OPERATOR'S MANUAL 650057–X

INCLUDING: SERVICE KITS, GENERAL DESCRIPTION & TROUBLESHOOTING
ALSO INCLUDE MANUALS: 6641X–X (97999–050) AIR MOTOR MANUAL, GENERAL INFORMATION SHEET (97999–352).

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(REV. F) IPP

3" AIR MOTOR
5:1 RATIO
2–1/4" STROKE

Models 650057–X (STUB) and 650059–X (55 GALLON)

TWO–BALL PUMP

ALSO COVERS 637016 AND 637065 SERVICE KITS.

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.
- 637016 for general repair of lower pump end (leather).
- 637065 for general repair of lower pump end (PTFE).

GENERAL DESCRIPTION

⚠WARNING HAZARDOUS PRESSURE. Do not exceed maximum operating pressure of 750 psi (51 bar) at 150 psi (10.4 bar) inlet air pressure.

⚠WARNING Refer to general information sheet for additional safety precautions and important information.

- The two–ball design provides for easy priming of the lower foot valve. The double acting feature is standard in all ARO industrial pumps. Material is delivered to the pump discharge outlet on both the up and down stroke.

PUMP RATIO X REGULATED AIR/HYDRAULIC PRESSURE =

MAXIMUM FLUID PRESSURE

- The pump ratio is an expression of the relationship between the air motor area and the lower pump end area. EXAMPLE: When 150 p.s.i. (10.4 bar) air/hydraulic pressure is supplied to the pump motor on a 5:1 ratio pump, the lower pump end will develop a maximum of 750 p.s.i. (51 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.
- Operating at excessive pressures will shorten the life of the pump and could cause personal injury.

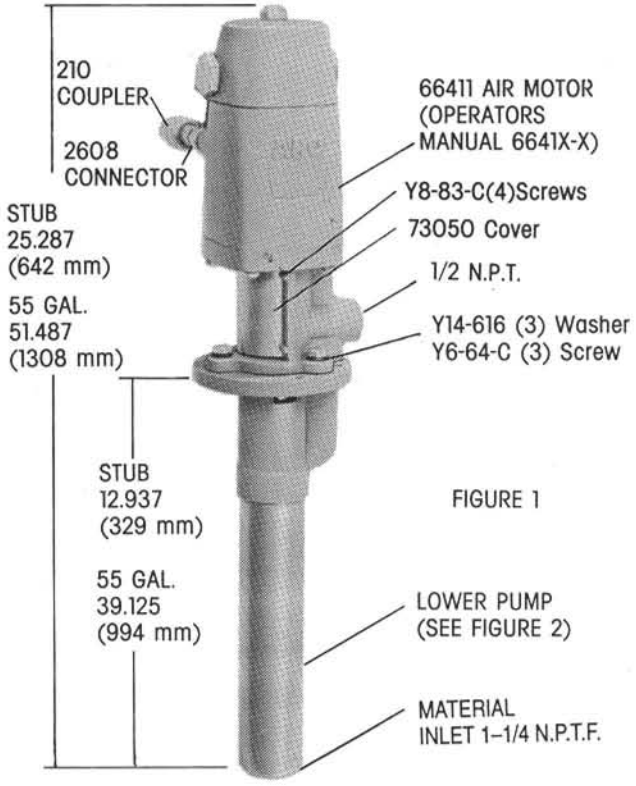

FIGURE 1

MODEL	PACKING MATERIAL
650057–D	PTFE
650057–1–D	PTFE (W/EXTENSION TUBE ON INLET)
650057–2–D	LEATHER
650057–3–D	LEATHER (W/EXTENSION TUBE ON INLET)
650059–D	LEATHER
650059–1–D	PTFE

TROUBLE SHOOTING OF TWO–BALL PUMPS

Lower Pump End Problems

- **No material at outlet. (pump continuously cycles).** Check material supply, disconnect or shut off the air/hydraulic supply and replenish the material, reconnect.
- **Material on one stroke only (fast downstroke).** The lower ball may not be seating in the foot valve. See lower pump disassembly. Remove the ball from the foot valve, clean and inspect the ball and foot valve seat area. If either ball or foot valve are damaged, replace them as necessary.
- **Material on one stroke only (fast upstroke).** Check for worn or damaged seals. Replace the seals as necessary.
- **Material leakage out of solvent cup or material appears on the pump plunger rod.** Increase the load on the packings by tightening the packing nut (–X5X models only). Check for worn upper "V" packings and replace them as necessary.

