

OPERATOR'S MANUAL

650044-D

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

ALSO INCLUDE MANUALS: 65030-X (SWIVEL), 6641X-X (AIR MOTOR), F252XX-X (AIR REGULATOR), 651412-X (MATERIAL FILTER), 651533 (SPRAY GUN), FORM 3637-2 (GENERAL INFORMATION)

3" AIR MOTOR
28:1 RATIO
2-1/4 STROKE

AIRLESS SPRAY PUMP
5 GALLON DRUM

650044-1-D**650048-D**

RELEASED: 5-30-75
REVISED: 6-21-10
(REV. G) IPP

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

SERVICE KITS

- 637006 Lower Pump Packing Service Kit (See Page 5)
- 637006-1 Lower Pump Packing Service Kit (See page 5)
- 637007 Lower Pump Ball Service Kit (See page 5)

GENERAL DESCRIPTION

The Aro Model 650044-D pump assembly is designed to spray paints, primers, adhesives or light viscosity materials. Model 650048-D is similar but includes an air operated agitator ass'y.

MAJOR COMPONENTS CHECK LIST

650044-D

650044-1-D

(without agitator ass'y.)

REF.	DESCRIPTION	PART NO.
1	Air Motor	66412-1*
2	Material Filter	651412-6*
3	Spray Gun	651533*
4	Swivel	65030-5*
5	Cover	91296
6	Foot Screen (50 mesh)	90273
7	Screen Support	65713
8	Regulator	R27221-100 *
9	Material Hose 25'	628042-25
10	Cover	65706
11	Lower Pump End (650044-D)(See Pg. 5)	66066
11	Lower Pump End (650044-1-D)(See Pg. 5)	66066-1
12	Drum	65722

650048-D

(with agitator ass'y.)

REF.	DESCRIPTION	PART NO.
1	Air Motor	66412-1*
2	Material Filter	651412-6*
3	Agitator	650252
4	Spray Gun	651533
5	Swivel	65030-5*
6	Cover	91296
7	Foot Screen (50 mesh)	90273
8	Screen Support	65713
9	Regulator	R27221-100 *
10	Material Hose 25'	628042-25
11	Cover	65706
12	Lower Pump End (See Page 5)	66066
13	Drum	65722

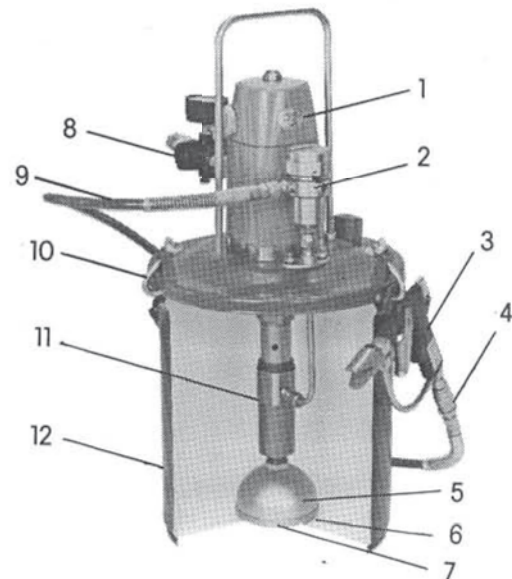


FIGURE 1

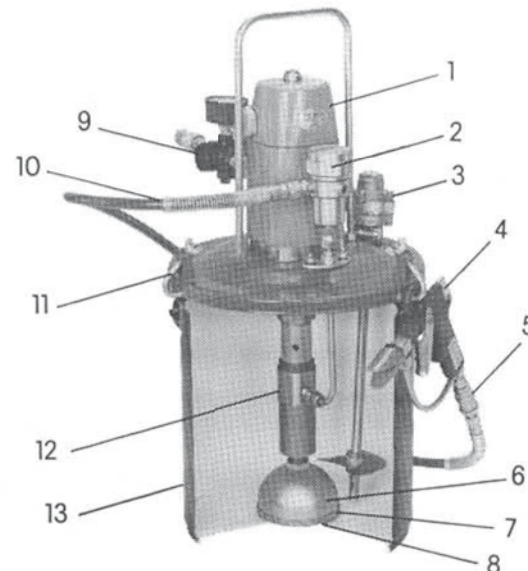


FIGURE 2

*Refer to Operator's Manual

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OPERATING AND SAFETY PRECAUTIONS

- HEED ALL WARNINGS AND CAUTIONS.

WARNING: HIGH PRESSURE DEVICE.

IMPROPER USAGE OF 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 FOR IMMEDIATE TREATMENT OF SUCH INJURIES.

