

# Parker Heavy Duty Automotive Hydraulic Cylinders

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## Series HD

Exclusive  
with the New Parker Stepped Cushion  
for increased performance and productivity

- Faster cycle time
- Reduced hydraulic shock
- Reduced machine noise
- Lower machine maintenance



Heavy Duty Service — Tie Rod Construction

Nominal Pressure — 3000 PSI  
Standard Bore Sizes — 1½" Through 8"  
Piston Rod Diameters — 5/8" Through 5½"  
Thirteen Standard Mounting Styles

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For additional information – call your local Parker Cylinder Distributor.

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

## Specifications Mountings

### STANDARD SPECIFICATIONS

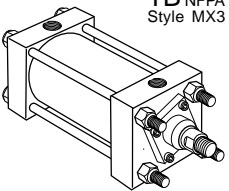
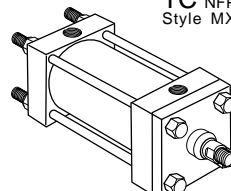
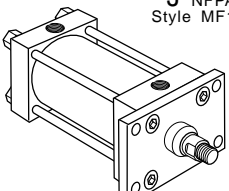
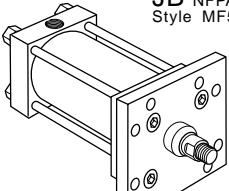
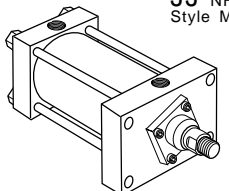
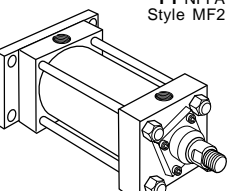
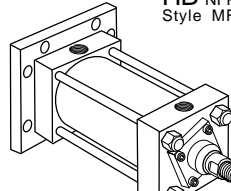
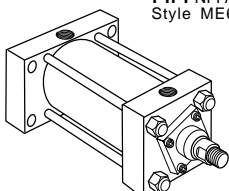
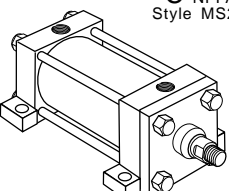
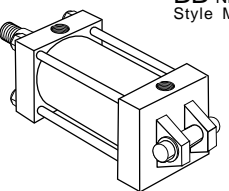
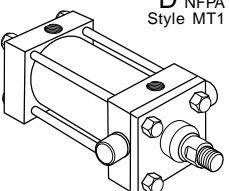
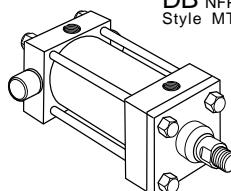
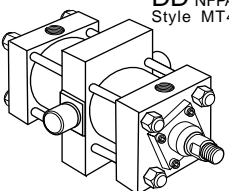
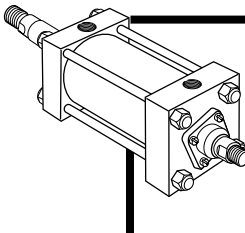
- HEAVY DUTY SERVICE — NFPA SPECIFICATIONS AND ANSI B93. 15-1981 MOUNTING DIMENSION STANDARDS
- STANDARD CONSTRUCTION — SQUARE HEAD — TIE ROD DESIGN
- NOMINAL PRESSURE — 3000 PSI
- STANDARD FLUID — HYDRAULIC OIL
- STANDARD TEMPERATURE — 10½F TO +165½F\*\*
- BORE SIZES — 1½" THROUGH 8"
- PISTON ROD DIAMETERS — ⅝" THROUGH 5½"
- MOUNTING STYLES — 13 STANDARD STYLES AT VARIOUS APPLICATION RATINGS
- STANDARD — EXTERNALLY REMOVABLE BOLT ON GLAND ASSEMBLY
- STROKES — AVAILABLE IN ANY PRACTICAL STROKE LENGTH
- CUSHIONS — OPTIONAL AT EITHER END OF BOTH ENDS OF STROKE. "FLOAT CHECK" AT END CAP
- ROD ENDS — THREE STANDARD CHOICES — SPECIALS TO ORDER

\*If hydraulic operating pressure exceeds 3000 PSI, send application data for engineering evaluation and recommendation.  
\*\* See section C, page 83 for higher temperature service.

In line with our policy of continuing product improvement, specifications in this catalog are subject to change.

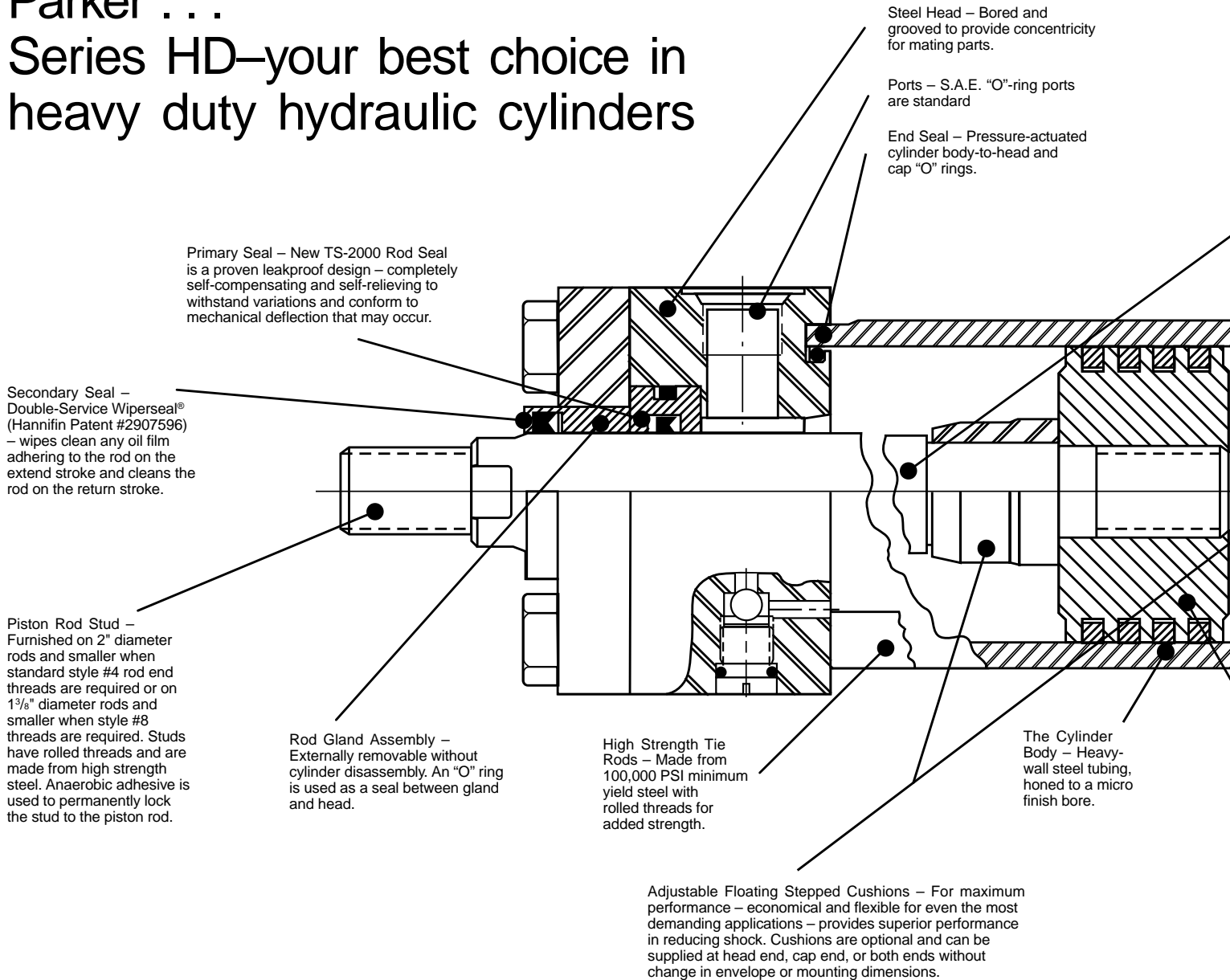
### AVAILABLE MOUNTINGS AND WHERE TO FIND THEM

NOTE: Series HD-HDC Hydraulic Cylinders fully meet N.F.P.A. Standards and ANSI Standard B93. 15-1981 for Mounting Dimensions for Square Head Industrial Fluid Power Cylinders.

 <p><b>TB</b> NFPA Style MX3</p> <p>Tie Rods Extended Head End, Style TB. 1 1/2"-8" Bores, Page 126</p>	 <p><b>TC</b> NFPA Style MX2</p> <p>Tie Rods Extended Cap End, Style TC. 1 1/2"-8" Bores, Page 126</p>	 <p><b>J</b> NFPA Style MF1</p> <p>Head Rectangular Flange, Style J. 1 1/2"-3 1/4" Bores, Page 128</p>	 <p><b>JB</b> NFPA Style MF5</p> <p>Head Square Flange, Style JB. 1 1/2"-8" Bores, Page 128</p>	 <p><b>JJ</b> NFPA Style ME5</p> <p>Head Rectangular, Style JJ. 1 1/2"-8" Bores, Page 128</p>
 <p><b>H</b> NFPA Style MF2</p> <p>Cap Rectangular Flange, Style H. 1 1/2"-8" Bores, Page 130</p>	 <p><b>HB</b> NFPA Style MF6</p> <p>Cap Square Flange, Style HB. 1 1/2"-8" Bores, Page 130</p>	 <p><b>HH</b> NFPA Style ME6</p> <p>Cap Rectangular, Style HH. 1 1/2"-8" Bores, Page 130</p>	 <p><b>C</b> NFPA Style MS2</p> <p>Side Lug, Style C. 1 1/2"-8" Bores, Page 132</p>	 <p><b>BB</b> NFPA Style MP1</p> <p>Cap Fixed Clevis, Style BB. 1 1/2"-8" Bores, Page 132</p>
 <p><b>D</b> NFPA Style MT1</p> <p>Head Trunnion, Style D. 1 1/2"-8" Bores, Page 134</p>	 <p><b>DB</b> NFPA Style MT2</p> <p>Cap Trunnion, Style DB. 1 1/2"-8" Bores, Page 134</p>	 <p><b>DD</b> NFPA Style MT4</p> <p>Intermediate Fixed Trunnion Mounting, Style DD. 1 1/2"-8" Bores, Page 134</p>	 <p><b>DOUBLE ROD CYLINDERS</b> Most of the above illustrated mounting styles are available in double rod cylinders. See Catalog Page 136.</p> <p style="text-align: right;"><b>KTB</b></p>	

For Cylinder Division Plant Locations – See Page II.

# Parker . . . Series HD—your best choice in heavy duty hydraulic cylinders



## PARKER'S NEW, EXCLUSIVE Stepped floating cushions combine the best features of known cushion technology.

Deceleration devices or built-in "cushions" are optional and can be supplied at head end, cap end, or both ends without change in envelope or mounting dimensions. Parker cylinder cushions are a stepped design and combine the best features of known cushion technology.

