within one bore size for different rod sizes. We have one set of dimensions for all rods sizes in a given bore size. Our dimensions will agree with one set of the NFPA dimensions. When the mounting dimensions are critical, check our dimensions on the appropriate pages of the catalog for suitability.
- Front trunnion mounts conform to NFPA "MT1"
- Mid trunnion mounts conform to NFPA "MT4"
- Rear trunnion mounts NFPA "MT2" are not available.
- Front flange mounts are available in NFPA "MF1" and "MF5" and Sealum standard.
- Rear flange mounts do not conform.
- Foot mount does not conform.

Trunnion mounts

It is recommended to use female style mid-trunnions instead of male style. This way, if a stud happens to break off, it will be the pin that actually failed and needs replacing. However when the stud fails on a male style trunnion, the barrel will need replacing.

Series B Cylinder – Introduction

Double Rod Cylinders

All Series B cylinders are available in a double rod design. Double rods are used when the cylinder speed must be the same in both directions. This is beneficial when the cylinder speed is used to meter the amount of material or work flow that is moved with each cycle. Double rod cylinders can also be used to actuate a second function with the other rod.

Back to Back Cylinders

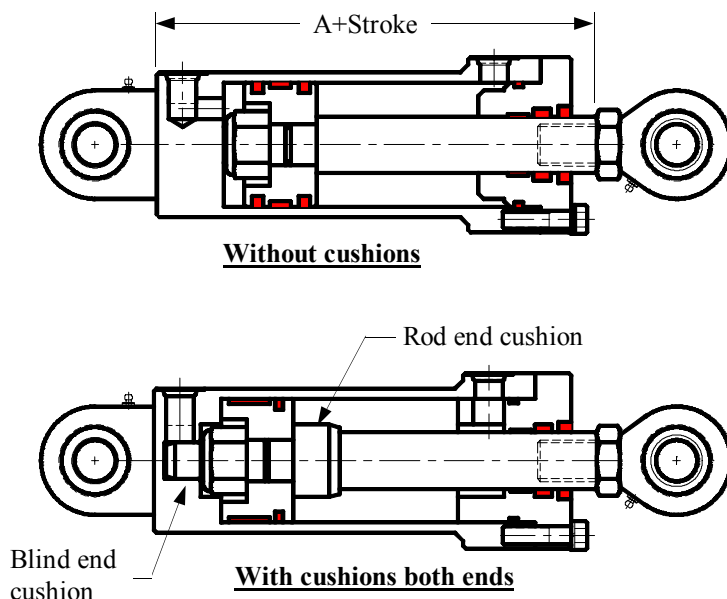
All Series B cylinders are available in a back to back design. Back to back cylinders are useful when loads must be moved in different stages. They are also useful when different sizes of loads must all reach the same end point. With up to four cylinders combined, loads may be moved in four stages with one cylinder installation.

Cushions

In certain applications it is desirable to stop the load gradually, as opposed to a sudden stop, at the end of the cylinder stroke. This will protect the cylinder and the load being moved from damaging impacts at the ends of the stroke. They are generally considered when the piston velocity approaches 25 feet per minute (5 inches per second). A cushion will restrict the oil flow out of the cylinder to create a back pressure which will oppose the force on the working side of the piston. This will decelerate the load smoothly avoiding shock loads being introduced to the load or the cylinder at the end of the stroke. The overall result will be less damage to the cylinder, load and any associated machinery, thereby reducing downtime and maintenance.

A cushioned cylinder application will also be quieter when it comes to the end of its stroke and any mating parts make contact. This will create a quieter working environment.

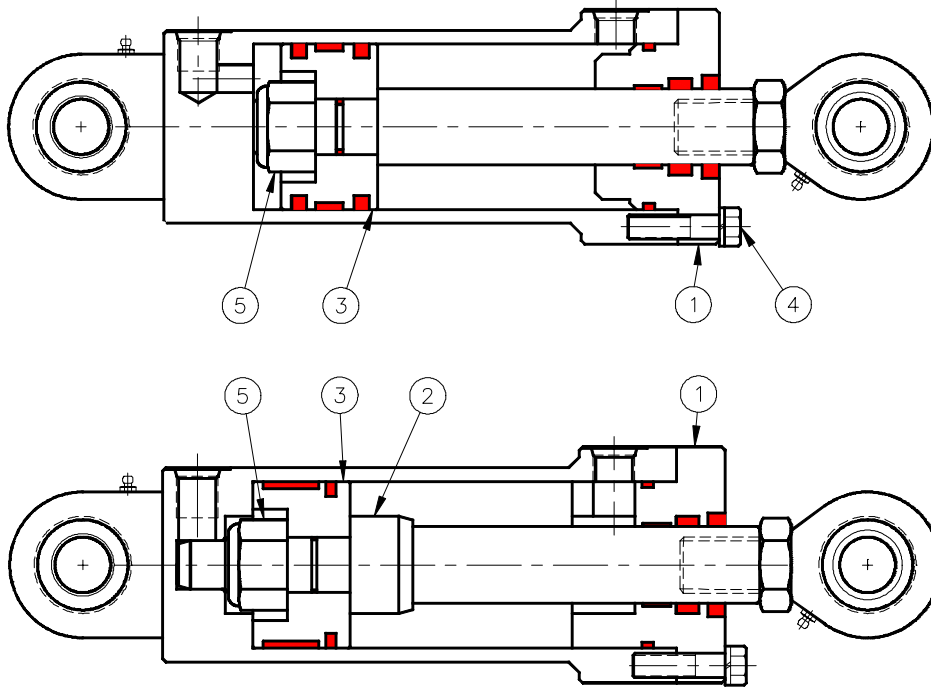
Fixed cushions are available at both ends or at either end.



BORE	Cushioned Blind End Subtract from "A+Stroke"	Cushioned Rod End Add to "A+Stroke"
1 1/2	- 3/8	+ 3/8
2	- 1/2	+ 1/2
2 1/2	- 1/2	+ 1/2
3	- 1/2	+ 1/2
3 1/4	- 1/2	+ 1/2
3 1/2	- 1/2	+ 1/2
4	- 9/16	+ 9/16
5	- 1/2	+ 1/2
6	- 3/8	+ 3/8
7	- 7/16	+ 7/16
8	- 5/8	+ 5/8
10	- 13/16	+ 13/16

Series B Cylinder – Part Numbers

- Standard parts can be ordered by the part numbers below.
- Barrels, Rods and Special Parts can be ordered by the cylinder Serial Number (written on the tag and stamped on the blind end of the cylinder barrel.) They can also be ordered using the Model Number written on the tag. The rod and the barrel can be ordered using the drawing number, which is the last set of digits in the model number and will start with a "C" or an "H". eg H-1234-B for the barrel or H-1234-R for the rod.



PART NUMBERS		SEAL KIT		ITEM #1		ITEM #2	ITEM #3		ITEM #4	ITEM #5
BORE	ROD	SEAL KIT		HEAD GLAND		CUSHION	PISTON		BOLT KIT	PISTON NUT
		SLIPPER	U-CUP	STANDARD	CUSHION	PLUNGER	SLIPPER	U-CUP		
1 1/2	3/4	11893	11840	B1745	B1746	B1661-12	B1774	B1773	11979	11969
2	1	11894	11841	B1676	B1667	B1661-16	B1095	B1098	11979	11970
	1 3/8	11895	11842	B1677	B1678	B1661-22				
2 1/2	1	11896	11843	B1681	B1688	B1661-16	B1075	B1074	11980	11970
	1 3/8	11897	11844	B1682	B1689	B1661-22				
	1 1/2	12745	12711	B2556		B1661-24				
	1 3/4	11898	11845	B1683	B1680	B1661-28				
3	1 1/4	11899	11846	B1679		B1661-20	B890	B889	11980	11971
	1 3/8	11900	11847	B1684	B1690	B1661-22				
	1 3/4	11901	11848	B1685	B1691	B1661-28				
	2	11902	11849	B1686	B1692	B1661-32				
3 1/4	1 3/8	11903	11850	B1693	B1696	B1661-22	B932	B933	11981	11971
	1 3/4	11905	11852	B1694	B1697	B1661-28				
	2	11906	11853	B1695	B1698	B1661-32				

CONTINUED ON NEXT PAGE

Series B Cylinder – Part Numbers

PART NUMBERS		SEAL KIT		ITEM #1		ITEM #2	ITEM #3		ITEM #4	ITEM #5
BORE	ROD	SLIPPER	U-CUP	HEAD GLAND		CUSHION	PISTON		BOLT KIT	PISTON NUT
				STANDARD	CUSHION	PLUNGER	SLIPPER	U-CUP		
3 1/2	1 3/8	11907	11854	B1699	N/A	N/A	B918	B919	11982	11972
	1 3/4	11908	11855	B1700	B1704	B1661-28				
	2	11909	11856	B1701	B1705	B1661-32				
	2 1/2	11910	11857	B1702	N/A	N/A				
4	1 3/4	11911	11858	B1707	B1711	B1661-28	B864	B908	11982	11973
	2	11912	11859	B1708	B1712	B1661-32				
	2 1/2	11913	11860	B1709	B1713	B1661-40				
	3	11915	11862	B1710	N/A	N/A				
4 1/2	2	11916	11863	B1715	B1718	B1661-32	B1022	B1175	12743	11974
	2 1/2	11917	11864	B1716	B1719	B1661-40				
	3	11918	11865	B1717	B1720	B1661-48				
	3 1/2	12746	12747	B2262	N/A	N/A				
5	2	11919	11866	B1721	B1726	B1661-32	B879	B881	11983	11974
	2 1/2	11920	11867	B1722	B1727	B1661-40				
	3	11921	11868	B1723	B2571	B1661-48				
	3 1/2	11922	11869	B1724	B1729	B1661-56				
5 1/2	2 1/2	11923	11870	B1739	B1742	B1661-40	B1044	B1043	12744	11975
	3	11924	11871	B1740	B1743	B1661-48				
	3 1/2	11926	11872	B1741	B1744	B1661-56				
6	2 1/2	11926	11873	B1730	B1734	B1661-40	B888	B1662	11984	11975
	3	11927	11874	B1731	B1735	B1661-48				
	3 1/2	11928	11875	B1732	B1736	B1661-56				
	4	11929	11876	B1733	B1737	B1661-64				
7	3	11933	11880	B1751	B1918	B1661-48	B1107	B869	11985	11976
	3 1/2	11934	11881	B1752	B3043	B1661-56				
	4	11935	11882	B1753	B1919	B1661-64				
	5	11936	11883	B1754	B1920	B1661-80				
8	3 1/2	11937	11884	B1912	B1921	B1661-56	B1319	B1320	11986	11977
	4	11938	11885	B1913	B1922	B1661-64				
	5	11939	11886	B1914	B1923	B1661-80				
	6	N/A	N/A	N/A	N/A	N/A				
9	4	11940	11887	B2995	B3763	B1661-64	B1083	B1084	12234	11977
	4 1/2	12748	12749	B3675	B3764	B1661-72				
	5	11941	11888	B1088	B3765	B1661-80				
	6	11942	11889	B1089	B3766	B1661-96				
10	5	11943	11890	B1915	B1924	B1661-80	B1025	B960	11987	11978
	6	11944	11891	B1916	B1925	B1661-96				
	7	11945	11892	B1917	B1926	B1661-112				

Series B Cylinder – Introduction

Shipping weights (approximate)

Base Weight includes two mounting accessories.

BORE	BASE WEIGHT	POUNDS PER INCH OF STROKE BY ROD SIZE											
		3/4	1	1 3/8	1 3/4	2	2 1/2	3	3 1/2	4	5	6	7
1 1/2	7	0.41											
2	12		0.59	0.79									
2 1/2	16		0.72	0.91	1.18								
3	24			1.14	1.40	1.61							
3 1/4	30			1.20	1.46	1.67							
3 1/2	37				1.51	1.72	2.22						
4	50				1.63	1.83	2.34	2.95					
5	80					2.68	3.18	3.79	4.52				
6	120						3.52	4.13	4.85	5.68			
7	180							4.46	5.18	6.02	8.02		
8	270								6.51	7.34	9.34	11.79	
10	525										12.73	15.18	18.07

Port sizes

Series B cylinders are supplied standard with ORB ports.

They are available with NPT ports and 4-bolt SAE code 61 ports as an option. When using 4-bolt flange ports the mounting dimensions of the cylinder may have to be increased.

Port Dash size	ORB port Thread size
-06	9/16"-18
-08	3/4"-16
-12	1-1/16"-12
-16	1-5/16"-12
-20	1-5/8"-12

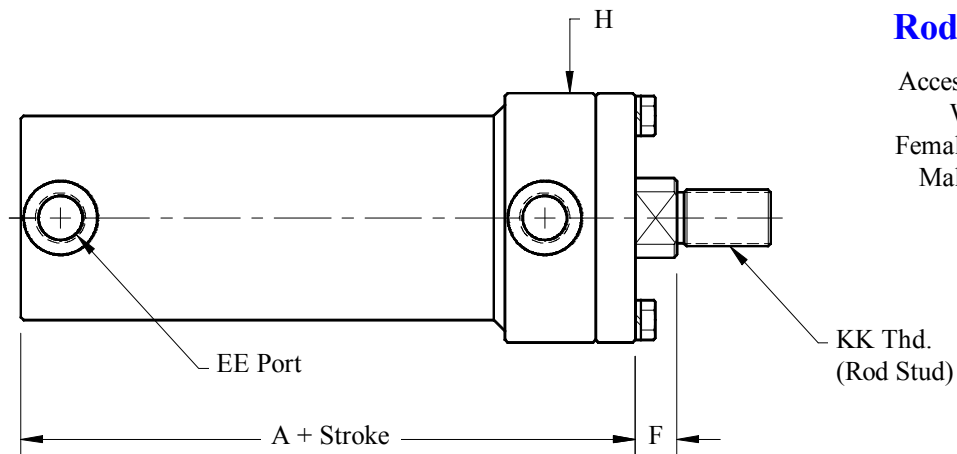
Series B Cylinder – Basic

See the Accessories section of the catalogue for rod end & blind end options. The 'CD' (Pin Dia), the 'F' (Rod extension) and 'KK' (Thread) dimensions given are standard and can be changed to suit. Threaded and welded ends are both available. Dimensions given are rounded off to the nearest two decimal places and are nominal.

Series B Cylinders are available with Cushioned Ends. The dimension 'A' is the same for both Standard non-cushioned and cushioned at both ends cylinders. Cylinders cushioned on the Blind end or Rod end **only**, differ slightly in length.

Blind End

Accessories:
Welded



Rod End

Accessories:
Welded
Female Thd.
Male Thd.

Bore	Available Rod Sizes				A			H Dia	EE (ORB)	Standard sizes shown.		
					STD & Cushion Both ends	BLIND Cushion	ROD Cushion			CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	4.63	5.38	2.50	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	5.50	5.00	6.00	3.25	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	5.75	5.25	6.25	3.75	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	6.13	5.63	6.63	4.25	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	6.63	6.13	7.13	4.75	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	6.75	6.25	7.25	5.00	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	6.88	6.31	7.44	5.50	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	7.25	6.69	7.81	6.00	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	7.50	7.00	8.00	6.88	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	8.00	7.38	8.63	7.25	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	8.50	8.13	8.88	8.00	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	9.06	9.94	9.13	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	10.50	9.88	11.13	10.50	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	11.50	10.88	12.13	11.50	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	13.00	12.19	13.81	13.00	# 20	3.50	1.25	3 1/4-12

Series B Cylinder – Trunnion

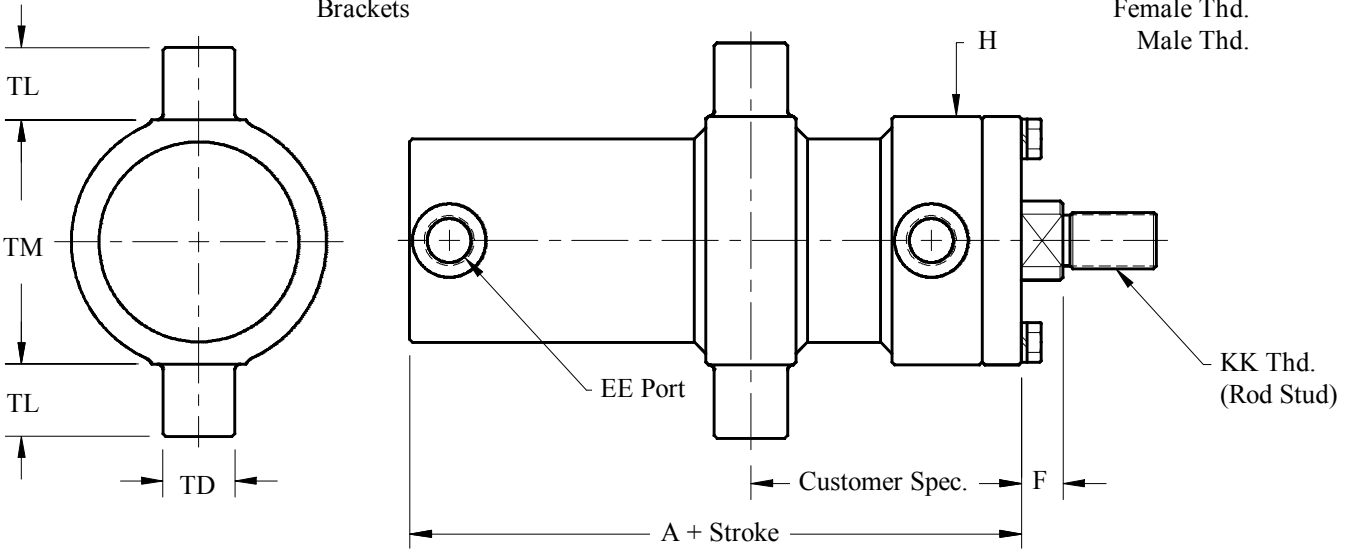
Mid Trunnion – Male

Blind End

Accessories:
Trunnion
Brackets

Rod End

Accessories:
Welded
Female Thd.
Male Thd.



Bore	Available Rod Sizes				A			H Dia	TD	TL	TM	EE (ORB)	Standard sizes shown.		
					STD & Cushion	BLIND Cushion	ROD Cushion						CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	4.63	5.38	2.50	1.00	1.00	3.00	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	5.50	5.00	6.00	3.25	1.38	1.38	3.50	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	5.75	5.25	6.25	3.75	1.38	1.38	4.00	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	6.13	5.63	6.63	4.25	1.38	1.38	4.50	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	6.63	6.13	7.13	4.75	1.75	1.75	5.00	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	6.75	6.25	7.25	5.00	1.75	1.75	5.25	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	6.88	6.31	7.44	5.50	1.75	1.75	5.50	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	7.25	6.69	7.81	6.00	1.75	1.75	6.25	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	7.50	7.00	8.00	6.88	1.75	1.75	7.00	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	8.00	7.38	8.63	7.25	2.00	2.00	7.50	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	8.50	8.13	8.88	8.00	2.00	2.00	8.50	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	9.06	9.94	9.13	2.50	2.50	9.75	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	10.50	9.88	11.13	10.50	3.00	3.00	11.00	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	11.50	10.88	12.13	11.50	3.00	3.00	12.50	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	13.00	12.19	13.81	13.00	3.50	3.50	14.00	# 20	3.50	1.25	3 1/4-12

Series B Cylinder – Trunnion

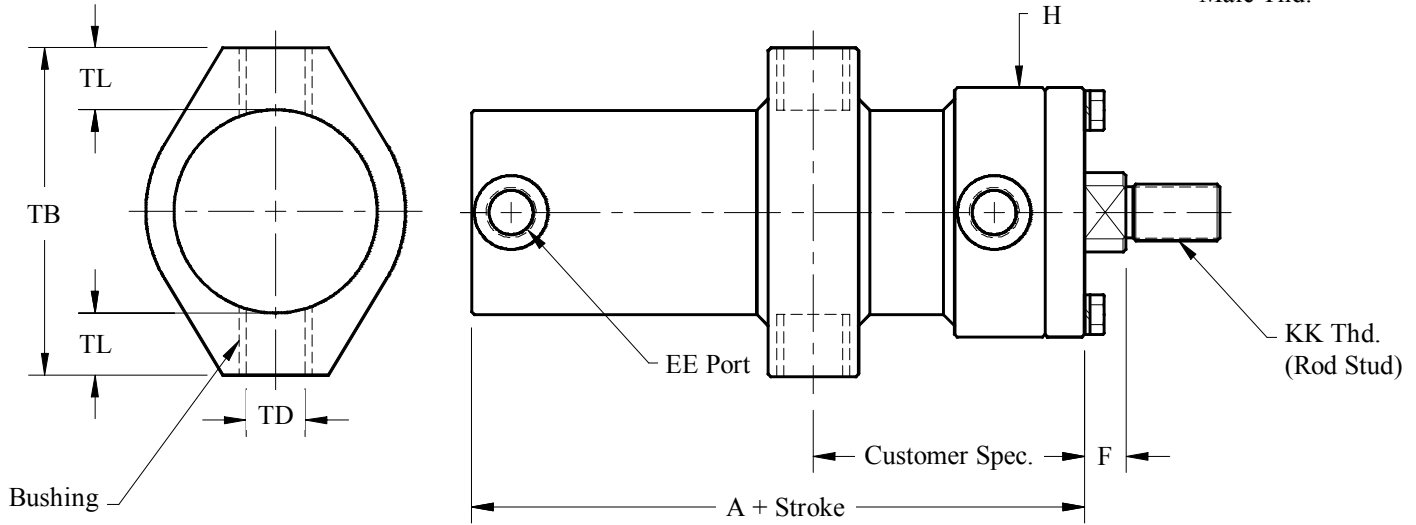
Mid Trunnion – Female

Blind End

Accessories:
Trunnion
Brackets

Rod End

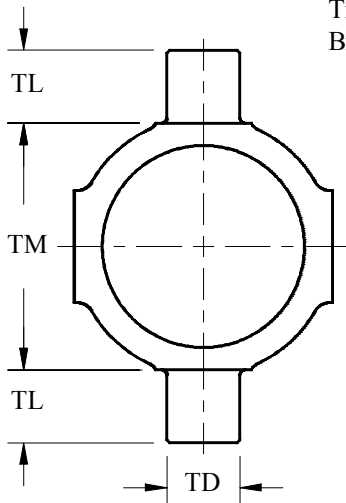
Accessories:
Welded
Female Thd.
Male Thd.



Bore	Available Rod Sizes				A			H Dia	TD	TL	TB	EE (ORB)	Standard sizes shown.		
					STD & Cushion	BLIND Cushion	ROD Cushion						CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	4.63	5.38	2.50	0.75	0.63	3.25	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	5.50	5.00	6.00	3.25	0.75	0.63	3.75	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	5.75	5.25	6.25	3.75	0.75	0.63	4.25	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	6.13	5.63	6.63	4.25	1.00	0.88	5.38	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	6.63	6.13	7.13	4.75	1.00	0.88	5.63	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	6.75	6.25	7.25	5.00	1.00	0.88	5.88	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	6.88	6.31	7.44	5.50	1.38	1.31	7.25	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	7.25	6.69	7.81	6.00	1.38	1.31	7.75	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	7.50	7.00	8.00	6.88	1.75	1.56	9.00	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	8.00	7.38	8.63	7.25	1.75	1.56	9.50	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	8.50	8.13	8.88	8.00	1.75	1.56	10.00	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	9.06	9.94	9.13	2.00	1.81	11.50	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	10.50	9.88	11.13	10.50	2.50	2.25	13.50	# 20	3.00	1.00	2 1/2-12

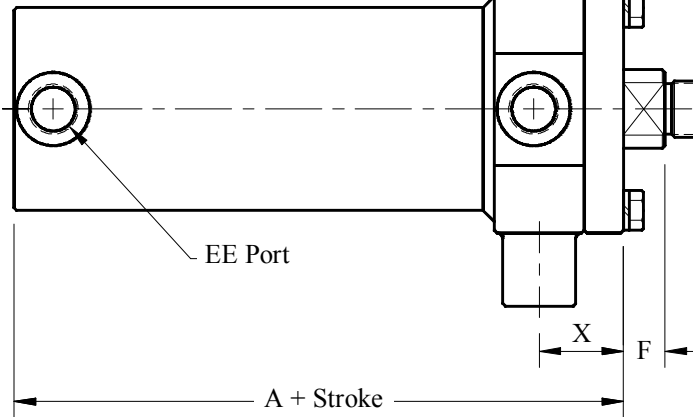
Series B Cylinder – Trunnion

Front Trunnion



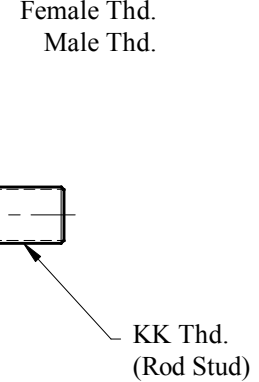
Blind End

Accessories:
Trunnion
Brackets



Rod End

Accessories:
Welded
Female Thd.
Male Thd.



Bore	Available Rod Sizes				A			H Dia	TD	TL	TM	*X STD	*X Cushion	EE (ORB)	Standard sizes shown.		
					STD & Cushion	BLIND Cushion	ROD Cushion								CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	4.63	5.38	2.50	1.00	1.00	2.50	1.19	1.19	# 6	0.50	0.68	1/2-20
2	1	1 3/8	—	—	5.50	5.00	6.00	3.25	1.38	1.38	3.00	1.50	1.63	# 8	0.75	0.75	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	5.75	5.25	6.25	3.75	1.38	1.38	3.50	1.56	1.69	# 8	0.75	0.69	3/4-16
3	1 1/4	1 3/8	1 3/4	2	6.13	5.63	6.63	4.25	1.38	1.38	4.50	1.63	1.75	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	6.63	6.13	7.13	4.75	1.75	1.75	4.50	1.75	2.00	# 12	1.00	0.88	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	6.75	6.25	7.25	5.00	1.75	1.75	5.25	1.88	2.13	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	6.88	6.31	7.44	5.50	1.75	1.75	5.00	1.88	2.13	# 12	1.38	1.00	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	7.25	6.69	7.81	6.00	1.75	1.75	6.25	1.88	2.13	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	7.50	7.00	8.00	6.88	1.75	1.75	6.50	2.13	2.38	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	8.00	7.38	8.63	7.25	2.00	2.00	7.50	2.38	2.50	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	8.50	8.13	8.88	8.00	2.00	2.00	7.50	2.31	2.44	# 16	2.00	1.06	1 7/8-12
7	3	3 1/2	4	5	9.50	9.06	9.94	9.13	2.50	2.50	8.50	2.63	2.88	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	10.50	9.88	11.13	10.50	3.00	3.00	9.50	2.75	3.13	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	11.50	10.88	12.13	11.50	3.00	3.00	12.50	3.63	3.88	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	13.00	12.19	13.81	13.00	3.50	3.50	12.63	3.88	4.13	# 20	3.50	1.13	3 1/4-12

*When using a cushion on the rod end or on both ends of your cylinder, see 'X Cushion' for your 'X' dimension. Use 'X STD' for the 'X' dimension on a standard cylinder or if you are using a cushion on the blind end only.

Series B Cylinder – Front Flange

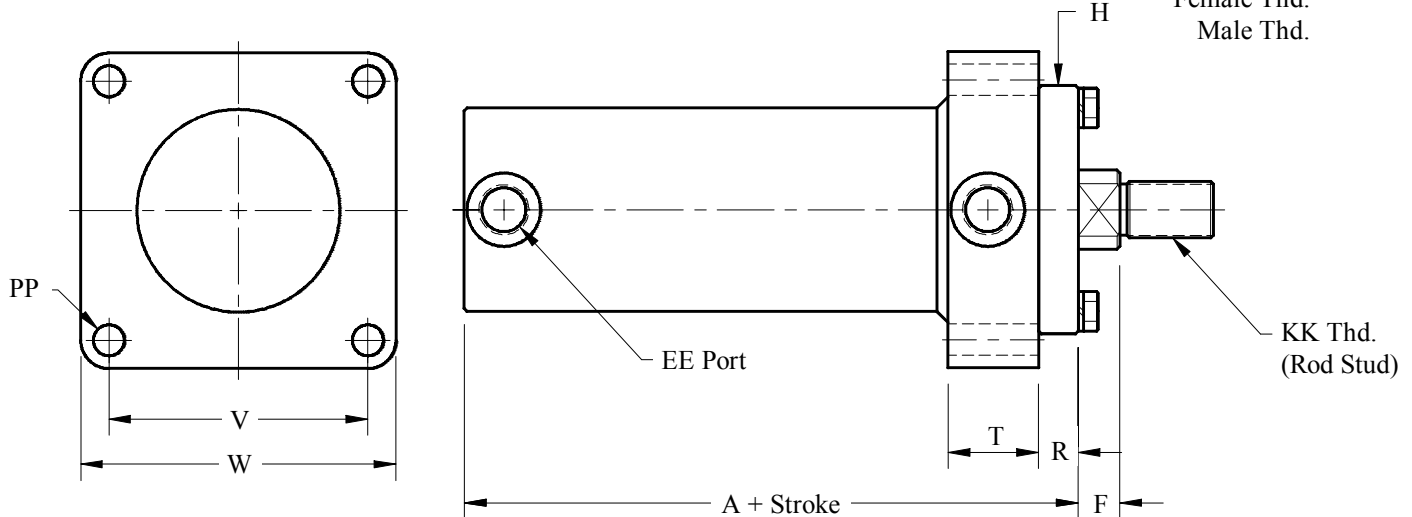
Standard

Blind End

Accessories:
None

Rod End

Accessories:
Welded
Female Thd.
Male Thd.

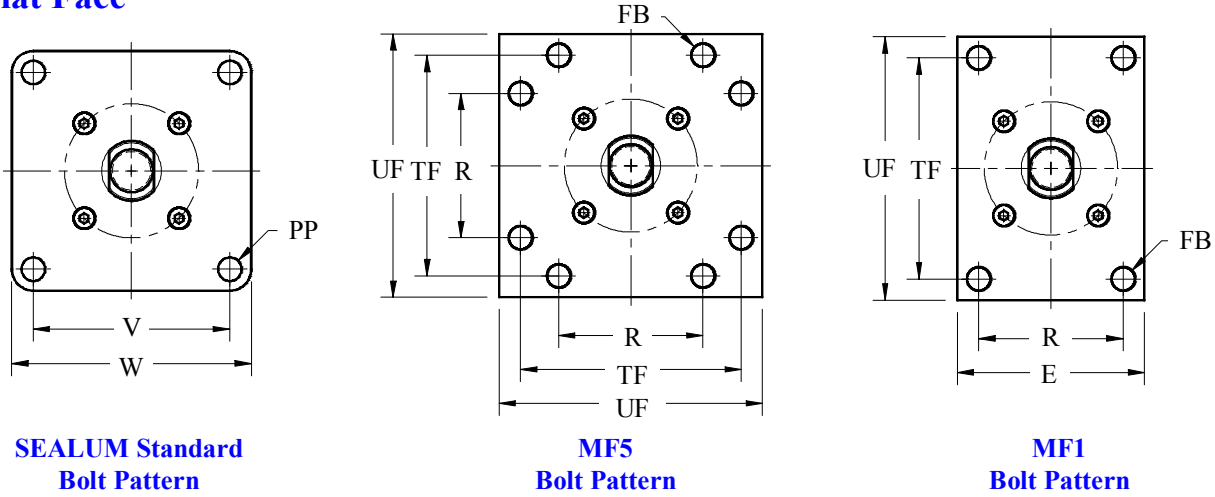


Bore	Available Rod Sizes				A			H Dia	PP Dia	T	*R STD	*R Cushion	V	W	EE (ORB)	Standard sizes shown.		
					STD & Cushion	BLIND Cushion	ROD Cushion									CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	4.63	5.38	2.50	0.44	1.75	0.50	0.50	2.63	3.50	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	5.50	5.00	6.00	3.25	0.56	1.75	0.63	0.75	3.38	4.50	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	5.75	5.25	6.25	3.75	0.56	1.75	0.69	0.81	3.88	5.00	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	6.13	5.63	6.63	4.25	0.56	1.75	0.75	0.88	4.38	5.50	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	6.63	6.13	7.13	4.75	0.69	2.00	0.75	1.00	4.75	6.00	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	6.75	6.25	7.25	5.00	0.69	2.00	0.88	1.13	5.25	6.50	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	6.88	6.31	7.44	5.50	0.69	2.00	0.88	1.13	5.75	7.00	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	7.25	6.69	7.81	6.00	0.69	2.00	0.88	1.13	6.25	7.50	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	7.50	7.00	8.00	6.88	0.94	2.13	1.00	1.25	7.00	8.50	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	8.00	7.38	8.63	7.25	0.94	2.13	1.13	1.25	7.50	9.00	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	8.50	8.13	8.88	8.00	1.06	2.44	1.06	1.19	8.00	10.00	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	9.06	9.94	9.13	1.31	2.75	1.19	1.44	8.50	11.00	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	10.50	9.88	11.13	10.50	1.31	2.88	1.50	1.88	9.50	12.00	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	11.50	10.88	12.13	11.50	1.31	2.88	1.88	2.13	10.50	13.00	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	13.00	12.19	13.81	13.00	1.31	3.38	2.00	2.25	11.50	14.00	# 20	3.50	1.25	3 1/4-12

*When using a cushion on the rod end or on both ends of your cylinder, see 'R Cushion' for your 'R' dimension. Use 'R STD' for the 'R' dimension on a standard cylinder or if you are using a cushion on the blind end only.

Series B Cylinder – Front Flange

Flat Face



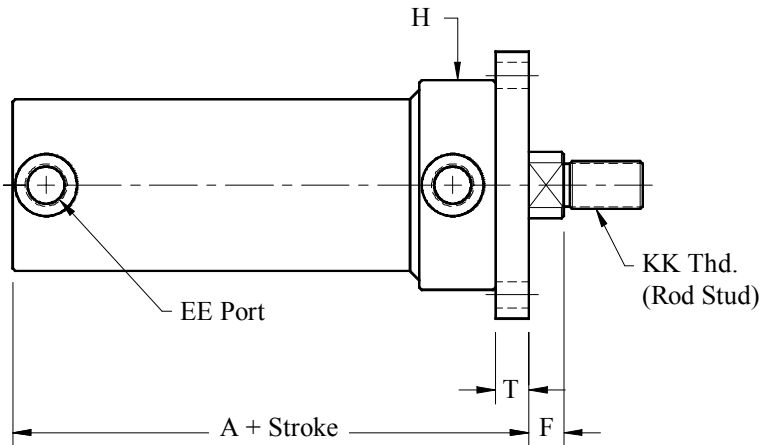
SEALUM Standard Bolt Pattern

MF5 Bolt Pattern

MF1 Bolt Pattern

Blind End

Accessories:
None



Rod End

Accessories:
Welded
Female Thd.
Male Thd.

Bore	Available Rod Sizes			A			H Dia	PP Dia	*T STD	*T Cushion	V	W	E	FB Dia	R	TF	UF	EE ORB	Standard sizes shown.		
				STD & Cushion	BLIND Cushion	ROD Cushion													CD Pin	F	KK Thd
2	1	—	—	5.50	5.00	6.00	3.25	0.56	0.63	0.75	3.38	4.50	3.00	0.56	2.05	4.13	5.13	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	5.75	5.25	6.25	3.75	0.56	0.69	0.81	3.88	5.00	3.75	0.56	2.55	4.63	5.63	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	6.13	5.63	6.63	4.25	0.56	0.75	0.88	4.38	5.50	—	—	—	—	—	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	6.63	6.13	7.13	4.75	0.69	0.75	1.00	4.75	6.00	4.75	0.69	3.25	5.88	7.13	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	6.75	6.25	7.25	5.00	0.69	0.88	1.13	5.25	6.50	—	—	—	—	—	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	6.88	6.31	7.44	5.50	0.69	0.88	1.13	5.75	7.00	5.50	0.69	3.82	6.38	7.63	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	7.25	6.69	7.81	6.00	0.69	0.88	1.13	6.25	7.50	—	—	—	—	—	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	7.50	7.00	8.00	6.88	0.94	1.00	1.25	7.00	8.50	6.88	0.94	4.95	8.19	9.75	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	8.50	8.13	8.88	8.00	1.06	1.06	1.19	8.00	10.00	8.00	1.06	5.73	9.44	11.25	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	9.50	9.06	9.94	9.13	1.31	1.19	1.44	8.50	11.00	9.13	1.19	6.58	10.63	12.63	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	10.50	9.88	11.13	10.50	1.31	1.50	1.88	9.50	12.00	10.50	1.31	7.50	11.81	14.00	# 20	3.00	1.00	2 1/2-12

*When using a cushion on the rod end or on both ends of your cylinder, use 'T Cushion' for your 'T' dimension. Use 'T STD' for the 'T' dimension on a standard cylinder or if you are using a cushion on the blind end only.

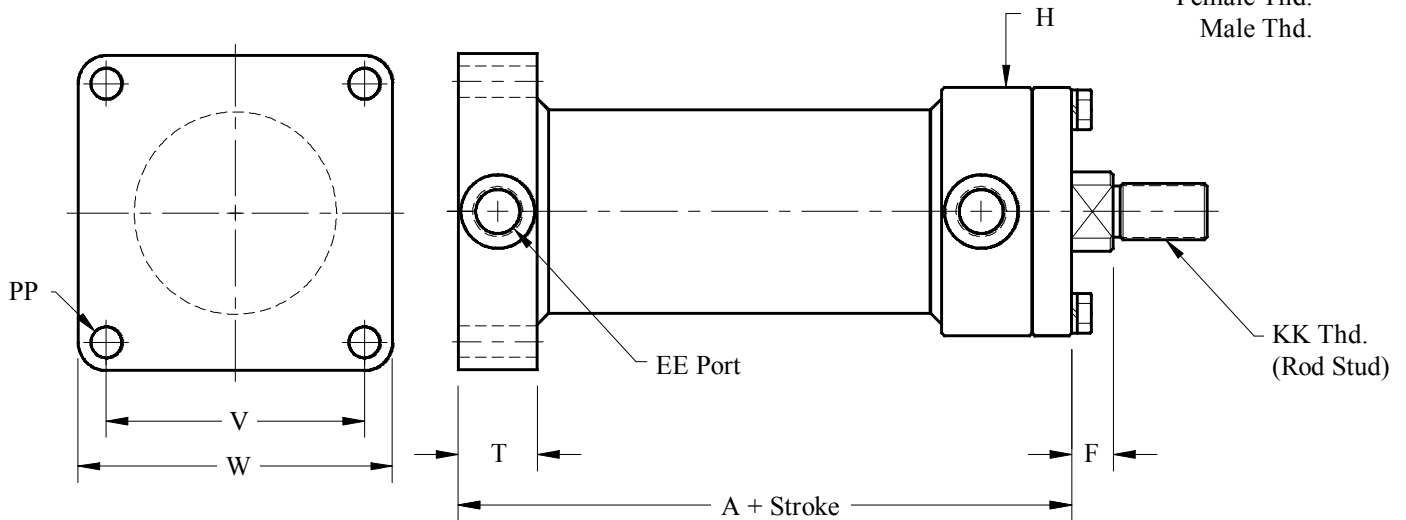
Series B Cylinder – Rear Flange

Blind End

Accessories:
None

Rod End

Accessories:
Welded
Female Thd.
Male Thd.



Bore	Available Rod Sizes				A			H Dia	PP Dia	T	V	W	EE ORB	Standard sizes shown.		
					STD & Cushion	BLIND Cushion	ROD Cushion							CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	4.63	5.38	2.50	0.44	1.19	2.63	3.50	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	5.50	5.00	6.00	3.25	0.56	1.31	3.38	4.50	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	5.75	5.25	6.25	3.75	0.56	1.44	3.88	5.00	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	6.13	5.63	6.63	4.25	0.56	1.44	4.38	5.50	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	6.63	6.13	7.13	4.75	0.69	1.69	4.75	6.00	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	6.75	6.25	7.25	5.00	0.69	1.69	5.25	6.50	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	6.88	6.31	7.44	5.50	0.69	1.75	5.75	7.00	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	7.25	6.69	7.81	6.00	0.69	1.81	6.25	7.50	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	7.50	7.00	8.00	6.88	0.94	1.75	7.00	8.50	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	8.00	7.38	8.63	7.25	0.94	1.75	7.50	9.00	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	8.50	8.13	8.88	8.00	1.06	2.13	8.00	10.00	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	9.06	9.94	9.13	1.31	2.50	8.50	11.00	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	10.50	9.88	11.13	10.50	1.31	2.63	9.50	12.00	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	11.50	10.88	12.13	11.50	1.31	2.63	10.50	13.00	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	13.00	12.19	13.81	13.00	1.31	3.19	11.50	14.00	# 20	3.50	1.25	3 1/4-12

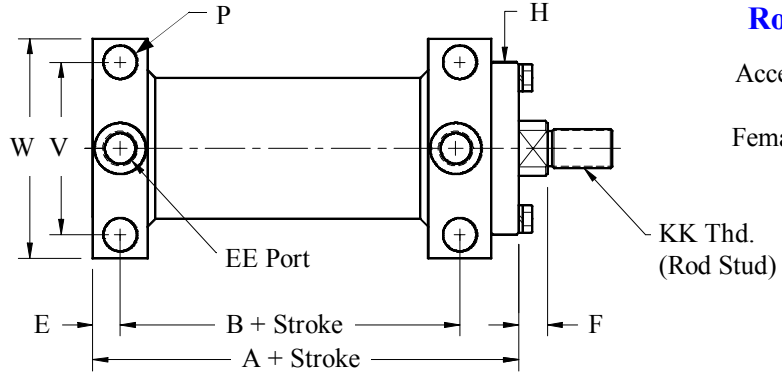
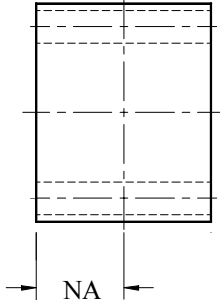
Series B Cylinder – Foot Mount

Square Style

Bore Sizes:
1 1/2" to 3"

Blind End

Accessories:
None



Rod End

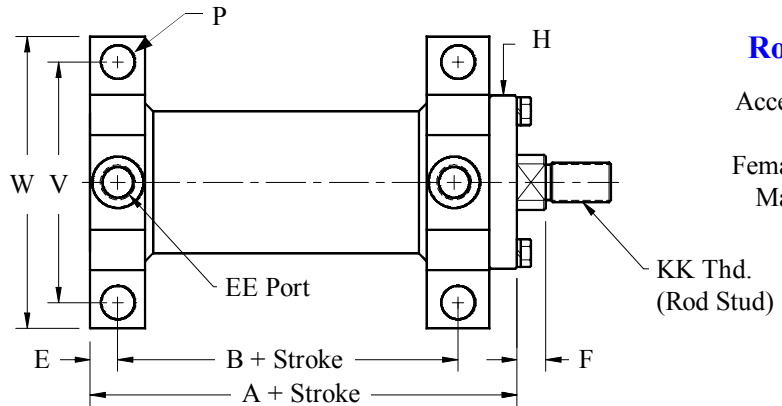
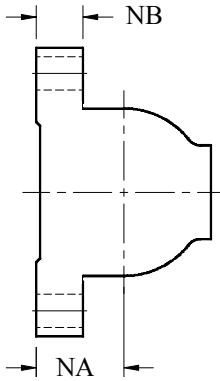
Accessories:
Welded
Female Thd.

Rounded

Bore Sizes:
3 1/4" to 10"

Blind End

Accessories:
None



Rod End

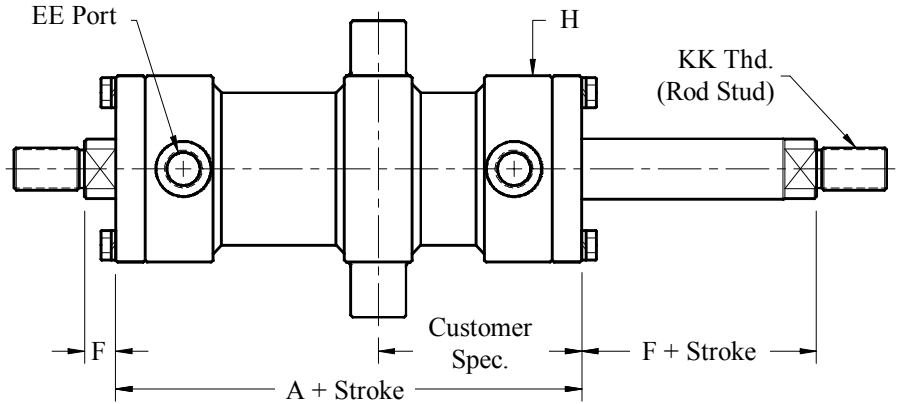
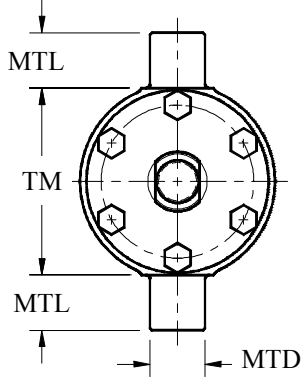
Accessories:
Welded
Female Thd.
Male Thd.

Bore	Available Rod Sizes					STD & Cushion	STD	Cushion Both ends	BLIND Cushion		ROD Cushion		E	H Dia	NA	NB	P Dia	V	W	EE ORB	Standard sizes shown.		
									A	B	A	B									A	B	CD Pin
1 1/2	3/4	—	—	—	—	5.00	2.88	2.88	4.63	2.50	5.38	3.25	0.63	2.50	1.31	—	0.44	2.25	3.00	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	—	5.50	3.13	3.00	5.00	2.63	6.00	3.50	0.63	3.25	1.56	—	0.56	2.88	3.75	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	—	5.75	3.31	3.19	5.25	2.81	6.25	3.69	0.75	3.75	1.94	—	0.56	3.38	4.25	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	—	6.13	3.50	3.38	5.63	3.00	6.63	3.88	0.75	4.25	2.19	—	0.69	4.00	5.00	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	—	6.63	4.00	3.75	6.13	3.50	7.13	4.25	0.88	4.75	2.44	1.25	0.81	6.38	7.75	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	—	6.75	4.00	3.75	6.25	3.50	7.25	4.25	0.88	5.00	2.56	1.50	0.81	6.63	8.00	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	—	6.88	4.13	3.88	6.31	3.56	7.44	4.44	0.88	5.50	2.81	1.50	1.06	7.63	9.25	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	—	7.25	4.50	4.25	6.69	3.94	7.81	4.81	0.88	6.00	3.19	1.50	1.06	8.00	9.63	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	—	7.50	4.56	4.31	7.00	4.06	8.00	4.81	0.88	6.88	3.44	1.75	1.06	8.75	10.38	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	—	8.00	4.94	4.81	7.38	4.31	8.63	5.44	0.88	7.25	3.81	1.75	1.06	9.25	10.88	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	—	8.50	5.00	4.88	8.13	4.63	8.88	5.25	1.06	8.00	4.06	2.00	1.31	10.38	12.50	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	—	9.50	5.56	5.31	9.06	5.13	9.94	5.75	1.38	9.13	4.75	2.50	1.56	12.25	15.00	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	—	10.50	6.25	5.88	9.88	5.63	11.13	6.50	1.31	10.50	5.50	2.50	1.56	13.25	15.75	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	—	11.50	6.75	6.50	10.88	6.13	12.13	7.13	1.44	11.50	5.75	3.00	1.81	15.25	18.25	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	—	13.00	7.63	7.38	12.19	6.81	13.81	8.19	1.63	13.00	6.50	3.50	1.81	17.00	20.00	# 20	3.50	1.25	3 1/4-12

Series BD Cylinder – Double Rod Cylinder

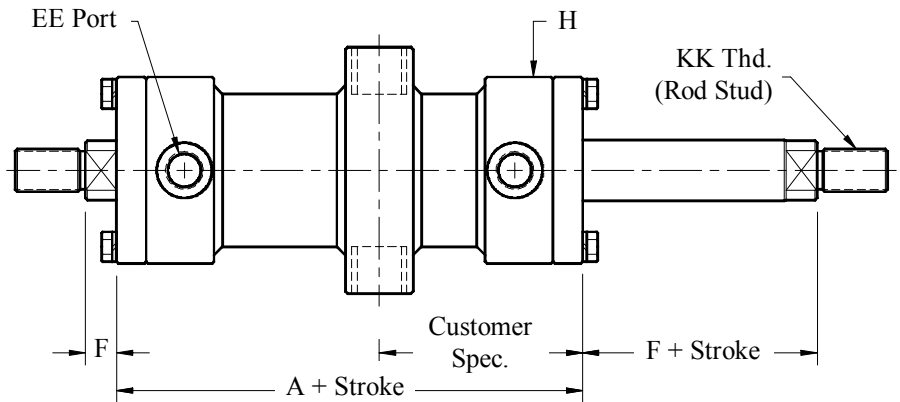
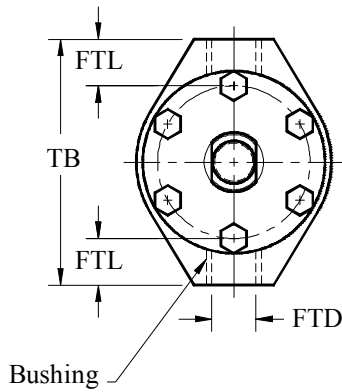
Mid Trunnion

Male



Accessories: Welded
Female Thd.
Male Thd.
Trunnion Brackets

Female

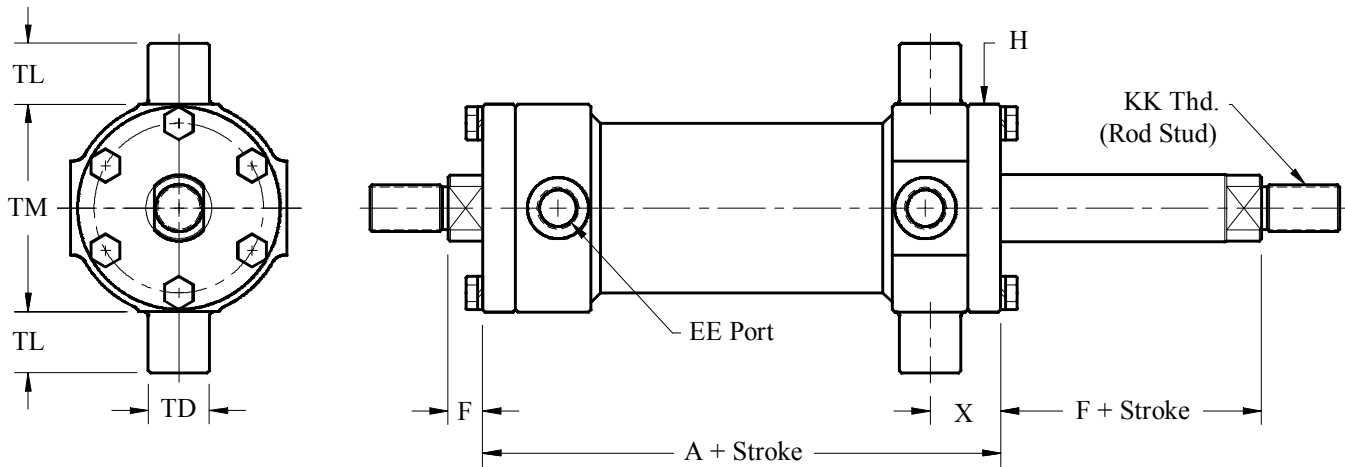


Bore	Available Rod Sizes				A		H Dia	FTD	FTL	TB	MTD	MTL	TM	EE (ORB)	Standard sizes shown.		
					STD	Cushion									CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	5.75	2.50	0.75	0.63	3.25	1.00	1.00	3.00	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	5.75	6.75	3.25	0.75	0.63	3.75	1.38	1.38	3.50	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	6.25	7.25	3.75	0.75	0.63	4.25	1.38	1.38	4.00	# 8	0.75	0.63	3/4-16
3	1 3/8	1 3/4	2	—	6.88	7.88	4.25	1.00	0.88	5.38	1.38	1.38	4.50	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	8.38	4.75	1.00	0.88	5.63	1.75	1.75	5.00	# 12	1.00	0.75	1-14
3 1/2	1 3/8	2	2 1/2	—	7.63	8.63	5.00	1.00	0.88	5.88	1.75	1.75	5.25	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	7.75	8.88	5.50	1.38	1.31	7.25	1.75	1.75	5.50	# 12	1.38	0.75	1 1/4-12
5	2	2 1/2	3	3 1/2	8.88	9.88	6.88	1.75	1.56	9.00	1.75	1.75	7.00	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	10.00	10.75	8.00	1.75	1.56	10.00	2.00	2.00	8.50	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	11.88	12.75	9.13	2.00	1.81	11.50	2.50	2.50	9.75	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	13.75	15.00	10.50	2.50	2.25	13.50	3.00	3.00	11.00	# 20	3.00	1.00	2 1/2-12
10	5	6	7	—	16.25	17.88	13.00	—	—	—	3.50	3.50	14.00	# 20	3.50	1.25	3 1/4-12

Series BD Cylinder – Double Rod Cylinder

Front Trunnion

Accessories: Welded
Female Thd.
Male Thd.
Trunnion Brackets

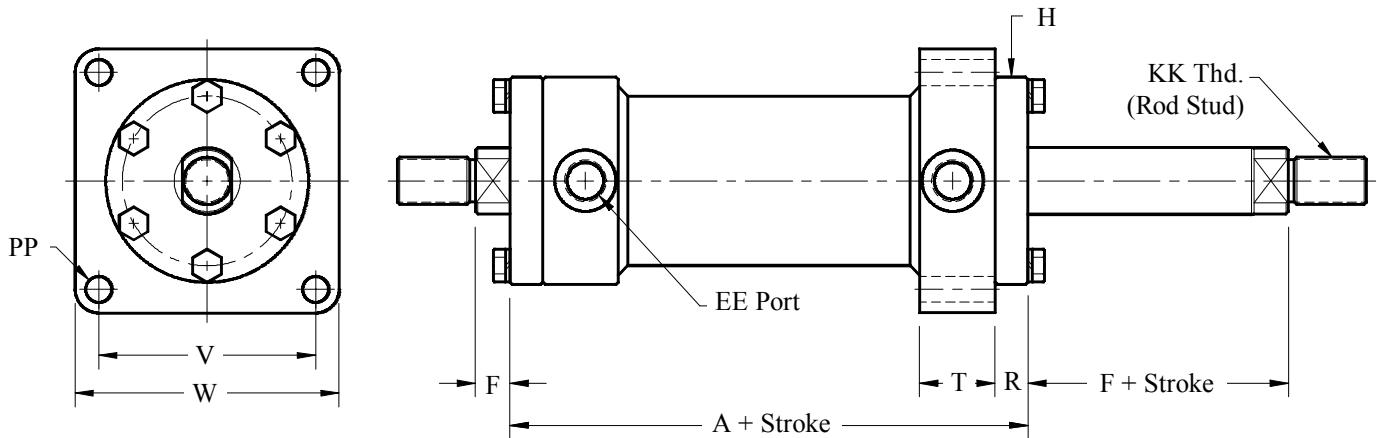


Bore	Available Rod Sizes				A		H Dia	TD	TL	TM	X STD	X Cushion	EE (ORB)	Standard sizes shown.		
					STD	Cushion								CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	5.75	2.50	1.00	1.00	2.50	1.19	1.19	# 6	0.50	0.68	1/2-20
2	1	1 3/8	—	—	5.75	6.75	3.25	1.38	1.38	3.00	1.50	1.63	# 8	0.75	0.75	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	6.25	7.25	3.75	1.38	1.38	3.50	1.56	1.69	# 8	0.75	0.69	3/4-16
3	1 3/8	1 3/4	2	—	6.88	7.88	4.25	1.38	1.38	4.50	1.63	1.75	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	8.38	4.75	1.75	1.75	4.50	1.75	2.00	# 12	1.00	0.88	1-14
3 1/2	1 3/8	2	2 1/2	—	7.63	8.63	5.00	1.75	1.75	5.25	1.88	2.13	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	7.75	8.88	5.50	1.75	1.75	5.00	1.88	2.13	# 12	1.38	1.00	1 1/4-12
5	2	2 1/2	3	3 1/2	8.88	9.88	6.88	1.75	1.75	6.50	2.13	2.38	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	10.00	10.75	8.00	2.00	2.00	7.50	2.31	2.44	# 16	2.00	1.06	1 7/8-12
7	3	3 1/2	4	5	11.88	12.75	9.13	2.50	2.50	8.50	2.63	2.88	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	13.75	15.00	10.50	3.00	3.00	9.50	2.75	3.13	# 20	3.00	1.00	2 1/2-12
10	5	6	7	—	16.25	17.88	13.00	3.50	3.50	12.63	3.88	4.13	# 20	3.50	1.13	3 1/4-12

Series BD Cylinder – Double Rod Cylinder

Flange Mount – Standard

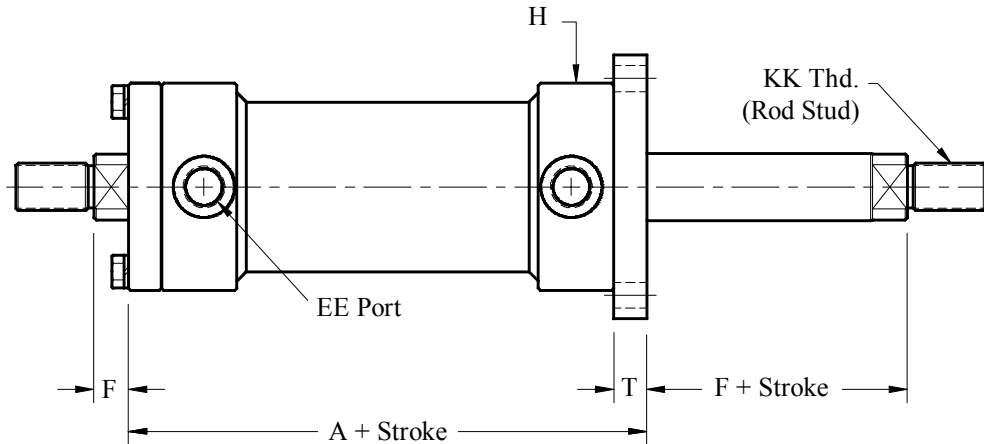
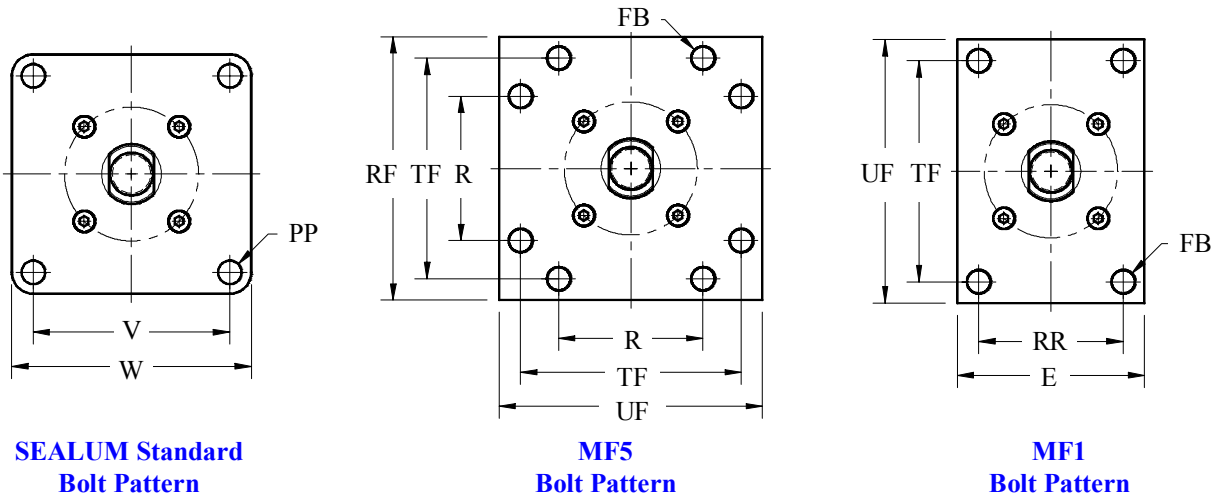
Accessories: Welded
Female Thd.
Male Thd.



Bore	Available Rod Sizes				A		H Dia	PP Dia	T	R STD	R Cushion	V	W	EE (ORB)	Standard sizes shown.		
					STD	Cushion									CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	5.75	2.50	0.44	1.75	0.50	0.50	2.63	3.50	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	5.75	6.75	3.25	0.56	1.75	0.63	0.75	3.38	4.50	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	6.25	7.25	3.75	0.56	1.75	0.69	0.81	3.88	5.00	# 8	0.75	0.63	3/4-16
3	1 3/8	1 3/4	2	—	6.88	7.88	4.25	0.56	1.75	0.75	0.88	4.38	5.50	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	8.38	4.75	0.69	2.00	0.75	1.00	4.75	6.00	# 12	1.00	0.75	1-14
3 1/2	1 3/8	2	2 1/2	—	7.63	8.63	5.00	0.69	2.00	0.88	1.13	5.25	6.50	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	7.75	8.88	5.50	0.69	2.00	0.88	1.13	5.75	7.00	# 12	1.38	0.75	1 1/4-12
5	2	2 1/2	3	3 1/2	8.88	9.88	6.88	0.94	2.13	1.00	1.25	7.00	8.50	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	10.00	10.75	8.00	1.06	2.44	1.06	1.19	8.00	10.00	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	11.88	12.75	9.13	1.31	2.75	1.19	1.44	8.50	11.00	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	13.75	15.00	10.50	1.31	2.88	1.50	1.88	9.50	12.00	# 20	3.00	1.00	2 1/2-12
10	5	6	7	—	16.25	17.88	13.00	1.31	3.38	2.00	2.25	11.50	14.00	# 20	3.50	1.25	3 1/4-12

Series BD Cylinder – Double Rod Cylinder

Flange Mount – Flat Face



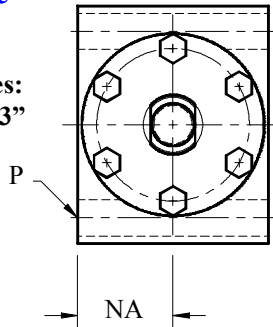
Bore	Available Rod Sizes			A		H Dia	PP Dia	T STD	T Cushion	V	W	E	FB Dia	R	TF	UF	EE (ORB)	Standard sizes shown.		
				STD	Cushion													CD Pin	F	KK Thd
2	1	—	—	5.75	6.75	3.25	0.56	0.63	0.75	3.38	4.50	3.00	0.56	2.05	4.13	5.13	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	6.25	7.25	3.75	0.56	0.69	0.81	3.88	5.00	3.75	0.56	2.55	4.63	5.63	# 8	0.75	0.63	3/4-16
3	1 3/8	1 3/4	—	6.88	7.88	4.25	0.56	0.75	0.88	4.38	5.50	—	—	—	—	—	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	7.38	8.38	4.75	0.69	0.75	1.00	4.75	6.00	4.75	0.69	3.25	5.88	7.13	# 12	1.00	0.75	1-14
3 1/2	1 3/4	2	—	7.63	8.63	5.00	0.69	0.88	1.13	5.25	6.50	—	—	—	—	—	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	7.75	8.88	5.50	0.69	0.88	1.13	5.75	7.00	5.50	0.69	3.82	6.38	7.63	# 12	1.38	0.75	1 1/4-12
5	2	2 1/2	3	8.88	9.88	6.88	0.94	1.00	1.25	7.00	8.50	6.88	0.94	4.95	8.19	9.75	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	10.00	10.75	8.00	1.06	1.06	1.19	8.00	10.00	8.00	1.06	5.73	9.44	11.25	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	11.88	12.75	9.13	1.31	1.19	1.44	8.50	11.00	9.13	1.19	6.58	10.63	12.63	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	13.75	15.00	10.50	1.31	1.50	1.88	9.50	12.00	10.50	1.31	7.50	11.81	14.00	# 20	3.00	1.00	2 1/2-12

Series BD Cylinder – Double Rod Cylinder

Foot Mount

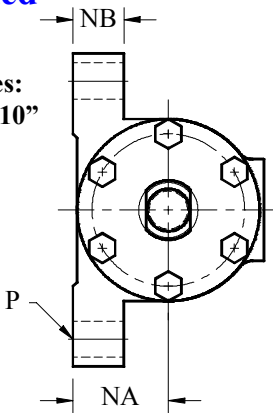
Square Style

Bore Sizes:
1 1/2" to 3"

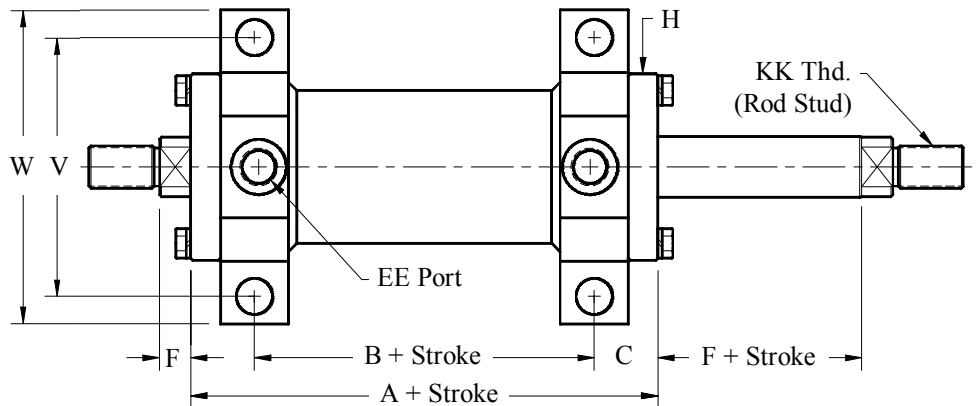
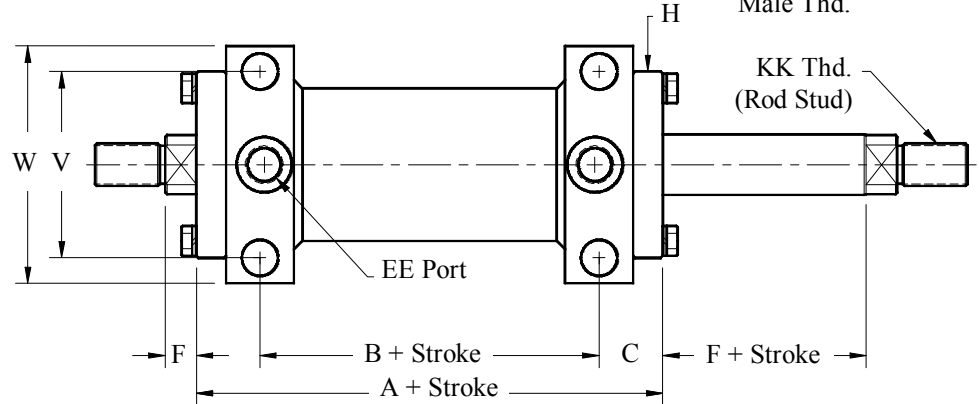


Rounded Style

Bore Sizes:
3 1/4" to 10"



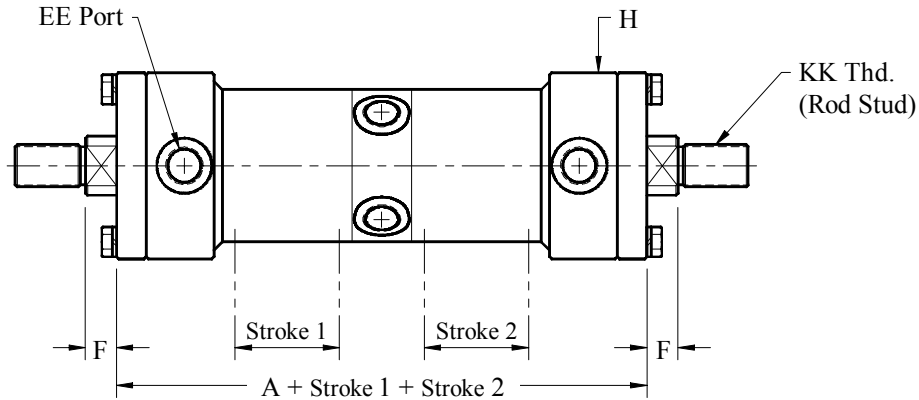
Accessories: Welded
Female Thd.
Male Thd.



Bore	Available Rod Sizes				Standard			Cushion			H Dia	NA	NB	P Dia	V	W	EE (ORB)	Standard sizes shown.		
					A	B	C	A	B	C								CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	5.00	2.00	1.50	5.75	2.75	1.50	2.50	1.31	—	0.44	2.25	3.00	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	5.75	2.25	1.75	6.75	3.00	1.88	3.25	1.56	—	0.56	2.88	3.75	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	6.25	2.88	1.69	7.25	3.63	1.81	3.75	1.94	—	0.56	3.38	4.25	# 8	0.75	0.63	3/4-16
3	1 3/8	1 3/4	2	—	6.88	3.13	1.88	7.88	3.88	2.00	4.25	2.19	—	0.69	4.00	5.00	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	3.88	1.75	8.38	4.38	2.00	4.75	2.44	1.25	0.81	6.38	7.75	# 12	1.00	0.75	1-14
3 1/2	1 3/8	2	2 1/2	—	7.63	3.88	1.88	8.63	4.38	2.13	5.00	2.56	1.50	0.81	6.63	8.00	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	7.75	4.00	1.88	8.88	4.63	2.13	5.50	2.81	1.50	1.06	7.63	9.25	# 12	1.38	0.75	1 1/4-12
5	2	2 1/2	3	3 1/2	8.88	4.75	2.06	9.88	5.25	2.31	6.88	3.44	1.75	1.06	8.75	10.38	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	10.00	5.13	2.44	10.75	5.63	2.56	8.00	4.06	2.00	1.31	10.38	12.50	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	11.88	6.75	2.56	12.75	7.13	2.81	9.13	4.75	2.50	1.56	12.25	15.00	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	13.75	7.88	2.94	15.00	8.38	3.31	10.50	5.50	2.50	1.56	13.25	15.75	# 20	3.00	1.00	2 1/2-12
10	5	6	7	—	16.25	8.75	3.75	17.88	9.88	4.00	13.00	6.50	3.50	1.81	17.00	20.00	# 20	3.50	1.25	3 1/4-12

Series BB Cylinder – Back to Back

Two Cylinders

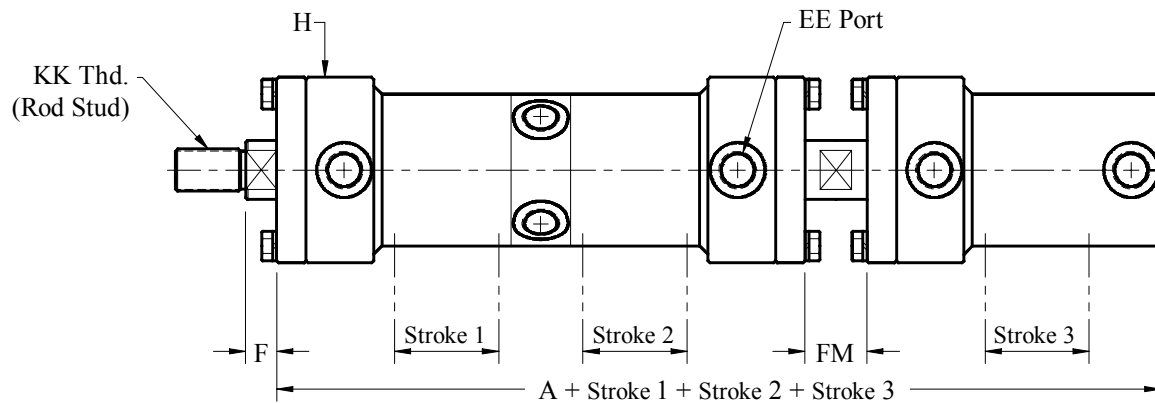


Accessories: Welded
Female Thd.
Male Thd.

Bore	Available Rod Sizes				A	H Dia	EE (ORB)	Standard sizes shown.		
								CD Pin Ø	F	KK Thd
1 1/2	3/4	—	—	—	8.81	2.50	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	9.69	3.25	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	10.06	3.75	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	10.81	4.25	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	11.56	4.75	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	11.81	5.00	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	12.00	5.50	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	12.69	6.00	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	13.25	6.88	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	14.25	7.25	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	14.88	8.00	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	16.50	9.13	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	18.38	10.50	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	20.38	11.50	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	22.81	13.00	# 20	3.50	1.25	3 1/4-12

Series BB Cylinder – Back to Back

Three Cylinders

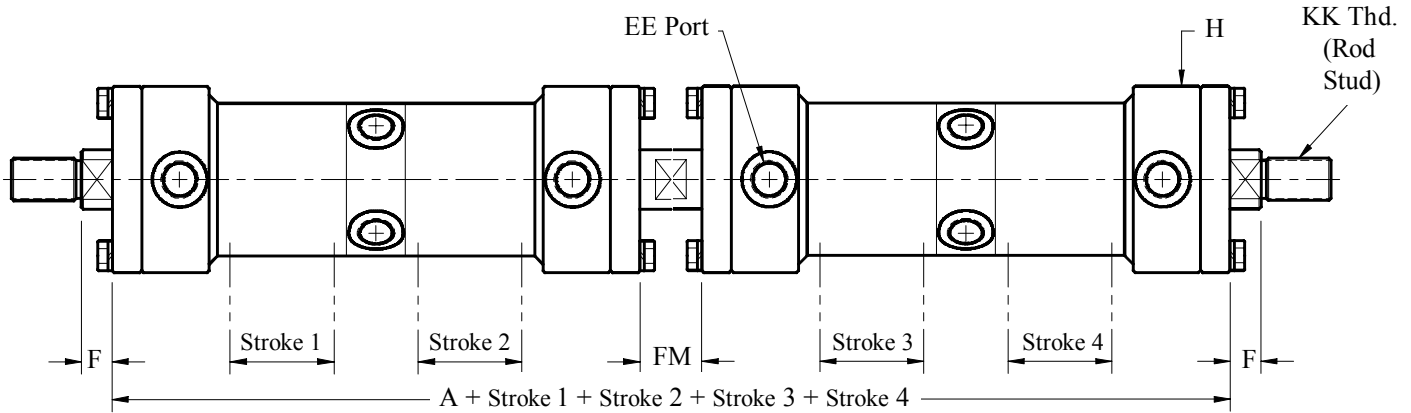


Accessories: Welded
Female Thd.
Male Thd.

Bore	Available Rod Sizes				A	H Dia	FM	EE (ORB)	Standard sizes shown.		
	CD Pin Ø	F	KK Thd								
1 1/2	3/4	—	—	—	14.81	2.50	1.00	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	16.19	3.25	1.00	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	16.94	3.75	1.13	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	18.06	4.25	1.13	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	19.56	4.75	1.38	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	19.94	5.00	1.38	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	20.25	5.50	1.38	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	21.31	6.00	1.38	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	22.25	6.88	1.50	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	23.75	7.25	1.50	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	25.13	8.00	1.75	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	27.75	9.13	1.75	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	30.88	10.50	2.00	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	33.88	11.50	2.00	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	37.81	13.00	2.00	# 20	3.50	1.25	3 1/4-12

Series BB Cylinder – Back to Back

Four Cylinders

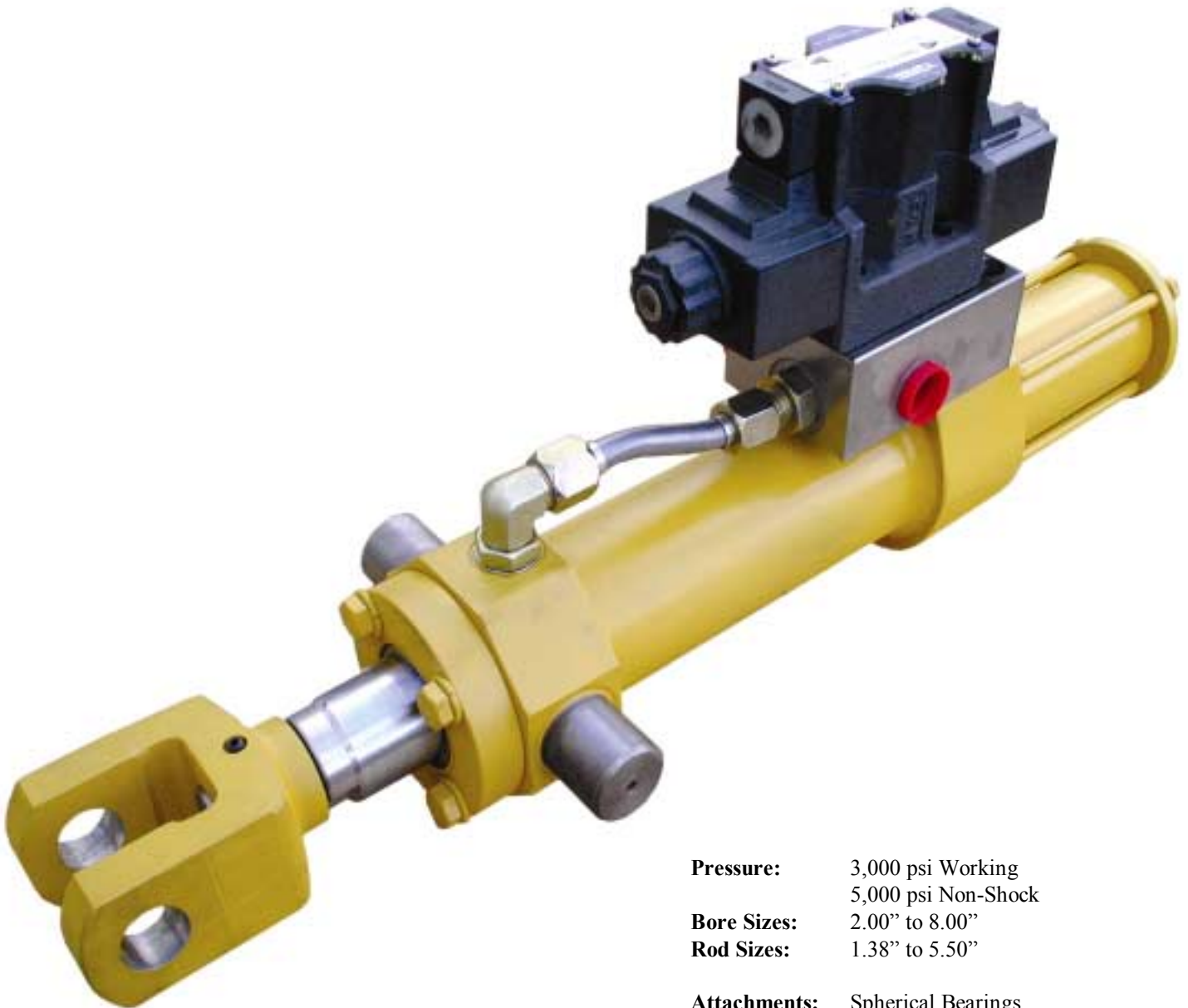


Accessories: Welded
Female Thd.
Male Thd.

Bore	Available Rod Sizes				A	H Dia	FM	EE (ORB)	Standard sizes shown.		
	CD Pin Ø	F	KK Thd								
1 1/2	3/4	—	—	—	18.63	2.50	1.00	# 6	0.50	0.50	1/2-20
2	1	1 3/8	—	—	20.38	3.25	1.00	# 8	0.75	0.50	3/4-16
2 1/2	1	1 3/8	1 1/2	1 3/4	21.25	3.75	1.13	# 8	0.75	0.63	3/4-16
3	1 1/4	1 3/8	1 3/4	2	22.75	4.25	1.13	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	24.50	4.75	1.38	# 12	1.00	0.75	1-14
3 1/2	1 3/8	1 3/4	2	2 1/2	25.00	5.00	1.38	# 12	1.25	0.75	1 1/4-12
4	1 3/4	2	2 1/2	3	25.38	5.50	1.38	# 12	1.38	0.75	1 1/4-12
4 1/2	2	2 1/2	3	3 1/2	26.75	6.00	1.38	# 12	1.50	0.75	1 1/2-12
5	2	2 1/2	3	3 1/2	28.00	6.88	1.50	# 12	1.75	0.88	1 1/2-12
5 1/2	2 1/2	3	3 1/2	—	30.00	7.25	1.50	# 12	2.00	0.88	1 7/8-12
6	2 1/2	3	3 1/2	4	31.50	8.00	1.75	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	34.75	9.13	1.75	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	6	38.75	10.50	2.00	# 20	3.00	1.00	2 1/2-12
9	4	5	6	—	42.75	11.50	2.00	# 20	3.50	1.25	3 1/4-12
10	5	6	7	—	47.63	13.00	2.00	# 20	3.50	1.25	3 1/4-12



Series TM Hydraulic Cylinder TeMposonic



Pressure: 3,000 psi Working
5,000 psi Non-Shock

Bore Sizes: 2.00" to 8.00"

Rod Sizes: 1.38" to 5.50"

Attachments: Spherical Bearings
Clevis
Cross Hole
Threaded Rod

Series TM Cylinder

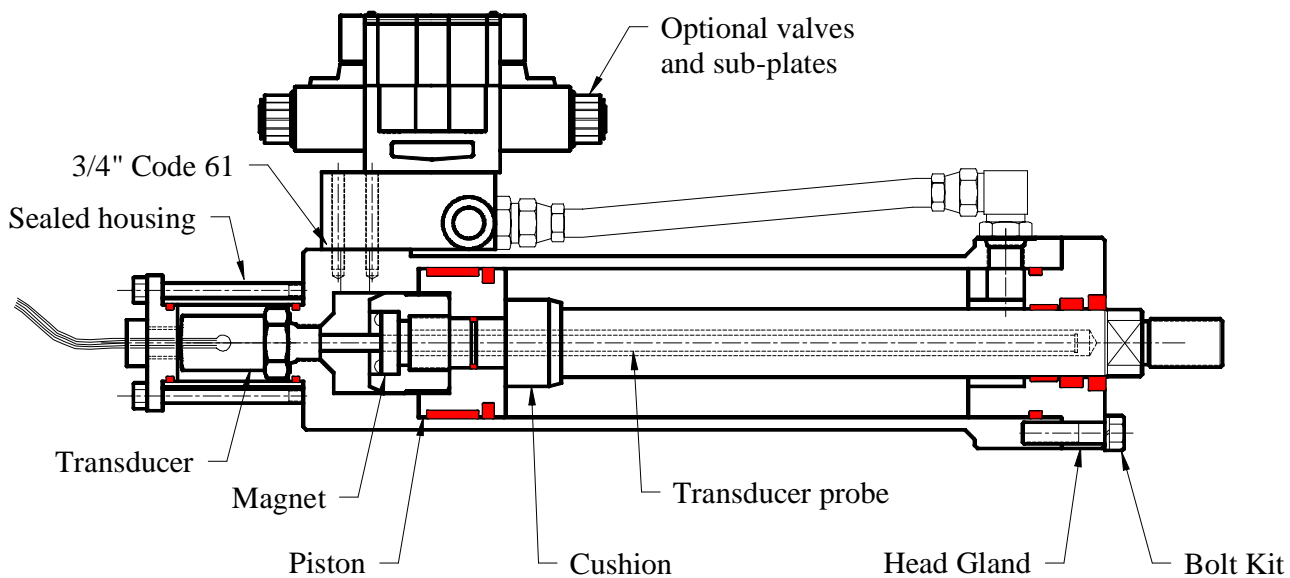
Our Series **TM** cylinders, with suitable electronics, can monitor the position and velocity of the piston. It is based on our popular Series **B** cylinder with provision for mounting an LVDT (Linear Velocity Displacement Transducer) and magnet from Temposonic, Balluff, or any other manufacturer.

The transducer assembly is mounted into the blind end of the cylinder. The magnet is housed in a stainless steel piston nut and the probe is inserted into a blind hole in the rod. The rod is drilled from one end only, which makes for a much stronger rod end than one that is drilled from both ends. A male thread is standard for the rod end. Therefore, any size and style of accessory with female threads is available. Female threads in the rod end can be accommodated, but the rod extension must be increased by the depth of the threads.

The transducer head is protected by a sealed housing. Since the back end of the cylinder must be clear to withdraw the probe, the available mounting styles are front and mid trunnion, front and rear flange and foot mount.

The pressure rating is 3000 psi operating and 5000 psi non-shock and fixed cushions at both ends of the cylinder are standard with series TM.

Options are available to mount a wide variety of servo or proportional valves on the cylinder. See page #27-7 of the manifold section for details.



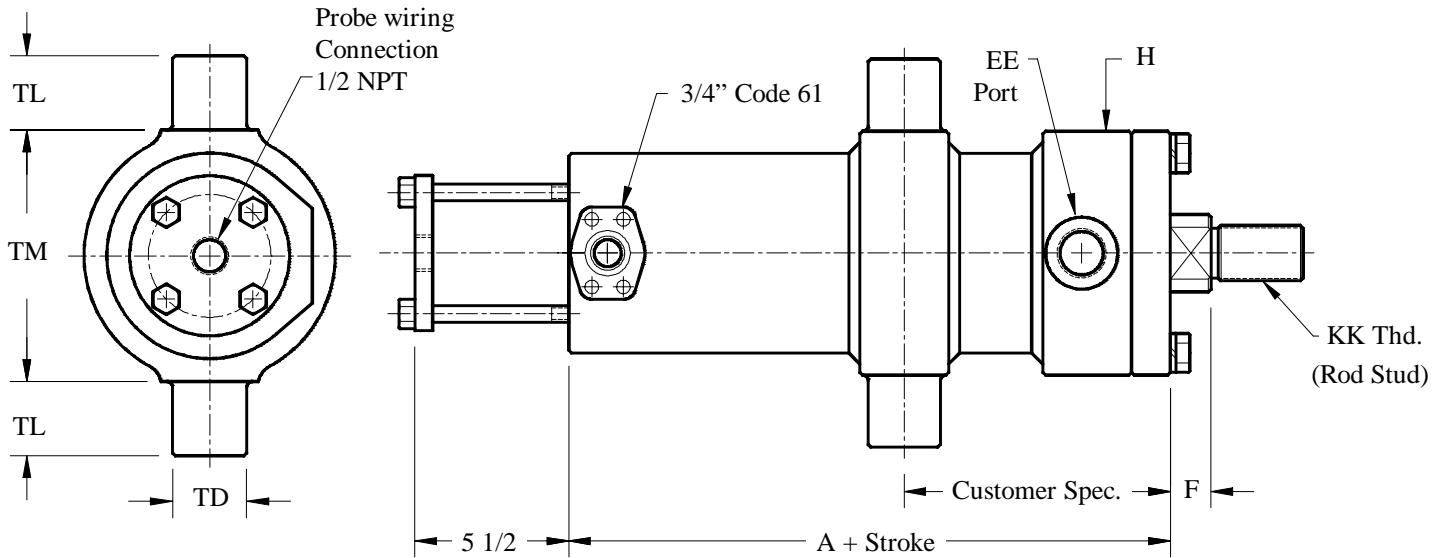
NOTE: Replacement parts for the piston, head gland, cushion, bolt kit and the seal kits are the same as Series B.

Series TM Cylinder – Trunnion

Mid Trunnion – Male

Rod End

Accessories:
Female Thd.
Welded



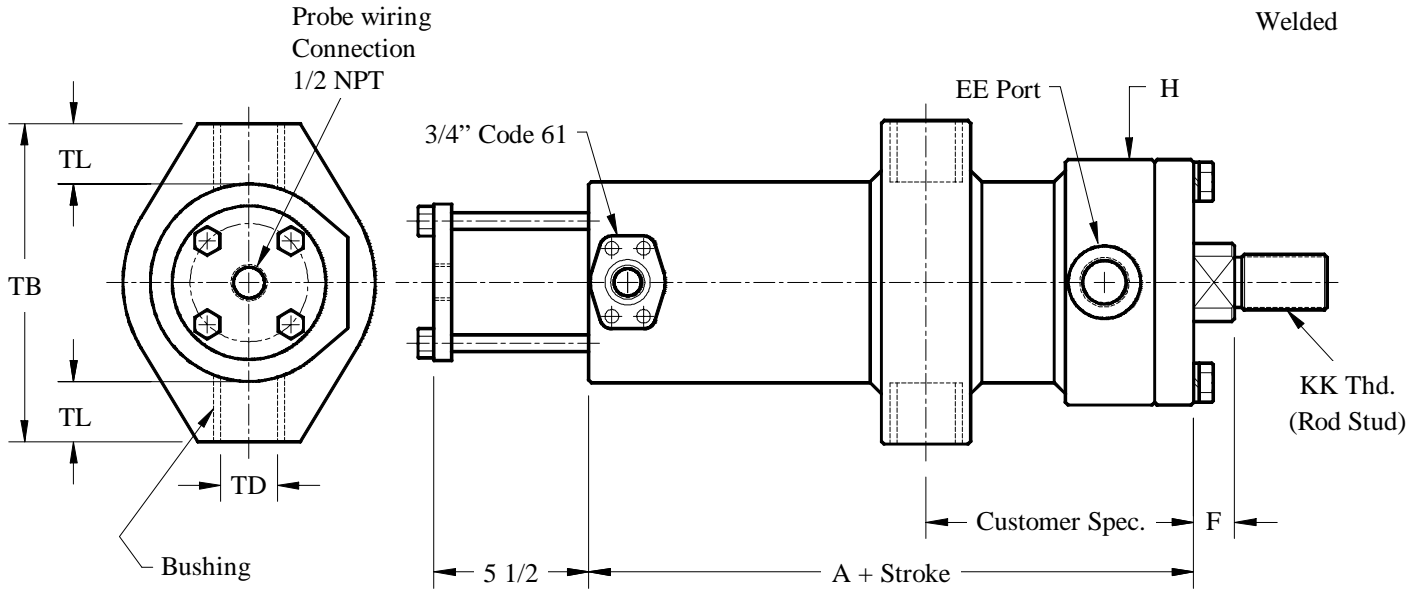
Bore	Available Rod Sizes				A	H Dia	TD	TL	TM	EE (ORB)	Standard sizes shown.		
											CD Pin Ø	F	KK Thd
2	1 3/8	—	—	—	6.69	3.25	1.38	1.38	3.50	# 8	0.75	0.50	3/4-16
2 1/2	1 3/8	1 1/2	1 3/4	—	6.81	3.75	1.38	1.38	4.00	# 8	0.75	0.63	3/4-16
3	1 3/8	1 3/4	2	—	7.13	4.25	1.38	1.38	4.50	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	4.75	1.75	1.75	5.00	# 12	1.00	0.75	1-14
4	1 3/4	2	2 1/2	3	7.75	5.50	1.75	1.75	5.50	# 12	1.38	0.75	1 1/4-12
5	2	2 1/2	3	3 1/2	8.25	6.88	1.75	1.75	7.00	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	8.88	8.00	2.00	2.00	8.50	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	9.13	2.50	2.50	9.75	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	5 1/2	10.50	10.50	3.00	3.00	11.00	# 20	3.00	1.00	2 1/2-12
10	5	6	7	—	12.63	13.00	3.50	3.50	14.00	# 20	3.50	1.25	3 1/4-12

Series TM Cylinder – Trunnion

Mid Trunnion – Female

Rod End

Accessories:
Female Thd.
Welded



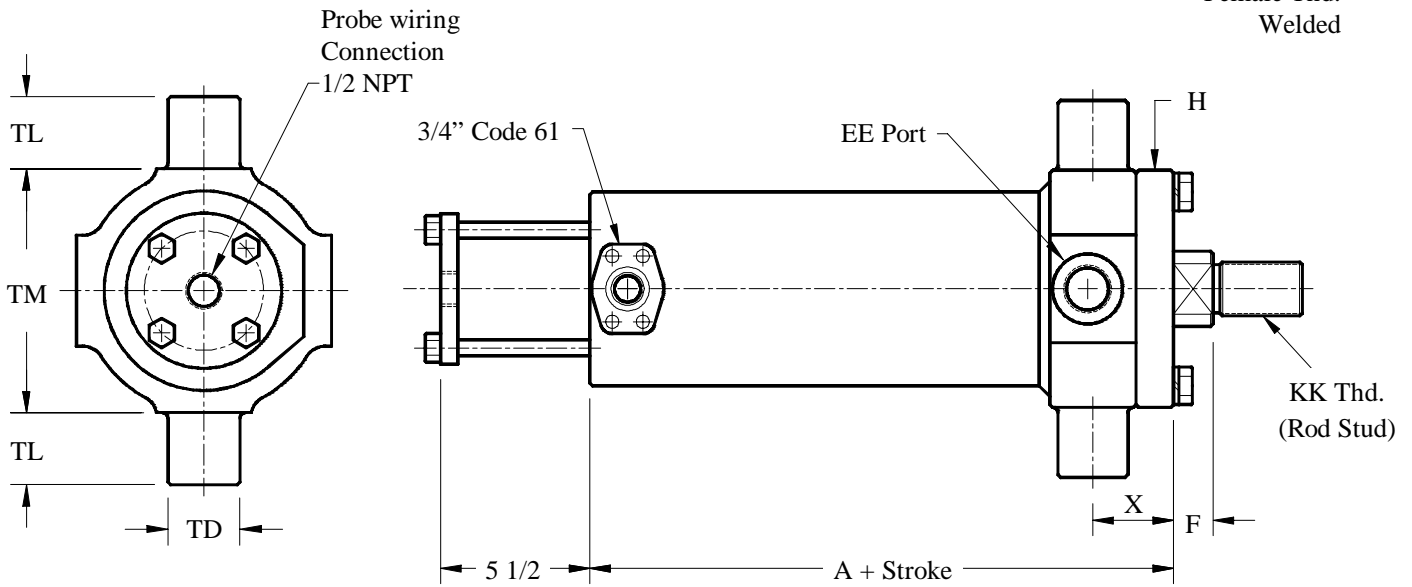
Bore	Available Rod Sizes				A	H Dia	TD	TL	TB	EE (ORB)	Standard sizes shown.		
	CD Pin Ø	F	KK Thd										
2	1 3/8	—	—	—	6.69	3.25	0.75	0.63	3.75	# 8	0.75	0.50	3/4-16
2 1/2	1 3/8	1 1/2	1 3/4	—	6.81	3.75	0.75	0.63	4.25	# 8	0.75	0.63	3/4-16
3	1 3/8	1 3/4	2	—	7.13	4.25	1.00	0.88	5.38	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	4.75	1.00	0.88	5.63	# 12	1.00	0.75	1-14
4	1 3/4	2	2 1/2	3	7.75	5.50	1.38	1.31	7.25	# 12	1.38	0.75	1 1/4-12
5	2	2 1/2	3	3 1/2	8.25	6.88	1.75	1.56	9.00	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	8.88	8.00	1.75	1.56	10.00	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	9.13	2.00	1.81	11.50	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	5 1/2	10.50	10.50	2.50	2.25	13.50	# 20	3.00	1.00	2 1/2-12

Series TM Cylinder – Trunnion

Front Trunnion

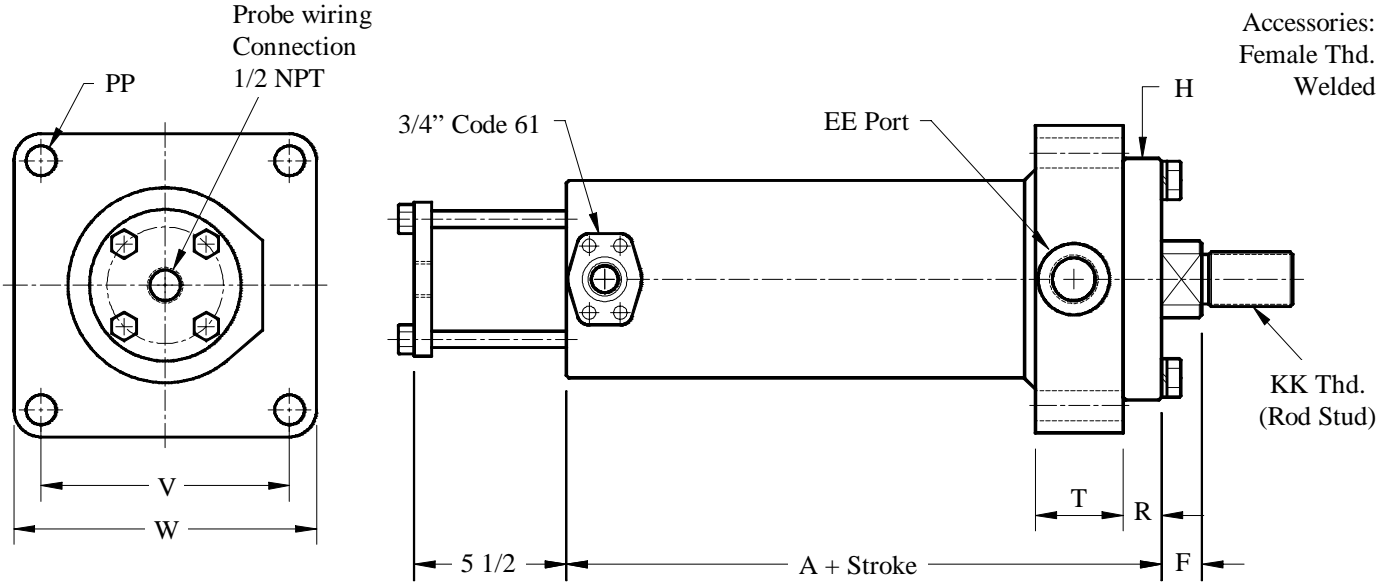
Rod End

Accessories:
Female Thd.
Welded



Bore	Available Rod Sizes				A	H Dia	TD	TL	TM	X	EE (ORB)	Standard sizes shown.		
												CD Pin Ø	F	KK Thd
2	1 3/8	—	—	—	6.69	3.25	1.38	1.38	3.00	1.63	# 8	0.75	0.75	3/4-16
2 1/2	1 3/8	1 1/2	1 3/4	—	6.81	3.75	1.38	1.38	3.50	1.69	# 8	0.75	0.69	3/4-16
3	1 3/8	1 3/4	2	—	7.13	4.25	1.38	1.38	4.50	1.75	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	4.75	1.75	1.75	4.50	2.00	# 12	1.00	0.88	1-14
4	1 3/4	2	2 1/2	3	7.75	5.50	1.75	1.75	5.00	2.13	# 12	1.38	1.00	1 1/4-12
5	2	2 1/2	3	3 1/2	8.25	6.88	1.75	1.75	6.50	2.38	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	8.88	8.00	2.00	2.00	7.50	2.44	# 16	2.00	1.06	1 7/8-12
7	3	3 1/2	4	5	9.50	9.13	2.50	2.50	8.50	2.94	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	5 1/2	10.50	10.50	3.00	3.00	9.50	3.63	# 20	3.00	1.00	2 1/2-12
10	5	6	7	—	12.63	13.00	3.50	3.50	12.63	4.25	# 20	3.50	1.13	3 1/4-12

Series TM Cylinder – Front Flange



Rod End

Accessories:
Female Thd.
Welded

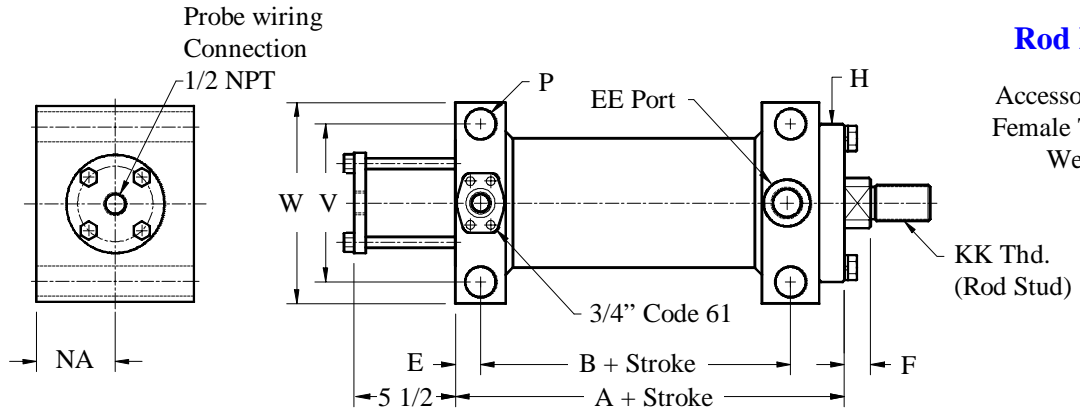
KK Thd.
(Rod Stud)

Bore	Available Rod Sizes				A	H Dia	PP Dia	T	R	V	W	EE (ORB)	Standard sizes shown.		
	CD Pin Ø	F	KK Thd												
2	1 3/8	—	—	—	6.69	3.25	0.56	1.75	0.75	3.38	4.50	# 8	0.75	0.50	3/4-16
2 1/2	1 3/8	1 1/2	1 3/4	—	6.81	3.75	0.56	1.75	0.81	3.88	5.00	# 8	0.75	0.63	3/4-16
3	1 3/8	1 3/4	2	—	7.13	4.25	0.56	1.75	0.88	4.38	5.50	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	4.75	0.69	2.00	1.00	4.75	6.00	# 12	1.00	0.75	1-14
4	1 3/4	2	2 1/2	3	7.75	5.50	0.69	2.00	1.13	5.75	7.00	# 12	1.38	0.75	1 1/4-12
5	2	2 1/2	3	3 1/2	8.25	6.88	0.94	2.13	1.25	7.00	8.50	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	8.88	8.00	1.06	2.44	1.19	8.00	10.00	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	9.13	1.31	2.75	1.44	8.50	11.00	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	5 1/2	10.50	10.50	1.31	2.88	1.88	9.50	12.00	# 20	3.00	1.00	2 1/2-12
10	5	6	7	—	12.63	13.00	1.31	3.38	2.25	11.50	14.00	# 20	3.50	1.25	3 1/4-12

Series TM Cylinder – Foot Mount

Square Style

Bore Sizes:
2" to 3"

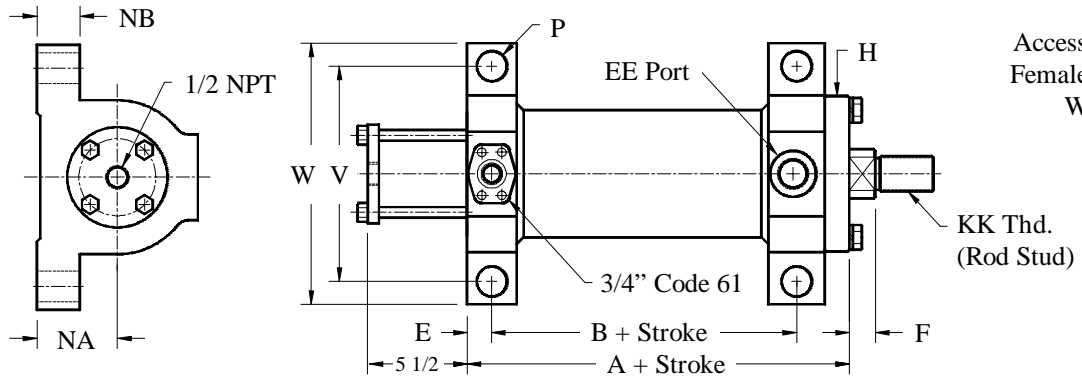


Rod End

Accessories:
Female Thd.
Welded

Rounded Style

Bore Sizes:
3 1/4" to 10"



Rod End

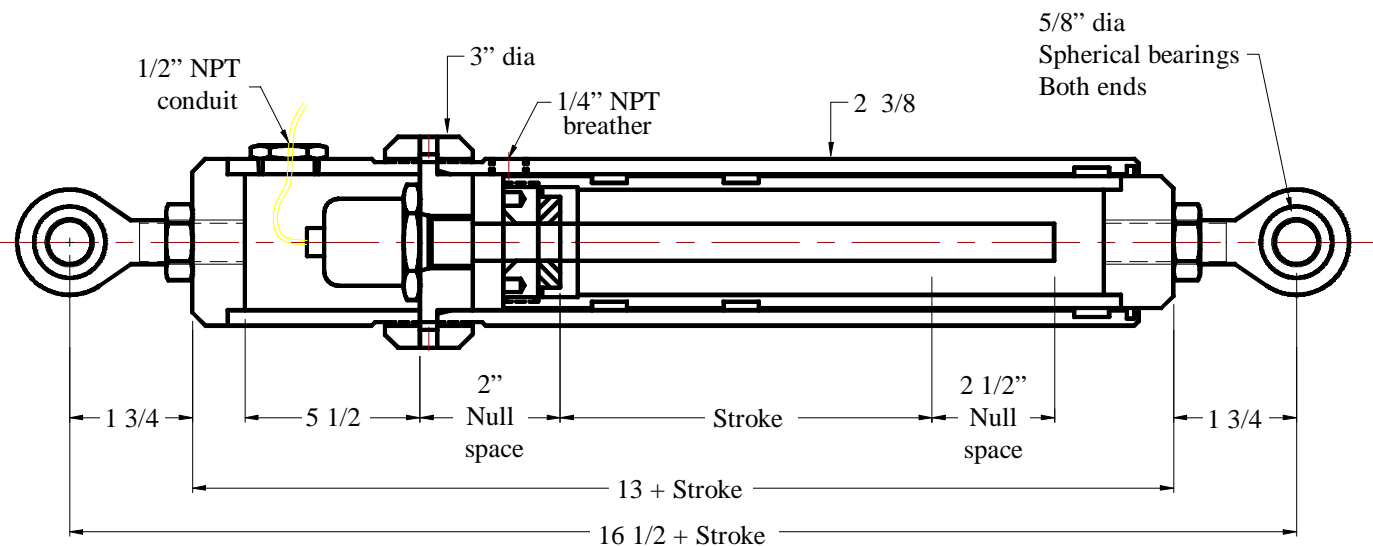
Accessories:
Female Thd.
Welded

Bore	Available Rod Sizes				A	B	E	H Dia	NA	NB	P Dia	V	W	EE ORB	Standard sizes shown.		
															CD Pin Ø	F	KK Thd
2	1 3/8	—	—	—	6.69	4.19	0.63	3.25	1.56	—	0.56	2.88	3.75	# 8	0.75	0.50	3/4-16
2 1/2	1 3/8	1 1/2	1 3/4	—	6.81	4.25	0.75	3.75	1.94	—	0.56	3.38	4.25	# 8	0.75	0.63	3/4-16
3	1 3/8	1 3/4	2	—	7.13	4.38	0.75	4.25	2.19	—	0.69	4.00	5.00	# 8	1.00	0.63	1-14
3 1/4	1 3/8	1 3/4	2	2 1/4	7.38	4.50	0.88	4.75	2.44	1.25	0.81	6.38	7.75	# 12	1.00	0.75	1-14
4	1 3/4	2	2 1/2	3	7.75	4.75	0.88	5.50	2.81	1.50	1.06	7.63	9.25	# 12	1.38	0.75	1 1/4-12
5	2	2 1/2	3	3 1/2	8.25	5.06	0.88	6.88	3.44	1.75	1.06	8.75	10.38	# 12	1.75	0.88	1 1/2-12
6	2 1/2	3	3 1/2	4	8.88	5.25	1.06	8.00	4.06	2.00	1.31	10.38	12.50	# 16	2.00	1.00	1 7/8-12
7	3	3 1/2	4	5	9.50	5.31	1.38	9.13	4.75	2.50	1.56	12.25	15.00	# 20	2.50	1.00	2 1/4-12
8	3 1/2	4	5	5 1/2	10.50	5.88	1.31	10.50	5.50	2.50	1.56	13.25	15.75	# 20	3.00	1.00	2 1/2-12
10	5	6	7	—	12.63	7.00	1.63	13.00	6.50	3.50	1.81	17.00	20.00	# 20	3.50	1.25	3 1/4-12

Temposonic housing

Temposonic probe housing

This is a complete Temposonic measuring device. It can be mounted to any type of machinery where one would want to measure the movement. With this arrangement, the moving piece of machinery would pull the rod out, while the barrel is stationary. The Temposonic feedback device will then send out a signal which can be translated into the machine position.



Materials:

- Barrel is CDSM or 304 stainless steel
- Rod is C1045 or 304 stainless steel
- Magnet carrier is brass
- Wear bands are reinforced nylon

Model number:

Our Model number is C1392-*stroke*



Series EX Hydraulic Cylinder EXtra heavy duty



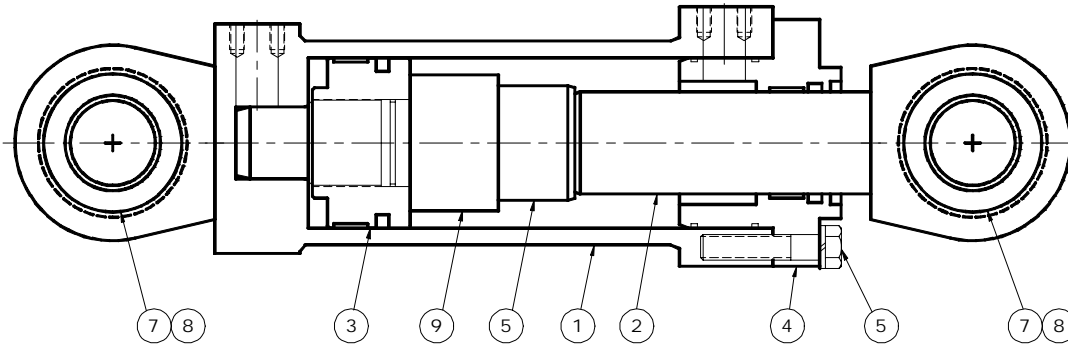
Pressure: 5,000 psi Working
Bore Sizes: 2.50" to 8.00"
Rod Sizes: 1.75" to 5.50"
Ports: ORB, Code #61, Code #62
Attachments: Spherical Bearings

Series EX Cylinder

Our Series EX are high strength cylinders designed for high pressures, high flows and rugged environments. They are particularly suited to demanding industrial and mobile equipment applications.

FEATURES:

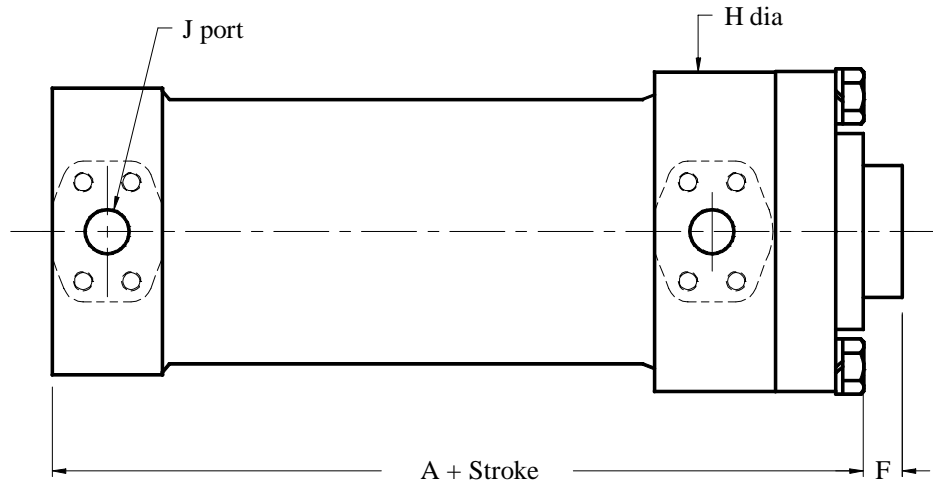
- Induction Hardened Chrome Plated Rod is standard.
- Heavy-duty piston is threaded and adhesive bonded to the rod.
- Large fixed cushions both ends are standard.
- Spherical bearings both ends are standard. For other mountings see accessories section.
- Ports are available in Code 61 4-Bolt Flange, Code 62 4-Bolt Flange and ORB.
- Stop tubes (when required) help to withstand rod bending forces.
- Rated working pressure is 5000 psi.
- When retracting the rod end is the stop, not the piston, thereby reducing stress on the piston.
- Rugged construction with oversize pins, head bolts and thick wall barrels.



PART NUMBERS		ITEM 1	ITEM 2	ITEM 3	ITEM 4	ITEM 5	ITEM 6	ITEM 7	ITEM 8	ITEM 9	SHIPPING WEIGHTS (Approximate)		
Bore	Rod	Barrel	Rod	Piston	Head	Cushion	Bolt Kit	Spherical Bearing	Snap Ring	Stop Tube	Seal Kit	Base Weight	lb/inch stroke
2 1/2	1 3/4	Part Number is model number and stroke followed by: B for barrel R for rod		B3869	B1680	B3203-28	12207	11687	10792	B3480-28	12083	30	1.29
3	1 3/4			B2098	B2774	B3203-28	12208	11581	11582	B3480-28	12337	40	1.43
3 1/4	2			B3000	B3387	B3203-32	12643	10803	10826	B3480-32	12126	55	1.88
3 1/2	2			B2988	B3150	B3203-32	12209	10204	10203	B3480-32	12338	65	2.18
4	2 1/2			B1802	B2149	B3203-40	12210	10804	11584	B3480-40	12223	90	3.39
4 1/2	2 1/2			B3189	B3191	B3203-40	12211	10806	10327	B3480-40	12224	120	3.62
5	3			B3165	B3151	B3203-48	12212	10806	10327	B3480-48	11809	140	4.48
5 1/2	3 1/2			B3186	B3232	B3203-56	12213	10228	11732	B3480-56	12335	195	6.14
6	3 1/2			B2095	B3166	B3203-56	12214	10228	11732	B3480-56	12336	230	6.41
6 1/2	4			B3260	B3345	B3203-64	12215	11551	12082	B3480-64	12392	310	7.53
7	5			B1762	B1763	B3203-80	12216	11551	12082	B3480-80	11778	365	9.68
7 1/2	5			B3327	B3326	B3203-80	12750	12218	12219	B3480-80	12751	415	10.58
8	5 1/2			B2128	B3882	B3203-80	12217	12218	12219	B3480-80	12752	490	11.41

Series EX Cylinder

Basic Cylinder



Bore	Rod std	Rod option	A	F	H	J Port
2 1/2	1 3/4	-	5.75	0.75	4.00	#12 ORB
3	1 3/4	2	6.75	0.75	4.50	#12 ORB
3 1/4	2	2 1/4	7.06	0.75	5.13	#12 ORB
3 1/2	2	2 1/2	7.31	0.75	5.50	3/4" Code 61
4	2 1/2	3	8.50	1.00	6.00	3/4" Code 61
4 1/2	2 1/2	3	8.50	1.00	6.63	1" Code 61
5	3	3 1/2	9.19	1.13	7.25	1" Code 61
5 1/2	3 1/2	-	9.56	1.13	8.00	1 1/4" Code 62
6	3 1/2	4	11.06	1.13	8.50	1 1/4" Code 62
6 1/2	4	4 1/2	13.13	1.13	9.50	1 1/4" Code 62
7	5	5 1/2	14.13	1.13	10.25	1 1/4" Code 62
7 1/2	5	5 1/2	14.50	1.13	10.63	1 1/2" Code 62
8	5 1/2	6	15.25	1.13	11.25	1 1/2" Code 62

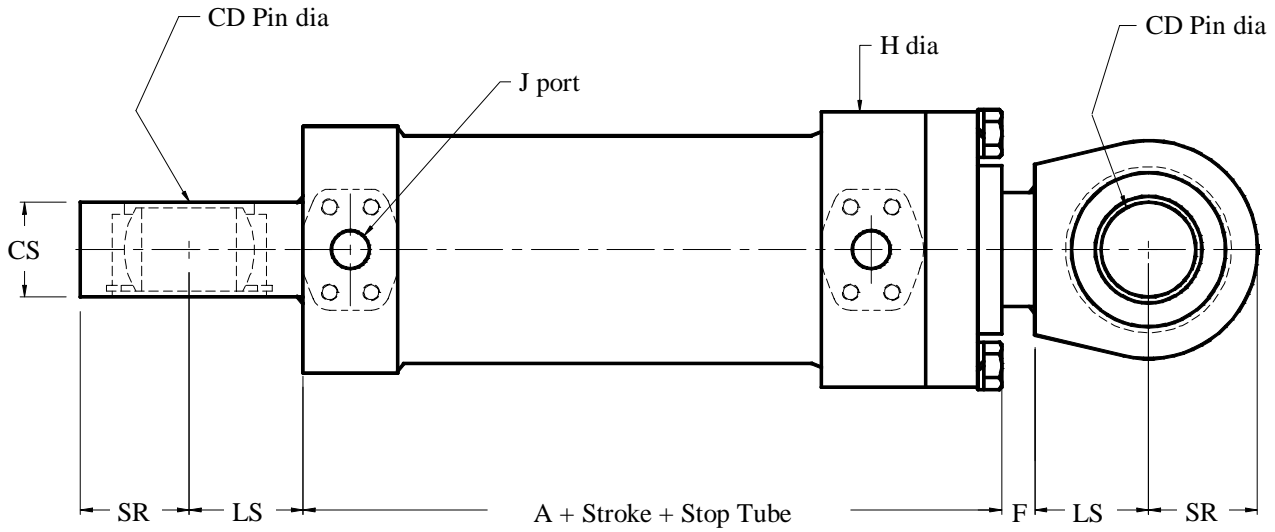
MATERIAL SPECIFICATIONS

<i>Barrel:</i> DOM Tubing ASTM 513/519 Gr. 1020/1026	<i>Piston Seal:</i> Filled Teflon with Nitrile Loader
<i>Head:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Rod seal:</i> Polyurethane
<i>Piston:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Wear Ring:</i> Reinforced Nylon
<i>Rod:</i> C1045 Induction Hardened Chrome Plated	<i>Wiper:</i> Polyurethane on Phosphated Steel
<i>Accessories:</i> Steel CSA G40-21 Gr. 44W	<i>O-Ring:</i> Nitrile
<i>Bolts:</i> SAE Grade 8	<i>Back-Up:</i> Nitrile

Seal Temperature Range: -65F to +225F (-54C to +107C)

Series EX Cylinder

Spherical bearings



Bore	Rod std	Rod option	A	F	H	J Port	CD pin dia	LS	CS	SR
2 1/2	1 3/4	-	5.75	0.75	4.00	#12 ORB	1.25	1.88	1.25	1.63
3	1 3/4	2	6.75	0.75	4.50	#12 ORB	1.38	2.13	1.50	1.88
3 1/4	2	2 1/4	7.06	0.75	5.13	#12 ORB	1.50	2.25	1.75	2.00
3 1/2	2	2 1/2	7.31	0.75	5.50	3/4" Code 61	1.75	2.38	2.00	2.13
4	2 1/2	3	8.50	1.00	6.00	3/4" Code 61	2.00	2.63	2.25	2.43
4 1/2	2 1/2	3	8.50	1.00	6.63	1" Code 61	2.50	3.00	2.50	2.88
5	3	3 1/2	9.19	1.13	7.25	1" Code 61	2.50	3.00	2.50	2.88
5 1/2	3 1/2	-	9.56	1.13	8.00	1 1/4" Code 62	3.00	3.75	2.75	3.63
6	3 1/2	4	11.06	1.13	8.50	1 1/4" Code 62	3.00	3.75	2.75	3.63
6 1/2	4	4 1/2	13.13	1.13	9.50	1 1/4" Code 62	3.50	4.50	3.50	4.18
7	5	5 1/2	14.13	1.13	10.25	1 1/4" Code 62	3.50	4.50	3.50	4.18
7 1/2	5	5 1/2	14.50	1.13	10.63	1 1/2" Code 62	4.00	5.25	4.00	4.50
8	5 1/2	6	15.25	1.13	11.25	1 1/2" Code 62	4.00	5.25	4.00	4.50



Series TH Hydraulic Cylinder hydraulic THumb



Pressure: 5,000 psi Working
Bore Sizes: 2.00" to 6.00"
Rod Sizes: 1.38" to 3.50"
Ports: ORB (3.50" bore and smaller)
Code #61 (4.00" bore and larger)
Attachments: Spherical Bearings

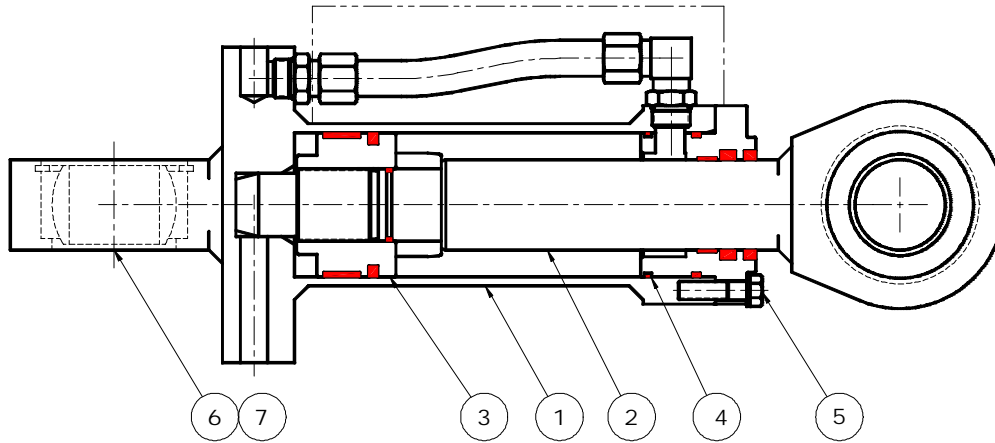
Guarded transfer hose
3.00" bore and larger

Series TH Cylinder

Our Series TH is designed specifically for hydraulic thumb applications on track mounted and wheeled excavators. Heavy duty construction, a guarded transfer hose and oversize spherical bearing mounts at both ends all contribute to long life and trouble free service in this rugged working environment.

FEATURES:

- Induction Hardened Chrome Plated Rod is standard.
- Heavy-duty piston is threaded and adhesive bonded to the rod.
- Large fixed cushions both ends are standard.
- Spherical bearings both ends are standard.
- Ports are Code 61 4-bolt flange on 4" bore and larger.
- Ports are ORB on 3 1/2" bore and smaller.
- Rated working pressure is 5000 psi.
- When retracting the rod end is the stop, not the piston, thereby reducing stress on the piston.
- Rugged construction with oversize pins, head bolts and thick wall barrels.
- The transfer hose is protected by a thick steel guard.



NOTE: picture shows the 4.00" bore and larger style of construc-

PART NUMBERS			Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7
Bore	Model Number	*Seal Kit	Barrel	Rod	Piston	Head	Bolt Kit	Spherical Bearing	Snap Ring
2	TH20-(stroke)-14-H1281	11895	Part Number is model number and stroke followed by: B for barrel R for rod		B1655	B1678	11979	10334	12052
2 1/2	TH25-(stroke)-18-H1282	12083		B3869	B1680	11980	10334	12052	
3	TH30-(stroke)-18-C1486	12337		B2098	B2774	12385	10803	10826	
3 1/2	TH35-(stroke)-20-C1461	12338		B2988	B3150	12386	10804	11584	
4	TH40-(stroke)-25-C1482	12223		B1802	B2149	12387	10806	10327	
5	TH50-(stroke)-30-C1462	11809		B3165	B3151	12388	10806	10327	
5 1/2	TH55-(stroke)-35-C1487	12335		B3186	B3167	12388	10228	11732	
6	TH60-(stroke)-35-C1551	12336		B2095	B3224	12389	10228	11732	

Series TH Cylinder

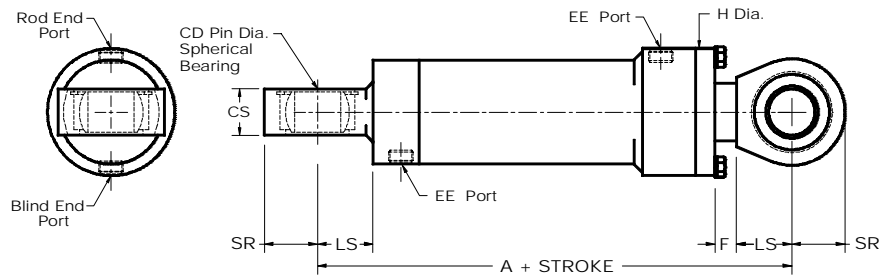


Figure 1. 2.00" and 2.50" bore cylinders

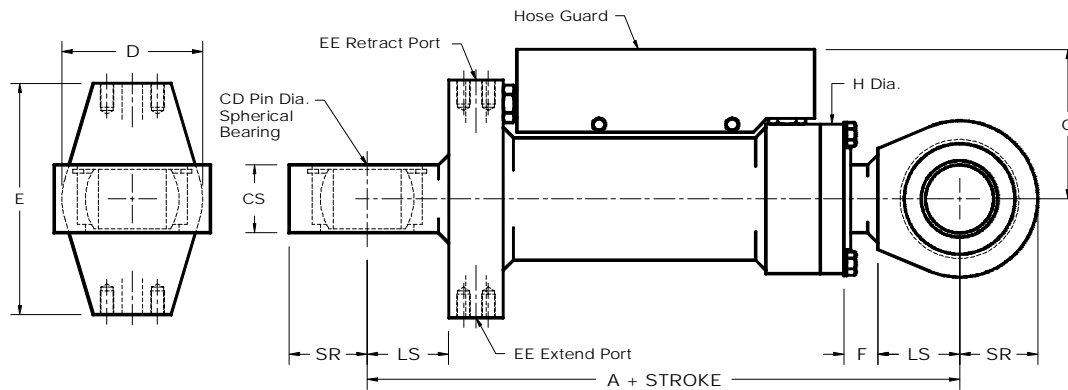


Figure 2. 3.00" bore and larger cylinders

Bore	Rod	A	D	E	EE	F	G	H	CD	LS	CS	SR
2	1 3/8	9.00	-	-	#8 ORB	0.50	-	3.25	1.00	1.50	1.25	1.31
2 1/2	1 3/4	9.50	-	-	#8 ORB	0.75	-	3.75	1.00	1.50	1.25	1.31
3	1 3/4	11.50	4.13	7.00	#8 ORB	0.75	4.75	4.50	1.50	2.25	1.75	2.00
3 1/2	2	13.00	4.88	8.00	#12 ORB	0.75	5.13	5.50	2.00	2.63	2.25	2.50
4	2 1/2	15.00	5.50	8.75	3/4" Code 61	1.63	5.38	6.00	2.50	3.00	2.50	2.88
5	3	15.25	6.50	10.25	3/4" Code 61	1.56	6.00	7.25	2.50	3.00	2.50	2.88
5 1/2	3 1/2	16.50	7.00	10.75	1" Code 61	0.69	6.25	8.00	3.00	3.75	2.75	3.63
6	3 1/2	17.25	7.50	11.25	1" Code 61	0.56	6.88	8.50	3.00	3.75	2.75	3.63

MATERIAL SPECIFICATIONS

<i>Barrel:</i> DOM Tubing ASTM 513/519 Gr. 1020/1026	<i>Piston Seal:</i> Filled Teflon with Nitrile Loader
<i>Head:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Rod seal:</i> Polyurethane
<i>Piston:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Wear Ring:</i> Reinforced Nylon
<i>Rod:</i> C1045 Induction Hardened Chrome Plated	<i>Wiper:</i> Polyurethane on Phosphated Steel
<i>Accessories:</i> Steel CSA G40-21 Gr. 44W	<i>O-Ring:</i> Nitrile
<i>Bolts:</i> SAE Grade 8	<i>Back-Up:</i> Nitrile

Seal Temperature Range: -65° F to 225° F (-54° C to 107° C)

Series TH Cylinder

Upgrades

We have recently upgraded our thumb cylinder design. They are now rated for a 5,000 PSI working pressure (7500 psi non-shock) to accommodate the higher pressures used on modern mobile equipment. The old and new cylinders are interchangeable with each other, as they have the same mounting dimensions and porting. The new cylinders have thicker walls, larger bolts on the head gland and longer cushions. Parts will still be available for the older style cylinders.

New Style	Old Style	Bore	Rod	Pin / Pin Retracted	Spherical Bearing	Notes
TH20-(stroke)-14-H1281	H166	2	1 3/8	9.00 + Stroke	1.00	No transfer tube or guard
TH25-(stroke)-18-H1282	H350	2 1/2	1 3/4	9.50 + Stroke	1.00	No transfer tube or guard
TH30-(stroke)-18-C1486	C1238	3	1 3/4	11.50 + Stroke	1.50	
TH30-(stroke)-18-C1463	C1415	3	1 3/4	13.00 + Stroke	2.00	3.50" cyl. mounting dimensions.
TH35-(stroke)-20-C1461	C1215	3 1/2	2	13.00 + Stroke	2.00	
TH35-(stroke)-20-C1481	C1403	3 1/2	2	15.00 + Stroke	2.50	4.00" cyl. mounting dimensions.
TH40-(stroke)-25-C1482	C1216	4	2 1/2	15.00 + Stroke	2.50	
TH40-(stroke)-25-C1460	C1447	4	2 1/2	15.25 + Stroke	2.50	5.00" cyl. mounting dimensions.
TH50-(stroke)-30-C1462	C1217	5	3	15.25 + Stroke	2.50	
TH50-(stroke)-30-C1483	C1258	5	3	16.50 + Stroke	3.00	5.50" cyl. mounting dimensions.
TH55-(stroke)-35-C1487	C1218	5 1/2	3 1/2	16.50 + Stroke	3.00	
TH60-(stroke)-35-C1551	C1235	6	3 1/2	17.25 + Stroke	3.00	

Commonly Stocked Thumb Cylinders

Model Number	Bore	Stroke	Rod	Weight
TH35-36-20-C1461	3 1/2	36	2	160 lbs
TH40-40-25-C1482	4	40	2 1/2	215 lbs
TH40-45-25-C1482	4	45	2 1/2	225 lbs
TH50-40-30-C1462	5	40	3	305 lbs
TH50-45-30-C1462	5	45	3	320 lbs
TH55-44-35-C1487	5 1/2	44	3 1/2	450 lbs



Series IT Hydraulic Cylinders Internal Thread



Pressure: 2,500 psi Working
3,500 psi Non-Shock

Bore Sizes: 2.00" to 6.00"

Rod Sizes: 1.00" to 2.50"

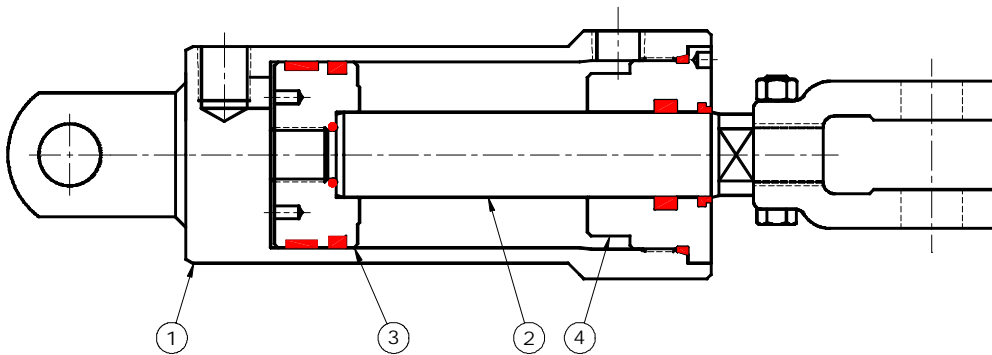
Ports: 3/8" to 1/2" NPT

Attachments: Spherical Bearings
Clevis
Tube Eye

Series IT Cylinder

Our Series **IT** hydraulic cylinder is designed for simplicity and economy. With a 2,500 psi working pressure and a 3,500 psi non-shock load pressure we have not compromised on the quality, yet have made it an affordable and reliable alternative as opposed to using our more rugged bolted on head gland construction style of hydraulic cylinder.

To strengthen the open end of the cylinder, a thick ring is welded to the barrel to carry the internal thread and port. Both ports are machined into the cylinder barrel end and ring, which means localized weld distortion and the stress concentrations that arise from welding half couplings for ports are eliminated. The internal threads that hold the head gland will not corrode since they are constantly submersed in oil. The piston is securely threaded and adhesive bonded to the rod. To accommodate our customers wide range of needs, we manufacture the barrel and cylinder rod to order on every hydraulic cylinder order to provide the exact strokes and pin to pin dimensions that are required. A variety of mounting accessories can be installed onto the cylinder to suit virtually any application. Other rod materials and mounting styles, such as trunnion and flange mounts, are available on request.

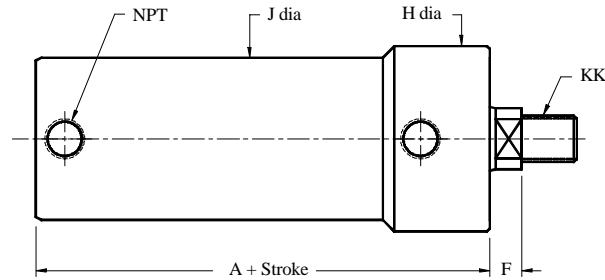


PART NUMBERS		ITEM 1	ITEM 2	ITEM 3	ITEM 4	
BORE	ROD	Barrel	Rod	Piston	Head	Seal Kit
2	1	Part Number is model number and stroke followed by: B for barrel R for rod		B3354-32	B3368-16	12413
	1 1/4			B3354-32	B3368-20	12414
2 1/4	1			B3354-36	B3442-16	12557
	1 1/4			B3354-36	B3442-20	12558
2 1/2	1			B3354-40	B3350-16	12415
	1 1/4			B3354-40	B3350-20	12416
	1 1/2			B3354-40	B3350-24	12417
	2			B3354-40	B3350-32	12418
3	1 1/4			B3354-48	B3352-20	12419
	1 3/8			B3354-48	B3352-22	12556
	1 1/2			B3354-48	B3352-24	12420
	1 3/4			B3354-48	B3352-28	12421
3 1/4	1 1/4			B3354-52	B3446-20	12542
	1 3/8			B3354-52	B3446-22	12543
	1 1/2		B3354-52	B3446-24	12544	
	1 3/4		B3354-52	B3446-28	12545	

PART NUMBERS		ITEM 1	ITEM 2	ITEM 3	ITEM 4	
BORE	ROD	Barrel	Rod	Piston	Head	Seal Kit
3 1/2	1 1/4	Part Number is model number and stroke followed by: B for barrel R for rod		B3354-56	B3358-20	12422
	1 3/8			B3354-56	B3358-22	12555
	1 1/2			B3354-56	B3358-24	12423
	1 3/4			B3354-56	B3358-28	12424
4	1 1/2			B3354-64	B3355-24	12425
	1 3/4			B3354-64	B3355-28	12426
	2			B3354-64	B3355-32	12427
	2 1/2			B3354-64	B3355-40	12428
4 1/2	1 3/4			B3354-72	B3360-28	12429
	2			B3354-72	B3360-32	12430
	2 1/2			B3354-72	B3360-40	12431
5	1 3/4			B3354-80	B3426-28	12546
	2			B3354-80	B3426-32	12547
	2 1/2			B3354-80	B3426-40	12548
	3			B3354-80	B3426-48	12549
6	2 1/2			B3354-96	B3452-40	12553
	3			B3354-96	B3452-48	12554

Series IT Cylinder – Basic

See the Accessories section of the catalogue for rod end & blind end options. The 'CD' (Pin Dia), the 'F' (Rod Extension) and 'KK' (Thread) dimensions given are standard but they can be changed to suit any special requirements. Threaded and welded ends are both available.



Bores	Available rod sizes				A	J	H	NPT	F	KK	CD Pin Ø
2	1	1 1/4	—	—	4.44	2.38	3.00	3/8	0.69	1"-14	0.75
2 1/4	1	1 1/4	—	—	4.44	2.63	3.25	3/8	0.69	1"-14	1.00
2 1/2	1	1 1/4	1 1/2	2	4.44	2.88	3.50	3/8	0.69	1"-14	1.00
3	1 1/4	1 3/8	1 1/2	1 3/4	4.81	3.50	4.00	1/2	0.69	1"-14	1.00
3 1/4	1 1/4	1 3/8	1 1/2	1 3/4	4.81	3.75	4.25	1/2	0.69	1"-14	1.00
3 1/2	1 1/4	1 3/8	1 1/2	1.75	4.81	4.00	4.50	1/2	0.69	1"-14	1.00
4	1 1/2	1.75	2	2 1/2	4.88	4.50	5.00	1/2	0.69	1"-14	1.00
4 1/2	1 3/4	2	2 1/2	—	5.44	5.00	5.50	1/2	0.81	1-1/4"-12	1.25
5	1 3/4	2	2 1/2	3	5.69	5.75	6.00	1/2	0.81	1-1/4"-12	1.25
6	2 1/2	3	—	—	6.13	6.75	7.25	3/4	0.88	1-1/4"-12	1.50

Shipping weights (approximate) Base Weight includes two clevises.

BORE	BASE WGT	POUNDS PER INCH OF STROKE BY ROD SIZE							
		1	1 1/4	1 3/8	1 1/2	1 3/4	2	2 1/2	3
2	10.63	0.59	0.72						
2 1/4	13.92	0.63	0.76						
2 1/2	15.52	0.67	0.80		0.95		1.34		
3	20.44		1.07	1.14	1.22	1.40			
3 1/4	22.17		1.13	1.20	1.28	1.46			
3 1/2	24.87		1.18	1.25	1.33	1.51			
4	29.85				1.45	1.63	1.84	2.34	
4 1/2	43.17					1.74	1.95	2.45	
5	53.35					2.47	2.68	3.18	3.79
6	84.10							3.52	4.13

MATERIAL SPECIFICATIONS

Barrel: DOM Tubing ASTM 513/519 Gr. 1020/1026

Head: Ductile Iron ASTM A536 (65-45-12)

Piston: Ductile Iron ASTM A536 (65-45-12)

Rod: C1045 Chrome Plated

Accessories: Steel CSA G40-21 Gr. 44W

Piston Seal: Polyurethane with Nitrile Loader

Rod seal: Polyurethane

Wear Ring: Reinforced Nylon

Wiper: Polyurethane

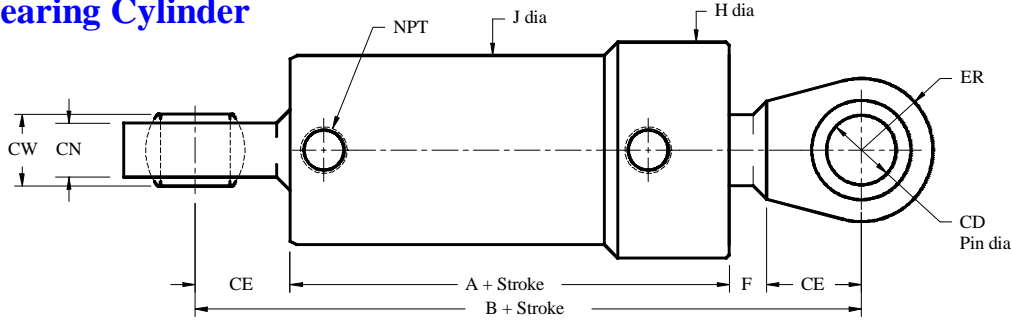
O-Ring: Nitrile

Back-Up: Nitrile

Seal Temperature Range: -65° F to 225° F (-54° C to 107° C)

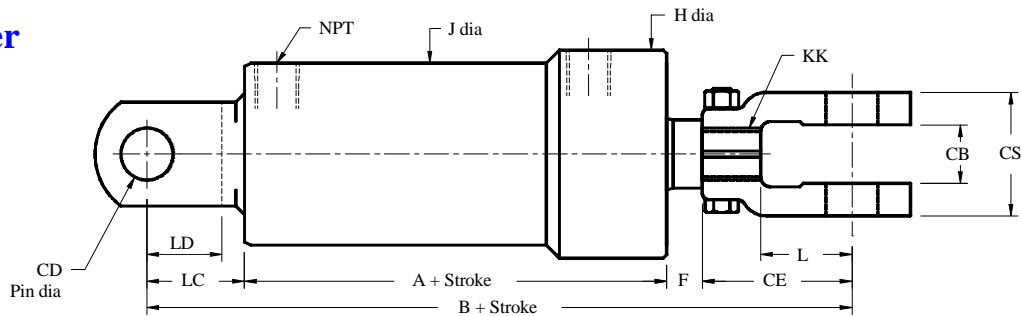
Series IT Cylinder

Spherical Bearing Cylinder



Bore	Available rod sizes				A	B	J	H	NPT	F	CD	ER	CE	CW	CN
2	1	1 1/4	—	—	4.44	7.63	2.38	3.00	3/8	0.69	0.75	1.13	1.25	0.66	0.56
2 1/4	1	1 1/4	—	—	4.44	8.00	2.63	3.25	3/8	0.69	1.00	1.44	1.50	0.88	0.75
2 1/2	1	1 1/4	1 1/2	2	4.44	8.50	2.88	3.50	3/8	0.69	1.00	1.44	1.50	0.88	0.75
3	1 1/4	1 3/8	1 1/2	1 3/4	4.81	8.50	3.50	4.00	1/2	0.69	1.00	1.44	1.50	0.88	0.75
3 1/4	1 1/4	1 3/8	1 1/2	1 3/4	4.81	8.50	3.75	4.25	1/2	0.69	1.00	1.44	1.50	0.88	0.75
3 1/2	1 1/4	1 3/8	1 1/2	1.75	4.81	9.25	4.00	4.50	1/2	0.69	1.25	1.75	1.88	1.09	0.96
4	1 1/2	1.75	2	2 1/2	4.88	9.25	4.50	5.00	1/2	0.69	1.25	1.75	1.88	1.09	0.96
4 1/2	1 3/4	2	2 1/2	—	5.44	10.75	5.00	5.50	1/2	0.81	1.50	2.19	2.25	1.31	1.13
5	1 3/4	2	2 1/2	3	5.69	11.00	5.50	6.00	1/2	0.81	1.50	2.19	2.25	1.31	1.13
6	2 1/2	3	—	—	6.13	12.25	6.75	7.25	3/4	0.88	1.75	2.50	2.63	1.53	1.31

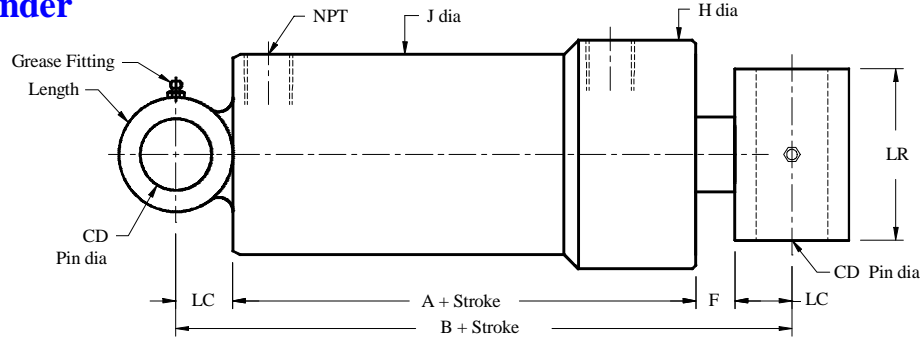
Clevis Cylinder



Bore	Available rod sizes				A	B	J	H	NPT	F	CD	CB	CS	CE	LD	LC	L	KK
2	1	1 1/4	—	—	4.44	9.25	2.38	3.00	3/8	0.69	0.75	0.88	1.88	2.50	1.31	1.63	1.50	3/4"-16
2 1/4	1	1 1/4	—	—	4.44	9.88	2.63	3.25	3/8	0.69	1.00	1.13	2.38	2.88	1.44	1.88	1.75	1"-14
2 1/2	1	1 1/4	1 1/2	2	4.44	10.25	2.88	3.50	3/8	0.69	1.00	1.13	2.38	2.88	1.44	1.88	1.75	1"-14
3	1 1/4	1 3/8	1 1/2	1 3/4	4.81	10.25	3.50	4.00	1/2	0.69	1.00	1.13	2.38	2.88	1.44	1.88	1.75	1"-14
3 1/4	1 1/4	1 3/8	1 1/2	1 3/4	4.81	10.25	3.75	4.25	1/2	0.69	1.00	1.13	2.38	2.88	1.44	1.88	1.75	1"-14
3 1/2	1 1/4	1 3/8	1 1/2	1.75	4.81	10.25	4.00	4.50	1/2	0.69	1.00	1.13	2.38	2.88	1.44	1.88	1.75	1"-14
4	1 1/2	1.75	2	2 1/2	4.88	10.25	4.50	5.00	1/2	0.69	1.00	1.13	2.38	2.88	1.44	1.88	1.75	1-1/4"-12
4 1/2	1 3/4	2	2 1/2	—	5.44	11.88	5.00	5.50	1/2	0.81	1.25	1.38	2.88	3.13	2.00	2.50	1.88	1-1/4"-12
5	1 3/4	2	2 1/2	3	5.69	12.13	5.50	6.00	1/2	0.81	1.25	1.38	2.88	3.13	2.00	2.50	1.88	1-1/2"-12
6	2 1/2	3	—	—	6.13	13.00	6.75	7.25	3/4	0.88	1.50	1.63	3.63	3.50	2.25	2.63	2.13	1-3/4"-12

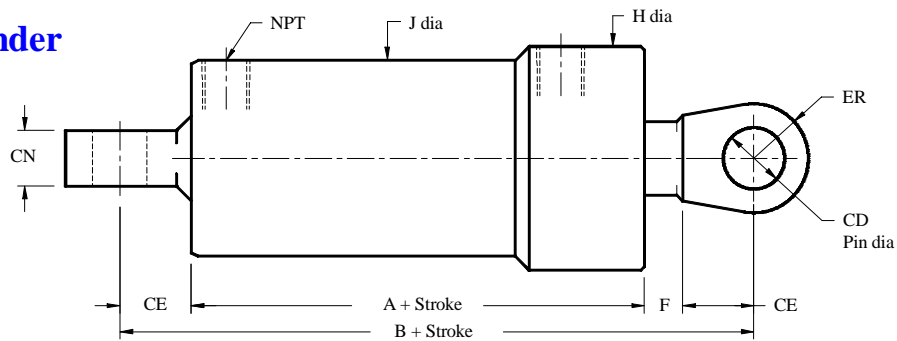
Series IT Cylinder

Tube Eye Cylinder



Bore	Available rod sizes				A	B	J	H	NPT	F	CD	LC	LR	LENGTH
	1	1 1/4	—	—										
2	1	1 1/4	—	—	4.44	6.38	2.38	3.00	3/8	0.69	0.75	0.63	2.00	3.25
2 1/4	1	1 1/4	—	—	4.44	6.81	2.63	3.25	3/8	0.69	1.00	0.88	2.00	3.00
2 1/2	1	1 1/4	1 1/2	2	4.44	7.25	2.88	3.50	3/8	0.69	1.00	0.88	2.00	3.00
3	1 1/4	1 3/8	1 1/2	1 3/4	4.81	7.25	3.50	4.00	1/2	0.69	1.00	0.88	2.00	4.13
3 1/4	1 1/4	1 3/8	1 1/2	1 3/4	4.81	7.25	3.75	4.25	1/2	0.69	1.00	0.88	2.00	4.13
3 1/2	1 1/4	1 3/8	1 1/2	1.75	4.81	7.25	4.00	4.50	1/2	0.69	1.00	0.88	2.00	4.13
4	1 1/2	1.75	2	2 1/2	4.88	7.25	4.50	5.00	1/2	0.69	1.00	0.88	3.00	4.75
4 1/2	1 3/4	2	2 1/2	—	5.44	8.25	5.00	5.50	1/2	0.81	1.25	1.00	6.00	3.25
5	1 3/4	2	2 1/2	3	5.69	8.50	5.50	6.00	1/2	0.81	1.25	1.00	6.00	3.25
6	2 1/2	3	—	—	6.13	9.25	6.75	7.25	3/4	0.88	1.50	1.13	7.00	4.00

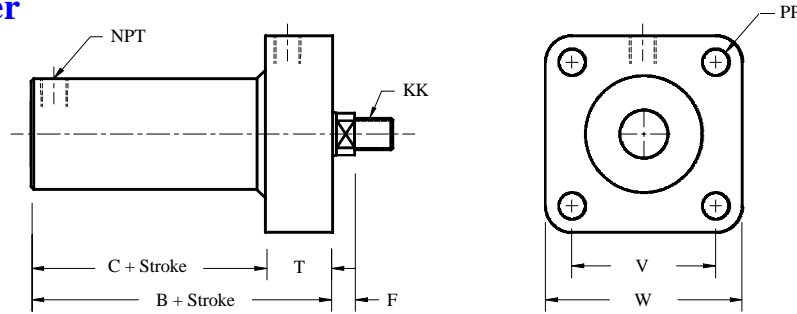
Welded Lug Cylinder



Bore	Available rod sizes				A	B	J	H	NPT	F	CD	ER	CE	CN
	1	1 1/4	—	—										
2	1	1 1/4	—	—	4.44	7.63	2.38	3.00	3/8	0.69	0.75	0.88	1.25	0.75
2 1/4	1	1 1/4	—	—	4.44	8.06	2.63	3.25	3/8	0.69	1.00	1.25	1.63	1.00
2 1/2	1	1 1/4	1 1/2	2	4.44	8.50	2.88	3.50	3/8	0.69	1.00	1.25	1.63	1.00
3	1 1/4	1 3/8	1 1/2	1 3/4	4.81	8.50	3.50	4.00	1/2	0.69	1.00	1.25	1.63	1.00
3 1/4	1 1/4	1 3/8	1 1/2	1 3/4	4.81	8.50	3.75	4.25	1/2	0.69	1.00	1.25	1.63	1.00
3 1/2	1 1/4	1 3/8	1 1/2	1.75	4.81	8.50	4.00	4.50	1/2	0.69	1.00	1.25	1.63	1.00
4	1 1/2	1.75	2	2 1/2	4.88	8.50	4.50	5.00	1/2	0.69	1.00	1.25	1.63	1.00
4 1/2	1 3/4	2	2 1/2	—	5.44	10.00	5.00	5.50	1/2	0.81	1.25	1.50	2.00	1.25
5	1 3/4	2	2 1/2	3	5.69	10.25	5.50	6.00	1/2	0.81	1.25	1.50	2.00	1.25
6	2 1/2	3	—	—	6.13	11.50	6.75	7.25	3/4	0.88	1.50	1.75	2.25	1.50

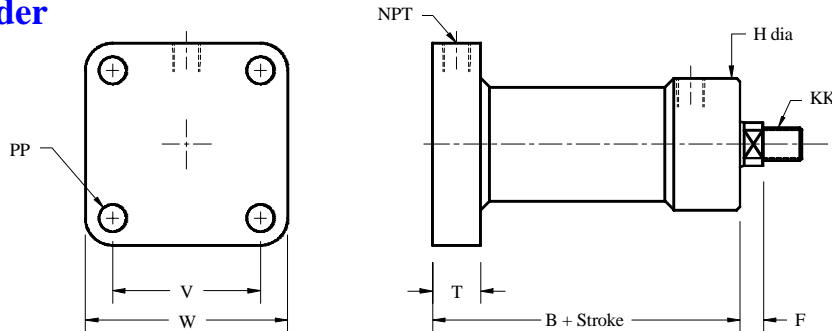
Series IT Cylinder

Front Flange Cylinder



Bore	Available rod sizes				B	C	F	T	V	W	PP	NPT	KK
	1	1 1/4	1 1/2	2									
2	1	1 1/4	—	—	4.44	2.50	0.69	1.94	2.63	3.63	15/32	3/8	3/4"-16
2 1/4	1	1 1/4	—	—	4.44	2.50	0.69	1.94	3.00	4.25	9/16	3/8	1"-14
2 1/2	1	1 1/4	1 1/2	2	4.44	2.50	0.69	1.94	3.25	4.50	9/16	3/8	1"-14
3	1 1/4	1 3/8	1 1/2	1 3/4	4.81	2.69	0.69	2.13	3.75	5.00	9/16	1/2	1"-14
3 1/4	1 1/4	1 3/8	1 1/2	1 3/4	4.81	2.69	0.69	2.13	4.00	5.50	11/16	1/2	1"-14
3 1/2	1 1/4	1 3/8	1 1/2	1.75	4.81	2.69	0.69	2.13	4.25	5.75	11/16	1/2	1"-14
4	1 1/2	1.75	2	2 1/2	4.88	2.75	0.69	2.13	4.50	6.00	11/16	1/2	1-1/4"-12
4 1/2	1 3/4	2	2 1/2	—	5.44	3.31	0.81	2.13	5.00	6.75	13/16	1/2	1-1/4"-12
5	1 3/4	2	2 1/2	3	5.69	3.50	0.81	2.19	5.38	7.13	13/16	1/2	1-1/2"-12
6	2 1/2	3	—	—	6.13	3.50	0.88	2.63	6.13	8.25	15/16	3/4	1-3/4"-12

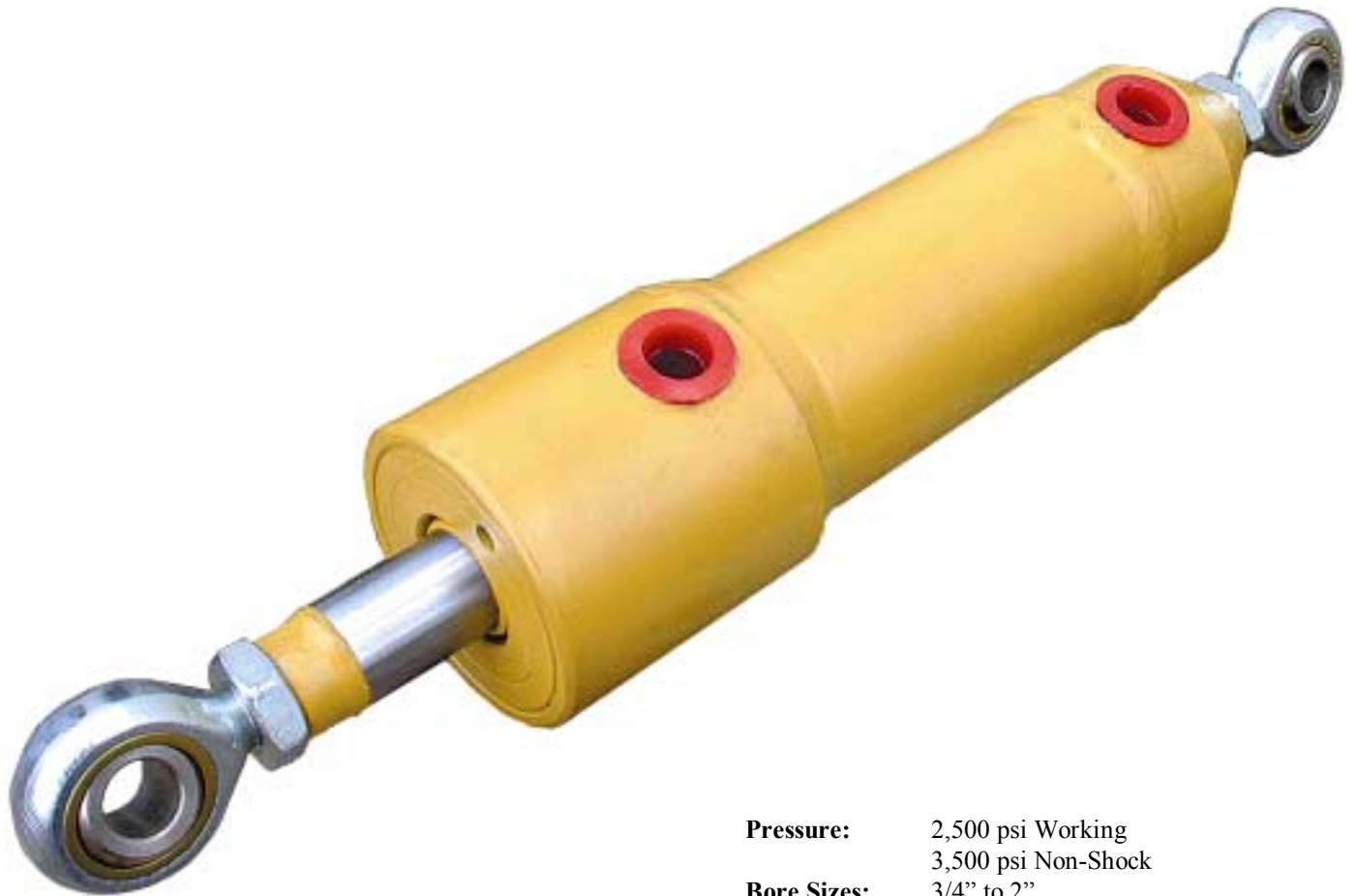
Rear Flange Cylinder



Bore	Available rod sizes				B	F	H	T	V	W	PP	NPT	KK
	1	1 1/4	1 1/2	2									
2	1	1 1/4	—	—	4.13	0.69	3.00	1.00	2.63	3.63	15/32	3/8	3/4"-16
2 1/4	1	1 1/4	—	—	4.13	0.69	3.25	1.00	3.00	4.25	9/16	3/8	1"-14
2 1/2	1	1 1/4	1 1/2	2	4.13	0.69	3.50	1.00	3.25	4.50	9/16	3/8	1"-14
3	1 1/4	1 3/8	1 1/2	1 3/4	4.63	0.69	4.00	1.25	3.75	5.00	9/16	1/2	1"-14
3 1/4	1 1/4	1 3/8	1 1/2	1 3/4	4.63	0.69	4.25	1.25	4.00	5.50	11/16	1/2	1"-14
3 1/2	1 1/4	1 3/8	1 1/2	1.75	4.63	0.69	4.50	1.25	4.25	5.75	11/16	1/2	1"-14
4	1 1/2	1.75	2	2 1/2	4.69	0.69	5.00	1.25	4.50	6.00	11/16	1/2	1-1/4"-12
4 1/2	1 3/4	2	2 1/2	—	5.25	0.81	5.50	1.25	5.00	6.75	13/16	1/2	1-1/4"-12
5	1 3/4	2	2 1/2	3	5.69	0.81	6.00	1.50	5.38	7.13	13/16	1/2	1-1/2"-12
6	2 1/2	3	—	—	6.13	0.88	7.25	1.50	6.13	8.25	15/16	3/4	1-3/4"-12



Series MIT Hydraulic Cylinder Miniature Internal Thread



Pressure: 2,500 psi Working
3,500 psi Non-Shock
Bore Sizes: 3/4" to 2"
Rod Sizes: 3/8" to 1"
Ports: 1/16" to 3/8" NPT
Attachments: Spherical Bearings
Clevis
Cross Hole

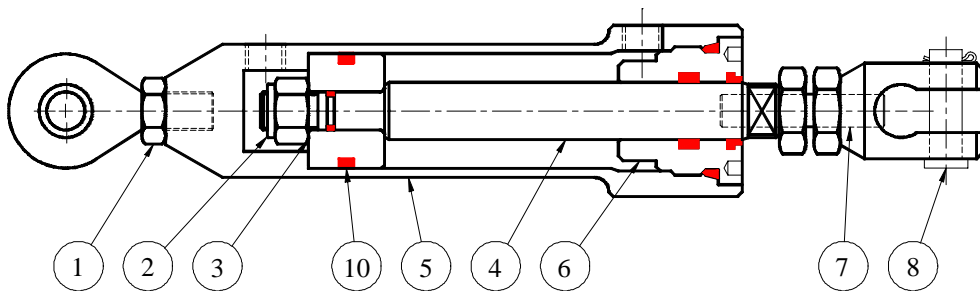
Series MIT Cylinder

Our Series **MIT** is our **Miniature Internal Thread** hydraulic cylinder. It's a welded construction cylinder with an internal threaded gland rated for 3,000 psi working pressure and 4,000 psi non-shock pressure.

