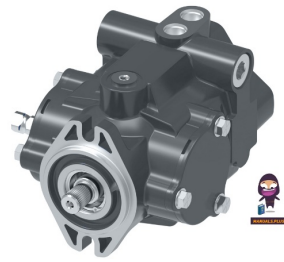


Danfoss

**70160 Variable
Displacement Piston
Pump**



Danfoss 70160 Variable Displacement Piston Pump User Guide

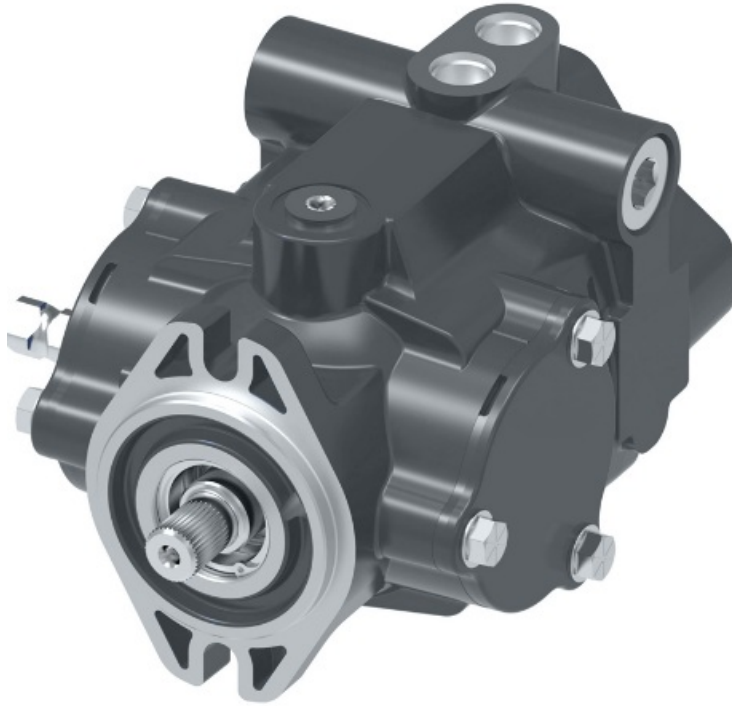
[Home](#) » [Danfoss](#) » Danfoss 70160 Variable Displacement Piston Pump User Guide 

Contents

- [1 Danfoss 70160 Variable Displacement Piston Pump](#)
- [2 INTRODUCTION](#)
- [3 Tools Required](#)
- [4 Parts Drawing](#)
- [5 Parts List](#)
- [6 Drive Shaft Identification](#)
- [7 Rotating Kit Assembly](#)
- [8 CONTACT](#)
- [9 FAQ](#)
- [10 Documents / Resources](#)
 - [10.1 References](#)

Danfoss

Danfoss 70160 Variable Displacement Piston Pump



INTRODUCTION

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

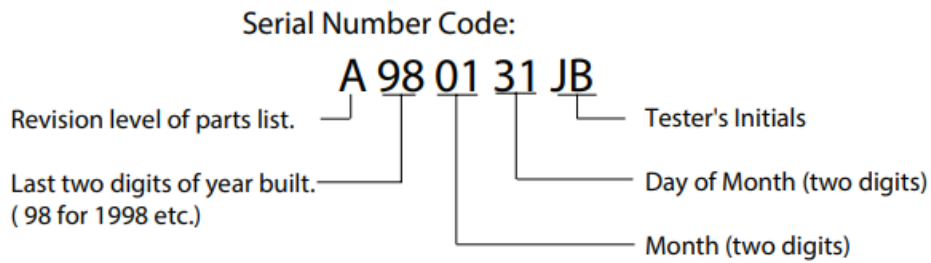
Single Pump - Product Number:

<u>70160</u>	-	<u>R A A</u>	-	<u>02</u>
A		B		C

Tandem Pumps -Product Number:

<u>78163</u>	-	<u>R A B</u>	-	<u>02</u>
A		B		C

Serial Number Code:



Each order must include the following information.

