



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:

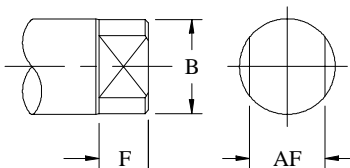
- Adding a stop tube between the piston and the head gland.
- Adding an extension to the blind end of the barrel.
- Increasing the rod extension.

Overview

Rod Specifications

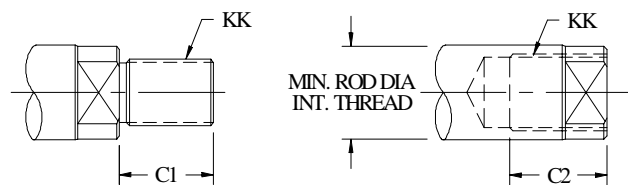
Standard rod material is CPO (*C1045 steel with 0.0005 thick hard chrome plating*). We also offer IHCP (*Induction hardened chrome plated*) or else stainless steel SS (*S316L stainless with 0.001 thick hard chrome*) as readily available options. Rod accessories can be welded or threaded to the rod. Usually, 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.

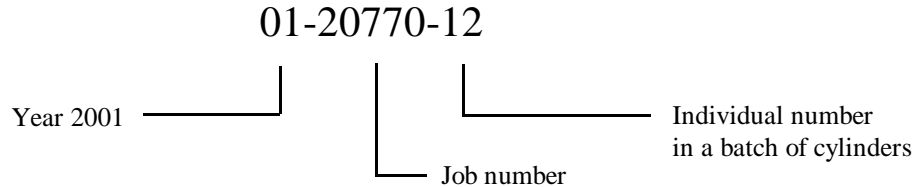
The fax # is (604-522-0070). We will then contact you with a price and delivery or for any further information.