DO NOT EXCEED MATERIAL WORKING PRESSURE OF 4,200 P.S.I. (290 BAR) AT 150 P.S.I. (10 BAR) AIR INLET PRESSURE OR 75 CYCLES PER MINUTE.

- WARNING: DO NOT EXCEED MAXIMUM INLET AIR PRESSURE OF 150 PSI (10.3 BAR). OPERATING PUMP AT HIGHER PRESSURE MAY CAUSE PUMP DAMAGE AND/OR PERSONAL INJURY AND/OR PROPERTY DAMAGE.

(continued on Page 6)

INSTALLATION

1. Pump comes partially assembled. Complete assembly is shown in figure 1 and 2.
2. Pump has been thoroughly inspected and pressure tested prior to packing for shipment. A film of material from testing operation remains on the working parts. Material must be flushed from the unit before placing into operation.
3. Adjustment knob on air regulator should be turned counterclockwise until it turns free to prevent overpressurizing pump.
4. To flush system of material:
 - A. Pour a suitable solvent into container.
 - B. Connect main air line to connector.
 - C. Adjust knob on air regulator clockwise until pump begins to slowly operate.
 - D. Circulate solvent through material hose by triggering the spray gun into the container opening.
 - E. Release spray gun trigger and increase air regulator pressure to a setting between 30 and 50 psi and repeat step D.
 - F. Disconnect main air line from connector and trigger the spray gun relieving all material pressure in pump.

OPERATING INSTRUCTIONS

1. Replace container with material that is to be sprayed.
2. Adjust knob on air regulator counterclockwise until it turns freely.
3. Connect main air line to connector.
4. Adjust knob on air regulator clockwise until air motor starts to cycle. Adjust air regulator to approximately 40 PSI (2.7 bar).
5. Turn handle on needle valve counterclockwise approximately 1/2 turn to allow the agitator to thoroughly mix and pump material. Let agitator operate at least 3 minutes to assure a uniform mixture before spraying. (650048-D only).

CAUTION: Operating with excessive air pressure will shorten the life of the pump and it will not improve the spray pattern.

NOTE: Prior to actually spraying material, pump a small amount of material through spray gun into a waste container to insure material is clean.

6. Check and replenish the material supply as necessary to keep from running out and getting excessive air into the system.

Models 650044-D, 650044-1-D, and 650048-D Basic Pump Parts List

REF. DESCRIPTION	(MAT'L)	PART NO. (QTY.)
14 Handle	(S)	90272
15 Nipple		Y27-52-C
16 Gauge		100067
17 Adapter	(S)	90351 (650048-D only)
18 Connector	(S)	23902-210 (650044-D only)
Connector	(S)	23902-200 (650048-D only)
19 Coupler	(S)	23102-200
20 Fitting	(NY)	Y210-1 (650048-D only)
21 Tube	(NY)	90353 (650048-D only)
22 Fitting	(NY)	Y209-1 (650048-D only)
23 Clamp	(SS)	75923 (650048-D only)
24 Adapter	(S)	75895 (650048-D only)
25 Set Screw	(SS)	Y29-42-S (650048-D only)

REF. DESCRIPTION	(MAT'L)	PART NO.
26 Propeller	(SS)	31680-102 (650048-D only)
27 Valve	(BR)	Y28-2 (650048-D only)
28 Nut	(S)	Y12-6-N (4)
29 Washer	(S)	F15-3-C (2)
30 Adapter	(S)	66467
31 Screw	(S)	Y6-42-C (2)
32 Washer	(S)	Y14-416 (2)
33 Nut	(S)	Y12-4-C (2)
34 Ferrule	(S)	91211
35 Nut	(S)	91210
36 Tube	(SS)	66126
37 Swivel Nut	(SS)	90975
38 Stirring Rod	(SS)	31652-2 (650048-D only)

