

# OPERATOR'S MANUAL

# 650504

## INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

ALSO INCLUDE MANUALS: 66605X-X DIAPHRAGM PUMP (PN 97999-99), 650757-X DIAPHRAGM PUMP (PN 97999-569), 2752X-X MATERIAL REGULATOR (PN 97999-674), AIRLINE SAFETY INFORMATION (PN 100400-76) .

RELEASED: 12-20-96

REVISED 10-13-10

(REV. D)

## 650504

### LOW PRESSURE DELIVERY SYSTEM

**1/2" DIAPHRAGM PUMP, 1:1 RATIO, 55 GALLON DRUM COVER**  
FOR USE WITH CONVENTIONAL HVLP / AIR SPRAY SYSTEMS  
(SPRAY GUN NOT INCLUDED)



**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.

- Fluid Section Repair Kit 637140-A4.
- Air Section Repair Kit 637141.

Refer to the 66605X-X Operator's Manual for parts / repair and service information.

### PUMP SYSTEM DATA

**Model** ..... 650504 Low Pressure Delivery System

**Pump Model** ..... 650758-2A4

**Pump Type** ..... Non-Metallic Air Operated Double  
Diaphragm with stainless steel seats

**Material** ..... Groundable Acetal

**Weight** .....

**Air Inlet** ..... 1/4" - 18 N.P.T.F.

**Air Consumption** ..... 1 c.f.m. per gallon (approx.)

**Maximum Air Inlet Pressure** ..... 100 p.s.i.g. (6.9 bar)

**Maximum Material Inlet Pressure** .. 10 p.s.i.g. (0.69 bar)

**Maximum Outlet Pressure** ..... 100 p.s.i.g. (6.9 bar)

**Maximum Flow Rate** ..... 13 g.p.m. (49 l/m)

**Maximum Particle Size** ..... 3/32"

**Max. Output Per Cycle** ..... .039 gallons (148 cc's)

**Maximum Temp. Limits** ..... 10° to 180°F (-12° to 82°C)

**Dimensional Data** ..... See page 3

**Noise Level @ 70 psi, 60 C.P.M.** □ .. 71.1 db(A)

□ The pump sound pressure levels published here have 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.

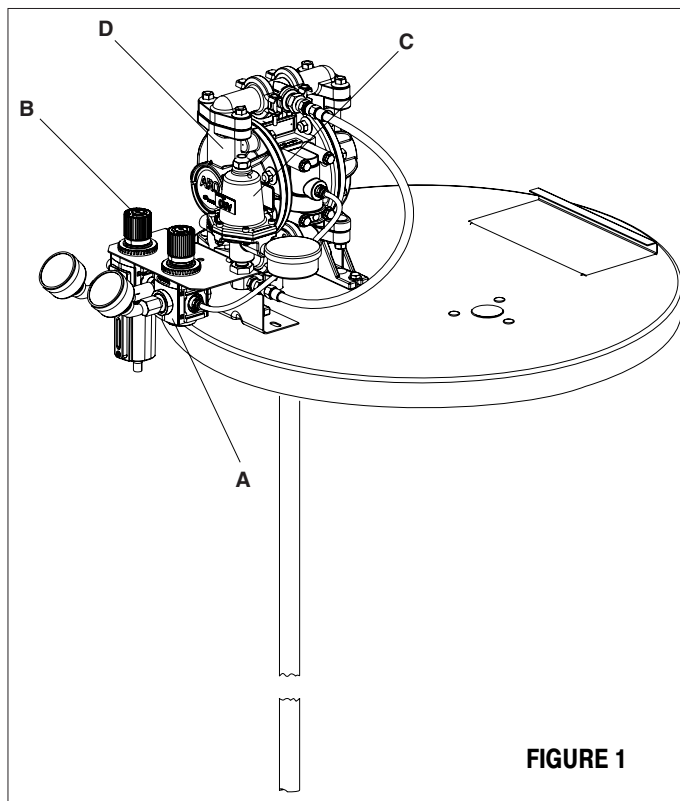


FIGURE 1

### MAJOR COMPONENTS LIST

\* Operator's Manuals are provided, which cover parts and service information.

| Item | Description         | Qty | Part No.   | Item | Description                  | Qty | Part No.   |
|------|---------------------|-----|------------|------|------------------------------|-----|------------|
| A    | Filter / Regulator* | (1) | P39224-210 | C    | 1/4 Sst / Carbide Regulator* | (1) | 27520-400  |
| B    | Regulator*          | (1) | R37221-100 | D    | 1/2" Diaphragm Pump*         | (1) | 650758-2A4 |

### GENERAL DESCRIPTION

The 650504 Portable Pumping System includes fittings, drum cover, regulators, siphon tube, gauges and hardware. It is intended to be used in conventional HVLP (High Volume Low Pressure) spray systems. These systems generally operate using low material pressure (less than 30 p.s.i.), and when complimented with the proper gun, it produces a "soft spray".

Read the information included with the spray gun for system settings and operation information.

