

# OPERATOR'S MANUAL

# NM2202B-X

SPECIFICATIONS, SERVICE KITS, GENERAL INFORMATION, TROUBLESHOOTING  
 INCLUDE MANUALS: 67317-X LOWER PUMP END (PN 97999-1043), 67316 AIR MOTOR (PN 97999-1045)  
 & S-632 GENERAL INFORMATION MANUAL (PN 97999-624).

RELEASED: 3-7-03  
 REVISED: 2-24-04  
 (REV. C)

**2" AIR MOTOR**  
**2:1 RATIO**  
**3" STROKE**

## NM2202B-X1-X31 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.
- **637377** for repair of air motor section.
- **637379-X31** for repair of 67317-X31 and 67318-X31 lower pump ends.

### SPECIFICATIONS

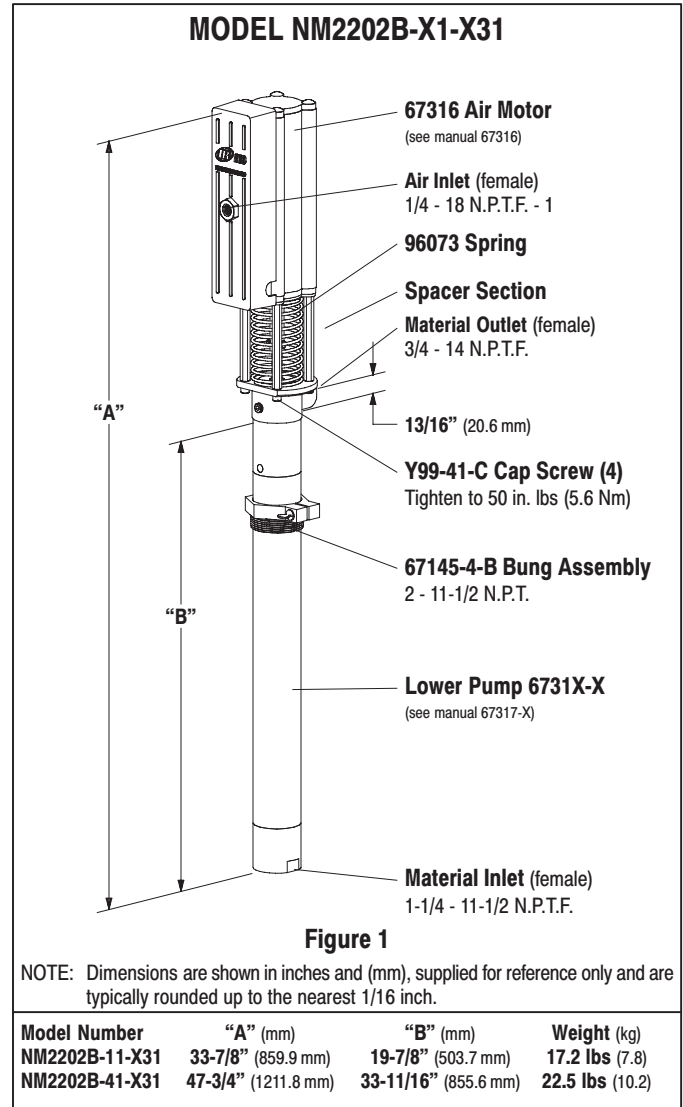
|   |                         |
|---|-------------------------|
| <b>Model Series</b> (refer to option chart) | NM2202B-X1-X31          |
| <b>Type</b>                                 | Air Operated, Two-ball  |
| <b>Ratio</b>                                | 2:1                     |
| <b>Air Motor</b>                            | 67316                   |
| <b>Motor Repair Kit</b>                     | 637377                  |
| <b>Motor Diameter</b>                       | 2" (5.08 cm)            |
| <b>Stroke (Double Acting)</b>               | 3" (7.62 cm)            |
| <b>Air Inlet (female)</b>                   | 1/4 - 18 N.P.T.F. - 1   |
| <b>Lower Pump End Series</b>                |                         |
| NM2202B-11-731                              | 67318-731               |
| NM2202B-11-B31                              | 67318-B31               |
| NM2202B-11-C31                              | 67318-C31               |
| NM2202B-11-J31                              | 67318-J31               |
| NM2202B-41-731                              | 67317-731               |
| NM2202B-41-B31                              | 67317-B31               |
| NM2202B-41-C31                              | 67317-C31               |
| NM2202B-41-J31                              | 67317-J31               |
| <b>Lower Pump Repair Kit</b>                | 637379-X31              |
| <b>Material Inlet</b>                       |                         |
| NM2202B-11-X31 (female)                     | 1-1/4 - 11-1/2 N.P.T.F. |
| NM2202B-41-X31                              | immersed                |
| <b>Material Outlet (female)</b>             | 3/4 - 14 N.P.T.F.       |
| <b>Weight</b>                               | See chart               |

### PERFORMANCE

|   |   |
|---|---|
| <b>Air Inlet Pressure Range</b>               | 0 - 150 p.s.i. (0 - 10.3 bar)                               |
| <b>Fluid Pressure Range</b>                   | 0 - 351 p.s.i. (0 - 24.2 bar)                               |
| <b>Maximum Rec'd Cycles / Minute</b>          | 120   |
| <b>Displacement In.<sup>3</sup> Per Cycle</b> | 8.28  |
| <b>Volume / Cycle</b>                         | 4.59 oz. (135.6 ml)   |
| <b>Cycles Per Gallon</b>                      | 27.9  |
| <b>Flow @ 60 Cycles / Minute</b>              | 2.15 g.p.m. (8.14 l.p.m.)                                   |
| <b>Noise Level @ 100 p.s.i.</b>               | 80 db(A) *  |
| <b>Accessories Available</b>                  | 61113 Wall Mount Bracket<br>66073-1 Air Line Connection Kit |

\* The pump sound pressure level has been updated to an Equivalent Continuous Sound Level (L<sub>Aeq</sub>) to meet the intent of ANSI S1. 13-1971, CAGI-PNEUROP S5.1 using four microphone locations.

