

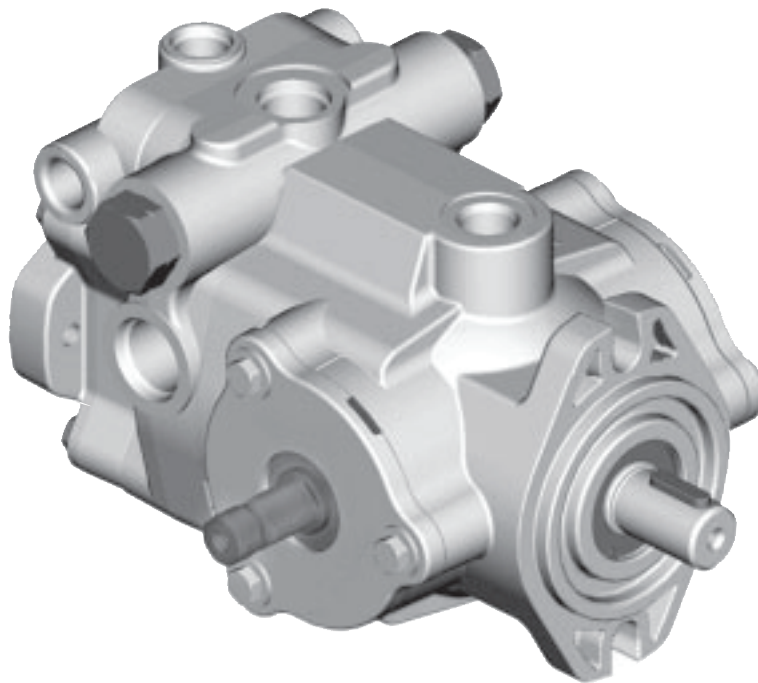
# Danfoss®

## Medium Duty Piston Pump

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## Parts Information



Model 70160 Variable Displacement Piston Pump

20,3 cm<sup>3</sup>/r [1.24 in<sup>3</sup>/r] or 23,6 cm<sup>3</sup>/r [1.44 in<sup>3</sup>/r] Displacements

Manual Controlled

v-02

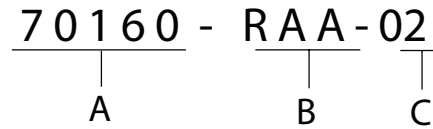


### Identification Numbers -Manually Variable Displacement Piston Pump

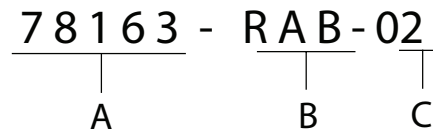
Stamped on each unit's mounting flange.

- A - Product Number Description  
70160 = Single Piston Pump  
78162 = Single Piston Pump with Gear Pump  
78161 = Tandem Piston Pumps  
78163 = Tandem Piston Pumps with Gear Pump
- B - Sequential Numbering
- C - Engineering Design Code

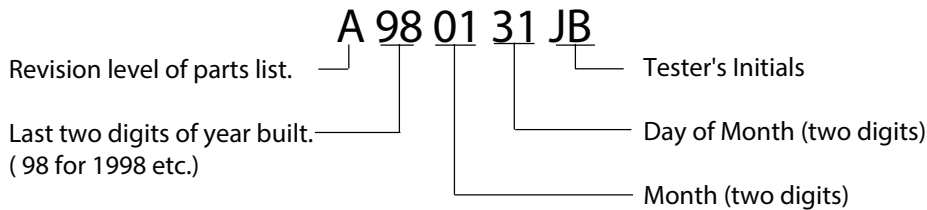
Single Pump - Product Number:



Tandem Pumps -Product Number:



Serial Number Code:



Each order must include the following information.