To strengthen the open end of the cylinder, a thick ring is welded to the barrel to carry the internal thread and port. Both ports are machined into the cylinder barrel itself, which means localized weld distortion and the stress concentration that arises from welding half couplings for ports are eliminated. The internal threads that hold the gland will not corrode since they are constantly submersed in oil. To accommodate our customers wide range of requirements, we manufacture the barrel and rod to order for every hydraulic cylinder to provide the exact stroke and pin to pin dimensions as required. Various combinations of mounting accessories can also be installed onto the cylinder to suit most applications. Other rod materials and mounting styles as needed, such as trunnion and flange mount, are available on request.

All MIT cylinders have National Pipe Thread (NPT) ports. The blind end port is normally placed at 90° to the center-line of a fixed pin axis, at the 12 o'clock position. The clevis style of blind end always has two ports, one in line with the rear port and one that is at 90° to this port.

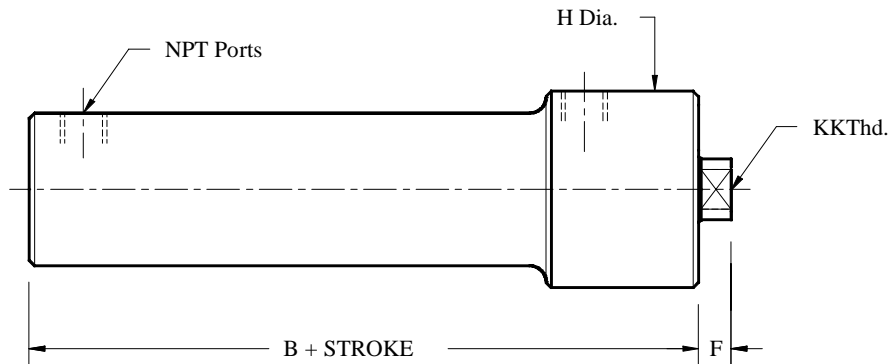
Whenever possible, spherical bearings mounts should be used on both ends of the cylinders. This will reduce any mounting misalignment and side loading that may be introduced into the cylinder. This type of loading should definitely be avoided on cylinders with small diameter rods such as used on this series.



PART NUMBERS		Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Items 10
Bore	Rod	Jam Nut	Lock Nut	Piston	Rod	Barrel	Gland	Stud	Pin	Seal Kit
3/4	3/8	B3022-4	12714	B3405-8	Part Number is Model number and Stroke Followed by: B for barrel R for rod		B3704	B2078-4-4	B3708-4	12696
1	1/2	B3022-5	12715	B3405-10			B3460	B2078-5-5	B3708-5	12697
1 1/4	5/8	B3022-6	12716	B3405-13			B3408	B2078-6-6	B3708-6	12495
1 1/2	3/4	B3022-8	12717	B3405-15			B3456	B2078-8-8	B3708-8	12698
1 3/4	7/8	B3022-10	12718	B3405-18			B3454	B2078-10-10	B3708-10	12713
2	1	B3022-12	12719	B3405-20			B3368	B2078-12-12	B3708-12	12712

Series MIT Cylinder – Basic

See the Accessories section of the catalogue for rod end & blind end options. The 'CD' (Pin Dia), the 'F' (Rod Extension) and 'KK' (Thread) dimensions given are standard but they can be changed to suit any special requirements. Threaded and welded ends are both available.



Bore	Rod	B	F	H	NPT	KK THD	CD
3/4	3/8	2.50	0.25	1.25	1/8	1/4-28	0.25
1	1/2	2.75	0.25	1.50	1/8	5/16-24	0.31
1 1/4	5/8	3.00	0.38	1.88	1/8	3/8-24	0.38
1 1/2	3/4	3.69	0.38	2.25	1/4	1/2-20	0.50
1 3/4	7/8	3.75	0.38	2.50	1/4	5/8-18	0.63
2	1	4.38	0.56	3.00	3/8	3/4-16	0.75

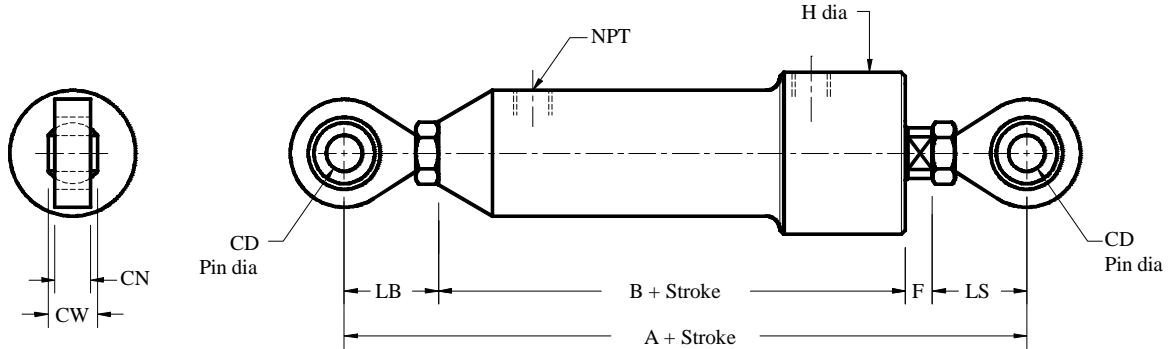
MATERIAL SPECIFICATIONS

<i>Barrel:</i> DOM Tubing ASTM 513/519 Gr. 1020/1026	<i>Piston Seal:</i> Polyurethane with Nitrile Loader
<i>Head:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Rod seal:</i> Polyurethane
<i>Piston:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Wear Ring:</i> Reinforced Nylon
<i>Rod:</i> C1045 Chrome Plated	<i>Wiper:</i> Polyurethane
<i>Accessories:</i> Steel CSA G40-21 Gr. 44W	<i>O-Ring:</i> Nitrile
	<i>Back-Up:</i> Nitrile

Seal Temperature Range: -65° F to 225° F (-54° C to 107° C)

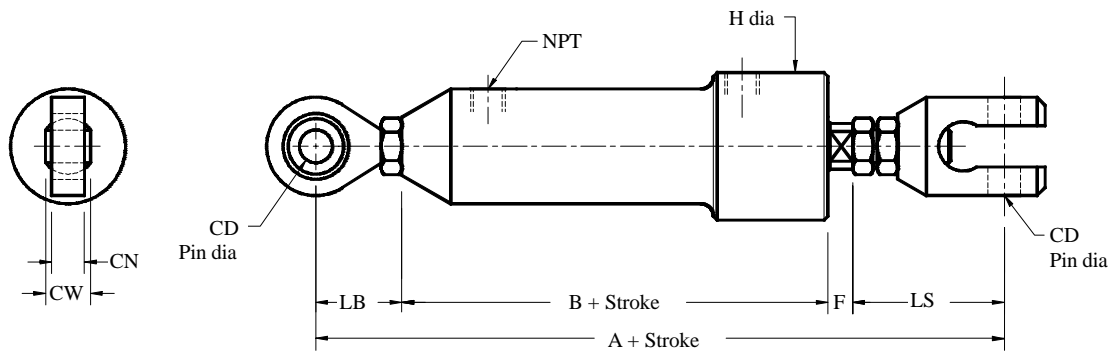
Series MIT Cylinder

Spherical Blind End / Spherical Rod End



Bore	Rod	CD	A	B	F	H	NPT	LB	LS	CN	CW
3/4	3/8	0.25	4.56	2.94	0.25	1.25	1/8	0.69	0.69	0.28	0.38
1	1/2	0.31	5.06	3.31	0.25	1.50	1/8	0.75	0.75	0.34	0.44
1 1/4	5/8	0.38	5.50	3.63	0.38	1.88	1/8	0.75	0.75	0.41	0.50
1 1/2	3/4	0.50	7.25	4.50	0.38	2.25	1/4	1.19	1.19	0.50	0.63
1 3/4	7/8	0.63	7.75	4.75	0.38	2.50	1/4	1.31	1.31	0.56	0.75
2	1	0.75	8.94	5.50	0.56	3.00	3/8	1.44	1.44	0.69	0.88

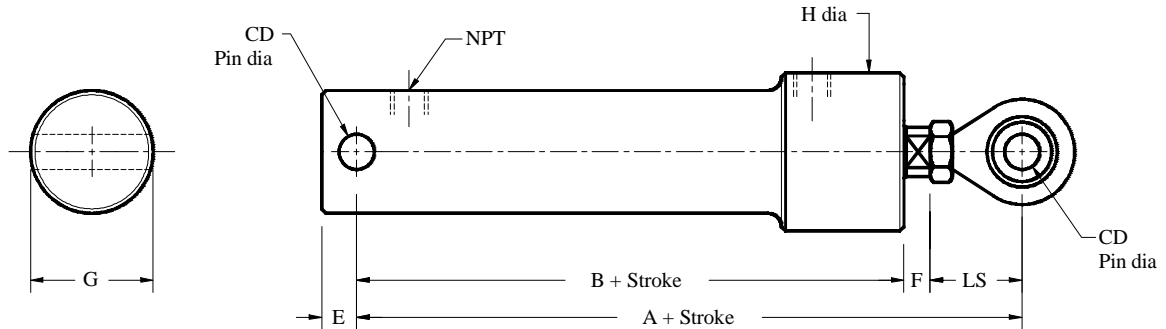
Spherical Bearing Blind End / Clevis Rod End



Bore	Rod	CD	A	B	F	H	NPT	LB	LS	CN	CW
3/4	3/8	0.25	5.25	2.94	0.25	1.25	1/8	0.69	1.38	0.28	0.38
1	1/2	0.31	5.88	3.31	0.25	1.50	1/8	0.75	1.56	0.34	0.44
1 1/4	5/8	0.38	6.50	3.63	0.38	1.88	1/8	0.75	1.75	0.41	0.50
1 1/2	3/4	0.50	8.38	4.50	0.38	2.25	1/4	1.19	2.31	0.50	0.63
1 3/4	7/8	0.63	9.13	4.75	0.38	2.50	1/4	1.31	2.69	0.56	0.75
2	1	0.75	10.50	5.50	0.56	3.00	3/8	1.44	3.00	0.69	0.88

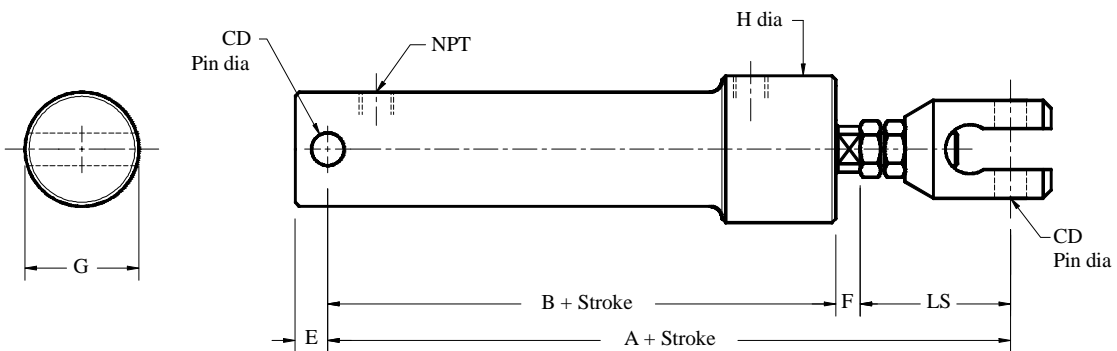
Series MIT Cylinder

Cross Hole Blind End / Spherical Rod End



Bore	Rod	CD	A	B	E	F	G	H	NPT	LS
3/4	3/8	0.25	3.56	2.63	0.25	0.25	1.00	1.25	1/8	0.69
1	1/2	0.31	3.88	2.88	0.31	0.25	1.25	1.50	1/8	0.75
1 1/4	5/8	0.38	4.25	3.13	0.38	0.38	1.50	1.88	1/8	0.75
1 1/2	3/4	0.50	5.50	3.94	0.50	0.38	1.75	2.25	1/4	1.19
1 3/4	7/8	0.63	5.75	4.06	0.63	0.38	2.13	2.50	1/4	1.31
2	1	0.75	6.69	4.69	0.69	0.56	2.38	3.00	3/8	1.44

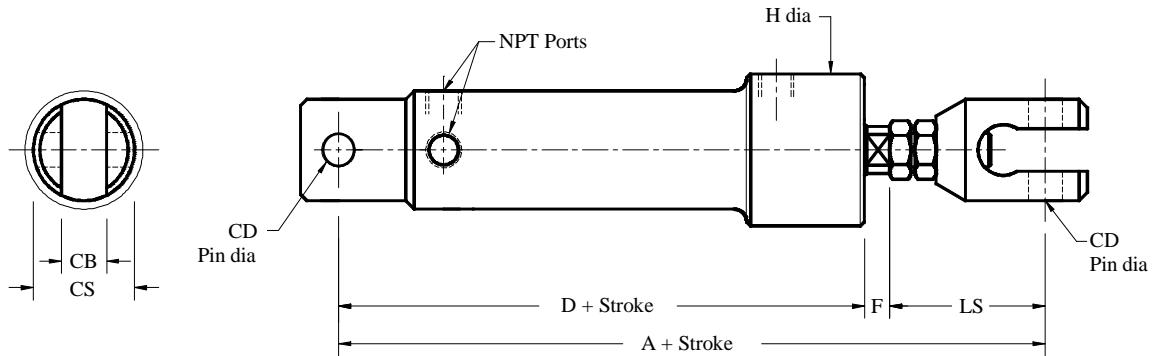
Cross Hole Blind End / Clevis Rod End



Bore	Rod	CD	A	B	E	F	G	H	NPT	LS
3/4	3/8	0.25	4.25	2.63	0.25	0.25	1.00	1.25	1/8	1.38
1	1/2	0.31	4.69	2.88	0.31	0.25	1.25	1.50	1/8	1.56
1 1/4	5/8	0.38	5.25	3.13	0.38	0.38	1.50	1.88	1/8	1.75
1 1/2	3/4	0.50	6.63	3.94	0.50	0.38	1.75	2.25	1/4	2.31
1 3/4	7/8	0.63	7.13	4.06	0.63	0.38	2.13	2.50	1/4	2.69
2	1	0.75	8.25	4.69	0.69	0.56	2.38	3.00	3/8	3.00

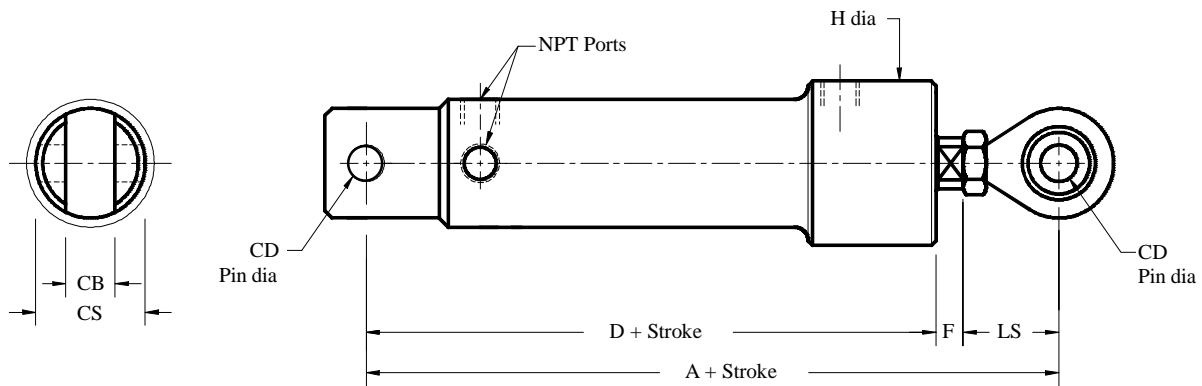
Series MIT Cylinder

Clevis Blind End / Clevis Rod End



Bore	Rod	CD	A	D	F	H	NPT	LS	CB	CS
3/4	3/8	0.25	4.81	3.19	0.25	1.25	1/8	1.38	0.38	0.81
1	1/2	0.31	5.38	3.56	0.25	1.50	1/8	1.56	0.45	0.94
1 1/4	5/8	0.38	6.00	3.88	0.38	1.88	1/8	1.75	0.51	1.19
1 1/2	3/4	0.50	7.50	4.81	0.38	2.25	1/4	2.31	0.66	1.47
1 3/4	7/8	0.63	8.06	5.00	0.38	2.50	1/4	2.69	0.76	1.69
2	1	0.75	9.31	5.75	0.56	3.00	3/8	3.00	0.88	1.97

Clevis Blind End / Spherical Rod End



Bore	Rod	CD	A	D	F	H	NPT	LS	CB	CS
3/4	3/8	0.25	4.13	3.19	0.25	1.25	1/8	0.69	0.38	0.81
1	1/2	0.31	4.56	3.56	0.25	1.50	1/8	0.75	0.45	0.94
1 1/4	5/8	0.38	5.00	3.88	0.38	1.88	1/8	0.75	0.51	1.19
1 1/2	3/4	0.50	6.38	4.81	0.38	2.25	1/4	1.19	0.66	1.47
1 3/4	7/8	0.63	6.69	5.00	0.38	2.50	1/4	1.31	0.76	1.69
2	1	0.75	7.75	5.75	0.56	3.00	3/8	1.44	0.88	1.97



Series SIT Hydraulic Cylinders

Single acting Internal Thread



Pressure: 2,500 psi Working
3,500 psi Non-Shock

Bore Sizes: 1.25" to 3.25"

Rod Sizes: 1.00" to 3.00"

Ports: 1/8" to 1/2" NPT

Attachments: Spherical Bearings
Clevis
Cross Hole
Front Flange Mount
Rear Flange Mount

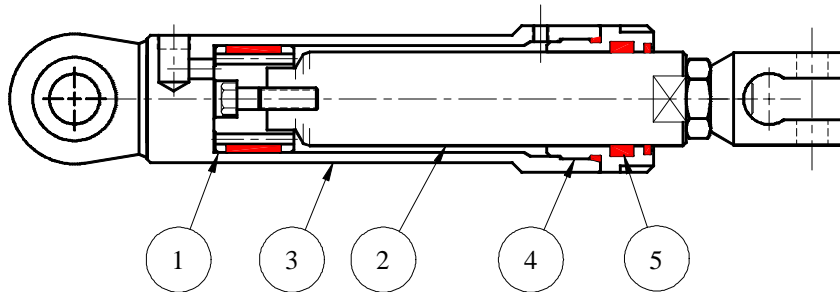
Series SIT Cylinder

Our Series **SIT** is a **Single acting Internal Thread** displacement cylinder. With a pressure rating of 2500 psi working and 3500 psi non-shock, the pressure acts on the rod to create an extend force that is equal to that of the pressure times the rod area. An external force, generally gravity, retracts the rod once the oil is allowed to leave the cylinder. The piston supports and guides the rod.

The cylinder is well sealed at the rod end which will keep the inside of the cylinder barrel from becoming contaminated. The advantage of this design is that the inside of the barrel is not exposed to atmosphere and the rod is always immersed in oil when retracted which will keep the rod from corroding. Also, only one hydraulic pressure line is required in order to operate the cylinder, thus simplifying the hose routing.

Since pressure acts on the area of the rod and not on the piston area, it is necessary to use a larger bore than a non-displacement type of cylinder design to exert the same force.

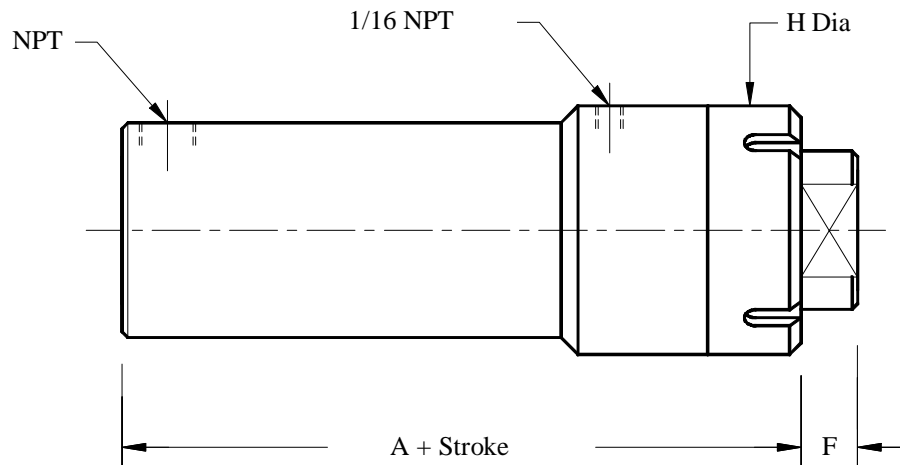
There is a 1/16" NPT plug at the rod end of the cylinder barrel which is provided to bleed air out of the cylinder during installation. This must be done in order to prevent the cylinder from becoming "spongy" due to the compressibility of the air trapped inside the cylinder.



PART NUMBERS		Item 1	Item 2	Item 3	Item 4	Item 5	Shipping weight (lb) (c/w clevis ends)	
Bore	Rod	Piston	Rod	Barrel	Gland	Seal Kit	Base weight	lb/inch Stroke
1 1/4	1	B3365-13	Part Number is Model number and Stroke Followed by: B for barrel R for rod		B3696	12661	4.46	0.46
1 1/2	1 1/4	B3365-15		B3379	12435	5.85	0.63	
1 3/4	1 1/2	B3365-18		B3375	12434	6.94	0.82	
2	1 3/4	B3365-20		B3373	12433	9.16	1.05	
2 1/4	2	B3365-23		B3371	12432	11.63	1.45	
2 3/4	2 1/2	B3365-28		B3363	12412	15.28	2.06	
3 1/4	3	B3365-33		B3477	12539	20.39	2.78	

Series SIT Cylinder

See the Accessories section of the catalogue for rod end & blind end options. The 'CD' (Pin Dia), the 'F' (Rod Extension) and 'KK' (Thread) dimensions given are standard but they can be changed to suit any special requirements. Threaded and welded ends are both available.



Bore	Rod	CD	A	F	H	NPT
1 1/4"	1"	0.38	3.69	0.38	2.00	1/8
1 1/2"	1 1/4"	0.50	4.00	0.50	2.25	1/4
1 3/4"	1 1/2"	0.63	4.00	0.50	2.50	1/4
2"	1 3/4"	0.75	4.75	0.50	2.75	3/8
2 1/4"	2"	1.00	4.75	0.50	3.00	3/8
2 3/4"	2 1/2"	1.00	4.88	0.50	3.50	1/2
3 1/4"	3"	1.25	5.00	0.50	4.00	1/2

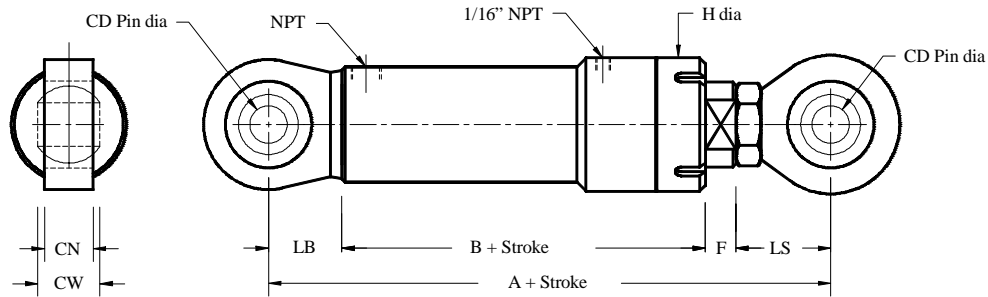
MATERIAL SPECIFICATIONS

<i>Barrel:</i> DOM Tubing ASTM 513/519 Gr. 1020/1026	<i>Rod seal:</i> Polyurethane
<i>Head:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Wear Ring:</i> Reinforced Nylon
<i>Piston:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Wiper:</i> Polyurethane
<i>Rod:</i> C1045 Chrome Plated	<i>O-Ring:</i> Nitrile
<i>Accessories:</i> Steel CSA G40-21 Gr. 44W	<i>Back-Up:</i> Nitrile
<i>Bolts:</i> SAE Grade 8	

Seal Temperature Range: -65° F to 225° F (-54° C to 107° C)

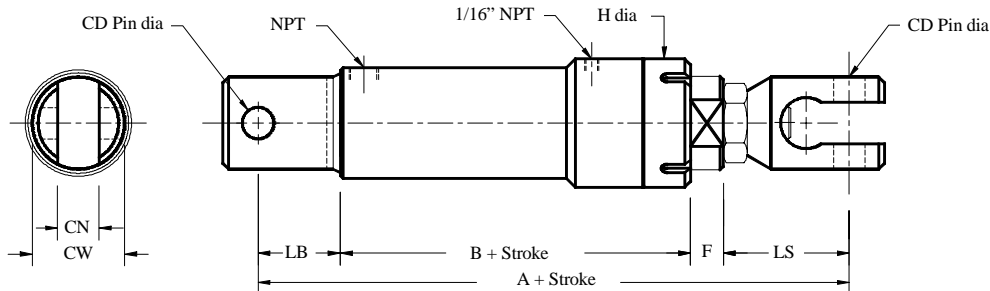
Series SIT Cylinder

Spherical Blind End / Spherical Rod End



Bore	Rod	CD	A	B	F	H	NPT	LB	LS	CN	CW
1 1/4	1	0.38	7.01	3.69	0.38	2.00	1/8	0.88	0.75	0.41	0.50
1 1/2	1 1/4	0.50	7.38	4.00	0.50	2.25	1/4	1.00	1.19	0.50	0.63
1 3/4	1 1/2	0.63	7.38	4.00	0.50	2.50	1/4	1.13	1.31	0.56	0.75
2	1 3/4	0.75	8.13	4.75	0.50	2.75	3/8	1.25	1.44	0.69	0.88
2 1/4	2	1.00	9.05	4.75	0.50	3.00	3/8	1.50	2.30	0.75	0.88
2 3/4	2 1/2	1.00	9.18	4.88	0.50	3.50	1/2	1.50	2.30	0.75	0.88
3 1/4	3	1.25	9.30	5.00	0.50	4.00	1/2	1.88	3.10	0.94	1.09

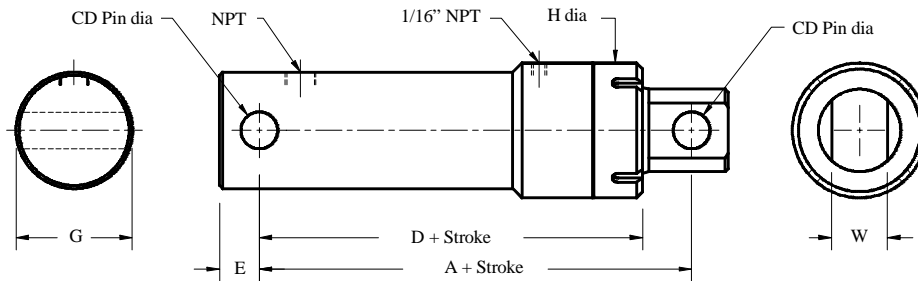
Clevis Blind End / Clevis Rod End



Bore	Rod	CD	A	B	F	H	NPT	LB	LS	CB	CS
1 1/4	1	0.38	6.60	3.69	0.38	2.00	1/8	1.00	1.47	0.51	1.19
1 1/2	1 1/4	0.50	7.75	4.00	0.50	2.25	1/4	1.31	1.94	0.66	1.47
1 3/4	1 1/2	0.63	8.26	4.00	0.50	2.50	1/4	1.50	2.26	0.76	1.69
2	1 3/4	0.75	9.48	4.75	0.50	2.75	3/8	1.69	2.55	0.88	1.97
2 1/4	2	1.00	10.43	4.75	0.50	3.00	3/8	2.00	3.18	1.13	2.47
2 3/4	2 1/2	1.00	10.55	4.88	0.50	3.50	1/2	2.00	3.18	1.13	2.47
3 1/4	3	1.25	10.68	5.00	0.50	4.00	1/2	2.50	3.73	1.38	2.88

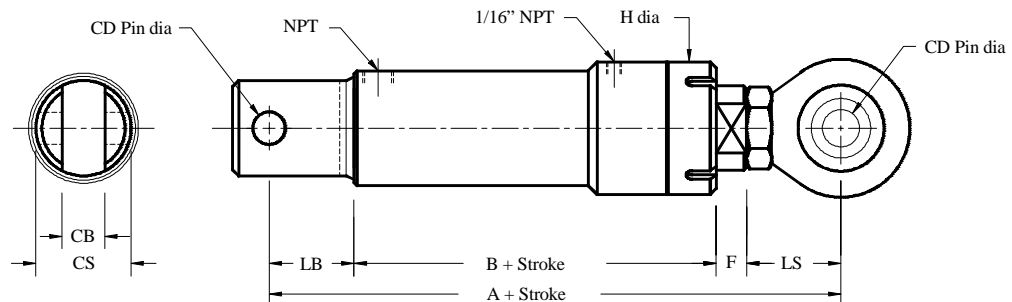
Series SIT Cylinder

Cross Hole Blind End / Cross Hole Rod End



Bore	Rod	CD	A	D	E	G	H	W	NPT
1 1/4	1	0.38	4.50	3.88	0.38	1.50	2.00	0.75	1/8
1 1/2	1 1/4	0.50	4.88	4.13	0.50	1.75	2.25	0.88	1/4
1 3/4	1 1/2	0.63	5.13	4.25	0.63	2.13	2.50	1.00	1/4
2	1 3/4	0.75	6.13	5.13	0.81	2.38	2.75	1.25	3/8
2 1/4	2	1.00	6.63	5.25	0.81	2.63	3.00	1.50	3/8
2 3/4	2 1/2	1.00	6.75	5.38	0.94	3.13	3.50	2.00	1/2
3 1/4	3	1.25	7.13	5.50	1.06	3.75	4.00	2.25	1/2

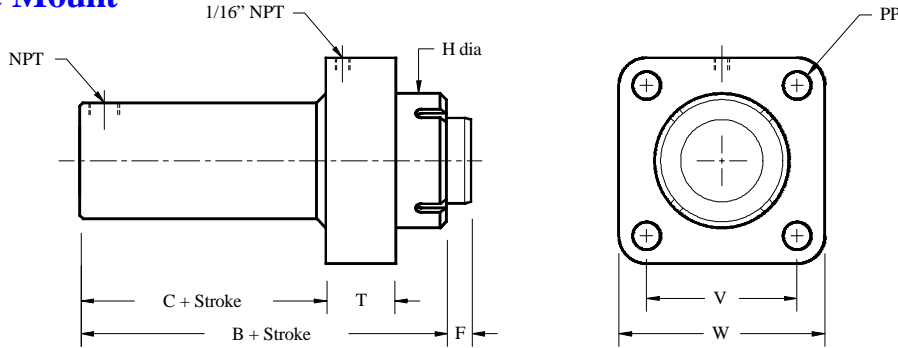
Clevis Blind End / Spherical Rod End



Bore	Rod	CD	A	B	F	H	NPT	LB	LS	CB	CS
1 1/4	1	0.38	5.44	3.69	0.38	2.00	1/8	1.00	0.75	0.51	1.19
1 1/2	1 1/4	0.50	6.50	4.00	0.50	2.25	1/4	1.31	1.19	0.66	1.47
1 3/4	1 1/2	0.63	6.81	4.00	0.50	2.50	1/4	1.50	1.31	0.76	1.69
2	1 3/4	0.75	7.88	4.75	0.50	2.75	3/8	1.69	1.44	0.88	1.97
2 1/4	2	1.00	9.06	4.75	0.50	3.00	3/8	2.00	2.30	1.13	2.47
2 3/4	2 1/2	1.00	9.19	4.88	0.50	3.50	1/2	2.00	2.30	1.13	2.47
3 1/4	3	1.25	10.60	5.00	0.50	4.00	1/2	2.50	3.10	1.38	2.88

Series SIT Cylinder

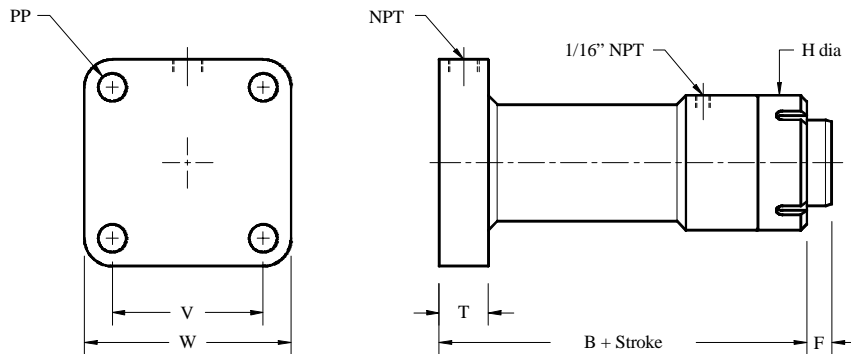
Front Flange Mount



See the Accessories section of the catalogue for rod ends.

Bore	Rod	B	C	F	H	T	V	W	PP	NPT
1 1/4	1	3.69	1.31	0.38	2.00	1.38	2.00	2.75	13/32	1/8
1 1/2	1 1/4	4.00	1.63	0.50	2.25	1.38	2.13	3.00	13/32	1/4
1 3/4	1 1/2	4.00	1.63	0.50	2.50	1.38	2.50	3.50	15/32	1/4
2	1 3/4	4.75	2.25	0.50	2.75	1.50	2.63	3.63	15/32	3/8
2 1/4	2	4.75	2.25	0.50	3.00	1.50	3.00	4.25	17/32	3/8
2 3/4	2 1/2	4.88	2.38	0.50	3.50	1.50	3.50	4.75	17/32	1/2
3 1/4	3	5.00	2.38	0.50	4.00	1.50	4.00	5.25	11/16	1/2

Rear Flange Mount



See the Accessories section of the catalogue for rod ends.

Bore	Rod	B	F	H	T	V	W	PP	NPT
1 1/4	1	3.56	0.38	2.00	0.75	2.00	2.75	13/32	1/8
1 1/2	1 1/4	3.81	0.50	2.25	1.00	2.13	3.00	13/32	1/4
1 3/4	1 1/2	3.88	0.50	2.50	1.00	2.50	3.50	15/32	1/4
2	1 3/4	4.44	0.50	2.75	1.00	2.63	3.63	15/32	3/8
2 1/4	2	4.44	0.50	3.00	1.00	3.00	4.25	9/16	3/8
2 3/4	2 1/2	4.69	0.50	3.50	1.25	3.50	4.75	9/16	1/2
3 1/4	3	4.81	0.50	4.00	1.25	4.00	5.50	11/16	1/2



Series LB Hydraulic Cylinder Large Bore



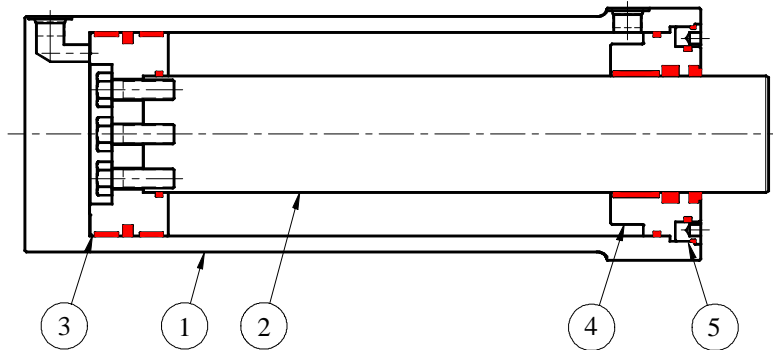
Pressure: 3,000 psi Working
4,000 psi Non-Shock
Bore Sizes: 9.00" to 24.25"
Rod Sizes: 5.00" to 20.00"
Ports: #16 ORB
Attachments: Spherical Bearings
Welded eye
Cross Hole

Series LB Cylinder

Our Series **LB** is a large bore double acting cylinder. They have a 3,000 psi working pressure rating and a 4,000 psi non-shock pressure rating. They are designed for a multitude of applications where a large force is required. Higher working pressures are available on request.

FEATURES:

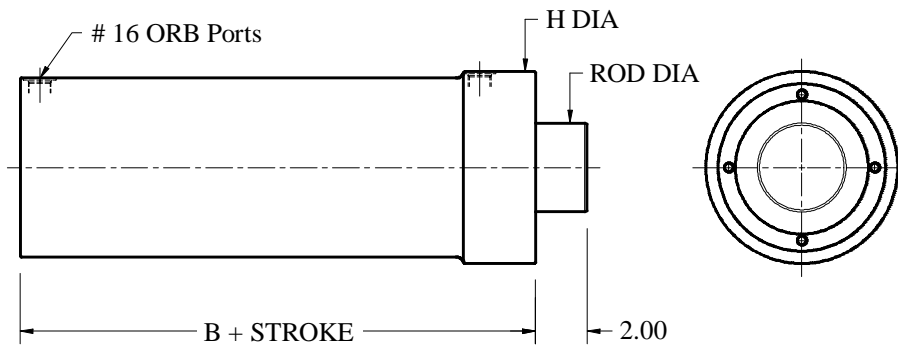
- The head gland is held in place with a threaded ring. This makes for simpler installation and removal.
- A thick ring is welded to the end of the barrel. This ensures that the barrel end will not expand under pressure, causing seal leakage or the threaded ring to loosen.
- The piston is fastened to the end of the rod with a ring of bolts. This provides for easier installation and removal than if the piston was threaded on or held with one large nut.
- C1045 hard chrome plated rod. May be hollow in larger sizes.



PART NUMBERS			Item 1	Item 2	Item 3	Item 4	Item 5
Bore	Rod Min.	Rod Max.	Barrel	Rod	Piston	Gland	Ring
9	5	6	Part Number is Model number and Stroke Followed by: B for barrel R for rod		B3812-90	B3792	B3807-90
10	5	7			B3812-100	B3924	B3807-100
11 1/4	6	8			B3812-113	B3925	B3807-113
12 1/4	6	9			B3812-123	B3717	B3807-123
13 1/4	7	10			B3812-133	B3926	B3807-133
14 1/4	7	11			B3812-143	B3927	B3807-143
15 1/4	8	12			B3812-153	B3928	B3807-153
16 1/4	9	13			B3812-163	B3929	B3807-163
18 1/4	10	15			B3812-183	B3930	B3807-183
19 1/4	11	16			B3812-193	B3931	B3807-193
20 1/4	12	17			B3812-203	B3932	B3807-203
22 1/4	12	18			B3812-223	B3933	B3807-223
24 1/4	14	20			B3812-243	B3934	B3807-243

Series LB Cylinder

Basic Cylinder



Bore	Rod Dia								B	H
9.00	5.00	6.00	—	—	—	—	—	10.38	11.00	
10.00	5.00	6.00	7.00	—	—	—	—	11.88	12.50	
11.25	6.00	7.00	8.00	—	—	—	—	12.25	14.00	
12.25	6.00	7.00	8.00	9.00	—	—	—	13.13	15.00	
13.25	7.00	8.00	9.00	10.00	—	—	—	13.63	16.00	
14.25	7.00	8.00	9.00	10.00	11.00	—	—	13.63	17.50	
15.25	8.00	9.00	10.00	11.00	12.00	—	—	14.13	18.50	
16.25	9.00	10.00	11.00	12.00	13.00	—	—	15.13	19.50	
18.25	10.00	11.00	12.00	13.00	14.00	15.00	—	15.63	22.00	
19.25	11.00	12.00	13.00	14.00	15.00	16.00	—	16.13	23.00	
20.25	12.00	13.00	14.00	15.00	16.00	17.00	—	17.13	24.00	
22.25	12.00	13.00	14.00	15.00	16.00	17.00	18.00	17.13	27.00	
24.25	14.00	15.00	16.00	17.00	18.00	19.00	20.00	18.63	29.00	

MATERIAL SPECIFICATIONS

<i>Barrel:</i> DOM Tubing ASTM 513/519 Gr. 1020/1026	<i>Piston Seal:</i> Filled Teflon with Nitrile Loader
<i>Head:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Rod seal:</i> Polyurethane
<i>Piston:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Wear Ring:</i> Reinforced Nylon
<i>Rod:</i> C1045 Chrome Plated	<i>Wiper:</i> Polyurethane on Phosphated Steel
<i>Accessories:</i> Steel CSA G40-21 Gr. 44W	<i>O-Ring:</i> Nitrile
	<i>Back-Up:</i> Nitrile

Seal Temperature Range: -65° F to 225° F (-54° C to 107° C)

Series LB Cylinder

Front Flange Cylinder

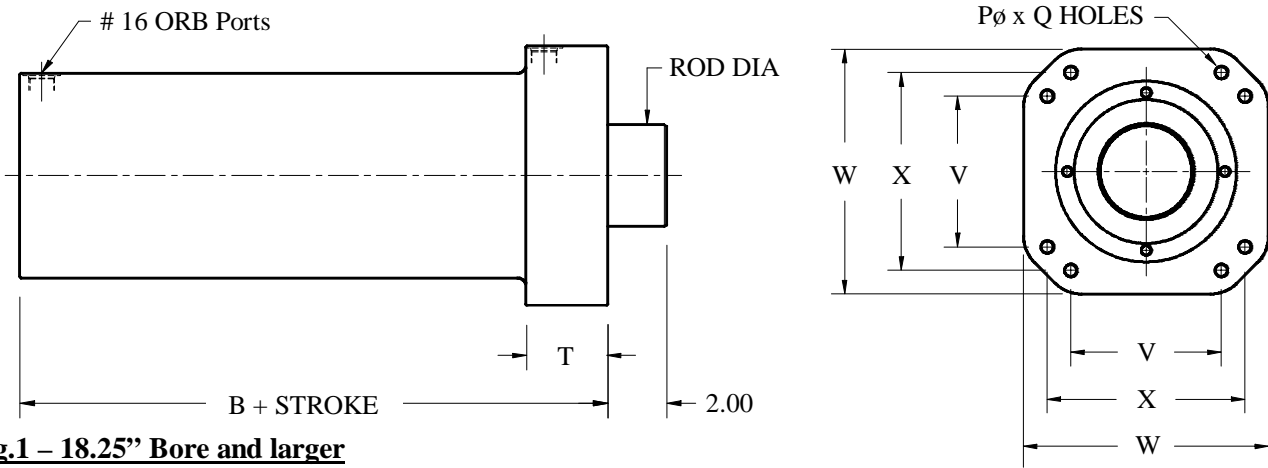


Fig.1 – 18.25” Bore and larger

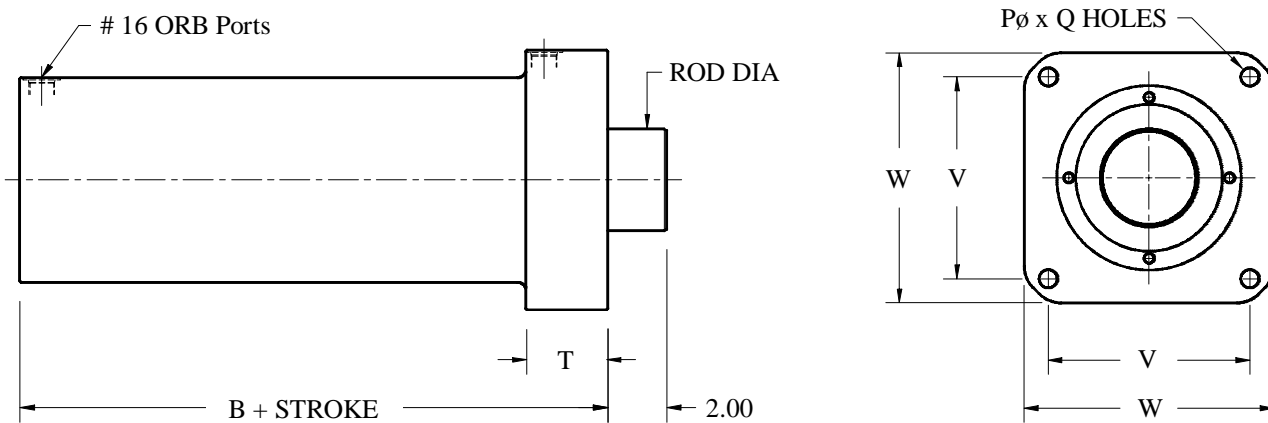


Fig. 2 – 16.25” Bore and smaller

Bore	Rod Dia							B	P	Q	V	X	W	T
	5.00	6.00	7.00	8.00	9.00	10.00	11.00							
9.00	5.00	6.00	—	—	—	—	—	10.38	15/16	4	10.50	—	13.00	3.94
10.00	5.00	6.00	7.00	—	—	—	—	11.88	1 1/16	4	11.00	—	14.50	4.38
11.25	6.00	7.00	8.00	—	—	—	—	12.25	1 3/16	4	12.50	—	16.00	4.38
12.25	6.00	7.00	8.00	9.00	—	—	—	13.13	1 5/16	4	13.50	—	17.50	4.88
13.25	7.00	8.00	9.00	10.00	—	—	—	13.63	1 5/16	4	14.00	—	18.50	4.88
14.25	7.00	8.00	9.00	10.00	11.00	—	—	13.63	1 7/16	4	15.25	—	20.00	4.88
15.25	8.00	9.00	10.00	11.00	12.00	—	—	14.13	1 7/16	4	16.00	—	21.50	4.88
16.25	9.00	10.00	11.00	12.00	13.00	—	—	15.13	1 9/16	4	17.00	—	22.50	4.88
18.25	10.00	11.00	12.00	13.00	14.00	15.00	—	15.63	1 5/16	8	16.00	22.00	26.00	5.38
19.25	11.00	12.00	13.00	14.00	15.00	16.00	—	16.13	1 5/16	8	17.00	23.00	27.00	5.38
20.25	12.00	13.00	14.00	15.00	16.00	17.00	—	17.13	1 5/16	8	17.50	23.50	27.50	5.38
22.25	12.00	13.00	14.00	15.00	16.00	17.00	18.00	17.13	1 9/16	8	19.00	27.00	31.00	5.88
24.25	14.00	15.00	16.00	17.00	18.00	19.00	20.00	18.63	1 9/16	8	20.00	29.00	33.50	5.88



Series J Hydraulic Cylinder Jack



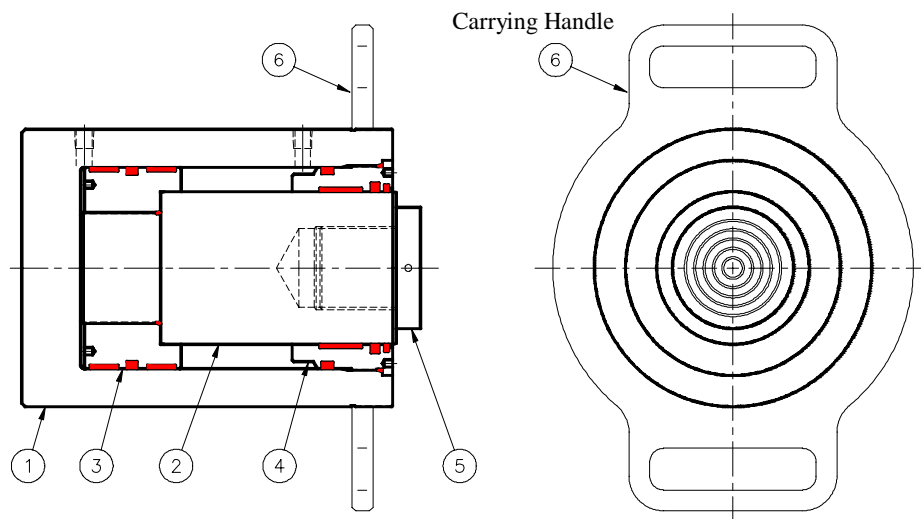
Pressure: 10,000 psi Working
Bore Sizes: 2.00" to 8.25"
Rod Sizes: 1.75" to 6.50"
Ports: 3/8" NPT

Series J Cylinder

Our Series J cylinders are designed for high tonnage jacking applications. Rated to operate up to 10,000 psi, they feature quality construction in a compact package. They are a double acting cylinder, therefore they can be used to push and also pull a load if needed.

FEATURES:

- Threaded piston and head gland
- Hard chrome plated rod
- Hardened, threaded and removable saddle in the rod end
- Threaded barrel end will carry full load for mounting
- Available in a pancake style
- Optional carrying handle

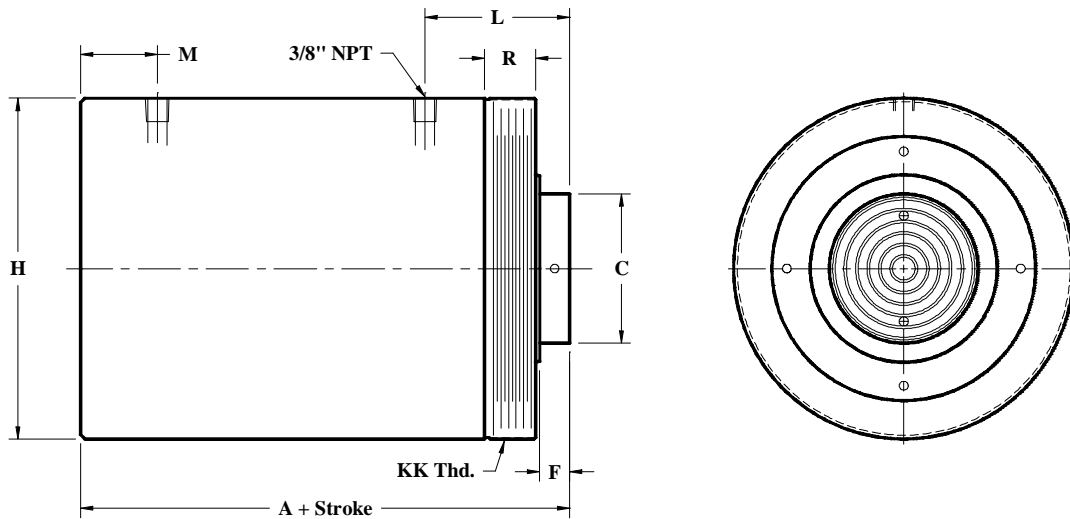


PART NUMBERS			Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	
Bore	Rod	Push Force (Tons)	Barrel	Rod	Piston	Gland	Saddle	Carrying Handle	Seal Kit
2 1/2	1 3/4	24.54	Part Number is Model number and Stroke Followed by: B for barrel R for rod		B3909	B3900	B3918-1	B3919-1	12754
3	2 1/4	35.33			B3910	B3901	B3918-2	B3919-2	12755
3 1/2	2 1/2	48.10			B3911	B3902	B3918-3	B3919-3	12756
4	3	62.83			B3912	B3903	B3918-4	B3919-4	12757
4 1/2	3 1/4	79.52			B3913	B3904	B3918-5	B3919-5	12758
5	4	98.18			B3914	B3905	B3918-6	B3919-6	12759
6 1/4	4 1/2	153.40			B3915	B3906	B3918-7	B3920-1	12760
7 1/4	5 1/2	206.41			B3916	B3907	B3918-8	B3920-2	12761
8 1/4	6 1/2	267.28			B3917	B3908	B3918-9	B3920-3	12762

Series J Cylinder

Basic cylinder

As a standard the cylinder will come with a threaded saddle in the end of the rod. It is possible to supply a special purpose saddle to suit a particular application. This can either be threaded into the rod or welded to the rod end.



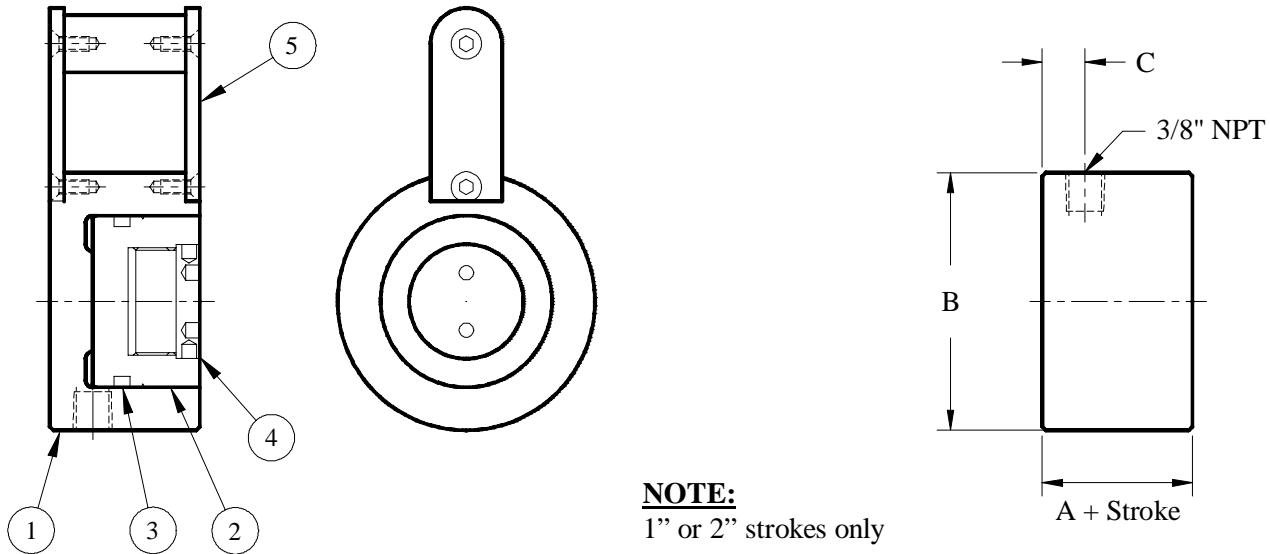
Bore	Rod	A	F	C	H	L	M	R	KK
2 1/2	1 3/4	6.06	0.38	1.44	3.50	2.38	1.13	1.00	3.50-12
3	2 1/4	6.38	0.38	1.69	4.00	2.50	1.38	1.00	4.00-12
3 1/2	2 1/2	6.81	0.50	2.19	4.75	2.63	1.50	1.00	4.75-12
4	3	7.38	0.63	2.69	5.50	2.75	1.63	1.00	5.50-12
4 1/2	3 1/4	7.50	0.63	2.88	6.00	2.75	1.75	1.00	6.00-12
5	4	8.63	0.63	3.44	7.00	3.13	2.00	1.00	7.00-12
6 1/4	4 1/2	9.69	0.75	3.75	8.50	3.25	2.13	1.50	8.50-12
7 1/4	5 1/2	10.38	0.88	4.38	10.00	3.25	2.25	1.50	10.00-12
8 1/4	6 1/2	10.88	1.00	5.38	11.00	3.38	2.50	1.50	11.00-12

Series J Cylinder

Pancake style cylinder

The pancake cylinders are meant for short stroke straight lift applications. They are a single acting cylinder operating at 10,000 psi. and would generally be operated by a manual pump. The rod is inserted directly into the barrel without any head gland holding it in place. As such the operator must be careful not to pump the rod out of the barrel. There is a line machined into the rod to mark the safe limit of the extension. A carrying handle is standard. Strokes are either 1" or 2" only.

These cylinders are ideal for construction work, machinery lifts and emergency rescue work.

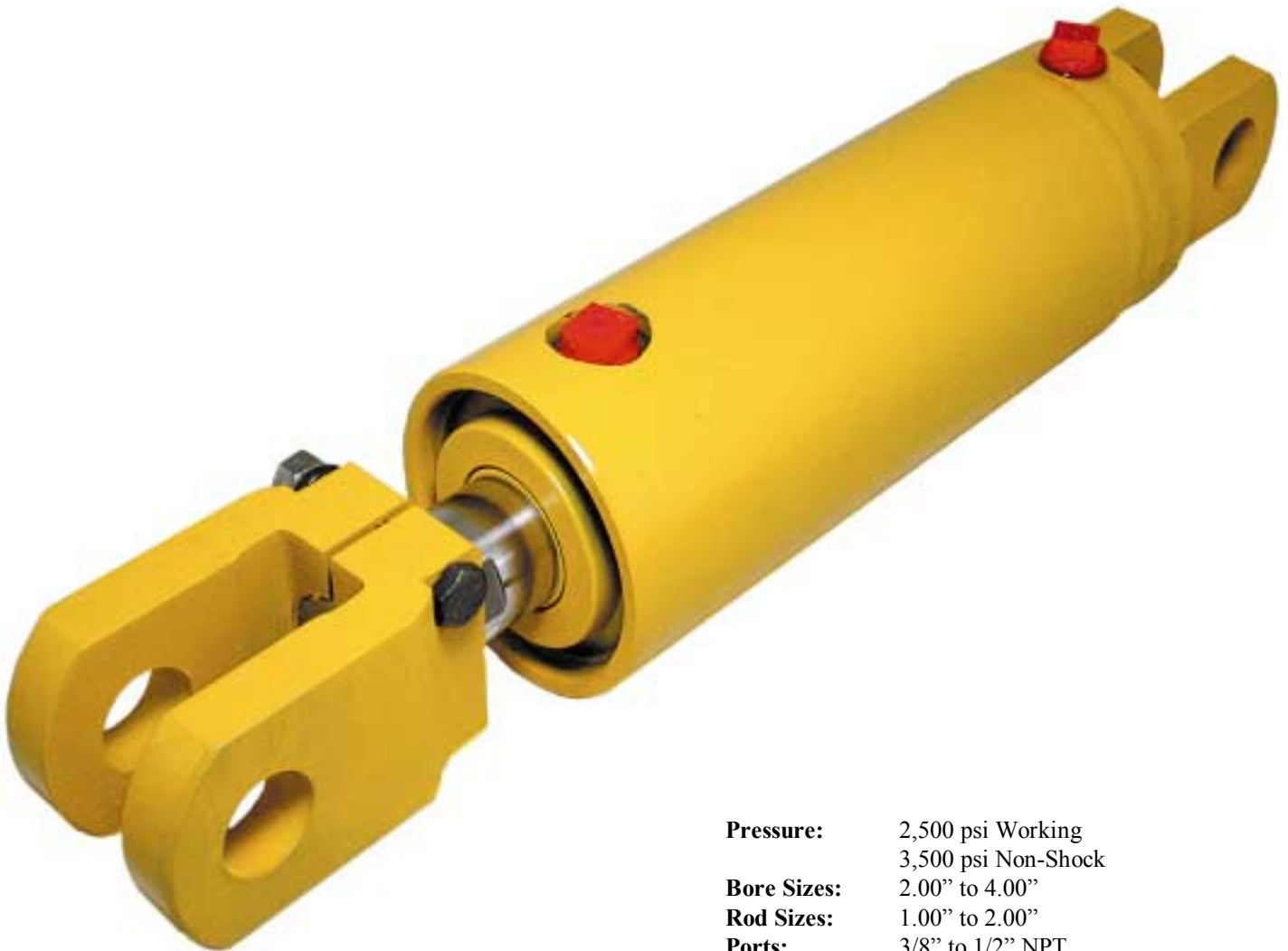


NOTE:
1" or 2" strokes only

PART NUMBERS.		Item 1	Item 2	Item 3	Item 4	Item 5			
Bore	Push Force (Tons)	Barrel	Rod	Seal	Saddle	Carrying Handle	A	B	C
2	15.71	Part Number is Model number and Stroke Followed by: B for barrel R for rod		12763	B3921-1	B3922-1	1.38	3.50	0.50
3	35.33			12764	B3921-2	B3922-2	1.63	4.50	0.75
3 5/8	51.60			12765	B3921-3	B3922-3	2.00	5.50	0.75



Series S Hydraulic Cylinder Snap ring



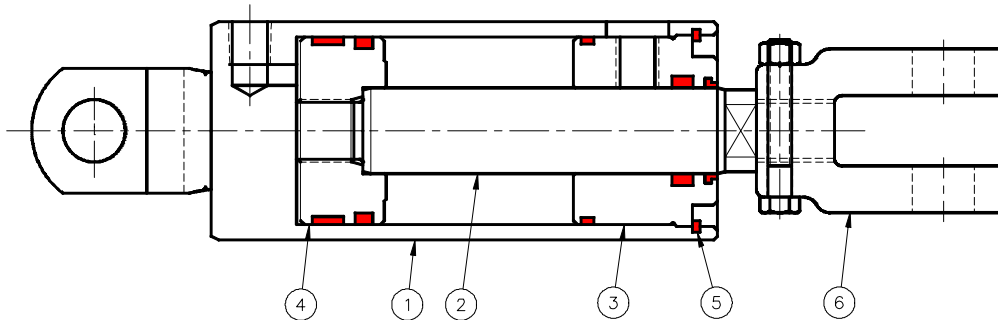
Pressure: 2,500 psi Working
3,500 psi Non-Shock
Bore Sizes: 2.00" to 4.00"
Rod Sizes: 1.00" to 2.00"
Ports: 3/8" to 1/2" NPT
Attachments: Clevis

Series S Cylinder

Our Series S cylinders are a snap ring style of cylinder, that is the head gland is held in place with a snap ring. They are rated for 2,500 psi operating pressure, and have a 3,500 non-shock pressure rating. This style is mainly used where space is limited around the cylinder, such as inside a structure.

FEATURES:

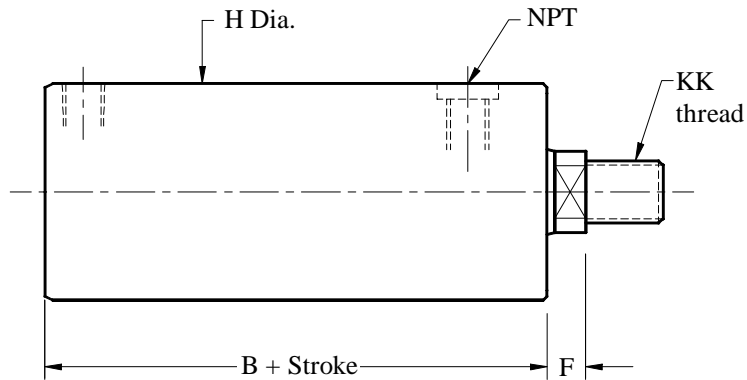
- There is no protrusion beyond the barrel outside diameter
- Head gland is held in place with a snap ring
- NPT ports are machined directly into the end and the head gland
- Piston is threaded to the rod with locking compound
- Clevis with 1" dia. pins are standard on both ends on all bore sizes



PART NUMBERS		Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	
Bore	Rod	Barrel	Rod	Gland	Piston	Snap Ring	Rod Clevis	Seal Kit
2	1	Part number is Model number and Stroke Followed by: B for barrel R for rod		B2699	B2727-32	12206	B2796-2	12178
2 1/2	1			B2702	B2727-40	10799	B2796-2	12187
	1 3/8			B2703	B2727-40	10799	B2796-2	12180
3	1 3/8			B2680	B2727-48	10800	B2796-2	12174
	1 3/4			B2692	B2727-48	10800	B2796-2	12188
3 1/2	1 3/8			B2660	B2727-56	11588	B2796-2	12173
	1 3/4			B2693	B2727-56	11588	B2796-2	12189
4	1 3/4			B2683	B2727-64	10795	B2796-2	12190
	2			B2691	B2727-64	10795	B2796-2	12191
4 1/2	2			B3120	B3124	12766	B2796-2	12320
5	2			B2955	B2954	10797	B2796-2	12277

Series S Cylinder

Basic cylinder



Bore	Rod #1	Rod #2	B	F	H	KK	NPT
2	1	—	4.88	0.88	3.00	1-14	3/8
2 1/2	1	1 3/8	4.88	0.88	3.00	1-14	3/8
3	1 3/8	1 3/4	5.13	0.63	3.50	1-14	1/2
3 1/2	1 3/8	1 3/4	5.13	0.63	4.00	1-14	1/2
4	1 3/4	2	5.13	0.63	4.50	1-14	1/2
4 1/2	2	—	6.00	0.63	5.00	1-14	1/2
5	2	—	6.00	0.63	5.75	1-14	1/2

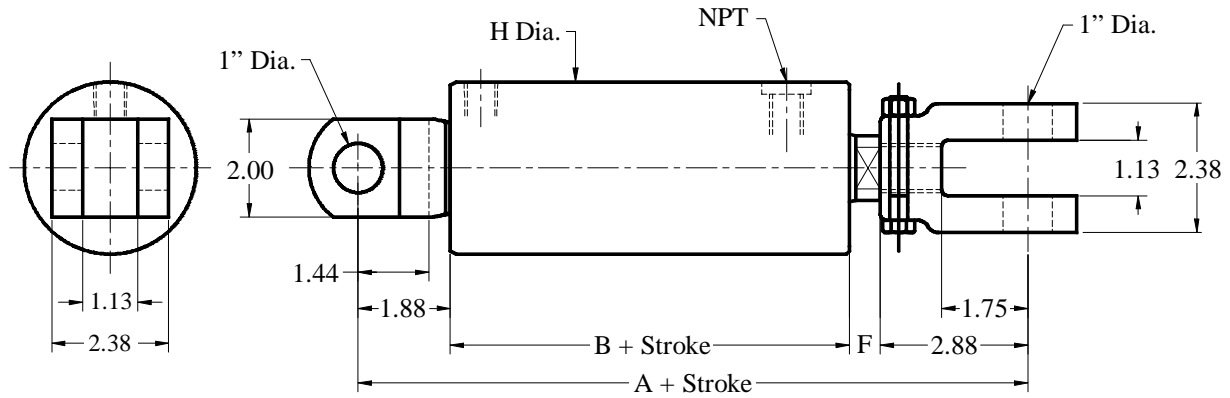
SHIPPING WEIGHTS (Approximate)					
Base Weight includes clevises.					
Bore	Base Weight	Pounds per inch of stroke by rod size			
		1	1 3/8	1 3/4	2
2	13	0.59			
2 1/2	13	0.72	0.91		
3	17		1.14	1.40	
3 1/2	21		1.28	1.51	
4	26			1.63	1.83
4 1/2	34				1.95
5	45				2.68

MATERIAL SPECIFICATIONS	
<i>Barrel:</i> DOM Tubing ASTM 513/519 Gr. 1020/1026	<i>Piston Seal:</i> Polyurethane with Nitrile Loader
<i>Head:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Rod seal:</i> Polyurethane
<i>Piston:</i> Ductile Iron ASTM A536 (65-45-12)	<i>Wear Ring:</i> Reinforced Nylon
<i>Rod:</i> C1045 Chrome Plated	<i>Wiper:</i> Polyurethane
<i>Accessories:</i> Steel CSA G40-21 Gr. 44W	<i>O-Ring:</i> Nitrile
	<i>Back-Up:</i> Nitrile

Seal Temperature Range: -65° F to 225° F (-54° C to 107° C)

Series S Cylinder

Clevis Blind End / Clevis Rod End



Bore	Rod #1	Rod #2	A	B	F	H	NPT
2	1	—	10.50	4.88	0.88	3.00	3/8
2 1/2	1	1 3/8	10.50	4.88	0.88	3.00	3/8
3	1 3/8	1 3/4	10.50	5.13	0.63	3.50	1/2
3 1/2	1 3/8	1 3/4	10.50	5.13	0.63	4.00	1/2
4	1 3/4	2	10.50	5.13	0.63	4.50	1/2
4 1/2	2	—	11.38	6.00	0.63	5.00	1/2
5	2	—	11.38	6.00	0.63	5.75	1/2



Telescopic Cylinders

Series TS - Single Acting

Series TD - Double Acting



Pressure: 3,000 psi Working
3,000 psi Non-Shock

Bore Sizes: 2" to 8"

Rod Sizes: 1" to 6 3/4"

Ports: #6, to #20 ORB

Attachments: Tube

Cross Hole

Sph. Brg

Front Flange

Rear Flange

Male Mid Trunnion

Female Mid Trunnion

Telescopic Cylinder – Introduction

A telescopic cylinder is essentially a series of cylinders (called stages) nesting inside one another. It is normally used where space is a constraint.

Each stage is the rod of the larger stage and the barrel of that stage. e.g. A 3-stage cylinder is 3 stages or rods that move in and out. It consists of the barrel (the largest tube) followed by the first stage and then the second stage and finally the smallest stage (called the rod).

There are two types of telescopic cylinders. Single acting and double acting.

Single Acting - S/A

A S/A telescopic is essentially a displacement cylinder. It extends by hydraulic power and retracts by gravity or any external force. The oil pressure acts on the outside diameter of the various rods. When retracted, the various stages are immersed in oil, thus protecting them from rusting. These cylinders do not leak unless the rod seals are damaged. The port is located at the barrel end and a bleed port at the rod. The cylinder is sealed at the rod end.

Double Acting - D/A

D/A telescopic is powered both ways. Oil acts on the bore area to extend and on the annulus area between the bore and rod to retract. The extend force is typically 5 times the retract force. Because of this intensification, it is critical that the retract port is not restricted. D/A cylinders will slowly drift due to seal leakage; the leakage rate is

dependent on the surface finishes of the cast iron piston seals and the barrel surface. The ports are located at the rod end. The first stage extends first, when extending the cylinder; on retracting, the rod stage retracts first.

Design & Selection Considerations

- The forces given in the charts are theoretical; friction and back pressure are ignored.
- Since the size of each stage is different, the speed and force of a cylinder will vary as the cylinder extends and retract. For a variable load application (e.g. dump truck), the force at each stage must be examined for overall suitability.
- Overlap “A” should be maximum for strength. We recommend a minimum of 15% to 20% of the stroke per stage. A telescopic cylinder should be designed to use the fewest number of stages, for economy and strength.
- As the customer is aware of all aspects of the application, he is responsible for sizing the cylinder according to his needs. Our products are not warranted express or by implication for any specific purpose, notwithstanding any disclosure to us of the use to which the product is to be put.
- Stroke is the same for each stage. The rod stroke can be different to accommodate an odd stroke.

Telescopic Cylinder – Introduction

Features

- Designed for 3,000 PSI non-shock pressure.
- Designed for easy maintenance. Unscrew the barrel end cap and each stage can be removed from the blind end.
- All stages have 0.001 inches thick hard chrome on the O.D. to resist corrosion. This smooth surface reduces wear on the rod, wear ring, seal and wiper.
- No external threaded ring at the rod. Each stage protrudes only ¼” resulting in maximum overlap.
- The tube of each stage is re-inforced by the gland and piston, making the stages considerably stronger.
- Wide selection of standard mounting. The following charts show the standard size (hole diameter, CD) and x-hole and tube eye style. Any other style and size (shown in the accessories section ‘02’) are available. The limitation is that the rod end accessory must be smaller than the rod for welded type. If this is not possible, then a threaded type must be selected.
- The annulus space between each stage is 1/8” this gives a smoother transition between stages when extending and retracting. Also, the cylinder diameter is smaller.
- The rod seal is “U-Cup” (Parker or equivalent) and not Vee packing which can be over-tightened causing increased friction and premature failure.
- Normally three wear rings, strategically placed, support each stage. Two wear rings style is available but is only recommended for short stroke cylinders (less than 10” of S/S). Call our Engineering Department for details.
- SAE ORB (O’ring Boss) ports are standard.

Cylinder Attachments

Blind End

- The following charts show the blind end with standard tube eye.
- Any size and type of welded cylinder accessories can be ordered.
- Front flange, rear flange, male trunnion and female trunnion are also available see page **13-13, 14** for details.

Rod End

- The following charts show X-hole mounting as the shortest and simplest style.
- Any other types or sizes can be supplied. The only restriction is, the attachments must be smaller than the rod diameter.
- If a bigger accessory is necessary, it must be threaded on. Consult our Engineering Department for details.

Selection

First, decide on the following:

- Working pressure.
- Single or double acting cylinder.
- Force and stroke requirements.
- Space available.
- Type and size of attachments at both ends to support the load and minimize side loads.

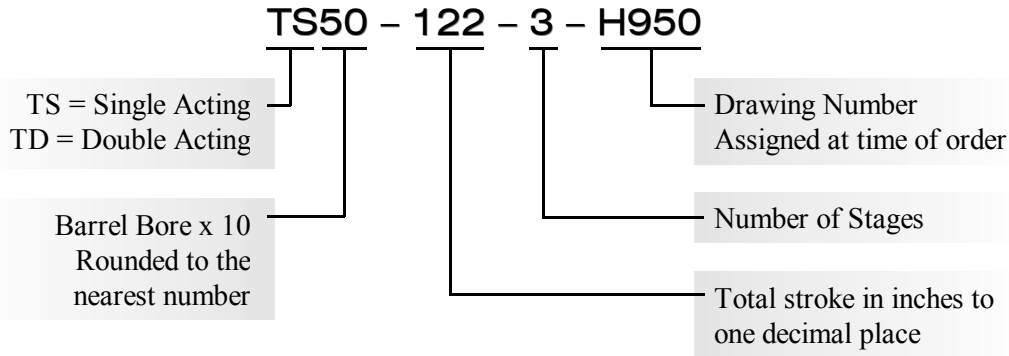
From the following charts work out:

- Number of stages.
- S/S – stroke per stage
- A – overlap

Telescopic Cylinder – Introduction

Model Number

A model number will be assigned at the time of order. Please refer to this number when re-ordering or ordering parts.



Specifications

The forces given in the following charts are theoretical. Losses due to friction etc. are neglected.

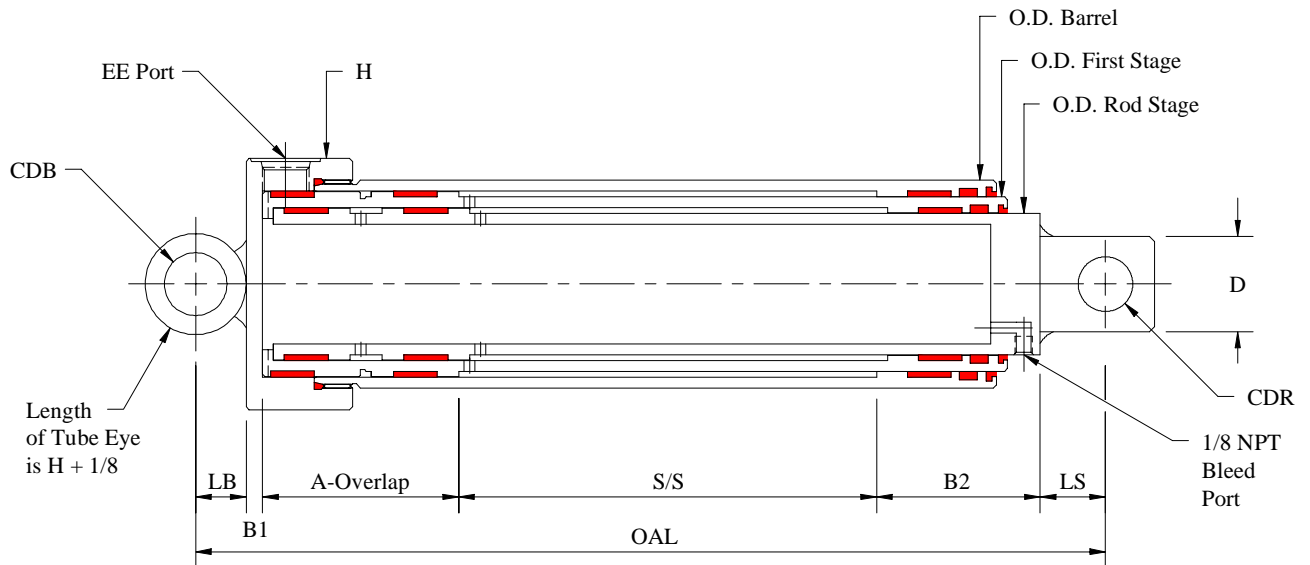
Forces:	$F = P \times A$
F = force in lbs. either push or pull (see charts)	
P = pressure, lbs / inch ² , 3000psi maximum	
A = area in square inch	
	- rod area for single acting in push - piston area for double acting in push - accumulated area for double acting in pull

Lengths:	$OAL = S/S + A + B + LB + LS$
OAL = overall length of the cylinder in inches, centre of pin to centre of pin fully retracted	
S/S = stroke per stage in inches = total stroke ÷ number of stages	
A = overlap of stage, either specified by the customer or obtained from OAL	

Volume:	$V = FV \times \text{stroke}$
V = volume of oil displaced in U.S. gallons. or the difference between volume of oil in the cylinder when fully extended and retracted.	
= total stroke in inches	

Weight:	$W = \text{Basic} + FW \times (OAL-L)$
W = Dry weight of cylinder in lbs. for standard mounting as per chart.	

Telescopic Cylinder – 2 Stage, Single Acting

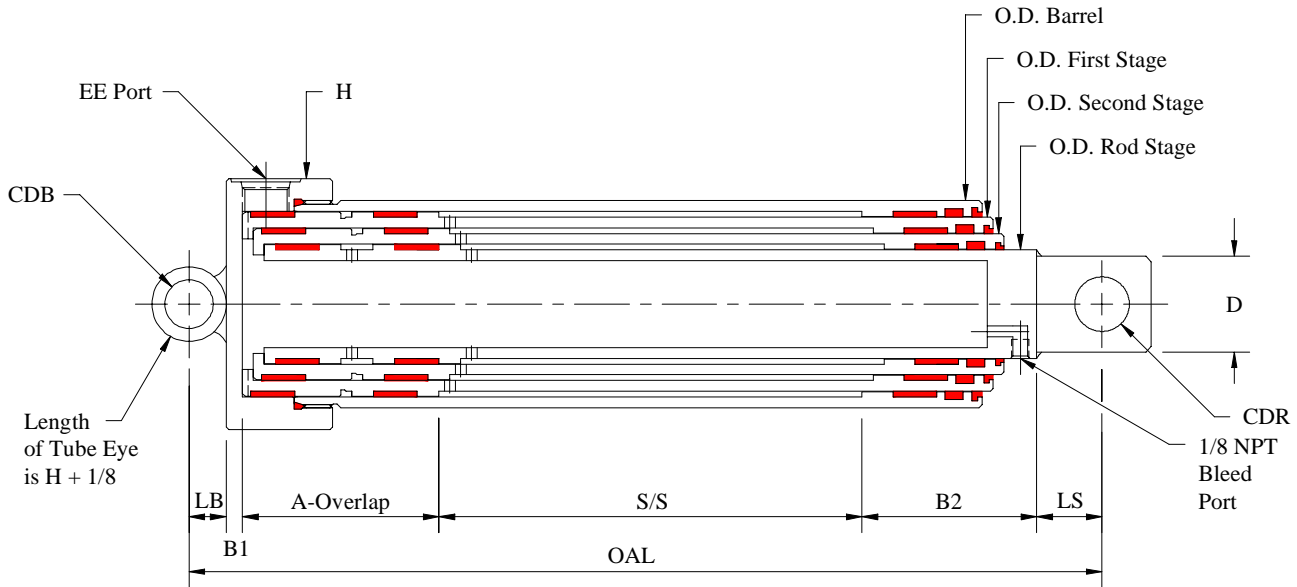


A-Overlap Minimum is 4 1/2 for all Stages.

BARREL BORE	O.D. IN INCHES			B= B1+B2	H Dia	EE ORB	MOUNTING ACCESSORIES				
	BARREL	1 ST STAGE	ROD				BLIND END		ROD END		D
							CDB ϕ	LB	CDR ϕ	LS	
2	2 1/2	1 3/4	1	4.13	3.25	#6	0.75	0.63	0.63	0.75	1.00
2 3/4	3 1/4	2 1/2	1 3/4	4.13	4.00	#8	0.75	0.63	0.75	1.00	1.44
3 1/2	4	3 1/4	2 1/2	4.13	5.00	#12	1.00	0.88	1.00	1.13	1.69
4 1/4	4 3/4	4	3 1/4	4.13	5.75	#12	1.25	1.00	1.25	1.50	2.19
5	5 3/4	4 3/4	4	4.25	6.50	#12	1.50	1.13	1.50	1.75	2.44
6	6 3/4	5 3/4	4 3/4	4.25	7.50	#16	1.75	1.25	1.75	2.00	3.19
7	7 3/4	6 3/4	5 3/4	4.25	8.50	#20	2.00	1.50	2.00	2.25	3.44
8	8 3/4	7 3/4	6 3/4	4.38	9.75	#20	2.50	1.75	2.50	2.75	3.94

BARREL BORE	PUSH FORCE @ 3000 PSI IN lbs		VOLUME FACTOR FV	WEIGHT FACTORS			SEAL KIT
	1 ST STAGE	ROD STAGE		BASIC	FW	L	
2	7,220	2,360	0.007	12	1.62	10.0	12491
2 3/4	14,700	7,220	0.016	21	1.85	10.3	12459
3 1/2	24,900	14,700	0.029	26	2.00	10.6	12460
4 1/4	37,700	24,900	0.045	35	2.50	11.1	12461
5	53,200	37,700	0.066	49	3.62	11.6	12462
6	77,900	53,200	0.095	68	4.91	12.0	12463
7	107,000	77,900	0.134	90	6.37	12.5	12464
8	142,000	107,000	0.180	116	7.37	13.4	12465

Telescopic Cylinder – 3 Stage, Single Acting

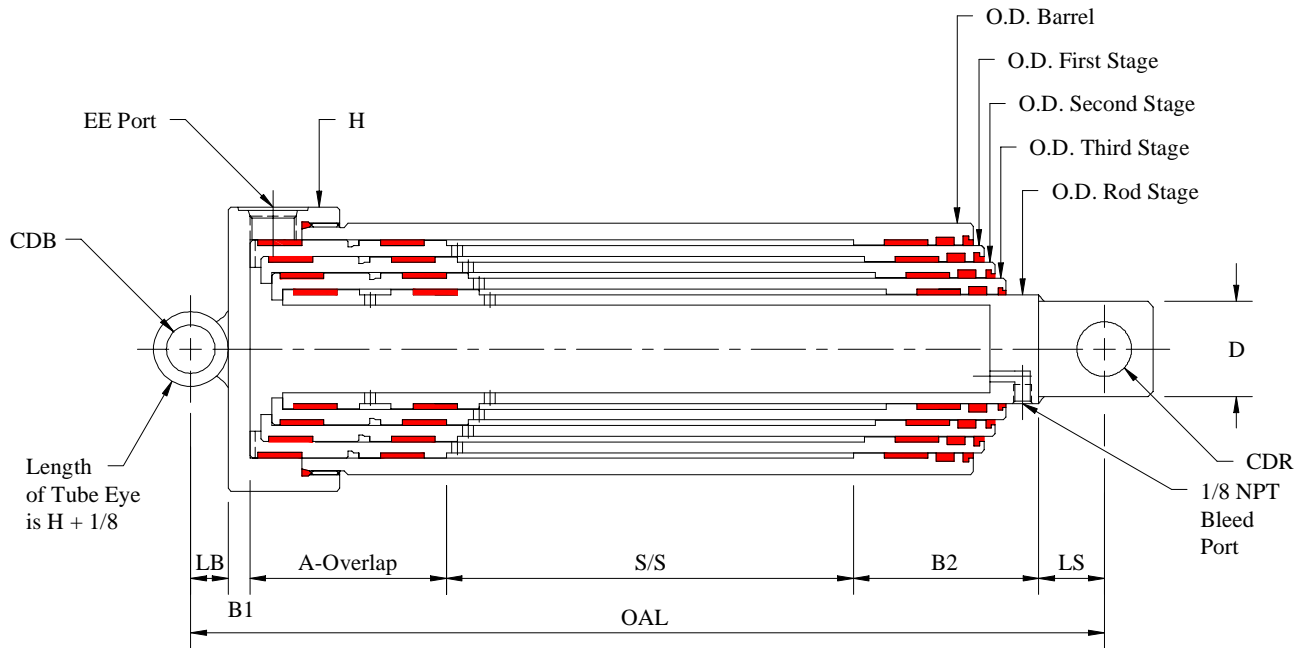


A-Overlap Minimum is 4 1/2 for all Stages.

BARREL BORE	O.D. IN INCHES				B= B1+B2	H Dia	EE ORB	MOUNTING ACCESSORIES				
	BARREL	1 ST STAGE	2 ND STAGE	ROD				BLIND END		ROD END		D
								CDB ϕ	LB	CDR ϕ	LS	
2 3/4	3 1/4	2 1/2	1 3/4	1	4.38	4.00	#8	0.75	0.63	0.63	0.75	1.00
3 1/2	4	3 1/4	2 1/2	1 3/4	4.38	5.00	#12	1.00	0.88	1.00	1.13	1.69
4 1/4	4 3/4	4	3 1/4	2 1/2	4.38	5.75	#12	1.25	1.00	1.25	1.50	2.19
5	5 3/4	4 3/4	4	3 1/4	4.50	6.50	#12	1.50	1.13	1.50	1.75	2.44
6	6 3/4	5 3/4	4 3/4	4	4.50	7.50	#16	1.75	1.25	1.75	2.00	3.19
7	7 3/4	6 3/4	5 3/4	4 3/4	4.50	8.50	#20	2.00	1.50	2.00	2.25	3.44
8	8 3/4	7 3/4	6 3/4	5 3/4	4.63	9.75	#20	2.50	1.75	2.50	2.75	3.94

BARREL BORE	PUSH FORCE @ 3000 PSI IN lbs			VOLUME FACTOR FV	WEIGHT FACTORS			SEAL KIT
	1 ST STAGE	2 ND STAGE	ROD STAGE		BASIC	FW	L	
2 3/4	14,700	7,220	2,360	0.012	20	2.28	10.3	12492
3 1/2	24,900	14,700	7,220	0.023	32	2.68	10.9	12466
4 1/4	37,700	24,900	14,700	0.037	40	3.00	11.4	12467
5	53,200	37,700	24,900	0.056	56	4.29	11.9	12468
6	77,900	53,200	37,700	0.081	76	5.75	12.3	12469
7	107,000	77,900	53,200	0.115	99	7.37	12.8	12470
8	142,000	107,000	77,900	0.157	131	9.16	13.6	12471

Telescopic Cylinder – 4 Stage, Single Acting

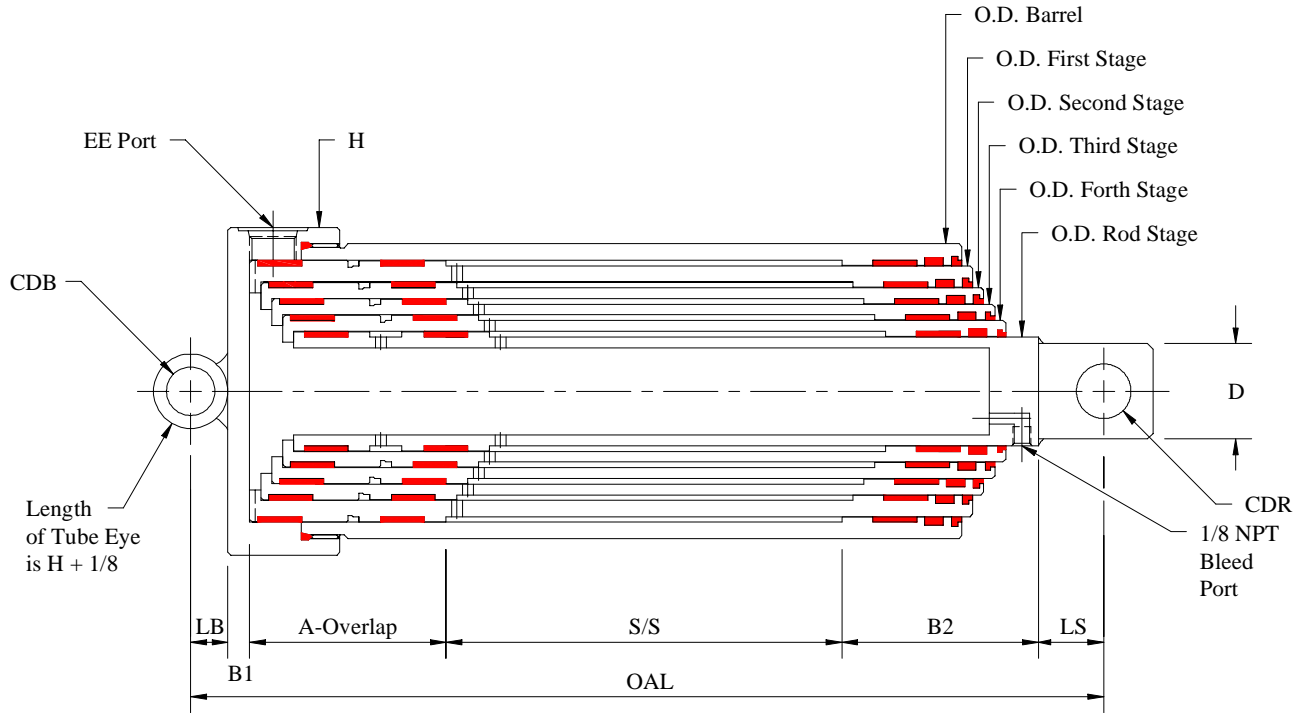


A-Overlap Minimum is 4 1/2 for all Stages.

BARREL BORE	O.D. IN INCHES					B= B1+B2	H Dia	EE ORB	MOUNTING ACCESSORIES				
	BARREL	1 ST STAGE	2 ND STAGE	3 RD STAGE	ROD				BLIND END		ROD END		D
									CDB ϕ	LB	CDR ϕ	LS	
3 1/2	4	3 1/4	2 1/2	1 3/4	1	4.63	5.00	#12	1.00	0.88	0.63	0.75	1.00
4 1/4	4 3/4	4	3 1/4	2 1/2	1 3/4	4.63	5.75	#12	1.25	1.00	1.00	1.13	1.69
5	5 3/4	4 3/4	4	3 1/4	2 1/2	4.75	6.50	#12	1.50	1.13	1.50	1.75	2.44
6	6 3/4	5 3/4	4 3/4	4	3 1/4	4.75	7.50	#16	1.75	1.25	1.75	2.00	3.19
7	7 3/4	6 3/4	5 3/4	4 3/4	4	4.75	8.50	#20	2.00	1.50	2.00	2.25	3.44
8	8 3/4	7 3/4	6 3/4	5 3/4	4 3/4	4.88	9.75	#20	2.50	1.75	2.50	2.75	3.94

BARREL BORE	PUSH FORCE @ 3000 PSI IN lbs				FV	WEIGHT FACTORS			SEAL KIT
	1 ST STAGE	2 ND STAGE	3 RD STAGE	ROD STAGE		BASIC	FW	L	
3 1/2	24,900	14,700	7,220	2,360	0.018	31	3.12	10.8	12493
4 1/4	37,700	24,900	14,700	7,220	0.030	44	3.68	11.3	12472
5	53,200	37,700	24,900	14,700	0.047	61	4.79	12.1	12473
6	77,900	53,200	37,700	24,900	0.070	83	6.41	12.5	12474
7	107,000	77,900	53,200	37,700	0.100	107	8.20	13.0	12475
8	142,000	107,000	77,900	53,200	0.137	141	10.16	13.9	12476

Telescopic Cylinder – 5 Stage, Single Acting

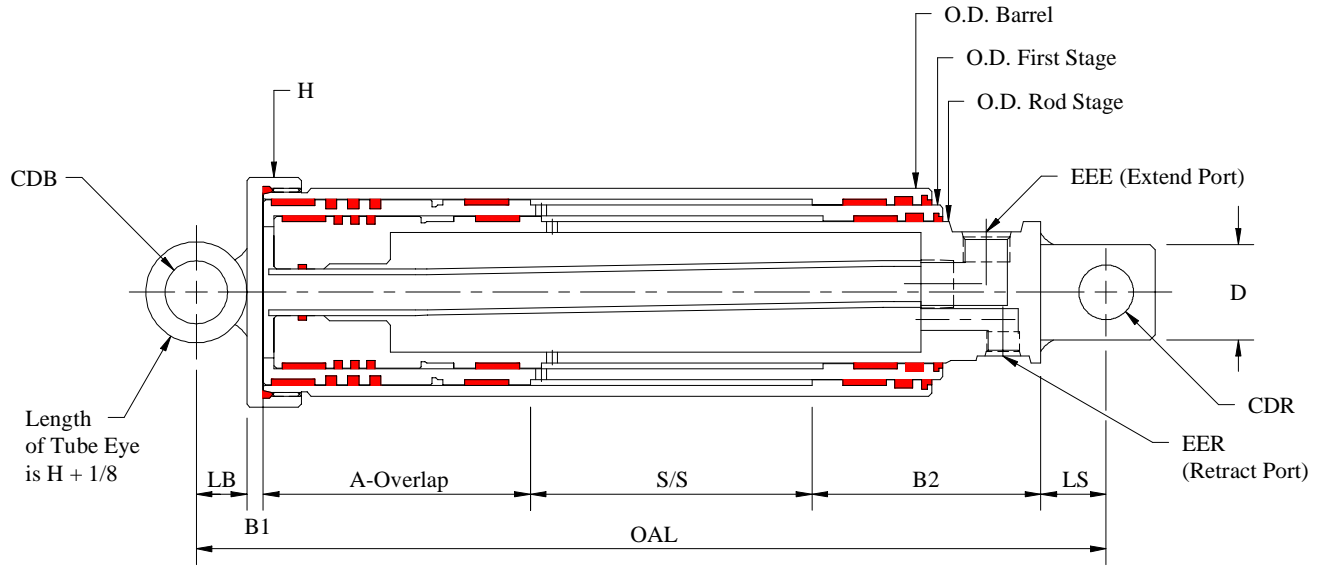


A-Overlap Minimum is 4 1/2 for all Stages.

BARREL BORE	O.D. IN INCHES						B= B1+B2	H Dia	EE ORB	MOUNTING ACCESSORIES				
	BARREL	1 ST STAGE	2 ND STAGE	3 RD STAGE	4 TH STAGE	ROD				BLIND END		ROD END		D
										CDBØ	LB	CDRØ	LS	
4 1/4	4 3/4	4	3 1/4	2 1/2	1 3/4	1	4.88	5.75	#12	1.25	1.00	0.63	0.75	1.00
5	5 3/4	4 3/4	4	3 1/4	2 1/2	1 3/4	5.00	6.50	#12	1.50	1.13	1.00	1.13	1.69
6	6 3/4	5 3/4	4 3/4	4	3 1/4	2 1/2	5.00	7.50	#16	1.75	1.25	1.50	1.75	2.44
7	7 3/4	6 3/4	5 3/4	4 3/4	4	3 1/4	5.00	8.50	#20	2.00	1.50	1.75	2.00	3.19
8	8 3/4	7 3/4	6 3/4	5 3/4	4 3/4	4	5.13	9.75	#20	2.50	1.75	2.50	2.75	3.94

BARREL BORE	PUSH FORCE @ 3000 PSII IN lbs					VOLUME FACTOR FV	WEIGHT FACTORS			SEAL KIT
	1 ST STAGE	2 ND STAGE	3 RD STAGE	4 TH STAGE	ROD STAGE		BASIC	FW	L	
4 1/4	37,700	24,900	14,700	7,220	2,360	0.025	43	4.12	11.1	12494
5	53,200	37,700	24,900	14,700	7,220	0.040	64	5.47	11.8	12477
6	77,900	53,200	37,700	24,900	14,700	0.060	84	6.91	12.5	12478
7	107,000	77,900	53,200	37,700	24,900	0.087	112	8.87	13.0	12479
8	142,000	107,000	77,900	53,200	37,700	0.121	154	10.99	14.1	12480

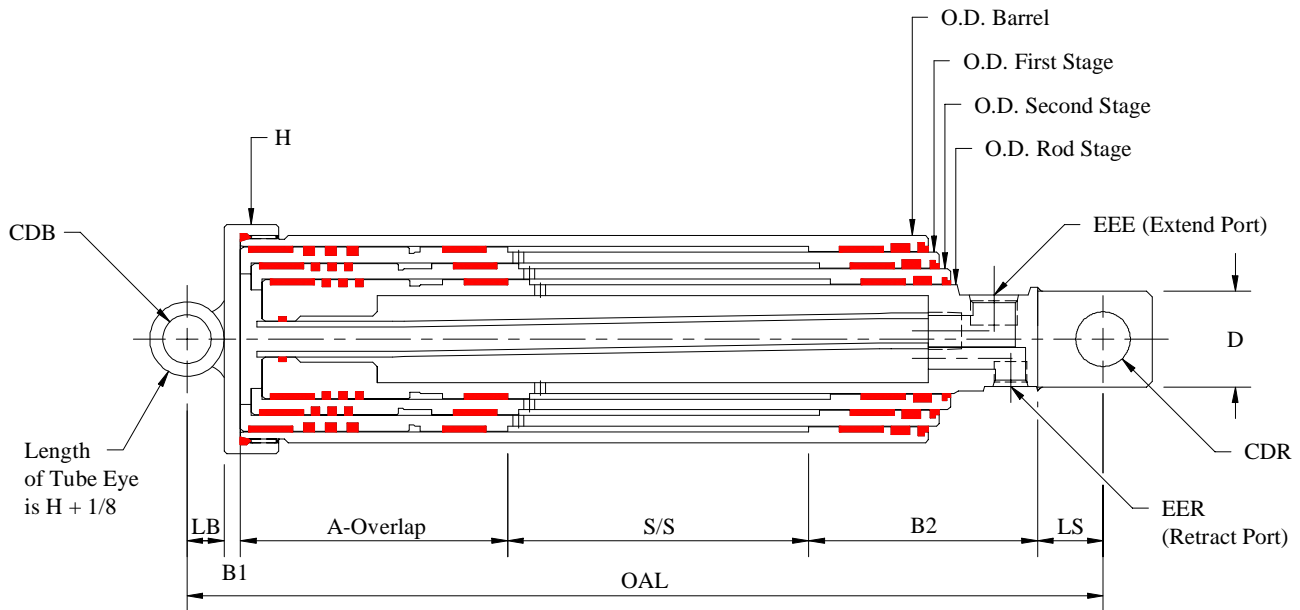
Telescopic Cylinder – 2 Stage, Double Acting



BARREL BORE	O.D. IN INCHES			A O'LAP (MIN)	B= B1+B2	H Dia	PORTS		MOUNTING ACCESSORIES				
	BARREL	1 ST STAGE	ROD				EEE ORB	EER ORB	BLIND END		ROD END		D
									CDB ϕ	LB	CDR ϕ	LS	
2 3/4	3 1/4	2 1/2	1 3/4	5.63	5.25	3.75	#8	#6	0.75	0.63	0.75	1.00	1.44
3 1/2	4	3 1/4	2 1/2	5.63	5.38	4.50	#12	#8	1.00	0.88	1.00	1.13	1.69
4 1/4	4 3/4	4	3 1/4	6.13	5.63	5.25	#16	#8	1.25	1.00	1.25	1.50	2.19
5	5 3/4	4 3/4	4	6.13	5.75	6.25	#16	#12	1.50	1.13	1.50	1.75	2.44
6	6 3/4	5 3/4	4 3/4	6.13	6.00	7.38	#20	#12	1.75	1.25	1.75	2.00	3.19
7	7 3/4	6 3/4	5 3/4	6.13	6.13	8.38	#20	#16	2.00	1.50	2.00	2.25	3.44
8	8 3/4	7 3/4	6 3/4	6.13	6.25	9.75	#20	#16	2.50	1.75	2.50	2.75	3.94

BARREL BORE	FORCE @ 3000 PSI IN lbs FOR STAGES				VOLUME FACTOR FV	WEIGHT FACTORS			SEAL KIT
	PUSH FORCE		PULL FORCE			BASIC	FW	L	
	1 ST	ROD	1 ST	ROD					
2 3/4	17,800	9,420	3,090	2,210	0.016	16	1.50	6.9	12438
3 1/2	28,900	17,800	3,980	3,090	0.029	27	2.00	7.8	12439
4 1/4	42,600	28,900	4,860	3,980	0.045	39	2.50	8.5	12402
5	58,900	42,600	5,740	4,860	0.066	61	3.62	9.5	12441
6	84,800	58,900	6,920	5,740	0.095	87	4.91	10.1	12442
7	115,000	84,800	8,100	6,920	0.134	119	6.37	10.8	12443
8	151,000	115,000	9,280	8,100	0.180	157	7.37	11.6	12440

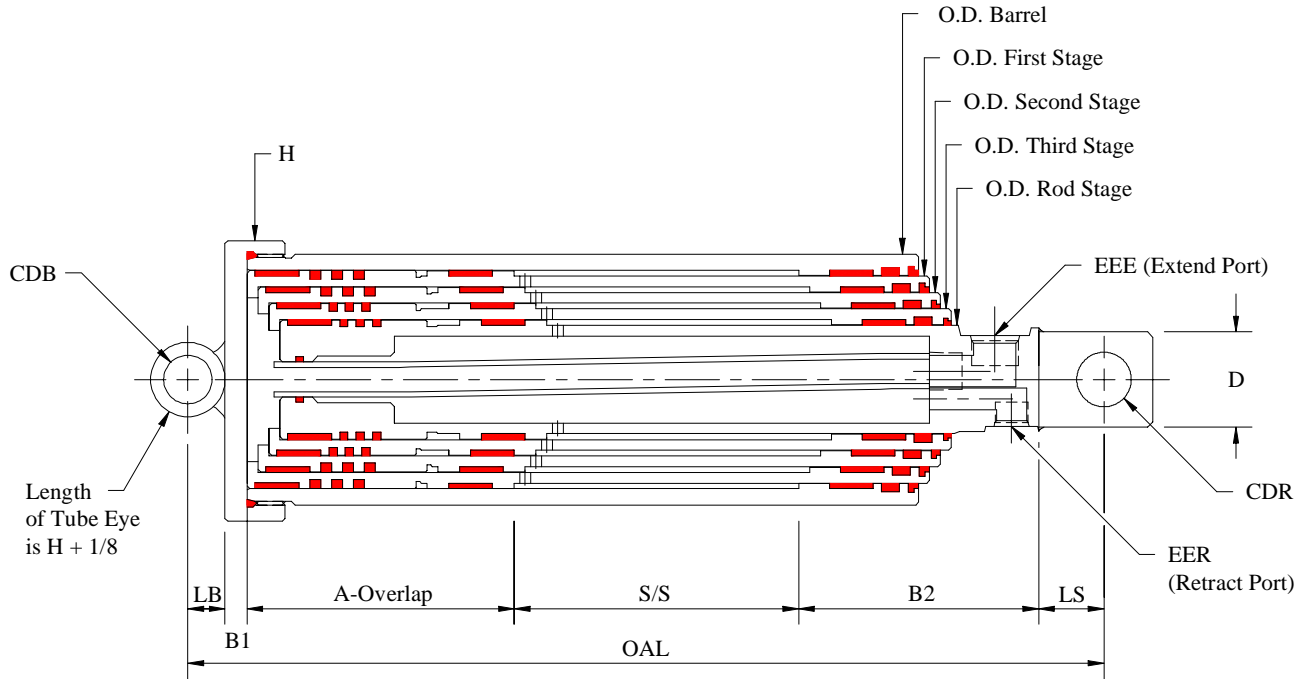
Telescopic Cylinder – 3 Stage, Double Acting



BARREL BORE	O.D. IN INCHES				A O'LAP (MIN)	B= B1+B2	H Dia	PORTS		MOUNTING ACCESSORIES				
	BARREL	1 ST STAGE	2 ND STAGE	ROD				EEE ORB	EER ORB	BLIND END		ROD END		D
										CDB ϕ	LB	CDR ϕ	LS	
3 1/2	4	3 1/4	2 1/2	1 3/4	5.63	5.50	4.50	#12	#8	1.00	0.88	1.00	1.13	1.69
4 1/4	4 3/4	4	3 1/4	2 1/2	6.13	5.63	5.25	#16	#8	1.25	1.00	1.25	1.50	2.19
5	5 3/4	4 3/4	4	3 1/4	6.13	6.00	6.25	#16	#12	1.50	1.13	1.50	1.75	2.44
6	6 3/4	5 3/4	4 3/4	4	6.13	6.00	7.38	#20	#12	1.75	1.25	1.75	2.00	3.19
7	7 3/4	6 3/4	5 3/4	4 3/4	6.13	6.25	8.38	#20	#16	2.00	1.50	2.00	2.25	3.44
8	8 3/4	7 3/4	6 3/4	5 3/4	6.13	6.50	9.75	#20	#16	2.50	1.75	2.50	2.75	3.94

BARREL BORE	FORCE @ 3000 PSI IN lbs FOR STAGES						VOLUME FACTOR FV	WEIGHT FACTORS			SEAL KIT
	PUSH FORCE			PULL FORCE				BASIC	FW	L	
	1 ST	2 ND	ROD	1 ST	2 ND	ROD					
3 1/2	28,900	17,800	9,420	3,980	3,090	2,210	0.023	30	2.33	7.6	12444
4 1/4	42,600	28,900	17,800	4,860	3,980	3,090	0.037	39	3.00	8.3	12445
5	58,900	42,600	28,900	5,740	4,860	3,980	0.056	61	4.29	9.5	12446
6	84,800	58,900	42,600	6,920	5,740	4,860	0.081	86	5.75	9.9	12447
7	115,000	84,800	58,900	8,100	6,920	5,740	0.115	116	7.37	10.6	12448
8	151,000	115,000	84,800	9,280	8,100	6,920	0.157	157	9.16	11.6	12449

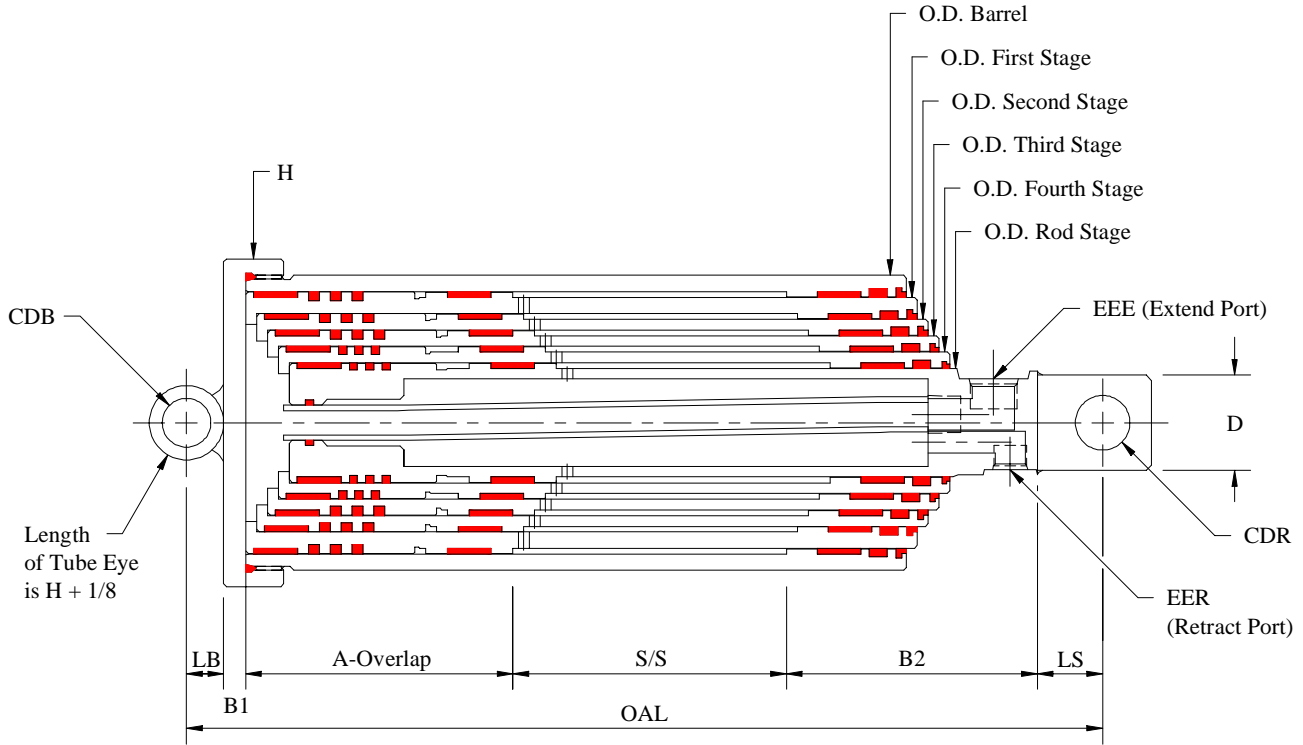
Telescopic Cylinder – 4 Stage, Double Acting



BARREL BORE	O.D. IN INCHES								PORTS		MOUNTING ACCESSORIES				
	BARREL	1 ST STAGE	2 ND STAGE	3 RD STAGE	ROD	A O ^L LAP (MIN)	B= B1+B2	H Dia	EEE ORB	EER ORB	BLIND END		ROD END		D
											CDB ϕ	LB	CDR ϕ	LS	
4 1/4	4 3/4	4	3 1/4	2 1/2	1 3/4	6.13	5.75	5.25	#16	#8	1.25	1.00	1.00	1.13	1.69
5	5 3/4	4 3/4	4	3 1/4	2 1/2	6.13	6.00	6.25	#16	#12	1.50	1.13	1.50	1.75	2.44
6	6 3/4	5 3/4	4 3/4	4	3 1/4	6.13	6.25	7.38	#20	#12	1.75	1.25	1.75	2.00	3.19
7	7 3/4	6 3/4	5 3/4	4 3/4	4	6.13	6.25	8.38	#20	#16	2.00	1.50	2.00	2.25	3.44
8	8 3/4	7 3/4	6 3/4	5 3/4	4 3/4	6.13	6.63	9.75	#20	#16	2.50	1.75	2.50	2.75	3.94

BARREL BORE	FORCE @ 3000 PSI IN lbs FOR STAGES									VOLUME FACTOR FV	WEIGHT FACTORS			SEAL KIT
	PUSH FORCE				PULL FORCE				BASIC		FW	L		
	1 ST	2 ND	3 RD	ROD	1 ST	2 ND	3 RD	ROD						
4 1/4	42,600	28,900	17,800	9,420	4,860	3,980	3,090	2,210	0.030	37	3.33	7.8	12450	
5	58,900	42,600	28,900	17,800	5,740	4,860	3,980	3,090	0.047	61	4.79	9.3	12451	
6	84,800	58,900	42,600	28,900	6,920	5,740	4,860	3,980	0.070	86	6.41	9.9	12452	
7	115,000	84,800	58,900	42,600	8,100	6,920	5,740	4,860	0.100	115	8.20	10.4	12453	
8	151,000	115,000	84,800	58,900	9,280	8,100	6,920	5,740	0.137	154	10.16	11.5	12454	

Telescopic Cylinder – 5 Stage, Double Acting

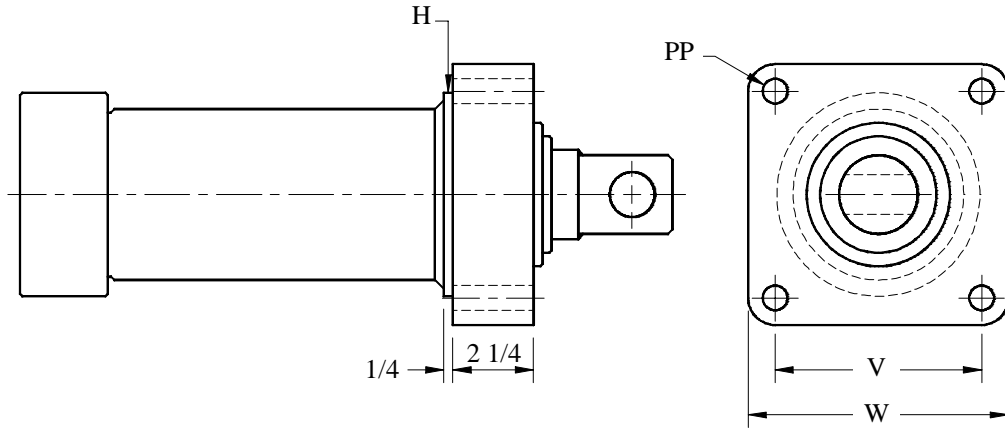


BARREL BORE	O.D. IN INCHES						A O'LAP (MIN)	B= B1+B2	H Dia	PORTS		MOUNTING ACCESSORIES				D
	BARREL	1 ST STAGE	2 ND STAGE	3 RD STAGE	4 TH STAGE	ROD				EEE ORB	EER ORB	BLIND END		ROD END		
												CDB ϕ	LB	CDR ϕ	LS	
5	5 3/4	4 3/4	4	3 1/4	2 1/2	1 3/4	6.13	6.13	6.25	#16	#12	1.50	1.13	1.00	1.13	1.69
6	6 3/4	5 3/4	4 3/4	4	3 1/4	2 1/2	6.13	6.25	7.38	#20	#12	1.75	1.25	1.50	1.75	2.44
7	7 3/4	6 3/4	5 3/4	4 3/4	4	3 1/4	6.13	6.50	8.38	#20	#16	2.00	1.50	1.75	2.00	3.19
8	8 3/4	7 3/4	6 3/4	5 3/4	4 3/4	4	6.13	6.63	9.75	#20	#16	2.50	1.75	2.50	2.75	3.94

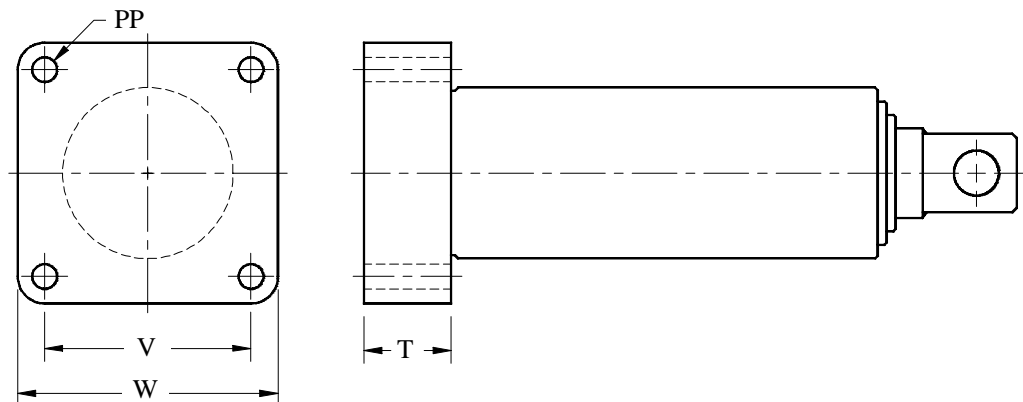
BARREL BORE	FORCE @ 3000 PSI IN lbs FOR STAGES										VOLUME FACTOR FV	WEIGHT FACTORS			SEAL KIT
	PUSH FORCE					PULL FORCE						BASIC	FW	L	
	1 ST	2 ND	3 RD	4 TH	ROD	1 ST	2 ND	3 RD	4 TH	ROD					
5	58,900	42,600	28,900	17,800	9,420	5,740	4,860	3,980	3,090	2,210	0.040	58	5.12	8.5	12455
6	84,800	58,900	42,600	28,900	17,800	6,920	5,740	4,860	3,980	3,090	0.060	82	6.91	9.4	12456
7	115,000	84,800	58,900	42,600	28,900	8,100	6,920	5,740	4,860	3,980	0.087	113	8.87	10.1	12457
8	151,000	115,000	84,800	58,900	42,600	9,280	8,100	6,920	5,740	4,860	0.121	153	10.99	11.3	12458

Telescopic Cylinder – Flange Mount S/A & D/A

Flange Mount – Front



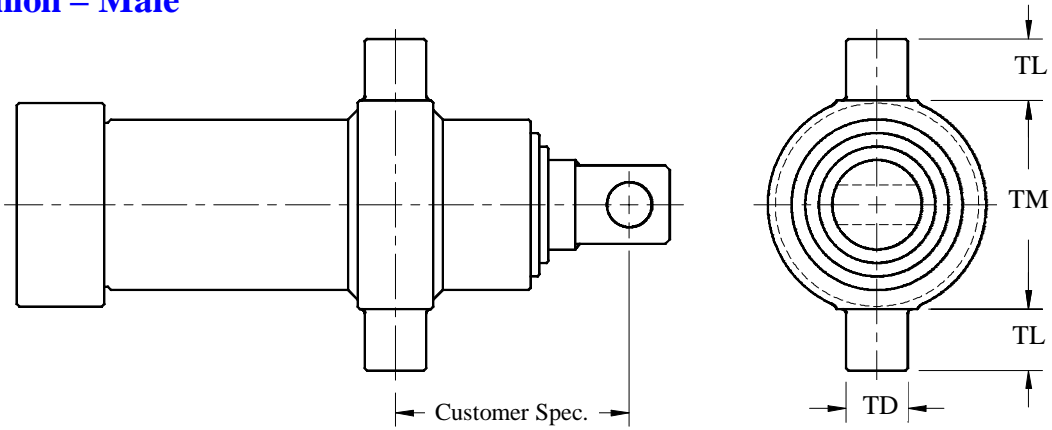
Flange Mount – Rear



BARREL BORE	V	W	T		PP Dia	H Dia
			S/A	D/A		
2	3.38	4.50	1.94	—	0.56	3.25
2 3/4	3.88	5.13	2.13	1.25	0.56	4.00
3 1/2	5.25	6.50	2.44	1.25	0.69	5.00
4 1/4	5.50	7.00	2.44	1.25	0.69	5.75
5	7.00	8.50	2.56	1.38	0.94	6.50
6	8.00	10.00	2.81	1.38	1.06	7.50
7	8.50	11.00	3.13	1.38	1.31	8.50
8	9.50	12.00	3.25	1.50	1.31	9.75

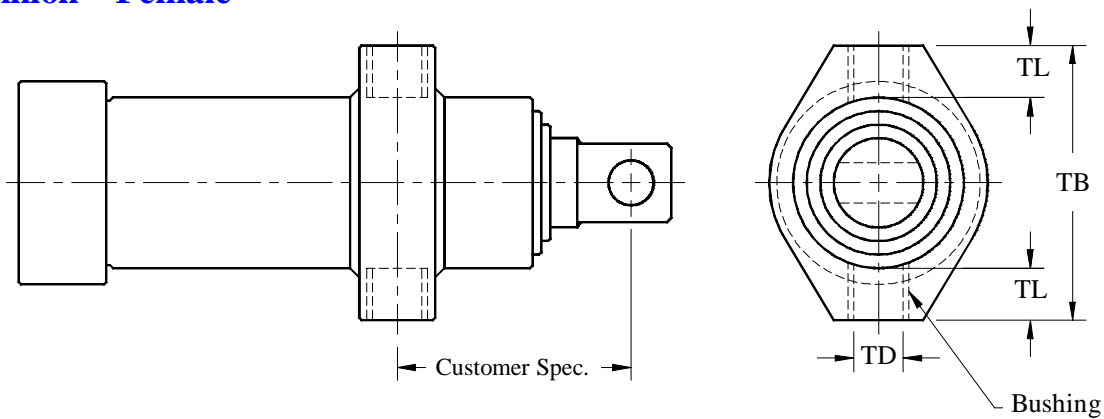
Telescopic Cylinder – Trunnion S/A & D/A

Trunnion – Male



BARREL BORE	TD	TL	TM
3 1/2	1.75	1.75	5.25
5	1.75	1.75	7.00
6	2.00	2.00	8.50
7	2.50	2.50	9.75
8	3.00	3.00	11.00

Trunnion – Female



BARREL BORE	TD	TL	TB
3 1/2	1.00	0.88	5.88
5	1.75	1.56	9.00
6	1.75	1.56	10.00
7	2.00	1.81	11.50
8	2.50	2.25	13.50

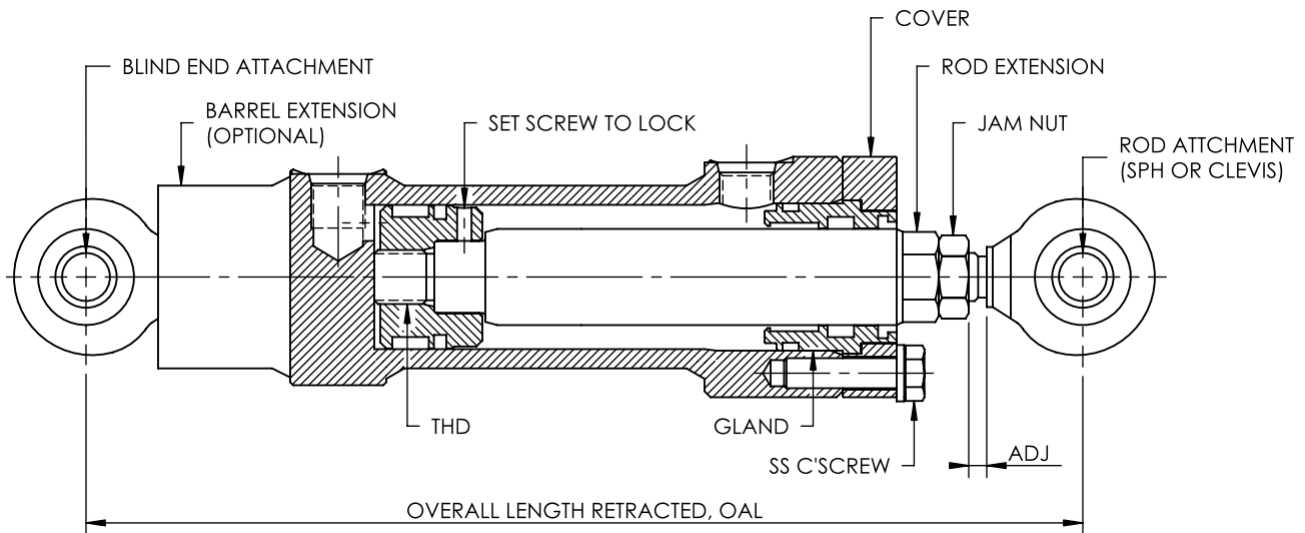


SERIES SS HYDRAULIC CYLINDER STAINLESS STEEL



PRESSURE:	2500 PSI WORKING 3000 PSI NON SHOCK
BORE SIZES:	1 1/2" TO 3 3/8"
ROD SIZES:	3/4" TO 2 1/2"
PORT:	SAE ORB
ATTACHMENTS:	SPHERICAL BEARINGS CLEVIS

The design of the Series SS cylinder is similar to our standard Series B



All cylinders are designed with standard pistons, heads, ends and rings. The barrel and rod are made to order to allow complete customization of stroke. Stop tubes, barrel extensions, and rod extensions can be used to adjust the OAL.

Cylinder model numbers are only created after an order is placed and are tracked using H drawing numbers. The H number refers to a specific customer design and are not shown in this catalogue.

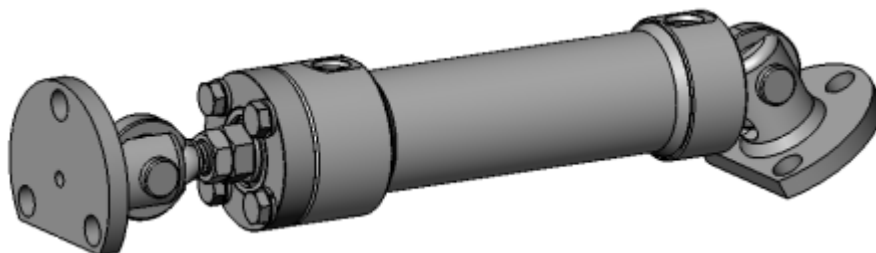
Model # e.g. SS29-20.8-09-H5028 ——— DWG #

SERIES SS — | — ROD DIA X 10

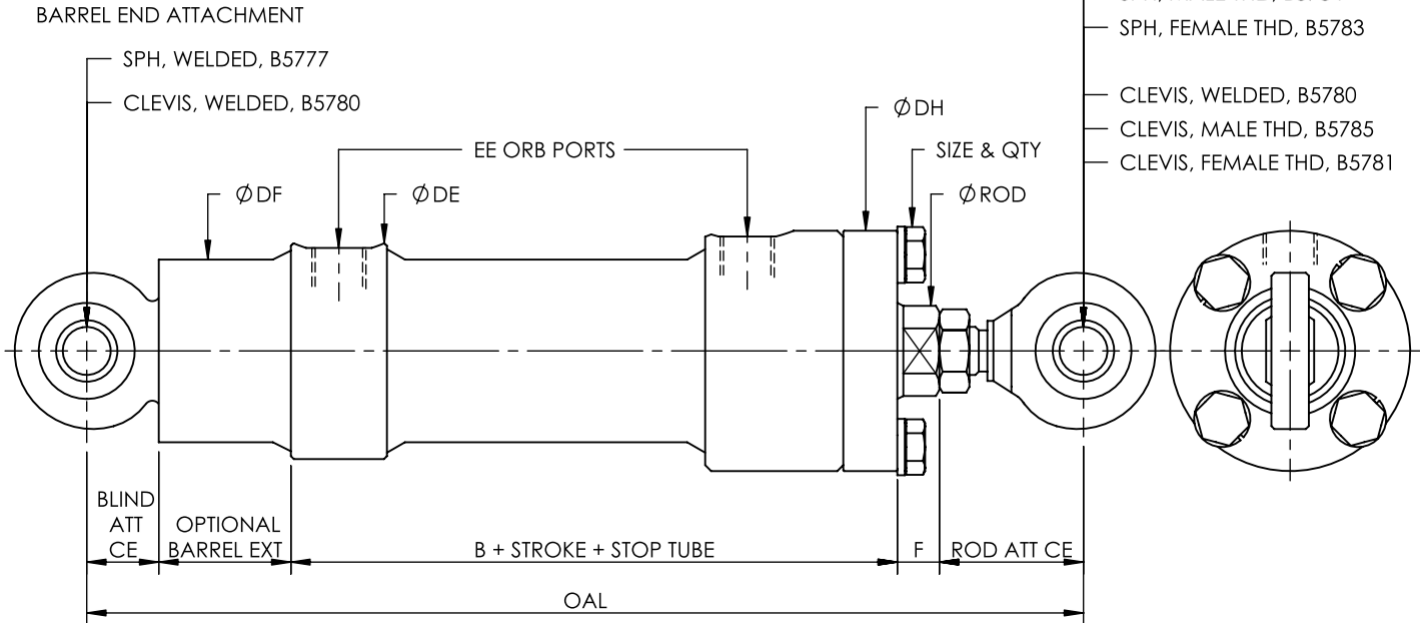
BORE SIZE X 10 — | — STROKE

Key Points:

- Rod Material is Stainless Steel 17-4PH condition H1150, with 0.0005" to 0.001" hard chrome to provide a smooth and hardened surface for the rod seal and wiper.
- External components are made from 316L SS
- Cylinders are not painted
- Recommend spherical bushings both ends to reduce side loading from misalignment and decrease the likelihood of buckling. It is responsibility of the customer to select an appropriate rod size, stroke, stop tube, and load to avoid buckling.
- All ports are SAE O'Ring Boss and are machined directly into the end and ring. SS fittings should be used to adapt to other connections.
- SS mounting attachments are standard in three pin sizes 1/2", 3/4", and 1" and can be seen on the last page. These attachments are also available for use on the customer's equipment.
- Round body and no protrusion is ideal for anti corrosion.

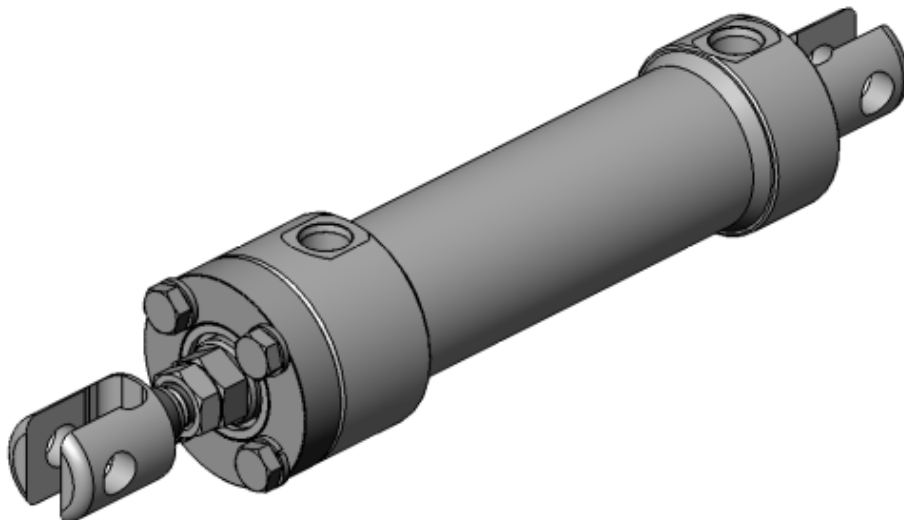


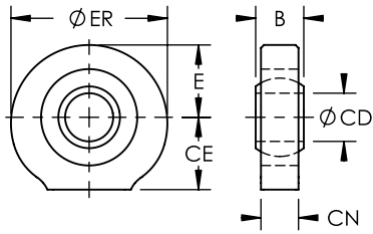
ROD END ATTACHMENT



BORE INCHES	ROD Ø INCHES	CD	B	DB	DE	OPTIONAL DF	DH	EE ORB	STD F
1.500	3/4, 1	0.50	3.88	1.88	2.25	1.90	2.50	#6	0.44
1.940	1, 1 3/8	0.50	3.88	2.38	2.75	2.38	3.00	#6	0.50
2.325	1, 1 3/8, 1 3/4	0.75	4.38	2.88	3.25	2.88	3.50	#8	0.50
2.900	1 3/8, 1 3/4, 2	1.00	4.50	3.50	3.75	3.50	4.25	#8	0.56
3.364	1 3/4, 2, 2 1/2	1.00	4.75	4.00	4.50	4.00	5.00	#8	0.69

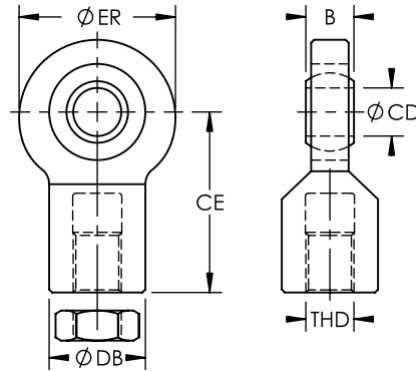
- Within reason, any size spherical & clevis can be attached to a cylinder.
- SEE NEXT PAGE FOR AVAILABLE ATTACHMENTS SPEC.
- Spherical bushing is maintenance free with PTFE Liner.





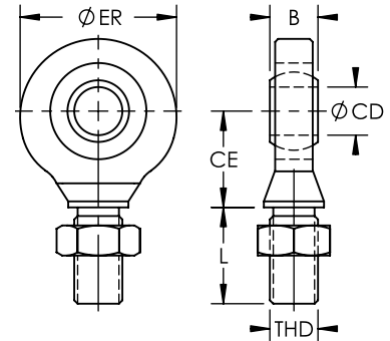
B5777—SPHERICAL, WELDED

DASH	CD	CE	CN	ER	B	E
-08	0.50	0.75	0.39	1.63	0.50	0.75
-12	0.75	1.13	0.59	2.25	0.75	1.00
-16	1.00	1.50	0.80	2.88	1.00	1.25



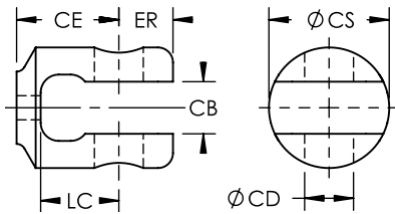
B5783—SPHERICAL, FEMALE THD

DASH	CD	THD	CE	ER	B	DB
-08	0.50	1/2-20	1.88	1.63	0.50	1.00
-12	0.75	3/4-16	2.50	2.25	0.75	1.38
-16	1.00	1 1/4-12	3.00	2.88	1.00	2.00



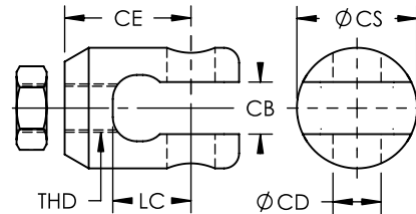
B5784—SPHERICAL, MALE THD

DASH	CD	THD	CE	ER	B	L
-08	0.50	1/2-20	1.00	1.63	0.50	1.38
-12	0.75	3/4-16	1.38	2.25	0.75	1.75
-16	1.00	1 1/4-12	1.88	2.88	1.00	2.13



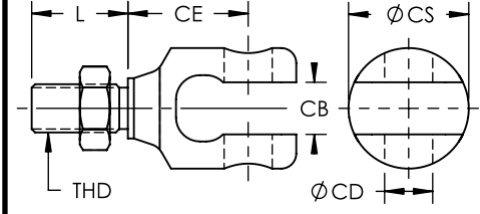
B5780—CLEVIS, WELDED

DASH	CD	CE	CB	CS	ER	LC
-08	0.50	1.06	0.54	1.25	0.56	0.81
-12	0.75	1.50	0.81	1.75	0.75	1.19
-16	1.00	1.75	1.06	2.50	1.25	1.44



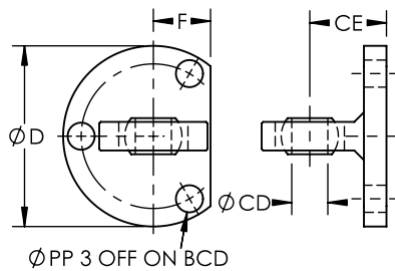
B5781—CLEVIS, FEMALE THD

DASH	CD	THD	CE	CB	CS	LC
-08	0.50	1/2-20	1.38	0.54	1.25	0.81
-12	0.75	3/4-16	2.13	0.81	1.75	1.19
-16	1.00	1 1/4-12	2.50	1.06	2.50	1.44



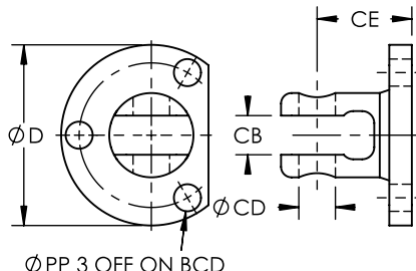
B5785—CLEVIS, MALE THD

DASH	CD	THD	CE	CB	CS	L
-08	0.50	1/2-20	1.31	0.54	1.25	1.38
-12	0.75	3/4-16	1.75	0.81	1.75	1.75
-16	1.00	1 1/4-12	2.13	1.06	2.50	2.13



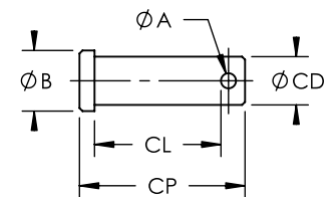
B5786—BRACKET, SPHERICAL

DASH	CD	CE	D	F	PP	BCD
-08	0.50	1.09	3.13	0.94	0.50	2.38
-12	0.75	1.59	3.75	1.19	0.56	3.00
-16	1.00	1.97	4.88	1.50	0.56	3.88



B5787—BRACKET, CLEVIS

DASH	CD	CE	CB	D	PP	BCD
-08	0.50	1.41	0.54	3.13	0.50	2.38
-12	0.75	1.97	0.81	3.75	0.56	3.00
-16	1.00	2.22	1.06	4.88	0.56	3.88



B5789—PIN C/W COTTER PIN

DASH	CD	CL	CP	A	B
-08	0.50	1.31	1.72	0.16	0.63
-12	0.75	1.81	2.31	0.16	0.94
-16	1.00	2.56	3.44	0.39	1.18

MANIFOLDS

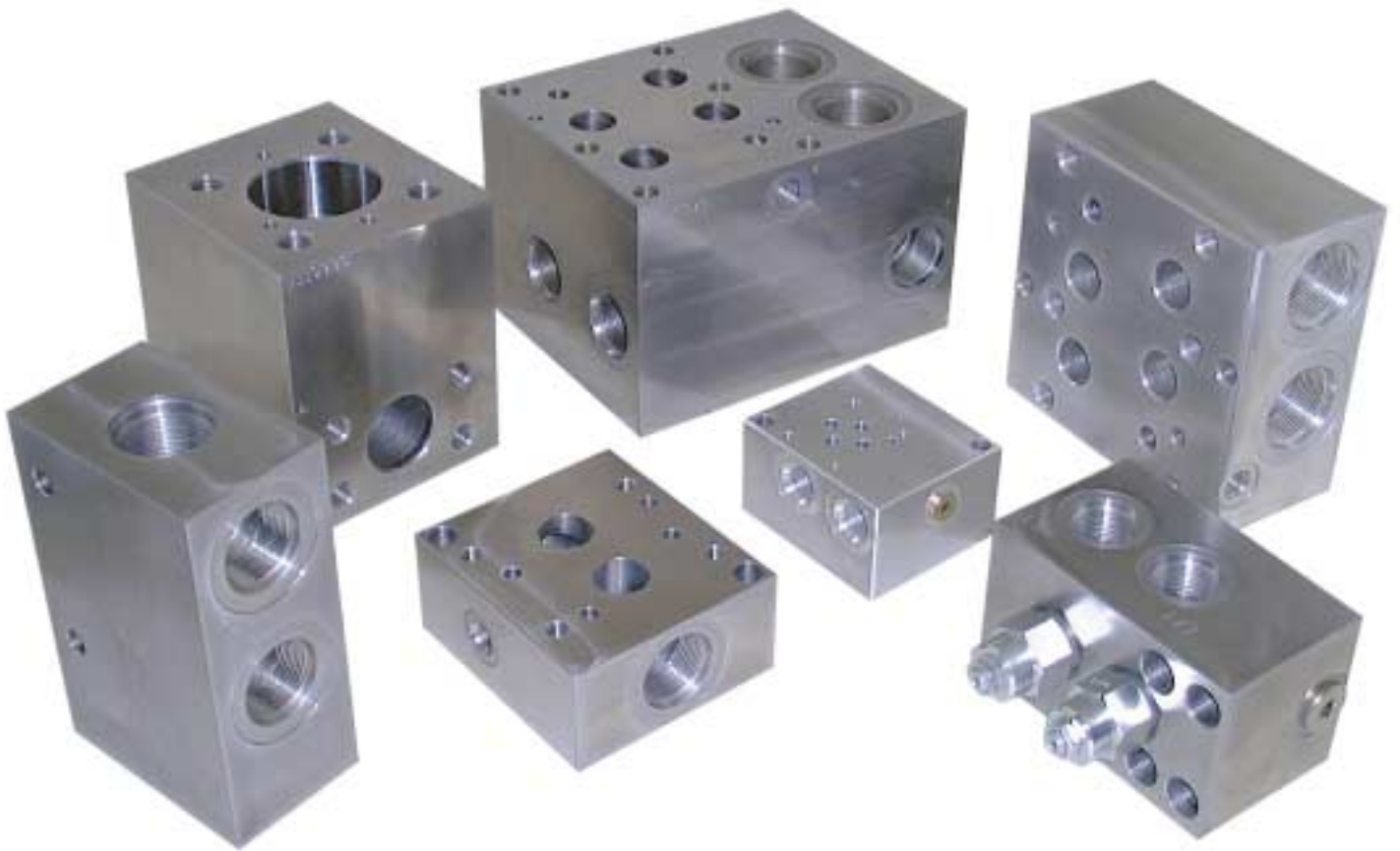


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Introduction

Sealum Industries has designed and manufactured hydraulic manifolds for over twenty years. Our CNC mills and lathes are tooled up for all common cavity ports, and we have the expertise to produce manifolds as large as 60" x 48" x 40" and as small as ½" x 1" x 2".

Stock Manifolds

Most of the manifolds shown on the following pages are stock items. They are inventoried in steel and aluminum and are available with special coatings (zinc, anodized, and black oxide coatings) if requested. Coatings will add approximately one week to the delivery.

Custom Manifolds

Sealum Industries can design and manufacture custom manifolds to your specifications when you supply us with a circuit with a list of valves, port sizes, type of material, and any special features. A quotation will then be sent to you, and if this results in a purchase order, a part number will be issued. Our engineering department will work with you on the details of the layout and can also supply you with a layout drawing if requested. Sealum Industries does not supply manufacturing drawings and custom manifolds will not be sold to others without the consent of the customer. As a general rule, surface mounted valves will be on the top, inlet ports on one side with outlet ports opposite, and cartridges can go anywhere suitable. Mounting holes are also provided and can be either tapped or through holes. Custom manifolds take approximately two to three weeks to produce, will not be accepted back for credit and are subject to a cancellation fee once manufacturing has begun.

