

OPERATOR'S MANUAL

651612-X

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

INCLUDE MANUALS: 66516-X FOLLOWER PLATE (PN 97999-854) OR 67195-X FOLLOWER PLATE (PN 97999-841)
& S-635 GENERAL INFORMATION (PN 97999-635)

RELEASED: 7-15-90

REVISED: 6-28-02

(REV. H)

HEAVY DUTY TWO POST LIFT / RAM

For use with 55 Gallon Drums



**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.

THIS MANUAL COVERS THE FOLLOWING MODELS (COMPLETE FOLLOWER DATA ON PAGE 3)

MODEL (See Page 3 for Follower Plate)	TYPICAL PUMP APPLICATION
651612-1, -2, -3, -7, -8, -9, -59	4-1/4" & 6" Chop-Check & Two-Ball Pumps, 8" 44:1 Chop-Check and 38:1 Two-Ball Pumps.
651612, -4, -5, -6, -10, -11, -12	8", 10" & 12" Chop-Check & Two-Ball Pumps (except 8" 44:1 Chop-Check and 38:1 Two-Ball Pumps).

SERVICE KITS

637343 for repair of elevator elastomeric seals.

104158 for repair of 127122-000 miniature regulator.

GENERAL DESCRIPTION

The ARO Model 651612-X Two Post Lift / Ram is used to help force high viscosity materials or greases into the pump material inlet. This unit uses dual 5-1/2" air operated cylinders welded to a heavy gauge plate and a tubular steel cross member to raise and lower a fluid handling pump assembly into and out of a standard 55 - gallon drum.

The cast aluminum follower is fitted with a dual-lipped seal to wipe the drum clean and seal off the material from the atmosphere. Several follower plate outer seal material options are available to be compatible with the material being pumped. In a typical configuration the pump lower pump end is securely attached to the follower plate and is further stabilized by a support bracket assembly. Hold down brackets located on each of the cylinders help to properly position drum with the follower plate each time the drum is changed.

It is best to permanently fasten the lift / ram to the floor. Once the unit has been properly anchored in concrete, this unit has the ability to raise a pump 38-1/4" (to clear a standard 55 - gallon drum.) The operator is then able to easily remove a pump and follower assembly from a drum in order to exchange drums.

This unit uses a lever type control valve which controls the air necessary to raise and lower the lift. This type of valve exhausts through a port in the valve.

The lift also includes an auxiliary manual air valve which is used to supply a controlled amount of air to the follower plate. A small amount of air supplied under the follower plate will help to raise the follower plate, pump and lift by relieving the vacuum.



FIGURE 1

651612-X
HEAVY DUTY TWO POST LIFT / RAM

BASE DIMENSIONS: 39-1/2" (100.3 cm) x 24" (61.0 cm)
HEIGHT: LOWERED 61-3/4" (156.2 cm), RAISED: 99-13/16" (253.4 cm)

OPERATING AND SAFETY PRECAUTIONS

- ◇ Read and heed all Warnings, Cautions and Safety Precautions before operating.
- ◇ Use only genuine ARO replacement parts to assure compatible pressure rating and longest service life.

⚠ WARNING THE LIFT MUST BE SECURELY ANCHORED IN CONCRETE. DO NOT ATTEMPT TO USE THE LIFT UNTIL ALL POSSIBLE MEASURES HAVE BEEN TAKEN TO INSURE THAT THE LIFT HAS BEEN PROPERLY INSTALLED AND THE BASE IS SECURELY FASTENED. It is the duty of the installer to provide anchor bolts / studs (not included) and for them to be securely embedded in concrete which is more than 2" thick. An improperly secured lift is unsafe.

⚠ WARNING PREVENT ELECTRIC SHOCK. BE CERTAIN THE AREA ABOVE THE LIFT IS CLEAR OF ELECTRICAL FIXTURES, DEVICES AND WIRING (minimum of 100" is required.) Examine the working area and take necessary action to assure adequate clearance for the lift and pump assembly to raise to the fullest limit and function properly.

⚠ WARNING DO NOT EXCEED MAXIMUM INLET PRESSURE OF 100 p.s.i. (6.9 bar). OPERATING LIFT AT HIGHER PRESSURE MAY CAUSE LIFT DAMAGE AND / OR PERSONAL INJURY AND / OR PROPERTY DAMAGE.