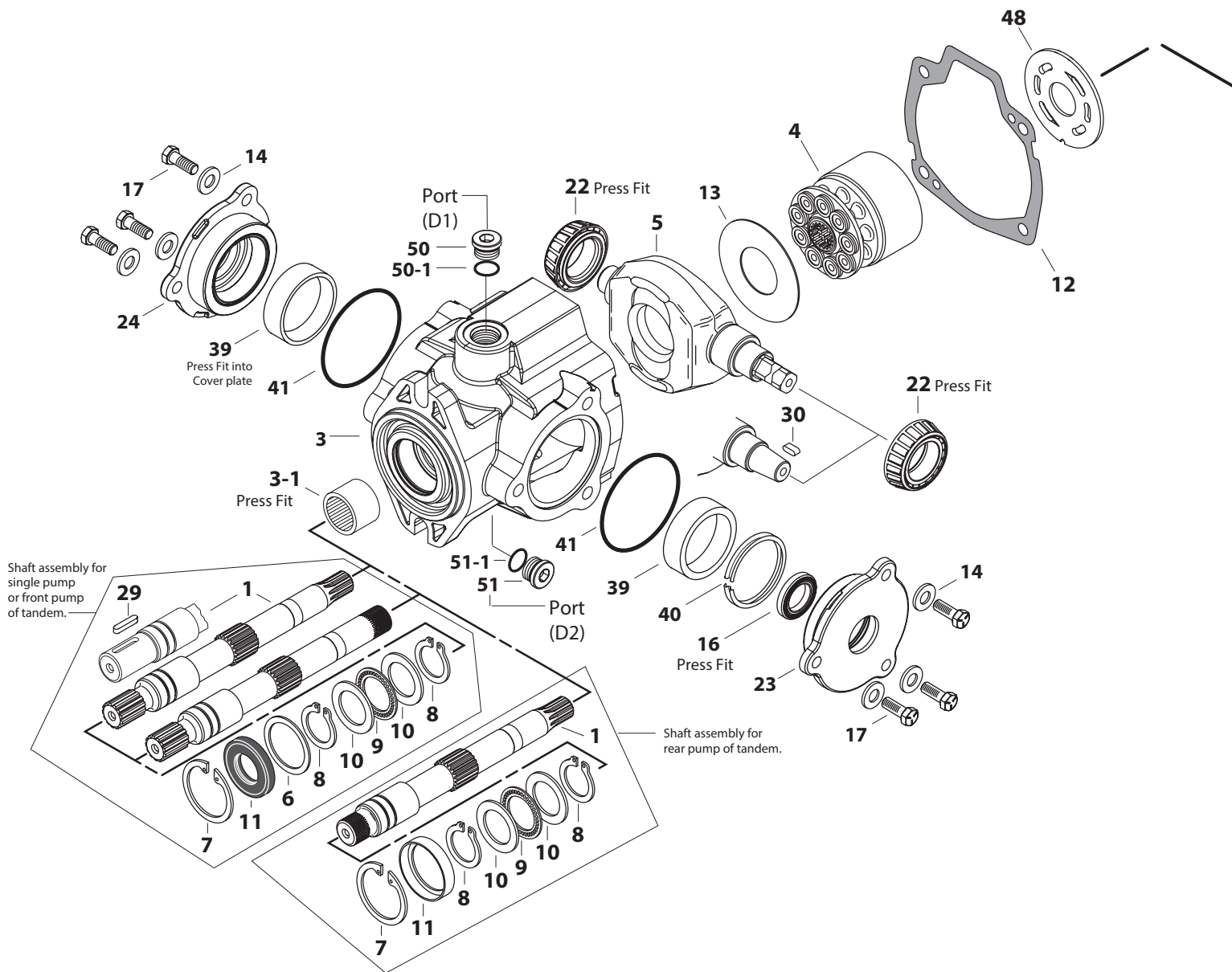
1. Product and/or Part Number
2. Serial Number Code
3. Part Name
4. Quantity

### Tools Required

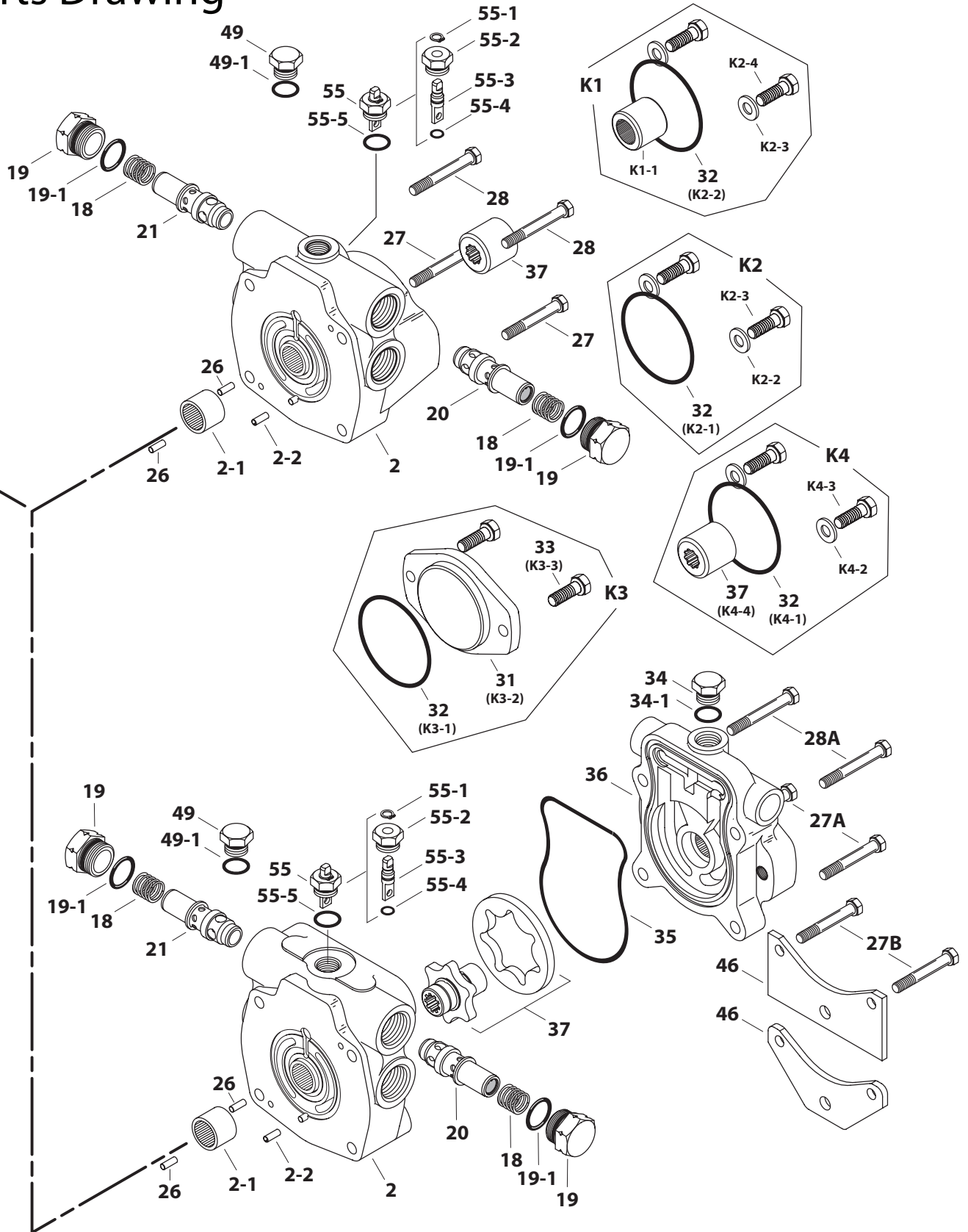
- 1/2, 9/16, 7/8 & 1-1/8 in. sockets and/or end wrenches
- Torque wrench (136 Nm [100 lbfft] capacity)
- Ratchet wrench
- 5/16 in. and 7/16 Allen wrenches or bit sockets
- Internal and external retaining ring pliers
- Small screwdrivers (2)
- Hammer (soft face)
- Light Petroleum Jelly
- Seal driver or similar tool