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

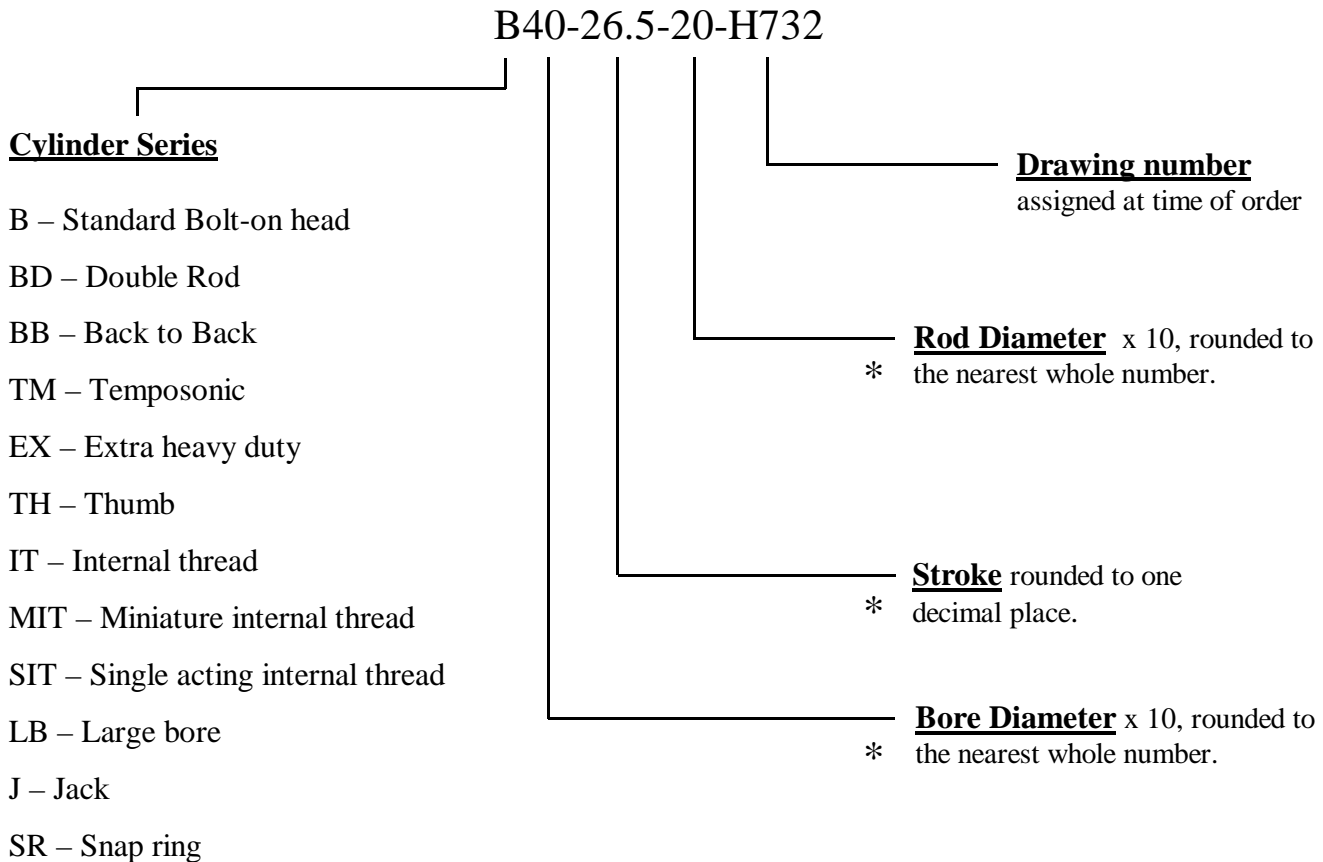
Serial Number

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

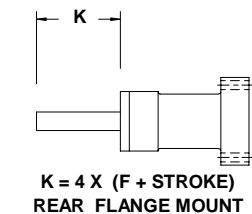
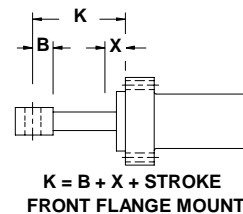
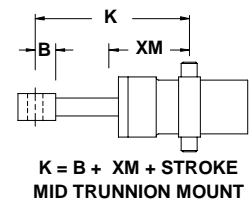
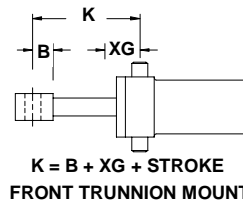
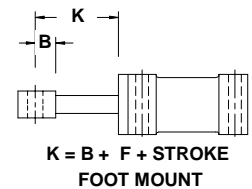
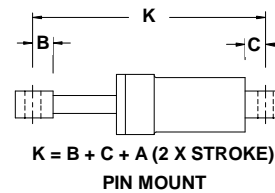
Buckling

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)

$$\text{Force (lb)} = \text{Pressure (psi)} \times \text{Piston Area (sq.in.)}$$

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
3 1/2	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
4	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	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
5 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
6	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
6 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
7	3	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
7 1/2	3 1/2	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
8	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
8 1/2	2 1/2	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
9	3	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
9 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
10	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
10 1/2	2 1/2	PUSH	23,360	35,050	46,730	58,410	70,100	81,780	94,460	107,140	119,830	0.1011
		PULL	21,200	31,810	42,410	53,010	63,610	74,220	84,820	95,420	106,030	0.0918
11	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
11 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	72,150	82,460	92,770	103,080	0.0892
12	3	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
12 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
13	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
13 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
14	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
14 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
15	6	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)

Speed (in/sec) = 3.85 x Flow (GPM) ÷ 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											
		1.6	3.3	8.2	11.4	16.4	19.6	24.5											
		13/8	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									
		0.9	1.9	4.7	6.5	9.3	11.2	14.0	18.7	23.5									
		13/8	1.1	2.3	5.6	7.9	11.3	13.5	16.9	22.5	28.1								
		13/4	1.5	3.1	7.7	10.8	15.4	18.5	23.1	30.8	38.5								
3	13/8	0.5	1.1	2.7	3.8	5.5	6.5	8.2	10.9	13.6	16.4	19.1							
		0.7	1.4	3.5	4.8	6.9	8.3	10.4	13.8	17.3	20.7	24.2							
		13/4	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	13/8	0.5	0.9	2.3	3.3	4.6	5.6	7.0	9.3	11.6	13.9	16.3	18.6						
		0.6	1.1	2.8	3.9	5.7	6.8	8.5	11.3	14.1	17.0	19.8	22.6						
		13/4	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	13/4	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					
		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	13/4		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			
			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			
			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			
			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		
			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		
			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		
			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	
			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	
			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	
			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
				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
				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
				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
				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
				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
				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
					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
					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
					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
						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
						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
						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 _____

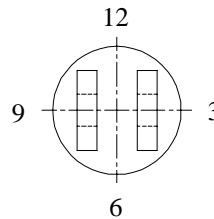
Qty. Req'd
 Series
 Bore Dia.
 Stroke
 Rod dia.
 Stop tube
 Retracted length

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 _____