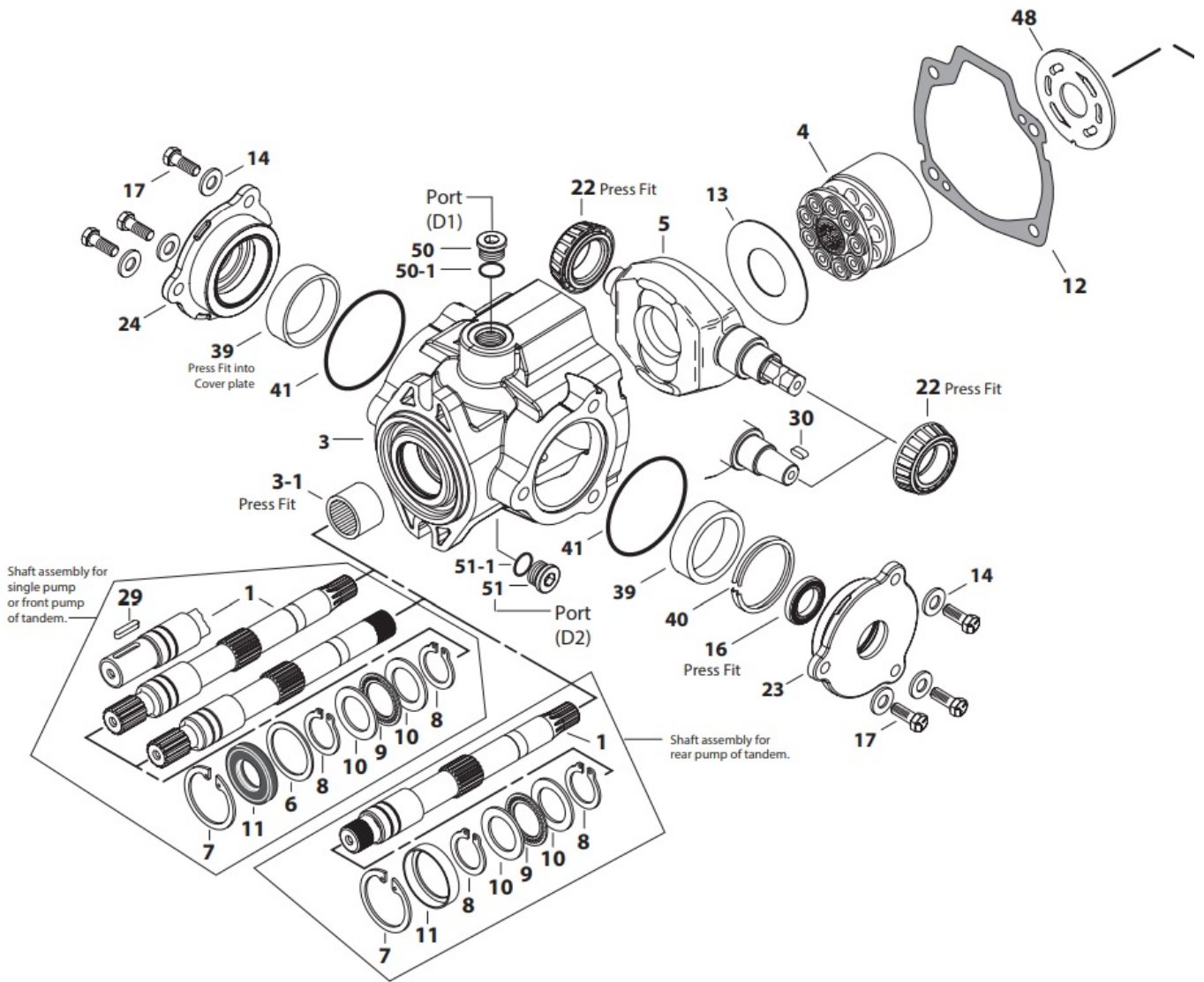
1. Product and/or Part Number
2. Serial Number Code
3. Part Name
4. Quantity

