Imo Delaval Inc.

INSTRUCTIONS and PARTS LIST

SERIES VT 210

WARNING

READ THIS INSTRUCTION BOOK AND CA-1 BEFORE INSTALLATION, OPERATION OR MAINTENANCE

Instructions VT 210 (R-2)

This manual now is identified as part no. SRM00071

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U S A

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ORDERING INSTRUCTIONS

All correspondence pertaining to renewal parts for the equipment must refer to the instruction book number and should be addressed to the nearest IMO Pump Division Sales Office or representative. See addresses of sales offices listed above.

The handling of renewal orders will be greatly facilitated if the following directions are carefully observed.

1. Give the number of the instruction book.
2. Give the serial number of the machine for which part is desired. This number appears on the name-plate.
3. Designate the desired part by the number and name as listed in this instruction book.
4. Give the drawing number or figure number in which the part is shown. (In the event the part is called out on an unnumbered sketch - the page number on which the sketch appears should be used in lieu of the drawing number as the reference.)

For Example:

Instruction Book No. A3D-6
Serial Number 505629
Part Number and Name ..... 063, Power Rotor
Drawing Number (see item 4 above) SF-5377

FOREWORD

The VT210H-118-2D series pump is specifically designed for use on diecasting machines. The pump incorporates a special bearing and seal for vertical in-tank mounting with fire resistant fluids.

SPECIAL INSTALLATION INSTRUCTIONS

Driver – The series VT210 is designed for vertical in-tank mounting. It is recommended that the unit be driven directly through a flexible coupling.

Inlet Position – The inlet flange may be positioned in increments of 90° from the position shown on the assembly drawing.

To change the position of the inlet flange, remove the socket head cap screws (006) and lock washers (007). Rotate the housing (001) and the inlet head (002) as a unit taking care not to damage the 'O' ring (009). Replace the socket head cap screws with their lock washers and torque to 50 foot-pounds.

Suction Strainer – A suction strainer of at least 100 mesh with a flow capacity of 30-50 gpm and a pressure drop not exceeding 0.5 psi (when newly installed) should be used. (The inlet strainer shall be sized to insure that the pressure at the inlet port of the pump will not, under any circumstances, exceed 10 inches of mercury vacuum.) Maintenance instructions shall provide for the periodic cleaning or replacement of the inlet strainer.

Maintenance – If the installation instructions have been carefully followed, the pump should operate satisfactorily with very little attention other than periodic checks of the condition of the suction strainer, the bearing (020) and the seal (025).

NOTE: BALL BEARING IS PRE-LUBRICATED WITH A SPECIAL GREASE. A SLIGHT PURGING OF THE INITIAL GREASE FILL IS TO BE EXPECTED AND IS DESIRABLE.

OPERATIONAL SAFETY PRECAUTIONS

Accidental Accumulator Discharge

In the event of accidental accumulator discharge into the hydraulic reservoir which will result in excessive foaming and gas entrainment in the fluid, pumps must not be operated. All gas must be released from the tank and the fluid settled prior to pump restart. Typical settling time for hydraulic fluid with anti-foam additives is approximately one-half to three-quarters of one hour.

Structural Limits

Operating conditions, such as speed, fluid viscosity, inlet pressure, discharge pressure, temperature, filtration, duty cycle, mounting, drive type, etc. are interrelated. Due to these variable conditions, the specific application limitations may be different from that of the structural limitations. This equipment must not be operated without verification that operating requirements are within published capabilities as shown in the appropriate pump data book (available from local IMO Pump Div. offices and representatives).

Under no circumstances are the following structural limitations to be exceeded.

Maximum Discharge Pressure – 2000 PSIG (150 SSU minimum viscosity at pumping temperature)

Maximum Inlet Pressure – 35 PSIG

Maximum Fluid Temperature – 160° F

DISASSEMBLY

Step 1 – Remove pump and motor as a unit from the machine.

Step 2 – Remove pump from the bracket.

Step 3 – Remove the four cap screws (006) and lock washers (007) and remove the inlet head (002).

Step 4 – Remove the idler rotors (016) with their thrust shoes (017) by screwing them out of the rotor housing (001).

