

# OPERATOR'S MANUAL

# 662420-B

INCLUDING: SPECIFICATIONS, SERVICE KITS, GENERAL INFORMATION, PARTS, TROUBLESHOOTING.  
INCLUDE MANUALS: 6544X-X Air Motor (pn 97999-64) & S-632 General Information Manual (pn 97999-624).

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(REV. N)

**4-1/4" AIR MOTOR**  
**9:1 RATIO**  
**4" STROKE**

## 662420-B Basic Oil Pump



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

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.  
The original language of this manual is English.

### SERVICE KITS

- Use only genuine ARO® replacement parts to assure compatible pressure rating and longest service life.
- **61053** for repair of air motor and lower pump end.
- **61268** for repair of 65441-B air motor.
- **65823** packing kit assembly.

### SPECIFICATIONS

|                                             |                             |
|---------------------------------------------|-----------------------------|
| <b>Model Series</b> (refer to option chart) | 662420-B                    |
| <b>Pump Type</b>                            | Air Operated, Two-Ball Pump |
| <b>Ratio</b>                                | 9:1                         |
| <b>Air Motor</b>                            | 65441-B                     |
| <b>Motor Repair Kit</b>                     | 61268                       |
| <b>Motor Diameter</b>                       | 4-1/4" (10.8 cm)            |
| <b>Stroke (double acting)</b>               | 4" (10.2 cm)                |
| <b>Air Inlet (female)</b>                   | 1/2 - 14 NPTF - 1           |
| <b>Air Exhaust (female)</b>                 | 1-1/4 - 11-1/2 NPTF - 1     |
| <b>Material Outlet (female)</b>             | 3/4 - 14 NPTF               |
| <b>Lower Pump End</b>                       | 60873                       |
| <b>Material Inlet (female)</b>              | 2 - 11-1/2 NPT              |
| <b>Dimensional Data</b>                     | see figure 1                |

### PUMP PERFORMANCE

|                                               |                                  |
|-----------------------------------------------|----------------------------------|
| <b>Air Inlet Pressure Range</b>               | 0 - 150 p.s.i.g. (0 - 10.3 bar)  |
| <b>Fluid Pressure Range</b>                   | 0 - 1350 p.s.i.g. (0 - 93.1 bar) |
| <b>Maximum Rec'd Cycles / Minute</b>          | 75                               |
| <b>Displacement In.<sup>3</sup> Per Cycle</b> | 12.0                             |
| <b>Volume / Cycle</b>                         | 6.65 oz. (196.8 ml)              |
| <b>Cycles Per Gallon</b>                      | 19.2                             |
| <b>Maximum Working Flow Rate</b>              | 3.9 g.p.m. (14.8 l.p.m.)         |
| <b>Noise Level @ 60 p.s.i. - 40 c.p.m. ①</b>  | 81.8 db(A)②                      |

① Tested with 91790 silencer installed.

② The pump sound pressure level has been updated to an Equivalent Continuous Sound Level (LAeq) to meet the intent of ANSI S1.13-1971, CAGI-PNEUROP S5.1 using four microphone locations.

### GENERAL DESCRIPTION

The 9:1 ratio is an expression of the relationship between the effective air motor area and the effective lower pump area. When 150 p.s.i. (10.3 bar) of air pressure is supplied to the air motor, the lower pump end will develop a maximum 1350 p.s.i. (93.1 bar) of fluid pressure (at no flow). As the fluid control is opened, the flow rate will increase as the air motor cycle rate increases to keep up with demand.