⚠ WARNING DO NOT EXCEED DRUM PRESSURE LIMITS. Know the pressure limitations of the drum and regulate the air pressure within safe limits when supplying air to the follower plate.


⚠ WARNING AVOID POSSIBLE INJURY. KEEP HANDS, ARMS AND FEET CLEAR OF DRUM WHEN LIFT IS ASCENDING AND DESCENDING. Do not attempt to reposition the pump by grasping the follower plate. In the raising and lowering function, the air is restricted through a secondary restrictor orifice (in addition to the air valve). In a situation where the lift could get hung up or the descent is restricted temporarily, the lift could in some cases drop rapidly and be hazardous. If the follower plate does not enter the drum properly, DO NOT ATTEMPT TO REPOSITION IT WITH YOUR HANDS; raise the lift and restart.

⚠ WARNING STAND CLEAR WHEN RAISING OR LOWERING THE LIFT. It is good safety practice to stay clear of a raised lift and operate it from a safe position. When using the larger size pumps (10" & 12") the clearance of the air motor and cross tube are quite close, KEEP HANDS AWAY FROM THIS AREA ANY TIME THE PUMP IS DESCENDING.

⚠ WARNING DO NOT SERVICE OR CLEAN LIFT, 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 valve or device and / or carefully and slowly loosening and removing outlet hose or piping from the pump.

⚠ CAUTION BE CERTAIN ALL OPERATORS OF THIS EQUIPMENT HAVE BEEN TRAINED FOR SAFE WORKING PRACTICES, UNDERSTAND IT'S LIMITATIONS AND WEAR SAFETY GOGGLES / EQUIPMENT WHEN REQUIRED.

MODEL DESCRIPTION / FOLLOWER PLATE OPTIONS

MODEL NUMBER	LOCATION OF RODS	FOLLOWER ASSEMBLY	SEAL MATERIAL
651612	17.875"	-----	-----
651612-1	14.000"	66516	Nitrile
651612-2	14.000"	66516-1	Polyurethane
651612-3	14.000"	66516-2	EPR
651612-4	17.875"	66517	Nitrile
651612-5	17.875"	66517-1	Polyurethane
651612-6	17.875"	66517-2	EPR
651612-7	17.875"	67195-2	EPR
651612-8	17.875"	67195-1	Neoprene
651612-9	17.875"	67195-3	Viton
651612-10	17.875"	67196-2	EPR
651612-11	17.875"	67196-1	Neoprene
651612-12	17.875"	67196-3	Viton
651612-59	17.875"	67195-7 	Viton

 Follower plate is Teflon coated.

GENERAL LIFT INSTALLATION INSTRUCTIONS

1. The area above the lift work area must be clear and without obstructions and safely away from anything electrical.
2. **THE LIFT BASE SHOULD BE SECURELY ANCHORED IN CONCRETE.** Anchor bolts / studs must be embedded in **AT LEAST 2"** of good concrete is recommended. The base itself can be used for a

- template for establishing the proper anchor locations.
3. Install an air shut-off valve between air source and pump air inlet.

NOTE: One of the available F-R-L combinations should be used with the ram. Refer to page 5.

INITIAL SET-UP PROCEDURE

1. Assemble pump to follower plate.
2. Place pump on follower plate and secure with the proper fasteners.
3. Mount 91519 mounting plate to bottom of air motor only if a 4-1/4" or 6" air motor is going to be used. Be sure support rods are properly placed in the 14" (35.6 cm) location to mount air motor. Use the 17-7/8" (45.4 cm) support rod spacing for the 8", 10" or 12".

NOTE: It may be necessary to loosen pump spacer rods nuts in order to re-index the air motor on the pump to a more favorable position.

4. Place two support brackets around base of the air motor and secure with four Y6-65-C 1" long screws, four Y16-616 lockwashers and four Y12-6-C jam nuts.
 5. Install an air shut-off valve between air source and pump.
- NOTE: This is important for pump control when the pump and follower are in the "UP" position.

LIFT OPERATION

TO RAISE LIFT:

1. Connect air supply 100 p.s.i. (6.9 bar) to air regulator coupler (not supplied).
2. Adjust air regulator pressure to between 30 and 40 p.s.i. (2.1 and 2.8 bar).
3. Remove vent plug.
4. Rotate lift valve lever to the "UP" position to raise lift. Be certain the lift is clear of any objects above. Also refer to "OPERATING AND SAFETY PRECAUTIONS" found on page 2.
5. Raise the lift to desired height to clear drum. Stop lift upward travel by rotating lift valve lever to the "NEUTRAL" position.

