



# PUMPS & SPARES

MINERAL EXPLORATION  
ENVIRONMENTAL  
GEOTECHNICAL  
GEOTHERMAL  
ROTARY  
SONIC  
HDD



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# PUMPS & SPARES

## TABLE OF CONTENTS

**PUMPS OVERVIEW ..... 2**

**CENTRIFUGAL PUMPS ..... 3-11**

- 178 Series Centrifugal Pump ..... 4-7
- 250 Series Centrifugal Pump .....8-11

**DUPLEX PUMPS ..... 12-22**

- 5" x 6" ..... 12-21
- 5 1/2" x 8" ..... 12-22

**PISTON PUMPS..... 23-39**

- E0413 Pump .....24-27
- A0413.....28-31
- W1122BCD ..... 32-35
- AL0918B .....36-39

**PROGRESSIVE CAVITY PUMPS..... 40-43**

## PUMPS & SPARES



Hole Products offers a full range of pumps and spares for use within the construction, rotary, sonic, environmental, geotechnical, surface and underground coring, and water well drilling markets.

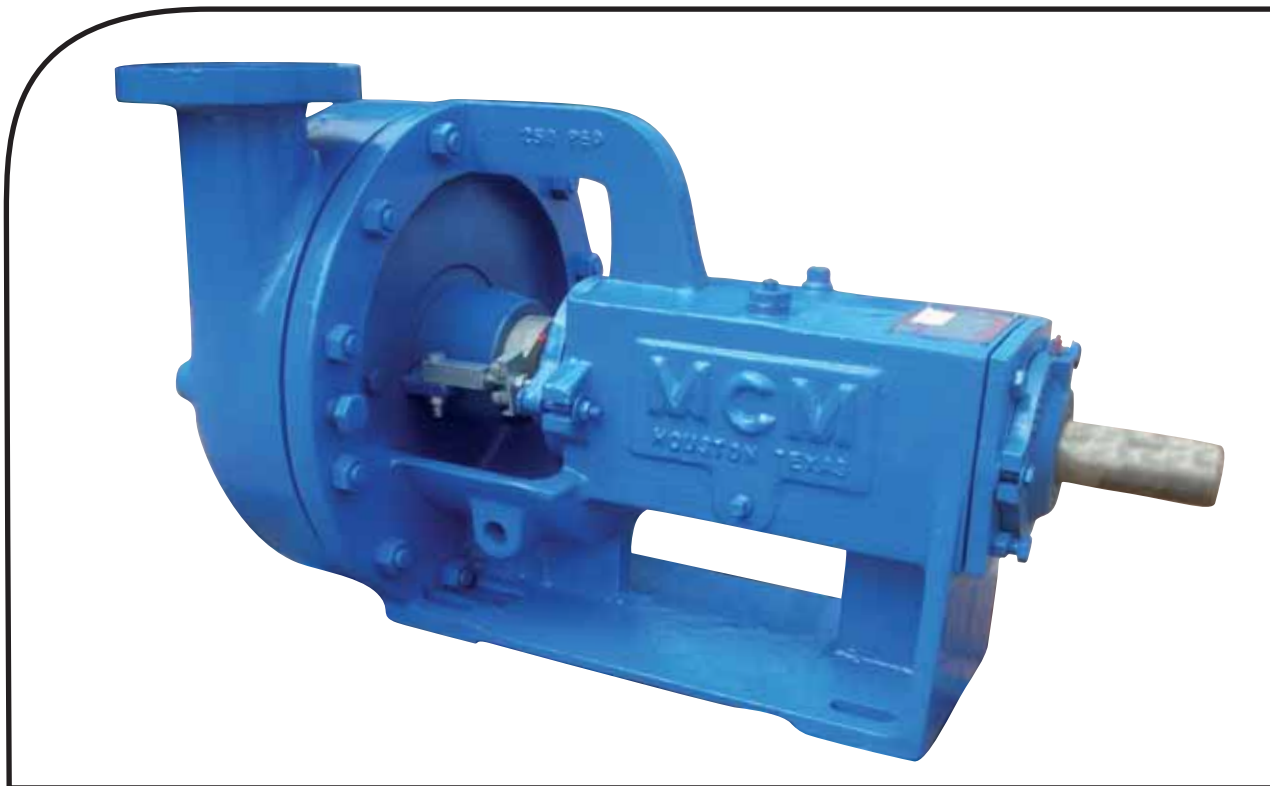
Our product offering includes: centrifugal pumps, American Manufacturing piston pumps, FMC Technologies® "Bean" piston pumps, American Manufacturing duplex power pumps, Gardner Denver® duplex power pumps, and progressive cavity (Moyno®) pumps.

Pumps shown in this catalog are a sample of some of our most common sizes and styles. Additional pumps are available in a wide range of sizes and with a variety of capacities for use in all drilling, mining, and industrial applications.

Please contact your Hole Products representative for pump selection assistance, specific performance details, detailed installation and operation guides, and ordering assistance.

*Products listed in the catalog are representative of the most common industry sizes and styles. Please contact your Hole Products representative for additional product offerings.*

# CENTRIFUGAL PUMPS



Hole Products offers a complete line of centrifugal pumps and spares with a wide range of capacities.

Centrifugal pumps feature high volume, low pressure performance, making them suitable for a wide variety of drilling, mud processing, and industrial applications.

When properly selected and installed, centrifugal pumps will provide long lasting and dependable service.

Pump diagrams are shown for general reference and to aid in identifying spare parts for service. Order spare parts by part number and description. Item numbers are for reference only.

Please contact your Hole Products representative for specific pump performance details and ordering assistance.

# 178 SERIES CENTRIFUGAL PUMP FEATURES

## Pedestal

The pedestal frame provides a larger work area to facilitate packing the pump which cuts repacking time.



## Bearings

Heavy duty bearings are protected by spring type oil seals and a water slinger designed to keep fluid and dirt out of the bearing cavity.



## Housing & Face

A two piece concentric housing design allows for the versatility of either right hand or left hand operation. This unique design reduces turbulence within the pump to minimize cavitation, shaft deflection, and excessive wear. Resulting in a smoother operation and a longer running pump.



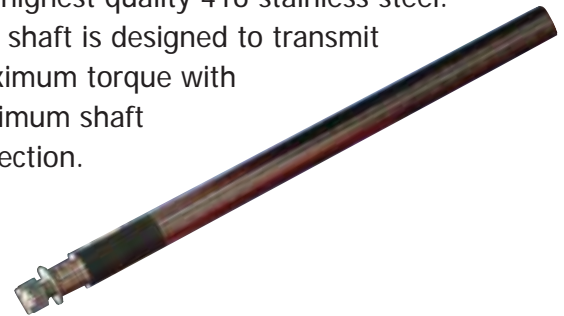
## Graphite Packing

Graphite packing rings consist of five rings and one lantern ring.



## Pump Shaft

The pump shaft is manufactured from the highest quality 416 stainless steel. The shaft is designed to transmit maximum torque with minimum shaft deflection.



## Impeller

The semi open impeller is designed to handle water or heavy slurries with equal efficiency. The pronounced back vanes of the impeller are designed to reduce the pressure on the stuffing box, thus increasing the life of the packing and decreasing the wear on the shaft.

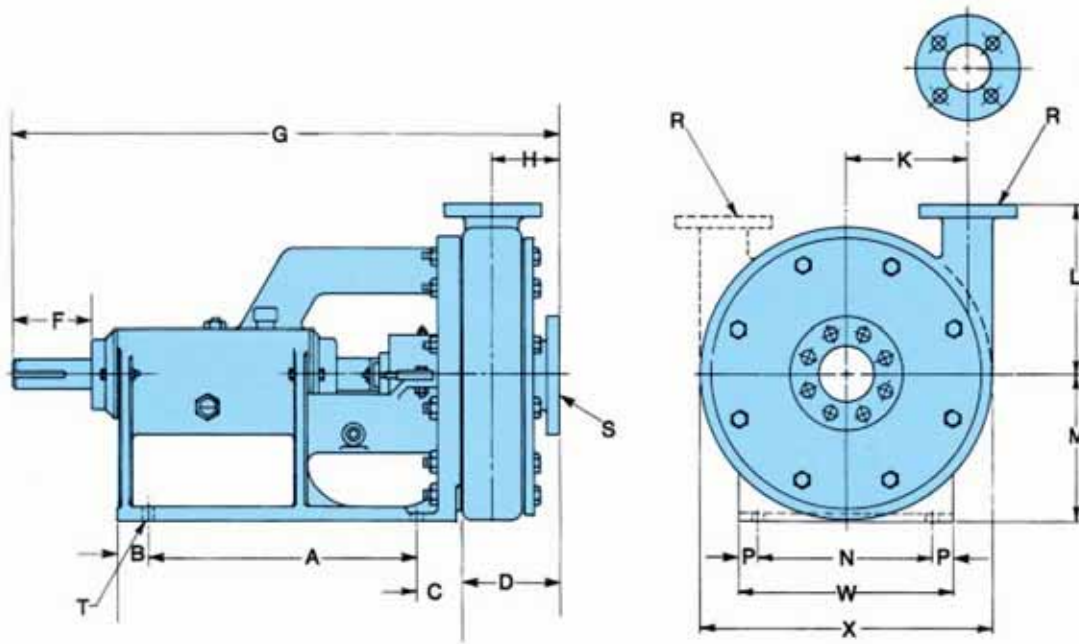


## Wear Plate

A replaceable wear plate protects the pedestal from wear and corrosion caused by fluids being pumped, therefore, extending the life of the pump.



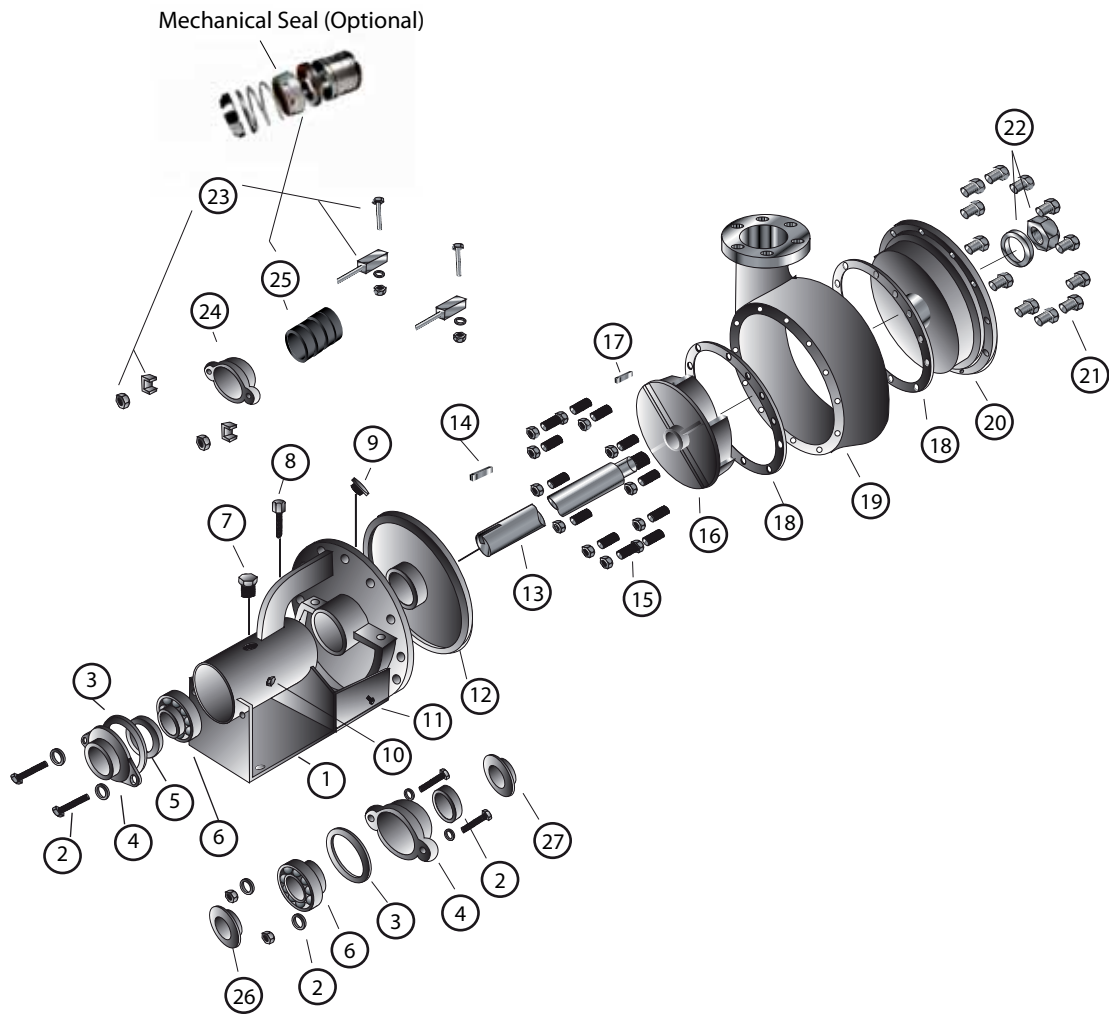
# 178 SERIES CENTRIFUGAL PUMP DIMENSIONAL OUTLINE



PEDESTAL, HOUSING & INSTALLATION DIMENSIONS																	
PUMP SIZE	A	B	C	D	F	G	H	K	L	M	N	P	R	S	T	W	X
3" x 4"	16 1/2"	1 11/16"	2 1/4"	6"	5"	33 1/2"	4"	7"	10 1/4"	9"	7"	1"	2"	3"	11/16"	9"	18"

FLANGE SIZE					
PUMP SIZE	PUMP TYPE (SHAFT DIAMETER)	DISCHARGE PIPE		SUCTION PIPE	
		SIZE	DRILLING	SIZE	DRILLING
3" x 4" R & L	1 7/8"	3"	8 HOLES 3/4" DIA. 6" B.C	4"	8 HOLES 3/4" DIA. 7 1/2" B.C.

# CENTRIFUGAL PUMP PARTS DIAGRAM 178 SERIES (1 7/8" SHAFT & PEDESTAL)



# 178 SERIES CENTRIFUGAL PUMP

178 SERIES CENTRIFUGAL PUMP				
PUMP SIZE & ROTATION	IMPELLER SIZE	DESCRIPTION	QTY	DUCTILE IRON* PART NUMBER
3" x 4R	10"	MECHANICAL SEAL	1	5300110
3" x 4L	10"	MECHANICAL SEAL	1	5300115
3" x 4R	10"	PACKING SEAL	1	5300120
3" x 4L	10"	PACKING SEAL	1	5300125
ITEM #	DESCRIPTION		QTY	PART #
1	PEDESTAL		1	5300130
2	BEARING CAP BOLT ASSEMBLY		4	5300135
3	BEARING CAP GASKET		2	5300140
4	BEARING CAP		2	5300145
5	OIL & GREASE SEAL		2	5300150
6	BEARING ASSEMBLY		2	5300155
7	OIL VENT VALVE		1	5300160
8	DIP STICK		1	5300165
9	ZERT GREASE FITTING		1	5300170
10	HOUSING FACE CAP SCREW		1	5300175
11	DRIP BOWL DRAIN PLUG		1	5300180
12	316-SS WEAR PLATE		1	5300185
	DUCTILE IRON WEAR PLATE			5300190
	ALUMINIUM BRONZE WEAR PLATE			5300195
13	416-SS CERAMIC COATED SHAFT/ 2" X 3" THRU 5" X 6"		1	5300200
	316-SS SHAFT F/ 2" X 3" THRU 5" X 6"			5300205
	416-SS SHAFT F/ 2" X 3" THRU 5" X 6"			5300210
14	COUPLING KEY		1	5300215
15	HOUSING STUD WITH NUT		12	5300220
16*	3" X 4" DUCTILE IRON RIGHT HAND IMPELLER			5300225
	3" X 4" DUCTILE IRON LEFT HAND IMPELLER			5300230
17	IMPELLER KEY		1	5300235
18	HOUSING GASKET		2	5300039
19	DUCTILE HOUSING ONLY		1	5300240
20	DUCTILE HOUSING FACE 3" x 4"		1	5300075
21	ZERT GREASE FITTING		1	5300245
22	SHAFT LOCK NUT ASSEMBLY		1	5300250
23	GLAND ADJUSTMENT BOLT ASSEMBLY		2	5300255
24	PACKING GLAND		1	5300260
25	GRAPHITE PACKING ASSEMBLY		1	5300061
	KING PACKING ASSEMBLY			5300265
	TEFLON PACKING ASSEMBLY			5300270
	MECHANICAL SEAL (OPTIONAL)			5300275
26	SLINGER RING - OIL		1	5300280
27	SLINGER RING - WATER		1	5300285

\*Stainless steel and aluminium bronze pumps and parts also available.



## 250 SERIES CENTRIFUGAL PUMP FEATURES

### Pedestal

The heavy duty pedestal frame is built to withstand high piping loads. The frame is manufactured from cast iron for high strength and durability.



### Casing

The concentric housing eliminates vibration turbulence and cavitation and reduces bearing load and shaft deflection.



### Impeller (Open Vane Impeller)

The open vane impeller is engineered to reduce turbulence, eliminate recirculation, lower radial and thrust loads and provide a smooth flow of fluid through the pump.



### Impeller (Semi Vane Impeller)

Semi vane impellers are available in the 5" x 6", 6" x 8", and 8" x 10" sizes.

### Wear Pads

Replaceable wear pads are available in sizes from 3" x 4" x 13" through 8" x 10" x 14". Wear pads reduce maintenance costs of housing replacement by only replacing the wear pads.



### Shearing Ring

The shearing ring offers an option to convert a regular 250 series pump to a shearing pump for mud applications.



### Mechanical Seals

All mechanical seals come with a highly polished sealing face and viton bellows and stainless steel springs.



### Pump Bearings

The outboard bearing assembly consists of a pair of angular contact bearings with high thrust load ratings and zero end play.