### PUMP DATA

#### MODELS 662420-B

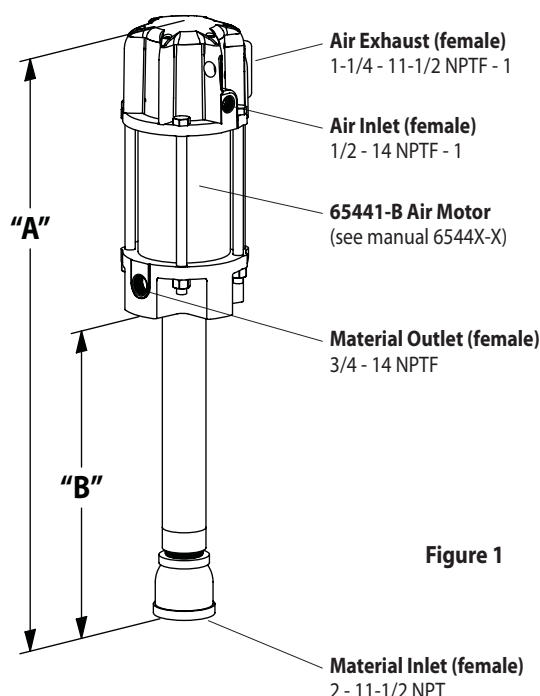


Figure 1

NOTE: Dimensions are shown in inches and (mm) and are supplied for reference only.

| Model    | "A" (mm)    | "B" (mm)        |
|----------|-------------|-----------------|
| 662420-B | 29" (736.4) | 15-1/8" (383.9) |

### IMPORTANT

This is one of three documents which support the pump. Replacement copies of these forms are available upon request.

- ☒ **662420-B** Model Operator's Manual (pn 97999-108)
- ☐ **S-632** General Information - Air / Hydraulic Operated Piston Pumps (pn 97999-624)
- ☐ **6544X-X** Air Motor Operator's Manual (pn 97999-64)

# ARO

**IR** Ingersoll Rand  
Industrial Technologies

## PARTS LIST

| Item   | Description (size)             | Qty | Part No.  | Mtl  |
|--------|--------------------------------|-----|-----------|------|
| 1      | Air Motor                      | (1) | 65441-B   |      |
| ① ② 2  | Spacer                         | (1) | 96624     | [Br] |
| ① ② 3  | Seal                           | (1) | 96625     | [U]  |
| ① ② 5  | Spring                         | (1) | 90120     | [C]  |
| ① ② 6  | Washer                         | (1) | 90125     | [Co] |
| ① ② 7  | "O" Ring (1/16" x 2-1/8" o.d.) | (1) | Y325-33   | [B]  |
| 8      | Nut (1/2" - 20)                | (2) | Y11-108-C | [C]  |
| 9      | Piston Rod                     | (1) | 76507     | [C]  |
| 10     | Cup Follower                   | (1) | 75678     | [C]  |
| 11     | Ball (1.0000" diameter)        | (1) | Y16-232   | [C]  |
| ① ② 12 | Cup                            | (1) | 92867-1   | [UH] |
| ① ② 13 | Washer                         | (1) | 75682     | [C]  |
| 14     | Inner Check Seat               | (1) | 75681     | [C]  |

| Item   | Description (size)                          | Qty | Part No. | Mtl |
|--------|---------------------------------------------|-----|----------|-----|
| 15     | Tube                                        | (1) | 76506    | [C] |
| 16     | Ball Stop Pin (3/16" o.d. x 1-13/16")       | (1) | 83009    | [C] |
| ① ② 17 | "O" Ring (1/8" x 1-7/8" o.d.)               | (1) | Y325-223 | [B] |
| 18     | Ball (1.2500" diameter)                     | (1) | Y16-240  | [C] |
| 19     | Foot Valve Seat                             | (1) | 77006    | [C] |
| 20     | Reducer (1-1/2 11-1/2 NPT x 2 - 11-1/2 NPT) | (1) | Y202-12  | [I] |
|        |                                             |     |          |     |
|        | Lower Pump Assembly (includes items 7 - 20) | (1) | 60873    |     |
|        |                                             |     |          |     |
| ①      | Items included in repair kit                | (1) | 61053    |     |
| ②      | Items included in packing kit               | (1) | 65823    |     |

## OPERATING AND SAFETY PRECAUTIONS

**⚠ WARNING HAZARDOUS PRESSURE.** Do not exceed maximum operating pressure of 1350 p.s.i. (93.1 bar) at 150 p.s.i. (10.3 bar) inlet air pressure.

|                                                                                                                                                                                                                                                                                                                                                                                                                      |   |                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------|
| <b>Pump Ratio X</b><br><b>Inlet Pressure to Pump Motor</b>                                                                                                                                                                                                                                                                                                                                                           | = | <b>Maximum Pump</b><br><b>Fluid Pressure</b> |
| Pump ratio is an expression of the relationship between the pump motor area and the lower pump end area. EXAMPLE: When 150 p.s.i. (10.3 bar) inlet pressure is supplied to the motor of a 4:1 ratio pump, it will develop a maximum of 600 p.s.i. (41.4 bar) fluid pressure (at no flow) - as the fluid control is opened, the flow rate will increase as the motor cycle rate increases to keep up with the demand. |   |                                              |

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

- The two-ball pumps are primarily designed for the pumping of medium viscosity fluids. The two-ball design provides better priming of the lower foot valve. 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.