MATERIAL

(S) = Steel
(NY) = Nylon
(SS) = Stainless Steel
(BR) = Brass

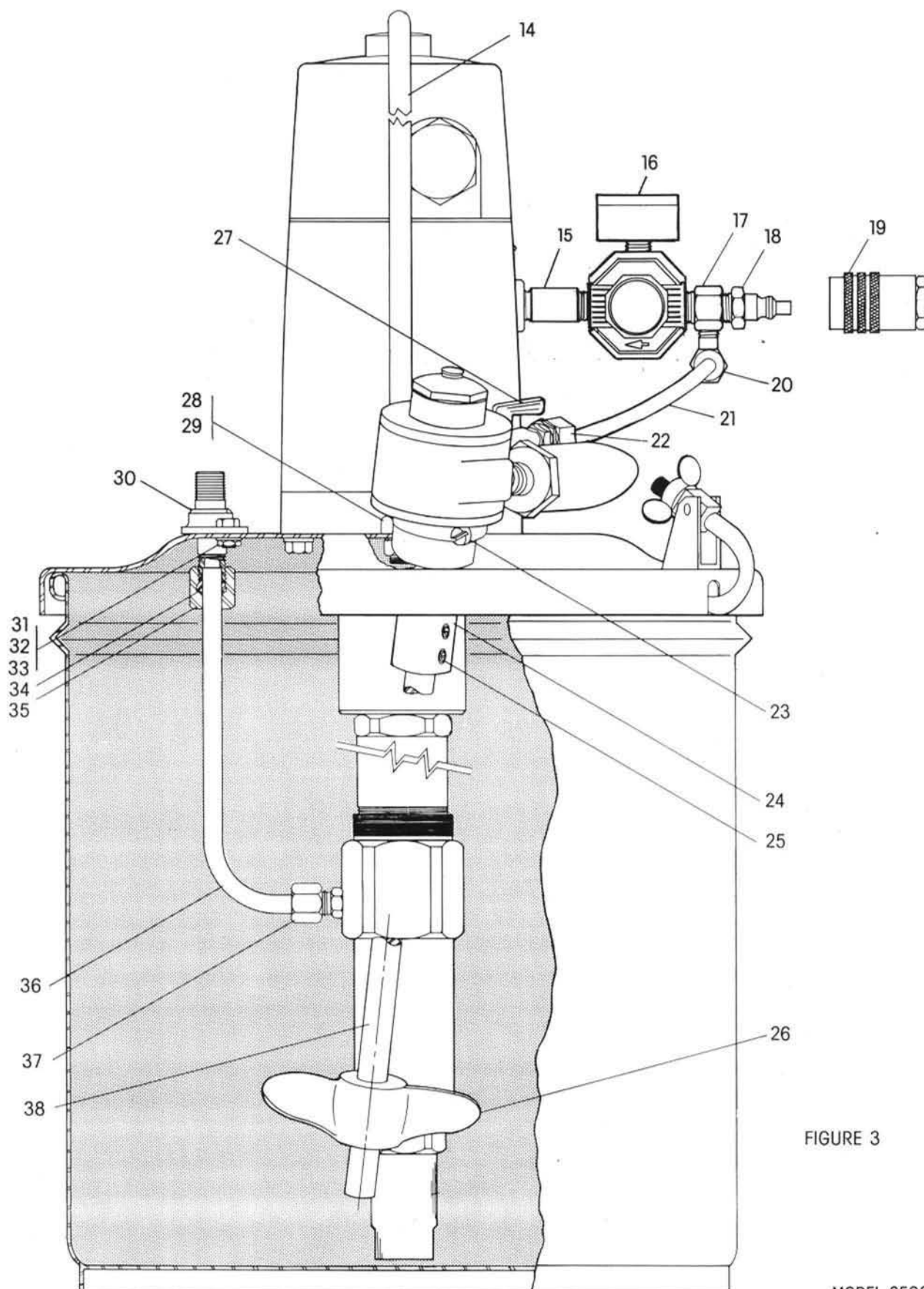


FIGURE 3

LOWER PUMP END DISASSEMBLY

1. Loosen (55) nut and remove the (58) foot valve seat, which will allow the (2) (57) gaskets, the (61) ball stop, and the (62) ball to be removed.
2. Remove the (55) nut.
3. Unscrew big hex nut at top end of (48) Tube Ass'y. and remove lower section and solvent cup.
4. Unscrew the (51) inner valve seat at which time the (52) washer, (53) washer, (6) (54) packings, and the (56) washer will all come off. Be careful not to lose the (50) ball as you remove the (51) valve seat.
5. Loosen the (40) nut and unscrew the (39) spacer tube and pull down, this will also remove the (46) spring (45) washer, (3) (59) washers, (4) (44) packings, and the (43) washer. They may then be pushed out of the tube with a blunt stick or rod without damage.

When only desiring to service the upper or lower packings, the following simplified procedure may be followed.

1. Unscrew the swivel nut on (48) tube ass'y. and pull down, removing the (48) whole lower assembly.
2. Unscrew the (51) inner Valve Seat, the lower packings and washer will then be serviceable.
3. Loosen the (40) nut and unscrew the (39) Spacer Tube and slide down; this will also remove the upper packings and washers. To remove the upper packings and washer from the tube use a blunt stick or rod and push them out of the bottom of the (39) Spacer Tube.

LOWER PUMP END ASSEMBLY

Reverse the above procedure for reassembly.