# Parts Drawing

Pump drawn below is typical of a right hand pump.



# Parts Drawing



# Parts List

Parts listed below are to service catalog units. Other variations of units are built that have parts altered for special requirements. The non-catalog units can be serviced with the parts list below using caution for proper identification. Contact an Danfoss representative with any questions concerning your selection. Have your final assembly number ready when contacting representative.

Item	02 Part No.	Qty.	Description
1	☒	1	Drive Shaft (Identification drawing on page #8)
2	☒	1	Endcover Assembly (Identification drawing and parts list on page #9)
3	☒	1	Housing Assembly (Identification drawing on page #10)
3-1	16238-11616	1	Bearing (Press Fit)
4	70111-692	1	Rotating Kit Assembly (parts list on page #10)
5		1	Swashplate, 20,3 cm <sup>3</sup> /r [1.24 in <sup>3</sup> /r] Displacement
	70160-623		Square Arm
	70160-617		Tapered Arm
5		1	Swashplate, 23,6 cm <sup>3</sup> /r [1.44 in <sup>3</sup> /r] Displacement
	70160-620		Square Arm
	70160-618		Tapered Arm
6	16048-312	1	Washer
+ 7	16077-26	1	Retaining Ring
+ 8	16078-16	2	Retaining Ring
9	16241-1625	1	Thrust Bearing
10	16241-C1625	2	Bearing Race
+ 11	16253-16	1	Shaft Seal, Drive
11	16253-216	1	Viton Shaft Seal, Drive
11	70102-636	1	Spacer
+ 12	70111-701	1	Housing Gasket
13	70160-504	1	Swashplate Insert
14	106013-038	6	Washer
+ 16	16253-214	1	Shaft Seal, Trunnion
17	16136-610	6	Screw, Cap
18	17086-017	2	Spring
19	32060-8	2	Plug Assembly
+ 19-1	16015-18-90	2	O-ring, 2,38 mm Dia. x 22,23 mm ID. [.0937 in. Dia. x .875 in. ID.]
20	☒	1	Relief Valve for Port "C" (Identification drawing on page #11)
21	☒	1	Relief Valve for Port "D" (Identification drawing on page #11)
22	16320-117	2	Cone Bearing
23	70160-508	1	Cover Plate
24	70160-510	1	Cover Plate
26	16028-304	2	Dowel Pin
27	16136-520	2	Cap Screws, 5/16-18, 50,8 mm [2 in.] Long
27A	16136-532	2	Cap Screws, 5/16-18, 82,6 mm [3.25 in.] Long
27B	16136-534	2	Cap Screws, 5/16-18, 88,9 mm [3.5 in.] Long
28	16136-524	2	Cap Screws, 5/16-18, 63,5 mm [2.5 in.] Long
28A	16136-536	2	Cap Screws, 5/16-18, 95,3 mm [3.75 in.] Long
28B	16136-540	2	Cap Screws, 5/16-18, 101,6 mm [4.00 in.] Long
29		1	Key, Drive Shaft
	24500-619		Used with 7/8 in. dia. drive shaft.
30	16246-430	1	Key, Tapered Arm
31	70142-600	1	Cover Plate (In K3 kit)
+ 32	16007-14	1	O-ring (In K1, K2, K3, & K4 kit)
33	16036-610	2	Cap Screws, Cover Plate (In K3 kit)
34	16103-108	1	Plug Assembly
+ 34-1	16133-8	1	O-ring, 2,21 mm Dia. x 16,36 mm ID. [.087 in. Dia. x .644 in. ID.]
+ 35	70111-703	1	Molded O-ring
36	☒	1	Charge Pump Adaptor (Identification drawing and parts list on page #12 & #13)
37		1	Gerotor set and coupler sub-assembly
	70111-642		6,9 cm <sup>3</sup> /r [.42 in <sup>3</sup> /r] displacement, 6,35 mm [.25 in.] width
	70111-646		13,8 cm <sup>3</sup> /r [.84 in <sup>3</sup> /r] displacement, 12,7 mm [.5 in.] width

