

# OPERATOR'S MANUAL

# 650239

## INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

650239-1

ALSO INCLUDE MANUALS: 65778-X CART (PN 97999-113), 6544X-X AIR MOTOR (97999-064), R272X1-XXX REGULATOR (100400-006), 635101 SWIVEL (97999-045), 651500-X SPRAY GUN (97999-021), 65184X-X FOLLOWER PLATE (97999-605) & S-636 GENERAL INFORMATION (PN 97999-636).

650240

RELEASED: 5-22-70  
REVISED: 9-22-00  
(REV. B)

## 650239, 650239-1 & 650240

### PUMP AND CART ASSEMBLY (4-1/4" AIR MOTOR - 9:1 RATIO)



**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.
- **61268** for repair of air motor section.
- **637058** for repair of lower pump section (Leather).
- **637059** for repair of lower pump section (Teflon).

#### PUMP SYSTEM DATA

Model Series	650239, 650239-1 & 650240
System Type	Air operated, 2-ball double acting cart mounted pump
Basic Pump	65814-X
Ratio	9:1
Air Motor	65445-B
Motor Repair Kit	61268
Motor Diameter	4-1/4" (10.8 cm)
Stroke	4" (10.2 cm)
Air Inlet	1/2" - 14 N.P.T.F. - 1 (female)
Lower Pump End Series	65965-X
Lower Pump Repair Kit	63705X
Material Outlet	3/4" - 14 N.P.T.F. - 1 (female)

#### OPERATING AND SAFETY PRECAUTIONS

**⚠ WARNING** READ THE GENERAL INFORMATION MANUAL INCLUDED FOR OPERATING AND SAFETY PRECAUTIONS AND OTHER IMPORTANT INFORMATION.

**⚠ WARNING** DO NOT EXCEED MAXIMUM OPERATING PRESSURE OF 1350 P.S.I. (93 BAR) AT 150 P.S.I. (10.3 BAR) AIR INLET PRESSURE.

**⚠ WARNING** REFER TO THE PUMP MANUAL FOR ADDITIONAL OPERATING AND SAFETY PRECAUTIONS AND OTHER IMPORTANT INFORMATION.

#### IMPORTANT

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

- 650239 MODEL OPERATOR'S MANUAL
- GENERAL INFORMATION - PUMPING SYSTEMS (PN 97999-636)
- 65778-X CARTS MANUAL (PN 97999-113)
- 6544X-X AIR MOTOR OPERATOR'S MANUAL (PN 97999-064)
- R272X1-XXX REGULATOR OPERATOR'S MANUAL (PN 100400-6)
- 635101 SWIVEL OPERATOR'S MANUAL (PN 97999-45)
- 651500-X SPRAY GUN OPERATOR'S MANUAL (PN 97999-21)
- 65184X-X FOLLOWER PLATE OPERATOR'S MANUAL (PN 97999-605)

#### MODEL DESCRIPTION CHART

PUMP PACKAGE	(1) PUMP MODEL NO.	LOWER PUMP END	LOWER PUMP REPAIR KIT
650239	65814-B	65965	637058 (Leather)
650239-1	65814-1B	65965-1	637059 (Teflon)
650240	65814-B	65965	637058 (Leather)

#### 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:

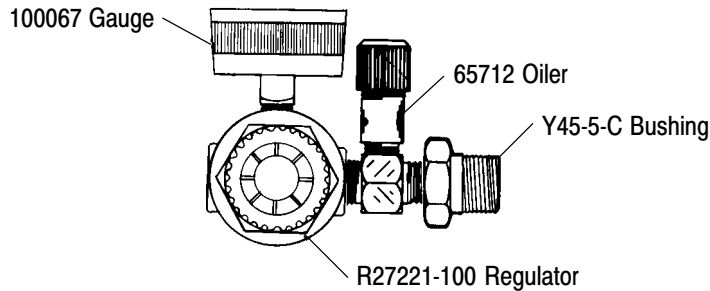
- AIR PRESSURE - Refer to maximum pressure note in Operating Precautions.
  - AIR FILTRATION - 50 micron
  - LUBRICATED AIR SUPPLY
  - AIR INLET SIZE - 1/2" N.P.T.F. - 1
- Filtered and oiled air will allow the pump to operate more efficiently and yield a longer life to operating parts and mechanisms.