TO LOWER LIFT:

SAFETY NOTE: The lift may hesitate before starting downward, the air pressure inside the lift post air chamber must decrease before it will begin to descend.

NOTE: The lift valve should be in the "NEUTRAL" position.

1. Place the drum in position securely against barrel guides and adjust if needed.
2. Align pump and follower with drum.
3. Turn lift valve lever to the "DOWN" position to begin lowering.

WARNING BE CERTAIN HEAD, HANDS AND ARMS ARE CLEAR OF ASCENDING AND DESCENDING LIFT. Refer to "OPERATING AND SAFETY PRECAUTIONS" on page 2.

4. Gradually work the follower seal into the drum, be certain the vent plug has been removed (as applicable) so that the air trapped between the follower and the material is allowed to escape.
5. Air trapped between material and follower will purge through the vent plug opening. When material "oozes" from the vent, replace the vent plug. The lift valve lever should remain in the "DOWN" position.
6. At this point the pump should be started and allowed to prime. After the pump has cycled several times, all the trapped air should be purged from the pump, hose assembly, and the extrusion gun. A steady stream of material from the nozzle indicates the system is primed and ready to operate. Pump should stall out or remain static when extrusion gun is in the "OFF" position.
7. Should pump continue to cycle after extrusion gun is in the "OFF" position, increase the air pressure to the lift valve to a higher setting; this increases the force exerted by the two cylinders and the follower plate on the material.
8. If this does not remedy the problem; increase the setting in increments of 10 p.s.i. (0.7 bar) up to 90 p.s.i. (6.2 bar) or purge the trapped air under the follower plate or in the system.

TO CHANGE DRUMS:

CAUTION DO NOT EXCEED MAXIMUM PRESSURE LIMITATIONS OF DRUM AS INDICATED BY DRUM SUPPLIER / MANUFACTURER.

1. Disconnect air supply to pump.
2. When utilizing the follower air valve assist feature; open the follower plate air supply valve supply an amount of air sufficient to help the lift raise the pump through the material drum.
3. SLOWLY rotate lift valve lever to "UP" position and raise lift by throttling the lift valve.
4. When the follower plate air supply is no longer needed; turn off air valve and remove vent plug.
5. Replace drum.
6. Repeat steps under "TO LOWER LIFT" section.

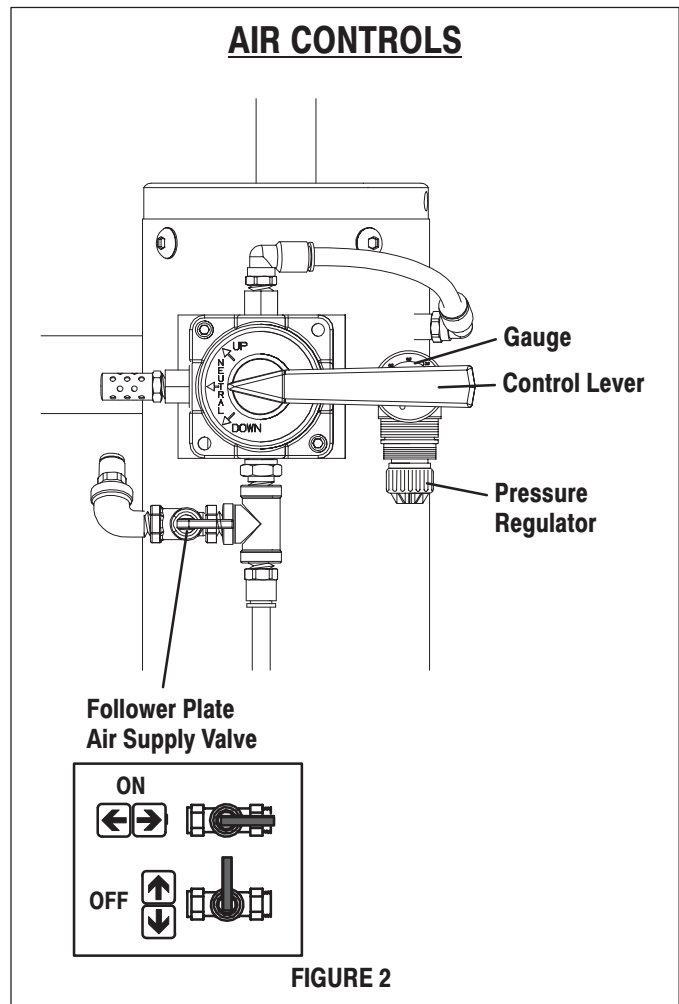
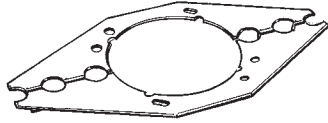