Standard straight or tapered cushions have been used in industrial cylinders over a very broad range of applications, Parker research has found that both designs have their limitations.

As a result, Parker has taken a new approach in cushioning of industrial hydraulic cylinders and for specific load and velocity conditions have been able to obtain deceleration curves that come very close to the ideal. The success lies in a stepped sleeve or spear concept where the steps are calculated to approximate theoretical orifice areas curves.

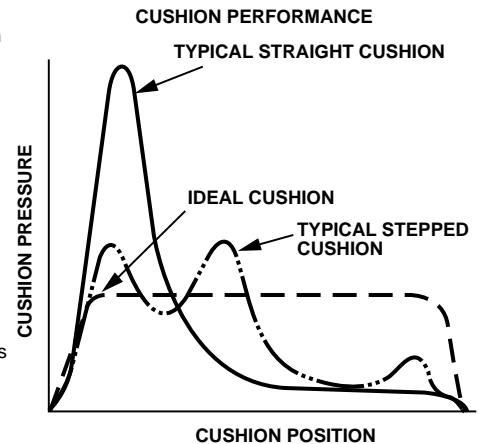
In the cushion performance chart, pressure traces show the results of typical orifice flow conditions. Tests of a three-step sleeve or spear show three

pressure pulses coinciding with the steps. The deceleration cushion plunger curves shape comes very close to being theoretical, with the exception of the last 1/2 inch of travel.

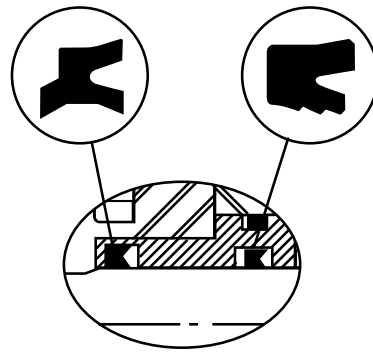
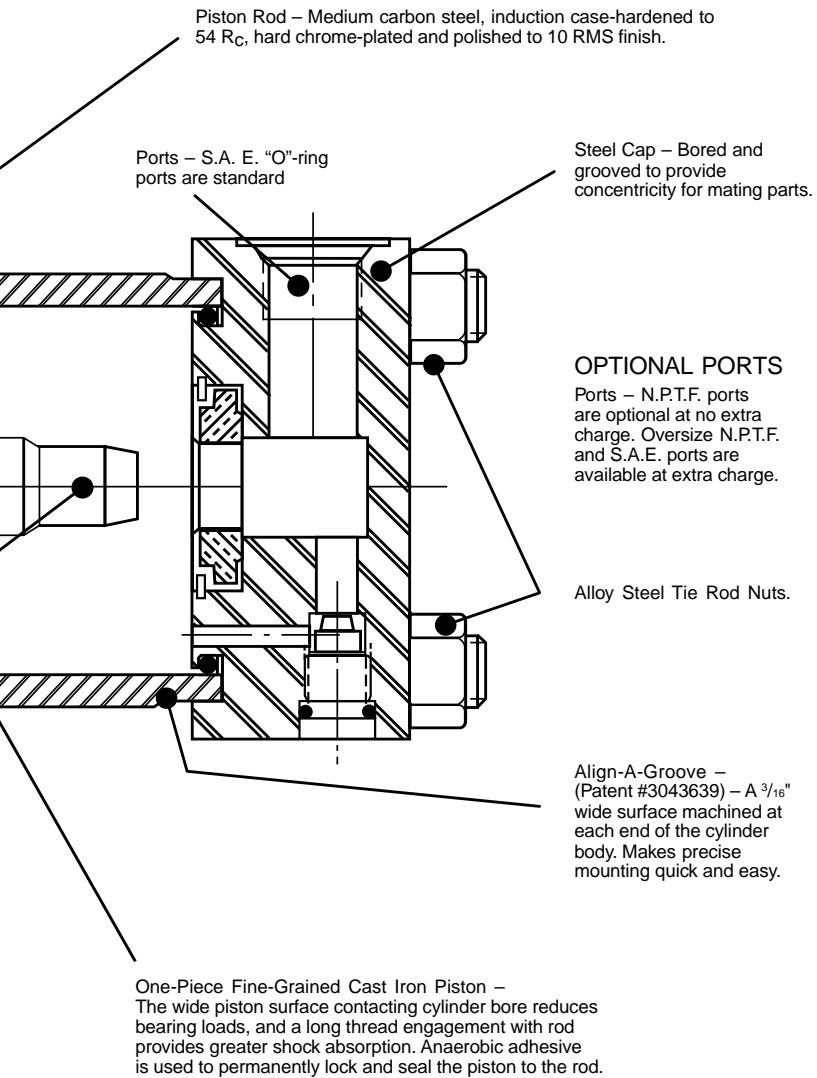
This is a constant shape in order to have some flexibility in application. The stepped cushion design shows reduced pressure peaks for most load and speed conditions, with comparable reduction of objectionable stopping forces being transmitted to the load and the support structure.

All Parker Hannifin cushions are adjustable.

The Series HD cylinder design incorporates the longest cushion sleeve and cushion spear that can be provided in the standard envelope without decreasing the rod bearing and piston bearing lengths.

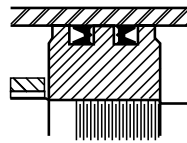


For additional information – call your local Parker Cylinder Distributor.

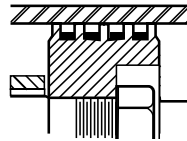


**Gland Assembly with TS-2000 Rod Seal**  
 Gland Assembly externally removable without cylinder disassembly. An O-ring is used as a seal between the gland and head. The serrated TS-2000 (primary seal) is completely self-compensating and self-relieving. The result is positive, no-leak sealing - regardless of conditions. The Wiperseal wipes away any dirt on the rod. This means less wear on bearing surfaces and internal parts. Back up washer prevents extrusion of lipseal.

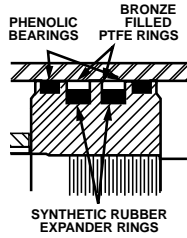
**OPTIONAL PISTONS**



**Lipseal® Piston** - Optional at no extra charge in 1 1/2"-6" bore sizes. Zero leakage under static conditions for hydraulic pressures up to 3000 PSI. Seals are self-compensating to conform to variations in pressure, mechanical deflection, and wear. Back-up washer prevents extrusion.

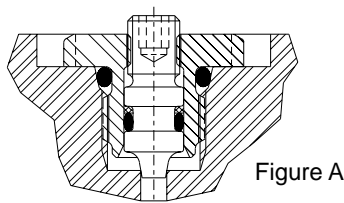


**Piston with Retainer Nut** - Optional at no extra charge.

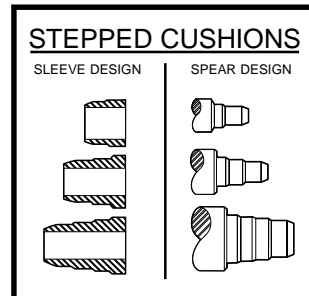


**Hi Load Piston** - Optional at extra charge. Includes wear rings and bronze-filled PTFE seals. Two wear rings serve as bearings which deform radially under side-loading, enabling the load to be spread over a larger area and reduce unit loading. Bronze-filled PTFE seals are designed for extrusion-free, leak-proof service and longer cylinder life than the lipseal type piston. Not available with retainer nut.

- (1) When a cushion is specified at the head end:
- A self-centering stepped sleeve is furnished on the piston rod assembly.
  - A needle valve is provided that is flush with the side of the head even when wide open. It may be identified by the fact that it is socket-keyed. It is located on side number 2, in all mounting styles except D, DB, DD, JJ and HH. In these styles it is located on side number 3.
  - On 5" bore and larger cylinders (except for 2 1/2" bores with code 2 rods), a springless check valve is provided that is also flush with the side of the head and is mounted adjacent to the needle valve except on mounting style C, where it is mounted opposite the needle valve. It may be identified by the fact that it is slotted.
  - On 1 1/2" - 4" bore cylinders a slotted sleeve design is used in place of the check valve.
  - 1 1/2" - 2" bore cylinders use cartridge style needle valve (see Figure A).



- (2) When a cushion is specified at the cap end:
- A cushion stepped spear is provided on the piston rod.
  - A "float check" self-centering bushing is provided which incorporates a large flow check valve for fast "out-stroke" action.
  - A socket-keyed needle valve is provided that is flush with the side of the cap when wide open. It is located on side number 2 in all mounting styles except D, DB, DD, JJ and HH. In these styles it is located on side number 3.



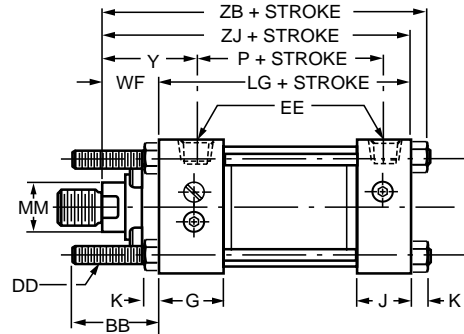
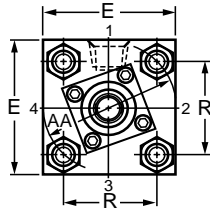
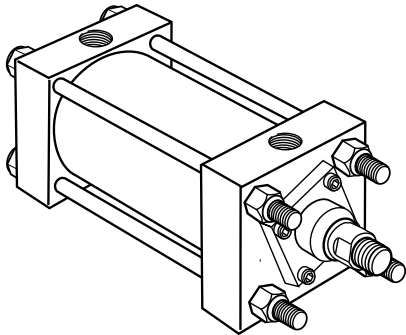
For Cylinder Division Plant Locations - See Page II.