The inboard bearing is a double row ball bearing with high radial load ratio to compensate for the larger size of impellers and heavy duty applications.

### Pump Shaft

The pump shaft is manufactured from the highest quality 416 stainless steel. The shaft is designed to transmit maximum torque with minimum shaft deflection.



### Shaft Sleeve

The shaft sleeve is designed to protect the shaft from abrasive fluids.

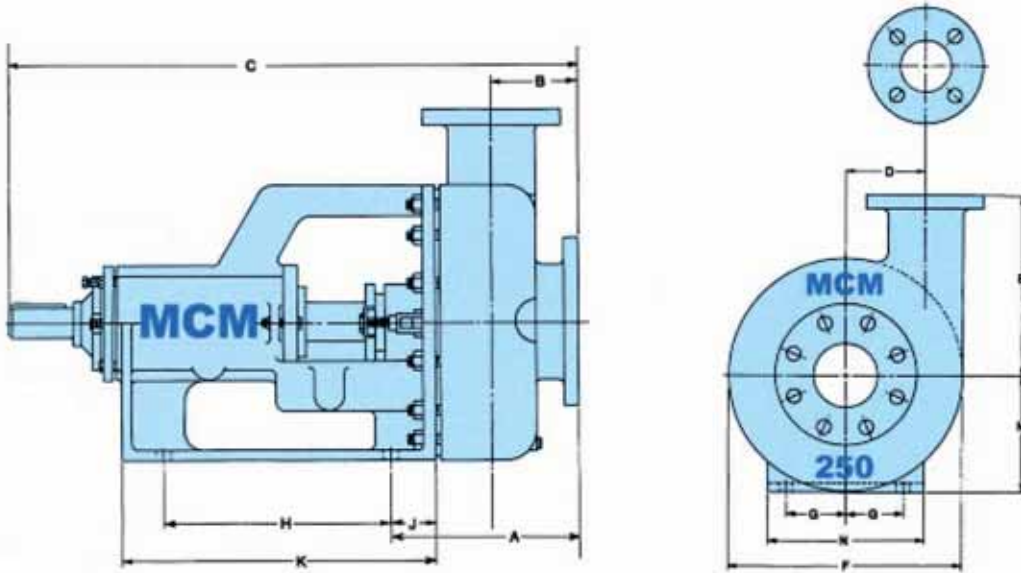


### Stuffing Box

The stuffing box cover is designed to combine the functions of the wear plate and stuffing box of conventional pumps into a one piece replaceable unit. The stuffing box cover is available in two styles for mechanical seals or for regular packing.



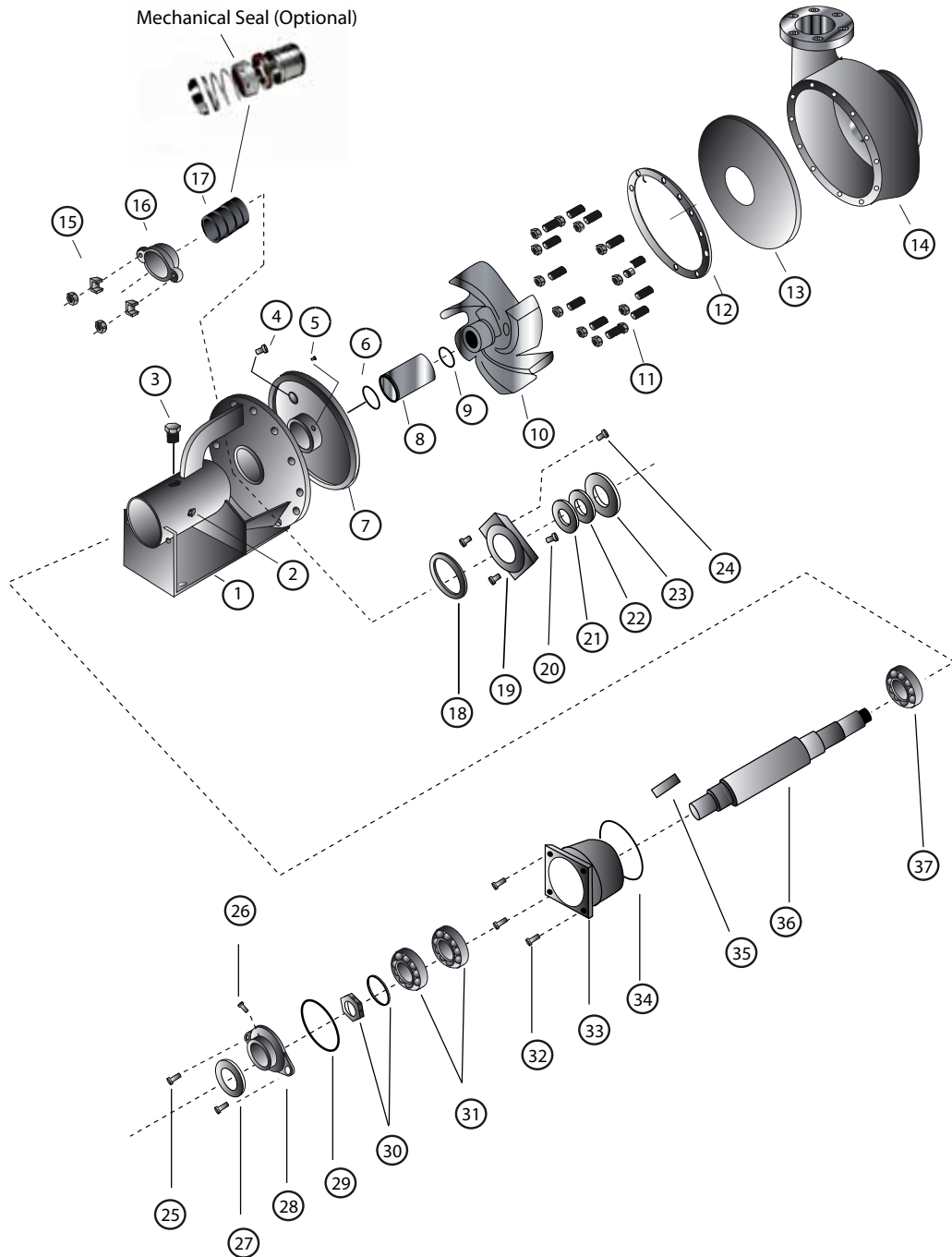
# 250 SERIES CENTRIFUGAL PUMP DIMENSIONAL OUTLINE



PEDESTAL, HOUSING & INSTALLATION DIMENSIONS																	
PUMP SIZE	A	B	C	D	E	F	G	H	J	K	M	N	MAX. IMP. DIAM.	MIN. IMP. DIAM.	SUCTION SIZE	DISCHARGE SIZE	WEIGHT LBS.
3" x 4" x 13"	9 3/8"	4 1/4"	33 5/8"	6 3/4"	10 1/4"	17 7/8"	3 1/2"	15 7/16"	2 5/16"	19 5/8"	9"	9"	13"	6"	3"	2"	430

FLANGE SIZE						
FLANGE SIZE	I.D.	O.D.	B.C.	NO. OF HOLES	SIZE OF HOLES	THICKNESS
3" x 4" R & L	1 7/8"	7 1/2"	6"	4	3/4"	3/4"

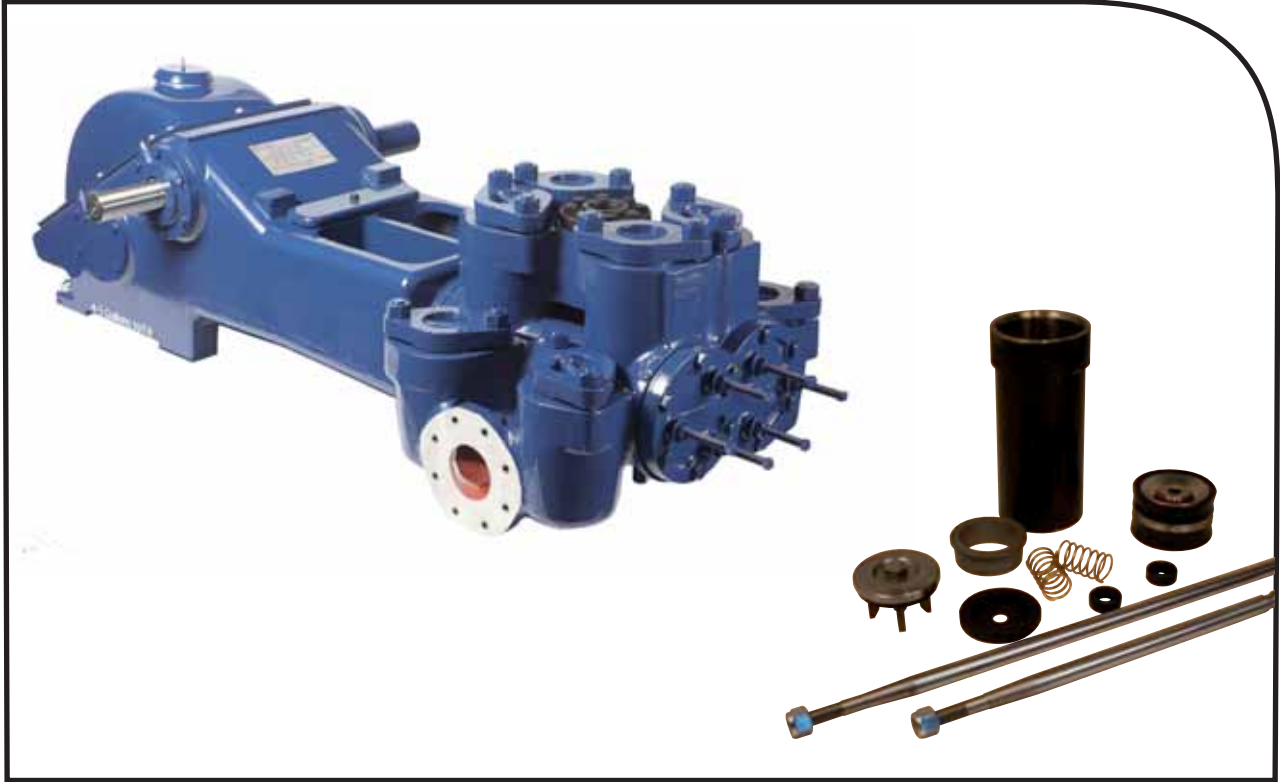
# CENTRIFUGAL PUMP PARTS DIAGRAM 250 SERIES (2 1/2" SHAFT & PEDESTAL)



## 250 SERIES CENTRIFUGAL PUMP

250 SERIES CENTRIFUGAL PUMP				
PUMP SIZE	PART NUMBER	MATERIAL	ROTATION	IMPELLER
3" X 4" X 13"	5300030	DUCTILE IRON	RH	13"
ITEM #	DESCRIPTION		QTY	PART #
1	PEDESTAL		1	5300290
2	OIL DRAIN PLUG		1	5300295
3	DIP STICK		1	5300300
4	STUFF BOX BOLT		1	5300305
5	ZERT GREASE FITTING		1	5300310
6	SHAFT SLEEVE / O-RING		1	5300315
7	STUFFING BOX FOR PACKED PUMPS		1	5300320
	STUFFING BOX FOR MECHANICAL SEALS		1	5300325
8	SHAFT SLEEVE, CERAMIC COATED		1	5300045
9	IMPELLER SEAL / O-RING		1	5300050
10	3" x 4" x 13" DUCTILE IRON RH IMPELLER		1	5300330
11	HOUSING STUD W/ NUT		12	5300335
12	HOUSING GASKET		1	5300040
13	REPLACEABLE WEAR PAD 3" X 4" X 13"			5300093
14	3" x 4" x 13" DUCTILE IRON RH HOUSING ASSY.		1	5300035
15	GLAND BOLT ASSEMBLY		2	5300340
16	PACKING GLAND		1	5300345
17	GRAPHITE PACKING ASSEMBLY		1	5300350
	KING PACKING ASSEMBLY			5300355
	TEFLON PACKING ASSEMBLY			5300060
	MECHANICAL SEAL			5300360
18	INBOARD BEARING COVER GASKET		1	5300365
19	INBOARD BEARING COVER		1	5300370
20	INBOARD BEARING COVER BOLT		2	5300375
21	INBOARD BEARING OIL SEAL		1	5300380
22	INBOARD BEARING EXCLUSION SEAL		1	5300395
23	SLINGER RING - WATER		1	5300390
24	BEARING COVER PLUGS		1	5300395
25	OUTBOARD BEARING COVER BOLT		2	5300400
26	BEARING COVER PLUG		1	5300405
27	OUTBOARD BEARING OIL SEAL		1	5300410
28	OUTBOARD BEARING COVER		1	5300415
29	OUTBOARD BEARING COVER SEAL / O-RING		1	5300420
30	BEARING LOCK NUT KIT		1	5300425
31	OUTBOARD BEARING		2	5300430
32	BEARING HOUSING BOLT		4	5300435
33	OUTBOARD BEARING HOUSING		1	5300440
34	OUTBOARD BEARING HOUSING SEAL / O-RING		1	5300445
35	COUPLING KEY		1	5300450
36	SHAFT		11	5300455
37	INBOARD BEARING		1	5300460

# DUPLEX PUMPS



Hole Products offers a complete line of American Manufacturing and Gardner Denver® duplex reciprocating type pumps and interchangeable pump parts for use in a variety of mud pumping, drilling, and industrial applications.

Duplex power pumps can be used for numerous drilling, mud, oil field, and industrial applications.

Pump diagrams are shown for general reference and to aid in identifying spare parts for service. Order spare parts by part number and description. Item numbers are for reference only.

Please contact your Hole Products representative for additional pump performance details and ordering assistance.

## DUPLEX PUMP SPECIFICATIONS

### 5" X 6" DUPLEX PUMP

**Pump Weight:** 2,300 lbs. (1,043 kg)

**Dimensions:**

**Length:** 79.3" **Width:** 35.4" **Height:** 23.3"

**Jackshaft Extension:**

**Diameter:** 2.44" **Length:** 6.06"

**Keyway:** 6" L x 5/8" W x 5/8" H

**Stroke Length:** 6" (152 mm)

**Fluid End Type:** Cast Iron One Piece

**No. of Pistons:** 2

**Piston Rod Load:** 6,122 lbs. (2,777 kg)

**Oil Capacity:** 4.5 gal. (17 liters)

**Maximum BHP:**

**Mud Service:** 32 (24 kw)

**Ind'l. Service:** 42.5 (32 kw)

**Maximum Jackshaft RPM:**

**Mud Service:** 354

**Ind'l. Service:** 472

**Suction Connection:** 4" NPT 125#

**Discharge Connection:** 2" NPT 600#

### 5 1/2" X 8" DUPLEX PUMP

**Pump Weight:** 4,760 lbs. (2,159 kg)

**Dimensions:**

**Length:** 96.9" **Width:** 49.8" **Height:** 31.0"

**Jackshaft Extension:**

**Diameter:** 3" **Length:** 9"

**Keyway:** 9" L x 3/4" W x 3/4" H

**Stroke Length:** 8" (203 mm)

**Fluid End Type:** Cast Iron One Piece

**No. of Pistons:** 2

**Piston Rod Load:** 8,036 lbs. (3,645 kg)

**Oil Capacity:** 12 gal. (46 liters)

**Maximum BHP:**

**Mud Service:** 52 (39 kw)

**Ind'l. Service:** 73 (54 kw)

**Maximum Jackshaft RPM:**

**Mud Service:** 330

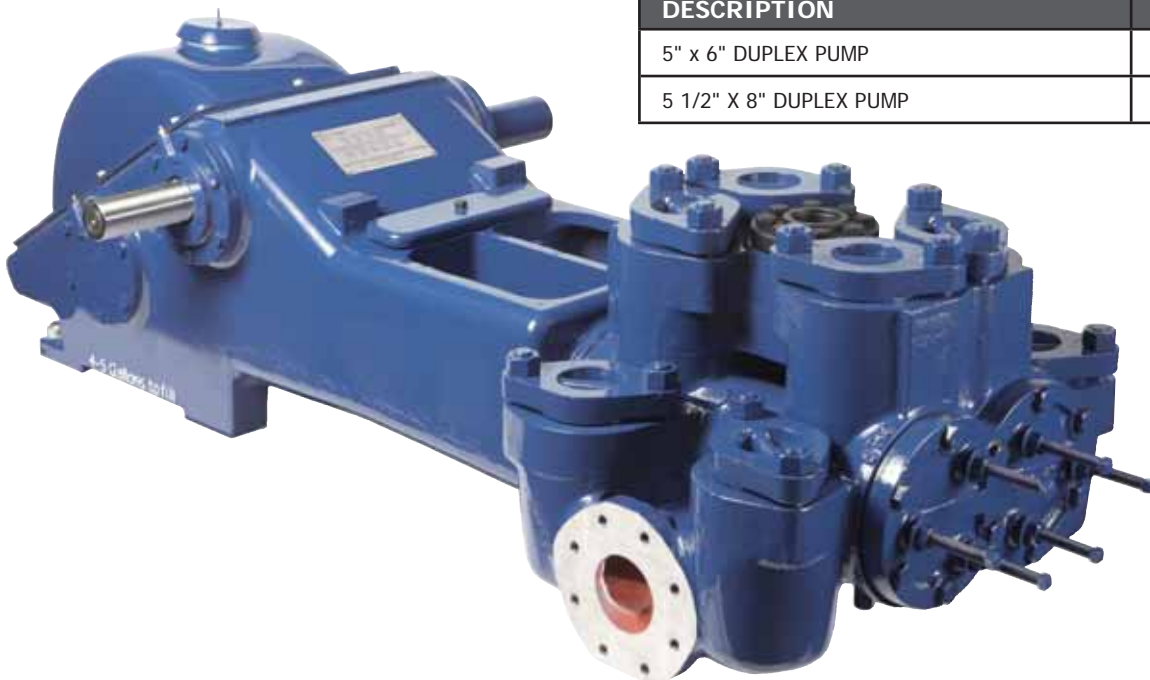
**Ind'l. Service:** 471

**Suction Connection:** 4" NPT 250#

**Discharge Connection:** 3" NPT 600#

**Note:** All installations must contain a pressure relief valve in the discharge line near the pump to help prevent breakage.