# Parts List

Item	02 Part No.	Qty.	Description
37	70111-667	1	9 tooth coupler (In Kit 4)
37	70111-687	1	11 tooth coupler (In Kit 5)
39	16321-117	2	Cup, Bearing
40	N/S	1	Ring, Crush (Shim kit must be ordered to replace crush ring).
41	16015-46	2	O-ring, 2.38 mm Dia. x 66.68 mm I.D. [.0937 in. Dia. x 2.625 in. I.D.]
42	106013-031	4	Washer
46	70111-632	1	Mounting Bracket, Square shaped
46	70111-709	1	Mounting Bracket, "V" shaped
48	☒	1	Valve Plate (Identification drawing on page #11)
	70113-008		Righthand (CW) Rotation
	70113-009		Lefthand (CCW) Rotation
+ 49	16103-108	1	Plug Assembly
49-1	16133-8	1	O-ring, 2,21 mm Dia. x 16,36 mm I.D. [.087 in. Dia. x .644 in. I.D.]
50	16103-308	1	Plug Assembly
+ 50-1	16133-8	1	O-ring, 2,21 mm Dia. x 16,36 mm I.D. [.087 in. Dia. x .644 in. I.D.]
51	16103-308	1	Plug Assembly
+ 51-1	16133-8	1	O-ring, 1,98 mm Dia. x 11,89 mm ID. [.078 in. Dia. x .468 in. ID.]
55	70300-610	1	Bypass Valve sub-assembly
+ 55-1	16078-6	1	Retaining Ring
55-2	70300-609	1	Separator Plug
55-3	70411-502	1	Separator
+ 55-4	16003-7	1	O-ring, 1,59 mm Dia. x 9,53 mm I.D. [.0625 in. Dia. x .375 in. I.D.]
+ 55-5	16133-8	1	O-ring, 2,21 mm Dia. x 16,36 mm I.D. [.087 in. Dia. x .644 in. I.D.]

## Mounting Kits

K1	70142-944	1	Tandem Piston Pump Mounting Kit
K1-1	70111-666	1	35T Coupler, 36,8 mm [1.45 in.] long
K1-2	16007-14	1	O-ring, 1,59 mm Dia. x 101,6 mm ID. [.0625 in. Dia. x 4 in. ID.]
K1-3	16136-613	2	Cap Screws
K1-4	16048-8	2	Washer
K2	70442-929	1	Gear Pump Mounting Kit
K2-1	16007-14	1	O-ring, 1,59 mm Dia. x 82,55 mm ID. [.0625 in. Dia. x 3.25 in. ID.]
K2-2	16048-113	2	Washer
K2-3	16136-612	2	Cap Screws
K3	70142-915	1	Cover Plate Kit
K3-1	16007-14	1	O-ring, 1,59 mm Dia. x 82,55 mm ID. [.0625 in. Dia. x 3.25 in. ID.]
K3-2	70142-600	1	Cover Plate
K3-3	16136-610	2	Cap Screws
K4	70144-903	1	Gear Pump Mounting Kit with Coupler
K4-1	16007-14	1	O-ring, 1,59 mm Dia. x 101,6 mm ID. [.0625 in. Dia. x 4 in. ID.]
K4-2	16048-113	2	Washer
K4-3	16136-612	2	Cap Screws
K4-4	70111-667	1	9T Coupler

## Seal Repair Kit

70160-902	1	Seal Repair Kit for 70160 piston pump.
70160-903	1	Control Shaft Shim Kit (to replace crush ring (40) after replacment of cover plate).

Legend	☒	Refer to specific item parts list.
	+	Common parts to seal repair kits.
	N/S	Not Serviceable

# Item 1 - Drive Shaft Identification

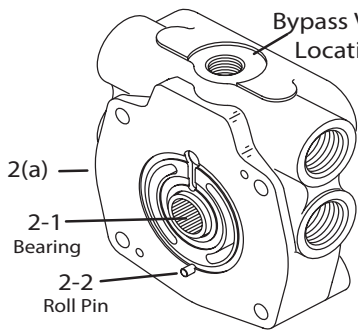
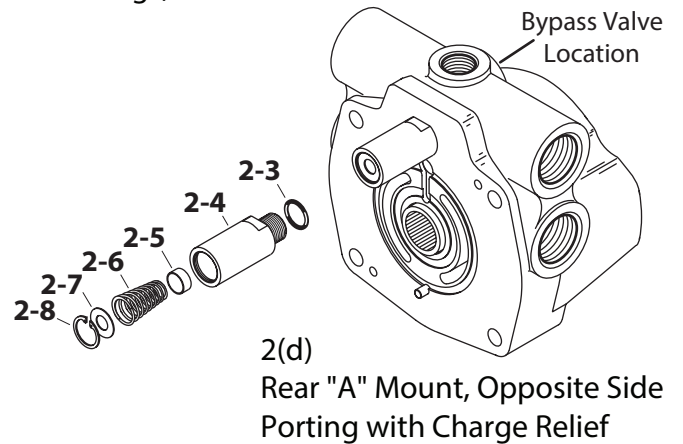
Part Number	Input Drive	Where Used	Output Drive
			9 Tooth .81 Min. Full Depth
		Single Pump, with Gerotor	9 Tooth .81 Min. Full Depth
70142-200 [13 Tooth]		Single Pump, with Gerotor	9 Tooth .625 Min. Full Depth
70142-203 [7/8 in. Keyed]		Single Pump, No Gerotor	9 Tooth .625 Min. Full Depth
70142-215 [13 Tooth]		Single Pump, No Gerotor	35 Tooth .76 Min. Full Depth
70142-225 [7/8 in. Keyed]		Tandem Front Pump, No Gerotor	9 Tooth .625 Min. Full Depth
70142-201 [13 Tooth]		Tandem Rear Pump, No Gerotor	9 Tooth .81 Min. Full Depth
70142-212 [35 Tooth] .69 Min. Full Depth		Tandem Rear Pump, with Gerotor	
70142-214 [35 Tooth] .69 Min. Full Depth			