### PUMP DATA



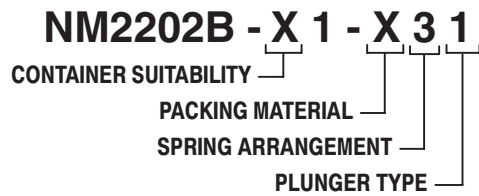
### IMPORTANT

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

- NM2202B-X MODEL OPERATOR'S MANUAL
- GENERAL INFORMATION - INDUSTRIAL PISTON PUMPS
- 67317-X LOWER PUMP END OPERATOR'S MANUAL
- 67316 AIR MOTOR OPERATOR'S MANUAL



# PUMP OPTION DESCRIPTION CHART



### CONTAINER SUITABILITY

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

### PACKING MATERIAL

- 7 - Teflon (upper and lower)
- B - UHMW-PE (upper) / Teflon (lower)
- C - UHMW-PE (upper and lower)
- J - Polyurethane (upper) / UHMW-PE (lower)

### SPRING ARRANGEMENT

- 3 - No Spring

### PLUNGER TYPE

- 1 - Standard (300 series Stainless steel)

## GENERAL DESCRIPTION

Model NM2202B-X Series two-ball, double acting pumps are intended to be used primarily for oil transfer and delivery systems. It is best to use this pump with low - medium viscosity fluids. It uses Stainless steel and other materials which make it compatible with most petroleum based lubrication products. The two-ball design provides better priming of the lower foot valve. Double acting pumps will deliver material on both the up and down stroke.

NOTE: If this pump was purchased separately (not part of a system), consult your sales representative for compatible dispensing accessories which will best match the application. All accessories must be able to withstand the maximum pressure developed by the pump.

**⚠️ WARNING HAZARDOUS PRESSURE. Do not exceed maximum operating pressure of 351 p.s.i. (24.2 bar) at 150 p.s.i. (10.3 bar) inlet air pressure.**

| PUMP RATIO X<br>INLET PRESSURE TO PUMP MOTOR  | = | MAXIMUM PUMP<br>FLUID PRESSURE |
|---|---|--------------------------------|
| 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.**

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.

## 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. 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.
- Damaged motor. Service 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 check or foot valve are damaged, replace.

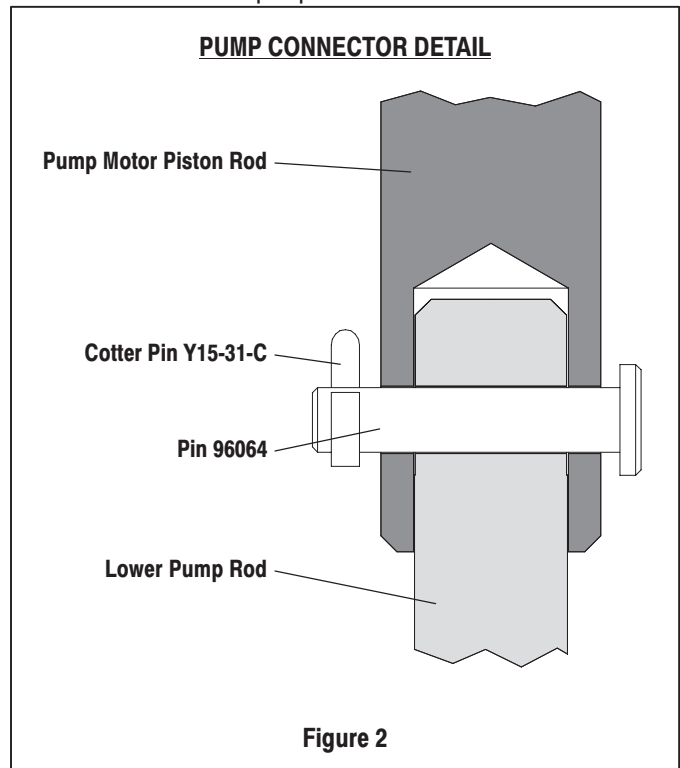
### Material on one stroke only (fast upstroke).

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

## PUMP CONNECTION - UPPER / LOWER

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

1. Lay the pump assembly on a workbench.
2. Remove four (Y99-41-C) cap screws and pull the air motor from the lower pump end until the motor piston rod is in the "down" position and the lower pump end rod is in the "up" position.
3. Remove the (Y15-31-C) cotter pin and (96064) pin, releasing the air motor from the lower pump end.



### REASSEMBLY

1. Assemble motor piston rod to the lower pump end rod, aligning thru holes.
2. Assemble (96064) pin through hole, securing rods.
3. Assemble (Y15-31-C) cotter pin through hole in pin.
4. Align tie rods with holes in pump outlet body.
5. Assemble four (Y99-41-C) cap screws, securing air motor. NOTE: Tighten cap screws to 50 in. lbs (5.65 Nm).