REF.	DESCRIPTION	(MAT'L)	PART NO.(QTY)
39	Tube	(S)	91311
40	Nut	(SS)	90027
41	Cotter Pin	(SS)	Y15-21-S * ✓
42	Connecting Pin	(S)	90274
43	Female Washer	(BR)	90265
44	Packing (66066)	(L)	90264 *
	Packing (66066-1)	(B)	90671-2 ✓
45	Male Washer	(BR)	90262
46	Spring	(SS)	90266 * ✓
47	Gasket	(NY)	77858-1 * ✓
48	Tube	(SS)	93211
49	Plunger	(SS)	90267
50	Ball	(S)	Y16-108 □
51	Valve Seat	(SS)	90261 □
52	Spring Washer	(S)	90258 * ✓
53	Male Washer	(BR)	90260
54	Packing (66066)	(L)	90256 (6) *
	Packing 66066-1	(T)	90671-1 ✓
55	Lock Nut	(S)	90255
56	Female Washer	(BR)	90259
57	Gasket	(Cu)	72851 (2) * □ ✓
58	Foot Valve	(S)	66059 □
59	Washer	(BR)	90263 (3)
60	Adapter	(SS)	93212
61	Ball Stop	(SS)	65087 □
62	Ball	(S)	Y16-116 □