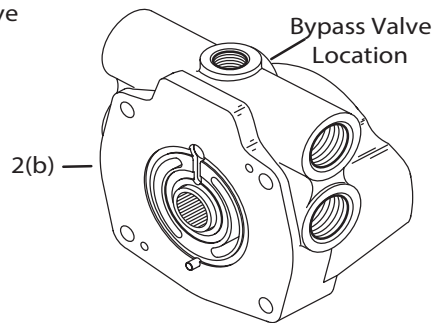
# Item 2 - Endcover Assembly Identification

## Item 2 - Parts List (Refer to Identification chart and drawings)

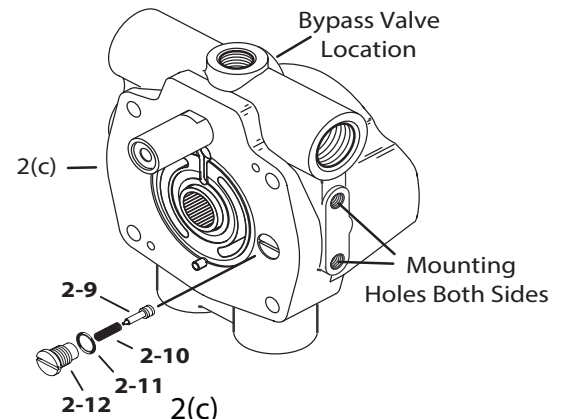
Item	Part Number	Qty.	Description
2	See chart below		Endcover Assembly
2-1	70420-43	1	Bearing
2-2	16026-610	1	Roll Pin
2-3	16133-6	1	O-ring
2-4	70111-711	1	Charge Relief Housing
2-5	70111-507	1	Poppet Filter Relief
2-6	17000-48B	1	Spring (100-150 PSI)
2-7	16048-260	1	Washer
2-8	16077-10	1	Retaining Ring
2-9	70400-508	1	Bleed-off Valve Poppet
2-10	17023-12	1	Spring
2-11	16133-5	1	O-ring
2-12	70400-501	1	Cartridge



2(a)  
Accepts Gerotor Charge Pump



2(b)  
Rear "A" Mount, Opposite Side Porting



2(c)  
Rear "A" Mount, Same Side Porting with Mounting Holes

## Item 2 - Endcover Assembly Identification (Refer to drawings above)

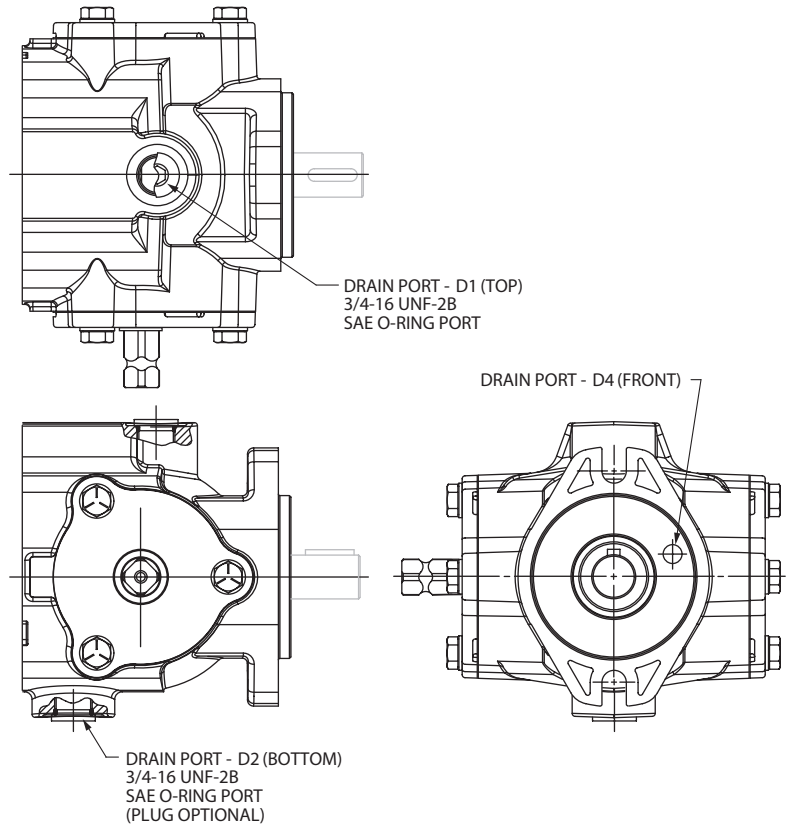
Item	Part Number	Charge Pump	Charge Main Port	Bypass Valve	Charge Relief to Case	Charge Relief Setting <sub>bar</sub> [PSI]	Special Feature
2(a)	70119-005	Yes	Opposite Sides*	Yes	No	----	----
2(b)	70117-021	No	Opposite Sides*	Yes	No	----	----
2(c)	70121-022	No	Same Side*	Yes	Yes	6,89-10,34 [100-150]	Bleed Off & Mounting Holes
2(d)	70117-023	No	Opposite Sides*	Yes	Yes	6,89-10,34 [100-150]	----