Tie Rod Mountings  
1 1/2" to 8" bore sizes

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

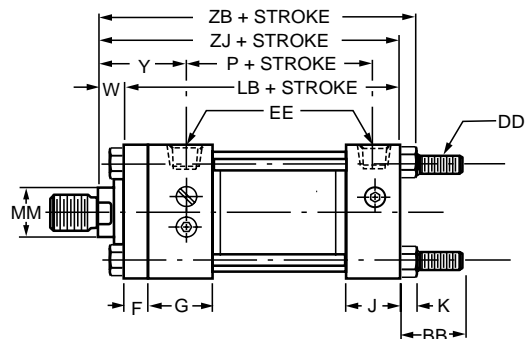
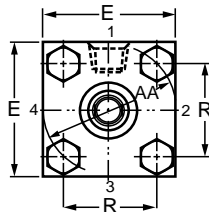
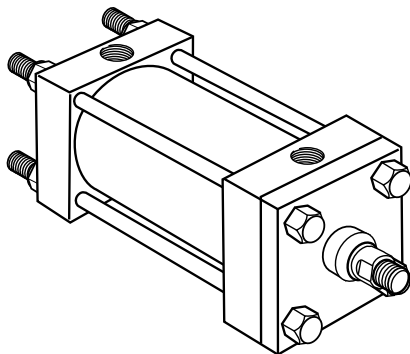
Tie Rods Extended Head End  
Parker Style TB  
(NFPA Style MX3)

Envelope and mounting dimensions—  
see tables 1 and 3



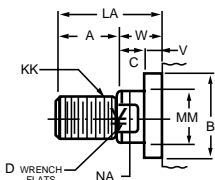
Tie Rods Extended Cap End  
Parker Style TC  
(NFPA Style MX2)

Envelope and mounting dimensions—  
see tables 1 and 3

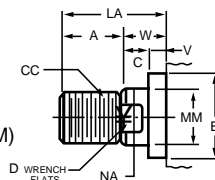


Rod end dimensions—see table 2

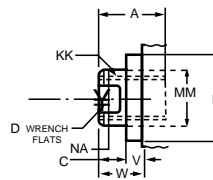
PARKER  
THREAD  
STYLE 4  
(NFPA  
STYLE SM)



PARKER  
THREAD  
STYLE 8  
(NFPA  
STYLE IM)



PARKER  
THREAD  
STYLE 9  
(NFPA  
STYLE SF)



**"SPECIAL"  
THREAD  
STYLE 3**

Special thread, extension, rod eye, blank, etc., are also available

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

For additional information – call your local Parker Cylinder Distributor.

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

Tie Rod Mountings  
1 1/2" to 8" bore sizes

Table 1—Envelope and mounting dimensions

BORE	AA	BB	DD	E	EE		F	G	J	K	R	ADD STROKE		
					NPTF◆	SAE★						LB	LG	P★
1 1/2	2.3	1 3/8	3/8-24	2 1/2	1/2	10	3/8	1 3/4	1 1/2	3/8	1.63	5	4 5/8	2 7/8
2	2.9	1 13/16	1/2-20	3	1/2	10	5/8	1 3/4	1 1/2	7/16	2.05	5 1/4	4 5/8	2 7/8
2 1/2	3.6	1 13/16	1/2-20	3 1/2	1/2	10	5/8	1 3/4	1 1/2	7/16	2.55	5 3/8	4 3/4	3
3 1/4	4.6	2 5/16	5/8-18	4 1/2	3/4	12	3/4	2	1 3/4	9/16	3.25	6 1/4	5 1/2	3 1/2
4	5.4	2 5/16	5/8-18	5	3/4	12	7/8	2	1 3/4	9/16	3.82	6 5/8	5 3/4	3 3/4
5	7.0	3 3/16	7/8-14	6 1/2	3/4	12	7/8	2	1 3/4	13/16	4.95	7 1/8	6 1/4	4 1/4
6	8.1	3 5/8	1-14	7 1/2	1	16	1	2 1/4	2 1/4	7/8	5.73	8 3/8	7 3/8	4 7/8
8	10.6	4 1/2	1 1/4-12	9 1/2	1 1/2	24	1	3	3	1 1/16	7.50	10 1/2	9 1/2	6 1/4

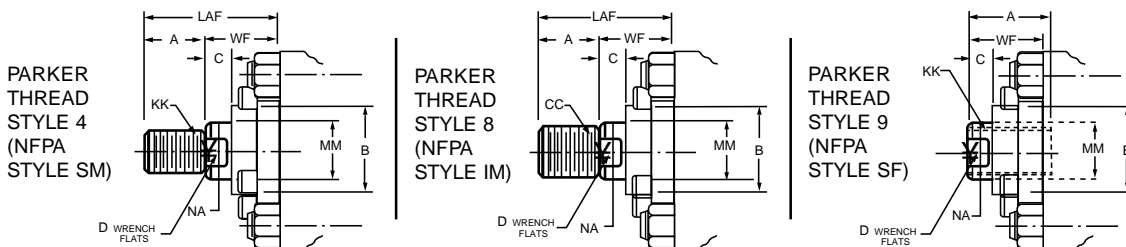
★ SAE straight thread ports are standard and are indicated by port number.  
On 1 1/2", 2" and 2 1/2" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 1/16" and increase dimension "Y" by 1/16".  
◆ NPTF ports are available at no extra charge.

Table 3—Envelope and mounting dimensions

Table 2—Rod dimensions

ROD NO.	ROD DIA.	THREAD	ROD EXTENSIONS AND PILOT DIMENSIONS										WF	Y*	ADD STROKE	
			MM	CC Style 8	KK Style 4 & 9	A	+0.000 B -.002	C	D	LA	NA	V			W	ZB
1 1/2	1 (Std.)	5/8 1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1	2	6	5 5/8	
	2	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	1 3/8	2 3/8	6 3/8	6	
2	1 (Std.)	1 7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1 3/8	2 3/8	6 7/16	6	
	2	1 3/8 1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	1 5/8	2 5/8	6 11/16	6 1/4	
2 1/2	1 (Std.)	1 7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1 3/8	2 3/8	6 9/16	6 1/8	
	3	1 3/8 1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	1 5/8	2 5/8	6 13/16	6 3/8	
3 1/4	1 (Std.)	1 3/8 1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	15/16	1/4	7/8	1 5/8	2 3/4	7 11/16	7 1/8	
	3	1 3/4 1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	111/16	3/8	1 1/8	1 7/8	3	7 15/16	7 3/8	
4	1 (Std.)	1 3/4 1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3	111/16	1/4	1	1 7/8	3	8 3/16	7 5/8	
	3	2 1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	115/16	1/4	1 1/8	2	3 1/8	8 5/16	7 3/4	
5	1 (Std.)	2 1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	115/16	1/4	1 1/8	2	3 1/8	9 1/16	8 1/4	
	3	2 1/2 2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 3/8	2 3/8	3/8	1 3/8	2 1/4	3 3/8	9 5/16	8 1/2	
6	1 (Std.)	2 1/2 2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/4	2 3/8	1/4	1 1/4	2 1/4	3 1/2	10 1/2	9 5/8	
	4	3 1/2 3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	2 1/4	3 1/2	10 1/2	9 5/8	
8	1 (Std.)	3 1/2 3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	2 1/4	3 7/8	12 13/16	11 3/4	
	2	5 1/2 5 1/4-12	4-12	5 1/2	6.249	1	4 5/8	6 3/4	5 3/8	1/4	1 1/4	2 1/4	3 7/8	12 13/16	11 3/4	
	3	4 3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/4	3 7/8	1/4	1 1/4	2 1/4	3 7/8	12 13/16	11 3/4	

Rod end dimensions—see table 2



A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

### "SPECIAL" THREAD STYLE 3

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for KK, A and LAF or WF. If otherwise special, furnish dimensioned sketch.

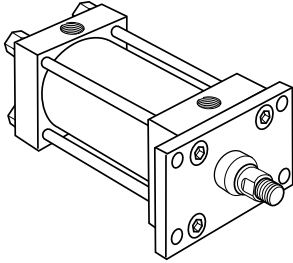
For Cylinder Division Plant Locations – See Page II.



Rectangular Flange and Head Mountings  
 1 1/2" to 3-1/4" bore sizes—Style J  
 1 1/2" to 8" bore sizes

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

Head Rectangular Flange Mounting  
 Parker Style J  
 (NFFPA Style MF1)



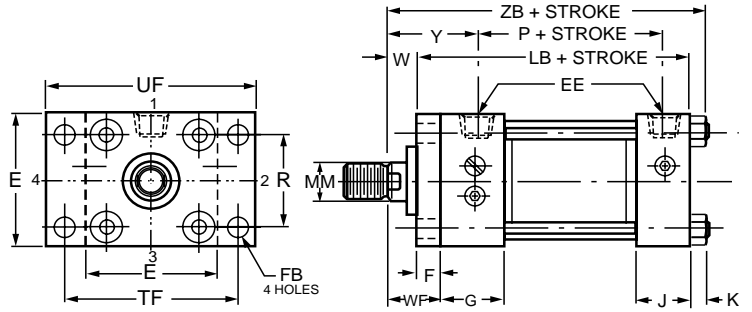
For Style "J" Mount

Bore Size	Maximum Pressure Rating, Push Application	
	Std. Rod	Code 2 Rod
1 1/2" thru 3 1/4"	2500	1500

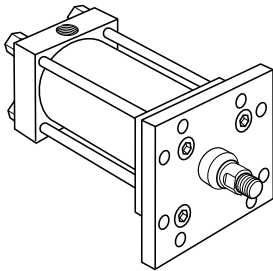
For pressures exceeding those shown, use Mounting Styles JB or JJ.

Note: Style "J" mount available only in 1 1/2" through 3 1/4" bore size.

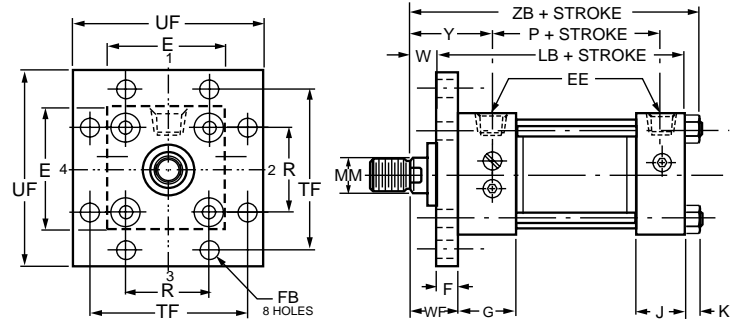
Envelope and mounting dimensions—  
 see tables 1 and 3



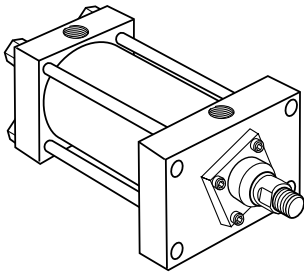
Head Square Flange Mounting  
 Parker Style JB  
 (NFFPA Style MF5)



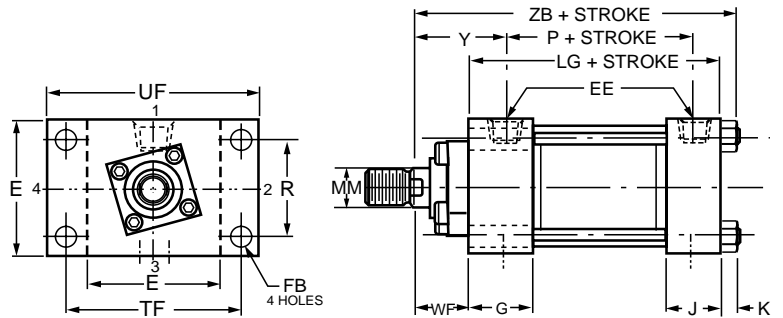
Envelope and mounting dimensions—  
 see tables 1 and 3



Head Rectangular Mounting  
 Parker Style JJ (NFFPA Style ME5)

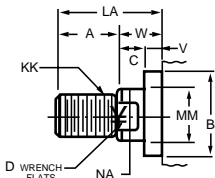


Envelope and mounting dimensions—  
 see tables 1 and 3

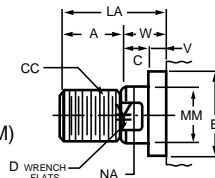


Rod end dimensions—see table 2

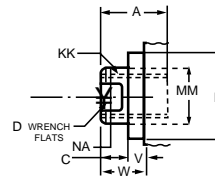
PARKER  
 THREAD  
 STYLE 4  
 (NFFPA  
 STYLE SM)



PARKER  
 THREAD  
 STYLE 8  
 (NFFPA  
 STYLE IM)



PARKER  
 THREAD  
 STYLE 9  
 (NFFPA  
 STYLE SF)



A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

"SPECIAL"  
 THREAD  
 STYLE 3

Special thread, extension, rod eye, blank, etc., are also available

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

For additional information – call your local Parker Cylinder Distributor.