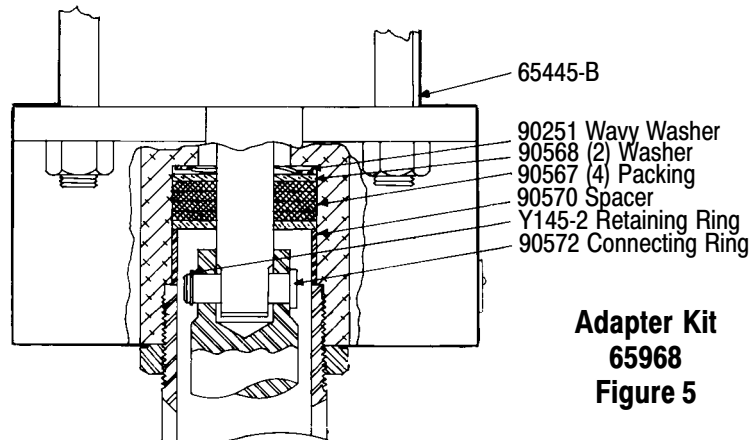
## PARTS LIST

Item	Description (Size in inches)	Qty	Part No.
1	<b>Manifold Assembly</b> (See Figure 2)	(1)	65815
2	<b>Pump Assembly</b> (650239 & 650240) (Leather)	(1)	65814-B
	(See Figure 4) (650239-1) (Teflon)	(1)	65814-1B
3	<b>Cart Assembly</b> (See Operator's Manual)	(1)	65778
4	<b>Screw</b> (3/8" - 16 x 5/8" long)	(4)	Y6-62-C
5	<b>Follower Plate</b> (See Operator's Manual)	(1)	651840-1
6	<b>Nipple</b> (3/4" x 3" long)	(1)	Y44-43-N
7	<b>90° Elbow</b> (3/4")	(2)	Y43-15-N
8	<b>Nipple</b> (3/4" x 7" long)	(1)	Y44-50-N
•	<b>Kit Assembly</b> (Includes Items 9 - 15)		66104
• 9	<b>Hose Assembly</b> (3/4" i.d. x 15') (650240)	(1)	622651-15
• 10	<b>Adapter</b> (650240)	(1)	90423
• 11	<b>Hose Assembly</b> (1/2" i.d. x 5') (650240)	(1)	623501-5
• 12	<b>Swivel</b> (650240) (See Operator's Manual)	(1)	635107
• 13	<b>Control Handle</b> (650240) (See Operator's Manual)	(1)	651500
• 14	<b>Extrusion Nozzle</b> (650240)	(1)	91424-12
• 15	<b>Retaining Nut</b> (650240)	(1)	92367
<b>See Figure 3 for Items 16 - 39</b>			
16	<b>Piston Rod</b>	(1)	90584
17	<b>Spacer Tube</b>	(1)	90582
18	<b>Lock Nut</b>	(1)	90571
19	<b>Solvent Cup</b>	(1)	91182
20	<b>Washer</b>	(1)	77432

Item	Description (Size in inches)	Qty	Part No.
21	<b>Washer</b>	(1)	77327
22	<b>"O" Ring</b> (1/16" x 2" o.d.)	(1)	Y325-32
□ 23	<b>Packing</b> (650239 & 650240) (Leather)	(4)	90578-1
	(650239-1) (Teflon)	(5)	90578-3
24	<b>Separator</b> (650239 & 650240)	(3)	90580
25	<b>Washer</b>	(1)	91349
26	<b>Body</b>	(1)	90579
□ 27	<b>Spring</b>	(1)	90120
□ 28	<b>Washer</b>	(2)	90125
29	<b>Connector</b> (Use Loctite #242 on threads)	(1)	91168
30	<b>Ball</b> (1.0000" dia)	(1)	Y16-232
31	<b>Follower Cup</b>	(1)	75678
□ 32	<b>Washer</b>	(1)	94516
□ 33	<b>Cup</b> (650239 & 650240)	(2)	75680
	(650239-1)	(2)	73919
34	<b>Inner Check Seat</b> (Torque to 65 - 70 ft lbs)	(1)	90583
35	<b>Suction Tube</b>	(1)	90581
36	<b>Pin</b>	(1)	90438
□ 37	<b>"O" Ring</b> (1/8" x 1-7/8" o.d.)	(1)	Y325-223
38	<b>Ball</b> (1.1875" dia)	(1)	Y16-238
39	<b>Foot Valve</b> (Torque to 125 - 150 ft lbs)	(1)	90441
□	<b>Service Kit</b> (650239 & 650240) (Leather)		637058
□	<b>Service Kit</b> (650239-1) (Teflon)		637059