\* Port Size: 1 1/16-12 UN-2B

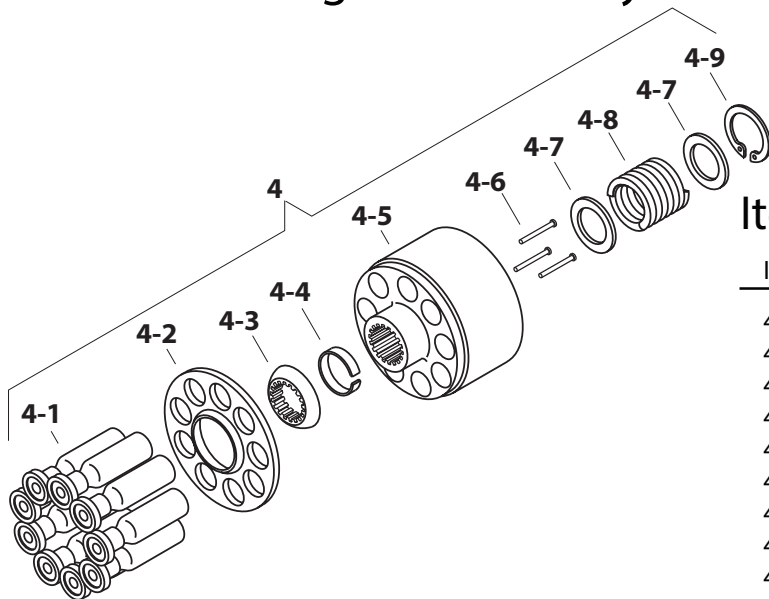
# Item 3 - Housing Assembly Identification

## Item 3 - Housing Assembly Identification

Item	Part Number	Port Machined
3	70160-307	D1 & D2
3	113077-001	D1, D2, & D4



## Item 4 - Rotating Kit Assembly



## Item 4 - Rotating Kit Assembly

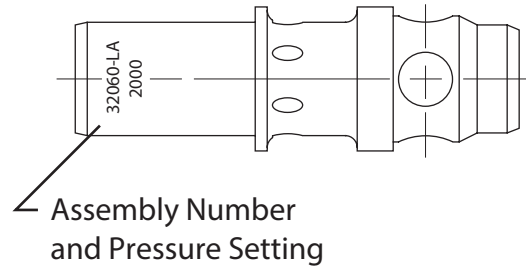
Item	Part Number	Qty.	Description
4	70111-692	1	Rotating Kit Assy.
4-1	NSS	9	Piston Assembly
4-2	NSS	1	Shoe Retainer
4-3	NSS	1	Shoe Retainer Pivot
4-4	NSS	1	Pin retainer
4-5	NSS	1	Cylinder Barrel
4-6	NSS	3	Pins
4-7	NSS	2	Washer
4-8	NSS	1	Spring
4-9	NSS	1	Retaining Ring