Step 5 – Remove rotor housing (001) with 'O' rings (009). Do not remove pin (004).

Step 6 – Remove four cap screws (018) and ball bearing retainer (019).

Step 7 – Remove power rotor assembly from outlet head (003).

NOTE: Special detailed disassembly procedure for the removal of the ball bearing and seal are provided on Pages 4 and 5.

Step 8 – Remove balance piston bushing (005).

ASSEMBLY

Step 1 – Clean all parts prior to assembly.

Step 2 – Install power rotor assembly in outlet head (003).

NOTE: Special detailed instructions for power rotor assembly are provided on Pages 6 and 7.

Step 3 – Install ball bearing retainer (019) and four cap screws (018). Torque cap screws uniformly to approximatley 5 foot-pounds.

Step 4 – Install balance piston bushing (005).

Step 5 – Lubricate the housing pilots with a light oil or hydraulic fluid and install new 'O' rings (009) against shoulder of housing (001).

Step 6 – Lubricate the thread section of the power rotor (011) and install housing in outlet head (003).

Step 7 – Lubricate idler rotors with light oil or hydraulic fluid and screw into housing.

Step 8 – Install outlet head (002). Use care to align the hole in the head with the pin (004) in the rotor housing (001).

Step 9 – Install four socket head cap screws (006) with their lock washers (007) and torque to approximately 50 foot-pounds. Turn power rotor by hand. Rotor should turn freely.

Step 10 – Install key (022) in rotor keyway. Make sure that the key does not overhang the end of the shaft.

Step 11 – Align pump to bracket and install pump mounting bolts.

DISASSEMBLY OF LIP SEAL AND BALL BEARING FROM POWER ROTOR OF TYPE VT-210 IMO HYDRAULIC PUMP

1. Grip power rotor as shown in Fig. 1. Use standard external snap ring pliers and remove snap ring (021) adjacent to bearing.

2. Support the bearing (020) by its outer race, press off and discard – See Fig. 2.

3. Remove grease from cavity to expose snap ring as shown in Fig. 3.

4. Use snap ring pliers and remove snap ring (021), Fig. 4.

CAUTION

Take care not to mark the wear ring with the nose of the pliers.

5. Remove seal retainer (023) complete with seal (025) as shown, Fig. 5. Remove lip seal from retainer taking care not to damage seal locating bore and face. Discard the seal.

6. Remove 'O' ring (024) from outer diameter of seal retainer and discard.

IMPORTANT

1. Inspect wear ring (014); if grooved or pitted, replace rotor sub-assembly (010).

2. Inspect power rotor bearing locating diameter and snap ring grooves for scoring and burrs. If damaged, replace power rotor sub-assembly (010).