Material Selection

Unless otherwise specified, the following materials will be used:

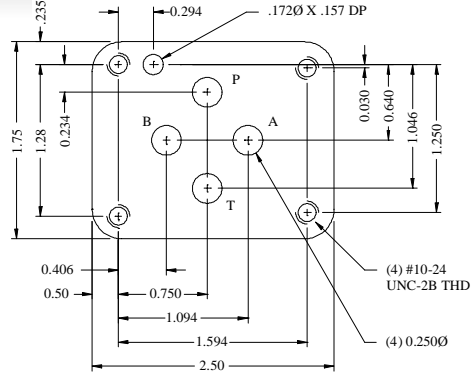
Steel – G40.21-44W or C1018
Aluminum – 6061-T6
Stainless Steel – 316L

It is the responsibility of the customer to select the appropriate material. When doing so, the following factors should be taken into consideration.

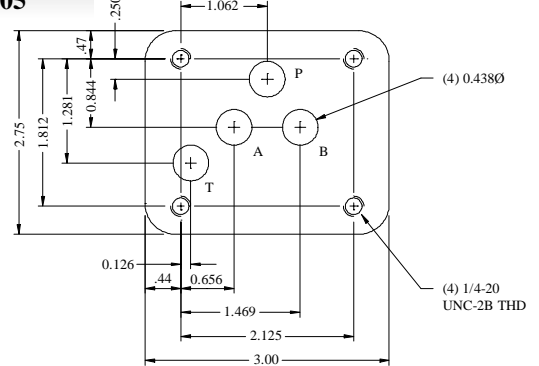
- **Pressure:** Normally, aluminum is rated for 3,000 PSI while steel is rated for 6,000 PSI. The pressure rating of the valves itself should also be taken into consideration.
- **Heat:** Steel should be used when the valves generate high heat such as pressure relieving and pressure reducing valves. The coefficient of linear expansion for aluminum is twice that of steel cartridges and plugs. Therefore they will expand at a different rate and may loosen.
- **Erosion:** If the oil velocity is very high as the oil leaves the cartridge, there is a danger of erosion on the walls of the cavity. In this case steel would be a better choice.
- **Corrosion:** If corrosion is a factor, a special coating may be required. We can supply you with regular or hard anodizing on our aluminum manifolds, and zinc plating or black oxide on our steel manifolds.
- **Weight:** Weight is normally not a factor since the manifold itself is considerably smaller than the rest of the equipment. However, if weight is a concern, a steel manifold will weigh about three times as much as the same manifold in aluminum.

Valve Specifications

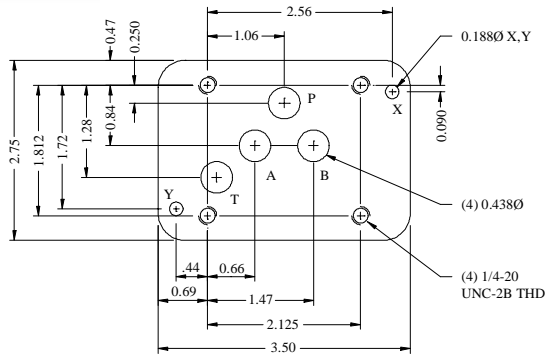
NFPA D03



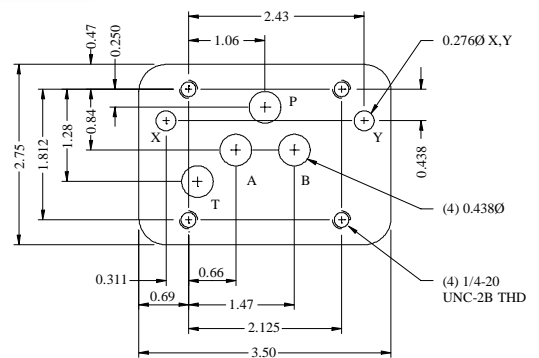
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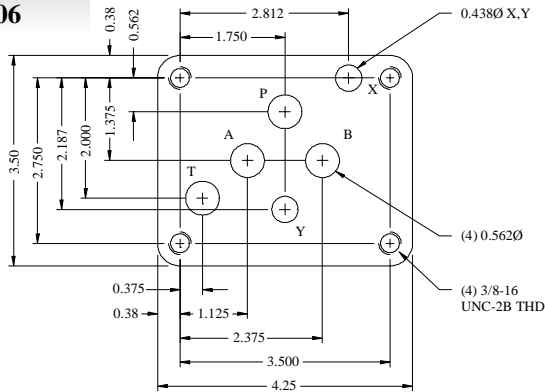
D05H



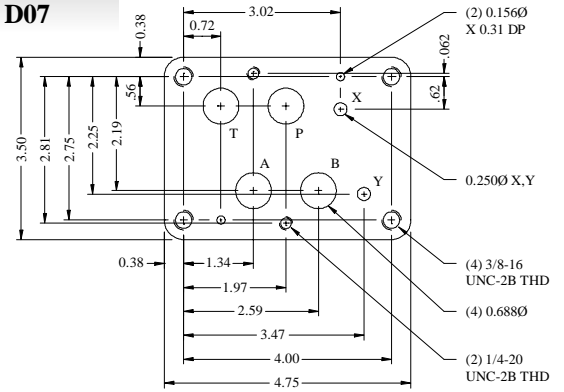
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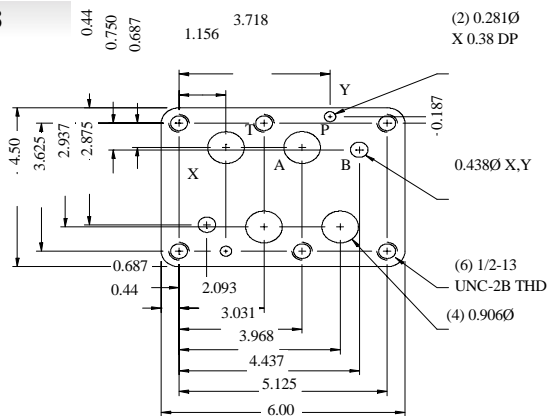
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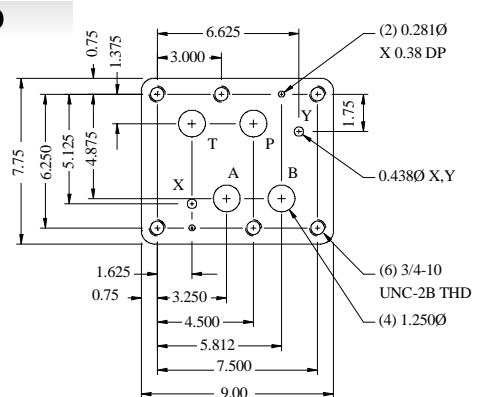
NFPA D07



NFPA D08

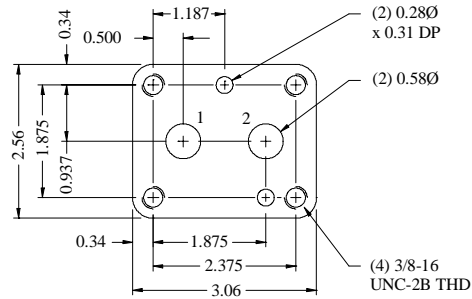


NFPA D10

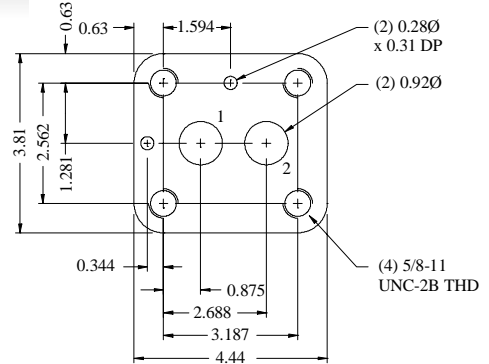


Valve Specifications

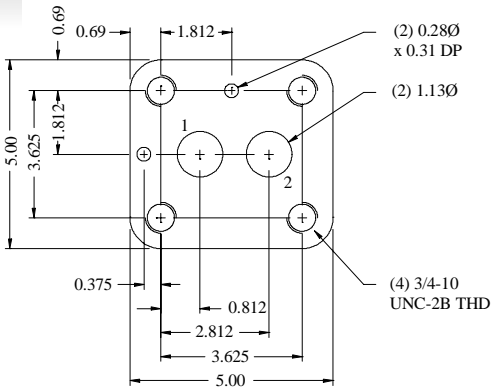
C03



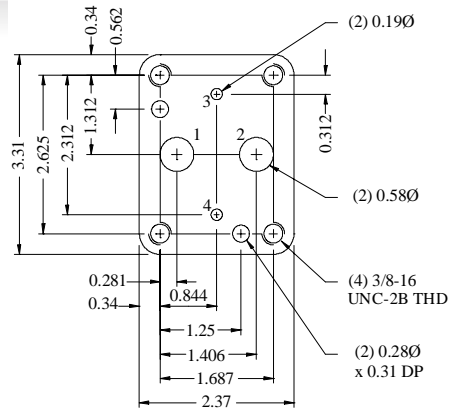
C06



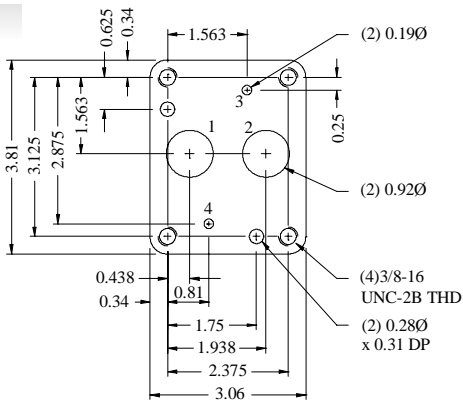
C10



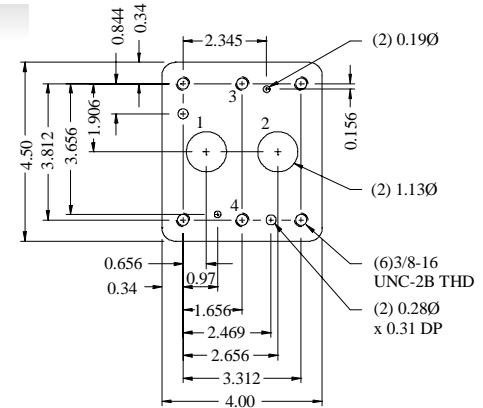
P06



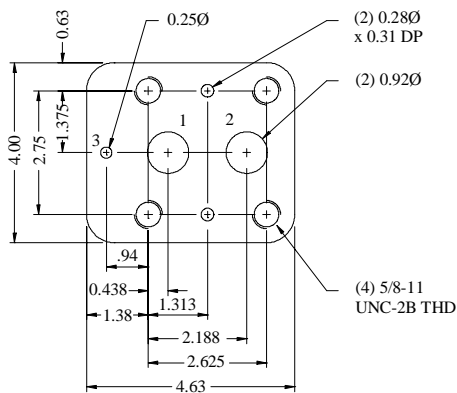
P08



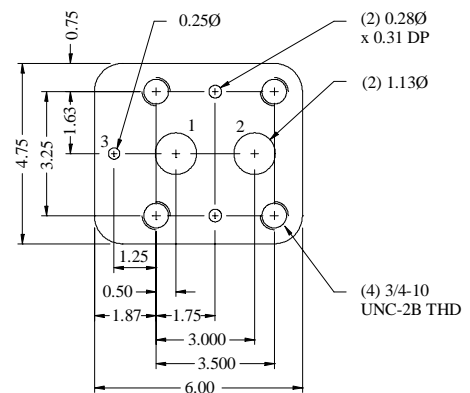
P10



R08

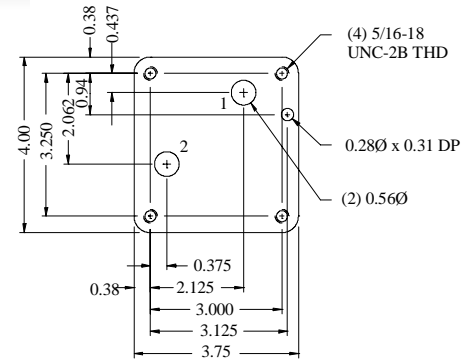


R10

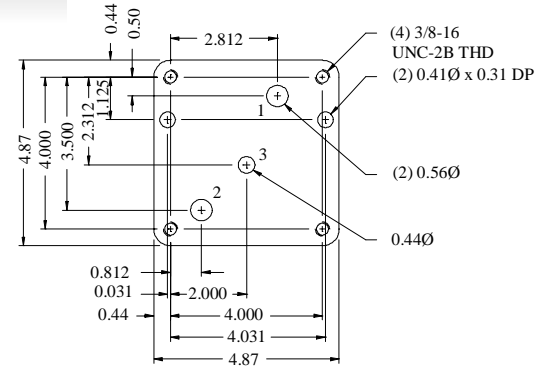


Valve Specifications

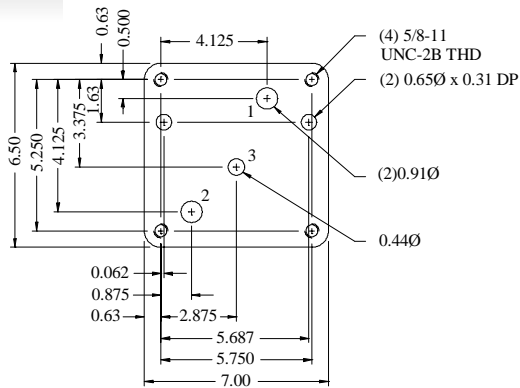
2F02



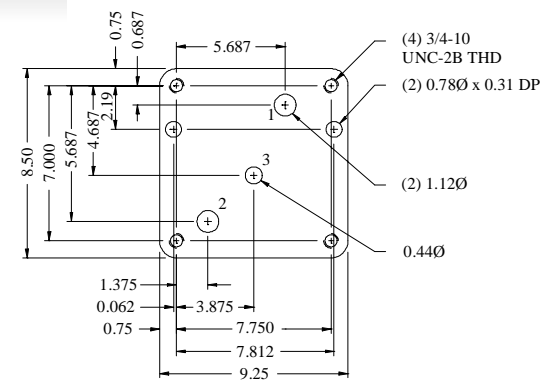
2F03



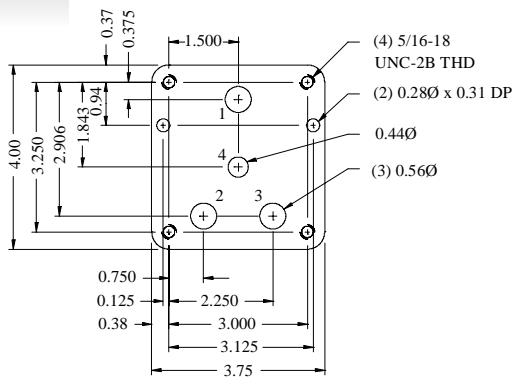
2F06



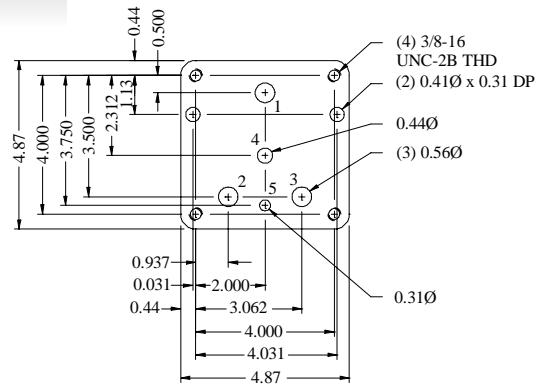
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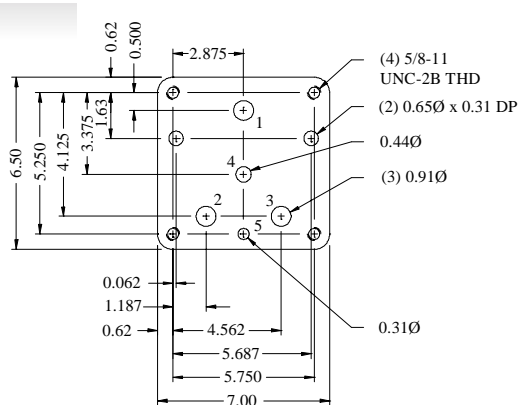
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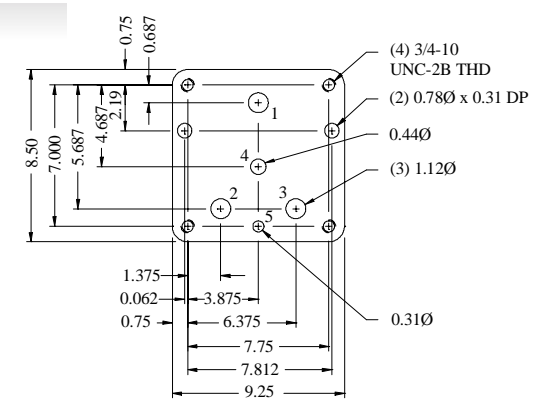
3F03



3F06

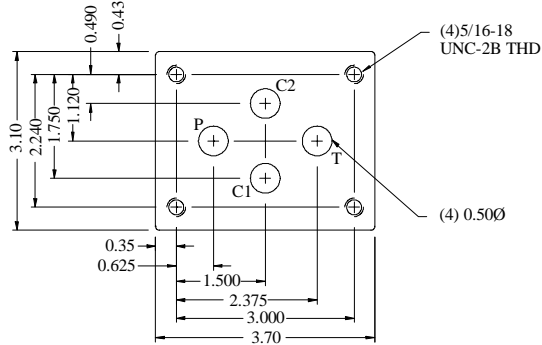


3F10

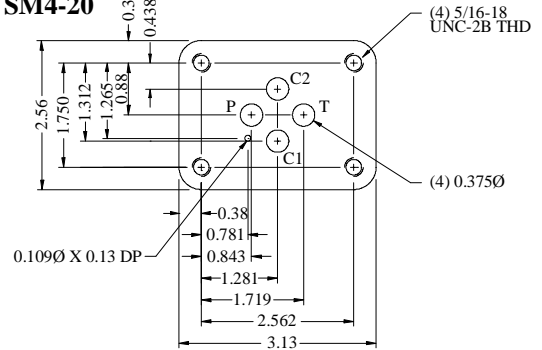


Valve Specifications

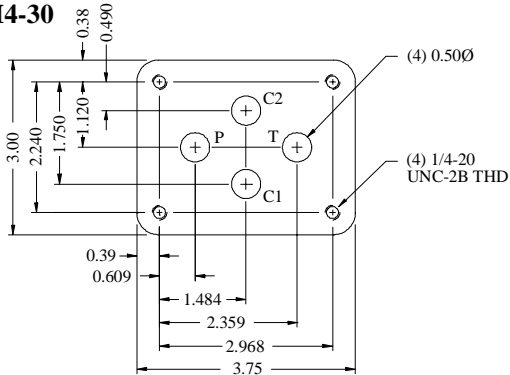
ATCHLEY CONTROLS 242



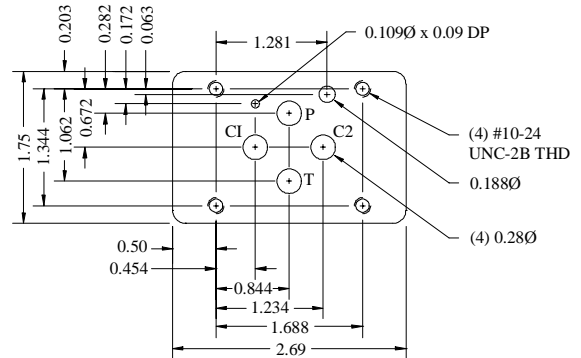
**MOOG 62-100 SERIES / ATCHLEY CONTROLS 215A
VICKERS SM4-20**



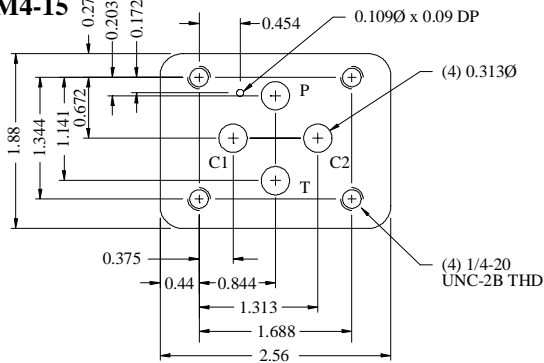
**MOOG 62-300 SERIES / ATCHLEY CONTROLS 241
VICKERS SM4-30**



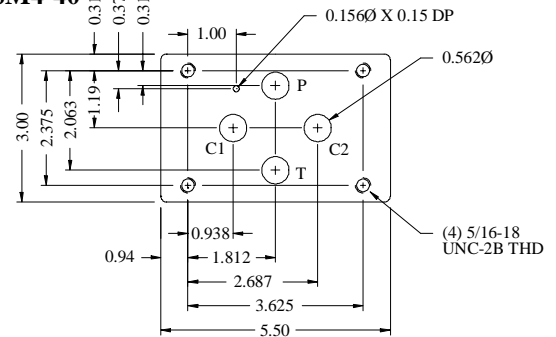
MOOG 772 / ATCHLEY CONTROLS 211A



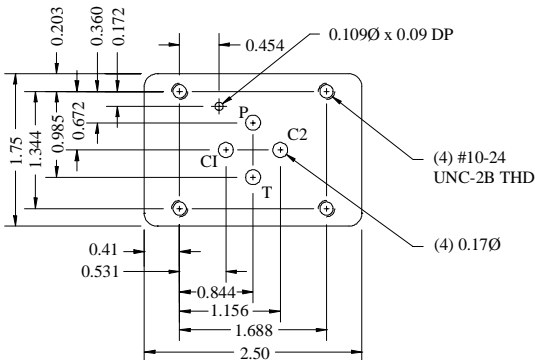
**MOOG 773 / ATCHLEY CONTROLS 218
VICKERS SM4-15**



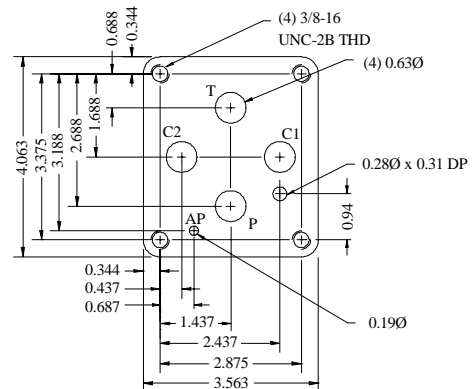
**MOOG 78-100 SERIES / ATCHLEY CONTROLS 240
VICKERS SM4-40**



**MOOG 771 / ATCHLEY CONTROLS 206 / 208A
VICKERS SM4-10**

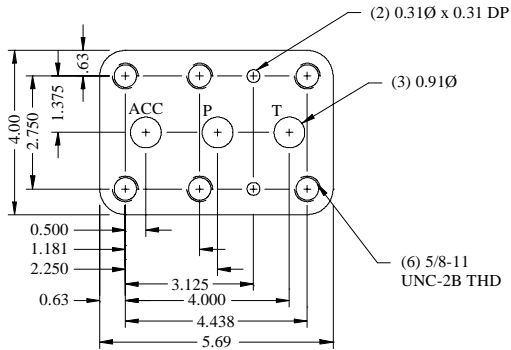


MOOG 72 / ATCHLEY CONTROLS 261

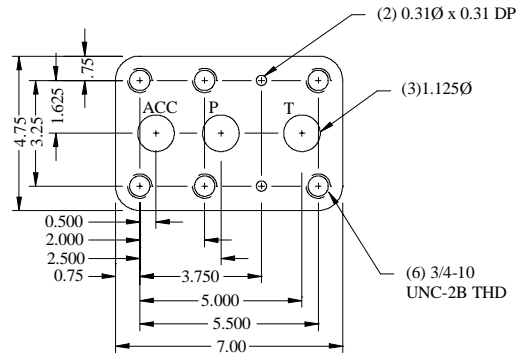


Valve Specifications

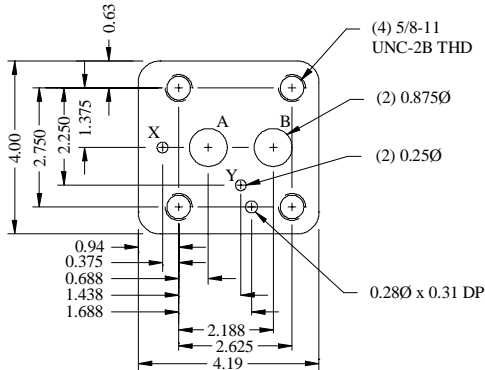
VICKERS URG06



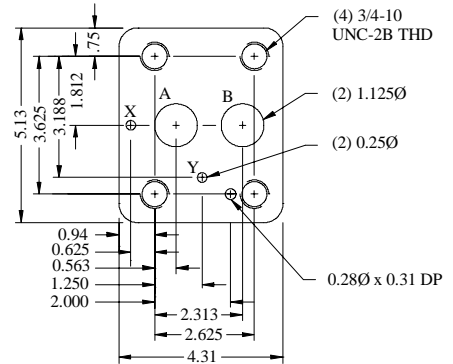
VICKERS URG10



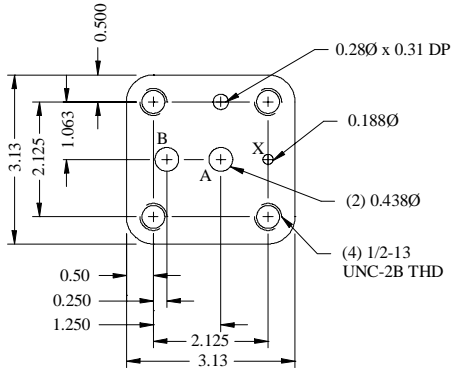
VICKERS CG06



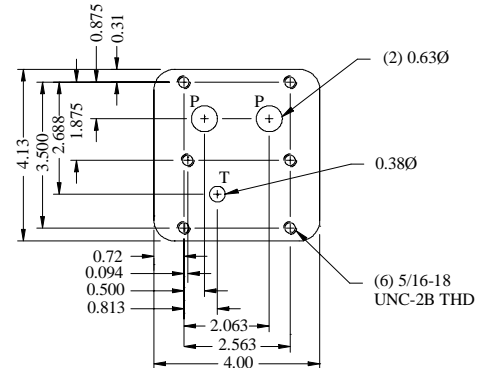
VICKERS CG10



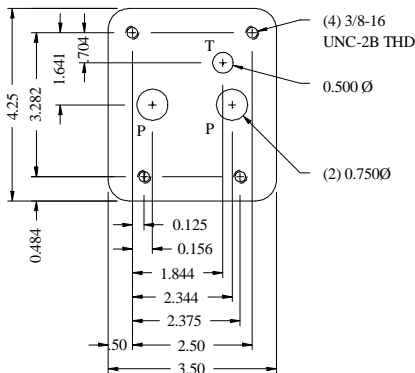
R06 / VICKERS CG03



SUNDSTRAND HOT OIL SHUTTLE 9510648



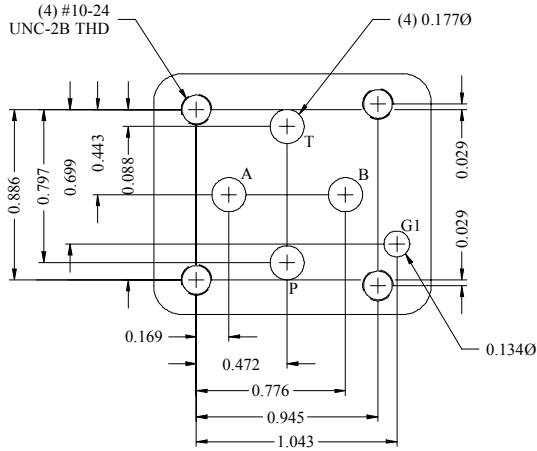
EATON HOT OIL SHUTTLE



Valve Specifications

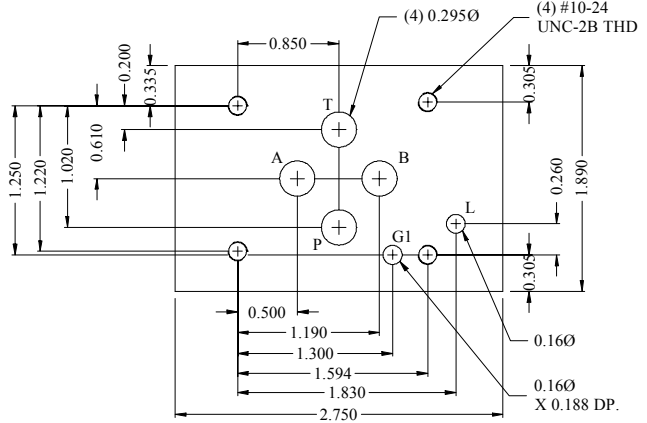
D02

ISO 4401-02-01-0-94
NFPA T3.5.1 R2 D02



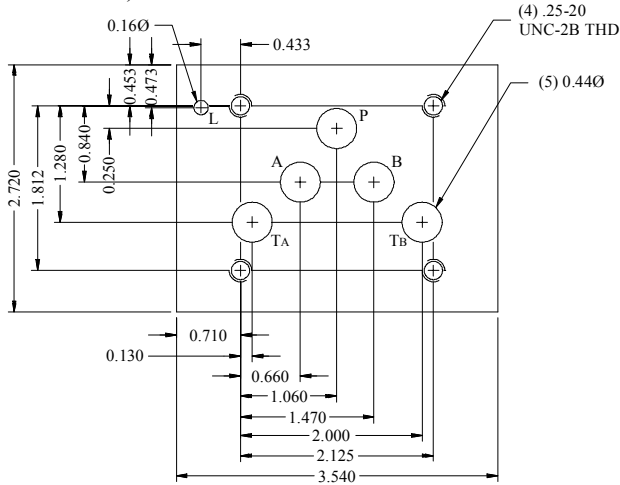
D03 with L

ISO 4401-03-02-0-94
NFPA T3.5.1 R2 D03



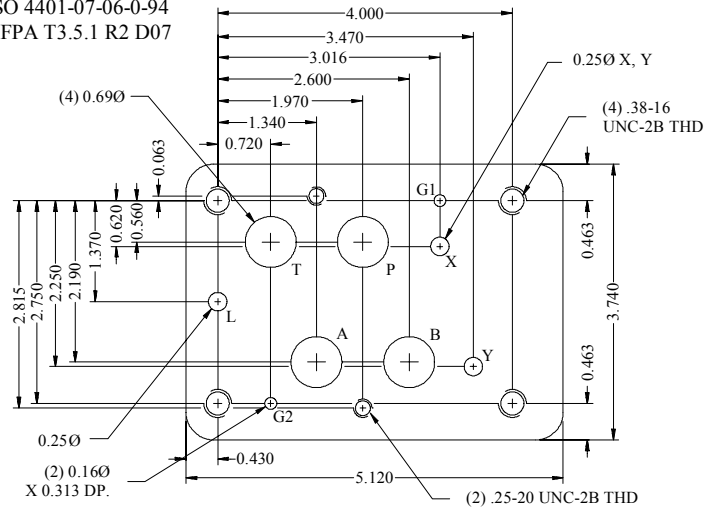
D05 with L

ISO 4401-05-04-0-94, NFPA T3.5.1 R2 D05



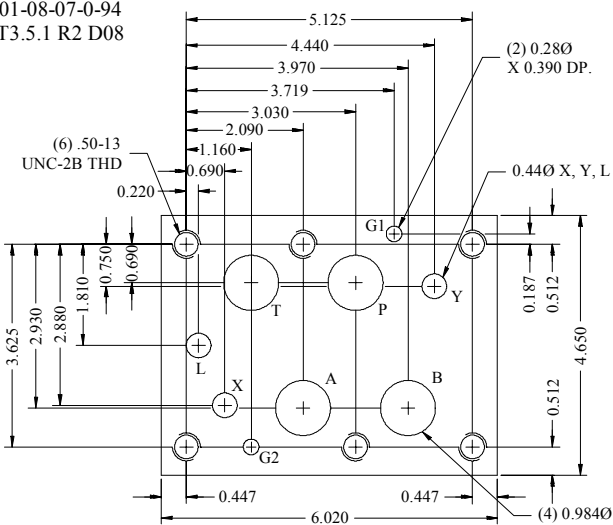
D07 with L

ISO 4401-07-06-0-94
NFPA T3.5.1 R2 D07



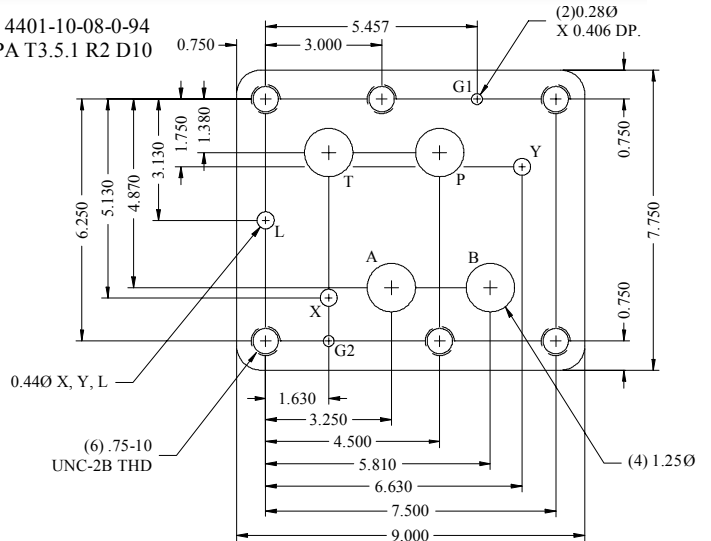
D08 with L

ISO 4401-08-07-0-94
NFPA T3.5.1 R2 D08



D10 with L

ISO 4401-10-08-0-94
NFPA T3.5.1 R2 D10



Subplates

Directional Valves

Servo Valves

Surface Mounted Valves

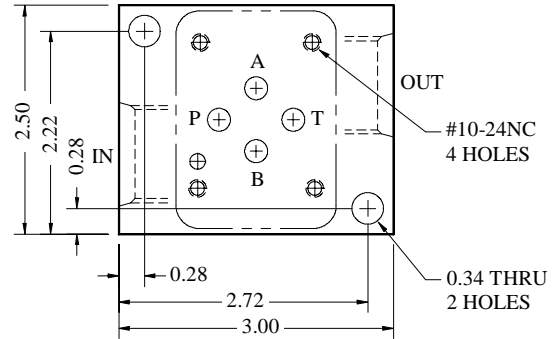
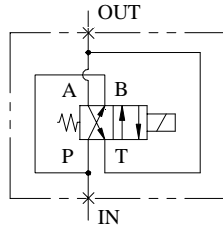


Double Flow Manifold

D03

PART NO: **MB1083S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
IN, OUT: **#12 SAE ORB**

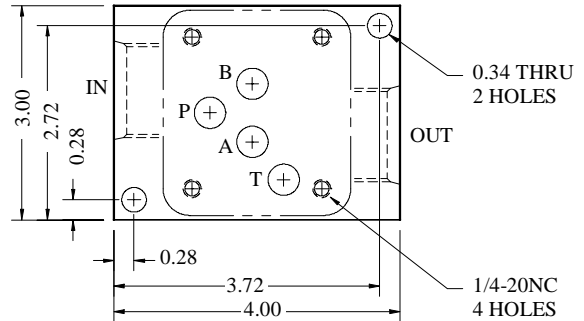
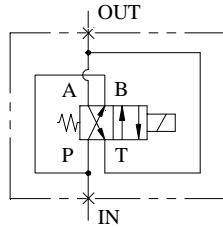
2" THICK



D05

PART NO: **MB1085S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
IN, OUT: **#16 SAE ORB**

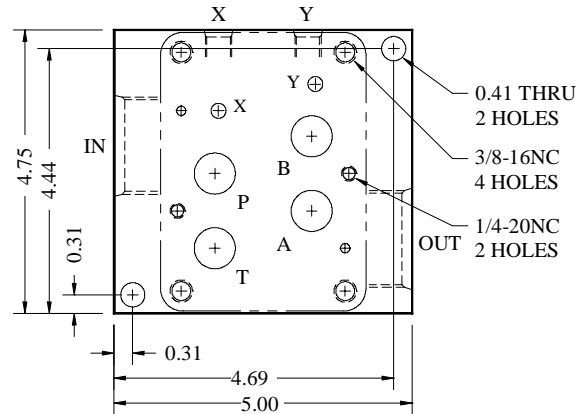
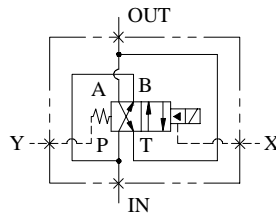
2" THICK



D07

PART NO: **MB1974S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
IN, OUT: **#20 SAE ORB**
X, Y: **#4 SAE ORB**

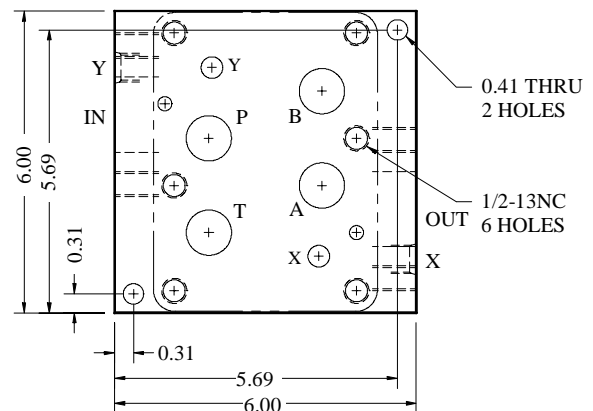
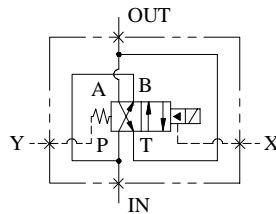
2 1/2" THICK



D08

PART NO: **MB1434S**
MATL: **STEEL**
PRESSURE: **3000 PSI WORKING PRESSURE**
IN, OUT: **1 1/2 C61 SAE 4-BOLT FLANGE**
X, Y: **#6 SAE ORB**

4" THICK



FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.

FLANGE MOUNTING HOLES ARE IN INCHES.

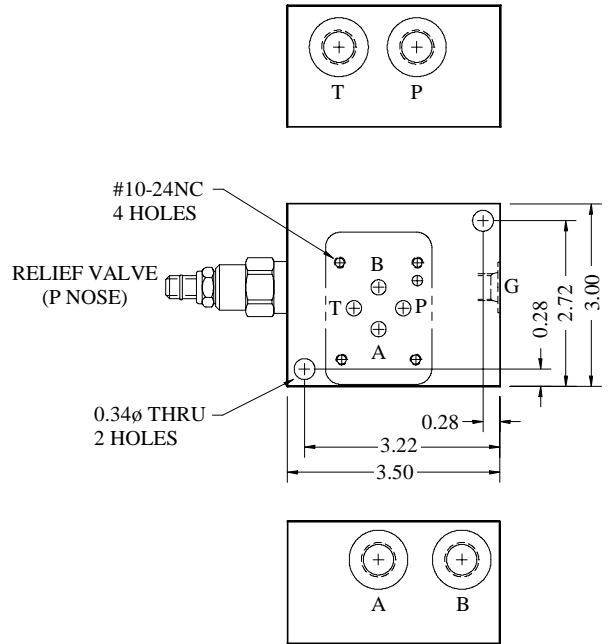
Directional Subplate

D03 - SAE ORB SIDE PORT

MB201-0-8AM

- M - WITH 1/2" MOUNTING PLATE
(OMIT IF NO MOUNTING PLATE)
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- 8 - #8 SAE ORB
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY

TO ORDER MOUNTING PLATE ONLY: **MB581-3**
G (GAGE ON P): #4 SAE ORB
2" THICK

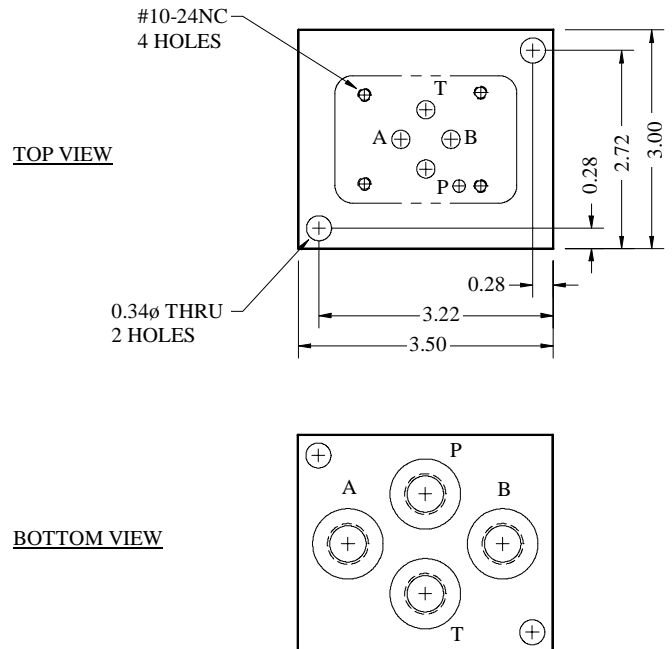


D03 - SAE ORB BOTTOM PORT

MB606-8A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- 8 - #8 SAE ORB

1 1/4" THICK



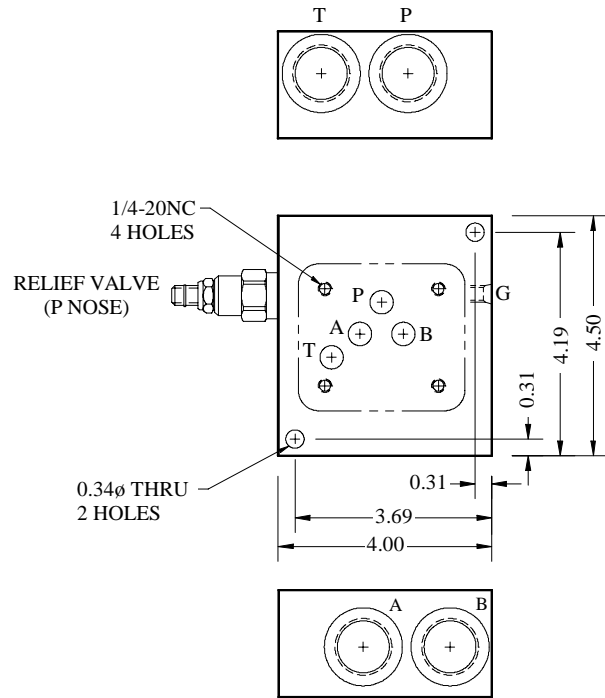
Directional Subplate

D05 - SAE ORB SIDE PORT

MB202-0-12AM

- M - WITH 1/2" MOUNTING PLATE
(OMIT IF NO MOUNTING PLATE)
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- 12 - #12 SAE ORB
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY

TO ORDER MOUNTING PLATE ONLY: **MB581-5**
G (GAGE ON P): #4 SAE ORB
2" THICK

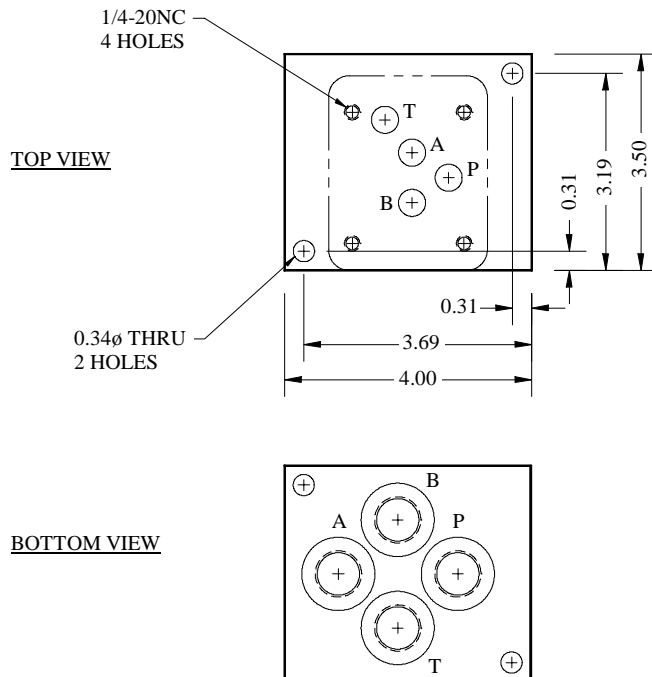


D05 - SAE ORB BOTTOM PORT

MB564-8A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- 8 - #8 SAE ORB

1 1/4" THICK

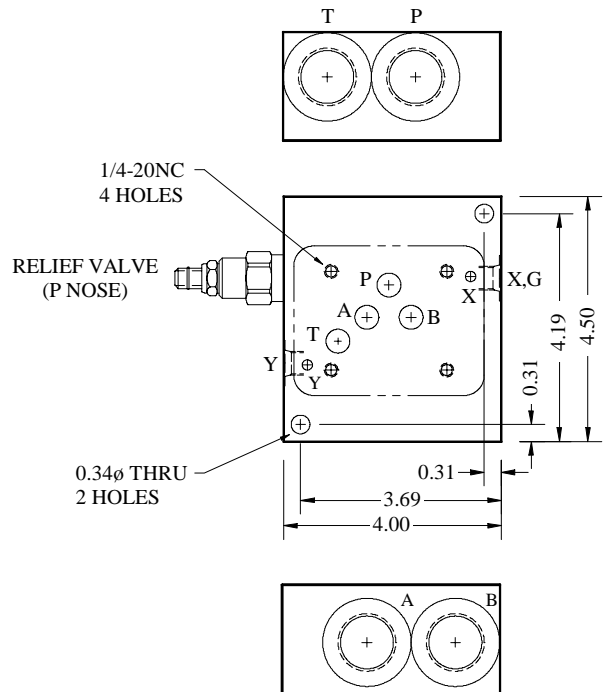


Directional Subplate

D05H - SAE ORB SIDE PORT

MB203-0-12AM

- M - WITH 1/2" MOUNTING PLATE
(OMIT IF NO MOUNTING PLATE)
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- 12 - #12 SAE ORB
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY

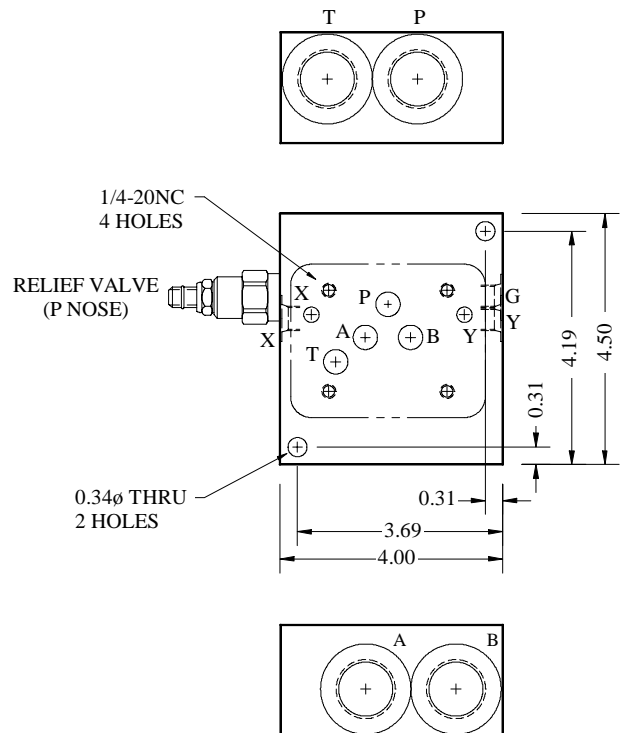


TO ORDER MOUNTING PLATE ONLY: **MB581-5**
X, Y, G (GAGE ON P): #4 SAE ORB
2" THICK

D05HE - SAE ORB SIDE PORT

MB504-0-12AM

- M - WITH 1/2" MOUNTING PLATE
(OMIT IF NO MOUNTING PLATE)
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- 12 - #12 SAE ORB
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY



TO ORDER MOUNTING PLATE ONLY: **MB581-5**
X, Y, G (GAGE ON P): #4 SAE ORB
2" THICK

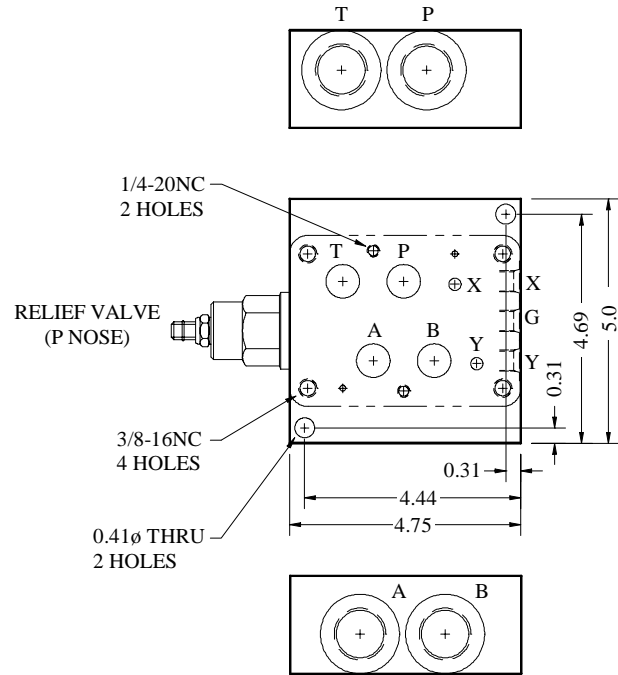
Directional Subplate

D07 - SAE ORB SIDE PORT

MB654-0-12AM

- M - WITH 1/2" MOUNTING PLATE
(OMIT IF NO MOUNTING PLATE)
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- 12 - #12 SAE ORB
- 16 - #16 SAE ORB
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-3A CAVITY

TO ORDER MOUNTING PLATE ONLY: **MB831-7**
 X, Y, G (GAGE ON P): #4 SAE ORB
 2" THICK FOR #12 SAE ORB
 2 1/2" THICK FOR #16 SAE ORB

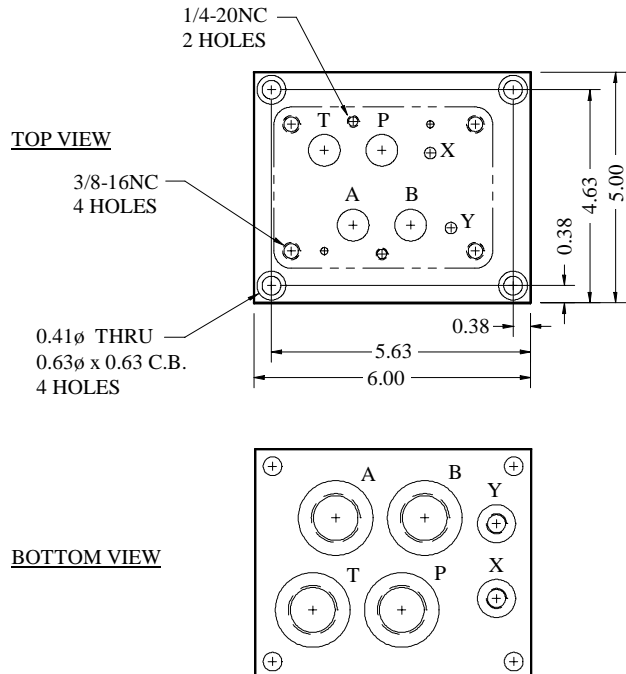


D07 - SAE ORB BOTTOM PORT

MB2210-12A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- 12 - #12 SAE ORB
- 16 - #16 SAE ORB

X, Y: #4 SAE ORB
2" THICK



Directional Subplate

D07 - SAE 4-BOLT FLANGE SIDE PORT

MC1466-0-20C1S

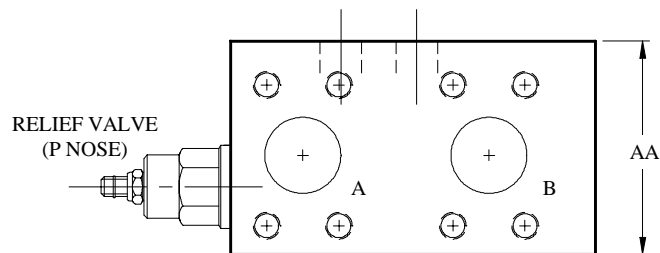
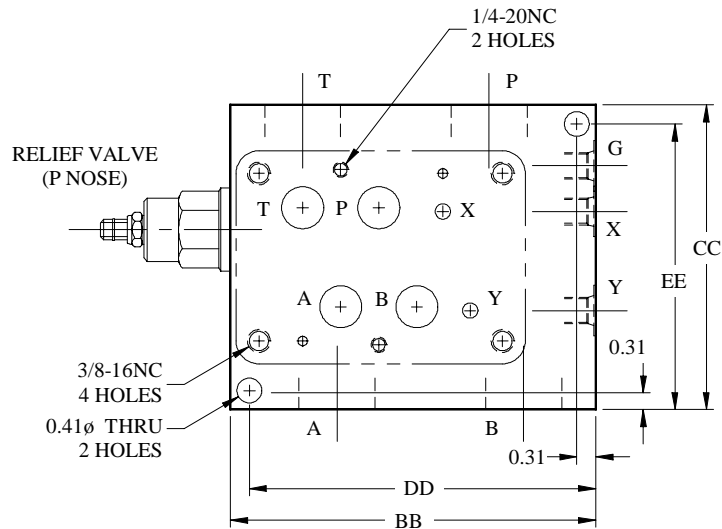
20C1S - 1 1/4 C61 P, T, A, B
20C2S - 1 1/4 C62 P, A, B 1 1/4 C61 T
24C1S - 1 1/2 C61 P, T, A, B
24C2S - 1 1/2 C62 P, A, B 1 1/2 C61 T

0 - NO RELIEF CAVITY
M - STD C-16-2 CAVITY
S - SUN T-3A CAVITY

X, Y, G (GAGE): #4 SAE ORB
MATL: STEEL

FOR DIMENSIONS OF FLANGE PORTS AND
PRESSURE RATING SEE PAGE 41-12.

FLANGE MOUNTING HOLES ARE IN INCHES.



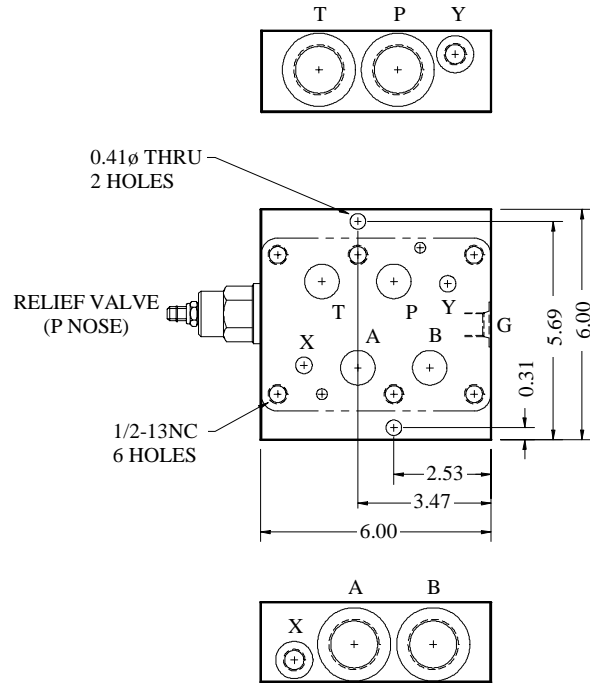
Part No.	P, A, B	T	AA	BB	CC	DD	EE
MC1466 - * - 20C1S	1 1/4 C61	1 1/4 C61	3.50	6.00	5.00	5.69	4.69
MC1466 - * - 20C2S	1 1/4 C62	1 1/4 C61	4.00	6.25	5.00	5.94	4.69
MC1466 - * - 24C1S	1 1/2 C61	1 1/2 C61	4.00	6.63	5.00	6.31	4.69
MC1466 - * - 24C2S	1 1/2 C62	1 1/2 C61	5.00	7.00	5.25	4.13	4.94

Directional Subplate

D08 - SAE ORB SIDE PORT

MB652-0-16AM

- M - WITH 1/2" MOUNTING PLATE
(OMIT IF NO MOUNTING PLATE)
- A - 6061T6 ALUMINUM 3000 PSI
S - C1018 STEEL 5000 PSI
- 16 - #16 SAE ORB
20 - #20 SAE ORB
- 0 - NO CAVITY
M - C-16-2 CAVITY
S - SUN T-3A CAVITY
S1 - SUN T-16A CAVITY



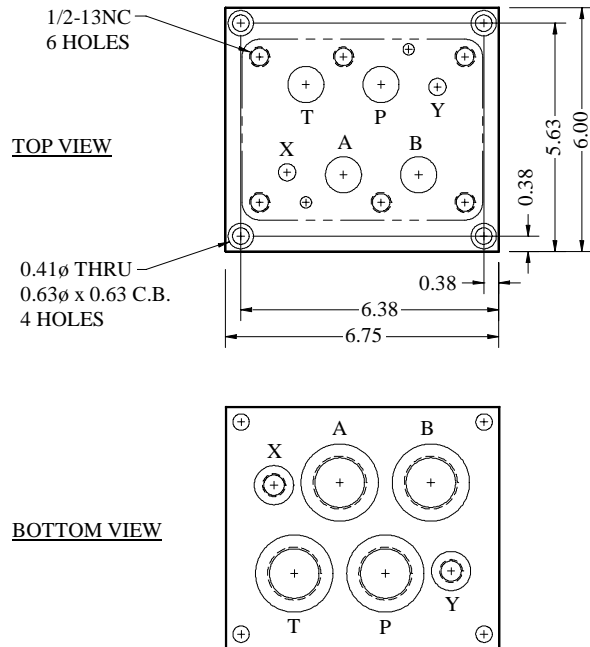
TO ORDER MOUNTING PLATE ONLY: **MB831-8**

X, Y: #6 SAE ORB
G (GAGE ON P): #4 SAE ORB
2" THICK FOR #16 SAE ORB
3" THICK FOR #20 SAE ORB

D08 - SAE ORB BOTTOM PORT

MB2211-16A

- A - 6061T6 ALUMINUM 3000 PSI
S - C1018 STEEL 5000 PSI
- 16 - #16 SAE ORB
20 - #20 SAE ORB



X, Y: #6 SAE ORB
1 1/2" THICK FOR #16 SAE ORB
2 1/2" THICK FOR #20 SAE ORB

Directional Subplate

D08 - SAE 4-BOLT FLANGE SIDE PORT

MC1313-0-20C1S

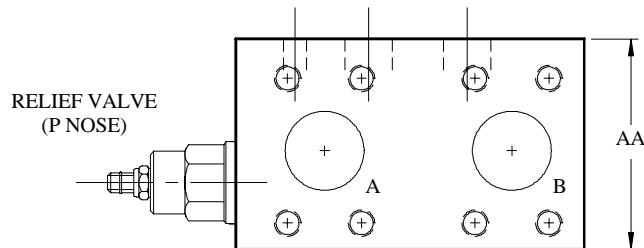
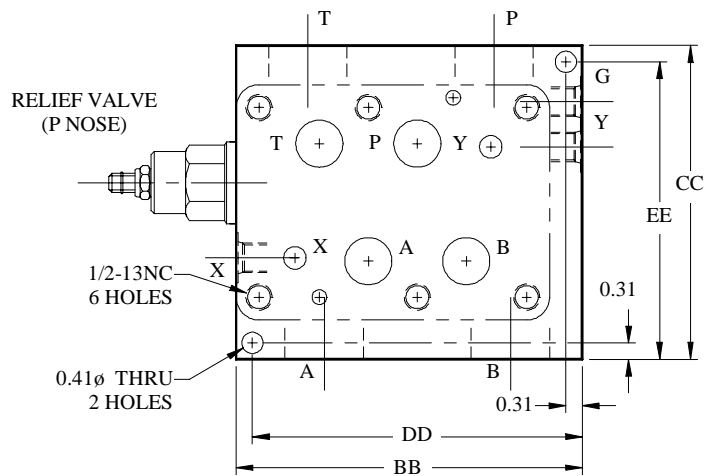
- 20C1S - 1 1/4 C61 P, T, A, B
- 20C2S - 1 1/4 C62 P, A, B 1 1/4 C61 T
- 24C1S - 1 1/2 C61 P, T, A, B
- 24C2S - 1 1/2 C62 P, A, B 1 1/4 C61 T
- 32C1S - 2 C61 P, T, A, B
- 32C2S - 2 C62 P, A, B 2 C61 T

- 0 - NO RELIEF CAVITY
- M - STD C-16-2 CAVITY
- S - SUN T-16A CAVITY

X, Y, G (GAGE): # 6 SAE ORB
MATL: STEEL

FOR DIMENSIONS OF FLANGE PORTS AND
PRESSURE RATING SEE PAGE 41-12.

FLANGE MOUNTING HOLES ARE IN INCHES.



Part No.	P, A, B	T	AA	BB	CC	DD	EE
MC1313 - * - 20C1S	1 1/4 C61	1 1/4 C61	3.50	6.00	6.00	5.69	5.69
MC1313 - * - 20C2S	1 1/4 C62	1 1/4 C61	4.00	6.25	6.00	5.94	5.69
MC1313 - * - 24C1S	1 1/2 C61	1 1/2 C61	4.00	6.63	6.00	6.31	5.69
MC1313 - * - 24C2S	1 1/2 C62	1 1/2 C61	5.00	7.00	6.25	4.13	5.94
MC1313 - * - 32C1S	2 C61	2 C61	4.50	7.50	6.00	4.38	5.69
MC1313 - * - 32C2S	2 C62	2 C61	6.00	8.38	6.50	4.75	6.19

Directional Subplate

D10 - SAE ORB OR SAE 4-BOLT SIDE PORT

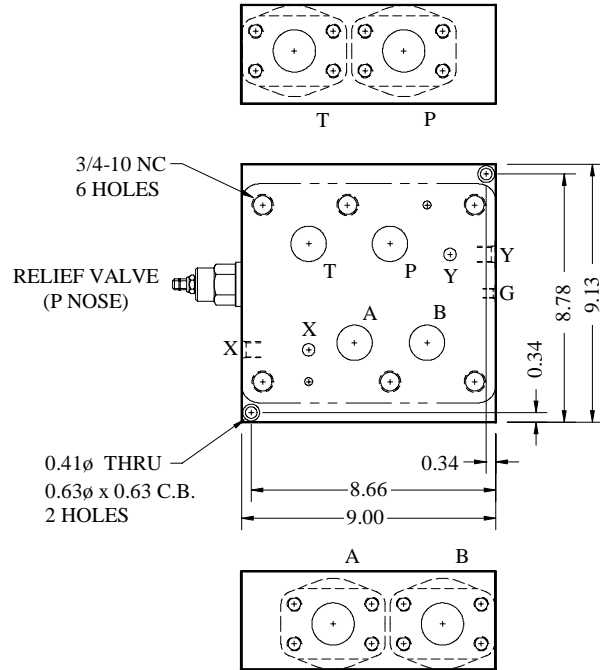
MC700-0-24C1S

- S - 44W STEEL
(5000 PSI SAE ORB PORTS)
(4000 PSI FLANGE PORTS)
- 24 - #24 SAE ORB
24C1 - 1 1/2 CODE 61
4-BOLT COMP FLANGE
- 0 - NO CAVITY
S - SUN T-18A CAVITY

X, Y: #8 SAE ORB
G (GAGE ON P): #4 SAE ORB
3" THICK (SAE ORB PORTS)
3 1/2" THICK (FLANGE PORTS)

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING
SEE PAGE 41-12.

FLANGE MOUNTING HOLES ARE IN INCHES.

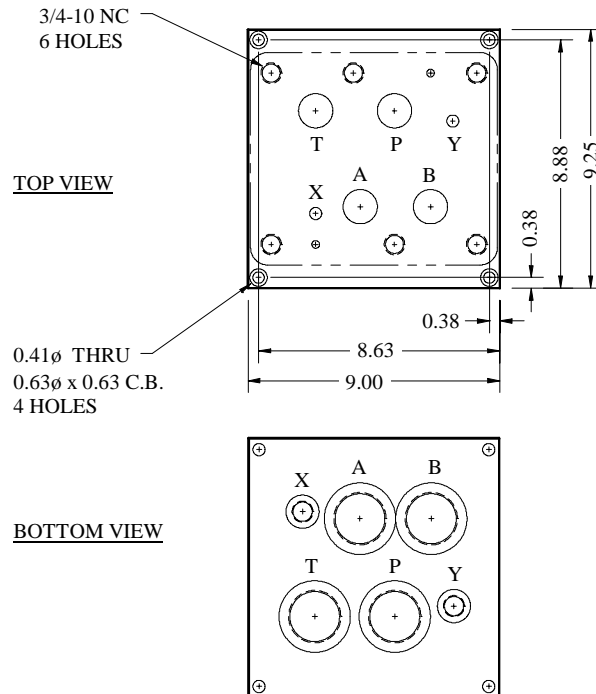


D10 - SAE ORB BOTTOM PORT

MC1467-24S

- S - 44W STEEL 5000 PSI
- 24 - #24 SAE ORB

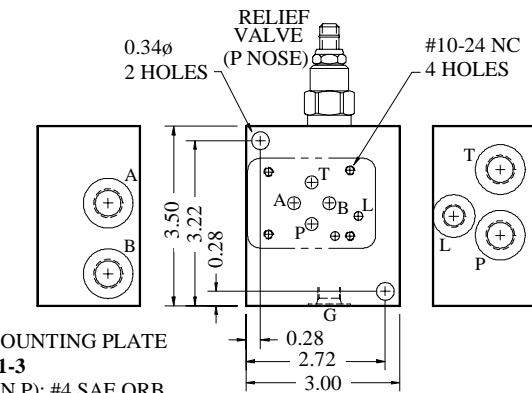
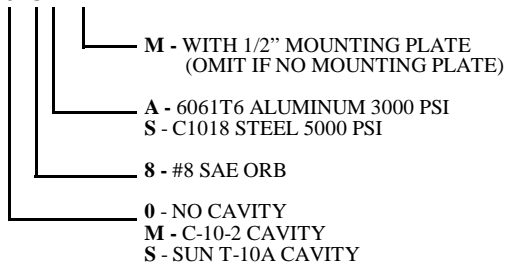
X, Y: #8 SAE ORB
1 1/2" THICK



Directional Subplate with L

D03 With L - SAE ORB SIDE PORT

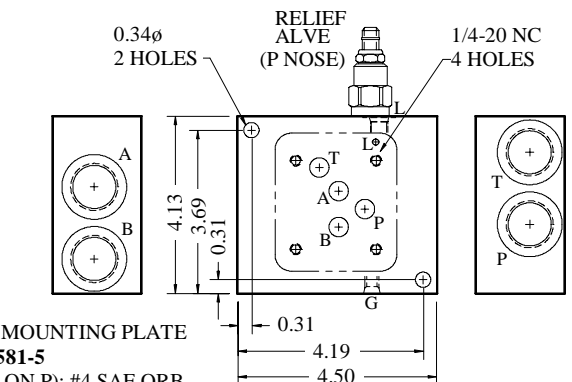
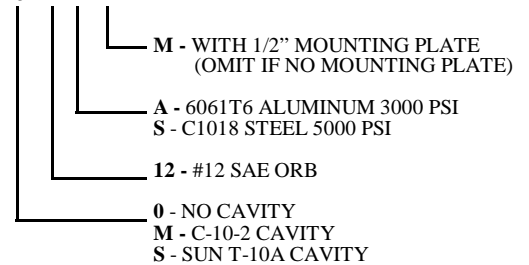
MB2555-0-8AM



TO ORDER MOUNTING PLATE ONLY: **MB581-3**
L, G (GAGE ON P): #4 SAE ORB
2" THICK

D05 With L - SAE ORB SIDE PORT

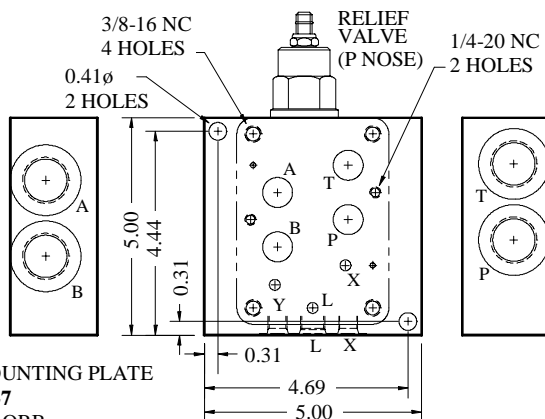
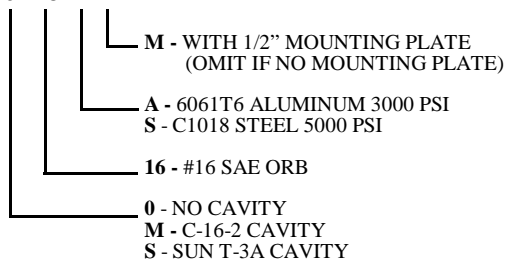
MB2556-0-12AM



TO ORDER MOUNTING PLATE ONLY: **MB581-5**
L, G (GAGE ON P): #4 SAE ORB
2" THICK

D07 With L - SAE ORB SIDE PORT

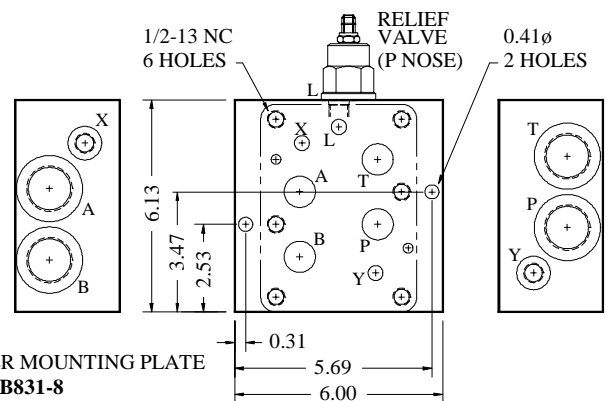
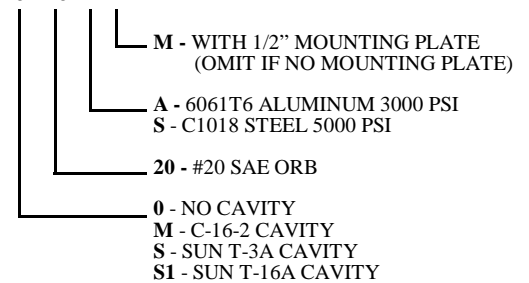
MB2557-0-16-AM



TO ORDER MOUNTING PLATE ONLY: **MB831-7**
L, X, Y: #4 SAE ORB
2 1/2" THICK

D08 With L - SAE ORB SIDE PORT

MB2558-0-20-AM

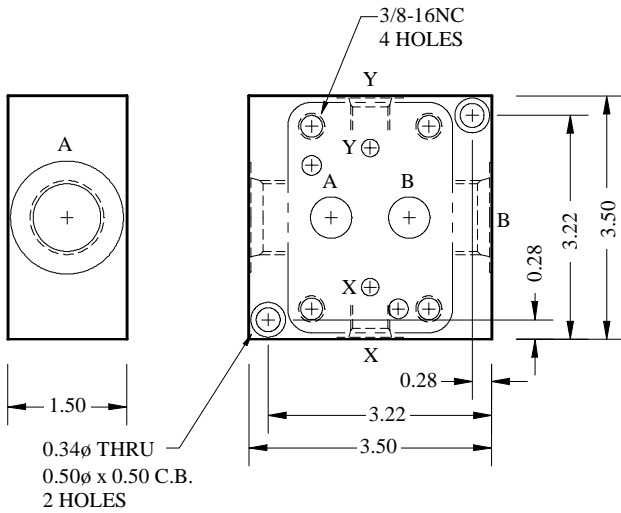


TO ORDER MOUNTING PLATE ONLY: **MB831-8**
L, X, Y: #6 SAE ORB
3" THICK

Surface Mounted Valve Subplate - SAE ORB Ports

P06 - SIDE PORT

PART NO: **MB532-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#12 SAE ORB**
X, Y: **#6 SAE ORB**



P06 - BOTTOM

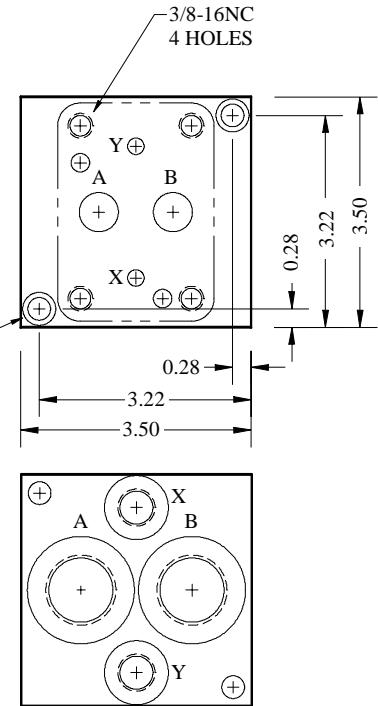
PART NO: **MB529-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#12 SAE ORB**
X, Y: **#6 SAE ORB**

1 1/2" THICK

TOP VIEW

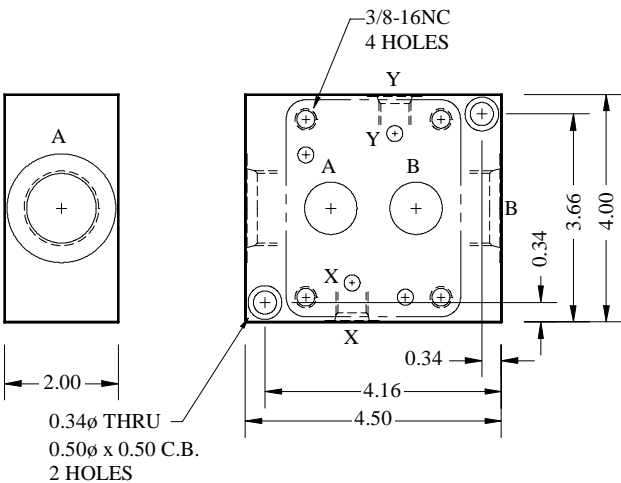
0.34 ϕ THRU
0.50 ϕ x 0.50 C.B.
2 HOLES

BOTTOM VIEW



P08 - SIDE PORT

PART NO: **MB530-16S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#16 SAE ORB**
X, Y: **#6 SAE ORB**



P08 - BOTTOM PORT

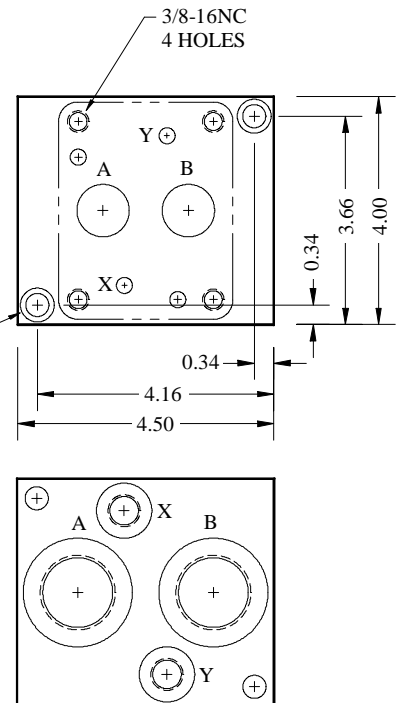
PART NO: **MB527-16S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#16 SAE ORB**
X, Y: **#6 SAE ORB**

2" THICK

TOP VIEW

0.34 ϕ THRU
0.50 ϕ x 0.50 C.B.
2 HOLES

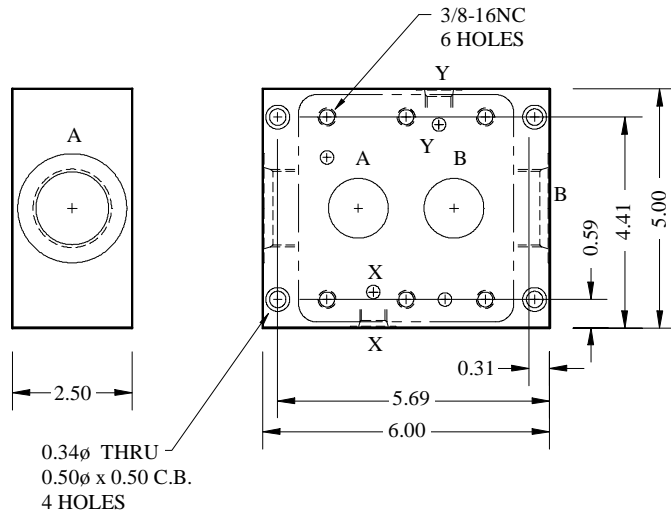
BOTTOM VIEW



Surface Mounted Valve Subplate – SAE ORB Ports

P10 - SIDE PORT

PART NO: **MB528-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#20 SAE ORB**
X, Y: **#6 SAE ORB**

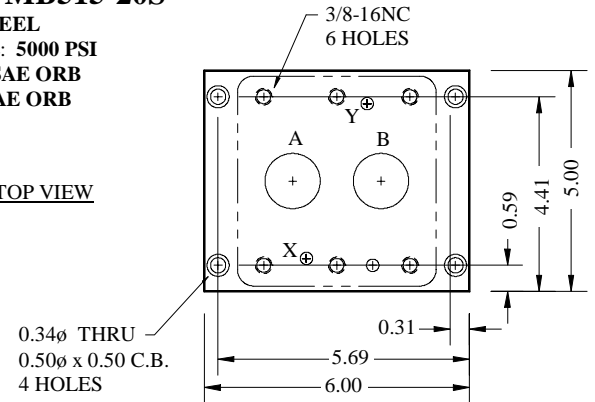


P10 - BOTTOM PORT

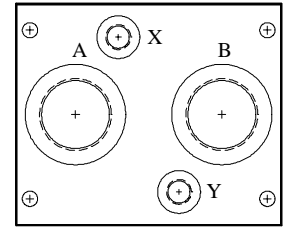
PART NO: **MB515-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#20 SAE ORB**
X, Y: **#6 SAE ORB**

2" THICK

TOP VIEW

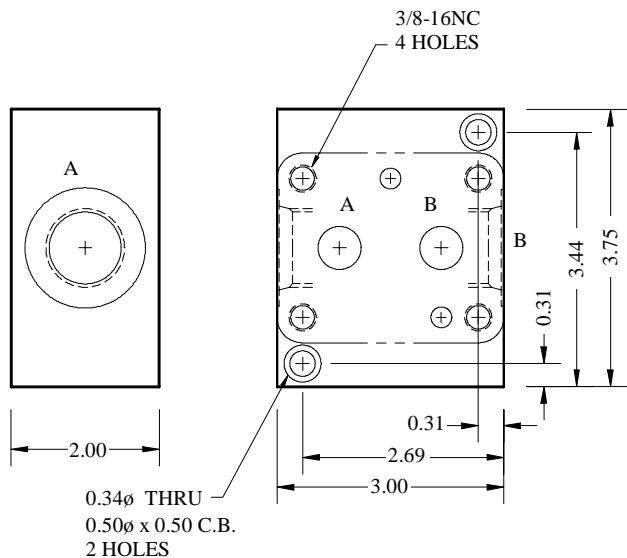


BOTTOM VIEW



C03 - SIDE PORT

PART NO: **MB992-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#12 SAE ORB**

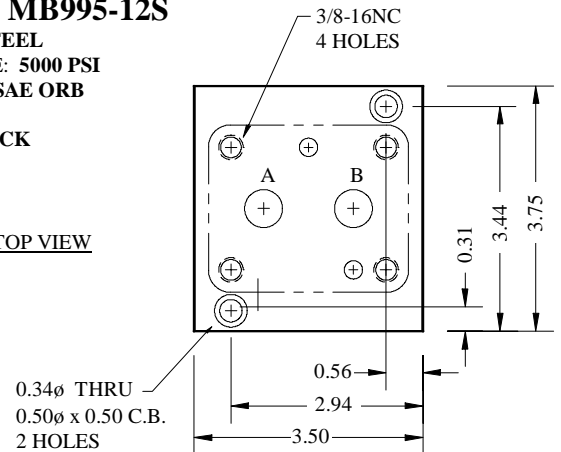


C03 - BOTTOM PORT

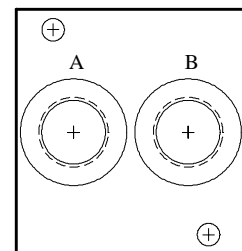
PART NO: **MB995-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#12 SAE ORB**

1 1/4" THICK

TOP VIEW



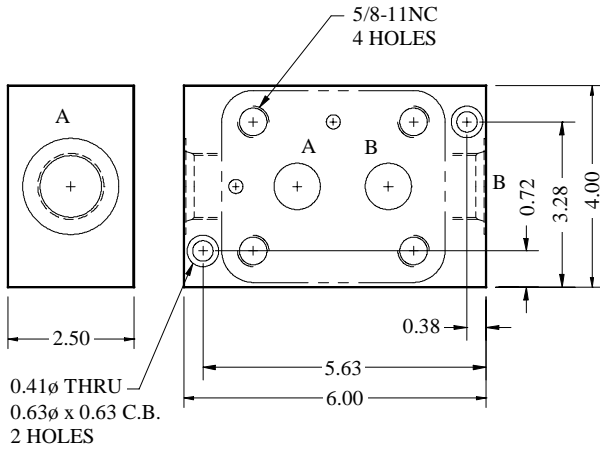
BOTTOM VIEW



Surface Mounted Valve Subplate – SAE ORB Ports

C06 - SIDE PORT

PART NO: **MB994-16S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#16 SAE ORB**

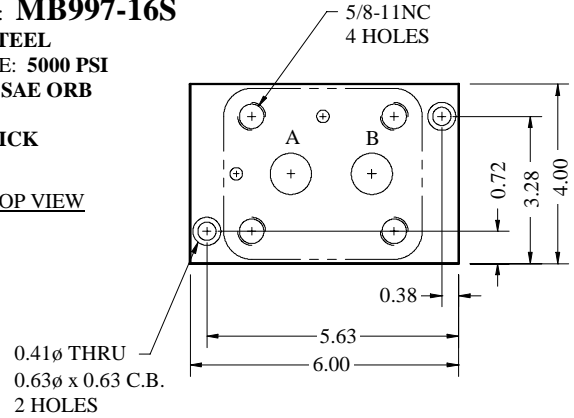


C06 - BOTTOM PORT

PART NO: **MB997-16S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#16 SAE ORB**

1 1/2" THICK

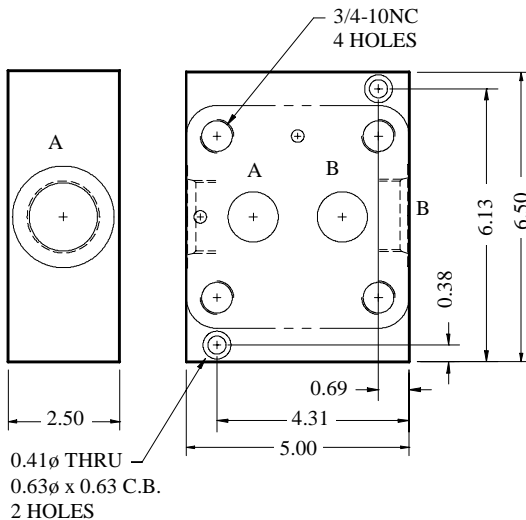
TOP VIEW



BOTTOM VIEW

C10 - SIDE PORT

PART NO: **MB996-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#20 SAE ORB**

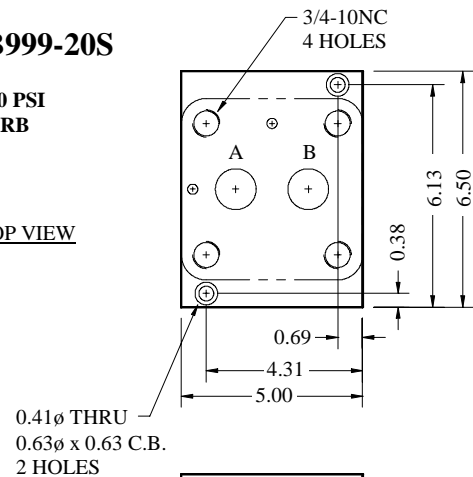


C10 - BOTTOM PORT

PART NO: **MB999-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#20 SAE ORB**

2" THICK

TOP VIEW

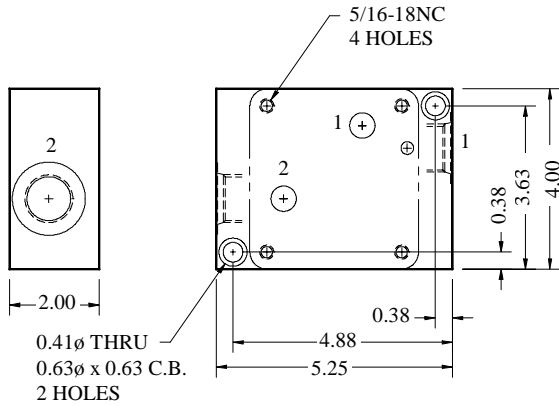


BOTTOM VIEW

Surface Mounted Valve Subplate – SAE ORB Ports

2F02 - SIDE PORT

PART NO: **MB2048-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
1, 2: **#12 SAE ORB**



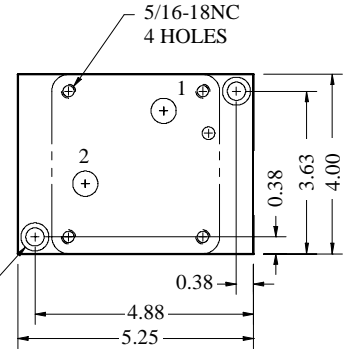
2F02 - BOTTOM PORT

PART NO: **MB991-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
1, 2: **#12 SAE ORB**

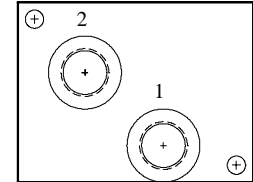
1 1/4" THICK

TOP VIEW

0.41 ϕ THRU
0.63 ϕ x 0.63 C.B.
2 HOLES

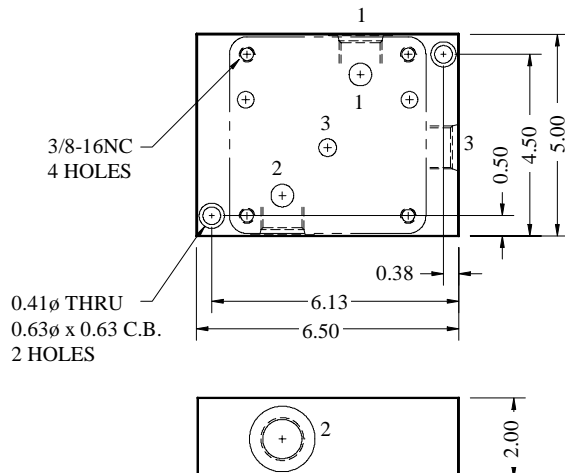


BOTTOM VIEW



2F03 - SIDE PORT

PART NO: **MB2051-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
1, 2, 3: **#12 SAE ORB**



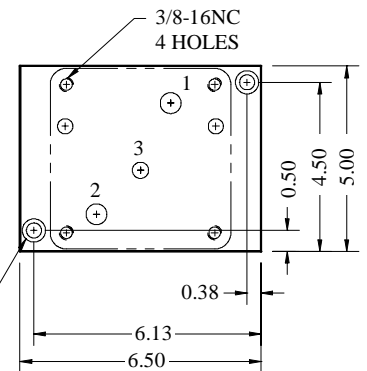
2F03 - BOTTOM PORT

PART NO: **MB993-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
1, 2, 3: **#12 SAE ORB**

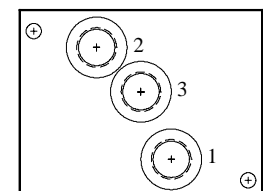
1 1/4" THICK

TOP VIEW

0.41 ϕ THRU
0.63 ϕ x 0.63 C.B.
2 HOLES



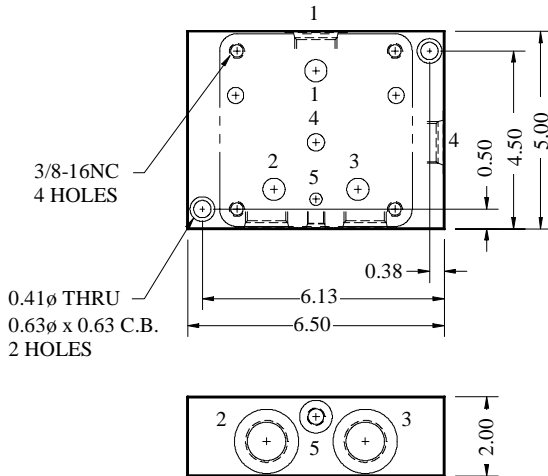
BOTTOM VIEW



Surface Mounted Valve Subplate – SAE ORB Ports

3F03 - SIDE PORT

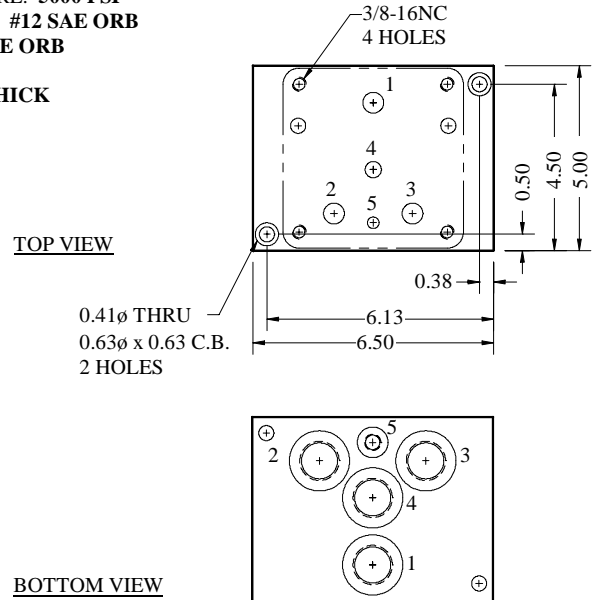
PART NO: **MB2056-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
1, 2, 3, 4: **#12 SAE ORB**
5: **#4 SAE ORB**



3F03 - BOTTOM PORT

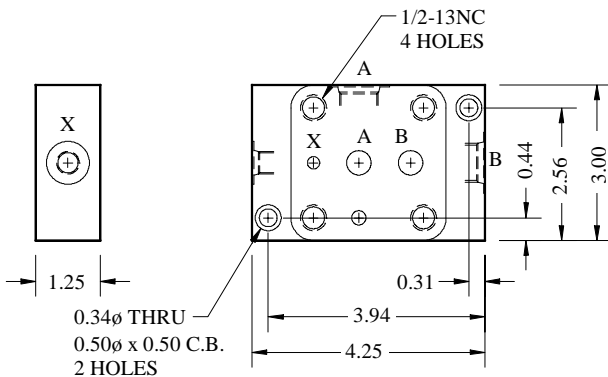
PART NO: **MB998-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
1, 2, 3, 4: **#12 SAE ORB**
5: **#4 SAE ORB**

1 1/4" THICK



R06/ VICKERS CG03 - SIDE PORT

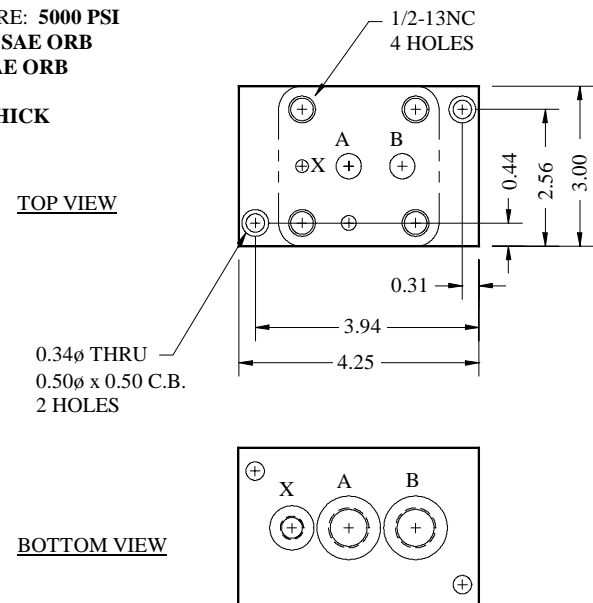
PART NO: **MB2049-8S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#8 SAE ORB**
X: **#4 SAE ORB**



R06/ VICKERS CG03 - BOTTOM

PART NO: **MB1043-8S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#8 SAE ORB**
X: **#4 SAE ORB**

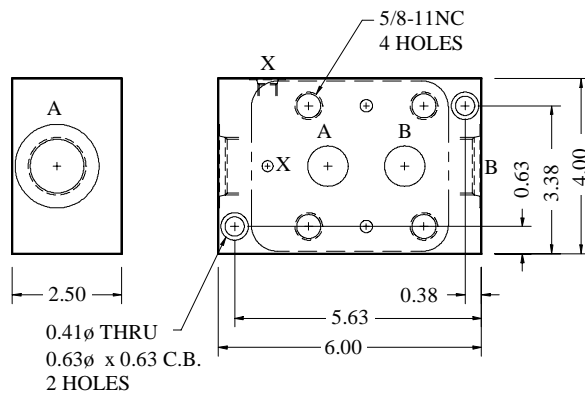
1 1/4" THICK



Surface Mounted Valve Subplate – SAE ORB Ports

R08 - SIDE PORT

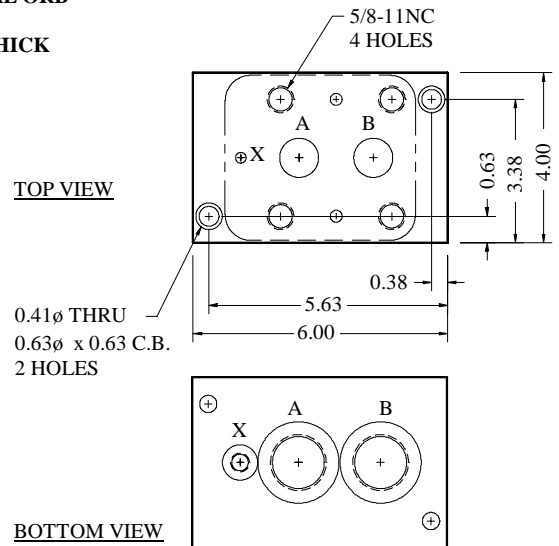
PART NO: **MB1849-16S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#16 SAE ORB**
X: **#4 SAE ORB**



R08 - BOTTOM PORT

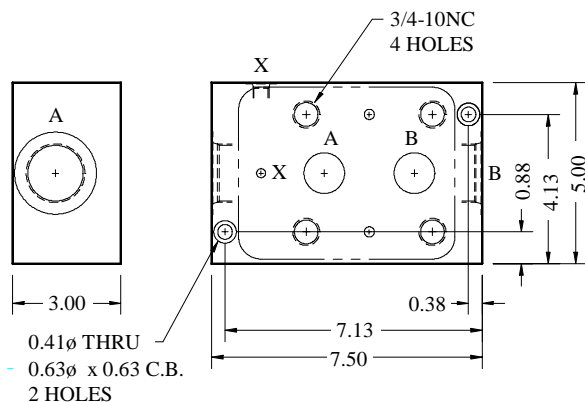
PART NO: **MB1046-16S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#16 SAE ORB**
X: **#4 SAE ORB**

1 1/2" THICK



R10 - SIDE PORT

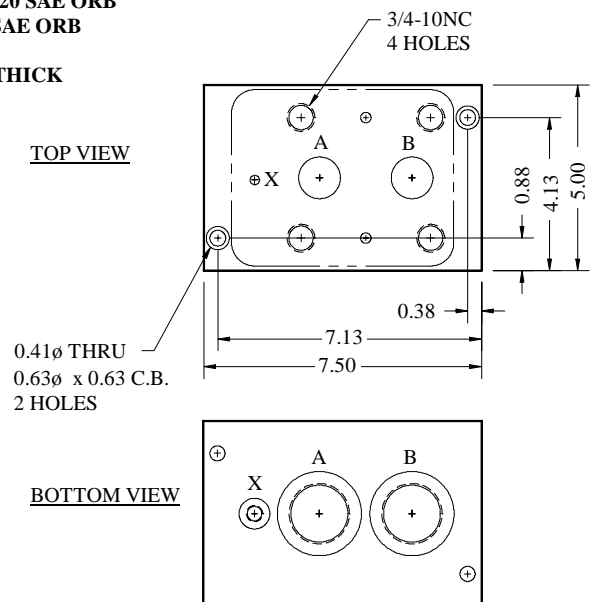
PART NO: **MB2052-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#20 SAE ORB**
X: **#4 SAE ORB**



R10 - BOTTOM PORT

PART NO: **MB1049-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#20 SAE ORB**
X: **#4 SAE ORB**

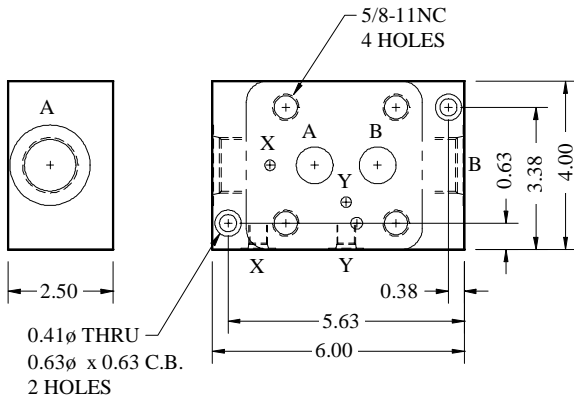
1 1/2" THICK



Surface Mounted Valve Subplate – SAE ORB Ports

VICKERS CG06 - SIDE PORT

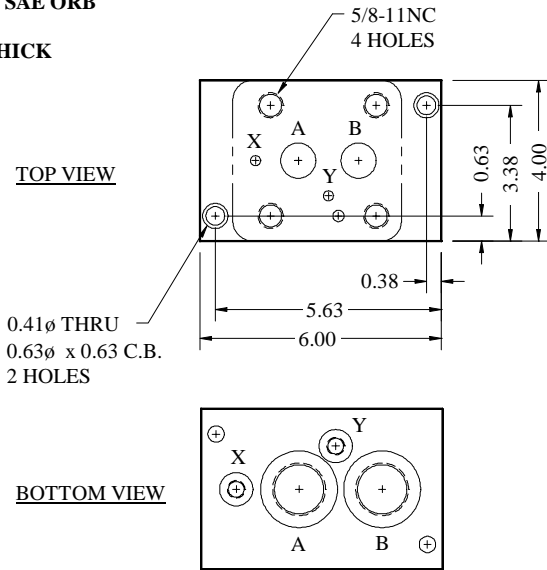
PART NO: **MB2053-16S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#16 SAE ORB**
X, Y: **#4 SAE ORB**



VICKERS CG06 - BOTTOM PORT

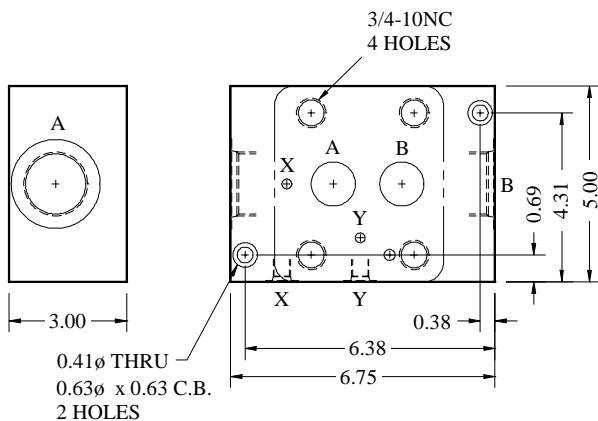
PART NO: **MB1045-16S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#16 SAE ORB**
X, Y: **#4 SAE ORB**

1 1/2" THICK



VICKERS CG10 - SIDE PORT

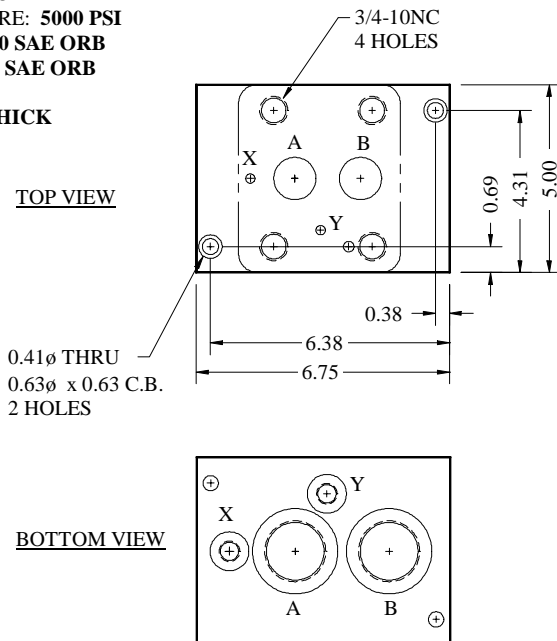
PART NO: **MB2057-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#20 SAE ORB**
X, Y: **#4 SAE ORB**



VICKERS CG10 - BOTTOM PORT

PART NO: **MB1048-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
A, B: **#20 SAE ORB**
X, Y: **#4 SAE ORB**

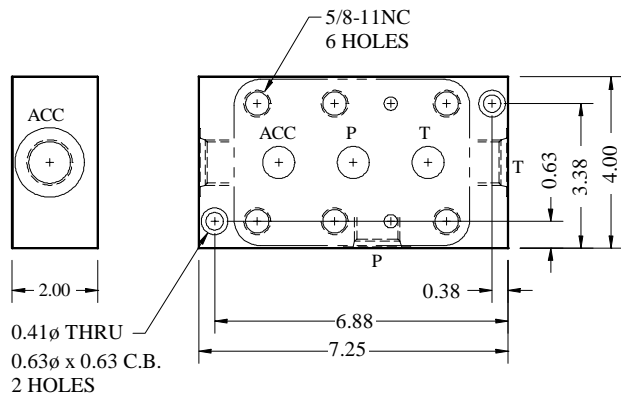
1 1/2" THICK



Surface Mounted Valve Subplate – SAE ORB Ports

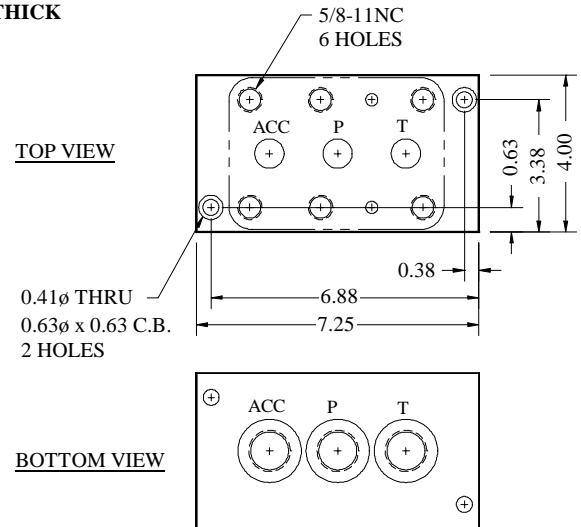
VICKERS URG06 - SIDE PORT

PART NO: **MB2054-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
PORTS: **#12 SAE ORB**



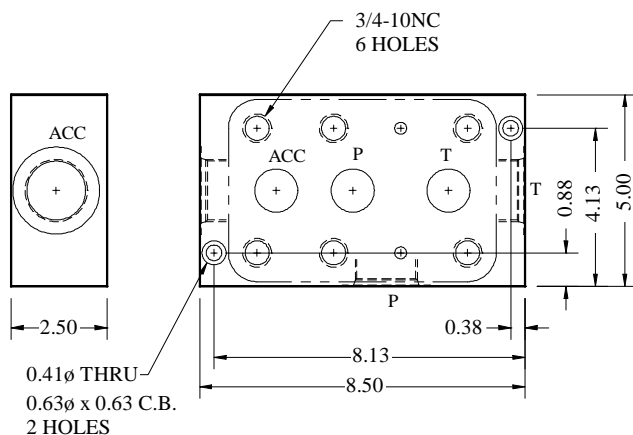
VICKERS URG06 - BOTTOM PORT

PART NO: **MB1044-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
PORTS: **#12 SAE ORB**
1 1/4" THICK



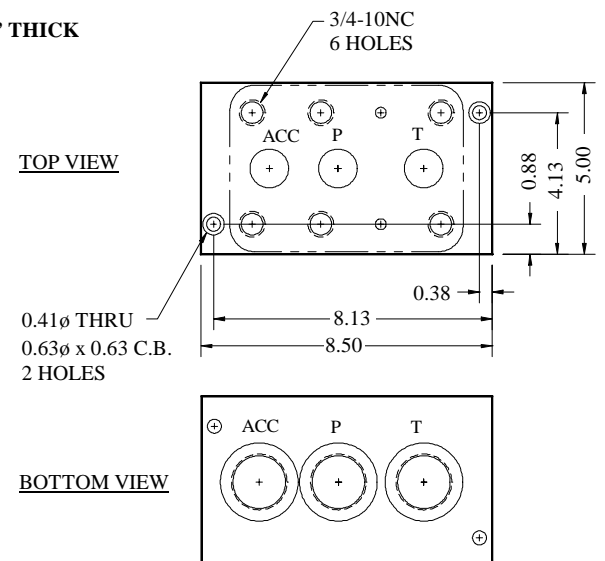
VICKERS URG10 - SIDE PORT

PART NO: **MB2058-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
PORTS: **#20 SAE ORB**



VICKERS URG10 - BOTTOM PORT

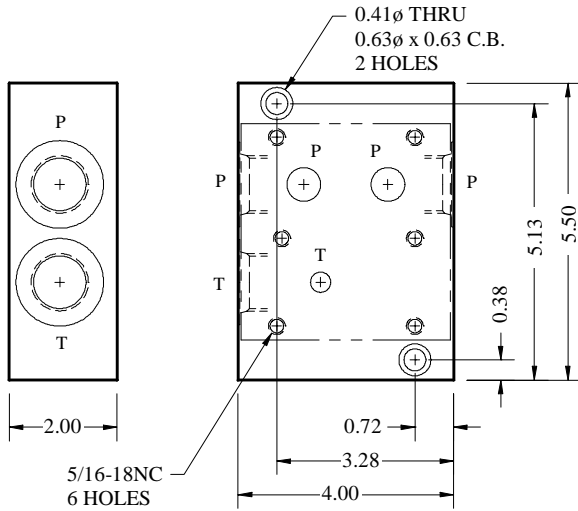
PART NO: **MB1047-20S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
PORTS: **#20 SAE ORB**
1 1/2" THICK



Surface Mounted Valve Subplate – SAE ORB Ports

SUNDSTRAND 9510648 SIDE PORT - HOT OIL SHUTTLE

PART NO: **MB348-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
P, T: **#12 SAE ORB**

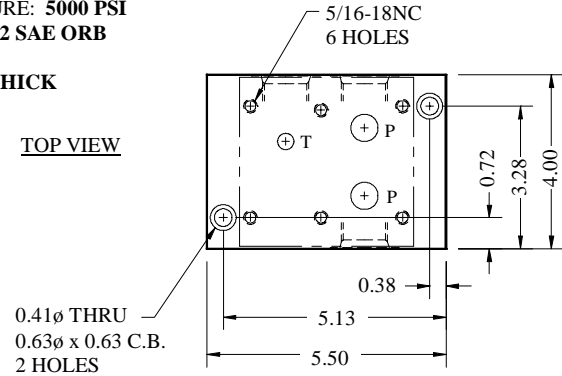


SUNDSTRAND 9510648 BOTTOM PORT - HOT OIL SHUTTLE

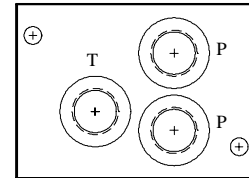
PART NO: **MB2050-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
P, T: **#12 SAE ORB**

1 1/2" THICK

TOP VIEW



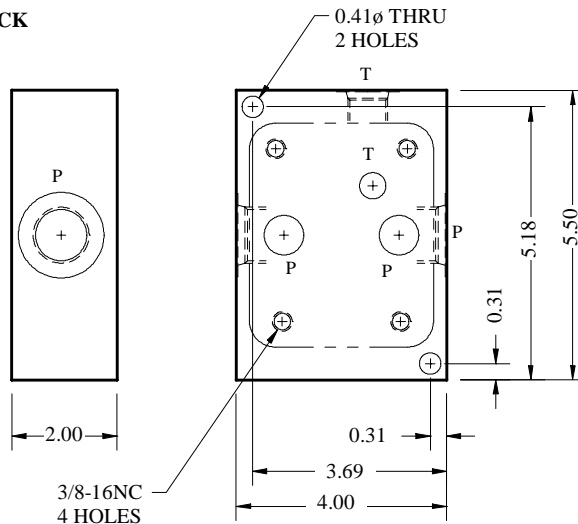
BOTTOM VIEW



EATON SIDE PORT - HOT OIL SHUTTLE

PART NO: **MB361-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
P, T: **#12 SAE ORB**

2" THICK

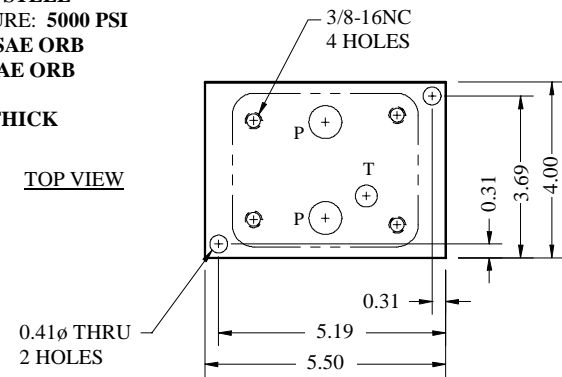


EATON BOTTOM PORT - HOT OIL SHUTTLE

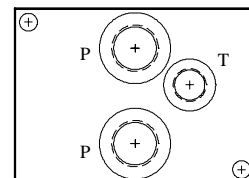
PART NO: **MB2055-12S**
MATL: **STEEL**
PRESSURE: **5000 PSI**
P: **#12 SAE ORB**
T: **#8 SAE ORB**

1 1/2" THICK

TOP VIEW



BOTTOM VIEW

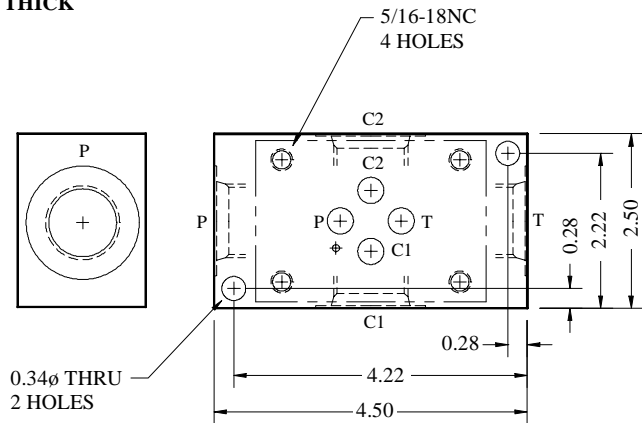


Servo Subplate - SAE ORB Side Port

ATCHLEY 215A
MOOG 62-100 SERIES
VICKERS SM4-20

PART NO: **MB139-12A**
MATL: ALUMINUM
PRESSURE: **3000 PSI**
PORTS: #12 SAE ORB

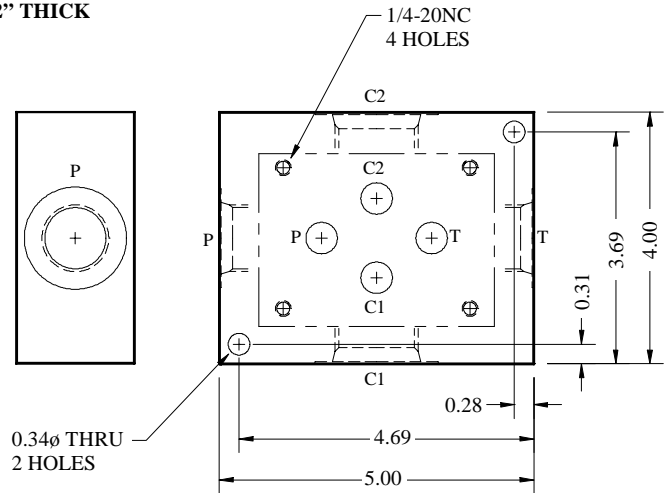
2" THICK



ATCHLEY 241
MOOG 62-300 SERIES
VICKERS SM4-30

PART NO: **MB138-12A**
MATL: ALUMINUM
PRESSURE: **3000 PSI**
PORTS: #12 SAE ORB

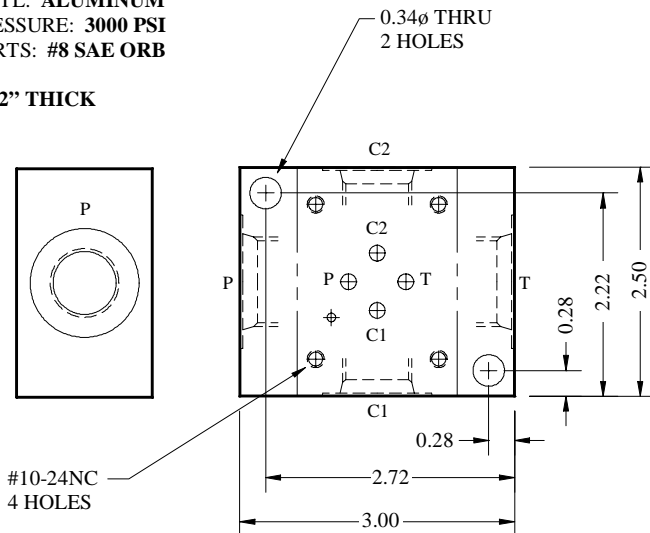
2" THICK



ATCHLEY 206/ 208A
MOOG 771
VICKERS SM4-10

PART NO: **MB410-8A**
MATL: ALUMINUM
PRESSURE: **3000 PSI**
PORTS: #8 SAE ORB

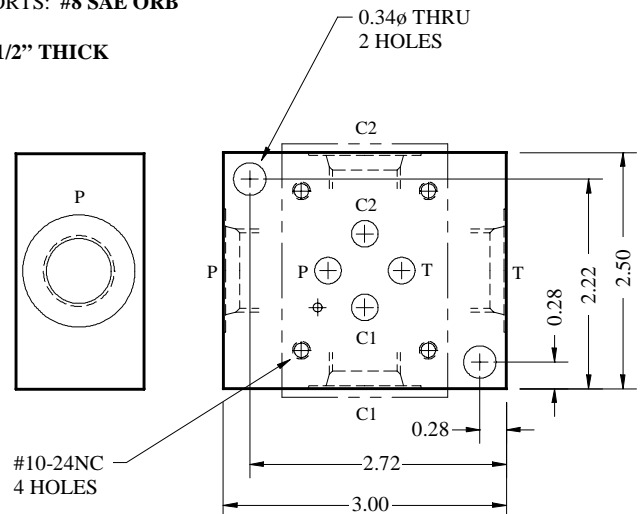
1 1/2" THICK



ATCHLEY 211A
MOOG 772

PART NO: **MB444-8A**
MATL: ALUMINUM
PRESSURE: **3000 PSI**
PORTS: #8 SAE ORB

1 1/2" THICK

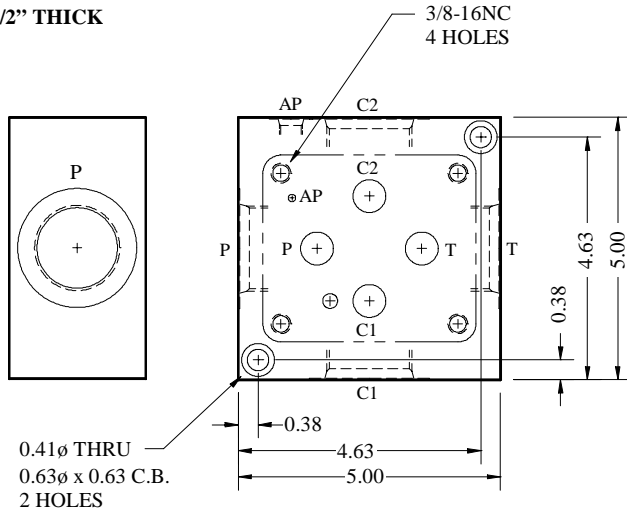


Servo Subplate – SAE ORB Side Port

MOOG 72 ATCHLEY 261

PART NO: **MB739-20A**
MATL: ALUMINUM
PRESSURE: 3000 PSI
PORTS: #20 SAE ORB
AP: #4 SAE ORB

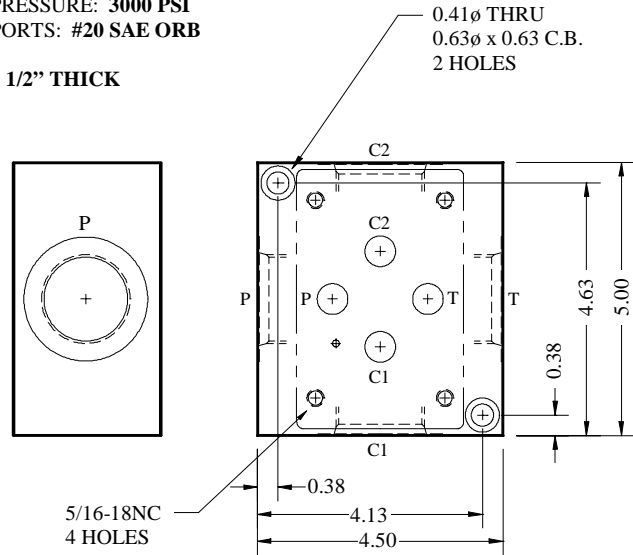
2 1/2" THICK



MOOG 78-100 SERIES ATCHLEY 240 VICKERS SM4-40

PART NO: **MB837-20A**
MATL: ALUMINUM
PRESSURE: 3000 PSI
PORTS: #20 SAE ORB

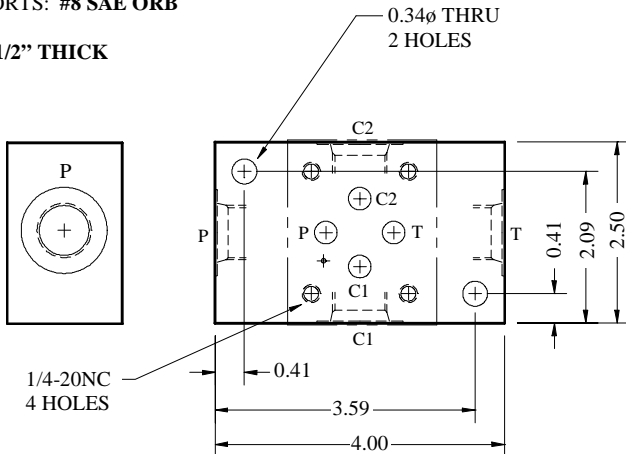
2 1/2" THICK



MOOG 773 ATCHLEY 218 VICKERS SM4-15

PART NO: **MB984-8A**
MATL: ALUMINUM
PRESSURE: 3000 PSI
PORTS: #8 SAE ORB

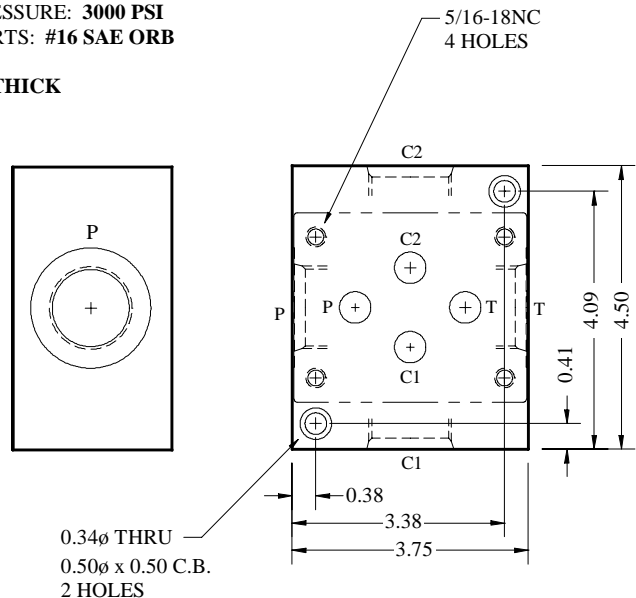
1 1/2" THICK



ATCHLEY 242

PART NO: **MB990-16A**
MATL: ALUMINUM
PRESSURE: 3000 PSI
PORTS: #16 SAE ORB

2" THICK





Bar Manifold - Parallel and Series

D03

D05

D05H

D05HE

D07

D08



Parallel Bar

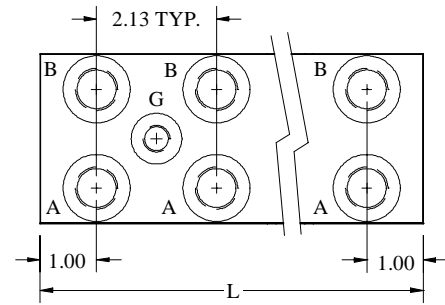
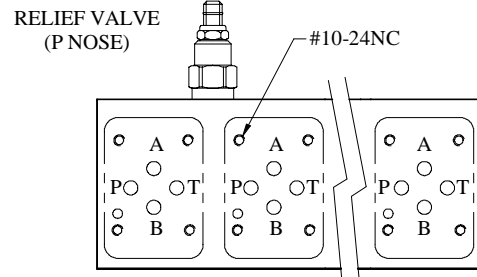
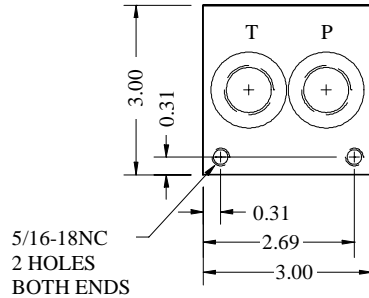
D03 PARALLEL - STANDARD FLOW

MC391-0-10-10-8A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #8 SAE ORB
- P AND T #10 SAE ORB BOTH END
- NO. OF STATIONS: 10 MAX.
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY

No. Of Valves	L (Inch)	No. Of Valves	L (Inch)
1	2.00	6	12.63
2	4.13	7	14.75
3	6.25	8	16.88
4	8.38	9	19.00
5	10.50	10	21.13

G (GAGE ON P): #4 SAE ORB



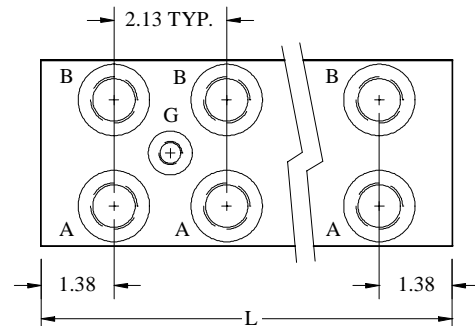
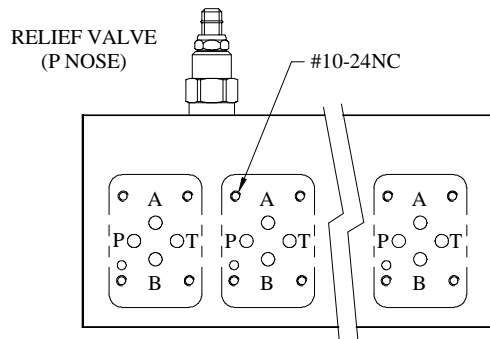
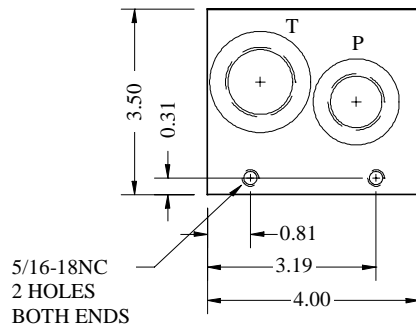
D03 PARALLEL - HIGH FLOW

MC1346-0-14-16-10A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #10 SAE ORB
- P #12 SAE ORB BOTH END
- T #16 SAE ORB BOTH END
- NO. OF STATIONS: 14 MAX.
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-3A CAVITY

No. Of Valves	L (Inch)	No. Of Valves	L (Inch)
1	2.63	8	17.63
2	4.88	9	19.75
3	7.00	10	21.88
4	9.13	11	24.00
5	11.25	12	26.13
6	13.38	13	28.25
7	15.50	14	30.38

G (GAGE ON P): #4 SAE ORB

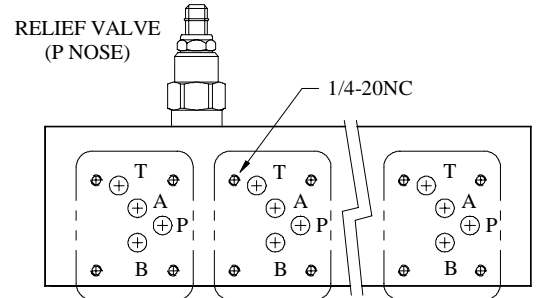


Parallel Bar

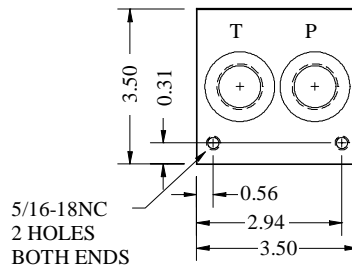
D05 PARALLEL - STANDARD FLOW

MC520-0-8-12-8A-5

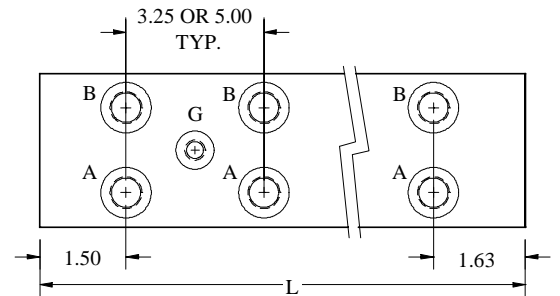
- 5 - WITH 5" SPACING
- OMIT - WITH 3 1/4" SPACING
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #8 SAE ORB
- P AND T #12 SAE ORB BOTH END
- NO. OF STATIONS: 8 MAX.
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY



No. of Valves	Valve Spacing	
	Std L (Inch)	Wide L (Inch)
1	3.13	
2	6.38	8.13
3	9.63	13.13
4	12.88	18.13
5	16.13	23.13
6	19.38	28.13
7	22.63	33.13
8	25.88	38.13



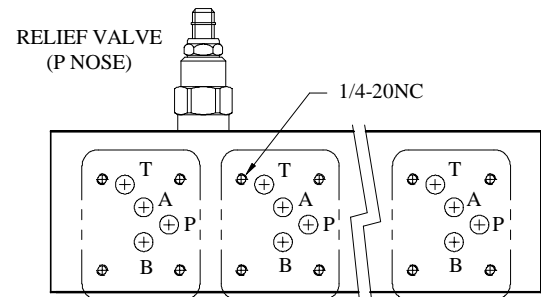
G (GAGE ON P): #4 SAE ORB



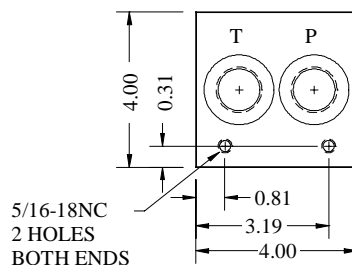
D05 PARALLEL - HIGH FLOW

MC1198-0-10-16-12A-5

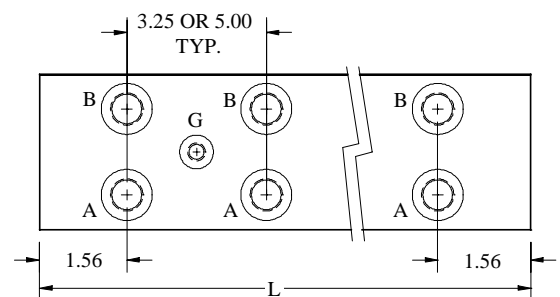
- 5 - WITH 5" SPACING
- OMIT - WITH 3 1/4" SPACING
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #12 SAE ORB
- P AND T #16 SAE ORB BOTH END
- NO. OF STATIONS: 10 MAX.
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-3A CAVITY



No. of Valves	Valve Spacing	
	Std L (Inch)	Wide L (Inch)
1	3.13	
2	6.38	8.13
3	9.63	13.13
4	12.88	18.13
5	16.13	23.13
6	19.38	28.13
7	22.63	33.13
8	25.88	38.13
9	29.13	43.13
10	32.38	48.13



G (GAGE ON P): #4 SAE ORB



Parallel Bar

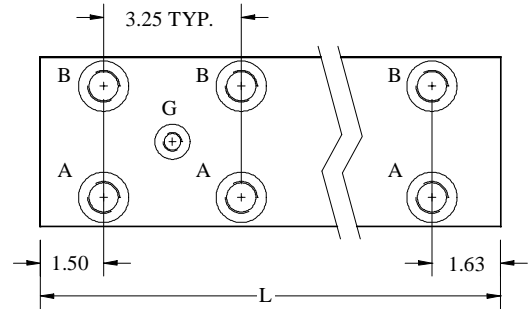
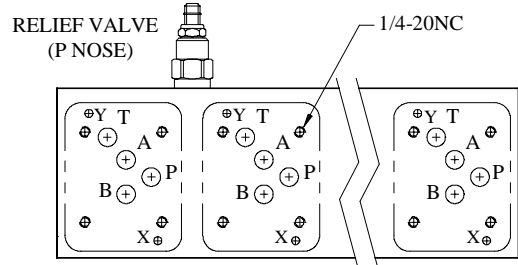
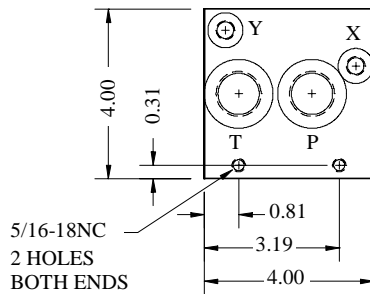
D05H PARALLEL - STANDARD FLOW

MC580-0-8-12-8A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #8 SAE ORB
- P AND T #12 SAE ORB BOTH END
- NO. OF STATIONS: 8 MAX.
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY

No. Of Valves	L (Inch)	No. Of Valves	L (Inch)
1	3.13	5	16.13
2	6.38	6	19.38
3	9.63	7	22.63
4	12.88	8	25.88

X, Y, G (GAGE ON P): #4 SAE ORB



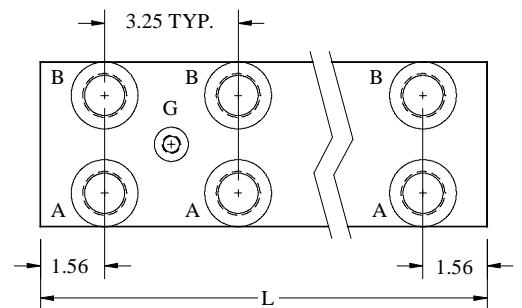
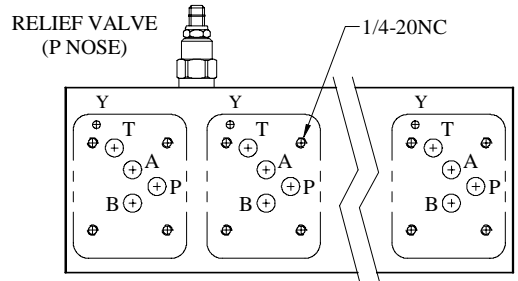
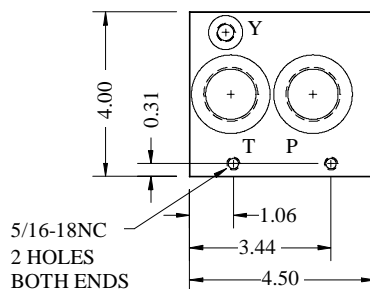
D05H PARALLEL - HIGH FLOW

MC1208-0-10-16-12A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #12 SAE ORB
- P AND T #16 SAE ORB BOTH END
- NO. OF STATIONS: 10 MAX.
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-3A CAVITY

No. Of Valves	L (Inch)	No. Of Valves	L (Inch)
1	3.13	6	19.38
2	6.38	7	22.63
3	9.63	8	25.88
4	12.88	9	29.13
5	16.13	10	32.28

Y, G (GAGE ON P): #4 SAE ORB
NO 'X' PORT

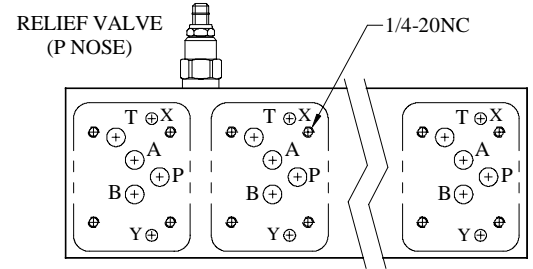


Parallel Bar

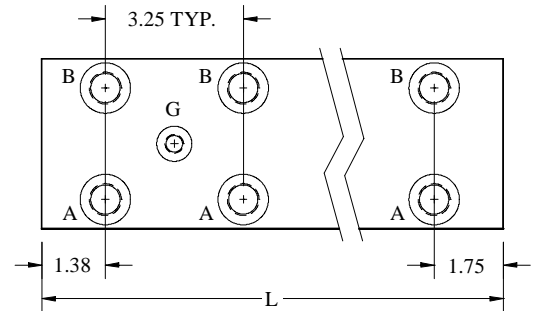
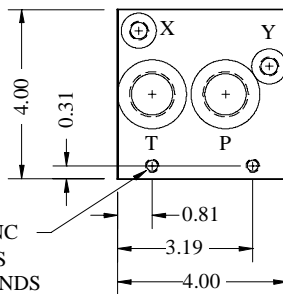
D05HE PARALLEL - STANDARD FLOW

MC912-0-8-12-8A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #8 SAE ORB
- P AND T #12 SAE ORB BOTH END
- NO. OF STATIONS: 8 MAX.
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY

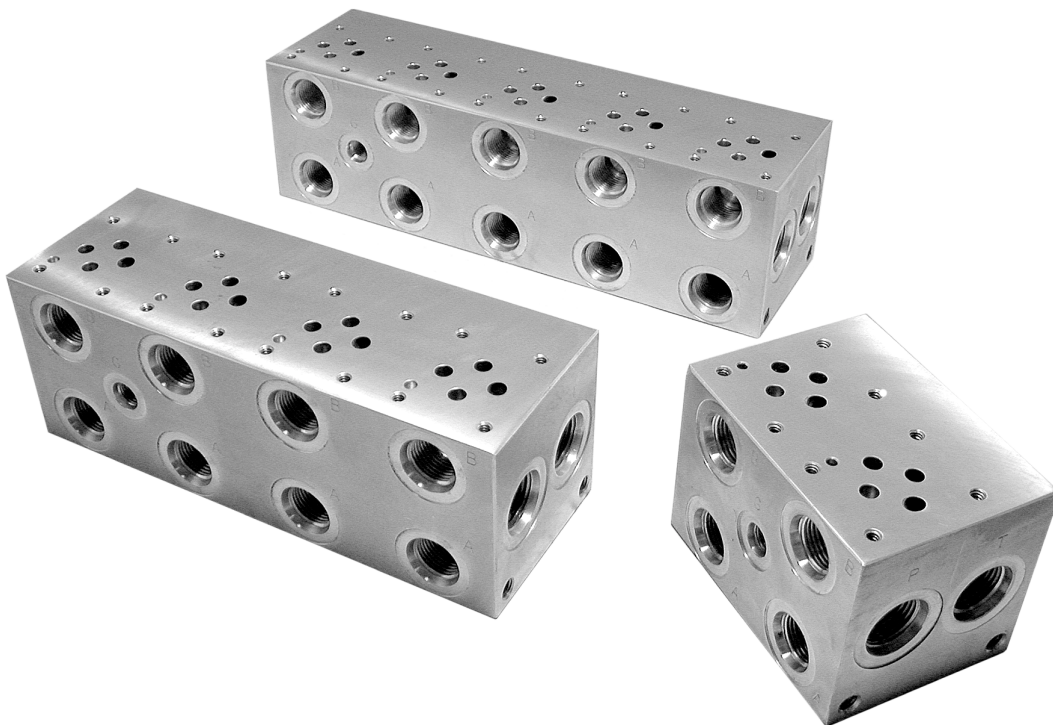


No. Of Valves	L (Inch)	No. Of Valves	L (Inch)
1	3.13	5	16.13
2	6.38	6	19.38
3	9.63	7	22.63
4	12.88	8	25.88



X, Y, G (GAGE ON P): #4 SAE ORB

5/16-18NC
2 HOLES
BOTH ENDS



Parallel Bar

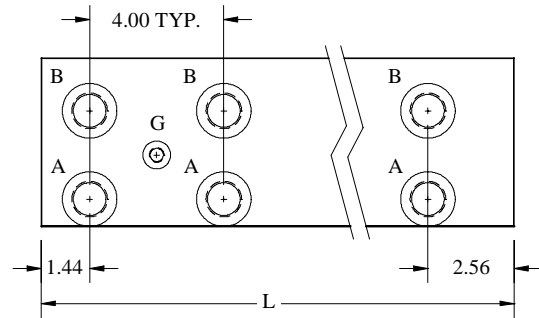
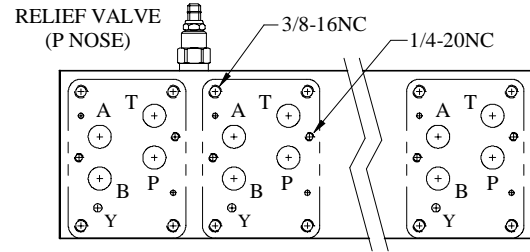
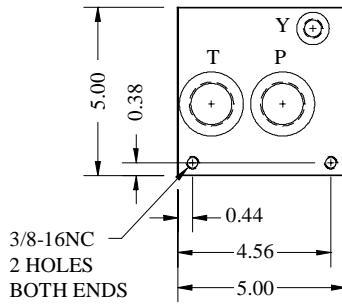
D07 PARALLEL - STANDARD FLOW

MC602-0-8-16-12A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #12 SAE ORB
- P AND T #16 SAE ORB BOTH END
- NO. OF STATIONS: 8 MAX.
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-3A CAVITY

No. Of Valves	L (Inch)	No. Of Valves	L (Inch)
1	4.00	5	20.00
2	8.00	6	24.00
3	12.00	7	28.00
4	16.00	8	32.00

Y, G (GAGE ON P): #4 SAE ORB
NO 'X' PORT



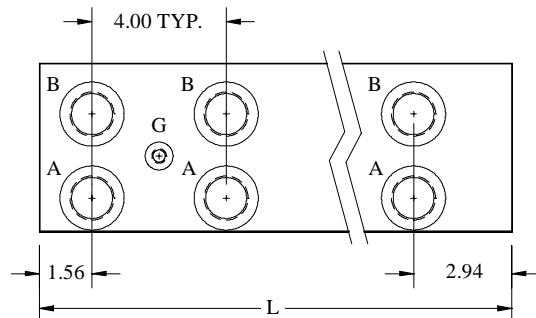
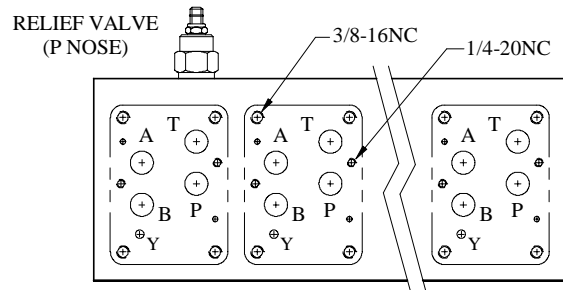
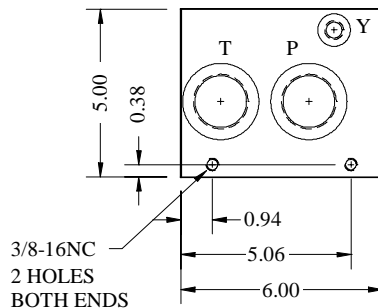
D07 PARALLEL - HIGH FLOW

MC1210-0-8-20-16A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #16 SAE ORB
- P AND T #20 SAE ORB BOTH END
- NO. OF STATIONS: 8 MAX.
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-16A CAVITY

No. Of Valves	L (Inch)	No. Of Valves	L (Inch)
1	4.50	5	20.50
2	8.50	6	24.50
3	12.50	7	28.50
4	16.50	8	32.50

G (GAGE ON P): #4 SAE ORB
Y: #6 SAE ORB
NO 'X' PORT



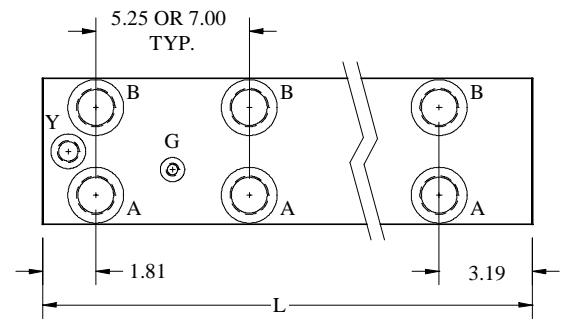
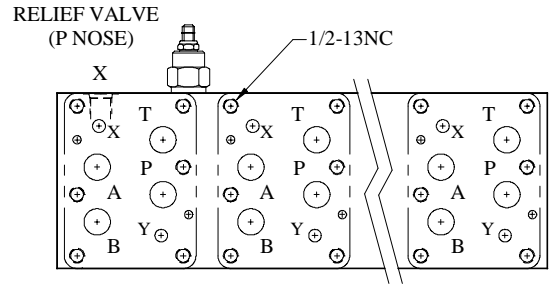
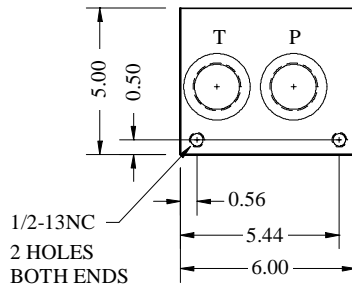
Parallel Bar

D08 PARALLEL - STANDARD FLOW

MC604-0-7-20-16A-7

- 7 - WITH 7" SPACING
- OMIT - WITH 5 1/4" SPACING
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #16 SAE ORB
- P AND T #20 SAE ORB BOTH END
- NO. OF STATIONS: 7 MAX.
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-3A CAVITY
- S1 - SUN T-16A CAVITY

No. of Valves	Valve Spacing	
	Std L (Inch)	Wide L (Inch)
1	5.00	
2	10.25	12.00
3	15.50	19.00
4	20.75	26.00
5	26.00	33.00
6	31.25	40.00
7	36.50	47.00



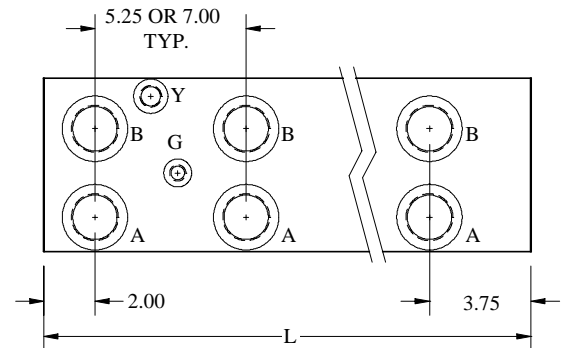
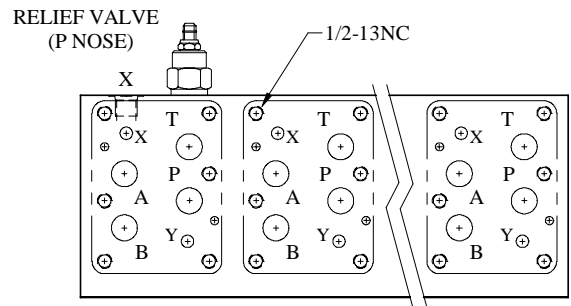
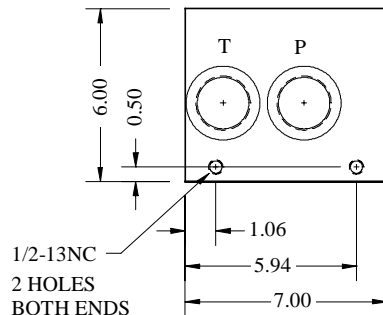
G (GAGE ON P): #4 SAE ORB
X, Y: #8 SAE ORB

D08 PARALLEL - HIGH FLOW

MC1205-0-7-24-20A-7

- 7 - WITH 7" SPACING
- OMIT - WITH 5 1/4" SPACING
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #20 SAE ORB
- P AND T #24 SAE ORB BOTH END
- NO. OF STATIONS: 7 MAX.
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-16A CAVITY

No. of Valves	Valve Spacing	
	Std L (Inch)	Wide L (Inch)
1	5.75	
2	11.00	12.75
3	16.25	19.75
4	21.50	26.75
5	26.75	33.75
6	32.00	40.75
7	37.25	47.75



G (GAGE ON P): #6 SAE ORB
X, Y: #8 SAE ORB

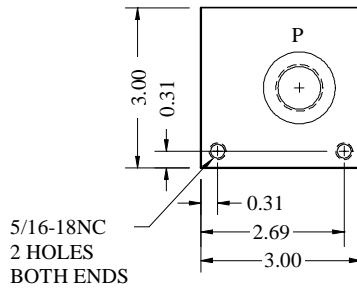
Series Bar

D03 SERIES - STANDARD FLOW

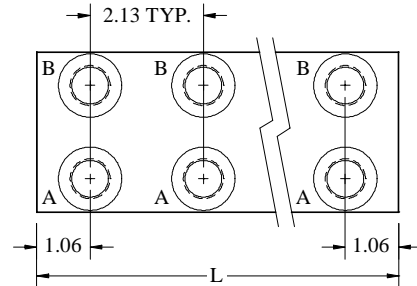
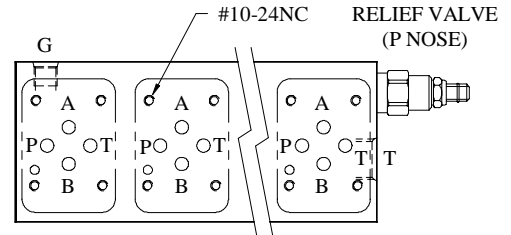
MC590-0-5-10-8A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #8 SAE ORB
- P AND T #10 SAE ORB
- NO. OF STATIONS: 2 TO 5
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY

No. Of Valves	L (Inch)
2	4.25
3	6.38
4	8.50
5	10.63



G (GAGE ON P): #4 SAE ORB

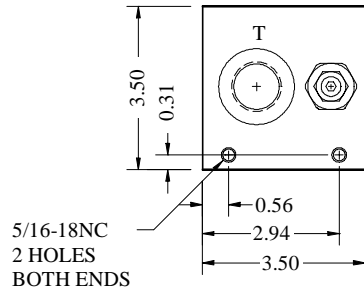


D05 SERIES - STANDARD FLOW

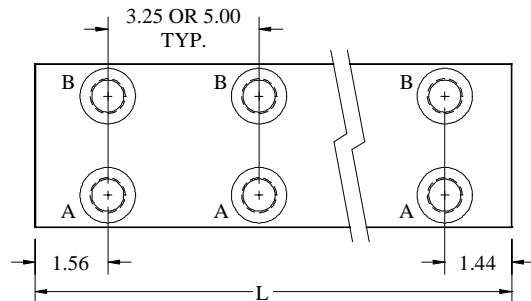
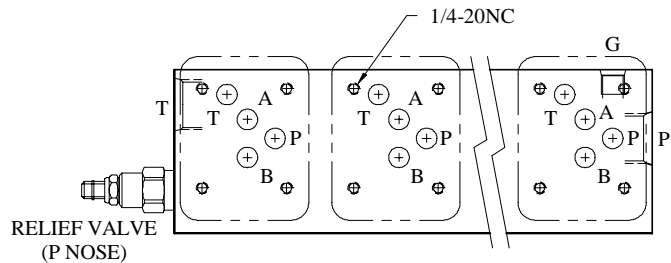
MC592-0-4-12-8A-5

- 5 - WITH 5" SPACING
- OMIT - WITH 3 1/4" SPACING
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #8 SAE ORB
- P AND T #12 SAE ORB
- NO. OF STATIONS: 2 TO 4
- 0 - NO CAVITY
- M - C-10-2 CAVITY
- S - SUN T-10A CAVITY

No. Of Valves	Valve Spacing	
	Std L(Inch)	Wide L(Inch)
2	6.25	8.00
3	9.50	13.00
4	12.75	18.00



G (GAGE ON P): #6 SAE ORB



Series Bar

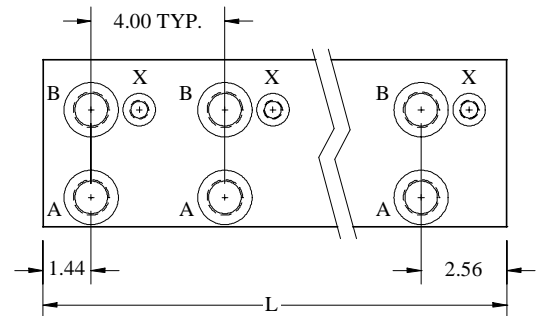
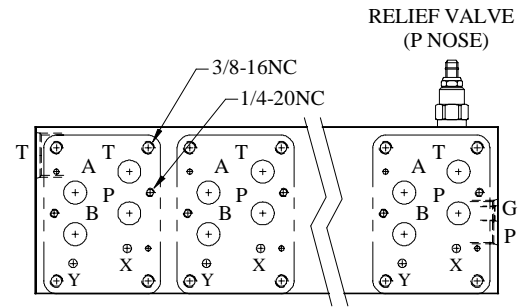
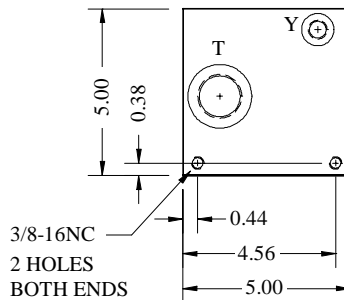
D07 SERIES - STANDARD FLOW

MC856-0-3-16-12A

- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #12 SAE ORB
- P AND T #16 SAE ORB
- NO. OF STATIONS: 2 AND 3
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-3A CAVITY

No. Of Valves	L (Inch)
2	8.00
3	12.00

G (GAGE ON P): #4 SAE ORB
X (ON EACH VALVE): #6 SAE ORB
Y: #6 SAE ORB



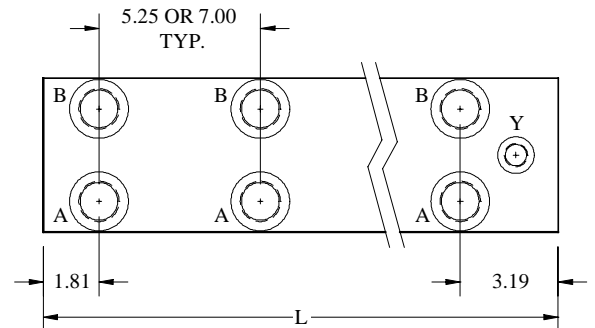
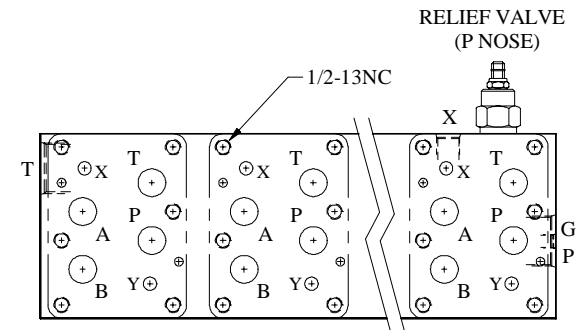
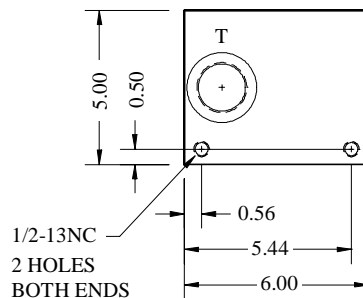
D08 SERIES - STANDARD FLOW

MC858-0-3-20-16A-7

- 7 - WITH 7" SPACING
- OMIT - WITH 5 1/4" SPACING
- A - 6061T6 ALUMINUM 3000 PSI
- S - C1018 STEEL 5000 PSI
- A AND B #16 SAE ORB
- P AND T #20 SAE ORB
- NO. OF STATIONS: 2 AND 3
- 0 - NO CAVITY
- M - C-16-2 CAVITY
- S - SUN T-3A CAVITY
- S1 - SUN T-16A CAVITY

No. Of Valves	Valve Spacing	
	Std L(Inch)	Wide L(Inch)
2	10.25	12.00
3	15.50	19.00

G (GAGE ON P): #4 SAE ORB
X, Y: #8 SAE ORB



Cover and Transition Plates

Directional Valves

Servo Valves

Surface Mounted Valves

Poppet Covers - DIN 24342

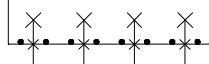
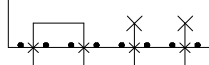

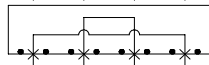
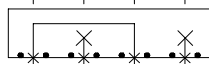


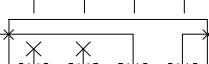



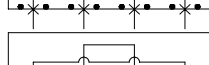

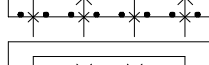


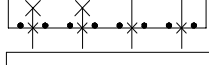
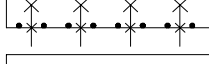


Cover Plate

Directional Valve

 MATL: STEEL
 PRESSURE: 5000 PSI

 THE COVER PLATE COMES COMPLETE WITH O' RINGS AND BOLT KIT.
 THE COVER PLATE SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.