NOTICE: Thermal expansion can occur when the fluid in the material lines is exposed to elevated temperatures. Example: Material lines located in a non-insulated roof area can warm due to sunlight. Install a pressure relief valve in the pumping system.

Replacement warning label (pn 92325) is available upon request.

### LOWER PUMP END DISASSEMBLY

**NOTE: All threads are right hand.**

- While holding pump securely with a strap wrench, unthread and remove (15) tube.
- Loosen (8) nut against motor rod and unthread (9) piston rod from motor rod.
- Unthread and remove (14) inner check seat, releasing (13) washer, (12) cup and (11) ball.
- Loosen (8) nut to unthread and remove (10) cup follower from (9) piston rod.
- While holding (15) tube securely, unthread and remove (19) foot valve seat and components.
- Remove (16) ball stop pin, releasing (18) ball.

### LOWER PUMP END ASSEMBLY

**NOTE: Thoroughly clean and lubricate all seals. Replace all soft parts with new ones included in the repair kit.** Note: Refer to the illustration (figure 2, page 3) for packing lip direction.

- Assemble (17) "O" ring, (18) ball and (16) ball stop pin to (19)

foot valve seat.

- Assemble (19) foot valve seat and components to (15) tube. NOTE: Tighten (19) foot valve seat to 125 - 150 ft lbs (169.5 - 203.4 Nm).
- Assemble (9) piston rod and (8) nut to (10) cup follower. NOTE: Apply Loctite 242 to threads of (9) piston rod before assembly. NOTE: Tighten (8) nut to 50 - 60 ft lbs (67.8 - 81.3 Nm).
- Assemble (12) cup, (13) washer and (11) ball to (10) cup follower, securing with (14) inner check seat. NOTE: Tighten (14) inner check seat to 65 - 70 ft lbs (88.1 - 94.9 Nm).
- Assemble (3) seal, (2) spacer, (5) spring and (6) washer into cavity in bottom of motor. NOTE: Refer to figure 2, page 3 for packing lip direction.
- Assemble (8) nut and (9) piston rod and components to motor rod, tightening (8) nut against motor rod. NOTE: Apply Loctite 242 to threads of (9) piston rod before assembly. NOTE: Tighten (8) nut to 60 - 70 ft lbs (81.3 - 94.9 Nm).
- Assemble (7) "O" ring to (15) tube and assemble (15) tube over (10) cup follower and components and into air motor base. NOTE: Tighten (15) tube to 90 - 100 ft lbs (122.0 - 135.6 Nm).

## TROUBLE SHOOTING

Pump problems can occur in either the air motor section or the lower pump end section. Use these basic guidelines to help determine which section is affected.

**Pump will not cycle.**

- Be certain to first check for non-pump problems including kinked, restrictive or plugged inlet / outlet hose or dispensing device. Depressurize the pump system and clean out any obstructions in the inlet / outlet material lines.
- Refer to the motor manual for trouble shooting if the pump does not cycle and / or air leaks from the air motor.
- Inadequate air supply. Increase air pressure to the pump.
- Obstructed material line. Remove obstruction.
- Damaged motor. Service the motor.

**Material on one stroke only (fast downstroke).**

- Ball (18) is not seating. Remove the ball from the foot valve, clean and inspect the ball and foot valve seat area. If the ball or foot valve is damaged, replace.

**Material on one stroke only (fast upstroke).**

- Cup (12) is worn. Replace.

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• ARO® is a registered trademark of Ingersoll-Rand •

## PARTS LIST

### ASSEMBLY TORQUE REQUIREMENTS

NOTE: DO NOT OVERTIGHTEN FASTENERS.

(8) nut, 50 - 60 ft lbs (67.8 - 81.3 Nm).