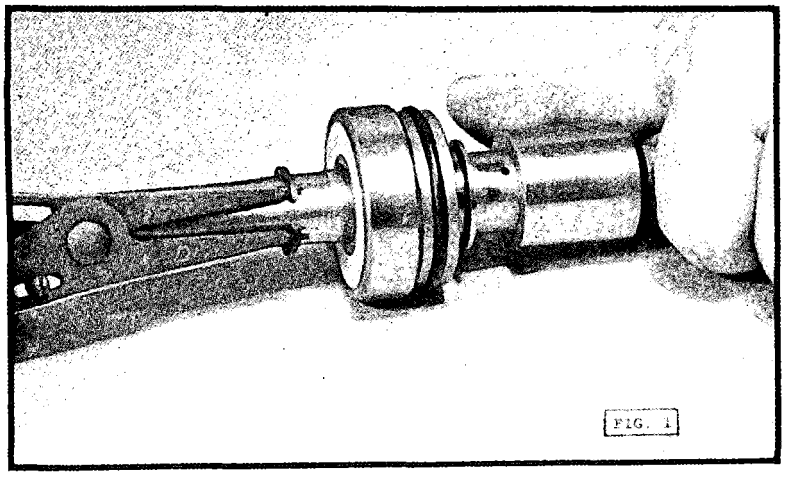


FIG. 1

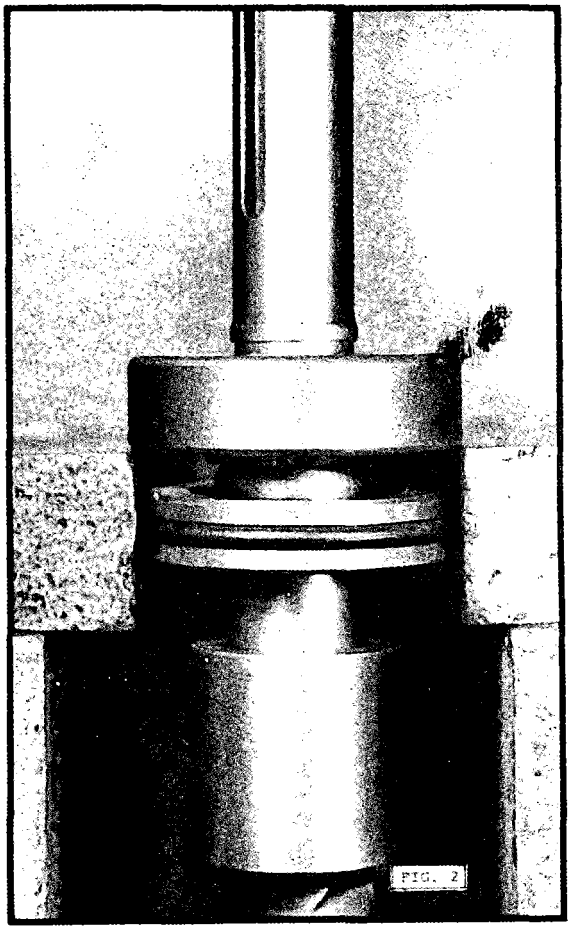


FIG. 2

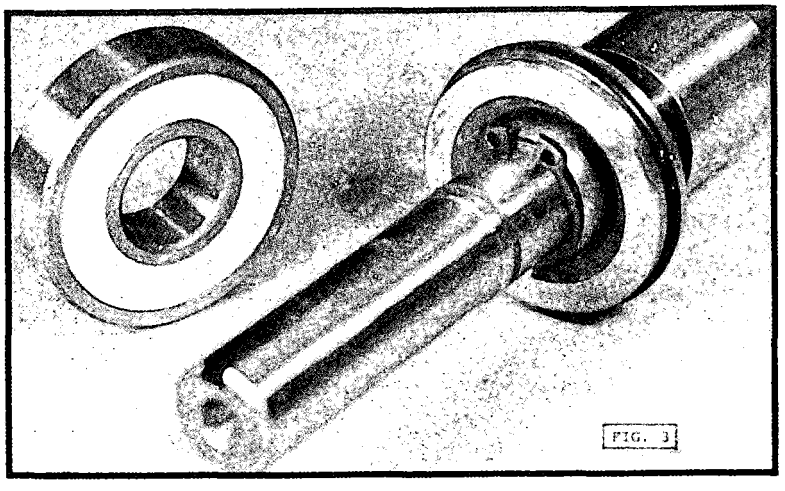


FIG. 3

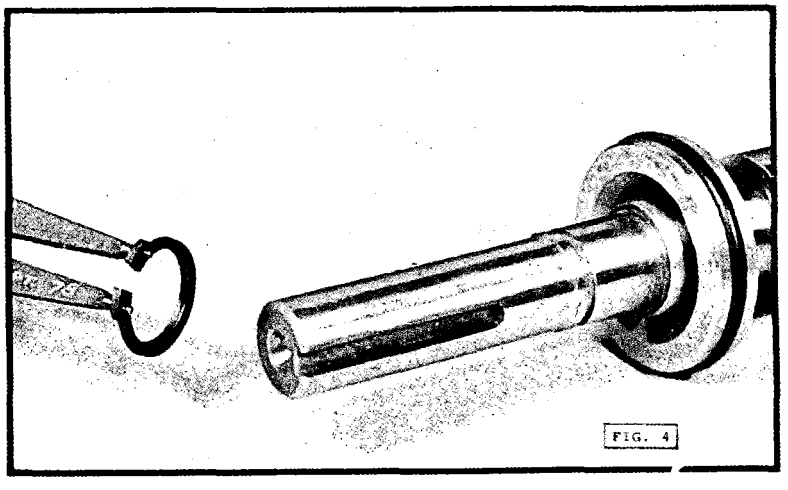


FIG. 4

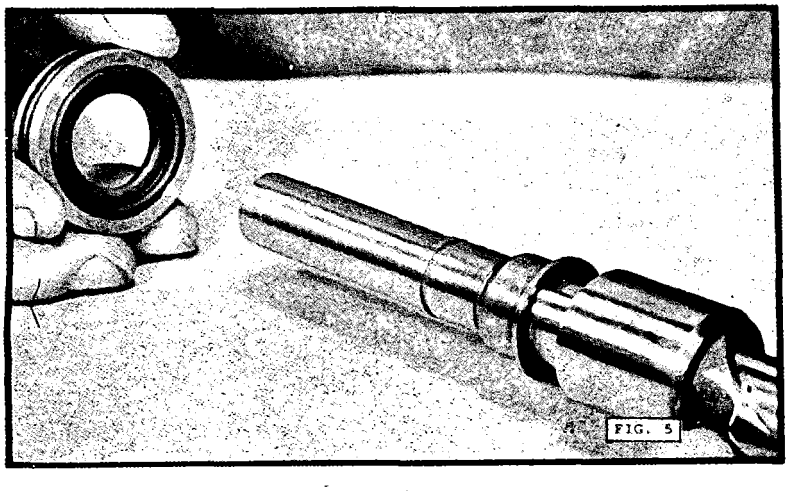


FIG. 5

INSTALLATION OF
LIP SEAL AND BALL BEARING
ON POWER ROTOR
TYPE VT-210 IMO HYDRAULIC PUMP

1. Clean seal retainer (023). Carefully install lip seal (025) and 'O'ring (024) shown in sketch (A).

2. Clean wear ring (014) and power rotor (010).

CAUTION

Do Not use abrasives