Part No.	Valve	Description	Thickness	Function						
				P	T	A	B	X	Y	
MB196S	D03	ALL PORTS BLOCKED	1/2							
MB736S	D03	SERIES P TO T	3/4							
MB148S	D03	P TO A, B TO T	3/4							
MB712S	D03	P TO B, A TO T	3/4							
MB773S	D03	P TO A	3/4							
MB1028S	D03	P TO B	3/4							
MB870S	D03	#4 ORB ON P	3/4							
MB862S	D03	#4 ORB ON A AND B	3/4							
MB197S	D05	ALL PORTS BLOCKED	1/2							
MB642S	D05	SERIES P TO T	3/4							
MB816S	D05	P TO A, B TO T	3/4							
MB738S	D05	P TO B, A TO T	3/4							
MB772S	D05	P TO A	3/4							
MB1029S	D05	P TO B	3/4							
MB759S	D05	#4 ORB ON P	3/4							
MB760S	D05	#4 ORB ON A AND B	3/4							
MB195S	D05H	ALL PORTS BLOCKED	3/4							
MB734S	D05H	SERIES P TO T	3/4							

Cover Plate

Directional Valve

MATL: STEEL
PRESSURE: 5000 PSI

THE COVER PLATE COMES COMPLETE WITH O' RINGS AND BOLT KIT.
THE COVER PLATE SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.

Part No.	Valve	Description	Thickness	Function
				P T A B X Y
MB1050S	D05H	#4 ORB ON P	3/4	
MB1051S	D05H	#4 ORB ON A AND B	3/4	
MB1052S	D05HE	ALL PORTS BLOCKED	3/4	
MB1053S	D05HE	SERIES P TO T	3/4	
MB1054S	D05HE	#4 ORB ON P	3/4	
MB1055S	D05HE	#4 ORB ON A AND B	3/4	
MB110S	D07	ALL PORTS BLOCKED	3/4	
MB499S	D07	SERIES P TO T	1 1/2	
MB740S	D07	P TO B, A TO T	1 1/2	
MB1056S	D07	#6 ORB ON P	1 1/2	
MB1057S	D07	#6 ORB ON A AND B	1 1/2	
MB111S	D08	ALL PORTS BLOCKED	3/4	
MB742S	D08	SERIES P TO T	1 1/2	
MB540S	D08	P TO B, A TO T	1 1/2	
MB1058S	D08	#6 ORB ON P	1 1/2	
MB1059S	D08	#6 ORB ON A AND B	1 1/2	
MB472S	D10	ALL PORTS BLOCKED	1 1/4	
MB1060S	D10	SERIES P TO T	1 3/4	

Cover Plate

Surface Mounted Valve

MATL: STEEL
PRESSURE: 5000 PSI

THE COVER PLATE COMES COMPLETE WITH O' RINGS AND BOLT KIT.
THE COVER PLATE SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.

Part No.	Valve	Description	Thickness	Function			
				A	B	X	Y
MB2079S	C03	ALL PORTS BLOCKED	3/4				
MB2080S	C03	SERIES A TO B	3/4				
MB2081S	C06	ALL PORTS BLOCKED	3/4				
MB2082S	C06	SERIES A TO B	3/4				
MB2083S	C10	ALL PORTS BLOCKED	3/4				
MB2084S	C10	SERIES A TO B	3/4				
MB1191S	P06	ALL PORTS BLOCKED	3/4				
MB1874S	P06	SERIES A TO B	1 1/2				
MB1192S	P08	ALL PORTS BLOCKED	1 1/2				
MB815S	P08	SERIES A TO B	1 1/2				
MB1193S	P10	ALL PORTS BLOCKED	1 1/2				
MB1875S	P10	SERIES A TO B	3/4				
MB1678S	R06 VICKERS CG03	ALL PORTS BLOCKED	1 1/2				
MB2085S	R06 VICKERS CG03	SERIES A TO B	1 1/2				
MB1214S	R08	ALL PORTS BLOCKED	1 1/2				
MB2086S	R08	SERIES A TO B	1 1/2				
MB1215S	R10	ALL PORTS BLOCKED	1 1/2				
MB2087S	R10	SERIES A TO B	1 1/2				
MB1674S	VICKERS CG06	ALL PORTS BLOCKED	1 1/4				
MB2088S	VICKERS CG06	SERIES A TO B	1 3/4				

Cover Plate

Surface Mounted Valve

MATL: STEEL
PRESSURE: 5000 PSI

THE COVER PLATE COMES COMPLETE WITH O' RINGS AND BOLT KIT.
THE COVER PLATE SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.


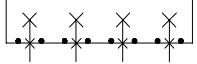
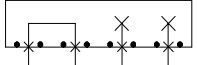
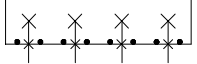
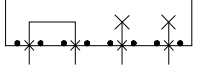
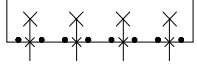
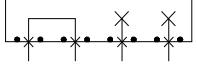
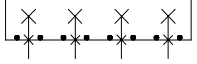
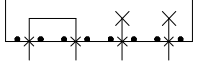
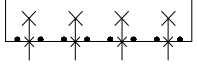
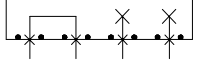
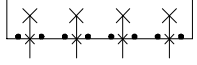
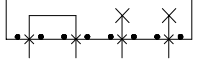
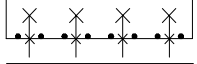
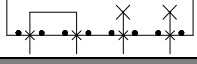
Part No.	Valve	Description	Thickness	Function				
				1	2	3	4	5
MB1676S	VICKERS CG10	ALL PORTS BLOCKED	3/4					
MB2089S	VICKERS CG10	SERIES 1 TO 2	3/4					
MB2090S	VICKERS URG06	ALL PORTS BLOCKED	3/4					
MB2091S	VICKERS URG06	SERIES 1 TO 2	3/4					
MB2120S	VICKERS URG10	ALL PORTS BLOCKED	3/4					
MB2186S	VICKERS URG10	SERIES 1 TO 2	3/4					
MB2121S	2F02	ALL PORTS BLOCKED	3/4					
MB2187S	2F03	ALL PORTS BLOCKED	1 1/2					
MB2188S	2F06	ALL PORTS BLOCKED	1 1/2					
MB2189S	2F10	ALL PORTS BLOCKED	1 1/2					
MB2190S	3F02	ALL PORTS BLOCKED	1 1/2					
MB2191S	3F03	ALL PORTS BLOCKED	3/4					
MB2192S	3F06	ALL PORTS BLOCKED	1 1/2					
MB2092S	3F10	ALL PORTS BLOCKED	1 1/2					
MB1291S	SUNDSTRAND HOT OIL SHUTTLE	ALL PORTS BLOCKED	1 1/2					
MB1200S	EATON HOT OIL SHUTTLE	ALL PORTS BLOCKED	1 1/4					

Cover Plate

Servo Valve

MATL: STEEL
 PRESSURE: 5000 PSI

THE COVER PLATE COMES COMPLETE WITH O' RINGS AND BOLT KIT.
 THE COVER PLATE SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.

Part No.	Valve	Description	Thickness	Function			
				P	T	C1	C2
MB262S	MOOG62-100 SERIES	ALL PORTS BLOCKED	3/4				
MB1066S	MOOG62-100 SERIES	SERIES P TO T	3/4				
MB1001S	MOOG62-300 SERIES	ALL PORTS BLOCKED	3/4				
MB498S	MOOG62-300 SERIES	SERIES P TO T	1				
MB1003S	MOOG771	ALL PORTS BLOCKED	3/4				
MB1068S	MOOG771	SERIES P TO T	3/4				
MB747S	MOOG772	ALL PORTS BLOCKED	3/4				
MB1069S	MOOG772	SERIES P TO T	3/4				
MB1062S	MOOG773	ALL PORTS BLOCKED	1/2				
MB1070S	MOOG773	SERIES P TO T	3/4				
MB1063S	MOOG72	ALL PORTS BLOCKED	3/4				
MB1071S	MOOG72	SERIES P TO T	1 1/4				
MB1064S	MOOG78-100 SERIES	ALL PORTS BLOCKED	3/4				
MB1072S	MOOG78-100 SERIES	SERIES P TO T	1				
MB1065S	ATCHLEY 242	ALL PORTS BLOCKED	3/4				
MB1073S	ATCHLEY 242	SERIES P TO T	1				

Transition Plate

MATL: STEEL (5000 PSI)

THE TRANSITION PLATE COMES COMPLETE WITH O' RINGS AND BOLT KIT.

Part No.	Valve Side	O' Ring Side	Length	Width	Thickness	Remarks
MB244S	D03	D05	3	2 1/2	1	A AND B REVERSED
MB313S	D03	D05	3	2 1/2	1 1/2	A AND B ORIENTED
MB468S	D03	D05H	3 1/2	2 1/2	1	A AND B REVERSED
MB470S	D03	D05H	3 1/2	2 1/2	1 1/2	A AND B ORIENTED
MB310S	D05	D06	4 1/2	3 1/2	1 1/2	
MB329S	D07	D06	4 3/4	3 1/2	1 1/2	NO X AND Y ON D07
MB246S	D05	D07	4 3/4	3 1/2	1 1/2	
MB248S	D05H	D07	4 3/4	3 1/2	1 1/2	
MB2015S	D05HE	D07	4 3/4	3 1/2	2	
MB250S	D03	D08	6	4 1/2	1 1/2	
MB252S	D05	D08	6	4 1/2	1 1/2	
MB254S	D07	D08	6	4 1/2	2	
MB256S	D08	D10	9	7 3/4	2	
MB812S	MOOG62-100 SERIES	D05	3 1/2	3	1 1/2	
MB275S	MOOG62-100 SERIES	D05H	3 1/2	3 1/2	1 1/4	
MB1635S	MOOG78-100 SERIES	D05HE	4 1/2	3 1/2	1 1/2	
MB2319S	MOOG78-100 SERIES	D08	6	4 1/2	2	
MB1639S	P06	P08	4	3 5/8	2	
MB2250S	D05	ATCHLEY 225	4 1/8	2 1/2	2	
MB1082S	D05HE	ATCHLEY 242	4	3 11/16	1 1/2	EXTERNAL #4 ORB ON X AND Y
MB2177S	MOOG78-100 SERIES	ATCHLEY 242	5	3 3/4	1	
MB326S	D05	MOOG773	4	3	2	
MB797S	D03	MOOG62-100 SERIES	3 1/4	2 1/2	3/4	
MB123S	D05	MOOG62-100 SERIES	3 1/2	3	1 1/2	
MB2219S	D05	MOOG62-300 SERIES	3 3/4	3 1/2	1 1/2	
MB2098S	D05	MOOG72	4 1/8	4	1 1/2	
MB1439S	D03	MOOG78-100 SERIES	4 1/4	3	1	
MB1712S	D05	MOOG78-100 SERIES	4 1/4	3	1 1/2	
MB2201S	MOOG62-100 SERIES	MOOG78-100 SERES	4 1/2	3 1/4	1	
MB1976S	MOOG772	MOOG771	2 1/2	2	3/4	
MB1948S	MOOG772	MOOG62-100 SERIES	3 1/4	2 1/2	1	
MB1733S	MOOG773	MOOG62-100 SERIES	3 1/4	2 1/2	1	
MB291S	MOOG78-100 SERIES	MOOG62-100 SERIES	4 1/2	3 1/4	1	
MB589S	MOOG78-100 SERIES	MOOG62-300 SERIES	4 1/2	3 1/2	1	

DIN / Poppet Cover

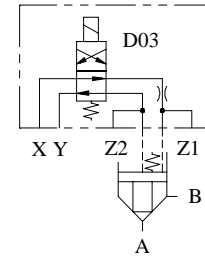
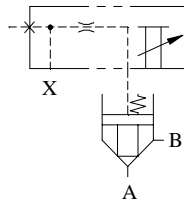
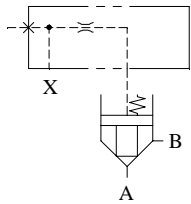
MATL: STEEL

COVER DIMENSIONS MADE TO DIN 24342 / ISO 7368 / NFPA T3.5.45 STANDARDS.

COVER PLATES ARE SUITABLE FOR BOSCH, DENISON, PARKER, REXROTH, WANDFLUH AND OTHERS.

COVER PLATES COME COMPLETE WITH O'RINGS AND BOLT KIT.

FOR DIN / POPPET BODY, SEE PAGE 25-8



Remote Pilot

Part No.	Cover Size
MB1155S	NG16 / 16mm
MB1156S	NG25 / 25mm
MB1157S	NG32 / 32mm
MB1158S	NG40 / 40mm
MB1159S	NG50 / 50mm

Stroke Limiter

Part No.	Cover Size
MB1165S	NG16 / 16mm
MB1166S	NG25 / 25mm
MB1167S	NG32 / 32mm
MB1168S	NG40 / 40mm
MB1169S	NG50 / 50mm

Directional Control

Part No.	Cover Size
MB1175S	NG16 / 16mm
MB1176S	NG25 / 25mm
MB1177S	NG32 / 32mm
MB1178S	NG40 / 40mm
MB1179S	NG50 / 50mm



Single Cartridge

Compact

Danfoss

Delta

Hydraforce

Integrated Hydraulics

Parker

Sterling

Vickers

Waterman

Poppet Body - DIN 24342

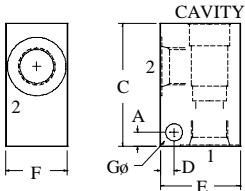


Single Cartridge Body – SAE ORB Ports

Two Port Bodies – SUN

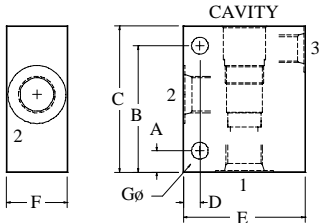
MATL: STEEL (5000 PSI)

THESE SINGLE CARTRIDGE BODIES ARE SIMILAR IN FUNCTION TO THE SUN BODIES, BUT MAY DIFFER IN DIMENSION.

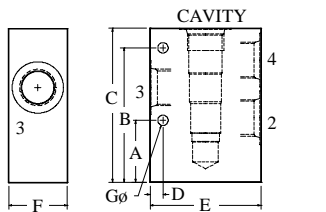


Part No.	Cavity	Ports SAE ORB	SUN No.	A	C	D	E	F	G
MB629S	SUN T-10A	#8 (3/4-16)	FAJ	0.28	2.50	0.28	1.63	1.25	0.34
MB630S	SUN T-13A	#8 (3/4-16)	GAJ	0.28	2.50	0.25	1.63	1.25	0.34
MB632S	SUN T-5A	#8 (3/4-16)	DAJ	0.38	2.63	0.38	2.00	1.50	0.41
MB631S	SUN T-3A	#12 (1 1/16-12)	CAL	0.38	3.00	0.38	2.00	1.50	0.41
MB569S	SUN T-16A	#16 (1 5/16-12)	IAM	1.00	4.00	0.50	3.00	2.00	0.41
MB633S	SUN T-18A	#20 (1 5/8-12)	LAN	0.94	4.50	0.63	3.50	2.50	0.41

Three Port Bodies – SUN

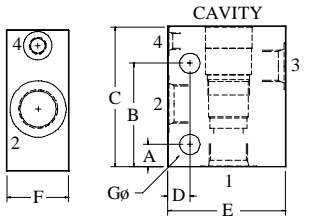


Part No.	Cavity	Ports 1 & 2 SAE ORB	Port 3 SAE ORB	SUN No.	A	B	C	D	E	F	G
MB493S	SUN T-11A	#8 (3/4-16)	#6 (9/16-18)	ECJ	0.44	2.56	3.00	0.38	2.50	1.25	0.34
MB483S	SUN T-2A	#12 (1 1/16-12)	#6 (9/16-18)	BCL	0.50	2.75	3.25	0.50	3.00	1.50	0.34
MB584S	SUN T-17A	#16 (1 5/16-12)	#6 (9/16-18)	HCM	0.75	3.50	4.00	0.75	3.50	2.50	0.41
MB634S	SUN T-19A	#20 (1 5/8-12)	#6 (9/16-18)	KCN	0.50	4.50	5.00	0.50	4.00	3.00	0.41

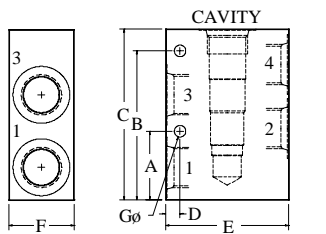


Part No.	Cavity	Ports 2 & 4 SAE ORB	Port 3 SAE ORB	SUN No.	A	B	C	D	E	F	G
MB636S	SUN T-31A	#8 (3/4-16)	#8 (3/4-16)	MMJ	1.50	3.63	4.44	0.38	2.50	1.25	0.34
MB637S	SUN T-32A	#12 (1 1/16-12)	#12 (1 1/16-12)	NML	1.94	4.19	5.00	0.50	3.00	1.50	0.34
MB639S	SUN T-33A	#16 (1 5/16-12)	#16 (1 5/16-12)	PMM	2.25	5.25	6.19	0.62	4.00	2.50	0.41
MB640S	SUN T-34A	#20 (1 5/8-12)	#20 (1 5/8-12)	QMN	2.44	6.44	7.50	0.75	5.00	3.00	0.41

Four Port Bodies – SUN



Part No.	Cavity	Ports 1 & 2 SAE ORB	Port 3 SAE ORB	Port 4 SAE ORB	SUN No.	A	B	C	D	E	F	G
MB635S	T-21A	#8 (3/4-16)	#8 (3/4-16)	#6 (9/16-18)	MAJ	0.44	2.56	3.56	0.38	2.50	1.25	0.34
MB454S	T-22A	#12 (1 1/16-12)	#10 (7/8-14)	#6 (9/16-18)	NAL	0.50	2.75	3.75	0.50	3.00	1.50	0.41
MB638S	T-23A	#16 (1 5/16-12)	#12 (1 1/16-12)	#6 (9/16-18)	PAM	0.75	3.50	4.75	0.75	4.00	2.50	0.41
MB583S	T-24A	#16 (1 5/16-12)	#16 (1 5/16-12)	#6 (9/16-18)	QCM	0.50	4.50	6.00	0.50	4.00	3.00	0.41



Part No.	Cavity	Ports SAE ORB	SUN No.	A	B	C	D	E	F	G
MB2444S	SUN T-31A	#8 (3/4-16)	MNJ	1.50	3.63	4.44	0.38	2.50	1.25	0.34
MB2449S	SUN T-32A	#12 (1 1/16-12)	NNL	1.94	4.19	5.00	0.50	3.00	1.50	0.34
MB2452S	SUN T-33A	#16 (1 5/16-12)	PNM	2.25	5.25	6.19	0.63	4.00	2.50	0.41
MB2447S	SUN T-34A	#20 (1 5/8-12)	QNN	2.44	6.44	7.50	0.75	5.00	3.00	0.41

Single Cartridge Body – SAE ORB Ports

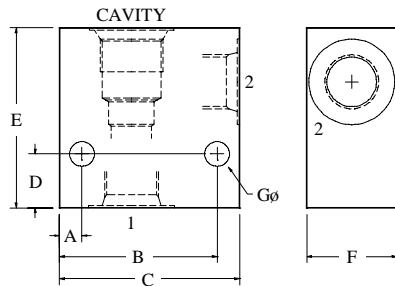
Two Port Bodies

MATL: STEEL

PRESSURE: 5000 PSI

C - STANDARD CAVITY FOR:

COMPACT
DANFOSS
DELTA
HYDRAFORCE
INTERGRATED. HYD.
PARKER
STERLING
VICKERS
WATERMAN



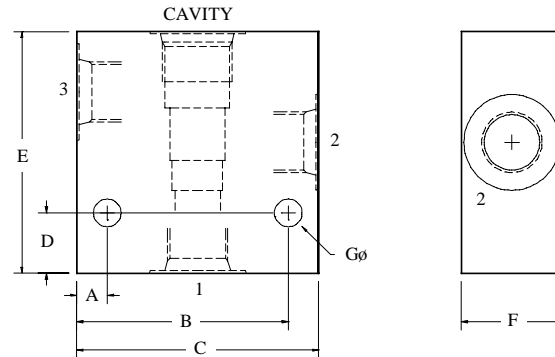
Part No.	Cavity	Ports	A	B	C	D	E	F	G
MB2328S	STANDARD C-8-2	#8 (3/4-16)	0.31	2.06	2.38	0.75	2.50	1.25	0.34
MB680S	STANDARD C-10-2	#8 (3/4-16)	0.31	2.19	2.50	0.75	2.50	1.25	0.34
MB2332S	STANDARD C-10-2	#12 (1 1/16-12)	0.31	2.44	2.75	0.75	2.50	1.50	0.34
MB686S	STANDARD C-16-2	#16 (1 5/16-12)	0.25	2.75	3.00	1.00	3.00	2.00	0.34
MB690S	STANDARD C-20-2	#20 (1 5/8-12)	0.31	3.19	3.50	1.00	3.50	2.50	0.41
MB900S	COMPACT CP12-2	#12 (1 1/16-12)	0.25	2.75	3.00	0.75	3.00	1.50	0.34
MB2388S	DANFOSS FC-10	#16 (1 5/16-12)	0.31	2.44	2.75	0.75	3.50	2.00	0.34
MB2395S	DANFOSS FC-76	#16 (1 5/16-12)	0.31	2.56	2.88	0.75	3.00	2.00	0.34
MB2392S	DANFOSS FC-153	#24 (1 7/8-12)	0.38	3.38	3.75	1.25	4.50	2.50	0.41
MB2397S	DANFOSS FC-178A	#24 (1 7/8-12)	0.38	3.38	3.75	1.00	4.00	2.50	0.41
MB2391S	DELTA 40200028	#16 (1 5/16-12)	0.31	2.69	3.00	0.75	3.13	2.00	0.34
MB900S	DELTA 40200032	#12 (1 1/16-12)	0.25	2.75	3.00	0.75	3.00	1.50	0.34
MB900S	HYDRAFORCE VC12-2	#12 (1 1/16-12)	0.25	2.75	3.00	0.75	3.00	1.50	0.34
MB2395S	INTEGRATED A878	#16 (1 5/16-12)	0.31	2.56	2.88	0.75	3.00	2.00	0.34
MB2388S	INTEGRATED A881	#16 (1 5/16-12)	0.31	2.44	2.75	0.75	3.50	2.00	0.34
MB2408S	INTEGRATED A890	#6 (9/16-18)	0.31	1.69	2.00	0.50	2.88	1.25	0.34
MB2413S	INTEGRATED A892	#8 (3/4-16)	0.31	2.19	2.50	0.63	2.75	1.25	0.34
MB2392S	INTEGRATED A1126	#24 (1 7/8-12)	0.31	3.44	3.75	1.25	4.50	2.50	0.41
MB2416S	INTEGRATED A2791	#12 (1 1/16-12)	0.31	2.44	2.75	0.75	3.50	2.00	0.34
MB2389S	INTEGRATED A3377	#12 (1 1/16-12)	0.31	2.44	2.75	0.75	2.50	1.50	0.34
MB2418S	INTEGRATED A3973	#8 (3/4-16)	0.31	2.06	2.38	0.63	2.50	1.25	0.34
MB2331S	INTEGRATED A6701	#8 (3/4-16)	0.31	2.06	2.38	0.75	2.50	1.25	0.34
MB2421S	INTEGRATED A6835	#12 (1 1/16-12)	0.38	2.63	3.00	0.75	4.13	2.00	0.41
MB2438S	INTEGRATED A7447	#12 (1 1/16-12)	0.31	2.44	2.75	0.63	3.00	2.00	0.34
MB2435S	INTEGRATED CVA-20-01-0	#8 (3/4-16)	0.31	2.19	2.50	0.50	2.25	1.25	0.34
MB2331S	PARKER C09-2	#8 (3/4-16)	0.31	2.06	2.38	0.75	2.50	1.25	0.34
MB2333S	PARKER C12-2	#12 (1 1/16-12)	0.31	2.44	2.75	0.75	3.00	1.50	0.34
MB2391S	STERLING 2B	#16 (1 5/16-12)	0.31	2.69	3.00	0.75	3.13	2.00	0.34
MB2397S	STERLING 2K	#24 (1 7/8-12)	0.31	3.44	3.75	1.00	4.00	2.50	0.41
MB2394S	STERLING 2M	#16 (1 5/16-12)	0.31	2.69	3.00	0.88	3.00	2.00	0.34
MB2389S	STERLING 2R	#12 (1 1/16-12)	0.31	2.44	2.75	0.75	2.50	1.50	0.34
MB2331S	STERLING 2X	#8 (3/4-16)	0.31	2.06	2.38	0.75	2.50	1.25	0.34
MB683S	VICKERS C-12-2	#12 (1 1/16-12)	0.25	2.75	3.00	0.75	3.00	1.50	0.34
MB2331S	WATERMAN 12-2A	#8 (3/4-16)	0.31	2.06	2.38	0.75	2.50	1.25	0.34
MB2389S	WATERMAN 14-2	#12 (1 1/16-12)	0.31	2.44	2.75	0.75	2.50	1.50	0.34

Single Cartridge Body – SAE ORB Ports

Three Port Bodies

MATL: STEEL

PRESSURE: 5000 PSI

 'C' - STANDARD CAVITY FOR:
**COMPACT
 DANFOSS
 DELTA
 HYDRAFORCE,
 INTEGRATED HYD.
 PARKER
 STERLING
 VICKERS
 WATERMAN**


Part No.	Cavity	Port 1	Port 2	Port 3	A	B	C	D	E	F	G
MB2390S	STANDARD C-8-3	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.69	3.00	0.50	2.63	1.25	0.34
MB681S	STANDARD C-10-3	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.75	3.00	1.25	0.34
MB682S	STANDARD C-10-3S	#8 (3/4-16)	#8 (3/4-16)	#6 (9/16-18)	0.38	2.13	2.50	0.75	3.00	1.25	0.34
MB687S	STANDARD C-16-3	#16 (1 5/8-12)	#16 (1 5/8-12)	#16 (1 5/8-12)	0.38	3.63	4.00	0.75	4.13	2.00	0.41
MB688S	STANDARD C-16-3S	#16 (1 5/8-12)	#16 (1 5/8-12)	#6 (9/16-18)	0.38	3.13	3.50	0.75	3.50	2.00	0.41
MB691S	STANDARD C-20-3	#20 (1 5/8-12)	#20 (1 5/8-12)	#20 (1 5/8-12)	0.38	3.63	4.00	0.75	5.50	2.50	0.41
MB692S	STANDARD C-20-3S	#20 (1 5/8-12)	#20 (1 5/8-12)	#6 (9/16-18)	0.38	3.63	4.00	0.75	4.50	2.50	0.41
MB2396S	COMPACT CP8-3L	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.31	2.56	2.88	0.75	3.00	1.25	0.34
MB985S	COMPACT CP10-3L	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.75	3.25	1.25	0.34
MB987S	COMPACT CP12-3	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	3.13	3.50	0.75	4.00	2.00	0.41
MB986S	COMPACT CP12-3S	#12 (1 1/16-12)	#12 (1 1/16-12)	#6 (9/16-18)	0.38	2.63	3.00	0.75	3.50	2.00	0.41
MB1856S	COMPACT CP20-3S	#20 (1 5/8-12)	#20 (1 5/8-12)	#6 (9/16-18)	0.38	3.63	4.00	0.75	4.50	2.50	0.41
MB2412S	DANFOSS FC-13	#16 (1 5/8-12)	#16 (1 5/8-12)	#6 (9/16-8)	0.38	2.63	3.00	0.75	4.13	2.00	0.41
MB2424S	DANFOSS FC-60	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.75	4.50	1.50	0.41
MB2409S	DANFOSS FC-109A	#6 (9/16-18)	#6 (9/16-18)	#6 (9/16-18)	0.31	1.69	2.00	0.50	2.63	1.00	0.34
MB2410S	DANFOSS FC-173	#16 (1 5/8-12)	#16 (1 5/8-12)	#6 (9/16-18)	0.38	2.75	3.13	1.00	4.00	2.00	0.41
MB2429S	DANFOSS FC-173A	#6 (9/16-18)	#16 (1 5/8-12)	#16 (1 5/8-12)	0.38	3.13	3.50	0.63	3.88	2.00	0.41
MB986S	DELTA 40200033	#12 (1 1/16-12)	#12 (1 1/16-12)	#6 (9/16-18)	0.38	2.63	3.00	0.75	3.50	2.00	0.41
MB2393S	DELTA 40200034	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.88	3.25	0.75	4.00	2.00	0.41
MB2393S	HYDRAFORCE VC12-3	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.88	3.25	0.75	4.00	2.00	0.41

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Single Cartridge Body – SAE ORB Ports

 THREE PORT
BODIES
CONT'D

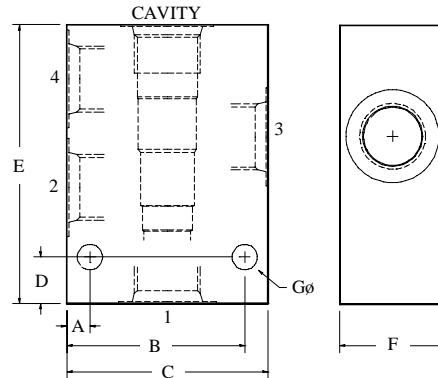
Part No.	Cavity	Port 1	Port 2	Port 3	A	B	C	D	E	F	G
MB2410S	INTEGRATED A877	#16 (1 5/16-12)	#16 (1 5/16-12)	#6 (9/16-18)	0.38	2.75	3.13	1.00	4.00	2.00	0.41
MB2412S	INTEGRATED A880	#16 (1 5/16-12)	#16 (1 5/16-12)	#6 (9/16-8)	0.38	2.63	3.00	0.75	4.13	2.00	0.41
MB2419S	INTEGRATED A893	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.31	2.69	3.00	0.50	3.25	1.25	0.34
MB2422S	INTEGRATED A2976	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.31	2.56	2.88	0.63	3.00	1.50	0.34
MB2439S	INTEGRATED A3146	#12 (1 1/16-12)	#12 (1 1/16-12)	#4 (7/16-20)	0.31	2.44	2.75	0.75	3.50	2.00	0.34
MB2414S	INTEGRATED A5572	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.31	2.56	2.88	0.75	3.50	1.50	0.34
MB2425S	INTEGRATED A6610	#8 (3/4-16)	#8 (3/4-16)	#4 (7/16-20)	0.31	2.19	2.50	0.75	2.63	1.25	0.34
MB2436S	INTEGRATED A6935	#20 (1 5/8-12)	#20 (1 5/8-12)	#4 (7/16-20)	0.38	3.25	3.63	0.50	4.00	2.50	0.41
MB2440S	INTEGRATED A12336	#12 (1 1/16-12)	#12 (1 1/16-12)	#4 (7/16-20)	0.31	2.56	2.88	0.63	3.00	1.50	0.34
MB2426S	INTEGRATED CVA-22-06-0	#8 (3/4-16)	#8 (3/4-16)	#6 (9/16-18)	0.31	2.19	2.50	0.75	3.25	1.25	0.34
MB2431S	INTEGRATED CVA-27-04-0	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.75	3.13	0.75	4.00	1.50	0.41
MB2426S	INTEGRATED CVB-22-06-0	#8 (3/4-16)	#8 (3/4-16)	#6 (9/16-18)	0.31	2.19	2.50	0.75	3.25	1.25	0.34
MB2442S	INTEGRATED CVB-42-04-0	#20 (1 5/8-12)	#24 (1 7/8-12)	#20 (1 5/8-12)	0.38	4.13	4.50	1.00	7.00	2.50	0.41
MB2387S	PARKER C12-3	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.88	3.25	0.75	3.50	2.00	0.41
MB2427S	STERLING 3A	#16 (1 5/16-12)	#16 (1 5/16-12)	#16 (1 5/16-12)	0.38	3.13	3.50	0.75	4.25	2.00	0.41
MB2432S	STERLING 3C	#16 (1 5/16-12)	#16 (1 5/16-12)	#4 (7/16-20)	0.38	2.63	3.00	1.00	4.25	2.00	0.41
MB2414S	STERLING 3G	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.31	2.56	2.88	0.75	3.50	1.50	0.34
MB2441S	STERLING 3M	#12 (1 1/16-12)	#12 (1 1/16-12)	#4 (7/16-20)	0.38	2.63	3.00	1.00	4.00	2.00	0.41
MB2417S	STERLING 3U	#16 (1 5/16-12)	#16 (1 5/16-12)	#16 (1 5/16-12)	0.38	3.00	3.38	1.00	4.50	2.00	0.41
MB2422S	STERLING 3X	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.31	2.56	2.88	0.63	3.00	1.50	0.34
MB2428S	STERLING 53-1	#6 (9/16-18)	#6 (9/16-18)	#4 (7/16-20)	0.31	1.69	2.00	0.50	2.19	1.00	0.34
MB2433S	STERLING 68-1	#8 (3/4-16)	#8 (3/4-16)	#4 (7/16-20)	0.38	2.19	2.56	0.75	3.50	1.25	0.41
MB2437S	STERLING 78-1	#12 (1 1/16-12)	#12 (1 1/16-12)	#4 (7/16-20)	0.38	2.50	2.88	1.00	3.50	2.00	0.41
MB2442S	STERLING 91-1	#20 (1 5/8-12)	#24 (1 7/8-12)	#20 (1 5/8-12)	0.38	4.13	4.50	1.00	7.00	2.50	0.41
MB684S	VICKERS C-12-3	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	3.13	3.50	0.75	4.00	2.00	0.41
MB685S	VICKERS C-12-3S	#12 (1 1/16-12)	#12 (1 1/16-12)	#6 (9/16-18)	0.38	2.63	3.00	0.75	3.50	2.00	0.41
MB2390S	WATERMAN 12-3	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.69	3.00	0.50	2.63	1.25	0.34
MB2422S	WATERMAN 14-3	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.31	2.56	2.88	0.63	3.00	1.50	0.34

Single Cartridge Body – SAE ORB Ports

Four Port Bodies

MATL: STEEL

PRESSURE: 5000 PSI

 'C' - STANDARD CAVITY FOR:
 COMPACT
 DANFOSS
 DELTA
 HYDRAFORCE,
 INTEGRATED HYD.
 PARKER
 STERLING
 VICKERS
 WATERMAN


Part No.	Cavity	Port 1	Port 2	Port 3	Port 4	A	B	C	D	E	F	G
MB2398S	STANDARD C-8-4	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.63	3.13	1.25	0.41
MB961S	STANDARD C-10-4	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.75	3.50	1.25	0.34
MB689S	STANDARD C-16-4	#16 (1 5/16-12)	#16 (1 5/16-12)	#16 (1 5/16-12)	#16 (1 5/16-12)	0.31	3.69	4.00	0.75	5.25	2.00	0.41
MB693S	STANDARD C-20-4	#20 (1 5/8-12)	#20 (1 5/8-12)	#20 (1 5/8-12)	#20 (1 5/8-12)	0.38	3.63	4.00	0.75	6.75	2.50	0.41
MB2398S	COMPACT CP8-4	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.63	3.13	1.25	0.41
MB988S	COMPACT CP12-4	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.88	3.25	0.75	4.50	2.00	0.41
MB2411S	DANFOSS FC-314	#12 (1 1/16-12)	#12 (1 1/16-12)	#6 (9/16-18)	#6 (9/16-18)	0.38	2.63	3.00	0.75	4.13	1.50	0.41
MB2398S	DELTA 40200029	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.63	3.13	1.25	0.41
MB2400S	DELTA 40200035	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.63	3.00	1.00	5.00	2.00	0.41
MB2398S	HYDRAFORCE VC08-4	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.63	3.13	1.25	0.41
MB2400S	HYDRAFORCE VC12-4	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.63	3.00	1.00	5.00	2.00	0.41
MB2415S	INTEGRATED A5302	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.75	3.75	1.25	0.41
MB2398S	INTEGRATED A6951	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.63	3.13	1.25	0.41
MB2423S	INTEGRATED A12196	#8 (3/4-16)	#8 (3/4-16)	#4 (7/16-20)	#4 (7/16-20)	0.31	2.44	2.75	0.63	3.50	1.50	0.34
MB2434S	INTEGRATED A13098	#16 (1 5/16-12)	#16 (1 5/16-12)	#4 (7/16-20)	#4 (7/16-20)	0.38	2.88	3.25	0.75	4.50	2.00	0.41
MB2398S	PARKER C08-4	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.63	3.13	1.25	0.41
MB2399S	PARKER C12-4	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.63	3.00	0.75	4.25	2.00	0.41
MB2443S	STERLING 4A	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	#6 (9/16-18)	0.38	3.13	3.50	1.00	5.25	2.00	0.41
MB2415S	STERLING 4C	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.75	3.75	1.25	0.41
MB2398S	VICKERS C-8-4	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.63	3.13	1.25	0.41
MB2401S	VICKERS C-12-4	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	#12 (1 1/16-12)	0.38	2.63	3.00	0.75	4.63	2.00	0.41
MB2398S	WATERMAN 12-4	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.63	3.13	1.25	0.41
MB2415S	WATERMAN 14-4	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	#8 (3/4-16)	0.38	2.63	3.00	0.75	3.75	1.25	0.41

Cylinder Mount – Single

SAE ORB Ports

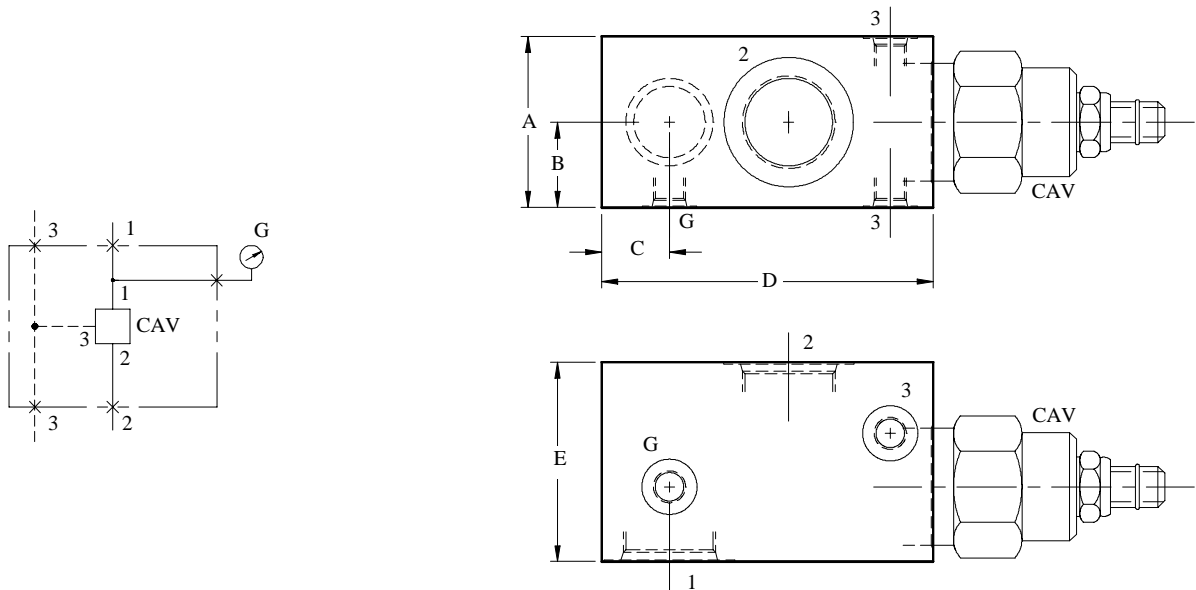
MATL: STEEL

CARTRIDGES: SUN CAVITY (OR EQUIVALENT) '1' IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

FOR 4-BOLT FLANGE MOUNT SEE PAGE 27-4 & 5.



Part No.	CAV Cavity	1 SAE ORB	2 SAE ORB	3 SAE ORB	A	B	C	D	E
MB2269S	SUN T-11A	#8 (3/4-16)	#8 (3/4-16)	#6 (9/16-18)	2.00	1.00	0.63	3.25	2.00
MB2271S	SUN T-2A	#12 (1 1/16-12)	#12 (1 1/16-12)	#6 (9/16-18)	2.00	1.00	0.81	3.63	2.50
MB2272S	SUN T-17A	#16 (1 5/16-12)	#16 (1 5/16-12)	#6 (9/16-18)	2.50	1.25	1.00	4.50	3.00
MB2273S	SUN T-19A	#20 (1 5/8-12)	#20 (1 5/8-12)	#6 (9/16-18)	3.00	1.50	1.19	5.81	3.50

Single DIN / Poppet Body

SAE ORB or SAE 4-Bolt Ports

MATL: STEEL

INSERT CAVITY DIMENSIONS MADE TO DIN 24342/ ISO 7368/ NFPA T3.5.45 STANDARDS.
POPPET BODIES ARE SUITABLE FOR ALL MAKES OF INSERT CARTRIDGES.

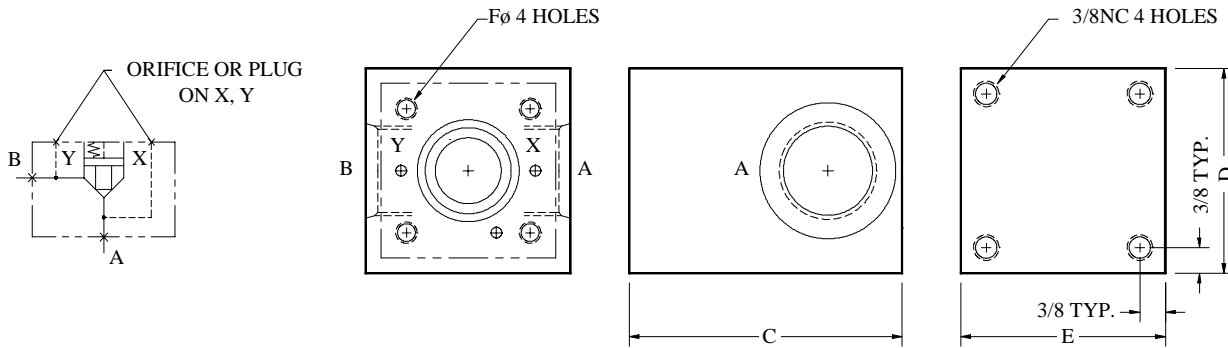
5000 PSI PRESSURE RATING FOR SAE ORB PORTS.

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.

FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

FOR DIN / POPPET COVER, SEE PAGE 24-8



Part No.	Poppet Size	A, B SAE ORB	C	D	E	F
MB1097S	NG16 / 16mm	#16 (1 5/6-12)	4.00	3.00	3.50	5/16-18NC
MB1098S	NG25 / 25mm	#20 (1 5/8-12)	5.00	4.00	4.00	1/2-13NC
MB1957S	NG32 / 32mm	#24 (1 7/8-12)	5.00	4.50	5.00	5/8-11NC

Part No.	Poppet Size	A, B SAE 4-Bolt	C	D	E	F
MB1958S	NG16 / 16mm	1 C61	4.38	3.00	3.00	5/16-18NC
MB1962S	NG16 / 16mm	1 C62	4.38	3.50	3.50	5/16-18NC
MB1959S	NG25 / 25mm	1 1/4 C61	5.00	4.00	4.00	1/2-13NC
MB1963S	NG25 / 25mm	1 1/4 C62	5.25	4.00	4.50	1/2-13NC
MB1099S	NG32 / 32mm	1 1/2 C61	5.50	4.50	5.00	5/8-11NC
MB1960S	NG32 / 32mm	1 1/2 C62	6.00	4.50	5.25	5/8-11NC
MB1100S	NG40 / 40mm	2 C61	6.88	5.00	6.00	3/4-10NC
MB1952S	NG40 / 40mm	2 C62	7.13	5.38	6.00	3/4-10NC
MB1101S	NG50 / 50mm	2 1/2 C61	8.00	6.00	6.50	3/4-10NC
MB1961S	NG50 / 50mm	2 1/2 C62	8.50	6.75	7.00	3/4-10NC



Multiple Valves

Cross Relief

Dual-Relief and Make-Up

Selector

Regenerative

Rectifier

Accumulator Dump

Hi-Low

Grapple Rotation

Pump

Hydrostatic Transmission

Thumb



Cross-Relief Manifold

SAE ORB Ports

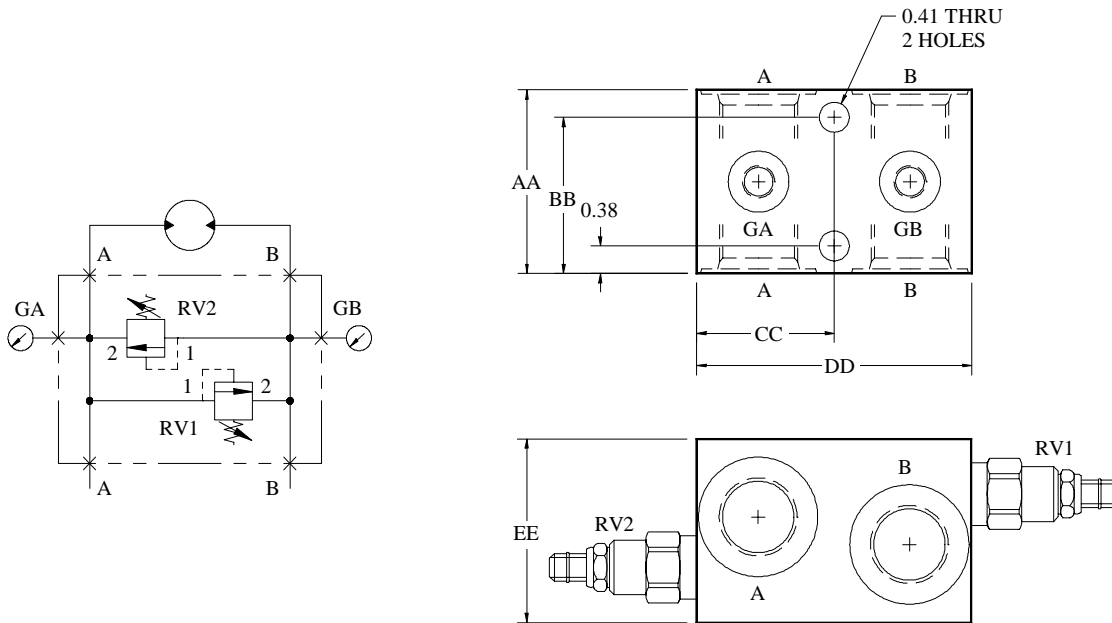
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, OILGEAR, PARKER, STERLING, SUN, AND VICKERS
CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE

GA GB (GAGE): #4 SAE ORB

NOTE: COMPACT CP12-2 CAVITY IS EQUIVALENT TO HYDRAFORCE VC12-2 CAVITY.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	RV Relief Cavity	Flow (GPM)	A, B Ports SAE ORB	AA	BB	CC	DD	EE
MB2069S	COMPACT CP12-2	30	#12 (1 1/16-12)	3.00	0.38	2.13	4.25	3.00
MB2071S	VICKERS C-12-2	30	#12 (1 1/16-12)	3.00	0.38	2.13	4.25	3.00
MB2070S	PARKER C12-2	30	#12 (1 1/16-12)	3.00	2.63	2.13	4.25	3.00
MB1094S	STANDARD C-10-2	30	#12 (1 1/16-12)	2.50	2.13	1.88	3.75	2.50
MB1095S	STANDARD C-16-2	80	#20 (1 5/8-12)	3.50	3.13	2.63	5.25	3.50
MB1089S	SUN T-10A	25	#12 (1 1/16-12)	2.50	2.13	1.88	3.75	2.50
MB1090S	SUN T-3A	50	#16 (1 5/16-12)	3.00	2.62	2.25	4.50	3.00
MB1091S	SUN T-16A	100	#20 (1 5/8-12)	3.50	3.13	2.75	5.50	3.50

Cross-Relief Manifold

SAE 4-Bolt Flange Ports

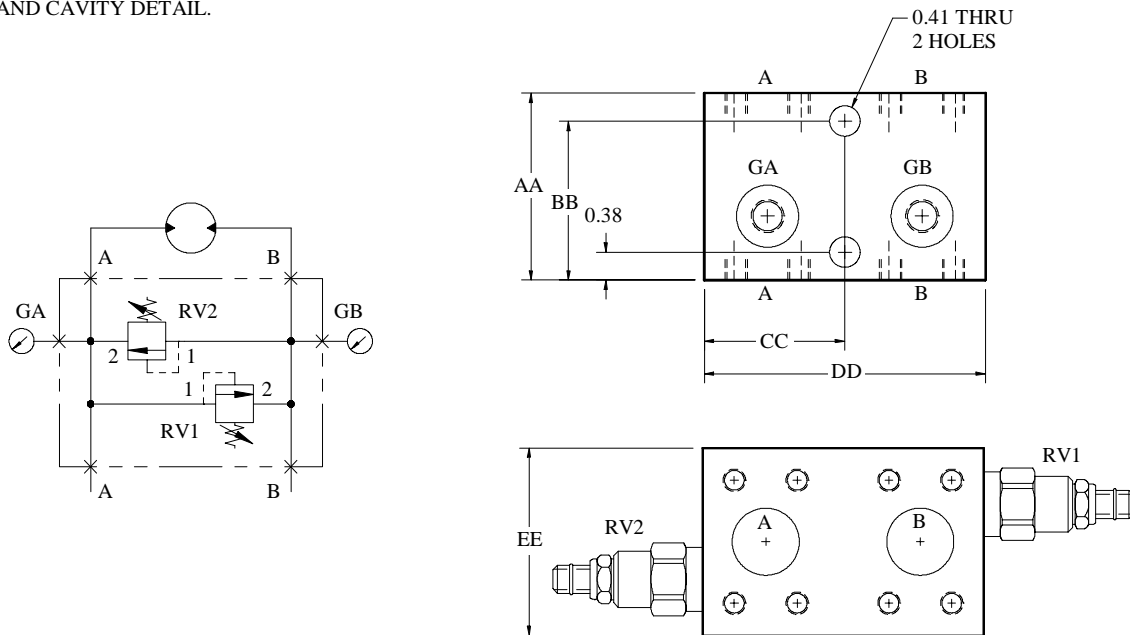
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, PARKER, STERLING, SUN AND VICKERS CAVITY (OR EQUIVALENT)
1 IS NOSE OF CARTRIDGE

GA, GB (GAGE): #4 SAE ORB

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE,
FLOW RATE AND CAVITY DETAIL.



Part No.	RV Relief Cavity	Flow (GPM)	A, B Ports SAE 4-Bolt	AA	BB	CC	DD	EE
MB1096S	STANDARD C-16-2	80	1 1/4 C61	3.50	3.13	2.75	5.50	3.50
MB2127S	STANDARD C-16-2	80	1 1/2 C61	4.00	3.63	3.19	6.38	4.50
MB2128S	STANDARD C-16-2	80	1 1/4 C62	4.00	3.63	3.00	6.00	4.50
MB1092S	SUN T-16A	100	1 1/4 C61	3.50	3.13	2.75	5.50	3.50
MB2125S	SUN T-3A	50	1 1/4 C61	3.50	3.13	2.75	5.50	3.50
MB1093S	SUN T-18A	200	1 1/2 C61	5.50	5.13	3.63	7.25	4.00
MB2129S	SUN T-16A	100	1 1/2 C61	4.00	3.63	3.19	6.38	4.00
MB2130S	SUN T-18A	200	2 C61	5.00	4.63	4.00	8.00	5.00
MB2132S	SUN T-16A	100	1 C62	3.50	3.13	2.88	5.75	3.50
MB2126S	SUN T-3A	50	1 1/4 C62	3.50	3.13	3.00	6.00	4.00
MB2131S	SUN T-16A	100	1 1/4 C62	4.00	3.63	3.00	6.00	4.00
MB2134S	SUN T-18A	200	1 1/4 C62	4.50	4.13	3.50	7.00	4.50
MB2133S	SUN T-18A	200	1 1/2 C62	5.00	4.63	4.00	8.00	5.00

Dual-Relief and Make-Up Manifold

SAE ORB Ports

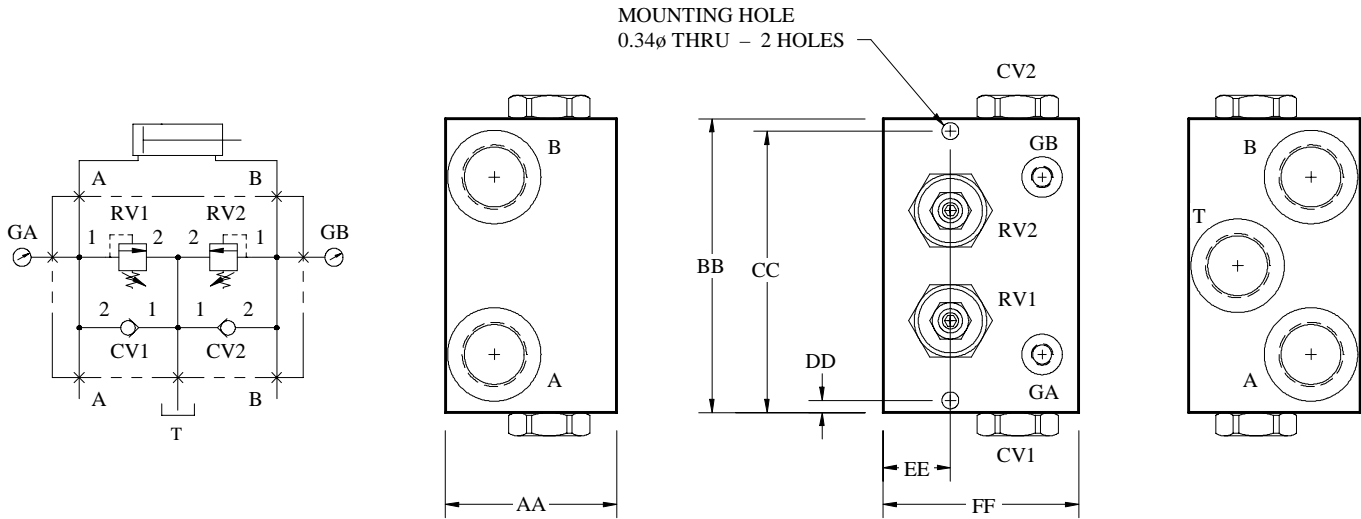
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, OILGEAR, PARKER, STERLING, SUN AND VICKERS
CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

GA, GB (GAGE): #4 SAE ORB

NOTE: COMPACT CP12-2 CAVITY IS EQUIVALENT TO HYDRAFORCE VC12-2 CAVITY
AND PARKER C12-2 CAVITY IS EQUIVALENT TO OILGEAR HS800-2 CAVITY.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CV Check Cavity	Flow (GPM)	RV Relief Cavity	Flow (GPM)	A, B, T SAE ORB Ports	AA	BB	CC	DD	EE	FF
MC1419S	STANDARD C-10-2	42	STANDARD C-10-2	35	#12 (1 1/16-12)	3.00	4.50	4.25	0.25	1.00	3.00
MC1412S	COMPACT CP12-2	37	COMPACT CP12-2	50	#12 (1 1/16-12)	3.50	4.88	4.63	0.25	1.13	3.50
MC1413S	VICKERS C-12-2	30	VICKERS C-12-2	30	#12 (1 1/16-12)	3.50	4.88	4.63	0.25	1.13	3.50
MC1410S	PARKER C12-2	32	PARKER C12-2	50	#12 (1 1/16-12)	3.50	4.88	4.63	0.25	1.19	3.50
MC1417S	STANDARD C-16-2	132	STANDARD C-16-2	106	#16 (1 5/16-12)	3.50	6.00	5.75	0.25	1.06	4.00
MC1420S	SUN T-13A	20	SUN T-10A	25	#12 (1 1/16-12)	3.00	4.63	4.38	0.25	1.00	3.00
MC1421S	SUN T-5A	40	SUN T-3A	50	#12 (1 1/16-12)	3.50	5.00	4.63	0.38	1.19	3.50
MC1422S	SUN T-16A	80	SUN T-3A	50	#16 (1 5/16-12)	4.00	6.25	5.88	0.38	1.13	4.00
MC1450S	SUN T-16A	80	SUN T-16A	100	#20 (1 5/8-12)	4.50	6.88	6.38	0.38	1.13	4.00

Dual-Relief and Make-Up Manifold

SAE 4-Bolt Flange Ports

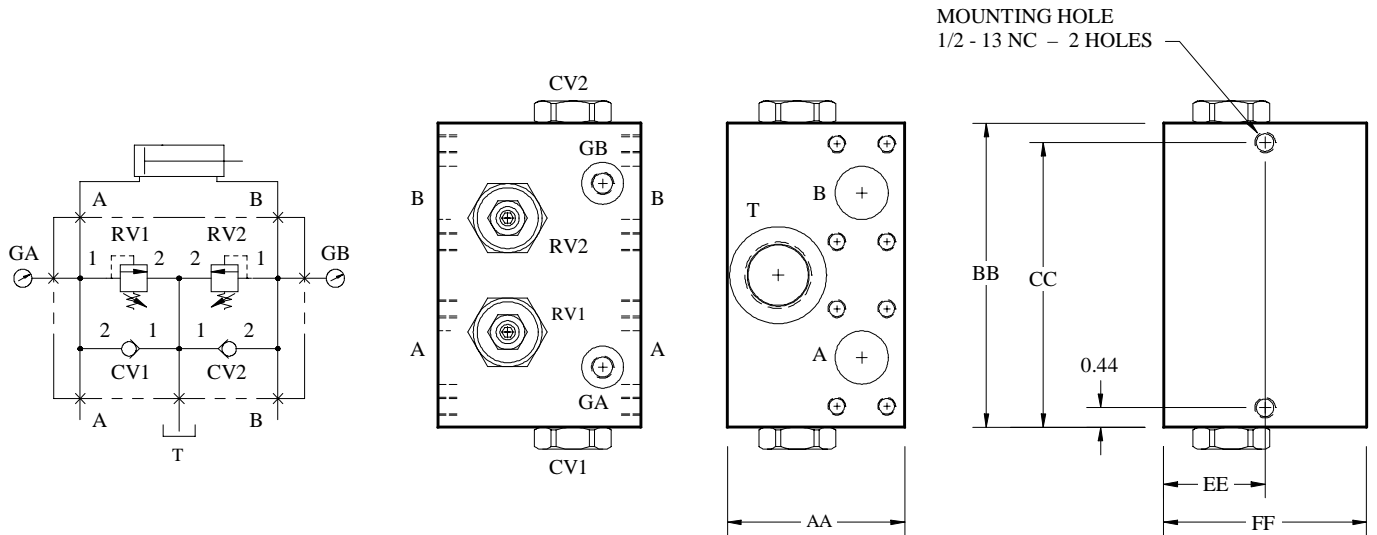
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, OILGEAR, PARKER, STERLING, SUN AND VICKERS CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE

GA, GB (GAGE): #4 SAE ORB

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-22.
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE FLOW RATE AND CAVITY DETAIL.



Part No.	CV Check Cavity	Flow (GPM)	RV Relief Cavity	Flow (GPM)	A, B Ports	T Port SAE ORB	AA	BB	CC	EE	FF
MC1418	STANDARD C-16-2	132	STANDARD C-16-2	106	1 1/4 C61	#20 (1 5/8-12)	4.50	7.00	6.56	2.25	4.50
MC1437	STANDARD C-20-2	80	STANDARD C-16-2	106	1 1/2 C61	#24 (1 7/8-12)	5.00	8.75	8.31	2.50	5.00
MC1443	STANDARD C-20-2	80	STANDARD C-16-2	106	1 1/2 C62	#24 (1 7/8-12)	5.00	11.00	10.56	2.75	5.50
MC1442	STANDARD C-16-2	132	STANDARD C-16-2	106	1 1/4 C62	#20 (1 5/8-12)	4.00	10.00	9.56	2.25	4.50
MC1438	SUN T-16A	80	SUN T-3A	50	1 1/4 C61	#20 (1 5/8-12)	4.00	8.25	7.81	2.00	4.00
MC1439	SUN T-16A	80	SUN T-16A	100	1 1/2 C61	#24 (1 7/8-12)	5.00	8.75	8.31	2.50	5.00
MC1440	SUN T-18A	160	SUN T-16A	100	1 1/2 C61	#24 (1 7/8-12)	5.00	8.75	8.31	2.50	5.00
MC1441	SUN T-18A	160	SUN T-18A	200	2 C61	#24 (1 7/8-12)	6.00	9.50	9.06	3.00	6.00
MC1444	SUN T-16A	80	SUN T-16A	100	1 1/2 C62	#24 (1 7/8-12)	5.00	11.00	10.56	2.50	5.00
MC1445	SUN T-18A	160	SUN T-18A	200	2 C62	#24 (1 7/8-12)	6.00	12.25	11.81	3.00	6.00

Single Selector Manifold

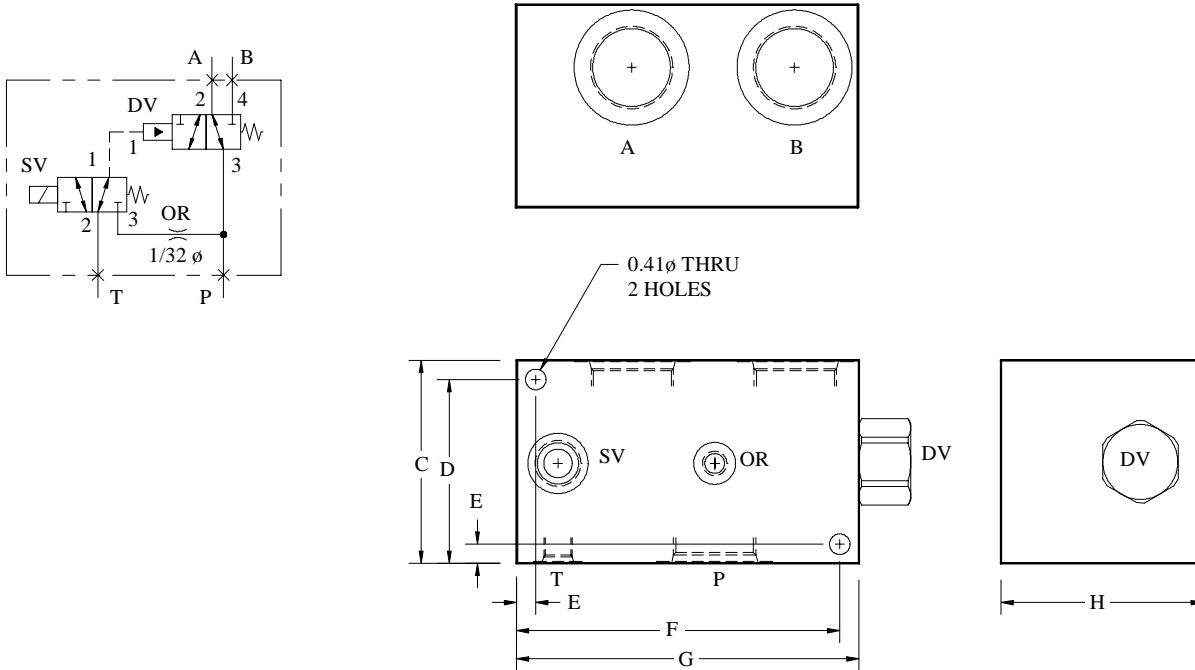
SAE ORB Ports

MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, PARKER, STERLING, AND VICKERS CAVITY (OR EQUIVALENT)
 '1' IS NOSE OF CARTRIDGE
 VC12-4 CAVITY FOR HYDRAFORCE ONLY

'OR': #4 SAE ORB PLUG ACCESS TO 1/32 DIA. ORIFICE PLUG

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	DV Cavity	DV Flow	SV Cavity	P, A, B SAE ORB	T SAE ORB	C	D	E	F	G	H
MB1626S	C-10-4	8 GPM	C-10-3	#8 (3/4-16)	#6 (9/16-18)	3.00	2.63	0.38	3.13	3.50	3.00
MB2072S	VC12-4	30 GPM	C-10-3	#12 (1 1/16-12)	#6 (9/16-18)	3.50	3.13	0.38	4.63	5.00	3.50
MB604S	C-16-4	35 GPM	C-10-3	#16 (1 5/16-12)	#6 (9/16-18)	3.50	3.13	0.38	4.88	5.25	3.50
MB491S	C-20-4	70 GPM	C-10-3	#20 (1 5/8-12)	#6 (9/16-18)	4.00	3.63	0.38	6.38	6.75	4.00

Dual Selector Manifold

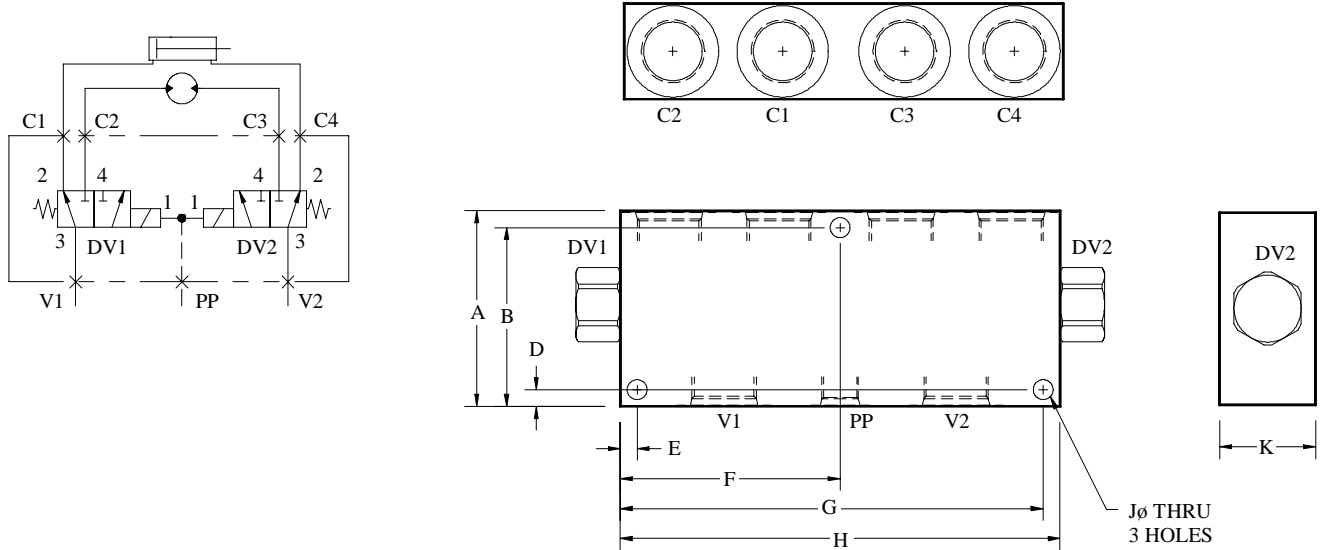
External Pilot, SAE ORB & SAE 4-Bolt Flange Ports

MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, HYDRAFORCE, PARKER, STERLING, AND VICKERS CAVITY (OR EQUIVALENT)
 '1' IS NOSE OF CARTRIDGE
 VC12-4 CAVITY FOR HYDRAFORCE ONLY

FOR DIMENSION OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.
 FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	DV1, DV2		C, V SAE ORB or SAE 4-Bolt	PP SAE ORB	A	B	D	E	F	G	H	J	K
	Cavity	Flow											
MC709S	C-10-4	8 GPM	#8 (3/4-16)	#4 (7/16-20)	3.00	2.69	0.31	0.31	2.75	5.19	5.50	0.34	1.50
MC1409S	VC12-4	30 GPM	#12 (1 1/16-12)	#6 (9/16-18)	3.50	3.16	0.34	0.34	4.13	7.91	8.25	0.41	2.00
MC688S	C-16-4	35 GPM	#16 (1 5/16-12)	#8 (3/4-16)	4.00	3.66	0.34	0.34	4.50	8.66	9.00	0.41	2.00
MC716S	C-20-4	70 GPM	1 1/4 C61	#8 (3/4-16)	3.50	3.13	0.38	0.38	6.00	11.63	12.00	0.41	3.50
MC1154S	C-20-4	70 GPM	1 1/4 C62	#8 (3/4-16)	4.00	3.63	0.38	0.38	6.13	11.88	12.25	0.41	4.00

Dual Selector Manifold

Internal Pilot, SAE ORB Ports

MATL: STEEL

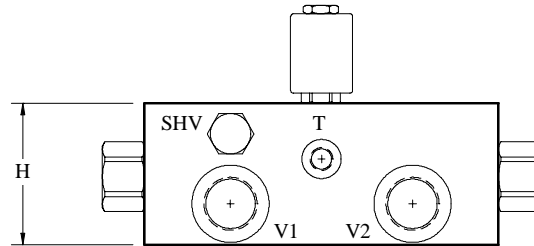
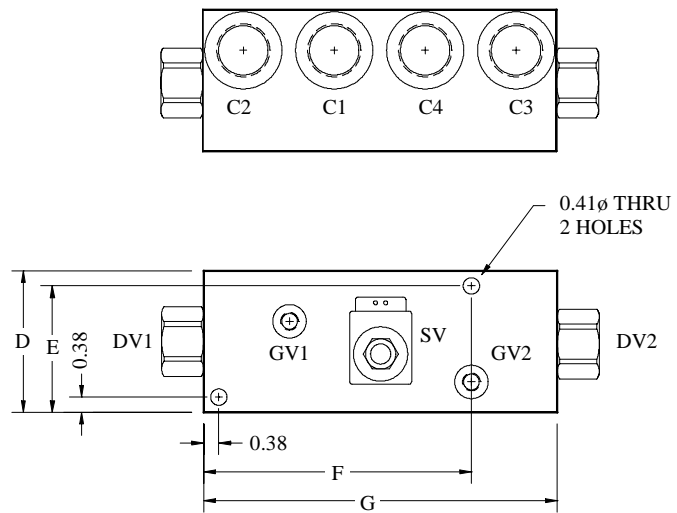
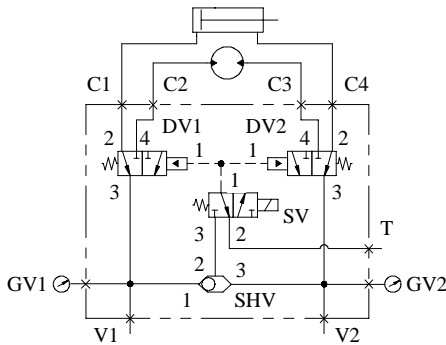
CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, PARKER, STERLING, AND VICKERS CAVITY (OR EQUIVALENT)

'1' IS NOSE OF CARTRIDGE

VC12-4 CAVITY FOR HYDRAFORCE ONLY

'GV1', 'GV2' (GAGE): #4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	DV1, DV2		SV, SHV Cavity	C, V SAE ORB	T SAE ORB	D	E	F	G	H
	Cavity	Flow								
MB1630S	C-10-4	8 GPM	C-10-3	#8 (3/4-16)	#6 (9/16-18)	3.00	2.63	2.88	5.75	3.00
MC1407S	VC12-4	30 GPM	C-10-3	#12 (1 1/16-12)	#6 (9/16-18)	3.00	2.63	6.13	8.25	3.50
MC616S	C-16-4	35 GPM	C-10-3	#16 (1 5/16-12)	#6 (9/16-18)	3.50	3.13	6.63	8.75	3.50

Dual Selector Manifold

Internal Pilot, SAE 4-Bolt Flange Ports

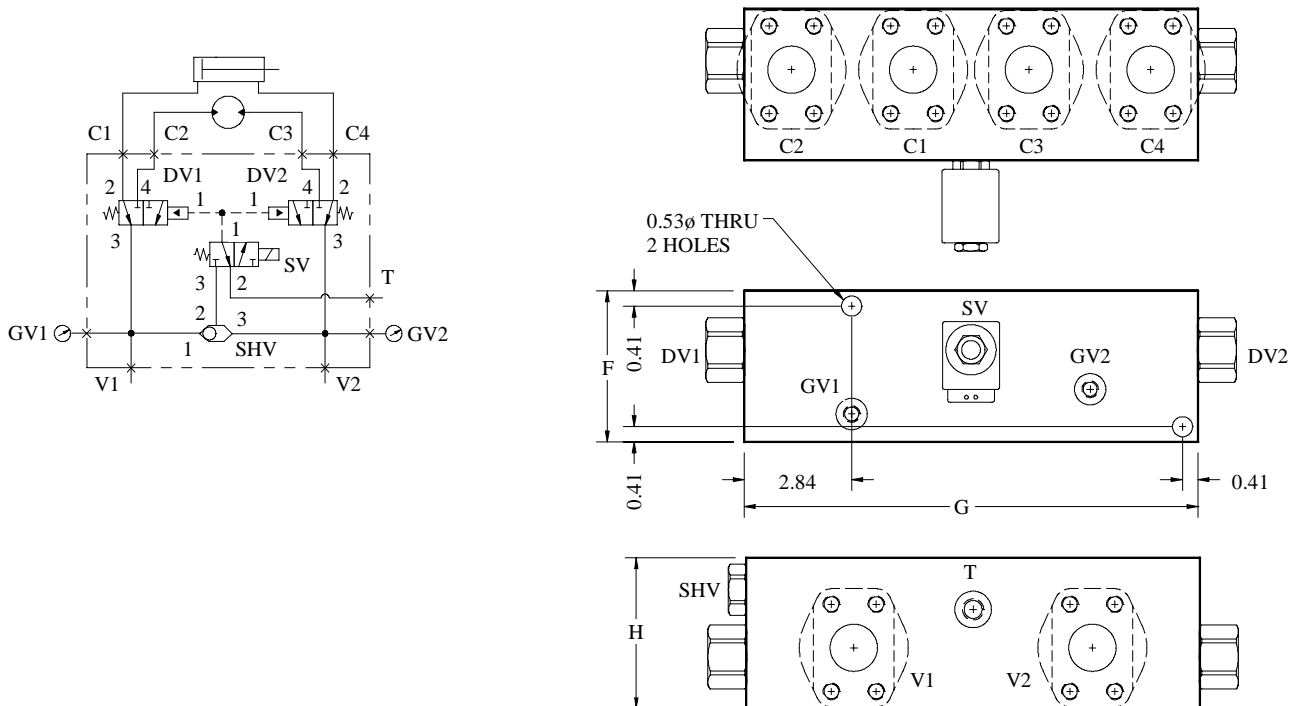
MATL: STEEL

CARTRIDGES: COMPACT, DANFOSS, DELTA, HYDRAFORCE, PARKER, STERLING, AND VICKERS CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

'GV1', 'GV2' (GAGE): #4 SAE ORB

FOR DIMENSION OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	DV1, DV2		SV, SHV Cavity	C, V SAE 4-Bolt	T SAE ORB	F	G	H
	Cavity	Flow						
MC607S	C-20-4	70 GPM	C-10-3	1 1/4 C61	#8 (3/4-16)	4.00	12.00	4.00
MC1157S	C-20-4	70 GPM	C-10-3	1 1/4 C62	#8 (3/4-16)	4.50	12.25	4.50

Regenerative Manifold

D03 – SAE ORB Ports

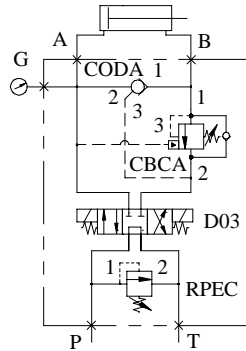
PART NO: MC1001S

MATL: STEEL
PRESSURE: 5000 PSI
FLOW RATE: 15 GPM
CARTRIDGES: SUN CBCA C'BALANCE
SUN CODA PILOT CHECK
SUN RPEC RELIEF
(OR EQUIVALENT)

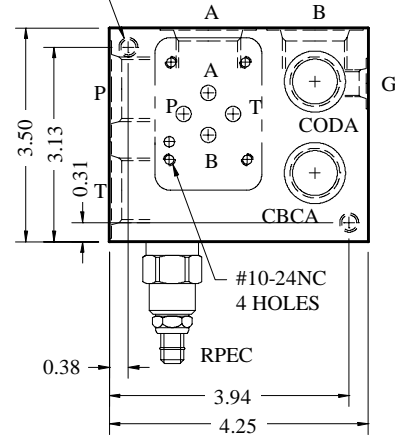
PORTS: #12 SAE ORB
G (GAGE): #4 SAE ORB

3 1/2" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



5/16-18NC 2 HOLES
FAR SIDE



D05 – SAE ORB Ports

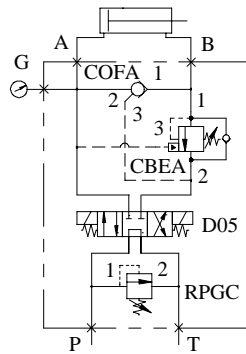
PART NO: MC1002S

MATL: STEEL
PRESSURE: 5000 PSI
FLOW RATE: 30 GPM
CARTRIDGES: SUN CBEA C'BALANCE
SUN COFA PILOT CHECK
SUN RPGC RELIEF
(OR EQUIVALENT)

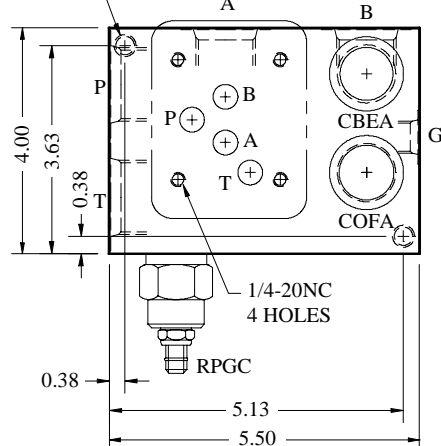
PORTS: #16 SAE ORB
G (GAGE): #6 SAE ORB

4" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



3/8-16NC 2 HOLES
FAR SIDE



D08 – SAE ORB Ports

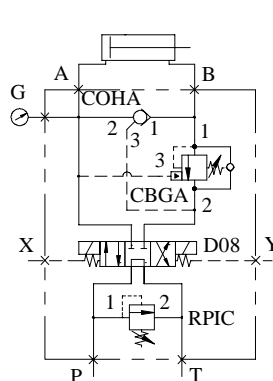
PART NO: MC1003S

MATL: STEEL
PRESSURE: 5000 PSI
FLOW RATE: 60 GPM
CARTRIDGES: SUN CBGA C'BALANCE
SUN COHA PILOT CHECK
SUN RPIC RELIEF
(OR EQUIVALENT)

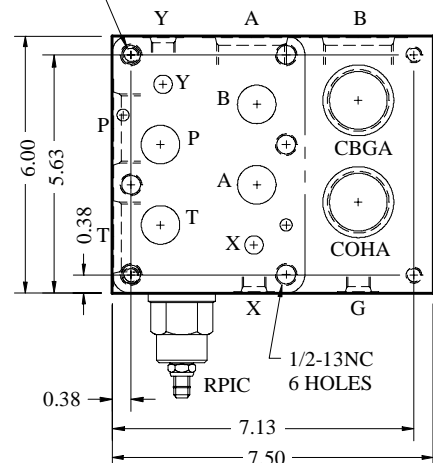
PORTS: #20 SAE ORB
X, Y, G (GAGE): #6 SAE ORB

5" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



3/8-16NC 4 HOLES
FAR SIDE



Regenerative Manifold

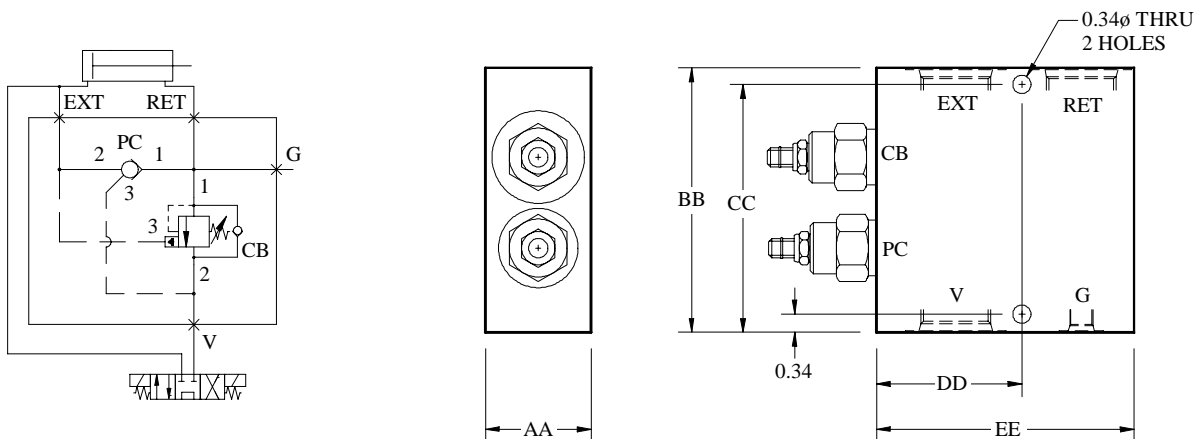
Without Directional Valve, SAE ORB Ports

MATL: STEEL

CARTRIDGES: COMPACT AND SUN CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

G (GAGE): # 4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CB Cavity	PC Cavity	EXT, RET, V SAE ORB	AA	BB	CC	DD	EE
MC1506S	SUN T-11A	SUN T-11A	#8 (3/4-16)	1.25	3.50	3.19	2.13	3.50
MC1507S	SUN T-2A	SUN T-2A	#12 (1 1/16-12)	1.50	4.75	4.44	2.50	4.50
MC1508S	COMPACT CP12-3S	COMPACT CP16-3S	#16 (1 5/16-12)	2.00	5.00	4.69	2.75	4.88
MC1509S	SUN T-17A	SUN T-17A	#20 (1 5/8-12)	2.50	6.00	5.69	3.25	5.75
MC1510S	SUN T-19A	SUN T-19A	#24 (1 7/8-12)	3.00	7.50	7.19	4.00	6.88

Rectifier Manifold

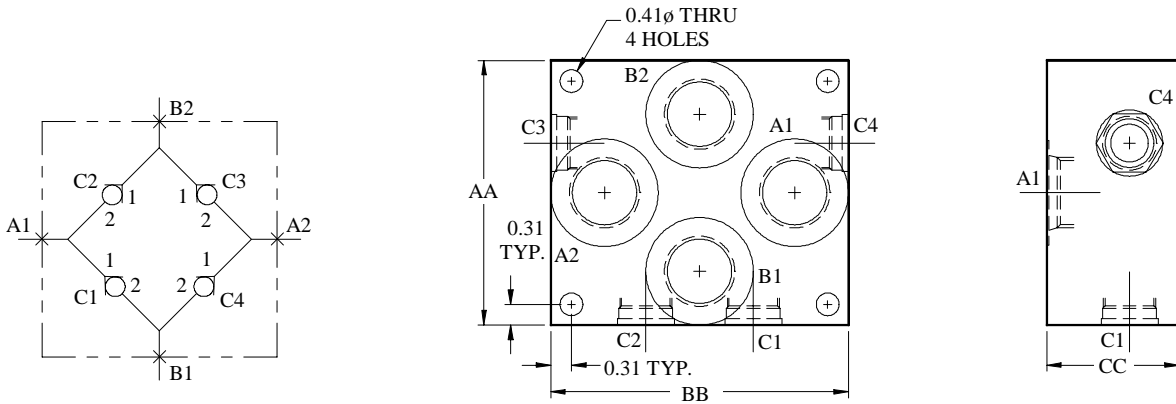
SAE ORB Ports

MATL: STEEL

CARTRIDGES: STD (STANDARD), COMPACT, PARKER, SUN, AND VICKERS (OR EQUIVALENT)
1 IS NOSE OF CARTRIDGE

NOTE: COMPACT CP12-2 CAVITY EQUIVALENT TO HYDRAFORCE VC12-2 CAVITY
AND PARKER C12-2 CAVITY IS EQUIVALENT TO OILGEAR HS800-2 CAVITY

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	C Cavity	A1, A2, B1, B2 SAE ORB	AA	BB	CC
MB2274S	STD C-10-2	#12 (1 1/16-12)	4.00	4.50	2.00
MB2275S	COMPACT CP12-2	#16 (1 5/16-12)	5.00	5.00	2.00
MB2276S	VICKERS C-12-2	#16 (1 5/16-12)	5.00	5.00	2.00
MB2277S	PARKER C12-2	#16 (1 5/16-12)	5.00	5.00	2.00
MB2278S	STD C-16-2	#20 (1 5/8-12)	6.00	6.00	2.50
MB2279S	STD C-20-2	#24 (1 7/8-12)	7.25	7.75	3.00
MB2280S	SUN T-13A	#12 (1 1/16-12)	4.00	4.50	2.00
MB2281S	SUN T-5A	#16 (1 5/16-12)	5.00	5.00	2.00
MB2282S	SUN T-16A	#20 (1 5/8-12)	6.00	6.75	2.50
MB2283S	SUN T-18A	#24 (1 7/8-12)	8.25	8.50	3.00

Rectifier Manifold

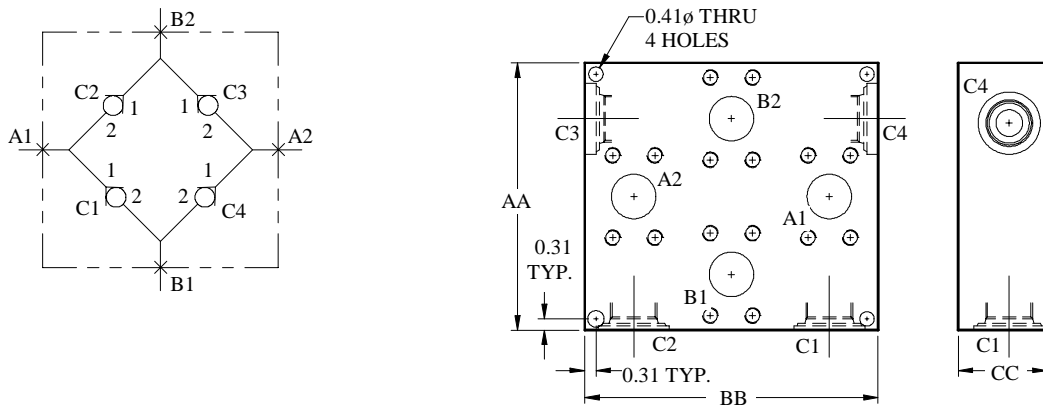
SAE 4-Bolt Flange Ports

MATL: STEEL

CARTRIDGES: STD (STANDARD), AND SUN CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.
FLANGE MOUNTING HOLES ARE IN INCHES.



Part No.	C Cavity	A1, A2, B1, B2 SAE 4-BOLT	AA	BB	CC
MB2284S	STD C-16-2	1 1/4 C61	7.50	8.25	2.50
MB2285S	STD C-16-2	1 1/4 C62	9.00	9.25	3.00
MB2286S	STD C-20-2	1 1/2 C61	9.00	9.75	3.50
MB2287S	STD C-20-2	1 1/2 C62	11.00	11.00	3.50
MB2288S	SUN T-16A	1 1/4 C61	8.00	8.25	3.00
MB2289S	SUN T-16A	1 1/4 C62	9.25	9.25	3.00
MB2290S	SUN T-18A	1 1/2 C61	9.75	9.75	3.50
MB2291S	SUN T-18A	1 1/2 C62	11.00	10.75	4.00

Accumulator Dump Manifold

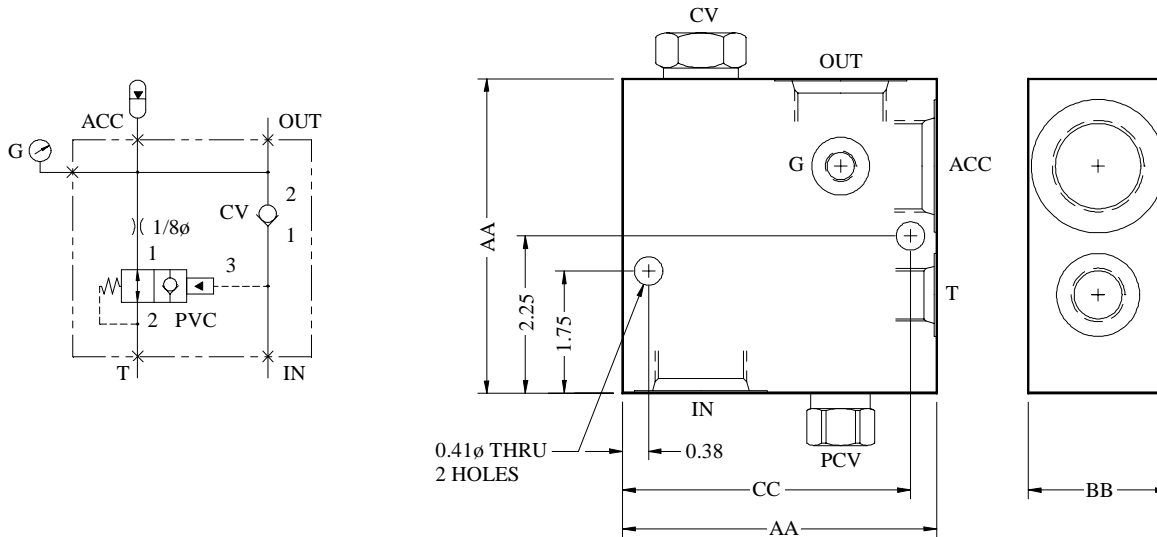
SAE ORB Ports

MATL: STEEL

CARTRIDGES: STD (STANDARD) AND SUN CAVITY (OR EQUIVALENT)
1 IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CV Check Cavity	Check Flow Rate	PCV Pilot Check Cavity	IN, OUT, ACC SAE ORB	T SAE ORB	AA	BB	CC
MB1102S	SUN T-5A	40 GPM	SUN T-11A	#16 (1 5/16-12)	#8 (3/4-16)	4.50	2.00	4.13
MB1104S	STD C-16-2	40 GPM	STD C-10-3	#16 (1 5/16-12)	#8 (3/4-16)	4.50	2.00	4.13
MB1103S	SUN T-16A	80 GPM	SUN T-11A	#20 (1 5/8-12)	#8 (3/4-16)	5.00	2.50	4.63
MB1105S	STD C-20-2	60 GPM	STD C-10-3	#20 (1 5/8-12)	#8 (3/4-16)	5.00	2.50	4.63

Hi-Low Manifold

D05 – SAE ORB Ports

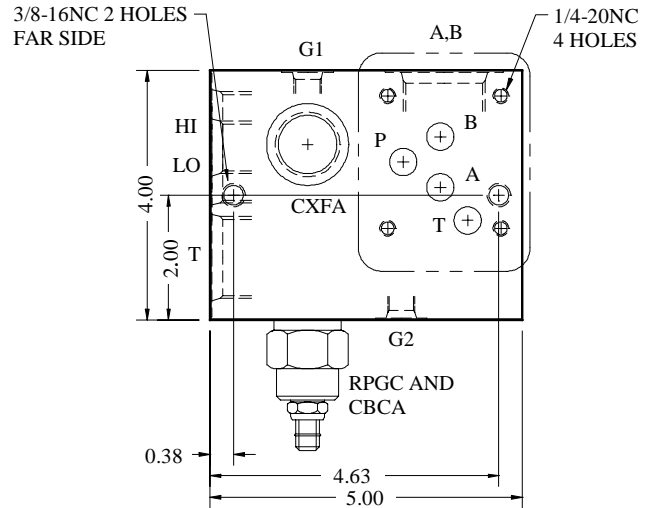
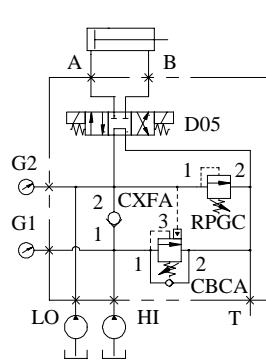
PART NO: MC1006S

MATL: STEEL
PRESSURE: 5000 PSI
FLOW RATE: 20 GPM
CARTRIDGES: SUN CBCA C' BALANCE
SUN CXFA CHECK
SUN RPGC RELIEF
(OR EQUIVALENT)

PORTS: #16 SAE ORB
G (GAGE): #4 SAE ORB

4" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



D08 – SAE ORB Ports

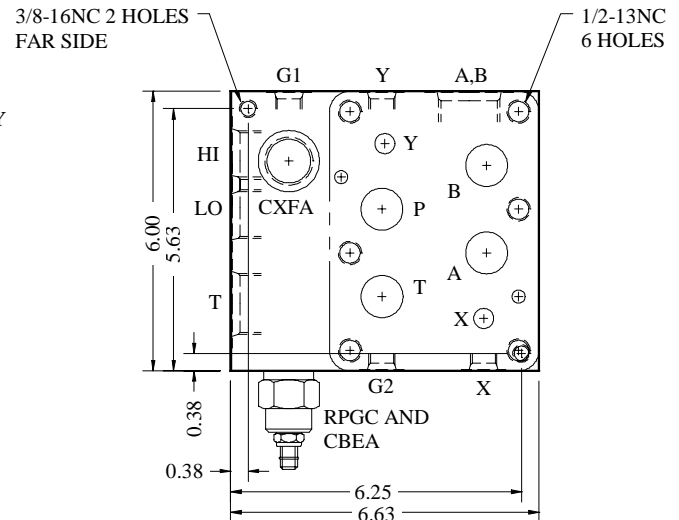
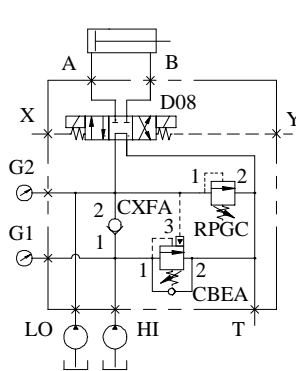
PART NO: MC1007S

MATL: STEEL
PRESSURE: 5000 PSI
FLOW RATE: 40 GPM
CARTRIDGES: SUN CBEA C' BALANCE
SUN CXFA CHECK
SUN RPGC RELIEF
(OR EQUIVALENT)

PORTS: #16 SAE ORB
X, Y, G (GAGE): #6 SAE ORB

4" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



D08 – SAE ORB Ports

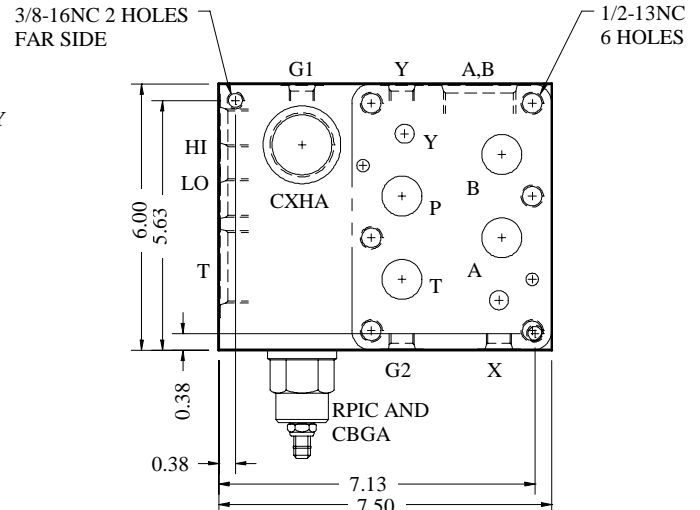
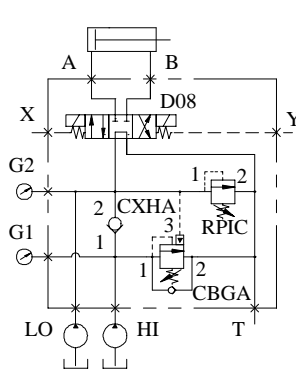
PART NO: MC1008S

MATL: STEEL
PRESSURE: 5000 PSI
FLOW RATE: 80 GPM
CARTRIDGES: SUN CBGA C' BALANCE
SUN CXHA CHECK
SUN RPIC RELIEF
(OR EQUIVALENT)

PORTS: #20 SAE ORB
X, Y, G (GAGE): #6 SAE ORB

5" THICK

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



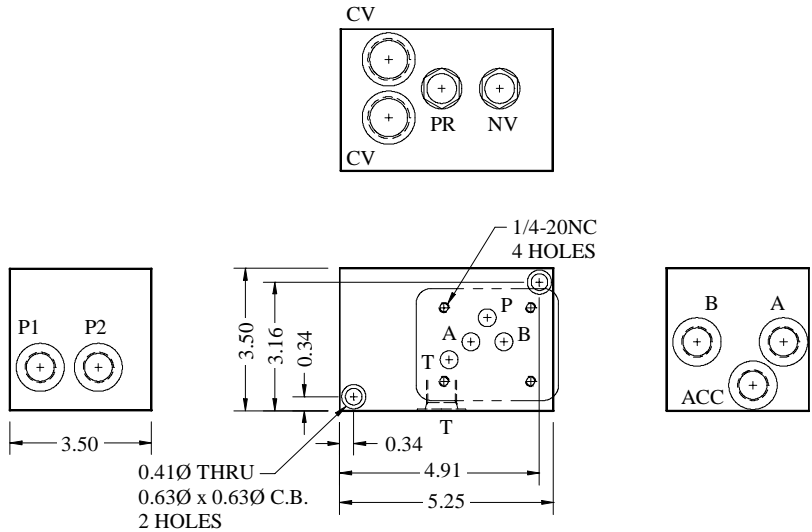
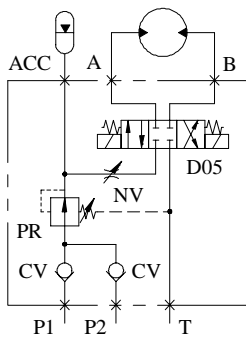
Grapple Rotation Manifold

Without Relief – SAE ORB Ports

PART NO: MC663S

MATL: STEEL
 PRESSURE: 5000 PSI
 DIRECTIONAL VALVE: (D05) YUKEN DSG-03-3C2-D24-5090
 (OR EQUIVALENT)
 CARTRIDGES: SUN CXFA-XCN CHECK
 SUN PBDB-LAN PRESSURE REDUCING
 SUN NFCC-LAN NEEDLE
 (OR EQUIVALENT)
 PORTS: #8 SAE ORB

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR
 RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

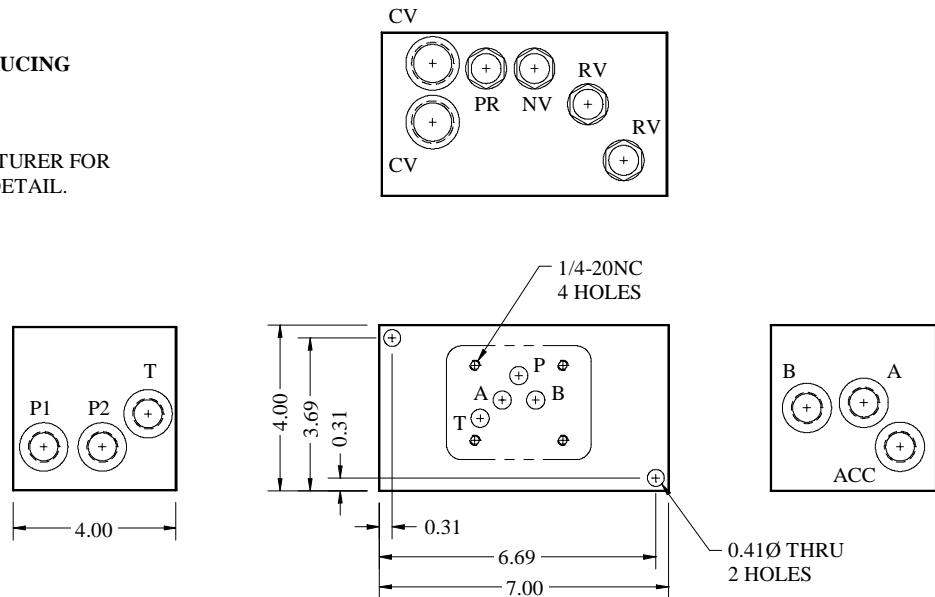
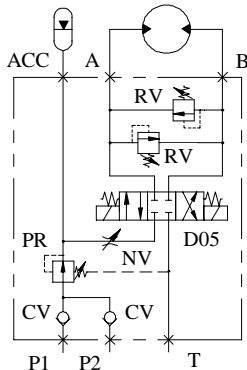


With Relief – SAE ORB Ports

PART NO: MC429S

MATL: STEEL
 PRESSURE: 5000 PSI
 DIRECTIONAL VALVE: (D05) YUKEN DSG-03-3C2-D24-5090
 (OR EQUIVALENT)
 CARTRIDGES: SUN CXFA-XCN CHECK
 SUN RPEC-LAN RELIEF
 SUN NFCC-LAN NEEDLE
 SUN PBDB-LAN PRESSURE REDUCING
 (OR EQUIVALENT)
 PORTS: #8 SAE ORB

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR
 RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Pump Manifold

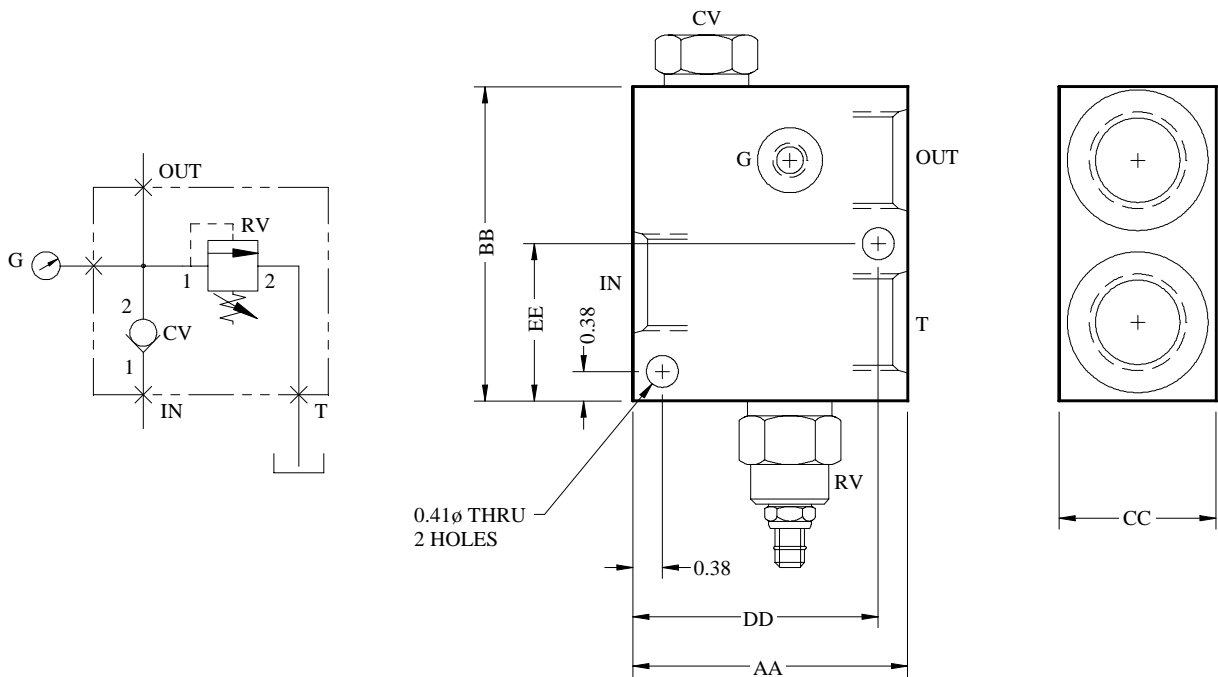
SAE ORB Ports

MATL: STEEL

CARTRIDGES: STD (STANDARD) AND SUN CAVITY (OR EQUIVALENT)
1 IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CV Cavity	Check Flow Rate	RV Cavity	Relief Flow Rate	IN, OUT, T SAE ORB	AA	BB	CC	DD	EE
MB1020S	SUN T-13A	20 GPM	SUN T-10A	25 GPM	#12 (1 1/16-12)	3.00	3.50	2.00	2.63	1.75
MB1022S	SUN T-5A	40 GPM	SUN T-3A	50 GPM	#16 (1 5/16-12)	3.50	4.00	2.00	3.13	2.00
MB1024S	SUN T-16A	80 GPM	SUN T-3A	50 GPM	#20 (1 5/8-12)	4.00	5.00	2.50	3.63	2.50
MB1026S	SUN T-16A	80 GPM	SUN T-16A	100 GPM	#20 (1 5/8-12)	5.00	5.25	2.50	4.63	2.75
MB1021S	STD C-10-2	20 GPM	STD C-10-2	30 GPM	#12 (1 1/16-12)	3.00	3.50	2.00	2.63	1.75
MB1023S	STD C-16-2	40 GPM	STD C-16-2	80 GPM	#16 (1 5/16-12)	4.00	4.00	2.00	3.63	2.00
MB1025S	STD C-20-2	60 GPM	STD C-16-2	80 GPM	#20 (1 5/8-12)	4.75	5.00	2.50	4.38	2.50

Hydrostatic Transmission Manifold

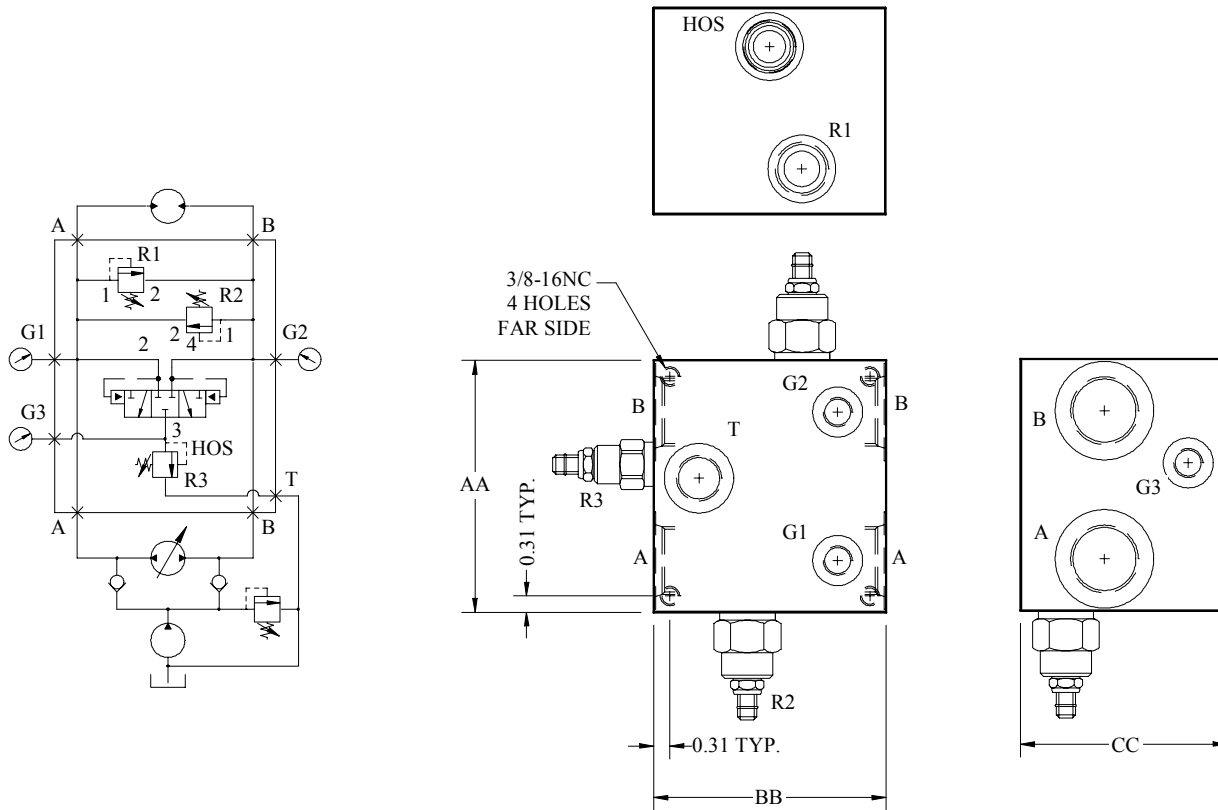
SAE ORB Ports

MATL: STEEL

CARTRIDGES: SUN CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTIGDE

G1, G2, G3 (GAGE): #6 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	Hot Oil Shuttle	Cross Relief	Shuttle Relief	A, B SAE ORB	T SAE ORB	AA	BB	CC
MB2303S	SUN T-31A	SUN T-10A	SUN T-10A	#12 (1 1/16-12)	#8 (3/4-16)	4.50	4.00	3.00
MB2304S	SUN T-32A	SUN T-3A	SUN T-10A	#16 (1 5/16-12)	#10 (7/8-14)	4.88	4.50	4.00
MB2329S	SUN T-33A	SUN T-16A	SUN T-3A	#24 (1 7/8-12)	#12 (1 1/16-12)	6.19	6.00	4.50

Hydrostatic Transmission Manifold

SAE 4-Bolt Flange Ports

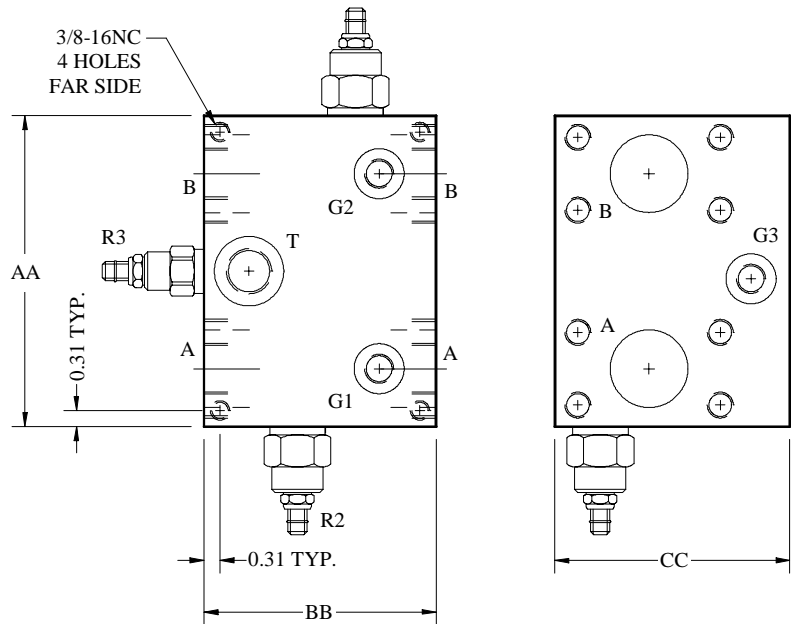
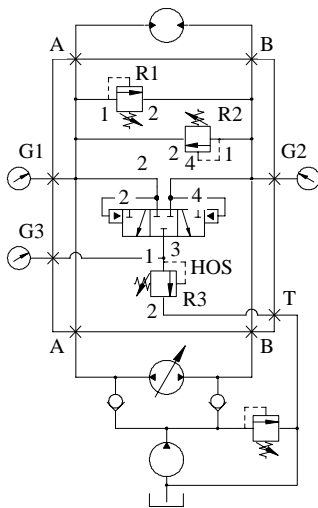
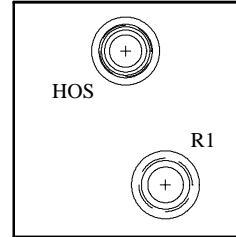
MATL: STEEL

CARTRIDGES: SUN CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

G1, G2, G3 (GAGE): #6 SAE ORB

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	Hot Oil Shuttle	Cross Relief	Shuttle Relief	A, B SAE 4-BOLT	T SAE ORB	AA	BB	CC
MC1492S	SUN T-33A	SUN T-16A	SUN T-3A	1 1/2 C61	#12 (1 1/16-12)	6.75	5.50	5.00
MC1493S	SUN T-33A	SUN T-16A	SUN T-3A	1 1/2 C62	#12 (1 1/16-12)	7.25	6.00	5.50
MC1494S	SUN T-34A	SUN T-18A	SUN T-16A	1 1/2 C61	#16 (1 5/16-12)	8.25	6.75	6.00
MC1495S	SUN T-34A	SUN T-18A	SUN T-16A	1 1/2 C62	#16 (1 5/16-12)	8.50	7.00	6.00
MC1496S	SUN T-34A	SUN T-18A	SUN T-16A	2 C61	#16 (1 5/16-12)	8.50	6.75	6.00
MC1497S	SUN T-34A	SUN T-18A	SUN T-16A	2 C62	#16 (1 5/16-12)	9.13	7.00	6.00

Thumb Manifold

D05 – SAE ORB Ports

MATL: STEEL

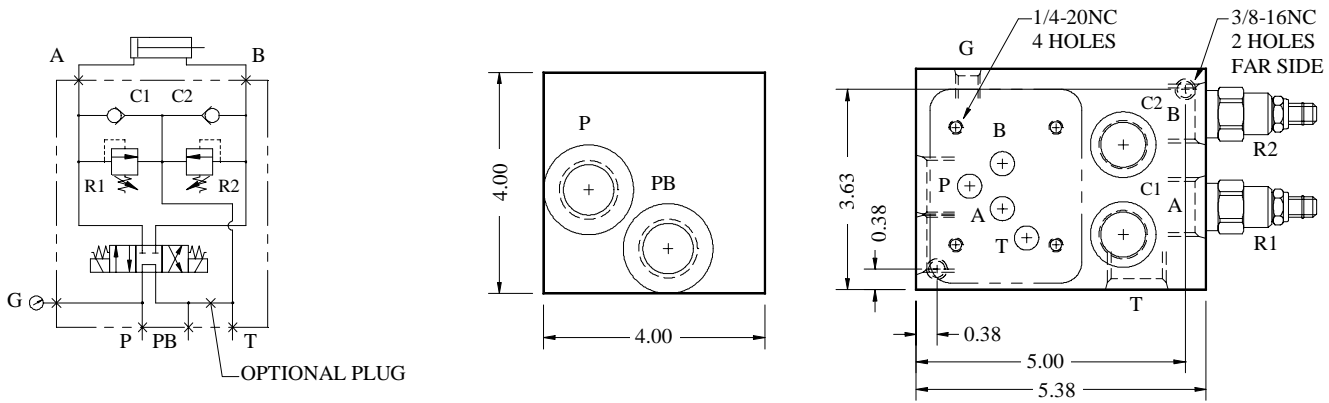
PRESSURE: 5000 PSI

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
PRESSURE IN FROM NOSE, OUT TO SIDE

PORTS: #12 SAE ORB

G (GAGE): #4 SAE ORB

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED
PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	C1, C2 Check Cavity	Check Flow Rate	R1, R2 Relief Cavity	Relief Flow Rate
MB1074S	SUN T-5A	40 GPM	SUN T-10A	50 GPM
MB1078S	STANDARD C-10-2	20 GPM	STANDARD C-10-2	30 GPM

THIS MANIFOLD IS TO ALLOW AN EXCAVATION THUMB CYLINDER TO BE PUSHED BACK BY THE BUCKET CYLINDER. THE RELIEF VALVE SHOULD BE SET AT THE MINIMUM VALUE REQUIRED TO HOLD THE LOAD. THERE ARE TWO WAYS TO PLUMB THIS MANIFOLD, AS A STRAIGHT VALVE OR POWER BEYOND FUNCTION.

Thumb Manifold

D08 – SAE ORB Ports

MATL: STEEL

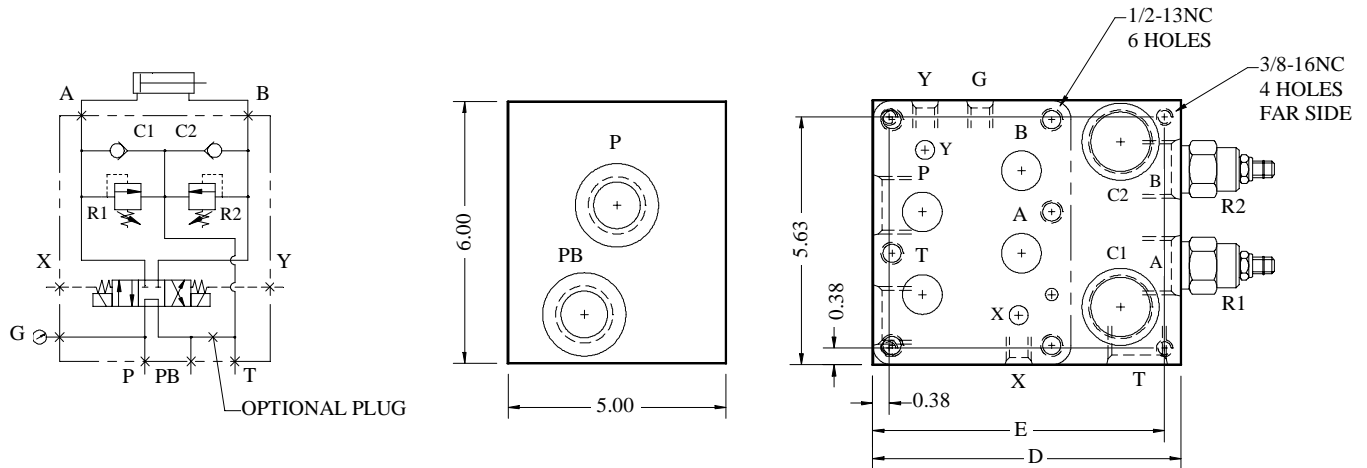
PRESSURE: 5000 PSI

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
PRESSURE IN FROM NOSE, OUT TO SIDE

PORTS: #16 SAE ORB

X, Y, G (GAGE): #6 SAE ORB

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL



Part No.	C1, C2 Check Cavity	Check Flow Rate	R1, R2 Relief Cavity	Relief Flow Rate	D	E
MC825S	SUN T-16A	80 GPM	SUN T-3A	50 GPM	7.00	6.63
MC999S	STANDARD C-20-2	60 GPM	STANDARD C-16-2	80 GPM	7.63	7.25

THIS MANIFOLD IS TO ALLOW AN EXCAVATION THUMB CYLINDER TO BE PUSHED BACK BY THE BUCKET CYLINDER. THE RELIEF VALVE SHOULD BE SET AT THE MINIMUM VALUE REQUIRED TO HOLD THE LOAD. THERE ARE TWO WAYS TO PLUMB THIS MANIFOLD, AS A STRAIGHT VALVE OR POWER BEYOND FUNCTION.

Two Cavity Manifold

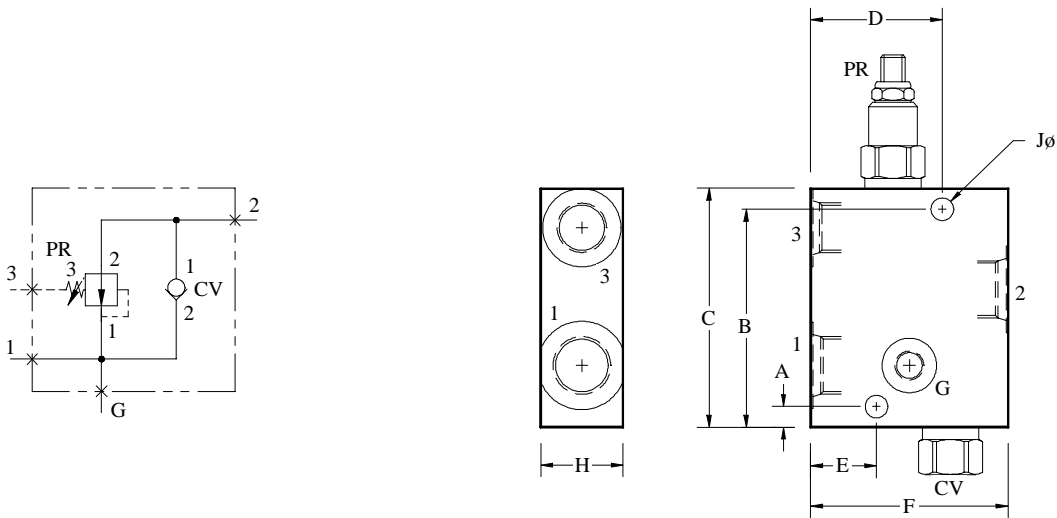
Pressure Reducing and Reducing Relieving with Reverse Free Flow Check SAE ORB Ports

MATL: STEEL

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	PR Cavity	CV Cavity	Ports 1, 2 SAE ORB	Port 3 SAE ORB	A	B	C	D	E	F	H	J
MB2495S	STANDARD C-10-3	STANDARD C-10-2	#8 (3/4-16)	#6 (9/16-18)	1.50	2.81	3.13	2.69	0.31	3.00	1.25	0.34
MB2499S	STANDARD C-16-3	STANDARD C-16-2	#20 (1 5/8-12)	#12 (1 1/16-12)	2.50	4.63	5.00	3.75	0.38	4.13	2.50	0.41

Part No.	PR Cavity	CV Cavity	SUN No.	Ports 1, 2 SAE ORB	Port 3 SAE ORB	A	B	C	D	E	F	H	J
MB2498S	SUN T-11A	SUN T-13A	E4K	#10 (7/8-14)	#8 (3/4-16)	0.31	3.31	3.63	2.00	1.00	3.00	1.25	0.34
MB2502S	SUN T-2A	SUN T-5A	B4L	#12 (1 1/16-12)	#10 (7/8-14)	0.38	3.63	4.00	2.38	1.25	3.50	1.50	0.41
MB2506S	SUN T-17A	SUN T-16A	H4N	#20 (1 5/8-12)	#12 (1 1/16-12)	0.38	5.13	5.50	3.50	1.50	4.50	2.50	0.41
MB2510S	SUN T-19A	SUN T-18A	—	#24 (1 7/8-12)	#12 (1 1/16-12)	0.44	6.44	6.88	4.50	2.00	6.00	3.00	0.41



Single Flange

SAE Code 61

SAE Code 62



Single Cavity SAE 4-Bolt Flange Sandwich Code 61

MATL: STEEL

CARTRIDGES: COMPACT, STANDARD, PARKER, SUN AND
VICKERS CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

- G (GAGE): #4 SAE ORB

- COME WITH O' RING AND ONE 'D' PORT PLUGGED

- NORMALLY USED FOR RELIEF,
ACCUMULATOR DRAIN AND FLOW CONTROL.

- FOR DIMENSION OF FLANGE PORTS AND PRESSURE
RATING SEE SPECIFICATIONS ON PAGE 41-12.

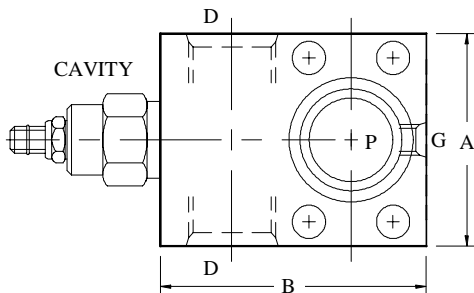
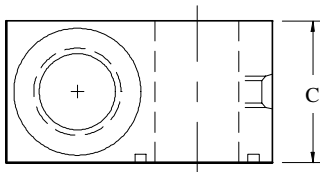
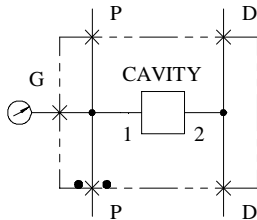
- CONSULT CARTRIDGE MANUFACTURER FOR
RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

- COMPACT CP12-2 CAVITY IS EQUIVALENT TO
HYDRAFORCE VC12-2 CAVITY

- PARKER C12-2 CAVITY IS EQUIVALENT TO
OILGEAR HS800-2 CAVITY

'C-' Standard Cavity For:

Compact
Danfoss
Delta
Hydraforce
Vickers
Parker
Sterling



Part No.	P Flange Code 61	Cavity	D SAE ORB	A	B	C
MB1477S	3/4	STANDARD C-10-2	#12 (1 1/16-12)	2.75	3.00	1.50
MB1476S	3/4	SUN T-10A	#12 (1 1/16-12)	2.75	3.00	1.50
MB1901S	3/4	SUN T-13A	#12 (1 1/16-12)	2.75	3.00	1.50
MB1837S	1	STANDARD C-10-2	#12 (1 1/16-12)	3.00	3.25	1.50
MB1902S	1	VICKERS C-12-2	#16 (1 5/16-12)	3.13	3.50	2.00
MB1906S	1	COMPACT CP12-2	#16 (1 5/16-12)	3.13	3.50	2.00
MB1910S	1	PARKER C12-2	#16 (1 5/16-12)	3.13	3.50	2.00
MB1031S	1	STANDARD C-16-2	#16 (1 5/16-12)	3.25	4.00	2.00
MB1795S	1	SUN T-13A	#8 (3/4-16)	2.75	3.00	1.25
MB1843S	1	SUN T-13A	#12 (1 1/16-12)	3.00	3.25	1.50
MB1829S	1	SUN T-5A	#12 (1 1/16-12)	3.00	3.25	1.50
MB1030S	1	SUN T-3A	#12 (1 1/16-12)	2.75	3.50	1.50
MB1838S	1 1/4	STANDARD C-10-2	#12 (1 1/16-12)	3.25	3.50	1.50
MB1903S	1 1/4	VICKERS C-12-2	#16 (1 5/16-12)	3.25	4.00	2.00
MB1907S	1 1/4	COMPACT CP12-2	#16 (1 5/16-12)	3.25	4.00	2.00
MB1911S	1 1/4	PARKER C12-2	#16 (1 5/16-12)	3.25	4.00	2.00
MB1033S	1 1/4	STANDARD C-16-2	#16 (1 5/16-12)	3.25	4.00	2.00
MB1914S	1 1/4	SUN T-13A	#12 (1 1/16-12)	3.00	3.50	1.50
MB1830S	1 1/4	SUN T-5A	#16 (1 5/16-12)	3.00	3.81	2.00
MB1032S	1 1/4	SUN T-3A	#16 (1 5/16-12)	3.00	3.75	2.00
MB1839S	1 1/2	STANDARD C-10-2	#12 (1 1/16-12)	3.75	4.00	1.50
MB1904S	1 1/2	VICKERS C-12-2	#16 (1 5/16-12)	4.00	4.13	2.00
MB1908S	1 1/2	COMPACT CP12-2	#16 (1 5/16-12)	4.00	4.13	2.00
MB1912S	1 1/2	PARKER C12-2	#16 (1 5/16-12)	4.00	4.13	2.00
MB1915S	1 1/2	STANDARD C-16-2	#16 (1 5/16-12)	4.00	4.13	2.00
MB1831S	1 1/2	SUN T-5A	#16 (1 5/16-12)	4.00	4.13	2.00
MB1916S	1 1/2	SUN T-3A	#16 (1 5/16-12)	4.00	4.13	2.00
MB1034S	1 1/2	SUN T-16A	#20 (1 5/8-12)	4.00	4.63	2.50
MB1840S	2	STANDARD C-10-2	#12 (1 1/16-12)	4.00	4.25	1.50
MB1905S	2	VICKERS C-12-2	#16 (1 5/16-12)	4.00	4.50	2.00
MB1909S	2	COMPACT CP12-2	#16 (1 5/16-12)	4.00	4.50	2.00
MB1913S	2	PARKER C12-2	#16 (1 5/16-12)	4.00	4.50	2.00
MB1524S	2	STANDARD C-16-2	#16 (1 1/16-12)	4.00	4.63	2.00
MB1832S	2	SUN T-5A	#16 (1 1/16-12)	4.00	4.50	2.00
MB1035S	2	SUN T-16A	#20 (1 5/8-12)	4.00	5.25	2.50

Single Cavity SAE 4-Bolt Flange Sandwich Code 62

MATL: STEEL

CARTRIDGES: COMPACT, STANDARD, PARKER, SUN AND
VICKERS CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

- G (GAGE): #4 SAE ORB

- COME WITH O' RING AND ONE 'D' PORT PLUGGED

- NORMALLY USED FOR RELIEF,
ACCUMULATOR DRAIN AND FLOW CONTROL.

- FOR DIMENSION OF FLANGE PORTS AND PRESSURE
RATING SEE SPECIFICATIONS ON PAGE 41-12.

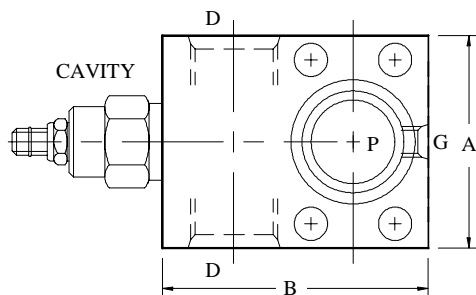
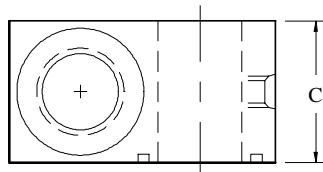
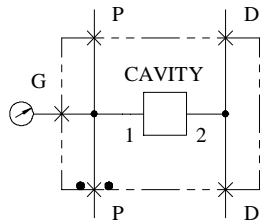
- CONSULT CARTRIDGE MANUFACTURER FOR
RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

- COMPACT CP12-2 CAVITY IS EQUIVALENT TO
HYDRAFORCE VC12-2 CAVITY

- PARKER C12-2 CAVITY IS EQUIVALENT TO
OILGEAR HS800-2 CAVITY

'C-' Standard Cavity For:

Compact
Danfoss
Delta
Hydraforce
Vickers
Parker
Sterling



Part No.	P Flange Code 62	Cavity	D SAE ORB	A	B	C
MB1479S	3/4	STANDARD C-10-2	#12 (1 1/16-12)	3.00	3.19	1.50
MB1478S	3/4	SUN T-10A	#12 (1 1/16-12)	3.00	3.19	1.50
MB1917S	3/4	SUN T-13A	#12 (1 1/16-12)	3.00	3.19	1.50
MB1841S	1	STANDARD C-10-2	#12 (1 1/16-12)	3.00	3.44	1.50
MB1920S	1	VICKERS C-12-2	#16 (1 5/16-12)	3.50	3.75	2.00
MB1924S	1	COMPACT CP12-2	#16 (1 5/16-12)	3.50	3.75	2.00
MB1928S	1	PARKER C12-2	#16 (1 5/16-12)	3.50	3.75	2.00
MB1037S	1	STANDARD C-16-2	#16 (1 5/16-12)	3.25	4.00	2.00
MB1791S	1	SUN T-13A	#8 (3/4-16)	3.00	3.25	1.25
MB1918S	1	SUN T-13A	#12 (1 1/16-12)	3.00	3.44	1.50
MB1833S	1	SUN T-5A	#12 (1 1/16-12)	3.00	3.50	1.50
MB1036S	1	SUN T-3A	#12 (1 1/16-12)	3.00	3.63	1.50
MB1932S	1 1/4	STANDARD C-10-2	#12 (1 1/16-12)	3.50	3.69	1.50
MB1921S	1 1/4	VICKERS C-12-2	#16 (1 5/16-12)	3.50	4.00	2.00
MB1925S	1 1/4	COMPACT CP12-2	#16 (1 5/16-12)	3.50	4.00	2.00
MB1929S	1 1/4	PARKER C12-2	#16 (1 5/16-12)	3.50	4.00	2.00
MB1039S	1 1/4	STANDARD C-16-2	#16 (1 5/16-12)	3.50	4.00	2.00
MB1919S	1 1/4	SUN T-13A	#12 (1 1/16-12)	3.50	3.69	1.50
MB1834S	1 1/4	SUN T-5A	#16 (1 5/16-12)	3.50	4.00	2.00
MB1038S	1 1/4	SUN T-3A	#16 (1 5/16-12)	3.50	4.00	2.00
MB1933S	1 1/2	STANDARD C-10-2	#12 (1 1/16-12)	4.25	4.00	1.50
MB1922S	1 1/2	VICKERS C-12-2	#16 (1 5/16-12)	4.25	4.50	2.00
MB1926S	1 1/2	COMPACT CP12-2	#16 (1 5/16-12)	4.25	4.50	2.00
MB1930S	1 1/2	PARKER C12-2	#16 (1 5/16-12)	4.25	4.50	2.00
MB1844S	1 1/2	STANDARD C-16-2	#16 (1 5/16-12)	4.25	4.50	2.00
MB1835S	1 1/2	SUN T-5A	#16 (1 5/16-12)	4.25	4.50	2.00
MB1934S	1 1/2	SUN T-3A	#16 (1 5/16-12)	4.25	4.50	2.00
MB1040S	1 1/2	SUN T-16A	#20 (1 5/8-12)	4.25	5.00	2.50
MB1842S	2	STANDARD C-10-2	#12 (1 1/16-12)	5.00	4.63	1.50
MB1923S	2	VICKERS C-12-2	#16 (1 5/16-12)	5.00	4.88	2.00
MB1927S	2	COMPACT CP12-2	#16 (1 5/16-12)	5.00	4.88	2.00
MB1931S	2	PARKER C12-2	#16 (1 5/16-12)	5.00	4.88	2.00
MB1845S	2	STANDARD C-16-2	#16 (1 1/16-12)	5.00	5.00	2.00
MB1836S	2	SUN T-5A	#16 (1 1/16-12)	5.00	5.00	2.00
MB1041S	2	SUN T-16A	#20 (1 5/8-12)	5.00	5.25	2.50

Two Port Cavity with Seal Plate

SAE 4-Bolt Flange In-line Mount

MATL: STEEL

CARTRIDGES: SUN CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTIDGE

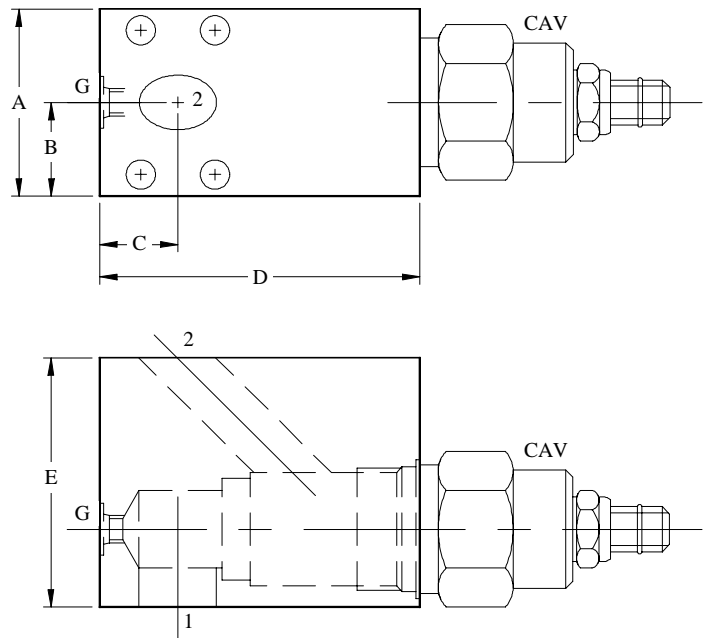
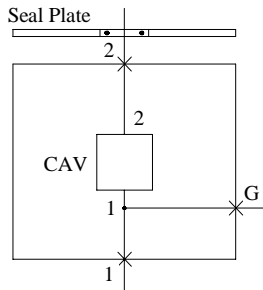
G (GAGE): #4 SAE ORB

COMPLETE WITH O'RING AND SEAL PLATE

SEAL PLATE TO BE PLACED ON FACE '1' OR FACE '2' DEPENDING ON FLOW DIRECTION.

FOR DIMENSIONS ON FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CAV Cavity	Ports 1 & 2 SAE 4-BOLT	A	B	C	D	E	Seal Plate Part No.
MB2537S	SUN T-13A	3/4 C61	2.50	1.25	0.94	2.75	2.00	MB2563-2
MB2538S	SUN T-5A	3/4 C61	2.50	1.25	0.88	3.00	2.25	MB2563-2
MB2539S	SUN T-16A	1 C61	2.75	1.38	1.06	4.13	3.00	MB2563-3
MB2540S	SUN T-18A	1 1/4 C61	3.00	1.50	1.25	5.00	4.00	MB2563-4
MB2541S	STANDARD C-10-2	3/4 C61	2.50	1.25	0.88	2.63	2.00	MB2563-2
MB2542S	STANDARD C-16-2	1 C61	2.75	1.38	1.13	3.50	3.00	MB2563-3
MB2543S	STANDARD C-20-2	1 1/4 C61	3.00	1.50	1.25	4.25	3.50	MB2563-4

Three-Port Cavity with Seal Plate

SAE 4-Bolt Flange In-line Mount

MATL: STEEL

CARTRIDGES: SUN CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTIDGE

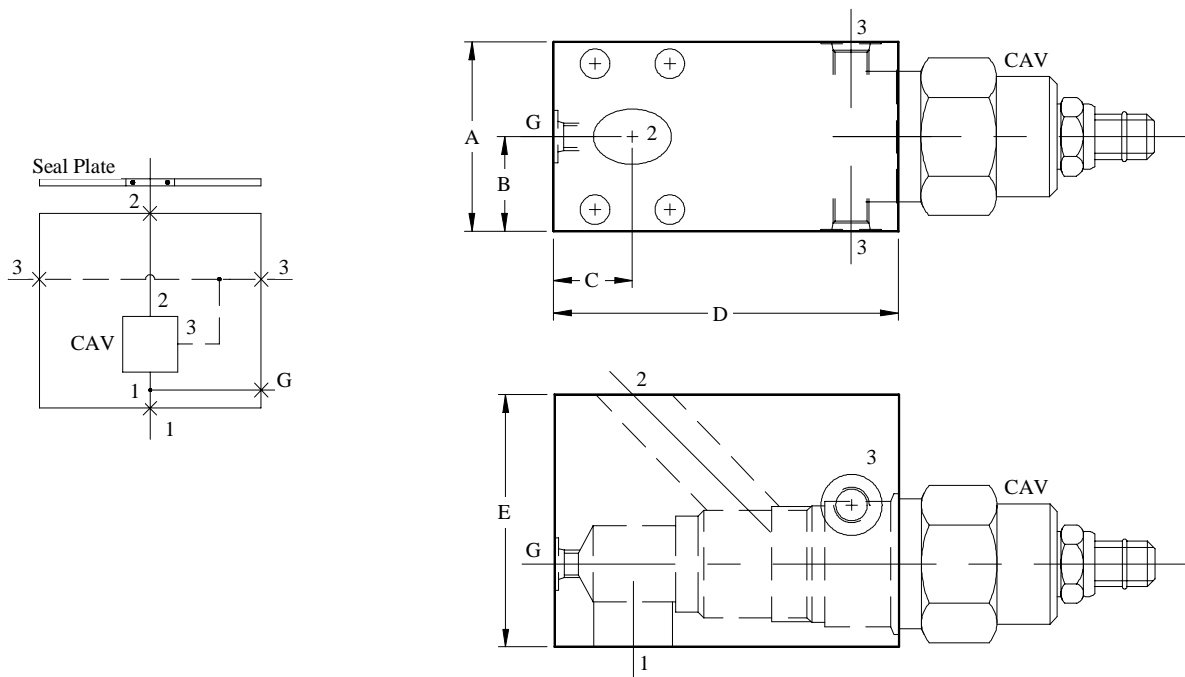
G (GAGE): #4 SAE ORB

COMPLETE WITH O’RING AND SEAL PLATE

SEAL PLATE TO BE PLACED ON FACE ‘1’ OR FACE ‘2’ DEPENDING ON FLOW DIRECTION.

FOR DIMENSIONS ON FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CAV Cavity	Port 1 SAE 4-BOLT	Port 2 SAE 4-BOLT	Port 3 SAE ORB	A	B	C	D	E	Seal Plate Part No.
MB2255S	SUN T-11A	1/2 C61	1/2 C61	# 6 (9/16-18)	2.00	1.00	0.75	3.13	2.00	MB2563-1
MB2256S	SUN T-2A	3/4 C61	3/4 C61	# 6 (9/16-18)	2.50	1.25	0.88	3.38	2.50	MB2563-2
MB2257S	SUN T-17A	1 C61	1 C61	# 6 (9/16-18)	2.75	1.38	1.13	4.38	3.00	MB2563-3
MB2258S	SUN T-19A	1 1/4 C61	1 1/4 C61	# 6 (9/16-18)	3.00	1.50	1.25	5.75	4.00	MB2563-4
MB2535S	STANDARD C-10-3	1/2 C61	1/2 C61	# 6 (9/16-18)	2.00	1.00	0.69	2.88	1.75	MB2563-1
MB2536S	STANDARD C-16-3	3/4 C61	3/4 C61	# 6 (9/16-18)	2.50	1.25	1.00	4.38	3.00	MB2563-2

Single Cavity

SAE 4-Bolt Flange Mount

MATL: STEEL

CARTRIDGES: SUN CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

THIS BODY IS TYPICALLY USED FOR COUNTER BALANCE, PILOT CHECK, VENTABLE RELIEF AND SEQUENCE.

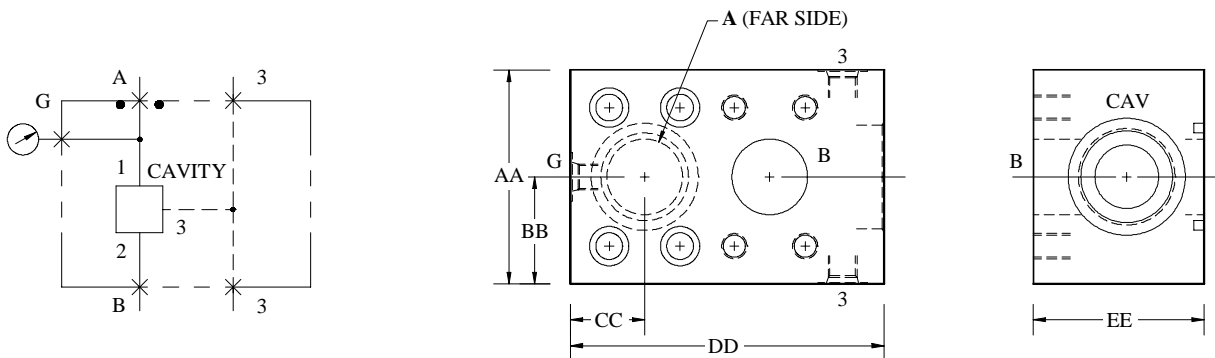
G (GAGE): #4 SAE ORB

PORT '3': #6 SAE ORB

COMPLETE WITH O' RING, BOLT KIT AND ONE 'PILOT/ DRAIN' PORT PLUGGED.

FOR DIMENSION OF FLANGE PORTS SEE SPECIFICATIONS ON PAGE 41-12.
FLANGE MOUNTING HOLES ARE IN INCHES.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOWRATE AND CAVITY DETAIL.



Part No.	'A' O' Ring	'B' Companion	CAV Cavity	AA	BB	CC	DD	EE
MB2139S	3/4 C61	3/4 C61	SUN T-17A	3.00	1.50	0.88	4.25	2.50
MB2140S	1 C61	1 C61	SUN T-17A	3.00	1.50	1.00	4.50	2.50
MB2141S	1 1/4 C61	1 1/4 C61	SUN T-17A	3.50	1.75	1.13	4.88	2.50
MB2142S	3/4 C62	3/4 C62	SUN T-17A	3.00	1.50	1.00	4.44	2.50
MB2143S	1 C62	1 C62	SUN T-17A	3.50	1.75	1.13	4.88	2.50
MB2144S	1 1/4 C62	1 1/4 C62	SUN T-17A	4.00	2.00	1.25	5.13	2.50
MB2145S	1 1/4 C61	1 1/4 C61	SUN T-19A	3.50	1.75	1.13	5.56	3.00
MB2146S	1 1/2 C61	1 1/2 C61	SUN T-19A	4.00	2.00	1.31	6.06	3.00
MB2147S	1 1/4 C62	1 1/4 C62	SUN T-19A	4.00	2.00	1.25	5.81	3.00
MB2148S	1 1/2 C62	1 1/2 C62	SUN T-19A	4.50	2.25	1.44	6.38	3.00

Cylinder Mount – Directional Valve

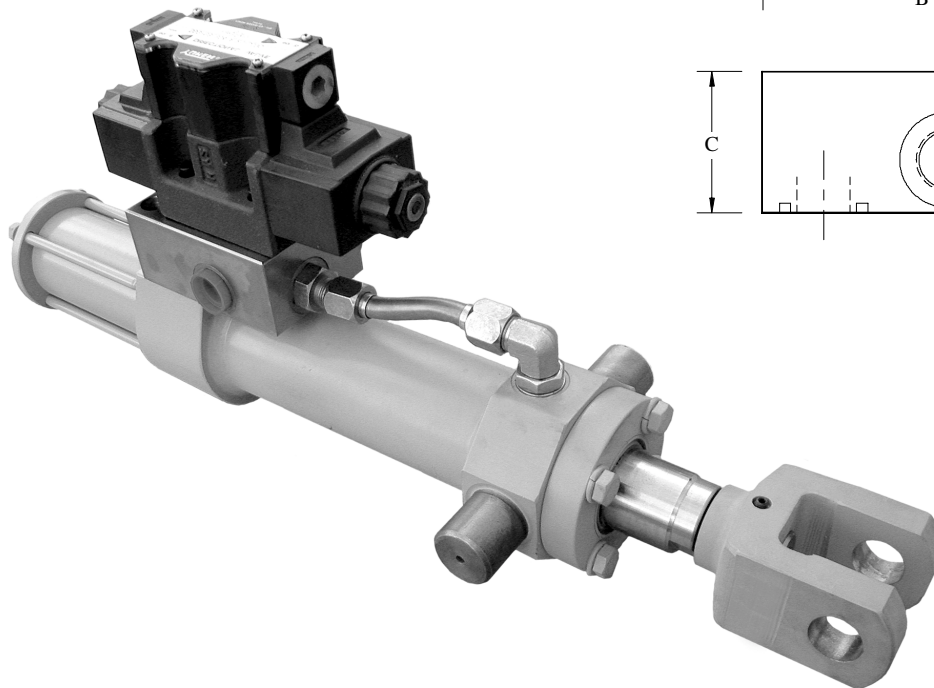
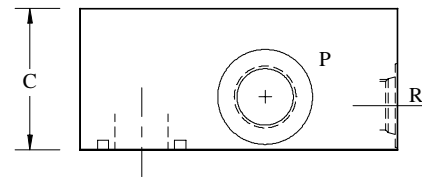
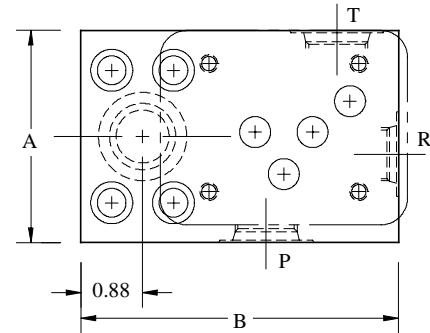
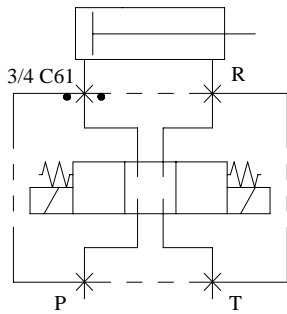
3/4 Code 61 SAE 4-Bolt Flange Mount

MATL: STEEL

COMPLETE WITH O'RING AND BOLT KIT

FOR DIMENSIONS OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.