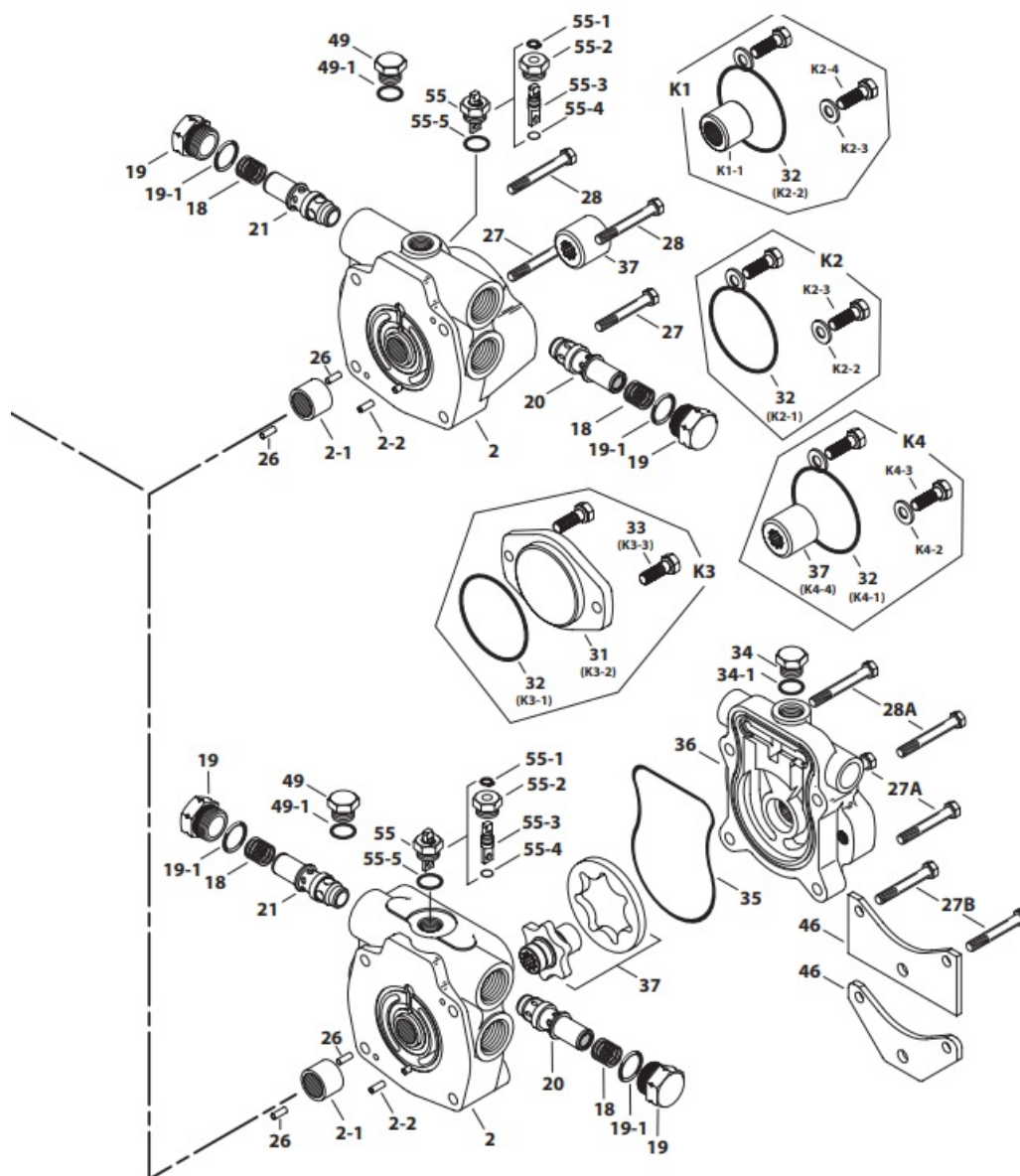
Tools Required

- 1/2, 9/16, 7/8 & 1-1/8 in. sockets and/or end wrenches
- Torque wrench (136 N.m [100 lbf.ft] 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

The pump drawn below is typical of a right-hand pump.