MATERIAL

(S) = Steel
 (NY) = Nylon
 (SS) = Stainless Steel
 (BR) = Brass

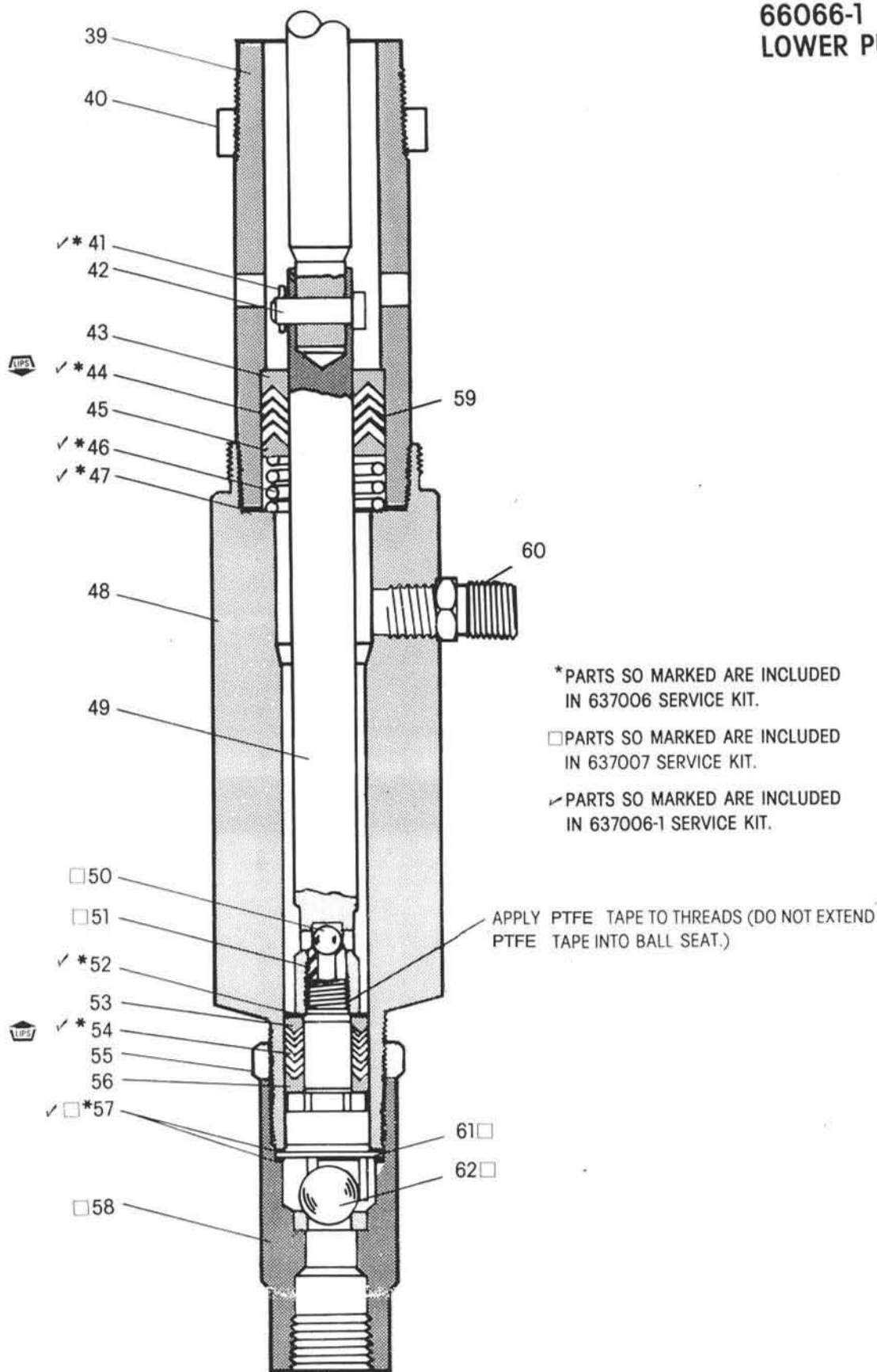


FIGURE 4

SAFETY PRECAUTIONS CONT'D

- **WARNING:** WHEN USING PUMP IN A LOCATION WHERE SURROUNDING ATMOSPHERE IS CONDUCTIVE TO SPONTANEOUS COMBUSTION OR WHEN PUMPING, FLUSHING OR RECIRCULATING INFLAMMABLE SUBSTANCES (E.G., PAINTS, SOLVENTS, LACQUERS, ETC.), FAILURE TO SAFEGUARD AGAINST STATIC SPARK, OPEN FLAME, HEAT AND IMPROPER VENTILATION COULD RESULT IN EXPLOSION AND/OR FIRE CAUSING SEVERE PERSONAL INJURY OR DEATH AND/OR PROPERTY DAMAGE.
- Safety precautions should include:
 - Use of static wire hoses.
 - Proper grounding of pump (at clamps), dispensing valve or device, hoses, any object to which material is being transferred, and containers. After grounding, periodically check to verify continuity of electrical path to ground. Test with ohmmeter from each component (i.e., hoses, pump, clamp, container, spray gun, etc.) to ground to insure continuity. Ohmmeter reading shown should be 10 ohms or less. Consult local electric codes for specific grounding requirements.
 - Submersion of outlet hose end, dispensing valve or device within material being dispensed whenever possible. (Avoid free streaming of material being dispensed.)
 - Proper ventilation of area where pump and containers are located.
 - Keeping inflammables away from heat, open flames and sparks.
 - Keeping containers closed when not in use.
- Secure pump, connections and all contact points to avoid vibration and generation of contact or static spark.
- Be sure material hoses and other components are able to withstand fluid pressures developed by this pump.
- Disconnect air line from pump when system sits idle for long periods of time.
- **WARNING:** DO NOT SERVICE OR CLEAN PUMP, HOSES OR DISPENSING VALVE WHILE THE SYSTEM IS PRESSURIZED AS SERIOUS PERSONAL INJURY COULD RESULT. First disconnect air line, then relieve pressure from system by opening dispensing valve or device and/or carefully and slowly loosening and removing outlet hose or piping from pump.
- **CAUTION:** Verify the chemical compatibility of the pump wetted parts and the substance being pumped, flushed or recirculated. Chemical compatibility may change with temperature and concentration of the chemical(s) within the substance being pumped, flushed or recirculated. Consult ARO Form 8677-P, Fluid Compatibility Guide, for information on chemical compatibility.
- **CAUTION:** Do not allow pump to operate when out of material for long periods of time; this may cause unnecessary wear or damage to the pump.
- Use ARO® replacement parts to assure compatible pressure rating.

MAINTENANCE

If the pump is to be inoperative for a lengthy period of time (a few hours) disconnect air and relieve all pressure from the system.

Periodically flush pump with a solvent that is compatible with material being pumped. Pour a little solvent into the solvent cup to keep upper packings pliable and to keep material drag-thru soft. Material drag-thru that is allowed to harden will score the piston rod. This will create excessive leakage and rapid packing wear.

Disassembly should be done on a clean work bench with clean cloths to keep parts clean.

If replacement parts are necessary, consult parts list 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" ring and "O" ring groove surfaces.

The oiler increases the service life of the pump by reducing wear of the air motor's internal parts. Keep oiler supplied with a good grade of S.A.E. No. 90 non-detergent oil.

TROUBLE SHOOTING

Pump fails to operate

- Inadequate air supply.
- Obstruction in material supply.
- Binding or misalignment of moving external parts.

Material in one stroke only (fast downstroke)

- (62) Ball in (58) Foot Valve not seating. Remove (58) Foot Valve and inspect ball. If either ball or foot valve is damaged, replace.
- (50) Ball in (51) Inner Check Seat not seating. Remove (51) Inner Check Seat and inspect ball. If either ball or inner check seat is damaged, replace.