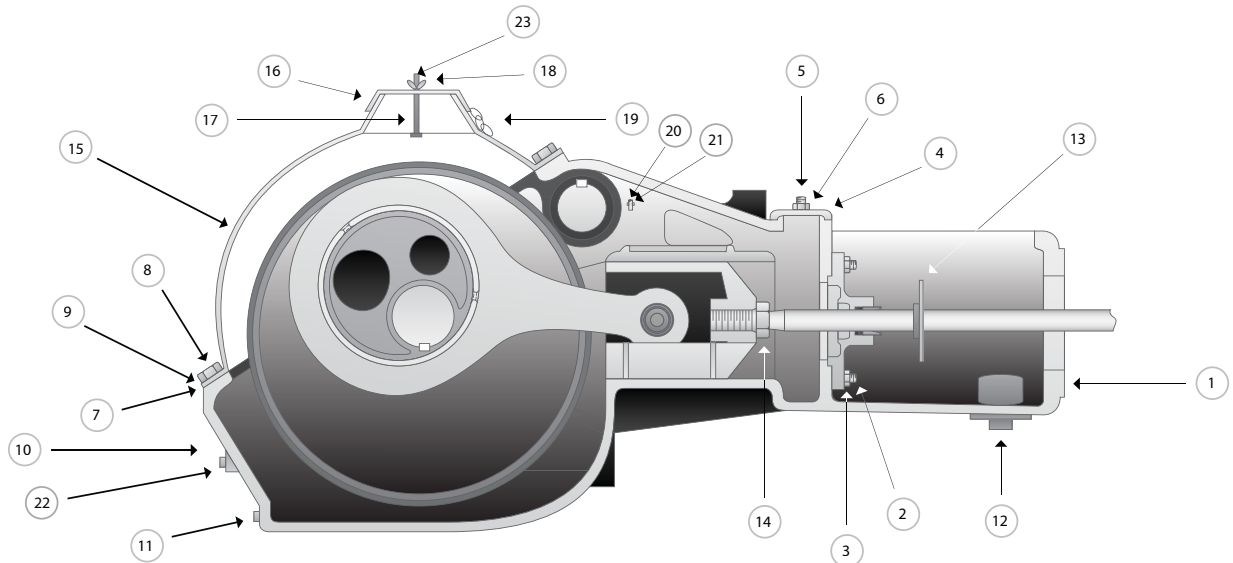
## COMPLETE PUMP ASSEMBLY



COMPLETE PUMP ASSEMBLY GROUP	
DESCRIPTION	PART #
5" x 6" DUPLEX PUMP	5400245
5 1/2" X 8" DUPLEX PUMP	5400250

# FRAME ASSEMBLY GROUP

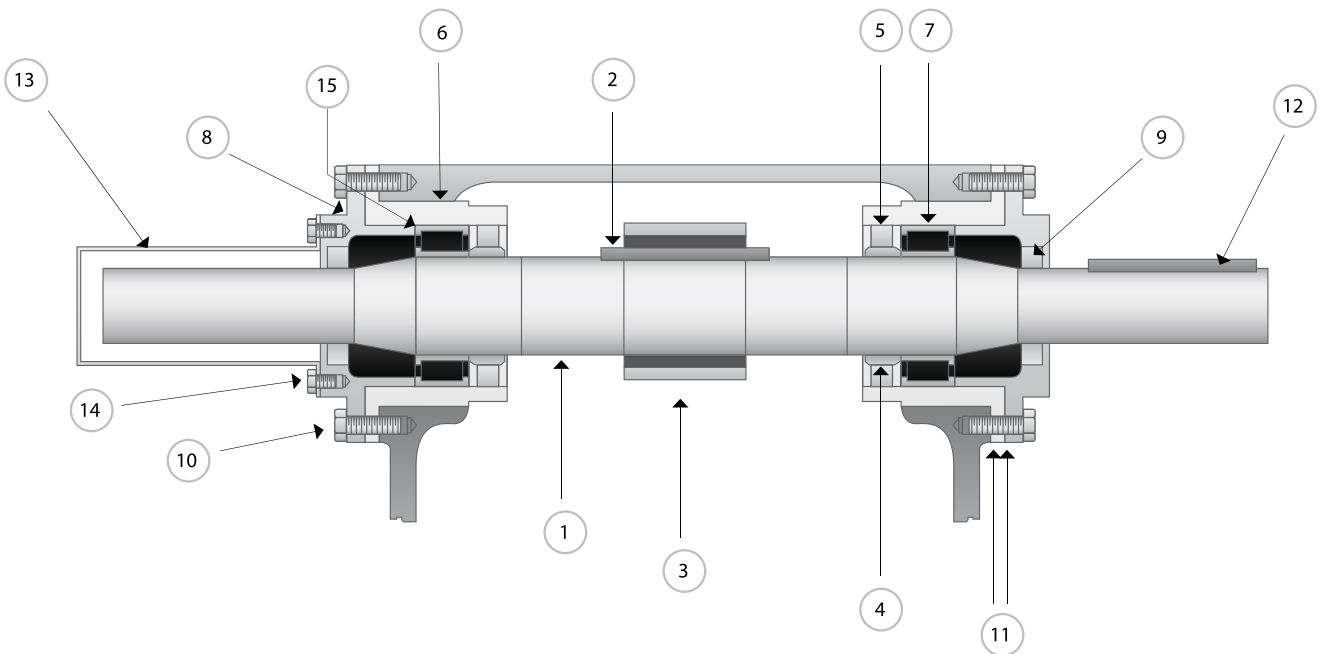
FRAME ASSEMBLY GROUP				
ITEM #	DESCRIPTION	QTY	PART #	
			5" X 6"	5 1/2" X 8"
1	FRAME ASSEMBLY 5" X 6" (INCLUDES ITEMS: 1-7, 10-12, & 15)	1	5400255	-----
	FRAME ASSEMBLY 5 1/2" X 8" (INCLUDES ITEMS: 5, 10, 11, 12, 20, & 21)	1	-----	5400260
	FRAME ONLY	1	5400265	5400350
2	STUD, OIL STOP HEAD	4	5400029	5400355
3	NUT, OIL STOP HEAD	4	5400144	5400360
4	PLATE - INSPECTION PLATE	1	5400270	5400365
5	STUD, INSPECTION PLATE	1	5400275	5400370
6	NUT, INSPECTION PLATE STUD	1	5400280	5400375
7	GASKET, HOOD	1	5400285	5400380
8	SCREW, HOOD	8	5400290	5400385
9	WASHER	8	5400295	5400390
10	PLUG, OIL LEVEL	1	5400300	5400395
11	PLUG, OIL DRAIN	1	5400305	5400400
12	PLUG, FRAME DRAIN	1	5400310	5400405
13	BAFFLE, PISTON ROD	2	5400093	5400210
14	NUT, CROSSHEAD	2	5400315	5400144
15	HOOD ASSEMBLY (INCLUDES ITEMS: 16, 17, 18, AND 19)	1	5400320	-----
	HOOD ONLY		-----	5400410
16	HOOD CAP	1	5400325	-----
17	STUD, HOOD CAP	1	5400330	-----
18	NUT, HOOD CAP	1	5400335	-----
19	CHAIN, HOOD CAP	1	5400340	-----
20	PLUG, CROSSHEAD	2	-----	5400415
21	STUD CROSSHEAD	4	-----	5400420
22	ELBOW-PIPE STREET, OIL LEVEL	1	-----	5400425
23	COVER-FILLER	1	5400345	5400430



# JACKSHAFT ASSEMBLY GROUP

JACKSHAFT ASSEMBLY GROUP				
ITEM #	DESCRIPTION	QTY	PART #	PART #
			5" X 6"	5 1/2" X 8"
----	JACKSHAFT ASSEMBLY (INCLUDES ITEMS: 1-3)	1	5400435	5400485
1	JACKSHAFT	1	5401017	5400490
2	KEY, JACKSHAFT TO GEAR	1	5400440	5400495
3	GEAR - DRIVER	1	5400445	5401020
4	SLEEVE - SHAFT	2	5400120	5400118
5	SEAL - OIL, BEARING HOUSING	2	5400148	5400141
6	HOUSING - BEARING	2	5400450	5400215
7	BEARING, JACKSHAFT	2	5400150	5400500
8	PLATE - BEARING RETAINING	2	5400455	5400505
9	SEAL - OIL, BEARING RETAINING PLATE	2	5400127	5400141
10	SCREW, HOUSING & RETAINING PLATE	12	5400460	5400510
11	GASKET, HOUSING & RETAINING PLATE	4	5400125	5401030
12	KEY, JACKSHAFT	1	5400465	5400515
13	COVER - SHAFT EXTENSION	1	5400470	5400520
14	SCREW, SHAFT EXTENSION COVER	3	5400475	5400525
15	SPACER BEARING	1	----	5400530
*	FITTING - LUBRICATION	2	5400480	5400535

\* Not shown on illustration.



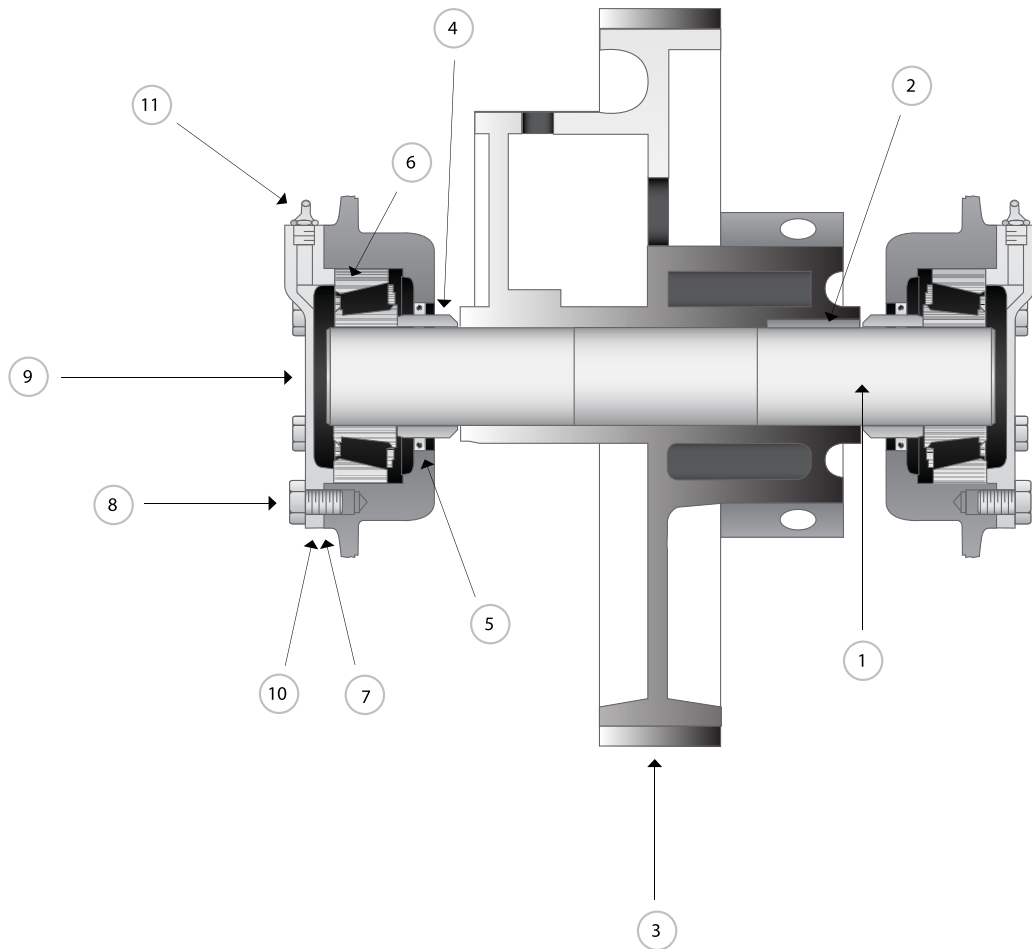


# ECCENTRIC ASSEMBLY GROUP

ECCENTRIC ASSEMBLY GROUP				
ITEM #	DESCRIPTION	QTY	PART #	
			5" X 6"	5 1/2" X 8"
1	SHAFT - ECCENTRIC	1	5400011	5401035
2	KEY	1	5400012	5401023
3	ECCENTRIC GEAR	1	5400009	5400560
4	SLEEVE - SHAFT	2	5400129	5400128
5	SEAL - OIL	2	5400130	5401040
6	BEARING, ECCENTRIC SHAFT	2	5400132	5400133
7	SHIM, BEARING COVER PLATE*	1	5400152	5401045
8	SCREW, BEARING COVER PLATE	12	5400540	5400225
9	PLATE - BEARING COVER	2	5400545	5400555
10	GASKET, BEARING COVER PLATE**	1	5400125	5401030
11	FITTING - LUBE	2	5400550	5400565

\* Used opposite PPGD 25C657 Gasket.

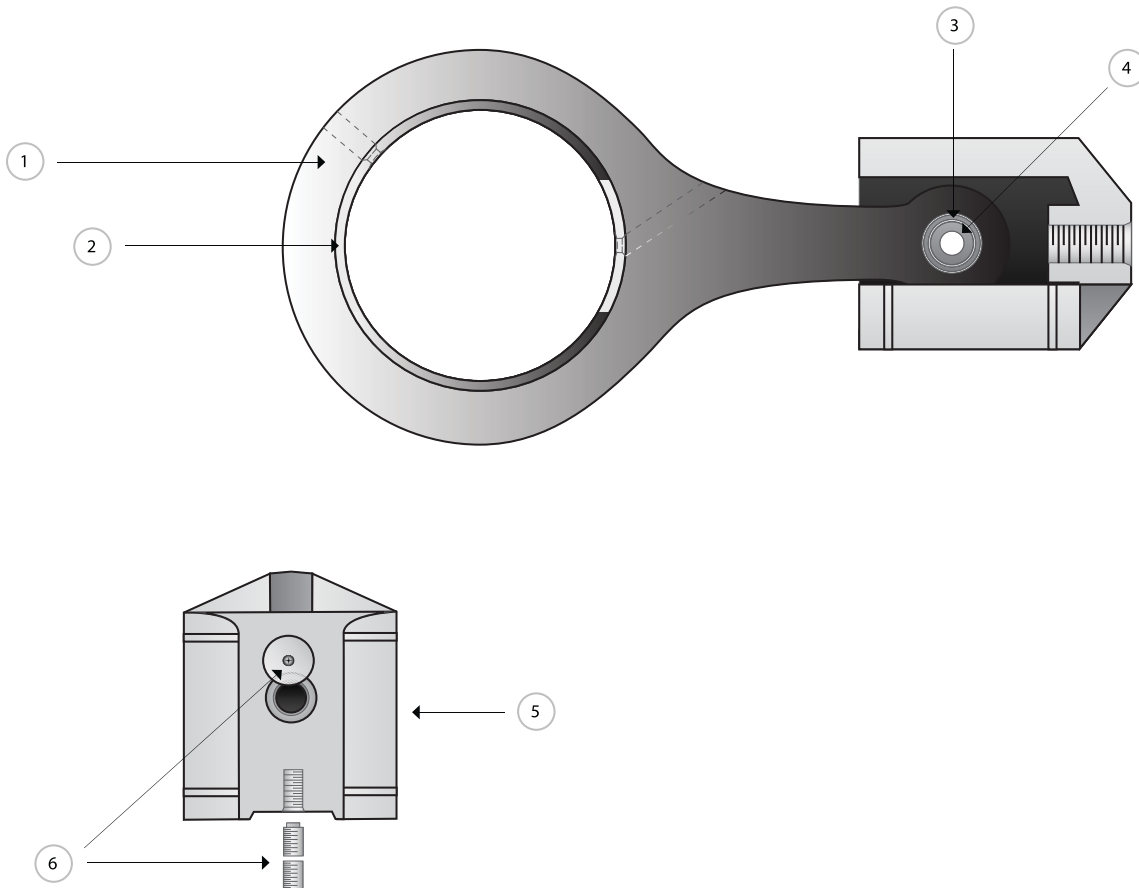
\*\* Used opposite PPGD 77G16 Shims.



# CONNECTING ROD & CROSSHEAD

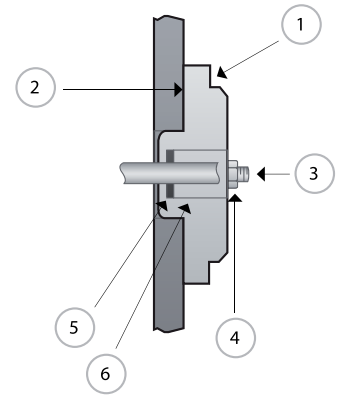
CONNECTING ROD & CROSSHEAD				
ITEM #	DESCRIPTION	QTY	PART #	
			5" X 6"	5 1/2" X 8"
1	CONNECTING ROD (INCLUDES ITEMS: 2-3)	2	5400570	5400220
2	BUSHING, ECCENTRIC	2	5400134	5400190
3	BUSHING, CROSSHEAD PIN	2	5400136	5400195
4	PIN CROSSHEAD	2	5400138	5400580
5	CROSSHEAD ASSEMBLY	2	5400008	5400200
6	SET SCREW - ASSEMBLY	2	5400575	-----
*	SCREW (1.25" LG.) RETAINER PLATE	4	-----	5400585
*	SCREW (1" LG.) RETAINER PLATE	4	-----	5400590
*	WIRE	1	-----	5400230

\* Not shown on illustration.