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

Rectangular Flange and Head Mountings  
1 1/2" to 8" bore sizes

Table 1—Envelope and mounting dimensions

BORE	E	EE		F	FB	G	J	K	R	TF	UF	ADD STROKE		
		NPTF◆	SAE★									LB	LG	P★
1 1/2	2 1/2	1/2	10	3/8	7/16	1 3/4	1 1/2	3/8	1.63	3 7/16	4 1/4	5	4 5/8	2 7/8
2	3	1/2	10	5/8	9/16	1 3/4	1 1/2	7/16	2.05	4 1/8	5 1/8	5 1/4	4 5/8	2 7/8
2 1/2	3 1/2	1/2	10	5/8	9/16	1 3/4	1 1/2	7/16	2.55	4 5/8	5 5/8	5 3/8	4 3/4	3
3 1/4	4 1/2	3/4	12	3/4	1 1/16	2	1 3/4	9/16	3.25	5 7/8	7 1/8	6 1/4	5 1/2	3 1/2
4	5	3/4	12	7/8	1 1/16	2	1 3/4	9/16	3.82	6 3/8	7 5/8	6 5/8	5 3/4	3 3/4
5	6 1/2	3/4	12	7/8	1 5/16	2	1 3/4	1 3/16	4.95	8 3/16	9 3/4	7 1/8	6 1/4	4 1/4
6	7 1/2	1	16	1	1 1/16	2 1/4	2 1/4	7/8	5.73	9 7/16	11 1/4	8 3/8	7 3/8	4 7/8
8	9 1/2	1 1/2	24	1	1 5/16	3	3	1 1/16	7.50	11 13/16	14	10 1/2	9 1/2	6 1/4

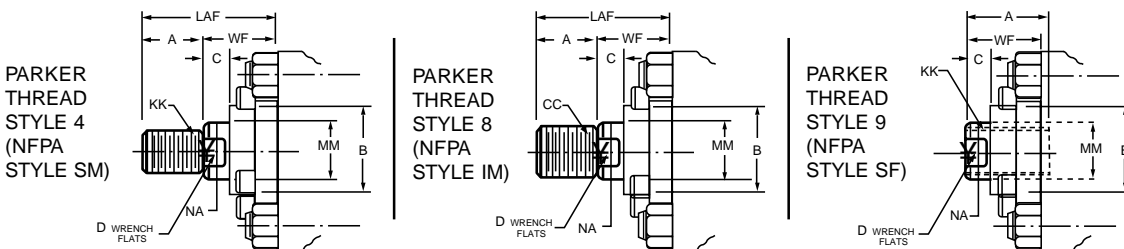
★ SAE straight thread ports are standard and are indicated by port number.  
On 1 1/2", 2" and 2 1/2" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 1/16" and increase dimension "Y" by 1/16".  
◆ NPFT ports are available at no extra charge.

Table 3—Envelope and mounting dimensions

Table 2—Rod dimensions

BORE	ROD NO.	ROD DIA. MM	THREAD		ROD EXTENSIONS AND PILOT DIMENSIONS								WF	Y*	ADD STROKE ZB
			CC Style 8	KK Style 4 & 9	A	+0.000 B -0.002	C	D	LA	NA	V	W			
1 1/2	1 (Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1	2	6
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	1 5/16	1/2	1	1 3/8	2 3/8	6 3/8
2	1 (Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	1 3/8	2 3/8	6 7/16
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 5/8	6 11/16
2 1/2	1 (Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	1 3/8	2 3/8	6 9/16
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 5/8	6 13/16
3 1/4	1 (Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	1 5/8	2 3/4	7 11/16
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	1 7/8	3	7 15/16
4	1 (Std.)	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3	1 11/16	1/4	1	1 7/8	3	8 3/16
	3	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	1 15/16	1/4	1 1/8	2	3 1/8	8 5/16
5	1 (Std.)	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	1 15/16	1/4	1 1/8	2	3 1/8	9 1/16
	3	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 3/8	2 3/8	3/8	1 3/8	2 1/4	3 3/8	9 5/16
6	1 (Std.)	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/4	2 3/8	1/4	1 1/4	2 1/4	3 1/2	10 1/2
	4	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	2 1/4	3 1/2	10 1/2
8	1 (Std.)	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	2 1/4	3 7/8	12 13/16
	2	5 1/2	5 1/4-12	4-12	5 1/2	6.249	1	4 5/8	6 3/4	5 3/8	1/4	1 1/4	2 1/4	3 7/8	12 13/16
	3	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/4	3 7/8	1/4	1 1/4	2 1/4	3 7/8	12 13/16

Rod end dimensions—see table 2



A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/4" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

**"SPECIAL" THREAD STYLE 3**

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for KK, A and LAF or WF. If otherwise special, furnish dimensioned sketch.

For Cylinder Division Plant Locations – See Page II.

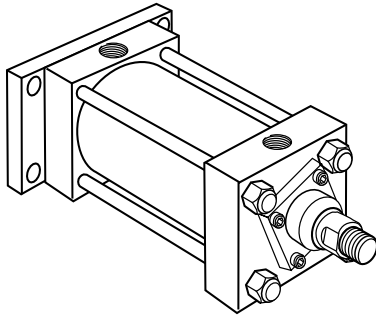




Rectangular Flange and Cap Mountings  
 1 1/2" to 3-1/4" bore sizes—Style H  
 1 1/2" to 8" bore sizes

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

Cap Rectangular Flange Mounting  
 Parker Style H  
 (NFFA Style MF2)

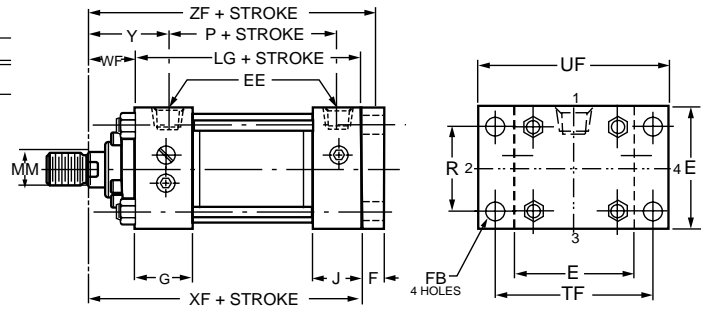


Bore Size	Maximum Pressure Rating, Pull Application	
	Std. Rod	Code 2 Rod
1 1/2" thru 3 1/4"	3000	3000

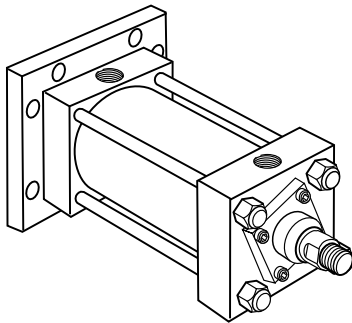
For pressures exceeding those shown, use Mounting Styles HB or HH.

Note: Style "H" mount available only in 1 1/2" through 3 1/4" bore sizes.

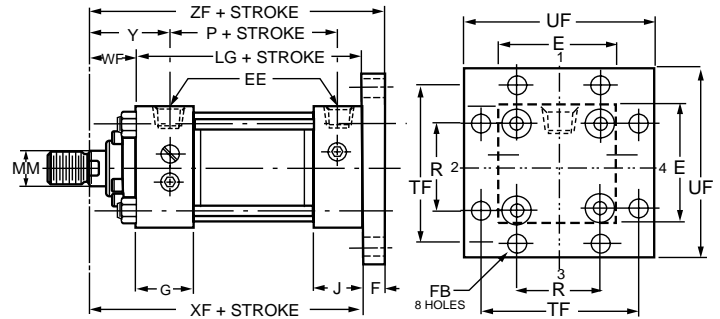
Envelope and mounting dimensions—  
 see tables 1 and 3



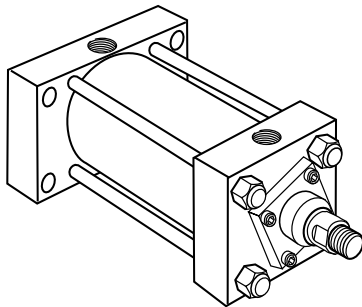
Cap Square Flange Mounting  
 Parker Style HB (NFFA Style MF6)



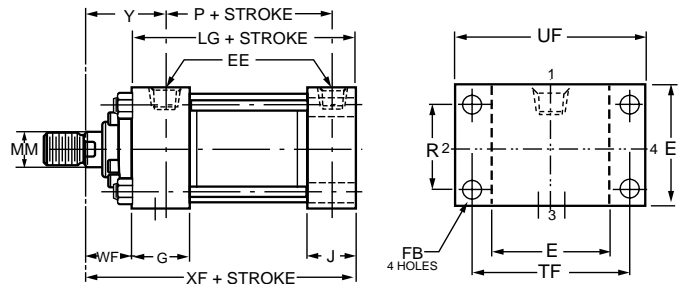
Envelope and mounting dimensions—  
 see tables 1 and 3



Cap Rectangular Flange Mounting  
 Parker Style HH (NFFA Style ME6)

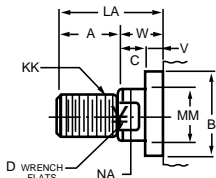


Envelope and mounting dimensions—  
 see tables 1 and 3

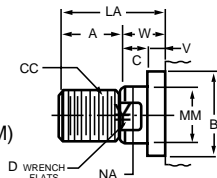


Rod end dimensions—see table 2

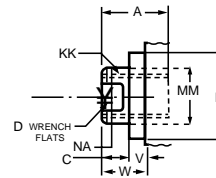
PARKER  
 THREAD  
 STYLE 4  
 (NFFA  
 STYLE SM)



PARKER  
 THREAD  
 STYLE 8  
 (NFFA  
 STYLE IM)



PARKER  
 THREAD  
 STYLE 9  
 (NFFA  
 STYLE SF)



A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

"SPECIAL"  
 THREAD  
 STYLE 3

Special thread, extension, rod eye, blank, etc., are also available

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

For additional information – call your local Parker Cylinder Distributor.

