OPERATOR'S MANUAL 612056–E

INCLUDING: SERVICE KITS, GENERAL DESCRIPTION & TROUBLESHOOTING
ALSO INCLUDE MANUALS: 6641X–X AIR MOTOR

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(REV. E) IPP/PSE

3" AIR MOTOR
5:1 RATIO
2 1/4" STROKE

612056–E
BASIC PUMP

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

SERVICE KITS

- Use only genuine ARO® replacement parts to assure compatible pressure rating and longest service life.
- 637066–B for repair of Air Motor section.
- 637067–B for repair of Lower Pump (see figure 2).

GENERAL DESCRIPTION

This model is designed for high volume delivery of low viscosity fluids such as motor oil, gear oil or transmission fluids. The model covered by this manual includes a coupler, connector and material and air supply hoses. Material dispensing accessories and supply lines and fittings must be capable of withstanding pressures developed by pump.

- The ARO 5:1 ratio basic pump assembly consists of a 3" air motor, spacer section and ball check lower pump end.
- The ball check design provides for easy priming of the lower foot valve. Material is delivered to the pump discharge outlet on both the up and down stroke.

RATIO x REGULATED AIR PRESSURE TO AIR MOTOR = MAXIMUM FLUID PRESSURE.

- The 5:1 ratio is an expression of the relationship between the air motor area and the lower pump end area. When 150 p.s.i. (10 bar) air pressure is supplied to the air motor, the lower pump end will develop a maximum of 786 p.s.i. (54 bar) 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 the demand.

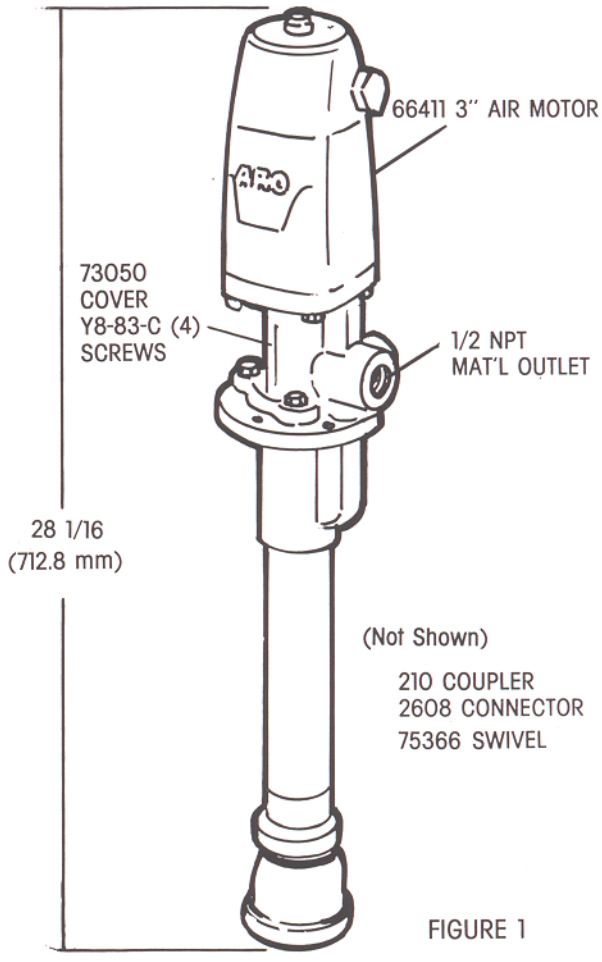

FIGURE 1

OPERATING AND SAFETY INSTRUCTIONS

- **HEED ALL WARNINGS.**
- **DO NOT EXCEED MAXIMUM WORKING PRESSURE OF 786 PSI (54 BAR) AT 150 PSI (10 BAR) AIR INLET PRESSURE.**

⚠WARNING: HIGH PRESSURE DEVICE. Improper usage of this equipment could result in serious injury. The possibility of injection into the flesh is a potential hazard. Never allow any part of the human body to come in front of or in direct contact with the material outlet. An injection injury can be serious. If injection should occur, contact a qualified physician immediately for treatment.