Parts List

Parts listed below are for 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 a Danfoss representative with any questions concerning your selection. Have your final assembly number ready when contacting the 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 ³ /r [1.24 in ³ /r] Displacement
	70160-623		Square Arm
	70160-617		Tapered Arm
5		1	Swashplate, 23,6 cm ³ /r [1.44 in ³ /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 ³ /r [.42 in ³ /r] displacement, 6,35 mm [.25 in.] width
	70111-646		13,8 cm ³ /r [.84 in ³ /r] displacement, 12,7 mm [.5 in.] width

	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 the crush ring (40) after replacment of the cover plate).
Legend		+ N/S	Refer to the specific item parts list. Common parts to seal repair kits. Not Serviceable

Drive Shaft Identification

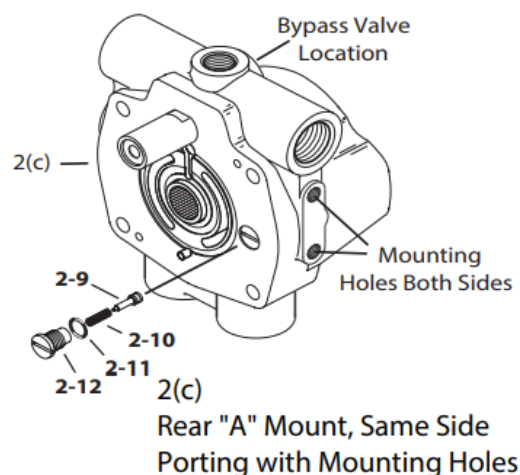
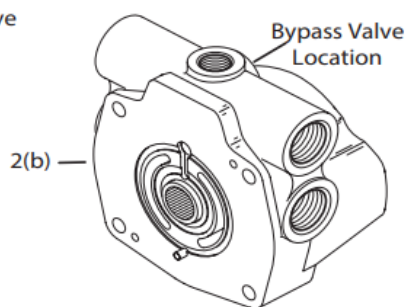
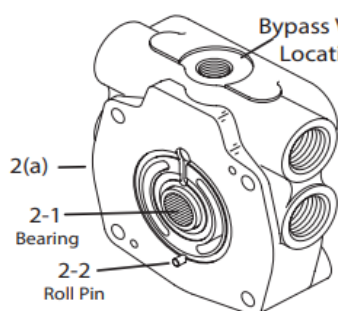
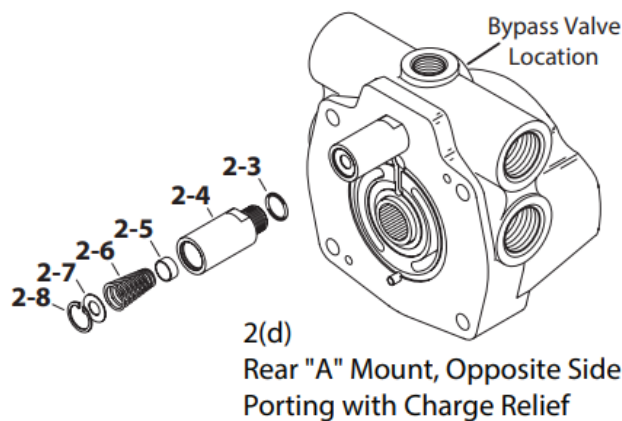
Item 1 – Drive Shaft Identification

Part Number	Input Drive	Where Used	Output Drive
		Single Pump, with Gerotor	9 Tooth .81 Min. Full Depth
		Single Pump, with Gerotor	9 Tooth .81 Min. Full Depth
70142-200 [13 Tooth]		Single Pump, No 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