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

Rectangular Flange and Cap Mountings  
1 1/2" to 8" bore sizes

Table 1—Envelope and mounting dimensions

BORE	E	EE		F	FB	G	J	K	R	TF	UF	ADD STROKE		
		NPTF◆	SAE★									LB	LG	P★
1 1/2	2 1/2	1/2	10	3/8	7/16	1 3/4	1 1/2	3/8	1.63	3 7/16	4 1/4	5	4 5/8	2 7/8
2	3	1/2	10	5/8	9/16	1 3/4	1 1/2	7/16	2.05	4 1/8	5 1/8	5 1/4	4 5/8	2 7/8
2 1/2	3 1/2	1/2	10	5/8	9/16	1 3/4	1 1/2	7/16	2.55	4 5/8	5 5/8	5 3/8	4 3/4	3
3 1/4	4 1/2	3/4	12	3/4	1 1/16	2	1 3/4	9/16	3.25	5 7/8	7 1/8	6 1/4	5 1/2	3 1/2
4	5	3/4	12	7/8	1 1/16	2	1 3/4	9/16	3.82	6 3/8	7 5/8	6 5/8	5 3/4	3 3/4
5	6 1/2	3/4	12	7/8	1 5/16	2	1 3/4	1 3/16	4.95	8 3/16	9 3/4	7 1/8	6 1/4	4 1/4
6	7 1/2	1	16	1	1 1/16	2 1/4	2 1/4	7/8	5.73	9 7/16	11 1/4	8 3/8	7 3/8	4 7/8
8	9 1/2	1 1/2	24	1	1 5/16	3	3	1 1/16	7.50	11 13/16	14	10 1/2	9 1/2	6 1/4

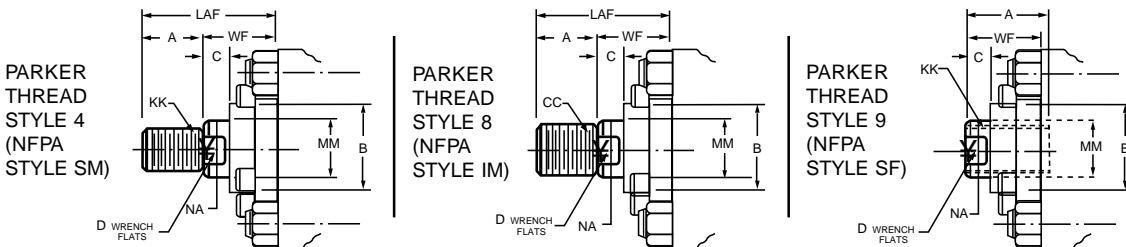
★ SAE straight thread ports are standard and are indicated by port number.  
On 1 1/2", 2" and 2 1/2" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 1/16" and increase dimension "Y" by 1/16".  
◆ NPTF ports are available at no extra charge.

Table 3—Envelope and mounting dimensions

Table 2—Rod dimensions

ROD NO.	ROD DIA.	THREAD	ROD EXTENSIONS AND PILOT DIMENSIONS										WF	Y*	ADD STROKE		
			MM	CC Style 8	KK Style 4 & 9	A	+0.000 B -0.002	C	D	LA	NA	V			W	XF	ZF
1 1/2	1 (Std.)	5/8-20	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1	2	5 5/8	6
	2	7/8-14	1	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	1 5/16	1/2	1	1 3/8	2 3/8	6	6 3/8	
2	1 (Std.)	7/8-14	1	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	1 5/8	2 5/8	6 1/4	6 7/8	
	2	1 1/4-12	1 3/8	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 5/8	6 1/4	6 7/8	
2 1/2	1 (Std.)	7/8-14	1	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	1 5/8	2 3/8	6 1/8	6 3/4	
	3	1 1/4-12	1 3/8	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 5/8	6 3/8	7	
3 1/4	1 (Std.)	1 1/4-12	1 3/8	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	1 5/8	2 3/4	7 1/8	7 7/8	
	3	1 1/2-12	1 3/4	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	1 7/8	3	7 3/8	8 1/8	
4	1 (Std.)	1 1/2-12	1 3/4	1 1/4-12	2	2.374	3/4	1 1/2	3	1 11/16	1/4	1	1 7/8	3	7 5/8	8 1/2	
	3	1 3/4-12	2	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	1 15/16	1/4	1 1/8	2	3 1/8	7 3/4	8 5/8	
5	1 (Std.)	1 3/4-12	2	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	1 15/16	1/4	1 1/8	2	3 1/8	8 1/4	9 1/8	
	3	2 1/4-12	2 1/2	1 7/8-12	3	3.124	1	2 1/16	4 3/8	2 3/8	3/8	1 3/8	2 1/4	3 3/8	8 1/2	9 3/8	
6	1 (Std.)	2 1/4-12	2 1/2	1 7/8-12	3	3.124	1	2 1/16	4 1/4	2 3/8	1/4	1 1/4	2 1/4	3 1/2	9 5/8	10 5/8	
	4	3 1/4-12	3 1/2	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	2 1/4	3 1/2	9 5/8	10 5/8	
8	1 (Std.)	3 1/4-12	3 1/2	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	2 1/4	3 7/8	11 3/4	12 3/4	
	2	5 1/4-12	5 1/2	4-12	5 1/2	6.249	1	4 5/8	6 3/4	5 3/8	1/4	1 1/4	2 1/4	3 7/8	11 3/4	12 3/4	
	3	3 3/4-12	4	3-12	4	4.749	1	3 3/8	5 1/4	3 7/8	1/4	1 1/4	2 1/4	3 7/8	11 3/4	12 3/4	

Rod end dimensions—see table 2



A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

**"SPECIAL" THREAD STYLE 3**

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for KK, A and LAF or WF. If otherwise special, furnish dimensioned sketch.

For Cylinder Division Plant Locations – See Page II.

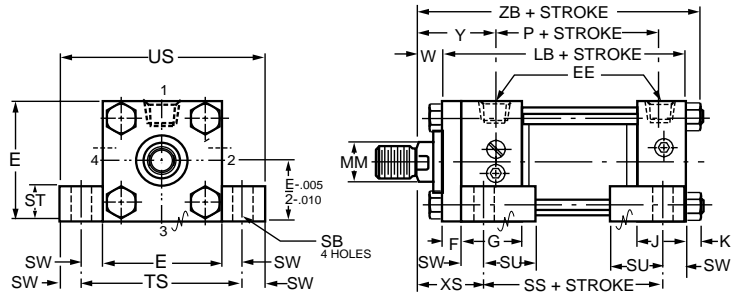
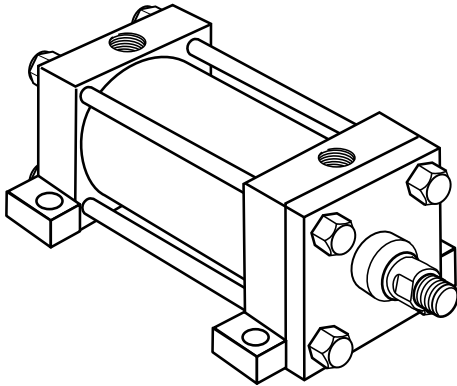


Side Lugs,  
and Cap Fixed Clevis Mountings  
1 1/2" to 8" bore sizes

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

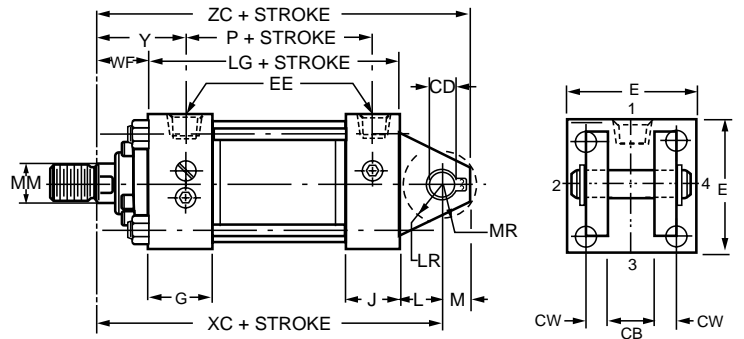
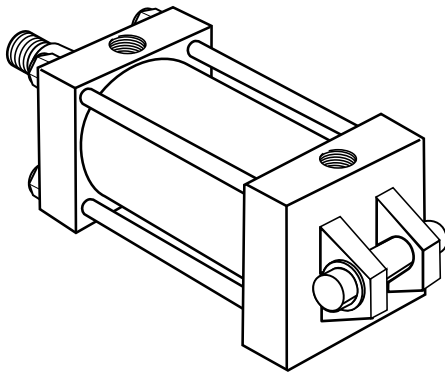
Side Lug Mountings  
Parker Style C  
(NFPA Style MS2)

Envelope and mounting dimensions—  
see tables 1 and 3



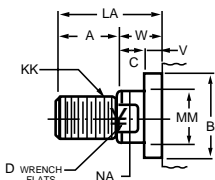
Cap Fixed Clevis Mounting  
Parker Style BB  
(NFPA Style MP1)

Envelope and mounting dimensions—  
see tables 1 and 3

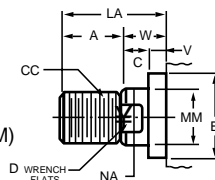


Rod end dimensions—see table 2

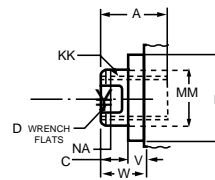
PARKER  
THREAD  
STYLE 4  
(NFPA  
STYLE SM)



PARKER  
THREAD  
STYLE 8  
(NFPA  
STYLE IM)



PARKER  
THREAD  
STYLE 9  
(NFPA  
STYLE SF)



"SPECIAL"  
THREAD  
STYLE 3

Special thread, extension, rod eye, blank, etc., are also available

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

For additional information – call your local Parker Cylinder Distributor.