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PARTS LIST
650057-X
650059-X
LOWER PUMP END

PACKING OPTIONS and SERVICE KITS

SERVICE KIT INCLUDES: A,B,3,5,6,8,10

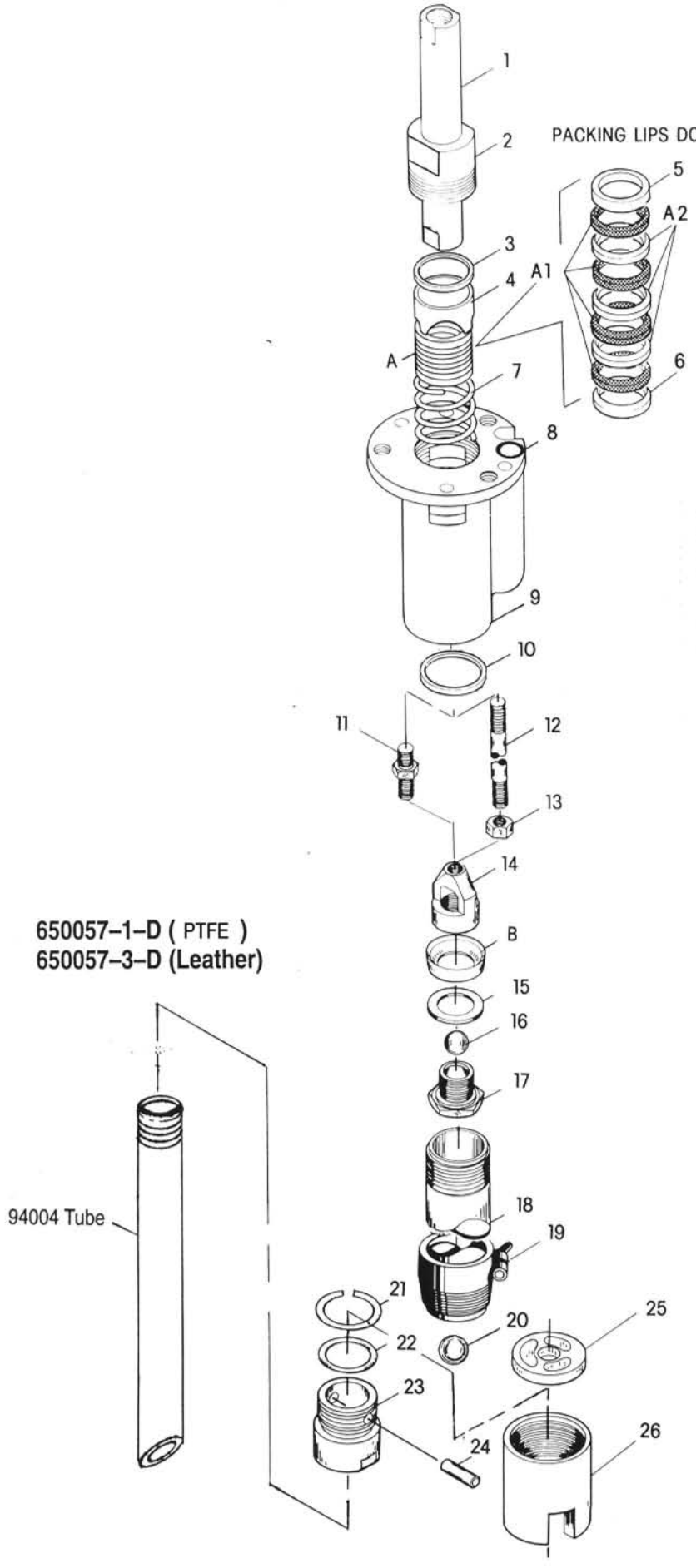
-XXX	SERVICE KIT	"A" PACKING				"B" PACKING		
REF.	6370XX	REF.	PART NO.	(QTY)	[MAT'L]	PART NO.	(QTY)	[MAT'L]
057-D	637065		73815	(5)	[T]	73919	(1)	[T]
057-1-D	637065		73815	(5)	[T]	73919	(1)	[T]
057-2-D	637016	A1 A2	73043 73042	(4) (3)	[L] [Br]	75680	(1)	[L]
057-3-D	637016	A1 A2	73043 73042	(4) (3)	[L] [Br]	75680	(1)	[L]
059-D	637016	A1 A2	73043 73042	(4) (3)	[L] [Br]	75680	(1)	[L]
059-1-D	637065		73815	(5)	[T]	73919	(1)	[T]

MATERIAL CODE

[Al]=Aluminum
[Br]=Brass
[Cs]=Carbon Steel
[De]=Delrin
[HDPE]=High Density Polyethylene
[L]=Leather
[Pp]=Polypropylene
[SS]=Stainless Steel
[T]= PTFE
[Zn]=Zinc

