

# OPERATOR'S MANUAL

# 650635-X-B

INCLUDING: SERVICE KITS, GENERAL DESCRIPTION & TROUBLESHOOTING  
ALSO INCLUDE MANUALS: 6564X-X AIR MOTOR, 6695X-X LOWER PUMP, FORM 3637-2  
GENERAL INFORMATION SHEET.

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(REV. C) IPP

**6" AIR MOTOR**  
**4:1 RATIO**  
**6" STROKE**

## FOUR-BALL PUMP (300 SERIES STAINLESS STEEL)

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

(PACKINGS ARE UPPER AND LOWER UNLESS NOTED)

### PACKING MATERIAL

- 1 THICKOL LEATHER
- 6 LEATHER (UPPER)  
VIRGIN PTFE (LOWER)
- 7 GLASS FILLED PTFE (UPPER)  
VIRGIN PTFE (LOWER)
- 8 (G/F) PTFE / LEATHER STGD (UPPER)  
VIRGIN PTFE (LOWER)
- A UHMW-PE (UPPER)  
LEATHER (LOWER)
- B UHMW-PE (UPPER)  
PTFE (LOWER)

### PACKING MATERIAL

- C UHMW-PE
- D UHMW-PE / LEATHER STGD (UPPER)  
LEATHER (LOWER)
- E UHMW-PE / LEATHER STGD (UPPER)  
PTFE (LOWER)
- F UHMW-PE / LEATHER STGD (UPPER)  
UHMW-PE (LOWER)
- P UHMW-PE / PTFE STGD (UPPER)  
UHMW-PE (LOWER)
- R PTFE / UHMW-PE STGD (UPPER)  
PTFE (LOWER)

### PUMP OPTION DESCRIPTION CHART 650635-XXX-B

PACKING MATERIAL

PLUNGER TYPE

SPRING ARRANGEMENT

#### SPRING ARRANGEMENT

- 1 COIL SPRING
- 2 COMPOSITE SPRING
- 3 NO SPRING

#### PLUNGER TYPE

- 6 SS W / HD CHROME PLATING

### SERVICE KITS

- Use only genuine ARO® replacement parts to assure compatible pressure rating and longest service life.
- 61355 for general repair of the Air Motor section.
- 637232-XXX for general repair of the 66952-XXX Four-Ball Lower Pump End.

### GENERAL DESCRIPTION

**⚠ WARNING** HAZARDOUS PRESSURE. Do not exceed maximum operating pressure of 600 psi (41 bar) at 150 psi (10.4 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 Four-Ball pumps are primarily designed for the high volume transfer of light and medium viscosity fluids compatible with 300 series stainless 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

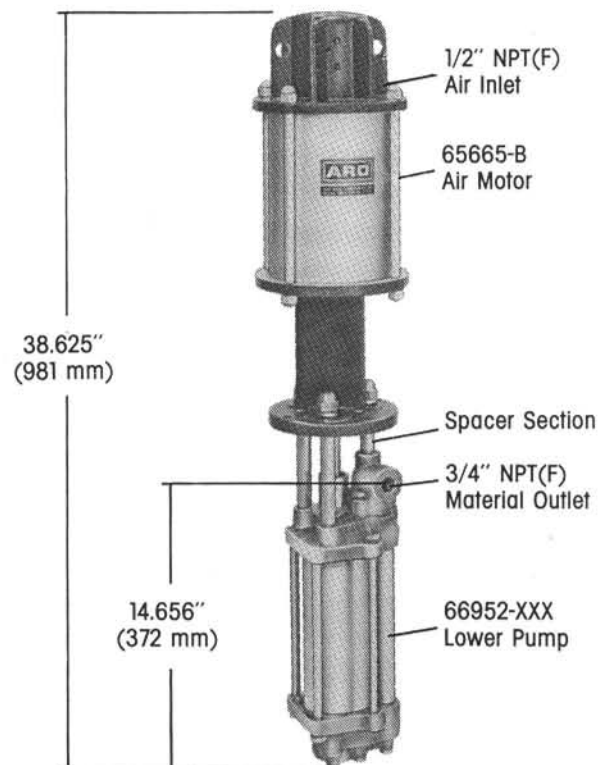


FIGURE 1

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## PUMP DISASSEMBLY

Refer to Figure 2.

1. Lay the pump assembly on a workbench.
2. Remove the three (D) nuts and three (E) lockwashers from the two (G) and one (F) 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. Slide (A) retaining ring upward.  
NOTE: A snap ring tool is recommended for proper handling of retaining ring.
5. Slide (B) sleeve towards air motor on the air motor piston rod.
6. Remove two (C) connectors and lay air motor aside.
7. Unscrew two (G) and one (F) spacer rods only if disassembly of lower pump end is necessary.

## PUMP ASSEMBLY

Note: All threads are right hand.