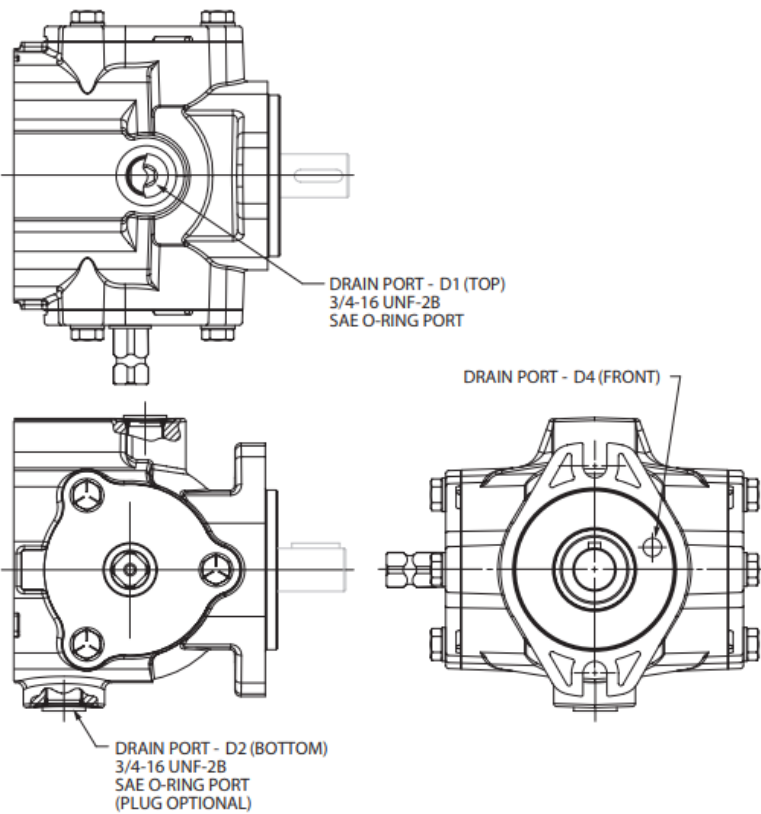
Item 2 – Endcover Assembly Identification (Refer to drawings above)

Item	Part Number	Charge Pump	Main Port	Bypass Valve	Charge Relief to Case	Charge Relief Setting [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]	—

Item 3 – Housing Assembly Identification

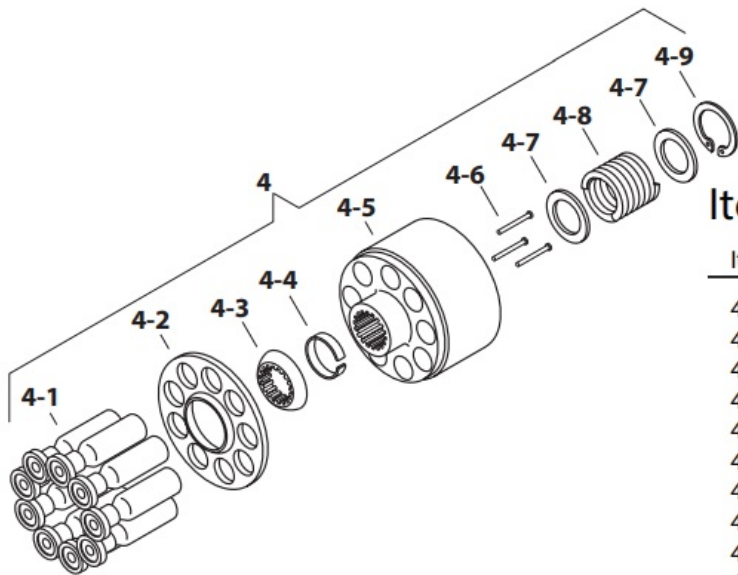
Item 3 -
Housing Assembly Identification