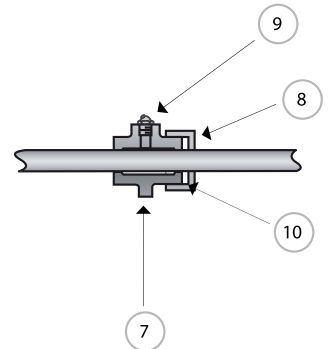


# STUFFING BOX, GLAND & OIL STOP HEAD

STUFFING BOX						
ITEM #	DESCRIPTION	QTY	PART #			
			5" X 6"		5 1/2" X 8"	
----	STUFFING BOX ASSEMBLY (INCLUDES ITEMS: 1, 3, & 4)	2	RH	LH	RH	LH
			5400595	5400600	5400615	5400620
1	STUFFING BOX		5400605		5400625	
2	GASKET, STUFFING BOX	2	5400610		5400630	
3	STUD, STUFFING BOX	4	5400160		5400635	
4	NUT, STUFFING BOX STUD	4	5400172		5400640	
5	RING - JUNK	2	5400100		5401013	
6	PACKING, CROWN TYPE	2	5400015		5400645	
	PACKING, OIL RES MOLDED CONVEX	2	----		5400650	
	PACKING, BRAIDED ASBESTOS	2	----		5400655	
	PACKING, MOLDED RUBBER AND DUCK		----		5400660	

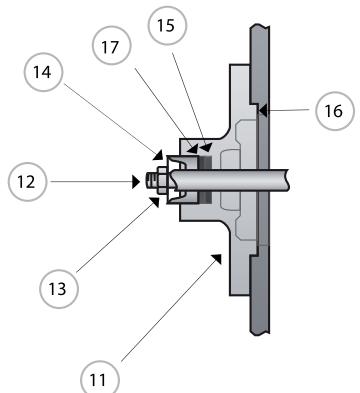


STUFFING BOX GLAND				
ITEM #	DESCRIPTION	QTY	PART #	
			5" X 6"	5 1/2" X 8"
----	GLAND ASSEMBLY (INCLUDES ITEMS: 7-10)	2	5401010	5400675
7	GLAND	2	5400162	5400680
8	NUT	2	5400665	5400685
9	FITTING - LUBE	2	5400670	5400690
10	PACKING - RING	2	5400110	5400695
*	BUSHING-GLAND	2	----	5400700



\* Not shown on illustration.

OIL STOP HEAD					
ITEM #	DESCRIPTION	QTY	5" X 6"	PART #	
				5 1/2" X 8"	
			2 BOLT	4 BOLT	
----	OIL STOP HEAD ASSEMBLY (INCLUDES ITEMS: 11-13)	2	5400013	5400705	5400710
12	STUD, OIL STOP HEAD	4	5400029	5400715	5400735
13	NUT, OIL STOP HEAD	2	5400144	5400144	5400144
14	GLAND, OIL STOP HEAD	2	5400960	5400720	5400740
15	WASHER OIL STOP HEAD	2	5400101	5401015	5401015
16	GASKET, OIL STOP HEAD	2	5400965	5400725	5400745
17	PACKING, OIL STOP HEAD	2	5400022	5400730	5400750

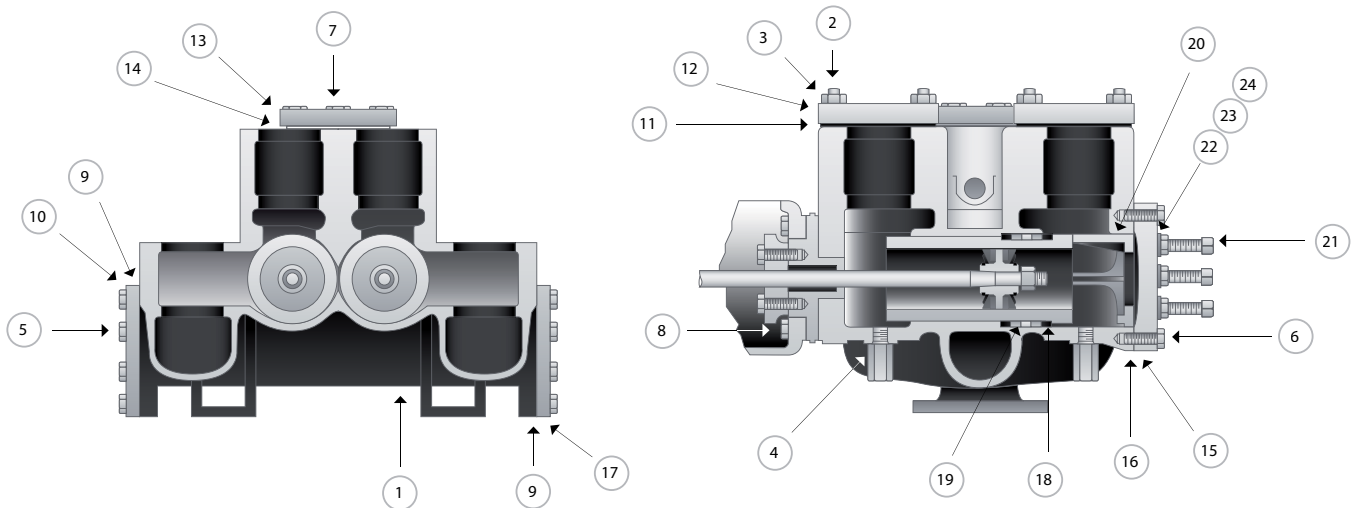


# FLUID CYLINDER GROUP

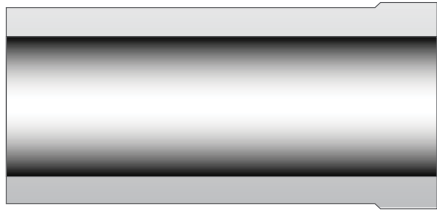
5" X 6" FLUID CYLINDER GROUP*			
ITEM #	DESCRIPTION	QTY	PART #
----	FLUID CYLINDER ASSEMBLY (INCLUDES ITEMS: 2)	1	5400755
1	FLUID CYLINDER	1	5400760
2	STUD, VALVE COVER	16	5400027
3	NUT, VALVE COVER STUD	16	5400026
4	PLUG, DRAIN	5	5400028
5	SCREW, SUCTION & BLANK FLANGE	16	5400765
6	SCREW, CYLINDER HEAD	10	5400770
7	SCREW, DISCHARGE FLANGE	8	5400775
8	SCREW, FRAME TO CYLINDER	6	5400780
9	GASKET, SUCTION & BLANK FLANGE	2	5400106
10	FLANGE, SUCTION BLANK	1	5400785
11	GASKET, VALVE COVER	8	5400790
12	COVER VALVE	8	5400795
13	FLANGE, DISCHARGE	1	5400800
14	GASKET, DISCHARGE FLANGE	1	5400805
15	HEAD - CYLINDER	1	5400810
16	GASKET, CYLINDER	2	5400815
17	FLANGE, SUCTION	1	5400820
18	PACKING, LINER	4	5400090
19	SPACER - LANTERN, LINER	2	5400085
20	CLAMP - LINER	2	5400115
21	SET SCREW, LINER CLAMP	6	5400146
22	PACKING, LINER CLAMP	6	5400019
23	WASHER, LINER CLAMP SET SCREW	6	5400825
24	NUT, LINER CLAMP SET SCREW	6	5400830
**	LINER	2	5400835

\*See page 22 for 5 1/2" x 8" fluid end options.

\*\*Not shown on illustration. See page 20.



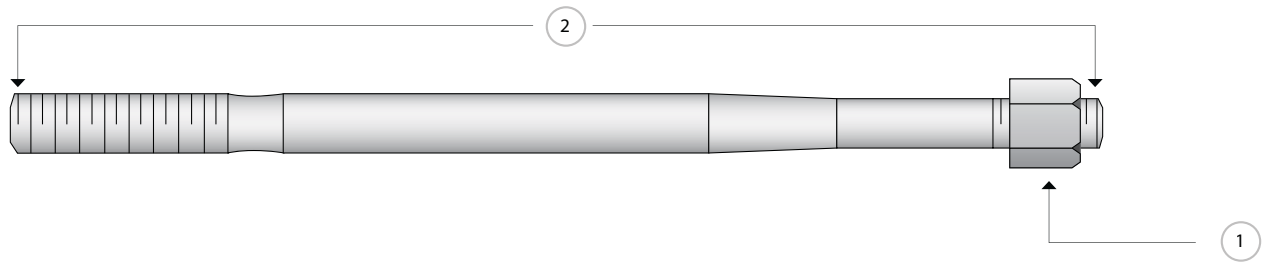
## CYLINDER LINERS



5" X 6" CYLINDER LINERS*					
SIZE	QUANTITY	HARDENED STEEL PART #	CHROME PLATED PART #	STAINLESS STEEL PART #	BRONZE PART #
2 1/2"	2	5400065	5400067	5450500	5400840
3"	2	5400845	5450510	5400850	5400855
3 1/2"	2	5400860	5450515	5400865	5400870
4"	2	5401014	5450520	5400875	5400880
4 1/2"	2	5400885	5450525	5400890	5400895
5"	2	5400167	5450530	5400900	5400905

\*See page 22 for 5 1/2" x 8" options.

## PISTON ROD & LOCK NUT



5" X 6" PISTON ROD & LOCK NUT*						
ITEM #	DESCRIPTION	QTY	HARDENED STEEL PART #	CHROME PLATE PART #	STAINLESS STEEL PART #	BRONZE PART #
1	LOCK NUT	2	5400910	5400920	5400930	5400945
2	PISTON ROD (INCLUDES ITEMS: 1-2) 5" x 6" PUMP	2	5400076	5400074	5400935	5400950
2	PISTON ROD (INCLUDES ITEMS: 1-2) 5 1/2" x 8" PUMP	2	5400915	5400925	5400940	5400955

\*See page 22 for 5 1/2" x 8" options.

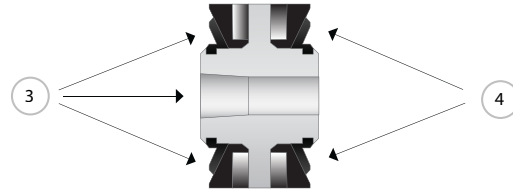
# STEEL INSERT TYPE PISTON

API No. 1 Taper

Standard for slush, grout and cement service.

5" X 6" STEEL INSERT TYPE PISTON*			
ITEM #	DESCRIPTION	QTY	PART #
3	PISTON ASSEMBLY (INCLUDES: 5" INSERT GROUP)	2	5400006
4	5" INSERT GROUP (RUBBER, RETAINER PLATE & RINGS)	2	5400007
3	4 1/2" PISTON ASSEMBLY (INCLUDES 4 1/2" INSERT GROUP)	2	5400970
4	4" PISTON ASSEMBLY (INCLUDES: 4" INSERT GROUP)	2	5400975
3	4" INSERT GROUP (RUBBER, RETAINER PLATE & RINGS)	2	5400083
4	3 1/2" PISTON ASSEMBLY (INCLUDES 3 1/2" INSERT GROUP)	2	5400980
3	3" PISTON ASSEMBLY (INCLUDES 3" INSERT GROUP)	2	5400985
4	3" INSERT GROUP (RUBBER, RETAINER PLATE & RINGS)	2	5400900

\*See page 22 for 5 1/2" x 8" options.



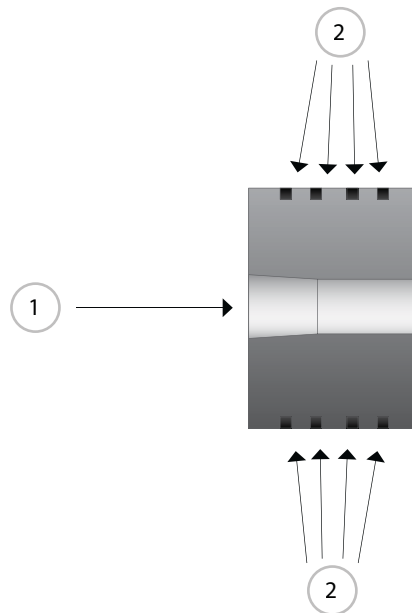
# SOLID IRON TYPE PISTON

API No. 1 Taper

With cast iron rings. Standard for oil service.

5" X 6" SOLID IRON TYPE PISTON*			
ITEM #	DESCRIPTION	QTY	PART #
1	5" PISTON	2	5400995
2	5" RING - PISTON	8	5401050
1	4 1/2" PISTON	2	5401055
2	4 1/2" RING - PISTON	8	5401060
1	4" PISTON	2	5401065
2	4" RING - PISTON	8	5401070
1	3 1/2" PISTON	2	5401075
2	3 1/2" RING - PISTON	8	5401080
1	3" PISTON	2	5401085
2	3" RING - PISTON	8	5401090

\*See page 22 for 5 1/2" x 8" options.



## 5 1/2" X 8" FLUID END PARTS

5 1/2" X 8" FLUID CYLINDER GROUP		
DESCRIPTION	QTY	PART #
ASM FLUID CYLINDER	1	5401095
STUD, CYLINDER TO FRAME	12	5401110
NUT, CYLINDER HEAD	12	5401115
STUD, VALVE COVER	16	5401120
NUT, VALVE COVER	16	5401125
STUD, DISCHARGE FLANGE	8	5401130
NUT, DISCHARGE FLANGE STUD	8	5401135
STUD, CYLINDER HEAD	24	5401140
NUT, CYLINDER HEAD STUD	24	5401145
STUD, SUCTION FLANGE	8	5401150
NUT, SUCTION FLANGE STUD	8	5401155
FLANGE, DISCHARGE	1	5401160
GASKET, DISCHARGE FLANGE	1	540116
HEAD CYLINDER	2	5401170
GASKET, CYLINDER HEAD	2	5401175
CLAMP LINER	2	5401180
SLEEVE, LINER	4	5401885
SPACER, LINER	2	5401190
LINER SET SCREW	2	5401195
NUT, LINER SET SCREW	2	5401200
WASHER, LINER SET SCREW	2	5401205
PACKING, LINER SET SCREW	2	5401210
FLANGE, SUCTION	1	5401215
GASKET, SUCTION FLANGE	1	5401225
PLUG	5	5401230
VALVE COVER	8	5401235
STUD, FLANGE & HEAD	32	5401240
NUT, FLANGE & HEAD	32	5401245
GASKET, DISCHARGE FLANGE	1	5401250
PLUG	2	5401255

5 1/2" X 8" LINER AND SEAT PULLERS		
DESCRIPTION	QTY	PART #
PULLER, SEAT STANDARD	1	5401260
PULLER, SEAT GRAVEL	1	5401265
PULLER, LINER	1	5401270

5 1/2" X 8" FLUID END OPTIONAL LINERS, PISTONS, PISTON RUBBER KITS		
DESCRIPTION	QTY	PART #
LINER 5 1/2" X 8" 5 1/2" BORE	2	5401275
PISTON 5 1/2" B API-3	2	5401280
PISTON RUBBER KITS 5 1/2"	2	5401285
LINER 5 1/2" X 8" 5" BORE	2	5401290
PISTON 5" B API-3	2	5401295
PISTON RUBBER KIT 5" B	2	5401300
LINER 4 1/2" BORE FOR 5 1/2" X 8"	2	5401305
PISTON 4 1/2" B API-3	2	5401310
PISTON RUBBER KIT 4 1/2" BORE	2	5401315
LINER 5 1/2" X 8" 4" BORE	2	5401320
PISTON 4" K API-3	2	5401325
PISTON RUBBER KIT 4" K	2	5401330
LINER 3 1/2" BORE	2	5401335
PISTON 3 1/2" K API-3	2	5401340
PISTON RUBBER KIT 3 1/2" K	2	5401345

5 1/2" X 8" FLUID END REBUILD KIT		
DESCRIPTION	QTY	PART #
LINER	2	5401350
LINER CHROME	2	5401355
LINER PACKING	4	5401360
LANTERN RING	2	5401365
HEAD GASKET	2	5401370
PISTON	2	5401375
PISTON RUBBER KIT	2	5401380
PISTON ROD (5 1/2" X 8)	2	5401385
PISTON ROD CHROME	2	5401390
JUNK RING	2	5401395
PACKING	2	5401400
BUSHING GLAND	2	5401405

# PISTON PUMPS



Hole Products offers a complete line of American Manufacturing and FMC Technologies® “Bean” piston pumps and interchangeable pump parts for use in a variety of mud pumping and drilling applications.

All piston pumps are designed for continuous duty industrial applications and are capable of handling even the most abrasive drilling fluids. Piston pumps feature simple designs that incorporate less wearable parts and provide for ease of service.