- **COMPONENT RUPTURE.** This pump is capable of producing high material pressure as stated on pump model plate.
- Be sure material hoses and other components are able to withstand fluid pressures developed by this pump.
- Do not operate pump continuously at speeds in excess of 75 cycles per minute.
- Disconnect air line from pump air motor when system sits idle for long periods of time.
- Materials and solvents being pumped by this pump must be compatible with the parts of this pump that come in contact with the material and solvent.
- SERVICING. Before servicing or cleaning pump, or removing fluid hose or gun from a unit that has been used, be sure to disconnect air lines and carefully bleed the pressure off the system.

⚠WARNING: PREVENT STATIC SPARKING. If static sparking occurs, fire or explosion could result. Pump, dispensing valve and containers must be grounded when handling inflammable fluids such as petroleum products, paints, lacquers, etc. and wherever discharge of static electricity is a hazard.

- Use grounded hoses (static wire) and be sure the object is grounded if it can produce a static charge.

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AIR AND LUBE REQUIREMENTS

- Excessive air pressure will shorten the life of the pump. DO NOT OPERATE PUMP ABOVE RECOMMENDED MAXIMUM AIR PRESSURE.
- For maximum operating efficiency. The following air supply specification should be maintained to this pump.
  - AIR PRESSURE – up to 150 P.S.I. (10 bar)
  - AIR FILTRATION – 50 micron
  - LUBRICATED AIR SUPPLY
  - AIR INLET SIZE – 1/4" NPTF
- Filtered and oiled air will allow the pump to operate more efficiently and yield a longer life to operating parts and mechanisms.
- Lack of or an excessive amount of lubrication will affect the performance and life of this pump. Use only recommended lubricants.
- DAILY Fill air line lubricator reservoir with a good grade of S.A.E. NO. 90W non-detergent gear oil, adjust to 1 to 2 drops per minute.
- If pump is to be inoperative for more than a few hours at a time, disconnect air supply and relieve all pressure from the system.

It is recommended that an oiler be installed in the air line as close as possible to the pump. This increases the service life of the pump by reducing wear of the air motor's internal parts.

INSTALLATION

__Connect fluid hose to pump outlet. be sure all fittings are tight.
__Turn air regulator knob counter-clockwise until it turns free.
__Pump has been tested in oil and a small amount remains for protection against rusting. Immerse lower pump end in compatible solvent.
__Connect air hose coupler to connector on FRL.
__Turn air regulator knob clockwise until air motor starts.
__Flush pump until oil is removed.
__Disconnect air supply to air motor.

- CAUTION: Solvent used for flushing may not be compatible with material to be pumped. If this is the case, flush again with a compatible solvent.
- If pump is to be inoperative for an unspecified period of time, disconnect air and relieve all pressure.
- If pump does not function properly, disconnect air and relieve all pressure. Refer to Trouble Shooting.

OPERATING INSTRUCTIONS

__Turn air regulator knob clockwise until air motor starts to cycle.
__Allow pump to cycle slowly until it is primed and all air is purged from the fluid hose or dispensing valve.
__Turn off dispensing valve and allow pump to stall – check all fittings for leakage.
__Change air regulator setting until desired pressure and flow is obtained.
__Inspect airline filter, open petcock, to flush moisture or residue from bowl.
__Pump is recommended to operate between 30 PSI and 150 PSI (not to exceed 75 cycles per minute.

PUMP DISASSEMBLY

NOTE: All threads are right handed.
CAUTION: Do not mar finish on (23) tube.

__Clamp pump assembly in a vise on either the motor base assembly, or material outlet assembly or air inlet assembly (see page 3).
__Remove four Y8-83-C screws and 73050 cover. (see page 3).
__Remove three (21) screws and three (22) washer.
__Separate motor assembly from lower pump assembly by pulling down on the lower pump assembly exposing the connector adapters between motor piston rod and material rod.
__Uncouple the motor piston rod from (1) plunger by placing a wrench on the machined flats of (1) plunger and unscrewing 75674 retainer.
__Remove (4) "O" ring.
__Clamp the lower pump assembly in a vise on the (8) pump base. CAUTION: Do not overtighten.
__Loosen (23) tube from (8) pump base with a strap wrench. Pu.. (23) tube off (24) piston rod assembly.
__Remove (10) seal from inside (8) pump base.
__Remove (1) piston and (24) piston rod assembly from (8) pump base by pulling down on (24) piston rod assembly.
__Vise on machined flat of (1) piston, loosen (9) nut and remove (24) piston rod assembly.
__Vise on machined flat of (11) cup follower, unscrew and remove (15) inner check seat from (11) cup follower on the (24) piston rod assembly and remove (12) ball, (14) washer, (13) cup.
__Vise (8) pump base. Remove (2) packing nut, (3) packing wiper, (5) spacer, (6) packing and (7) spacer.
__Unscrew (19) valve from (23) tube and remove (16) pin and (18) ball.