CONSULT CARTRIDGE AND VALVE MANUFACTURER FOR RATED PRESSURE, FLOWRATE AND CAVITY DETAIL.



Part No.	Directional Valve	Rod Port SAE ORB	P & T Ports SAE ORB	A	B	C
MB2402S	D05	#8 (3/4-16)	#10 (7/8-14)	3.00	4.50	2.00
MB2405S	MOOG 62-100	#8 (3/4-16)	#12 (1 1/16-12)	3.50	4.00	2.00
MB2403S	MOOG 62-300	#12 (1 1/16-12)	#16 (1 5/16-12)	3.63	4.00	2.00
MB2406S	MOOG 78	#16 (1 5/16-12)	#20 (1 5/8-12)	3.50	5.75	2.50
MB2404S	ATCHLEY 242	#16 (1 5/16-12)	#20 (1 5/8-12)	3.75	4.00	2.50

Cylinder Mount – Single Counter Balance

SAE Code 61 4-Bolt Flange Mount

MATL: STEEL

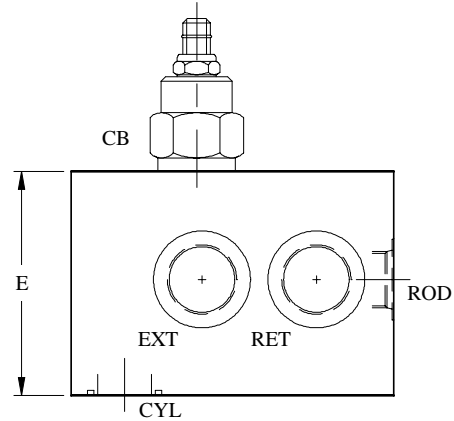
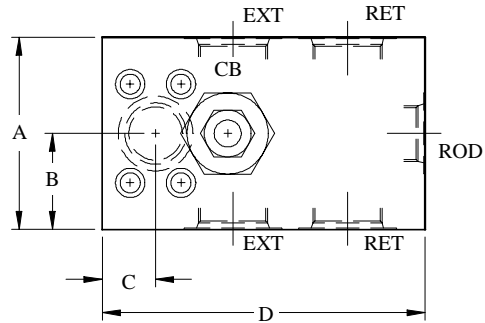
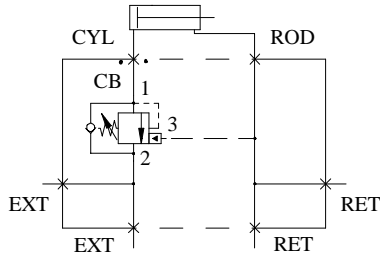
CARTRIDGES: SUN CAVITY (OR EQUIVALENT), '1' IS NOSE OF CARTRIDGE

COMPLETE WITH O' RING AND BOLT KIT.

FOR DIMENSION OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

REPLACE OLD MODEL, SAME FUNCTION BUT DIFFERENT PORT AND CARTRIDGE ORIENTATION. FOR DETAILS SEE PREVIOUS CATALOG.



New Model Part No.	Old Model Part No.	EXT & RET SAE ORB	ROD SAE ORB	CYL Port SAE 4-Bolt	CB Cavity	A	B	C	D	E
MB2381S	MB1012S	#8 (3/4-16)	#8 (3/4-16)	1/2 C61	SUN T-11A	2.00	1.00	0.72	4.00	3.00
MB2382S	MB1013S	#12 (1 1/16-12)	#8 (3/4-16)	3/4 C61	SUN T-2A	3.00	1.50	0.88	4.88	3.00
MB2383S	MB1014S	#16 (1 5/16-12)	#12 (1 1/16-12)	1 C61	SUN T-17A	3.50	1.75	1.06	6.00	4.00
MB2384S	MB1015S	#20 (1 5/8-12)	#16 (1 5/16-12)	1 1/4 C61	SUN T-19A	4.50	2.25	1.25	7.25	5.25

Cylinder Mount – Dual Counter Balance

SAE Code 61 4-Bolt Flange Mount

MATL: STEEL

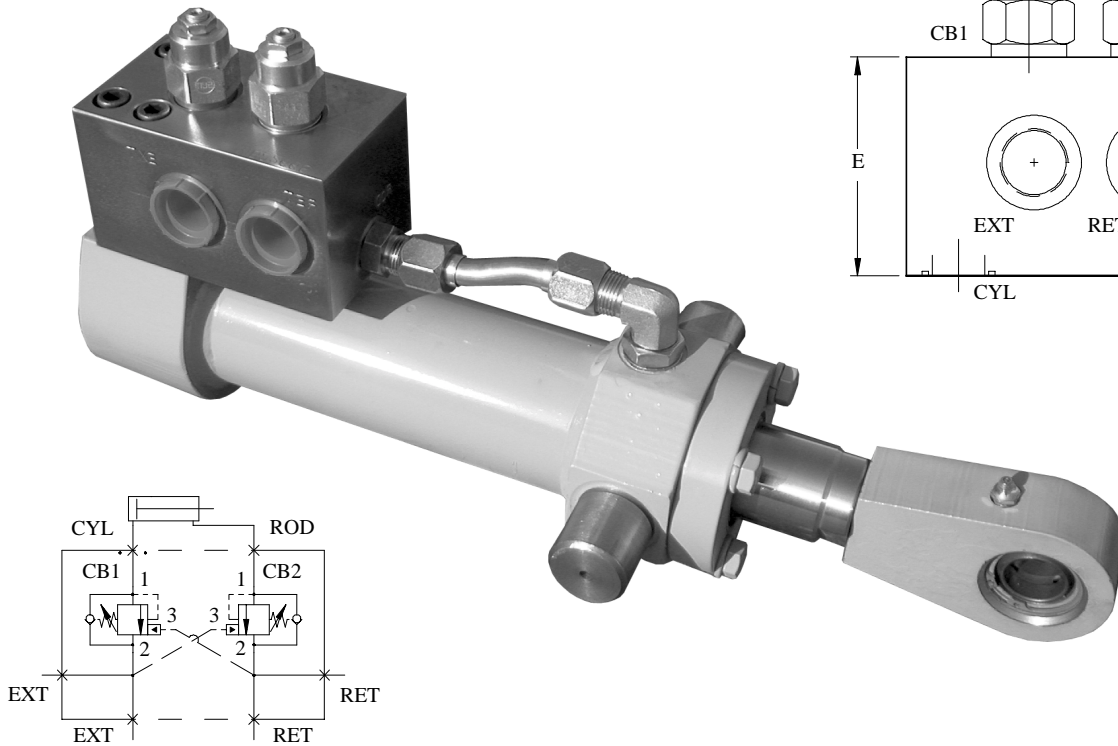
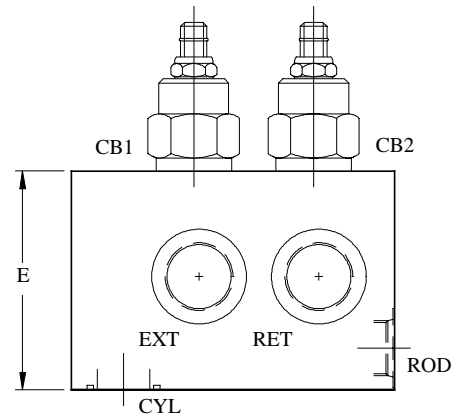
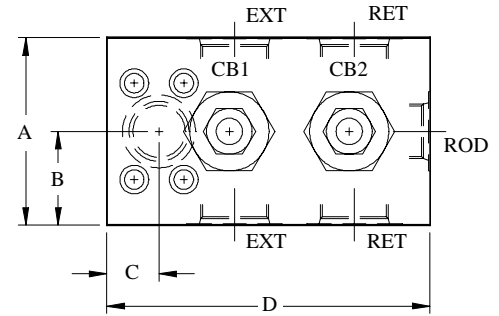
CARTRIDGES: SUN CAVITY (OR EQUIVALENT), '1' IS NOSE OF CARTRIDGE

COMPLETE WITH O' RING AND BOLT KIT.

FOR DIMENSION OF FLANGE PORTS AND PRESSURE RATING SEE PAGE 41-12.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.

REPLACE OLD MODEL, SAME FUNCTION BUT DIFFERENT PORT AND CARTRIDGE ORIENTATION. FOR DETAILS SEE PREVIOUS CATALOG.



New Model Part No.	Old Model Part No.	EXT & RET SAE ORB	ROD SAE ORB	CYL Port SAE 4-Bolt	CB1, CB2 Cavity	A	B	C	D	E
MB2265S	MB1016S	#8 (3/4-16)	#8 (3/4-16)	1/2 C61	SUN T-11A	2.00	1.00	0.72	4.13	3.00
MB2266S	MB1017S	#12 (1 1/16-12)	#8 (3/4-16)	3/4 C61	SUN T-2A	3.00	1.50	0.88	5.00	3.00
MB2267S	MB1018S	#16 (1 5/16-12)	#12 (1 1/16-12)	1 C61	SUN T-17A	3.50	1.75	1.06	6.38	4.00
MB2268S	MB1019S	#20 (1 5/8-12)	#16 (1 5/16-12)	1 1/4 C61	SUN T-19A	4.50	2.25	1.25	7.75	5.25

Tank Mounted Manifold

SAE Code 61 4-Bolt Flange Mount

MATL: STEEL

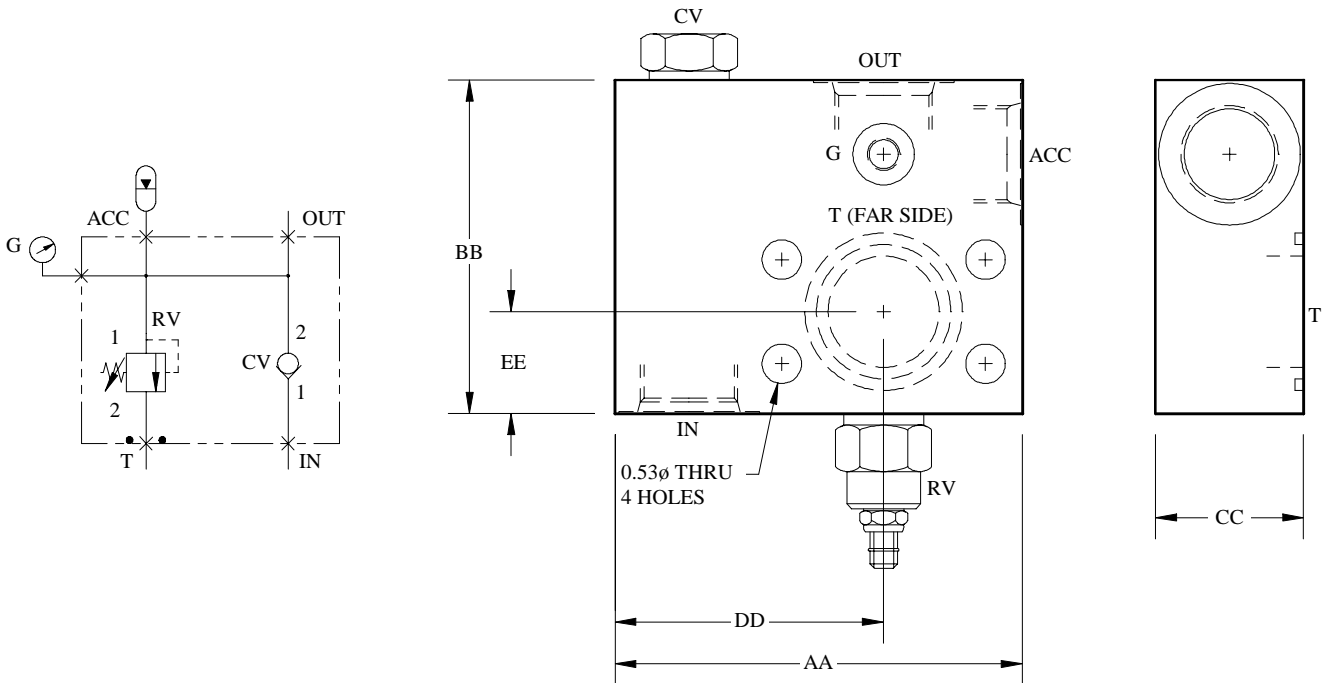
CARTRIGES: SUN AND STANDARD CAVITY (OR EQUIVALENT)
'1' IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB

COMPLETE WITH O' RING AND BOLT KIT.

FOR DIMENSIONS OF FLANGE PORTS SEE PAGE 41-12.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CV Check	Check Flow	RV Relief	Relief Flow	T SAE 4-BOLT	IN, OUT, ACC	AA	BB	CC	DD	EE
MB1106S	SUN T-5A	40 GPM	SUN T-10A	25 GPM	1 1/2 C61	#16 (1 5/16-12)	5.50	4.50	2.00	3.63	1.38
MB1107S	STD C-16-2	40 GPM	STD C-10-2	20 GPM	1 1/2 C61	#16 (1 5/16-12)	5.50	4.50	2.00	3.63	1.38
MB1108S	SUN T-16A	80 GPM	SUN T-3A	50 GPM	2 C61	#20 (1 5/8-12)	6.00	5.00	2.50	4.00	1.56
MB1109S	STD C-20-2	80 GPM	STD C-16-2	40 GPM	2 C61	#20 (1 5/8-12)	6.00	5.00	2.50	4.00	1.56

Tank Mounted Manifold

SAE Code 61 4-Bolt Flange Mount With Accumulator Dump

MATL: STEEL

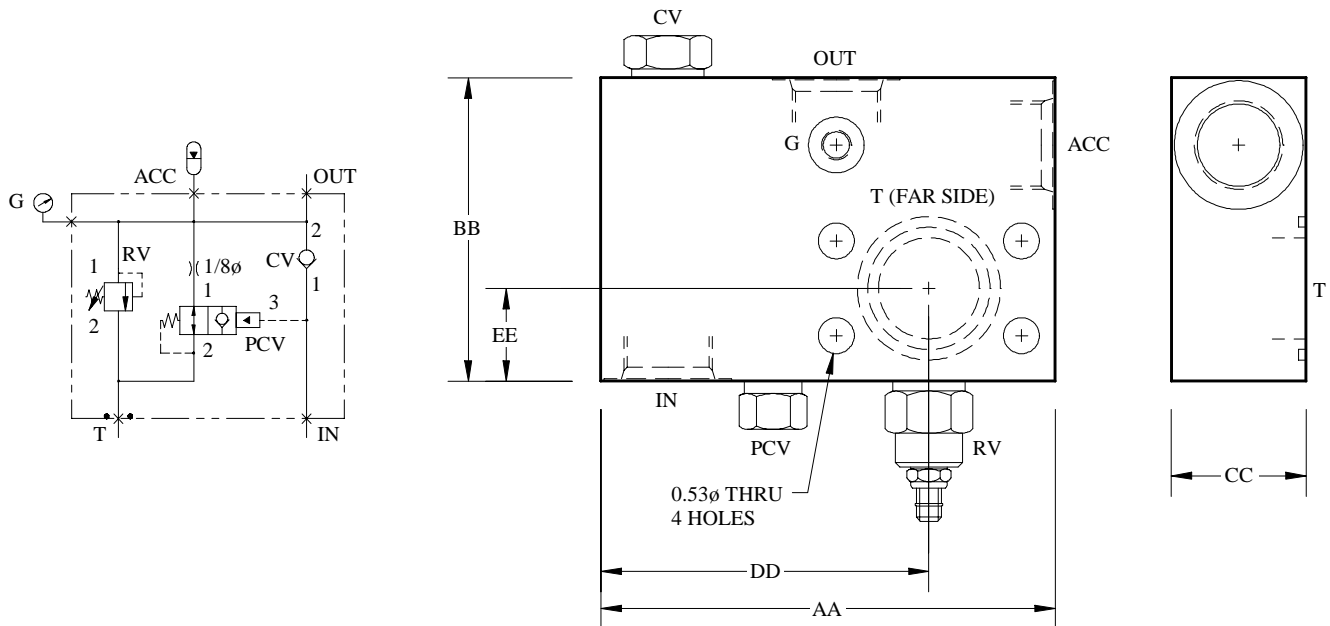
CARTRIGES: SUN AND STANDARD CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE

G (GAGE): #4 SAE ORB

COMPLETE WITH O’ RING AND BOLT KIT.

FOR DIMENSIONS OF FLANGE PORTS SEE PAGE 41-12.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	CV Check	Check Flow	RV Relief	Relief Flow	PCV Pilot Check Cavity	T SAE 4-BOLT	IN, OUT, ACC SAE ORB	AA	BB	CC	DD	EE
MB1110S	SUN T-5A	40 GPM	SUN T-10A	25 GPM	SUN T-11A	1 1/2 C61	#16 (1 5/16-12)	6.75	4.50	2.00	4.88	1.38
MB1111S	STD C-16-2	40 GPM	STD C-10-2	20 GPM	STD C-10-3	1 1/2 C61	#16 (1 5/16-12)	6.75	4.50	2.00	4.88	1.38
MB1112S	SUN T-16A	80 GPM	SUN T-3A	50 GPM	SUN T-11A	2 C61	#20 (1 5/8-12)	7.50	5.00	2.50	5.50	1.56
MB1113S	STD C-20-2	80 GPM	STD C-16-2	40 GPM	STD C-10-3	2 C61	#20 (1 5/8-12)	7.50	5.00	2.50	5.50	1.56

Pump Manifold

SAE 4-Bolt Flange Mount

MATL: STEEL

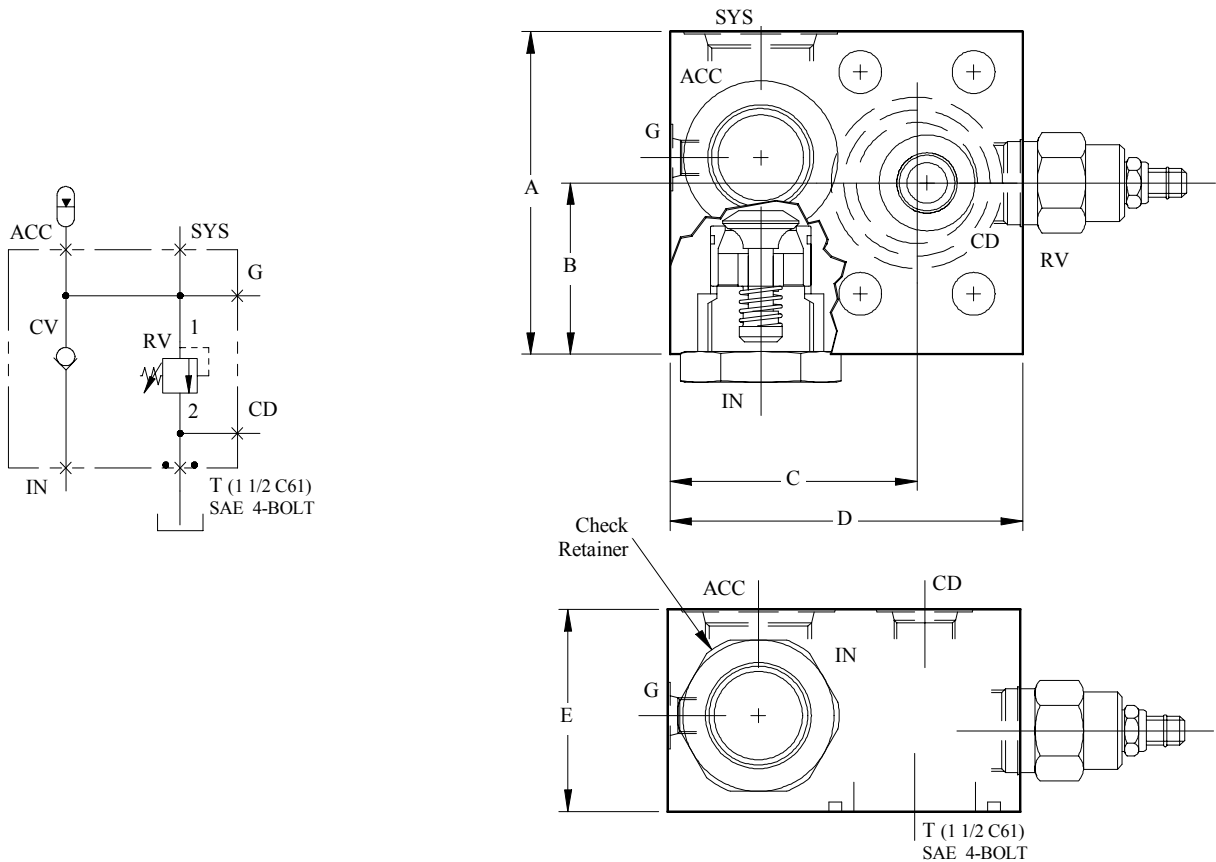
CARTRIDGES: COMPACT, PARKER, STANDARD, SUN AND VICKERS CAVITY (OR EQUIVALENT)
1 IS NOSE OF CARTRIDGE.

GAGE PORTS: #4 SAE ORB

COMPLETE WITH O-RING, BOLT KIT, AND SEALUM CHECK.

FOR DIMENSIONS OF FLANGES AND PRESSURE RATING SEE PAGE 41-12.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL.



Part No.	Sealum Check	RV Relief	In, Out Sys.	CD	A	B	C	D	E
MB2259S	1 1/4	SUN T-3A	#16 (1 5/16-12)	#8 (3/4-16)	4.00	2.13	3.06	4.38	2.50
MB2260S	1 1/4	PARKER C12-2	#16 (1 5/16-12)	#8 (3/4-16)	4.00	2.13	3.06	4.38	2.50
MB2261S	1 1/4	COMPACT CP12-2	#16 (1 5/16-12)	#8 (3/4-16)	4.00	2.13	3.06	4.38	2.50
MB2262S	1 1/4	VICKERS C-12-2	#16 (1 5/16-12)	#8 (3/4-16)	4.00	2.13	3.06	4.38	2.50
MB2263S	1 1/2	SUN T-3A	#20 (1 5/8-12)	#8 (3/4-16)	4.50	2.63	3.19	4.50	2.50
MB2264S	1 1/2	STANDARD C-16-2	#20 (1 5/8-12)	#8 (3/4-16)	4.50	2.63	3.19	4.50	2.50

Multiple Flange

Calzoni Motor - Cross Relief

Hydrostar KYB Motor - Cross Relief

Staffa Motor - Cross Relief



Hydrostar KYB Motor Manifold – Cross Relief

Direct Mount

MATL: STEEL

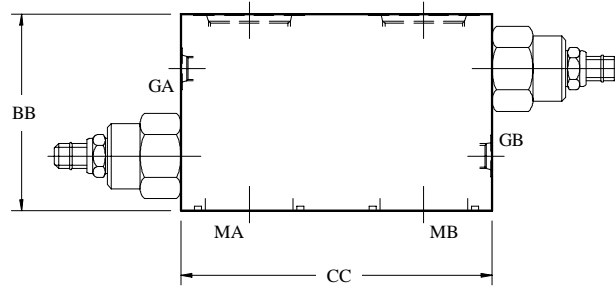
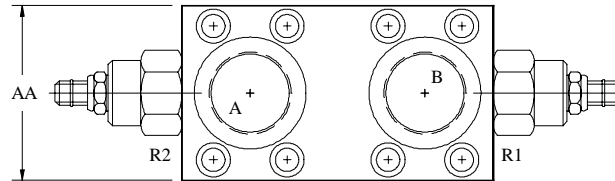
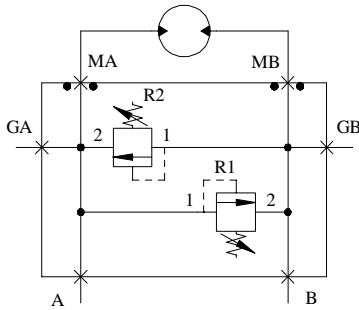
CARTRIDGES: COMPACT, PARKER, STANDARD, SUN AND VICKERS CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE.

GA, GB (GAGE): #6 SAE ORB

COMPLETE WITH O’RINGS AND BOLT KIT.

FOR PORT BLOCK ONLY SEE PAGE 62-6.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL



Part No.	Motor Model	R1, R2	A, B	AA	BB	CC
MB2461S	KYB MRH 12	COMPACT CP12-2	#12 (1 1/16-12)	3.00	3.50	4.19
MB2470S	KYB MRH 12	PARKER C12-2	#12 (1 1/16-12)	3.00	3.50	3.94
MB2478S	KYB MRH 12	VICKERS C-12-2	#12 (1 1/16-12)	3.00	3.50	4.19
MB212S	KYB MRH 12	SUN T-3A	#12 (1 1/16-12)	3.00	3.00	4.19
MB2474S	KYB MRH 30	COMPACT CP12-2	#12 (1 1/16-12)	3.00	3.50	4.31
MB2469S	KYB MRH 30	PARKER C12-2	#12 (1 1/16-12)	3.00	3.50	4.06
MB2476S	KYB MRH 30	VICKERS C-12-2	#12 (1 1/16-12)	3.00	3.50	4.31
MB213S	KYB MRH 30	SUN T-3A	#12 (1 1/16-12)	3.00	3.00	4.31
MB2466S	KYB MRH 45	STANDARD C-16-2	#16 (1 5/16-12)	3.00	4.00	5.25
MB343S	KYB MRH 45	SUN T-3A	#16 (1 5/16-12)	3.00	3.00	5.25
MB2457S	KYB MRH 60/270	STANDARD C-16-2	#20 (1 5/8-12)	3.50	4.00	5.50
MB346S	KYB MRH 60/270	SUN T-3A	#20 (1 5/8-12)	3.50	3.50	5.50
MB2473S	KYB MRHD 540	STANDARD C-16-2	#24 (1 7/8-12)	4.00	4.50	7.13
MB2468S	KYB MRHD 540	SUN T-16A	#24 (1 7/8-12)	4.00	4.50	7.13

Hydrostar KYB Motor Manifold – Cross Relief

Direct Mount – KYB MRH 375/525

MATL: STEEL

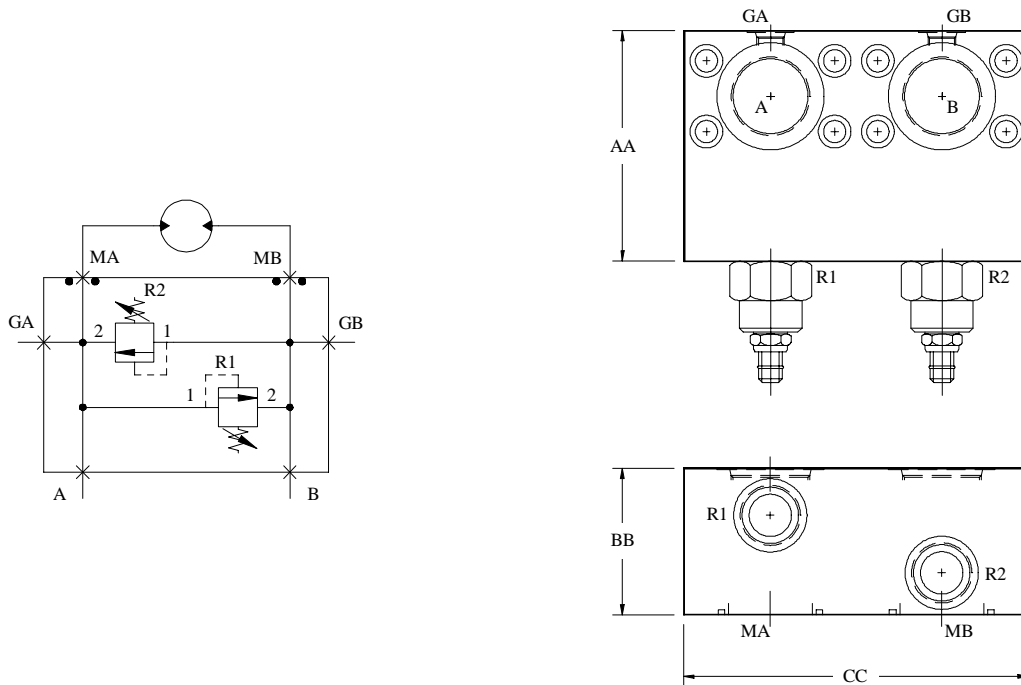
CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE.

GA, GB (GAGE): #6 SAE ORB

COMPLETE WITH O’RINGS AND BOLT KIT.

FOR PORT BLOCK ONLY SEE PAGE 62-6.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL



Part No.	Motor Model	R1, R2	A, B	AA	BB	CC
MB2475S	KYB MRH 375/525	STANDARD C-16-2	#24 (1 7/8-12)	4.50	3.50	8.22
MB2479S	KYB MRH 375/525	SUN T-16A	#24 (1 7/8-12)	5.50	3.50	8.22

Staffa Motor Manifold – Cross Relief

Direct Mount – HMB010

MATL: STEEL

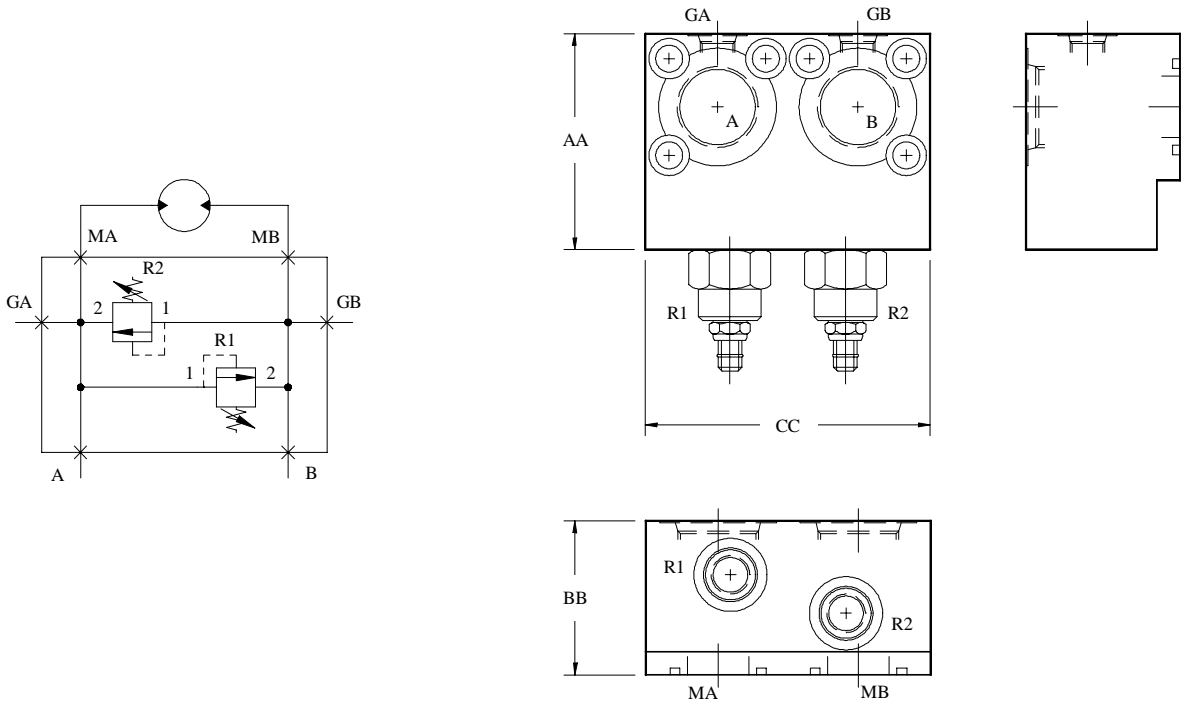
CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE.

GA, GB (GAGE): #6 SAE ORB

COMPLETE WITH O’RINGS AND BOLT KIT.

FOR PORT BLOCK ONLY SEE PAGE 62-6.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL



Part No.	Motor Model	R1, R2	A, B	AA	BB	CC
MB2296S	HMB010	STANDARD C-10-2	#16 (1 5/16-12)	3.50	2.50	4.63
MB2299S	HMB010	SUN T-10A	#16 (1 5/16-12)	3.50	2.50	4.63

Staffa Motor Manifold – Cross Relief

Direct Mount – HMB030

MATL: STEEL

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE.

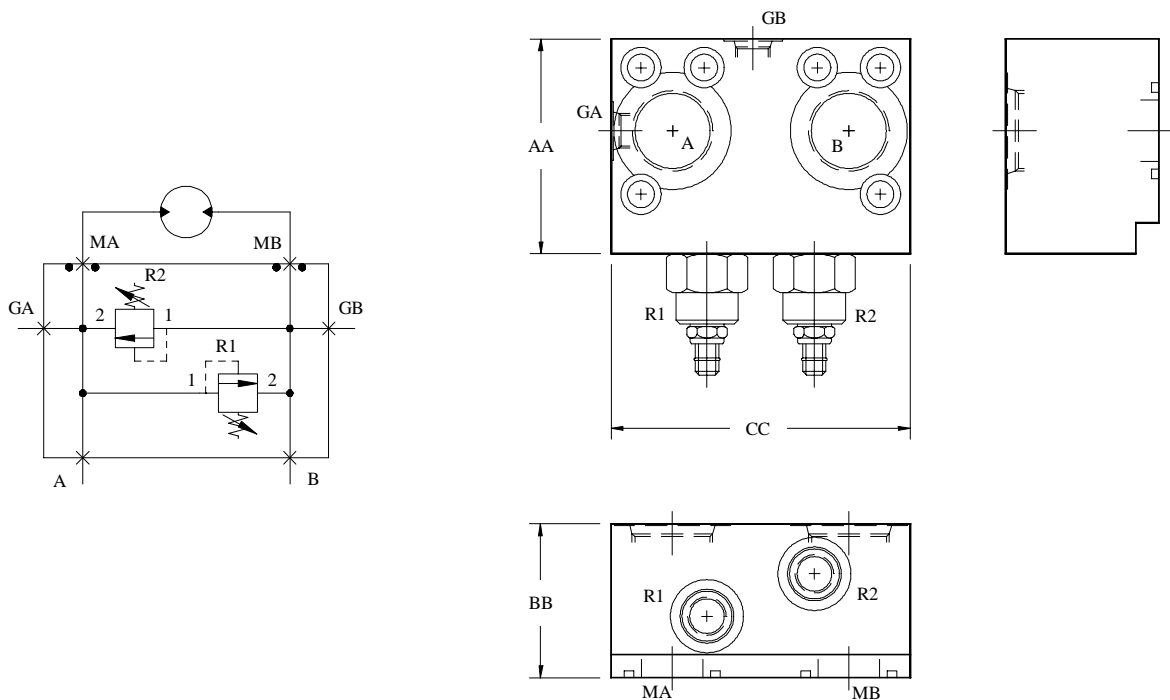
GA, GB (GAGE): #6 SAE ORB

COMPLETE WITH O’RINGS AND BOLT KIT.

PLEASE SPECIFY MODEL ‘F’ FOR IMPERIAL BOLTS AND ‘FM’ FOR METRIC BOLTS.

FOR PORT BLOCK ONLY SEE PAGE 62-6.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL



Part No.	Motor Model	R1, R2	A, B	AA	BB	CC
MB2242S	HMB030 'F' or 'FM'	STANDARD C-10-2	#16 (1 5/16-12)	3.50	2.50	4.88
MB2300S	HMB030 'F' or 'FM'	SUN T-10A	#16 (1 5/16-12)	3.75	2.50	4.88

Staffa Motor Manifold – Cross Relief

Direct Mount – S03, S04 Port Connection

MATL: STEEL

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE.

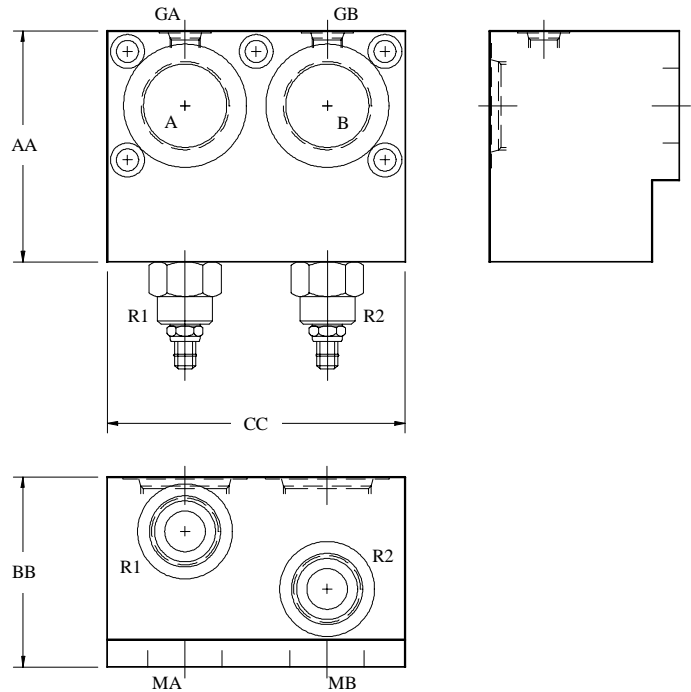
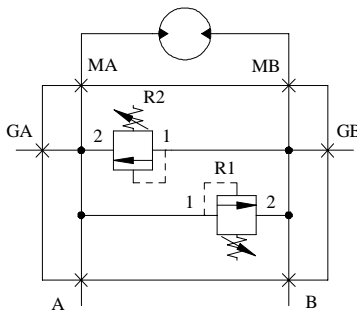
GA, GB (GAGE): #6 SAE ORB

COMPLETE WITH BOLT KIT.

FOR PORT BLOCK ONLY SEE PAGE 62-6.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL

Staffa Motor Model		
Series 1 – ‘S03’ Port Connection	Series 2 – ‘S04’ Port Connection	Series 3 – ‘S04’ Port Connection
HMB060	HMB060	HM(HD)B270
HMB080	HMB080	HM(HD)B325
HMB100	HMB100	HMC270
HM(HD)B125	HM(HD)B125	HMC325
HM(HD)B150	HM(HD)B150	
HM(HD)B200	HM(HD)B200	
HMC030	HMC200	
HMC045		
HMC080		
HMC125		
HMC200		



Part No.	Motor Model (see above chart)	R1, R2	A, B	AA	BB	CC
MB1425S	Series 1	STANDARD C-16-2	#16 (1 5/16-12)	4.00	3.50	4.75
MB2214S	Series 1	SUN T-3A	#16 (1 5/16-12)	4.00	3.50	4.75
MB2215S	Series 2	STANDARD C-16-2	#16 (1 5/16-12)	4.00	3.50	4.50
MB2124S	Series 2	SUN T-3A	#16 (1 5/16-12)	4.00	3.50	4.50
MB2297S	Series 3	STANDARD C-16-2	#20 (1 5/8-12)	4.25	3.50	5.50
MB2301S	Series 3	SUN T-3A	#20 (1 5/8-12)	4.25	3.50	5.50

Staffa Motor Manifold – Cross Relief

Direct Mount – HMHDB400

MATL: STEEL

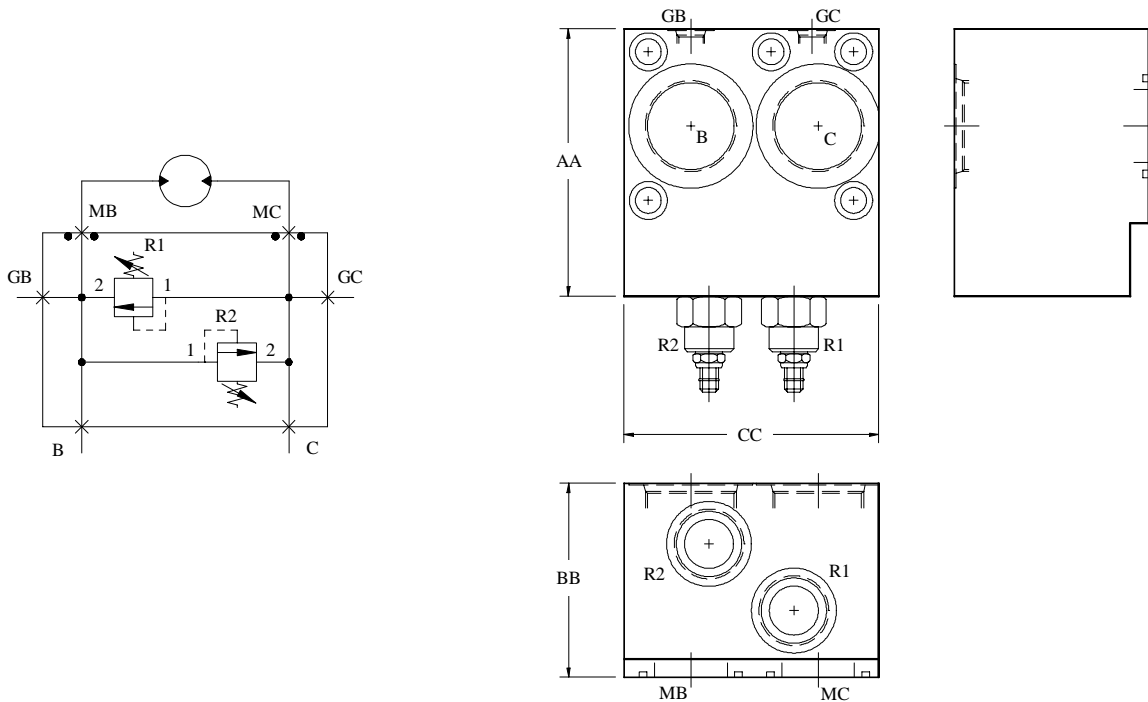
CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE.

GA, GB (GAGE): #6 SAE ORB

COMPLETE WITH O’RINGS AND BOLT KIT.

FOR PORT BLOCK ONLY SEE PAGE 62-6.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL



Part No.	Motor Model	R1, R2	B, C	AA	BB	CC
MB2298S	HMHDB400	STANDARD C-16-2	#24 (1 7/8-12)	5.00	4.00	5.25
MB2302S	HMHDB400	SUN T-16A	#24 (1 7/8-12)	5.50	4.00	5.25

Calzoni Motor Manifold – Cross Relief

Direct Mount

MATL: STEEL

CARTRIDGES: STANDARD AND SUN CAVITY (OR EQUIVALENT)
‘1’ IS NOSE OF CARTRIDGE.

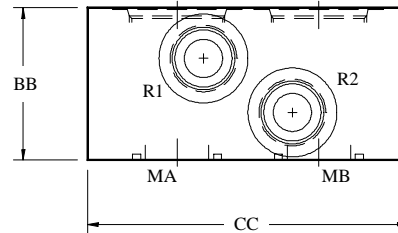
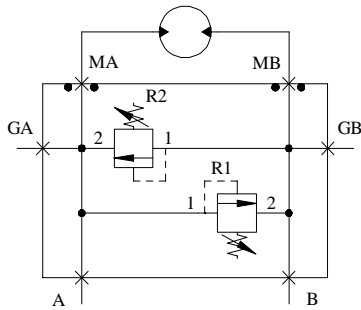
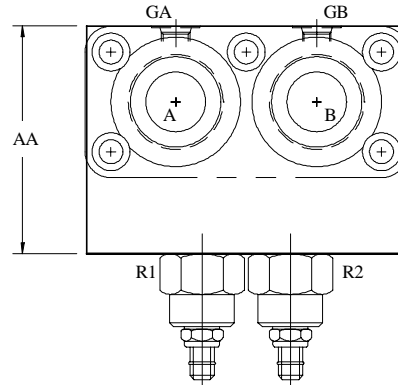
GA, GB (GAGE): #6 SAE ORB

COMPLETE WITH O’RINGS AND BOLT KIT.

FOR PORT BLOCK ONLY SEE PAGE 62-6.

CONSULT CARTRIDGE MANUFACTURER FOR RATED PRESSURE, FLOW RATE AND CAVITY DETAIL

Calzoni Motor Model				
Series 1	Series 2	Series 3	Series 4	Series 5
MR190	MR450	MR1100	MR2400	MR3600
MR300	MR700	MR1800	MR2800	MR4500
		MRE1400	MRE3100	MR7000
		MRE2100		MRE5400
				MRE8500



Part No.	Motor Model (see above chart)	R1, R2 Cavity	A, B SAE ORB	AA	BB	CC
MB2460S	Series 1	STANDARD C-10-2	#12 (1 1/16-12)	3.00	2.50	4.75
MB2464S	Series 2	STANDARD C-16-2	#20 (1 5/8-12)	4.00	3.00	5.63
MB2323S	Series 3	STANDARD C-16-2	#24 (1 7/8-12)	4.50	3.00	6.31
MB2471S	Series 4	STANDARD C-16-2	1 1/2 C61	5.00	4.00	8.13
MB2463S	Series 1	SUN T-10A	#12 (1 1/16-12)	3.25	2.50	4.75
MB2472S	Series 2	SUN T-3A	#20 (1 5/8-12)	4.00	3.00	5.63
MB2477S	Series 3	SUN T-16A	#24 (1 7/8-12)	5.00	3.50	6.31
MB2465S	Series 4	SUN T-16A	1 1/2 C61	5.25	4.00	8.13
MB2462S	Series 5	SUN T-18A	2 C61	6.38	5.00	9.13



Sandwich Manifolds

D03

D05

D05H

D05HE

D07

D08

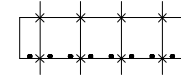
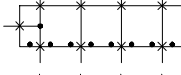
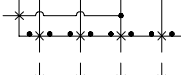
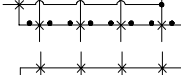
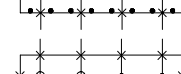
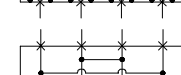
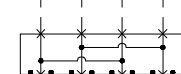
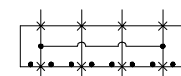
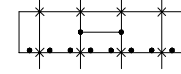

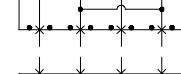
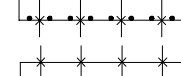
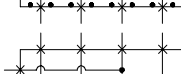
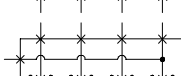
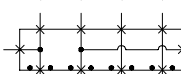
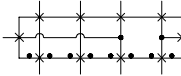

Servo



Sandwich Spacer

MATL: STEEL
 PRESSURE: 5000 PSI

THE SANDWICH SPACER COMES COMPLETE WITH O' RINGS AND BOLT KIT.
 THE SANDWICH SPACER SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.

Part No.	Valve	Description	Thickness	Function					
				P	T	A	B	X	Y
MB1335S	D03	SPACER	3/4						
MB775S	D03	#4 ORB ON 'P'	3/4						
MB160S	D03	#4 ORB ON 'A'	3/4						
MB2245S	D03	#4 ORB ON 'B'	3/4						
MB590S	D03	#4 ORB ON 'P' AND 'T'	3/4						
MB588S	D03	# 4 ORB ON 'A' AND 'B'	3/4						
MB2334S	D03	'P' TO 'B', 'A' TO 'T'	3/4						
MB2340S	D03	'P' TO 'A', 'B' TO 'T'	3/4						
MB1233S	D03	'P' TO 'B'	3/4						
MB1258S	D03	'A' TO 'T'	3/4						
MB2343S	D03	'P' TO 'A'	3/4						
MB2350S	D03	'B' TO 'T'	3/4						
MB1337S	D05	SPACER	3/4						
MB644S	D05	# 4 ORB ON 'P'	3/4						
MB2353S	D05	#4 ORB ON 'A'	3/4						
MB905S	D05	#4 ORB ON 'B'	3/4						
MB2344S	D05	# 4 ORB ON 'P' AND 'T'	3/4						
MB648S	D05	# 4 ORB ON 'A' AND 'B'	3/4						

Sandwich Spacer

MATL: STEEL
PRESSURE: 5000 PSI

THE SANDWICH SPACER COMES COMPLETE WITH O' RINGS AND BOLT KIT.
THE SANDWICH SPACER SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.

Part No.	Valve	Description	Thickness	Function
				P T A B X Y
MB2355S	D05	'P' TO 'B', 'A' TO 'T'	3/4	
MB149S	D05	'P' TO 'A', 'B' TO 'T'	3/4	
MB2335S	D05	'P' TO 'B'	3/4	
MB1268S	D05	'A' TO 'T'	3/4	
MB2354S	D05	'P' TO 'A'	3/4	
MB1280S	D05	'B' TO 'T'	3/4	
MB2351S	D05H	SPACER	3/4	
MB2361S	D05H	# 4 ORB ON 'P'	3/4	
MB2371S	D05H	# 4 ORB ON 'A'	3/4	
MB2379S	D05H	# 4 ORB ON 'B'	3/4	
MB2364S	D05H	# 4 ORB ON 'P' AND 'T'	3/4	
MB1882S	D05H	# 4 ORB ON 'A' AND 'B'	3/4	
MB2372S	D05H	'P' TO 'B', 'A' TO 'T'	3/4	
MB2368S	D05H	'P' TO 'A', 'B' TO 'T'	3/4	
MB2373S	D05H	'P' TO 'B'	3/4	
MB2337S	D05H	'A' TO 'T'	3/4	
MB2357S	D05H	'P' TO 'A'	3/4	
MB2366S	D05H	'B' TO 'T'	3/4	

Sandwich Spacer

MATL: STEEL
 PRESSURE: 5000 PSI

THE SANDWICH SPACER COMES COMPLETE WITH O' RINGS AND BOLT KIT.
 THE SANDWICH SPACER SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.

Part No.	Valve	Description	Thickness	Function					
				P	T	A	B	X	Y
MB2346S	D05HE	SPACER	3/4						
MB2374S	D05HE	# 4 ORB ON 'P'	3/4						
MB2369S	D05HE	# 4 ORB ON 'A'	3/4						
MB2345S	D05HE	# 4 ORB ON 'B'	3/4						
MB2338S	D05HE	# 4 ORB ON 'P', 'T'	3/4						
MB2336S	D05HE	# 4 ORB ON 'A', 'B'	3/4						
MB2356S	D05HE	'P' TO 'B', 'A' TO 'T'	3/4						
MB2380S	D05HE	'P' TO 'A', 'B' TO 'T'	3/4						
MB2370S	D05HE	'P' TO 'B'	3/4						
MB2377S	D05HE	'A' TO 'T'	3/4						
MB2375S	D05HE	'P' TO 'A'	3/4						
MB2363S	D05HE	'B' TO 'T'	3/4						
MB2365S	D07	SPACER	1 1/4						
MB2348	D07	# 4 ORB ON 'P'	1 1/4						
MB1888S	D07	# 4 ORB ON 'A'	1 1/4						
MB2376S	D07	# 4 ORB ON 'B'	1 1/4						
MB2347S	D07	# 4 ORB ON 'P', 'T'	1 1/4						
MB1797S	D07	# 4 ORB ON 'A', 'B'	1 1/4						

Sandwich Spacer

MATL: STEEL

PRESSURE: 5000 PSI

THE SANDWICH SPACER COMES COMPLETE WITH O' RINGS AND BOLT KIT.

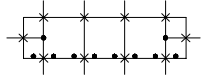
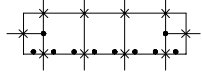
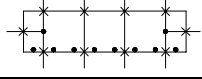
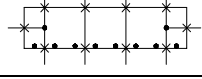
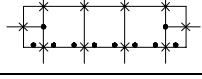
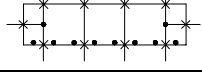

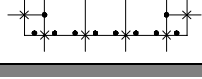
THE SANDWICH SPACER SIZE IS APPROXIMATELY THE SAME AS THE FOOTPRINT OF THE VALVE.

Part No.	Valve	Description	Thickness	Function
				P T A B X Y
MB2378S	D07	'P' TO 'B', 'A' TO 'T'	1 1/4	
MB2359S	D07	'P' TO 'B'	1 1/4	
MB2339S	D07	'A' TO 'T'	1 1/4	
MB1894S	D08	SPACER	1 1/2	
MB2358S	D08	# 8 ORB ON 'P'	1 1/2	
MB2362S	D08	# 8 ORB ON 'A'	1 1/2	
MB2352S	D08	# 6 ORB ON 'B'	1 1/2	
MB2342S	D08	# 6 ORB ON 'P', 'T'	1 1/2	
MB906S	D08	# 6 ORB ON 'A', 'B'	1 1/2	
MB2349S	D08	'P' TO 'B', 'A' TO 'T'	1 1/2	
MB2341S	D08	'P' TO 'B'	1 1/2	
MB1415S	D08	'A' TO 'T'	1 1/2	

Servo Sandwich – Gage Plate

MATL: STEEL
 PRESSURE: 5000 PSI

SIZE IS APPROX. – FOOTPRINT OF VALVE C/W O’RING

Part No.	Valve Pattern	Description	Thickness	SAE ORB Ports	Function C1 P T C2
MB2544S	MOOG 62-100 ATCHLEY 215A VICKERS SM4-20	GAGE PORTS ON C1 & C2	1 1/4	#6 (9/16-18)	
MB2545S	MOOG 62-300 ATCHLEY 241 VICKERS SM4-30	GAGE PORTS ON C1 & C2	1 1/4	#6 (9/16-18)	
MB2546S	MOOG 72 ATCHLEY 261	GAGE PORTS ON C1 & C2	1 1/4	#6 (9/16-18)	
MB2547S	MOOG 78-100 ATCHLEY 240 VICKERS SM4-40	GAGE PORTS ON C1 & C2	1 1/4	#6 (9/16-18)	
MB2548S	MOOG 771 ATCHLEY 206/208A VICKERS SM4-10	GAGE PORTS ON C1 & C2	1	#4 (7/16-20)	
MB2549S	MOOG 772 ATCHLEY 211A	GAGE PORTS ON C1 & C2	1	#4 (7/16-20)	
MB2550S	MOOG 773 ATCHLEY 218 VICKERS SM4-15	GAGE PORTS ON C1 & C2	1	#4 (7/16-20)	
MB2551S	ATCHLEY 242	GAGE PORTS ON C1 & C2	1	#4 (7/16-20)	



Stacking Manifolds

D03

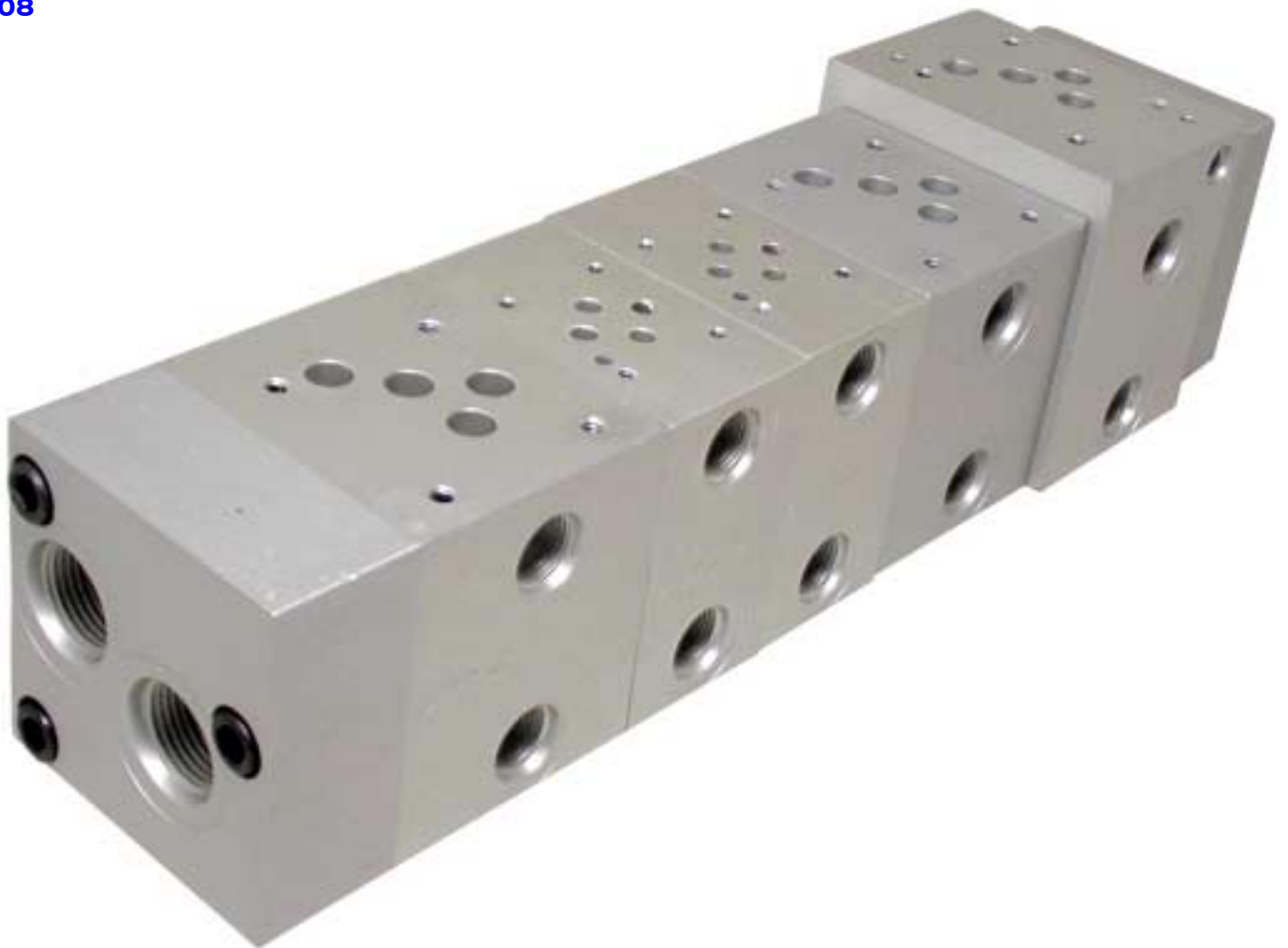
D05

D05H

D05HE

D07

D08

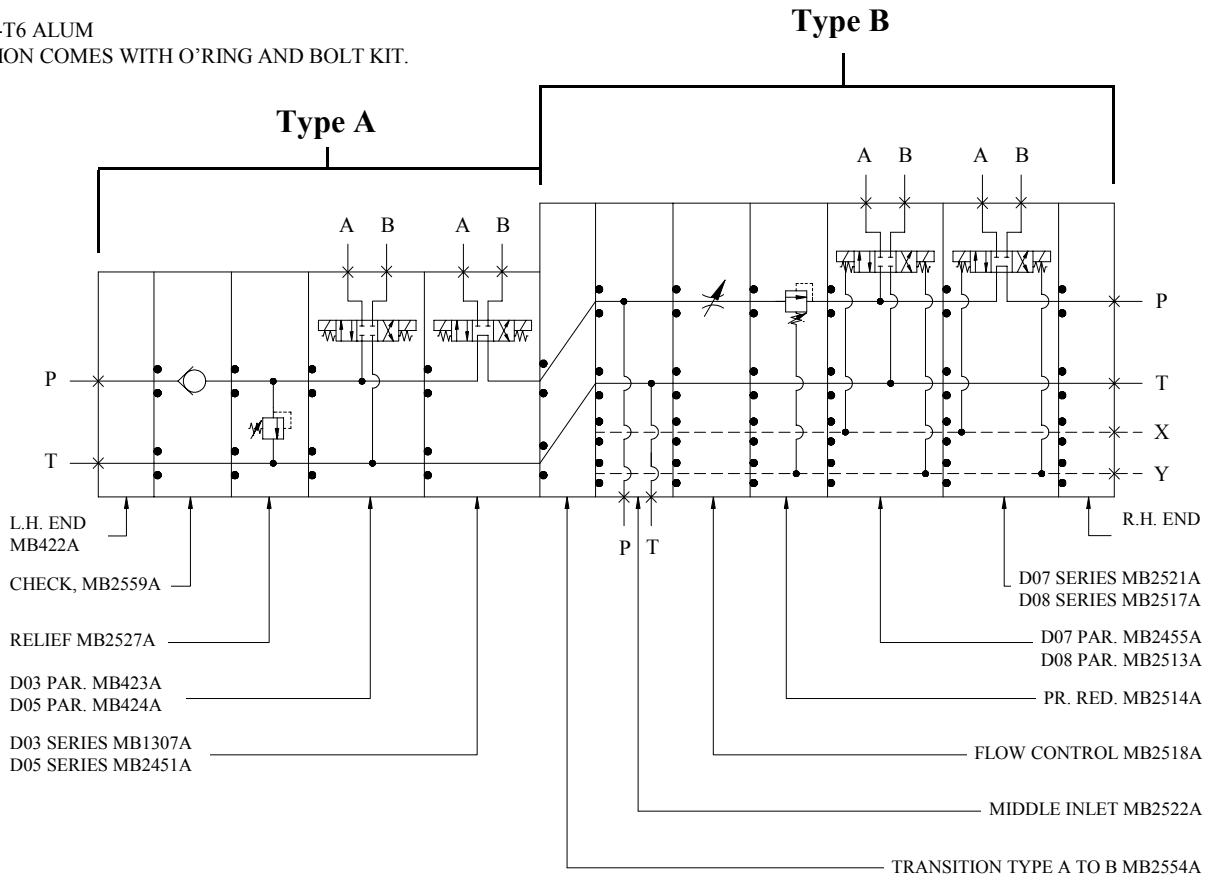


Stacking Manifold

Types A & B

MATL: 6061-T6 ALUM

EACH SECTION COMES WITH O'RING AND BOLT KIT.



Type A

- D03, D05, D05H AND D05HE

Part No.	Function	Length
MB423A	D03 PARALLEL	2.00
MB424A	D05 PARALLEL	3.00
MB425A	D05H PARALLEL	3.00
MB2448A	D05HE PARALLEL	3.00
MB1307A	D03 SERIES	2.00
MB2451A	D05 SERIES	3.00
MB2454A	D05H SERIES	3.00
MB2515A	D05HE SERIES	3.00
MB422A	LEFTHAND END	1.50
MB421A	RIGHTHAND END	1.50
MB2516A	MIDDLE INLET	2.00
MB2527A	RELIEF	1.50
MB2530A	PRESSURE REDUCING	2.50
MB2532A	FLOW CONTROL	2.50
MB2559A	CHECK	2.00

Type B

- D07 AND D08

Part No.	Function	Length
MB2455A	D07 PARALLEL	4.00
MB2513A	D08 PARALLEL	5.00
MB2521A	D07 SERIES	4.00
MB2517A	D08 SERIES	5.00
MB2524A	LEFTHAND END	2.00
MB2529A	RIGHTHAND END	2.00
MB2522A	MIDDLE INLET	3.00
MB2514A	RELIEF	2.00
MB2528A	PRESSURE REDUCING	3.00
MB2518A	FLOW CONTROL	3.00
MB2554A	TRANS; SERIES A & B	3.00
MB2560A	CHECK	2.50

Accessories

- Cavity Plug
- Orifice Plug
- Mounting Plate

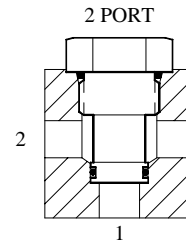


Cavity Plug

2 and 3 Port

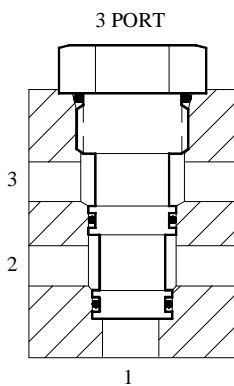
MATL: STEEL

CAVITY PLUG SUITABLE FOR: COMPACT, DELTA
HYDRAFORCE, INTEGRATED HYD, PARKER,
VICKERS AND WATERMAN (OR EQUIVALENT)



2 Port	All Ports Blocked	All Ports Open
Cavity	Part No.	Part No.
STANDARD C-8-2	MB1601-1	#8 SAE ORB Plug
STANDARD C-10-2	MB1135-1	#10 SAE ORB Plug
STANDARD C-16-2	MB1137-1	#16 SAE ORB Plug
STANDARD C-20-2	MB1138-1	#20 SAE ORB Plug
COMPACT CP12-2	MB1139-1	#12 SAE ORB Plug
DANFOSS FC-10	MB2045-1	MB2045-2
DANFOSS FC-76	MB1530-1	#10 SAE ORB Plug
DANFOSS FC-153	MB2453-1	#20 SAE ORB Plug
DANFOSS FC-178A	MB2445-1	MB2445-2
DELTA 40200028	MB2047-1	#10 SAE ORB Plug
DELTA 40200032	MB1139-1	#12 SAE ORB Plug
HYDRAFORCE VC12-12	MB1139-1	#12 SAE ORB Plug
INTEGRATED A878	MB1530-1	#10 SAE ORB Plug
INTEGRATED A881	MB2045-1	MB2045-2
INTEGRATED A1126	MB2453-1	#20 SAE ORB Plug
INTEGRATED A3377	MB2450-1	#10 SAE ORB Plug
INTEGRATED A6701	MB2446-1	#8 SAE ORB Plug

2 Port	All Ports Blocked	All Ports Open
Cavity	Part No.	Part No.
PARKER C09-2	MB2446-1	#8 SAE ORB Plug
PARKER C12-2	MB1872-1	#12 SAE ORB Plug
STERLING 2B	MB2047-1	#10 SAE ORB Plug
STERLING 2K	MB2445-1	MB2445-2
STERLING 2M	MB2456-1	#14 SAE ORB Plug
STERLING 2R	MB2450-1	#10 SAE ORB Plug
STERLING 2X	MB2446-1	#8 SAE ORB Plug
SUN T-3A	MB1117-1	MB1117-2
SUN T-5A	MB1118-1	MB1118-2
SUN T-10A	MB1119-1	MB1119-2
SUN T-13A	MB1120-1	MB1120-2
SUN T-16A	MB1121-1	MB1121-2
SUN T-18A	MB1122-1	MB1122-2
VICKERS C-12-2	MB1136-1	#12 SAE ORB Plug
WATERMAN 12-2A	MB2446-1	#8 SAE ORB Plug
WATERMAN 14-2	MB2450-1	#10 SAE ORB Plug



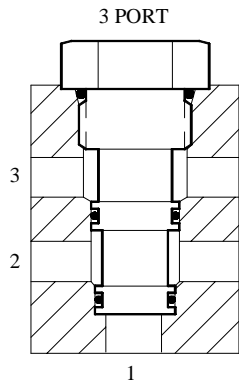
3 Port	All Ports Blocked	Ports 1 & 2 Open	Ports 2 & 3 Open	All Ports Open
Cavity	Part No.	Part No.	Part No.	Part No.
STANDARD C-8-3	MB2324-1	MB2324-2	MB2324-3	#8 SAE ORB Plug
STANDARD C-10-3	MB1140-1	MB1140-2	MB1140-3	#10 SAE ORB Plug
STANDARD C-10-3S	MB1141-1	MB1141-2	MB1141-3	#10 SAE ORB Plug
STANDARD C-16-3	MB1144-1	MB1144-2	MB1144-3	#16 SAE ORB Plug
STANDARD C-16-3S	MB1145-1	MB1145-2	MB1145-3	#16 SAE ORB Plug
STANDARD C-20-3	MB1146-1	MB1146-2	MB1146-3	#20 SAE ORB Plug
STANDARD C-20-3S	MB1147-1	MB1147-2	MB1147-3	#20 SAE ORB Plug
COMPACT CP8-3L	MB2480-1	MB2480-2	MB2480-3	#8 SAE ORB Plug
COMPACT CP10-3L	MB1148-1	MB1148-2	MB1148-3	#10 SAE ORB Plug
COMPACT CP12-3	MB1149-1	MB1149-2	MB1149-3	#12 SAE ORB Plug
COMPACT CP12-3S	MB1150-1	MB1150-2	MB1150-3	#12 SAE ORB Plug
COMPACT CP20-3S	MB2430-1	MB2430-2	MB2430-3	#20 SAE ORB Plug
DANFOSS FC-13	MB2481-1	MB2481-2	MB2481-3	—————
DANFOSS FC-60	MB2485-1	MB2485-2	MB2485-3	MB2485-4

Cavity Plug

3 Port

MATL: STEEL

CAVITY PLUG SUITABLE FOR:
COMPACT, DELTA
HYDRAFORCE, INTEGRATED
HYD, PARKER, VICKERS AND
WATERMAN (OR EQUIVALENT)

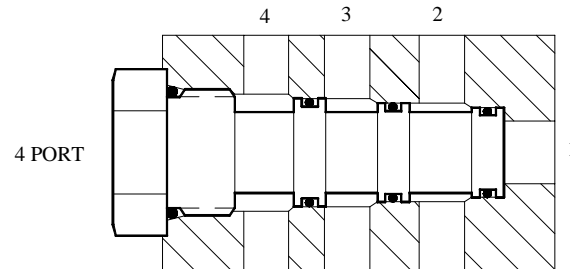


3 Port	All Ports Blocked	Ports 1 & 2 Open	Ports 2 & 3 Open	All Ports Open
Cavity	Part No.	Part No.	Part No.	Part No.
DANFOSS FC-109A	MB2489-1	MB2489-2	MB2489-3	#8 SAE ORB Plug
DANFOSS FC-173	MB2493-1	MB2493-2	MB2493-3	#16 SAE ORB Plug
DANFOSS FC-173A	MB2482-1	MB2482-2	MB2482-3	#16 SAE ORB Plug
DELTA 40200033	MB1150-1	MB1150-2	MB1150-3	#12 SAE ORB Plug
DELTA 40200034	MB2483-1	MB2483-2	MB2483-3	#12 SAE ORB Plug
HYDRAFORCE VC12-3	MB2483-1	MB2483-2	MB2483-3	#12 SAE ORB Plug
INTEGRATED A877	MB2493-1	MB2493-2	MB2493-3	#16 SAE ORB Plug
INTEGRATED A880	MB2481-1	MB2481-2	—————	—————
INTEGRATED A893	MB2486-1	MB2486-2	MB2486-3	#10 SAE ORB Plug
INTEGRATED A2976	MB2494-1	MB2494-2	MB2494-3	#10 SAE ORB Plug
INTEGRATED A3146	MB2500-1	MB2500-2	MB2500-3	MB2500-4
INTEGRATED A5572	MB2492-1	MB2492-2	MB2492-3	#10 SAE ORB Plug
INTEGRATED A6610	MB2503-1	MB2503-2	MB2503-3	MB2503-4
INTEGRATED A6935	MB2507-1	MB2507-2	MB2507-3	#20 SAE ORB Plug
INTEGRATED A12336	MB2487-1	MB2487-2	MB2487-3	MB2487-4
INTEGRATED CVA-22-06-0	MB2501-1	MB2501-2	MB2501-3	MB2501-4
INTEGRATED CVA-27-04-0	MB2508-1	MB2508-2	MB2508-3	MB2508-4
INTEGRATED CVB-22-06-0	MB2501-1	MB2501-2	MB2501-3	MB2501-4
INTEGRATED CVB-27-04-0	MB2508-1	MB2508-2	MB2508-3	MB2508-4
INTEGRATED CVB-42-04-0	MB2523-1	MB2523-2	MB2523-3	MB2523-4
PARKER C12-3	MB1143-1	MB1143-2	MB1143-3	#12 SAE ORB Plug
SUN T-2A	MB1123-1	MB1123-2	—————	—————
SUN T-11A	MB1124-1	MB1124-2	—————	—————
SUN T-17A	MB1125-1	MB1125-2	—————	—————
SUN T-19A	MB1126-1	MB1126-2	—————	—————
STERLING 3A	MB2484-1	MB2484-2	MB2484-3	#14 SAE ORB Plug
STERLING 3C	MB2488-1	MB2488-2	MB2488-3	#14 SAE ORB Plug
STERLING 3G	MB2492-1	MB2492-2	MB2492-3	#10 SAE ORB Plug
STERLING 3M	MB2511-1	MB2511-2	MB2511-3	#16 SAE ORB Plug
STERLING 3U	MB2490-1	MB2490-2	MB2490-3	#14 SAE ORB Plug
STERLING 3X	MB2494-1	MB2494-2	MB2494-3	#10 SAE ORB Plug
STERLING 53-1	MB2505-1	MB2505-2	MB2505-3	MB2505-4
STERLING 68-1	MB2509-1	MB2509-2	MB2509-3	MB2509-4
STERLING 78-1	MB2519-1	MB2519-2	MB2519-3	MB2519-4
STERLING 91-1	MB2523-1	MB2523-2	MB2523-3	MB2523-4
VICKERS C-12-3	MB1142-1	MB1142-2	MB1142-3	#12 SAE ORB Plug
VICKERS C-12-3S	MB1143-1	MB1143-2	MB1143-3	#12 SAE ORB Plug
WATERMAN 12-3	MB2324-1	MB2324-2	MB2324-3	#8 SAE ORB Plug
WATERMAN 14-3	MB2494-1	MB2494-2	MB2494-3	#10 SAE ORB Plug

Cavity Plug

4 Port

MATL: STEEL

 CAVITY PLUG SUITABLE FOR: COMPACT, DELTA
 HYDRAFORCE, INTEGRATED HYD, PARKER,
 VICKERS AND WATERMAN (OR EQUIVALENT)


4 Port	All Ports Blocked	Ports 1 & 2 Open	Ports 2 & 3 Open	Ports 3 & 4 Open	All Ports Open
Cavity	Part No.	Part No.	Part No.	Part No.	Part No.
STANDARD C-8-4	MB2491-1	MB2491-2	MB2491-3	MB2491-4	#8 SAE ORB Plug
STANDARD C-10-4	MB1151-1	MB1151-2	MB1151-3	MB1151-4	#10 SAE ORB Plug
STANDARD C-16-4	MB1152-1	MB1152-2	MB1152-3	MB1152-4	#16 SAE ORB Plug
STANDARD C-20-4	MB1153-1	MB1153-2	MB1153-3	MB1153-4	#20 SAE ORB Plug
COMPACT CP8-4	MB2491-1	MB2491-2	MB2491-3	MB2491-4	#8 SAE ORB Plug
COMPACT CP12-4	MB1154-1	MB1154-2	MB1154-3	MB1154-4	#12 SAE ORB Plug
DANFOSS FC-314	MB2496-1	MB2496-2	MB2496-3	—————	—————
DELTA 40200029	MB2491-1	MB2491-2	MB2491-3	MB2491-4	#8 SAE ORB Plug
DELTA 40200035	MB2504-1	MB2504-2	MB2504-3	MB2504-4	#12 SAE ORB Plug
HYDRAFORCE VC12-4	MB2504-1	MB2504-2	MB2504-3	MB2504-4	#12 SAE ORB Plug
INTEGRATED A5302	MB2520-1	MB2520-2	MB2520-3	MB2520-4	#10 SAE ORB Plug
INTEGRATED A6951	MB2491-1	MB2491-2	MB2491-3	MB2491-4	#8 SAE ORB Plug
INTEGRATED A12196	MB2526-1	MB2526-2	MB2526-3	MB2526-4	MB2526-5
INTEGRATED A13098	MB2531-1	MB2531-2	MB2531-3	—————	—————
PARKER C08-4	MB2491-1	MB2491-2	MB2491-3	MB2491-4	#8 SAE ORB Plug
PARKER C12-4	MB2497-1	MB2497-2	MB2497-3	MB2497-4	#12 SAE ORB Plug
SUN T-21A	MB1127-1	MB1127-2	—————	—————	—————
SUN T-22A	MB1128-1	MB1128-2	—————	—————	—————
SUN T-23A	MB1129-1	MB1129-2	—————	—————	—————
SUN T-24A	MB1130-1	MB1130-2	—————	—————	—————
SUN T-31A	MB1131-1	MB1131-2	MB1131-3	MB1131-4	MB1131-5
SUN T-32A	MB1132-1	MB1132-2	MB1132-3	MB1132-4	MB1132-5
SUN T-33A	MB1133-1	MB1133-2	MB1133-3	MB1133-4	MB1133-5
SUN T-34A	MB1134-1	MB1134-2	MB1134-3	MB1134-4	MB1134-5
STERLING 4A	MB2512-1	MB2512-2	MB2512-3	MB2512-4	#14 SAE ORB Plug
STERLING 4C	MB2520-1	MB2520-2	MB2520-3	MB2520-4	#10 SAE ORB Plug
VICKERS C-8-4	MB2491-1	MB2491-2	MB2491-3	MB2491-4	#8 SAE ORB Plug
VICKERS C-12-4	MB2525-1	MB2525-2	MB2525-3	MB2525-4	#12 SAE ORB Plug
WATERMAN 12-4	MB2491-1	MB2491-2	MB2491-3	MB2491-4	#8 SAE ORB Plug
WATERMAN 14-4	MB2520-1	MB2520-2	MB2520-3	MB2520-4	#10 SAE ORB Plug

Orifice Plug and Mounting Plate

Orifice Plug

MATL: STEEL 3/4 TAPER PIPE PLUG

1/16 PIPE PLUG		1/8 PIPE PLUG		1/4 PIPE PLUG	
Part No.	Orifice	Part No.	Orifice	Part No.	Orifice
MB1161-016	0.016	MB1162-031	0.031	MB1163-063	0.063
MB1161-031	0.031	MB1162-063	0.063	MB1163-094	0.094
MB1161-063	0.063	MB1162-094	0.094	MB1163-125	0.125
MB1161-094	0.094	MB1162-125	0.125	MB1163-156	0.156
MB1161-109	0.109	MB1162-156	0.156	MB1163-188	0.188
MB1161-125	0.125	MB1162-188	0.188	MB1163-250	0.250

3/8 PIPE PLUG		1/2 PIPE PLUG		3/4 PIPE PLUG	
Part No.	Orifice	Part No.	Orifice	Part No.	Orifice
MB2533-031	0.031	MB2552-062	0.062	MB2553-250	0.250
MB2533-062	0.062	MB2552-125	0.125	MB2553-313	0.313
MB2533-125	0.125	MB2552-188	0.188	MB2553-375	0.375
MB2533-188	0.188	MB2552-250	0.250	MB2553-438	0.438
MB2533-250	0.250	MB2552-313	0.313	MB2553-500	0.500
MB2533-313	0.313	MB2552-375	0.375	MB2553-562	0.562

Mounting Plate

FOR DIRECTIONAL SUBPLATES.

COMPLETE WITH BOLT KIT.

THE MOUNTING PLATE HAS THE SAME LENGTH AND WIDTH AS THE CORRESPONDING SIDE PORT SUBPLATE.

Part No.	Subplate Size	Reference	Thickness
MB581-3	D03	PAGE 22-3, 22-11	0.50
MB581-5	D05 / D05H / D05HE	PAGE 22-4, 22-5, 22-11	0.50
MB831-7	D07	PAGE 22-6, 22-11	0.50
MB831-8	D08	PAGE 22-8, 22-11	0.50

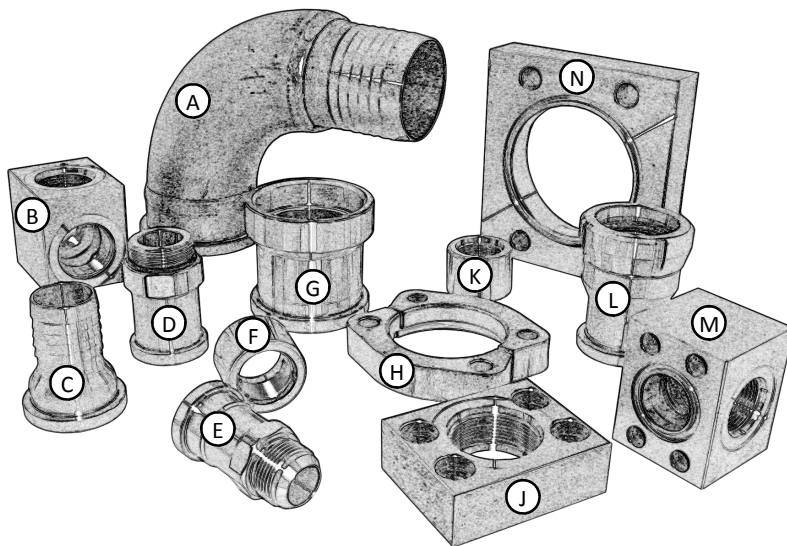
Terms and Conditions

LIMITED WARRANTY

Sealum Industries Ltd. guarantees its flanges and adapters for dimensional accuracy and workmanship. Sealum Industries does not guarantee material defects. No warranties are implied for the suitability of the product. It is intended that technical people having skill and knowledge in their own particular applications will use the parts. Liability under this warranty will extend only to replacement or repair of the defective part within 90 days of purchase, when returned freight prepaid to our plant by the original purchaser. Sealum Industries accepts no liability for any other damages or costs. Catalog dimensions are for reference only and are subject to engineering change without notice. Sealum Industries Ltd. will not assume any liability for damage or injury, nor for the safe and or satisfactory operation of any machine or system designed from information in this catalog. The purchaser agrees to the warranty conditions upon purchase of any Sealum product.

RETURNED GOODS

No returns will be accepted without a return goods authorization (RGA) number. All returns are subject to a 20% restocking charge on unused stocking items only when returned freight prepaid within 30 days of purchase by the original purchaser. All custom manufactured parts are non-returnable and are subject to a cancellation fee once manufacturing has begun.



ON THE COVER:

- A) 1670-Series – Barb / C61 ORH
- B) 2485-Series – ORB Tee
- C) 1650-Series – Barb / C61 ORH
- D) 1593-Series – ORB Male / C61 ORH
- E) 1841-Series – Male JIC / C61 ORH
- F) 1805-Series – ORB / SWP
- G) 1500-Series – SWP / C61 ORH
- H) 1585-Series – C61 Split Flange Kit
- J) 1203-Series – ORF / C61 ORF
- K) 1875-Series – ORB Coupling
- L) 2568-Series – ORFJ / C61 ORH
- M) 1815-Series – ORB / C61 ORF Elbow
- N) 1210-Series – SWP / C61 ORF

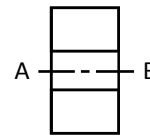
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Part Numbering System

All Sealum part numbers start with four digits. This set of numbers is considered to be the *series number*. The *series number* identifies the style of the part and its function. Each *series* of flange or adapter will come in a variety of sizes. To identify the different sizes, Sealum uses a two-digit number equal to the size in inches multiplied by sixteen. For example, 1.50" x 16 = 24. This two-digit number is called a *dash number*. The majority of flanges and adapters have two or more sides to them, therefore two or more *dash numbers*. The order in which the *dash numbers* follow the *series number* is extremely important. This is especially true in a fitting with jump sizes. The *series number* together with the *dash numbers* will now become the *part number*. On fittings with two different types of ports, there are some rules that tell us which port comes first and which comes second. The following list will show which ports take precedence over the next. Generally, the higher up on the list, the farther to the end of the part number it goes. Male threads are always higher up on the list than female threads.

- C61** SAE J518C Code 61
- C62** SAE J518C Code 62
- ORF** O'Ring Face
- ORH** O'Ring Head
- Comp** Companion Face
- ORB** O'Ring Boss
- NPT** National Pipe Thread
- JIC** Joint Industrial Council
- BSPP** British Standard Pipe thread – Parallel
- BSPT** British Standard Pipe thread – Tapered
- ORFS** O'Ring Face Seal
- SWP** Socket Weld Pipe
- BWP** Butt Weld Pipe
- SWT** Socket Weld Tube
- ORFJ** O'Ring Flex Joint



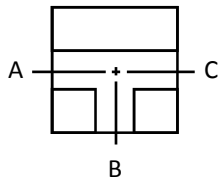
1203 - 16 - 20

Series number:

Side A:
(#16 ORB)

Side B:
(1.25" C61 ORF)

On fittings with more than two ports, such as tees and crosses, the order in which the dash numbers fall will always start at the left side of the block and go in a counterclockwise direction. The preceding list has no bearing on the order in which dash numbers fall when it comes to tees and crosses.



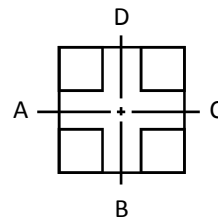
1806 - 16 - 16 - 16

Series number:

(Side A)

(Side B)

(Side C)



1810 - 16 - 16 - 16 - 16

Series number:

(Side A)

(Side B)

(Side C)

(Side D)

CONTINUED ON NEXT PAGE

Part Numbering System

Bolt Kits:

With the exception of Sandwich style flanges, all Sealum O'Ring Face flanges come standard with Imperial grade 8 bolt kits. Metric bolt kits are available upon request and must be specified in the part number by adding a 'M' to the end of the part number, for example 1203-16-16M. For bolt sizes and torque specifications see page 41-12.

Material Grades:

Sealum flanges and adapters are manufactured from C1018 & G40.21-44W steel, 316 Stainless Steel as well as 6061-T6 Aluminum are also available upon special request. To specify stainless steel, add 'SS' to the end of the part number. For example 1203-16-16SS. To specify aluminum, add an 'A' to the end of the part number. For example 1203-16-16A.

Plating:

In some instances it is preferred to have your flanges and adapters yellow zinc plated or black oxidized. For yellow zinc plating add 'ZY' after the series number. For example 1203ZY-16-16. For black oxide coating add 'XB' after the series number. For example 1203XB-16-16.

Pressure Rating:

While Code 61 flanges are sometimes referred to as "3000 psi flanges" the actual pressure rating varies between 500 psi and 5000 psi depending on the size of flange. Code 62 flanges are all rated for 6000 psi regardless of the size of flange. For the actual pressure ratings and specifications refer to page 41-12.

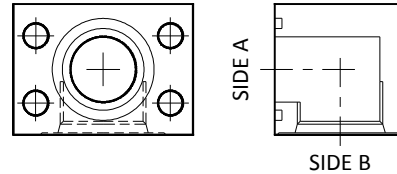
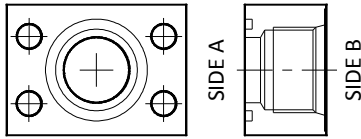
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1208	C61 Flange - SWT / ORF	42-5	1855	C62 Flange - ORB / Comp	43-2	2375	C61 Tee - Comp / ORF / ORB	46-8
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2504	C62 Tee - Comp / SWP / NPT	46-15	2606	Cross - NPT / NPT / NPT / NPT	47-6			
2505	C62 Tee - Comp / SWT / Comp	46-15	2624	ORB Weld-O-Let	48-3			
2507	C62 Tee - Comp / SWT / SWT	46-16	2627	Cross - ORB / ORB / ORB / ORB	47-6			
2508	C62 Tee - Comp / SWT / ORB	46-16	2628	C61 Cross - Comp/ORB/ORB/ORB	47-4			
2509	C62 Tee - Comp / SWT / NPT	46-16	2630	C62 Cross-Comp/Comp/Comp/SWP	47-4			
2510	C62 Tee - Comp / ORB / Comp	46-12	2631	C62 Cross-Comp/ORB/SWP/ORB	47-4			
2511	C62 Tee - Comp / ORB / SWP	46-13	2632	C62 Cross-Comp/ORB/ORB/ORB	47-4			
2512	C62 Tee - Comp / ORB / SWT	46-13	2633	C62 Cross-Comp/SWP/Comp/SWP	47-5			
2513	C62 Tee - Comp / ORB / ORB	46-13	2634	C62 Cross-ORF/SWP/Comp/SWP	47-3			
2515	C62 Tee - Comp / NPT / Comp	46-13	2635	C62 Cross-ORF/Comp/Comp/Comp	47-3			
2516	C62 Tee - Comp / NPT / SWP	46-14	2636	C62 Cross-ORF/ORB/ORB/ORB	47-3			
2517	C62 Tee - Comp / NPT / SWT	46-14	2637	C62 Cross-ORF/ORB/Comp/ORB	47-3			
2519	C62 Tee - Comp / NPT / NPT	46-14	2645	NPT Weld-O-Let	48-3			

Function to Part Number Index

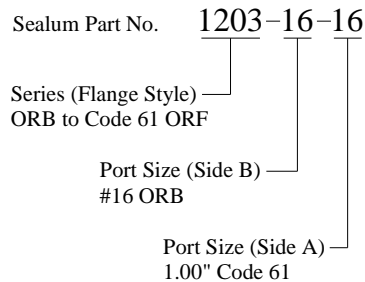


Side A	Side B	Series	Page
Code 61 O'Ring Flange	ORB	1203	42-2
	NPT	1201	42-2
	SWP	1210	42-10
	SWT	1208	42-5
	BWP (Sch 80)	2313	42-6
Code 61 Companion Flange	ORB	1202	42-2
	NPT	1200	42-3
	SWP	1211	42-10
	SWT	1209	42-5
	BWP (Sch 80)	2314	42-6
Code 62 O'Ring Flange	ORB	1856	43-2
	NPT	1858	43-3
	SWP	1852	43-4
	SWT	1854	43-5
	BWP (Sch 80)	3245	43-6
Code 62 Companion Flange	ORB	1855	43-2
	NPT	1857	43-3
	SWP	1851	43-4
	SWT	1853	43-5
	BWP (Sch 80)	2346	43-6

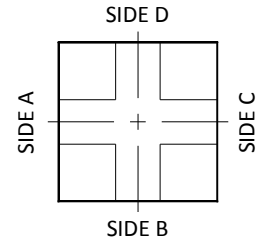
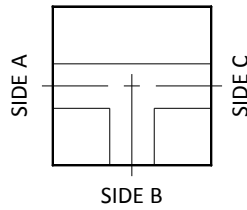
Side A	Side B	Series	Page
Code 61 O'Ring Elbow	ORB	1815	44-2
	NPT	1833	45-2
	SWP	1824	44-4
	SWT	1829	44-5
	Companion	2573	44-6
Code 61 Companion Elbow	ORB	1817	44-2
	NPT	1835	44-3
	SWP	1808	44-4
	SWT	1831	44-5
	Companion	2574	44-6
Code 62 O'Ring Elbow	ORB	1842	45-2
	NPT	1846	45-3
	SWP	1834	45-4
	SWT	1838	45-5
	Companion	2594	45-6
Code 62 Companion Elbow	ORB	1840	45-2
	NPT	1844	45-3
	SWP	1832	45-4
	SWT	1836	45-5
	Companion	2593	45-6

Example:

1.00" Code 61 O'Ring Face Flange to #16 ORB Female



Function to Part Number Index

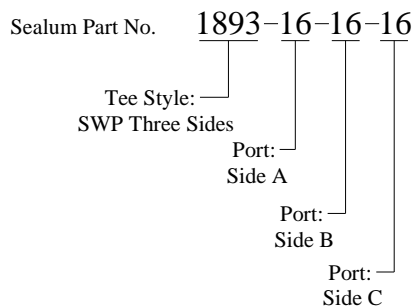


Side A	Side B	Side C	Series	Page
ORB	ORB	ORB	2485	46-18
	SWP	ORB	2481	46-19
	SWT	ORB	2483	46-19
NPT	NPT	NPT	2492	46-19
	SWP	NPT	2489	46-19
	SWT	NPT	2490	46-20
SWP	ORB	ORB	2463	46-20
		SWP	2058	46-20
	NPT	NPT	2468	46-21
		SWP	2465	46-21
	SWP	ORB	2456	46-21
		NPT	2457	46-21
SWT	ORB	ORB	2476	46-22
		SWT	2475	46-22
	NPT	NPT	2480	46-22
		SWT	2478	46-23
	SWT	ORB	2473	46-23
		NPT	2474	46-23
	SWT	2472	46-23	

Side A	Side B	Side C	Side D	Series	Page
Code 61 O'Ring Face	Comp	Comp	Comp	2599	47-3
	ORB	Comp	ORB	2601	47-3
		ORB	ORB	2600	47-3
	SWP	Comp	SWP	2598	47-3
Code 61 Companion	Comp	Comp	Comp	1810	47-4
			SWP	2596	47-4
	ORB	ORB	ORB	2628	47-4
SWP		ORB	2572	47-4	
	SWP	Comp	SWP	2597	47-5
Code 62 O'Ring Face	Comp	Comp	Comp	2635	47-3
	ORB	Comp	ORB	2637	47-3
		ORB	ORB	2636	47-3
	SWP	Comp	SWP	2634	47-3
Code 62 Companion	Comp	Comp	Comp	1811	47-4
			SWP	2630	47-4
	ORB	ORB	ORB	2632	47-4
SWP		ORB	2631	47-4	
	SWP	Comp	SWP	2633	47-5
ORB	ORB	ORB	ORB	2627	47-6
NPT	NPT	NPT	NPT	2606	47-6
SWP	ORB	ORB	ORB	2784	47-5
		SWP	ORB	2603	47-5
	NPT	NPT	NPT	2785	47-6
	SWP	SWP	SWP	2602	47-5

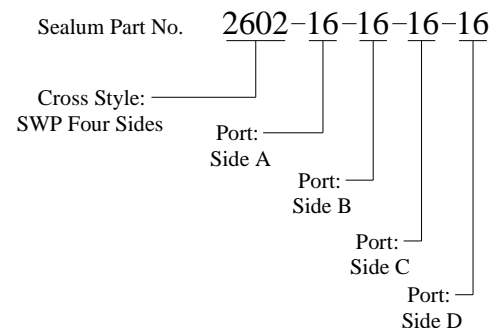
Example:

1.00" Socket Weld Pipe Tee (All Three Sides)

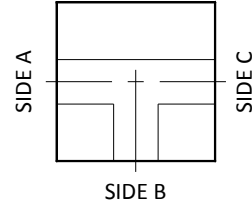


Example:

1.00" Socket Weld Pipe Cross (All Four Sides)

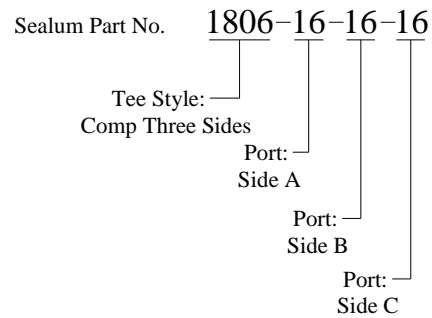


Function to Part Number Index Code 61 Tee



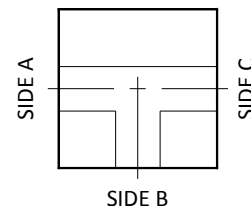
Side A	Side B	Side C	Series	Page
Code 61 Companion	ORB	ORB	2390	46-13
		SWP	2388	46-13
		SWT	2389	46-13
		Comp	2387	46-12
	NPT	NPT	2396	46-14
		SWP	2393	46-14
		SWT	2394	46-14
		Comp	2392	46-13
	SWP	ORB	2380	46-15
		NPT	2381	46-15
		SWP	2378	46-15
		Comp	2377	46-14
	SWT	ORB	2385	46-16
		NPT	2386	46-16
		SWT	2384	46-16
		Comp	2382	46-15
	Comp	ORB	2371	46-11
		NPT	2372	46-12
		SWP	1966	46-12
		SWT	2370	46-12
	ORF	Comp	1806	46-11
		ORB	2375	46-8
		NPT	2376	46-8
		SWP	2373	46-9
ORB	SWT	2374	46-9	
	Comp	2012	46-8	
	ORB	2411	46-11	
	Comp	2409	46-18	
NPT	ORB	2414	46-11	
	Comp	2413	46-18	
SWP	Comp	ORB	2398	46-16
		NPT	2399	46-17
	ORF	SWP	1865	46-17
		ORB	2401	46-9
SWT	ORF	NPT	2402	46-9
		SWP	2014	46-10
	Comp	ORB	2404	46-17
		NPT	2405	46-17
		SWT	2403	46-18
		ORB	2407	46-10
ORF	NPT	2408	46-10	
	SWT	2406	46-10	

Example:
1.00" Code 61 Companion Tee (All Three Sides)



Side A	Side B	Side C	Series	Page
Code 61 O'Ring Face	ORB	ORB	2431	46-4
		SWP	2429	46-4
		SWT	2430	46-5
		Comp	1870	46-4
	NPT	NPT	2437	46-5
		SWP	2434	46-5
		SWT	2435	46-6
		Comp	2433	46-5
	SWP	ORB	2422	46-6
		NPT	2423	46-6
		SWP	2420	46-7
		Comp	1869	46-6
	SWT	ORB	2427	46-7
		NPT	2428	46-7
		SWT	2426	46-8
		Comp	2424	46-7
	Comp	ORB	2418	46-3
		NPT	2419	46-3
		SWP	2416	46-3
		SWT	2417	46-4
		Comp	2415	46-3

Function to Part Number Index Code 62 Tee



Side A	Side B	Side C	Series	Page
Code 62 Companion	ORB	ORB	2513	46-13
		SWP	2511	46-13
		SWT	2512	46-13
		Comp	2510	46-12
	NPT	NPT	2519	46-14
		SWP	2516	46-14
		SWT	2517	46-14
		Comp	2515	46-13
	SWP	ORB	2503	46-15
		NPT	2504	46-15
		SWP	2501	46-15
		Comp	2500	46-14
	SWT	ORB	2508	46-16
		NPT	2509	46-16
		SWT	2507	46-16
		Comp	2505	46-15
	Comp	ORB	2494	46-11
		NPT	2495	46-12
		SWP	1969	46-12
		SWT	2493	46-12
Comp		1807	46-11	
ORF	ORB	2498	46-8	
	NPT	2499	46-8	
	SWP	2496	46-9	
	SWT	2497	46-9	
	Comp	2015	46-8	
ORB	ORF	ORB	2452	46-11
	Comp	ORB	2450	46-18
NPT	ORF	NPT	2544	46-11
	Comp	NPT	2543	46-18
SWP	Comp	ORB	2439	46-16
		NPT	2440	46-17
	SWP	1879	46-17	
ORF	ORB	2442	46-9	
	NPT	2443	46-9	
	SWP	2017	46-10	
SWT	Comp	ORB	2445	46-17
		NPT	2446	46-17
	SWT	2444	46-18	
	ORF	ORB	2448	46-10
	NPT	2449	46-10	
	SWT	2447	46-10	

Example:
1.00" Code 62 Companion Tee (All Three Sides)

Sealum Part No. **1807-16-16-16**

Tee Style: 1807
Comp Three Sides

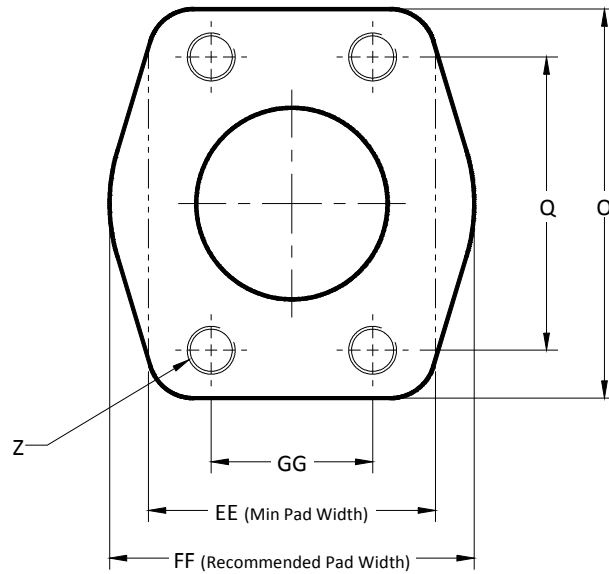
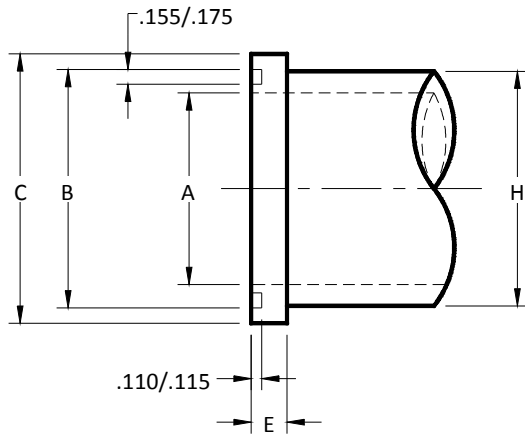
Port: 16
Side A

Port: 16
Side B

Port: 16
Side C

Side A	Side B	Side C	Series	Page
Code 62 O"Ring Face	ORB	ORB	2536	46-4
		SWP	2534	46-4
		SWT	2535	46-5
		Comp	1872	46-4
	NPT	NPT	2542	46-5
		SWP	2539	46-5
		SWT	2540	46-6
		Comp	2538	46-5
	SWP	ORB	2527	46-6
		NPT	2528	46-6
		SWP	2525	46-7
		Comp	1871	46-6
	SWT	ORB	2532	46-7
		NPT	2533	46-7
		SWT	2531	46-8
		Comp	2529	46-7
	Comp	ORB	2523	46-3
		NPT	2524	46-3
		SWP	2521	46-3
		SWT	2522	46-4
	Comp	2520	46-3	

SAE J518C 4-Bolt Flange Specifications



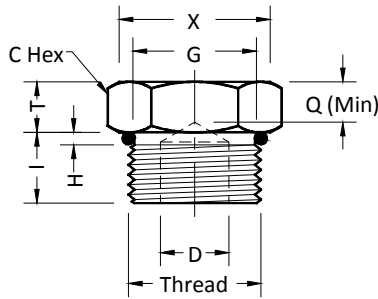
Code 61

Nom. Flange Size	A +0.00 -0.06	B +0.005 -0.000	C ±0.010	E ±0.005	H Dia Max	GG ±0.010	Q ±0.010	O	EE Min.	FF	Z Thread UNC	Z Thread Metric	Max Work. Pres.	Bolt Torque lb-in	N70 "O" Ring
1/2"	0.50	1.000	1.188	0.265	0.94	0.688	1.500	2.12	1.31	1.81	5/16-18	M8x1.25	5000 psi	175-225	2-210
3/4"	0.75	1.250	1.500	0.265	1.25	0.875	1.875	2.56	1.62	2.06	3/8-16	M10x1.50	5000 psi	250-350	2-214
1"	1.00	1.560	1.750	0.315	1.50	1.031	2.062	2.75	1.88	2.31	3/8-16	M10x1.50	5000 psi	325-425	2-219
1 1/4"	1.25	1.750	2.000	0.315	1.70	1.188	2.312	3.12	2.12	2.88	7/16-14	M10x1.50	4000 psi	425-550	2-222
1 1/2"	1.50	2.115	2.375	0.315	1.98	1.406	2.750	3.69	2.50	3.25	1/2-13	M12x1.75	3000 psi	550-700	2-225
2"	2.00	2.490	2.812	0.375	2.45	1.688	3.062	4.00	3.00	3.81	1/2-13	M12x1.75	3000 psi	650-800	2-228
2 1/2"	2.50	2.995	3.312	0.375	2.92	2.000	3.500	4.50	3.50	4.28	1/2-13	M12x1.75	2500 psi	950-1100	2-232
3"	3.00	3.615	4.000	0.375	3.55	2.438	4.188	5.31	4.19	5.16	5/8-11	M16x2.00	2000 psi	1650-1800	2-237
3 1/2"	3.50	4.095	4.500	0.442	4.00	2.750	4.750	6.00	4.69	5.50	5/8-11	M16x2.00	500 psi	1400-1600	2-241
4"	4.00	4.595	5.000	0.442	4.50	3.062	5.125	6.38	5.19	6.00	5/8-11	M16x2.00	500 psi	1400-1600	2-245
5"	5.00	5.595	6.000	0.442	5.50	3.625	6.000	7.25	6.19	7.12	5/8-11	M16x2.00	500 psi	1400-1600	2-253

Code 62

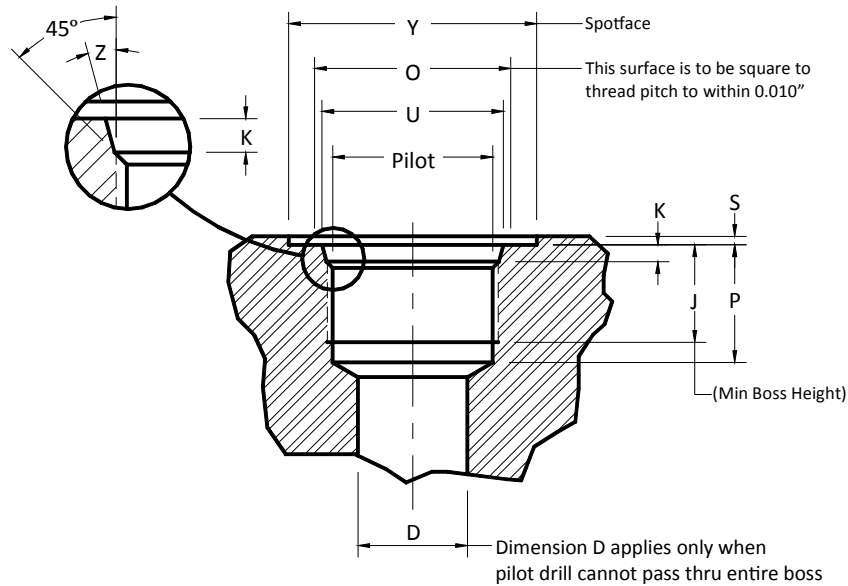
Nom. Flange Size	A +0.00 -0.06	B +0.005 -0.000	C ±0.010	E ±0.005	H Dia Max	GG ±0.010	Q ±0.010	O	EE Min.	FF	Z Thread UNC	Z Thread Metric	Max Work. Pres.	Bolt Torque lb-in	N70 "O" Ring
1/2"	0.50	1.000	1.250	0.305	0.94	0.718	1.574	2.22	1.50	1.88	5/16-18	M8x1.25	6000 psi	175-225	2-210
3/4"	0.75	1.250	1.625	0.345	1.25	0.937	2.000	2.81	1.88	2.38	3/8-16	M10x1.50	6000 psi	300-400	2-214
1"	1.00	1.560	1.875	0.375	1.50	1.093	2.250	3.19	2.12	2.75	7/16-14	M12x1.75	6000 psi	500-600	2-219
1 1/4"	1.25	1.750	2.125	0.405	1.72	1.250	2.625	3.75	2.38	3.06	1/2-13	M14x2.00	6000 psi	750-900	2-222
1 1/2"	1.50	2.115	2.500	0.495	2.00	1.437	3.125	4.44	2.75	3.75	5/8-11	M16x2.00	6000 psi	1400-1600	2-225
2"	2.00	2.490	3.125	0.495	2.62	1.750	3.812	5.25	3.38	4.50	3/4-10	M20x2.50	6000 psi	2400-2600	2-228

Male O'Ring Boss (ORB) Specifications



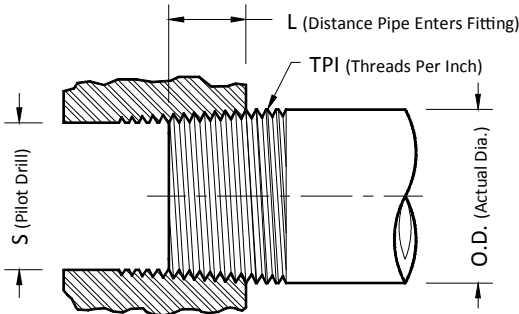
Nom. Size	Dash No.	UNF Thread	C Hex	D ^{+0.005} / _{-0.000}	G ^{+0.002} / _{-0.003}	H ^{+0.015} / _{-0.000}	I ^{±0.005}	T	Q	X	N70 O'Ring
1/8	-02	5/16"-24	7/16	0.093	0.250	0.063	0.297	0.125	0.06	0.438	2-902
3/16	-03	3/8"-24	1/2	0.125	0.313	0.063	0.297	0.125	0.08	0.500	2-903
1/4	-04	7/16"-20	9/16	0.203	0.364	0.075	0.360	0.156	0.10	0.563	2-904
5/16	-05	1/2"-20	5/8	0.234	0.427	0.075	0.360	0.156	0.12	0.625	2-905
3/8	-06	9/16"-18	11/16	0.297	0.482	0.083	0.391	0.188	0.16	0.688	2-906
1/2	-08	3/4"-16	7/8	0.422	0.660	0.094	0.438	0.188	0.22	0.875	2-908
5/8	-10	7/8"-14	1	0.500	0.773	0.107	0.500	0.250	0.25	1.000	2-910
3/4	-12	1-1/16"-12	1-1/4	0.656	0.945	0.125	0.594	0.313	0.25	1.250	2-912
7/8	-14	1-3/16"-12	1-3/8	0.718	1.07	0.125	0.594	0.313	0.25	1.375	2-914
1	-16	1-5/16"-12	1-1/2	0.875	1.195	0.125	0.594	0.375	0.25	1.500	2-916
1-1/4	-20	1-5/8"-12	1-7/8	1.093	1.507	0.125	0.594	0.375	0.25	1.875	2-920
1-1/2	-24	1-7/8"-12	2-1/8	1.344	1.756	0.125	0.594	0.375	0.25	2.125	2-924
2	-32	2-1/2"-12	2-3/4	1.813	2.381	0.125	0.594	0.375	0.30	2.750	2-932

Female O'Ring Boss (ORB) Specifications



Nom. Size	Dash No.	UNF Thread	Y	O	U ^{+0.005} / _{-0.000}	Pilot Drill	K ^{+0.015} / _{-0.000}	S	J	P	D	Z ± 1°
1/8	-02	5/16"-24	0.672	0.438	0.358	I	0.074	0.062	0.390	0.468	0.062	12
3/16	-03	3/8"-24	0.750	0.500	0.421	Q	0.074	0.062	0.390	0.468	0.125	12
1/4	-04	7/16"-20	0.828	0.563	0.487	25/64	0.093	0.062	0.454	0.547	0.172	12
5/16	-05	1/2"-20	0.906	0.625	0.550	29/64	0.093	0.062	0.454	0.547	0.234	12
3/8	-06	9/16"-18	0.969	0.688	0.616	33/64	0.097	0.062	0.500	0.609	0.297	12
1/2	-08	3/4"-16	1.188	0.875	0.811	11/16	0.10	0.094	0.562	0.688	0.391	15
5/8	-10	7/8"-14	1.344	1.000	0.942	13/16	0.100	0.094	0.656	0.781	0.484	15
3/4	-12	1-1/16"-12	1.625	1.250	1.148	63/64	0.130	0.094	0.750	0.906	0.609	15
7/8	-14	1-3/16"-12	1.765	1.375	1.273	1-3/32	0.130	0.094	0.750	0.906	0.719	15
1	-16	1-5/16"-12	1.910	1.500	1.398	1-15/64	0.130	0.125	0.750	0.906	0.844	15
1-1/4	-20	1-5/8"-12	2.270	1.875	1.713	1-17/32	0.132	0.125	0.750	0.906	1.078	15
1-1/2	-24	1-7/8"-12	2.560	1.125	1.962	1-51/64	0.132	0.125	0.750	0.906	1.312	15
2	-32	2-1/2"-12	3.480	2.750	2.587	2-27/64	0.132	0.125	0.750	0.906	1.781	15

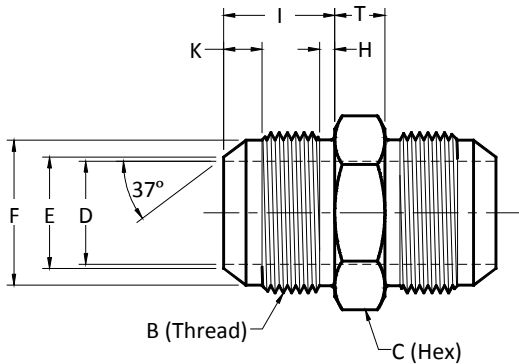
National Pipe Thread (NPT) Specifications



**Pipe size may be designated by giving a nominal pipe size and wall thickness or schedule. See chart on following page for schedules and physical dimensions.

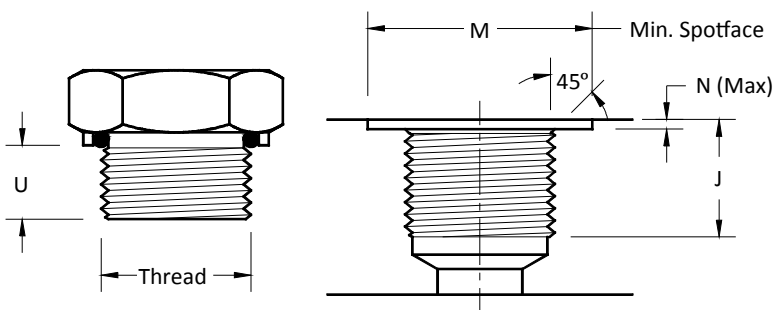
Nominal Pipe Size	TPI	OD	S	L	WALL THICKNESS**			
					Sch. 40	Sch. 80	Sch. 160	XXS
1/8	27	.405	11/32	3/16	.068	0.95	---	---
1/4	18	.540	7/16	9/32	0.88	.119	---	---
3/8	18	.675	37/64	19/64	0.91	.126	---	---
1/2	14	.840	23/32	3/8	.109	.147	.187	.294
3/4	14	1.050	59/64	13/32	.113	.154	.218	.308
1.00	11.50	1.315	1-5/32	1/2	.133	.179	.250	.358
1.25	11.50	1.660	1-1/2	35/64	.140	.191	.250	.382
1.50	11.50	1.900	1-47/64	9/16	.145	.200	.281	.400
2.00	11.50	2.375	2-7/32	37/64	.154	.218	.343	.436
2.50	8	2.875	2-5/8	7/8	.203	.276	.375	.552
3.00	8	3.50	3-1/4	15/16	.216	.300	.437	.600
3.50	8	4.00	3-3/4	1	.226	.318	---	---
4.00	8	4.50	4-1/4	1-1/16	.237	.337	.531	.674

JIC Specifications



Nom. Size	Dash No.	B UNF Thread	C Hex	D	E ± .003	F ^{+0.000} / _{-.005}	H ^{+0.015} / _{-.000}	I ± .015	K ^{+0.015} / _{-.000}	T
1/8	-02	5/16"-24	7/16	.062	.083	.245	.063	.448	.177	.22
3/16	-03	3/8"-24	7/16	.125	.146	.307	.063	.479	.177	.22
1/4	-04	7/16"-20	1/2	.172	.193	.359	.075	.550	.193	.22
5/16	-05	1/2"-20	9/16	.234	.255	.421	.075	.550	.193	.22
3/8	-06	9/16"-18	5/8	.297	.318	.476	.083	.556	.198	.25
1/2	-08	3/4"-16	13/16	.391	.426	.654	.094	.657	.253	.25
5/8	-10	7/8"-14	15/16	.484	.539	.767	.107	.758	.266	.31
3/4	-12	1-1/16"-12	1-1/8	.609	.664	.938	.125	.864	.315	.38
7/8	-14	1-3/16"-12	1-1/4	.718	.788	1.063	.125	.890	.315	.38
1	-16	1-5/16"-12	1-3/8	.844	.913	1.188	.125	.911	.315	.38
1-	-20	1-5/8"-12	1-11/16	1.078	1.147	1.501	.125	.958	.367	.46
1-	-24	1-7/8"-12	2	1.312	1.381	1.750	.125	1.083	.378	.53
2	-32	2-1/2"-12	2-5/8	1.781	1.880	2.375	.125	1.333	.461	.68

British Standard Pipe Parallel (BSPP) Specifications



Dash Size	Whitworth Thread	Major Dia.	Minor Dia.	U	M	N	J
-04	1/4"-19	.52	.45	.37	.85	.059	.43
-06	3/8"-19	.66	.59	.37	1.00	.059	.43
-08	1/2"-14	.83	.74	.51	1.19	.059	.55
-12	3/4"-14	1.04	.95	.51	1.44	.059	.63
-16	1"-11	1.31	1.19	.63	1.81	.078	.75
-20	1-1/4"-11	1.65	1.54	.63	2.25	.078	.83
-24	1-1/2"-11	1.88	1.77	.63	2.50	.078	.83

A.S.A. Pipe Schedules

Pipe Size	Actual O.D.	Wall Thickness (I.D.)												
		10	20	30	40	Std.	60	80	XS	100	120	140	160	XXS
1/8	.405	.049 (.307)			.068 (.269)	.068 (.269)		.095 (.215)	.095 (.215)					
1/4	.540	.065 (.410)			.088 (.364)	.088 (.364)		.119 (.302)	.119 (.302)					
3/8	.675	.065 (.545)			.091 (.493)	.091 (.493)		.126 (.423)	.126 (.423)					
1/2	.840	.083 (.674)			.109 (.622)	.109 (.622)		.147 (.546)	.147 (.546)				.187 (.466)	.294 (.252)
3/4	1.050	.083 (.884)			.113 (.824)	.113 (.824)		.154 (.742)	.154 (.742)				.218 (.614)	.308 (.434)
1	1.315	.109 (1.097)	.100 (1.115)	.125 (1.065)	.133 (1.049)	.133 (1.049)		.179 (.957)	.179 (.957)				.250 (.815)	.358 (.599)
1 1/4	1.660	.109 (1.442)	.100 (1.460)	.125 (1.41)	.140 (1.38)	.140 (1.38)		.191 (1.218)	.191 (1.270)				.250 (1.16)	.382 (.896)
1 1/2	1.900	.109 (1.682)	.110 (1.680)	.125 (1.65)	.145 (1.61)	.145 (1.61)		.200 (1.50)	.200 (1.50)				.281 (1.338)	.400 (1.10)
2	2.375	.109 (2.157)	.125 (2.125)		.154 (2.067)	.154 (2.067)		.218 (1.939)	.218 (1.939)				.343 (1.689)	.436 (1.503)
2 1/2	2.875	.120 (2.635)			.203 (2.469)	.203 (2.469)		.276 (2.323)	.276 (2.323)				.375 (2.125)	.552 (1.771)
3	3.50	.120 (3.260)	.125 (3.25)	.188 (3.124)	.216 (3.068)	.216 (3.068)		.300 (2.90)	.300 (2.90)				.438 (2.624)	.600 (2.30)
3 1/2	4.00	.120 (3.760)			.226 (3.548)	.226 (3.548)		.318 (3.364)	.318 (3.364)					.636 (2.728)
4	4.50	.120 (4.260)			.237 (4.026)	.237 (4.026)	.281 (3.938)	.337 (3.826)	.337 (3.826)		.438 (3.624)		.531 (3.438)	.674 (3.152)
4 1/2	5.00					.247 (4.506)			.355 (4.29)					.710 (3.58)
5	5.563	.134 (5.295)			.258 (5.047)	.258 (5.047)		.375 (4.813)	.375 (4.813)		.500 (4.563)		.625 (4.313)	.750 (4.063)
6	6.625	.134 (6.357)			.280 (6.065)	.280 (6.065)		.432 (5.761)	.432 (5.761)		.562 (5.501)		.718 (5.189)	.864 (4.897)
7	7.625					.301 (7.023)			.500 (6.625)					.875 (5.875)
8	8.625	.148 (8.329)	.250 (8.125)	.277 (8.071)	.322 (7.981)	.322 (7.981)	.406 (7.813)	.500 (7.625)	.500 (7.625)	.593 (7.439)	.718 (7.189)	.812 (7.001)	.906 (6.813)	.875 (6.875)
9	9.625					.342 (8.941)			.500 (8.625)					
10	10.75	.165 (10.420)	.250 (10.25)	.307 (10.136)	.365 (10.02)	.365 (10.02)	.500 (9.75)	.593 (9.564)	.500 (9.75)	.718 (9.314)	.843 (9.064)	1.000 (8.75)	1.125 (8.50)	
11	11.75					.375 (11.00)			.500 (10.75)					
12	12.75	.180 (12.39)	.250 (12.25)	.330 (12.09)	.406 (11.938)	.375 (12.00)	.562 (11.626)	.687 (11.376)	.500 (11.75)	.843 (11.064)	1.000 (10.75)	1.125 (10.50)	1.312 (10.126)	
14	14.00	.250 (13.50)	.312 (13.376)	.375 (13.25)	.437 (13.126)	.375 (13.25)	.593 (12.814)	.750 (12.50)	.500 (13.00)	.937 (12.126)	1.093 (11.814)	1.250 (11.50)	1.406 (11.188)	
16	16.00	.250 (15.50)	.312 (15.376)	.375 (15.25)	.500 (15.00)	.375 (15.25)	.656 (14.688)	.843 (14.314)	.500 (15.00)	1.031 (13.938)	1.218 (13.564)	1.437 (13.126)	1.593 (12.814)	
18	18.00	.250 (17.50)	.312 (17.376)	.437 (17.176)	.562 (16.876)	.375 (17.25)	.750 (16.50)	.937 (16.126)	.500 (17.00)	1.156 (15.688)	1.375 (15.25)	1.562 (14.876)	1.781 (14.438)	
20	20.00	.250 (19.50)	.375 (19.25)	.500 (19.00)	.593 (18.814)	.375 (19.25)	.812 (18.376)	1.031 (17.938)	.500 (19.00)	1.280 (17.44)	1.500 (17.00)	1.750 (16.50)	1.968 (16.064)	
24	24.00	.250 (23.50)	.375 (23.25)	.562 (22.876)	.687 (22.626)	.375 (23.25)	.968 (22.064)	1.218 (21.564)	.500 (23.00)	1.531 (20.938)	1.812 (20.376)	2.062 (19.876)	2.343 (19.314)	

Pressure Losses In Pipe & Tubing

Pipe						Flow Rate (GPM) & Pressure Loss (PSI/FT) @ AVG. Velocity (FPS)											
						Pressure (PSI)		5 FPS		10 FPS		15 FPS		20 FPS		25 FPS	
						Working	Burst	Loss	GPM	Loss	GPM	Loss	GPM	Loss	GPM	Loss	GPM
Size	Sch.	O.D.	I.D.														
1/2	80	0.840	0.546	4,100	21,000	0.37	4	0.73	7	1.11	11	2.62	15	3.87	18		
	40	0.840	0.622	2,300	15,600	0.28	5	0.57	10	1.35	14	2.23	19	3.29	24		
3/4	80	1.050	0.742	3,500	17,600	0.20	7	0.40	14	1.08	20	1.79	27	2.64	34		
	40	1.050	0.824	2,000	12,900	0.16	8	0.32	17	0.95	25	1.57	33	2.31	42		
1	80	1.315	0.957	3,500	15,900	0.12	11	0.39	22	0.79	34	1.30	45	1.92	56		
	40	1.315	1.049	2,100	12,100	0.10	14	0.34	27	0.70	40	1.16	54	1.71	67		
1 1/4	80	1.660	1.278	3,000	13,900	0.07	20	0.27	40	0.55	60	0.91	80	1.34	100		
	40	1.660	1.380	1,800	10,100	0.06	23	0.24	47	0.50	70	0.82	93	1.21	117		
1 1/2	160	1.900	1.338	4,500	17,700	0.06	22	0.25	44	0.52	66	0.85	88	1.26	110		
	80	1.900	1.500	2,800	12,600	0.05	28	0.22	55	0.45	83	0.74	110	1.09	138		
	40	1.900	1.610	1,700	9,100	0.04	32	0.20	64	0.41	95	0.68	127	1.00	159		
2	160	2.375	1.687	4,600	17,500	0.04	35	0.19	70	0.39	105	0.64	139	0.95	174		
	80	2.375	1.939	2,500	11,000	0.05	46	0.16	92	0.33	138	0.54	184	0.79	230		
	40	2.375	2.067	1,500	7,800	0.04	52	0.15	105	0.30	157	0.50	209	0.73	262		
2 1/2	160	2.875	2.125	4,200	15,700	0.04	55	0.14	111	0.29	166	0.48	221	0.71	276		
	80	2.875	2.323	2,800	11,500	0.04	66	0.13	132	0.26	198	0.43	264	0.63	330		
	40	2.875	2.469	1,900	8,500	0.04	75	0.12	149	0.24	224	0.40	299	0.59	373		
3	160	3.500	2.624	4,100	15,000	0.03	84	0.11	169	0.22	253	0.37	337	0.54	421		
	80	3.500	2.900	2,600	10,300	0.03	103	0.10	206	0.20	309	0.33	412	0.48	515		
	40	3.500	3.068	1,600	7,400	0.03	115	0.09	230	0.18	346	0.30	461	0.45	576		

Pressure rating based on ASTM A53 grade B or A 103 grade B seamless
Based on Barlows & 55,000 type ASAB93, 4-1966
Medium hydraulic oil 220 SSU @ 120° F

Tubing						Flow Rate (GPM) & Pressure Loss (PSI/FT) @ AVG. Velocity (FPS)											
						Pressure (PSI)		5 FPS		10 FPS		15 FPS		20 FPS		25 FPS	
						Working	Burst	Loss	GPM	Loss	GPM	Loss	GPM	Loss	GPM	Loss	GPM
O.D.	I.D.	Wall															
1/4	0.180	0.035	3850	15,400	1.8	0.4	3.7	0.8	6.0	1.3	7.0	1.6	9.5	2.0			
3/8	0.305	0.035	2580	10,300	0.6	1.1	1.1	2.2	2.4	3.4	3.8	4.6	5.5	6.0			
	0.245	0.065	4750	19,100	0.8	0.7	1.9	1.5	2.4	2.1	4.5	2.9	6.5	3.5			
1/2	0.430	0.035	1930	7,700	0.4	2.4	1.1	4.9	2.0	7.5	4.0	9.7	5.0	12.0			
	0.370	0.065	3580	14,300	0.2	1.8	1.0	3.5	2.0	5.2	3.5	7.1	4.4	8.6			
3/4	0.652	0.049	1800	7,200	0.15	4.8	0.5	9.4	0.9	15.0	1.7	19.0	2.5	24.0			
	0.560	0.095	3400	13,950	0.2	4.0	0.6	8.0	1.6	12.5	2.4	16.5	4.3	20.0			
1	0.870	0.065	1790	7,150	0.1	9.2	0.3	19.0	0.7	28.0	1.2	39.0	1.7	48.0			
	0.760	0.120	3300	13,200	0.13	7.9	0.5	15.5	1.0	23.0	1.4	31.0	2.5	40.0			
1 1/4	1.060	0.095	2080	8,350	0.09	14.0	0.27	27.0	0.5	41.0	1.0	54.0	1.4	70.0			
	0.010	0.120	2650	10,600	0.43	12.0	0.15	24.0	0.3	37.0	0.5	50.0	0.8	62.0			
1 1/2	1.260	0.120	2200	8,800	0.07	21.0	0.25	42.0	0.45	62.0	0.75	82.0	1.4	110.0			
2	1.500	0.250	3480	13,750	0.05	28.0	0.15	54.0	0.32	82.0	0.55	108.0	0.8	140.0			

Unified and American Screw Threads

Size	UNC Coarse Thread Series		UNF Fine Thread Series	
	Threads Per Inch	Tap Drill	Threads Per Inch	Tap Drill
	1 (.073)	64	No. 53	72
2 (.086)	56	No. 50	64	No. 50
3 (.099)	48	No. 47	56	No. 45
4 (.112)	40	No. 43	48	No. 42
5 (.125)	40	No. 38	44	No. 37
6 (.138)	32	No. 36	40	No. 33
8 (.164)	32	No. 29	36	No. 29
10 (.190)	24	No. 25	32	No. 21
12 (.216)	24	No. 16	28	No. 14
1/4	20	No. 7	28	No. 3
5/16	18	F	24	I
3/8	16	5/16	24	Q
7/16	14	U	20	25/64
1/2	13	27/64	20	29/64
9/16	12	31/64	18	33/64
5/8	11	17/32	18	37/64
3/4	10	21/32	16	11/16
7/8	9	49/64	14	13/16
1	8	7/8	12	59/64
1 1/8	7	63/64	12	1 3/64
1 1/4	7	1 7/64	12	1 11/64
1 3/8	6	1 7/32	12	1 19/64
1 1/2	6	1 11/32	12	1 27/64
1 3/4	5	1 9/16		
2	4 1/2	1 25/32		
2 1/4	4 1/2	2 1/32		
2 1/2	4	2 1/4		
2 3/4	4	2 1/2		
3	4	2 3/4		

NUMBER & LETTER DRILL SIZES							
Number Drill				Letter Drill			
No.	Size	No.	Size	No.	Size	Letter	Size
1	0.2280	28	0.1405	55	0.0520	A	0.2340
2	0.2210	29	0.1360	56	0.0465	B	0.2380
3	0.2130	30	0.1285	57	0.0430	C	0.2420
4	0.2090	31	0.1200	58	0.0420	D	0.2460
5	0.2055	32	0.1160	59	0.0410	E	0.2500
6	0.2040	33	0.1130	60	0.0400	F	0.2570
7	0.2010	34	0.1110	61	0.0390	G	0.2610
8	0.1990	35	0.1100	62	0.0380	H	0.2660
9	0.1996	36	0.1065	63	0.0370	I	0.2720
10	0.1935	37	0.1040	64	0.0360	J	0.2770
11	0.1910	38	0.1015	65	0.0350	K	0.2810
12	0.1890	39	0.0995	66	0.0330	L	0.2900
13	0.1850	40	0.0980	67	0.0320	M	0.2950
14	0.1820	41	0.0960	68	0.0310	N	0.3020
15	0.1800	42	0.0935	69	0.0292	O	0.3160
16	0.1770	43	0.0890	70	0.0280	P	0.3230
17	0.1730	44	0.0860	71	0.0260	Q	0.3320
18	0.1695	45	0.0820	72	0.0250	R	0.3390
19	0.1660	46	0.0810	73	0.0240	S	0.3480
20	0.1610	47	0.0785	74	0.0225	T	0.3580
21	0.1590	48	0.0760	75	0.0210	U	0.3680
22	0.1570	49	0.0730	76	0.0200	V	0.3770
23	0.1540	50	0.0700	77	0.0180	W	0.3860
24	0.1520	51	0.0670	78	0.0160	X	0.3970
25	0.1495	52	0.0635	79	0.0145	Y	0.4040
26	0.1470	53	0.0595	80	0.0135	Z	0.4130
27	0.1440	54	0.0550				

Thread Guide

Dash Size	NPT	ORB & JIC	BSPP	ORFS
-02	1/8"-27	5/16"-24	1/8"-28	---
-03	---	3/8"-24	---	---
-04	1/4"-18	7/16"-20	1/4"-19	9/16"-18
-05	---	1/2"-20	---	---
-06	3/8"-18	9/16"-18	3/8"-19	11/16"-16
-08	1/2"-14	3/4"-16	1/2"-14	13/16"-16
-10	---	7/8"-14	5/18"-14	1"-14
-12	3/4"-14	1-1/16"-12	3/4"-14	1-3/16"-12
-14	---	1-3/16"-12	---	---
-16	1"-11.5	1-5/16"-12	1"-11	1-7/16"-12
-20	1-1/4"-11.5	1-5/8"-12	1-1/4"-11	1-11/16"-12
-24	1-1/2"-11.5	1-7/8"-12	1-1/2"-11	2"-12
-32	2"-11.5	2-1/2"-12	2"-11	---

Fluid Powers Formulae & Useful Information

Fluid Power Formulae:

Torque and horsepower relations:

$$T = HP \times 5252 \div RPM$$

$$HP = T \times RPM \div 5252$$

$$RPM = HP \times 5252 \div T$$

Torque values are in foot pounds.

Hydraulic power flowing through pipe:

$$HP = PSI \times GPM \div 1714$$

HP = horsepower

PSI = gage pressure in lbs/sq. inch

GPM = flow in gallons per minute

Burst pressure of pipe and tube:

$$P = 2t \times S \div O$$

P = burst pressure in lbs/sq. inch

t = wall thickness of pipe or tube

S = tensile strength of pipe mat'l in lbs/sq. inch

O = outside diameter of pipe or tube in inches

Velocity of oil flow in hydraulic lines:

$$V = GPM \times 0.3208 \div A$$

V = velocity in feet per second

GPM = oil flow in gallons per minute

A = inside area of line in square inches

Rules of Thumb For Hydraulic Systems:

- a) Hydraulic Line Velocity: Suction 2 to 4 FPS
Return 6 to 10 FPS
Pressure 15 to 20 FPS

b) One H.P. is required for every one GPM @ 1500 PSI

c) Power required @ idle is approximately 5% of pump maximum rated pressure.

d) Heat generated in a system: BTU / Hour = 1.5 x PSI x GPM

e) Size of heat exchanger is 25% of input H.P.

f) Heat radiated from steel reservoir:

$$H.P. = .001 \times \Delta T \times A$$

Where A = area in square feet of tank surface

ΔT = difference between surface temperature and ambient temperature.

g) The size of a reservoir is 2-1/2 times the flow rate of the system.

Density

Common Metals (Pounds / Cubic Inch)	
Material	Weight
Aluminum	.0975
Brass: 80C.,20Z	.3105
Chromium	.2502
Copper	.3210
Gold	.6969
Iron, Cast	.254/.279
Iron, Wrought	.282/.285
Lead	.4096
Magnesium	.0628
Mercury (68° F)	.4892
Nickel	.3178
Silver	.376/.380
Steel, Carbon	.283/.284
Tin	.2633
Titanium	.1621
Tungsten	.672/.690
Vanadium	.2022
Zinc	.254/.259

Miscellaneous Substances (Pounds / Cubic Foot)	
Material	Weight
Asphaltum	87
Brick, Common	112
Brick, Fire	143
Brickwork, in mortar	100
Brickwork, in cement	112
Charcoal	25
Coal, anthracite	94
Coal, bituminous	81
Concrete	137
Earth, loose	75
Earth, rammed	100
Granite	168
Gravel	109
Gypsum	150
Limestone	162
Masonry	150
Sandstone	143
Slate	175

American Woods (Pounds / Cubic Foot)		
Material	Green	Airdry
Alder, red	46	28
Birch	57	44
Birch, paper	50	38
Cedar, western red	27	23
Cedar, eastern red	37	33
Cedar, northern white	28	22
Douglas Fir, coast reg.	38	34
Douglas Fir, rocky mt. Reg.	35	30
Hemlock, eastern	50	28
Hemlock, western	41	29
Oak, red	64	44
Oak, white	63	47
Pine, western white	35	27
Poplar, yellow	38	28
Redwood	50	28
Spruce, eastern	34	28
Spruce, engelmann	39	23
Walnut, black	58	38

Conversion Factors

Equivalent Units		
1 Inch (in)	=	25.4 Millimeters (mm)
1 Kilogram (kg)	=	2.2064 Pounds (lb)
1 Liter (l)	=	61.026 Cubic inches
1 Gallon (U.S.)	=	3.79 Liters (l)
1 Pound (lb)	=	4.448 Newton
1 Horsepower (HP)	=	550 Foot Pounds per Second
1 Ton (metric)	=	1000 Kilograms (kg)
1 Foot (ft)	=	12 Inches (in)
1 Yard (yd)	=	3 Feet (ft)
1 Mile	=	1760 Yards (yd)
1 Mile	=	8 Furlong
1 league	=	3 Miles
1 fathom	=	6 Feet (ft)
1 rod	=	5.50 Yards (yd)
1 pint	=	4 Gills
1 quart	=	2 Pints
1 Gallon (British)	=	4 Quarts
1 are	=	100 Square Meters
1 Cubic Foot	=	12 Board Feet

Metric Prefixes




Prefix	Symbol	Multiplier
tera	T	1,000,000,000,000
giga	G	1,000,000,000
mega	M	1,000,000
kilo	k	1,000
hecto	h	100
deka	da	10
		1
deci	d	.1
centi	c	.01
milli	m	.001
micro	μ	.000001
nano	n	.000000001
pico	p	.000000000001

Conversion Factors						
Kilowatts	x	1.341	=	HP	x	.7457 = Kilowatts
Kilograms	x	2.205	=	Pounds	x	.4536 = Kilograms
Liters	x	.2642	=	Gallons (US)	x	3.785 = Liters
Pascals (Newton/M ²)	x	1.45x10 ⁻⁴	=	PSI	x	6897 = Pascals (Newton/M ²)
Dynes (Gram-CM/Sec ²)	x	2.248x10 ⁻⁶	=	Pounds	x	4.448x10 ⁵ = Dynes (Gram-CM/Sec ²)
Joules (Newton Meter)	x	.7376	=	Foot pounds	x	1.356 = Joules (Newton Meter)
Millimeter	x	.0394	=	Inches	x	25.4 = Millimeter
Newton (Kg M/Sec ²)	x	.2248	=	Pounds	x	4448 = Newton (Kg M/Sec ²)
Tons	x	2000	=	Pounds	x	5x10 ⁻⁴ = Tons
Tons-Long	x	2240	=	Pounds	x	4.464x10 ⁻⁴ = Tons-Long
Tons-Metric	x	2205	=	Pounds	x	4.535x10 ⁻⁴ = Tons-Metric
Atmosphers	x	14.7	=	PSI	x	.06804 = Atmosphers
Bars	x	14.5	=	PSI	x	.08695 = Bars
B.T.U.	x	778.2	=	Foot Pounds	x	.001285 = B.T.U.
Calories (Grams)	x	.003966	=	B.T.U.	x	252.2 = Calories (Grams)
Cubic Inch	x	.004329	=	Gallons	x	231 = Cubic Inch
Foot Pounds / Sec	x	.001818	=	H.P.	x	550 = Foot Pounds / Sec
BTU / Min	x	.02358	=	H.P.	x	42.41 = BTU / Min
Miles	x	1760	=	Yards	x	5.68x10 ⁻⁴ = Miles
Miles-Nautical	x	2027	=	Yards	x	4.933x10 ⁻⁴ = Miles-Nautical
Chains	x	22	=	Yards	x	.04545 = Chains
Cords	x	128	=	Cubic Foot	x	.007812 = Cords

Recommended Bolt Torque Values

For SAE Grade 2, Grade 5, Grade 8 cap screws & bolts.
 Torques listed are approximate suggested values only on parts carrying residual oil of manufacture.
 These values do not apply to plated or otherwise lubricated parts.
 Torque-tension relationship is affected by lubrication, surface finish, thread fit, plating, lock washers, etc.
 For plated cap screws and bolts, use only 75% of torque values listed.

Bolt Size	SAE Grade 2		SAE Grade 5		SAE Grade 8	
	Load	Torque	Load	Torque	Load	Torque
1/4"-20	1320 lbs.	5 ft. lbs.	2020 lbs.	8 ft. lbs.	2860 lbs.	12 ft. lbs.
1/4"-28	1500 lbs.	6 ft. lbs.	2320 lbs.	10 ft. lbs.	3280 lbs.	14 ft. lbs.
5/16"-18	2160 lbs.	11 ft. lbs.	3340 lbs.	17 ft. lbs.	4720 lbs.	24 ft. lbs.
5/16"-24	2400 lbs.	13 ft. lbs.	3700 lbs.	19 ft. lbs.	5220 lbs.	27 ft. lbs.
3/8"-16	3200 lbs.	20 ft. lbs.	4940 lbs.	30 ft. lbs.	7000 lbs.	45 ft. lbs.
3/8"-24	3620 lbs.	22 ft. lbs.	5600 lbs.	35 ft. lbs.	7900 lbs.	50 ft. lbs.
7/16"-14	4380 lbs.	30 ft. lbs.	6800 lbs.	50 ft. lbs.	9550 lbs.	70 ft. lbs.
7/16"-20	4900 lbs.	35 ft. lbs.	7550 lbs.	55 ft. lbs.	10700 lbs.	78 ft. lbs.
1/2"-13	5840 lbs.	50 ft. lbs.	9050 lbs.	75 ft. lbs.	12750 lbs.	105 ft. lbs.
1/2"-20	6600 lbs.	55 ft. lbs.	10700 lbs.	90 ft. lbs.	14400 lbs.	120 ft. lbs.
5/8"-11	8800 lbs.	90 ft. lbs.	14400 lbs.	150 ft. lbs.	20350 lbs.	210 ft. lbs.
5/8"-18	10000 lbs.	105 ft. lbs.	16950 lbs.	180 ft. lbs.	23000 lbs.	240 ft. lbs.
3/4"-10	13000 lbs.	160 ft. lbs.	21300 lbs.	270 ft. lbs.	30100 lbs.	375 ft. lbs.
3/4"-16	14550 lbs.	180 ft. lbs.	23800 lbs.	300 ft. lbs.	33600 lbs.	420 ft. lbs.
7/8"-9	9700 lbs.	145 ft. lbs.	27000 lbs.	395 ft. lbs.	41600 lbs.	610 ft. lbs.
7/8"-14	10700 lbs.	155 ft. lbs.	29800 lbs.	435 ft. lbs.	45800 lbs.	675 ft. lbs.
1"-8	12700 lbs.	210 ft. lbs.	35500 lbs.	590 ft. lbs.	54500 lbs.	910 ft. lbs.
1"-12	13900 lbs.	230 ft. lbs.	38800 lbs.	650 ft. lbs.	59700 lbs.	1000 ft. lbs.
1"-14	14300 lbs.	240 ft. lbs.	39700 lbs.	655 ft. lbs.	61000 lbs.	1015 ft. lbs.

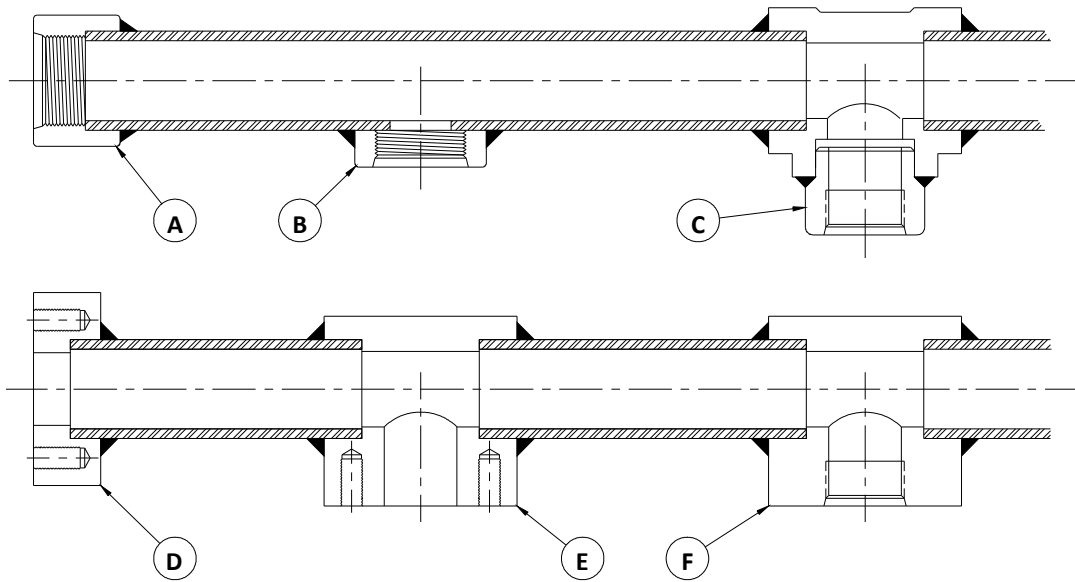
Grade	Markings	Material	Bolt & Screw Size	Proof Load (psi)	Tensile Strength min psi
2		Low Carbon Steel	1/4" thru 3/4" Over 3/4" thru 1-1/2"	55,000 33,000	74,000 60,000
5		Medium Carbon Steel Quenched & Tempered	1/4" thru 1" Over 1" thru 1-1/2"	85,000 74,000	120,000 105,000
8		Medium Carbon Alloy Steel Quenched & Tempered	1/4" thru 1-1/2"	120,000	150,000

Decimal Equivalents of Parts of an Inch in Imperial & Metric

<i>Fraction</i>	<i>Inches</i>	<i>Millimeters</i>
1/64	0.0156	0.3962
1/32	0.0313	0.7950
3/64	0.0469	1.1913
1/16	0.0625	1.5875
5/64	0.0781	1.9837
3/32	0.0938	2.3825
7/64	0.1094	2.7788
1/8	0.1250	3.1750
9/64	0.1406	3.5712
5/32	0.1563	3.9700
11/64	0.1719	4.3663
3/16	0.1875	4.7625
13/64	0.2031	5.1587
7/32	0.2188	5.5575
15/64	0.2344	5.9538
1/4	0.2500	6.3500
17/64	0.2656	6.7462
9/32	0.2813	7.1450
19/64	0.2969	7.5413
5/16	0.3125	7.9375
21/64	0.3281	8.3337
11/32	0.3438	8.7325
23/64	0.3594	9.1288
3/8	0.3750	9.5250
25/64	0.3906	9.9212
13/32	0.4063	10.3200
27/64	0.4219	10.7163
7/16	0.4375	11.1125
29/64	0.4531	11.5087
15/32	0.4688	11.9075
31/64	0.4844	12.3038
1/2	0.5000	12.7000

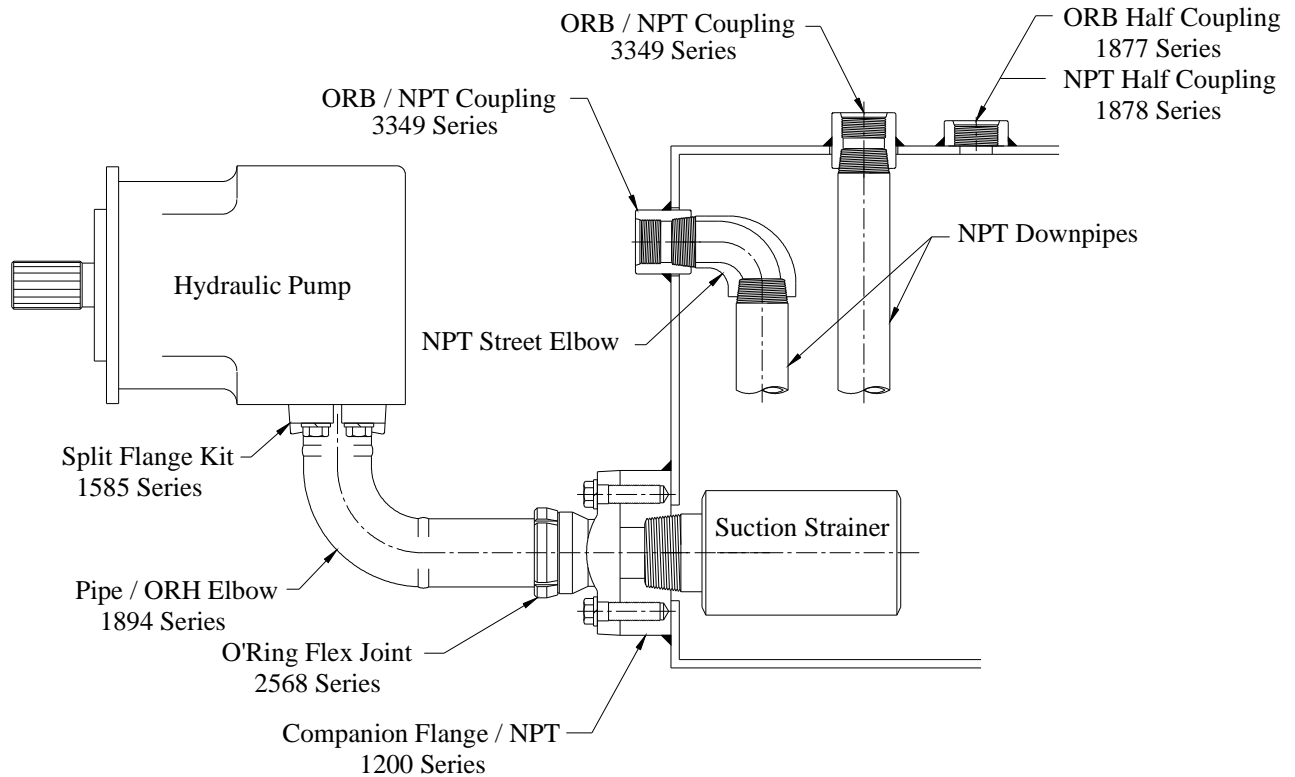
<i>Fraction</i>	<i>Inches</i>	<i>Millimeters</i>
33/64	0.5156	13.0962
17/32	0.5313	13.4950
35/64	0.5469	13.8913
9/16	0.5625	14.2875
37/64	0.5781	14.6837
19/32	0.5938	15.0825
39/64	0.6094	15.4788
5/8	0.6250	15.8750
41/64	0.6406	16.2712
21/32	0.6563	16.6700
43/64	0.6719	17.0663
11/16	0.6875	17.4625
45/64	0.7031	17.8587
23/32	0.7188	18.2575
47/64	0.7344	18.6538
3/4	0.7500	19.0500
49/64	0.7656	19.4462
25/32	0.7813	19.8450
51/64	0.7969	20.2413
13/16	0.8125	20.6375
53/64	0.8281	21.0337
27/32	0.8438	21.4325
55/64	0.8594	21.8288
7/8	0.8750	22.2250
57/64	0.8906	22.6212
29/32	0.9063	23.0200
59/64	0.9219	23.4163
15/16	0.9375	23.8125
61/64	0.9531	24.2087
31/32	0.9688	24.6075
63/64	0.9844	25.0038
1	1.0000	25.4000

Long Run Header Options



- A** *Threaded coupling, welded to the end of a pipe run in two styles, 1805 series, O' Ring Boss (ORB) to Socket Weld Pipe and 1809 series, National Pipe Thread (NPT) to Socket Weld Pipe.*
- B** *Weld-O-Let. , O' Ring Boss (2624 series) and National Pipe Thread (2625 series)*
This is an easy way to get a small port on a large pipe. Simply drill a hole in the side of your pipe and weld the Thread-O-Let in place. Disadvantage, too many too close will cause the pipe to warp due to welding.
- C** *ORB weld insert. 3348 Series*
An economical way to get an ORB port on your pipe run. This style fitting can be used in any socket weld pipe fitting such as elbows, tees, and crosses.
- D** *Companion Flange to Socket Weld Pipe. 1211 series in Code 61 and 1851 series in Code 62.*
When you want to terminate a pipe run for future expansion or to continue on in 4-bolt flange technology.
- E** *Socket Weld Pipe to 4-Bolt Flange Tees. 1865 series in Code 61 and 1879 series in Code 62*
When 4-bolt flanges are required on a pipe run. Simply cut the pipe and weld in place. Helps to eliminate pipe distortion so common with Weld-O-Lets.
- F** *Socket Weld Pipe to ORB Tees. 2058 series*
Used the same way as item E. A perfect way to get an ORB into your pipe run. Most commonly used when smaller hoses are needed off of a pipe run.