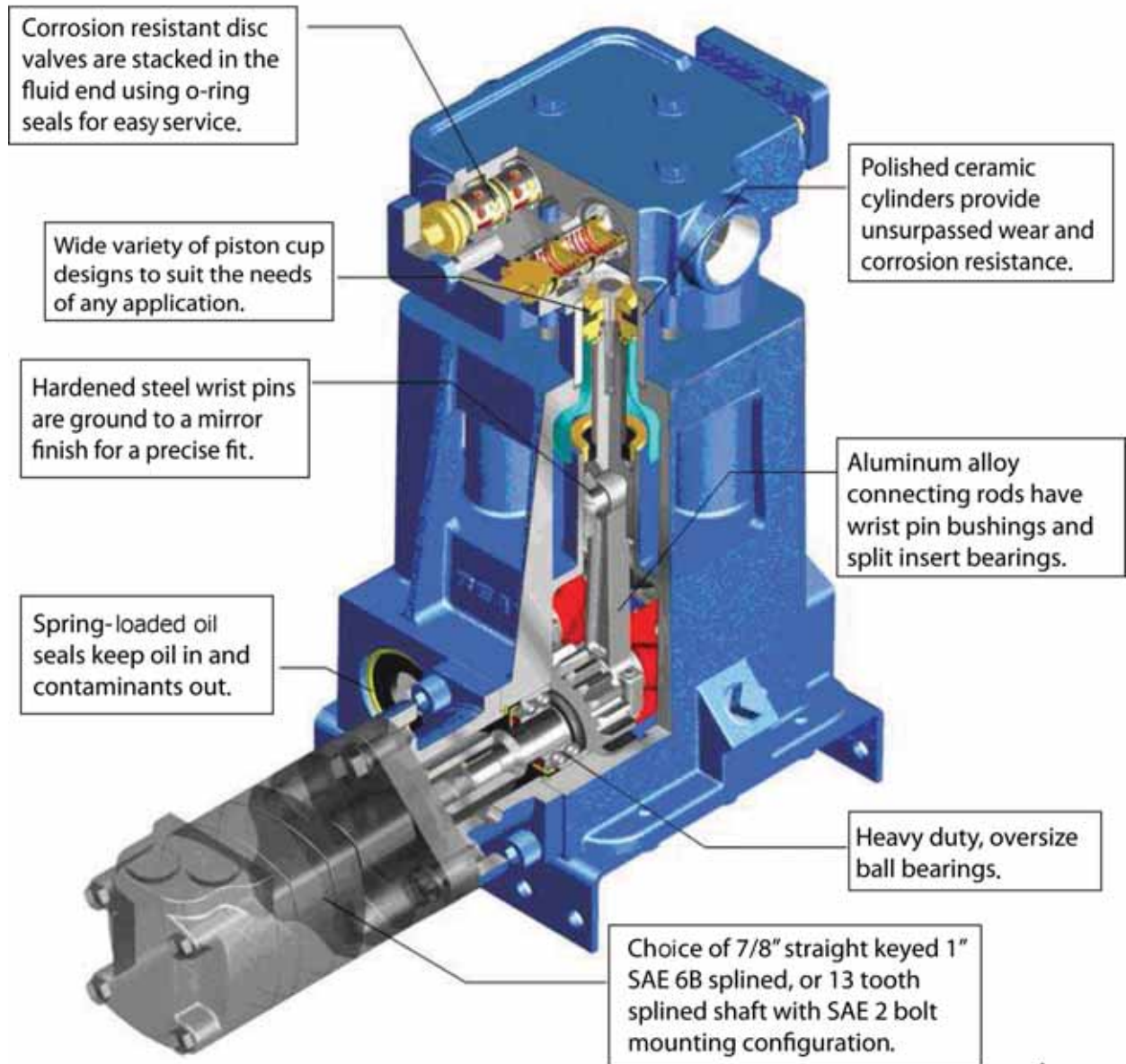
Piston pumps are available in duplex, triplex, and quadruplex configurations with a wide range of capacities and pressures. Pumps can incorporate ductile iron, aluminium bronze, and other materials as required.

Pump diagrams are shown for general reference and to aid in identifying spare parts for service. Order spare parts by part number and description. Item numbers are for reference only.

Please contact your Hole Products representative for pump performance details and ordering assistance.



# E0413 PUMP FEATURES



# EO413 PISTON PUMP DATA

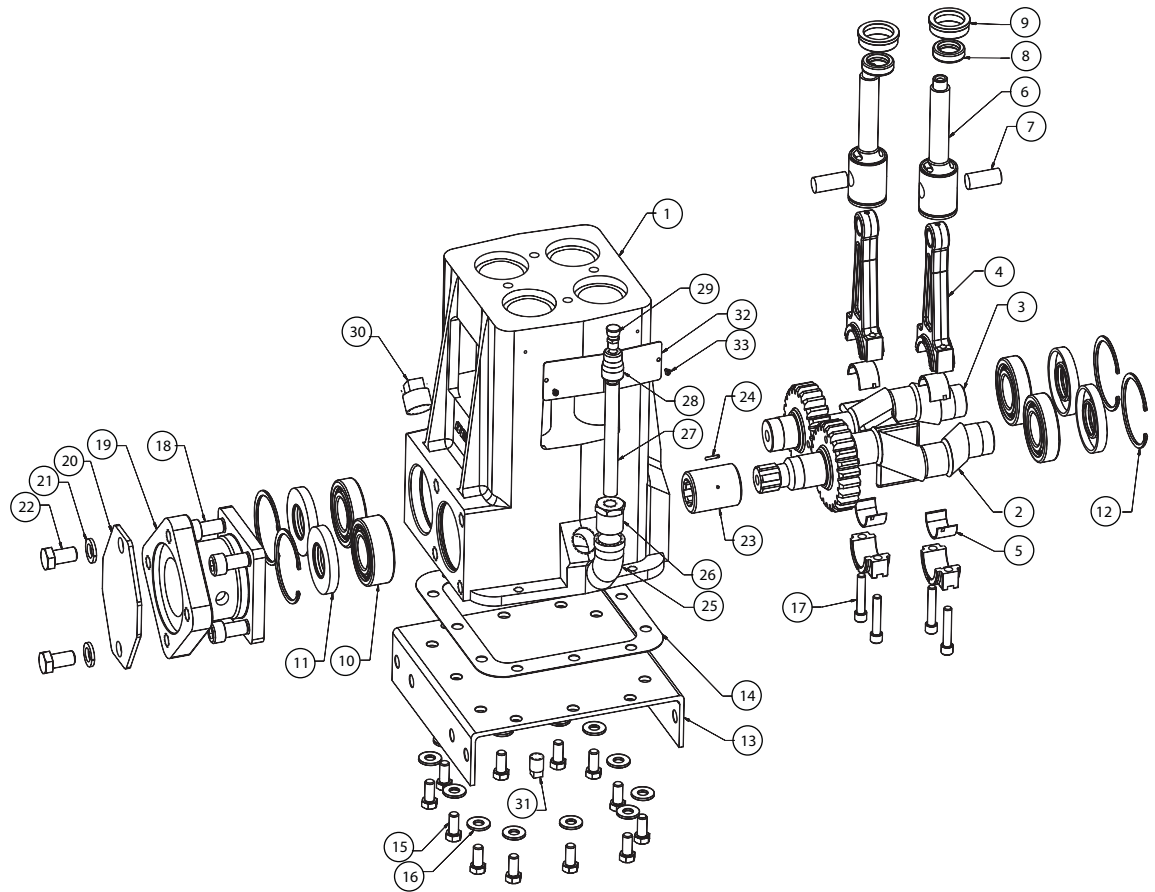


EO413 PUMP SPECIFICATIONS	
PUMP MODEL	EO413
CONFIGURATION	VERTICAL QUADRUPLEX PISTON
NUMBER OF PISTONS	4
STROKE LENGTH	1"
FRAME LOAD RATING	1,240 LBS.
PUMP WEIGHT (AVERAGE)	80 LBS.
DIRECTION OF ROTATION	EITHER
INTERNAL GEAR RATIO	1.1
INTERMITTENT DUTY SPEED RATING	575 RPM
CONTINUOUS DUTY SPEED RATING	450 RPM
BALL VALVE MAX SPEED RATING	N/A
MINIMUM SPEED	390 RPM
MECHANICAL EFFICIENCY	85%
LUBRICATION SYSTEM (STANDARD)	SPLASH, GRAVITY RETURN
LUBE OIL CAPACITY	1 QUART
LUBE OIL TYPE	SAE 30
MAXIMUM FLUID TEMPERATURE	140° F (250° F CAPABILITY)
MINIMUM FLUID TEMPERATURE	0° F (-20° F CAPABILITY)
STANDARD SUCTION SIZE	1 1/4" NPT
STANDARD DISCHARGE SIZE	3/4" NPT
FLUID END MATERIAL	CAST IRON, ALUMINIUM BRONZE
VALVE TYPES	DISC VALVES
HYDRAULIC MOTOR MOUNT	SAE A - 2 BOLT WITH 1" - 6B

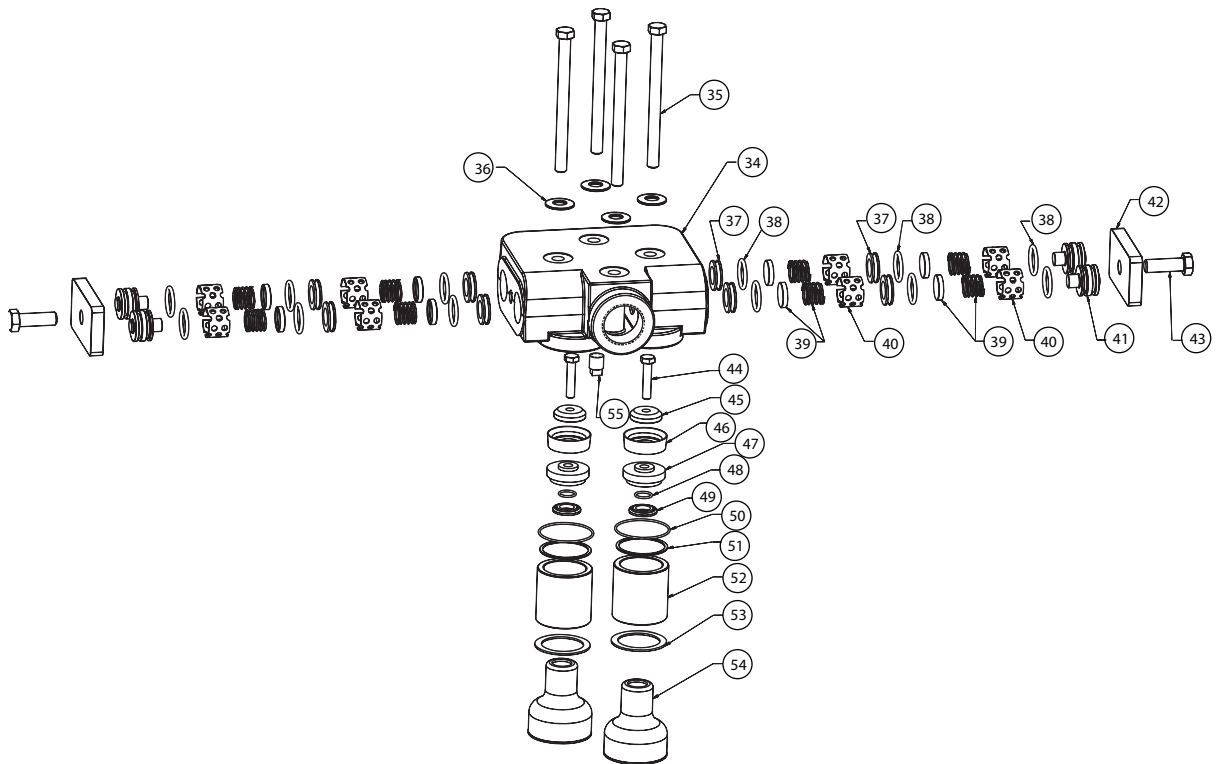
EO413 PUMP PERFORMANCE							
PISTON DIAMETER (IN)	DISPLACEMENT (GAL/REV)	MAXIMUM PRESSURE (PSI)	PUMP CAPACITY (GPM @ INPUT SPEED RPM)				
			390 RPM	400 RPM	425 RPM	450 RPM	575 RPM
1.625"	0.0359	600	14.01	14.36	15.26	16.16	20.65
Horsepower based on 85 or 90% mechanical efficiency. Actual application horsepower requirements can be calculated using the equation: $BHP = (GPM * PSI) / (1714 * 0.85 \text{ or } 0.90)$							
Pump capacities shown are based on 100% volumetric efficiency.							

# E0413 SERIES PUMP PARTS DIAGRAM

## POWER END



## FLUID END



## EO413 SERIES PUMP PARTS

EO413 COMPLETE PUMP	
DESCRIPTION	PART #
COMPLETE PUMP 4 CYLINDER	5350003

EO413 GROUPS	
DESCRIPTION	PART #
CYLINDER GROUP INCLUDES: 45,46,48,51,52,53, and 54	5350490
VALVE CHAMBER GROUP INCLUDES: 34,37,38,39,40,41,42,44, and 56	5260309

### EO413 COMPONENT PARTS POWER END

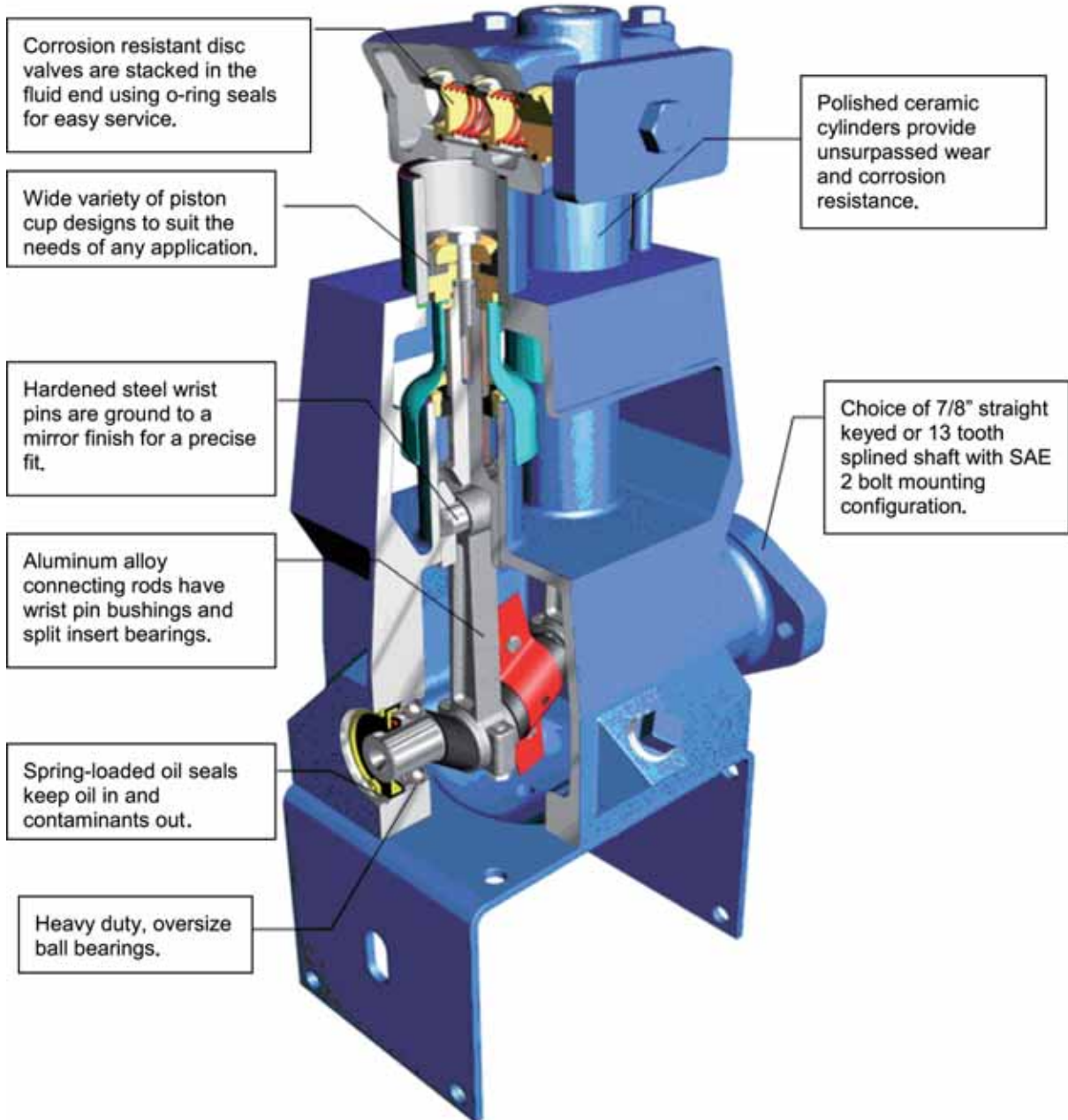
ITEM #	DESCRIPTION	QTY	PART #
1	POWER FRAME	1	5350350
2	CRANK (DRIVE)	1	5350355
3	CRANK (DRIVEN)	1	5350360
4	CONNECTING ROD ASSY	4	5350365
5	ROD BEARING	8	5350370
6	CROSSHEAD, CERAMIC	4	5350090
7	WRIST PIN	4	5350375
8	SLEEVE CROSSHEAD	4	5350030
9	UMBRELLA WASHER	4	5350080
10	BALL BEARING	4	5350380
11	OIL SEAL, CRANKSHAFT	4	5350051
12	RETAINING RING	4	5350385
13	BACK COVER	1	5350390
14	GASKET, BACK COVER	1	5350027
15	CAP SCREW BACK COVER	12	5350395
16	WASHER, BACK COVER	12	5350400
17	CAP SCREW, CONNECTING ROD	8	5350405
18	ALLEN HEAD SCREW FLANGE	4	5350410
19	FLANGE	1	5350415
20	PROTECTIVE COVER	1	5350420
21	LOCK WASHER	2	5350425
22	CAP SCREW CONNECTION FLANGE	2	5350430
23	SPINE ADAPTER	1	5350435
24	SPRING PIN	1	5350440
25	ELBOW LUBE VENT	1	5350445
26	BUSHING, LUBE VENT	1	5350450
27	NIPPLE, LUBE VENT	1	5350455
28	REDUCER, LUBE VENT	1	5350460
29	LUBE VENT	1	5350465
30	PIPE PLUG, FILL	1	5350470
31	PIPE PLUG, DRAIN	1	5350475
32	NAME PLATE	1	5350480
34	SELF TAPPING SCREW	2	5350485

### EO413 COMPONENT PARTS FLUID END

ITEM #	DESCRIPTION	QTY	PART #
34	FLUID CYLINDER	1	5350495
35	CAP SCREW, FLUID CYLINDER	4	5350500
36	WASHER, FLUID CYLINDER	4	5350505
37	DISC SEAT VALVE	8	5350006
38	O-RING, VALVE SEAT	12	5350009
39	SPRING DISK ASSEMBLY	8	5350008
40	VALVE CAGE	8	5350035
41	VALVE COVER	8	5350050
42	VALVE COVER CLAMP	4	5350510
43	CAP SCREW, VALVE COVER CLAMP	2	5350515
44	CAP SCREW, PISTON	2	5350520
45	CUP WASHER	4	5350013
46	PISTON CUP	4	5350525
47	PISTON HOLDER	4	5350012
48	O-RING, PISTON	4	5350011
49	WASHER, UMBRELLA	4	5350530
50	O-RING, CYLINDER	4	5350249
51	RING SEAL, CYLINDER	4	5350248
52	CYLINDER	4	5350010
53	GASKET	4	5350247
54	UMBRELLA	4	5350020
55	PIPE PLUG, FLUID CYLINDER DRAIN	1	5350535



## A04 PISTON PUMP FEATURES



Corrosion resistant disc valves are stacked in the fluid end using o-ring seals for easy service.