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

Side Lugs,  
and Cap Fixed Clevis Mountings  
1 1/2" to 8" bore sizes

Table 1—Envelope and mounting dimensions

BORE	CB	+.000 CD▲ -.002	CW	E	EE		F	G	J	K	L	LR	M	MR	NT	SB*	ST	SU	SW	TN	TS	US	ADD STROKE				
					NPTF◆	SAE★																	LB	LG	P*	SN	SS
1 1/2	3/4	.501	1/2	2 1/2	1/2	10	3/8	1 3/4	1 1/2	3/8	3/4	9/16	1/2	5/8	3/8-16	7/16	1/2	15/16	3/8	3/4	3 1/4	4	5	4 5/8	2 7/8	2 7/8	3 7/8
2	1 1/4	.751	5/8	3	1/2	10	5/8	1 3/4	1 1/2	7/16	1 1/4	1	3/4	15/16	1/2-13	9/16	3/4	1 1/4	1/2	15/16	4	5	5 1/4	4 5/8	2 7/8	2 7/8	3 5/8
2 1/2	1 1/4	.751	5/8	3 1/2	1/2	10	5/8	1 3/4	1 1/2	7/16	1 1/4	15/16	3/4	15/16	5/8-11	13/16	1	1 9/16	11/16	15/16	4 7/8	6 1/4	5 3/8	4 3/4	3	3	3 3/8
3 1/4	1 1/2	1.001	3/4	4 1/2	3/4	12	3/4	2	1 3/4	9/16	1 1/2	1 1/4	1	1 3/16	3/4-10	13/16	1	1 9/16	11/16	1 1/2	5 7/8	7 1/4	6 1/4	5 1/2	3 1/2	3 1/2	4 1/8
4	2	1.376	1	5	3/4	12	7/8	2	1 3/4	9/16	2 1/8	1 3/4	1 3/8	1 5/8	1-8	1 1/16	1 1/4	2	7/8	2 1/16	6 3/4	8 1/2	6 5/8	5 3/4	3 3/4	3 3/4	4
5	2 1/2	1.751	1 1/4	6 1/2	3/4	12	7/8	2	1 3/4	13/16	2 1/4	2 1/16	1 3/4	2 1/8	1-8	1 1/16	1 1/4	2	7/8	2 15/16	8 1/4	10	7 1/8	6 1/4	4 1/4	4 1/4	4 1/2
6	2 1/2	2.001	1 1/4	7 1/2	1	16	1	2 1/4	2 1/4	7/8	2 1/2	2 5/16	2	2 3/8	1 1/4-7	1 5/16	1 1/2	2 1/2	1 1/8	3 5/16	9 3/4	12	8 3/8	7 3/8	4 7/8	5 1/8	5 1/8
8	3	3.001	1 1/2	9 1/2	1 1/2	24	1	3	3	1 1/16	3 1/4	3 1/4	2 3/4	3 1/8	1 1/2-6	1 9/16	1 3/4	2 7/8	1 3/8	4 1/4	12 1/4	15	10 1/2	9 1/2	6 1/4	6 5/8	6 3/4

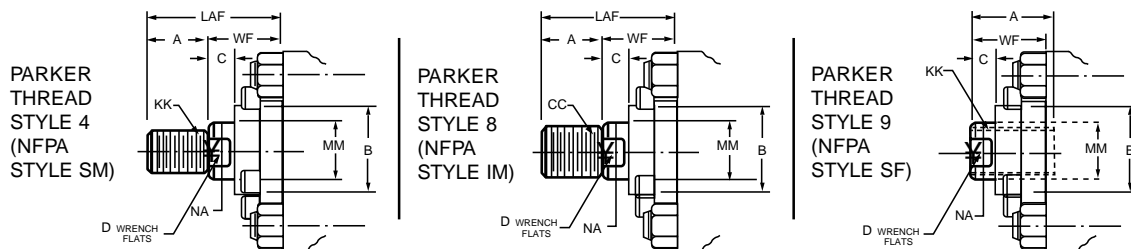
★ SAE straight thread ports are standard and are indicated by port number.  
On 1 1/2", 2" and 2 1/2" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 1/16" and increase dimension "Y" by 1/16".  
◆ NPTF ports are available at no extra charge.  
● Upper surface spotfaced for socket head screws.  
▲ Dimension CD is pin diameter.

Table 3—  
Envelope and  
mounting dimensions

Table 2—Rod dimensions

BORE	ROD NO.	ROD DIA. MM	THREAD		ROD EXTENSIONS AND PILOT DIMENSIONS								ND	WF	XS	XT	Y*	ADD STROKE		
			CC Style 8	KK Style 4 & 9	A	+.000 B -.002	C	D	LA	NA	V	W						XC	ZB	ZC
1 1/2	1 (Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	3/8	1	1 3/8	2	2	6 3/8	6	6 7/8
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	3/8	1 3/8	1 3/4	2 3/8	2 3/8	6 3/4	6 3/8	7 1/4
2	1 (Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	7/16	1 3/8	1 7/8	2 3/8	2 3/8	7 1/4	6 1/16	8
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	7/16	1 5/8	2 1/8	2 5/8	2 5/8	7 1/2	6 1/16	8 1/4
2 1/2	1 (Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1/2	1 3/8	2 1/16	2 3/8	2 3/8	7 3/8	6 9/16	8 1/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1/2	1 5/8	2 5/16	2 5/8	2 5/8	7 5/8	6 13/16	8 3/8
3 1/4	1 (Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	11/16	1 5/8	2 5/16	2 3/4	2 3/4	8 5/8	7 1/16	9 5/8
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	11/16	1 7/8	2 9/16	3	3	8 7/8	7 5/16	9 7/8
4	1 (Std.)	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3	1 11/16	1/4	1	11/16	1 7/8	2 3/4	3	3	9 3/4	8 3/16	11 1/8
	3	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	1 15/16	1/4	1 1/8	11/16	2	2 7/8	3 1/8	3 1/8	9 7/8	8 5/16	11 1/4
5	1 (Std.)	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	1 15/16	1/4	1 1/8	1	2	2 7/8	3 1/8	3 1/8	10 1/2	9 1/16	12 1/4
	3	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 3/8	2 3/8	3/8	1 3/8	1	2 1/4	3 1/8	3 3/8	3 3/8	10 3/4	9 5/16	12 1/2
6	1 (Std.)	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/4	2 3/8	1/4	1 1/4	1 1/4	2 1/4	3 3/8	3 1/2	3 1/2	12 1/8	10 1/2	14 1/8
	4	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	1 1/4	2 1/4	3 3/8	3 1/2	3 1/2	12 1/8	10 1/2	14 1/8
8	1 (Std.)	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	1 1/2	2 1/4	3 5/8	3 15/16	3 7/8	15	12 13/16	17 3/4
	2	5 1/2	5 1/4-12	4-12	5 1/2	6.249	1	4 5/8	6 3/4	5 3/8	1/4	1 1/4	1 1/2	2 1/4	3 5/8	3 15/16	3 7/8	15	12 13/16	17 3/4
	3	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/4	3 7/8	1/4	1 1/4	1 1/2	2 1/4	3 5/8	3 15/16	3 7/8	15	12 13/16	17 3/4

Rod end dimensions—see table 2



A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

**"SPECIAL" THREAD STYLE 3**

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for KK, A and LAF or WF. If otherwise special, furnish dimensioned sketch.

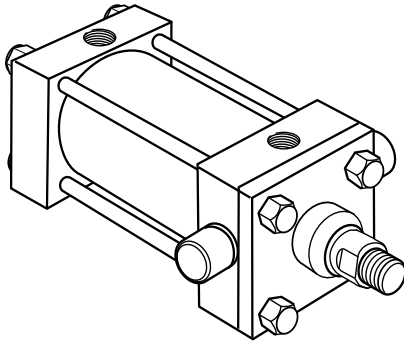
For Cylinder Division Plant Locations – See Page II.



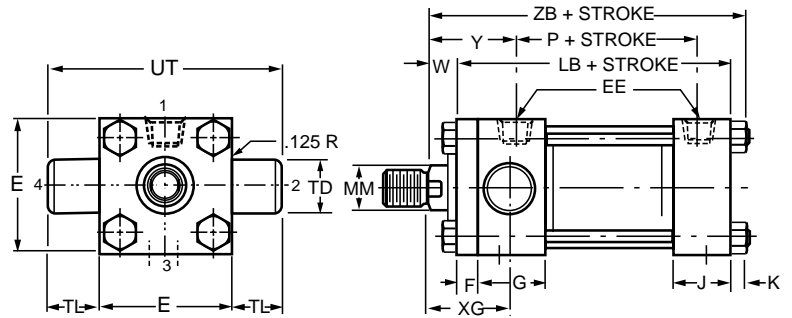
Trunnion Mountings  
1 1/2" to 8" bore sizes

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

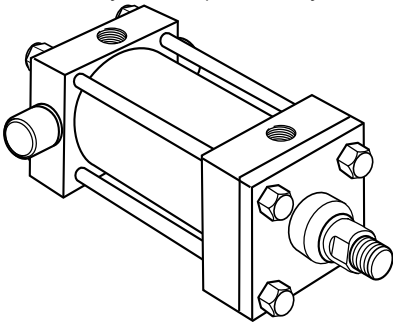
Head Trunnion Mounting  
Parker Style D (NFFPA Style MT1)



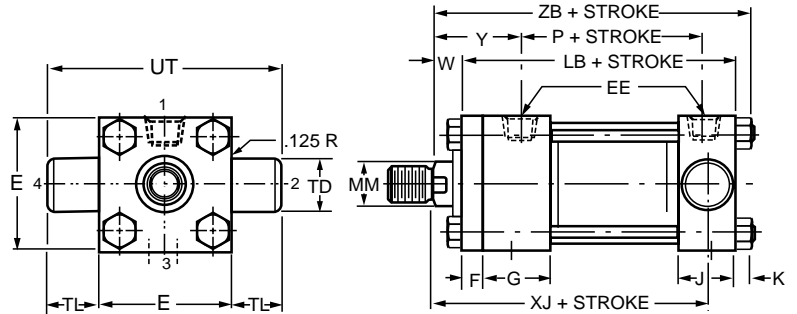
Envelope and mounting dimensions—  
see tables 1 and 3



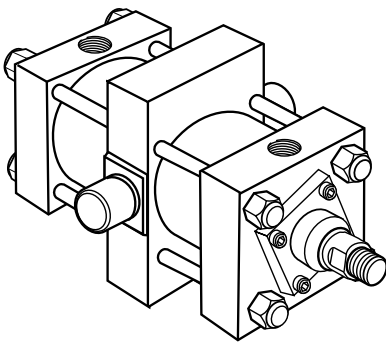
Cap Trunnion Mounting  
Parker Style DB (NFFPA Style MT2)



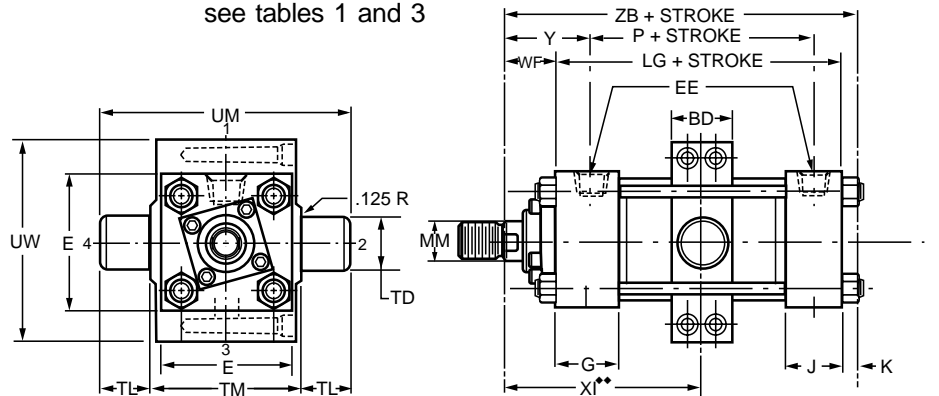
Envelope and mounting dimensions—  
see tables 1 and 3



Intermediate Fixed Trunnion Mounting  
Parker Style DD (NFFPA Style MT4)

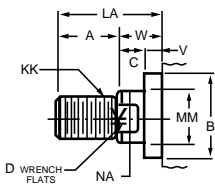


Envelope and mounting dimensions—  
see tables 1 and 3

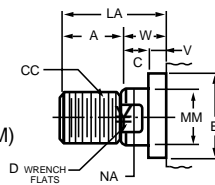


Rod end dimensions—see table 2

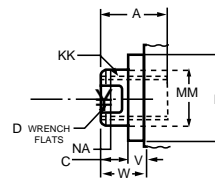
PARKER  
THREAD  
STYLE 4  
(NFFPA  
STYLE SM)



PARKER  
THREAD  
STYLE 8  
(NFFPA  
STYLE IM)



PARKER  
THREAD  
STYLE 9  
(NFFPA  
STYLE SF)



"SPECIAL"  
THREAD  
STYLE 3

Special thread, extension, rod eye, blank, etc., are also available

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 1/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

rod ends are recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

For additional information – call your local Parker Cylinder Distributor.