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



Rotating Kit Assembly

Item 4 – Rotating Kit Assembly



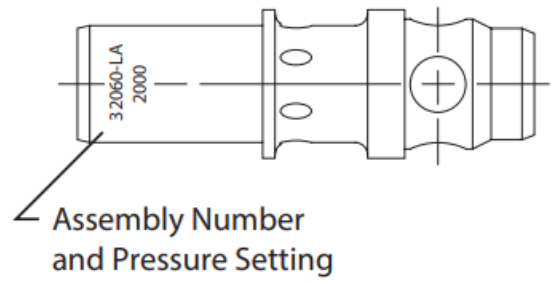
Item 4 - Rotating Kit Assembly

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			

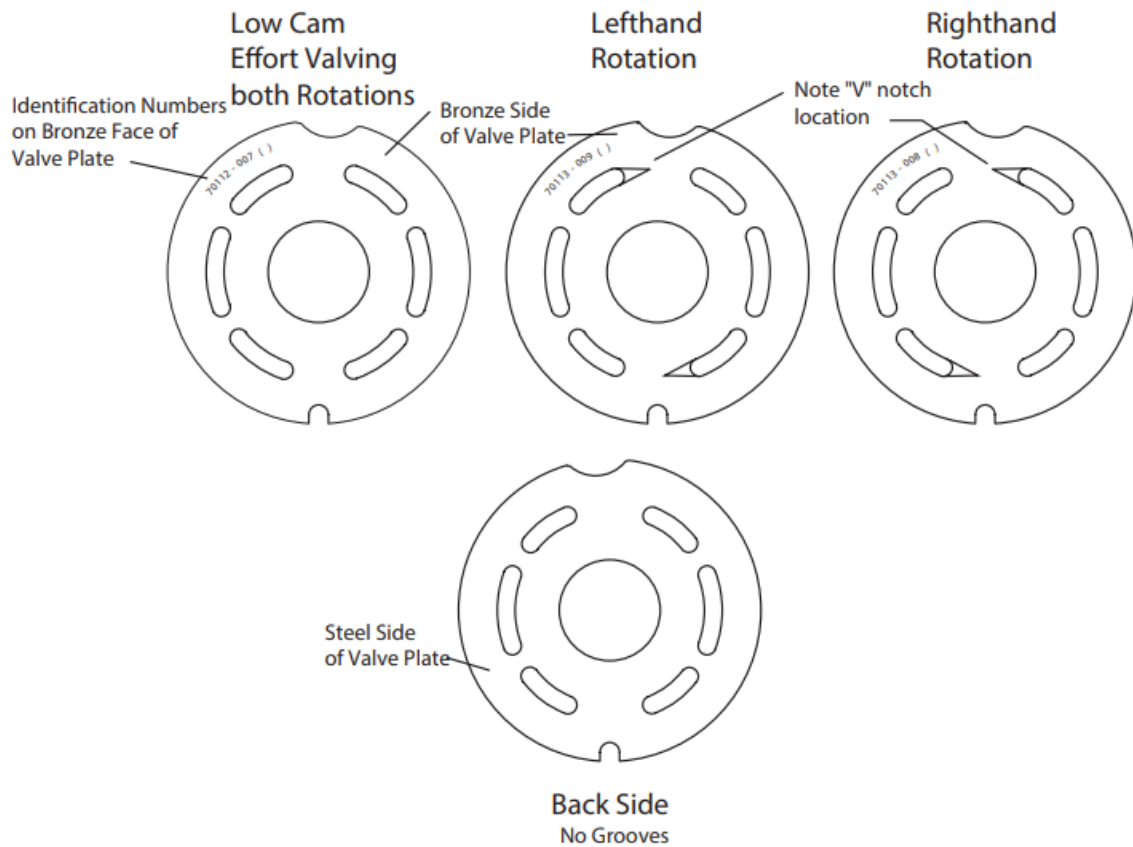
Item 20 or 21 – Relief Valve

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

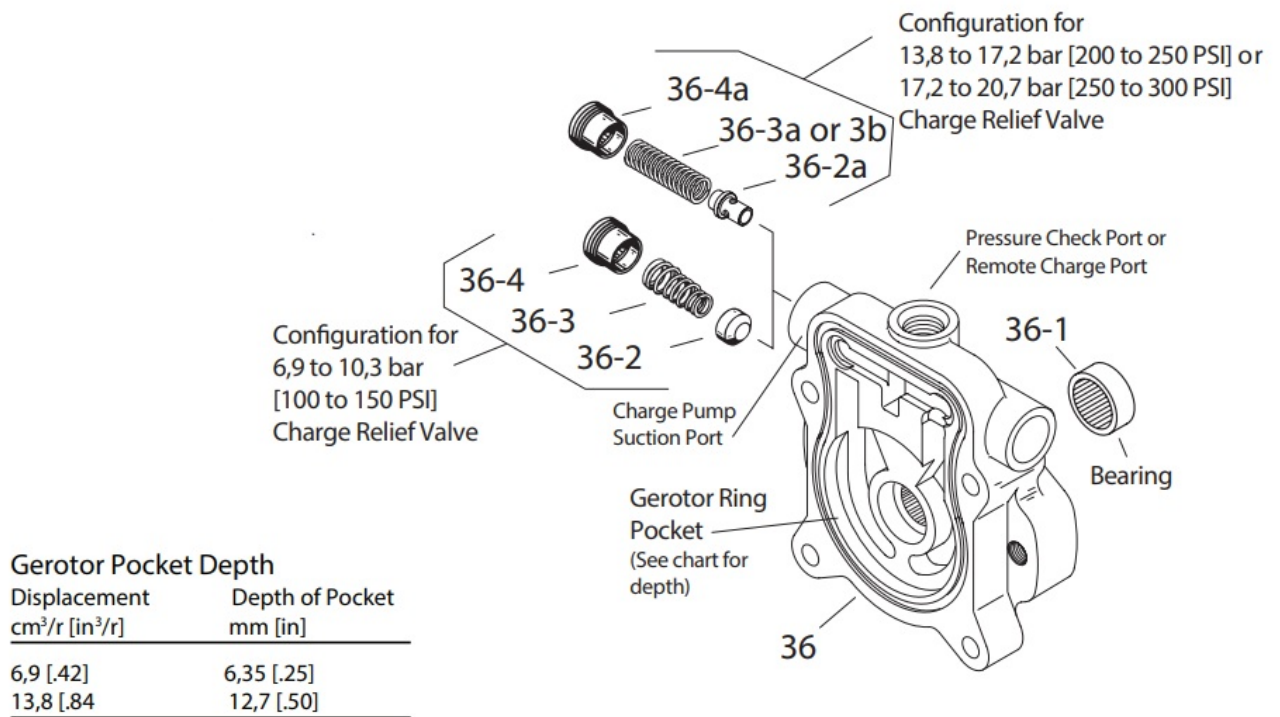


Item 48 – Valve Plate

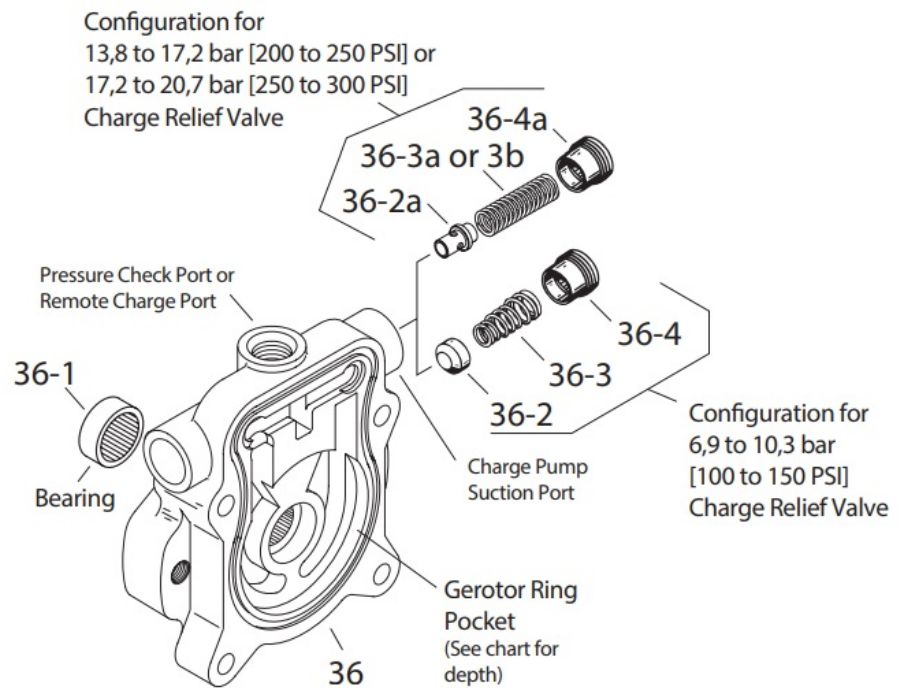


Item 36 – Charge Pump Adapter Assembly Identification

Right Hand Rotation



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 $\frac{\text{cm}^3}{\text{r}}$ [.42 in ³ /r]
	70142-306	1	Assembly, Charge Pump Adapter	Lefthand	13,8 $\frac{\text{cm}^3}{\text{r}}$ [.84 in ³ /r]
	70141-397	1	Assembly, Charge Pump Adapter	Righthand	13,8 $\frac{\text{cm}^3}{\text{r}}$ [.84 in ³ /r]
	70142-359	1	Assembly, Charge Pump Adapter	Lefthand	6,88 $\frac{\text{cm}^3}{\text{r}}$ [.42 in ³ /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 $\frac{\text{cm}^3}{\text{r}}$ [.42 in ³ /r]
	70142-377	1	Assembly, Charge Pump Adapter	Righthand	6,88 $\frac{\text{cm}^3}{\text{r}}$ [.42 in ³ /r]
	70142-380	1	Assembly, Charge Pump Adapter	Righthand	13,8 $\frac{\text{cm}^3}{\text{r}}$ [.84 in ³ /r]
	70142-385	1	Assembly, Charge Pump Adapter	Lefthand	13,8 $\frac{\text{cm}^3}{\text{r}}$ [.84 in ³ /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 $\frac{\text{cm}^3}{\text{r}}$ [.42 in ³ /r]
	70142-381	1	Assembly, Charge Pump Adapter	Lefthand	6,88 $\frac{\text{cm}^3}{\text{r}}$ [.42 in ³ /r]
	70142-386	1	Assembly, Charge Pump Adapter	Lefthand	13,8 $\frac{\text{cm}^3}{\text{r}}$ [.84 in ³ /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		