Wide variety of piston cup designs to suit the needs of any application.

Hardened steel wrist pins are ground to a mirror finish for a precise fit.

Aluminum alloy connecting rods have wrist pin bushings and split insert bearings.

Spring-loaded oil seals keep oil in and contaminants out.

Heavy duty, oversize ball bearings.

Polished ceramic cylinders provide unsurpassed wear and corrosion resistance.

Choice of 7/8" straight keyed or 13 tooth splined shaft with SAE 2 bolt mounting configuration.

The I04 piston pump is available; it is a horizontal version of the A04 pump. Please contact your Hole Products representative for details.

# A0413 PISTON PUMP DATA

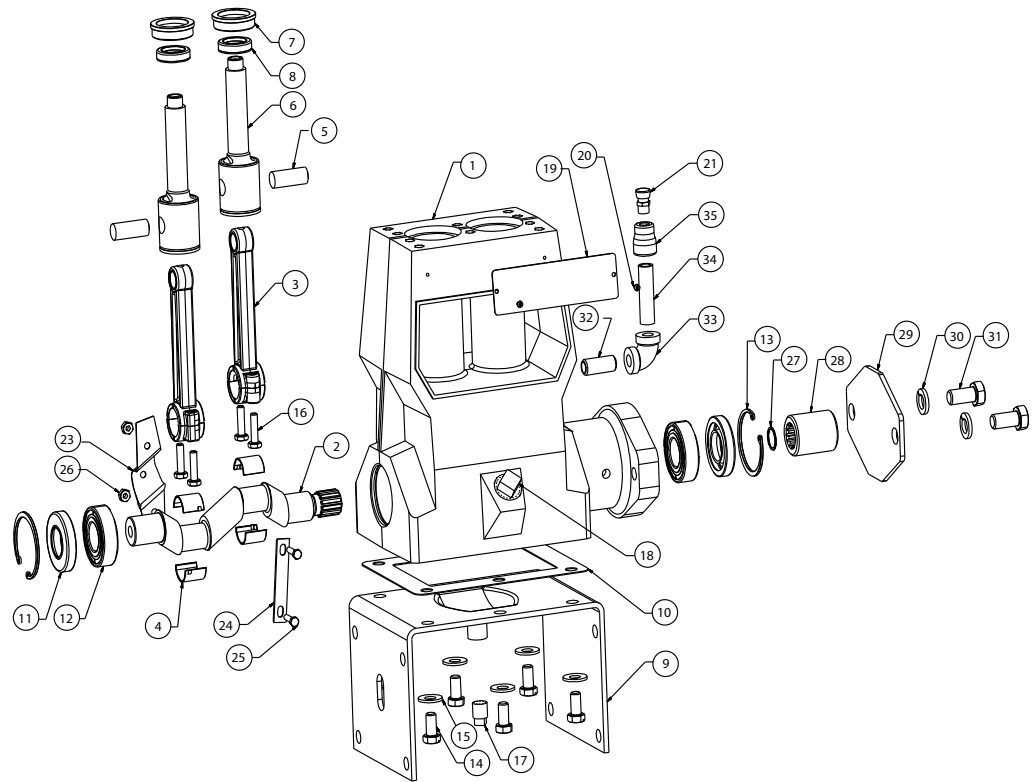


AO413 PUMP SPECIFICATIONS	
PUMP MODEL	A0413
CONFIGURATION	A04 VERTICAL DUPLEX PISTON
NUMBER OF PISTONS	2
STROKE LENGTH	1"
FRAME LOAD RATING	1,140 LBS.
PUMP WEIGHT (AVERAGE)	43 LBS.
DIRECTION OF ROTATION	EITHER
INTERNAL GEAR RATIO	N/A
INTERMITTENT DUTY SPEED RATING	500 RPM
CONTINUOUS DUTY SPEED RATING	400 RPM
BALL VALVE MAX SPEED RATING	N/A
MINIMUM SPEED	300 RPM
MECHANICAL EFFICIENCY	90%
LUBRICATION SYSTEM (STANDARD)	SPLASH, GRAVITY RETURN
LUBE OIL CAPACITY	1 QUART
LUBE OIL TYPE	SAE 30
MAXIMUM FLUID TEMPERATURE	140° F (250° F CAPABILITY)
MINIMUM FLUID TEMPERATURE	0° F (-20° F CAPABILITY)
STANDARD SUCTION SIZE	1" NPT
STANDARD DISCHARGE SIZE	1/2" NPT 3/4" NPT
FLUID END MATERIAL	CAST IRON, ALUMINIUM BRONZE
VALVE TYPES	DISC VALVES
HYDRAULIC MOTOR MOUNT	SAE A - 2 BOLT WITH 7/8" - 13T

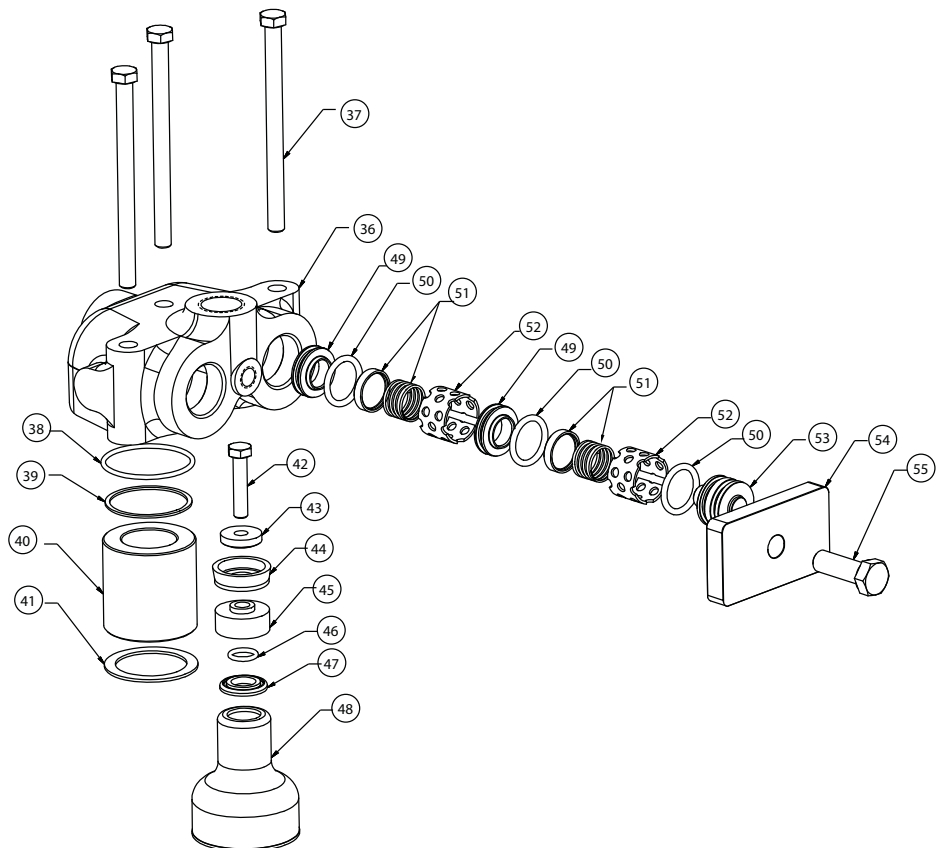
AO413 PUMP PERFORMANCE							
PISTON DIAMETER (IN)	DISPLACEMENT (GAL/REV)	MAXIMUM PRESSURE (PSI)	PUMP CAPACITY (GPM @ INPUT SPEED RPM)				
			300 RPM	350 RPM	375 RPM	400 RPM	500 RPM
1.625"	0.0180	550	5.39	6.28	6.73	7.18	8.98
Horsepower based on 85 or 90% mechanical efficiency. Actual application horsepower requirements can be calculated using the equation: $BHP = (GPM * PSI) / (1714 * 0.85 \text{ or } 0.90)$							
Pump capacities shown are based on 100% volumetric efficiency.							
Dimensions shown are for general sizing purposes and should not be used for construction.							

# A0413 PISTON PUMP PARTS DIAGRAM

## POWER END



## FLUID END



## A0413 PISTON PUMP PARTS

AO413C COMPLETE PUMP	
DESCRIPTION	PART #
COMPLETE PUMP 4 CYLINDER	5350540

AO413C GROUPS	
DESCRIPTION	PART #
CYLINDER GROUP INCLUDES: 41,42,43,44,45,46, and 47	5350690
VALVE CHAMBER GROUP INCLUDES: 51,52,53,54,55,56, and 57	5350695

AO413C COMPONENT PARTS DRIVE END			
ITEM #	DESCRIPTION	QTY	PART #
1	POWER FRAME	1	5350545
2	CRANK	1	5350550
3	CONNECTING ROD ASSY.	2	5350055
4	ROD BEARING, HALF SHELL	4	5350555
5	WRIST PIN	2	5350560
6	CROSSHEAD	2	5350090
7	SEAL HOLDER	2	5350565
8	SLEEVE	2	5350030
9	BACK COVER	1	5350570
10	GASKET, BACK COVER	1	5350025
11	OIL SEAL, CRANKSHAFT	2	5350045
12	BALL BEARING	2	5350575
13	RETAINING RING	2	5350580
14	CAP SCREW, BACK COVER / FRONT FOOT	6	5350585
15	WASHER, BACK COVER	6	5350590
16	CAP SCREW, CONNECTING ROD	4	5350595
17	PIPE PLUG, DRAIN	1	5350600
18	PIPE PLUG, FILL	1	5350605
19	NAME PLATE	1	5350610
20	SELF TAPPING SCREW	2	5350615
21	LUBE VENT	1	5350620
22	KEY*	1	5350625
23	OIL SLINGER	1	5350630
24	BOLTING STRIP, OIL SLINGER	1	5350635
25	CAP SCREW, OIL SLINGER	2	5350640
26	HEX NUT, OIL SLINGER	2	5350645
27	RETAINER RING**	1	5350650
28	SPLINE ADAPTER**	1	5350655
29	PROTECTIVE COVER**	11	5350660
30	LOCK WASHER**	2	5350665
31	CAP SCREW, CONNECTION FLANGE**	2	5350670
32	NIPPLE, LUBE VENT	1	5350675
33	ELBOW, LUBE VENT	1	5350680
34	NIPPLE, LUBE VENT	1	5350675
35	REDUCER, LUBE VENT	1	5350685

AO413C COMPONENT PARTS FLUID END			
ITEM #	DESCRIPTION	QTY	PART #
36	FLUID CYLINDER	1	5350700
37	CAP SCREW, FLUID CYLINDER	3	5350705
38	O-RING, CYLINDER	2	5350249
39	RING SEAL, CYLINDER	2	5350248
40	CYLINDER	2	5350710
41	GASKET, CYLINDER	2	5350247
42	CAP SCREW, PISTON	2	5350715
43	PISTON CUP WASHER	2	5350720
44	PISTON CUP	2	5350725
45	PISTON CUP HOLDER	2	5350730
46	O-RING, PISTON	2	5350011
47	WASHER, UMBRELLA	2	5350080
48	UMBRELLA	2	5350020
49	VALVE SEAT	4	5350006
50	O-RING, VALVE SEAT	6	5350735
51	VALVE DISC & SPRING	4	5350008
52	VALVE CAGE	4	5350035
53	VALVE COVER	4	5350050
54	VALVE COVER CLAMP	2	5350740
55	CAP SCREW, VALVE COVER CLAMP	1	5350745

\*Used if pump is equipped with a keyed shaft.

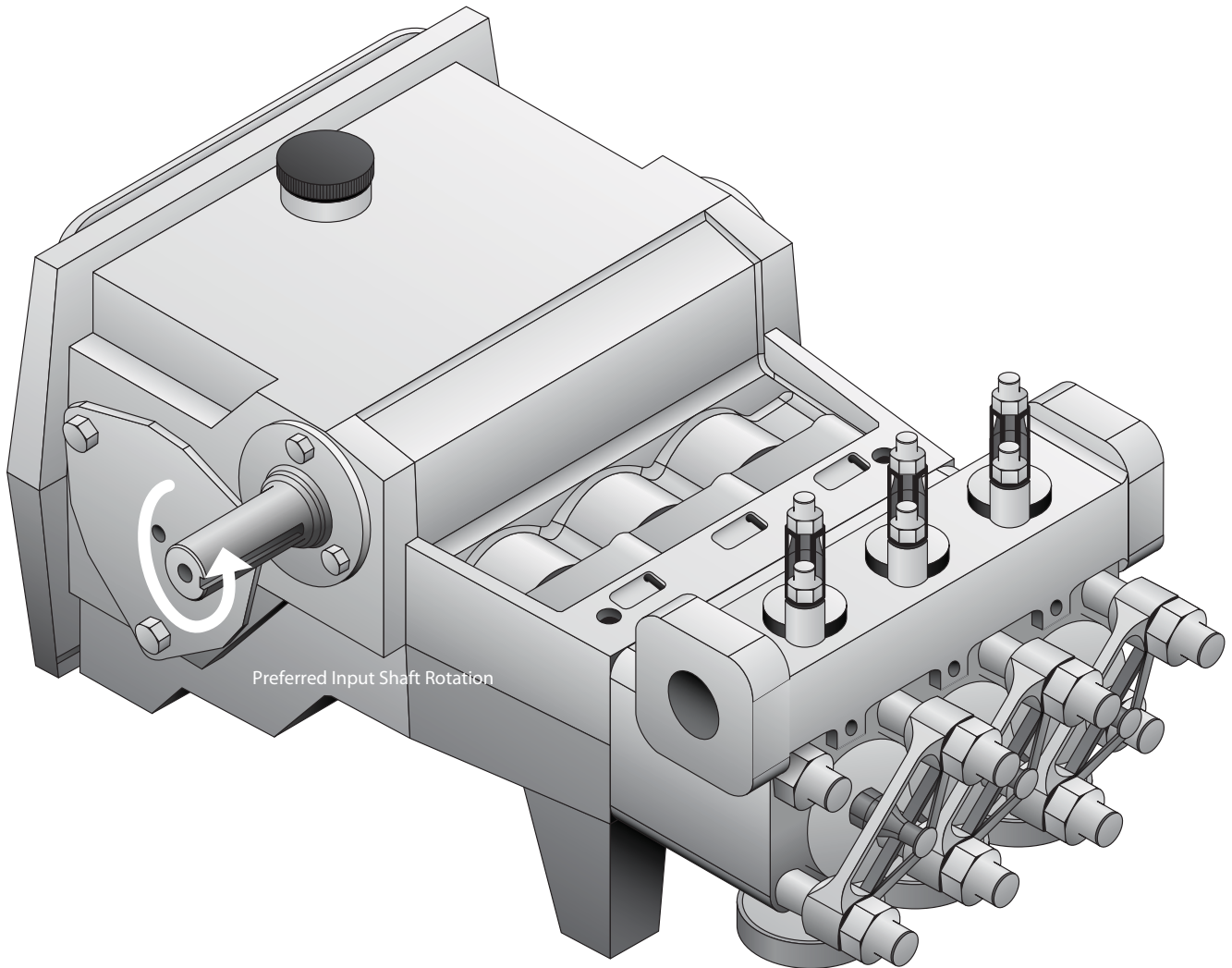
\*\*Used if pump is equipped with flanged adapter for hydraulic drive with spined shaft.





## W1122BCD PISTON PUMP FEATURES

The W1122BCD pump includes the integral gear reduction pinion shaft. Drive shaft standard end comes with 1 1/2" diameter shaft and 3/8" square keyway. Splined shaft option comes with 14 tooth 12/24" diameter pitch female spline per ANSI B92.1 specifications.