FIGURE 2

OPTIONAL EQUIPMENT

Pump Stabilizing Bracket Kit (includes hardware)



66353-1 for 8", 10", 12" Motors

Includes:

92362 Support Bracket (2)

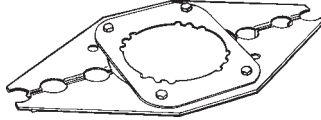
Y6-65-C Screw (4) (3/8" - 16 x 1")

Y6-66-C Screw (4) (3/8" - 16 x 1-1/4")

Y12-106-C Jam Nut (4) (3/8" - 16)

Y12-6-C Nut (4) (3/8" - 16)

Y14-616 Lockwasher (8) (3/8")



66354-1 for 4-1/4", 6" Motors

Includes:

91519 Mounting Plate

92362 Support Bracket (2)

Y6-62-C Screw (4) (3/8" - 16 x 5/8")

Y6-65-C Screw (4) (3/8" - 16 x 1")

Y6-66-C Screw (4) (3/8" - 16 x 1-1/4")

Y12-106-C Jam Nut (8) (3/8" - 16)

Y12-6-C Nut (4) (3/8" - 16)

Y14-616 Lockwasher (12) (3/8")

Filter-Regulator-Lubricators

4-1/4", 6-1/4" - 65940 HD FRL w / Bracket

8", 10", 12" - 651729 HD FRL w / Bracket

Polyethylene Follower Plate seal protector sheets (included)

91363-10 Pkg of 10 - 32" dia. (55 gal. drum)

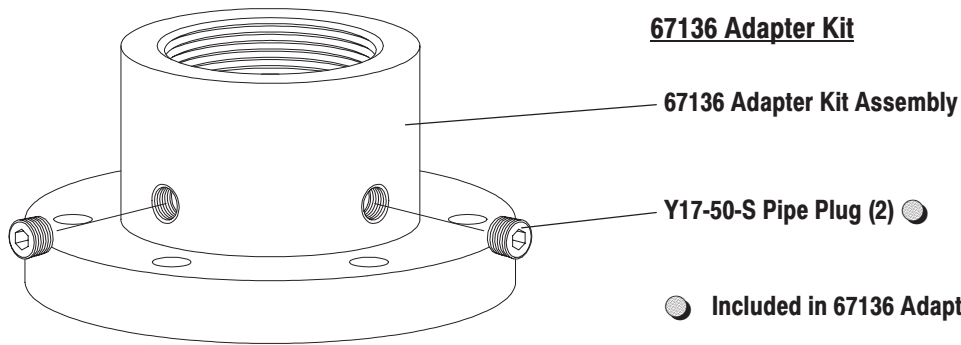


FIGURE 3

PARTS LIST

ITEM	DESCRIPTION (Size in inches)	(Qty)	Part No.
✓ 1	Retaining Ring (1.942" o.d.)	(2)	Y147-175
2	Guide	(2)	402-818
3	Screw (3/8" - 16 x 5/8")	(8)	361-690
✓ 4	"O" Ring (1/8" x 1-1/2" o.d.)	(2)	Y325-218
5	Lock Washer, Hi-Collar (1/2")	(2)	350-073HC
6	Screw (1/2" - 13 x 2-1/2")	(2)	Y99-88
7	Drain Cock (1/8 - 27 N.P.T.)	(2)	Y57-1
8	Stop Tube	(2)	402-820
✓ 9	Wear Strip	(2)	360-086
✓ 10	"O" Ring (1/4" x 5-1/2" o.d.)	(4)	350-430
11	Piston	(2)	401-570
12	Stop Tube	(2)	402-822
✓ 13	"O" Ring (3/16" x 1-5/8" o.d.)	(2)	350-661
✓ 14	Rod Scraper	(2)	360-051
15	Screw (7/8" - 9 x 4-1/2")	(2)	360-089
16	Lock Washer (7/8")	(2)	Y14-875
17	Vertical Support Rod	(2)	94016
18	Piston Rod	(2)	401-585
19	Decal (Warning)	(1)	93922
20	4-Way Air Valve	(1)	350-058-1
21	Adapter (1/4" N.P.T.F. x 3/8" N.P.T.F.)	(2)	73581
22	Male Connector (1/4 N.P.T. x 3/8")	(1)	59474-160
□ 23	Tubing (5/16" o.d. x 60")	(1)	94980-XXX-X
○ 24	Tubing (3/8" o.d. x 42-3/4")	(1)	360-107
25	Clamp Shoe	(2)	401-600
26	Clamp Pin	(2)	401-599