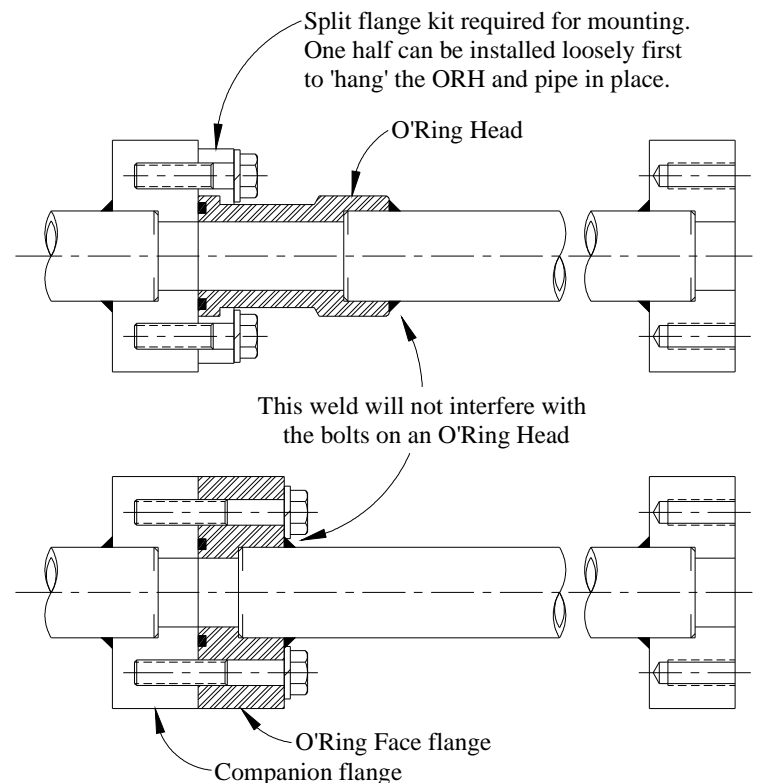
Tank Port Options



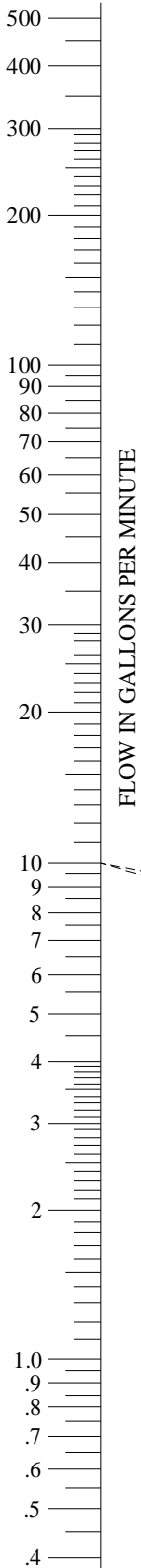
O'Ring Head versus O'Ring Face

In order to join two pieces of pipe using 4-bolt flange technology, you need two flanges. The first being a flat face flange with tapped bolt holes (companion face flange) and the second being a flange with an o'ring groove (o'ring flange). The o'ring flanges come in two styles, O'Ring Face (ORF) and O'Ring Head (ORH). The O'Ring Head style flange requires a split flange kit for mounting while the O'Ring Face flange bolts directly in place. The O'Ring Head (ORH) flange is a much superior flange and has many advantages over the O'Ring Face (ORF) flange.

- On socket weld pipe, as shown, the weld is moved farther away from the bolts, eliminating the need to grind welds in order to install the bolts when too much weld is put in place.
- There is no orientation required when welding in place as the flange itself is round.
- When installing your welded pipe together, one half of the split flange kit can be loosely installed to "hang" the pipe assembly in place as you tighten the bolts.
- The O'Ring Head style flange is the only way a larger pipe can be welded to a smaller flange as the socket for the pipe is well away from the bolt pattern of the flange and will not interfere.



Flow Capacities of Hydraulic Lines at Recommended Velocities



This nomograph will aid you in selecting the correct line size when a straight edge is placed from the left column (GPM) to the recommended velocity in the right hand column. The example shows that with 10 gallons per minute a either a 5/8" or 3/4" I.D. line will give you a flow velocity within the recommended range for pressure lines.

$$\text{Area in Square Inches} = \frac{0.321 \times \text{Flow (G.P.M.)}}{\text{Velocity in Feet per Second}}$$

Recommendations are for hydraulic oils having a maximum viscosity of 315 S.S.U. at 100° F. And operating temperatures between 60° F and 155° F

FLOW IN GALLONS PER MINUTE

INSIDE DIAMETER OF LINE IN INCHES

INSIDE AREA OF LINE IN SQUARE INCHES

VELOCITY IN FEET PER SECOND

RECOMMENDED VELOCITY RANGE FOR INTAKE LINES

RECOMMENDED VELOCITY RANGE FOR PRESSURE LINES



Code 61 4-Bolt Flanges

O'Ring Boss

National Pipe Thread

Socket Weld Pipe

Socket Weld Tube

Butt Weld Pipe

Cover Plates

Union Plates

Gage Blocks

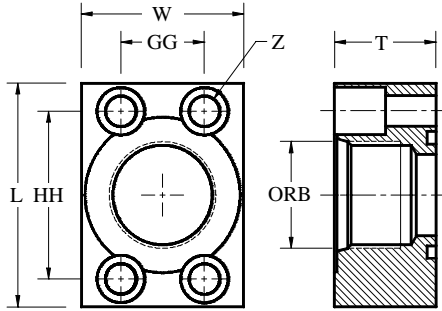
Transitions

Blanking Plates



O'Ring Boss (ORB) / Code 61 Flange

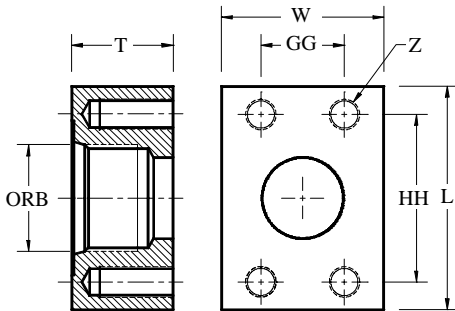
ORB / Code 61 O'Ring Face Flange



Socket Head Mounting Kit Supplied

Code 61 Part No.	ORB Size	Flange Size	Z	GG	HH	W	L	T
1203-08-08	#8 (3/4"-16)	1/2"	11/32	0.688	1.500	1.50	2.19	1.00
1203-12-12	#12 (1-1/16"-12)	3/4"	13/32	0.875	1.875	1.75	2.63	1.00
1203-12-16	#12 (1-1/16"-12)	1.00"	13/32	1.031	2.062	2.00	2.81	1.00
1203-16-16	#16 (1-5/16"-12)	1.00"	13/32	1.031	2.062	2.00	2.81	1.00
1203-16-20	#16 (1-5/16"-12)	1.25"	15/32	1.188	2.312	2.50	3.13	1.25
1203-20-20	#20 (1-5/8"-12)	1.25"	15/32	1.188	2.312	2.50	3.13	1.25
1203-20-24	#20 (1-5/8"-12)	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1203-24-24	#24 (1-7/8"-12)	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1203-24-32	#24 (1-7/8"-12)	2.00"	17/32	1.688	3.062	3.50	4.00	1.50
1203-32-32	#32 (2.50"-12)	2.00"	17/32	1.688	3.062	3.50	4.00	1.50
1203-32-40	#32 (2.50"-12)	2.50"	17/32	2.00	3.500	4.00	4.50	1.50

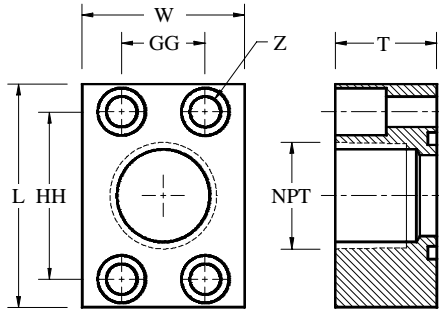
ORB / Code 61 Companion Face Flange



Code 61 Part No.	ORB Size	Flange Size	Z	GG	HH	W	L	T
1202-08-08	#8 (3/4"-16)	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.00
1202-12-12	#12 (1-1/16"-12)	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.00
1202-12-16	#12 (1-1/16"-12)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	1.00
1202-16-16	#16 (1-5/16"-12)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	1.00
1202-16-20	#16 (1-5/16"-12)	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
1202-20-20	#20 (1-5/8"-12)	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
1202-20-24	#20 (1-5/8"-12)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1202-24-24	#24 (1-7/8"-12)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1202-24-32	#24 (1-7/8"-12)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50
1202-32-32	#32 (2.50"-12)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50
1202-32-40	#32 (2.50"-12)	2.50"	1/2"-13	2.00	3.500	4.00	4.50	1.50

National Pipe Thread (NPT) / Code 61 Flange

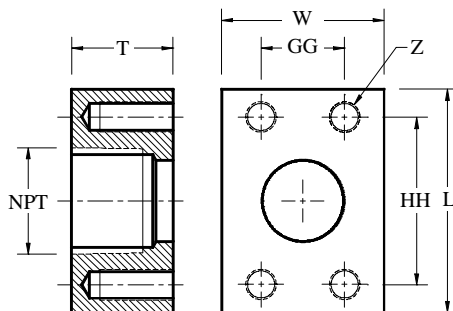
NPT / Code 61 O'Ring Face Flange



Socket Head Mounting Kit Supplied

Code 61 Part No.	NPT Size	Flange Size	Z	GG	HH	W	L	T
1201-08-08	1/2"-14	1/2"	11/32	0.688	1.500	1.50	2.19	1.00
1201-12-12	3/4"-14	3/4"	13/32	0.875	1.875	1.75	2.63	1.00
1201-12-16	3/4"-14	1.00"	13/32	1.031	2.062	2.00	2.81	1.00
1201-16-16	1"-11.5	1.00"	13/32	1.031	2.062	2.00	2.81	1.00
1201-16-20	1"-11.5	1.25"	15/32	1.188	2.312	2.50	3.13	1.25
1201-20-20	1.25"-11.5	1.25"	15/32	1.188	2.312	2.50	3.13	1.25
1201-20-24	1.25"-11.5	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1201-24-24	1.50"-11.5	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1201-24-32	1.50"-11.5	2.00"	17/32	1.688	3.062	3.50	4.00	1.50
1201-32-32	2.00"-11.5	2.00"	17/32	1.688	3.062	3.50	4.00	1.50
1201-32-40	2.00"-11.5	2.50"	17/32	2.000	3.500	4.00	4.50	1.50
1201-40-40	2.50"-8	2.50"	17/32	2.000	3.500	4.00	4.50	1.50
1201-40-48	2.50"-8	3.00"	21/32	2.438	4.188	5.00	5.31	1.50
1201-48-48	3.00"-8	3.00"	21/32	2.438	4.188	5.00	5.31	1.50
1201-48-56	3.00"-8	3.50"	21/32	2.750	4.750	5.00	6.00	1.50
1201-56-56	3.50"-8	3.50"	21/32	2.750	4.750	5.00	6.00	1.50
1201-56-64	3.50"-8	4.00"	21/32	3.062	5.125	6.00	6.38	1.50
1201-64-64	4.00"-8	4.00"	21/32	3.062	5.125	6.00	6.38	1.50

NPT / Code 61 Companion Face Flange

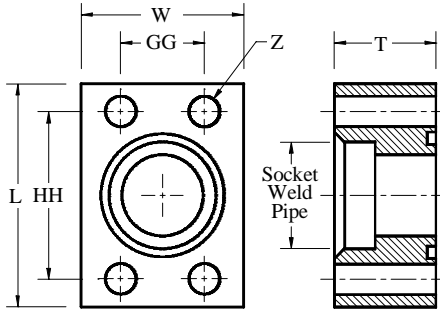


Code 61 Part No.	NPT Size	Flange Size	Z	GG	HH	W	L	T
1200-08-08	1/2"-14	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.00
1200-12-12	3/4"-14	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.00
1200-12-16	3/4"-14	1.00"	3/8"-16	1.031	2.062	2.00	2.81	1.00
1200-16-16	1"-11.5	1.00"	3/8"-16	1.031	2.062	2.00	2.81	1.00
1200-16-20	1"-11.5	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
1200-20-20	1.25"-11.5	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
1200-20-24	1.25"-11.5	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1200-24-24	1.50"-11.5	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1200-24-32	1.50"-11.5	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50
1200-32-32	2.00"-11.5	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50
1200-32-40	2.00"-11.5	2.50"	1/2"-13	2.000	3.500	4.00	4.50	1.50
1200-40-40	2.50"-8	2.50"	1/2"-13	2.000	3.500	4.00	4.50	1.50
1200-40-48	2.50"-8	3.00"	5/8"-11	2.438	4.188	5.00	5.31	1.50
1200-48-48	3.00"-8	3.00"	5/8"-11	2.438	4.188	5.00	5.31	1.50
1200-48-56	3.00"-8	3.50"	5/8"-11	2.750	4.750	5.00	6.00	1.50
1200-56-56	3.50"-8	3.50"	5/8"-11	2.750	4.750	5.00	6.00	1.50
1200-56-64	3.50"-8	4.00"	5/8"-11	3.062	5.125	6.00	6.38	1.50
1200-64-64	4.00"-8	4.00"	5/8"-11	3.062	5.125	6.00	6.38	1.50

Socket Weld Pipe (SWP) / Code 61 Flange

SWP / Code 61 O'Ring Face Flange

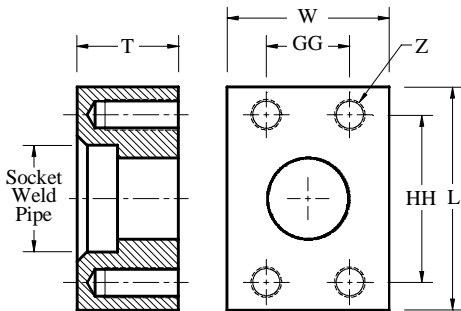
Code 61 Part No.	SWP Size	Flange Size	Z	GG	HH	W	L	T
1210-08-08	1/2" (0.845)	1/2"	11/32	0.688	1.500	1.50	2.19	1.00
1210-12-12	3/4" (1.055)	3/4"	13/32	0.875	1.875	1.75	2.63	1.00
1210-12-16	3/4" (1.055)	1.00"	13/32	1.031	2.062	2.00	2.81	1.00
1210-16-16	1.00" (1.320)	1.00"	13/32	1.031	2.062	2.00	2.81	1.00
1210-16-20	1.00" (1.320)	1.25"	15/32	1.188	2.312	2.50	3.13	1.25
1210-20-20	1.25" (1.670)	1.25"	15/32	1.188	2.312	2.50	3.13	1.25
1210-20-24	1.25" (1.670)	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1210-24-24	1.50" (1.910)	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1210-24-32	1.50" (1.910)	2.00"	17/32	1.688	3.062	3.50	4.00	1.50
1210-32-32	2.00" (2.385)	2.00"	17/32	1.688	3.062	3.50	4.00	1.50
1210-32-40	2.00" (2.385)	2.50"	17/32	2.000	3.500	4.00	4.50	1.50
1210-40-40	2.50" (2.888)	2.50"	17/32	2.000	3.500	4.00	4.50	1.50
1210-40-48	2.50" (2.888)	3.00"	21/32	2.438	4.188	5.00	5.31	1.50
1210-48-48	3.00" (3.510)	3.00"	21/32	2.438	4.188	5.00	5.31	1.50
1210-48-56	3.00" (3.510)	3.50"	21/32	2.750	4.750	5.00	6.00	1.50
1210-56-56	3.50" (4.010)	3.50"	21/32	2.750	4.750	5.00	6.00	1.50
1210-56-64	3.50" (4.010)	4.00"	21/32	3.062	5.125	6.00	6.38	1.50
1210-64-64	4.00" (4.510)	4.00"	21/32	3.062	5.125	6.00	6.38	1.50



Hex Head Mounting Kit Supplied

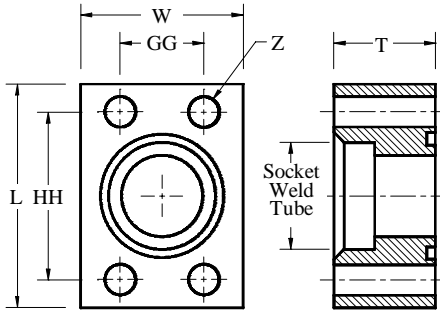
SWP / Code 61 Companion Face Flange

Code 61 Part No.	SWP Size	Flange Size	Z	GG	HH	W	L	T
1211-08-08	1/2" (0.845)	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.00
1211-12-12	3/4" (1.055)	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.00
1211-12-16	3/4" (1.055)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	1.00
1211-16-16	1.00" (1.320)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	1.00
1211-16-20	1.00" (1.320)	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
1211-20-20	1.25" (1.670)	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
1211-20-24	1.25" (1.670)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1211-24-24	1.50" (1.910)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1211-24-32	1.50" (1.910)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50
1211-32-32	2.00" (2.385)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50
1211-32-40	2.00" (2.385)	2.50"	1/2"-13	2.000	3.500	4.00	4.50	1.50
1211-40-40	2.50" (2.888)	2.50"	1/2"-13	2.000	3.500	4.00	4.50	1.50
1211-40-48	2.50" (2.888)	3.00"	5/8"-11	2.438	4.188	5.00	5.31	1.50
1211-48-48	3.00" (3.510)	3.00"	5/8"-11	2.438	4.188	5.00	5.31	1.50
1211-48-56	3.00" (3.510)	3.50"	5/8"-11	2.750	4.750	5.00	6.00	1.50
1211-56-56	3.50" (4.010)	3.50"	5/8"-11	2.750	4.750	5.00	6.00	1.50
1211-56-64	3.50" (4.010)	4.00"	5/8"-11	3.062	5.125	6.00	6.38	1.50
1211-64-64	4.00" (4.510)	4.00"	5/8"-11	3.062	5.125	6.00	6.38	1.50



Socket Weld Tube (SWT) / Code 61 Flange

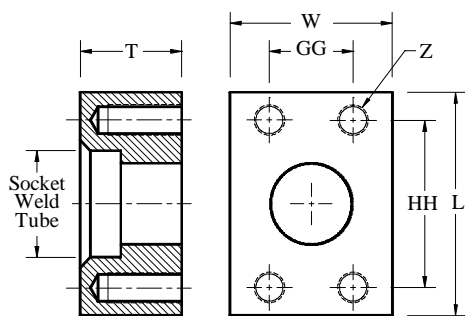
SWT / Code 61 O'Ring Face Flange



Hex Head Mounting Kit Supplied

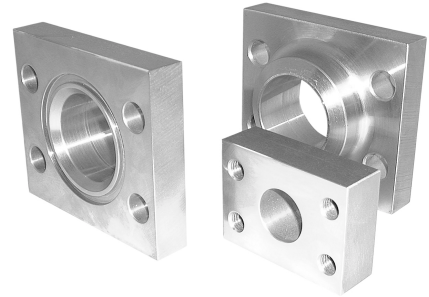
Code 61 Part No.	SWT Size	Flange Size	Z	GG	HH	W	L	T
1208-08-08	1/2" (0.505)	1/2"	11/32	0.688	1.500	1.50	2.19	1.00
1208-10-08	5/8" (0.630)	1/2"	11/32	0.688	1.500	1.50	2.19	1.00
1208-12-12	3/4" (0.755)	3/4"	13/32	0.875	1.875	1.75	2.63	1.00
1208-16-12	1.00" (1.005)	3/4"	13/32	0.875	1.875	1.75	2.63	1.00
1208-16-16	1.00" (1.005)	1.00"	13/32	1.031	2.062	2.00	2.81	1.00
1208-20-16	1.25" (1.255)	1.00"	13/32	1.031	2.062	2.00	2.81	1.00
1208-20-20	1.25" (1.255)	1.25"	15/32	1.188	2.312	2.50	3.13	1.25
1208-24-20	1.50" (1.510)	1.25"	15/32	1.188	2.312	2.50	3.13	1.25
1208-24-24	1.50" (1.510)	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1208-28-24	1.75" (1.760)	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1208-32-24	2.00" (2.010)	1.50"	17/32	1.406	2.750	3.00	3.69	1.25
1208-32-32	2.00" (2.010)	2.00"	17/32	1.688	3.062	3.50	4.00	1.50

SWT / Code 61 Companion Face Flange

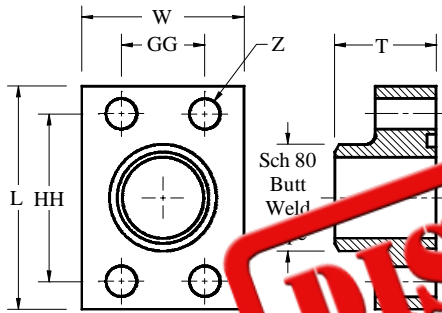


Code 61 Part No.	SWT Size	Flange Size	Z	GG	HH	W	L	T
1209-08-08	1/2" (0.505)	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.00
1209-10-08	5/8" (0.630)	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.00
1209-12-12	3/4" (0.755)	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.00
1209-16-12	1.00" (1.005)	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.00
1209-16-16	1.00" (1.005)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	1.00
1209-20-16	1.25" (1.255)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	1.00
1209-20-20	1.25" (1.255)	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
1209-24-20	1.50" (1.510)	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
1209-24-24	1.50" (1.510)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1209-28-24	1.75" (1.760)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1209-32-24	2.00" (2.010)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
1209-32-32	2.00" (2.010)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50

Sch 80 Butt Weld Pipe (BWP) / Code 61 Flange



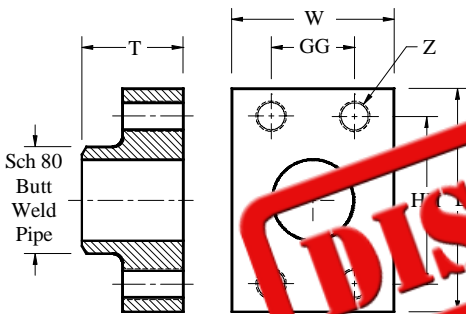
Sch 80 Butt Weld Pipe / Code 61 Hex Head Mounting Face Flange



Hex Head Mounting Face Flange

Code 61 Part No.	BWP Size	Flange Size	Z	GG	HH	W	L	T
2313-08-08	1/2" Sch 80	1/2"	5/8"-8	0.875	1.500	1.50	2.19	1.00
2313-12-12	3/4" Sch 80	3/4"	3/8"-16	0.875	1.750	1.75	2.63	1.00
2313-16-16	1.00" Sch 80	1.00"	3/8"-16	1.000	2.062	2.00	2.81	1.00
2313-20-20	1.25" Sch 80	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
2313-24-24	1.50" Sch 80	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
2313-32-32	2.00" Sch 80	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50
2313-40-40	2.50" Sch 80	2.50"	1/2"-13	2.000	3.500	4.00	4.50	1.50
2313-48-48	3.00" Sch 80	3.00"	5/8"-11	2.438	4.188	5.00	5.31	1.50
2313-56-56	3.50" Sch 80	3.50"	5/8"-11	2.750	4.750	5.00	6.00	1.50
2313-64-64	4.00" Sch 80	4.00"	5/8"-11	3.062	5.125	6.00	6.38	1.50

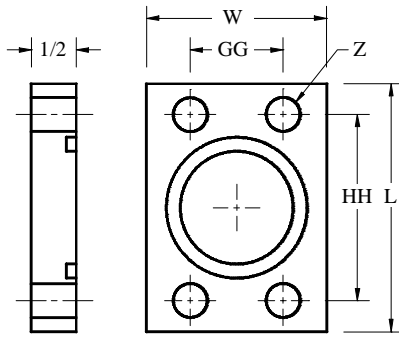
Sch 80 Butt Weld Pipe / Code 61 Common Face Flange



Code 61 Part No.	BWP Size	Flange Size	Z	GG	HH	W	L	T
2314-08-08	1/2" Sch 80	1/2"	5/8"-8	0.875	1.500	1.50	2.19	1.00
2314-12-12	3/4" Sch 80	3/4"	3/8"-16	0.875	1.750	1.75	2.63	1.00
2314-16-16	1.00" Sch 80	1.00"	3/8"-16	1.000	2.062	2.00	2.81	1.00
2314-20-20	1.25" Sch 80	1.25"	7/16"-14	1.188	2.312	2.50	3.13	1.25
2314-24-24	1.50" Sch 80	1.50"	1/2"-13	1.406	2.750	3.00	3.69	1.25
2314-32-32	2.00" Sch 80	2.00"	1/2"-13	1.688	3.062	3.50	4.00	1.50
2314-40-40	2.50" Sch 80	2.50"	1/2"-13	2.000	3.500	4.00	4.50	1.50
2314-48-48	3.00" Sch 80	3.00"	5/8"-11	2.438	4.188	5.00	5.31	1.50
2314-56-56	3.50" Sch 80	3.50"	5/8"-11	2.750	4.750	5.00	6.00	1.50
2314-64-64	4.00" Sch 80	4.00"	5/8"-11	3.062	5.125	6.00	6.38	1.50

Code 61 Blanking & Cover Plates

Code 61 O'Ring Face Blanking Plates

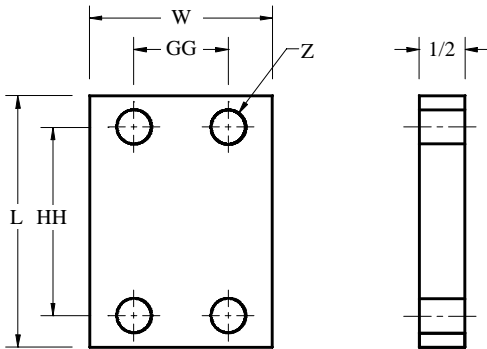


Hex Head Mounting Kit Supplied
c/w O'Ring

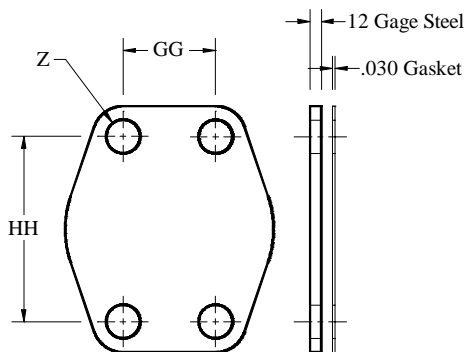
Code 61 Part No.	Flange Size	Z	GG	HH	W	L
3365-12	3/4"	13/32	0.875	1.875	1.75	2.63
3365-16	1.00"	13/32	1.031	2.062	2.00	2.81
3365-20	1.25"	15/32	1.188	2.312	2.50	3.13
3365-24	1.50"	17/32	1.406	2.750	3.00	3.69
3365-32	2.00"	17/32	1.688	3.062	3.50	4.00
3365-40	2.50"	17/32	2.000	3.500	4.00	4.50
3365-48	3.00"	21/32	2.438	4.188	5.00	5.31
3365-56	3.50"	21/32	2.750	4.750	5.00	6.00
3365-64	4.00"	21/32	3.062	5.125	6.00	6.38

For O'Ring Head Style Blanking Plugs, See Part No. 1830-Size

Code 61 Flat Face Blanking Plates



Code 61 Part No.	Flange Size	Z	GG	HH	W	L
1205-12	3/4"	13/32	0.875	1.875	1.75	2.63
1205-16	1.00"	13/32	1.031	2.062	2.00	2.81
1205-20	1.25"	15/32	1.188	2.312	2.50	3.13
1205-24	1.50"	17/32	1.406	2.750	3.00	3.69
1205-32	2.00"	17/32	1.688	3.062	3.50	4.00
1205-40	2.50"	17/32	2.000	3.500	4.00	4.50
1205-48	3.00"	21/32	2.438	4.188	5.00	5.31
1205-56	3.50"	21/32	2.750	4.750	5.00	6.00
1205-64	4.00"	21/32	3.062	5.125	6.00	6.38

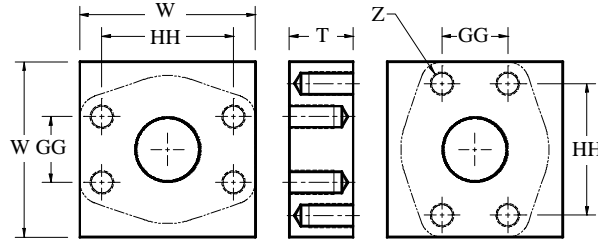


Hex Head Mounting Kit Supplied

Code 61 Protective Cover Plates

Code 61 Part No.	Flange Size	Z	GG	HH
3273-12	3/4"	13/32	0.875	1.875
3273-16	1.00"	13/32	1.031	2.062
3273-20	1.25"	15/32	1.188	2.312
3273-24	1.50"	17/32	1.406	2.750
3273-32	2.00"	17/32	1.688	3.062
3273-40	2.50"	17/32	2.000	3.500
3273-48	3.00"	21/32	2.438	4.188
3273-56	3.50"	21/32	2.750	4.750
3273-64	4.00"	21/32	3.062	5.125

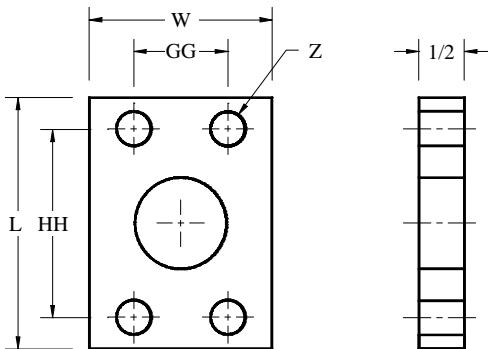
Code 61 Union Plates



Code 61 Companion Union Plates

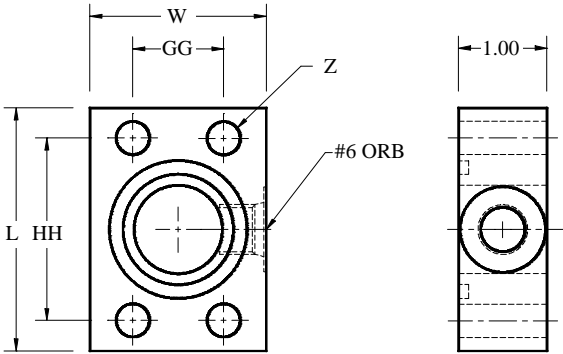
Code 61 Part No.	Flange Size	Z	GG	HH	W	T
3367-12-12	3/4"	3/8"-16	0.875	1.875	2.50	1.00
3367-16-16	1.00"	3/8"-16	1.031	2.062	2.75	1.00
3367-20-20	1.25"	7/16"-14	1.188	2.312	3.25	1.25
3367-24-24	1.50"	1/2"-13	1.406	2.750	3.75	1.50
3367-32-32	2.00"	1/2"-13	1.688	3.062	4.00	1.50
3367-40-40	2.50"	1/2"-13	2.000	3.500	4.50	1.50
3367-48-48	3.00"	5/8"-11	2.438	4.188	5.38	1.50
3367-56-56	3.50"	5/8"-11	2.750	4.750	6.00	1.50
3367-64-64	4.00"	5/8"-11	3.062	5.125	6.50	1.50

Code 61 Sandwich Union Plates



Code 61 Part No.	Flange Size	Z	GG	HH	W	L
1207-12	3/4"	13/32	0.875	1.875	1.75	2.63
1207-16	1.00"	13/32	1.031	2.062	2.00	2.81
1207-20	1.25"	15/32	1.188	2.312	2.50	3.13
1207-24	1.50"	17/32	1.406	2.750	3.00	3.69
1207-32	2.00"	17/32	1.688	3.062	3.50	4.00
1207-40	2.50"	17/32	2.000	3.500	4.00	4.50
1207-48	3.00"	21/32	2.438	4.188	5.00	5.31
1207-56	3.50"	21/32	2.750	4.750	5.00	6.00
1207-64	4.00"	21/32	3.062	5.125	6.00	6.38

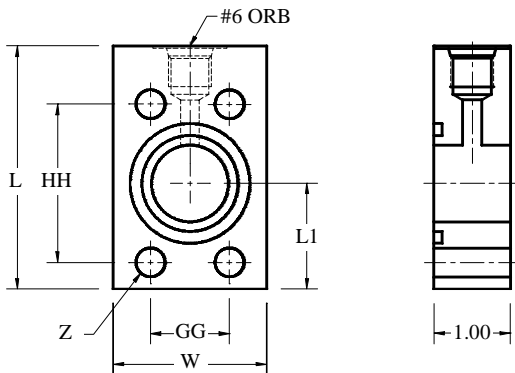
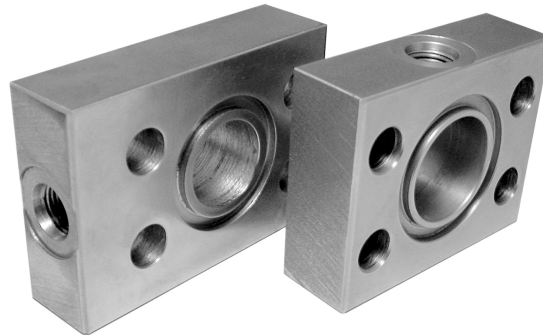
Code 61 Sandwich Style Gage Blocks



All sandwich style gage blocks come with #6 ORB side port and are 1.00" thick c/w O'Ring

Code 61 Sandwich Style Gage Blocks

Code 61 Part No.	Flange Size	Z	GG	HH	W	L
3046-12	3/4"	13/32	0.875	1.875	1.75	2.63
3046-16	1.00"	13/32	1.031	2.062	2.00	2.81
3046-20	1.25"	15/32	1.188	2.312	2.50	3.13
3046-24	1.50"	17/32	1.406	2.750	3.00	3.69
3046-32	2.00"	17/32	1.688	3.062	3.50	4.00
3046-40	2.50"	17/32	2.000	3.500	4.00	4.50
3046-48	3.00"	21/32	2.438	4.188	5.00	5.31
3046-56	3.50"	21/32	2.750	4.750	5.00	6.00
3046-64	4.00"	21/32	3.062	5.125	6.00	6.38

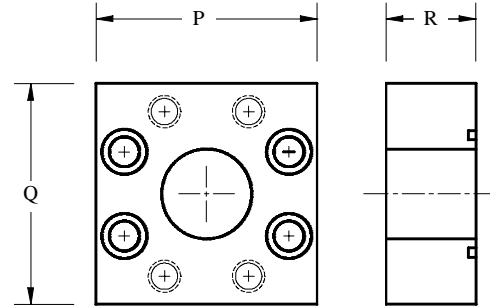
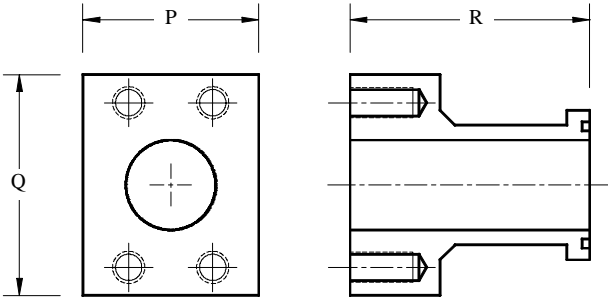


All sandwich style gage blocks come with #6 ORB side port and are 1.00" thick c/w O'Ring

Code 61 Sandwich Style Gage Blocks

Code 61 Part No.	Flange Size	Z	GG	HH	W	L	L1
3146-12	3/4"	13/32	0.875	1.875	1.75	3.13	1.28
3146-16	1.00"	13/32	1.031	2.062	2.00	3.19	1.38
3146-20	1.25"	15/32	1.188	2.312	2.50	3.50	1.56
3146-24	1.50"	17/32	1.406	2.750	3.00	3.69	1.84
3146-32	2.00"	17/32	1.688	3.062	3.50	4.00	2.00
3146-40	2.50"	17/32	2.000	3.500	4.00	4.50	2.25
3146-48	3.00"	21/32	2.438	4.188	5.00	5.31	2.66
3146-56	3.50"	21/32	2.750	4.750	5.00	6.00	3.00
3146-64	4.00"	21/32	3.062	5.125	6.00	6.38	3.19

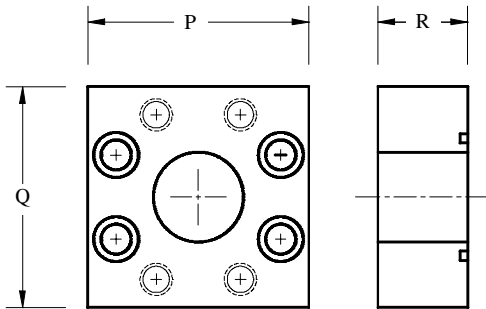
Code 61 Transition Flanges



Code 61 Step-Up Transition

Part No.	Code 61 Comp	Code 61 'O'Ring	P	Q	R
1816-12-08	3/4"	1/2"	1.75	2.56	2.88
1816-16-12	1.00"	3/4"	2.00	2.75	2.88
1816-20-16	1.25"	1.00"	2.50	3.12	3.00
1816-24-20	1.50"	1.25"	2.75	3.69	3.25
1816-32-24	2.00"	1.50"	3.50	4.00	3.63
1816-40-32	2.50"	2.00"	4.00	4.50	4.00
1816-48-40	3.00"	2.50"	5.00	5.31	4.50

Split Flange Kit Required for mounting
 See part number 1585-SIZE



Code 61 / Code 62 Transition

Part No.	Code 62 Comp	Code 61 'O'Ring	P	Q	R
1812-08-08	1/2"	1/2"	2.13	2.50	0.75
1812-12-12	3/4"	3/4"	2.63	3.00	0.75
1812-16-16	1.00"	1.00"	3.00	3.19	0.75
1812-20-20	1.25"	1.25"	3.13	4.00	1.00
1812-24-24	1.50"	1.50"	4.00	4.50	1.00
1812-32-32	2.00"	2.00"	4.00	5.25	1.50

Socket Head Mounting Kit Supplied

Code 61 Step-Down & Orientation Transitions

Part No.	Code 61 Comp	Code 61 'O'Ring	P	Q	R
1816-08-08	1/2"	1/2"	2.00	2.00	0.75
1816-08-12	1/2"	3/4"	3.00	2.13	0.75
1816-12-12	3/4"	3/4"	2.50	2.50	0.75
1816-12-16	3/4"	1.00"	3.00	2.56	0.75
1816-16-16	1.00"	1.00"	3.00	2.75	0.75
1816-12-20	3/4"	1.25"	3.13	2.50	1.00
1816-16-20	1.00"	1.25"	3.13	3.00	1.00
1816-20-20	1.25"	1.25"	3.13	3.00	1.00
1816-16-24	1.00"	1.50"	4.00	2.75	1.00
1816-20-24	1.25"	1.50"	4.00	3.13	1.00
1816-24-24	1.50"	1.50"	4.00	3.69	1.00
1816-20-32	1.25"	2.00"	4.00	3.13	1.50
1816-24-32	1.50"	2.00"	4.00	3.75	1.50
1816-32-32	2.00"	2.00"	4.00	4.00	1.50
1816-24-40	1.50"	2.50"	4.50	4.00	1.50
1816-32-40	2.00"	2.50"	4.50	4.00	1.50
1816-40-40	2.50"	2.50"	4.50	4.50	1.50
1816-32-48	2.00"	3.00"	5.50	4.00	1.50
1816-40-48	2.50"	3.00"	5.31	5.00	1.50
1816-48-48	3.00"	3.00"	5.50	5.31	1.50

Socket Head Mounting Kit Supplied

For Code 62 Transitions See Page 43-10



Code 62 4-Bolt Flanges

O'Ring Boss

National Pipe Thread

Socket Weld Pipe

Socket Weld Tube

Butt Weld Pipe

Cover Plates

Union Plates

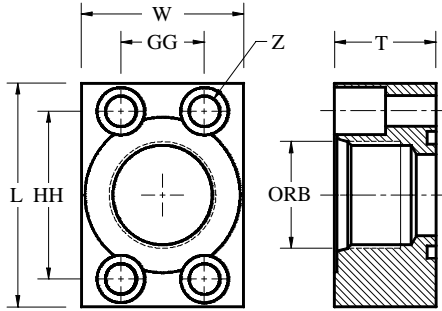
Gage Blocks

Transitions

Blanking Plates



O'Ring Boss (ORB) / Code 62 Flange

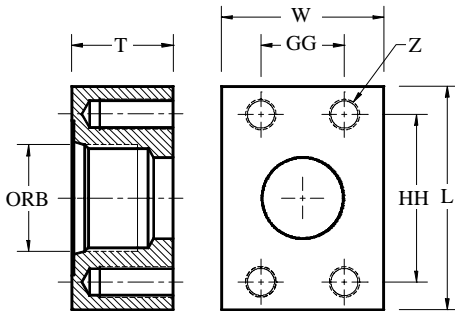


Socket Head Mounting Kit Supplied

ORB / Code 62 O'Ring Face Flange

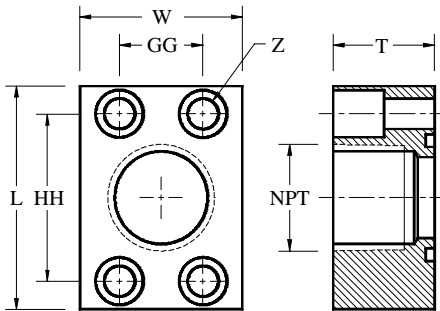
Code 62 Part No.	ORB Size	Flange Size	Z	GG	HH	W	L	T
1856-08-08	#8 (3/4"-16)	1/2"	11/32	0.718	1.574	1.75	2.22	1.00
1856-12-12	#12 (1-1/16"-12)	3/4"	13/32	0.937	2.000	2.00	2.81	1.00
1856-12-16	#12 (1-1/16"-12)	1.00"	15/32	1.093	2.250	2.50	3.19	1.25
1856-16-16	#16 (1-5/16"-12)	1.00"	15/32	1.093	2.250	2.50	3.19	1.25
1856-16-20	#16 (1-5/16"-12)	1.25"	17/32	1.250	2.625	3.00	3.75	1.25
1856-20-20	#20 (1-5/8"-12)	1.25"	17/32	1.250	2.625	3.00	3.75	1.25
1856-20-24	#20 (1-5/8"-12)	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1856-24-24	#24 (1-7/8"-12)	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1856-24-32	#24 (1-7/8"-12)	2.00"	25/32	1.750	3.812	4.00	5.25	1.50
1856-32-32	#32 (2.50"-12)	2.00"	25/32	1.750	3.812	4.00	5.25	1.50

ORB / Code 62 Companion Face Flange



Code 62 Part No.	ORB Size	Flange Size	Z	GG	HH	W	L	T
1855-08-08	#8 (3/4"-16)	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.00
1855-12-12	#12 (1-1/16"-12)	3/4"	3/8"-16	0.937	2.000	2.00	2.81	1.00
1855-12-16	#12 (1-1/16"-12)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	1.25
1855-16-16	#16 (1-5/16"-12)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	1.25
1855-16-20	#16 (1-5/16"-12)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	1.25
1855-20-20	#20 (1-5/8"-12)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	1.25
1855-20-24	#20 (1-5/8"-12)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1855-24-24	#24 (1-7/8"-12)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1855-24-32	#24 (1-7/8"-12)	2.00"	3/4"-10	1.750	3.812	4.00	5.25	1.50
1855-32-32	#32 (2.50"-12)	2.00"	3/4"-10	1.750	3.812	4.00	5.25	1.50

National Pipe Thread (NPT) / Code 62 Flange

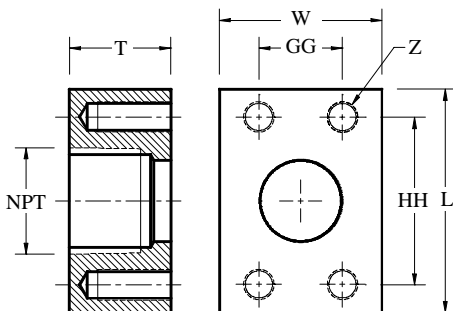


Socket Head Mounting Kit Supplied

NPT / Code 62 O'Ring Face Flange

Code 62 Part No.	NPT Size	Flange Size	Z	GG	HH	W	L	T
1858-08-08	1/2"-14	1/2"	11/32	0.718	1.574	1.75	2.22	1.00
1858-12-12	3/4"-14	3/4"	13/32	0.937	2.000	2.00	2.81	1.00
1858-12-16	3/4"-14	1.00"	15/32	1.093	2.250	2.50	3.19	1.25
1858-16-16	1"-11.5	1.00"	15/32	1.093	2.250	2.50	3.19	1.25
1858-16-20	1"-11.5	1.25"	17/32	1.250	2.625	3.00	3.75	1.25
1858-20-20	1.25"-11.5	1.25"	17/32	1.250	2.625	3.00	3.75	1.25
1858-20-24	1.25"-11.5	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1858-24-24	1.50"-11.5	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1858-24-32	1.50"-11.5	2.00"	25/32	1.750	3.812	4.00	5.25	1.50
1858-32-32	2.00"-11.5	2.00"	25/32	1.750	3.812	4.00	5.25	1.50

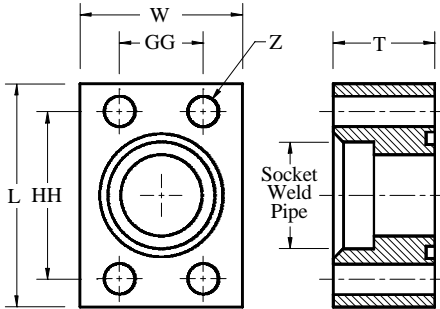
NPT / Code 62 Companion Face Flange



Code 62 Part No.	NPT Size	Flange Size	Z	GG	HH	W	L	T
1857-08-08	1/2"-14	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.00
1857-12-12	3/4"-14	3/4"	3/8"-16	0.937	2.000	2.00	2.81	1.00
1857-12-16	3/4"-14	1.00"	7/16"-14	1.093	2.250	2.50	3.19	1.25
1857-16-16	1"-11.5	1.00"	7/16"-14	1.093	2.250	2.50	3.19	1.25
1857-16-20	1"-11.5	1.25"	1/2"-13	1.250	2.625	3.00	3.75	1.25
1857-20-20	1.25"-11.5	1.25"	1/2"-13	1.250	2.625	3.00	3.75	1.25
1857-20-24	1.25"-11.5	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1857-24-24	1.50"-11.5	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1857-24-32	1.50"-11.5	2.00"	3/4"-10	1.750	3.812	4.00	5.25	1.50
1857-32-32	2.00"-11.5	2.00"	3/4"-10	1.750	3.812	4.00	5.25	1.50

Socket Weld Pipe (SWP) / Code 62 Flange

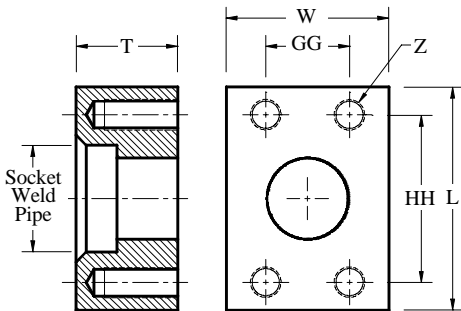
SWP / Code 62 O'Ring Face Flange



Hex Head Mounting Kit Supplied

Code 62 Part No.	SWP Size	Flange Size	Z	GG	HH	W	L	T
1852-08-08	1/2" (0.845)	1/2"	11/32	0.718	1.574	1.75	2.22	1.00
1852-12-12	3/4" (1.055)	3/4"	13/32	0.937	2.000	2.00	2.81	1.00
1852-12-16	3/4" (1.055)	1.00"	15/32	1.093	2.250	2.50	3.19	1.25
1852-16-16	1.00" (1.320)	1.00"	15/32	1.093	2.250	2.50	3.19	1.25
1852-16-20	1.00" (1.320)	1.25"	17/32	1.250	2.625	3.00	3.75	1.25
1852-20-20	1.25" (1.670)	1.25"	17/32	1.250	2.625	3.00	3.75	1.25
1852-20-24	1.25" (1.670)	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1852-24-24	1.50" (1.910)	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1852-24-32	1.50" (1.910)	2.00"	25/32	1.750	3.812	4.00	5.25	1.50
1852-32-32	2.00" (2.385)	2.00"	25/32	1.750	3.812	4.00	5.25	1.50

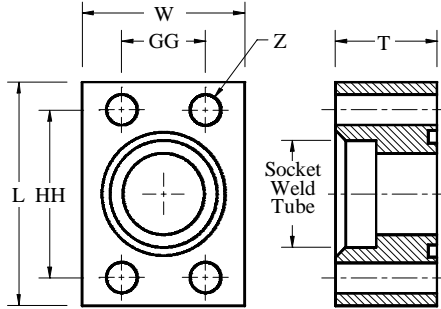
SWP / Code 62 Companion Face Flange



Code 62 Part No.	SWP Size	Flange Size	Z	GG	HH	W	L	T
1851-08-08	1/2" (0.845)	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.00
1851-12-12	3/4" (1.055)	3/4"	3/8"-16	0.937	2.000	2.00	2.81	1.00
1851-12-16	3/4" (1.055)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	1.25
1851-16-16	1.00" (1.320)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	1.25
1851-16-20	1.00" (1.320)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	1.25
1851-20-20	1.25" (1.670)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	1.25
1851-20-24	1.25" (1.670)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1851-24-24	1.50" (1.910)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1851-24-32	1.50" (1.910)	2.00"	3/4"-10	1.750	3.812	4.00	5.25	1.50
1851-32-32	2.00" (2.385)	2.00"	3/4"-10	1.750	3.812	4.00	5.25	1.50

Socket Weld Tube (SWT) / Code 62 Flange

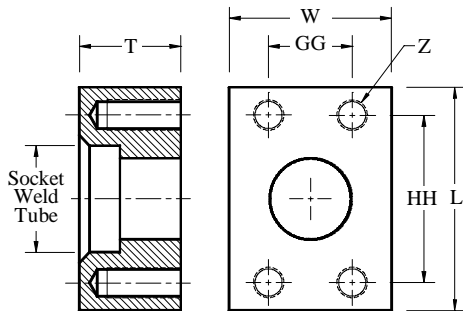
SWT / Code 62 O'Ring Face Flange



Hex Head Mounting Kit Supplied

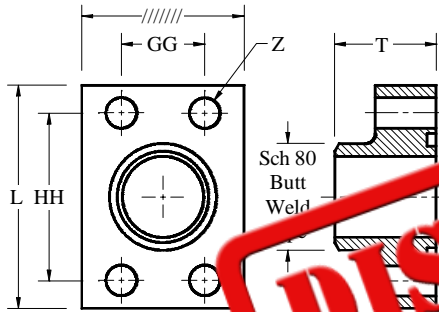
Code 62 Part No.	SWT Size	Flange Size	Z	GG	HH	W	L	T
1854-08-08	1/2" (0.505)	1/2"	11/32	0.718	1.574	1.75	2.22	1.00
1854-10-08	5/8" (0.630)	1/2"	11/32	0.718	1.574	1.75	2.22	1.00
1854-12-12	3/4" (0.755)	3/4"	13/32	0.937	2.000	2.00	2.81	1.00
1854-16-12	1.00" (1.005)	3/4"	13/32	0.937	2.000	2.00	2.81	1.00
1854-16-16	1.00" (1.005)	1.00"	15/32	1.093	2.250	2.50	3.19	1.25
1854-20-16	1.25" (1.255)	1.00"	15/32	1.093	2.250	2.50	3.19	1.25
1854-20-20	1.25" (1.255)	1.25"	17/32	1.250	2.625	3.00	3.75	1.25
1854-24-20	1.50" (1.510)	1.25"	17/32	1.250	2.625	3.00	3.75	1.25
1854-24-24	1.50" (1.510)	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1854-28-24	1.75" (1.760)	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1854-32-24	2.00" (2.010)	1.50"	21/32	1.437	3.125	3.50	4.44	1.50
1854-32-32	2.00" (2.010)	2.00"	25/32	1.750	3.812	4.00	5.25	1.50

SWT / Code 62 Companion Face Flange



Code 62 Part No.	SWT Size	Flange Size	Z	GG	HH	W	L	T
1853-08-08	1/2" (0.505)	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.00
1853-10-08	5/8" (0.630)	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.00
1853-12-12	3/4" (0.755)	3/4"	3/8"-16	0.937	2.000	2.00	2.81	1.00
1853-16-12	1.00" (1.005)	3/4"	3/8"-16	0.937	2.000	2.00	2.81	1.00
1853-16-16	1.00" (1.005)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	1.25
1853-20-16	1.25" (1.255)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	1.25
1853-20-20	1.25" (1.255)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	1.25
1853-24-20	1.50" (1.510)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	1.25
1853-24-24	1.50" (1.510)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1853-28-24	1.75" (1.760)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1853-32-24	2.00" (2.010)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	1.50
1853-32-32	2.00" (2.010)	2.00"	3/4"-10	1.750	3.812	4.00	5.25	1.50

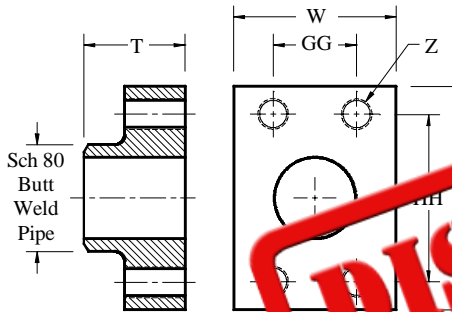
Sch 80 Butt Weld Pipe (BWP) / Code 62 Flange



Sch 80 Butt Weld Pipe / Code 62 O'Ring Face Flange

Code 62 Part No.	BWP Size	Flange Size	GG	HH	W	L	T
3245-08	1/2" Sch 80	1/2"	11/32	0.718	1.574	1.75	1.25
3245-12-12	3/4" Sch 80	3/4"	13/32	0.937	2.000	2.00	1.25
3245-16	1.00" Sch 80	1.00"	15/32	1.093	2.250	2.50	1.50
3245-20	1.25" Sch 80	1.25"	17/32	1.250	2.625	3.00	1.50
3245-24-24	1.50" Sch 80	1.50"	21/32	1.437	3.125	3.50	1.75
3245-32	2.00" Sch 80	2.00"	25/32	1.750	3.812	4.00	1.75

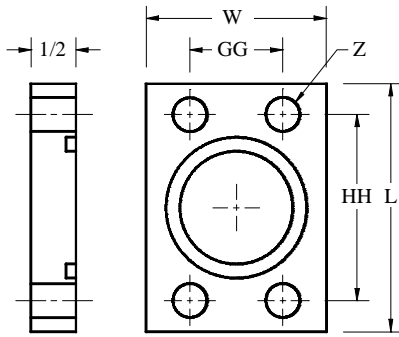
Hex Head Mounting Surfaces



Sch 80 Butt Weld Pipe / Code 62 Companion Face Flange

Code 62 Part No.	BWP Size	Flange Size	GG	HH	W	L	T
2346-08	1/2" Sch 80	1/2"	5/16"	0.718	1.574	1.75	1.25
2346-12-12	3/4" Sch 80	3/4"	3/8"-16	0.937	2.000	2.00	1.25
2346-16	1.00" Sch 80	1.00"	1/2"-14	1.093	2.250	2.50	1.50
2346-20	1.25" Sch 80	1.25"	1/2"-13	1.250	2.625	3.00	1.50
2346-24-24	1.50" Sch 80	1.50"	5/8"-11	1.437	3.125	3.50	1.75
2346-32	2.00" Sch 80	2.00"	3/4"-10	1.750	3.812	4.00	1.75

Code 62 Blanking & Cover Plates

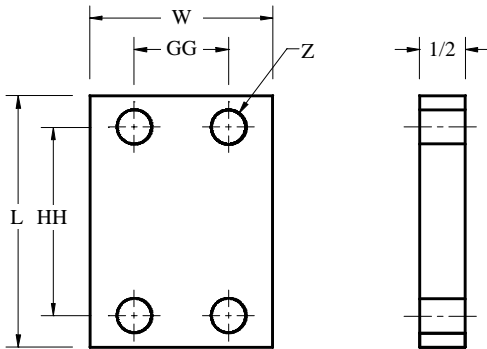


Hex Head Mounting Kit Supplied
c/w O'Ring

Code 62 O'Ring Face Blanking Plates

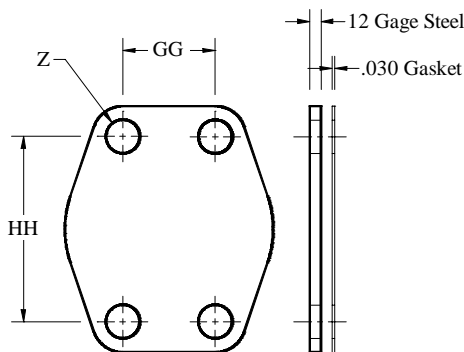
Code 62 Part No.	Flange Size	Z	GG	HH	W	L
3366-12	3/4"	13/32	0.937	2.000	2.00	2.81
3366-16	1.00"	15/32	1.093	2.250	2.50	3.19
3366-20	1.25"	17/32	1.250	2.625	3.00	3.75
3366-24	1.50"	21/32	1.437	3.125	3.50	4.44
3366-32	2.00"	25/32	1.750	3.812	4.00	5.25

For O'Ring Head Style Blanking Plugs, See Part No. 1646-Size



Code 62 Flat Face Blanking Plates

Code 62 Part No.	Flange Size	Z	GG	HH	W	L
1881-12	3/4"	13/32	0.937	2.000	2.00	2.81
1881-16	1.00"	15/32	1.093	2.250	2.50	3.19
1881-20	1.25"	17/32	1.250	2.625	3.00	3.75
1881-24	1.50"	21/32	1.437	3.125	3.50	4.44
1881-32	2.00"	25/32	1.750	3.812	4.00	5.25

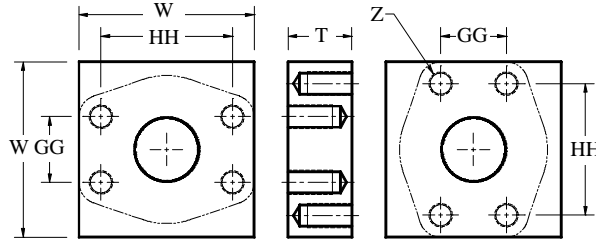


Hex Head Mounting Kit Supplied

Code 62 Protective Cover Plates

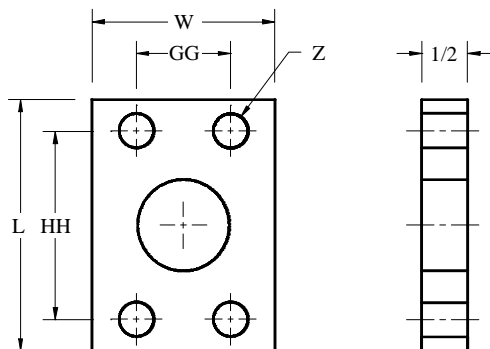
Code 62 Part No.	Flange Size	Z	GG	HH
3274-12	3/4"	13/32	0.937	2.000
3274-16	1.00"	15/32	1.093	2.250
3274-20	1.25"	17/32	1.250	2.625
3274-24	1.50"	21/32	1.437	3.125
3274-32	2.00"	25/32	1.750	3.812

Code 62 Union Plates



Code 62 Companion Union Plates

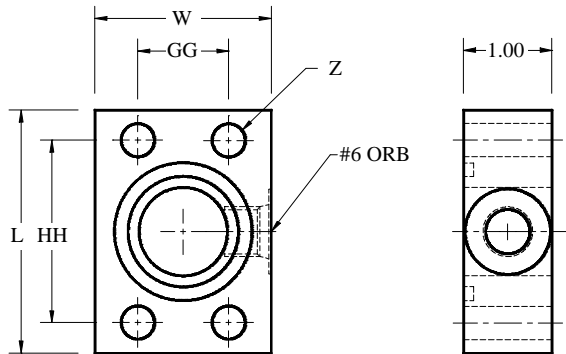
Code 62 Part No.	Flange Size	Z	GG	HH	W	T
3368-12-12	3/4"	3/8"-16	0.937	2.000	2.88	1.00
3368-16-16	1.00"	7/16"-14	1.093	2.250	3.25	1.25
3368-20-20	1.25"	1/2"-13	1.250	2.625	3.75	1.50
3368-24-24	1.50"	5/8"-11	1.437	3.125	4.50	1.50
3368-32-32	2.00"	3/4"-10	1.750	2.812	5.25	1.50



Code 62 Sandwich Union Plates

Code 62 Part No.	Flange Size	Z	GG	HH	W	L
1859-12	3/4"	13/32	0.937	2.000	2.00	2.81
1859-16	1.00"	15/32	1.093	2.250	2.50	3.19
1859-20	1.25"	17/32	1.250	2.625	3.00	3.75
1859-24	1.50"	21/32	1.437	3.125	3.50	4.44
1859-32	2.00"	25/32	1.750	3.812	4.00	5.25

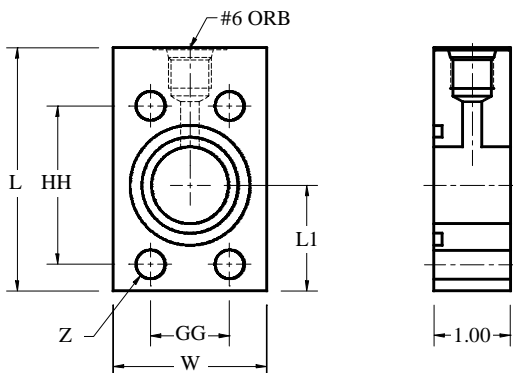
Code 62 Sandwich Style Gage Blocks



All sandwich style gage blocks come with #6 ORB side port and are 1.00" thick c/w O'Ring

Code 62 Sandwich Style Gage Blocks

Code 62 Part No.	Flange Size	Z	GG	HH	W	L
3047-12	3/4"	13/32	0.937	2.000	2.00	2.81
3047-16	1.00"	15/32	1.093	2.250	2.50	3.19
3047-20	1.25"	17/32	1.250	2.625	3.00	3.75
3047-24	1.50"	21/32	1.437	3.125	3.50	4.44
3047-32	2.00"	25/32	1.750	3.812	4.00	5.25

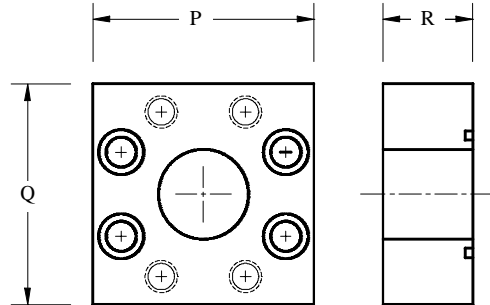
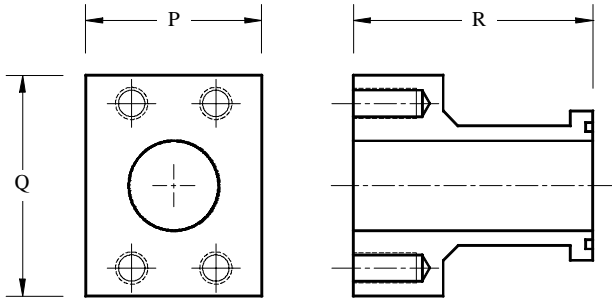


All sandwich style gage blocks come with #6 ORB side port and are 1.00" thick c/w O'Ring

Code 62 Sandwich Style Gage Blocks

Code 62 Part No.	Flange Size	Z	GG	HH	W	L	L1
3147-12	3/4"	13/32	0.937	2.000	2.00	3.31	1.41
3147-16	1.00"	15/32	1.093	2.250	2.50	3.56	1.59
3147-20	1.25"	17/32	1.250	2.625	3.00	4.00	1.88
3147-24	1.50"	21/32	1.437	3.125	3.50	4.44	2.22
3147-32	2.00"	25/32	1.750	3.812	4.00	5.25	2.63

Code 62 Transition Flanges



Code 62 Step-Up Transition

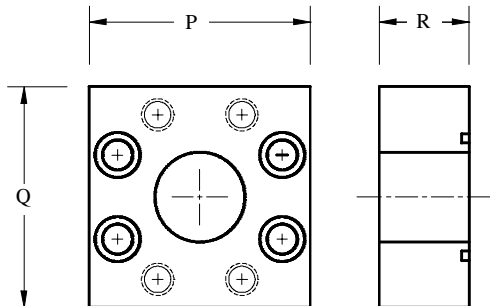
Part No.	Code 62 Comp	Code 62 'O'Ring	P	Q	R
1818-12-08	3/4"	1/2"	2.00	2.81	2.63
1818-16-12	1.00"	3/4"	2.50	3.19	2.75
1818-20-16	1.25"	1.00"	2.75	3.75	3.38
1818-24-20	1.50"	1.25"	3.00	4.44	3.63
1818-32-24	2.00"	1.50"	4.00	5.25	4.13

Split Flange Kit Required for mounting
See part number 1825-SIZE

Code 62 Step-Down & Orientation Transitions

Part No.	Code 62 Comp	Code 62 'O'Ring	P	Q	R
1818-08-08	1/2"	1/2"	2.50	2.25	0.75
1818-08-12	1/2"	3/4"	3.00	2.22	0.75
1818-12-12	3/4"	3/4"	3.00	2.81	0.75
1818-12-16	3/4"	1.00"	3.19	3.00	1.00
1818-16-16	1.00"	1.00"	3.50	3.19	1.00
1818-12-20	3/4"	1.25"	4.00	2.88	1.00
1818-16-20	1.00"	1.25"	4.00	3.19	1.00
1818-20-20	1.25"	1.25"	4.00	3.75	1.00
1818-16-24	1.00"	1.50"	4.50	3.19	1.50
1818-20-24	1.25"	1.50"	4.50	4.00	1.50
1818-24-24	1.50"	1.50"	4.50	4.44	1.50
1818-20-32	1.25"	2.00"	5.25	3.75	1.50
1818-24-32	1.50"	2.00"	5.25	5.00	1.50
1818-32-32	2.00"	2.00"	5.25	5.25	1.50

Socket Head Mounting Kit Supplied



Code 62 / Code 61 Transition

Part No.	Code 61 Comp	Code 62 'O'Ring	P	Q	R
1814-08-08	1/2"	1/2"	2.50	2.13	0.75
1814-12-12	3/4"	3/4"	2.81	2.50	0.75
1814-16-16	1.00"	1.00"	3.19	3.00	1.00
1814-20-20	1.25"	1.25"	3.75	3.00	1.00
1814-24-24	1.50"	1.50"	4.50	4.00	1.50
1814-32-32	2.00"	2.00"	5.25	4.00	1.50

Socket Head Mounting Kit Supplied

For Code 61 Transitions See Page 42-10



Code 61 4-Bolt Elbows

O'Ring Boss

National Pipe Thread

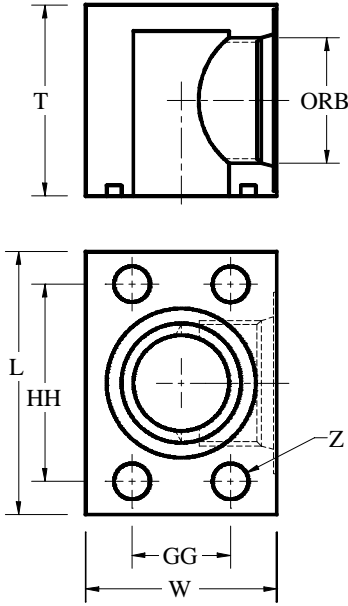
Socket Weld Pipe

Socket Weld Tube

4-Bolt Flange



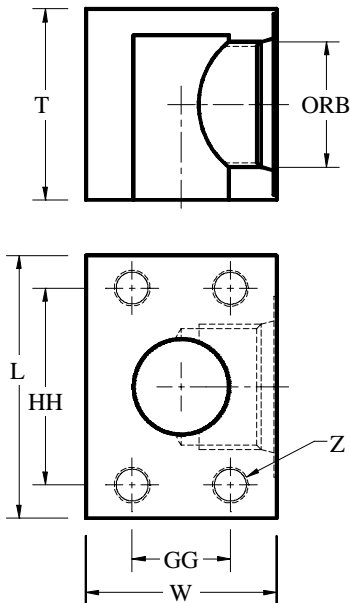
O'Ring Boss (ORB) / Code 61 Elbow



O'Ring Boss (ORB) / Code 61 O'Ring Face Elbow

Code 61 Part No.	ORB Size	Flange Size	Z	GG	HH	W	L	T
1815-08-08	#8 (3/4"-16)	1/2"	11/32	0.688	1.500	1.50	2.19	1.50
1815-12-12	#12 (1-1/16"-12)	3/4"	13/32	0.875	1.875	1.75	2.63	1.75
1815-12-16	#12 (1-1/16"-12)	1.00"	13/32	1.031	2.062	2.00	2.81	2.00
1815-16-16	#16 (1-5/16"-12)	1.00"	13/32	1.031	2.602	2.00	2.81	2.00
1815-16-20	#16 (1-5/16"-12)	1.25"	15/32	1.188	2.312	2.50	3.19	2.50
1815-20-20	#20 (1-5/8"-12)	1.25"	15/32	1.188	2.312	2.50	3.19	2.50
1815-20-24	#20 (1-5/8"-12)	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1815-24-24	#24 (1-7/8"-12)	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1815-24-32	#24 (1-7/8"-12)	2.00"	17/32	1.688	3.062	3.50	4.00	3.50
1815-32-32	#32 (2.50"-12)	2.00"	17/32	1.688	3.062	3.50	4.00	3.50
1815-32-40	#32 (2.50"-12)	2.50"	17/32	2.000	3.500	4.00	4.50	4.00

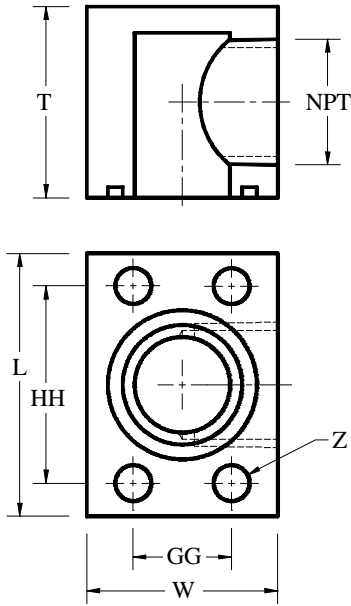
c/w Hex Head Mounting Kit



O'Ring Boss (ORB) / Code 61 Companion Face Elbow

Code 61 Part No.	ORB Size	Flange Size	Z	GG	HH	W	L	T
1817-08-08	#8 (3/4"-16)	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.50
1817-12-12	#12 (1-1/16"-12)	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.75
1817-12-16	#12 (1-1/16"-12)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	2.00
1817-16-16	#16 (1-5/16"-12)	1.00"	3/8"-16	1.031	2.602	2.00	2.81	2.00
1817-16-20	#16 (1-5/16"-12)	1.25"	7/16"-14	1.188	2.312	2.50	3.19	2.50
1817-20-20	#20 (1-5/8"-12)	1.25"	7/16"-14	1.188	2.312	2.50	3.19	2.50
1817-20-24	#20 (1-5/8"-12)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1817-24-24	#24 (1-7/8"-12)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1817-24-32	#24 (1-7/8"-12)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50
1817-32-32	#32 (2.50"-12)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50
1817-32-40	#32 (2.50"-12)	2.50"	1/2"-13	2.000	3.500	4.00	4.50	4.00

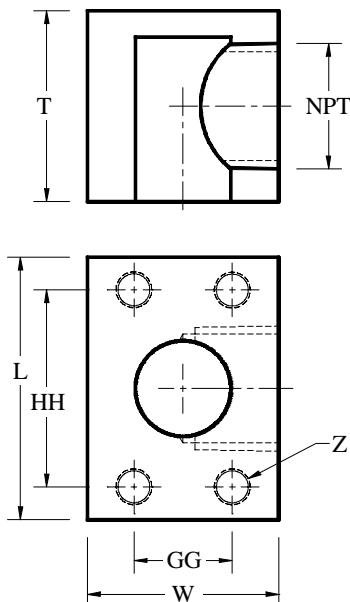
National Pipe Thread (NPT) / Code 61 Elbow



National Pipe Thread (NPT) / Code 61 O'Ring Face Elbow

Code 61 Part No.	NPT Size	Flange Size	Z	GG	HH	W	L	T
1833-08-08	1/2"-14	1/2"	11/32	0.688	1.500	1.50	2.19	1.50
1833-12-12	3/4"-14	3/4"	13/32	0.875	1.875	1.75	2.63	1.75
1833-12-16	3/4"-14	1.00"	13/32	1.031	2.062	2.00	2.81	2.00
1833-16-16	1"-11.5	1.00"	13/32	1.031	2.062	2.00	2.81	2.00
1833-16-20	1"-11.5	1.25"	15/32	1.188	2.312	2.50	3.19	2.50
1833-20-20	1.25"-11.5	1.25"	15/32	1.188	2.312	2.50	3.19	2.50
1833-20-24	1.25"-11.5	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1833-24-24	1.50"-11.5	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1833-24-32	1.50"-11.5	2.00"	17/32	1.688	3.062	3.50	4.00	3.50
1833-32-32	2.00"-11.5	2.00"	17/32	1.688	3.062	3.50	4.00	3.50
1833-32-40	2.00"-11.5	2.50"	17/32	2.000	3.500	4.00	4.50	4.00
1833-40-40	2.50"-8	2.50"	17/32	2.000	3.500	4.00	4.50	4.00
1833-48-48	3.00"-8	3.00"	21/32	2.438	4.188	4.50	5.31	4.50
1833-56-56	3.50"-8	3.50"	21/32	2.750	4.750	5.00	6.00	4.00
1833-64-64	4.00"-8	4.00"	21/32	3.062	5.125	6.00	6.38	6.00

c/w Hex Head Mounting Kit

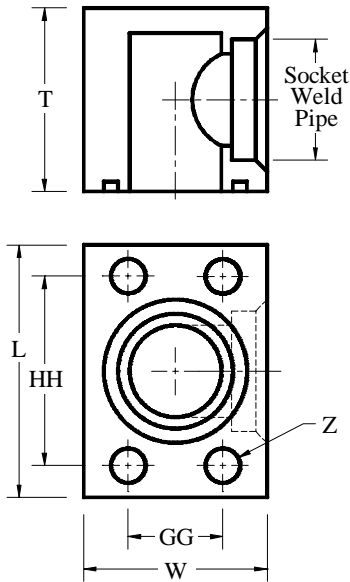


National Pipe Thread (NPT) / Code 61 Companion Face Elbow

Code 61 Part No.	NPT Size	Flange Size	Z	GG	HH	W	L	T
1835-08-08	1/2"-14	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.50
1835-12-12	3/4"-14	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.75
1835-12-16	3/4"-14	1.00"	3/8"-16	1.031	2.062	2.00	2.81	2.00
1835-16-16	1"-11.5	1.00"	3/8"-16	1.031	2.062	2.00	2.81	2.00
1835-16-20	1"-11.5	1.25"	7/16"-14	1.188	2.312	2.50	3.19	2.50
1835-20-20	1.25"-11.5	1.25"	7/16"-14	1.188	2.312	2.50	3.19	2.50
1835-20-24	1.25"-11.5	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1835-24-24	1.50"-11.5	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1835-24-32	1.50"-11.5	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50
1835-32-32	2.00"-11.5	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50
1835-32-40	2.00"-11.5	2.50"	1/2"-13	2.000	3.500	4.00	4.50	4.00
1835-40-40	2.50"-8	2.50"	1/2"-13	2.000	3.500	4.00	4.50	4.00
1835-48-48	3.00"-8	3.00"	5/8"-11	2.438	4.188	4.50	5.31	4.50
1835-56-56	3.50"-8	3.50"	5/8"-11	2.750	4.750	5.00	6.00	4.00
1835-64-64	4.00"-8	4.00"	5/8"-11	3.062	5.125	6.00	6.38	6.00

Socket Weld Pipe (SWP) / Code 61 Elbow

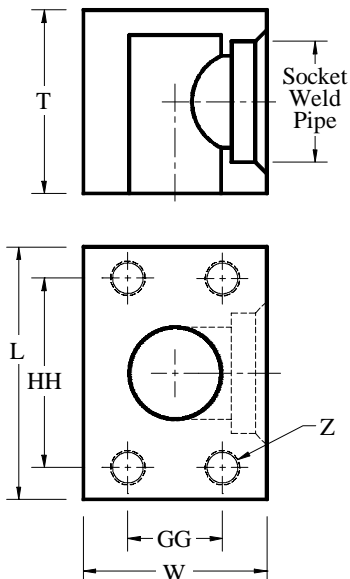
Socket Weld Pipe (SWP) / Code 61 O'Ring Face Elbow



Code 61 Part No.	SWP Size	Flange Size	Z	GG	HH	W	L	T
1824-08-08	1/2" (0.845)	1/2"	11/32	0.688	1.500	1.50	2.19	1.50
1824-12-12	3/4" (1.055)	3/4"	13/32	0.875	1.875	1.75	2.63	1.75
1824-12-16	3/4" (1.055)	1.00"	13/32	1.031	2.062	2.00	2.81	2.00
1824-16-16	1.00" (1.320)	1.00"	13/32	1.031	2.062	2.00	2.81	2.00
1824-16-20	1.00" (1.320)	1.25"	15/32	1.188	2.312	2.50	3.19	2.50
1824-20-20	1.25" (1.670)	1.25"	15/32	1.188	2.312	2.50	3.19	2.50
1824-20-24	1.25" (1.670)	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1824-24-24	1.50" (1.910)	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1824-24-32	1.50" (1.910)	2.00"	17/32	1.688	3.062	3.50	4.00	3.50
1824-32-32	2.00" (2.385)	2.00"	17/32	1.688	3.062	3.50	4.00	3.50
1824-32-40	2.00" (2.385)	2.50"	17/32	2.000	3.500	4.00	4.50	4.00
1824-40-40	2.50" (2.888)	2.50"	17/32	2.000	3.500	4.00	4.50	4.00
1824-48-48	3.00" (3.510)	3.00"	21/32	2.438	4.188	4.50	5.31	4.50
1824-56-56	3.50" (4.010)	3.50"	21/32	2.750	4.750	5.00	6.00	4.00
1824-64-64	4.00" (4.510)	4.00"	21/32	3.062	5.125	6.00	6.38	6.00

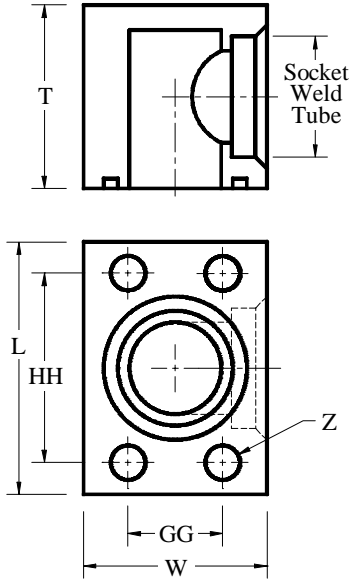
c/w Hex Head Mounting Kit

Socket Weld Pipe (SWP) / Code 61 Companion Face Elbow



Code 61 Part No.	SWP Size	Flange Size	Z	GG	HH	W	L	T
1808-08-08	1/2" (0.845)	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.50
1808-12-12	3/4" (1.055)	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.75
1808-12-16	3/4" (1.055)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	2.00
1808-16-16	1.00" (1.320)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	2.00
1808-16-20	1.00" (1.320)	1.25"	7/16"-14	1.188	2.312	2.50	3.19	2.50
1808-20-20	1.25" (1.670)	1.25"	7/16"-14	1.188	2.312	2.50	3.19	2.50
1808-20-24	1.25" (1.670)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1808-24-24	1.50" (1.910)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1808-24-32	1.50" (1.910)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50
1808-32-32	2.00" (2.385)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50
1808-32-40	2.00" (2.385)	2.50"	1/2"-13	2.000	3.500	4.00	4.50	4.00
1808-40-40	2.50" (2.888)	2.50"	1/2"-13	2.000	3.500	4.00	4.50	4.00
1808-48-48	3.00" (3.510)	3.00"	5/8"-11	2.438	4.188	4.50	5.31	4.50
1808-56-56	3.50" (4.010)	3.50"	5/8"-11	2.750	4.750	5.00	6.00	4.00
1808-64-64	4.00" (4.510)	4.00"	5/8"-11	3.062	5.125	6.00	6.38	6.00

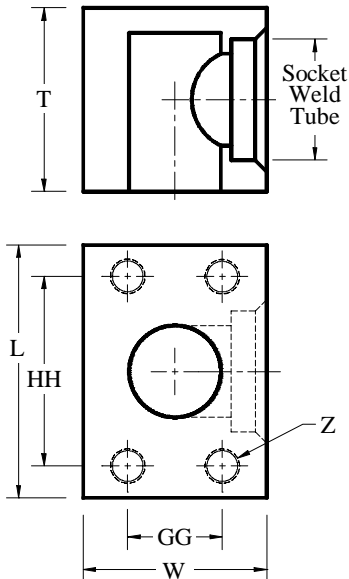
Socket Weld Tube (SWT) / Code 61 Elbow



Socket Weld Tube (SWT) / Code 61 O'Ring Face Elbow

Code 61 Part No.	SWT Size	Flange Size	Z	GG	HH	W	L	T
1829-08-08	1/2" (0.505)	1/2"	11/32	0.688	1.500	1.50	2.19	1.50
1829-12-12	3/4" (0.755)	3/4"	13/32	0.875	1.875	1.75	2.63	1.75
1829-12-16	3/4" (0.755)	1.00"	13/32	1.031	2.062	2.00	2.81	2.00
1829-16-16	1.00" (1.005)	1.00"	13/32	1.031	2.062	2.00	2.81	2.00
1829-16-20	1.00" (1.005)	1.25"	15/32	1.188	2.312	2.50	3.19	2.50
1829-20-20	1.25" (1.255)	1.25"	15/32	1.188	2.312	2.50	3.19	2.50
1829-20-24	1.25" (1.255)	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1829-24-24	1.50" (1.510)	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1829-28-24	1.75" (1.760)	1.50"	17/32	1.406	2.750	3.00	3.69	3.00
1829-24-32	1.50" (1.510)	2.00"	17/32	1.688	3.062	3.50	4.00	3.50
1829-28-32	1.75" (1.760)	2.00"	17/32	1.688	3.062	3.50	4.00	3.50
1829-32-32	2.00" (2.010)	2.00"	17/32	1.688	3.062	3.50	4.00	3.50

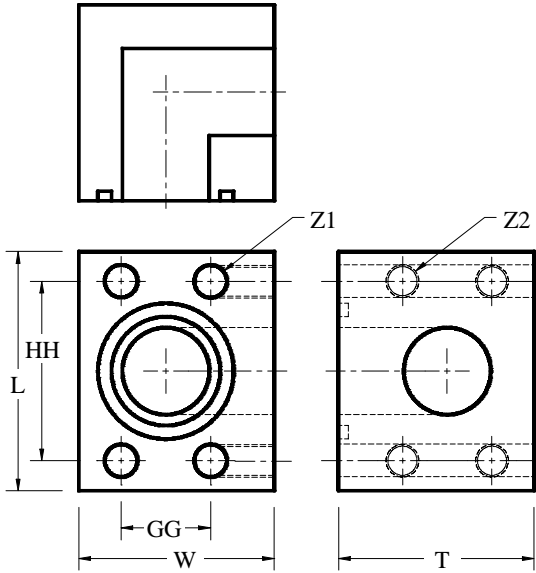
c/w Hex Head Mounting Kit



Socket Weld Tube (SWT) / Code 61 Companion Face Elbow

Code 61 Part No.	SWT Size	Flange Size	Z	GG	HH	W	L	T
1831-08-08	1/2" (0.505)	1/2"	5/16"-18	0.688	1.500	1.50	2.19	1.50
1831-12-12	3/4" (0.755)	3/4"	3/8"-16	0.875	1.875	1.75	2.63	1.75
1831-12-16	3/4" (0.755)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	2.00
1831-16-16	1.00" (1.005)	1.00"	3/8"-16	1.031	2.062	2.00	2.81	2.00
1831-16-20	1.00" (1.005)	1.25"	7/16"-14	1.188	2.312	2.50	3.19	2.50
1831-20-20	1.25" (1.255)	1.25"	7/16"-14	1.188	2.312	2.50	3.19	2.50
1831-20-24	1.25" (1.255)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1831-24-24	1.50" (1.510)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1831-28-24	1.75" (1.760)	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
1831-24-32	1.50" (1.510)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50
1831-28-32	1.75" (1.760)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50
1831-32-32	2.00" (2.010)	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50

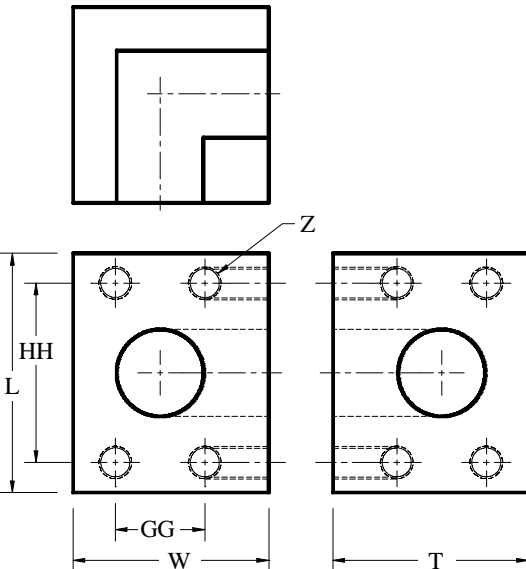
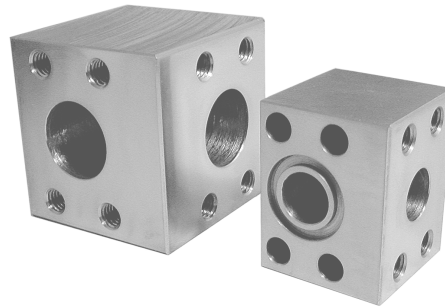
Code 61 / Code 61 Elbow



Code 61 Companion Face / O'Ring Face Elbow

Part No.	Code 61 Comp	Code 61 ORF	Z1	Z2	GG	HH	W	L	T
2573-08-08	1/2"	1/2"	11/32	5/16"-18	0.688	1.500	2.00	2.13	2.00
2573-12-12	3/4"	3/4"	13/32	3/8"-16	0.875	1.875	2.00	2.56	2.00
2573-16-16	1.00"	1.00"	13/32	3/8"-16	1.031	2.062	2.50	2.75	2.50
2573-20-20	1.25"	1.25"	15/32	7/16"-14	1.188	2.312	3.00	3.13	3.00
2573-24-24	1.50"	1.50"	17/32	1/2"-13	1.406	2.750	3.50	3.69	3.50
2573-32-32	2.00"	2.00"	17/32	1/2"-13	1.688	3.062	3.50	4.00	3.50

c/w Hex Head Mounting Kit



Code 61 Companion Face / Companion Face Elbow

Part No.	Code 61 Comp	Code 61 Comp	Z	GG	HH	W	L	T
2574-08-08	1/2"	1/2"	5/16"-18	0.688	1.500	2.00	2.13	2.00
2574-12-12	3/4"	3/4"	3/8"-16	0.875	1.875	2.00	2.56	2.00
2574-16-16	1.00"	1.00"	3/8"-16	1.031	2.062	2.50	2.75	2.50
2574-20-20	1.25"	1.25"	7/16"-14	1.188	2.312	3.00	3.13	3.00
2574-24-24	1.50"	1.50"	1/2"-13	1.406	2.750	3.00	3.69	3.00
2574-32-32	2.00"	2.00"	1/2"-13	1.688	3.062	3.50	4.00	3.50



Code 62 4-Bolt Elbows

O'Ring Boss

National Pipe Thread

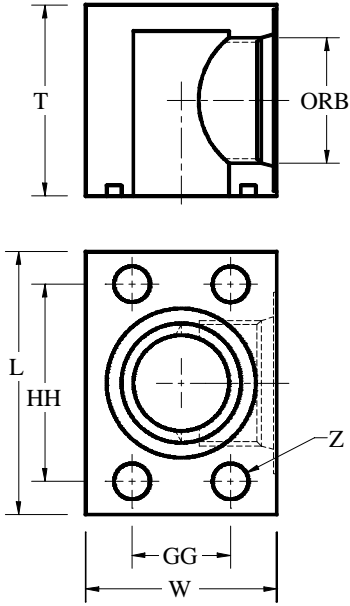
Socket Weld Pipe

Socket Weld Tube

4-Bolt Flange



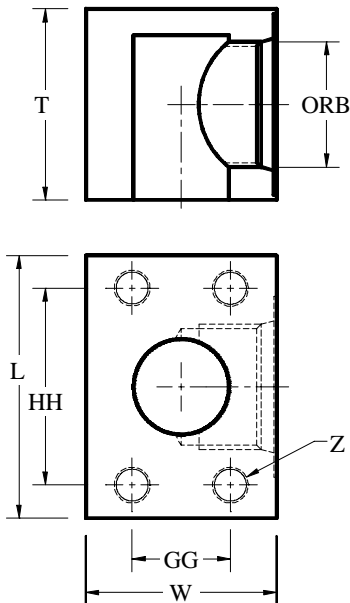
O'Ring Boss (ORB) / Code 62 Elbow



O'Ring Boss (ORB) / Code 62 O'Ring Face Elbow

Code 62 Part No.	ORB Size	Flange Size	Z	GG	HH	W	L	T
1842-08-08	#8 (3/4"-16)	1/2"	11/32	0.718	1.574	1.75	2.22	1.75
1842-12-12	#12 (1-1/16"-12)	3/4"	13/32	0.937	2.000	2.00	2.81	2.00
1842-12-16	#12 (1-1/16"-12)	1.00"	15/32	1.093	2.250	2.50	3.19	2.50
1842-16-16	#16 (1-5/16"-12)	1.00"	15/32	1.093	2.250	2.50	3.19	2.50
1842-16-20	#16 (1-5/16"-12)	1.25"	17/32	1.250	2.625	3.00	3.75	3.00
1842-20-20	#20 (1-5/8"-12)	1.25"	17/32	1.250	2.625	3.00	3.75	3.00
1842-20-24	#20 (1-5/8"-12)	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1842-24-24	#24 (1-7/8"-12)	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1842-24-32	#24 (1-7/8"-12)	2.00"	25/32	1.750	3.912	4.00	5.25	4.00
1842-32-32	#32 (2.50"-12)	2.00"	25/32	1.750	3.912	4.00	5.25	4.00

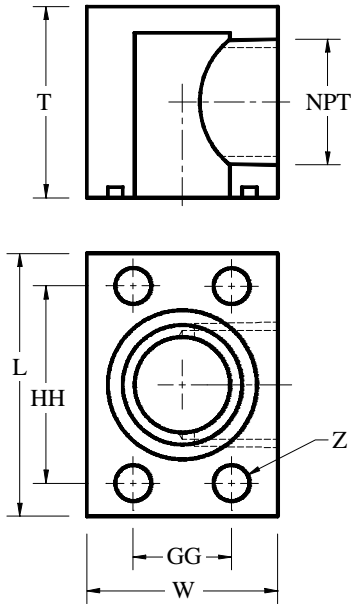
c/w Hex Head Mounting Kit



O'Ring Boss (ORB) / Code 62 Companion Face Elbow

Code 62 Part No.	ORB Size	Flange Size	Z	GG	HH	W	L	T
1840-08-08	#8 (3/4"-16)	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.75
1840-12-12	#12 (1-1/16"-12)	3/4"	3/8"-16	0.937	2.000	2.00	2.81	2.00
1840-12-16	#12 (1-1/16"-12)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	2.50
1840-16-16	#16 (1-5/16"-12)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	2.50
1840-16-20	#16 (1-5/16"-12)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
1840-20-20	#20 (1-5/8"-12)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
1840-20-24	#20 (1-5/8"-12)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1840-24-24	#24 (1-7/8"-12)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1840-24-32	#24 (1-7/8"-12)	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00
1840-32-32	#32 (2.50"-12)	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00

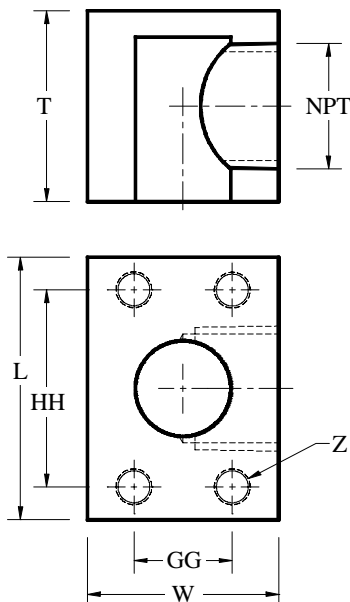
National Pipe Thread (NPT) / Code 62 Elbow



National Pipe Thread (NPT) / Code 62 O'Ring Face Elbow

Code 62 Part No.	NPT Size	Flange Size	Z	GG	HH	W	L	T
1846-08-08	1/2"-14	1/2"	11/32	0.718	1.574	1.75	2.22	1.75
1846-12-12	3/4"-14	3/4"	13/32	0.937	2.000	2.00	2.81	2.00
1846-12-16	3/4"-14	1.00"	15/32	1.093	2.250	2.50	3.19	2.50
1846-16-16	1"-11.5	1.00"	15/32	1.093	2.250	2.50	3.19	2.50
1846-16-20	1"-11.5	1.25"	17/32	1.250	2.625	3.00	3.75	3.00
1846-20-20	1.25"-11.5	1.25"	17/32	1.250	2.625	3.00	3.75	3.00
1846-20-24	1.25"-11.5	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1846-24-24	1.50"-11.5	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1846-24-32	1.50"-11.5	2.00"	25/32	1.750	3.912	4.00	5.25	4.00
1846-32-32	2.00"-11.5	2.00"	25/32	1.750	3.912	4.00	5.25	4.00

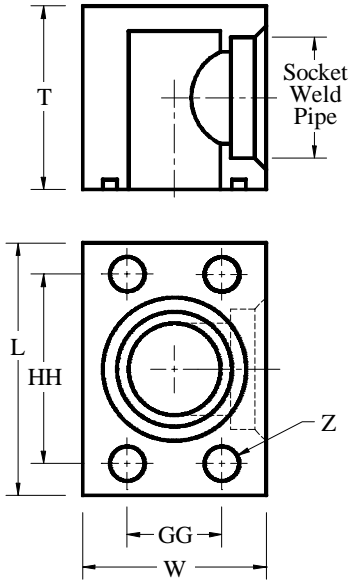
c/w Hex Head Mounting Kit



National Pipe Thread (NPT) / Code 62 Companion Face Elbow

Code 62 Part No.	NPT Size	Flange Size	Z	GG	HH	W	L	T
1844-08-08	1/2"-14	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.75
1844-12-12	3/4"-14	3/4"	3/8"-16	0.937	2.000	2.00	2.81	2.00
1844-12-16	3/4"-14	1.00"	7/16"-14	1.093	2.250	2.50	3.19	2.50
1844-16-16	1"-11.5	1.00"	7/16"-14	1.093	2.250	2.50	3.19	2.50
1844-16-20	1"-11.5	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
1844-20-20	1.25"-11.5	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
1844-20-24	1.25"-11.5	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1844-24-24	1.50"-11.5	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1844-24-32	1.50"-11.5	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00
1844-32-32	2.00"-11.5	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00

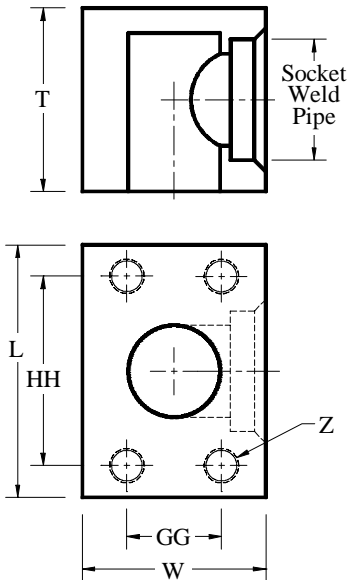
Socket Weld Pipe (SWP) / Code 62 Elbow



Socket Weld Pipe (SWP) / Code 62 O'Ring Face Elbow

Code 62 Part No.	SWP Size	Flange Size	Z	GG	HH	W	L	T
1834-08-08	1/2" (0.845)	1/2"	11/32	0.718	1.574	1.75	2.22	1.75
1834-12-12	3/4" (1.055)	3/4"	13/32	0.937	2.000	2.00	2.81	2.00
1834-12-16	3/4" (1.055)	1.00"	15/32	1.093	2.250	2.50	3.19	2.50
1834-16-16	1.00" (1.320)	1.00"	15/32	1.093	2.250	2.50	3.19	2.50
1834-16-20	1.00" (1.320)	1.25"	17/32	1.250	2.625	3.00	3.75	3.00
1834-20-20	1.25" (1.670)	1.25"	17/32	1.250	2.625	3.00	3.75	3.00
1834-20-24	1.25" (1.670)	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1834-24-24	1.50" (1.910)	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1834-24-32	1.50" (1.910)	2.00"	25/32	1.750	3.912	4.00	5.25	4.00
1834-32-32	2.00" (2.385)	2.00"	25/32	1.750	3.912	4.00	5.25	4.00

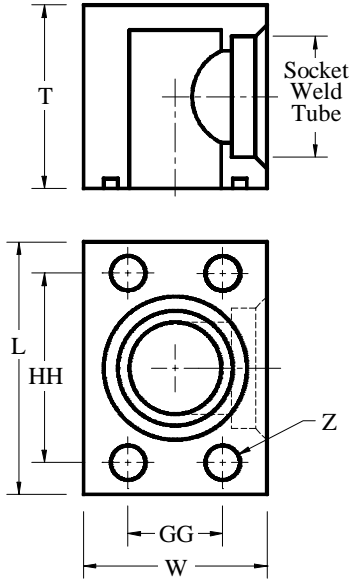
c/w Hex Head Mounting Kit



Socket Weld Pipe (SWP) / Code 62 Companion Face Elbow

Code 62 Part No.	SWP Size	Flange Size	Z	GG	HH	W	L	T
1832-08-08	1/2" (0.845)	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.75
1832-12-12	3/4" (1.055)	3/4"	3/8"-16	0.937	2.000	2.00	2.81	2.00
1832-12-16	3/4" (1.055)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	2.50
1832-16-16	1.00" (1.320)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	2.50
1832-16-20	1.00" (1.320)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
1832-20-20	1.25" (1.670)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
1832-20-24	1.25" (1.670)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1832-24-24	1.50" (1.910)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1832-24-32	1.50" (1.910)	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00
1832-32-32	2.00" (2.385)	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00

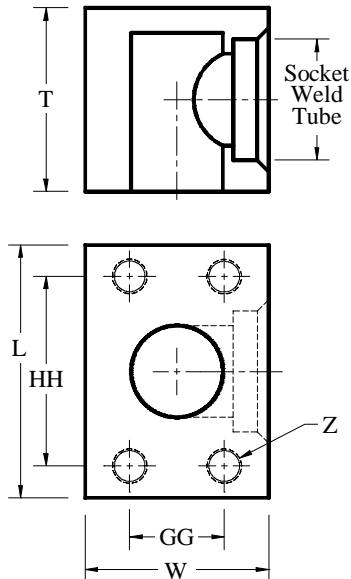
Socket Weld Tube (SWT) / Code 62 Elbow



Socket Weld Tube (SWT) / Code 62 O'Ring Face Elbow

Code 62 Part No.	SWT Size	Flange Size	Z	GG	HH	W	L	T
1838-08-08	1/2" (0.505)	1/2"	11/32	0.718	1.574	1.75	2.22	1.75
1838-12-12	3/4" (0.755)	3/4"	13/32	0.937	2.000	2.00	2.81	2.00
1838-12-16	3/4" (0.755)	1.00"	15/32	1.093	2.250	2.50	3.19	2.50
1838-16-16	1.00" (1.005)	1.00"	15/32	1.093	2.250	2.50	3.19	2.50
1838-16-20	1.00" (1.005)	1.25"	17/32	1.250	2.625	3.00	3.75	3.00
1838-20-20	1.25" (1.255)	1.25"	17/32	1.250	2.625	3.00	3.75	3.00
1838-20-24	1.25" (1.255)	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1838-24-24	1.50" (1.510)	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1838-28-24	1.75" (1.760)	1.50"	21/32	1.437	3.125	3.50	4.44	3.50
1838-24-32	1.50" (1.510)	2.00"	25/32	1.750	3.912	4.00	5.25	4.00
1838-28-32	1.75" (1.760)	2.00"	25/32	1.750	3.912	4.00	5.25	4.00
1838-32-32	2.00" (2.010)	2.00"	25/32	1.750	3.912	4.00	5.25	4.00

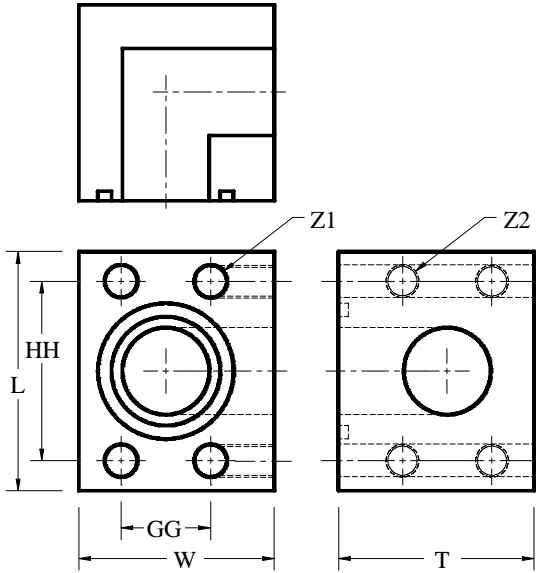
c/w Hex Head Mounting Kit



Socket Weld Tube (SWT) / Code 62 Companion Face Elbow

Code 62 Part No.	SWT Size	Flange Size	Z	GG	HH	W	L	T
1836-08-08	1/2" (0.505)	1/2"	5/16"-18	0.718	1.574	1.75	2.22	1.75
1836-12-12	3/4" (0.755)	3/4"	3/8"-16	0.937	2.000	2.00	2.81	2.00
1836-12-16	3/4" (0.755)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	2.50
1836-16-16	1.00" (1.005)	1.00"	7/16"-14	1.093	2.250	2.50	3.19	2.50
1836-16-20	1.00" (1.005)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
1836-20-20	1.25" (1.255)	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
1836-20-24	1.25" (1.255)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1836-24-24	1.50" (1.510)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1836-28-24	1.75" (1.760)	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
1836-24-32	1.50" (1.510)	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00
1836-28-32	1.75" (1.760)	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00
1836-32-32	2.00" (2.010)	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00

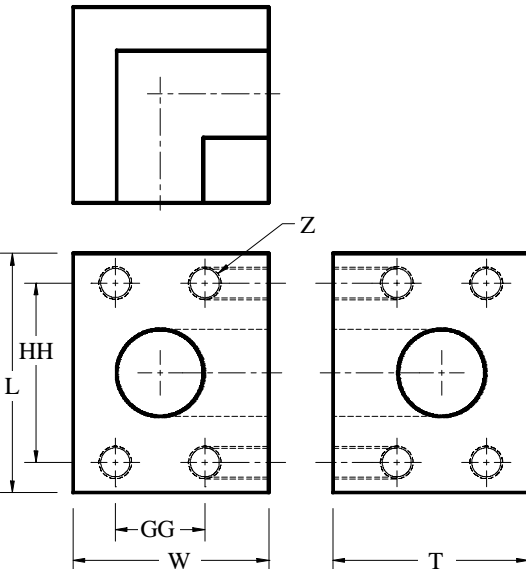
Code 62 / Code 62 Elbow



Code 62 Companion Face / O'Ring Face Elbow

Part No.	Code 62 Comp	Code 62 ORF	Z1	Z2	GG	HH	W	L	T
2594-08-08	1/2"	1/2"	11/32	11/32	0.718	1.574	2.00	2.25	2.00
2594-12-12	3/4"	3/4"	13/32	13/32	0.937	2.000	2.50	2.81	2.50
2594-16-16	1.00"	1.00"	15/32	15/32	1.093	2.250	3.00	3.00	2.50
2594-20-20	1.25"	1.25"	17/32	17/32	1.250	2.625	3.00	3.75	3.00
2594-24-24	1.50"	1.50"	21/32	21/32	1.437	3.125	3.50	4.44	3.50
2594-32-32	2.00"	2.00"	25/32	25/32	1.750	3.912	4.00	5.25	4.00

c/w Hex Head Mounting Kit



Code 62 Companion Face / Companion Face Elbow

Part No.	Code 62 Comp	Code 62 Comp	Z	GG	HH	W	L	T
2593-08-08	1/2"	1/2"	5/16"-18	0.718	1.574	2.00	2.25	2.00
2593-12-12	3/4"	3/4"	3/8"-16	0.937	2.000	2.50	2.81	2.50
2593-16-16	1.00"	1.00"	7/16"-14	1.093	2.250	3.00	3.00	2.50
2593-20-20	1.25"	1.25"	1/2"-13	1.250	2.625	3.00	3.75	3.00
2593-24-24	1.50"	1.50"	5/8"-11	1.437	3.125	3.50	4.44	3.50
2593-32-32	2.00"	2.00"	3/4"-10	1.750	3.912	4.00	5.25	4.00



Welded, Threaded & 4-Bolt Tees

O'Ring Boss

National Pipe Thread

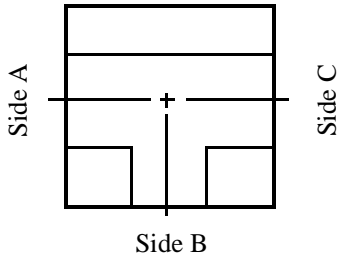
Socket Weld Pipe

Socket Weld Tube

4-Bolt Flange



Welded, Threaded & 4-Bolt Tees



All tees have three sides. Side A, B, & C
Side A & C are considered to be the 'RUN'
While Side B is considered to be the 'BRANCH'
Although most sizes shown are straight sizes,
Jump sizes are available upon request.

Contact our sales staff for sizes not shown in this catalog.

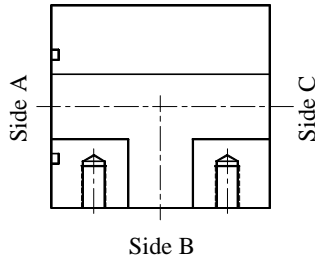
See page 46-24 for corner tees

Code 61 & 62 O'Ring Face Tees			
Side A	Side B	Side C	Page No.
ORF	Comp	Comp	46-3
		ORB	46-3
		NPT	46-3
		SWP	46-3
		SWT	46-4
	ORB	Comp	46-4
		ORB	46-4
		SWP	46-4
		SWT	46-5
	NPT	Comp	46-5
		NPT	46-5
		SWP	46-5
SWT		46-6	
SWP	Comp	46-6	
	ORB	46-6	
	NPT	46-6	
	SWP	46-7	
SWT	Comp	46-7	
	ORB	46-7	
	NPT	46-7	
	SWT	46-8	
Comp	ORF	Comp	46-8
		ORB	46-8
		NPT	46-8
		SWP	46-9
SWP	ORF	SWT	46-9
		ORB	46-9
SWT	ORF	SWP	46-10
		ORB	46-10
		NPT	46-10
ORB	ORF	SWT	46-10
		ORB	46-11
NPT	ORF	NPT	46-11

Code 61 & 62 Companion Tees			
Side A	Side B	Face C	Page No.
Comp	Comp	Comp	46-11
		ORB	46-11
		NPT	46-12
		SWP	46-12
		SWT	46-12
	ORB	Comp	46-12
		ORB	46-13
		SWP	46-13
		SWT	46-13
	NPT	Comp	46-13
		NPT	46-14
		SWP	46-14
		SWT	46-14
	SWP	Comp	46-14
		ORB	46-15
		NPT	46-15
		SWP	46-15
	SWT	Comp	46-15
ORB		46-16	
NPT		46-16	
SWP	Comp	SWT	46-16
		ORB	46-16
SWT	Comp	NPT	46-17
		SWP	46-17
ORB	Comp	ORB	46-17
		NPT	46-17
NPT	Comp	SWT	46-18
		ORB	46-18
NPT	Comp	NPT	46-18
		ORB	46-18

Welded & Threaded Tees			
Side A	Side B	Side C	Page No.
ORB	ORB	ORB	46-18
	SWP	ORB	46-19
	SWT	ORB	46-19
NPT	NPT	NPT	46-19
	SWP	NPT	46-19
	SWT	NPT	46-20
SWP	ORB	ORB	46-20
		SWP	46-20
	NPT	NPT	46-21
		SWP	46-21
	SWP	ORB	46-21
		NPT	46-21
SWT	ORB	ORB	46-22
		SWT	46-22
	NPT	NPT	46-22
		SWT	46-23
	SWT	ORB	46-23
		NPT	46-23
SWT	SWT	NPT	46-23
		SWT	46-23

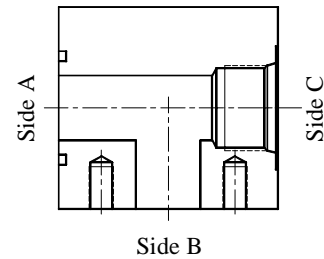
Code 61 & Code 62 4-Bolt Tees



ORF / Companion / Companion

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (Comp)	Side C (Comp)
2415-08-08-08	2520-08-08-08	0.50	0.50	0.50
2415-12-12-12	2520-12-12-12	0.75	0.75	0.75
2415-16-16-16	2520-16-16-16	1.00	1.00	1.00
2415-20-20-20	2520-20-20-20	1.25	1.25	1.25
2415-24-24-24	2520-24-24-24	1.50	1.50	1.50
2415-32-32-32	2520-32-32-32	2.00	2.00	2.00

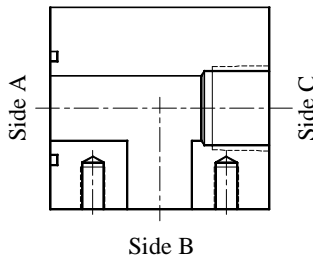
SANDWICH STYLE BLOCK, NO BOLTS SUPPLIED



ORF / Companion / ORB

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (Comp)	Side C (ORB)
2418-08-08-08	2523-08-08-08	0.50	0.50	#8 (3/4"-16)
2418-12-12-12	2523-12-12-12	0.75	0.75	#12 (1-1/16"-12)
2418-16-16-16	2523-16-16-16	1.00	1.00	#16 (1-5/16"-12)
2418-20-20-20	2523-20-20-20	1.25	1.25	#20 (1-5/8"-12)
2418-24-24-24	2523-24-24-24	1.50	1.50	#24 (1-7/8"-12)
2418-32-32-32	2523-32-32-32	2.00	2.00	#32 (2-1/2"-12)

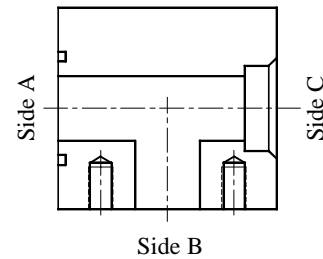
COMES COMPLETE WITH BOLT KIT



ORF / Companion / NPT

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (Comp)	Side C (NPT)
2419-08-08-08	2524-08-08-08	0.50	0.50	1/2"-14
2419-12-12-12	2524-12-12-12	0.75	0.75	3/4"-14
2419-16-16-16	2524-16-16-16	1.00	1.00	1"-11.5
2419-20-20-20	2524-20-20-20	1.25	1.25	1-1/4"-11.5
2419-24-24-24	2524-24-24-24	1.50	1.50	1-1/2"-11.5
2419-32-32-32	2524-32-32-32	2.00	2.00	2"-11.5

COMES COMPLETE WITH BOLT KIT

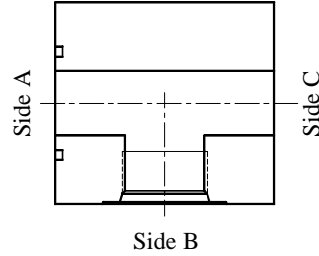
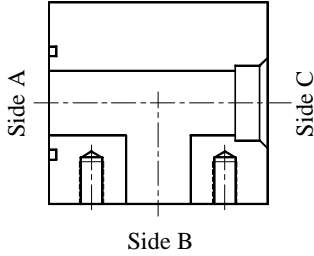


ORF / Companion / SWP

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (Comp)	Side C (SWP)
2416-08-08-08	2521-08-08-08	0.50	0.50	1/2
2416-12-12-12	2521-12-12-12	0.75	0.75	3/4
2416-16-16-16	2521-16-16-16	1.00	1.00	1
2416-20-20-20	2521-20-20-20	1.25	1.25	1-1/4
2416-24-24-24	2521-24-24-24	1.50	1.50	1-1/2
2416-32-32-32	2521-32-32-32	2.00	2.00	2

COMES COMPLETE WITH BOLT KIT

Code 61 & Code 62 4-Bolt Tees



ORF / Companion / SWT

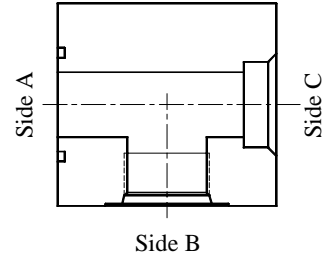
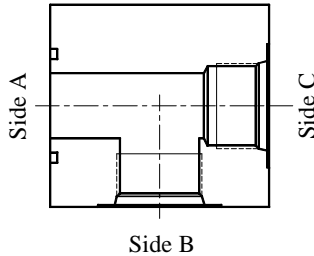
Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (Comp)	Side C (SWT)
2417-08-08-08	2522-08-08-08	0.50	0.50	0.50
2417-12-12-12	2522-12-12-12	0.75	0.75	0.75
2417-16-16-16	2522-16-16-16	1.00	1.00	1.00
2417-20-20-20	2522-20-20-20	1.25	1.25	1.25
2417-24-24-24	2522-24-24-24	1.50	1.50	1.50
2417-32-32-32	2522-32-32-32	2.00	2.00	2.00

COMES COMPLETE WITH BOLT KIT

ORF / ORB / Companion

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (ORB)	Side C (Comp)
1870-08-08-08	1872-08-08-08	0.50	#8 (3/4"-16)	0.50
1870-12-12-12	1872-12-12-12	0.75	#12 (1-1/16"-12)	0.75
1870-16-16-16	1872-16-16-16	1.00	#16 (1-5/16"-12)	1.00
1870-20-20-20	1872-20-20-20	1.25	#20 (1-5/8"-12)	1.25
1870-24-24-24	1872-24-24-24	1.50	#24 (1-7/8"-12)	1.50
1870-32-32-32	1872-32-32-32	2.00	#32 (2-1/2"-12)	2.00

SANDWICH STYLE BLOCK, NO BOLTS SUPPLIED



ORF / ORB / ORB

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (ORB)	Side C (ORB)
2431-08-08-08	2536-08-08-08	0.50	#8 (3/4"-16)	#8 (3/4"-16)
2431-12-12-12	2536-12-12-12	0.75	#12 (1-1/16"-12)	#12 (1-1/16"-12)
2431-16-16-16	2536-16-16-16	1.00	#16 (1-5/16"-12)	#16 (1-5/16"-12)
2431-20-20-20	2536-20-20-20	1.25	#20 (1-5/8"-12)	#20 (1-5/8"-12)
2431-24-24-24	2536-24-24-24	1.50	#24 (1-7/8"-12)	#24 (1-7/8"-12)
2431-32-32-32	2536-32-32-32	2.00	#32 (2-1/2"-12)	#32 (2-1/2"-12)

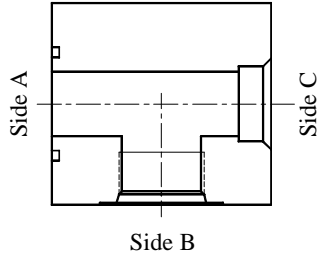
COMES COMPLETE WITH BOLT KIT

ORF / ORB / SWP

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (ORB)	Side C (SWP)
2429-08-08-08	2534-08-08-08	0.50	#8 (3/4"-16)	1/2
2429-12-12-12	2534-12-12-12	0.75	#12 (1-1/16"-12)	3/4
2429-16-16-16	2534-16-16-16	1.00	#16 (1-5/16"-12)	1
2429-20-20-20	2534-20-20-20	1.25	#20 (1-5/8"-12)	1-1/4
2429-24-24-24	2534-24-24-24	1.50	#24 (1-7/8"-12)	1-1/2
2429-32-32-32	2534-32-32-32	2.00	#32 (2-1/2"-12)	2

COMES COMPLETE WITH BOLT KIT

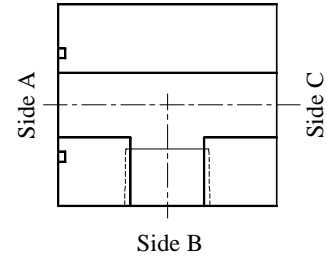
Code 61 & Code 62 4-Bolt Tees



ORF / ORB / SWT

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (ORB)	Side C (SWT)
2430-08-08-08	2535-08-08-08	0.50	#8 (3/4"-16)	0.50
2430-12-12-16	2535-12-12-16	0.75	#12 (1-1/16"-12)	1.00
2430-16-16-20	2535-16-16-20	1.00	#16 (1-5/16"-12)	1.25
2430-20-20-24	2535-20-20-24	1.25	#20 (1-5/8"-12)	1.50
2430-24-24-32	2535-24-24-32	1.50	#24 (1-7/8"-12)	2.00
2430-32-32-32	2535-32-32-32	2.00	#32 (2-1/2"-12)	2.00

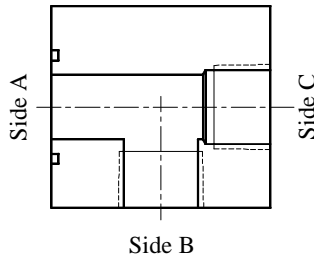
COMES COMPLETE WITH BOLT KIT



ORF / NPT / Companion

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (NPT)	Side C (Comp)
2433-08-08-08	2538-08-08-08	0.50	1/2"-14	0.50
2433-12-12-12	2538-12-12-12	0.75	3/4"-14	0.75
2433-16-16-16	2538-16-16-16	1.00	1"-11.5	1.00
2433-20-20-20	2538-20-20-20	1.25	1-1/4"-11.5	1.25
2433-24-24-24	2538-24-24-24	1.50	1-1/2"-11.5	1.50
2433-32-32-32	2538-32-32-32	2.00	2"-11.5	2.00

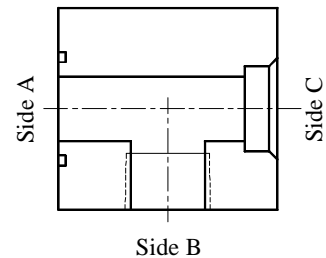
SANDWICH STYLE BLOCK, NO BOLTS SUPPLIED



ORF / NPT / NPT

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (NPT)	Side C (NPT)
2437-08-08-08	2542-08-08-08	0.50	1/2"-14	1/2"-14
2437-12-12-12	2542-12-12-12	0.75	3/4"-14	3/4"-14
2437-16-16-16	2542-16-16-16	1.00	1"-11.5	1"-11.5
2437-20-20-20	2542-20-20-20	1.25	1-1/4"-11.5	1-1/4"-11.5
2437-24-24-24	2542-24-24-24	1.50	1-1/2"-11.5	1-1/2"-11.5
2437-32-32-32	2542-32-32-32	2.00	2"-11.5	2"-11.5

COMES COMPLETE WITH BOLT KIT

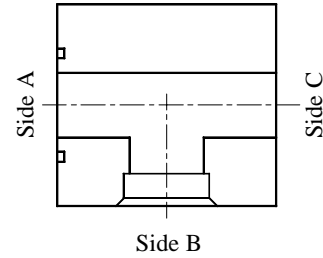
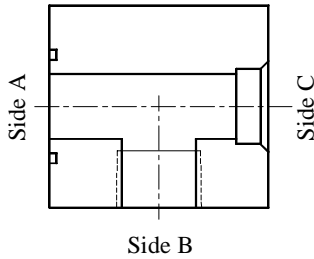


ORF / NPT / SWP

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (NPT)	Side C (SWP)
2434-08-08-08	2539-08-08-08	0.50	1/2"-14	1/2
2434-12-12-12	2539-12-12-12	0.75	3/4"-14	3/4
2434-16-16-16	2539-16-16-16	1.00	1"-11.5	1
2434-20-20-20	2539-20-20-20	1.25	1-1/4"-11.5	1-1/4
2434-24-24-24	2539-24-24-24	1.50	1-1/2"-11.5	1-1/2
2434-32-32-32	2539-32-32-32	2.00	2"-11.5	2

COMES COMPLETE WITH BOLT KIT

Code 61 & Code 62 4-Bolt Tees



ORF / NPT / SWT

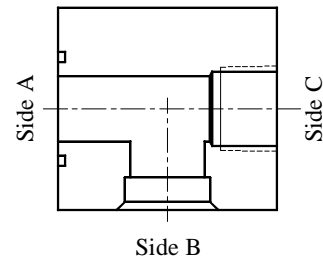
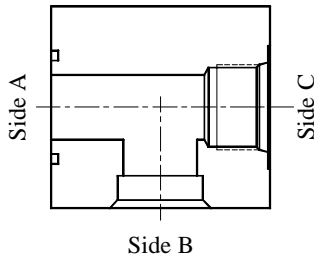
Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (NPT)	Side C (SWT)
2435-08-08-08	2540-08-08-08	0.50	1/2"-14	0.50
2435-12-12-12	2540-12-12-12	0.75	3/4"-14	0.75
2435-12-12-16	2540-12-12-16	0.75	3/4"-14	1.00
2435-16-16-20	2540-16-16-20	1.00	1"-11.5	1.25
2435-20-20-24	2540-20-20-24	1.25	1-1/4"-11.5	1.50
2435-24-24-32	2540-24-24-32	1.50	1-1/2"-11.5	2.00
2435-32-32-32	2540-32-32-32	2.00	2"-11.5	2.00

COMES COMPLETE WITH BOLT KIT

ORF / SWP / Companion

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWP)	Side C (Comp)
1869-08-08-08	1871-08-08-08	0.50	1/2	0.50
1869-12-12-12	1871-12-12-12	0.75	3/4	0.75
1869-16-16-16	1871-16-16-16	1.00	1	1.00
1869-20-20-20	1871-20-20-20	1.25	1-1/4	1.25
1869-24-24-24	1871-24-24-24	1.50	1-1/2	1.50
1869-32-32-32	1871-32-32-32	2.00	2	2.00

SANDWICH STYLE BLOCK, NO BOLTS SUPPLIED



ORF / SWP / ORB

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWP)	Side C (ORB)
2422-08-08-08	2527-08-08-08	0.50	1/2	#8 (3/4"-16)
2422-12-12-12	2527-12-12-12	0.75	3/4	#12 (1-1/16"-12)
2422-16-16-16	2527-16-16-16	1.00	1	#16 (1-5/16"-12)
2422-20-20-20	2527-20-20-20	1.25	1-1/4	#20 (1-5/8"-12)
2422-24-24-24	2527-24-24-24	1.50	1-1/2	#24 (1-7/8"-12)
2422-32-32-32	2527-32-32-32	2.00	2	#32 (2-1/2"-12)

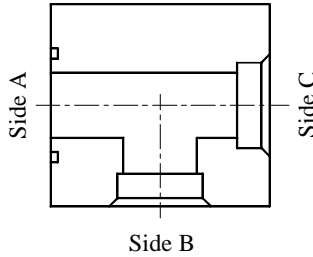
COMES COMPLETE WITH BOLT KIT

ORF / SWP / NPT

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWP)	Side C (NPT)
2423-08-08-08	2528-08-08-08	0.50	1/2	1/2"-14
2423-12-12-12	2528-12-12-12	0.75	3/4	3/4"-14
2423-16-16-16	2528-16-16-16	1.00	1	1"-11.5
2423-20-20-20	2528-20-20-20	1.25	1-1/4	1-1/4"-11.5
2423-24-24-24	2528-24-24-24	1.50	1-1/2	1-1/2"-11.5
2423-32-32-32	2528-32-32-32	2.00	2	2"-11.5

COMES COMPLETE WITH BOLT KIT

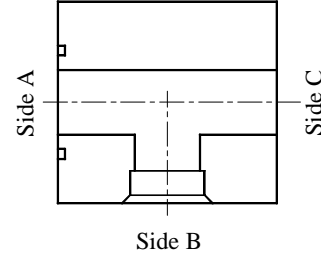
Code 61 & Code 62 4-Bolt Tees



ORF / SWP / SWP

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWP)	Side C (SWP)
2420-08-08-08	2525-08-08-08	0.50	1/2	1/2
2420-12-12-12	2525-12-12-12	0.75	3/4	3/4
2420-16-16-16	2525-16-16-16	1.00	1	1
2420-20-20-20	2525-20-20-20	1.25	1-1/4	1-1/4
2420-24-24-24	2525-24-24-24	1.50	1-1/2	1-1/2
2420-32-32-32	2525-32-32-32	2.00	2	2

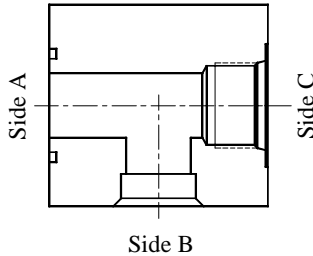
COMES COMPLETE WITH BOLT KIT



ORF / SWT / Companion

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWT)	Side C (Comp)
2424-08-08-08	2529-08-08-08	0.50	0.50	0.50
2424-12-12-12	2529-12-12-12	0.75	0.75	0.75
2424-12-16-12	2529-12-16-12	0.75	1.00	1.00
2424-16-20-16	2529-16-20-16	1.00	1.25	1.25
2424-20-24-20	2529-20-24-20	1.25	1.50	1.50
2424-24-32-24	2529-24-32-24	1.50	2.00	2.00
2424-32-32-32	2529-32-32-32	2.00	2.00	2.00

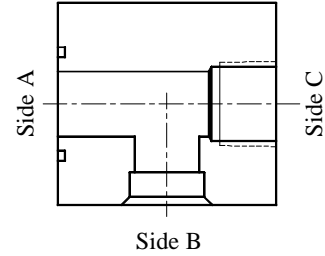
SANDWICH STYLE BLOCK, NO BOLTS SUPPLIED



ORF / SWT / ORB

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWT)	Side C (ORB)
2427-08-08-08	2532-08-08-08	0.50	0.50	#8 (3/4"-16)
2427-12-12-12	2532-12-12-12	0.75	0.75	#12 (1-1/16"-12)
2427-16-20-16	2532-16-20-16	1.00	1.25	#16 (1-5/16"-12)
2427-20-24-20	2532-20-24-20	1.25	1.50	#20 (1-5/8"-12)
2427-24-32-24	2532-24-32-24	1.50	2.00	#24 (1-7/8"-12)
2427-32-32-32	2532-32-32-32	2.00	2.00	#32 (2-1/2"-12)

COMES COMPLETE WITH BOLT KIT

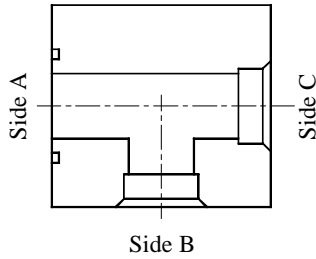


ORF / SWT / NPT

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWT)	Side C (NPT)
2428-08-08-08	2533-08-08-08	0.50	0.50	1/2"-14
2428-12-12-12	2533-12-12-12	0.75	0.75	3/4"-14
2428-12-16-16	2533-12-16-16	0.75	1.00	1"-11.5
2428-16-20-16	2533-16-20-16	1.00	1.25	1"-11.5
2428-20-24-20	2533-20-24-20	1.25	1.50	1-1/4"-11.5
2428-24-32-24	2533-24-32-24	1.50	2.00	1-1/2"-11.5
2428-32-32-32	2533-32-32-32	2.00	2.00	2"-11.5

COMES COMPLETE WITH BOLT KIT

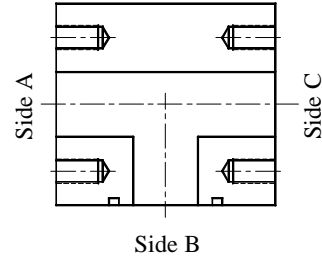
Code 61 & Code 62 4-Bolt Tees



ORF / SWT / SWT

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWT)	Side C (SWT)
2426-08-08-08	2531-08-08-08	0.50	0.50	0.50
2426-12-12-12	2531-12-12-12	0.75	0.75	0.75
2426-12-16-16	2531-12-16-16	0.75	1.00	1.00
2426-16-20-20	2531-16-20-20	1.00	1.25	1.25
2426-20-24-24	2531-20-24-24	1.25	1.50	1.50
2426-24-32-32	2531-24-32-32	1.50	2.00	2.00
2426-32-32-32	2531-32-32-32	2.00	2.00	2.00

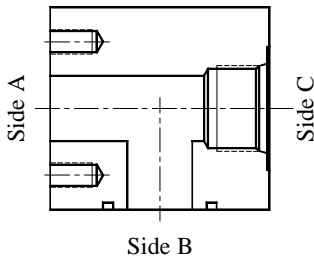
COMES COMPLETE WITH BOLT KIT



Companion / ORF / Companion

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORF)	Side C (Comp)
2012-08-08-08	2015-08-08-08	0.50	0.50	0.50
2012-12-12-12	2015-12-12-12	0.75	0.75	0.75
2012-16-16-16	2015-16-16-16	1.00	1.00	1.00
2012-20-20-20	2015-20-20-20	1.25	1.25	1.25
2012-24-24-24	2015-24-24-24	1.50	1.50	1.50
2012-32-32-32	2015-32-32-32	2.00	2.00	2.00

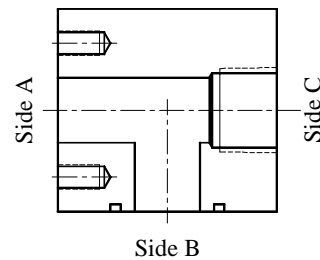
COMES COMPLETE WITH BOLT KIT



Companion / ORF / ORB

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORF)	Side C (ORB)
2375-08-08-08	2498-08-08-08	0.50	0.50	#8 (3/4"-16)
2375-12-12-12	2498-12-12-12	0.75	0.75	#12 (1-1/16"-12)
2375-16-16-16	2498-16-16-16	1.00	1.00	#16 (1-5/16"-12)
2375-20-20-20	2498-20-20-20	1.25	1.25	#20 (1-5/8"-12)
2375-24-24-24	2498-24-24-24	1.50	1.50	#24 (1-7/8"-12)
2375-32-32-32	2498-32-32-32	2.00	2.00	#32 (2-1/2"-12)

COMES COMPLETE WITH BOLT KIT

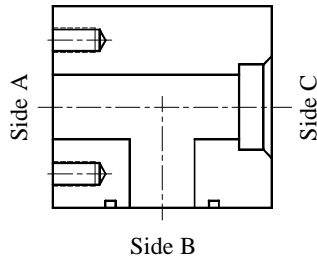


Companion / ORF / NPT

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORF)	Side C (NPT)
2376-08-08-08	2499-08-08-08	0.50	0.50	1/2"-14
2376-12-12-12	2499-12-12-12	0.75	0.75	3/4"-14
2376-16-16-16	2499-16-16-16	1.00	1.00	1"-11.5
2376-20-20-20	2499-20-20-20	1.25	1.25	1-1/4"-11.5
2376-24-24-24	2499-24-24-24	1.50	1.50	1-1/2"-11.5
2376-32-32-32	2499-32-32-32	2.00	2.00	2"-11.5

COMES COMPLETE WITH BOLT KIT

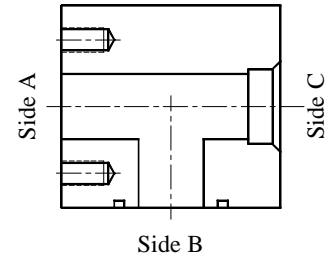
Code 61 & Code 62 4-Bolt Tees



Companion / ORF / SWP

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORF)	Side C (SWP)
2373-08-08-08	2496-08-08-08	0.50	0.50	1/2
2373-12-12-12	2496-12-12-12	0.75	0.75	3/4
2373-16-16-16	2496-16-16-16	1.00	1.00	1
2373-20-20-20	2496-20-20-20	1.25	1.25	1-1/4
2373-24-24-24	2496-24-24-24	1.50	1.50	1-1/2
2373-32-32-32	2496-32-32-32	2.00	2.00	2

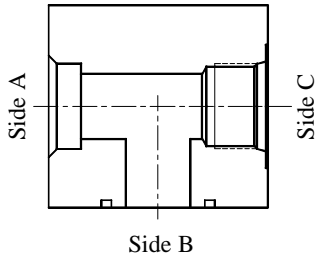
COMES COMPLETE WITH BOLT KIT



Companion / ORF / SWT

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORF)	Side C (SWT)
2374-08-08-08	2497-08-08-08	0.50	0.50	0.50
2374-12-12-12	2497-12-12-12	0.75	0.75	0.75
2374-16-16-20	2497-16-16-20	1.00	1.00	1.25
2374-20-20-24	2497-20-20-24	1.25	1.25	1.50
2374-24-24-32	2497-24-24-32	1.50	1.50	2.00
2374-32-32-32	2497-32-32-32	2.00	2.00	2.00

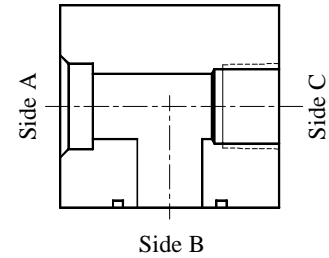
COMES COMPLETE WITH BOLT KIT



SWP / ORF / ORB

Code 61 Part No.	Code 62 Part No.	Side A (SWP)	Side B (ORF)	Side C (ORB)
2401-08-08-08	2442-08-08-08	1/2	0.50	#8 (3/4"-16)
2401-12-12-12	2442-12-12-12	3/4	0.75	#12 (1-1/16"-12)
2401-16-16-16	2442-16-16-16	1	1.00	#16 (1-5/16"-12)
2401-20-20-20	2442-20-20-20	1-1/4	1.25	#20 (1-5/8"-12)
2401-24-24-24	2442-24-24-24	1-1/2	1.50	#24 (1-7/8"-12)
2401-32-32-32	2442-32-32-32	2	2.00	#32 (2-1/2"-12)

COMES COMPLETE WITH BOLT KIT

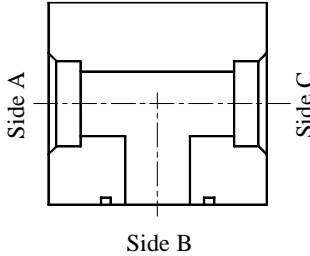


SWP / ORF / NPT

Code 61 Part No.	Code 62 Part No.	Side A (SWP)	Side B (ORF)	Side C (NPT)
2402-08-08-08	2443-08-08-08	1/2	0.50	1/2"-14
2402-12-12-12	2443-12-12-12	3/4	0.75	3/4"-14
2402-16-16-16	2443-16-16-16	1	1.00	1"-11.5
2402-20-20-20	2443-20-20-20	1-1/4	1.25	1-1/4"-11.5
2402-24-24-24	2443-24-24-24	1-1/2	1.50	1-1/2"-11.5
2402-32-32-32	2443-32-32-32	2	2.00	2"-11.5

COMES COMPLETE WITH BOLT KIT

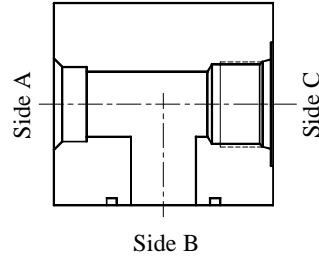
Code 61 & Code 62 4-Bolt Tees



SWP / ORF / SWP

Code 61 Part No.	Code 62 Part No.	Side A (SWP)	Side B (ORF)	Side C (SWP)
2014-08-08-08	2017-08-08-08	1/2	0.50	1/2
2014-12-12-12	2017-12-12-12	3/4	0.75	3/4
2014-16-16-16	2017-16-16-16	1	1.00	1
2014-20-20-20	2017-20-20-20	1-1/4	1.25	1-1/4
2014-24-24-24	2017-24-24-24	1-1/2	1.50	1-1/2
2014-32-32-32	2017-32-32-32	2	2.00	2

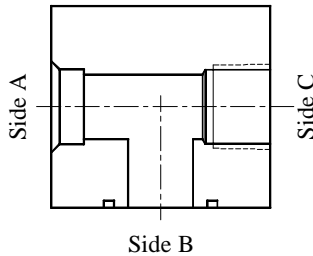
COMES COMPLETE WITH BOLT KIT



SWT / ORF / ORB

Code 61 Part No.	Code 62 Part No.	Side A (SWT)	Side B (ORF)	Side C (ORB)
2407-08-08-08	2448-08-08-08	0.50	0.50	#8 (3/4"-16)
2407-12-12-12	2448-12-12-12	0.75	0.75	#12 (1-1/16"-12)
2407-16-16-16	2448-16-16-12	1.00	1.00	#16 (1-5/16"-12)
2407-20-16-16	2448-20-16-16	1.25	1.00	#16 (1-5/16"-12)
2407-24-20-20	2448-24-20-20	1.50	1.25	#20 (1-5/8"-12)
2407-32-24-24	2448-32-24-24	2.00	1.50	#24 (1-7/8"-12)
2407-32-32-32	2448-32-32-32	2.00	2.00	#32 (2-1/2"-12)

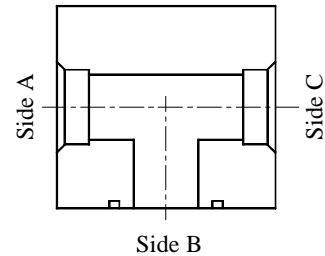
COMES COMPLETE WITH BOLT KIT



SWT / ORF / NPT

Code 61 Part No.	Code 62 Part No.	Side A (SWT)	Side B (ORF)	Side C (NPT)
2408-08-08-08	2449-08-08-08	0.50	0.50	1/2"-14
2408-12-12-12	2449-12-12-12	0.75	0.75	3/4"-14
2408-16-16-16	2449-16-16-16	1.00	1.00	1"-11.5
2408-20-16-16	2449-20-16-16	1.25	1.00	1"-11.5
2408-24-20-20	2449-24-20-20	1.50	1.25	1-1/4"-11.5
2408-32-24-24	2449-32-24-24	2.00	1.50	1-1/2"-11.5
2408-32-32-32	2449-32-32-32	2.00	2.00	2"-11.5

COMES COMPLETE WITH BOLT KIT

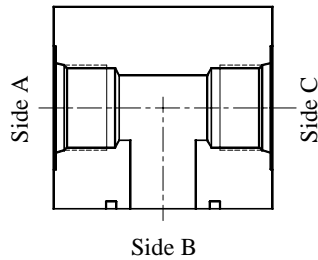


SWT / ORF / SWT

Code 61 Part No.	Code 62 Part No.	Side A (SWT)	Side B (ORF)	Side C (SWT)
2406-08-08-08	2447-08-08-08	0.50	0.50	0.50
2406-12-12-12	2447-12-12-12	0.75	0.75	0.75
2406-16-16-16	2447-16-16-16	1.00	1.00	1.00
2406-20-16-16	2447-20-16-16	1.25	1.00	1.25
2406-24-20-24	2447-24-20-24	1.50	1.25	1.50
2406-32-24-32	2447-32-24-32	2.00	1.50	2.00
2406-32-32-32	2447-32-32-32	2.00	2.00	2.00

COMES COMPLETE WITH BOLT KIT

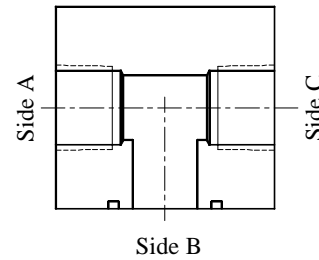
Code 61 & Code 62 4-Bolt Tees



ORB / ORF / ORB

Code 61 Part No.	Code 62 Part No.	Side A (ORB)	Side B (ORF)	Side C (ORB)
2411-08-08-08	2452-08-08-08	#8 (3/4"-16)	0.50	#8 (3/4"-16)
2411-12-12-12	2452-12-12-12	#12 (1-1/16"-12)	0.75	#12 (1-1/16"-12)
2411-16-16-16	2452-16-16-16	#16 (1-5/16"-12)	1.00	#16 (1-5/16"-12)
2411-20-20-20	2452-20-20-20	#20 (1-5/8"-12)	1.25	#20 (1-5/8"-12)
2411-24-24-24	2452-24-24-24	#24 (1-7/8"-12)	1.50	#24 (1-7/8"-12)
2411-32-32-32	2452-32-32-32	#32 (2-1/2"-12)	2.00	#32 (2-1/2"-12)

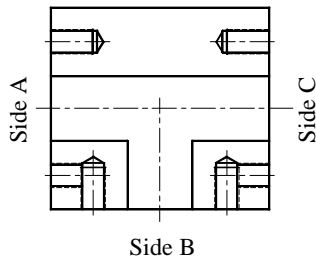
COMES COMPLETE WITH BOLT KIT



NPT / ORF / NPT

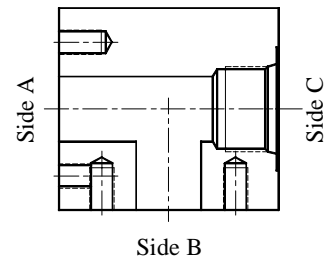
Code 61 Part No.	Code 62 Part No.	Side A (NPT)	Side B (ORF)	Side C (NPT)
2414-08-08-08	2544-08-08-08	1/2"-14	0.50	1/2"-14
2414-12-12-12	2544-12-12-12	3/4"-14	0.75	3/4"-14
2414-16-16-16	2544-16-16-16	1"-11.5	1.00	1"-11.5
2414-20-20-20	2544-20-20-20	1-1/4"-11.5	1.25	1-1/4"-11.5
2414-24-24-24	2544-24-24-24	1-1/2"-11.5	1.50	1-1/2"-11.5
2414-32-32-32	2544-32-32-32	2"-11.5	2.00	2"-11.5

COMES COMPLETE WITH BOLT KIT



Companion / Companion / Companion

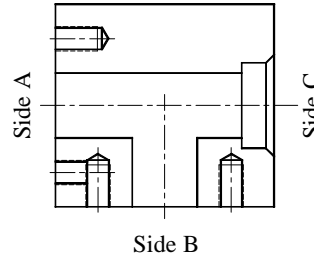
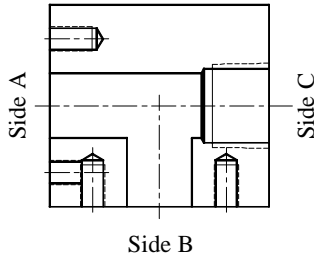
Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (Comp)	Side C (Comp)
1806-08-08-08	1807-08-08-08	0.50	0.50	0.50
1806-12-12-12	1807-12-12-12	0.75	0.75	0.75
1806-16-16-16	1807-16-16-16	1.00	1.00	1.00
1806-20-20-20	1807-20-20-20	1.25	1.25	1.25
1806-24-24-24	1807-24-24-24	1.50	1.50	1.50
1806-32-32-32	1807-32-32-32	2.00	2.00	2.00



Companion / Companion / ORB

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (Comp)	Side C (ORB)
2371-08-08-08	2494-08-08-08	0.50	0.50	#8 (3/4"-16)
2371-12-12-12	2494-12-12-12	0.75	0.75	#12 (1-1/16"-12)
2371-16-16-16	2494-16-16-16	1.00	1.00	#16 (1-5/16"-12)
2371-20-20-20	2494-20-20-20	1.25	1.25	#20 (1-5/8"-12)
2371-24-24-24	2494-24-24-24	1.50	1.50	#24 (1-7/8"-12)
2371-32-32-32	2494-32-32-32	2.00	2.00	#32 (2-1/2"-12)

Code 61 & Code 62 4-Bolt Tees

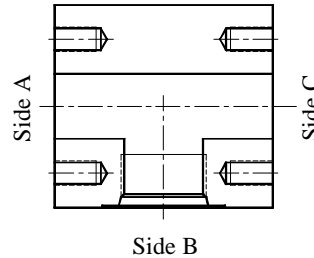
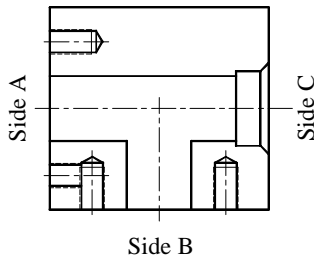


Companion / Companion / NPT

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (Comp)	Side C (NPT)
2372-08-08-08	2495-08-08-08	0.50	0.50	1/2"-14
2372-12-12-12	2495-12-12-12	0.75	0.75	3/4"-14
2372-16-16-16	2495-16-16-16	1.00	1.00	1"-11.5
2372-20-20-20	2495-20-20-20	1.25	1.25	1-1/4"-11.5
2372-24-24-24	2495-24-24-24	1.50	1.50	1-1/2"-11.5
2372-32-32-32	2495-32-32-32	2.00	2.00	2"-11.5

Companion / Companion / SWP

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (Comp)	Side C (SWP)
1966-08-08-08	1969-08-08-08	0.50	0.50	1/2
1966-12-12-12	1969-12-12-12	0.75	0.75	3/4
1966-16-16-16	1969-16-16-16	1.00	1.00	1
1966-20-20-20	1969-20-20-20	1.25	1.25	1-1/4
1966-24-24-24	1969-24-24-24	1.50	1.50	1-1/2
1966-32-32-32	1969-32-32-32	2.00	2.00	2



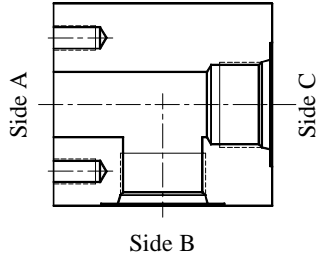
Companion / Companion / SWT

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (Comp)	Side C (SWT)
2370-08-08-08	2493-08-08-08	0.50	0.50	0.50
2370-12-12-12	2493-12-12-12	0.75	0.75	0.75
2370-12-12-16	2493-12-12-16	0.75	0.75	1.00
2370-16-16-20	2493-16-16-20	1.00	1.00	1.25
2370-20-20-24	2493-20-20-24	1.25	1.25	1.50
2370-24-24-32	2493-24-24-32	1.50	1.50	2.00
2370-32-32-32	2493-32-32-32	2.00	2.00	2.00

Companion / ORB / Companion

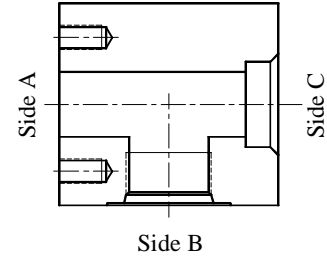
Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORB)	Side C (Comp)
2387-08-08-08	2510-08-08-08	0.50	#8 (3/4"-16)	0.50
2387-12-12-12	2510-12-12-12	0.75	#12 (1-1/16"-12)	0.75
2387-16-16-16	2510-16-16-16	1.00	#16 (1-5/16"-12)	1.00
2387-20-20-20	2510-20-20-20	1.25	#20 (1-5/8"-12)	1.25
2387-24-24-24	2510-24-24-24	1.50	#24 (1-7/8"-12)	1.50
2387-32-32-32	2510-32-32-32	2.00	#32 (2-1/2"-12)	2.00

Code 61 & Code 62 4-Bolt Tees



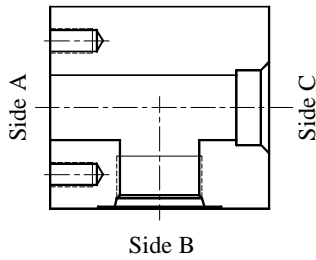
Companion / ORB / ORB

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORB)	Side C (ORB)
2390-12-12-12	2513-12-12-12	0.75	#12 (1-1/16"-12)	#12 (1-1/16"-12)
2390-16-16-16	2513-16-16-16	1.00	#16 (1-5/16"-12)	#16 (1-5/16"-12)
2390-20-20-20	2513-20-20-20	1.25	#20 (1-5/8"-12)	#20 (1-5/8"-12)
2390-24-24-24	2513-24-24-24	1.50	#24 (1-7/8"-12)	#24 (1-7/8"-12)
2390-32-32-32	2513-32-32-32	2.00	#32 (2-1/2"-12)	#32 (2-1/2"-12)



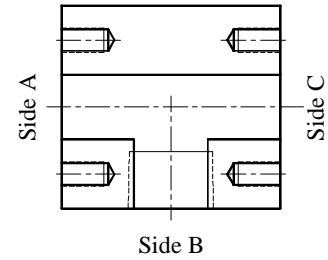
Companion / ORB / SWP

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORB)	Side C (SWP)
2388-12-12-12	2511-12-12-12	0.75	#12 (1-1/16"-12)	3/4
2388-16-16-16	2511-16-16-16	1.00	#16 (1-5/16"-12)	1
2388-20-20-20	2511-20-20-20	1.25	#20 (1-5/8"-12)	1-1/4
2388-24-24-24	2511-24-24-24	1.50	#24 (1-7/8"-12)	1-1/2
2388-32-32-32	2511-32-32-32	2.00	#32 (2-1/2"-12)	2