NSS - Not Sold Separately

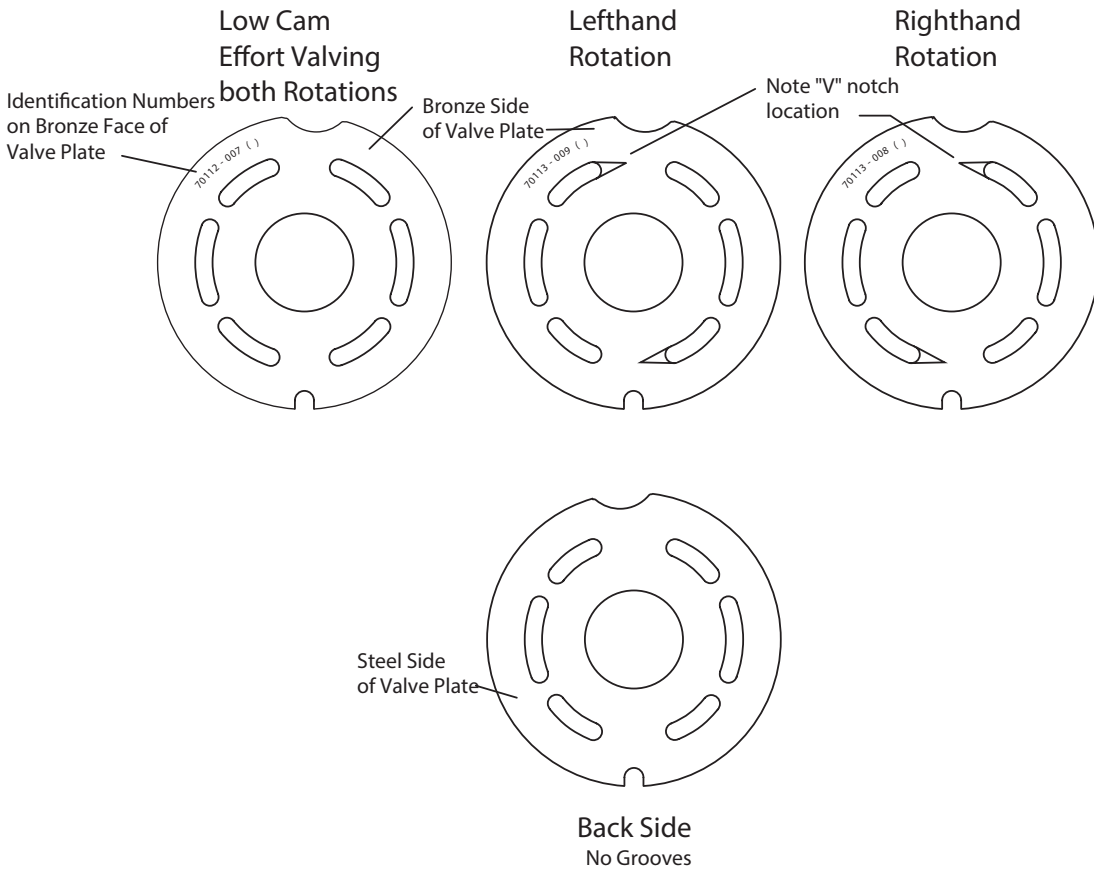
# Item 20 or 21 - Relief Valve

## Item 20 or 21 - Internal Relief Valve Settings Available

Part Number	bar [PSI]
32060-LA	138 [2000]
32060-QA	172 [2500]
32060-UA	207 [3000]
32060-WA	241 [3500]
32060-ZA	276 [4000]
32060-XA	310 [4500]
32060-IA	345 [5000]
70111-518	Seat, Valve