products we offer

- Cartridge valves
- DCV directional control valves
- Electric converters
- Electric machines
- Electric motors
- Gear motors
- Gear pumps
- Hydraulic integrated circuits (HICs)
- Hydrostatic motors
- Hydrostatic pumps
- Orbital motors
- PLUS+1® controllers
- PLUS+1® displays
- PLUS+1® joysticks and pedals
- PLUS+1® operator interfaces
- PLUS+1® sensors
- PLUS+1® software

- PLUS+1® software services, support, and training
- Position controls and sensors
- PVG proportional valves
- Steering components and systems
- Telematics

Danfoss Power Solutions is a global manufacturer and supplier of high-quality hydraulic and electric components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market, as well as the marine sector. Building on our extensive applications expertise, we work closely with you to ensure exceptional performance for a broad range of applications. We help you and other customers around the world speed up system development, reduce costs, and bring vehicles and vessels to market faster. Danfoss Power Solutions – your strongest partner in mobile hydraulics and mobile electrification.

Go to www.danfoss.com for further product information.

We offer you expert worldwide support for ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide you with comprehensive global service for all of our components.

CONTACT

Hydro-Gear

- www.hydro-gear.com

Daikin-Sauer-Danfoss

- www.daikin-sauer-danfoss.com

Power Solutions (US) Company

Danfoss

- 2800 East 13th Street
- Ames, IA 50010, USA
- Phone: +1 515 239 6000

Power Solutions GmbH & Co. OHG

