

OPERATOR'S MANUAL

NM2304B-X-X

INCLUDING: SPECIFICATIONS, SERVICE KITS, GENERAL INFORMATION, TROUBLESHOOTING.
 INCLUDE MANUALS: 65106-X Lower Pump End (pn 97999-578), 6691X Air Motor (pn 97999-748) and S-632
 General Information Manual (pn 97999-624).

RELEASED: 10-17-97
REVISED: 8-11-17
(REV: J)

3" AIR MOTOR
4:1 RATIO
3" STROKE

NM2304B-X1-X1X TWO-BALL PUMP SERIES Stainless Steel



**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.

SERVICE KITS

- Use only genuine ARO® replacement parts to assure compatible pressure rating and longest service life.
- **637316** for repair of air motor section.
- **637010** for repair of 65106, 65108 and 65108-5 lower pump ends.
- **637010-4** for repair of 65106-4, 65108-4 and 65108-6 lower pump ends.
- **637010-6** for repair of 65108-8 lower pump ends.
- **637011** for replacement of lower ball check

SPECIFICATIONS

Model Series (refer to option chart)	NM2304B-X1-X1X
Pump Type	Air Operated, Two-Ball
Ratio	4:1
Air Motor	66913
Motor Repair Kit	637316
Motor Diameter	3" (7.62 cm)
Stroke (double acting)	3" (7.62 cm)
Air Inlet (female)	1/4 - 18 NPTF - 1
Lower Pump End Series	
NM2304B-11-C11	65108-4
NM2304B-11-C1B	65108-6
NM2304B-11-W11	65108-8
NM2304B-11-111	65108-11
NM2304B-11-311	65108
NM2304B-11-511	65108-12
NM2304B-11-31B	65108-5
NM2304B-41-C11	65106-4
NM2304B-41-111	65106-11
NM2304B-41-311	65106
NM2304B-41-511	65106-12
Lower Pump Repair Kit	637010-X
Material Inlet (female)	1-1/4 - 11-1/2 NPSM
Material Outlet (female)	3/4 - 14 NPTF

PUMP PERFORMANCE

Air Inlet Pressure Range	30 - 150 psig (2.1 - 10.3 bar)
Fluid Pressure Range	60 - 795 psig (4.1 - 54.8 bar)
Maximum Rec'd Cycles / Minute	120
Displacement Per Cycle	8.2 In ³ (134 cc)
Cycles Per Gallon	28
Flow @ 120 Cycles / Minute	4.26 gpm (16.121 lpm)
Noise Level @ 100 psig - 60 cpm	85.0 db(A) ^①
Accessories Available	61113 Wall Mount Bracket 66073-1 Air Line Connection Kit

① 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-PNEUROPS S5.1 using four microphone locations.

PUMP DATA

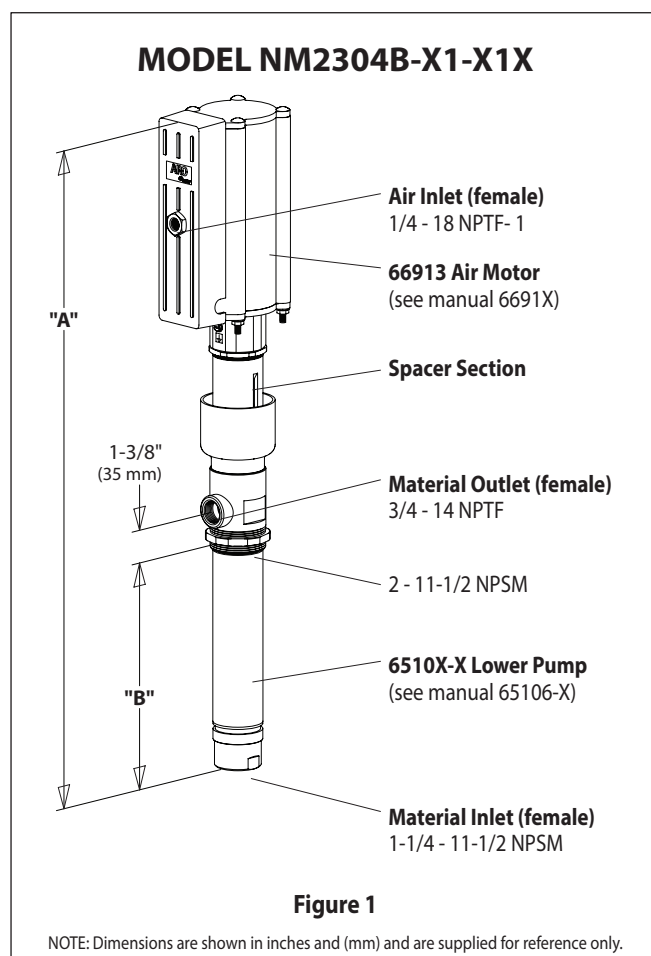


Figure 1

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

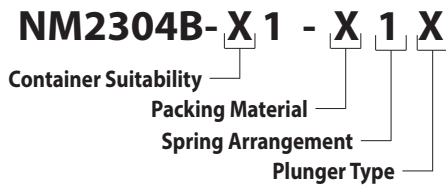
Model Number	"A" (mm)	"B" (mm)	Weight (kg)
NM2304B-11-X1X	28-1/8" (714.4)	9-23/32" (246.8)	32.0 (14.5)
NM2304B-41-X1X	51-21/32" (1312.1)	33-1/4" (844.6)	46.0 (20.9)