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

Trunnion Mountings  
1 1/2" to 8" bore sizes

Table 1—Envelope and mounting dimensions

BORE	BD	E	EE		F	G	J	K	+0.000 TD -0.002	TL	TM	UM	UT	UW	ADD STROKE			Style DD Minimum Stroke
			NPTF◆	SAE★											LB	LG	P★	
1 1/2	1 1/4	2 1/2	1/2	10	3/8	1 3/4	1 1/2	3/8	1.000	1	3	5	4 1/2	3 3/8	5	4 5/8	2 7/8	0
2	1 1/2	3	1/2	10	5/8	1 3/4	1 1/2	7/16	1.375	1 3/8	3 1/2	6 1/4	5 3/4	4 1/8	5 1/4	4 5/8	2 7/8	1/4
2 1/2	1 1/2	3 1/2	1/2	10	5/8	1 3/4	1 1/2	7/16	1.375	1 3/8	4	6 3/4	6 1/4	4 5/8	5 3/8	4 3/4	3	1/8
3 1/4	2	4 1/2	3/4	12	3/4	2	1 3/4	9/16	1.750	1 3/4	5	8 1/2	8	5 13/16	6 1/4	5 1/2	3 1/2	1/2
4	2	5	3/4	12	7/8	2	1 3/4	9/16	1.750	1 3/4	5 1/2	9	8 1/2	6 3/8	6 5/8	5 3/4	3 3/4	1/8
5	2	6 1/2	3/4	12	7/8	2	1 3/4	13/16	1.750	1 3/4	7	10 1/2	10	7 3/4	7 1/8	6 1/4	4 1/4	0
6	3	7 1/2	1	16	1	2 1/4	2 1/4	7/8	2.000	2	8 1/2	12 1/2	11 1/2	10 3/8	8 3/8	7 3/8	4 7/8	1/4
8	3 1/2	9 1/2	1 1/2	24	1	3	3	1 1/16	3.000	3	11	17	15 1/2	13 3/8	10 1/2	9 1/2	6 1/4	1/8

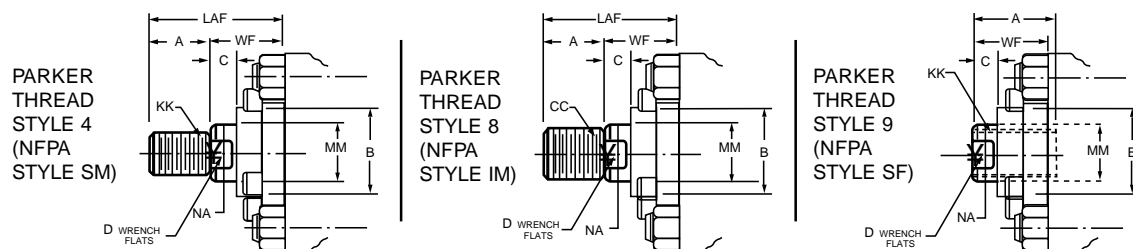
★ SAE straight thread ports are standard and are indicated by port number.  
On 1 1/2", 2" and 2 1/2" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 1/16" and increase dimension "Y" by 1/16".  
◆ NPFT ports are available at no extra charge.

Table 3—Envelope and mounting dimensions

Table 2—Rod dimensions

BORE	ROD NO.	ROD DIA.	THREAD		ROD EXTENSIONS AND PILOT DIMENSIONS								ADD STROKE					
			MM	CC Style 8	KK Style 4 & 9	A	+0.000 B -0.002	C	D	LA	NA	V	W	WF	XG	MIN.◆◆ XI	Y★	XJ
1 1/2	1 (Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1	1 7/8	3 7/16	2	4 7/8	6
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	1 3/8	2 1/4	3 13/16	2 3/8	5 1/4	6 3/8
2	1 (Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1 3/8	2 1/4	3 5/16	2 3/8	5 1/4	6 7/16
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 1/2	4 3/16	2 5/8	5 1/2	6 11/16
2 1/2	1 (Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1 3/8	2 1/4	3 5/16	2 3/8	5 3/8	6 9/16
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 1/2	4 3/16	2 5/8	5 5/8	6 13/16
3 1/4	1 (Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	1 5/8	2 5/8	4 11/16	2 3/4	6 1/4	7 11/16
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	1 7/8	2 7/8	4 15/16	3	6 1/2	7 15/16
4	1 (Std.)	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3	1 11/16	1/4	1	1 7/8	2 7/8	4 15/16	3	6 3/4	8 3/16
	3	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	1 15/16	1/4	1 1/8	2	3	5 1/16	3 1/8	6 7/8	8 5/16
5	1 (Std.)	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 3/8	1 15/16	1/4	1 1/8	2	3	5 1/16	3 1/8	7 3/8	9 1/16
	3	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 3/8	2 3/8	3/8	1 3/8	2 1/4	3 1/4	5 5/16	3 3/8	7 5/8	9 5/16
6	1 (Std.)	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/4	2 3/8	1/4	1 1/4	2 1/4	3 3/8	6 1/16	3 1/2	8 3/8	10 1/2
	4	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	2 1/4	3 3/8	6 1/16	3 1/2	8 3/8	10 1/2
8	1 (Std.)	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	4 3/4	3 3/8	1/4	1 1/4	2 1/4	3 3/4	7 1/16	3 7/8	10 1/4	12 13/16
	2	5 1/2	5 1/4-12	4-12	5 1/2	6.249	1	4 5/8	6 3/4	5 3/8	1/4	1 1/4	2 1/4	3 3/4	7 1/16	3 7/8	10 1/4	12 13/16
	3	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/4	3 7/8	1/4	1 1/4	2 1/4	3 3/4	7 1/16	3 7/8	10 1/4	12 13/16

Rod end dimensions—see table 2



A high strength rod end stud is supplied on thread style #4 through 2" diameter rods and on thread style #8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4

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### "SPECIAL" THREAD STYLE 3

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for KK, A and LAF or WF. If otherwise special, furnish dimensioned sketch.

For Cylinder Division Plant Locations – See Page II.

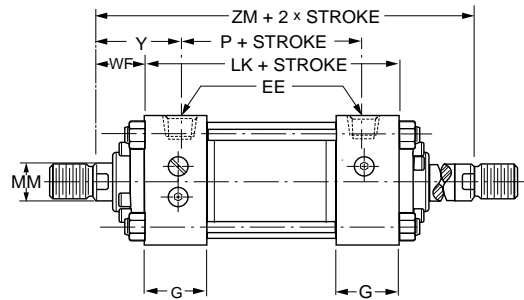


## HOW TO USE DOUBLE ROD CYLINDER DIMENSIONED DRAWINGS

To determine dimensions for a double rod cylinder, first refer to the desired single rod mounting style cylinder shown on preceding pages of this catalog. See table at right. After selecting necessary dimensions from that drawing, return to this page, supplement the single rod dimensions with those shown on drawings at right and dimension table below. Note that double rod cylinders have a head (Dim. G) at both ends and that dimension LD replaces LB and ZL replaces ZB, etc. The double rod dimensions differ from, or are in addition to, those for single rod cylinders shown on preceding pages and provide the information needed to completely dimension a double rod cylinder.

On a double rod cylinder where the two rod ends are different, be sure to clearly state which rod end is to be assembled at which end. Port position 1 is standard. If other than standard, specify pos. 2, 3, or 4 when viewed from one end only. (See port position information in Section C.)

All dimensions are in inches and apply to Code 1 rod sizes only. For alternate rod sizes determine all envelope dimensions (within LD dim.) as described above and then use appropriate rod end dimensions for proper rod size from single rod cylinder.



BORE	ROD NO.	ROD DIA.	ADD STROKE		ADD 2X STROKE
		MM	LK	SS <sub>k</sub>	ZM
1 1/2	1	5/8	4 7/8	4 1/8	6 7/8
2	1	1	4 7/8	3 7/8	7 5/8
2 1/2	1	1	5	3 5/8	7 3/4
3 1/4	1	1 3/8	5 3/4	4 3/8	9
4	1	1 3/4	6	4 1/4	9 3/4
5	1	2	6 1/2	4 3/4	10 1/2
6	1	2 1/2	7 3/8	5 1/8	11 7/8
8	1	3 1/2	9 1/2	6 3/4	14
REPLACES.....			LG	SS	—
ON SINGLE ROD MOUNTING STYLES			ALL MTG. STYLES	C	ALL MTGS

## MOUNTING RECOMMENDATIONS AND OTHER MOUNTINGS

In addition to the standard mountings dimensioned on the preceding pages, the following information covers other mountings and mounting ideas that may prove helpful in your applications. When needed, special heads, caps, flanges or intermediate mountings can be provided. Sketches of your requirements, together with specifications relative to the application and forces involved should be submitted.

**Mounting Bolts** – High tensile socket head screws are recommended for all mounting styles. Use 1/16" smaller than hole size.

**Tie Rod Mountings** – Cylinders with tie rod mountings are recommended for applications where mounting space is limited. The standard tie rod extension is shown as BB in the dimension table. Longer or shorter extensions are available.

**Flange Mountings** – Cylinders can be located by measuring from the pilot diameter of the gland. The flanges may be drilled for pins or dowels to prevent shifting after alignment has been obtained.

**Lug and Side Tapped Mountings** – Cylinders should be fixed at one end using fitted bolts, pins in the mounting lugs or shear keys so located as to resist the major load, whether push or pull.

**Trunnion Mountings** – Cylinders require lubricated pillow blocks with minimum bearing clearances. Pillow blocks should be carefully aligned and rigidly mounted so the trunnions will not be subjected to bending moments. The rod end connection should also be pivoted, with the customer's pin in the piston rod knuckle parallel to the trunnions.

**Clevis Mountings** – Cylinders should be pivoted at both ends, with the customer's pin in the piston rod knuckle parallel to the pivot pin supplied with the clevis.

For additional information – call your local Parker Cylinder Distributor.

# NOTES

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B

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For Cylinder Division Plant Locations – See Page II.