W1122BCD Pump Assembly with Pinion Shaft

## W1122BCD PUMP DATA

PUMP MODEL	W1122BCD
CONFIGURATION	HORIZONTAL TRIPLEX PISTON
NUMBER OF PISTONS	3
STROKE LENGTH	2 3/4" (69.9 MM)
FRAME LOAD RATING	6,000 LBS. (2,721 KG)
PUMP WEIGHT	425 LBS. (192 KG)
DIRECTION OF ROTATION	TOP OF SHAFT AWAY FROM HEAD
INTERNAL GEAR ROTATION	3.6:1
INTERMITTENT DUTY SPEED RATING	900 RPM (JACKSHAFT)
CONTINUOUS DUTY SPEED RATING	750 RPM (JACKSHAFT)
BALL VALVE MAX SPEED RATING	635 RPM (JACKSHAFT)
MINIMUM SPEED	360 RPM
MECHANICAL EFFICIENCY	85%
LUBRICATION SYSTEM	SPLASH, GRAVITY RETURN
LUBE OIL CAPACITY	1 GALLON
LUBE OIL TYPE	SAE 30
MAXIMUM FLUID TEMPERATURE	140° F (250° CAPABILITY)
MINIMUM FLUID TEMPERATURE	0° F (-20° CAPABILITY)
STANDARD SUCTION SIZE	2" NPT (50.8 MM)
STANDARD DISCHARGE SIZE	1 1/4" NPT (38.1 MM)
FLUID END MATERIAL	DUCTILE IRON
VALVE TYPE	DISC VALVES/BALL VALVES
HYDRAULIC MOTOR MOUNT	SAE C - 2 BOLT WITH 1 3/4" - 14T SAE C - 4 BOLT WITH 1 3/4" - 14T



### W1122 PUMP PERFORMANCE

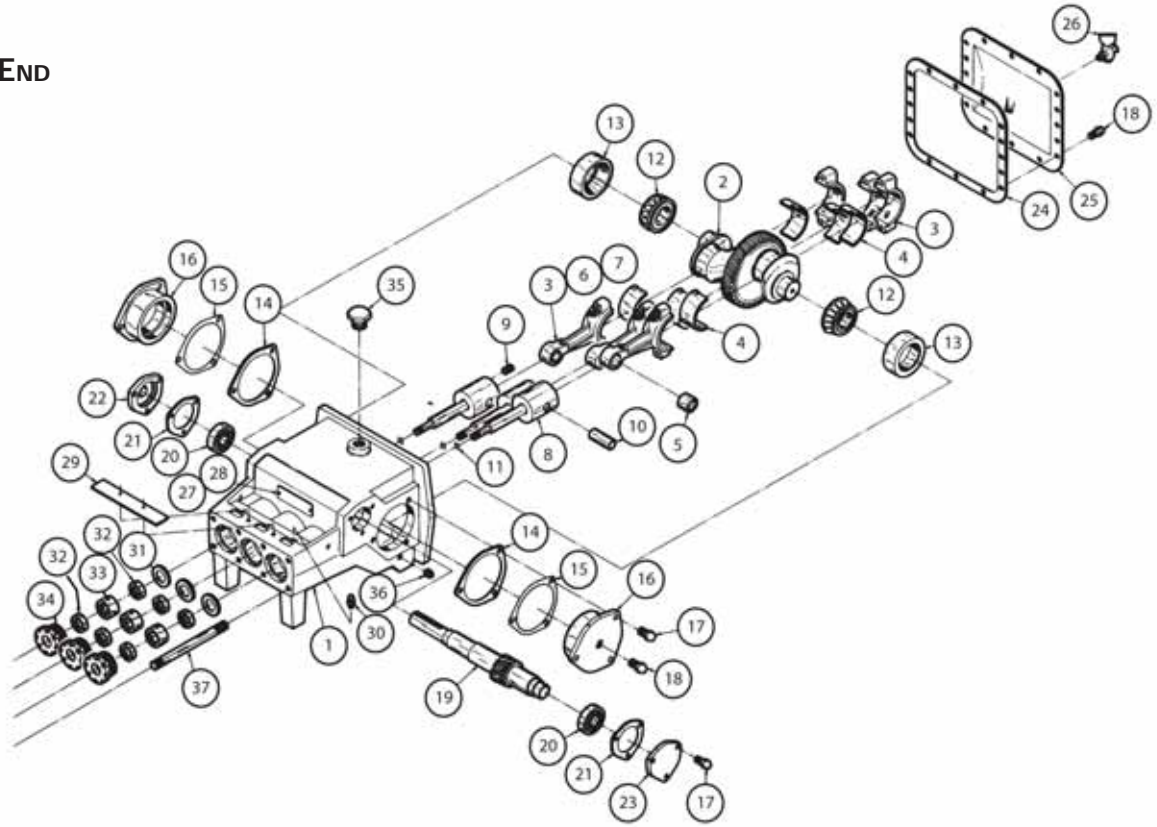
PISTON DIAMETER (IN)	DISPLACEMENT / (GAL/REV)	MAXIMUM PRESSURE	PUMP CAPACITY @ INPUT SPEED (RPM)				
			350 RPM	500 RPM	635 RPM	750 RPM	900 RPM
2 3/4"	0.0589	1,000	20.6	29.5	37.4	44.2	53

Horsepower based on 85 or 90% mechanical efficiency. Actual application horsepower requirements can be calculated using the equation:  $BHP = (GPM * PSI) / (1714 * 0.85 \text{ or } 0.90)$ .

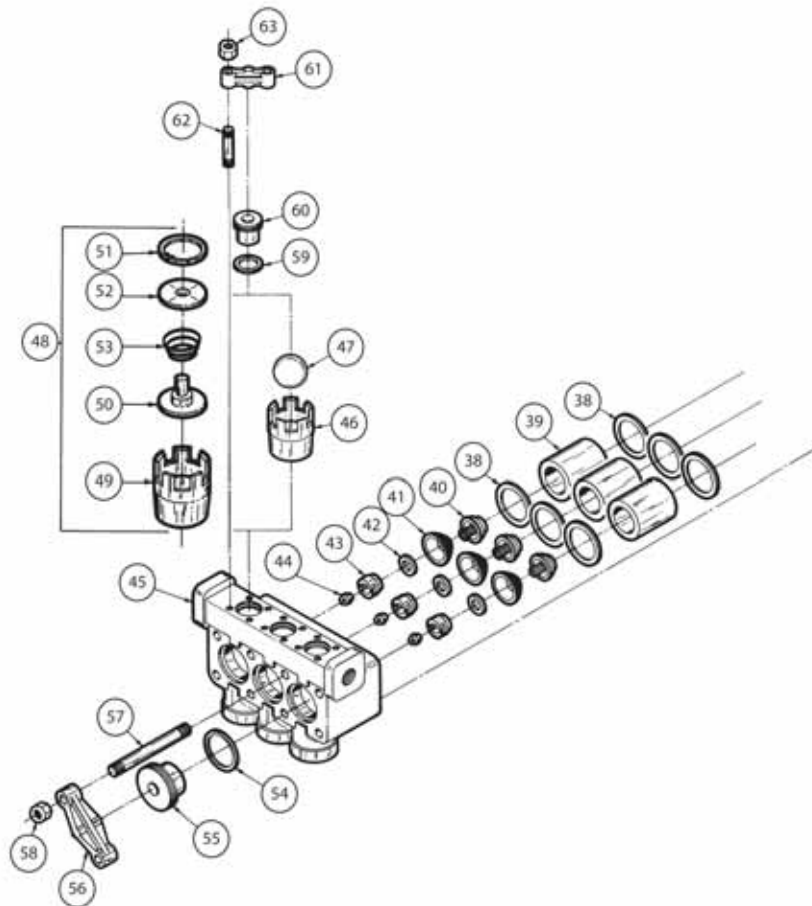
Pump capacities shown are based on 100% volumetric efficiency.

# W1122BCD SERIES PUMP PARTS DIAGRAM

## DRIVE END



## FLUID END

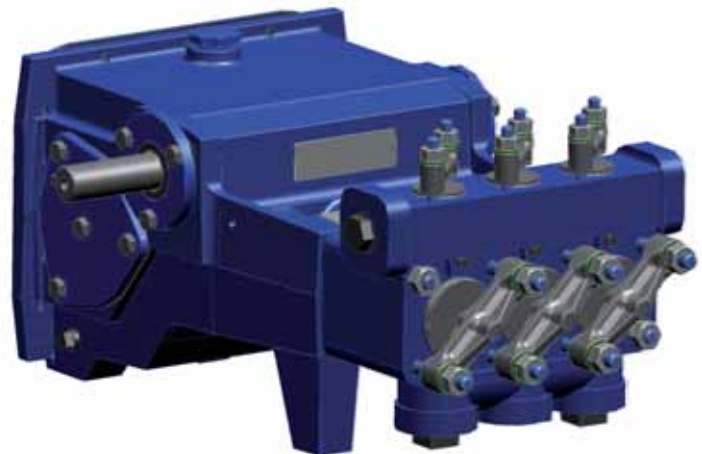


# W1122BCD PISTON PUMP PART DIAGRAM

W11221BCD COMPONENT PARTS DRIVE END			
ITEM #	DESCRIPTION	QTY	PART #
1	PUMP CASE	1	5350316
2	CRANKSHAFT	1	5350317
3	CONNECTING ROD	3	5350750
4	BEARING INSERT	3	5350755
5	BUSHING, CONNECTING ROD	3	5350760
6	BOLT CONNECTING ROD	6	5350765
7	NUT 1/2" - 20 ELAS. STOP	6	5350770
8	CROSSHEAD & ROD ASSEMBLY	3	5350319
9	SET SCREW 5/16"-18 X 5/16"	6	5350775
10	WRIST PIN	3	5350780
11	O-RING 5/8" O.D. X 1/16"	3	5350785
12	CONE, BEARING	2	5350110
13	CUP, BEARING	2	5350115
14	GASKET	2	5350120
15	SHIM	2	5350125
16	HOUSING, CRANKSHAFT BEARING	2	5350320
17	CAP SCREW, HEX HEAD 1/2" X 13 X 1 1/4"	12	5350790
18	CAP SCREW, HEX HEAD 1/2" X 13 X 3/4"	18	5350795
19	PINION SHAFT	1	5350130
	PINION SHAFT (DOUBLE SIDED)	1	5350800
20	BALL BEARING	2	5350805
21	GASKET	2	5350810
22	CAP BEARING	1	5350815
23	CAP PINION BEARING	1	5350820
24	GASKET COVER	1	5350825
25	COVER PLATE	1	5350830
26	PETCOCK	1	5350297
27	PLATE, MODEL	1	5350835
28	SCREW #4 X 3/16"	2	5350840
29	INSPECTION PLATE	1	5350845
30	LUBE FITTING, 1/8" C/Z	3	5350850
31	WASHER PACKING	3	5350855
32	SEAL OIL	6	5350155
33	SLEEVE, PACKING NUT	3	5350860
34	NUT, PLUNGER ROD	3	5350323
35	CAP OIL	1	5350865
36	PLUG, 1/2" PIPE	2	5350225
37	STUD, LONG 5/8" DIAMETER	6	5350870

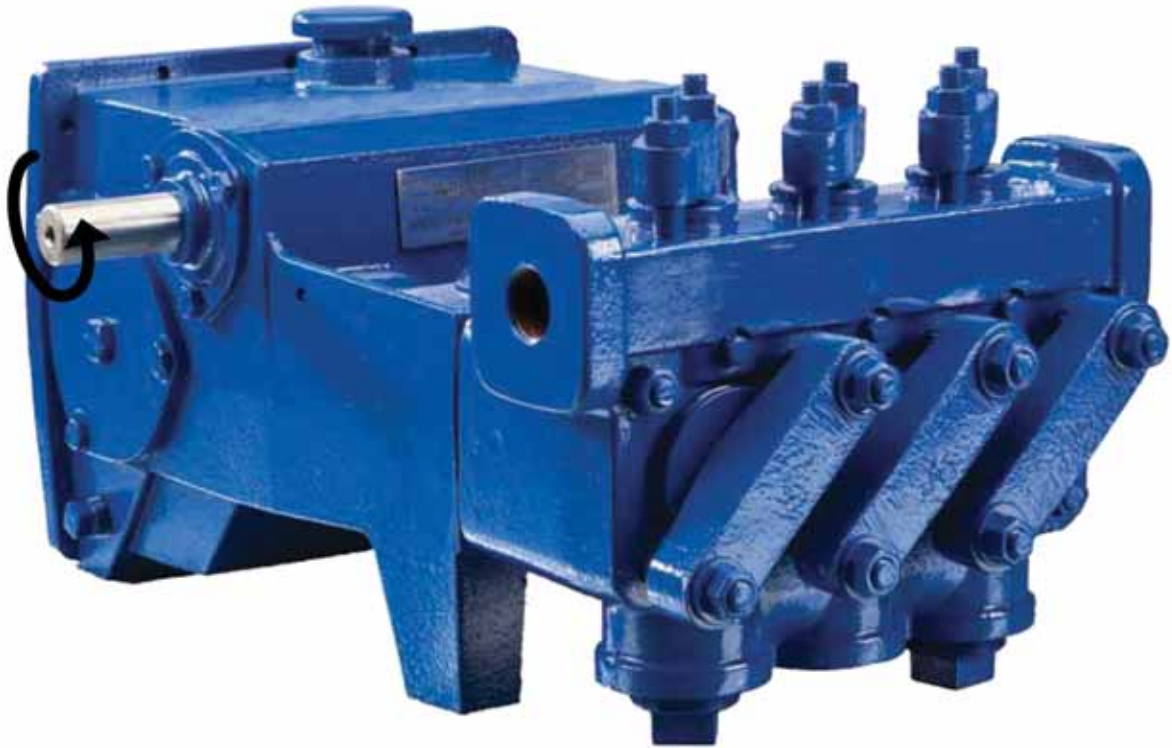
W11221BCD COMPONENT PARTS FLUID END			
ITEM #	DESCRIPTION	QTY	PART #
38	GASKET CYLINDER	6	5350165
39	CYLINDER, CERAMIC	3	5350170
40	PACKING CUP	3	5350175
41	CYLINDER PACKING		5350875
42	WASHER, PACKING	3	5350185
43	PISTON NUT (SLOTTED)	3	5350190
44	HEX NUT	3	5350211
45	FLUID CHAMBER	1	5350235
46	VALVE SEAT	6	5350269
47	BALL 1 1/8"	6	5350240
48	VALVE ASSEMBLY R-6-50 (INCLUDES: 49-53)	---	----
49	SEAT VALVE	---	---
50	VALVE	---	---
51	RETAINING RING	---	---
52	WASHER	---	---
53	SPRING	---	---
54	GASKET CYLINDER HEAD	3	5350205
55	CYLINDER COVER	3	5350245
56	CLAMP CYLINDER HEAD	3	5350290
57	STUD	2	5350250
58	HEX NUT 5/8" - 11	----	----
59	GASKET VALVE COVER	3	5350210
60	VALVE COVER	3	5350255
61	VALVE COVER CLAMP	3	5350280
62	STUD, 1/2" X 3 1/4"	6	5350265

W11221BCD COMPLETE PUMP	
MODEL	PART #
W11221BCD	5350880



## AL0918B PISTON PUMP FEATURES

The AL0918B pump includes the integral gear reduction pinion shaft and ball valves. Drive shaft standard end comes with 1 1/8" diameter shaft and 1/4" square keyway. Splined shaft option comes with 14 tooth 12/24" diameter pitch female spline per ANSI B92.1 specifications.



AL0918B Pump Assembly with Pinion Shaft.

## AL0918B PISTON PUMP DATA

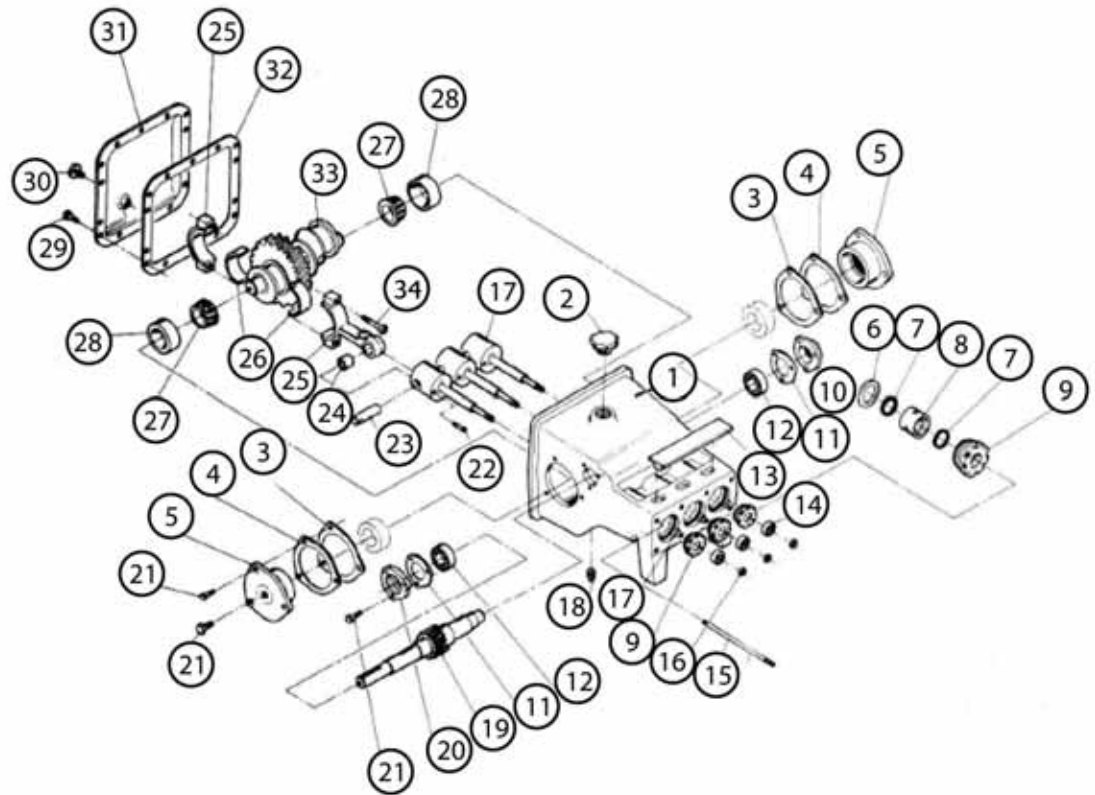
PUMP MODEL	AL0918B
PUMP MODEL	L09
CONFIGURATION	HORIZONTAL TRIPLEX PISTON
NUMBER OF PISTONS	3
STROKE LENGTH	2. 1/4" (57.15 MM)
FRAME LOAD RATING	2,800 LBS. (1,270 KG)
PUMP WEIGHT	200 LBS. (90 KG)
DIRECTION OF ROTATION	TOP OF SHAFT AWAY FROM HEAD
INTERNAL GEAR ROTATION	3.6:1
INTERMITTENT DUTY SPEED RATING	890 RPM
CONTINUOUS DUTY SPEED RATING	750 RPM
BALL VALVE MAX SPEED RATING	625 RPM
MINIMUM SPEED	360 RPM
MECHANICAL EFFICIENCY	85%
LUBRICATION SYSTEM	SPLASH, GRAVITY RETURN
LUBE OIL CAPACITY	2 1/4 QUARTS
LUBE OIL TYPE	SAE 30
MAXIMUM FLUID TEMPERATURE	140° F (250° CAPABILITY)
MINIMUM FLUID TEMPERATURE	0°F (-20° CAPABILITY)
STANDARD SUCTION SIZE	1 1/2" NPT (38.1 MM)
STANDARD DISCHARGE SIZE	1" NPT (25.4 MM)
FLUID END MATERIAL	CAST IRON
VALVE TYPE	DISC VALVES/BALL VALVES
HYDRAULIC MOTOR MOUNT	SAE B - 4 BOLT WITH 1 1/4" - 14T SAE C - 4 BOLT WITH 1 1/4" - 14T