3. Lubricate wear ring with clean light lubricating oil. Install seal assembly with a slightly twisting motion on the wear ring as shown in Fig. 1.

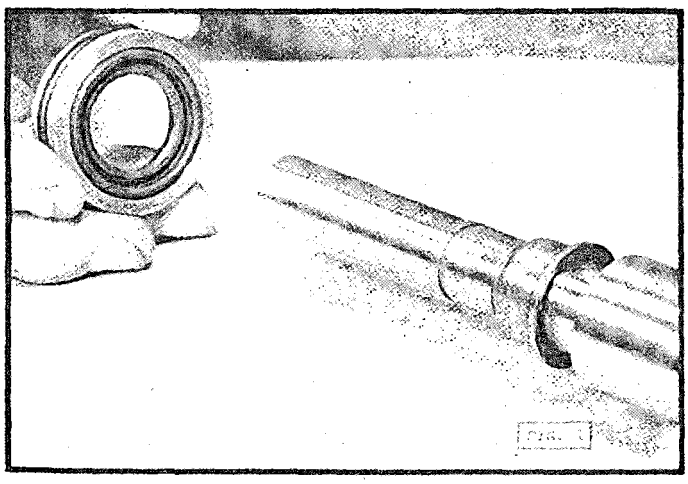
4. Install snap ring (021) in slot closest to wear ring. Use standard external snap ring assembly pliers. (Fig. 2) Take care not to mark the wear ring with the nose of the pliers.

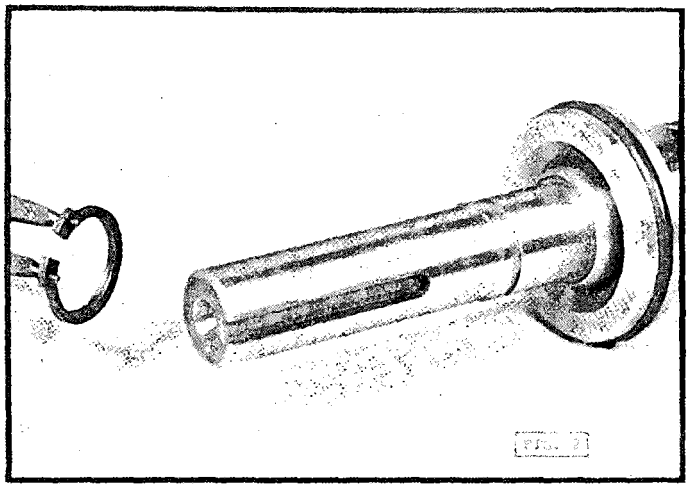
5. Fill cavity between snap ring (021) and seal retainer (023), (Fig. 3) with grease (Krytox 240AC or equal).