**65815 Manifold  
Figure 2**



**Adapter Kit  
65968  
Figure 5**

# PARTS LIST

## TORQUE REQUIREMENTS

NOTE: DO NOT OVERTIGHTEN FASTENERS  
 (34) Inner Check Seat, 65 - 70 ft lbs (88.1 - 94.9 Nm)  
 (39) Foot Valve, 125 - 150 ft lbs (169.5 - 203.4 Nm),  
 ▪ Apply Loctite #242 to threads at assembly.

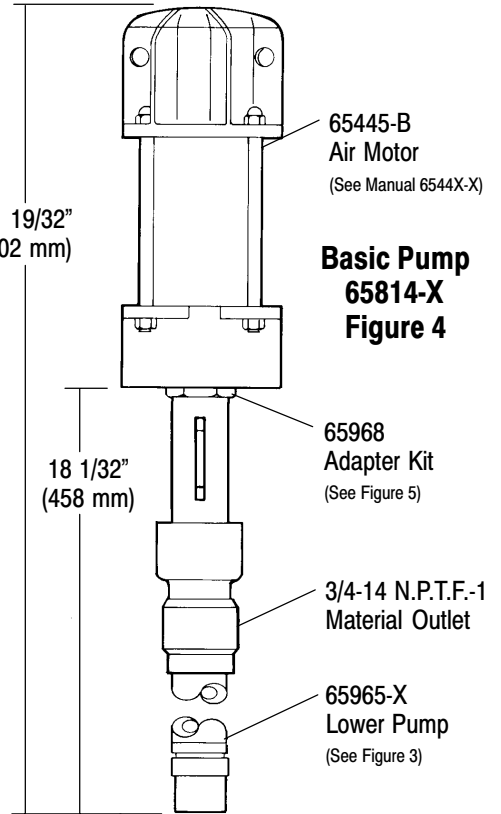
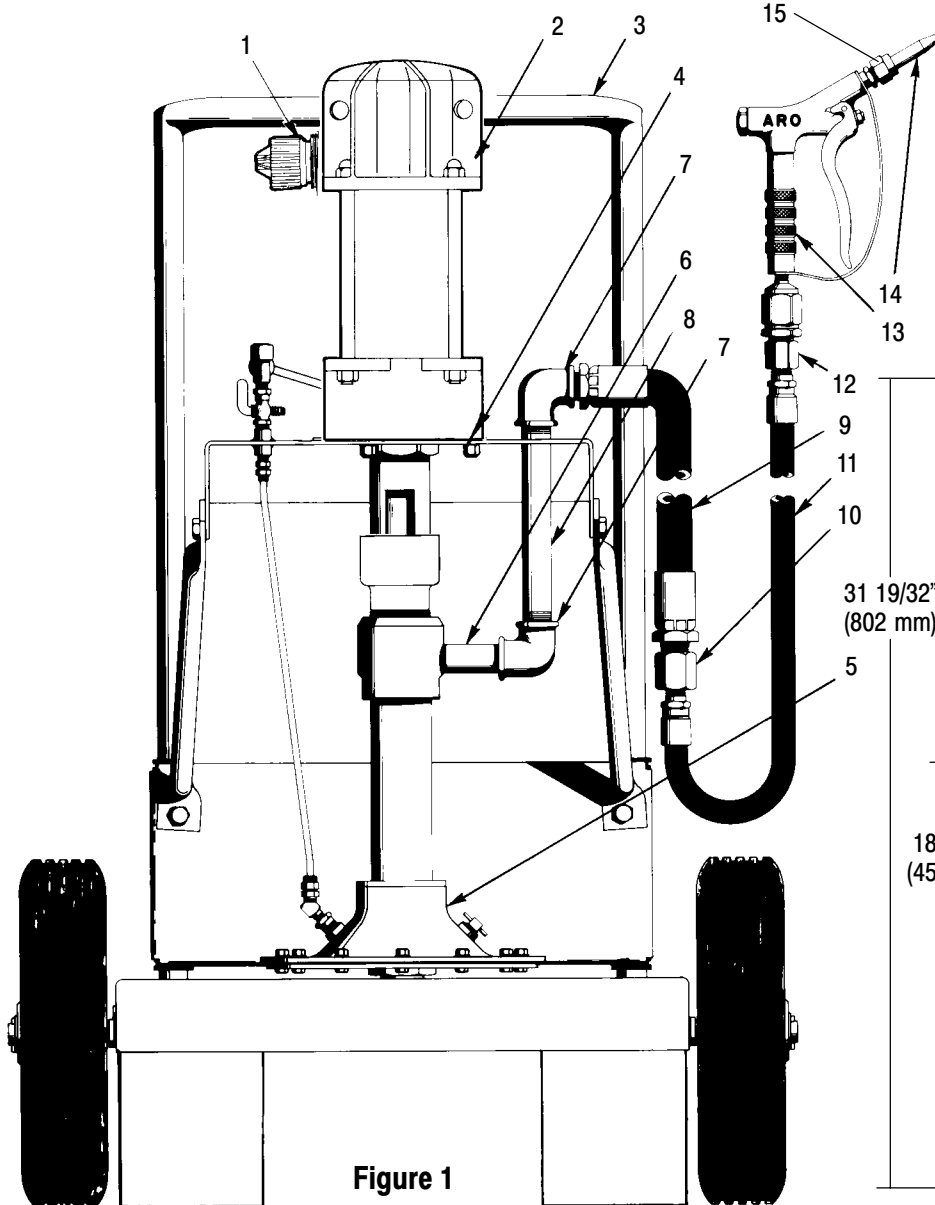
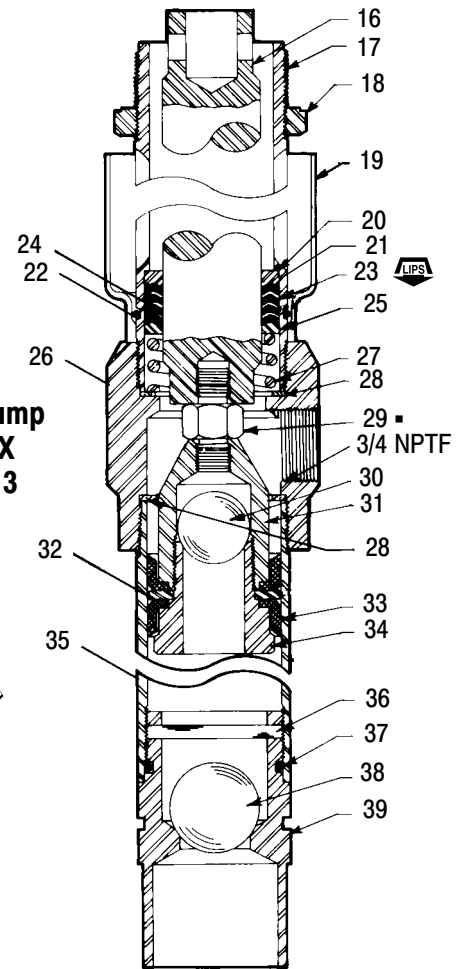