- Krokamp 35
- D-24539 Neumünster, Germany Phone: +49 4321 871 0

Power Solutions ApS

- Nordborgvej 81
- DK-6430 Nordborg, Denmark Phone: +45 7488 2222
- Danfoss

Power Solutions Trading

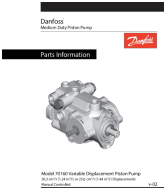
- (Shanghai) Co., Ltd.
- Building #22, No. 1000 Jin Hai Rd Jin Qiao, Pudong New District Shanghai, China 201206 Phone: +86 21 2080 6201

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequent changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.



FAQ

- What information is required for each order?
- Each order must include the following information:
 - Product and/or Part Number
 - Serial Number Code
 - Part Name
 - Quantity
- How can non-catalog units be serviced?
 - The non-catalog units can be serviced with the parts list provided in the manual. Contact a Danfoss representative for assistance and ensure proper identification by having your final assembly number ready.

Documents / Resources

	<p>Danfoss 70160 Variable Displacement Piston Pump [pdf] User Guide 70160 Variable Displacement Piston Pump, 70160, Variable Displacement Piston Pump, Displacement Piston Pump, Piston Pump, Pump</p>
---	--

References

-  [DSD | Home](#)
-  [Engineering Tomorrow | Danfoss](#)
- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

This website is an independent publication and is neither affiliated with nor endorsed by any of the trademark owners. The "Bluetooth®" word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. The "Wi-Fi®" word mark and logos are registered trademarks owned by the Wi-Fi Alliance. Any use of these marks on this website does not imply any affiliation with or endorsement.