(14) seat, 65 - 70 ft lbs (88.1 - 94.9 Nm).

(15) tube, 90 - 100 ft lbs (122.0 - 135.6 Nm).

(19) seat, 125 - 150 ft lbs (169.5 - 203.4 Nm).

### LUBRICATION / SEALANTS

① Apply Loctite 242 to threads.

#### MATERIAL CODE

|      |                |
|------|----------------|
| [B]  | = Nitrile      |
| [Br] | = Brass        |
| [C]  | = Carbon steel |
| [Co] | = Copper       |
| [I]  | = Iron         |
| [U]  | = Urethane     |
| [UH] | = UHMW-PE      |

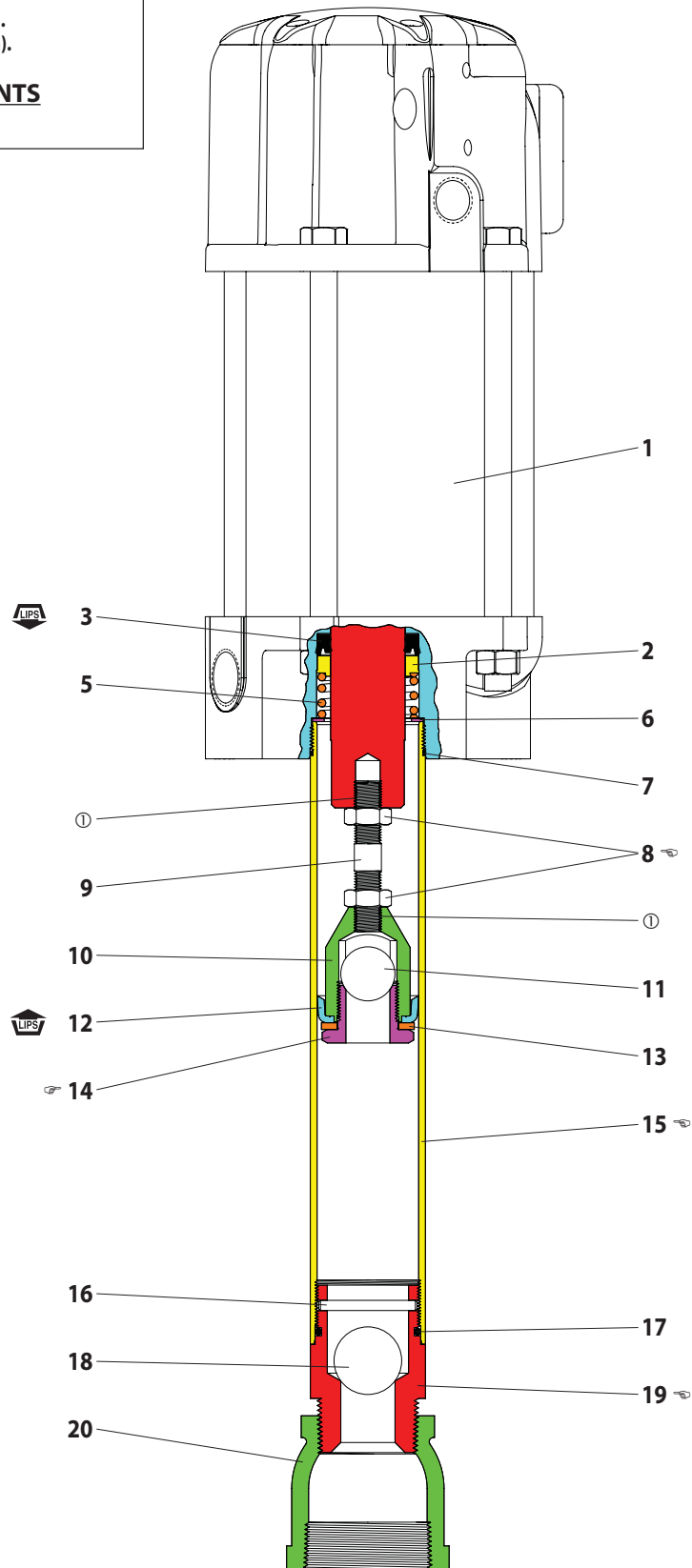


Figure 2

