

OPERATOR'S MANUAL

NM2304A-X-X

INCLUDING: SPECIFICATIONS, SERVICE KITS, GENERAL INFORMATION, TROUBLESHOOTING.
 INCLUDE MANUALS: 1875AXXXXXX Lower Pump End (pn 97999-1582), 6691X AirMotor (pn 97999-748) and
 S-632 General Information Manual (pn 97999-624).

RELEASED: 1-2-98
REVISED: 5-1-20
(REV: K)

3" AIR MOTOR
4:1 RATIO
3" STROKE

NM2304A-X1-X11

TWO-BALL PUMP SERIES

CARBON 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.
- **K1875A11KSXX** for repair of 1875AXXKSXX lower pump ends.
- **K1875A11FFXX** for repair of 1875AXXFFXX lower pump ends.
- **K1875A11USXX** for repair of 1875AXXUSXX lower pump ends.
- **K1875A11HFXX** for repair of 1875AXXHFXX lower pump ends.
- **K1875A11LFXX** for repair of 1875AXXLFXX lower pump ends.

SPECIFICATIONS

Model Series (refer to option chart)	NM2304A-X1-X1X
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	
NM2304A-11-C11	1875A11FF24
NM2304A-11-111	1875A11LF24
NM2304A-11-311	1875A11KS24
NM2304A-11-511	1875A11US24
NM2304A-41-C11	1875A51FF24
NM2304A-41-111	1875A51LF24
NM2304A-41-311	1875A51KS24
NM2304A-41-511	1875A51US24
NM2304A-81-111	1875A11LF24
NM2304A-81-311	1875A11KS24
NM2304A-91-111	1875A51LF24
NM2304A-91-311	1875A51KS24
NM2304A-A1-C11	1875A21FF24
NM2304A-A1-111	1875A21LF24
NM2304A-A1-311	1875A21KS24
NM2304A-A1-511	1875A21US24
NM2304A-B1-111	1875A11LF24
NM2304A-B1-311	1875A11KS24

Material Inlet

NM2304A-11-X11, -81-, -B1- (female) .. 1-1/2 - 11-1/2 NPTF - 1
 NM2304A-41-X11, -91-X11, -A1-X11... Immersed Inlet

Material Outlet (female)..... 3/4 - 14 NPTF - 1

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)Ⓛ

Accessories Available 61113 Wall Mount Bracket
 66073-1 Air Line Connection Kit

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

PUMP DATA

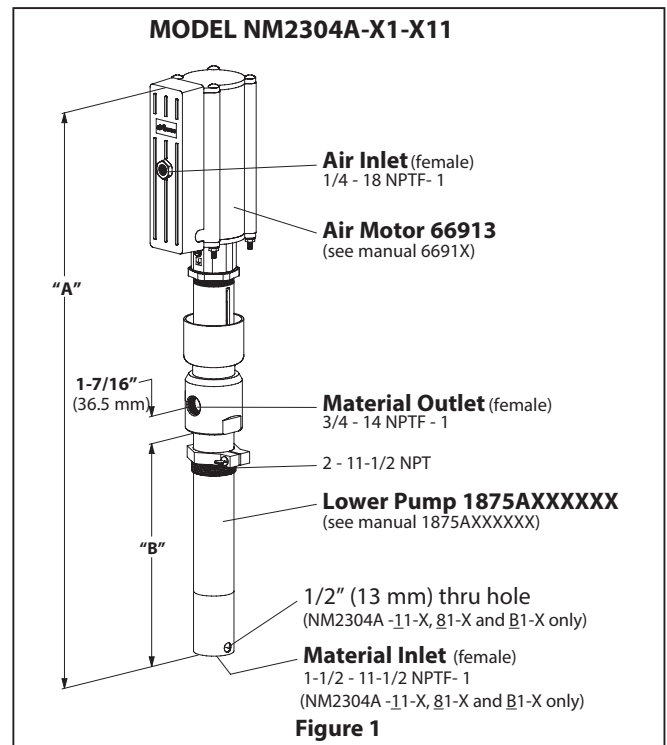


Figure 1

NOTE: Dimensions are shown in inches and (mm), supplied for reference only and are typically rounded up to the nearest 1/16 inch.

