



INSTRUCTIONS and PARTS LIST

SERIES 3NB Rotor Sizes 437 and 462

WARNING

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

INSTRUCTIONS 3NB (R-1)

Imo Delaval Inc.
IMO Pump Division
P.O. Box 5020
Airport Road
Monroe, NC 28110-0527
USA

3NB-437 & 3NB-462

DESCRIPTION

The 3NB-437 and 3NB-462 pumps are positive displacement, rotary, screw type pump. They are vertical mounted units designed for lube oil service and the moving parts (power rotor and two idler rotors) are lubricated by the fluid being pumped.

HYDRAULIC BALANCE - The idler rotors are hydraulically balanced to minimize axial thrust. High pressure oil from the discharge chamber is directed through the tubing (034) and the drilled passages of the thrust plate (026) to the outboard end faces of the idler rotors (030). The balance piston (019) fitted on the power rotor (018) between the discharge chamber and the seal chamber is subject to discharge oil pressure which balances the hydraulic axial force on the power rotor threads. Pressure in the seal compartment is vented to the suction chamber via drilled passages in the balance piston housing (006) and the rotor housing (016).

BALL BEARING - The ball bearing positions the power rotor axially within the pump and is located inboard of the mechanical seal.

MECHANICAL SEAL - The mechanical seal prevents leakage of oil where the power rotor shaft emerges from the pump. The type used is a Crane Type 21.

MAINTENANCE

GENERAL - Shut off driver. Close suction and discharge valves and disconnect piping from pump. Uncouple driver from pump and remove driver.

NOTE

A Kebby Tank Trapper (035) may be removed to drain oil from pump case.

DISASSEMBLY

STEP 1 - Loosen set screw (023) and remove check nut (022). Remove coupling half from rotor shaft. Remove bracket (043) and gasket (036) from outlet head (002) by removing nuts (038) and bolts (037).

STEP 2 - Remove hex head bolts (020), and lift pump cartridge from pump case (001) for disassembly.

STEP 3 - Remove tubing (034). Remove capscrews (028) and disassemble thrust plate (026) and four spacers (025). Spacers are machined as a set and should be wired together when disassembled.

STEP 4 - Unscrew idler rotors (031) from rotor housing (016).

STEP 5 - Remove capscrews (015) and remove balance piston housing (006) from rotor housing together with power rotor (018), mechanical seal (012), bearing spacer (011), ball bearing (010), lockwasher (009), locknut (008), "O" ring (005), and balance piston bushing (014).

Rotors and housing bores may now be inspected. No further disassembly is required unless it is necessary to service mechanical seal or ball bearing or replace power rotor. If service to any or all of these is required proceed as follows:

STEP 6 - Remove hex head bolts (004) and bearing retainer (003). Remove locknut (008) and lockwasher (009) from shaft. Remove ball bearing (010) from shaft. This may be accomplished by pressing on the threaded end of rotor until bearing is unseated or by pushing on opposite end of rotor until bearing is out of balance piston housing and can be removed with a puller. Remove bearing spacer (011), retaining ring (013) and stationary seal seat. Pull rotor out of balance piston housing and remove rotary seal member from shaft.

PARTS LIST

Drawing SF-5476

<u>Pc. No.</u>	<u>Name</u>	<u>Pc. No.</u>	<u>Name</u>
001	Case	023	Set Screw
002	Outlet Head	024	Ermeto Fitting
003	Bearing Retainer	025	Spacer
004	Hex Head Bolt	026**	Thrust Plate
005*	"O" Ring	027	Ermeto Fitting
006	Balance Piston Housing	028	Soc. Head Cap Screw
007	Pipe Plug	029	Pipe Plug
008**	Bearing Locknut	030	Idler Rotor Assembly
009**	Bearing Lockwasher	031**	Idler Rotor-2
010*	Ball Bearing	032	Shoe-2
011**	Bearing Spacer	033	Spring Pin
012*	Mechanical Seal	034	Tubing
013*	Retaining Ring	035	Tank Trapper
014**	Bushing	036*	Gasket
015	Soc. Head Cap Screw	037	Hex Head Bolt
016**	Rotor Housing	038	Nut
017**	Power Rotor Assembly	039	Name Plate
018	Power Rotor-1	040	Name Plate
019	Balance Piston-1	041	Name Plate
020	Hex Head Bolt	042	Drive Rivet
021	Key	043	Bracket
022	Check Nut		

