

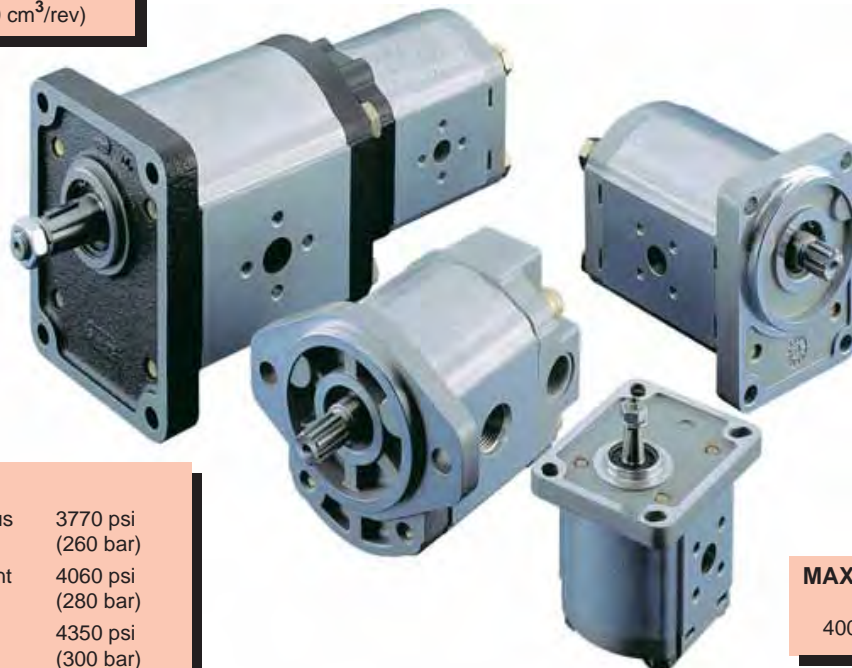
# POLARIS®

## Hydraulic gear pumps and motors

through bore aluminum body

### DISPLACEMENTS

From 0.07 in<sup>3</sup>/rev  
(1.07 cm<sup>3</sup>/rev)  
To 5.56 in<sup>3</sup>/rev  
(91.10 cm<sup>3</sup>/rev)



### PRESSURE

Max. Continuous 3770 psi  
(260 bar)  
Max. Intermittent 4060 psi  
(280 bar)  
Max. Peak 4350 psi  
(300 bar)

### MAX. SPEED

4000 min<sup>-1</sup>

- Group 1, 2 and 3 with displacements from 0.07 in<sup>3</sup>/rev (1,07 cm<sup>3</sup>/rev) to 5.56 in<sup>3</sup>/rev (91.10 cm<sup>3</sup>/rev).
- Drive shafts, mounting flanges and ports according to the international standards.
- Combination of multiple pumps in standard version, common inlet and separated stages.
- Integrated outboard bearings for heavy duty application.
- Many types of built-in valves.

"POLARIS" more than fifty years of Casappa experience in design and production of hydraulic components, characterized by large investments in research and development in order to propose new and personalized solutions to the market. Our use of CAD 3D in the development of this generation permit us the 3D modelling and the virtual simulation of the behaviour of the components inserted in the hydraulic circuit. This means that the process will take less time and the quality of the products is better.

Polaris pumps and motors are basically composed of a gear housing in aluminium alloy, two gear wheels supported by sleeve bearings and two end plates, the front and the rear cover, either in aluminium or in cast iron with excellent mechanical characteristics. Our success is based largely on the quality of our product. This guaranties the consistencies of the efficiencies and low level of noise emission during the life of our products.

Edition: 01/10.2003



**CASAPPA**  
FLUID POWER DESIGN



## INSTRUCTIONS

### INSTALLATION

#### Pump

The direction of rotation of single-rotation pumps must be the same as that of the drive shaft. Check that the coupling flange correctly aligns the transmission shaft and the pump shaft. Flexible couplings should be used (never rigid fittings) which will not generate an axial or radial load on the pump shaft.

#### Motor

The direction of rotation of single-rotation motors must match circuit connections. Check that the coupling flange correctly aligns the transmission shaft and the motor shaft. Flexible couplings should be used (never rigid fittings) which will not generate an axial or radial load on the motor shaft.

### TANK

Tank capacity must be sufficient for the system's operating conditions (~ 3 times the amount of oil in circulation) to avoid overheating of the fluid. A heat exchanger should be installed if necessary. The intake and return lines in the tank must be spaced apart (by inserting a vertical divider) to prevent the return-line oil from being taken up again immediately.

### LINES

The lines must have a major diameter which is at least as large as the diameter of pump or motor ports, and must be perfectly sealed. To reduce loss of power, the lines should be as short as possible, reducing the sources of hydraulic resistance (elbow, throttling, gate valves, etc.) to a minimum. A length of flexible tubing is recommended to reduce the transmission of vibrations. All return lines must end below the minimum oil level, to prevent foaming. Before connecting the lines, remove any plugs and make sure that the lines are perfectly clean.

### FILTERS

We recommend filtering the entire system flow. Filters should be fitted as indicated in the first pages of the catalogue. Only coarse filters are recommended for pump intake. Casappa recommends to use its own production filters:



### HYDRAULIC FLUID

Use hydraulic fluid conforming to ISO/DIN standards, having viscosity as specified in the first pages of the catalogue. Avoid using mixtures of different oils which could result in decomposition and reduction of the oil's lubricating power.