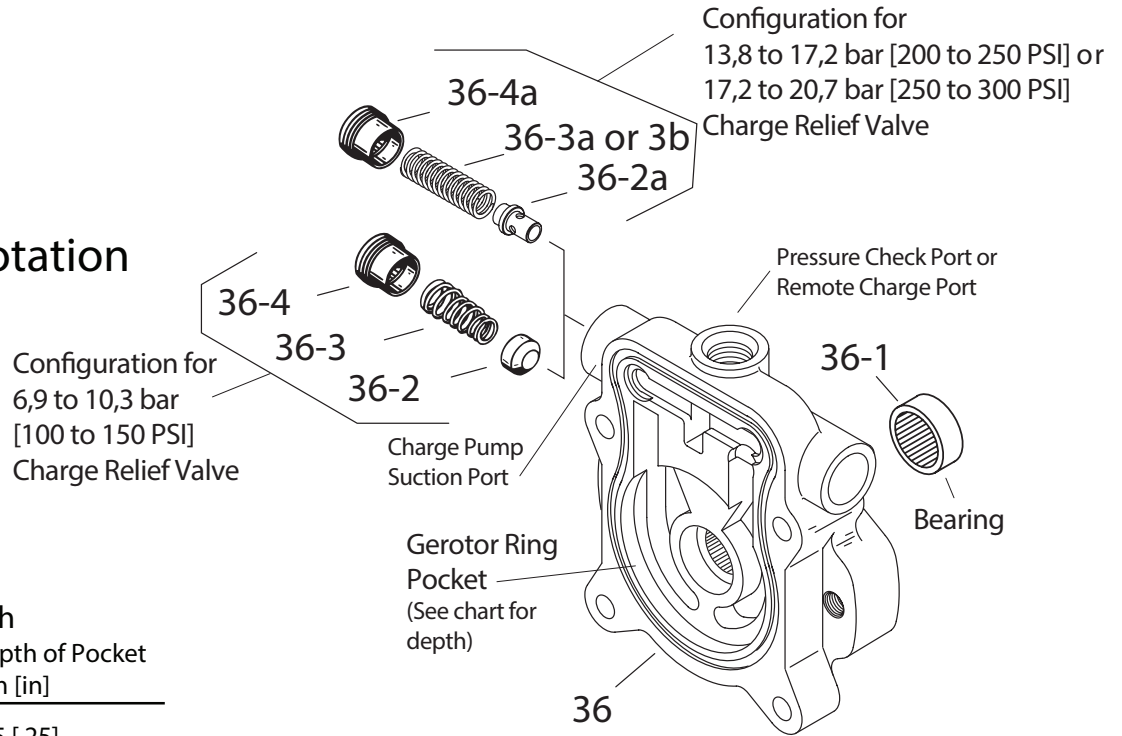


# Item 48 - Valve Plate



# Item 36 - Charge Pump Adapter Assembly Identification

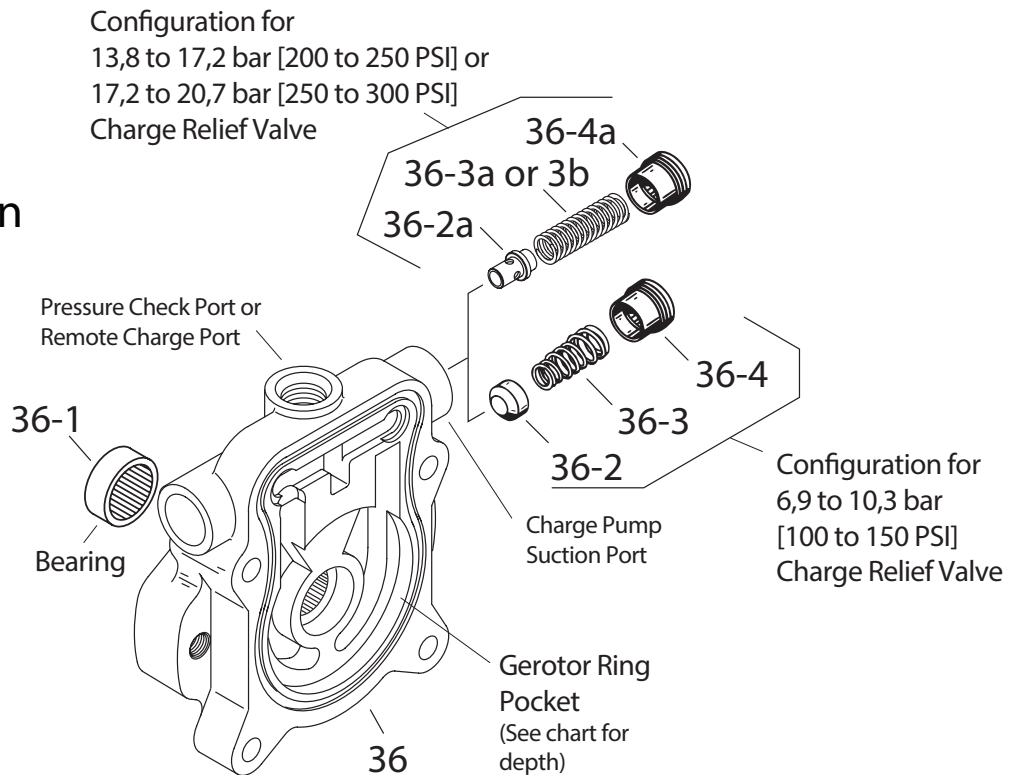
## Right Hand Rotation



### Gerotor Pocket Depth

Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r]	Depth of Pocket mm [in]
6,9 [.42]	6,35 [.25]
13,8 [.84]	12,7 [.50]

## Left Hand Rotation



# Item 36 - Charge Pump Adapter Assembly

## 6,9 to 10,3 bar [100 to 150 PSI] Charge Relief Setting

Item	Part No.	Qty.	Description	Rotation	Displacement
36	70142-314	1	Assembly, Charge Pump Adapter	Righthand	6,88 $\text{cm}^3$ [.42 in <sup>3</sup> /r]
	70142-306	1	Assembly, Charge Pump Adapter	Lefthand	13,8 $\text{cm}^3$ [.84 in <sup>3</sup> /r]
	70141-397	1	Assembly, Charge Pump Adapter	Righthand	13,8 $\text{cm}^3$ [.84 in <sup>3</sup> /r]
	70142-359	1	Assembly, Charge Pump Adapter	Lefthand	6,88 $\text{cm}^3$ [.42 in <sup>3</sup> /r]
36-1	16239-1148	1	Bearing (press fit)		
36-2	70111-507	1	Poppet, Cup		
36-3	17000-48B	1	Spring, Tapered		
36-4	70400-505	1	Spring Retainer		

## 13,8 to 17,2 bar [200 to 250 PSI] Charge Relief Setting

Item	Part No.	Qty.	Description	Rotation	Displacement
36	70142-373	1	Assembly, Charge Pump Adapter	Lefthand	6,88 $\text{cm}^3$ [.42 in <sup>3</sup> /r]
	70142-377	1	Assembly, Charge Pump Adapter	Righthand	6,88 $\text{cm}^3$ [.42 in <sup>3</sup> /r]
	70142-380	1	Assembly, Charge Pump Adapter	Righthand	13,8 $\text{cm}^3$ [.84 in <sup>3</sup> /r]
	70142-385	1	Assembly, Charge Pump Adapter	Lefthand	13,8 $\text{cm}^3$ [.84 in <sup>3</sup> /r]
36-1	16239-1148	1	Bearing (press fit)		
36-2a	70400-685	1	Poppet, Pin		
36-3a	17056-40	1	Spring, Color "Light Green"		
36-4a	70400-512	1	Spring Retainer		

## 17,2 to 20,7 bar [250 to 300 PSI] Charge Relief Setting

Item	Part No.	Qty.	Description	Rotation	Displacement
36	70142-376	1	Assembly, Charge Pump Adapter	Righthand	6,88 $\text{cm}^3$ [.42 in <sup>3</sup> /r]
	70142-381	1	Assembly, Charge Pump Adapter	Lefthand	6,88 $\text{cm}^3$ [.42 in <sup>3</sup> /r]
	70142-386	1	Assembly, Charge Pump Adapter	Lefthand	13,8 $\text{cm}^3$ [.84 in <sup>3</sup> /r]
36-1	16239-1148	1	Bearing (press fit)		
36-2a	70400-685	1	Poppet, Pin		
36-3b	17056-41	1	Spring, Color "Pink"		
36-4a	70400-512	1	Spring Retainer		









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