Companion / ORB / SWT

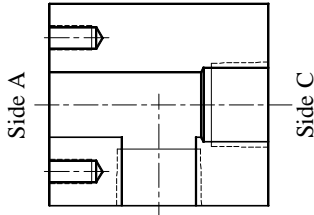
Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORB)	Side C (SWT)
2389-12-12-12	2512-12-12-12	0.75	#12 (1-1/16"-12)	0.75
2389-12-12-16	2512-12-12-16	0.75	#12 (1-1/16"-12)	1.00
2389-16-16-16	2512-16-16-16	1.00	#16 (1-5/16"-12)	1.00
2389-16-16-20	2512-16-16-20	1.00	#16 (1-5/16"-12)	1.25
2389-20-20-20	2512-20-20-20	1.25	#20 (1-5/8"-12)	1.25
2389-20-20-24	2512-20-20-24	1.25	#20 (1-5/8"-12)	1.50
2389-24-24-24	2512-24-24-24	1.50	#24 (1-7/8"-12)	1.50
2389-24-24-32	2512-24-24-32	1.50	#24 (1-7/8"-12)	2.00
2389-32-32-32	2512-32-32-32	2.00	#32 (2-1/2"-12)	2.00



Companion / NPT / Companion

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (NPT)	Side C (Comp)
2392-12-12-12	2515-12-12-12	0.75	3/4"-14	0.75
2392-16-12-16	2515-16-12-16	1.00	3/4"-14	1.00
2392-16-16-16	2515-16-16-16	1.00	1"-11.5	1.00
2392-20-16-20	2515-20-16-20	1.25	1"-11.5	1.25
2392-20-20-20	2515-20-20-20	1.25	1-1/4"-11.5	1.25
2392-24-20-24	2515-24-20-24	1.50	1-1/4"-11.5	1.50
2392-24-24-24	2515-24-24-24	1.50	1-1/2"-11.5	1.50
2392-32-24-32	2515-32-24-32	2.00	1-1/2"-11.5	2.00
2392-32-32-32	2515-32-32-32	2.00	2"-11.5	2.00

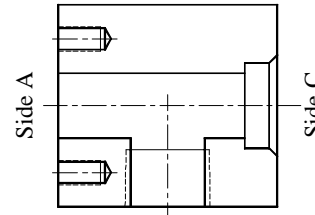
Code 61 & Code 62 4-Bolt Tees



Side B

Companion / NPT / NPT

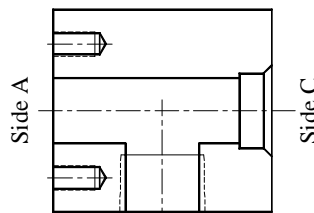
Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (NPT)	Side C (NPT)
2396-12-12-12	2519-12-12-12	0.75	3/4"-14	3/4"-14
2396-16-12-12	2519-16-12-12	1.00	3/4"-14	3/4"-14
2396-16-16-16	2519-16-16-16	1.00	1"-11.5	1"-11.5
2396-20-16-16	2519-20-16-16	1.25	1"-11.5	1"-11.5
2396-20-20-20	2519-20-20-20	1.25	1-1/4"-11.5	1-1/4"-11.5
2396-24-20-20	2519-24-20-20	1.50	1-1/4"-11.5	1-1/4"-11.5
2396-24-24-24	2519-24-24-24	1.50	1-1/2"-11.5	1-1/2"-11.5
2396-32-24-24	2519-32-24-24	2.00	1-1/2"-11.5	1-1/2"-11.5
2396-32-32-32	2519-32-32-32	2.00	2"-11.5	2"-11.5



Side B

Companion / NPT / SWP

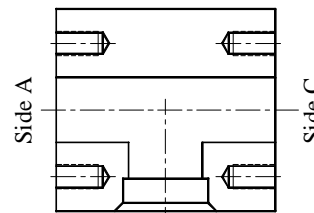
Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (NPT)	Side C (SWP)
2393-12-12-12	2516-12-12-12	0.75	3/4"-14	3/4
2393-16-12-12	2516-16-12-12	1.00	3/4"-14	3/4
2393-16-16-16	2516-16-16-16	1.00	1"-11.5	1
2393-20-16-16	2516-20-16-16	1.25	1"-11.5	1
2393-20-20-20	2516-20-20-20	1.25	1-1/4"-11.5	1-1/4
2393-24-20-20	2516-24-20-20	1.50	1-1/4"-11.5	1-1/4
2393-24-24-24	2516-24-24-24	1.50	1-1/2"-11.5	1-1/2
2393-32-24-24	2516-32-24-24	2.00	1-1/2"-11.5	1-1/2
2393-32-32-32	2516-32-32-32	2.00	2"-11.5	2



Side B

Companion / NPT / SWT

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (NPT)	Side C (SWT)
2394-12-12-12	2517-12-12-12	0.75	3/4"-14	0.75
2394-12-12-16	2517-12-12-16	0.75	3/4"-14	1.00
2394-16-16-16	2517-16-16-16	1.00	1"-11.5	1.00
2394-16-16-20	2517-16-16-20	1.00	1"-11.5	1.25
2394-20-20-20	2517-20-20-20	1.25	1-1/4"-11.5	1.25
2394-20-20-24	2517-20-20-24	1.25	1-1/4"-11.5	1.50
2394-24-24-24	2517-24-24-24	1.50	1-1/2"-11.5	1.50
2394-24-24-32	2517-24-24-32	1.50	1-1/2"-11.5	2.00
2394-32-32-32	2517-32-32-32	2.00	2"-11.5	2.00

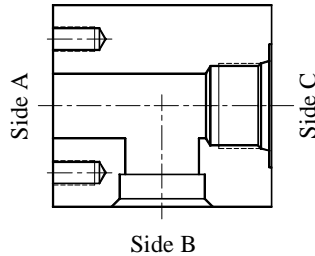


Side B

Companion / SWP / Companion

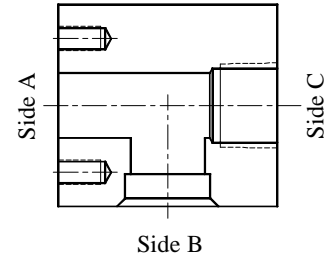
Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWP)	Side C (Comp)
2377-12-12-12	2500-12-12-12	0.75	3/4	0.75
2377-16-12-16	2500-16-12-16	1.00	3/4	1.00
2377-16-16-16	2500-16-16-16	1.00	1	1.00
2377-20-16-20	2500-20-16-20	1.25	1	1.25
2377-20-20-20	2500-20-20-20	1.25	1-1/4	1.25
2377-24-20-24	2500-24-20-24	1.50	1-1/4	1.50
2377-24-24-24	2500-24-24-24	1.50	1-1/2	1.50
2377-32-24-32	2500-32-24-32	2.00	1-1/2	2.00
2377-32-32-32	2500-32-32-32	2.00	2	2.00

Code 61 & Code 62 4-Bolt Tees



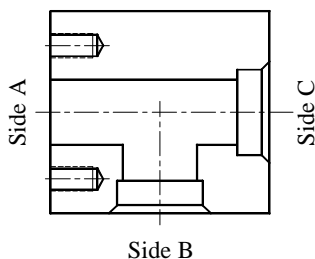
Companion / SWP / ORB

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWP)	Side C (ORB)
2380-12-12-12	2503-12-12-12	0.75	3/4	#12 (1-1/16"-12)
2380-16-12-12	2503-16-12-12	1.00	3/4	#12 (1-1/16"-12)
2380-16-16-16	2503-16-16-16	1.00	1	#16 (1-5/16"-12)
2380-20-16-16	2503-20-16-16	1.25	1	#16 (1-5/16"-12)
2380-20-20-20	2503-20-20-20	1.25	1-1/4	#20 (1-5/8"-12)
2380-24-20-20	2503-24-20-20	1.50	1-1/4	#20 (1-5/8"-12)
2380-24-24-24	2503-24-24-24	1.50	1-1/2	#24 (1-7/8"-12)
2380-32-24-24	2503-32-24-24	2.00	1-1/2	#24 (1-7/8"-12)
2380-32-32-32	2503-32-32-32	2.00	2	#32 (2-1/2"-12)



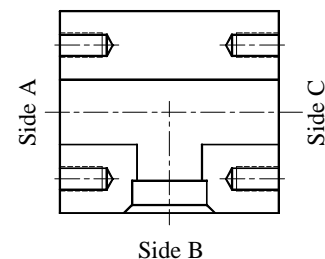
Companion / SWP / NPT

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWP)	Side C (NPT)
2381-12-12-12	2504-12-12-12	0.75	3/4	3/4"-14
2381-16-12-12	2504-16-12-12	1.00	3/4	3/4"-14
2381-16-16-16	2504-16-16-16	1.00	1	1"-11.5
2381-20-16-16	2504-20-16-16	1.25	1	1"-11.5
2381-20-20-20	2504-20-20-20	1.25	1-1/4	1-1/4"-11.5
2381-24-20-20	2504-24-20-20	1.50	1-1/4	1-1/4"-11.5
2381-24-24-24	2504-24-24-24	1.50	1-1/2	1-1/2"-11.5
2381-32-24-24	2504-32-24-24	2.00	1-1/2	1-1/2"-11.5
2381-32-32-32	2504-32-32-32	2.00	2	2"-11.5



Companion / SWP / SWP

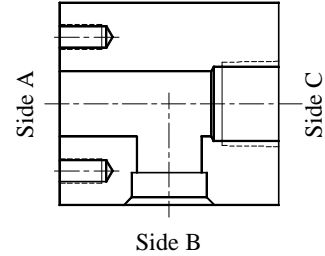
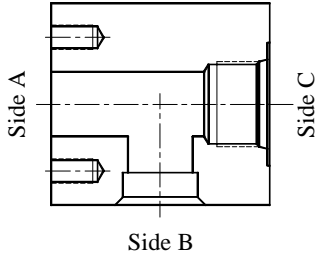
Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWP)	Side C (SWP)
2378-12-12-12	2501-12-12-12	0.75	3/4	3/4
2378-16-12-12	2501-16-12-12	1.00	3/4	3/4
2378-16-16-16	2501-16-16-16	1.00	1	1
2378-20-16-16	2501-20-16-16	1.25	1	1
2378-20-20-20	2501-20-20-20	1.25	1-1/4	1-1/4
2378-24-20-20	2501-24-20-20	1.50	1-1/4	1-1/4
2378-24-24-24	2501-24-24-24	1.50	1-1/2	1-1/2
2378-32-24-24	2501-32-24-24	2.00	1-1/2	1-1/2
2378-32-32-32	2501-32-32-32	2.00	2	2



Companion / SWT / Companion

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWT)	Side C (Comp)
2382-12-12-12	2505-12-12-12	0.75	0.75	0.75
2382-12-16-12	2505-12-16-12	0.75	1.00	0.75
2382-16-16-16	2505-16-16-16	1.00	1.00	1.00
2382-16-20-16	2505-16-20-16	1.00	1.25	1.00
2382-20-20-20	2505-20-20-20	1.25	1.25	1.25
2382-20-24-20	2505-20-24-20	1.25	1.50	1.25
2382-24-24-24	2505-24-24-24	1.50	1.50	1.50
2382-24-32-24	2505-24-32-24	1.50	2.00	1.50
2382-32-32-32	2505-32-32-32	2.00	2.00	2.00

Code 61 & Code 62 4-Bolt Tees

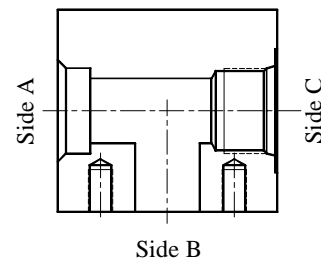
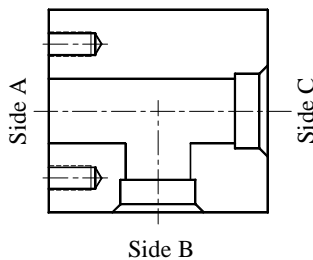


Companion / SWT / ORB

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWT)	Side C (ORB)
2385-12-12-12	2508-12-12-12	0.75	0.75	#12 (1-1/16"-12)
2385-16-12-12	2508-16-12-12	1.00	0.75	#12 (1-1/16"-12)
2385-16-16-16	2508-16-16-16	1.00	1.00	#16 (1-5/16"-12)
2385-20-16-16	2508-20-16-16	1.25	1.00	#16 (1-5/16"-12)
2385-20-20-20	2508-20-20-20	1.25	1.25	#20 (1-5/8"-12)
2385-24-20-20	2508-24-20-20	1.50	1.25	#20 (1-5/8"-12)
2385-24-24-24	2508-24-24-24	1.50	1.50	#24 (1-7/8"-12)
2385-32-24-24	2508-32-24-24	2.00	1.50	#24 (1-7/8"-12)
2385-32-32-32	2508-32-32-32	2.00	2.00	#32 (2-1/2"-12)

Companion / SWT / NPT

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWT)	Side C (NPT)
2386-12-12-12	2509-12-12-12	0.75	0.75	3/4"-14
2386-16-16-12	2509-16-16-12	1.00	1.00	3/4"-14
2386-16-20-16	2509-16-20-16	1.00	1.25	1"-11.5
2386-20-20-16	2509-20-20-16	1.25	1.25	1"-11.5
2386-20-24-20	2509-20-24-20	1.25	1.50	1-1/4"-11.5
2386-24-24-20	2509-24-24-20	1.50	1.50	1-1/4"-11.5
2386-24-32-24	2509-24-32-24	1.50	2.00	1-1/2"-11.5
2386-32-32-24	2509-32-32-24	2.00	2.00	1-1/2"-11.5
2386-32-32-32	2509-32-32-32	2.00	2.00	2"-11.5



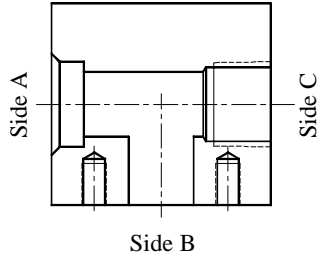
Companion / SWT / SWT

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWT)	Side C (SWT)
2384-12-12-12	2507-12-12-12	0.75	0.75	0.75
2384-16-16-16	2507-16-16-16	1.00	1.00	1.00
2384-16-20-20	2507-16-20-20	1.00	1.25	1.25
2384-20-20-20	2507-20-20-20	1.25	1.25	1.25
2384-20-24-24	2507-20-24-24	1.25	1.50	1.50
2384-24-24-24	2507-24-24-24	1.50	1.50	1.50
2384-24-32-32	2507-24-32-32	1.50	2.00	2.00
2384-32-32-32	2507-32-32-32	2.00	2.00	2.00

SWP / Companion / ORB

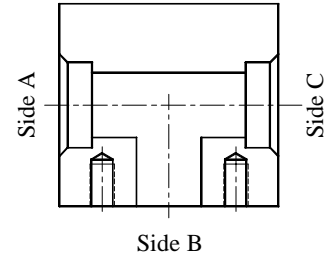
Code 61 Part No.	Code 62 Part No.	Side A (SWP)	Side B (Comp)	Side C (ORB)
2398-12-12-12	2439-12-12-12	3/4	0.75	#12 (1-1/16"-12)
2398-16-12-12	2439-16-12-12	3/4	1.00	#12 (1-1/16"-12)
2398-16-16-16	2439-16-16-16	1	1.00	#16 (1-5/16"-12)
2398-20-16-16	2439-20-16-16	1	1.25	#16 (1-5/16"-12)
2398-20-20-20	2439-20-20-20	1-1/4	1.25	#20 (1-5/8"-12)
2398-24-20-20	2439-24-20-20	1-1/4	1.50	#20 (1-5/8"-12)
2398-24-24-24	2439-24-24-24	1-1/2	1.50	#24 (1-7/8"-12)
2398-32-24-24	2439-32-24-24	1-1/2	2.00	#24 (1-7/8"-12)
2398-32-32-32	2439-32-32-32	2	2.00	#32 (2-1/2"-12)

Code 61 & Code 62 4-Bolt Tees



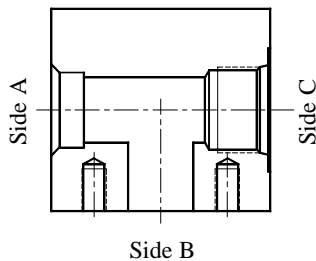
SWP / Companion / NPT

Code 61 Part No.	Code 62 Part No.	Side A (SWP)	Side B (Comp)	Side C (NPT)
2399-12-12-12	2440-12-12-12	3/4	0.75	3/4"-14
2399-16-12-12	2440-16-12-12	3/4	1.00	3/4"-14
2399-16-16-16	2440-16-16-16	1	1.00	1"-11.5
2399-20-16-16	2440-20-16-16	1	1.25	1"-11.5
2399-20-20-20	2440-20-20-20	1-1/4	1.25	1-1/4"-11.5
2399-24-20-20	2440-24-20-20	1-1/4	1.50	1-1/4"-11.5
2399-24-24-24	2440-24-24-24	1-1/2	1.50	1-1/2"-11.5
2399-32-24-24	2440-32-24-24	1-1/2	2.00	1-1/2"-11.5
2399-32-32-32	2440-32-32-32	2	2.00	2"-11.5



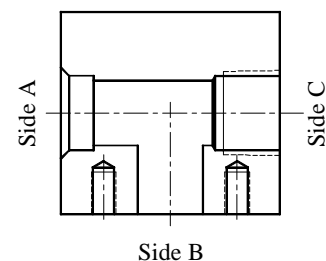
SWP / Companion / SWP

Code 61 Part No.	Code 62 Part No.	Side A (SWP)	Side B (Comp)	Side C (SWP)
1865-12-12-12	1879-12-12-12	3/4	0.75	3/4
1865-16-12-12	1879-16-12-12	3/4	1.00	3/4
1865-16-16-16	1879-16-16-16	1	1.00	1
1865-20-16-16	1879-20-16-16	1	1.25	1
1865-20-20-20	1879-20-20-20	1-1/4	1.25	1-1/4
1865-24-20-20	1879-24-20-20	1-1/4	1.50	1-1/4
1865-24-24-24	1879-24-24-24	1-1/2	1.50	1-1/2
1865-32-24-24	1879-32-24-24	1-1/2	2.00	1-1/2
1865-32-32-32	1879-32-32-32	2	2.00	2



SWT / Companion / ORB

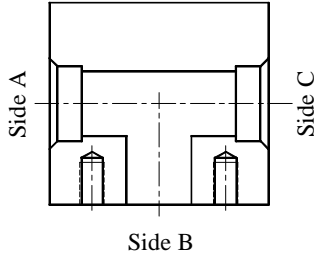
Code 61 Part No.	Code 62 Part No.	Side A (SWT)	Side B (Comp)	Side C (ORB)
2404-12-12-12	2445-12-12-12	0.75	0.75	#12 (1-1/16"-12)
2404-16-12-12	2445-16-12-12	1.00	0.75	#12 (1-1/16"-12)
2404-16-16-12	2445-16-16-12	1.00	1.00	#12 (1-1/16"-12)
2404-20-16-16	2445-20-16-16	1.25	1.00	#16 (1-5/16"-12)
2404-20-20-16	2445-20-20-16	1.25	1.25	#16 (1-5/16"-12)
2404-24-20-20	2445-24-20-20	1.50	1.25	#20 (1-5/8"-12)
2404-24-24-20	2445-24-24-20	1.50	1.50	#20 (1-5/8"-12)
2404-32-24-24	2445-32-24-24	2.00	1.50	#24 (1-7/8"-12)
2404-32-32-24	2445-32-32-24	2.00	2.00	#24 (1-7/8"-12)
2404-32-32-32	2445-32-32-32	2.00	2.00	#32 (2-1/2"-12)



SWT / Companion / NPT

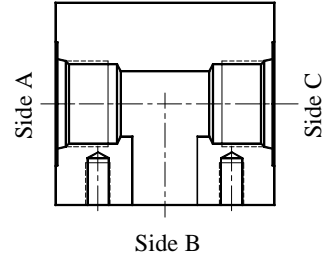
Code 61 Part No.	Code 62 Part No.	Side A (SWT)	Side B (Comp)	Side C (NPT)
2405-12-12-12	2446-12-12-12	0.75	0.75	3/4"-14
2405-16-12-12	2446-16-12-12	1.00	0.75	3/4"-14
2405-16-16-12	2446-16-16-12	1.00	1.00	3/4"-14
2405-20-16-16	2446-20-16-16	1.25	1.00	1"-11.5
2405-20-20-16	2446-20-20-16	1.25	1.25	1"-11.5
2405-24-20-20	2446-24-20-20	1.50	1.25	1-1/4"-11.5
2405-24-24-20	2446-24-24-20	1.50	1.50	1-1/4"-11.5
2405-32-24-24	2446-32-24-24	2.00	1.50	1-1/2"-11.5
2405-32-32-24	2446-32-32-24	2.00	2.00	1-1/2"-11.5
2405-32-32-32	2446-32-32-32	2.00	2.00	2"-11.5

Code 61 & Code 62 4-Bolt Tees



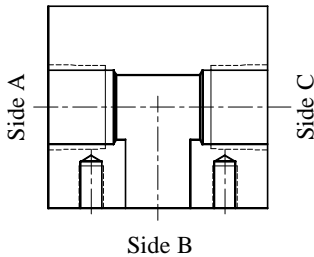
SWT / Companion / SWT

Code 61 Part No.	Code 62 Part No.	Side A (SWT)	Side B (Comp)	Side C (SWT)
2403-12-12-12	2444-12-12-12	0.75	0.75	0.75
2403-16-12-16	2444-16-12-16	1.00	0.75	1.00
2403-16-16-16	2444-16-16-16	1.00	1.00	1.00
2403-20-16-20	2444-20-16-20	1.25	1.00	1.25
2403-20-20-20	2444-20-20-20	1.25	1.25	1.25
2403-24-20-24	2444-24-20-24	1.50	1.25	1.50
2403-24-24-24	2444-24-24-24	1.50	1.50	1.50
2403-32-24-32	2444-32-24-32	2.00	1.50	2.00
2406-32-32-32	2444-32-32-32	2.00	2.00	2.00



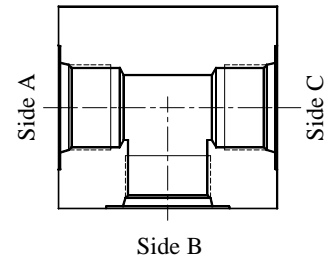
ORB / Companion / ORB

Code 61 Part No.	Code 62 Part No.	Side A (ORB)	Side B (Comp)	Side C (ORB)
2409-12-12-12	2450-12-12-12	#12 (1-1/16"-12)	0.75	#12 (1-1/16"-12)
2409-12-16-12	2450-12-16-12	#12 (1-1/16"-12)	1.00	#12 (1-1/16"-12)
2409-16-16-16	2450-16-16-16	#16 (1-5/16"-12)	1.00	#16 (1-5/16"-12)
2409-16-20-16	2450-16-20-16	#16 (1-5/16"-12)	1.25	#16 (1-5/16"-12)
2409-20-20-20	2450-20-20-20	#20 (1-5/8"-12)	1.25	#20 (1-5/8"-12)
2409-20-24-20	2450-20-24-20	#20 (1-5/8"-12)	1.50	#20 (1-5/8"-12)
2409-24-24-24	2450-24-24-24	#24 (1-7/8"-12)	1.50	#24 (1-7/8"-12)
2409-24-32-24	2450-24-32-24	#24 (1-7/8"-12)	2.00	#24 (1-7/8"-12)
2409-32-32-32	2450-32-32-32	#32 (2-1/2"-12)	2.00	#32 (2-1/2"-12)



NPT / Companion / NPT

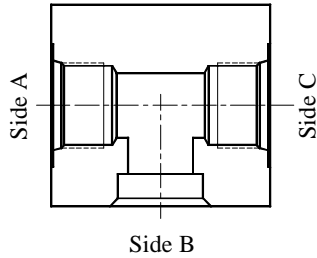
Code 61 Part No.	Code 62 Part No.	Side A (NPT)	Side B (Comp)	Side C (NPT)
2413-12-12-12	2543-12-12-12	3/4"-14	0.75	3/4"-14
2413-12-16-12	2543-12-16-12	3/4"-14	1.00	3/4"-14
2413-16-16-16	2543-16-16-16	1"-11.5	1.00	1"-11.5
2413-16-20-16	2543-16-20-16	1"-11.5	1.25	1"-11.5
2413-20-20-20	2543-20-20-20	1-1/4"-11.5	1.25	1-1/4"-11.5
2413-20-24-20	2543-20-24-20	1-1/4"-11.5	1.50	1-1/4"-11.5
2413-24-24-24	2543-24-24-24	1-1/2"-11.5	1.50	1-1/2"-11.5
2413-24-32-24	2543-24-32-24	1-1/2"-11.5	2.00	1-1/2"-11.5
2413-32-32-32	2543-32-32-32	2"-11.5	2.00	2"-11.5



ORB / ORB / ORB

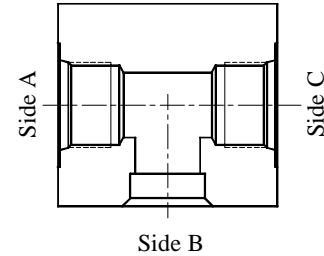
Part No.	Side A (ORB)	Side B (ORB)	Side C (ORB)
2485-08-08-08	#8 (3/4"-16)	#8 (3/4"-16)	#8 (3/4"-16)
2485-12-12-12	#12 (1-1/16"-12)	#12 (1-1/16"-12)	#12 (1-1/16"-12)
2485-16-16-16	#16 (1-5/16"-12)	#16 (1-5/16"-12)	#16 (1-5/16"-12)
2485-20-20-20	#20 (1-5/8"-12)	#20 (1-5/8"-12)	#20 (1-5/8"-12)
2485-24-24-24	#24 (1-7/8"-12)	#24 (1-7/8"-12)	#24 (1-7/8"-12)
2485-32-32-32	#32 (2-1/2"-12)	#32 (2-1/2"-12)	#32 (2-1/2"-12)

Code 61 & Code 62 4-Bolt Tees



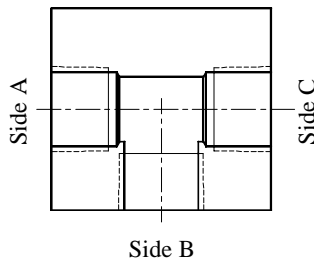
ORB / SWP / ORB

Part No.	Side A (ORB)	Side B (SWP)	Side C (ORB)
2481-16-16-16	#16 (1-5/16"-12)	1	#16 (1-5/16"-12)
2481-16-20-16	#16 (1-5/16"-12)	1-1/4	#16 (1-5/16"-12)
2481-20-20-20	#20 (1-5/8"-12)	1-1/4	#20 (1-5/8"-12)
2481-20-24-20	#20 (1-5/8"-12)	1-1/2	#20 (1-5/8"-12)
2481-24-24-24	#24 (1-7/8"-12)	1-1/2	#24 (1-7/8"-12)
2481-24-32-24	#24 (1-7/8"-12)	2	#24 (1-7/8"-12)
2481-32-32-32	#32 (2-1/2"-12)	2	#32 (2-1/2"-12)



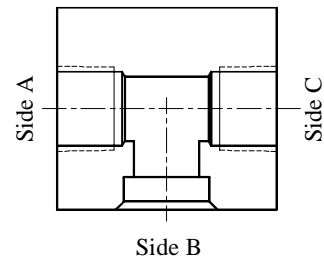
ORB / SWT / ORB

Part No.	Side A (ORB)	Side B (SWT)	Side C (ORB)
2483-12-16-12	#12 (1-1/16"-12)	1.00	#12 (1-1/16"-12)
2483-16-20-16	#16 (1-5/16"-12)	1.25	#16 (1-5/16"-12)
2483-20-24-20	#20 (1-5/8"-12)	1.50	#20 (1-5/8"-12)
2483-24-32-24	#24 (1-7/8"-12)	2.00	#24 (1-7/8"-12)
2483-32-32-32	#32 (2-1/2"-12)	2.00	#32 (2-1/2"-12)



NPT / NPT / NPT

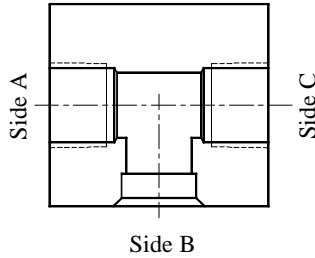
Part No.	Side A (NPT)	Side B (NPT)	Side C (NPT)
2492-12-12-12	3/4"-14	3/4"-14	3/4"-14
2492-16-16-16	1"-11.5	1"-11.5	1"-11.5
2492-20-20-20	1-1/4"-11.5	1-1/4"-11.5	1-1/4"-11.5
2492-24-24-24	1-1/2"-11.5	1-1/2"-11.5	1-1/2"-11.5
2492-32-32-32	2"-11.5	2"-11.5	2"-11.5



NPT / SWP / NPT

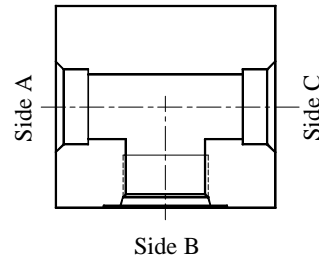
Part No.	Side A (NPT)	Side B (SWP)	Side C (NPT)
2489-12-12-12	3/4"-14	3/4	3/4"-14
2489-16-16-16	1"-11.5	1	1"-11.5
2489-20-20-20	1-1/4"-11.5	1-1/4	1-1/4"-11.5
2489-24-24-24	1-1/2"-11.5	1-1/2	1-1/2"-11.5
2489-32-32-32	2"-11.5	2	2"-11.5

Weld-On & Threaded Tees



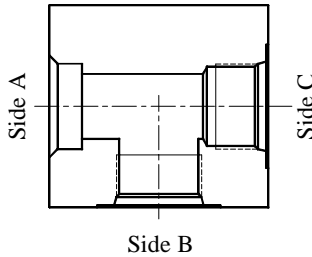
NPT / SWT / NPT

Part No.	Side A (NPT)	Side B (SWT)	Side C (NPT)
2490-12-16-12	3/4"-14	1	3/4"-14
2490-16-20-16	1"-11.5	1-1/4	1"-11.5
2490-20-24-20	1-1/4"-11.5	1-1/2	1-1/4"-11.5
2490-24-32-24	1-1/2"-11.5	2	1-1/2"-11.5



SWP / ORB / SWP

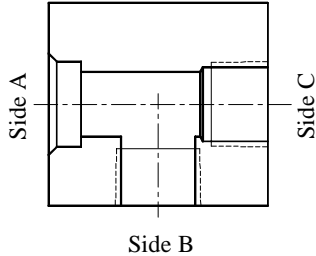
Part No.	Side A (SWP)	Side B (ORB)	Side C (SWP)
2058-12-08-12	3/4	#8 (3/4"-16)	3/4
2058-12-12-12	3/4	#12 (1-1/16"-12)	3/4
2058-16-08-16	1	#8 (3/4"-16)	1
2058-16-12-16	1	#12 (1-1/16"-12)	1
2058-16-16-16	1	#16 (1-5/16"-12)	1
2058-20-12-20	1-1/4	#12 (1-1/16"-12)	1-1/4
2058-20-16-20	1-1/4	#16 (1-5/16"-12)	1-1/4
2058-20-20-20	1-1/4	#20 (1-5/8"-12)	1-1/4
2058-24-12-24	1-1/2	#12 (1-1/16"-12)	1-1/2
2058-24-16-24	1-1/2	#16 (1-5/16"-12)	1-1/2
2058-24-20-24	1-1/2	#20 (1-5/8"-12)	1-1/2
2058-32-12-32	2	#12 (1-1/16"-12)	2
2058-32-16-32	2	#16 (1-5/16"-12)	2
2058-32-20-32	2	#20 (1-5/8"-12)	2
2058-40-16-40	2-1/2	#16 (1-5/16"-12)	2-1/2
2058-40-20-40	2-1/2	#20 (1-5/8"-12)	2-1/2
2058-48-16-48	3	#16 (1-5/16"-12)	3
2058-48-20-48	3	#20 (1-5/8"-12)	3
2058-64-16-64	4	#16 (1-5/16"-12)	4
2058-64-20-64	4	#20 (1-5/8"-12)	4



SWP / ORB / ORB

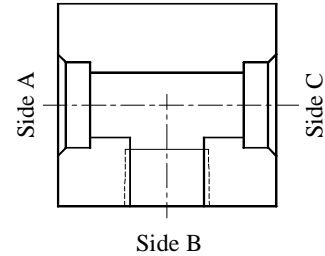
Part No.	Side A (SWP)	Side B (ORB)	Side C (ORB)
2463-12-12-12	3/4	#12 (1-1/16"-12)	#12 (1-1/16"-12)
2463-16-16-16	1	#16 (1-5/16"-12)	#16 (1-5/16"-12)
2463-20-20-20	1-1/4	#20 (1-5/8"-12)	#20 (1-5/8"-12)
2463-24-20-20	1-1/2	#20 (1-5/8"-12)	#20 (1-5/8"-12)
2463-24-24-24	1-1/2	#24 (1-7/8"-12)	#24 (1-7/8"-12)
2463-32-24-24	2	#24 (1-7/8"-12)	#24 (1-7/8"-12)
2463-32-32-32	2	#32 (2-1/2"-12)	#32 (2-1/2"-12)

Weld-On & Threaded Tees



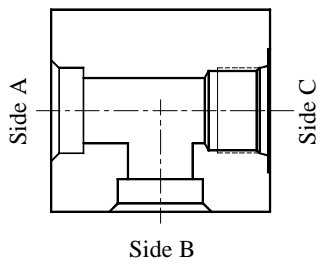
SWP / NPT / NPT

Part No.	Side A (SWP)	Side B (NPT)	Side C (NPT)
2468-12-12-12	3/4	3/4"-14	3/4"-14
2468-16-16-16	1	1"-11.5	1"-11.5
2468-20-20-20	1-1/4	1-1/4"-11.5	1-1/4"-11.5
2468-24-24-24	1-1/2	1-1/2"-11.5	1-1/2"-11.5
2468-32-32-32	2	2"-11.5	2"-11.5



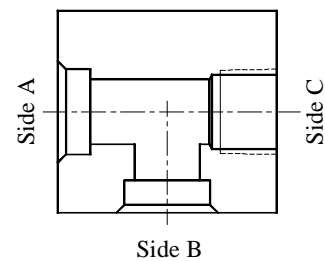
SWP / NPT / SWP

Part No.	Side A (SWP)	Side B (NPT)	Side C (SWP)
2465-12-12-12	3/4	3/4"-14	3/4
2465-16-16-16	1	1"-11.5	1
2465-20-20-20	1-1/4	1-1/4"-11.5	1-1/4
2465-24-24-24	1-1/2	1-1/2"-11.5	1-1/2
2465-32-32-32	2	2"-11.5	2



SWP / SWP / ORB

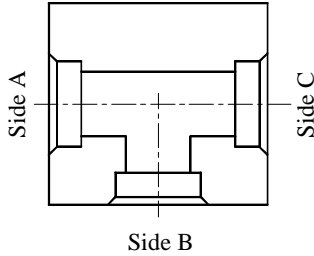
Part No.	Side A (SWP)	Side B (SWP)	Side C (ORB)
2456-12-12-12	3/4	3/4	#12 (1-1/16"-12)
2456-16-16-16	1	1	#16 (1-5/16"-12)
2456-20-20-20	1-1/4	1-1/4	#20 (1-5/8"-12)
2456-24-24-20	1-1/2	1-1/2	#20 (1-5/8"-12)
2456-24-24-24	1-1/2	1-1/2	#24 (1-7/8"-12)
2456-32-32-20	2	2	#20 (1-5/8"-12)
2456-32-32-24	2	2	#24 (1-7/8"-12)



SWP / SWP / NPT

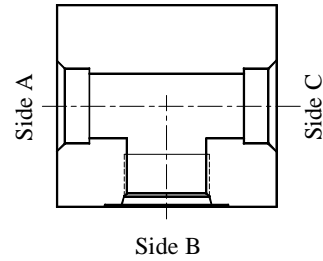
Part No.	Side A (SWP)	Side B (SWP)	Side C (NPT)
2457-12-12-12	3/4	3/4	3/4"-14
2457-16-16-16	1	1	1"-11.5
2457-20-20-20	1-1/2	1-1/2	1-1/4"-11.5
2457-24-24-24	1-1/2	1-1/2	1-1/2"-11.5
2457-32-32-32	2	2	2"-11.5
2457-40-40-40	2-1/2	2-1/2	2-1/2"-8

Weld-On & Threaded Tees



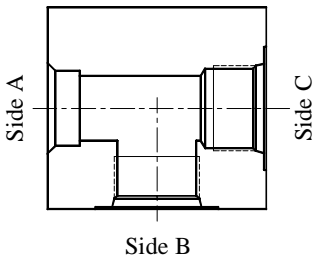
SWP / SWP / SWP

Part No.	Side A (SWP)	Side B (SWP)	Side C (SWP)
1893-16-16-16	1	1	1
1893-20-16-20	1-1/4	1	1-1/4
1893-20-20-20	1-1/4	1-1/4	1-1/4
1893-24-16-24	1-1/2	1	1-1/2
1893-24-20-24	1-1/2	1-1/4	1-1/2
1893-24-24-24	1-1/2	1-1/2	1-1/2
1893-32-20-32	2	1-1/4	2
1893-32-24-32	2	1-1/2	2
1893-32-32-32	2	2	2
1893-40-24-40	2-1/2	1-1/2	2-1/2
1893-40-32-40	2-1/2	2	2-1/2
1893-40-40-40	2-1/2	2-1/2	2-1/2
1893-48-24-48	3	1-1/2	3
1893-48-32-48	3	2	3
1893-48-40-48	3	2-1/2	3
1893-48-48-48	3	3	3
1893-64-32-64	4	2	4
1893-64-40-64	4	2-1/2	4
1893-64-48-64	4	3	4
1893-64-64-64	4	4	4



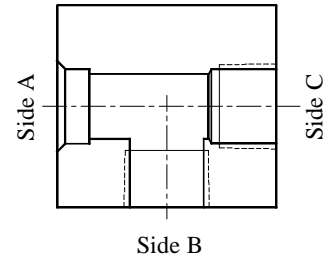
SWT / ORB / SWT

Part No.	Side A (SWT)	Side B (ORB)	Side C (SWT)
2475-12-12-12	0.75	#12 (1-1/16"-12)	0.75
2475-16-16-16	1.00	#16 (1-5/16"-12)	1.00
2475-20-20-20	1.25	#20 (1-5/8"-12)	1.25
2475-24-20-24	1.50	#20 (1-5/8"-12)	1.50
2475-24-24-24	1.50	#24 (1-7/8"-12)	1.50
2475-28-24-28	1.75	#24 (1-7/8"-12)	1.75
2475-32-20-32	2.00	#20 (1-5/8"-12)	2.00
2475-32-24-32	2.00	#24 (1-7/8"-12)	2.00
2475-32-32-32	2.00	#32 (2-1/2"-12)	2.00



SWT / ORB / ORB

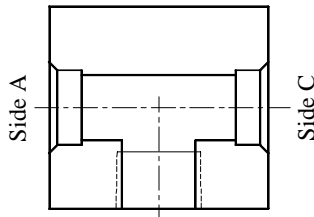
Part No.	Side A (SWT)	Side B (ORB)	Side C (ORB)
2476-12-12-12	0.75	#12 (1-1/16"-12)	#12 (1-1/16"-12)
2476-16-16-16	1.00	#16 (1-5/16"-12)	#16 (1-5/16"-12)
2476-20-20-20	1.25	#20 (1-5/8"-12)	#20 (1-5/8"-12)
2476-24-24-24	1.50	#24 (1-7/8"-12)	#24 (1-7/8"-12)
2476-28-24-24	1.75	#24 (1-7/8"-12)	#24 (1-7/8"-12)



SWT / NPT / NPT

Part No.	Side A (SWT)	Side B (NPT)	Side C (NPT)
2480-16-12-12	1.00	3/4"-14	3/4"-14
2480-20-16-16	1.25	1"-11.5	1"-11.5
2480-24-20-20	1.50	1-1/4"-11.5	1-1/4"-11.5
2480-32-24-24	2.00	1-1/2"-11.5	1-1/2"-11.5
2480-32-32-32	2.00	2"-11.5	2"-11.5

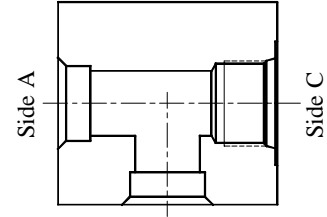
Weld-On & Threaded Tees



Side B

SWT / NPT / SWT

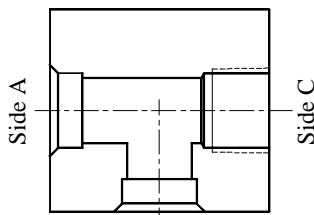
Part No.	Side A (SWT)	Side B (NPT)	Side C (SWT)
2478-16-12-16	1.00	3/4"-14	1.00
2478-20-16-20	1.25	1"-11.5	1.25
2478-24-20-24	1.50	1-1/4"-11.5	1.50
2478-32-24-32	2.00	1-1/2"-11.5	2.00
2478-32-32-32	2.00	2"-11.5	2.00



Side B

SWT / SWT / ORB

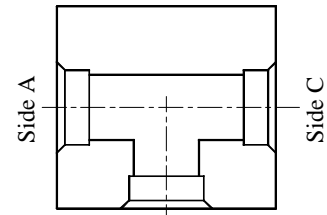
Part No.	Side A (SWT)	Side B (SWT)	Side C (ORB)
2473-16-16-12	1.00	1.00	#12 (1-1/16"-12)
2473-20-20-16	1.25	1.25	#16 (1-5/16"-12)
2473-24-24-20	1.50	1.50	#20 (1-5/8"-12)
2473-32-32-24	2.00	2.00	#24 (1-7/8"-12)
2473-32-32-32	2.00	2.00	#32 (2-1/2"-12)



Side B

SWT / SWT / NPT

Part No.	Side A (SWT)	Side B (SWT)	Side C (NPT)
2474-16-16-12	1.00	1.00	3/4"-14
2474-20-20-16	1.25	1.25	1"-11.5
2474-24-24-20	1.50	1.50	1-1/4"-11.5
2474-32-32-24	2.00	2.00	1-1/2"-11.5
2474-32-32-32	2.00	2.00	2"-11.5

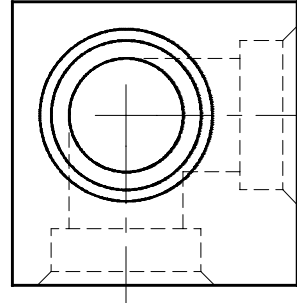
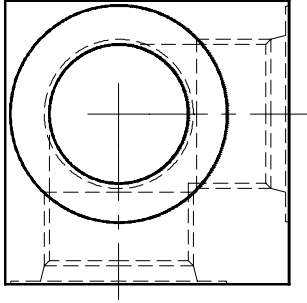


Side B

SWT / SWT / SWT

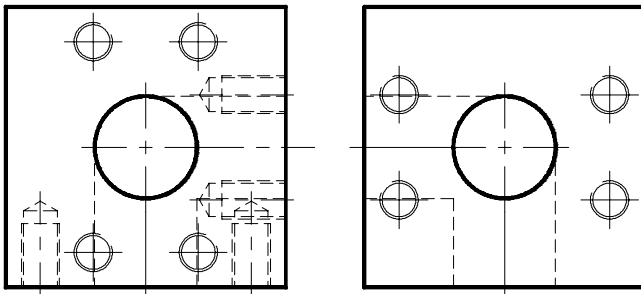
Part No.	Side A (SWT)	Side B (SWT)	Side C (SWT)
2472-12-12-12	0.75	0.75	0.75
2472-16-16-16	1.00	1.00	1.00
2472-20-20-20	1.25	1.25	1.25
2472-24-24-24	1.50	1.50	1.50
2472-28-28-28	1.75	1.75	1.75
2472-32-32-32	2.00	2.00	2.00

Corner Tees

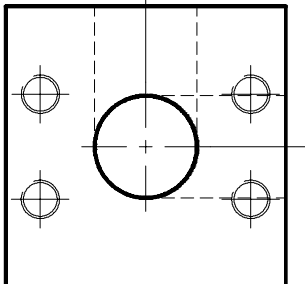


Part No.	ORB ports on three sides
3409-08-08-08	#8 (3/4"-16)
3409-12-12-12	#12 (1-1/16"-12)
3409-16-16-16	#16 (1-5/16"-12)
3409-20-20-20	#20 (1-5/8"-12)
3409-24-24-24	#24 (1-7/8"-12)
3409-32-32-32	#32 (2-1/2"-12)

Part No.	Socket Weld Pipe on three sides
3410-08-08-08	1/2"
3410-12-12-12	3/4"
3410-16-16-16	1"
3410-20-20-20	1-1/4"
3410-24-24-24	1-1/2"
3410-32-32-32	2"



Part No.	Code 61 Companion on three sides
3411-12-12-12	3/4"
3411-16-16-16	1"
3411-20-20-20	1-1/4"
3411-24-24-24	1-1/2"
3411-32-32-32	2"



Part No.	Code 62 Companion on three sides
3412-12-12-12	3/4"
3412-16-16-16	1"
3412-20-20-20	1-1/4"
3412-24-24-24	1-1/2"
3412-32-32-32	2"

Crosses

O'Ring Boss

National Pipe Thread

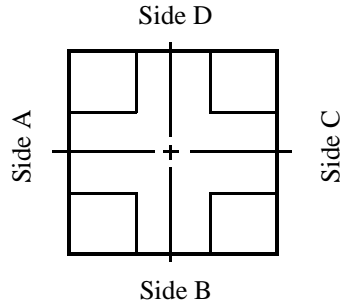
Socket Weld Pipe

Socket Weld Tube

4-Bolt Flange



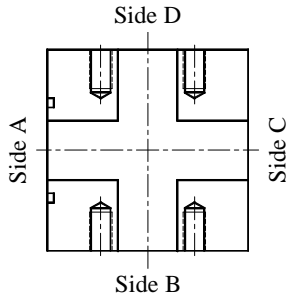
Crosses



All crosses have four sides. Side A, B, C, & D
Although most sizes shown are straight sizes,
Jump sizes are available upon request.
Contact our sales staff for sizes not shown in this catalog.

Side A	Side B	Side C	Side D	Page No.
ORF	Comp	Comp	Comp	47-3
ORF	ORB	Comp	ORB	47-3
ORF	ORB	ORB	ORB	47-3
ORF	SWP	Comp	SWP	47-3
Comp	Comp	Comp	Comp	47-4
Comp	Comp	Comp	SWP	47-4
Comp	ORB	ORB	ORB	47-4
Comp	ORB	SWP	ORB	47-4
Comp	SWP	Comp	SWP	47-5
SWP	ORB	SWP	ORB	47-5
SWP	SWP	SWP	SWP	47-5
SWP	ORB	ORB	ORB	47-5
SWP	NPT	NPT	NPT	47-6
ORB	ORB	ORB	ORB	47-6
NPT	NPT	NPT	NPT	47-6

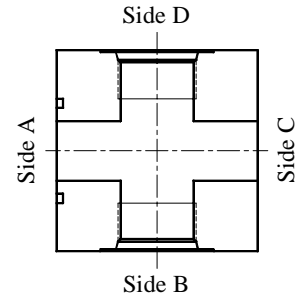
Crosses



Cross - ORF / Comp / Comp / Comp

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (Comp)	Side C (Comp)	Side D (Comp)
2599-16-16-16-16	2635-16-16-16-16	1.00	1.00	1.00	1.00
2599-20-20-20-20	2635-20-20-20-20	1.25	1.25	1.25	1.25
2599-24-24-24-24	2635-24-24-24-24	1.50	1.50	1.50	1.50
2599-32-32-32-32	2635-32-32-32-32	2.00	2.00	2.00	2.00

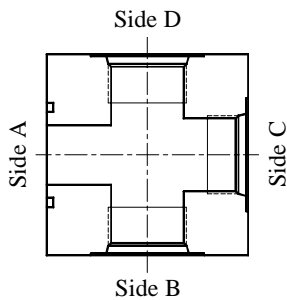
SANDWICH STYLE BLOCK, NO BOLTS SUPPLIED



Cross - ORF / ORB / Comp / ORB

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (ORB)	Side C (Comp)	Side D (ORB)
2601-16-16-16-16	2637-16-16-16-16	1.00	#16	1.00	#16
2601-20-20-20-20	2637-20-20-20-20	1.25	#20	1.25	#20
2601-24-24-24-24	2637-24-24-24-24	1.50	#24	1.50	#24
2601-32-32-32-32	2637-32-32-32-32	2.00	#32	2.00	#32

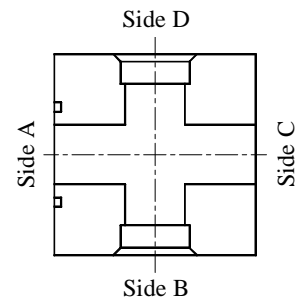
SANDWICH STYLE BLOCK, NO BOLTS SUPPLIED



Cross - ORF / ORB / ORB / ORB

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (ORB)	Side C (ORB)	Side D (ORB)
2600-16-16-16-16	2636-16-16-16-16	1.00	#16	#16	#16
2600-20-20-20-20	2636-20-20-20-20	1.25	#20	#20	#20
2600-24-24-24-24	2636-24-24-24-24	1.50	#24	#24	#24
2600-32-32-32-32	2636-32-32-32-32	2.00	#32	#32	#32

COMES COMPLETE WITH BOLT KIT

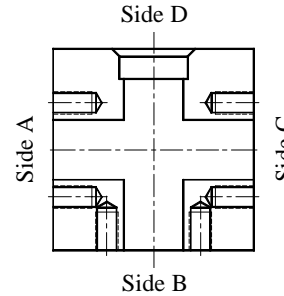
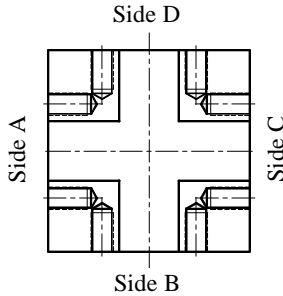


Cross - ORF / SWP / Comp / SWP

Code 61 Part No.	Code 62 Part No.	Side A (ORF)	Side B (SWP)	Side C (Comp)	Side D (SWP)
2598-16-16-16-16	2634-16-16-16-16	1.00	1	1.00	1
2598-20-20-20-20	2634-20-20-20-20	1.25	1-1/4	1.25	1-1/4
2598-24-24-24-24	2634-24-24-24-24	1.50	1-1/2	1.50	1-1/2
2598-32-32-32-32	2634-32-32-32-32	2.00	2	2.00	2

SANDWICH STYLE BLOCK, NO BOLTS SUPPLIED

Crosses

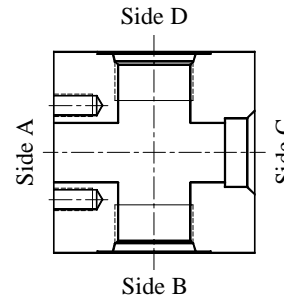
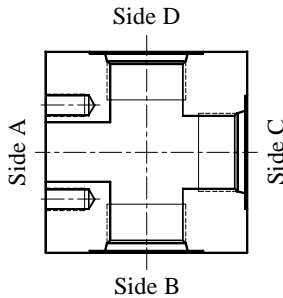


Cross - Comp / Comp / Comp / Comp

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (Comp)	Side C (Comp)	Side D (Comp)
1810-16-16-16-16	1811-16-16-16-16	1.00	1.00	1.00	1.00
1810-20-20-20-20	1811-20-20-20-20	1.25	1.25	1.25	1.25
1810-24-24-24-24	1811-24-24-24-24	1.50	1.50	1.50	1.50
1810-32-32-32-32	1811-32-32-32-32	2.00	2.00	2.00	2.00

Cross - Comp / Comp / Comp / SWP

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (Comp)	Side C (Comp)	Side D (SWP)
2596-16-16-16-16	2630-16-16-16-16	1.00	1.00	1.00	1
2596-20-20-20-20	2630-20-20-20-20	1.25	1.25	1.25	1-1/4
2596-24-24-24-24	2630-24-24-24-24	1.50	1.50	1.50	1-1/2
2596-32-32-32-32	2630-32-32-32-32	2.00	2.00	2.00	2



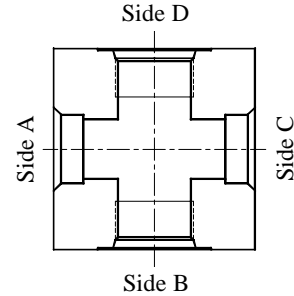
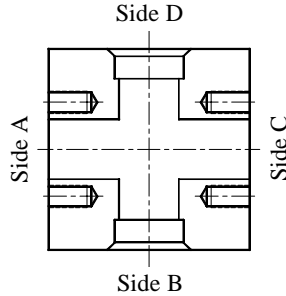
Cross - Comp / ORB / ORB / ORB

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORB)	Side C (ORB)	Side D (ORB)
2628-16-16-16-16	2632-16-16-16-16	1.00	#16	#16	#16
2628-20-20-20-20	2632-20-20-20-20	1.25	#20	#20	#20
2628-24-24-24-24	2632-24-24-24-24	1.50	#24	#24	#24
2628-32-32-32-32	2632-32-32-32-32	2.00	#32	#32	#32

Cross - Comp / ORB / SWP / ORB

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (ORB)	Side C (SWP)	Side D (ORB)
2572-16-16-16-16	2631-16-16-16-16	1.00	#16	1	#16
2572-20-20-20-20	2631-20-20-20-20	1.25	#20	1-1/4	#20
2572-24-24-24-24	2631-24-24-24-24	1.50	#24	1-1/2	#24
2572-32-32-32-32	2631-32-32-32-32	2.00	#32	2	#32

Crosses

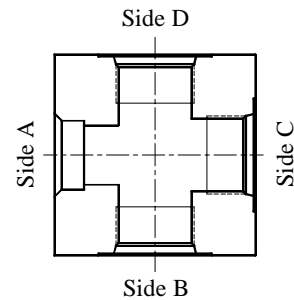
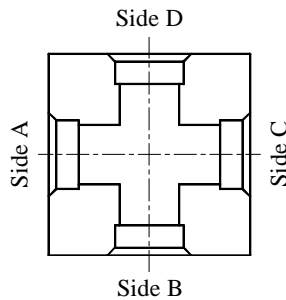


Cross - Comp / SWP / Comp / SWP

Code 61 Part No.	Code 62 Part No.	Side A (Comp)	Side B (SWP)	Side C (Comp)	Side D (SWP)
2597-16-16-16-16	2633-16-16-16-16	1.00	1	1.00	1
2597-20-20-20-20	2633-20-20-20-20	1.25	1-1/4	1.25	1-1/4
2597-24-24-24-24	2633-24-24-24-24	1.50	1-1/2	1.50	1-1/2
2597-32-32-32-32	2633-32-32-32-32	2.00	2	2.00	2

Cross - SWP / ORB / SWP / ORB

Part No.	Side A (SWP)	Side B (ORB)	Side C (SWP)	Side D (ORB)
2603-16-16-16-16	1	#16	1	#16
2603-20-20-20-20	1-1/4	#20	1-1/4	#20
2603-24-24-24-24	1-1/2	#24	1-1/2	#24
2603-32-32-32-32	2	#32	2	#32



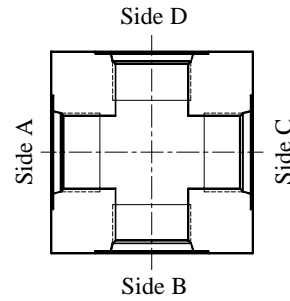
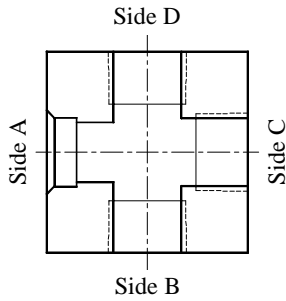
Cross - SWP / SWP / SWP / SWP

Part No.	Side A (SWP)	Side B (SWP)	Side C (SWP)	Side D (SWP)
2602-16-16-16-16	1	1	1	1
2602-20-20-20-20	1-1/4	1-1/4	1-1/4	1-1/4
2602-24-24-24-24	1-1/2	1-1/2	1-1/2	1-1/2
2602-32-32-32-32	2	2	2	2

Cross - SWP / ORB / ORB / ORB

Part No.	Side A (SWP)	Side B (ORB)	Side C (ORB)	Side D (ORB)
2784-16-16-16-16	1	#16	#16	#16
2784-20-20-20-20	1-1/4	#20	#20	#20
2784-24-24-24-24	1-1/2	#24	#24	#24
2784-32-32-32-32	2	#32	#32	#32

Crosses

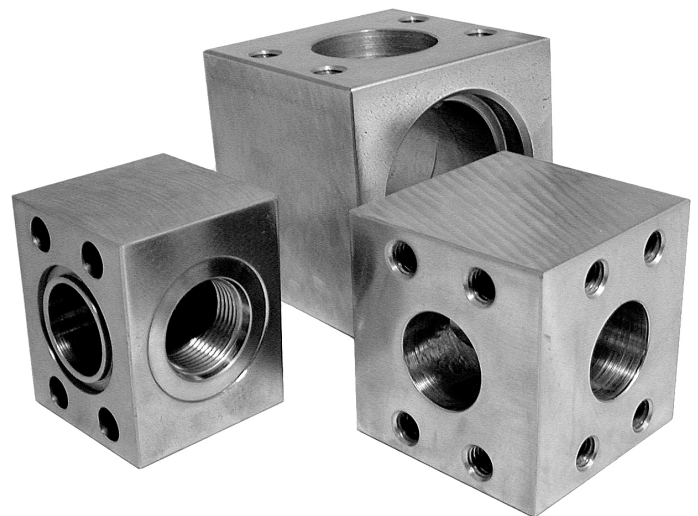
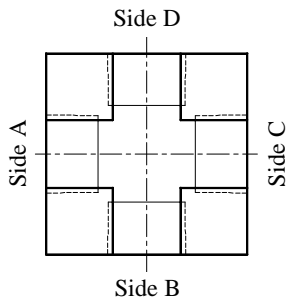


Cross - SWP / NPT / NPT / NPT

Cross - ORB / ORB / ORB / ORB

Part No.	Side A (SWP)	Side B (NPT)	Side C (NPT)	Side D (NPT)
2785-16-16-16-16	1	1"-11.5	1"-11.5	1"-11.5
2785-20-20-20-20	1-1/4	1.25"-11.5	1.25"-11.5	1.25"-11.5
2785-24-24-24-24	1-1/2	1.50"-11.5	1.50"-11.5	1.50"-11.5
2785-32-32-32-32	2	2.00"-11.5	2.00"-11.5	2.00"-11.5

Part No.	Side A (ORB)	Side B (ORB)	Side C (ORB)	Side D (ORB)
2627-16-16-16-16	#16	#16	#16	#16
2627-20-20-20-20	#20	#20	#20	#20
2627-24-24-24-24	#24	#24	#24	#24
2627-32-32-32-32	#32	#32	#32	#32



Cross - NPT / NPT / NPT / NPT

Part No.	Side A (NPT)	Side B (NPT)	Side C (NPT)	Side D (NPT)
2606-16-16-16-16	1"-11.5	1"-11.5	1"-11.5	1"-11.5
2606-20-20-20-20	1.25"-11.5	1.25"-11.5	1.25"-11.5	1.25"-11.5
2606-24-24-24-24	1.50"-11.5	1.50"-11.5	1.50"-11.5	1.50"-11.5
2606-32-32-32-32	2.00"-11.5	2.00"-11.5	2.00"-11.5	2.00"-11.5

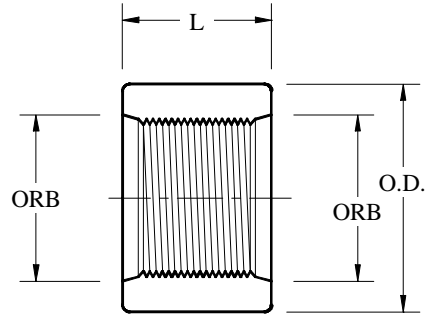
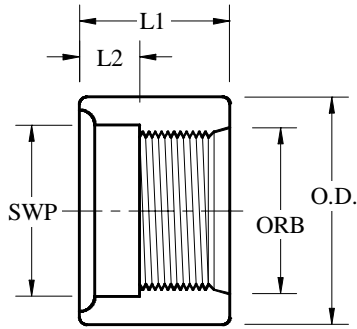


3,000 psi Weld-On & Threaded Adapters

ORB Half Coupling
NPT Half Coupling
ORB to ORB Adapter
SWP to ORB Adapter
ORB Weld-O-Let
NPT Weld-O-Let
SWP to ORFS Adapter
SWT to ORFS Adapter
ORB Weld Insert
SWP to SWP 90° Elbow
SWP to SWP 45° Elbow
SWT to ORB Adapter
SWP to NPT Adapters
NPT to ORB Adapters
ORB Reducer
SWP Coupling
SWP Cap



3000 PSI Weld-On & Threaded Adapters

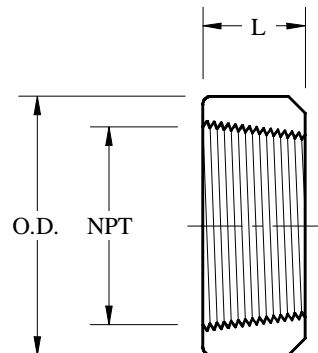
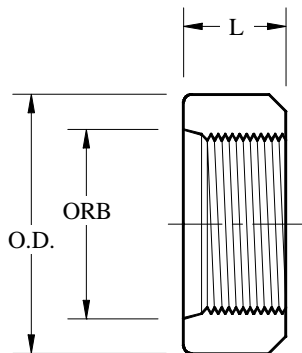


Socket Weld Pipe (SWP) / O'Ring Boss (ORB) Adapter

Part No.	SWP	ORB	L1	L2	O.D.
1805-08-08	1/2"	#8 (3/4"-16)	1.13	0.38	1.31
1805-12-12	3/4"	#12 (1-1/16"-12)	1.38	0.50	1.66
1805-16-16	1"	#16 (1-5/16"-12)	1.38	0.50	1.90
1805-20-20	1-1/4"	#20 (1-5/8"-12)	1.50	0.63	2.38
1805-24-24	1-1/2"	#24 (1-7/8"-12)	1.63	0.75	2.88
1805-32-32	2"	#32 (2.50"-12)	1.75	0.75	3.50

O'Ring Boss (ORB) / O'Ring Boss (ORB) Adapter

Part No.	ORB	ORB	L	O.D.
1875-08-08	#8 (3/4"-16)	#8 (3/4"-16)	1.38	1.31
1875-12-12	#12 (1-1/16"-12)	#12 (1-1/16"-12)	1.63	1.66
1875-16-16	#16 (1-5/16"-12)	#16 (1-5/16"-12)	1.63	1.90
1875-20-20	#20 (1-5/8"-12)	#20 (1-5/8"-12)	1.63	2.38
1875-24-24	#24 (1-7/8"-12)	#24 (1-7/8"-12)	1.63	2.88
1875-32-32	#32 (2.50"-12)	#32 (2.50"-12)	1.63	3.50



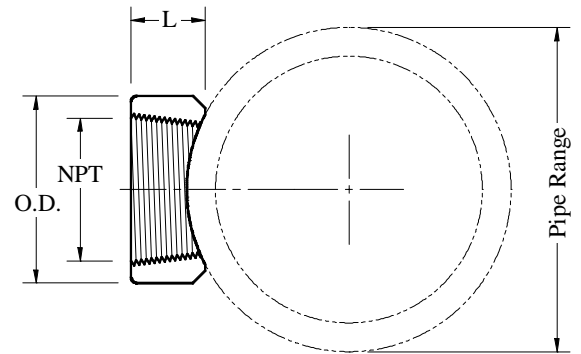
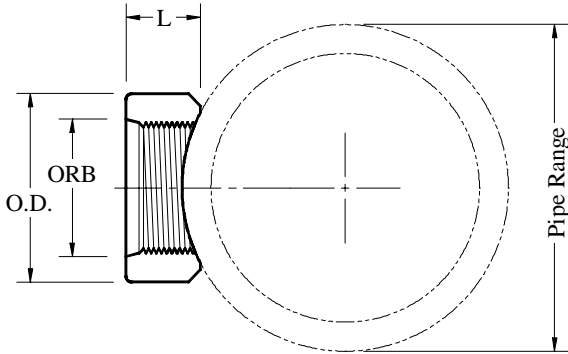
O'Ring Boss (ORB) Half Coupling

Part No.	ORB	L	O.D.
1877-06	#6 (9/16"-18)	0.88	1.00
1877-08	#8 (3/4"-16)	0.88	1.31
1877-12	#12 (1-1/16"-12)	1.13	1.66
1877-16	#16 (1-5/16"-12)	1.25	1.90
1877-20	#20 (1-5/8"-12)	1.25	2.38
1877-24	#24 (1-7/8"-12)	1.38	2.88
1877-32	#32 (2.50"-12)	1.50	3.50

National Pipe Thread (NPT) Half Coupling

Part No.	NPT	L	O.D.
1878-08	1/2"-14	0.88	1.31
1878-12	3/4"-14	1.13	1.66
1878-16	1"-11.5	1.25	1.90
1878-20	1.25"-11.5	1.38	2.38
1878-24	1.50"-11.5	1.50	2.88
1878-32	2.00"-11.5	1.50	3.50

3000 PSI Weld-On & Threaded Adapters

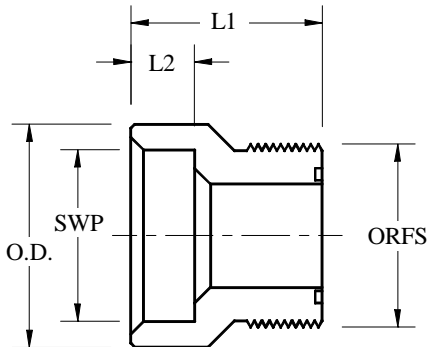


O'Ring Boss (ORB) Weld-O-Let

Part No.	Pipe Range	ORB	L	O.D.
2624-16-06	1/2" to 1"	#6 (9/16"-18)	0.88	1.06
2624-32-06	1-1/4" to 2"	#6 (9/16"-18)	0.88	1.06
2624-20-08	3/4" to 1"	#8 (3/4"-16)	0.88	1.31
2624-32-08	1-1/4" to 3"	#8 (3/4"-16)	0.88	1.31
2624-32-12	1-1/4" to 2"	#12 (1-1/16"-12)	1.13	1.66
2624-56-12	2-1/2" to 4"	#12 (1-1/16"-12)	1.13	1.66
2624-32-16	1-1/4" to 1-1/2"	#16 (1-5/16"-12)	1.25	1.90
2624-56-16	2" to 3"	#16 (1-5/16"-12)	1.25	1.90
2624-88-16	3-1/2" to 6"	#16 (1-5/16"-12)	1.25	1.90

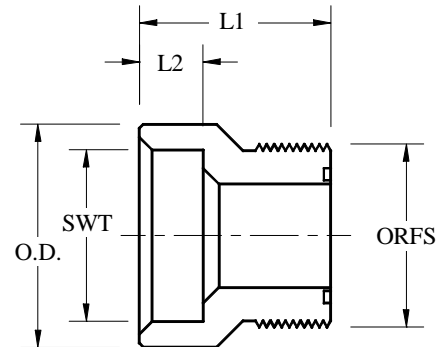
National Pipe Thread (NPT) Weld-O-Let

Part No.	Pipe Range	NPT	L	O.D.
2645-16-06	1/2" to 1"	3/8"-18	0.88	1.06
2645-32-06	1-1/4" to 2"	3/8"-18	0.88	1.06
2645-20-08	3/4" to 1"	1/2"-14	0.88	1.31
2645-32-08	1-1/4" to 3"	1/2"-14	0.88	1.31
2645-32-12	1-1/4" to 2"	3/4"-14	1.13	1.66
2645-56-12	2-1/2" to 4"	3/4"-14	1.13	1.66
2645-32-16	1-1/4" to 1-1/2"	1"-11.5	1.25	1.90
2645-56-16	2" to 3"	1"-11.5	1.25	1.90
2645-88-16	3-1/2" to 6"	1"-11.5	1.25	1.90



**Socket Weld Pipe (SWP) /
O'Ring Face Seal (ORFS) Adapter**

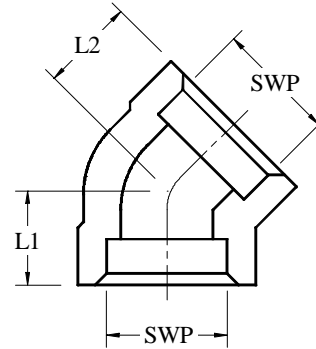
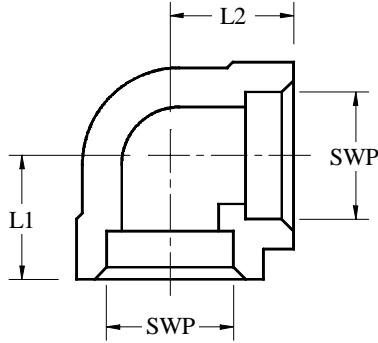
Part No.	SWP	ORFS	L1	L2	O.D.
2331-08-08	1/2"	13/16"-16	1.44	0.38	1.25
2331-12-12	3/4"	1-3/16"-12	1.44	0.38	1.50
2331-16-16	1"	1-7/16"-12	1.50	0.50	1.75
2331-20-20	1-1/4"	1-11/16"-12	1.63	0.50	2.25
2331-24-24	1-1/2"	2"-12	1.75	0.50	2.50



**Socket Weld Tube (SWT) /
O'Ring Face Seal (ORFS) Adapter**

Part No.	SWT	ORFS	L1	L2	O.D.
2356-08-08	1/2"	13/16"-16	1.44	0.38	1.25
2356-12-12	3/4"	1-3/16"-12	1.44	0.38	1.50
2356-16-16	1"	1-7/16"-12	1.50	0.50	1.75
2356-20-20	1-1/4"	1-11/16"-12	1.63	0.50	2.25
2356-24-24	1-1/2"	2"-12	1.75	0.50	2.50

3000 PSI Weld-On & Threaded Adapters



**90° Socket Weld Pipe (SWP) Elbow
(Forged Steel)**

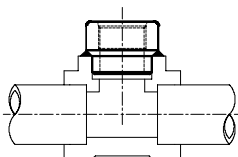
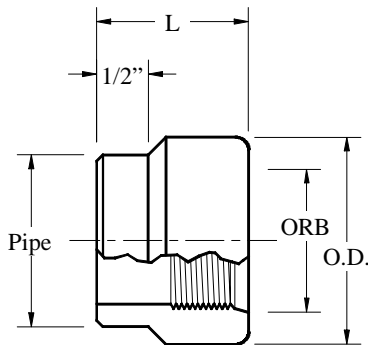
Part No.	SWP	SWP	L1	L2
2652-12-12	3/4"	3/4"	1.31	1.31
2652-16-16	1"	1"	1.50	1.50
2652-20-20	1-1/4"	1-1/4"	1.75	1.75
2652-24-24	1-1/2"	1-1/2"	2.00	2.00
2652-32-32	2"	2"	2.38	2.38
2652-40-40	2-1/2"	2-1/2"	3.00	3.00
2652-48-48	3"	3"	3.38	3.38
2652-64-64	4"	4"	4.18	4.18

**45° Socket Weld Pipe (SWP) Elbow
(Forged Steel)**

Part No.	SWP	SWP	L1	L2
2653-12-12	3/4"	3/4"	1.00	1.00
2653-16-16	1"	1"	1.13	1.13
2653-20-20	1-1/4"	1-1/4"	1.31	1.31
2653-24-24	1-1/2"	1-1/2"	1.38	1.38
2653-32-32	2"	2"	1.69	1.69
2653-40-40	2-1/2"	2-1/2"	2.06	2.06
2653-48-48	3"	3"	2.50	2.50
2653-64-64	4"	4"	3.13	3.13

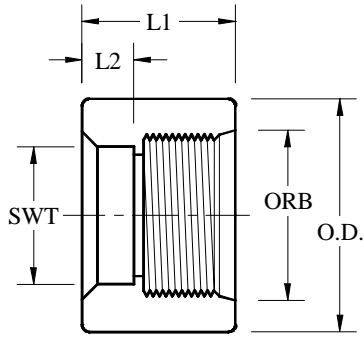
O'Ring Boss (ORB) Weld Insert

Part No.	ORB	Pipe	L	O.D.
3348-06-12	#6 (9/16"-18)	3/4" (1.050)	1.25	1.50
3348-08-12	#8 (3/4"-16)	3/4" (1.050)	1.25	1.50
3348-08-16	#8 (3/4"-16)	1" (1.315)	1.31	1.75
3348-12-16	#12 (1-1/16"-12)	1" (1.315)	1.31	1.75
3348-12-20	#12 (1-1/16"-12)	1-1/4" (1.660)	1.38	2.00
3348-16-20	#16 (1-5/16"-12)	1-1/4" (1.660)	1.38	2.00
3348-12-24	#12 (1-1/16"-12)	1-1/2" (1.900)	1.50	2.25
3348-16-24	#16 (1-5/16"-12)	1-1/2" (1.900)	1.50	2.25
3348-20-24	#20 (1-5/8"-12)	1-1/2" (1.900)	1.50	2.25
3348-16-32	#16 (1-5/16"-12)	2" (2.375)	1.63	2.75
3348-20-32	#20 (1-5/8"-12)	2" (2.375)	1.63	2.75
3348-24-32	#24 (1-7/8"-12)	2" (2.375)	1.63	2.75
3348-16-40	#16 (1-5/16"-12)	2-1/2" (2.875)	1.75	3.25
3348-20-40	#20 (1-5/8"-12)	2-1/2" (2.875)	1.75	3.25
3348-24-40	#24 (1-7/8"-12)	2-1/2" (2.875)	1.75	3.25
3348-32-40	#32 (2-1/2"-12)	2-1/2" (2.875)	1.75	3.25



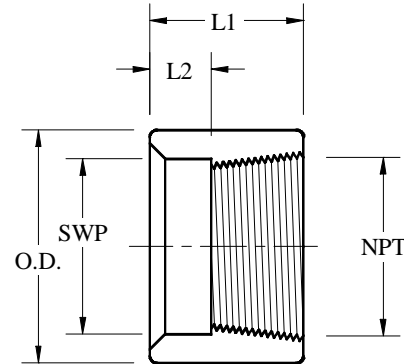
Eg. welded into forged steel socket weld tee

3000 PSI Weld-On & Threaded Adapters



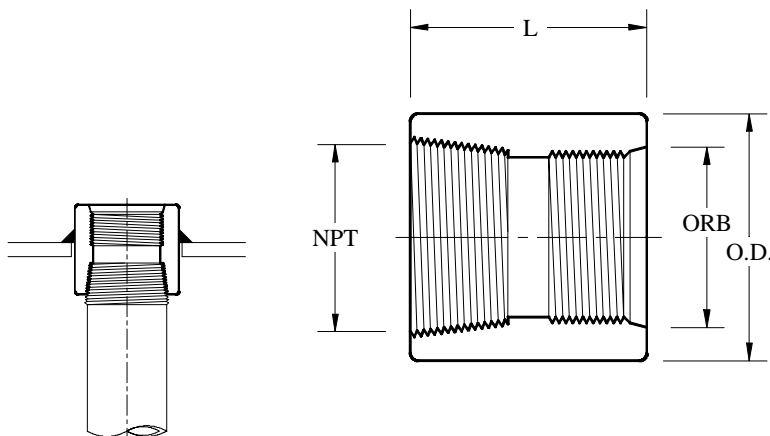
Socket Weld Tube (SWT) / O'Ring Boss (ORB) Adapter

Part No.	SWT	ORB	L1	L2	O.D.
2148-08-08	1/2"	#8 (3/4"-16)	1.00	0.31	1.25
2148-10-08	5/8"	#8 (3/4"-16)	1.00	0.31	1.25
2148-12-08	3/4"	#8 (3/4"-16)	1.00	0.38	1.31
2148-12-12	3/4"	#12 (1-1/16"-12)	1.25	0.44	1.50
2148-16-12	1"	#12 (1-1/16"-12)	1.25	0.50	1.66
2148-16-16	1"	#16 (1-5/16"-12)	1.25	0.50	1.75
2148-20-16	1-1/4"	#16 (1-5/16"-12)	1.25	0.50	1.90
2148-20-20	1-1/4"	#20 (1-5/8"-12)	1.38	0.50	2.25
2148-24-20	1-1/2"	#20 (1-5/8"-12)	1.38	0.50	2.25
2148-24-24	1-1/2"	#24 (1-7/8"-12)	1.50	0.50	2.50
2148-28-24	1-3/4"	#24 (1-7/8"-12)	1.50	0.50	2.50
2148-32-24	2"	#24 (1-7/8"-12)	1.50	0.75	2.88



Socket Weld Pipe (SWP) / National Pipe Thread (NPT) Adapters

Part No.	SWP	NPT	L1	L2	O.D.
1809-08-08	1/2"	1/2"-14	1.13	0.38	1.31
1809-12-12	3/4"	3/4"-14	1.38	0.50	1.66
1809-16-16	1"	1"-11.5	1.38	0.50	1.90
1809-20-20	1-1/4"	1.25"-11.5	1.50	0.63	2.38
1809-24-24	1-1/2"	1.50"-11.5	1.63	0.75	2.50
1809-32-32	2"	2.00"-11.5	1.63	0.75	3.50
1809-40-40	2-1/2"	2.50"-11.5	2.13	0.75	3.50
1809-48-48	3"	3.00"-11.5	2.13	0.75	4.50
1809-64-64	4"	4.00"-11.50	2.25	0.75	5.56

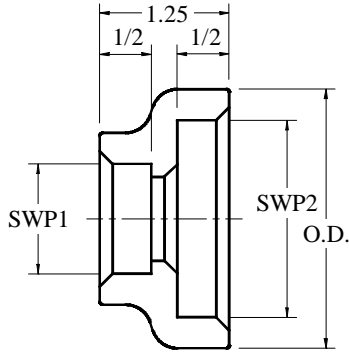


NPT / ORB Coupling

Part No.	NPT	ORB	L	O.D.
3349-08-08	1/2"-14	#8 (3/4"-16)	1.50	1.31
3349-12-12	3/4"-14	#12 (1-1/16"-12)	1.63	1.66
3349-16-16	1"-11.5	#16 (1-5/16"-12)	1.75	1.90
3349-20-20	1.25"-11.5	#20 (1-5/8"-12)	1.75	2.38
3349-24-24	1.50"-11.5	#24 (1-7/8"-12)	1.75	2.88
3349-32-32	2.00"-11.5	#32 (2.50"-12)	1.75	3.50

Perfect for downpipes
In hydraulic tanks

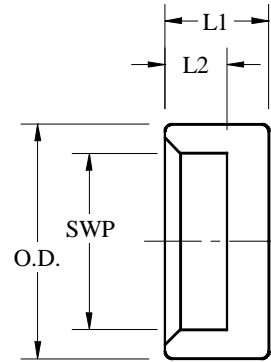
3000 PSI Weld-On & Threaded Adapters



Socket Weld Pipe (SWP) Coupling

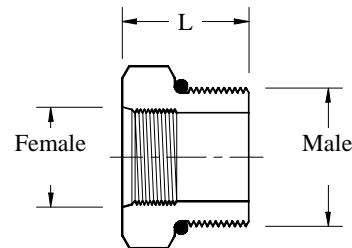
Part No.	SWP 1	SWP 2	O.D.
2265-12-12*	3/4"	3/4"	—
2265-12-16	3/4"	1"	1.75
2265-16-16*	1"	1"	—
2265-12-20	3/4"	1-1/4"	2.25
2265-16-20	1"	1-1/4"	2.25
2265-20-20*	1-1/4"	1-1/4"	—
2265-12-24	3/4"	1-1/2"	2.50
2265-16-24	1"	1-1/2"	2.50
2265-20-24	1-1/4"	1-1/2"	2.50
2265-24-24*	1-1/2"	1-1/2"	—
2265-16-32	1"	2"	2.88
2265-20-32	1-1/4"	2"	2.88
2265-24-32	1-1/2"	2"	2.88
2265-32-32*	2"	2"	—
2265-16-40	1"	2-1/2"	3.50
2265-20-40	1-1/4"	2-1/2"	3.50
2265-24-40	1-1/2"	2-1/2"	3.50
2265-32-40	2"	2-1/2"	3.50
2265-40-40*	2-1/2"	2-1/2"	—
2265-20-48	1-1/4"	3"	4.38
2265-24-48	1-1/2"	3"	4.38
2265-32-48	2"	3"	4.38
2265-40-48	2-1/2"	3"	4.38
2265-48-48*	3"	3"	—
2265-24-64	1-1/2"	4"	5.50
2265-32-64	2"	4"	5.50
2265-40-64	2-1/2"	4"	5.50
2265-48-64	3"	4"	5.50
2265-64-64*	4"	4"	—

*Forged steel, Profile may vary



Socket Weld Pipe (SWP) Cap

Part No.	SWP	L1	L2	O.D.
2651-12	3/4"	1.00	0.38	1.66
2651-16	1"	1.25	0.50	1.90
2651-20	1-1/4"	1.25	0.50	2.25
2651-24	1-1/2"	1.25	0.50	2.50
2651-32	2"	1.50	0.63	2.88
2651-40	2-1/2"	1.50	0.63	3.50
2651-48	3"	1.50	0.63	4.38
2651-64	4"	1.50	0.63	5.50



Female ORB / Male ORB Reducer

Part No.	Female ORB	Male ORB	L
2565-20	—	#20 (1-5/8"-12)	1.00
2565-12-20	#12 (1-1/16"-12)	#20 (1-5/8"-12)	1.00
2565-16-20	#16 (1-5/16"-12)	#20 (1-5/8"-12)	1.00
2565-24	—	#24 (1-7/8"-12)	1.18
2565-12-24	#12 (1-1/16"-12)	#24 (1-7/8"-12)	1.18
2565-16-24	#16 (1-5/16"-12)	#24 (1-7/8"-12)	1.18
2565-20-24	#20 (1-5/8"-12)	#24 (1-7/8"-12)	1.18
2565-32	—	#32 (2.50"-12)	1.34
2565-16-32	#16 (1-5/16"-12)	#32 (2.50"-12)	1.34
2565-20-32	#20 (1-5/8"-12)	#32 (2.50"-12)	1.34
2565-24-32	#24 (1-7/8"-12)	#32 (2.50"-12)	1.34



Code 61 O'Ring Head Adapters

Split Flange Kit

Plug

ORB Reducer

Union

Socket Weld Pipe

Socket Weld Tube

Butt Weld Pipe

Male ORB

Female ORB

Male NPT

Female NPT

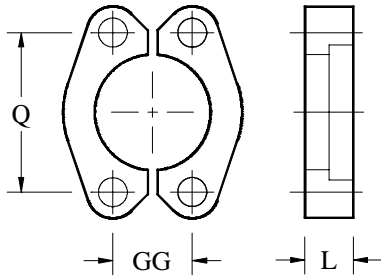
Male JIC

Male BSP

Pipe Stub



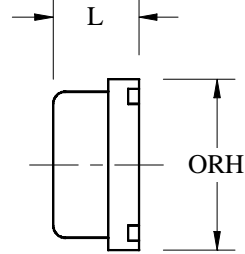
Code 61 O'Ring Head Adapters



Code 61 Split Flange Kit

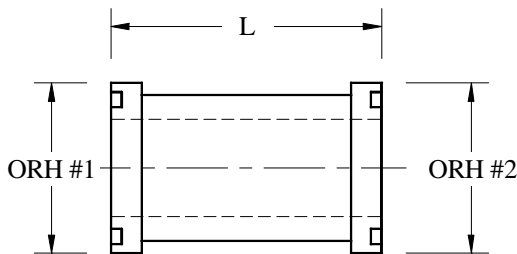
Hex Head Mounting Kit Supplied

Part No.	Size	Q	GG	L
1585-08	1/2"	1.50	0.69	0.50
1585-12	3/4"	1.88	0.88	0.56
1585-16	1.00"	2.06	1.03	0.63
1585-20	1.25"	2.31	1.19	0.56
1585-24	1.50"	2.75	1.41	0.63
1585-32	2.00"	3.06	1.69	0.63
1585-40	2.50"	3.50	2.00	0.88
1585-48	3.00"	4.19	2.44	1.00
1585-56	3.50"	4.75	2.75	1.00
1585-64	4.00"	5.13	3.06	1.25



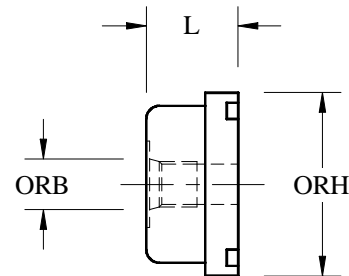
Code 61 O'Ring Head Plug

Part No.	ORH	L
1830-08	1/2"	0.63
1830-12	3/4"	0.69
1830-16	1.00"	0.69
1830-20	1.25"	0.69
1830-24	1.50"	0.75
1830-32	2.00"	0.75
1830-40	2.50"	0.81
1830-48	3.00"	0.88
1830-56	3.50"	1.00
1830-64	4.00"	1.13



Code 61 O'Ring Head Union

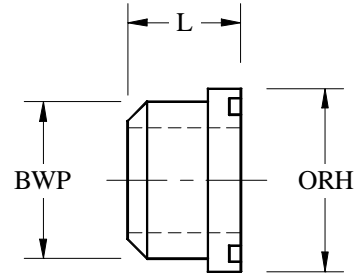
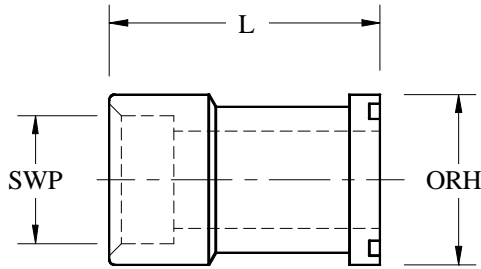
Part No.	ORH #1	ORH #2	L
1958-16-16	1.00	1.00	2.75
1958-16-20	1.00	1.25	2.84
1958-20-20	1.25	1.25	3.00
1958-20-24	1.25	1.50	3.13
1958-24-24	1.50	1.50	3.13
1958-24-32	1.50	2.00	3.13
1958-32-32	2.00	2.00	3.13
1958-32-40	2.00	2.50	3.38
1958-40-40	2.50	2.50	3.63
1958-40-48	2.50	3.00	3.88
1958-48-48	3.00	3.00	4.25
1958-48-56	3.00	3.50	4.25
1958-56-56	3.50	3.50	4.25
1958-56-64	3.50	4.00	4.50



ORB / Code 61 O'Ring Head Plug

Part No.	ORB	ORH	L
2732-06-20	#6 (9/16"-18)	1.25"	0.69
2732-06-24	#6 (9/16"-18)	1.50"	0.75
2732-12-24	#12 (1-1/16"-12)	1.50"	0.75
2732-06-32	#6 (9/16"-18)	2.00"	0.75
2732-12-32	#12 (1-1/16"-12)	2.00"	0.75
2732-16-32	#16 (1-5/16"-12)	2.00"	0.75
2732-08-40	#8 (3/4"-16)	2.50"	0.81
2732-12-40	#12 (1-1/16"-12)	2.50"	0.81
2732-16-40	#16 (1-5/16"-12)	2.50"	0.81
2732-08-48	#8 (3/4"-16)	3.00"	0.88
2732-12-48	#12 (1-1/16"-12)	3.00"	0.88
2732-16-48	#16 (1-5/16"-12)	3.00"	0.88
2732-08-56	#8 (3/4"-16)	3.50"	1.00
2732-12-56	#12 (1-1/16"-12)	3.50"	1.00
2732-16-56	#16 (1-5/16"-12)	3.50"	1.00
2732-08-64	#8 (3/4"-16)	4.00"	1.13
2732-12-64	#12 (1-1/16"-12)	4.00"	1.13
2732-16-64	#16 (1-5/16"-12)	4.00"	1.13

Code 61 O'Ring Head Adapters

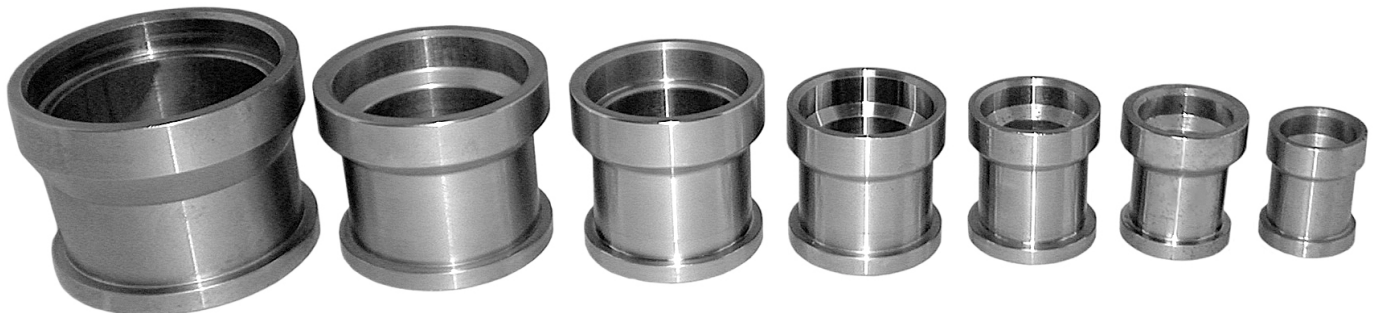


Socket Weld Pipe / Code 61 O'Ring Head

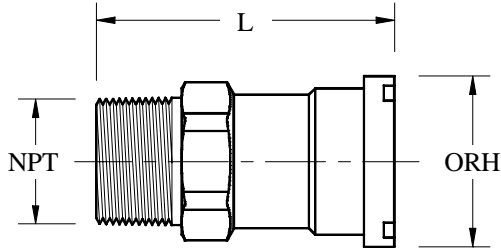
Part No.	SWP	ORH	L
1500-12-12	3/4" (1.055)	1/2"	2.19
1500-12-16	3/4" (1.055)	3/4"	1.50
1500-16-16	1.00" (1.320)	1.00"	2.19
1500-16-20	1.00" (1.320)	1.25"	1.63
1500-20-20	1.25" (1.670)	1.25"	2.50
1500-20-24	1.25" (1.670)	1.50"	2.63
1500-24-24	1.50" (1.910)	1.50"	2.63
1500-24-32	1.50" (1.910)	2.00"	1.75
1500-32-32	2.00" (2.385)	2.00"	2.75
1500-32-40	2.00" (2.385)	2.50"	2.00
1500-40-40	2.50" (2.888)	2.50"	3.25
1500-48-48	3.00" (3.515)	3.00"	3.38
1500-56-56	3.50" (4.015)	3.50"	3.75
1500-64-64	4.00" (4.515)	4.00"	3.75

Sch 80 Butt Weld Pipe / Code 61 O'Ring Head

Part No.	Sch 80 BWP	ORH	L
1604-16-16	1.00	1.00	1.00
1604-20-20	1.25	1.25	1.00
1604-24-20	1.50	1.25	1.50
1604-24-24	1.50	1.50	1.00
1604-32-24	2.00	1.50	2.00
1604-24-32	1.50	2.00	1.13
1604-32-32	2.00	2.00	1.13
1604-40-32	2.50	2.00	2.00
1604-32-40	2.00	2.50	1.25
1604-40-40	2.50	2.50	1.25
1604-48-40	3.00	2.50	2.25
1604-40-48	2.50	3.00	1.50
1604-48-48	3.00	3.00	1.50
1604-56-48	3.50	3.00	2.50
1604-64-48	4.00	3.00	2.50
1604-40-56	2.50	3.50	1.50
1604-48-56	3.00	3.50	1.50
1604-56-56	3.50	3.50	1.50
1604-64-56	4.00	3.50	2.50
1604-48-64	3.00	4.00	1.75
1604-56-64	3.50	4.00	1.75
1604-64-64	4.00	4.00	1.75

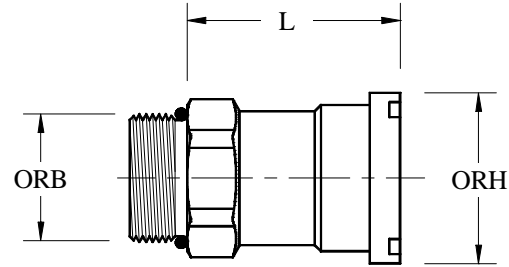


Code 61 O'Ring Head Adapters



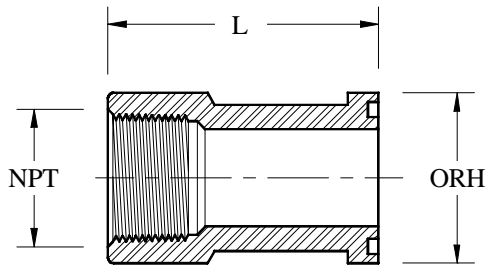
Male NPT / Code 61 O'Ring Head

Part No.	Male NPT	ORH	L
1750-12-12	3/4"-14	3/4"	2.69
1750-16-16	1.00"-11.5	1.00"	3.13
1750-20-20	1.25"-11.5	1.25"	3.50
1750-24-24	1.50"-11.5	1.50"	3.75
1750-32-32	2.00"-11.5	2.00"	4.00



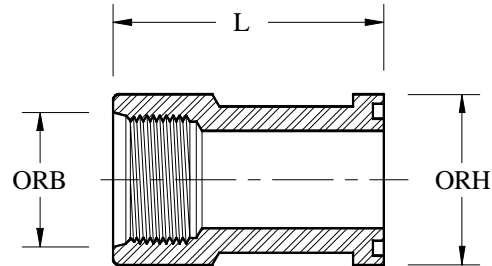
Male ORB / Code 61 O'Ring Head

Part No.	Male ORB	ORH	L
1593-12-12	#12 (1-1/16"-12)	3/4"	1.94
1593-12-16	#12 (1-1/16"-12)	1.00"	2.31
1593-16-16	#16 (1-5/16"-12)	1.00"	2.31
1593-20-16	#20 (1-5/8"-12)	1.00"	2.31
1593-16-20	#16 (1-5/16"-12)	1.25"	2.63
1593-20-20	#20 (1-5/8"-12)	1.25"	2.63
1593-24-20	#24 (1-7/8"-12)	1.25"	2.63
1593-20-24	#20 (1-5/8"-12)	1.50"	2.93
1593-24-24	#24 (1-7/8"-12)	1.50"	2.93
1593-32-24	#32 (2-1/2"-12)	1.50"	2.93
1593-24-32	#24 (1-7/8"-12)	2.00"	2.93
1593-32-32	#32 (2-1/2"-12)	2.00"	2.93



Female NPT / Code 61 O'Ring Head

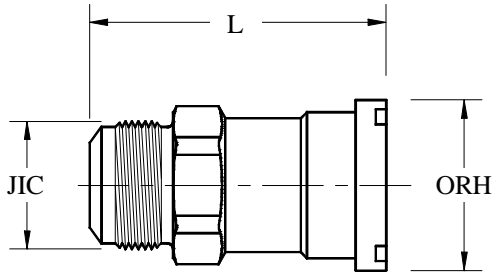
Part No.	Female NPT	ORH	L
1813-12-12	3/4"-14	3/4"	2.50
1813-12-16	3/4"-14	1.00"	1.50
1813-16-16	1.00"-11.5	1.00"	2.63
1813-16-20	1.00"-11.5	1.25"	2.88
1813-20-20	1.25"-11.5	1.25"	2.88
1813-20-24	1.25"-11.5	1.50"	3.00
1813-24-24	1.50"-11.5	1.50"	3.00
1813-24-32	1.50"-11.5	2.00"	3.13
1813-32-32	2.00"-11.5	2.00"	3.13
1813-32-40	2.00"-11.5	2.50"	3.50
1813-40-40	2.50"-8	2.50"	3.50
1813-48-48	3.00"-8	3.00"	3.75
1813-56-56	3.50"-8	3.50"	4.13
1813-64-64	4.00"-8	4.00"	4.25



Female ORB / Code 61 O'Ring Head

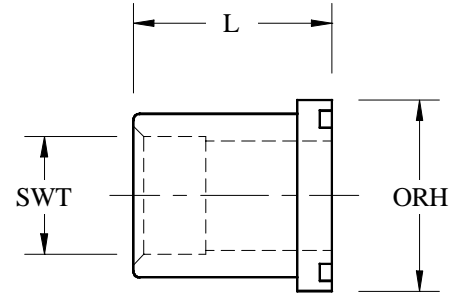
Part No.	Female ORB	ORH	L
1845-12-12	#12 (1-1/16"-12)	3/4"	2.13
1845-12-16	#12 (1-1/16"-12)	1.00"	2.63
1845-16-16	#16 (1-5/16"-12)	1.00"	2.63
1845-16-20	#16 (1-5/16"-12)	1.25"	2.88
1845-20-20	#20 (1-5/8"-12)	1.25"	2.88
1845-20-24	#20 (1-5/8"-12)	1.50"	3.00
1845-24-24	#24 (1-7/8"-12)	1.50"	3.00
1845-24-32	#24 (1-7/8"-12)	2.00"	3.13
1845-32-32	#32 (2-1/2"-12)	2.00"	3.13

Code 61 O'Ring Head Adapters



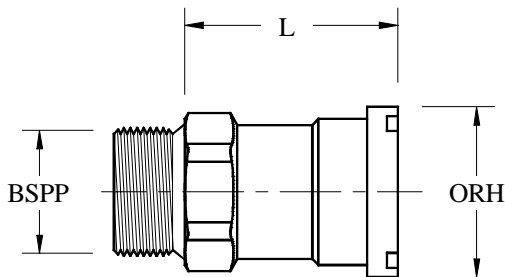
Male JIC / Code 61 O'Ring Head

Part No.	Male JIC	ORH	L
1841-12-12	#12 (1-1/16"-12)	3/4"	2.81
1841-12-16	#12 (1-1/16"-12)	1.00"	2.81
1841-16-16	#16 (1-5/16"-12)	1.00"	3.13
1841-20-16	#20 (1-5/8"-12)	1.00"	3.25
1841-16-20	#16 (1-5/16"-12)	1.25"	2.81
1841-20-20	#20 (1-5/8"-12)	1.25"	3.44
1841-24-20	#24 (1-7/8"-12)	1.25"	3.75
1841-20-24	#20 (1-5/8"-12)	1.50"	3.25
1841-24-24	#24 (1-7/8"-12)	1.50"	3.81
1841-32-24	#32 (2-1/2"-12)	1.50"	4.25
1841-24-32	#24 (1-7/8"-12)	2.00"	3.31
1841-32-32	#32 (2-1/2"-12)	2.00"	4.25



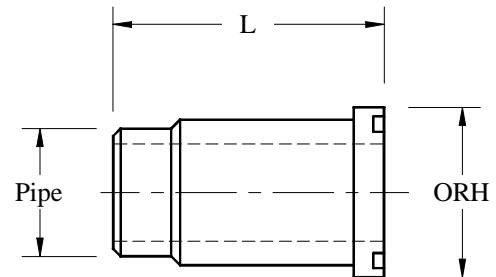
Socket Weld Tube / Code 61 O'Ring Head

Part No.	SWT	ORH	L
1330-12-12	3/4" (0.755)	3/4"	1.63
1330-16-12	1.00" (1.005)	3/4"	2.19
1330-16-16	1.00" (1.005)	1.00"	1.63
1330-20-16	1.25" (1.255)	1.00"	2.19
1330-20-20	1.25" (1.255)	1.25"	1.88
1330-24-20	1.50" (1.510)	1.25"	2.50
1330-24-24	1.50" (1.510)	1.50"	2.00
1330-28-24	1.75" (1.760)	1.50"	2.50
1330-32-24	2.00" (2.010)	1.50"	2.63
1330-32-32	2.00" (2.010)	2.00"	2.00



Male BSPP / Code 61 O'Ring Head

Part No.	Male BSPP	ORH	L
1965-12-16	3/4"-14	1.00"	2.81
1965-16-16	1.00"-11	1.00"	2.81
1965-20-16	1.25"-11	1.00"	3.13
1965-16-20	1.00"-11	1.25"	3.25
1965-20-20	1.25"-11	1.25"	2.81
1965-24-20	1.50"-11	1.25"	3.44
1965-20-24	1.25"-11	1.50"	3.75
1965-24-24	1.50"-11	1.50"	3.25
1965-24-32	1.50"-11	2.00"	3.81



Pipe Stub / Code 61 O'Ring Head

Part No.	Pipe	ORH	L
1827-12-12	3/4" (1.050)	3/4"	2.25
1827-16-16	1.00" (1.315)	1.00"	2.25
1827-20-20	1.25" (1.660)	1.25"	2.25
1827-24-24	150" (1.900)	1.50"	2.88
1827-32-32	2.00" (2.375)	2.00"	3.00



Code 62 O'Ring Head Adapters

Split Flange Kit

Plug

ORB Reducer

Union

Socket Weld Pipe

Butt Weld Pipe

Male ORB

Female ORB

Male NPT

Female NPT

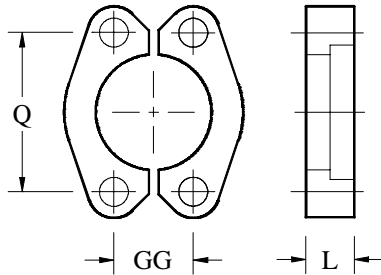
Male JIC

Male BSP

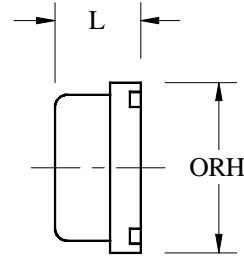
Pipe Stub



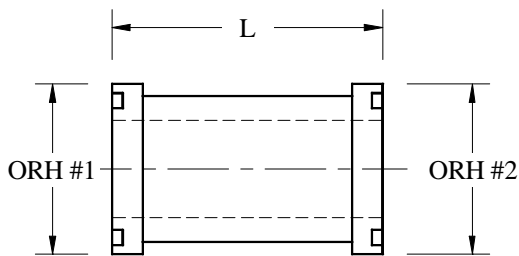
Code 62 O'Ring Head Adapters


Code 62 Split Flange Kit
Hex Head Mounting Kit Supplied

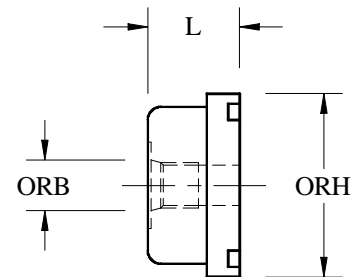
Part No.	Size	Q	GG	L
1825-08	1/2"	1.57	0.72	0.63
1825-12	3/4"	2.00	0.94	0.75
1825-16	1.00"	2.25	1.09	0.94
1825-20	1.25"	2.63	1.25	1.06
1825-24	1.50"	3.13	1.44	1.25
1825-32	2.00"	3.81	1.75	1.50


Code 62 O'Ring Head Plug

Part No.	ORH	L
1646-08	1/2"	0.69
1646-12	3/4"	0.81
1646-16	1.00"	0.94
1646-20	1.25"	1.13
1646-24	1.50"	1.31
1646-32	2.00"	1.63

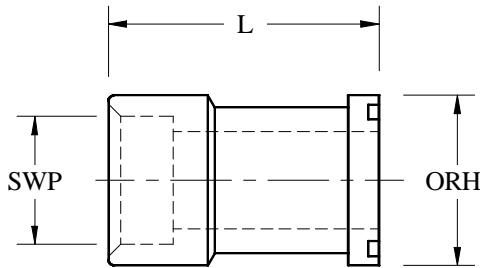

Code 62 O'Ring Head Union

Part No.	ORH #1	ORH #2	L
1959-16-16	1.00	1.00	3.56
1959-16-20	1.00	1.25	3.75
1959-20-20	1.25	1.25	3.81
1959-20-24	1.25	1.50	4.13
1959-24-24	1.50	1.50	4.69
1959-24-32	1.50	2.00	5.13
1959-32-32	2.00	2.00	5.69


ORB / Code 62 O'Ring Head Plug

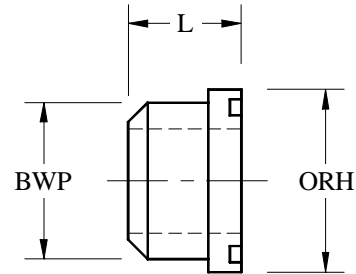
Part No.	ORB	ORH	L
2733-06-20	#6 (9/16"-18)	1.25"	1.13
2733-06-24	#6 (9/16"-18)	1.50"	1.31
2733-12-24	#12 (1-1/16"-12)	1.50"	1.31
2733-06-32	#6 (9/16"-18)	2.00"	1.63
2733-12-32	#12 (1-1/16"-12)	2.00"	1.63
2733-16-32	#16 (1-5/16"-12)	2.00"	1.63

Code 62 O'Ring Head Adapters



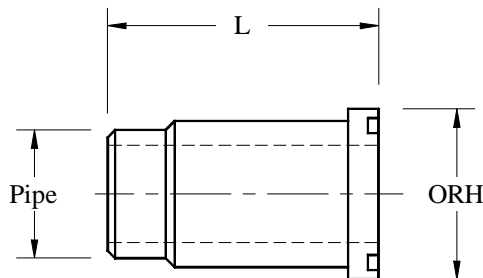
Socket Weld Pipe / Code 62 O'Ring Head

Part No.	SWP	ORH	L
1442-12-12	3/4" (1.055)	1/2"	1.94
1442-12-16	3/4" (1.055)	3/4"	1.88
1442-16-16	1.00" (1.320)	1.00"	2.13
1442-16-20	1.00" (1.320)	1.25"	2.13
1442-20-20	1.25" (1.670)	1.25"	2.50
1442-20-24	1.25" (1.670)	1.50"	2.50
1442-24-24	1.50" (1.910)	1.50"	3.00
1442-24-32	1.50" (1.910)	2.00"	3.00
1442-32-32	2.00" (2.385)	2.00"	3.50



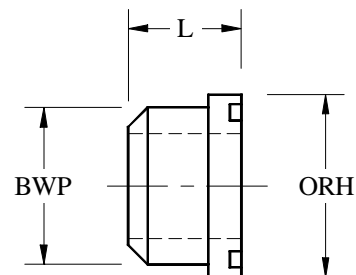
Sch 80 Butt Weld Pipe / Code 62 O'Ring Head

Part No.	Sch 80 BWP	ORH	L
1982-16-16	1.00	1.00	1.50
1982-20-16	1.25	1.00	2.00
1982-16-20	1.00	1.25	1.68
1982-20-20	1.25	1.25	1.68
1982-24-20	1.50	1.25	2.25
1982-20-24	1.25	1.50	2.00
1982-24-24	1.50	1.50	2.00
1982-32-24	2.00	1.50	3.00
1982-24-32	1.50	2.00	2.38
1982-32-32	2.00	2.00	2.38



Pipe Stub / Code 62 O'Ring Head

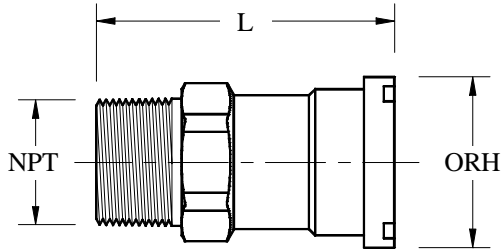
Part No.	Pipe	ORH	L
1882-12-12	3/4" (1.050)	3/4"	2.25
1882-16-16	1.00" (1.315)	1.00"	2.63
1882-20-20	1.25" (1.660)	1.25"	2.75
1882-24-24	1.50" (1.900)	1.50"	3.50
1882-32-32	2.00" (2.375)	2.00"	4.00



Sch 160 Butt Weld Pipe / Code 62 O'Ring Head

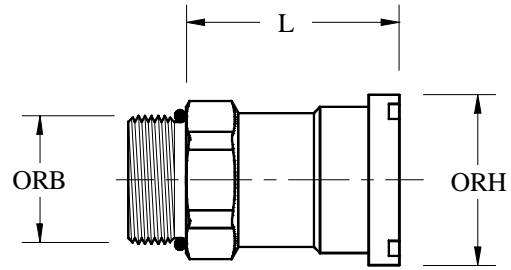
Part No.	Sch 160 BWP	ORH	L
1960-16-16	1.00	1.00	1.50
1960-20-20	1.25	1.25	1.69
1960-24-24	1.50	1.50	2.00
1960-32-32	2.00	2.00	2.38

Code 62 O'Ring Head Adapters



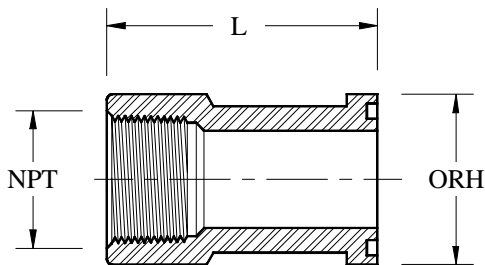
Male NPT / Code 62 O'Ring Head

Part No.	Male NPT	ORH	L
2021-12-12	3/4"-14	3/4"	2.56
2021-16-16	1.00"-11.5	1.00"	3.00
2021-20-20	1.25"-11.5	1.25"	3.25
2021-24-24	1.50"-11.5	1.50"	3.31
2021-32-32	2.00"-11.5	2.00"	4.38



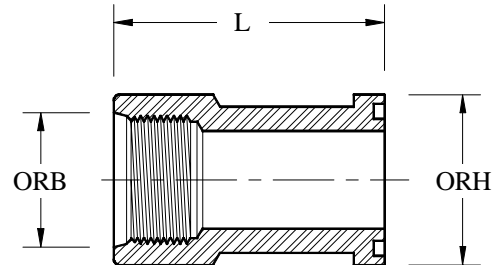
Male ORB / Code 62 O'Ring Head

Part No.	Male ORB	ORH	L
2020-12-12	#12 (1-1/16"-12)	3/4"	2.25
2020-12-16	#12 (1-1/16"-12)	1.00"	2.63
2020-16-16	#16 (1-5/16"-12)	1.00"	2.63
2020-20-16	#20 (1-5/8"-12)	1.00"	2.63
2020-16-20	#16 (1-5/16"-12)	1.25"	2.94
2020-20-20	#20 (1-5/8"-12)	1.25"	2.94
2020-24-20	#24 (1-7/8"-12)	1.25"	2.94
2020-20-24	#20 (1-5/8"-12)	1.50"	2.75
2020-24-24	#24 (1-7/8"-12)	1.50"	2.75
2020-32-24	#32 (2-1/2"-12)	1.50"	2.75
2020-24-32	#24 (1-7/8"-12)	2.00"	3.38
2020-32-32	#32 (2-1/2"-12)	2.00"	3.38



Female NPT / Code 62 O'Ring Head

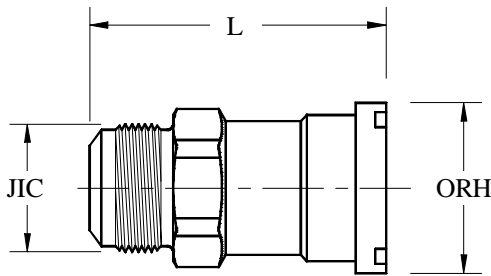
Part No.	Female NPT	ORH	L
1884-12-12	3/4"-14	3/4"	2.25
1884-12-16	3/4"-14	1.00"	2.00
1884-16-16	1.00"-11.5	1.00"	2.50
1884-16-20	1.00"-11.5	1.25"	2.38
1884-20-20	1.25"-11.5	1.25"	2.75
1884-20-24	1.25"-11.5	1.50"	2.75
1884-24-24	1.50"-11.5	1.50"	3.13
1884-24-32	1.50"-11.5	2.00"	3.25
1884-32-32	2.00"-11.5	2.00"	3.63



Female ORB / Code 62 O'Ring Head

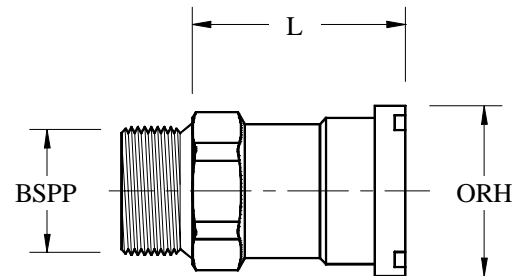
Part No.	Female ORB	ORH	L
1885-12-12	#12 (1-1/16"-12)	3/4"	2.25
1885-12-16	#12 (1-1/16"-12)	1.00"	2.00
1885-16-16	#16 (1-5/16"-12)	1.00"	2.50
1885-16-20	#16 (1-5/16"-12)	1.25"	2.38
1885-20-20	#20 (1-5/8"-12)	1.25"	2.75
1885-20-24	#20 (1-5/8"-12)	1.50"	2.75
1885-24-24	#24 (1-7/8"-12)	1.50"	3.13
1885-24-32	#24 (1-7/8"-12)	2.00"	3.25
1885-32-32	#32 (2-1/2"-12)	2.00"	3.63

Code 62 O'Ring Head Adapters



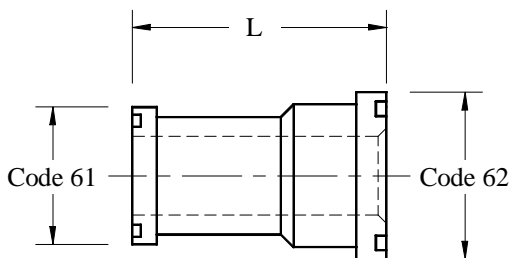
Male JIC / Code 62 O'Ring Head

Part No.	Male JIC	ORH	L
1883-12-12	#12 (1-1/16"-12)	3/4"	3.13
1883-12-16	#12 (1-1/16"-12)	1.00"	3.44
1883-16-16	#16 (1-5/16"-12)	1.00"	3.56
1883-20-16	#20 (1-5/8"-12)	1.00"	3.56
1883-16-20	#16 (1-5/16"-12)	1.25"	3.81
1883-20-20	#20 (1-5/8"-12)	1.25"	3.88
1883-24-20	#24 (1-7/8"-12)	1.25"	4.03
1883-20-24	#20 (1-5/8"-12)	1.50"	3.75
1883-24-24	#24 (1-7/8"-12)	1.50"	3.81
1883-32-24	#32 (2-1/2"-12)	1.50"	3.81
1883-24-32	#24 (1-7/8"-12)	2.00"	4.44
1883-32-32	#32 (2-1/2"-12)	2.00"	4.44



Male BSPP / Code 62 O'Ring Head

Part No.	Male BSPP	ORH	L
2022-12-16	3/4"-14	1.00"	2.63
2022-16-16	1.00"-11	1.00"	2.63
2022-20-16	1.25"-11	1.00"	2.63
2022-16-20	1.00"-11	1.25"	3.00
2022-20-20	1.25"-11	1.25"	3.00
2022-24-20	1.50"-11	1.25"	3.00
2022-20-24	1.25"-11	1.50"	2.75
2022-24-24	1.50"-11	1.50"	2.75
2022-24-32	1.50"-11	2.00"	3.31



Code 61 / Code 62 O'Ring Head Union

Part No.	Code 61 ORH	Code 62 ORH	L
1955-16-16	1.00	1.00	3.13
1955-20-16	1.25	1.00	3.38
1955-16-20	1.00	1.25	3.25
1955-20-20	1.25	1.25	3.50
1955-24-20	1.50	1.25	3.56
1955-20-24	1.25	1.50	3.75
1955-24-24	1.50	1.50	3.88
1955-32-24	2.00	1.50	3.88
1955-24-32	1.50	2.00	4.25
1955-32-32	2.00	2.00	4.25
1955-40-32	2.50	2.00	4.50



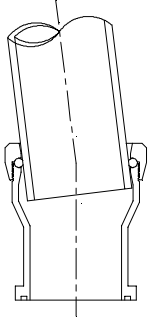


Suction & Return Adapters

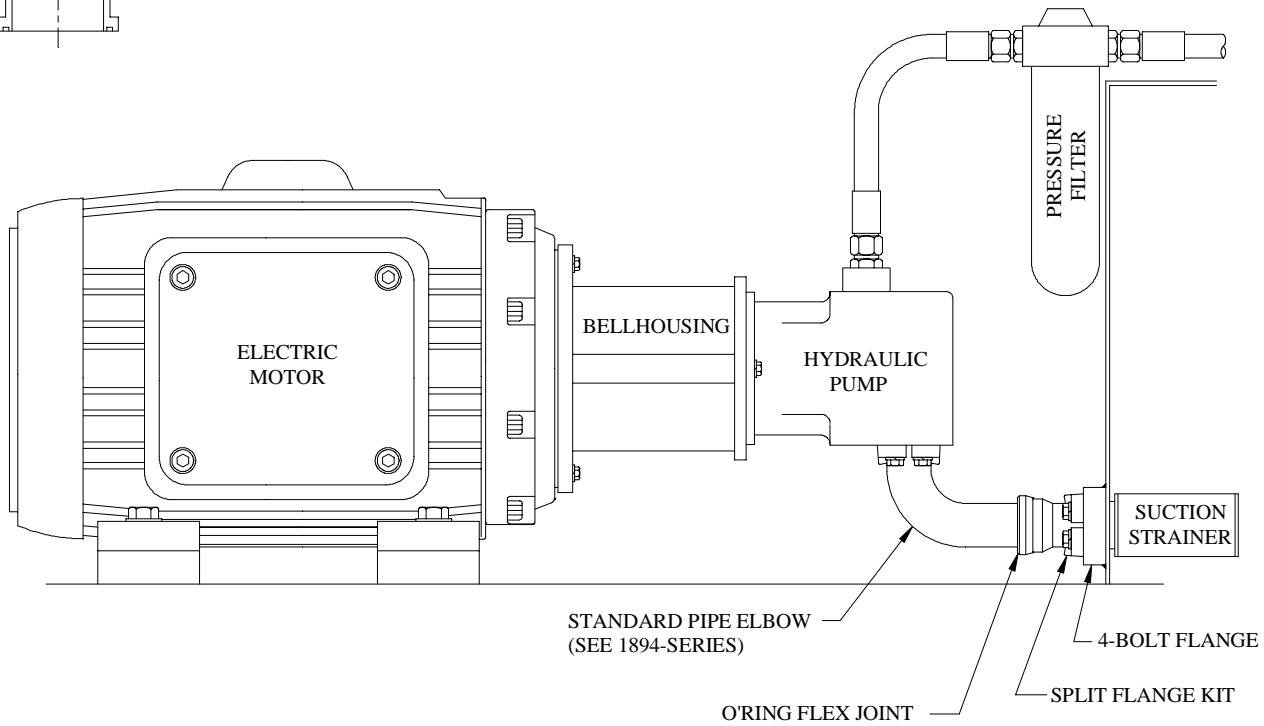
ORFJ Collar
ORFJ Coupling
ORFJ to Male NPT
ORFJ to BWP
ORFJ to ORH
ORFJ to ORH 45° Elbow
ORFJ to ORH 90° Elbow
Pipe
Barb
Male NPT
Kingnipple
ORH to ORH 90° Elbow
Barb to Male ORB
Barb to Butt Weld Pipe
Male NPT to Butt Weld Pipe
Barb to Male NPT 90° Elbow



O'Ring Flex Joint (ORFJ) Introduction & Installation



The O'Ring Flex Joint (ORFJ), in conjunction with SAE 4-bolt flanges, offers an elegant and simple solution to connecting ports of various components in the suction and return lines of every hydraulic system. This is especially true if a compact layout is essential, misalignment is severe and flow rates are high. The ORFJ will allow for approximately 7 degrees of misalignment per joint. The sealing is accomplished using a standard O'ring, and can be easily tightened into place using any adjustable collet wrench.



INSTALLATION PROCEDURE

STEP #1
Slide the collar
over your pipe.



STEP #2
Roll the O'Ring
up the pipe about



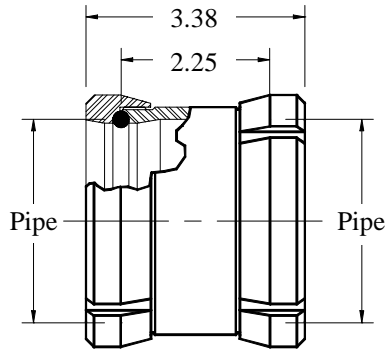
STEP #3
Push the coupling
up to the O'Ring.



STEP #4
Tighten the collar
to the coupling.



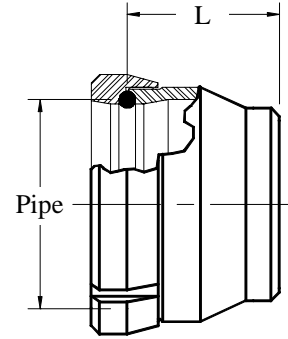
O'Ring Flex Joint (ORFJ) - 150 psi



ORFJ Coupling

Part No.	ORFJ	Pipe
2566-24-24	1.50"	1.50"
2566-32-32	2.00"	2.00"
2566-40-40	2.50"	2.50"
2566-48-48	3.00"	3.00"
2566-56-56	3.50"	3.50"
2566-64-64	4.00"	4.00"

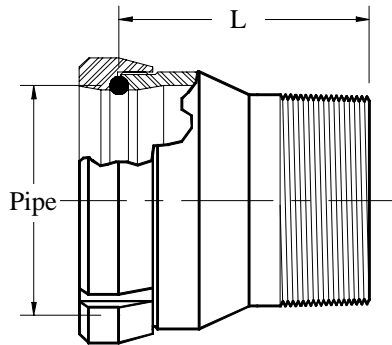
Complete With Collar & O'Ring



ORFJ / Butt Weld Pipe

Part No.	Pipe	BWP	L
2555-24-24	1.50"	1.50"	2.25
2555-32-32	2.00"	2.00"	2.25
2555-40-40	2.50"	2.50"	2.25
2555-48-48	3.00"	3.00"	2.25
2555-56-56	3.50"	3.50"	2.25
2555-64-64	4.00"	4.00"	2.25

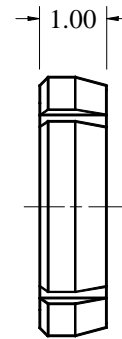
Complete With Collar & O'Ring



ORFJ / Male NPT

Part No.	Pipe	NPT	L
2569-24-24	1.50"	1.50"-11.5	3.75
2569-32-32	2.00"	2.00"-11.5	3.75
2569-40-40	2.50"	2.50"-8	3.75
2569-48-48	3.00"	3.00"-8	4.25
2569-56-56	3.50"	3.50"-8	4.25
2569-64-64	4.00"	4.00"-8	4.75

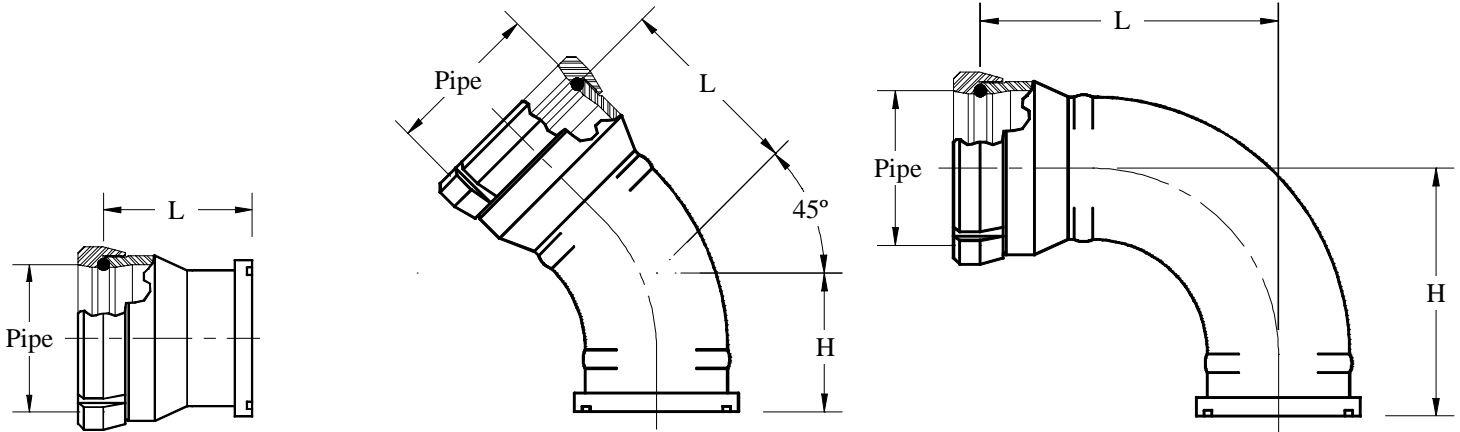
Complete With Collar & O'Ring



ORFJ Collar

Part No.	ORFJ
2554-24	1.50"
2554-32	2.00"
2554-40	2.50"
2554-48	3.00"
2554-56	3.50"
2554-64	4.00"

O'Ring Flex Joint (ORFJ) - 150 psi



**ORFJ /
Code 61 O'Ring Head**

Part No.	Pipe	Flange	L
2568-24-24	1.50"	1.50"	3.25
2568-32-24	2.00"	1.50"	4.25
2568-24-32	1.50"	2.00"	3.38
2568-32-32	2.00"	2.00"	3.38
2568-40-32	2.50"	2.00"	4.25
2568-32-40	2.00"	2.50"	3.50
2568-40-40	2.50"	2.50"	3.50
2568-48-40	3.00"	2.50"	4.50
2568-40-48	2.50"	3.00"	3.75
2568-48-48	3.00"	3.00"	3.75
2568-56-48	3.50"	3.00"	4.75
2568-48-56	3.00"	3.50"	3.75
2568-56-56	3.50"	3.50"	3.75
2568-64-56	4.00"	3.50"	4.75
2568-56-64	3.50"	4.00"	4.00
2568-64-64	4.00"	4.00"	4.00

Complete With Collar & O'Ring

**ORFJ / Code 61
O'Ring Head 45° Elbow**

Part No.	Pipe	Flange	L	H
3390-24-24	1.50"	1.50"	3.38	2.13
3390-32-24	2.00"	1.50"	3.63	3.38
3390-24-32	1.50"	2.00"	3.38	2.25
3390-32-32	2.00"	2.00"	3.63	2.50
3390-40-32	2.50"	2.00"	4.00	3.75
3390-32-40	2.00"	2.50"	3.63	2.63
3390-40-40	2.50"	2.50"	4.00	3.00
3390-48-40	3.00"	2.50"	4.25	4.25
3390-40-48	2.50"	3.00"	4.00	3.25
3390-48-48	3.00"	3.00"	4.25	3.50
3390-56-48	3.50"	3.00"	4.50	4.75
3390-48-56	3.00"	3.50"	4.25	3.50
3390-56-56	3.50"	3.50"	4.50	3.75
3390-64-56	4.00"	3.50"	4.75	5.00
3390-56-64	3.50"	4.00"	4.50	4.00
3390-64-64	4.00"	4.00"	4.75	4.25

Complete With Collar & O'Ring

**ORFJ / Code 61
O'Ring Head 90° Elbow**

Part No.	Pipe	Flang	L	H
2567-24-24	1.50"	1.50"	4.50	3.25
2567-32-24	2.00"	1.50"	5.25	5.00
2567-24-32	1.50"	2.00"	4.50	3.38
2567-32-32	2.00"	2.00"	5.25	4.13
2567-40-32	2.50"	2.00"	6.00	5.75
2567-32-40	2.00"	2.50"	5.25	4.25
2567-40-40	2.50"	2.50"	6.00	5.00
2567-48-40	3.00"	2.50"	6.75	6.75
2567-40-48	2.50"	3.00"	6.00	5.25
2567-48-48	3.00"	3.00"	6.75	6.00
2567-56-48	3.50"	3.00"	7.50	7.75
2567-48-56	3.00"	3.50"	6.75	6.00
2567-56-56	3.50"	3.50"	7.50	6.75
2567-64-56	4.00"	3.50"	8.25	8.50
2567-56-64	3.50"	4.00"	7.50	7.00
2567-64-64	4.00"	4.00"	8.25	7.75

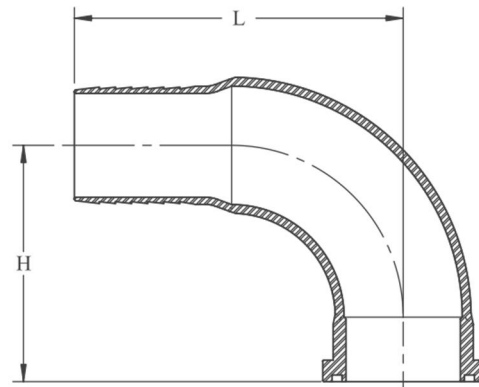
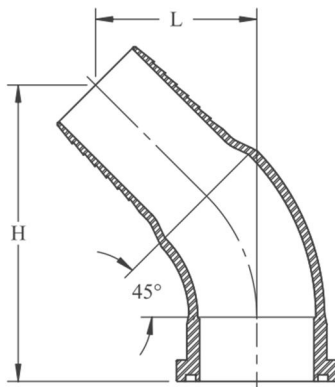
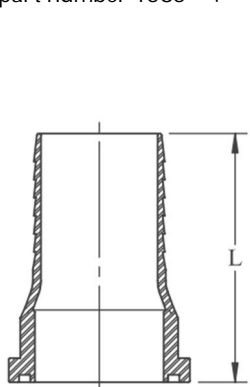
Complete With Collar & O'Ring

Code 61 split flange kit required for mounting
See part number 1585-size

150 psi Suction & Return Adapters

Hose Barb/Code 61 O-Ring Head

Code 61 split flange kit required for mounting.
 See part number 1585-**.



Hose Barb /
Code 61 O-Ring Head

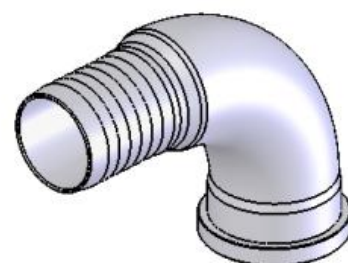
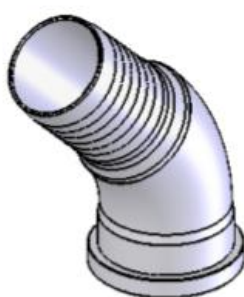
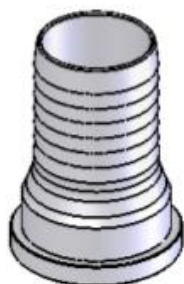
Part #	Barb	ORH	L
1650-20-20	1.25"	1 1/4"	3.00"
1650-24-20	1.50"	1 1/4"	3.25"
1650-32-20	2.00"	1 1/4"	4.25"
1650-20-24	1.25"	1 1/2"	3.00"
1650-24-24	1.50"	1 1/2"	3.25"
1650-32-24	2.00"	1 1/2"	3.75"
1650-40-24	2.50"	1 1/2"	5.00"
1650-24-32	1.50"	2"	3.38"
1650-32-32	2.00"	2"	3.88"
1650-40-32	2.50"	2"	4.13"
1650-48-32	3.00"	2"	5.25"
1650-32-40	2.00"	2 1/2"	4.00"
1650-40-40	2.50"	2 1/2"	4.25"
1650-48-40	3.00"	2 1/2"	4.50"
1650-40-48	2.50"	3"	4.50"
1650-48-48	3.00"	3"	4.75"
1650-64-48	4.00"	3"	6.00"
1650-48-56	3.00"	3 1/2"	4.75"
1650-64-56	4.00"	3 1/2"	5.00"
1650-48-64	3.00"	4"	5.00"
1650-64-64	4.00"	4"	5.25"

45° Elbow - Hose Barb /
Code 61 O-Ring Head

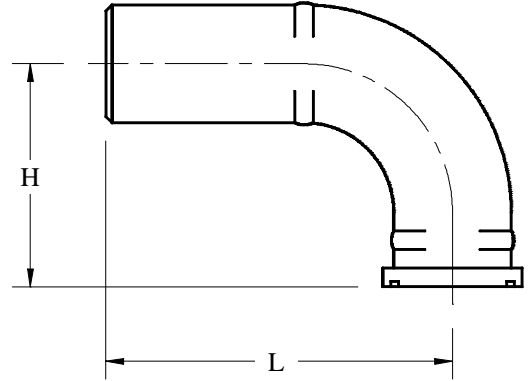
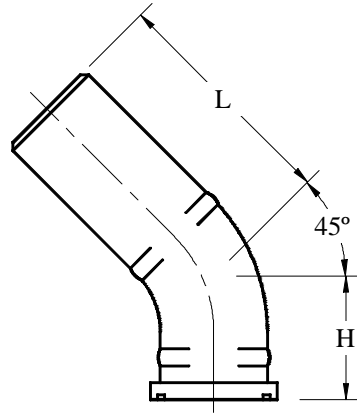
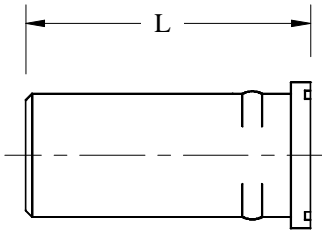
Part #	Barb	ORH	L	H
2675-20-20	1.25"	1 1/4"	2.12"	4.12"
2675-24-20	1.50"	1 1/4"	2.30"	4.30"
2675-32-20	2.00"	1 1/4"	2.74"	5.36"
2675-20-24	1.25"	1 1/2"	2.12"	4.12"
2675-24-24	1.50"	1 1/2"	2.39"	4.51"
2675-32-24	2.00"	1 1/2"	2.74"	4.86"
2675-40-24	2.50"	1 1/2"	3.09"	6.47"
2675-24-32	1.50"	2"	2.39"	4.64"
2675-32-32	2.00"	2"	2.91"	5.41"
2675-40-32	2.50"	2"	3.09"	5.59"
2675-48-32	3.00"	2"	3.54"	7.29"
2675-32-40	2.00"	2 1/2"	2.91"	5.54"
2675-40-40	2.50"	2 1/2"	3.36"	6.36"
2675-48-40	3.00"	2 1/2"	3.54"	6.54"
2675-40-48	2.50"	3"	3.36"	6.61"
2675-48-48	3.00"	3"	3.71"	7.21"
2675-64-48	4.00"	3"	4.06"	8.81"
2675-48-56	3.00"	3 1/2"	3.71"	7.21"
2675-64-56	4.00"	3 1/2"	4.06"	7.81"
2675-48-64	3.00"	4"	3.71"	7.46"
2675-64-64	4.00"	4"	4.24"	8.49"

90° Elbow - Hose Barb /
Code 61 O-Ring Head

Part #	Barb	ORH	L	H
1670-20-20	1.25"	1 1/4"	3.88"	2.88"
1670-24-20	1.50"	1 1/4"	4.13"	2.88"
1670-32-20	2.00"	1 1/4"	5.00"	3.75"
1670-20-24	1.25"	1 1/2"	3.88"	2.88"
1670-24-24	1.50"	1 1/2"	4.50"	3.25"
1670-32-24	2.00"	1 1/2"	5.00"	3.25"
1670-40-24	2.50"	1 1/2"	6.00"	5.00"
1670-24-32	1.50"	2"	4.50"	3.38"
1670-32-32	2.00"	2"	5.75"	4.13"
1670-40-32	2.50"	2"	6.00"	4.13"
1670-48-32	3.00"	2"	7.00"	5.75"
1670-32-40	2.00"	2 1/2"	5.75"	4.25"
1670-40-40	2.50"	2 1/2"	6.75"	5.00"
1670-48-40	3.00"	2 1/2"	7.00"	5.00"
1670-40-48	2.50"	3"	6.75"	5.25"
1670-48-48	3.00"	3"	7.75"	6.00"
1670-64-48	4.00"	3"	8.75"	7.75"
1670-48-56	3.00"	3 1/2"	7.75"	6.00"
1670-64-56	4.00"	3 1/2"	8.75"	6.75"
1670-48-64	3.00"	4"	7.75"	6.25"
1670-64-64	4.00"	4"	9.50"	7.75"



Suction & Return Adapters – 150 psi (Straight Pipe Fittings)



**Pipe /
Code 61 O'Ring Head**

Part No.	Pipe	Flange	L
1892-20-20	1.25"	1.25"	3.50
1892-24-20	1.50"	1.25"	4.50
1892-20-24	1.25"	1.25"	3.50
1892-24-24	1.50"	1.50"	4.00
1892-32-24	2.00"	1.50"	6.00
1892-24-32	1.50"	2.00"	4.13
1892-32-32	2.00"	2.00"	5.13
1892-40-32	2.50"	2.00"	7.00
1892-32-4	2.00"	2.50"	5.25
1892-40-40	2.50"	2.50"	6.25
1892-48-40	3.00"	2.50"	8.25
1892-40-48	2.50"	3.00"	6.50
1892-48-48	3.00"	3.00"	7.50
1892-64-48	4.00"	3.00"	10.50
1892-48-56	3.00"	3.50"	7.50
1892-64-56	4.00"	3.50"	10.50
1892-48-64	3.00"	4.00"	7.75
1892-64-64	4.00"	4.00"	9.75

**Pipe / Code 61
O'Ring Head 45° Elbow**

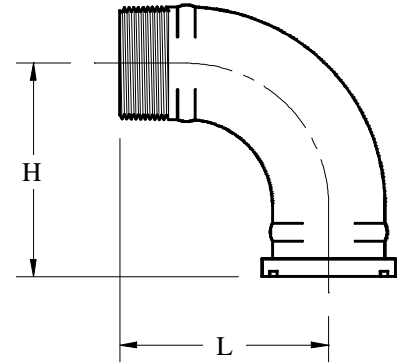
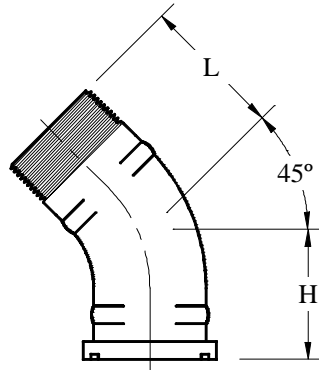
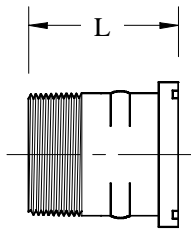
Part No.	Pipe	Flange	L	H
2677-20-20	1 1/4	1 1/4	3.50	2.00
2677-24-20	1 1/2	1 1/4	4.13	2.63
2677-20-24	1 1/4	1 1/2	3.50	2.00
2677-24-24	1 1/2	1 1/2	4.13	2.13
2677-32-24	2	1 1/2	5.38	3.38
2677-24-32	1 1/2	2	4.13	2.25
2677-32-32	2	2	5.38	2.50
2677-40-32	2 1/2	2	6.75	3.75
2677-32-40	2	2 1/2	5.38	2.63
2677-40-40	2 1/2	2 1/2	6.75	3.00
2677-48-40	3	2 1/2	8.25	4.25
2677-40-48	2 1/2	3	6.75	3.25
2677-48-48	3	3	8.25	3.50
2677-64-48	4	3	10.50	5.00
2677-48-56	3	3 1/2	8.25	3.50
2677-64-56	4	3 1/2	10.50	5.00
2677-48-64	3	4	8.25	3.75
2677-64-64	4	4	10.50	4.25

**Pipe / Code 61
O'Ring Head 90° Elbow**

Part No.	Pipe	Flange	L	H
1894-20-20	1 1/4	1 1/4	4.38	2.88
1894-24-20	1 1/2	1 1/4	5.25	3.75
1894-20-24	1 1/4	1 1/2	4.38	2.88
1894-24-24	1 1/2	1 1/2	5.25	3.25
1894-32-24	2	1 1/2	7.00	5.00
1894-24-32	1 1/2	2	5.25	3.38
1894-32-32	2	2	7.00	4.13
1894-40-32	2 1/2	2	8.75	5.75
1894-32-40	2	2 1/2	7.00	4.25
1894-40-40	2 1/2	2 1/2	8.75	5.00
1894-48-40	3	2 1/2	10.50	6.75
1894-40-48	2 1/2	3	8.75	5.25
1894-48-48	3	3	10.50	6.00
1894-64-48	4	3	14.00	8.50
1894-48-56	3	3 1/2	10.50	6.00
1894-64-56	4	3 1/2	14.00	8.50
1894-48-64	3	4	10.50	6.25
1894-64-64	4	4	14.00	7.75

Code 61 split flange kit required for mounting
See part number 1585-size

Suction & Return Adapters – 150 psi (Male NPT Fittings)



**Male NPT /
Code 61 O'Ring Head**

Part No.	NPT	Flange	L
1640-20-20	1.25"-11.5	1.25"	2.25
1640-24-20	1.50"-11.5	1.25"	2.75
1640-20-24	1.25"-11.5	1.25"	2.25
1640-24-24	1.50"-11.5	1.50"	2.50
1640-32-24	2.00"-11.5	1.50"	3.50
1640-24-32	1.50"-11.5	2.00"	2.63
1640-32-32	2.00"-11.5	2.00"	2.63
1640-40-32	2.50"-8	2.00"	4.00
1640-32-40	2.00"-11.5	2.50"	2.75
1640-40-40	2.50"-8	2.50"	3.25
1640-48-40	3.00"-8	2.50"	4.25
1640-40-48	2.50"-8	3.00"	3.50
1640-48-48	3.00"-8	3.00"	3.50
1640-64-48	4.00"-8	3.00"	5.00
1640-48-56	3.00"-8	3.50"	3.50
1640-64-56	4.00"-8	3.50"	5.00
1640-48-64	3.00"-8	4.00"	3.75
1640-64-64	4.00"-8	4.00"	4.25

**Male NPT / Code 61
O'Ring Head 45° Elbow**

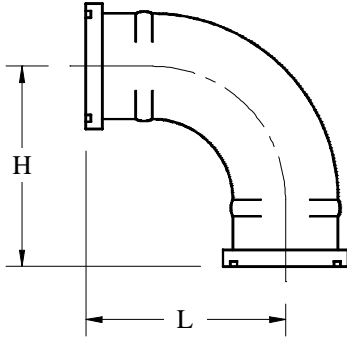
Part No.	NPT	Flange	L	H
2676-20-20	1.25"-11.5	1 1/4	2.25	2.00
2676-24-20	1.50"-11.5	1 1/4	2.63	2.63
2676-20-24	1.25"-11.5	1 1/2	2.25	2.00
2676-24-24	1.50"-11.5	1 1/2	2.63	2.13
2676-32-24	2.00"-11.5	1 1/2	2.88	3.38
2676-24-32	1.50"-11.5	2	2.63	2.25
2676-32-32	2.00"-11.5	2	2.88	2.50
2676-40-32	2.50"-8	2	3.75	3.75
2676-32-40	2.00"-11.5	2 1/2	2.88	2.63
2676-40-40	2.50"-8	2 1/2	3.75	3.00
2676-48-40	3.00"-8	2 1/2	4.00	4.25
2676-40-48	2.50"-8	3	3.75	3.25
2676-48-48	3.00"-8	3	4.00	3.50
2676-64-48	4.00"-8	3	5.00	5.00
2676-48-56	3.00"-8	3 1/2	4.00	3.50
2676-64-56	4.00"-8	3 1/2	5.00	5.00
2676-48-64	3.00"-8	4	4.00	3.75
2676-64-64	4.00"-8	4	5.00	4.25

**Male NPT / Code 61
O'Ring Head 90° Elbow**

Part No.	NPT	Flange	L	H
1660-20-20	1.25"-11.5	1 1/4	3.13	2.88
1660-24-20	1.50"-11.5	1 1/4	3.75	3.75
1660-20-24	1.25"-11.5	1 1/2	3.13	2.88
1660-24-24	1.50"-11.5	1 1/2	3.75	3.25
1660-32-24	2.00"-11.5	1 1/2	4.50	5.00
1660-24-32	1.50"-11.5	2	3.75	3.38
1660-32-32	2.00"-11.5	2	4.50	4.13
1660-40-32	2.50"-8	2	5.75	5.75
1660-32-40	2.00"-11.5	2 1/2	4.50	4.25
1660-40-40	2.50"-8	2 1/2	5.75	5.00
1660-48-40	3.00"-8	2 1/2	6.50	6.75
1660-40-48	2.50"-8	3	5.75	5.25
1660-48-48	3.00"-8	3	6.50	6.00
1660-64-48	4.00"-8	3	8.50	8.50
1660-48-56	3.00"-8	3 1/2	6.50	6.00
1660-64-56	4.00"-8	3 1/2	8.50	8.50
1660-48-64	3.00"-8	4	6.50	6.25
1660-64-64	4.00"-8	4	8.50	7.75

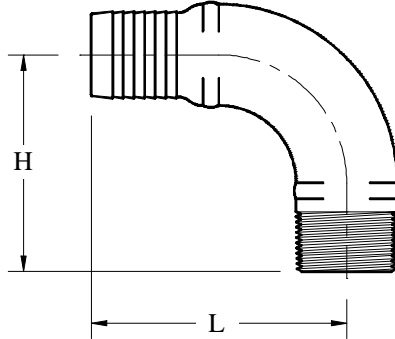
Code 61 split flange kit required for mounting
See part number 1585-size

Suction & Return Adapters – 150 psi



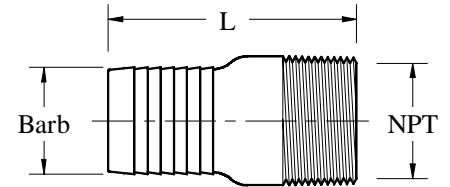
Code 61 O'Ring Head 90° Elbow

Part No.	Flange 2	Flange 1	L	H
2927-20-20	1.25	1.25	2.88	2.88
2927-20-24	1.25	1.50	2.88	2.88
2927-24-24	1.50	1.50	3.25	3.25
2927-24-32	1.50	2.00	3.25	3.38
2927-32-32	2.00	2.00	4.13	4.13
2927-32-40	2.00	2.50	4.13	4.25
2927-40-40	2.50	2.50	6.88	6.88
2927-40-48	2.50	3.00	5.00	5.25
2927-48-48	3.00	3.00	6.00	6.00
2927-48-56	3.00	3.50	6.00	6.00
2927-56-56	3.50	3.50	6.75	6.75
2927-56-64	3.50	4.00	6.75	7.00
2927-64-64	4.00	4.00	7.75	7.75



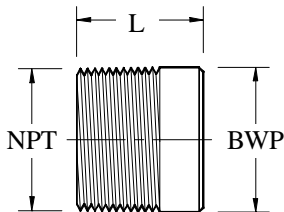
Hose Barb / NPT 90° Elbow

Part No.	Barb	NPT	L	H
1638-20-20	1.25	1.25"-11.5	3.88	3.13
1638-24-20	1.50	1.25"-11.5	4.13	3.13
1638-24-24	1.50	1.50"-11.5	4.50	3.75
1638-32-24	2.00	1.50"-11.5	5.00	3.75
1638-32-32	2.00	2.00"-11.5	5.75	4.50
1638-40-32	2.50	2.00"-11.5	6.00	4.50
1638-40-40	2.50	2.50"-8	6.75	5.75
1638-48-40	3.00	2.50"-8	7.00	5.75
1638-48-48	3.00	3.00"-8	7.75	6.50
1638-64-64	4.00	4.00"-8	9.50	8.50



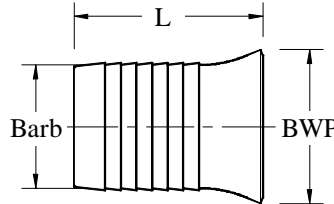
King Nipple

Part No.	Barb	NPT	L
1636-20-20	1.25	1.25	3.88
1636-24-24	1.50	1.50	4.13
1636-32-32	2.00	2.00	4.75
1636-40-40	2.50	2.50	5.50
1636-48-48	3.00	3.00	6.00
1636-64-64	4.00	4.00	7.50



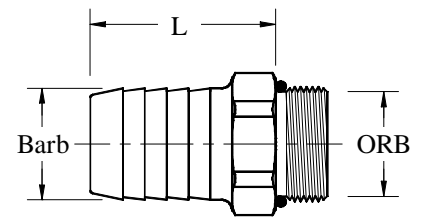
NPT / Butt Weld Pipe

Part No.	NPT	BWP	L
1634-20-20	1.25	1.25	1.25
1634-24-24	1.50	1.50	1.50
1634-32-32	2.00	2.00	1.50
1634-40-40	2.50	2.50	2.00
1634-48-48	3.00	3.00	2.00
1634-64-64	4.00	4.00	2.50



Hose Barb / Butt Weld Pipe

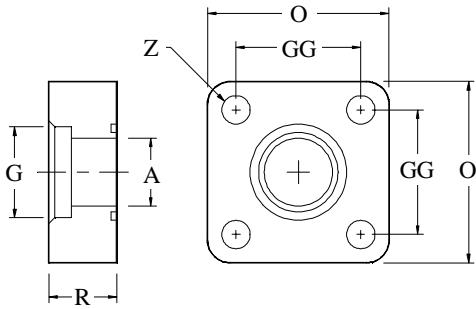
Part No.	Barb	BWP	L
2547-20-20	1.25	1.25	2.00
2547-24-24	1.50	1.50	2.25
2547-32-32	2.00	2.00	2.75
2547-40-40	2.50	2.50	3.00
2547-48-48	3.00	3.00	3.25
2547-64-64	4.00	4.00	3.50



Hose Barb / Male ORB

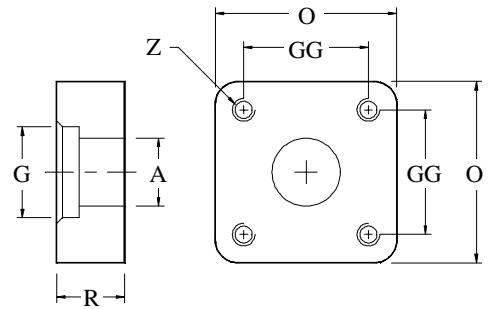
Part No.	Barb	ORB	L
2360-16-16	1.00	#16 (1-5/16"-12)	2.13
2360-20-16	1.25	#16 (1-5/16"-12)	2.13
2360-20-20	1.25	#20 (1-5/8"-12)	2.13
2360-24-20	1.50	#20 (1-5/8"-12)	2.50
2360-24-24	1.50	#24 (1-7/8"-12)	2.50
2360-32-24	2.00	#24 (1-7/8"-12)	2.50
2360-32-32	2.00	#32 (2.50"-12)	2.50

ISO 6000 psi Flanges



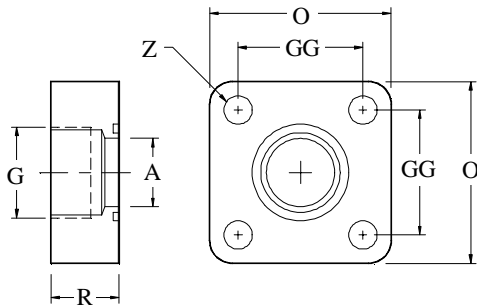
Socket Weld Pipe (SWP) / O'Ring Face (ORF)

Part No.	GG	O	A	G	R	Z
2183-32-32	2.728	4.00	1.63	2.385	1.75	0.69
2183-40-40	3.285	4.75	2.13	2.888	2.00	0.81
2183-48-48	4.037	5.75	2.75	3.515	2.00	1.06
2183-64-64	4.872	7.00	3.50	4.515	2.00	1.31



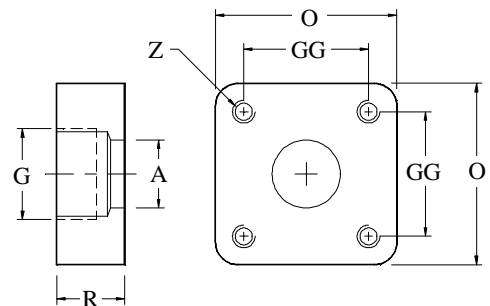
Socket Weld Pipe (SWP) / Companion

Part No.	GG	O	A	G	R	Z
2274-32-32	2.728	4.00	1.63	2.385	1.75	5/8-11
2274-40-40	3.285	4.75	2.13	2.888	2.00	3/4-10
2274-48-48	4.037	5.75	2.75	3.515	2.00	1-8
2274-64-64	4.872	7.00	3.50	4.515	2.00	1.25-7



National Pipe Thread (NPT) / O'Ring Face (ORF)

Part No.	GG	O	A	G	R	Z
2300-32-32	2.728	4.00	1.63	2 NPT	1.75	0.69
2300-40-40	3.285	4.75	2.13	2.5	2.00	0.81
2300-48-48	4.037	5.75	2.75	3 NPT	2.00	1.06
2300-64-64	4.872	7.00	3.50	4 NPT	2.00	1.31

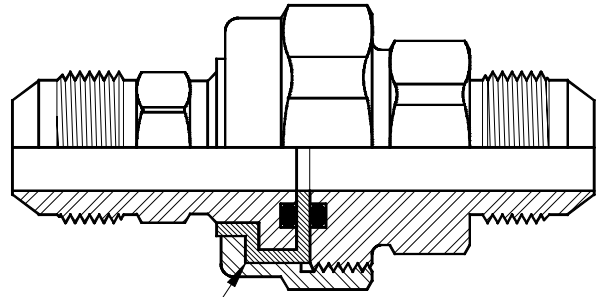


National Pipe Thread (NPT) / Companion

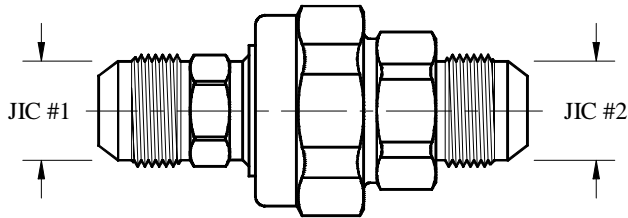
Part No.	GG	O	A	G	R	Z
2299-32-32	2.728	4.00	1.63	2 NPT	1.75	5/8-11
2299-40-40	3.285	4.75	2.13	2.5	2.00	3/4-10
2299-48-48	4.037	5.75	2.75	3 NPT	2.00	1-8
2299-64-64	4.872	7.00	3.50	4 NPT	2.00	1.25-7

Electrically Insulated Adapters

With a 3,000 psi capacity, **Sealum** insulated adapters are used where electrical insulation is required for hydraulic hose connections. The insulating material is Phenolic with a dielectric strength (short time) of 350 UPM and a compressive strength of 38,000 psi.