1. Align Lower End Pump Rod with Air Motor Piston rod. Position air inlet of motor 200° from material outlet.
2. Position two (C) connectors in place and slide (B) sleeve over two (C) connectors.
3. Slide (A) retaining ring into groove.
4. If two (G) and one (F) spacer rods were removed in disassembly of air motor from lower pump end, screw spacer rods into lower pump end.
5. Push air motor and lower pump end together so spacer rods slide thru holes located in air motor base.
6. Secure air motor to lower pump end using three (D) nuts and (E) lockwashers.

## 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	91547	RETAINING RING
B	91546	SLEEVE
C	91644 (2)	CONNECTOR
D	Y85-29-N (3)	HEX HEAD NUT
E	Y14-625 (3)	LOCKWASHER
F	93232-2	SPACER ROD
G	93232-1 (2)	SPACER ROD

OPTIONAL (55 GALLON) SPACER KIT (61307) IS AVAILABLE. KIT INCLUDES TWO CONNECTOR ASSEMBLIES WITH AN EXTENSION ASSEMBLIES WITH AN EXTENSION ROD (92815-3), TWO (93232-3) SPACER RODS AND ONE (93232-4) SPACER ROD.

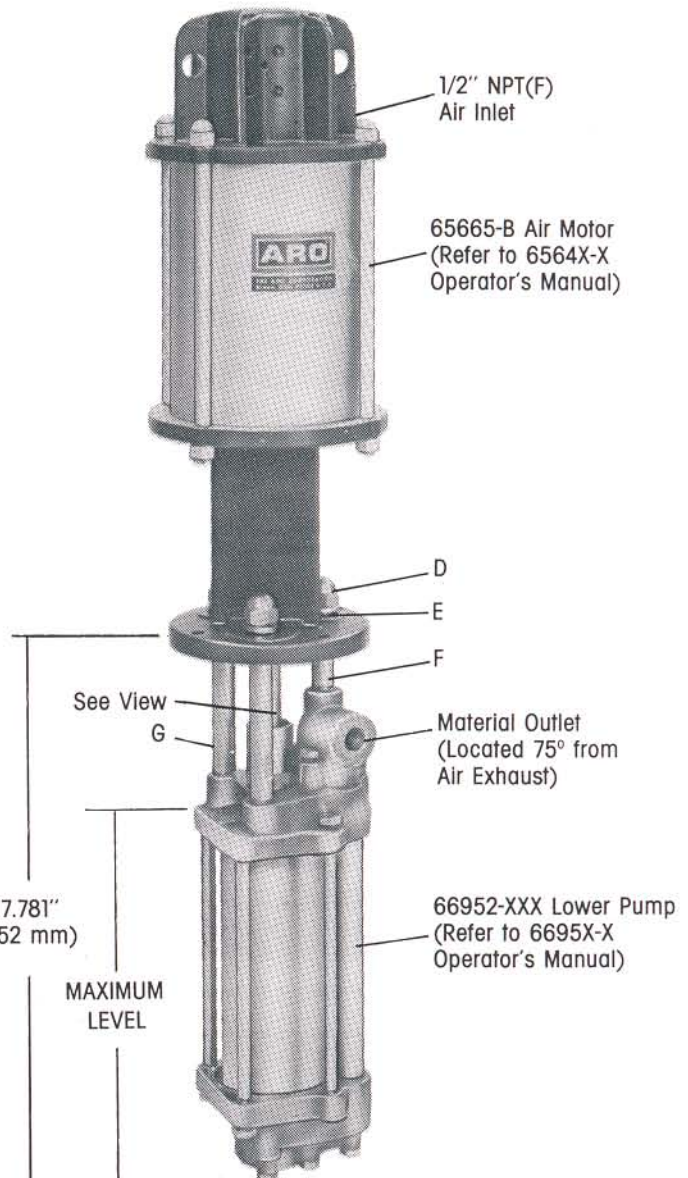
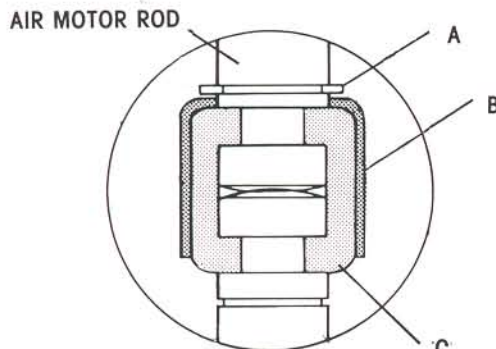


FIGURE 2

The 4-ball pump is not to be used with a stand pipe unless a special mounting is provided. Material being pumped must not be allowed to reach a level higher than the outlet casting of the lower pump end. (See maximum level). This is to keep material from coming in contact with the divorced area of the pump. This prevents material from being forced into the air motor.