LOWER PUMP END

TORQUE REQUIREMENTS
DO NOT OVERTIGHTEN
(9) NUT, (23) TUBE OR (19)
SEAT 60–70 FT. LBS.

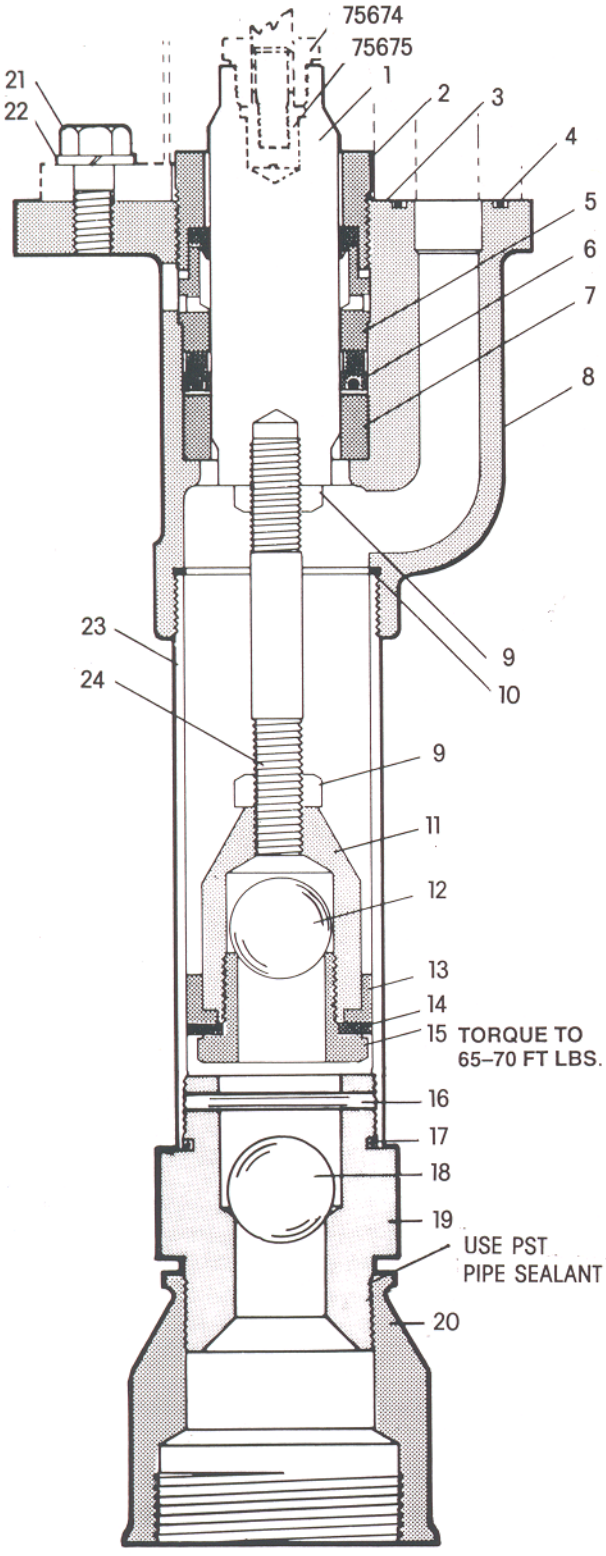

FIGURE 2

REF.	DESCRIPTION (SIZE IN INCHES)	(QTY.)	PART NO.
1	Piston		73047
2	Packing Nut Ass'y		76576
✓3	Packing Wiper		76577
✓4	"O" Ring (1 1/8 O.D.)		Y179-17
5	Spacer		76578
✓6	Packing, Poly		76579
✓7	Spacer		73332-2
8	Base		73035-1
9	Nut (1/2-20)	(2 req'd)	Y11-108-C
✓10	Seal		90125–1
11	Follower		75678
12	Ball (1.000 Dia.)		Y16-32
✓13	Cup Packing		75680
14	Washer		75682
15	Seat		75681
16	Pin		83009
17	"O" Ring (1 7/8 O.D.)		Y325-223
18	Ball (1.250 Dia.)		Y16-240
19	Seat		77006
20	Reducer		Y202-12
21	Screw (3/8-16)	(3 req'd)	Y6-64-C
22	Washer (3/8)	(3 req'd)	Y14-616
23	Tube		77212
24	Piston Rod		76507
✓	Indicated Parts included in Lower Pump End Service Kit		637067-B

PUMP ASSEMBLY

Assemble with new service parts.

__Install (18) ball and (16) pin into (19) valve. Screw (19) valve onto (23) tube and tighten.
__Vise (8) pump base. Push (7) spacer, (6) packing and (5) spacer to bottom of chamber. Screw (2) packing nut with (3) wiper into (8) pump base and tighten.

NOTE: Care must be taken in assembly of (1) piston plunger so that (6) packing is not damaged.

__Push (1) piston down through the top of the (8) pump base, being sure not to damage packing.
__Assemble (13) cup, (14) washer, (12) ball, and screw (15) inner seat into (11) follower.
__Replace (10) gasket in (8) pump base.
__Vise on machine flats of (1) piston and tighten (9) nut.
__Apply grease or lubricant to (13) cup and slide (23) tube over (24) piston rod assembly and screw (23) tube into (8) pump base and tighten.
__Install (4) "O" ring into (8) pump base.
__Couple the motor piston rod to the (1) plunger by placing a wrench on the machined flats of (1) plunger and assembly 75674 retainer and tighten.
__Align holes and install three (22) washers and three (21) screws and tighten.
__Install 73050 cover and fasten with four Y8-83-C screws (see page 1).

MAINTENANCE