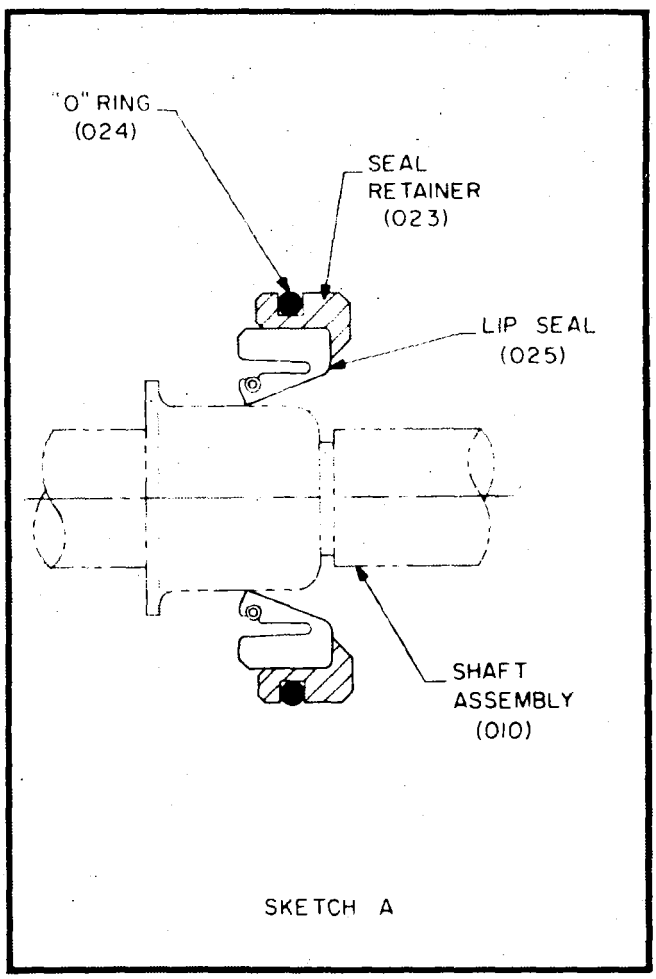
6. Place ball bearing (020) on shaft. Then using a hollow tube, press on bearing inner race to seat bearing against snap ring. (Fig. 4).

7. Inspect assembly. Make sure ball bearing clears snap ring groove and is properly seated on rotor.

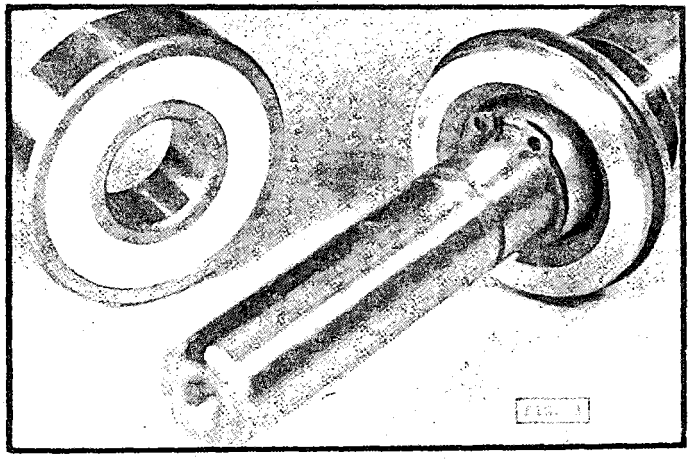
8. Install snap ring (021), (Fig. 5). Rotor is now ready for installation in a unit.