### STARTING UP

Check that all circuit connections are tight and that the entire system is completely clean. Insert the oil in the tank, using a filter. Bleed the circuit to assist in filling. Set the pressure relief valves to the lowest possible setting. Turn on the system for a few moments at minimum speed, then bleed the circuit again and check the level of oil in the tank. In the difference between pump or motor temperature and fluid temperature exceeds 50 °F (10 °C), rapidly switch the system on and off to heat it up gradually. Then gradually increase the pressure and speed of rotation until the pre-set operating levels as specified in the catalogue are attained.

### PERIODICAL CHECKS - MAINTENANCE

Keep the outside surface clean especially in the area of the drive shaft seal. In fact, abrasive powder can accelerate wear on the seal and cause leakage. Replace filters regularly to keep the fluid clean. The oil level must be checked and oil replaced periodically depending on the system's operating conditions.

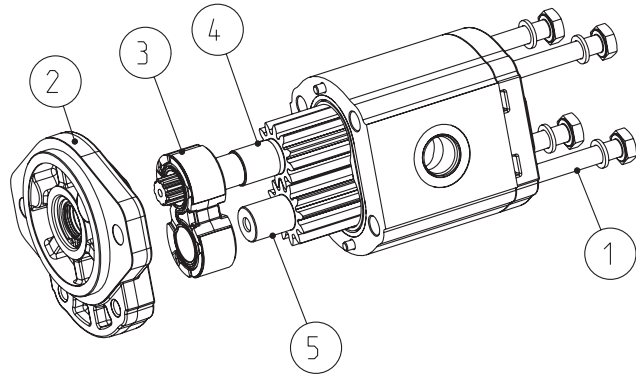
01/10.03

## CHANGING ROTATION

### Example of changing rotation: from PLP20 pump clockwise to counterclockwise

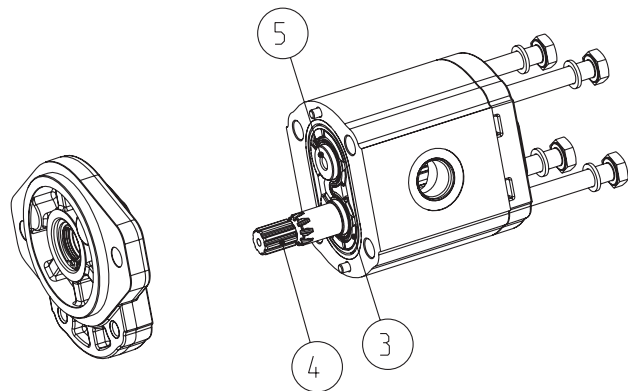
To change rotation of Polaris unidirectional pumps and motors it is necessary to operate in the following way:

- 1 - Clean the pump externally with care.
- 2 - Loosen, and remove, the clamp bolts (1).
- 3 - Coat the sharp edges of the drive shaft (4) with adhesive tape and smear a layer of clean grease on the shaft end extension to avoid damaging the lip of the shaft seal when removing the mounting flange.
- 4 - Remove the mounting flange (2), taking care to keep the flange as straight as possible during removal. If the flange is stuck, tap around the edge with a fibre or rubber mallet in order to break away from the body. Ensure that while removing the front mounting flange, the drive shaft and other components remain in position.
- 5 - Ease the drive gear (4) up to facilitate removal the front plate (3), taking care that the precision ground surfaces do not become damaged, and remove the drive gear.
- 6 - Remove the driven gear (5) without overturning. The rear plate has not to be removed.



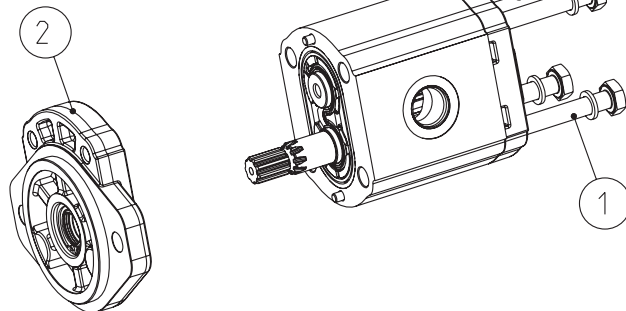
DCA7\_033\_040

- 7 - Re-locate the driven gear (5) in the position previously occupied by the drive gear (4)
- 8 - Re-locate the drive gear (4) in the position previously occupied by the driven gear (5).
- 9 - Replace the front plate (3) in its original position.



DCA7\_033\_029

- 10 - Gently wipe the machined surface of the mounting flange (2) and the body with a flat hand stone.
- 11 - Refit the front mounting flange (2) turned 180° from its original position.
- 12 - Refit the clamp bolts (1) with the washers and tighten in a crisscross pattern with the following torque value:  
70<sup>+5</sup> Nm (620 ÷ 664 lbf in) with cast iron cover.  
45<sup>+5</sup> Nm (398 ÷ 443 lbf in) with one or both cover in aluminium.
- 13 - Check that the pump rotates freely when the drive shaft (4) is turned by hand. If not a pressure plate seal may be pinched.
- 14 - The pump is ready for installation with the original rotation reversed.



DCA7\_033\_011

01/10.03