## HOW TO ORDER SERIES "HD" CYLINDERS

### DATA REQUIRED ON ALL CYLINDER ORDERS

When ordering Series "HD" cylinders, be sure to specify each of the following requirements:

(NOTE) – Duplicate cylinders can be ordered by giving the SERIAL NUMBER from the nameplate of the original cylinder. Factory records supply a quick, positive identification.)

- a) Bore Size
- b) Mounting Style  
Specify your choice of mounting style – as shown and dimensioned in this catalog. If double rod is wanted, specify "with double rod."
- c) Series Designation ("HD")
- e) Piston Rod Diameter  
Call out rod diameter or rod code number. In Series "HD" cylinders, standard rod diameters (Code No. 1) will be furnished if not otherwise specified, unless length of stroke makes the application questionable.
- f) Piston Rod End Thread Style  
Call out thread style number or specify dimensions. Thread style number 4 will be furnished if not otherwise specified.
- g) Cushions (if required)  
Specify "Cushion-head end," "Cushion-cap end" or "Cushion-both ends" as required. If cylinder is to have a double rod and only one cushion is required, be sure to specify clearly which end of the cylinder is to be cushioned.

- h) Alternate Lipseal® or Hi Load Piston (if desired)  
Parker LIPSEAL pistons are offered as an option at no extra cost in the Series "HD" cylinders. With this feature, zero leakage under static holding conditions is attained. Call out "with LIPSEAL piston" if this type of piston is desired. If not specified, the ring type piston will be furnished.
- i) Alternate Piston with Piston Retainer Nut (if desired)  
Parker standard ring and LIPSEAL pistons are available with Piston Retainer Nut as a no charge option. Specify "Nut Retained Piston" if this type of piston is desired. If not specified, the ring type piston will be furnished.
- i) Ports  
Parker recommends SAE Straight Thread Ports for leak-proof port connections on Series "HD" hydraulic cylinders.
- j) Fluid Medium  
Series HD hydraulic cylinders are equipped with seals for use with hydraulic oil. If other than hydraulic oil will be used, specify class of fluid (see Catalog section C).

ADDITIONAL DATA is required on orders for cylinders with special modifications. For further information, call factory.

### SERIES HD CYLINDERS

#### CLASS 1 SEALS

Class 1 seals are the seals provided as standard in a cylinder assembly unless otherwise specified. For further information on fluid compatibility on operating limitations of all compounds, see section C.

For the HD series cylinders the following make-up Class 1 seals:  
Primary Piston Rod Seal – Enhanced Polyurethane  
Piston Rod Wiper – Nitrile  
Piston Seals – Cast Iron Rings  
Option – Nitrile lipseals with polymyte back-up washers  
Option – Hi-Load. Filled P.T.F.E. seals with a nitrile expander  
O-Rings – Nitrile (nitrile back-up washer when used)

#### SERVICE POLICY

On cylinders returned to the factory for repairs, it is standard policy for the Cylinder Division to make such part replacements as will put the cylinder in as good as new condition. Should the condition of the returned cylinder be such that expenses for repair would exceed the costs of a new one, you will be notified.

Address all correspondence and make shipments to Service Department at your nearest regional plant listed in the pages of this catalog.

#### CERTIFIED DIMENSIONS

Parker Cylinder Division guarantees that all cylinders ordered from this catalog will be built to dimensions shown. All dimensions are certified to be correct and thus it is not necessary to request certified drawings.

#### Warranty

Seller warrants the goods sold hereunder to be free from defects in material and workmanship. This warranty shall terminate eighteen months after date of shipment from Seller's plant and claims not made in writing within such period are waived.

The above warranty does not extend to goods damaged after date of shipment from Seller's plant where the damage is not directly due to a defect in material or workmanship, nor does it apply to goods altered or repaired by anyone other than Seller's authorized employees, nor to goods furnished by Buyer or acquired at Buyer's request and/or to Buyer's specifications.

If the goods are in accordance with or in reference to an engineering drawing specified by or furnished to the customer, the specifications and information on the drawing shall be applicable in determining such correct use, operation and application.

When claiming a breach of warranty, Buyer must notify Seller promptly whereupon Seller will either examine the goods at their site, or issue shipping instructions for return to Seller (transportation costs prepaid by Buyer). When any goods sold hereunder are proved not as warranted, Seller's sole obligation under this warranty shall be to repair or replace the goods, at its option, without charge to buyer.

The above warranty comprises Seller's sole and entire warranty obligation and liability to Buyer, its customers and assigns in connection with goods sold hereunder. All other warranties, express or implied, including but not limited to, warranties of merchantability and fitness, are expressly excluded.

For additional information – call your local Parker Cylinder Distributor.

# Parker Series HD Automotive Heavy Duty Hydraulic Cylinders

Model Numbers

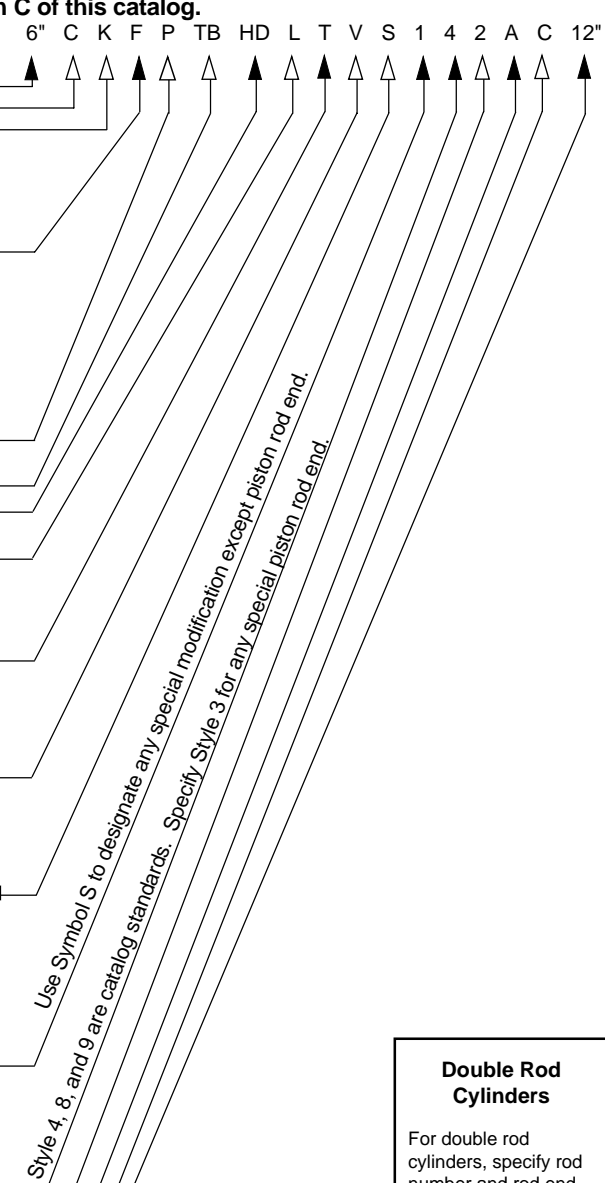
## SERIES HD MODEL NUMBERS – How to Develop Them – How to “Decode” Them

Parker Series HD cylinders can be completely and accurately described by a model number consisting of coded symbols. For single rod cylinders a maximum of 17 places for digits and letters are used in a prescribed sequence to produce a model number. Only eight places are needed to completely describe

a standard noncushioned series HD cylinder. To develop a model number, select only those symbols that represent the cylinder required, and place them in the sequence indicated below.

**NOTE: Page numbers with a letter prefix, i.e.: C77, are located in section C of this catalog.**

Feature	Description	Page No.	Symbol	
Bore*	Specify in inches		-	6"
Cushion-Head	Use only if cushion required	C94	C	C
Double Rod	Use only if double-rod cylinder is required	126	K	K
Mounting* Style	Head Tie Rods Extended	126	TB	TB
	Cap Tie Rods Extended	126	TC	TC
	Head Rectangular Flange	128	J	J
	Head Square Flange	128	JB	JB
	Head Rectangular	128	JJ	JJ
	Cap Rectangular Flange	130	H	H
	Cap Square Flange	130	HB	HB
	Cap Rectangular	130	HH	HH
	Side Lugs	132	C†	C†
	Cap Fixed Clevis	132	BB	BB
	Head Trunnion	134	D	D
	Cap Trunnion	134	DB	DB
	Intermediate Fixed Trunnion	134	DD	DD
Mounting Modifications	Use only for Thrust Key (Style C)	C93	P	P
	Use only for Manifold Port O-ring Seal (Style C)	C91	M	M
Combination Mounting Style	Any Practical Mounting Style Listed Above	-	As listed Above	
Series*	Cylinder with Lipseal Rod Packing	124-125	HD	HD
Piston	Ring packed piston standard		-	
	Used only for Lipseal® piston	124-125	L	L
	Used only for Hi Load piston	124-125	K	K
Ports*	SAE Straight Thread O-ring Port (Standard)	C89	T	T
	Used only for NPTF (Dry Seal Pipe Thread)	C89	U	U
	Used only for BSP (Parallel Thread ISO 228)	C89	R	R
	Used only for SAE Flange Ports (3000 PSI)	C89	P	P
	Used only for BSPT (Taper Thread)	C89	B	B
	Used only for Metric Thread	C89	G	G
	Used only for Metric Thread per ISO 6149	C89	Y	Y
Common Modifications	High Water Content Fluid	C83	J	J
	Viton Seals	C83	V	V
	Nut Retained Piston	125	F	F
	Water Service	C83	W	W
Special Modifications	Used only if special Modifications are required:			
	Oversize Ports	C91		
	Port Position Change	C89		
	Special Seals	C83	S	S
	Stop Tube	C95		
	Stroke Adjuster	C93		
Piston Rod* Number	For Single Rod Cylinders, select one only. Refer to Rod number listings, Table 2, Pages 106 through 115, See chart in section C, page 83 for minimum piston rod diameter.		1	1
			2	2
			3	3
			4	4
			5	5
			6	6
			7	7
			8	8
			9	9
			0	0
Piston* Rod End	Select:			
	Style 4 Small Male	C92	4	4
	Style 8 Intermediate Male		8	8
	Style 9 Short Female		9	9
Piston Rod Alternate Thread	Used only for stud two times longer than standard		3	3
			2	2
			2	2
Piston Rod* Threads	UNF Standard BSF (British Fine) Metric		A	A
			W	W
			M	M
Cushion-Cap	Used only if cushion required	124	C	C
Stroke*	Specify in inches	C93	-	-



**Double Rod Cylinders**

For double rod cylinders, specify rod number and rod end symbols for both piston rods. A typical double rod model number would be:  
6" KJ-HDU14A/14Ax12"

\* Required for Basic Cylinder Model Number.  
 ▲ Solid Arrows indicate Basic Minimum Model Number.  
 Cylinder serial numbers are factory production record numbers and are assigned to each cylinder, in addition to the model number.  
 † Cylinders with this mounting configuration should have a stroke length equal to or greater than the bore diameter.

For Cylinder Division Plant Locations – See Page II.