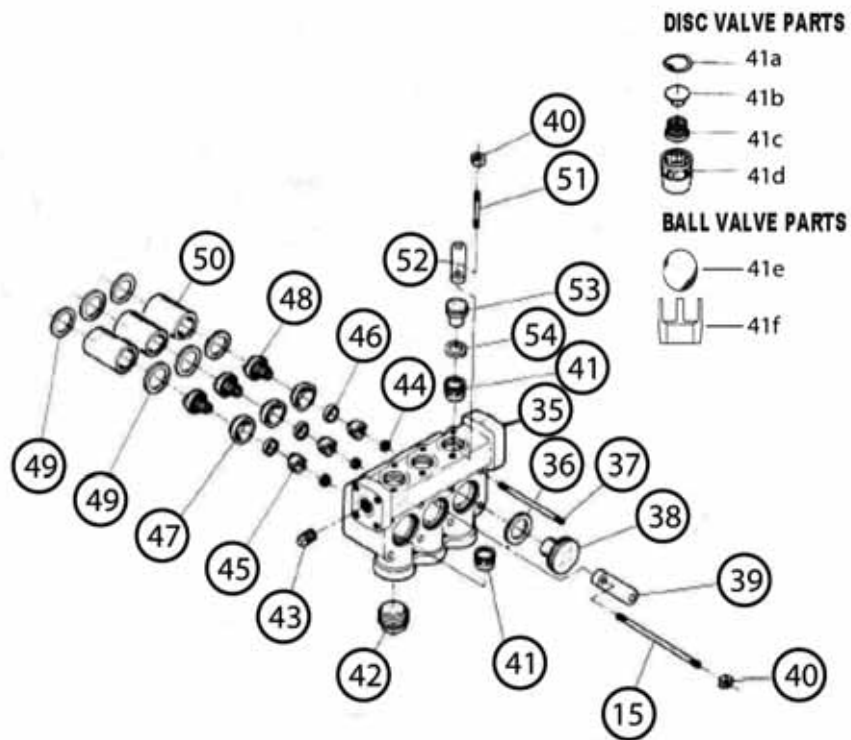
AL0918B PUMP PERFORMANCE							
PISTON DIAMETER (IN)	DISPLACEMENT/ (GAL/REV)	MAXIMUM PRESSURE	PUMP CAPACITY @ INPUT SPEED (RPM)				
			350 RPM	625 RPM	700 RPM	750 RPM	890 RPM
2 1/4"	.0323	700	11.3	20.2	22.6	24.2	28.7
Horsepower based on 85 or 90% mechanical efficiency. Actual application horsepower requirements can be calculated using the equation: BHP = (GPM * PSI) / (1714 * 0.85 or 0.90).							
Pump capacities shown are based on 100% volumetric efficiency.							

# ALO918B SERIES PUMP PARTS DIAGRAM

DRIVE END



FLUID END

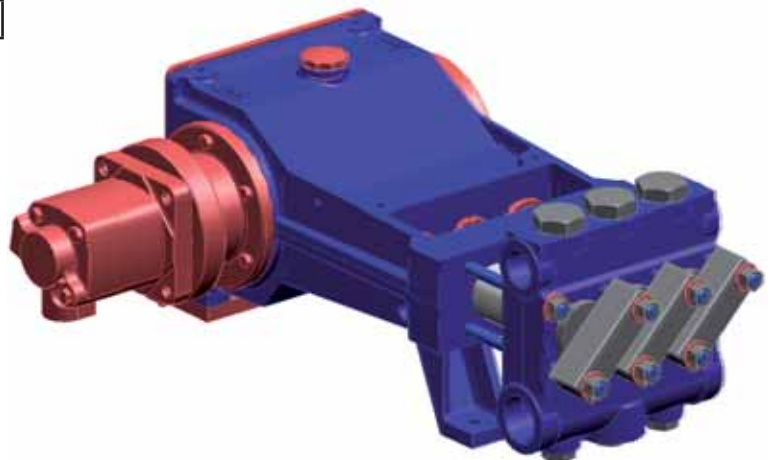


# ALO918B PISTON PUMP PART DIAGRAM

ALO918B COMPONENT PARTS - DRIVE END			
ITEM #	DESCRIPTION	QTY	PART #
1	PUMP CASE	1	5350885
2	OIL CAP	1	5350300
3	SHIM	5	5350890
4	GASKET	2	5350895
5	BEARING HOUSING	2	5350900
6	PACKING WASHER L09	3	5350186
7	TOP OIL SEAL	6	5350085
8	HOLDER SEAL	3	5350029
9	SEAL RETAINER NUT	3	5350345
10	BEARING CAP	1	5350905
11	GASKET	2	5350910
12	BALL BEARING	2	5350915
13	COVER PLATE ASSEMBLY	1	5350920
14	SEAL HOLDER	3	5350925
15	CYLINDER COVER STUD	6	5350930
16	O - RING 5/8" O.D. X 1/16"	3	5350105
17	CROSSHEAD & ROD	3	5350335
18	PLUG, 1/2"	2	5350225
19	PINION SHAFT	1	5350935
20	BEARING CAP	1	5350940
21	HHCS 3/8 - 16 X 3/4"	12	5350945
22	SET SCREW 5/16"-18 X 1/2"	3	5350347
23	PIN	3	5350950
24	BUSHING	3	5350348
25	CONNECTING ROD	3	5350955
26	BEARING ECCENTRIC	6	5350960
27	CONE BEARING	2	5350965
28	CUP BEARING	2	5350970
29	HHCS 3/8 - 16 X 1/2"	14	5350975
30	PETCOCK 1/8" NPT	1	5350297
31	COVER ASSEMBLY	1	5350980
32	GASKET - COVER	1	5350985
33	ECCENTRIC GEAR ASSEMBLY	1	5350990
34	BOLT	6	5350995

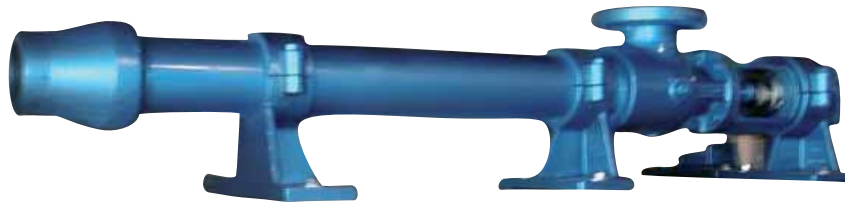
ALO918B COMPONENT PARTS - FLUID END			
ITEM #	DESCRIPTION	QTY	PART #
35	VALVE CHAMBER	1	5351000
36	GASKET CYLINDER HEAD	3	5350234
37	STUD CYLINDER	2	5351005
38	CYLINDER HEAD	3	5351010
39	CLAMP CYLINDER HEAD	3	5351015
40	HEX NUT 1/2" -13	14	5350281
41	DISC VALVE PARTS INCLUDES: 41a thru 41d	-----	5351020
41	BALL VALVE PARTS INCLUDES: 41e and 41f	-----	5351025
41a	SNAP RING	6	5351045
41b	DISC AND SPRING ASSY.	6	5351035
41c	VALVE SEAT	6	5351030
41d	SEAT VALVE	6	5351040
41e	BALL	6	5350031
41f	SEAT VALVE	6	5351030
42	PLUG 1 1/2" PIPE	2	5351050
43	PLUG 1" PIPE	1	5351055
44	HEX NUT 1/2" -13SS	3	5350211
45	PISTON NUT (SLOTTED)	3	5350190
46	PACKING WASHER	3	5350184
47	PACKING 1 5/8"	3	5350033
48	PACKING CUP	3	5350174
49	GASKET CYLINDER	3	5350164
50	CYLINDER 1 5/8" I.D.	3	5350017
51	VALVE CLAMP STUD	6	5351060
52	VALVE COVER CLAMP	3	5351065
53	VALVE COVER	3	5351070
54	GASKET VALVE COVER	3	5350233

ALO918B COMPLETE PUMP	
MODEL	PART #
ALO918B	5351075





## PROGRESSIVE CAVITY PUMPS



Hole Products offers a complete line of progressive cavity (Moyno®) pumps with a wide range of capacities and pressures.

Progressive cavity pumps are suitable for a wide variety of drilling applications, and when properly applied, offer cost effective, long life performance.

Pump diagrams are shown for general reference and to aid in identifying spare parts for service. Order spare parts by part number and description. Item numbers are for reference only.

Please contact your Hole Products representative for pump performance details and to order additional pumps and spare parts.

# PROGRESSIVE CAVITY PUMP DATA



## MATERIALS OF CONSTRUCTION:

**Pump Body:** Cast Iron 316 Stainless Steel

**Internals, Including Rotor:** Alloy Steel, 316 Stainless Steel

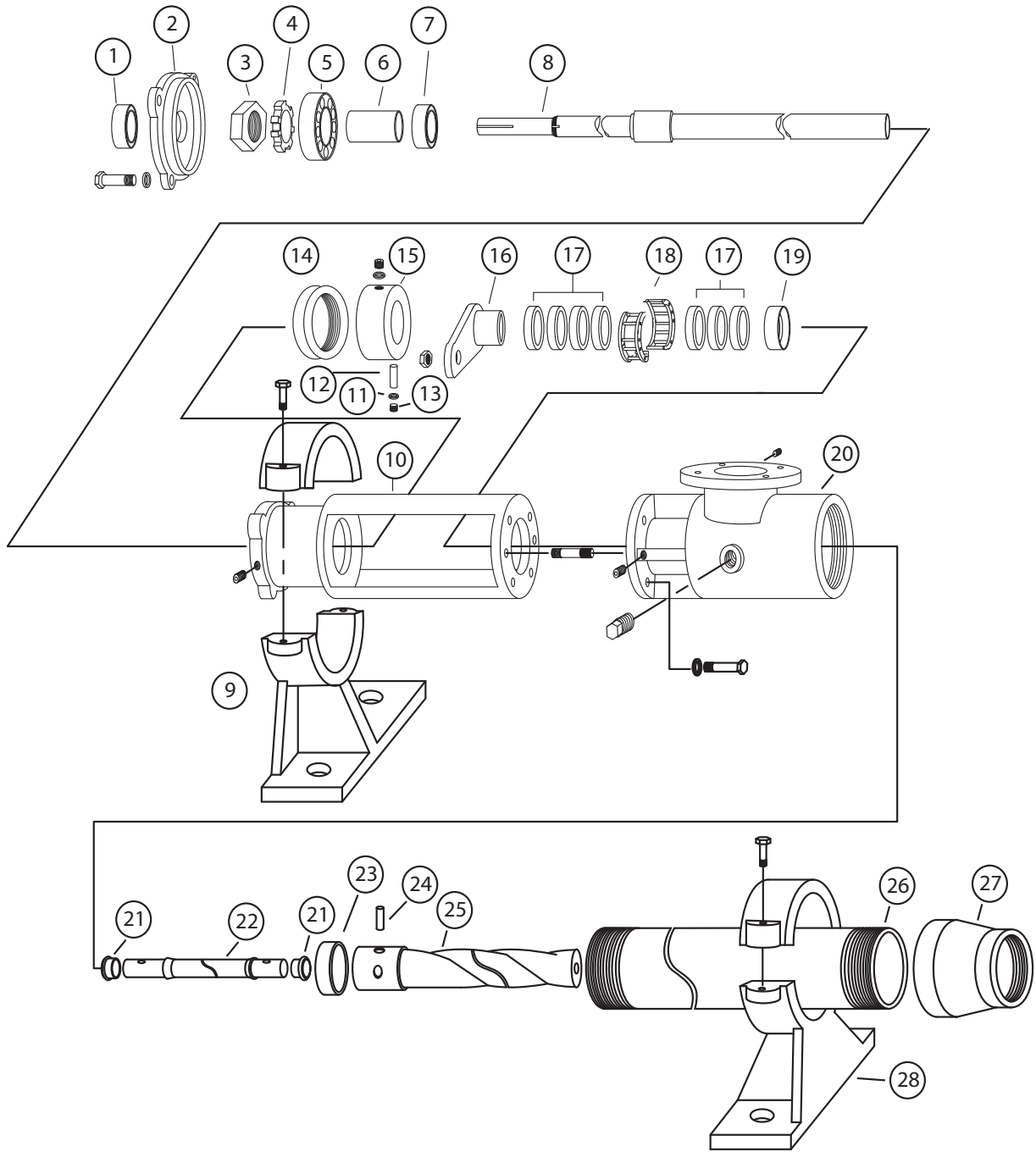
**Stators:** EPDM (TO 260° F)  
 FLUORELASTOMER (TO 350° F)  
 NITRILE (TO 210° F)  
 NATURAL RUBBER (TO 185° F)

## OPTIONS:

- Variety of drives and mounting configurations
- Mechanical or packing seals
- Electronic pump controls
  - Open and closed loop systems
  - Variable speed control
  - Metering and batching control
  - Fluid detection control
- Tachometer, gauges, and other accessories

PROGRESSIVE CAVITY PUMP RATINGS								
MODEL #	MAXIMUM GPM	MAXIMUM RPM	MAXIMUM PRESSURE PSI	SHAFT DIAMETER	KEYWAY	WEIGHT	PORT SIZES SUCTION	PORT SIZES DISCHARGE
2L4	24	2,100	15	15/16"	1/4" x 1/8"	91 bs.	2 1/2"	2"
3L4	24	1,200	225	15/16"	1/4" x 1/8"	97 lbs.	2 1/2"	2"
2L6	46	900	150	1 1/8"	1/4" x 1/8"	159 lbs.	3"	2 1/2"
3L6	46	900	225	1 1/8"	1/4" x 1/8"	192 lbs.	3"	2 1/2"
2L8	100	900	150	1 3/8"	3/8" x 3/16"	332 lbs.	4"	4"
3L8	100	900	225	1 3/8"	3/8" x 3/16"	372 lbs.	4"	4"

# PROGRESSIVE CAVITY PUMP PARTS DIAGRAM 2L4, 2L6, 2L8, 3L4, 3L6, AND 3L8



# PROGRESSIVE CAVITY PUMP PARTS

PROGRESSIVE CAVITY PUMP PARTS							
ITEM #	DESCRIPTION	2L4	2L6	2L8	3L4	3L6	3L8
----	COMPLETE PUMP GROUP	5450040	5450046	5450080	5450041	5450015	5450020
----	CONNECTING ROD KIT INCLUDES: 11, 12, 13, 21, 22 & 24	5450002	5450025	5450058	5450002	5450025	5450058
1	GREASE SEAL (THRUST)	5450058	5450034	5450055	5450058	5450034	5450055
2	BEARING COVER PLATE	5450135	5450140	5450145	5450135	5450140	5450145
3	BEARING LOCK NUT	5450165	5450170	5450175	5450165	5450170	5450175
4	BEARING LOCK WASHER	5450195	5450185	5450190	5450195	5450185	5450190
5	BALL BEARING (THRUST)	5450094	5450099	5450215	5450094	5450099	5450215
6	BEARING SPACERS	5450092	5450097	5450225	5450092	5450097	5450225
7	BALL BEARING (RADIAL)	5400093	5450098	5450235	5400093	5450098	5450235
8	DRIVE SHAFT	5450057	5450052	5450016	5450057	5450052	5450016
9	BODY SUPPORT	5450245	5450250	5450255	5450245	5450250	5450255
10	BEARING HOUSING	5450275	5450049	5450280	5450275	5450049	5450280
11	RETAINING SCREW WASHER	5450295	5450007	5450010	5450295	5450007	5450010
12	SHAFT PIN	5450037	5450023	5450024	5450037	5450023	5450024
13	DRIVE PIN RETAINING SCREW	5450305	5450013	5450011	5450305	5450013	5450011
14	GREASE SEAL (RADIAL)	5450059	5450032	5450056	5450059	5450032	5450056
15	SHAFT COLLAR	5451023	5451020	5451021	5451023	5451020	5451021
16	PACKING GLAND	5450335	5450340	5450200	5450335	5450340	5450200
17	PACKING	5450004	5450026	5450029	5450004	5450026	5450029
18	LANTERN RING	5450067	5450061	5450064	5450067	5450061	5450064
19	PACKING WASHER	5450100	5450062	5450018	5450100	5450062	5450018
20	SUCTION HOUSING (STATOR)	5450355	5450047	5450065	5450355	5450047	5450065
21	CONNECTING ROD WASHER	5450102	5450001	5450000	5450102	5450001	5450000
22	CONNECTING ROD	5450365	5450019	5450370	5450365	5450019	5450370
23	RETAINER, PIN (ROTOR BAND)	5450003	5450039	5450006	5450003	5450039	5450006
24	ROTOR PIN	5450012	5450022	5450024	5450012	5450022	5450024
25	ROTOR	5450045	5450070	5450048	5450042	5450030	5450031
26	STATOR	5450050	5450071	5450038	5450043	5450035	5450036
27	REDUCER	5450390	5450027	5450081	5450390	5450027	5450081
28	STATOR SUPPORT	5450395	5450400	5450068	5450395	5450400	5450068