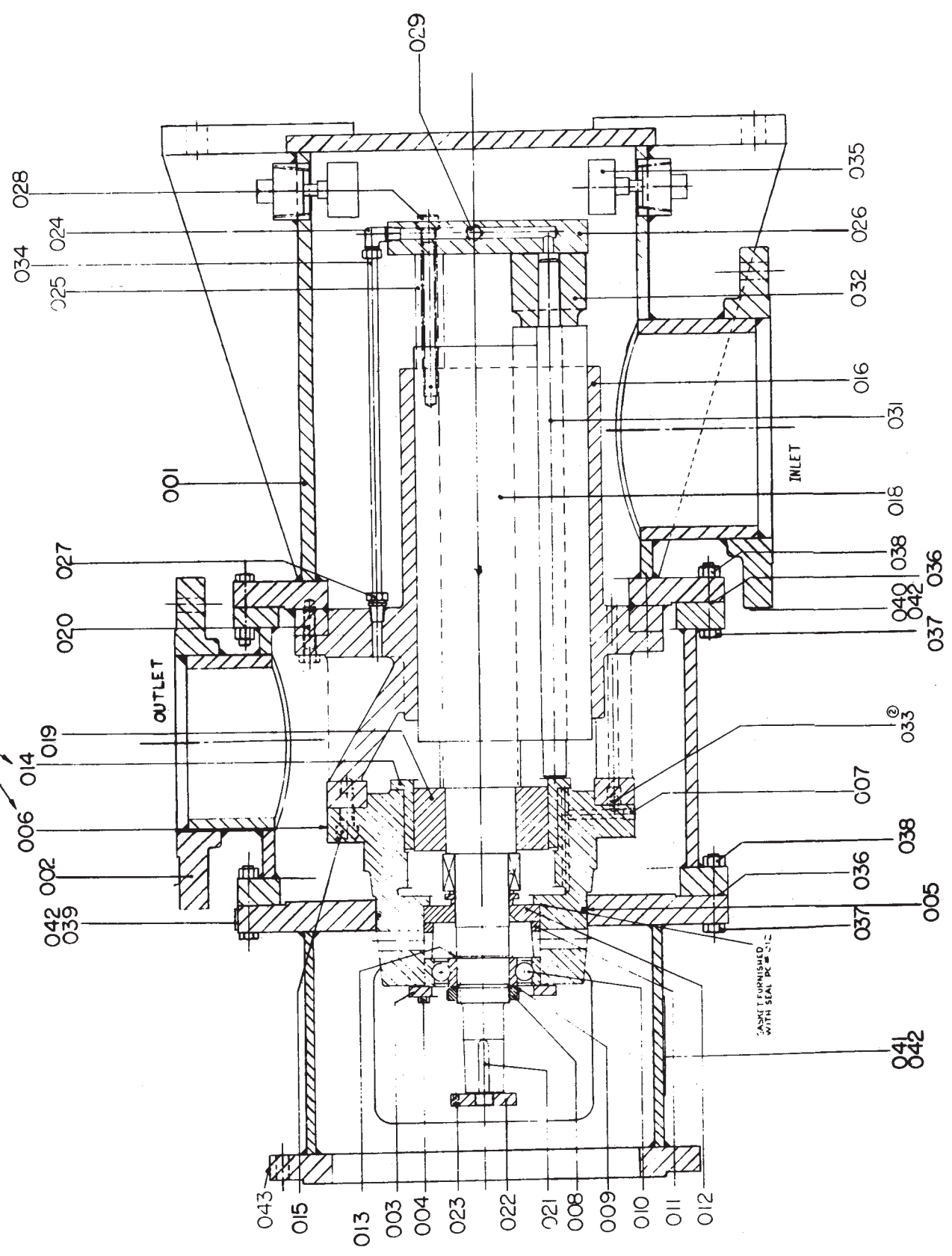
1 Not serviced separately. Furnished as assembly 017.

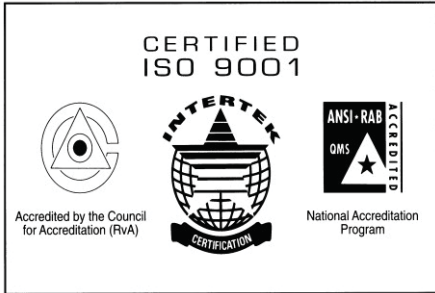
2 Not serviced separately. Furnished as assembly 030.

3 * Denotes minor repair kit items.

4 ** Denotes major repair kit items. Items marked * are also included in this kit.

LALITE BUSHING PC. 04 TO BALANCE
 PISTON HOUSING PC. P-05 WITH LOCTITE
 RETAINING COMPOUND.





CIRCOR

1710 Airport Road
PO Box 5020
Monroe, NC USA
28111.5020

Tel: +1. 877.853.7867

Email: cc@circor.com

Web: www.circorpt.com