Model Number	"A" (mm)	"B" (mm)	Weight (kg)
NM2304A-11-X11	30-11/32" (770.3)	11-23/32" (297.7)	32 lbs (14.5)
NM2304A-41-X11	55-23/32" (1414.9)	37-3/32" (942.2)	46 lbs (20.9)
NM2304A-81-X11	30-11/32" (770.3)	11-23/32" (297.7)	31.4 lbs (14.3)
NM2304A-91-X11	55-23/32" (1414.9)	37-3/32" (942.2)	45.4 lbs (20.6)
NM2304A-A1-X11	29-21/32" (752.9)	11-1/32" (280.2)	31.0 lbs (14.1)
NM2304A-B1-X11	30-11/32" (770.3)	11-23/32" (297.7)	32 lbs (14.5)

IMPORTANT

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

- NM2304A-X-X Model Operator's Manual (pn 97999-749)
- S-632 General Information - Industrial Piston Pumps (pn 97999-624)
- 1875AXXXXXX Lower Pump End Operator's Manual (pn 97999-1582)
- 6691X Air Motor Operator's Manual (pn 97999-748)

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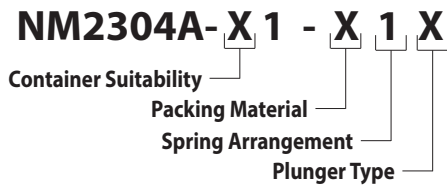
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PUMP OPTION DESCRIPTION CHART



CONTAINER SUITABILITY

- 1 - Universal (stub)
- 4 - 55 Gallon
- 8 - Universal (Stub) (without bung)
- 9 - 9 - 55 Gallon (without bung)
- A - Stub Follower Plate
- B - Universal (Stub) with alternate bung

PACKING MATERIAL

- C - UHMW-PE (upper and lower)
- 1 - Leather (upper) and UHMW-PE (lower)
- 3 - Glass filled PTFE (upper)
Virgin PTFE (lower)
- 5 - Glass filled PTFE / Leather staggered(upper)
Virgin PTFE (lower)

SPRING ARRANGEMENT

- 1 - Coil

PLUNGER TYPE

- 1 - Standard (300 series stainless steel)

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 Inlet Pressure to Pump Motor Fluid Pressure

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.

- 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 (90571) lock nut and unscrew entire pump from the air motor. This will expose (94448) adapter (see figure 2).
2. Remove (Y145-2) retaining ring and (90572) connector pin to remove pump assembly from the air motor.
3. Remove (Y15-21) cotter pin and (94048) clevis pin to remove (94448) adapter.

PUMP CONNECTOR DETAIL

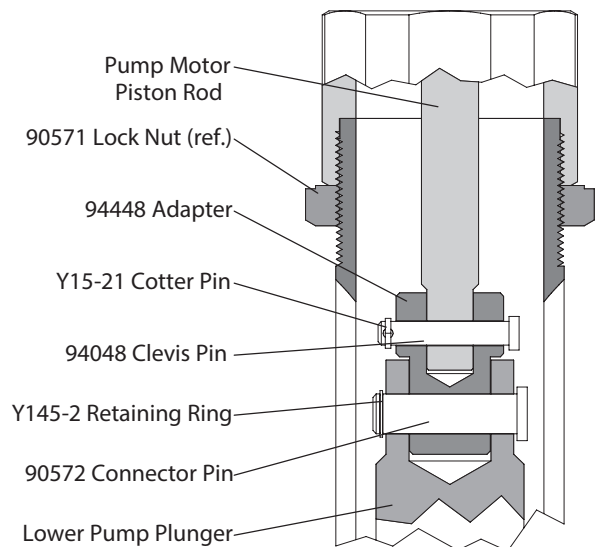


Figure 2

REASSEMBLY

1. Assemble (94448) adapter to air motor rod, aligning through holes.
2. Assemble (94048) clevis pin through hole, securing adapter.
3. Assemble (Y15-21) cotter pin through clevis pin.
4. Assemble (94448) adapter into (90584) plunger, aligning through holes.
5. Assemble (90572) connector pin through hole, securing with (Y145-2) retaining ring.
6. Screw the lower pump assembly to the air motor.
7. Screw (90571) lock nut against air motor base and tighten to 50 - 60 ft lbs (67.8 - 81.3 Nm).