DISASSEMBLY

- Remove (37) screws, releasing (17) vertical support rods from the (36) cross bar.
- Remove (15) screws and (16) lock washers, releasing (36) cross bar from the (18) piston rods.
- Remove (1) retaining ring and (14) rod scraper from the top of each (2) guide.
- Remove (3) screws, releasing (2) guides from the (29) weldment tubes sliding over the piston rods.
- Remove (10) "O" rings from the o.d. of (2) guides.
- Remove (13) "O" rings from the i.d. of (2) guides.
- Remove (11) piston and (18) rod assembly from each (29) weldment tube and remove (9) wear strip from each (11) piston.
- Remove (6) screw and (5) lock washer, releasing (8) stop tube and (11) piston assembly from the (18) piston rod.
- Slide (12) stop tube from each (18) piston rod.
- Remove (10) "O" rings from the o.d. of (11) pistons.
- Remove (4) "O" rings from the to i.d. of (11) pistons.

ITEM	DESCRIPTION (Size in inches)	(Qty)	Part No.
27	90° Male Elbow (1/4 N.P.T. x 3/8")	(3)	59756-160
28	Hair Pin Cotter	(2)	360-575
29	Welded Assembly	(1)	402-816-1
30	Follower Assembly		(See page 3)
31	Clevis Bracket	(2)	95354
32	Clamp Bracket	(2)	95353
33	Screw (3/8" - 16 x 1-1/2")	(4)	Y99-64
34	Nut (3/8" - 16)	(4)	Y12-6-C
35	Lock Washer (3/8")	(4)	Y14-616-C
36	Cross Bar	(1)	402-781
37	Screw (7/8" - 14 UNF x 4")	(2)	94009
○ 38	Tubing (3/8" o.d. x 6")	(1)	360-107
39	Gauge (0 - 160 p.s.i. / 0 - 11 bar)	(1)	29850
40	Regulator ■■	(1)	127122-000
41	Tee (1/4 - 18 N.P.T.)	(1)	Y43-32-C
42	Shut-Off Valve (1/4 - 18 N.P.T.)	(1)	Y28-1
43	90° Street Elbow (1/4 - 18 N.P.T.)	(1)	Y43-2-C
44	Male Connector (1/4 N.P.T. x 5/16")	(2)	59474-158
45	Silencer (1/4 - 18 N.P.T.)	(1)	20313-2
46	Screw (1/4" - 20 x 7/8")	(2)	Y99-478
47	Label (Up - Neutral - Down)	(1)	95583
✓	Service Kit		637343
■■	Service Kit for Regulator		104158
○	Bulk Tubing (3/8" o.d. x 100')		
□	Bulk Tubing (5/16" o.d. x 100')		

REASSEMBLY

- Grease (4) "O" rings and assemble to i.d. of (11) pistons.
- Grease (10) "O" rings and assemble to o.d. of (11) pistons.
- Slide (12) stop tube over each (18) piston rod.
- Assemble (11) piston assembly to (18) piston rod using (8) stop tube, (5) lock washer and (6) screw on each (18) piston rod.
- Apply oil to both (29) weldment tubes.
- Assemble (9) wear strip to each (11) piston and insert (11) piston and rod assembly into each (29) weldment tube.
- Grease (13) "O" rings and assemble to i.d. of (2) guides.
- Grease (10) "O" rings and assemble to o.d. of (2) guides.
- Assemble (2) guides to (29) weldment tubes sliding over the piston rods and secure with (3) screws. Note: Small tapped holes in top of (2) guide must be oriented to cross-over tube of (29) weldment.
- Assemble (14) rod scraper and (1) retaining ring to the top of each (2) guide.
- Position (36) cross bar over (18) piston rod and secure with (16) lock washer and (15) screw in each (18) piston rod with impact wrench.
- Assemble (17) vertical support rods to (30) follower assembly and assemble unit to lift with (37) screws and tighten.