Figure 1

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## OPERATING PROCEDURES

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- The 9:1 ratio is an expression of the relationship between the effective air motor area and the effective lower pump area. When 120 PSI (10 bar) of air pressure is supplied to the air motor, the lower pump end will develop a maximum of 1,350 PSI (93 bar) of 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.
- Flush system. This pump has been tested in kerosene and a small amount remains in the pump end. Kerosene must be flushed from the pump before using. To flush system:
  - Gun or dispensing device should be removed.
  - Immerse fluid or suction hose in a 5 gallon pail of compatible solvent.
  - Place material outlet hose into pail.
  - Regulate air pressure to a few pounds.
  - Connect air supply to air motor inlet.
  - Allow pump to cycle slowly and circulate solvent for awhile.
  - Disconnect air supply.
  - To Prime System:
    - Install gun or dispensing device to material outlet hose.
    - A shut-off valve located on the cart should be in the "off" position (handle perpendicular to valve body). Connect air line to connector (See figure 1).
    - With air line connected to connector, the lift assembly and pump will rise.
    - Once lift assembly and pump are in the "up" position, place and center opened 5 gallon pail of material under follower plate (5).
    - Remove vent plug from follower plate (5). Trapped air must be removed from beneath the follower plate.
    - Disconnect the main air line to the connector and allow pump and lift assembly to lower into 5 gallon pail of material. Once the follower plate (5) begins to force material out of the vent plug, reseal bleed plug.
    - Once the follower has been properly seated, prior to pumping, be sure the thumb screws on the cart are tightened to secure 5 gallon pail. Pail must be locked in place with thumb screws before the follower plate can be removed from 5 gallon pail.
    - Adjust knob on air regulator (1) should be turned counter-clockwise until it turns free to prevent overpressurizing the pump.
    - Connect air line to air regulator (1). Adjust knob on the air regulator (1) until pump begins to cycle.
    - Trigger (13) gun to prime pump with material.
    - If pump does not stop or material does not flow from dispensing valve, refer to Troubleshooting Section of this manual.

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## DAILY MAINTENANCE

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- Lack of or an excessive amount of lubeication will affect the performance and life of this pump. Use only recommended lubricants.
- DAILY - Fill air line lubricator reservoir with SAE NO. 90W non-detergent gear oil.
- 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.
- This manual covers the basic pump unit. The 4-1/4" air motor is completely separate from the lower pump end. This helps to keep the air motor from being contaminated by material being pumped.
- Periodically flush entire pump system with a solvent that is compatible with the material being pumped.
- Keep solvent cup filled with this compatible solvent. This will keep material from drying on the piston rod, which would drag thru the packings, ruin them and eventually scour the piston rod.

- Refer to Disassembly Procedures of air motor for correct break down.
- 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.

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## MAINTENANCE

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- When the following instructions are observed, heavy paste materials can be pumped directly from their original 5 gallon pail without air inclusion, or excessive waste. The follower plate creates an air tight seal as well as clean-wiping action in its progressive downward movement into the pail.
- Lubricate lower follower wiper plate seal with any type grease (silicone, vaseline, gear, etc.). This ensures a smooth fit into the pail as well as prevents curing type compounds from bonding to the seal.
- Check vent plug to be sure it easily threads in and out. It is recommended to lubricate the threads of the plug to help prevent possible set up of compound at this point. See 65184X-X Operator's Manual.

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## TO CHANGE THE PAIL

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- Turn knob on pump air regulator (1) counter-clockwise to turn air "off" to pump.
- Turn shut-off control valve to "ON" position (Handle parallel with body) to apply pressure under follower plate.
- Disconnect main air line from pump air regulator (1) and connect to air line connector on cart.
- Allow pump and lift assembly to clear the top of the 5 gallon pail of material.
- Turn shut-off control valve to "OFF" position. (Handle perpendicular to valve body).
- Unscrew thumb screws. Remove empty pail of material and replace with a new pail of material.
- Secure new pail of material with thumb screws. Remove vent plug from follower plate (5).
- Disconnect main air line from connector and allow lift assembly to lower into new 5 gallon pail of material. Once the (5) follower plate begins to force material out of the vent plug, reseal bleed plug.

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## TROUBLESHOOTING

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- Malfunctions beyond the scope of this manual should be brought to the attention of your ARO Representative.
- **PROBLEM**
  - Cause, Solution
- **No material coming from extrusion nozzle**
  - Obstructed Material, Remove tip and clean
  - Obstructed Hose, Remove control handle and cycle pump until hose is clear
  - Obstructed Control Handle, Disassemble control handle and clean