The basic pump consists of two major components: 1. Air Motor, 2. Lower Pump End. The air motor is connected to the lower pump end. The air motor is removable and is to be serviced separately. Refer to air motor manual for service and parts.

- Periodically flush entire pump system with a solvent that is compatible with the material being pumped.
- Refer to Disassembly Procedures of air motor for correct breakdown.
- Disassembly should be done on a clean work bench with clean cloths to keep parts clean.
- If replacement parts are necessary, consult drawing containing parts for identification.
- Before assembling, lubricate parts where required. When assembling "O" rings or parts adjacent to "O" rings, care must be exercised to prevent damage to "O" rings and "O" ring groove surfaces.

FIGURE 3

TROUBLE SHOOTING

If insufficient air is not the trouble, disconnect 210 Speed Coupler at pump and then detach Hose and Gun
REMOVE SLOWLY AS PRESSURE MAY BE BUILT UP IN PUMP.
Hold rag at this point and apply air to pump. If pump now operates, there is obstruction in material line, reel, or control handle. If, however, pump will still not operate, consult local dealer.

PROBLEM

- Material leakage out of slots in (8) Base

CAUSE

Worn Lower Pump Packings.

REMEDY

Replace Packings. (See Fig. 2 Seal Detail)

PROBLEM

- No material (stalled pump)

CAUSE

Obstructed Material Line

REMEDY

Remove Obstruction

PROBLEM

- No material (pump continually cycles)

CAUSE

Empty material supply

REMEDY

Disconnect the air. Replenish material supply. Connect the air.

PROBLEM

- Material on one stroke only (fast downstroke)

CAUSE

(18) ball in (19) seat is not seating.

REMEDY

Remove the foot valve. Clean and inspect ball and foot valve. If either ball or foot valve is damaged, replace.

PROBLEM

- Material on one stroke only (fast upstroke)

CAUSE

Worn (13) cup

REMEDY

Replace with new (13) cup

If pump will still not operate, consult your local dealer.