The diaphragm pump uses stainless steel balls and seats, and teflon diaphragms and is designed to be used with waterborne paints. The gun and low pressure air and material hoses are not included. (Continued)

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# ARO

**IR** Ingersoll Rand  
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## PARTS LIST / 650504

| Item | Description (Size in inches)                              | Qty | Part No.   |
|------|-----------------------------------------------------------|-----|------------|
| 1    | Lid                                                       | (1) | 94411      |
| 2    | Bracket                                                   | (1) | 94040-1    |
| 3    | Fitting (3/8" - 18 n.p.t.f. - 1 x 1/4" - 18 n.p.t.f. - 1) | (1) | 90538      |
| 4    | Adapter (1/4" - 18 n.p.t.f. - 1)                          | (2) | 1950       |
| 5    | 45° Street Elbow (1/4" - 18 n.p.t.f. - 1)                 | (2) | Y158-1-C   |
| 7    | Gauge (0 - 60 p.s.i.)                                     | (1) | 100090     |
| 8    | Gauge (0 - 160 p.s.i.)                                    | (1) | 100091     |
| 9    | Coupling (1/4" - 18 n.p.t.f. - 1)                         | (1) | Y43-42-C   |
| 10   | Tee (1/4" - 18 n.p.t.f. - 1)                              | (1) | 94039      |
| 11   | Gauge (0 - 30 p.s.i.)                                     | (1) | 93769      |
| 12   | Button (17/32" o.d.)                                      | (3) | Y116-17-N  |
| 13   | Tube (20" long)                                           | (1) | 628091-1-H |
| 16   | Male Elbow (1/4" o.d. tube - 1/4" - 18 n.p.t.f. thd)      | (2) | 59756-156  |
| 17   | Cover                                                     | (1) | 94410      |

| Item | Description (Size in inches)                              | Qty | Part No.    |
|------|-----------------------------------------------------------|-----|-------------|
| 18   | Fitting (1/2" - 14 n.p.t.f. - 1 x 1/4" - 18 n.p.t.f. - 1) | (1) | 94041       |
| ○ 19 | Tube (1/4" o.d. x 10" long)                               | (1) | 59675-XXX-X |
| 20   | Tube (36" long)                                           | (1) | 93320       |
| 21   | Button (1-9/16" o.d.)                                     | (1) | Y116-18-N   |
| 22   | Bolt (1/4" - 20 x 1")                                     | (4) | Y6-45-T     |
| 23   | Washer (.281" i.d. x .625" o.d.)                          | (4) | 93096       |
| 24   | Nut (1/4" - 20)                                           | (4) | Y12-4-S     |
| 25   | Screw (5/16" - 18 x 5/8") (not shown)                     | (1) | Y8-58-S     |
| 26   | Nut (5/16" - 18) (not shown)                              | (1) | Y12-5-S     |
| 27   | Nut                                                       | (1) | 94036       |
| 28   | Roll Pin (.094" o.d. x .250" long)                        | (1) | Y178-18-S   |
| 29   | Elbow (1/4" - 18 n.p.t.f.)                                | (1) | 94044       |
| 30   | Ground Kit Assembly (not shown)                           | (1) | 66885-1     |
| 31   | Connector, Reducing, Pipe                                 | (2) | Y167-1      |

○ Tube is available in bulk quantities only.

### GENERAL DESCRIPTION (CONTINUED)

Consult your sales representative for the proper low pressure gun and other accessories which will best match the application.

#### Theory of operation:

HVLP (High Volume, Low Pressure) is a spray process which uses a high volume of air (15 - 22 c.f.m.) at a low pressure (10 p.s.i. or less) to atomize the material, producing both high transfer efficiency (the total

percent of material that actually stays on the intended surface) and a quality finish. The air cap of the HVLP gun injects air into the fluid after it passes through the orifice restriction. The low velocity of the material being sprayed minimizes the over-spray and bounce-back that is associated with conventional air spray.

### OPERATING INSTRUCTIONS

**⚠ WARNING** DO NOT EXCEED MAXIMUM OPERATING PRESSURE OF 100 P.S.I. (6.9 BAR) AT 100 P.S.I. (6.9 BAR) AIR INLET PRESSURE.

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

For example: If 15 p.s.i. material pressure is required, adjust the pump air regulator / gauge pressure to approximately 30 p.s.i. Use the material pressure regulator to adjust. Control the spray gun air volume using the air regulator.

### START-UP

### INITIAL SETUP PROCEDURE

#### NOTICE

**REFER TO THE INFORMATION INCLUDED WITH THE LOW PRESSURE HVLP GUN FOR SYSTEM SETUP INFORMATION. THE SYSTEM IS INTENDED FOR LOW PRESSURE APPLICATION ONLY.**

- Attach air supply hose, gun and low pressure material hose.
- Install the connector to the air supply hose.
- Attach (30) ground kit to ground tab, securing with (25) screw and (26) nut.
- Attach the ground wire to a suitable ground.
- The gun air supply hose must be 5/16" i.d. minimum.
- Keep containers covered to prevent contamination.
- When using an agitator, install a "T" at the air inlet or use a separate air supply source.

1. Turn the knob on the air regulator counterclockwise to zero p.s.i.
2. Place pump and cover (with gun and hose attached) onto the container of material.
3. The operating pressure should be set at the lowest needed to atomize and deliver the paint. Start with the gun material pressure about the same as the air supply and adjust up or down to set the pattern.
4. Start the pump to cycle by turning the air regulator knob clockwise. The pump will cycle several strokes until pressure is built up in the system, at which time it will stop. Check for any loose fittings or leakage.

#### Nominal system settings:

- Pump Outlet Material Pressure - 15 p.s.i. maximum.
- Spray Gun Air Pressure - 60 p.s.i. maximum. Note: At 30 p.s.i. nominal setting it will deliver approximately 8 p.s.i. at the air cap when using 5/16" i.d. x 15' long air hose.
- Set air pressure to the pump at approximately 2x (two times) the operating material pressure.