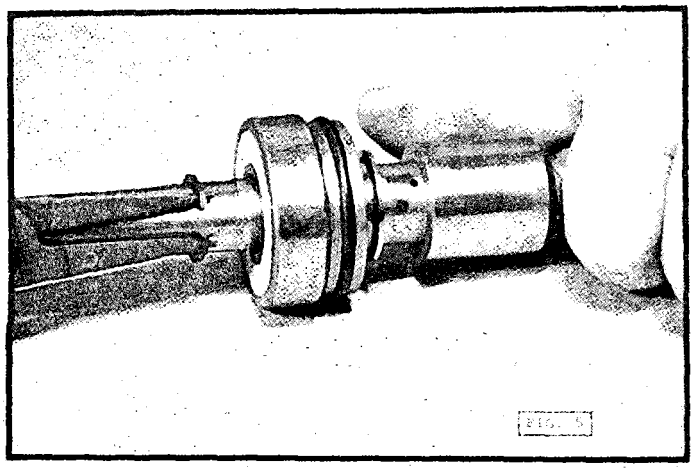


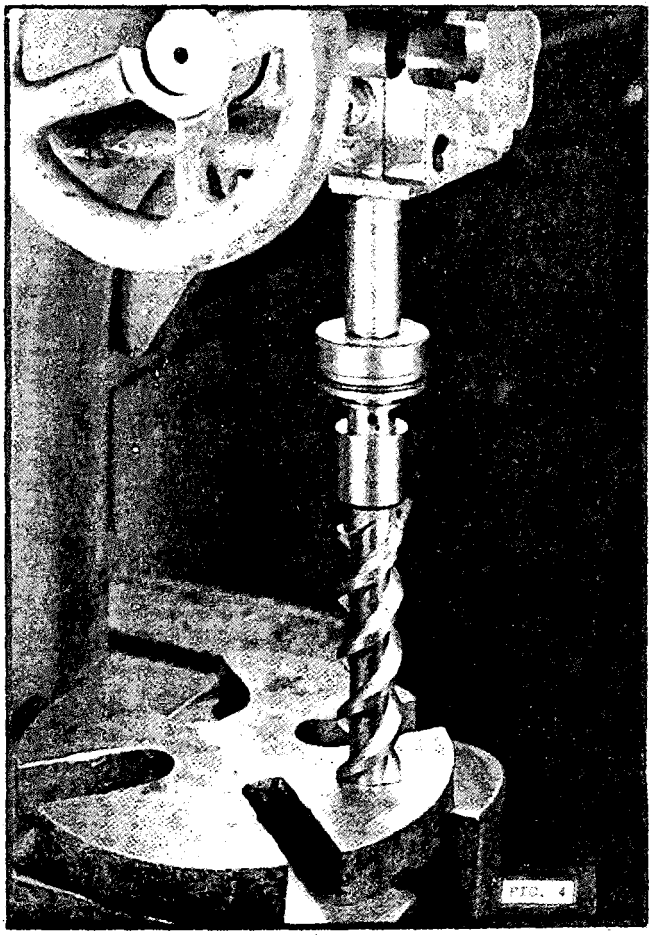




SKETCH A







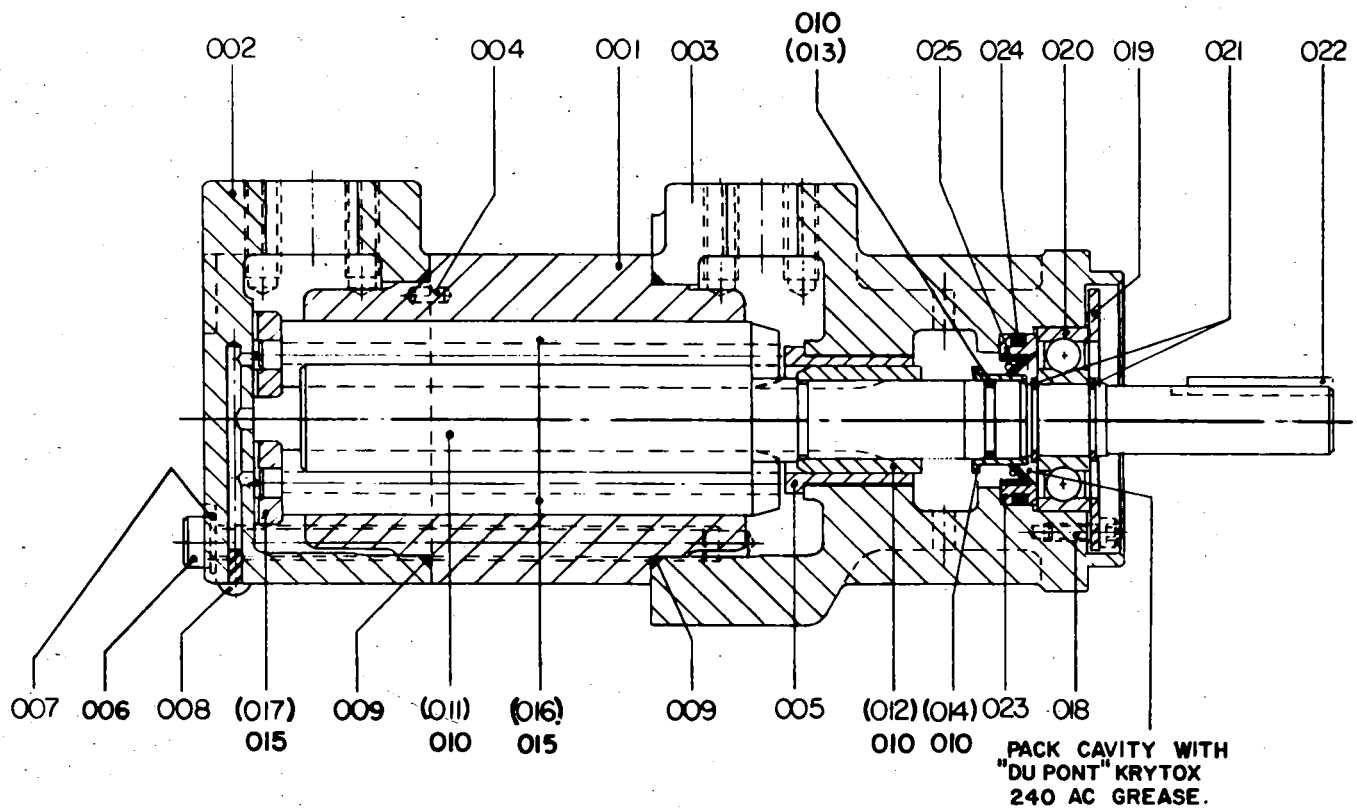
PARTS LIST

001	Rotor Housing	014	Wear Sleeve*
002	Inlet Head	015	Idler Rotor Sub-Assembly** (2)
003	Outlet Head	016	Idler Rotor**
004	Groove Pin	017	Shoe**
005	Balance Piston Bushing	018	Cap Screw (4)
006	Cap Screw (4)	019	Bearing Retainer
007	Lock Washer (4)	020	Ball Bearing X
008	Plug	021	Snap Ring (2) X
009	"O" RIng (2) X	022	Coupling Key
010	Power Rotor Sub-Assembly*	023	Seal Retainer
011	Power Rotor*	024	"O" Ring X
012	Balance Piston*	025	Lip Seal X
013	"O" Ring*		

*Piece 010 consists of parts (011), (012), (013) and (014). These parts are factory mounted and are not serviced separately.

**Piece (015) consists of parts (016) and (017). These parts are factory mounted and are not serviced separately.

Recommended Spare Parts
All parts marked X make up a minor repair kit.
All quantities are one except when noted in parentheses.



The instructions given herein cover generally the operation and maintenance of subject equipment. Should any questions arise which may not be answered specifically by these instructions, they should be referred to the IMO Pump Division for further detailed information and technical assistance.

This manual cannot possibly cover every situation connected with the operation, adjustment, inspection, test, overhaul and maintenance of the equipment furnished. Every effort is made to prepare the text of the manual so that engineering and design data is transformed into the most easily understood wording. The IMO Pump Division, in furnishing this equipment and this manual, must presume that the operating and maintenance personnel assigned thereto have sufficient technical knowledge and experience to apply sound safety and operational practices which may not be otherwise covered herein.

In applications where the IMO Pump Division furnished equipment is to be integrated with a process or other machinery, these instructions should be thoroughly reviewed to determine the proper integration of the equipment into the overall plant operational procedures.