COMMON PARTS

		650057-X			650059-X		
REF	DESCRIPTION (SIZE IN INCHES)	PART NO.	(QTY)	(MT'L)	PART NO.	(QTY)	(MT'L)
1	Piston	73047	(1)	(CS)	73047	(1)	(CS)
2	Packing Nut	91458	(1)	(CS)	91458	(1)	(CS)
3	Packing Wiper	91454	(1)	(Pp)	91454	(1)	(Pp)
4	Packing Spacer	91455	(1)	(CS)	91455	(1)	(CS)
5	Packing Washer	91456	(1)	(De)	91456	(1)	(De)
6	Packing Washer	91457	(1)	(De)	91457	(1)	(De)
7	Spring	73040	(1)	(CS)	73040	(1)	(CS)
8	"O" Ring(1 1/8 OD)	Y179-17	(1)	(L)	Y179-17	(1)	(L)
9	Lower Pump Base	73035-1	(1)	(Al)	73035-1	(1)	(Al)
10	Gasket(2.047 OD)	90125-1	(1)	[HDPE]	90125-1	(1)	[HDPE]
11	Connector	91168	(1)	(CS)	———		
12	Piston Rod	———			75677	(1)	(CS)
13	Nut(1/2-20)	———			Y11-108-C	(1)	(CS)
14	Follower	75678	(1)	(CS)	75678	(1)	(CS)
15	Washer(1.843 OD)	75682	(1)	(CS)	75682	(1)	(CS)
16	Ball(1 Dia)	Y16-32	(1)	(CS)	Y16-32	(1)	(CS)
17	Seat	75681	(1)	(CS)	75681	(1)	(CS)
18	Tube	90997	(1)	(CS)	73938	(1)	(CS)
19	Bung Adapter	60870	(1)	[SS]	71092	(1)	(Zn)
20	Ball(1.187 Dia)	Y16-238	(1)	(CS)	Y16-236	(1)	(CS)
21	Snap Ring	90616	(1)	(SS)	———		
22	"O" Ring(1.879 OD)	90617	(1)	(T)	———		
23	Valve Seat	90996	(1)	(CS)	———		
24	Pin	90620	(1)	(SS)	———		
25	Ball Stop	———			73038	(1)	(CS)
26	Valve	———			73037	(1)	(CS)



650057-1-D (PTFE)
650057-3-D (Leather)

TORQUE REQUIREMENTS

(11) Connector
(14) Follower
(17) Seat — 60-70 Ft-Lbs
(18) Tube
(23) Valve Seat

DO NOT OVERTIGHTEN

FIGURE 2

LOWER PUMP DISASSEMBLY

NOTE: All threads are right handed.
CAUTION: Do not mar finish on (18) tube.

__Clamp pump assembly in a vise on either the motor base assembly, or material outlet assembly or air inlet assembly (see page 1).
__Remove four Y8-83-C screws and 73050 cover. (see page 1).
__Remove three Y6-64-C screws and three Y14-616 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 (8) "O" ring.
__Clamp the lower pump assembly in a vise on the (9) pump base. CAUTION: Do not overtighten.
__Loosen (18) tube from (9) pump base with a strap wrench. Pull (18) tube off (11) or (12)piston rod assembly.
__Remove (10) seal from inside (9) pump base.
__Remove (1) piston and (11) or (12) piston rod assembly from (9) pump base by pulling down on piston rod assembly.
__Vise on machined flat of (1) piston, loosen (13) nut and remove (12) piston rod assembly.
__Vise on machined flat of (14) cup follower, unscrew and remove (17) inner check seat from (14) cup follower on the (11) or (12) piston rod assembly and remove (16) ball, (15) washer, (B) cup.
__Vise (9) pump base. Remove (2) packing nut, (3) packing wiper, (4) spacer, (A) packing (5) and (6) washers and (7) spring.
__Unscrew (26) or (23) valve from (18) tube and remove (21) ring and (22) "o" ring or (25) ball stop and (20) ball.

LOWER PUMP REASSEMBLY

Assemble with new service parts.

__Install (20) ball and (21) ring and (22) "o" ring or (25) ball stop into (26) or (23) valve. Screw (26) or (23) valve onto (18) tube and tighten.
__Vise (9) pump base. Push (7) spring, (A) packing and (5) and (6) washers to bottom of chamber. Screw (2) packing nut with (3) wiper into (9) pump base and tighten.
NOTE: Care must be taken in assembly of (1) piston plunger so that (A) packing is not damaged.
__Push (1) piston down through the top of the (9) pump base, being sure not to damage packing.
__Assemble (B) cup, (15) washer, (16) ball, and screw (17) inner seat into (14) follower.
__Replace (10) gasket in (9) pump base.
__Vise on machine flats of (1) piston and connect (12) or (11) rod to (1) piston and tighten (13) nut.
__Apply grease or lubricant to (B) cup and slide (18) tube over (11) or (12) piston rod assembly and screw (11) tube into (9) pump base and tighten.
__Install (8) "O" ring into (9) 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 Y14-616 washers and three Y6-64-C screws and tighten.
__Install 73050 cover and fasten with four Y8-83-C screws (see page 1).