

# OPERATOR'S MANUAL

# 650963-X

INCLUDING: SERVICE KITS, GENERAL DESCRIPTION & TROUBLESHOOTING  
ALSO INCLUDE MANUALS: 66506 AIR MOTOR, 66475-X LOWER PUMP, FORM 3637-2  
GENERAL INFORMATION SHEET.

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(REV. C) IPP

**12" AIR MOTOR**  
**65:1 RATIO**  
**6" STROKE**

## TWO-BALL PUMP (CARBON STEEL)

**IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING,  
OPERATING OR SERVICING THIS EQUIPMENT.**

(PACKINGS ARE UPPER AND LOWER UNLESS NOTED)

### PACKING MATERIAL

- 1 THIKOL LEATHER
- 3 GLASS FILLED PTFE
- 4 BUNA "N"
- 5 PTFE (GF) / LEATHER STG'D (UPPER)  
GLASS FILLED PTFE (LOWER)
- 9 (G/F) PTFE / LEATHER STG'D
- A UHMW-PE (UPPER)  
LEATHER (LOWER)
- B UHMW-PE (UPPER)  
PTFE (LOWER)
- C UHMW-PE
- D UHMW-PE / LEATHER STG'D (UPPER)  
LEATHER (LOWER)

### PACKING MATERIAL

- E UHMW-PE / LEATHER STG'D (UPPER)  
PTFE (LOWER)
- F UHMW-PE / LEATHER STG'D (UPPER)  
UHMW-PE (LOWER)
- G UHMW-PE / LEATHER STG'D
- N LEATHER (UPPER)  
PTFE (LOWER)
- P UHMW-PE / PTFE STG'D (UPPER)  
UHMW-PE (LOWER)
- R PTFE / UHMW-PE STG'D (UPPER)  
PTFE (LOWER)

## PUMP OPTION DESCRIPTION CHART 650963-XXX

PACKING MATERIAL

PLUNGER TYPE

SPRING ARRANGEMENT

### SPRING ARRANGEMENT

- 1 COIL SPRING
- 4 MULTIPLE WAVE SPRING

### PLUNGER TYPE

- 3 HD SS W / HD CHROME PLATING

## SERVICE KITS

- Use only genuine ARO® replacement parts to assure compatible pressure rating and longest service life.
- 637112 for general repair of the Air Motor section.
- 637098-XXX for general repair of the 66475-XXX Two-Ball Lower Pump End.

## GENERAL DESCRIPTION

**⚠ WARNING** HAZARDOUS PRESSURE. Do not exceed maximum operating pressure of 5,850 psi (404 bar) at 90 psi (6.3 bar) inlet air pressure.

**⚠ WARNING** Refer to general information sheet for additional safety precautions and important information.

- This MODEL MANUAL is one of four documents needed to properly support an ARO pump model. Ref: Part A. 650XXX-XXX-X MODEL (OPERATOR'S) MANUAL, Part B. GENERAL INFORMATION, Part C. AIR MOTOR (OPERATOR'S) MANUAL, Part D. LOWER PUMP END (OPERATOR'S) MANUAL. These forms are available from the factory if needed.
- The Two-Ball pumps are primarily designed for the pumping of medium viscosity fluids compatible with carbon steel. The lower pump is designed for easy priming and the double acting feature is standard in all ARO industrial pumps. Material is delivered to the pump discharge outlet on both the up and down stroke.
- The motor is connected to the lower pump end by a spacer section. This allows for lubrication of the upper packing gland and prevents motor contamination because of normal wear and eventual leakage through the material packing gland.

## PUMP DATA

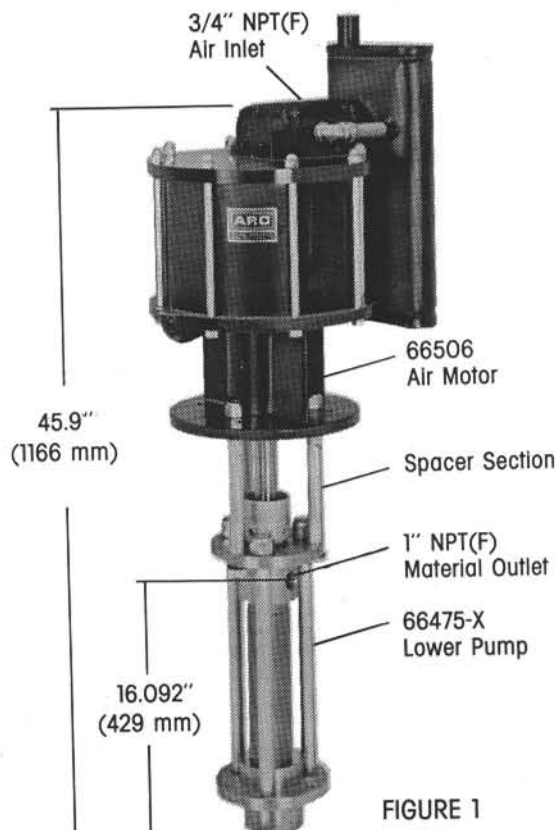


FIGURE 1

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# ARO

**IR** Ingersoll Rand  
Industrial Technologies

## PUMP DISASSEMBLY

Refer to Figure 2

1. Lay the pump assembly on a workbench.
2. Remove the three (C) nuts from the three (D) spacer rods.
3. Pull the air motor from the lower pump end until air motor piston rod is on "down" position and lower pump end rod is in "up" position.
4. Remove the (D) spacer rods.
5. Remove the two (B) cotter pins from the (A) adapter.
6. Unscrew the (A) adapter from the air motor.

## PUMP ASSEMBLY

Refer to Figure 2

1. Align Lower End Pump Rod with Air Motor Piston rod and secure two rods with (A) adapter. Position air inlet of motor 210° from material outlet of pump.
2. Insert two (B) cotter pins into position.
3. Secure the three (D) spacer rods to the lower pump using three (F) cap screws and (E) lockwashers.
4. Push air motor and lower pump end together so (D) spacer rods slide thru holes located in air motor base.
5. Secure air motor to lower pump end using three (C) nuts.

## TROUBLE SHOOTING

### • PROBLEM

\_\_\_Cause, solution.

### • Pump will not cycle.

- \_\_\_No pressure to motor, See motor manual.
- \_\_\_Restricted return lines, clean obstruction.
- \_\_\_Damaged motor, service motor.

\_\_\_Be sure to eliminate any possible non-pump problems before suspecting pump malfunction and continuing.

### • Pump problems will typically occur in one of two areas:

1. The Air Motor Section.
2. The Lower Pump Section.

\_\_\_Determine which section is affected.

## SPACER SECTION

REF	PART NO.	DESCRIPTION
A	92226	ADAPTER
B	Y15-47-C (2)	COTTER PIN
C	Y108-8-Z (3)	HEX HEAD NUT
D	79125 (3)	SPACER ROD
E	Y14-750 (3)	LOCKWASHER
F	Y6-128-C (3)	CAP SCREW

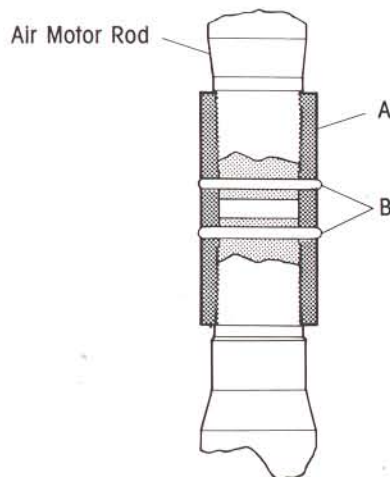


FIGURE 2