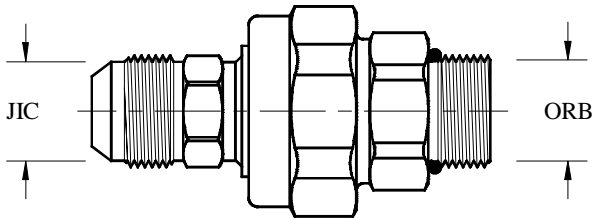


Phenolic Insulator



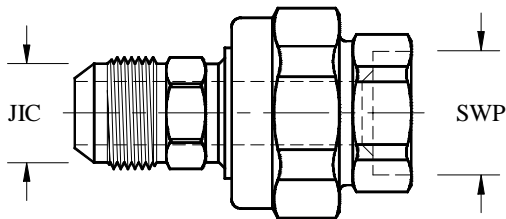
JIC Male / JIC Male

Part No.	JIC #1	JIC #2
3375-08-08	#8 (3/4"-16)	#8 (3/4"-16)
3375-12-12	#12 (1-1/16"-12)	#12 (1-1/16"-12)
3375-16-16	#16 (1-5/16"-12)	#16 (1-5/16"-12)



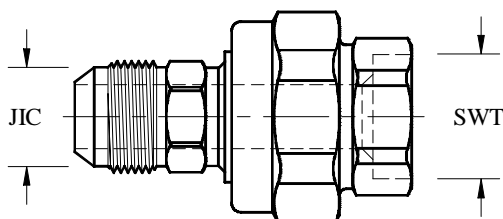
JIC Male / ORB Male

Part No.	JIC	ORB
3180-08-08	#8 (3/4"-16)	#8 (3/4"-16)
3180-12-12	#12 (1-1/16"-12)	#12 (1-1/16"-12)
3180-16-16	#16 (1-5/16"-12)	#16 (1-5/16"-12)



JIC Male / Socket Weld Pipe (SWP)

Part No.	JIC	SWP
3417-08-08	#8 (3/4"-16)	1/2" (0.845)
3417-12-12	#12 (1-1/16"-12)	3/4" (1.055)
3417-16-16	#16 (1-5/16"-12)	1" (1.320)



JIC Male / Socket Weld Tube (SWT)

Part No.	JIC	SWT
2958-08-08	#8 (3/4"-16)	1/2" (0.505)
2958-12-12	#12 (1-1/16"-12)	3/4" (0.755)
2958-16-16	#16 (1-5/16"-12)	1" (1.005)



Pump Motor Adapters

SAE Pump / NEMA Motor Adapters

Gas Engine Bellhousings

SAE Pump Brackets

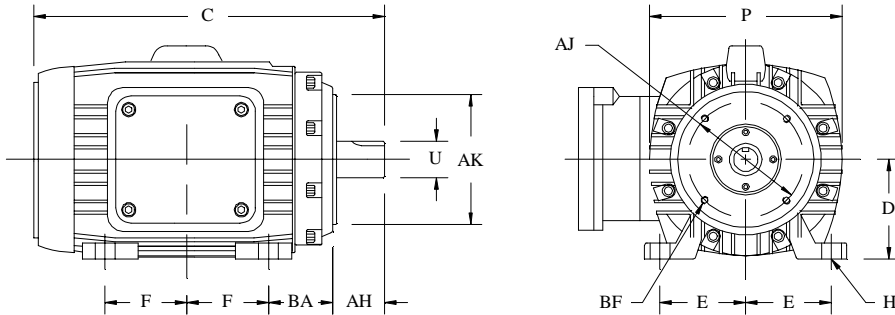
Motor Port Blocks

Motor Mounts

Accessories



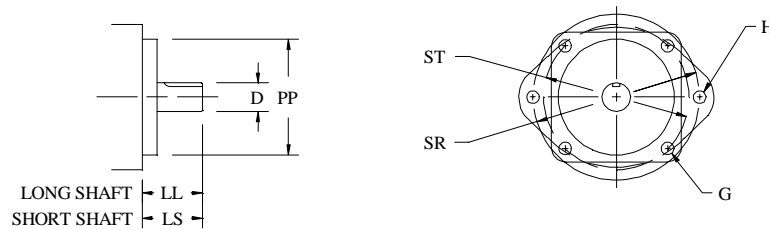
NEMA Motor & SAE Pump Specifications



**HP based on 1750 RPM and 440 volts.

NEMA Motor Specifications

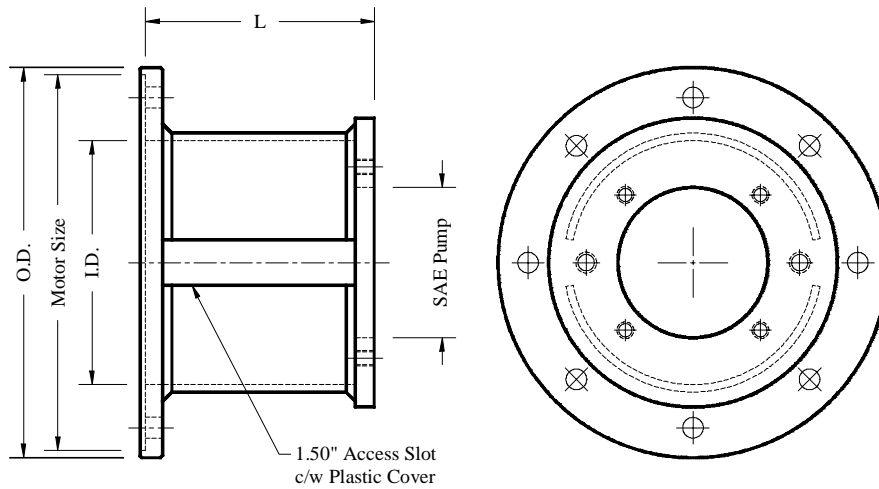
HP	Frame Size	E	F	H	BA	C	D	P	U	AH	AJ	AK	BF (QTY.)
1	143 TC	2.75	2.00	0.34	2.25	12.25	3.50	7.72	0.88	2.13	5.87	4.50	3/8-16 (4)
2	145 TC		2.50			13.25							
3	182 TC	3.75	2.25	0.41	2.75	15.00	4.50	8.91	1.13	2.62	7.25	8.50	1/2-13 (4)
5	184 TC		2.75			15.63							
7.5	213 TC	4.25	2.75	0.41	3.50	18.00	5.25	11.19	1.38	3.12			
10	215 TC		3.50			19.50							
15	254 TC	5.00	4.13	0.53	4.25	24.00	6.25	12.75	1.63	3.75	9.00	10.50	1/2-13 (4)
20	256 TC		5.00			25.60							
25	284 TC	5.50	4.75	0.53	4.75	25.60	7.00	14.50	1.88	4.37	11.00	12.50	5/8-11 (4)
30	286 TC		5.50			27.09							
40	324 TC	6.25	5.25	0.66	5.25	30.87	8.00	15.50	2.13	5.00	11.00	12.50	5/8-11 (4)
50	326 TC		6.00			30.86							
60	364 TC	7.00	5.63	0.66	5.87	35.00	9.00	17.50	2.38	5.62			
75	365 TC		6.13			36.00							
100	405 TC	8.00	6.88	0.81	6.63	38.00	10.00	19.13	2.88	7.00	14.00	16.00	5/8-11 (8)
125	444 TC	9.00	7.25	0.81	7.50	43.00	11.00	22.06	3.38	8.25			
150	445 TC		8.25			46.00							



SAE Pump Specifications

Pump Size	PP (Pilot)	4-Bolt Mount		2-Bolt Mount		Straight Shaft		
		ST	G	SR	H	LL	LS	D
1.78	1.78	2.838	0.38	—	—	—	—	—
AA	2.00	—	—	3.250	0.41	—	1.06	0.50
A	3.25	4.125	0.44	4.188	0.44	2.31	1.25	0.63
B	4.00	5.000	0.56	5.750	0.56	2.81	1.63	0.88
C	5.00	6.375	0.56	7.125	0.69	3.31	2.19	1.25
D	6.00	9.000	0.81	9.000	0.81	3.94	2.94	1.75
E	6.50	12.500	0.81	12.500	0.81	3.94	2.94	1.75
F	7.00	13.780	1.06	13.780	1.06	—	—	—

Pump Motor Adapters



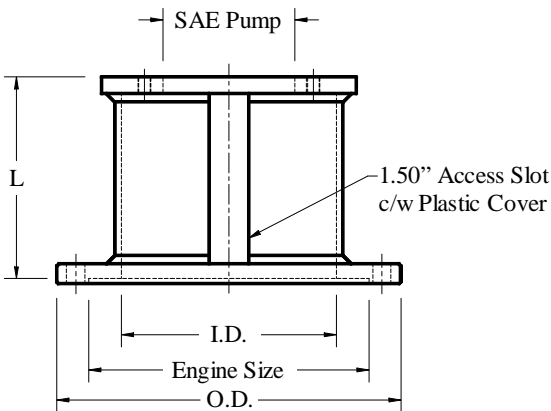
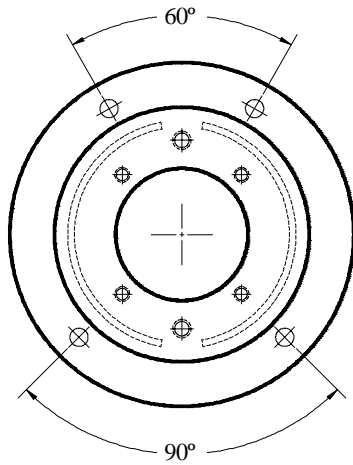
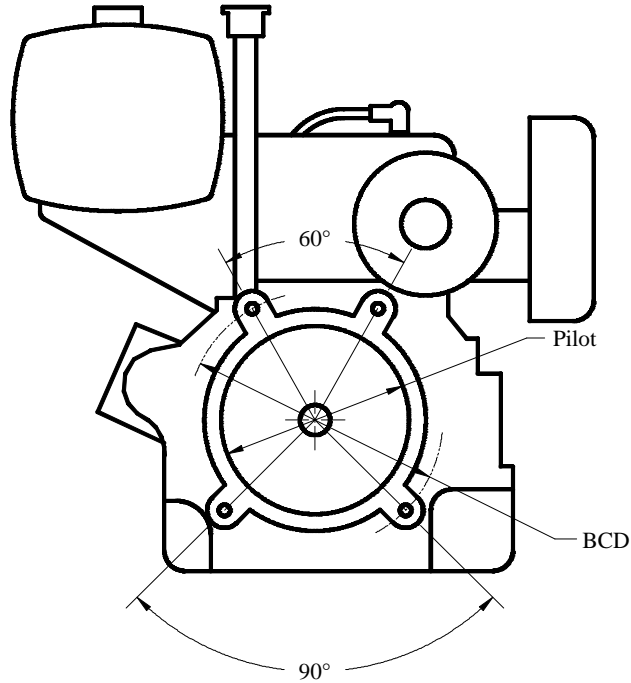
Motor Size	O.D.	I.D.	SAE Pump	L	Part No.	WT LB
Nema 56 TC To 145 TC	6.75	4.00	1.78	3.50	1416-1	10
				4.25	1416-3	
			AA	4.00	1417-1	11
				4.50	1417-3	
			A	4.00	1418-3	11
				4.50	1418-4	
5.25	1418-5					
Nema 182 TC To 256 TC	9.00	5.50	1.78	4.00	1419-1	15
				5.00	1419-2	
			AA	4.50	1420-1	16
				5.68	1420-2	
			A	4.88	1421-1	16
				5.68	1421-2	
			B	6.68	1421-3	17
				5.00	1422-1	
				5.81	1422-2	
			C	6.81	1422-3	20
				5.00	1423-1	
				5.81	1423-2	
			6.81	1423-3		

Motor Size	O.D.	I.D.	SAE Pump	L	Part No.	WT LB		
Nema 284 TC To 286 TC	11.00	7.00	A	5.00	1424-1	24		
				6.81	1424-2			
			B	6.81	1425-1	27		
				7.63	1425-2			
				8.81	1425-3			
			C	6.81	1426-1	27		
				7.63	1426-2			
				8.81	1426-3			
D	8.00	1427-3	30					
	9.19	1427-4						
	Nema 324 TC To 405 TC	13.00		8.13	B	6.81	1428-1	35
						7.63	1428-2	
C			8.81		1428-3	35		
			6.81		1429-1			
D			7.63		1429-2	48		
			8.81		1429-3			
	10.50	1429-4						
E	8.00	1430-4	68					
	9.19	1430-5						
	10.88	1430-6						
Nema 444 TC To 445 TC	16.50	10.00	D	9.00	1431-3	80		
				12.00	1431-2			
E	9.00	1432-1	100					
	12.00	1432-2						
				9.00	1433-1			
				12.00	1433-2			

- All dimensions are in inches
- Pump/Motor Adapters are suitable for 2-bolt & 4-bolt pumps.
- See page 62-2 For NEMA motor and SAE pump specifications.
- Material: G40.21-44W Steel.
- Complete with bolt kits.

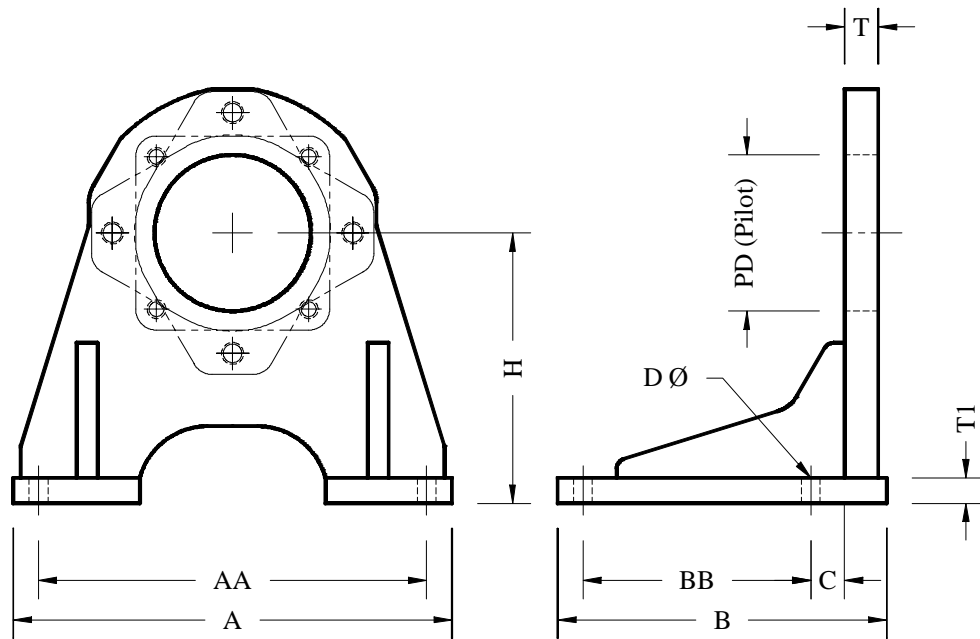
Gas Engine Bellhousings

Engine Size	Pilot	BCD
Small	5.75	6.50
Medium	7.00	7.75
Large	7.88	9.25



Engine	Pump	O.D.	I.D.	L	Part No.
Small	AA	7.50	5.00	5.00	2665-1
				5.50	2665-2
	A	7.50	5.00	5.00	2666-1
				5.50	2666-2
	B	7.50	5.00	5.00	2667-1
				5.50	2667-2
Medium	A	9.00	5.50	5.50	2668-1
				6.00	2668-2
				7.00	2668-3
	B	9.00	5.50	5.50	2669-1
				6.00	2669-2
				7.00	2669-3
C	9.00	5.50	5.50	2670-1	
			6.00	2670-2	
			7.00	2670-3	
Large	A	10.50	7.00	8.69	2671-1
	B	10.50	7.00	8.69	2672-1
	C	10.50	7.00	8.69	2673-1

Standard SAE Pump Brackets



Part No.	Mounting Flange	PD (Pilot)	H	AA	BB	T	T1	A	B	C	D	WT LB
744-3	SAE AA	2.000	3.50	5.25	1.88	0.50	0.50	6.00	3.50	0.44	0.44	5
980-4	SAE A	3.250	4.50	7.50	3.00	0.63	0.63	8.50	5.13	0.75	0.50	10
649-6	SAE B	4.000	6.25	9.00	4.63	0.75	0.63	10.25	7.00	0.75	0.56	20
612-7	SAE C	5.000	7.00	11.50	6.75	1.00	0.75	13.00	9.75	1.00	0.56	35
612-8			8.00									
612-9			9.00									
598-9	SAE D	6.000	9.00	14.50	8.25	1.25	1.00	16.00	11.75	1.25	0.69	65
625-10	SAE E	6.500	10.00	17.00	9.50	1.25	1.00	18.75	13.25	1.50	0.81	85
645-11	SAE F	7.000	11.00	18.50	10.38	1.50	1.25	21.00	14.50	1.50	1.06	140

ALL DIMENSIONS ARE IN INCHES

All footbrackets are suitable for 2-bolt and 4-bolt pumps.
Footbrackets with different height (H) are available upon request.
For SAE J748 standard pump specifications, see page 62-2

Motor Port Blocks

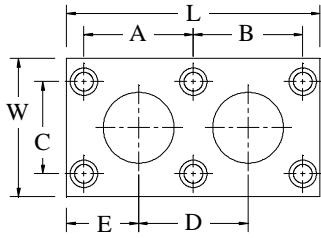


Figure 'A'

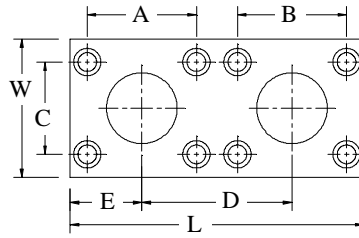


Figure 'B'

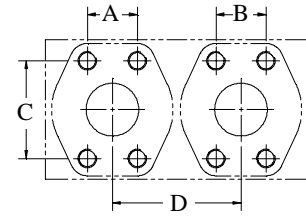


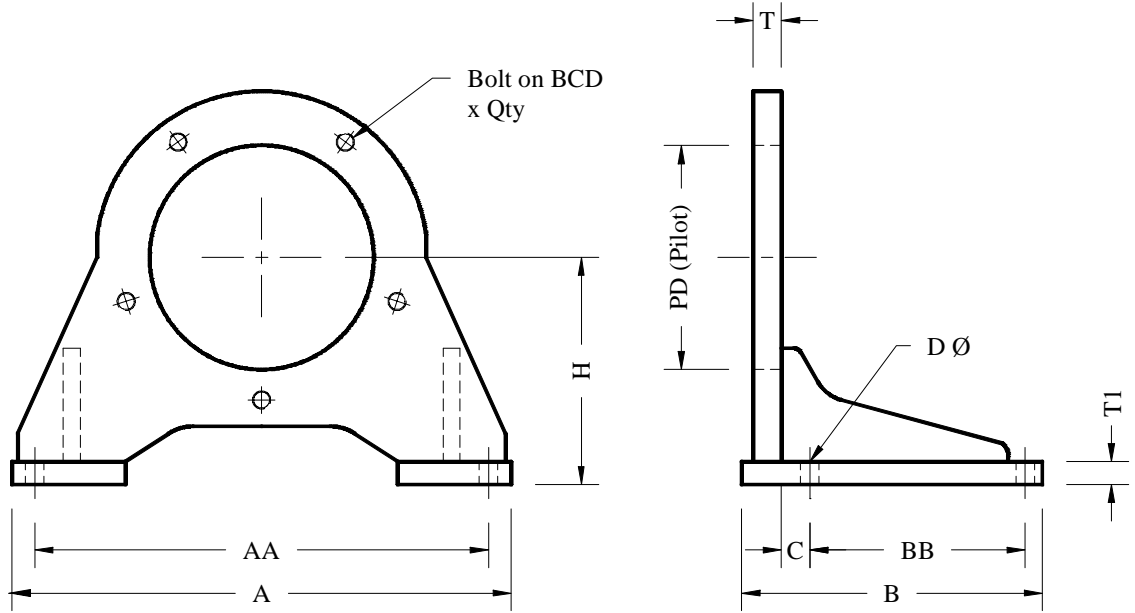
Figure 'C'

All Port Blocks Come With Mounting Kits

Motor Make	Motor Size	Fig.	Part Number	Port Size	A	B	C	D	E	L	W	THK
STAFFA	HMB010	B	MB367	#16 ORB	1.57	1.57	1.57	2.28	1.18	4.63	2.31	1.25
	B080 / 060	A	MB368	#16 ORB	2.00	2.00	1.75	2.38	1.18	4.75	2.50	1.25
	HMB100 / 125 HMC080 / 200											
	HMB150 B200	A	MB369	#16 ORB	1.88	1.88	1.75	2.00	1.25	4.50	2.50	1.25
	HMB270 / 325 HMC270	A	MB370	#20 ORB	2.38	2.38	2.00	2.63	1.43	5.50	3.00	1.25
	HMHDB400	A	MB371	#24 ORB	1.70	2.53	3.06	2.63	1.31	5.19	4.00	1.50
HYDROSTAR KYB	MRH12	C	See Section 42	3/4" Code 61	Standard Code 61 4-Bolt Flange							
	MRH30	C	See Section 42	3/4" Code 61	Standard Code 61 4-Bolt Flange							
	MRH45	C	See Section 42	1.00" Code 61	Standard Code 61 4-Bolt Flange							
	MRH60 to 270	C	See Section 42	1.25" Code 61	Standard Code 61 4-Bolt Flange							
	MRH375 / 250	A	MB610	2.00" Code 61	3.00	3.00	3.70	3.00	2.31	8.13	5.00	2.00
	MRH540	C	See Section 42	2.00" Code 61	Standard Code 61 4-Bolt Flange							
CALZONI	MR190 / 300	A	MB611	#12 ORB	1.97	1.97	1.34	1.97	1.36	4.69	2.00	1.25
	MR450 / 700	A	MB612	#16 ORB	2.36	2.36	1.57	2.36	1.60	5.56	2.50	1.50
	MR1100 / 1800 MRE1400 / 2100	A	MB613 MB345	#20 ORB 1.25" Code 61	2.67	2.67	1.97	2.79	1.79	6.38	3.00	1.50 1.00
	MR2400 / 2800 MRE3100	A	MB614	1.50" Code 61	3.55	3.55	2.44	3.38	2.40	8.19	3.50	1.00
	MR3600 to 7000 MRE5400 / 8500 MRE8500	A	MB615	2" Code 61	3.93	3.93	2.68	4.41	2.33	9.06	4.00	1.25

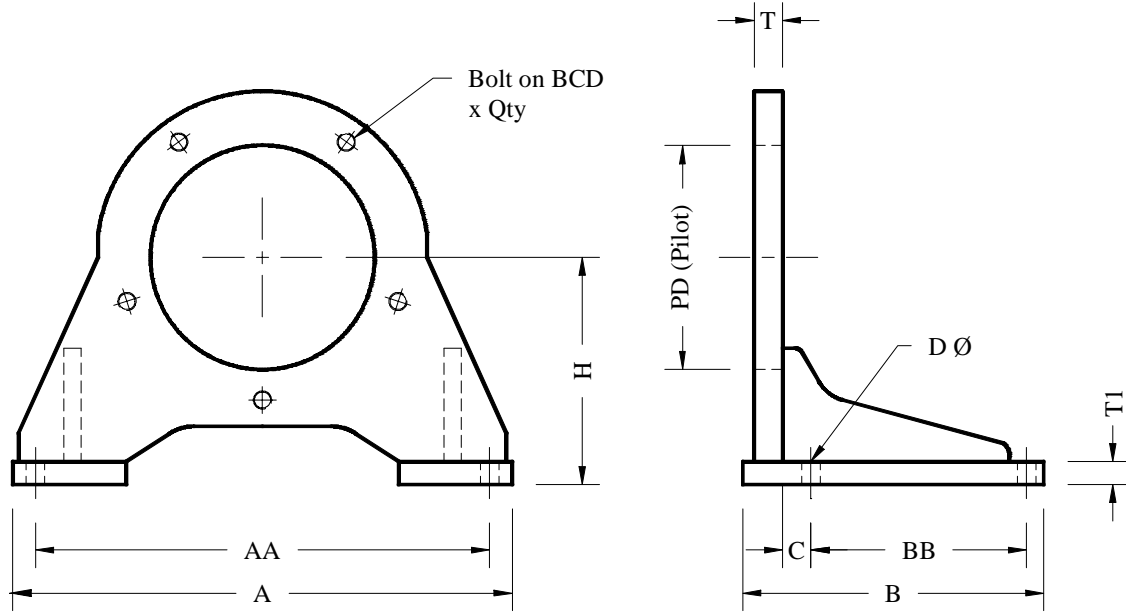
See manifold section 28 for cross port relief blocks.

HECO Motor Mounts



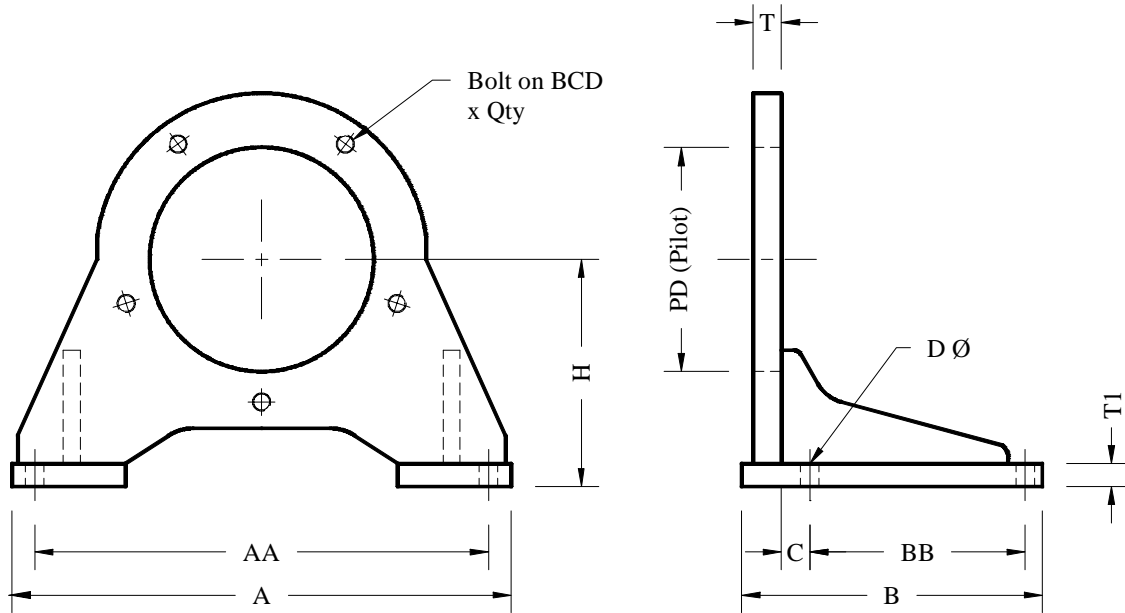
Motor Series	Part No.	PD	BCD	Bolt (QTY)	H	AA	BB	T	T1	A	B	C	D (QTY)	WT LB
16FF	612-1	5.000	6.375	5/8 NC (4)	7.00	11.50	6.75	1.00	0.75	13.0	9.75	1.00	0.56 (4)	35
16CF	1128-4	7.000	8.250	5/8 NC (4)	6.50	13.50	5.63	1.00	0.75	15.0	8.50	1.00	0.56 (4)	35
20FF 20DFE	940-2	11.000	13.187	3/4 NC (10)	10.00	20.00	9.50	1.25	1.00	22.0	13.25	1.50	0.81 (4)	110
20CF 20DCF	1128-5	7.500	9.375	0.656 DIA (6)	6.50	13.50	5.63	1.00	0.75	15.0	8.50	1.00	0.56 (4)	35
50CF 50DCF 52DCF	920-3	9.750	11.000	0.781 DIA (6)	9.00	17.50	8.25	1.00	1.00	19.0	11.50	1.25	0.69 (4)	75

CALZONI Motor Mounts



Motor Size	Part No.	PD	BCD	Bolt (QTY)	H	AA	BB	T	T1	A	B	C	D (QTY)	WT LB
MR190	1128-1	6.297	8.86	3/8 NC (5)	6.50	13.50	5.63	1.00	0.75	15.0	8.5	1.00	0.56 (4)	35
MR300	1128-2	6.888	9.13	3/8 NC (5)	6.50	13.50	5.63	1.00	0.75	15.0	8.5	1.00	0.56 (4)	35
MR450	979-1	7.478	10.47	7/16 NC (5)	8.00	16.00	6.75	1.00	0.75	18.0	9.8	1.00	0.56 (4)	55
MR700	920-1	8.659	11.42	7/16 NC (5)	9.00	17.50	8.25	1.00	1.00	19.0	11.5	1.25	0.69 (4)	75
MR1100	940-1	9.840	12.99	1/2 NC (5)	10.00	20.00	9.50	1.25	1.00	22.0	13.3	1.50	0.81 (4)	110
MR1800	939-1	11.414	14.96	5/8 NC (5)	11.50	24.00	10.38	1.25	1.25	26.5	14.5	1.75	1.06 (4)	160
MR2400 MR2800	1081-1	13.186	17.32	5/8 NC (5)	13.00	26.50	12.25	1.50	1.25	29.0	16.8	1.75	1.06 (4)	230
MR3600 MR4500	1127-1	15.745	21.26	7/8 NC (5)	15.50	31.50	7.50	1.50	1.50	34.5	19.5	1.75	1.06 (6)	335
MR7000	1082-1	17.713	23.62	7/8 NC (5)	18.00	35.50	8.38	1.75	1.50	38.5	21.5	1.75	1.06 (6)	470

CHAR-LYNN & NICHOLS Motor Mounts



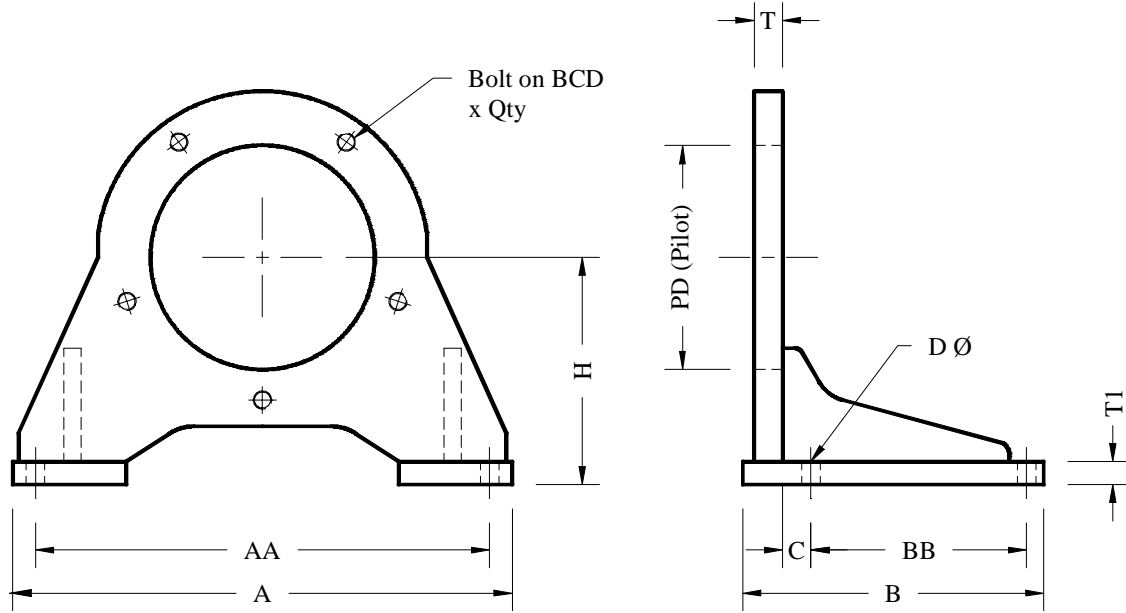
CHAR-LYNN Motor Mounts

Motor Series	Part No.	PD	BCD	Bolt (QTY)	H	AA	BB	T	T1	A	B	C	D (QTY)	WT LB
2000	980-1	3.250	4.188	1/2 NC (2)	4.50	7.50	3.00	0.63	0.63	8.5	5.13	0.75	0.50 (4)	10
4000	649-6	4.000	5.000	1/2 NC (4)	6.25	9.00	4.63	0.75	0.63	10.3	7.00	0.75	0.56 (4)	20
6000	612-7	5.000	6.375	1/2 NC (4)	7.00	11.50	6.75	1.00	0.75	13.0	9.75	1.00	0.56 (4)	35
10,000	612-1	5.000	6.375	5/8 NC (4)	7.00	11.50	6.75	1.00	0.75	13.0	9.75	1.00	0.56 (4)	35

NICHOLS Motor Mounts

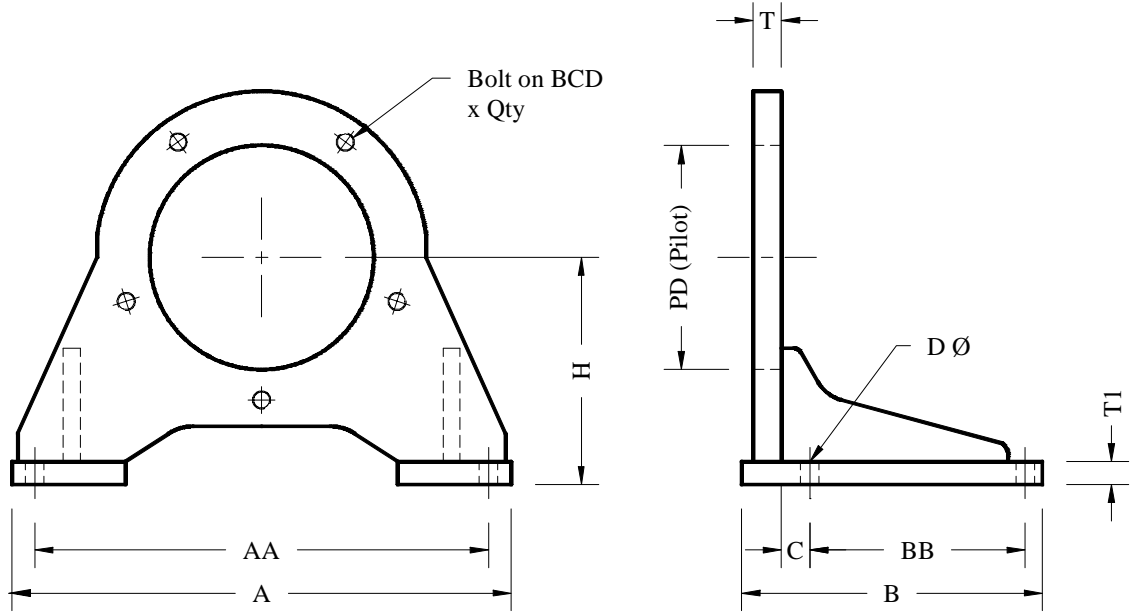
Model No.	Part No.	PD	BCD	Bolt (QTY)	H	AA	BB	T	T1	A	B	C	D (QTY)	WT LB
050A 110A	980-1	3.250	4.188	1/2 NC (2)	4.50	7.50	3.00	0.63	0.63	8.5	5.13	0.75	0.50 (4)	10
130K	980-1	3.250	4.188	1/2 NC (4)	4.50	7.50	3.00	0.63	0.63	8.5	5.13	0.75	0.50 (4)	10
110B	649-6	4.000	5.750	1/2 NC (2)	6.25	9.00	4.63	0.75	0.63	10.3	7.00	0.75	0.56 (4)	20
120H	649-1	4.250	5.810	1/2 NC (4)	6.25	9.00	4.63	0.75	0.63	10.3	7.00	0.75	0.56 (4)	20
310E	1128-6	6.500	7.500	0.656 DIA (4)	6.50	13.50	5.63	1.00	0.75	15.0	8.50	1.00	0.56 (4)	35

STAFFA Motor Mounts



Motor Size	Part No.	PD	BCD	Bolt (QTY)	H	AA	BB	T	T1	A	B	C	D (QTY)	WT LB
B10	1128-3	8.028	9.055	1/2 NC (5)	6.50	13.50	5.63	1.00	0.75	15.0	8.5	1.00	0.562 (4)	35
B30	979-3	7.083	10.240	5/8 NC (5)	8.00	16.00	6.75	1.00	0.75	18.0	9.8	1.00	0.562 (4)	55
B45	920-2	8.872	12.000	5/8 NC (5)	9.00	17.50	8.25	1.00	1.00	19.0	11.5	1.25	0.688 (4)	75
B60	939-2	11.870	12.875	3/4 NC (5)	11.50	24.00	10.38	1.25	1.25	26.5	14.5	1.75	1.062 (4)	160
B80														
B100														
B125	1081-2	14.995	16.500	3/4 NC (5)	13.00	26.50	12.25	1.50	1.25	29.0	16.8	1.75	1.062 (4)	230
B150														
B200														
B270	1127-2	17.995	20.500	3/4 NC (5)	15.50	31.50	7.50	1.50	1.50	34.5	19.5	1.75	1.062 (6)	335
B325														

HYDROSTAR (KYB) Motor Mounts

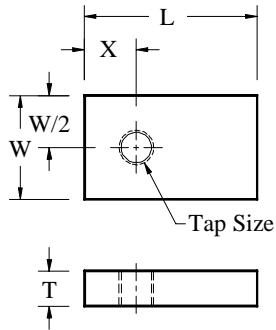
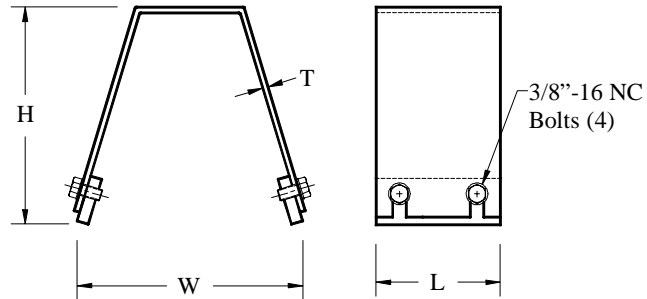


Motor Size	Part No.	PD	BCD	Bolt (QTY)	H	AA	BB	T	T1	A	B	C	D (QTY)	WT LB
MRH12	1128-3	8.028	9.0550	1/2 NC (5)	6.50	13.50	5.63	1.00	0.75	15.0	8.5	1.00	0.562 (4)	35
MRH30	979-2	8.816	10.240	5/8 NC (5)	8.00	16.00	6.75	1.00	0.75	18.0	9.8	1.00	0.562 (4)	55
MRH45	920-2	8.872	12.000	5/8 NC (5)	9.00	17.50	8.25	1.00	1.00	19.0	11.5	1.25	0.688 (4)	75
MRH80 MRH95	939-2	11.870	12.875	3/4 NC (5)	11.50	24.00	10.38	1.25	1.25	26.5	14.5	1.75	1.062 (4)	160
MRH135 MRH190	1081-2	14.995	16.500	3/4 NC (5)	13.00	26.50	12.25	1.50	1.25	29.0	16.8	1.75	1.062 (4)	230
MRH270	1127-2	17.995	20.500	3/4 NC (5)	15.50	31.50	7.50	1.50	1.50	34.5	19.5	1.75	1.062 (6)	335
MR375	1082-2	17.949	21.625	1 NC (5)	18.00	35.50	8.38	1.75	1.50	38.5	21.5	1.75	1.062 (6)	470
MR525	1082-3	17.949	21.654	1 NC (5)	18.00	35.50	8.38	1.75	1.50	38.5	21.5	1.75	1.062 (6)	470

Accessories

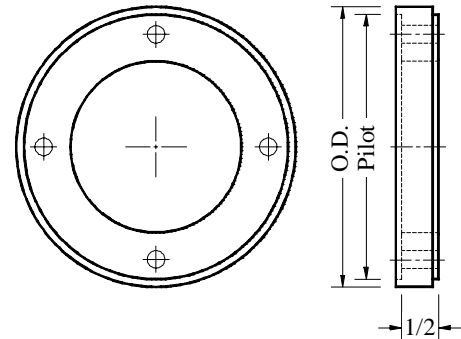
Coupling Guards

Part No.	W	H	L	T
1614-A	7.50	7.00	4.00	0.10
1801-B	9.50	9.00	5.00	0.10
1770-C	11.00	12.00	6.00	0.10
1756-D	15.00	14.50	9.00	0.13
1755-E	16.00	15.50	12.00	0.13
1787-F	18.00	17.00	12.00	0.13



Motor Mounting Pads

Part No.	HP	Motor Size	Tap Size	L	W	T	X
2757-1	1	143 TC	5/16-18 NC	2.00	2.00	0.75	0.50
	2	145 TC					
2757-2	3	182 TC	3/8-16 NC	2.50	2.00	0.75	0.75
	5	184 TC					
	7.5	213 TC					
2757-3	10	215 TC	1/2-13 NC	3.00	2.50	1.00	1.00
	15	254 TC					
	20	256 TC					
	25	284 TC					
2757-4	30	286 TC	5/8-11 NC	3.50	2.50	1.00	1.50
	40	324 TC					
	50	326 TC					
	60	364 TC					
2757-5	75	365 TC	3/4-10 NC	4.00	3.00	1.25	1.50
	100	405 TC					
	125	444 TC					
	150	445 TC					



Motor Spacers

Part No.	Motor Size	OD	Motor Pilot
2754-1	56 TC TO 145 TC	6.75	4.50
2754-2	182 TC TO 256 TC	9.00	8.50
2754-3	284 TC TO 286 TC	11.00	10.50
2754-4	324 TC TO 405 TC	13.00	12.50
2754-5	444 TC TO 445 TC	16.50	16.00



High Pressure Ball Valves (Full Bore)



SEALUM high-pressure ball valves utilize SAE J518 four-bolt flange technology to eliminate leaks so common with traditional pipe thread ball valves. With companion faces, virtually any O'Ring face flange adapter or hose head can be mounted directly to the valve itself, or by using O'Ring heads it can be mounted directly onto manifolds, cylinders or any four-bolt companion flange. With three different configurations to choose from, **SEALUM** ball valves will complement any hydraulic system.

MATERIALS

Ball: 4140 Heat Treated Steel

Stem: 4140 Heat Treated Steel

Body: C1018 Steel

Handle: G40.21-44W Plate

Ball Seats: Delrin

O'Ring Head: C1040 Steel

Companion Cover: C1018 Steel



PRODUCT FEATURES

Bore: All valves are full bore ball valves.

Cover: Four-bolt companion covers can be rotated to any 90° position.

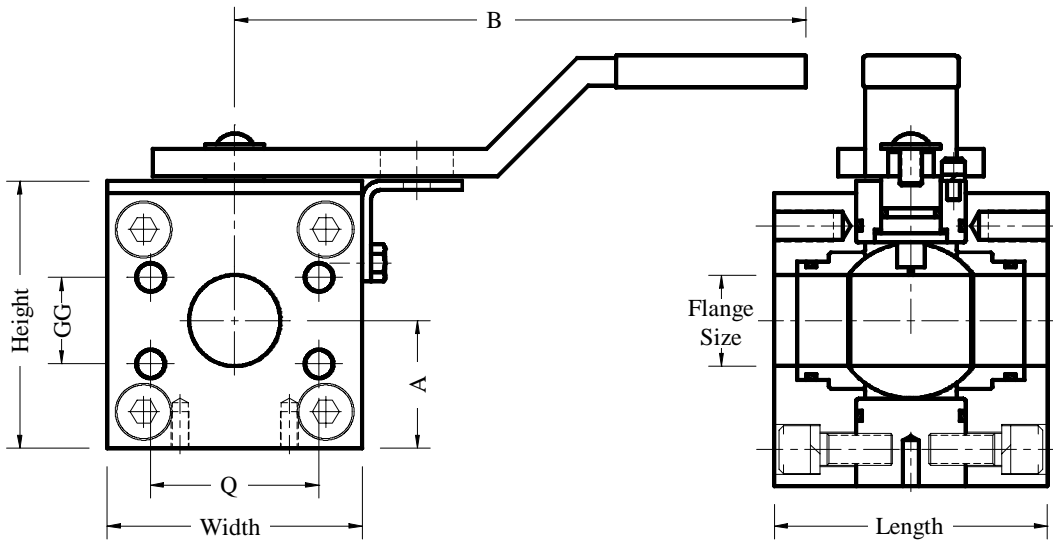
Mounting: Two threaded mounting holes in base of valve .

Pressure: Pressure ratings are based upon SAE Code 61 and Code 62.

Options: Mounting brackets are available to mount a limit or proximity switch to

Handle: Can be assembled in any of four 90° positions, and can be pad locked in the open or closed position (pad lock not included).

Companion Face / Companion Face

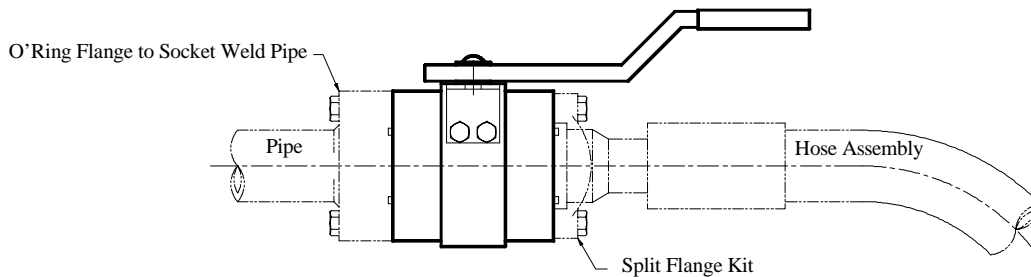


Code 61 Ball Valves

Part No.	Flange Size	Pressure	GG	Q	Width	Height	Length	A	B
3359-16	1.00	5000 psi	1.031	2.062	3.00	3.25	3.75	1.50	9.75
3359-20	1.25	4000 psi	1.188	2.312	3.50	3.65	3.75	1.75	9.75
3359-24	1.50	3000 psi	1.406	2.750	4.00	4.13	3.81	2.06	9.75
3359-32	2.00	3000 psi	1.688	3.062	4.50	4.84	4.75	2.25	11.00
3359-40	2.50	2500 psi	2.000	3.500	4.50	5.50	4.88	2.56	11.00
3359-48	3.00	2000 psi	2.438	4.188	6.00	6.31	5.75	3.00	11.00
3359-64	4.00	500 psi	3.062	5.125	7.75	8.25	6.88	3.88	18.00

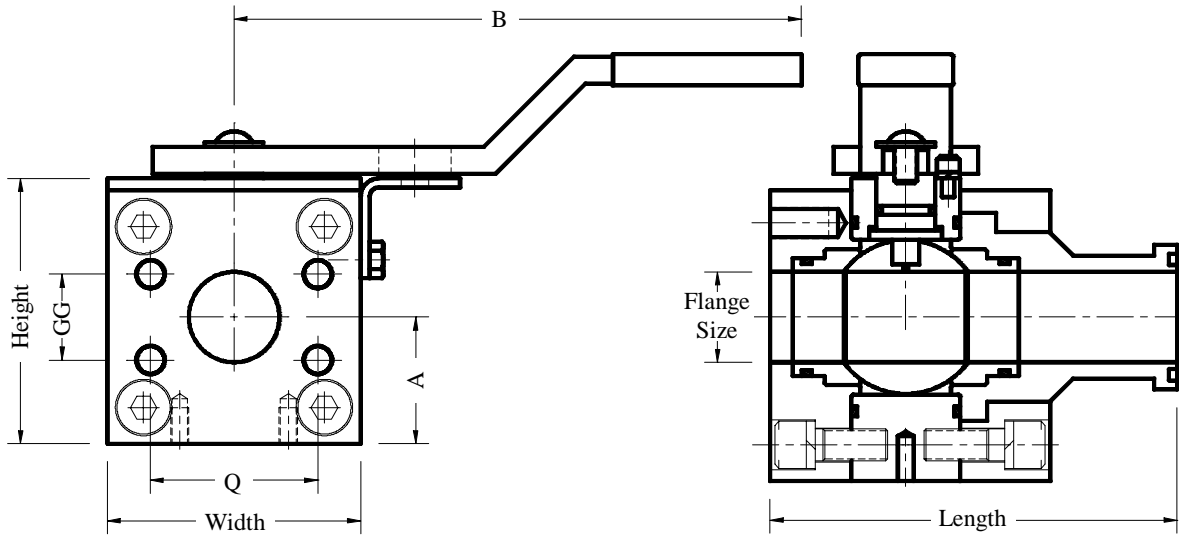
Code 62 Ball Valves

3362-16	1.00	6000 psi	1.093	2.250	3.50	3.75	3.75	1.88	9.75
3362-20	1.25	6000 psi	1.250	2.625	4.00	4.25	4.25	2.13	9.75
3362-24	1.50	6000 psi	1.437	3.125	5.00	4.94	4.75	2.44	11.00
3362-32	2.00	6000 psi	1.750	3.812	5.50	5.75	6.25	2.88	11.00

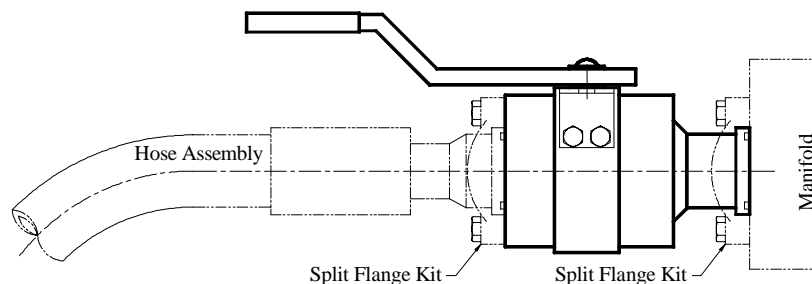


Example of a ball valve at the end of a pipe run

Companion Face to O'Ring Head

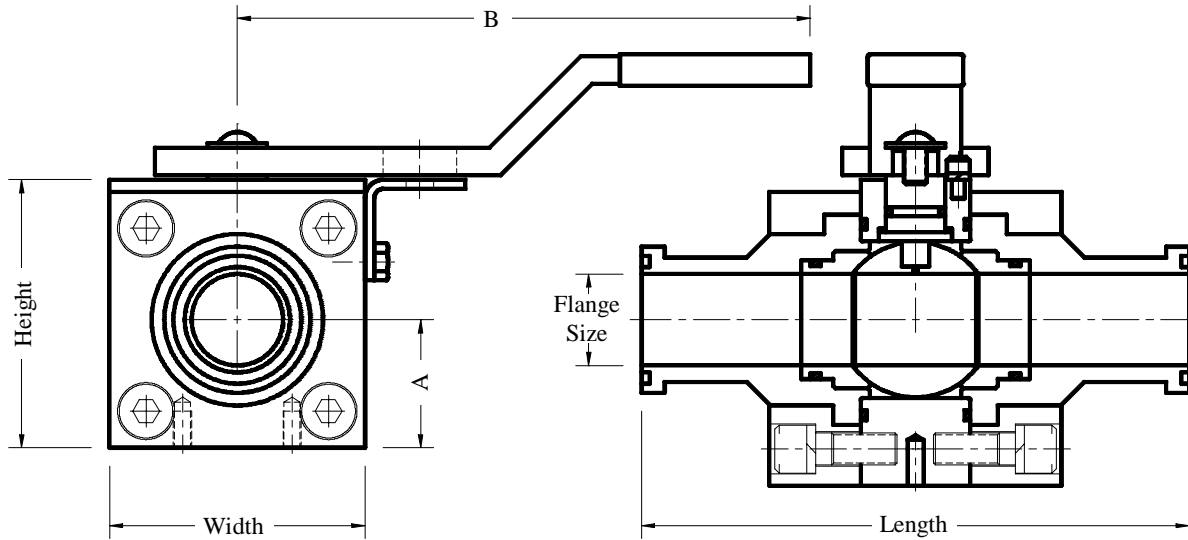


Code 61 Ball Valves									
Part No.	Flange Size	Pressure	GG	Q	Width	Height	Length	A	B
3360-16	1.00	5000 psi	1.031	2.062	3.50	3.25	5.38	1.50	9.75
3360-20	1.25	4000 psi	1.188	2.312	3.50	3.65	5.63	1.75	9.75
3360-24	1.50	3000 psi	1.406	2.750	4.00	4.13	6.06	2.06	9.75
3360-32	2.00	3000 psi	1.688	3.062	4.50	4.84	7.25	2.25	11.00
3360-40	2.50	2500 psi	2.000	3.500	4.50	5.50	8.19	2.56	11.00
3360-48	3.00	2000 psi	2.438	4.188	6.00	6.31	9.06	3.00	11.00
3360-64	4.00	500 psi	3.062	5.125	7.75	8.25	11.13	3.88	18.00
Code 62 Ball Valves									
3363-16	1.00	6000 psi	1.093	2.250	3.50	3.75	5.88	1.88	9.75
3363-20	1.25	6000 psi	1.250	2.625	4.00	4.25	6.63	2.13	9.75
3363-24	1.50	6000 psi	1.437	3.125	5.00	4.94	7.88	2.44	11.00
3363-32	2.00	6000 psi	1.750	3.812	5.50	5.75	9.75	2.88	11.00

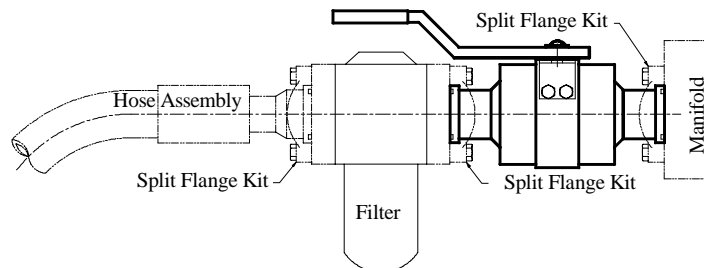


Example of connecting a ball valve to a manifold

O'Ring Head to O'Ring Head



Code 61 Ball Valves							
Part No.	Flange Size	Pressure	Width	Height	Length	A	B
3361-16	1.00	5000 psi	3.50	3.25	7.00	1.50	9.75
3361-20	1.25	4000 psi	3.50	3.65	7.50	1.75	9.75
3361-24	1.50	3000 psi	4.00	4.13	8.31	2.06	9.75
3361-32	2.00	3000 psi	4.50	4.84	9.75	2.25	11.00
3361-40	2.50	2500 psi	4.50	5.50	11.50	2.56	11.00
3361-48	3.00	2000 psi	6.00	6.31	12.38	3.00	11.00
3361-64	4.00	500 psi	7.75	8.25	15.50	3.88	18.00
Code 62 Ball Valves							
3364-16	1.00	6000 psi	3.50	3.75	8.00	1.88	9.75
3364-20	1.25	6000 psi	4.00	4.25	9.00	2.13	9.75
3364-24	1.50	6000 psi	5.00	4.94	11.00	2.44	11.00
3364-32	2.00	6000 psi	5.50	5.75	13.25	2.88	11.00



Example of connecting a filter to a manifold



In-Line Check Valves

Sealum Industries offers check valves in three cracking pressures, 5 PSI, 30 PSI, and 50 PSI. The poppets are machined from 4140 heat treated steel, while the seats are machined from 65-45-12 cast iron. The bodies are stocked in C1018 steel, but are also available in 316 stainless steel upon request. The stem is welded to the poppet for a positive lock, and the entire assembly is held in the body with a retaining ring.



Part Number & Ordering Information

The following example represents a 2.00" Code 61 sandwich style check with a 50 psi cracking pressure, reverse free flow, and 316 stainless body.

3385 - 32 - 50 R SS

Designates Style & Code:

Designates Size:

SS = 316 Stainless Body
Blank = C1018 Steel Body

R = Reverse Free Flow
Blank = Standard Free Flow

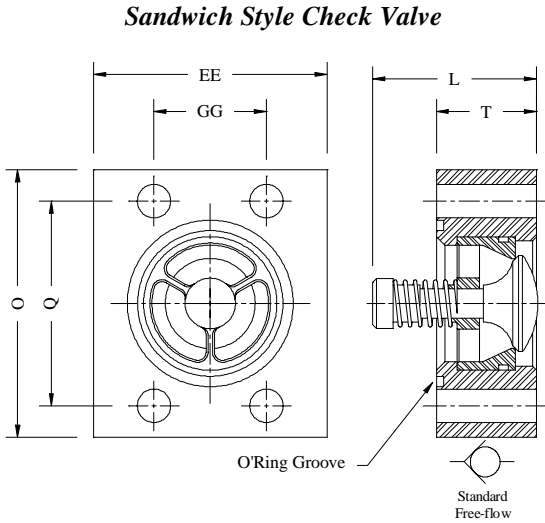
Designates Cracking Pressure:

5 = 5 psi Cracking Pressure

30 = 30 psi Cracking Pressure

50 = 50 psi Cracking Pressure

Sandwich Style In-Line Check Valves

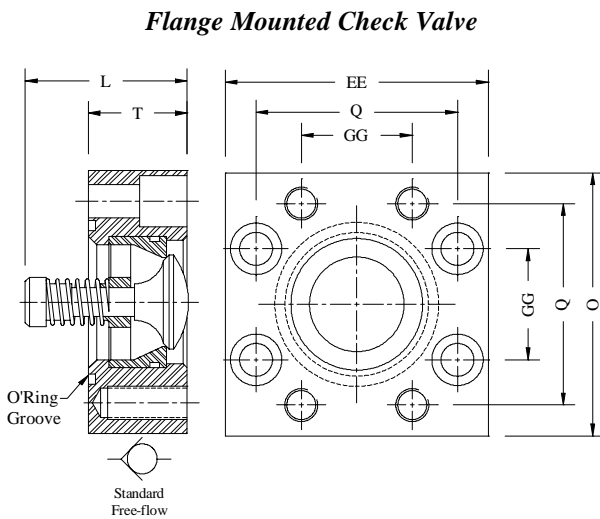


Code 61 Sandwich Style Check Valve									
Part No.	Flange Size	GG	Q	EE	O	T	L 5 psi	L 30 psi	L 50 psi
3385-16-***	1.00	1.03	2.06	2.00	2.81	1.25	1.56	1.94	2.34
3385-20-***	1.25	1.19	2.31	2.50	3.13	1.25	1.69	2.31	2.56
3385-24-***	1.50	1.41	2.75	3.00	3.69	1.50	1.97	2.53	2.94
3385-32-***	2.00	1.69	3.06	3.50	4.00	2.00	2.78	3.78	4.62
3385-40-***	2.50	2.00	3.50	4.00	4.50	2.00	3.09	4.68	5.59
3385-48-***	3.00	2.44	4.19	5.00	5.31	2.50	3.62	5.25	5.68
3385-56-***	3.50	2.75	4.75	5.00	6.00	3.00	4.13	6.25	7.00
3385-64-***	4.00	3.06	5.13	6.00	6.38	3.00	4.62	7.31	8.31

Code 62 Sandwich Style Check Valve									
Part No.	Flange Size	GG	Q	EE	O	T	L 5 psi	L 30 psi	L 50
3386-16-***	1.00	1.09	2.25	2.2	3.25	1.25	1.56	1.94	2.34
3386-20-***	1.25	1.25	2.63	3.0	3.75	1.25	1.69	2.31	2.56
3386-24-***	1.50	1.44	3.13	3.5	4.44	1.50	1.97	2.53	2.94
3386-32-***	2.00	1.75	3.81	4.0	5.25	2.00	2.78	3.78	4.62

*** See Page 64-1 For Part Number Information

Flange Mounted In-Line Check Valves

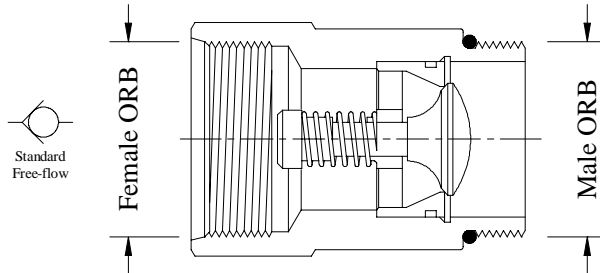


Code 61 Flange Mounted Check Valve									
Part No.	Flange Size	GG	Q	EE	O	T	L 5 psi	L 30 psi	L 50 psi
3387-16-***	1.00	1.03	2.06	2.75	2.75	1.25	1.56	1.94	2.34
3387-20-***	1.25	1.19	2.31	3.13	3.00	1.25	1.69	2.31	2.56
3387-24-***	1.50	1.41	2.75	4.00	3.69	1.50	1.97	2.53	2.94
3387-32-***	2.00	1.69	3.06	4.00	4.00	2.00	2.78	3.78	4.62
3387-40-***	2.50	2.00	3.50	4.50	4.50	2.00	3.09	4.68	5.59
3387-48-***	3.00	2.44	4.19	5.50	5.31	2.50	3.62	5.25	5.68
3387-56-***	3.50	2.75	4.75	6.00	6.00	3.00	4.13	6.25	7.00
3387-64-***	4.00	3.06	5.13	6.50	6.19	3.00	4.62	7.31	8.31

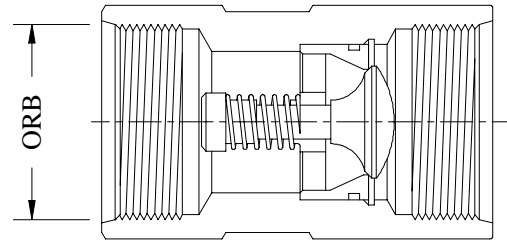
Code 62 Flange Mounted Check Valve									
Part No.	Flange Size	GG	Q	EE	O	T	L 5 psi	L 30 psi	L 50
3388-16-***	1.00	1.09	2.25	3.2	3.25	1.25	1.56	1.94	2.34
3388-20-***	1.25	1.25	2.63	4.0	3.75	1.25	1.69	2.31	2.56
3388-24-***	1.50	1.44	3.13	4.5	4.44	1.50	1.97	2.53	2.94
3388-32-***	2.00	1.75	3.81	5.2	5.25	2.00	2.78	3.78	4.62

*** See Page 64-1 For Part Number Information

ORB (O'Ring Boss) In-Line Check Valves



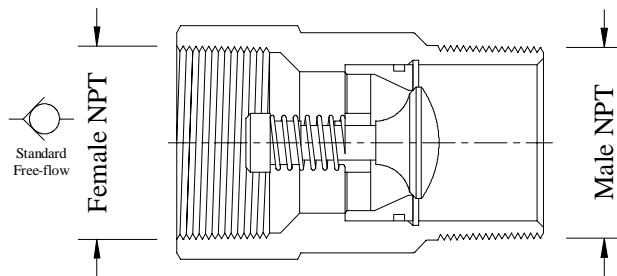
Part No.	Female ORB	Male ORB
3024-20-***	#20 (1-5/8"-12)	#20 (1-5/8"-12)
3024-24-***	#24 (1-7/8"-12)	#24 (1-7/8"-12)
3024-32-***	#32 (2-1/2"-12)	#32 (2-1/2"-12)



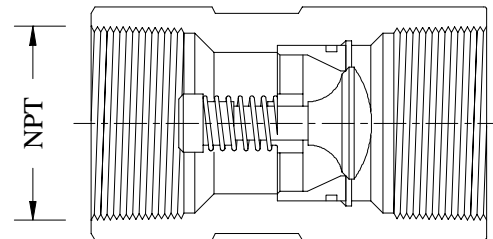
Part No.	Female ORB	Female ORB
3025-20-***	#20 (1-5/8"-12)	#20 (1-5/8"-12)
3025-24-***	#24 (1-7/8"-12)	#24 (1-7/8"-12)
3025-32-***	#32 (2-1/2"-12)	#32 (2-1/2"-12)

*** See Page 64-1 For Part Number Information

NPT (National Pipe Thread) In-Line Check Valves



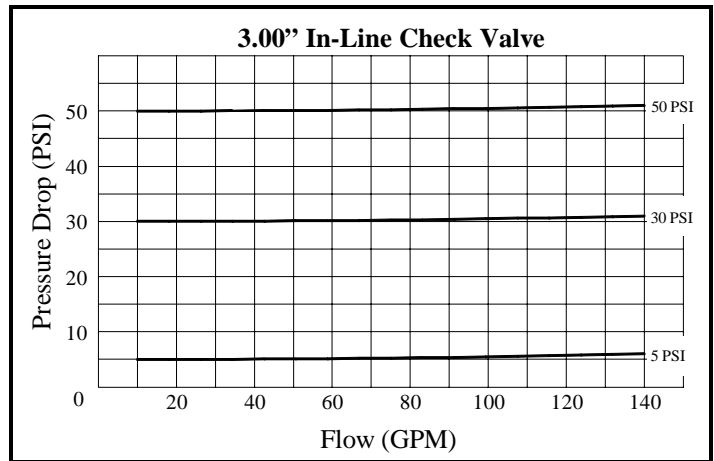
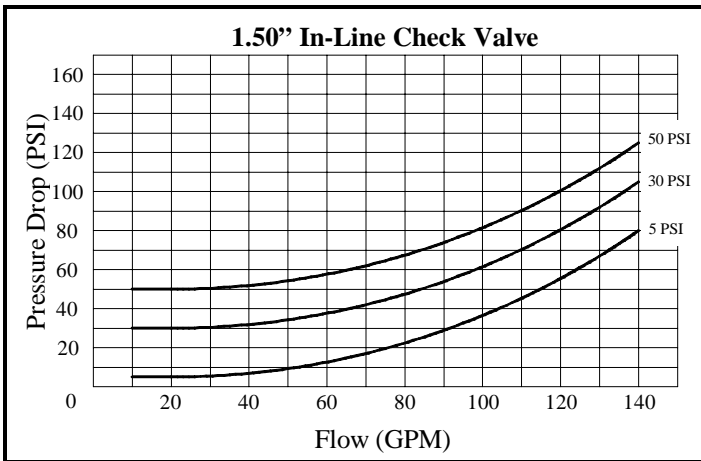
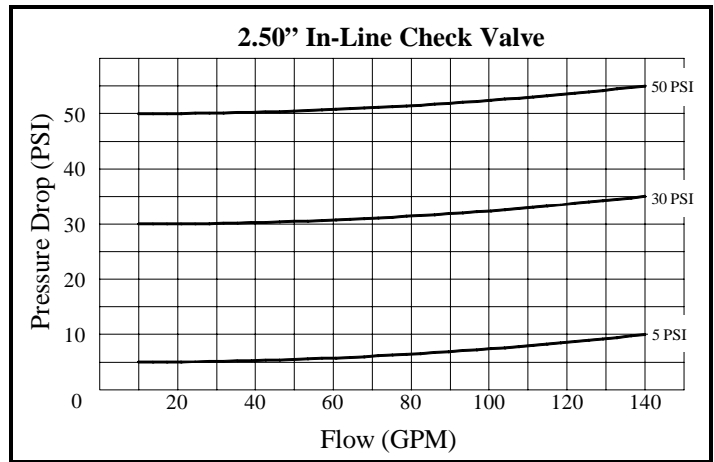
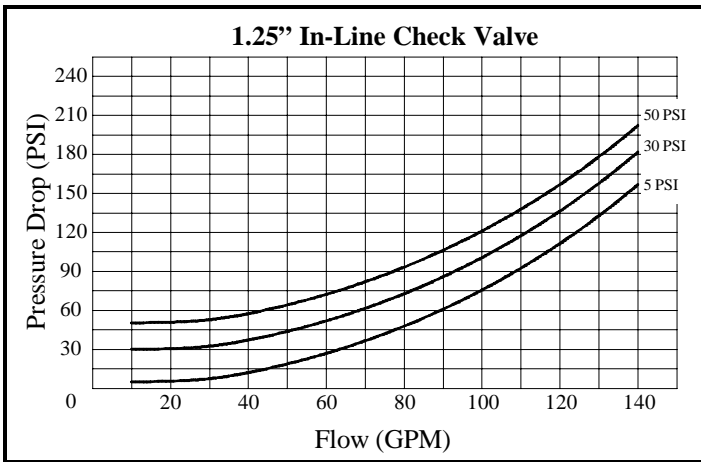
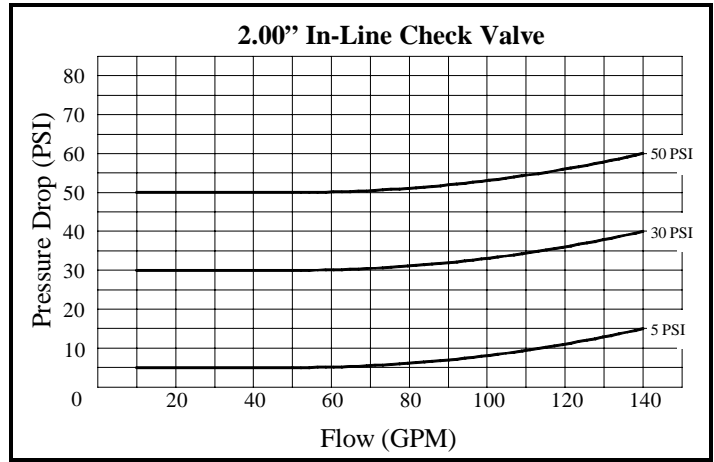
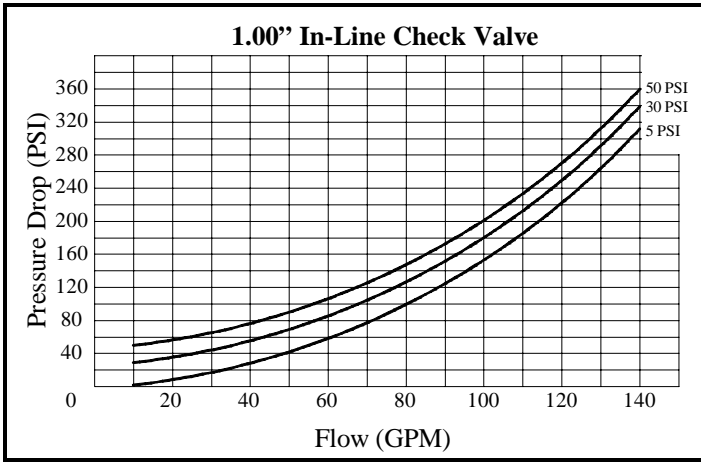
Part No.	Female NPT	Male NPT
3022-20-***	1.25"-11.5	1.25"-11.5
3022-24-***	1.50"-11.5	1.50"-11.5
3022-32-***	2.00"-11.5	2.00"-11.5
3022-40-***	2.50"-8	2.50"-8
3022-48-***	3.00"-8	3.00"-8
3022-56-***	3.50"-8	3.50"-8
3022-64-***	4.00"-8	4.00"-8



Part No.	Female NPT	Female NPT
3023-20-**	1.25"-11.5	1.25"-11.5
3023-24-**	1.50"-11.5	1.50"-11.5
3023-32-**	2.00"-11.5	2.00"-11.5
3023-40-**	2.50"-8	2.50"-8
3023-48-**	3.00"-8	3.00"-8
3023-56-**	3.50"-8	3.50"-8
3023-64-**	4.00"-8	4.00"-8

*** See Page 64-1 For Part Number Information

Check Valves – Pressure Drop versus Flow Specifications



All tests were performed with Texaco Rando HDZ-32 hydraulic oil at 50° C with a viscosity of 130 SSU.

All tests were performed on 5 PSI check valves. 30 PSI & 50 PSI check valve data has been extrapolated from the results.

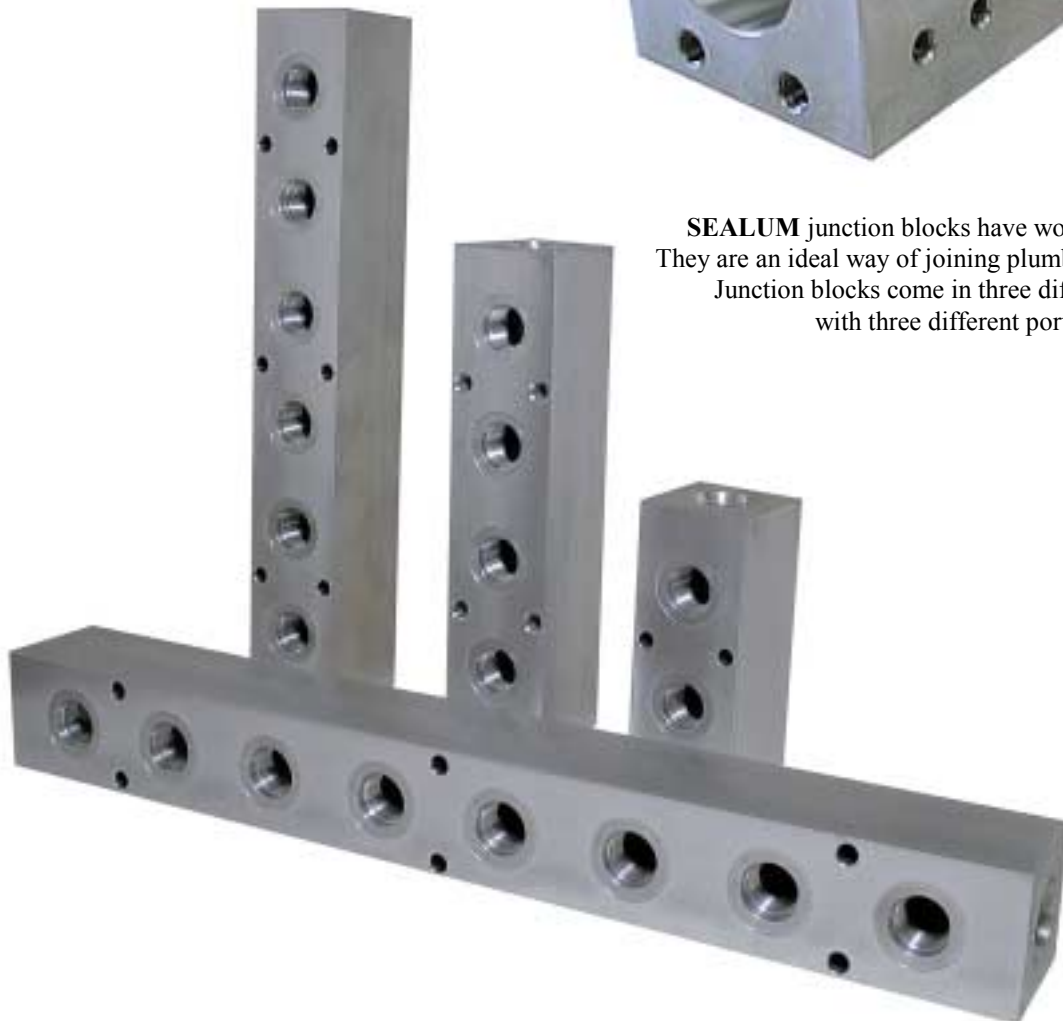


Header & Junction Blocks

SEALUM header blocks have all ports connected, with the work ports common to one center port. The center port is always one size larger than the work ports. Header blocks come in four different configurations, with three different porting options.



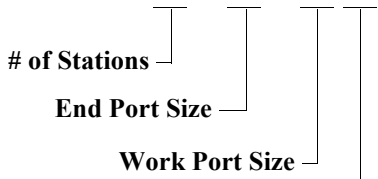
SEALUM junction blocks have work ports only connected. They are an ideal way of joining plumbing or to change direction. Junction blocks come in three different configurations, with three different porting options.



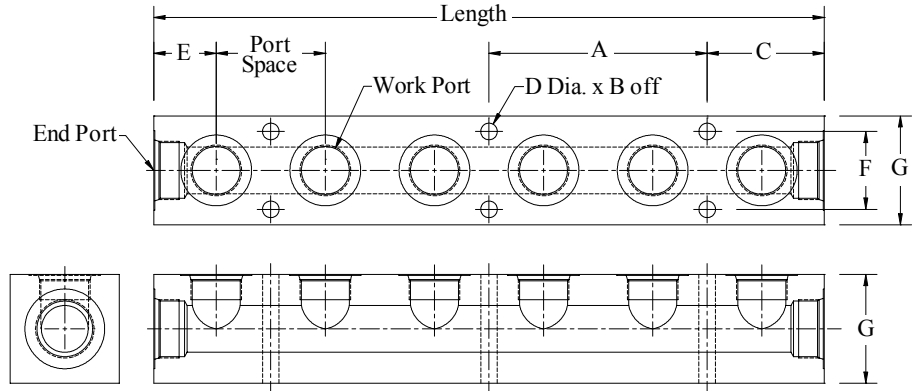
Materials range from C1018 Steel to 6061-T6 Aluminum to 316 Stainless Steel.

ORB (O'Ring Boss) Branch Header Blocks (All Ports Connected)

3053 - X - X - X X



Material:
S = C1018 Steel
SS = 316 Stainless
A = 6061-T6 Aluminum



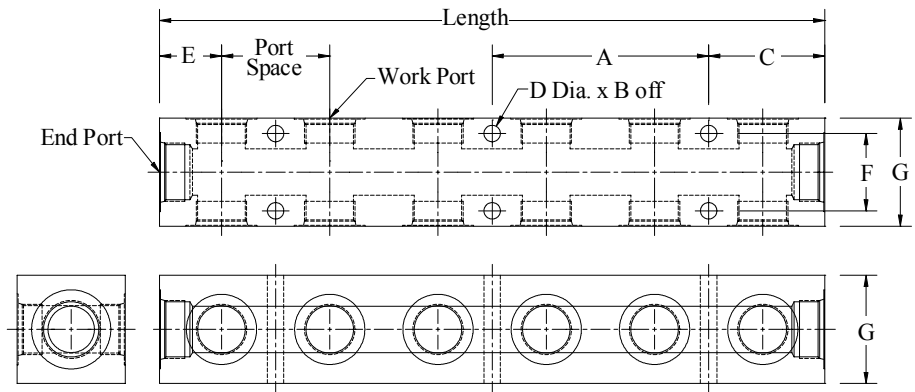
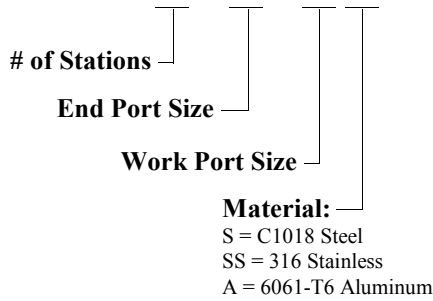
Pressure Ratings:

5000 PSI in C1018 Steel
5000 PSI in 316L Stainless
3000 PSI in 6061-T6 Aluminum

Number of Stations	End Port Size	Work Port Size	Length	A	B	C	D	Port Spacing	E	F	G
2	#12 ORB (1-1/16"-12)	#8 ORB (3/4"-16)	4.75	—	4	2.38	9/32	2.00	1.38	1.50	2.00
3			6.75	—	4						
4			8.75	—	4						
6			12.75	5.00	6						
8			16.75	7.00	6						
10			20.75	9.00	6						
2	#16 ORB (1-5/16"-12)	#12 ORB (1-1/16"-12)	5.50	—	4	2.75	9/32	2.50	1.50	1.75	2.50
3			8.00	—	4						
4			10.50	—	4						
6			15.50	6.25	6						
8			20.50	8.75	6						
10			25.50	11.25	6						
2	#20 ORB (1-5/8"-12)	#16 ORB (1-5/16"-12)	6.25	—	4	3.13	13/32	2.75	1.75	2.25	3.00
3			9.00	—	4						
4			11.75	—	4						
6			17.25	6.88	6						
8			22.75	9.63	6						
10			28.25	12.38	6						
2	#24 ORB (1-7/8"-12)	#20 ORB (1-5/8"-12)	7.50	—	4	3.75	17/32	3.50	2.00	2.50	3.50
3			11.00	—	4						
4			14.50	—	4						
6			21.50	10.50	6						
8			28.50	12.25	6						
2			#32 ORB (2-1/2"-12)	#24 ORB (1-7/8"-12)	8.25						
3	12.25	—			4						
4	16.25	—			4						
6	24.25	10.00			6						

ORB (O'Ring Boss) Run Header Blocks (*All Ports Connected*)

3057 - X - X - X X



Pressure Ratings:

5000 PSI in C1018 Steel

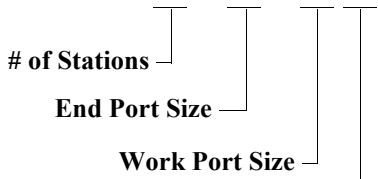
5000 PSI in 316L Stainless

3000 PSI in 6061-T6 Aluminum

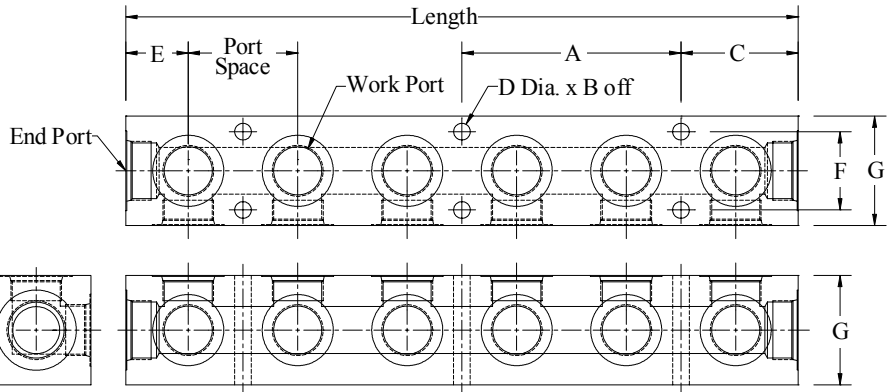
Number of Stations	End Port Size	Work Port Size	Length	A	B	C	D	Port Spacing	E	F	G
2	#12 ORB (1-1/16"-12)	#8 ORB (3/4"-16)	4.75	—	4	2.38	9/32	2.00	1.38	1.50	2.00
3			6.75	—	4						
4			8.75	—	4						
6			12.75	5.00	6						
8			16.75	7.00	6						
10			20.75	9.00	6						
2	#16 ORB (1-5/16"-12)	#12 ORB (1-1/16"-12)	5.50	—	4	2.75	9/32	2.50	1.50	1.75	2.50
3			8.00	—	4						
4			10.50	—	4						
6			15.50	6.25	6						
8			20.50	8.75	6						
10			25.50	11.25	6						
2	#20 ORB (1-5/8"-12)	#16 ORB (1-5/16"-12)	6.25	—	4	3.13	13/32	2.75	1.75	2.25	3.00
3			9.00	—	4						
4			11.75	—	4						
6			17.25	6.88	6						
8			22.75	9.63	6						
10			28.25	12.38	6						
2	#24 ORB (1-7/8"-12)	#20 ORB (1-5/8"-12)	7.50	—	4	3.75	17/32	3.50	2.00	2.50	3.50
3			11.00	—	4						
4			14.50	—	4						
6			21.50	10.50	6						
8			28.50	12.25	6						
10			35.50	14.00	6						
2	#32 ORB (2-1/2"-12)	#24 ORB (1-7/8"-12)	8.25	—	4	4.13	17/32	4.00	2.13	3.00	4.00
3			12.25	—	4						
4			16.25	—	4						
6			24.25	10.00	6						
8			32.25	12.75	6						

ORB (O'Ring Boss) Elbow Header Blocks (All Ports Connected)

3061 - X - X - X X



Material:
S = C1018 Steel
SS = 316 Stainless
A = 6061-T6 Aluminum



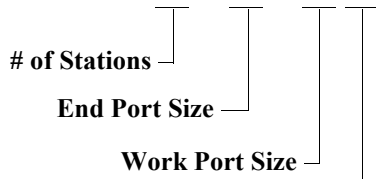
Pressure Ratings:

5000 PSI in C1018 Steel
5000 PSI in 316L Stainless
3000 PSI in 6061-T6 Aluminum

Number of Stations	End Port Size	Work Port Size	Length	A	B	C	D	Port Spacing	E	F	G
2	#12 ORB (1-1/16"-12)	#8 ORB (3/4"-16)	4.75	—	4	2.38	9/32	2.00	1.38	1.50	2.00
3			6.75	—	4						
4			8.75	—	4						
6			12.75	5.00	6						
8			16.75	7.00	6						
10			20.75	9.00	6						
2	#16 ORB (1-5/16"-12)	#12 ORB (1-1/16"-12)	5.50	—	4	2.75	9/32	2.50	1.50	1.75	2.50
3			8.00	—	4						
4			10.50	—	4						
6			15.50	6.25	6						
8			20.50	8.75	6						
10			25.50	11.25	6						
2	#20 ORB (1-5/8"-12)	#16 ORB (1-5/16"-12)	6.25	—	4	3.13	13/32	2.75	1.75	2.25	3.00
3			9.00	—	4						
4			11.75	—	4						
6			17.25	6.88	6						
8			22.75	9.63	6						
10			28.25	12.38	6						
2	#24 ORB (1-7/8"-12)	#20 ORB (1-5/8"-12)	7.50	—	4	3.75	17/32	3.50	2.00	2.50	3.50
3			11.00	—	4						
4			14.50	—	4						
6			21.50	10.50	6						
8			28.50	12.25	6						
2			#32 ORB (2-1/2"-12)	#24 ORB (1-7/8"-12)	8.25						
3	12.25	—			4						
4	16.25	—			4						
6	24.25	10.00			6						

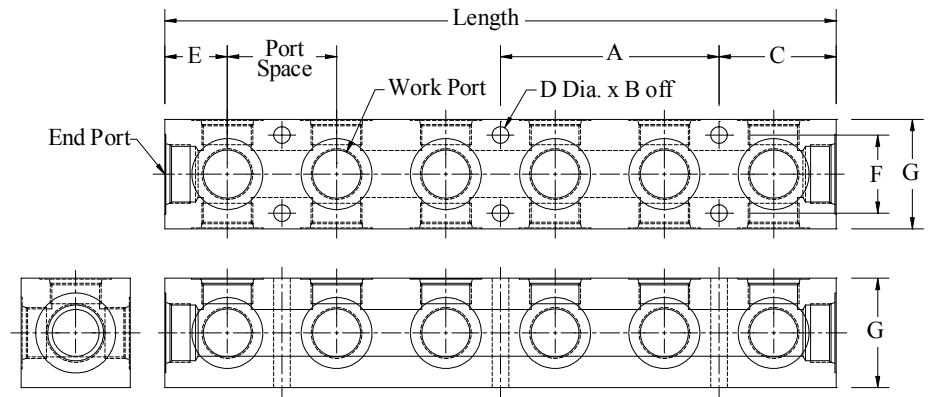
ORB (O'Ring Boss) Tee Header Blocks (*All Ports Connected*)

3065 - X - X - X X



Material:
S = C1018 Steel
SS = 316 Stainless
A = 6061-T6 Aluminum

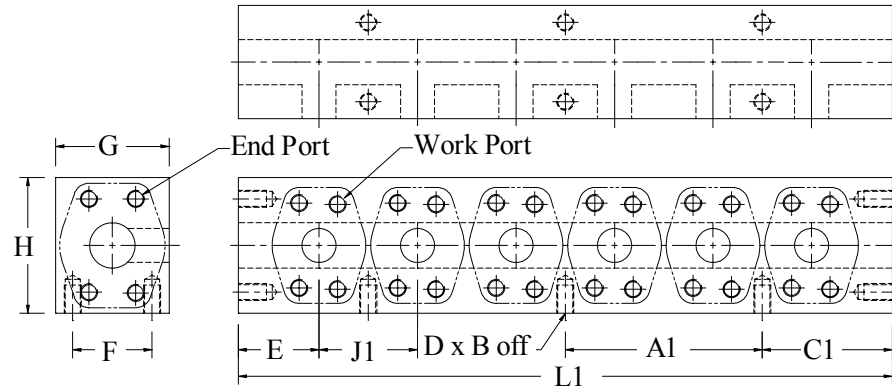
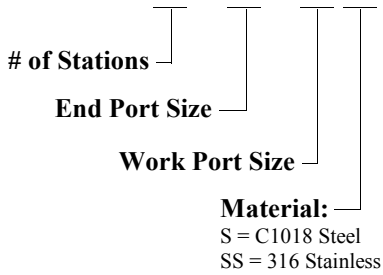
Pressure Ratings:
5000 PSI in C1018 Steel
5000 PSI in 316L Stainless
3000 PSI in 6061-T6 Aluminum



Number of Stations	End Port Size	Work Port Size	Length	A	B	C	D	Port Spacing	E	F	G
2	#12 ORB (1-1/16"-12)	#8 ORB (3/4"-16)	4.75	—	4	2.38	9/32	2.00	1.38	1.50	2.00
3			6.75	—	4						
4			8.75	—	4						
6			12.75	5.00	6						
8			16.75	7.00	6						
10			20.75	9.00	6						
2	#16 ORB (1-5/16"-12)	#12 ORB (1-1/16"-12)	5.50	—	4	2.75	9/32	2.50	1.50	1.75	2.50
3			8.00	—	4						
4			10.50	—	4						
6			15.50	6.25	6						
8			20.50	8.75	6						
10			25.50	11.25	6						
2	#20 ORB (1-5/8"-12)	#16 ORB (1-5/16"-12)	6.25	—	4	3.13	13/32	2.75	1.75	2.25	3.00
3			9.00	—	4						
4			11.75	—	4						
6			17.25	6.88	6						
8			22.75	9.63	6						
10			28.25	12.38	6						
2	#24 ORB (1-7/8"-12)	#20 ORB (1-5/8"-12)	7.50	—	4	3.75	17/32	3.50	2.00	2.50	3.50
3			11.00	—	4						
4			14.50	—	4						
6			21.50	10.50	6						
8			28.50	12.25	6						
2			#32 ORB (2-1/2"-12)	#24 ORB (1-7/8"-12)	8.25						
3	12.25	—			4						
4	16.25	—			4						
6	24.25	10.00			6						

Code 61 Branch Header Blocks (All Ports Connected)

3051 - X - X - X X



Pressure Ratings:

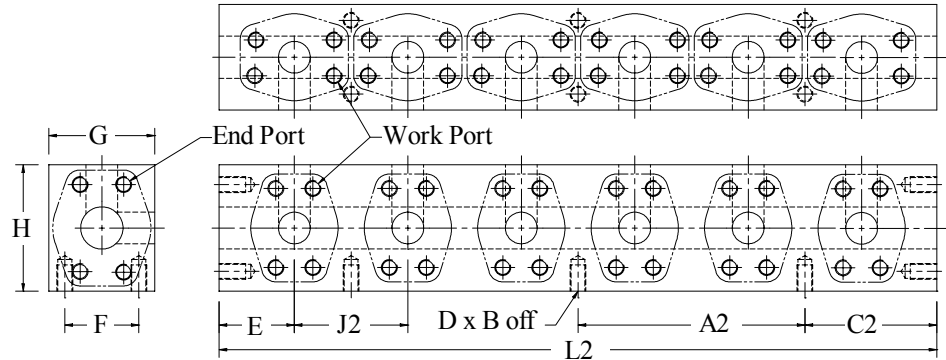
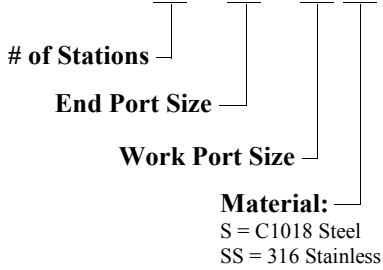
Pressure ratings are governed by largest flange size.

[CLICK HERE](#) for code 61 pressure ratings.

No. of Stations	End Port Size	Work Port Size	L1	A1	B	C1	C2	D	J1	E	F	G	H
2	1.00" Code 61	3/4" Code 61	5.69	—	2	2.84	3.09	3/8"-16 NC	2.19	1.75	1.75	2.50	3.00
3			7.88	—	4								
4			10.06	—	4								
6			14.44	4.38	6								
8			18.81	6.56	6								
10			23.19	8.75	6								
2	1.25" Code 61	1.00" Code 61	6.19	—	2	3.09	3.31	3/8"-16 NC	2.44	1.88	1.75	2.50	3.00
3			8.63	—	4								
4			11.06	—	4								
6			15.94	4.88	6								
8			20.81	7.31	6								
10			25.69	9.75	6								
2	1.50" Code 61	1.25" Code 61	7.63	—	2	3.81	3.94	7/16"-14 NC	3.00	2.31	2.13	3.00	4.00
3			10.63	—	4								
4			13.63	—	4								
6			19.63	6.00	6								
8			25.63	9.00	6								
10			31.63	12.00	6								
2	2.00" Code 61	1.50" Code 61	8.63	—	2	4.31	4.53	1/2"-13 NC	3.38	2.63	3.00	4.00	4.00
3			12.00	—	4								
4			15.38	—	4								
6			22.13	6.75	6								
8			28.88	10.13	6								
2			2.50" Code 61	2.00" Code 61	9.44								
3	13.38	—			4								
4	17.31	—			4								
6	25.19	7.88			6								

Code 61 Elbow Header Blocks *(All Ports Connected)*

3059 - X - X - X X



Pressure Ratings:

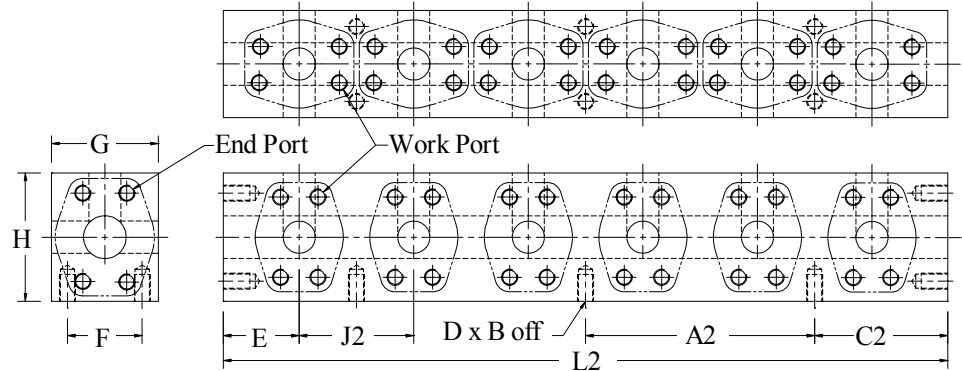
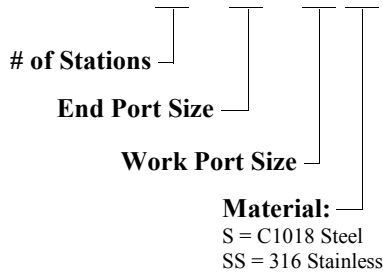
Pressure ratings are governed by largest flange size.

[CLICK HERE](#) for code 61 pressure ratings.

No. of Stations	End Port Size	Work Port Size	L2	A2	B	C2	D	J2	E	F	G	H
2	1.00" Code 61	3/4" Code 61	6.19	—	2	3.09	3/8"-16 NC	2.69	1.75	1.75	2.50	3.00
3			8.88	—	4							
4			11.56	—	4							
6			16.94	5.38	6							
8			22.31	8.06	6							
10			27.69	10.75	6							
2	1.25" Code 61	1.00" Code 61	6.63	—	2	3.31	3/8"-16 NC	2.88	1.88	1.75	2.50	3.00
3			9.50	—	4							
4			12.38	—	4							
6			18.13	5.75	6							
8			23.88	8.63	6							
10			29.63	11.50	6							
2	1.50" Code 61	1.25" Code 61	7.88	—	2	3.94	7/16"-14 NC	3.25	2.31	2.13	3.00	4.00
3			11.13	—	4							
4			14.38	—	4							
6			20.88	6.50	6							
8			27.38	9.75	6							
10			33.88	13.00	6							
2	2.00" Code 61	1.50" Code 61	9.06	—	2	4.53	1/2"-13 NC	3.81	2.63	3.00	4.00	4.00
3			12.88	—	4							
4			16.69	—	4							
6			24.31	7.63	6							
8			31.94	11.44	6							
2			2.50" Code 61	2.00" Code 61	9.63							
3	13.75	—			4							
4	17.88	—			4							
6	26.13	8.25			6							

Code 61 Tee Header Blocks (All Ports Connected)

3063 - X - X - X X



Pressure Ratings:

Pressure ratings are governed by largest flange size.

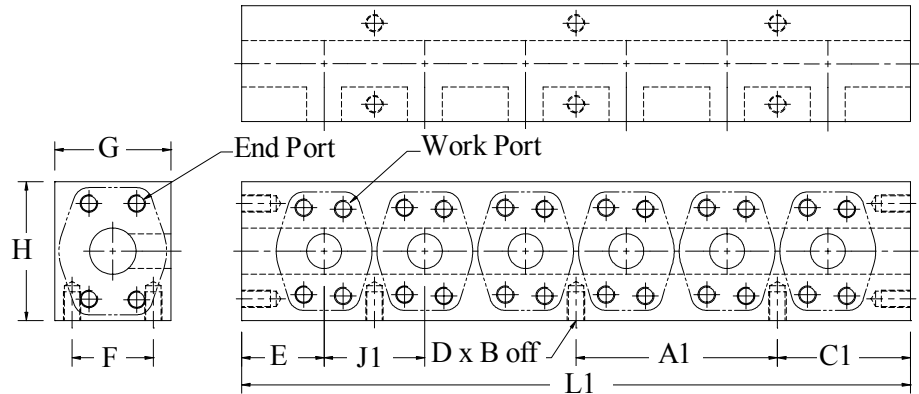
[CLICK HERE](#) for code 61 pressure ratings.

No. of Stations	End Port Size	Work Port Size	L2	A2	B	C2	D	J2	E	F	G	H
2	1.00" Code 61	3/4" Code 61	6.19	—	2	3.09	3/8"-16 NC	2.69	1.75	1.75	2.50	3.00
3			8.88	—	4							
4			11.56	—	4							
6			16.94	5.38	6							
8			22.31	8.06	6							
10			27.69	10.75	6							
2	1.25" Code 61	1.00" Code 61	6.63	—	2	3.31	3/8"-16 NC	2.88	1.88	1.75	2.50	3.00
3			9.50	—	4							
4			12.38	—	4							
6			18.13	5.75	6							
8			23.88	8.63	6							
10			29.63	11.50	6							
2	1.50" Code 61	1.25" Code 61	7.88	—	2	3.94	7/16"-14 NC	3.25	2.31	2.13	3.00	4.00
3			11.13	—	4							
4			14.38	—	4							
6			20.88	6.50	6							
8			27.38	9.75	6							
10			33.88	13.00	6							
2	2.00" Code 61	1.50" Code 61	9.06	—	2	4.53	1/2"-13 NC	3.81	2.63	3.00	4.00	4.00
3			12.88	—	4							
4			16.69	—	4							
6			24.31	7.63	6							
8			31.94	11.44	6							
2			2.50" Code 61	2.00" Code 61	9.63							
3	13.75	—			4							
4	17.88	—			4							
6	26.13	8.25			6							

Code 62 Branch Header Blocks (All Ports Connected)

3052 - X - X - X X

of Stations
End Port Size
Work Port Size
Material:
S = C1018 Steel
SS = 316 Stainless



Pressure Ratings:

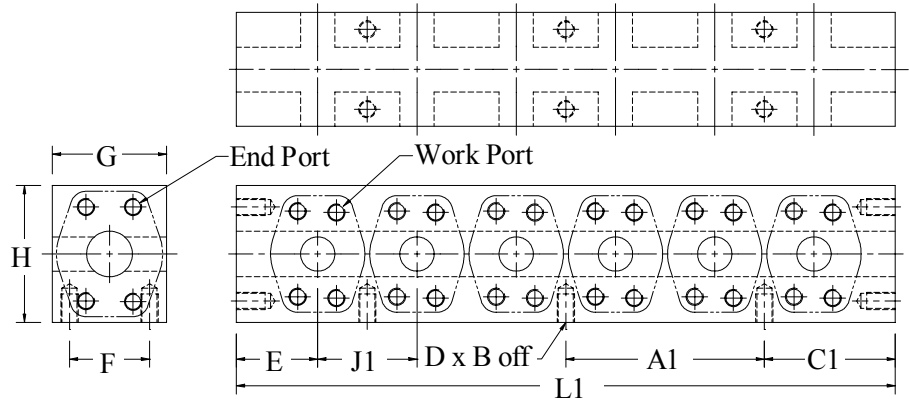
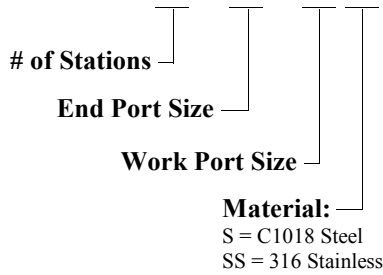
6000 PSI in C1018 Steel

6000 PSI in 316L Stainless

No. of Stations	End Port Size	Work Port Size	L1	A1	B	C1	D	J1	E	F	G	H
2	1.00" Code 62	3/4" Code 62	6.50	—	2	3.25	3/8"-16 NC	2.50	2.00	1.75	2.50	3.00
3			9.00	—	4							
4			11.50	—	4							
6			16.50	5.00	6							
8			21.50	7.50	6							
10			26.50	10.11	6							
2	1.25" Code 62	1.00" Code 62	7.63	—	2	3.81	7/16"-14 NC	2.88	2.38	2.13	3.00	3.75
3			10.50	—	4							
4			13.38	—	4							
6			19.13	5.75	6							
8			24.88	8.63	6							
10			30.63	11.50	6							
2	1.50" Code 62	1.25" Code 62	8.19	—	2	4.09	1/2"-13 NC	3.19	2.50	2.50	3.50	4.50
3			11.38	—	4							
4			14.56	—	4							
6			20.94	6.38	6							
8			27.31	9.56	6							
10			33.69	12.75	6							
2	2.00" Code 62	1.50" Code 62	9.88	—	2	4.94	5/8"-11 NC	3.88	3.00	2.75	4.00	5.00
3			13.75	—	4							
4			17.63	—	4							
6			25.38	7.75	6							
8			33.13	11.63	6							

Code 62 Run Header Blocks (All Ports Connected)

3056 - X - X - X X



Pressure Ratings:

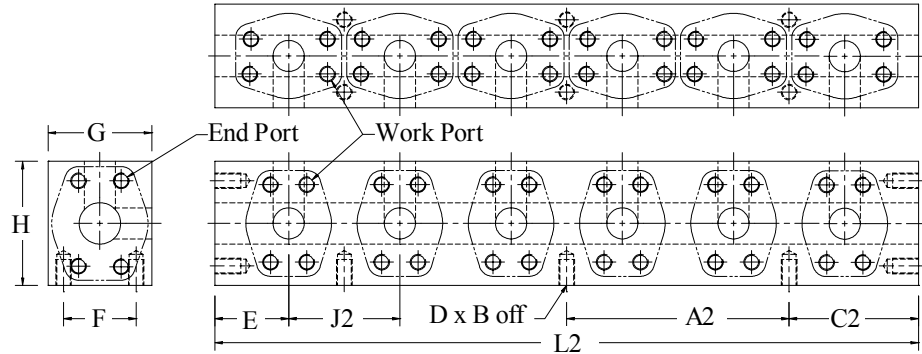
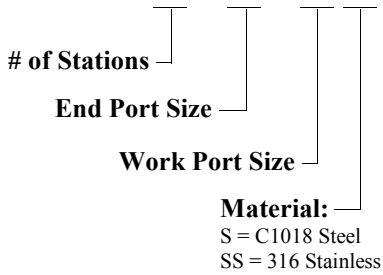
6000 PSI in C1018 Steel

6000 PSI in 316L Stainless

No. of Stations	End Port Size	Work Port Size	L1	A1	B	C1	D	J1	E	F	G	H
2	1.00" Code 62	3/4" Code 62	6.50	—	2	3.25	3/8"-16 NC	2.50	2.00	1.75	2.50	3.00
3			9.00	—	4							
4			11.50	—	4							
6			16.50	5.00	6							
8			21.50	7.50	6							
10			26.50	10.11	6							
2	1.25" Code 62	1.00" Code 62	7.63	—	2	3.81	7/16"-14 NC	2.88	2.38	2.13	3.00	3.75
3			10.50	—	4							
4			13.38	—	4							
6			19.13	5.75	6							
8			24.88	8.63	6							
10			30.63	11.50	6							
2	1.50" Code 62	1.25" Code 62	8.19	—	2	4.09	1/2"-13 NC	3.19	2.50	2.50	3.50	4.50
3			11.38	—	4							
4			14.56	—	4							
6			20.94	6.38	6							
8			27.31	9.56	6							
10			33.69	12.75	6							
2	2.00" Code 62	1.50" Code 62	9.88	—	2	4.94	5/8"-11 NC	3.88	3.00	2.75	4.00	5.00
3			13.75	—	4							
4			17.63	—	4							
6			25.38	7.75	6							
8			33.13	11.63	6							

Code 62 Elbow Header Blocks (All Ports Connected)

3060 - X - X - X X



Pressure Ratings:

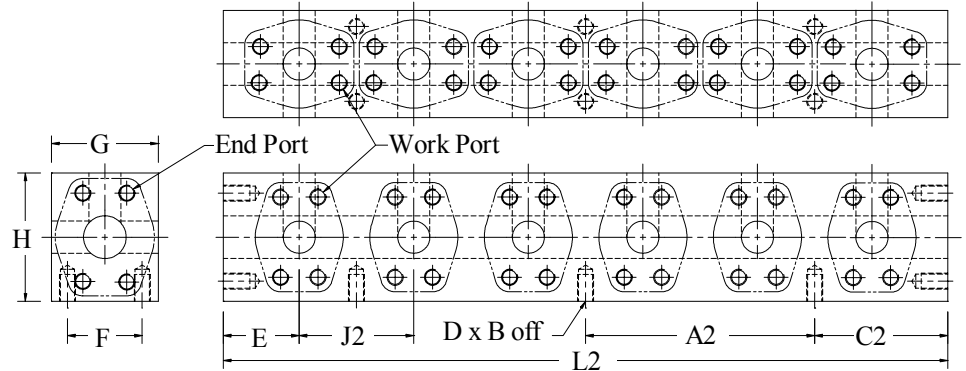
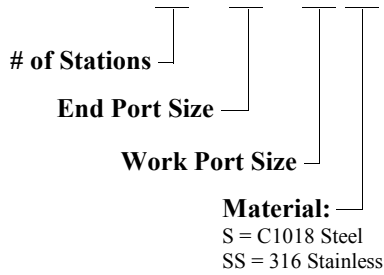
6000 PSI in C1018 Steel

6000 PSI in 316L Stainless

No. of Stations	End Port Size	Work Port Size	L2	A2	B	C2	D	J2	E	F	G	H
2	1.00" Code 62	3/4" Code 62	6.94	—	2	3.46	3/8"-16 NC	2.94	2.00	1.75	2.50	3.00
3			9.88	—	4							
4			12.81	—	4							
6			18.69	5.88	6							
8			24.56	8.81	6							
10			30.44	11.75	6							
2	1.25" Code 62	1.00" Code 62	8.00	—	2	4.00	7/16"-14 NC	3.25	2.38	2.13	3.00	3.75
3			11.25	—	4							
4			14.50	—	4							
6			21.00	6.50	6							
8			27.50	9.75	6							
10			34.00	13.00	6							
2	1.50" Code 62	1.25" Code 62	8.88	—	2	4.44	1/2"-13 NC	3.88	2.50	2.50	3.50	4.50
3			12.75	—	4							
4			16.63	—	4							
6			24.38	7.75	6							
8			32.13	11.63	6							
10			39.88	15.50	6							
2	2.00" Code 62	1.50" Code 62	10.63	—	2	5.31	5/8"-11 NC	4.63	3.00	2.75	4.00	5.00
3			15.25	—	4							
4			19.88	—	4							
6			29.13	9.25	6							
8			38.38	13.88	6							

Code 62 Tee Header Blocks (All Ports Connected)

3064 - X - X - X X



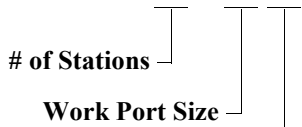
Pressure Ratings:

6000 PSI in C1018 Steel
6000 PSI in 316L Stainless

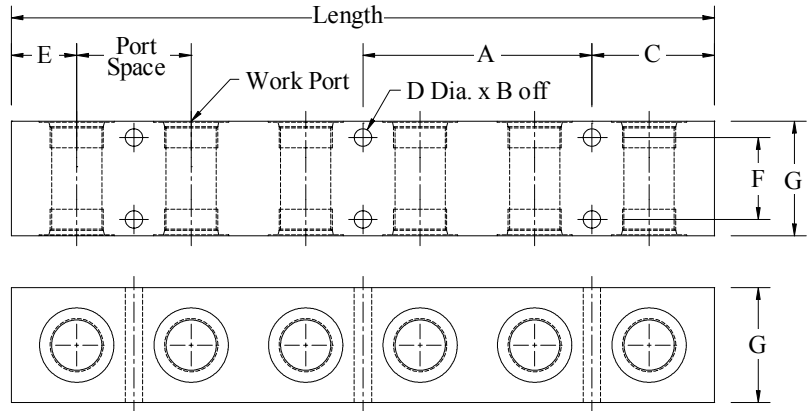
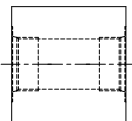
No. of Stations	End Port Size	Work Port Size	L2	A2	B	C2	D	J2	E	F	G	H
2	1.00" Code 62	3/4" Code 62	6.94	—	2	3.46	3/8"-16 NC	2.94	2.00	1.75	2.50	3.00
3			9.88	—	4							
4			12.81	—	4							
6			18.69	5.88	6							
8			24.56	8.81	6							
10			30.44	11.75	6							
2	1.25" Code 62	1.00" Code 62	8.00	—	2	4.00	7/16"-14 NC	3.25	2.38	2.13	3.00	3.75
3			11.25	—	4							
4			14.50	—	4							
6			21.00	6.50	6							
8			27.50	9.75	6							
10			34.00	13.00	6							
2	1.50" Code 62	1.25" Code 62	8.88	—	2	4.44	1/2"-13 NC	3.88	2.50	2.50	3.50	4.50
3			12.75	—	4							
4			16.63	—	4							
6			24.38	7.75	6							
8			32.13	11.63	6							
10			39.88	15.50	6							
2	2.00" Code 62	1.50" Code 62	10.63	—	2	5.31	5/8"-11 NC	4.63	3.00	2.75	4.00	5.00
3			15.25	—	4							
4			19.88	—	4							
6			29.13	9.25	6							
8			38.38	13.88	6							

ORB (O'Ring Boss) Run Junction Blocks *(Work Ports Connected)*

3069 - X - X X



Material:
S = C1018 Steel
SS = 316 Stainless
A = 6061-T6 Aluminum



Pressure Ratings:

5000 PSI in C1018 Steel
5000 PSI in 316L Stainless
3000 PSI in 6061-T6 Aluminum

Number of Stations	Work Port Size	Length	A	B	C	D	Port Spacing	E	F	G
2	#8 ORB (3/4"-16)	4.75	—	4	2.38	9/32	2.00	1.38	1.50	2.00
3		6.75	—	4						
4		8.75	—	4						
6		12.75	5.00	6						
8		16.75	7.00	6						
10		20.75	9.00	6						
2	#12 ORB (1-1/16"-12)	5.50	—	4	2.75	9/32	2.50	1.50	1.75	2.50
3		8.00	—	4						
4		10.50	—	4						
6		15.50	6.25	6						
8		20.50	8.75	6						
10		25.50	11.25	6						
2	#16 ORB (1-5/16"-12)	6.25	—	4	3.13	13/32	2.75	1.75	2.25	3.00
3		9.00	—	4						
4		11.75	—	4						
6		17.25	6.88	6						
8		22.75	9.63	6						
10		28.25	12.38	6						
2	#20 ORB (1-5/8"-12)	7.50	—	4	3.75	17/32	3.50	2.00	2.50	3.50
3		11.00	—	4						
4		14.50	—	4						
6		21.50	10.50	6						
8		28.50	12.25	6						
10		35.50	15.00	6						
2	#24 ORB (1-7/8"-12)	8.25	—	4	4.13	17/32	4.00	2.13	3.00	4.00
3		12.25	—	4						
4		16.25	—	4						
6		24.25	10.00	6						
8		32.25	12.75	6						

ORB (O'Ring Boss) Elbow Junction Blocks *(Work Ports Connected)*

3073 - X - X X

of Stations

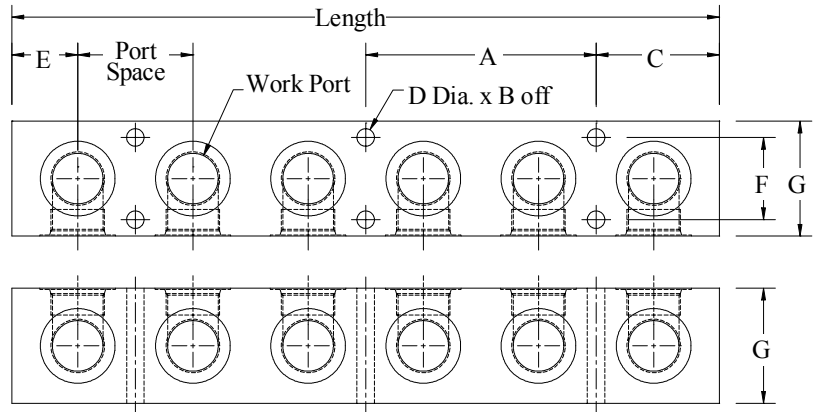
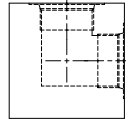
Work Port Size

Material:

S = C1018 Steel

SS = 316 Stainless

A = 6061-T6 Aluminum



Pressure Ratings:

5000 PSI in C1018 Steel

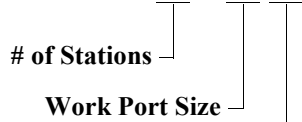
5000 PSI in 316L Stainless

3000 PSI in 6061-T6 Aluminum

Number of Stations	Work Port Size	Length	A	B	C	D	Port Spacing	E	F	G
2	#8 ORB (3/4"-16)	4.75	—	4	2.38	9/32	2.00	1.38	1.50	2.00
3		6.75	—	4						
4		8.75	—	4						
6		12.75	5.00	6						
8		16.75	7.00	6						
10		20.75	9.00	6						
2	#12 ORB (1-1/16"-12)	5.50	—	4	2.75	9/32	2.50	1.50	1.75	2.50
3		8.00	—	4						
4		10.50	—	4						
6		15.50	6.25	6						
8		20.50	8.75	6						
10		25.50	11.25	6						
2	#16 ORB (1-5/16"-12)	6.25	—	4	3.13	13/32	2.75	1.75	2.25	3.00
3		9.00	—	4						
4		11.75	—	4						
6		17.25	6.88	6						
8		22.75	9.63	6						
10		28.25	12.38	6						
2	#20 ORB (1-5/8"-12)	7.50	—	4	3.75	17/32	3.50	2.00	2.50	3.50
3		11.00	—	4						
4		14.50	—	4						
6		21.50	10.50	6						
8		28.50	12.25	6						
10		35.50	15.00	6						
2	#24 ORB (1-7/8"-12)	8.25	—	4	4.13	17/32	4.00	2.13	3.00	4.00
3		12.25	—	4						
4		16.25	—	4						
6		24.25	10.00	6						
8		32.25	12.75	6						

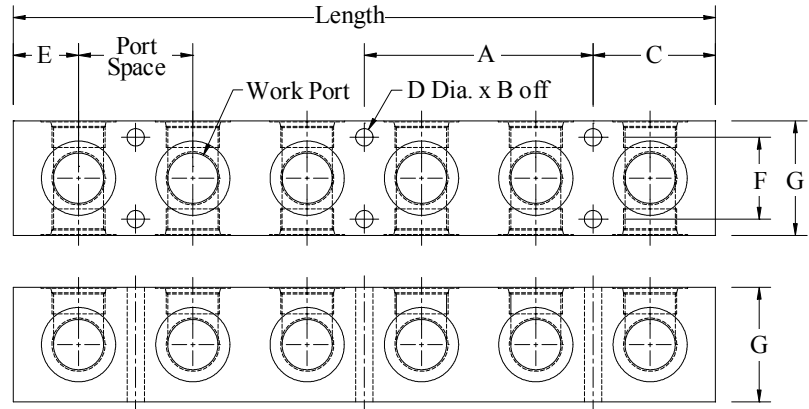
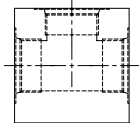
ORB (O'Ring Boss) Tee Junction Blocks (*Work Ports Connected*)

3077 - X - X X



Material:

- S = C1018 Steel
- SS = 316 Stainless
- A = 6061-T6 Aluminum



Pressure Ratings:

- 5000 PSI in C1018 Steel
- 5000 PSI in 316L Stainless
- 3000 PSI in 6061-T6 Aluminum

Number of Stations	Work Port Size	Length	A	B	C	D	Port Spacing	E	F	G
2	#8 ORB (3/4"-16)	4.75	—	4	2.38	9/32	2.00	1.38	1.50	2.00
3		6.75	—	4						
4		8.75	—	4						
6		12.75	5.00	6						
8		16.75	7.00	6						
10		20.75	9.00	6						
2	#12 ORB (1-1/16"-12)	5.50	—	4	2.75	9/32	2.50	1.50	1.75	2.50
3		8.00	—	4						
4		10.50	—	4						
6		15.50	6.25	6						
8		20.50	8.75	6						
10		25.50	11.25	6						
2	#16 ORB (1-5/16"-12)	6.25	—	4	3.13	13/32	2.75	1.75	2.25	3.00
3		9.00	—	4						
4		11.75	—	4						
6		17.25	6.88	6						
8		22.75	9.63	6						
10		28.25	12.38	6						
2	#20 ORB (1-5/8"-12)	7.50	—	4	3.75	17/32	3.50	2.00	2.50	3.50
3		11.00	—	4						
4		14.50	—	4						
6		21.50	10.50	6						
8		28.50	12.25	6						
2		#24 ORB (1-7/8"-12)	8.25	—						
3	12.25		—	4						
4	16.25		—	4						
6	24.25		10.00	6						

Code 61 Run Junction Blocks *(Work Ports Connected)*

3067 - X - X X

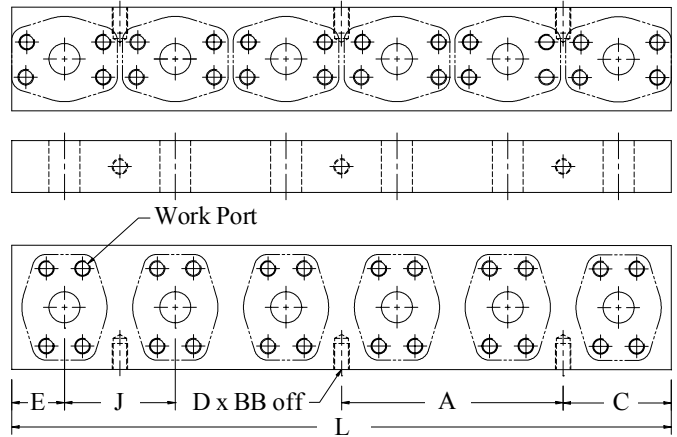
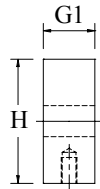
of Stations

Work Port Size

Material:

S = C1018 Steel

SS = 316 Stainless



Pressure Ratings:

Pressure ratings are governed by largest flange size.

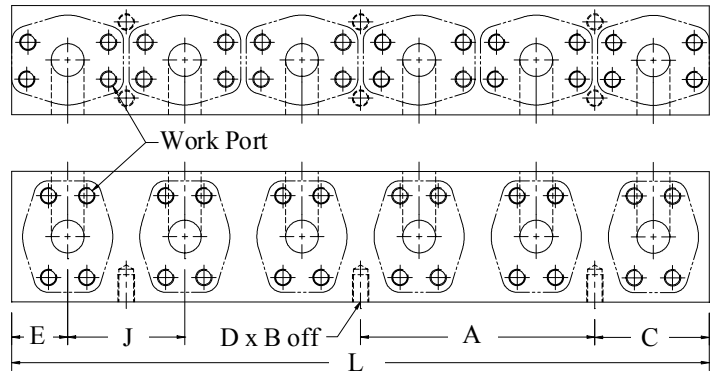
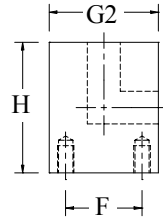
[CLICK HERE](#) for code 61 pressure ratings.

No. of Stations	Work Port Size	L	A	BB	C	D	J	E	F	G1	H
2	3/4" Code 61	5.19	—	—	2.59	3/8"-16 NC	2.69	1.25	1.75	1.00	2.50
3		7.88	—	2							
4		10.56	—	2							
6		15.94	5.38	3							
8		21.31	8.06	3							
10	26.69	10.75	3								
2	1.00" Code 61	5.63	—	—	2.81	3/8"-16 NC	2.88	1.38	1.75	1.00	3.00
3		8.50	—	2							
4		11.38	—	2							
6		17.13	5.75	3							
8		22.88	8.63	3							
10	28.63	11.50	3								
2	1.25" Code 61	6.50	—	—	3.25	7/16"-14 NC	3.25	1.63	2.00	1.25	3.50
3		9.75	—	2							
4		13.00	—	2							
6		19.50	6.50	3							
8		26.00	9.75	3							
10	32.50	13.00	3								
2	1.50" Code 61	7.56	—	—	3.78	1/2"-13 NC	3.82	1.88	3.00	1.50	4.00
3		11.38	—	2							
4		15.19	—	2							
6		22.81	7.63	3							
8		30.44	11.44	3							
2	2.00" Code 61	8.13	—	—	4.06	1/2"-13 NC	4.13	2.00	3.00	1.50	4.00
3		12.25	—	2							
4		16.38	—	2							
6		24.63	8.25	3							

Code 61 Elbow Junction Blocks (Work Ports Connected)

3071 - X - X X

of Stations
Work Port Size
Material:
S = C1018 Steel
SS = 316 Stainless



Pressure Ratings:

Pressure ratings are governed by largest flange size.

[CLICK HERE](#) for code 61 pressure ratings.

No. of Stations	Work Port Size	L	A	B	C	D	J	E	F	G2	H
2	3/4" Code 61	5.19	—	2	2.59	3/8"-16 NC	2.69	1.25	1.75	2.50	2.50
3		7.88	—	4							
4		10.56	—	4							
6		15.94	5.38	6							
8		21.31	8.06	6							
10	26.69	10.75	6								
2	1.00" Code 61	5.63	—	2	2.81	3/8"-16 NC	2.88	1.38	1.75	2.50	3.00
3		8.50	—	4							
4		11.38	—	4							
6		17.13	5.75	6							
8		22.88	8.63	6							
10	28.63	11.50	6								
2	1.25" Code 61	6.50	—	2	3.25	7/16"-14 NC	3.25	1.63	2.00	3.00	3.50
3		9.75	—	4							
4		13.00	—	4							
6		19.50	6.50	6							
8		26.00	9.75	6							
10	32.50	13.00	6								
2	1.50" Code 61	7.56	—	2	3.78	1/2"-13 NC	3.82	1.88	3.00	4.00	4.00
3		11.38	—	4							
4		15.19	—	4							
6		22.81	7.63	6							
8		30.44	11.44	6							
2	2.00" Code 61	8.13	—	2	4.06	1/2"-13 NC	4.13	2.00	3.00	4.00	4.00
3		12.25	—	4							
4		16.38	—	4							
6		24.63	8.25	6							

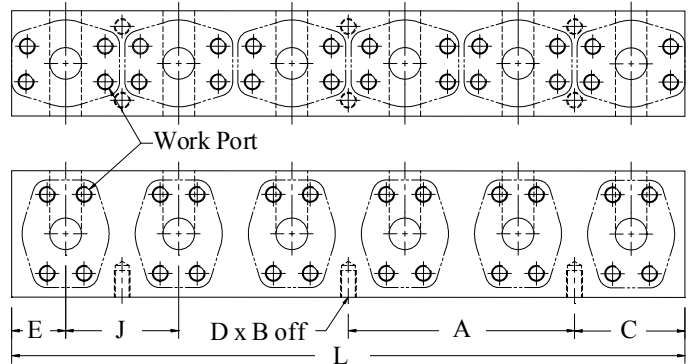
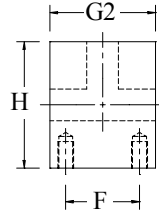
Code 61 Tee Junction Blocks (*Work Ports Connected*)

3075 - X - X X

of Stations

Work Port Size

Material:
S = C1018 Steel
SS = 316 Stainless



Pressure Ratings:

Pressure ratings are governed by largest flange size.

[CLICK HERE](#) for code 61 pressure ratings.

No. of Stations	Work Port Size	L	A	B	C	D	J	E	F	G2	H
2	3/4" Code 61	5.19	—	2	2.59	3/8"-16 NC	2.69	1.25	1.75	2.50	2.50
3		7.88	—	4							
4		10.56	—	4							
6		15.94	5.38	6							
8		21.31	8.06	6							
10		26.69	10.75	6							
2	1.00" Code 61	5.63	—	2	2.81	3/8"-16 NC	2.88	1.38	1.75	2.50	3.00
3		8.50	—	4							
4		11.38	—	4							
6		17.13	5.75	6							
8		22.88	8.63	6							
10		28.63	11.50	6							
2	1.25" Code 61	6.50	—	2	3.25	7/16"-14 NC	3.25	1.63	2.00	3.00	3.50
3		9.75	—	4							
4		13.00	—	4							
6		19.50	6.50	6							
8		26.00	9.75	6							
10		32.50	13.00	6							
2	1.50" Code 61	7.56	—	2	3.78	1/2"-13 NC	3.82	1.88	3.00	4.00	4.00
3		11.38	—	4							
4		15.19	—	4							
6		22.81	7.63	6							
8		30.44	11.44	6							
2		2.00" Code 61	8.13	—							
3	12.25		—	4							
4	16.38		—	4							
6	24.63		8.25	6							

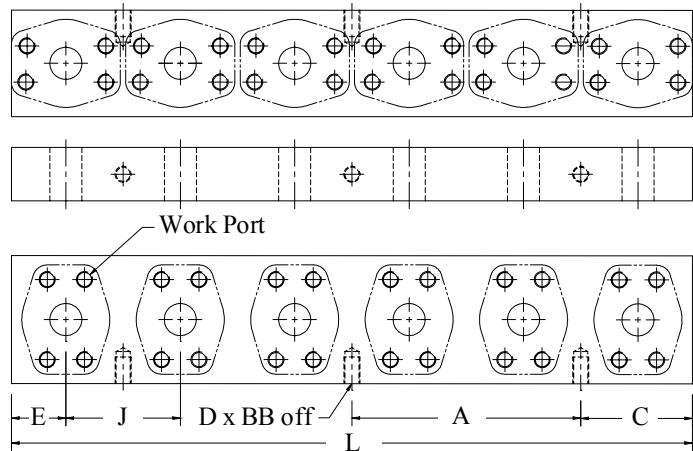
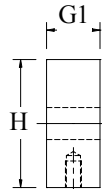
Code 62 Run Junction Blocks *(Work Ports Connected)*

3068 - X - X X

of Stations

Work Port Size

Material:
S = C1018 Steel
SS = 316 Stainless



Pressure Ratings:
6000 PSI in C1018 Steel
6000 PSI in 316L Stainless

No. of Stations	Work Port Size	L	A	BB	C	D	J	E	F	G1	H
2	3/4" Code 62	6.00	—	—	3.00	3/8"-16 NC	3.00	1.50	1.75	1.00	3.00
3		9.00	—	2							
4		12.00	—	2							
6		18.00	6.00	3							
8		24.00	9.00	3							
10		30.00	12.00	3							
2	1.00" Code 62	6.50	—	—	3.25	7/16"-14 NC	3.25	1.63	2.63	1.25	3.50
3		9.75	—	2							
4		13.00	—	2							
6		19.50	6.50	3							
8		26.00	7.75	3							
10		32.50	13.00	3							
2	1.25" Code 62	7.88	—	—	3.94	1/2"-13 NC	3.88	2.00	3.00	1.50	4.00
3		11.75	—	2							
4		15.63	—	2							
6		23.38	7.75	3							
8		31.13	11.63	3							
10		38.88	15.50	3							
2	1.50" Code 62	9.13	—	—	4.56	5/8"-11 NC	4.63	2.25	3.25	2.00	4.50
3		13.75	—	2							
4		18.38	—	2							
6		27.63	9.25	3							
8		36.88	13.88	3							
2		2.00" Code 62	10.63	—							
3	16.00		—	2							
4	21.38		—	2							
6	32.13		10.75	3							

Code 62 Elbow Junction Blocks (Work Ports Connected)

3072 - X - X X

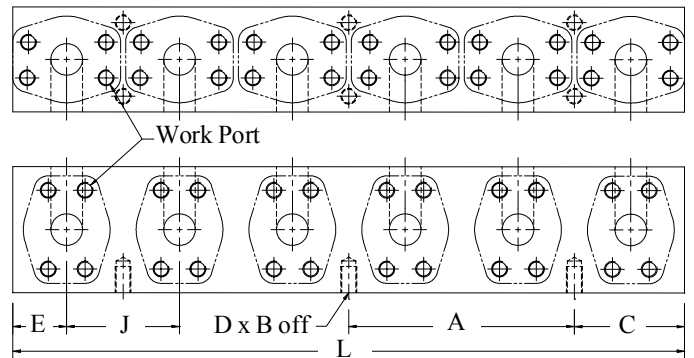
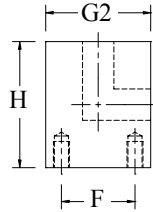
of Stations

Work Port Size

Material:

S = C1018 Steel

SS = 316 Stainless



Pressure Ratings:

6000 PSI in C1018 Steel

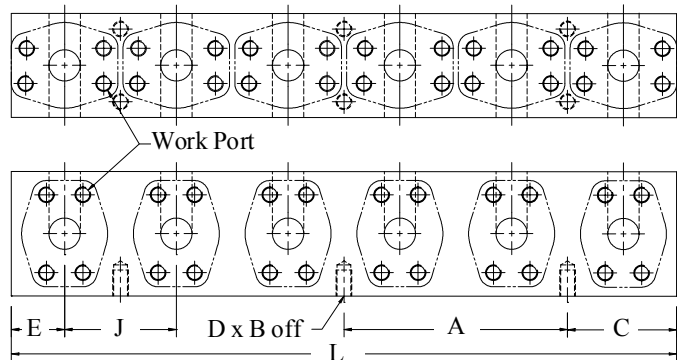
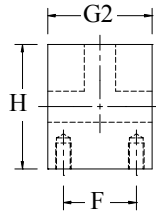
6000 PSI in 316L Stainless

No. of Stations	Work Port Size	L	A	B	C	D	J	E	F	G2	H
2	3/4" Code 62	6.00	—	2	3.00	3/8"-16 NC	3.00	1.50	1.75	2.50	3.00
3		9.00	—	4							
4		12.00	—	4							
6		18.00	6.00	6							
8		24.00	9.00	6							
10	30.00	12.00	6								
2	1.00" Code 62	6.50	—	2	3.25	7/16"-14 NC	3.25	1.63	2.63	3.50	3.50
3		9.75	—	4							
4		13.00	—	4							
6		19.50	6.50	6							
8		26.00	7.75	6							
10	32.50	13.00	6								
2	1.25" Code 62	7.88	—	2	3.94	1/2"-13 NC	3.88	2.00	3.00	4.00	4.00
3		11.75	—	4							
4		15.63	—	4							
6		23.38	7.75	6							
8		31.13	11.63	6							
10	38.88	15.50	6								
2	1.50" Code 62	9.13	—	2	4.56	5/8"-11 NC	4.63	2.25	3.25	4.50	4.50
3		13.75	—	4							
4		18.38	—	4							
6		27.63	9.25	6							
8		36.88	13.88	6							
2	2.00" Code 62	10.63	—	2	5.31	3/4"-10 NC	5.38	2.63	3.00	4.50	5.25
3		16.00	—	4							
4		21.38	—	4							
6		32.13	10.75	6							

Code 62 Tee Junction Blocks (*Work Ports Connected*)

3076 - X - X X

of Stations ———
Work Port Size ———
Material:
S = C1018 Steel
SS = 316 Stainless



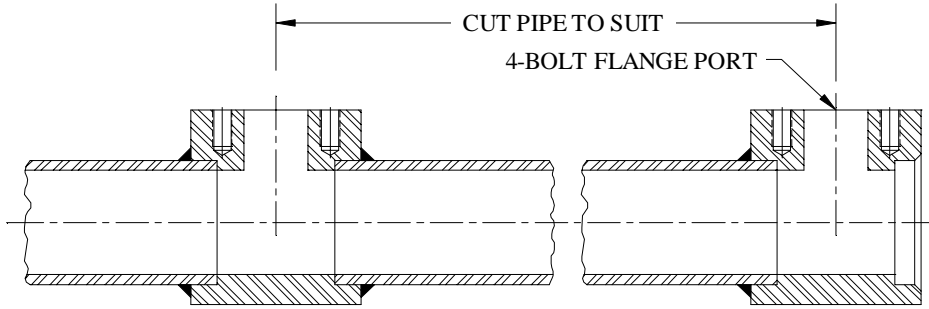
Pressure Ratings:

6000 PSI in C1018 Steel

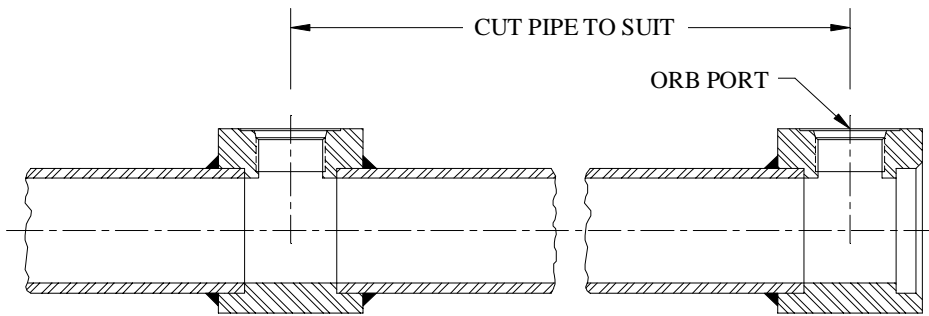
6000 PSI in 316L Stainless

No. of Stations	Work Port Size	L	A	B	C	D	J	E	F	G2	H
2	3/4" Code 62	6.00	—	2	3.00	3/8"-16 NC	3.00	1.50	1.75	2.50	3.00
3		9.00	—	4							
4		12.00	—	4							
6		18.00	6.00	6							
8		24.00	9.00	6							
10	30.00	12.00	6								
2	1.00" Code 62	6.50	—	2	3.25	7/16"-14 NC	3.25	1.63	2.63	3.50	3.50
3		9.75	—	4							
4		13.00	—	4							
6		19.50	6.50	6							
8		26.00	7.75	6							
10	32.50	13.00	6								
2	1.25" Code 62	7.88	—	2	3.94	1/2"-13 NC	3.88	2.00	3.00	4.00	4.00
3		11.75	—	4							
4		15.63	—	4							
6		23.38	7.75	6							
8		31.13	11.63	6							
10	38.88	15.50	6								
2	1.50" Code 62	9.13	—	2	4.56	5/8"-11 NC	4.63	2.25	3.25	4.50	4.50
3		13.75	—	4							
4		18.38	—	4							
6		27.63	9.25	6							
8		36.88	13.88	6							
2	2.00" Code 62	10.63	—	2	5.31	3/4"-10 NC	5.38	2.63	3.00	4.50	5.25
3		16.00	—	4							
4		21.38	—	4							
6		32.13	10.75	6							

Alternative Methods for Long Run Headers



Part No. 1865-XX-XX-XX (Socket Weld Pipe on the run and Code 61 companion flange on the branch)
Part No. 1879-XX-XX-XX (Socket Weld Pipe on the run and Code 62 companion flange on the branch)



Part No. 2058-XX-XX-XX (Socket Weld Pipe on the run and ORB female on the branch)

Tee – SWP / ORB / SWP

Part No.	Socket Weld Pipe	Female ORB	Socket Weld Pipe
2058-12-08-12	3/4	#8 (3/4"-16)	3/4
2058-12-12-12	3/4	#12 (1-1/16"-12)	3/4
2058-16-08-16	1	#8 (3/4"-16)	1
2058-16-12-16	1	#12 (1-1/16"-12)	1
2058-16-16-16	1	#16 (1-5/16"-12)	1
2058-20-12-20	1-1/4	#12 (1-1/16"-12)	1-1/4
2058-20-16-20	1-1/4	#16 (1-5/16"-12)	1-1/4
2058-20-20-20	1-1/4	#20 (1-5/8"-12)	1-1/4
2058-24-12-24	1-1/2	#12 (1-1/16"-12)	1-1/2
2058-24-16-24	1-1/2	#16 (1-5/16"-12)	1-1/2
2058-24-20-24	1-1/2	#20 (1-5/8"-12)	1-1/2
2058-32-12-32	2	#12 (1-1/16"-12)	2
2058-32-16-32	2	#16 (1-5/16"-12)	2
2058-32-20-32	2	#20 (1-5/8"-12)	2
2058-40-16-40	2-1/2	#16 (1-5/16"-12)	2-1/2
2058-40-20-40	2-1/2	#20 (1-5/8"-12)	2-1/2
2058-48-16-48	3	#16 (1-5/16"-12)	3
2058-48-20-48	3	#20 (1-5/8"-12)	3
2058-64-16-64	4	#16 (1-5/16"-12)	4
2058-64-20-64	4	#20 (1-5/8"-12)	4

4-Bolt Flange Tee – SWP / Companion / SWP

Code 61 Part No.	Code 62 Part No.	Socket Weld Pipe	4-Bolt Flange	Socket Weld Pipe
1865-12-12-12	1879-12-12-12	3/4	0.75	3/4
1865-16-12-12	1879-16-12-12	3/4	1.00	3/4
1865-16-16-16	1879-16-16-16	1	1.00	1
1865-20-16-16	1879-20-16-16	1	1.25	1
1865-20-20-20	1879-20-20-20	1-1/4	1.25	1-1/4
1865-24-20-20	1879-24-20-20	1-1/4	1.50	1-1/4
1865-24-24-24	1879-24-24-24	1-1/2	1.50	1-1/2
1865-32-24-24	1879-32-24-24	1-1/2	2.00	1-1/2
1865-32-32-32	1879-32-32-32	2	2.00	2

PLEASE NOTE:

These are just a few of the many ways to make long run pipe headers. Because your pipe is welded all around as opposed to just one side as you would do with a weld-o-let or saddle flange, there will be less distortion and your pipe will remain virtually straight even after welding.

When installed on new units or retrofitted to existing units, Sealum air breather adapters allow the hydraulic tank to “*breath*” and let the level of oil move up and down. Bayonet style breather adapters can be installed onto any existing bayonet style filler adapter, while the threaded breather adapters can be installed into any NPT port such as scullys and couplings. Both style adapters will accept standard filter or breather element.

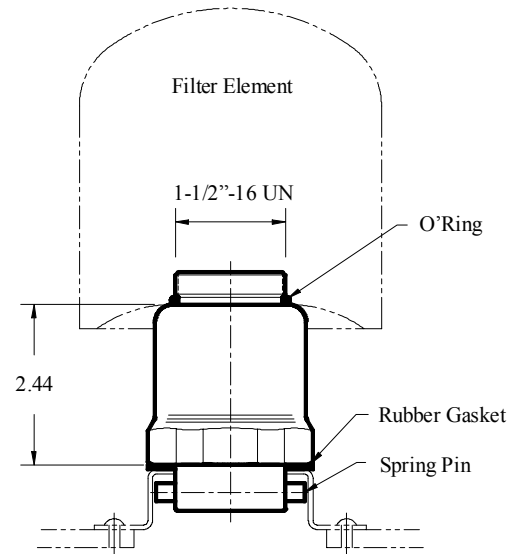
Bayonet Style Air Breather Adapter



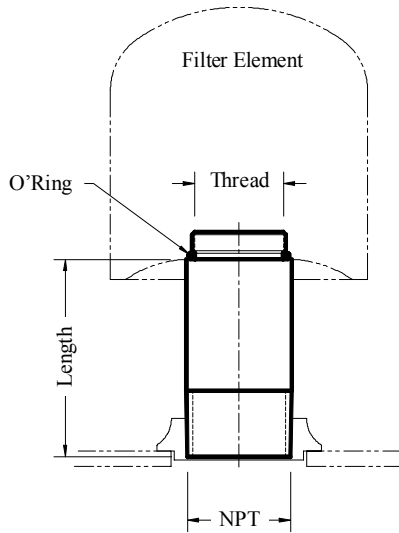
Bayonet Style Air Breather Adapter

Part Number: 2106

Material: Zinc Plated C1045 Steel
Comes with O’Ring & Gasket



NPT Breather Adapters



Material: 304 Stainless Steel
Comes Complete With O’Ring

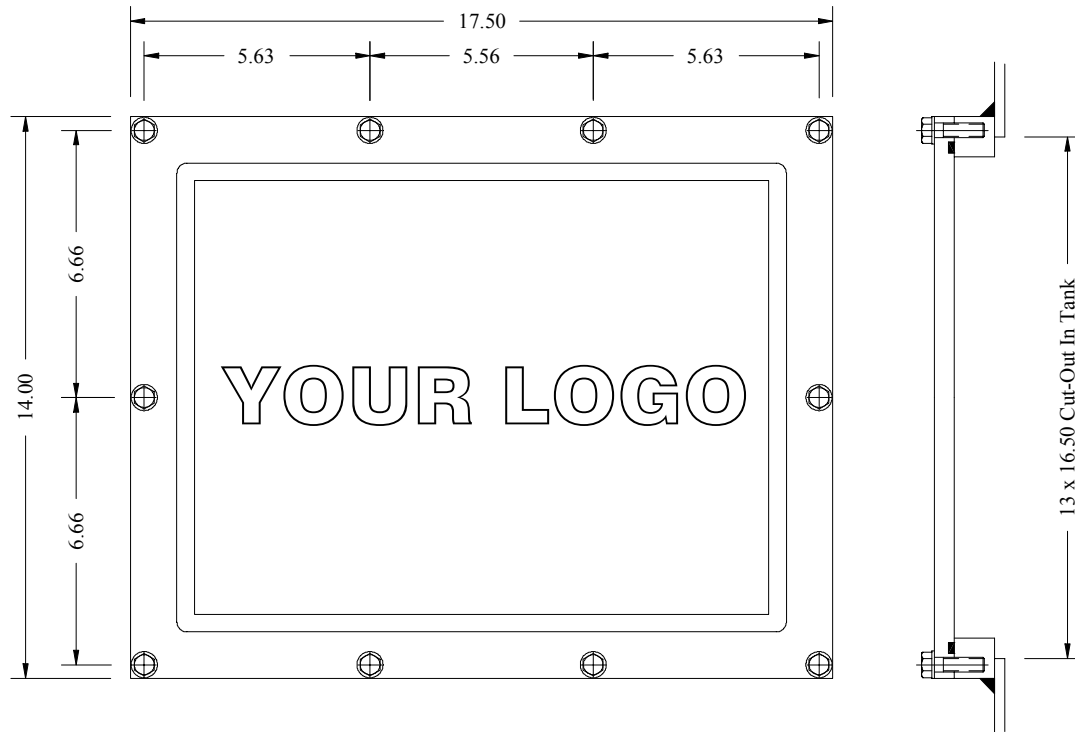


NPT Breather Adapters

Part No.	Length	NPT	Thread
2747	2.00	3/4"	1"-12
2550	2.13	1"	1 1/8"-16
2551	3.00	1.25"	1 1/2"-16

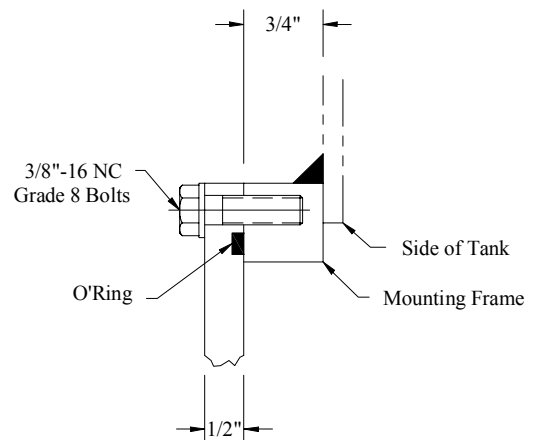
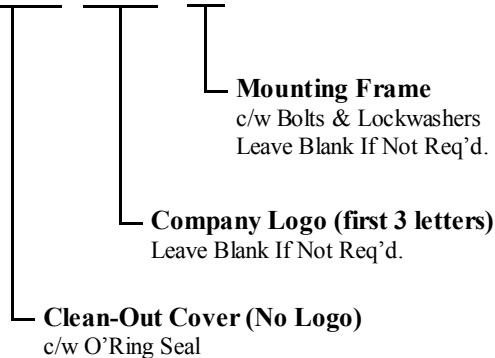
Clean-Out Cover

SEALUM aluminium clean-out covers offer a quick easy way to install an access cover to any hydraulic reservoir. Simply by welding the mounting frame to the side of your reservoir the SEALUM clean-out cover can be bolted into place with bolts supplied. The clean-out cover seals with a standard 1/4" cross section O'Ring, and with ten blind mounting holes is ideal for pressurized reservoirs. To give your reservoir more of a *custom* look you can have your company logo machined into the face of the clean-out cover.



Ordering Information

PART No. 2752-YOU-M



Materials:

Cover Plate: 1/2" 6061-T6 extruded aluminum
Mounting Frame: C1018 Steel