IMPORTANT

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

- NM2304B-X-X** Model Operator's Manual (pn 97999-750)
- S-632** General Information - Industrial Piston Pumps (pn 97999-624)
- 65106-X** Lower Pump End Operator's Manual (pn 97999-578)
- 6691X** Air Motor Operator's Manual (pn 97999-748)

PUMP OPTION DESCRIPTION CHART



CONTAINER SUITABILITY

- 1 - Universal (stub)
- 4 - 55 Gallon

PACKING MATERIAL

- C - UHMW-PE (upper and lower)
- W - Viton® (upper) / Virgin PTFE (lower)
- 1 - Leather (upper) and UHMW-PE (lower)
- 3 - Virgin PTFE (upper and lower)
- 5 - Glass filled PTFE/Leather Staggered (upper) / Virgin PTFE (lower)

SPRING ARRANGEMENT

- 1 - Coil

PLUNGER TYPE

- 1 - Standard (300 series stainless steel)
- B - Ceramic

GENERAL DESCRIPTION

The two-ball design provides for easy 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.

The motor is connected to the lower pump end with a spacer tube and solvent cup. This allows for lubrication of the upper packing gland and to prevent air motor contamination because of normal wear and eventual leakage through the material packing gland.

⚠ WARNING HAZARDOUS PRESSURE. Do not exceed maximum operating pressure of 600 psig (41.4 bar) at 150 psig (10.3 bar) inlet air pressure.

Pump Ratio X	=	Maximum Pump Fluid Pressure
Inlet Pressure to Pump Motor		

Pump ratio is an expression of the relationship between the pump motor area and the lower pump end area. EXAMPLE: When 150 psig (10.3 bar) inlet pressure is supplied to the motor of a 4:1 ratio pump, it will develop a maximum of 600 psig (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.

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 94520) is available upon request.

TROUBLESHOOTING

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. Be sure to eliminate any possible non-pump problems before suspecting pump malfunction.

Pump will not cycle.

- No pressure to the motor. See motor manual.
- Restricted return lines. Clean obstruction.
- Damaged motor. Service the motor.

No material at the outlet (pump continually cycles).

- Check the material supply, disconnect or shut off the air supply and replenish the material, reconnect.

Material on one stroke only (fast downstroke).

- The lower check may not be seating in the foot valve (see lower pump disassembly). Remove the check from the foot valve, clean and inspect the valve seat area. If the check or foot valve are damaged, replace.

Material on one stroke only (fast upstroke).

- The middle packings may be worn (see lower pump disassembly). Replace the seals as necessary.

Material leakage out of the solvent cup or material appears on the pump plunger rod.

- Tighten the solvent cup until leakage discontinues. If this procedure does not aid in stopping the leakage problem, the upper packings may be worn (see lower pump disassembly). Replace the seals as necessary.

PUMP CONNECTION - UPPER / LOWER

NOTE: All threads are right hand.

1. Loosen (90606) lock nut and unscrew the entire pump from the air motor. This will expose (94445) adapter (see figure 2).
2. Unscrew (94445) adapter to remove pump assembly from the air motor.
3. Remove the (Y15-21) cotter pin and (94048) clevis pin to remove (94445) adapter.

PUMP CONNECTION DETAIL

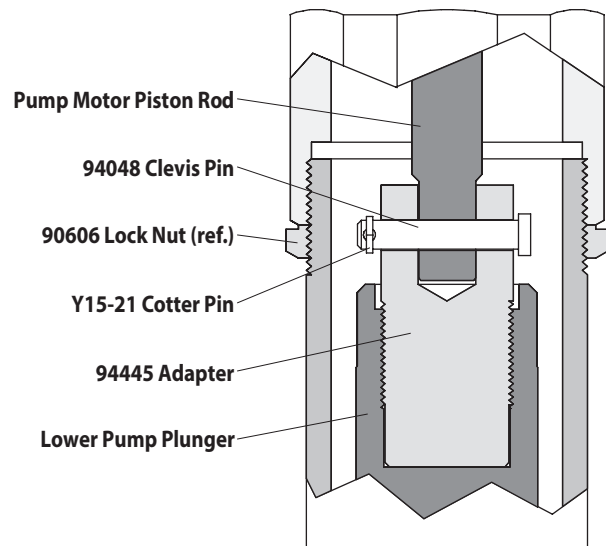


Figure 2

REASSEMBLY

1. Assemble (94445) adapter to the air motor rod, aligning the through holes.
2. Assemble (94048) clevis pin through hole, securing adapter.
3. Assemble (Y15-21) cotter pin through the hole in the clevis pin.
4. Apply Loctite® 242 to threads of (94445) adapter and screw (94445) adapter into (90615-X) plunger.
5. Screw the lower pump assembly to the air motor.
6. Screw (90606) lock nut against the air motor base and tighten to 50 - 60 ft. lbs (67.8 - 81.3 Nm).

• Viton® is a registered trademark of the DuPont Company •
• ARO® is a registered trademark of Ingersoll Rand •
• Loctite® is a registered trademark of Henkel Loctite Corporation •