PARTS LIST

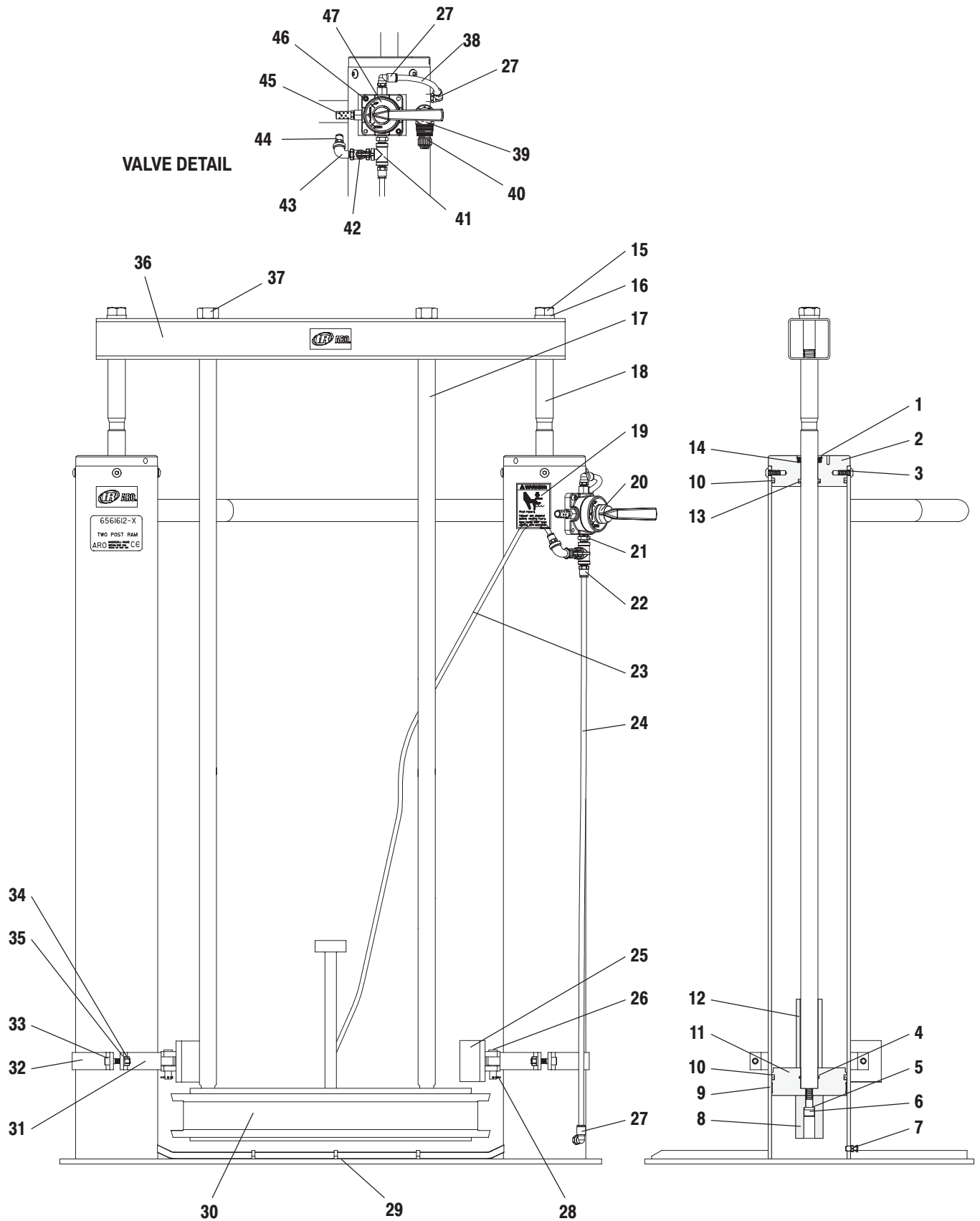


FIGURE 4

DIMENSIONAL DATA

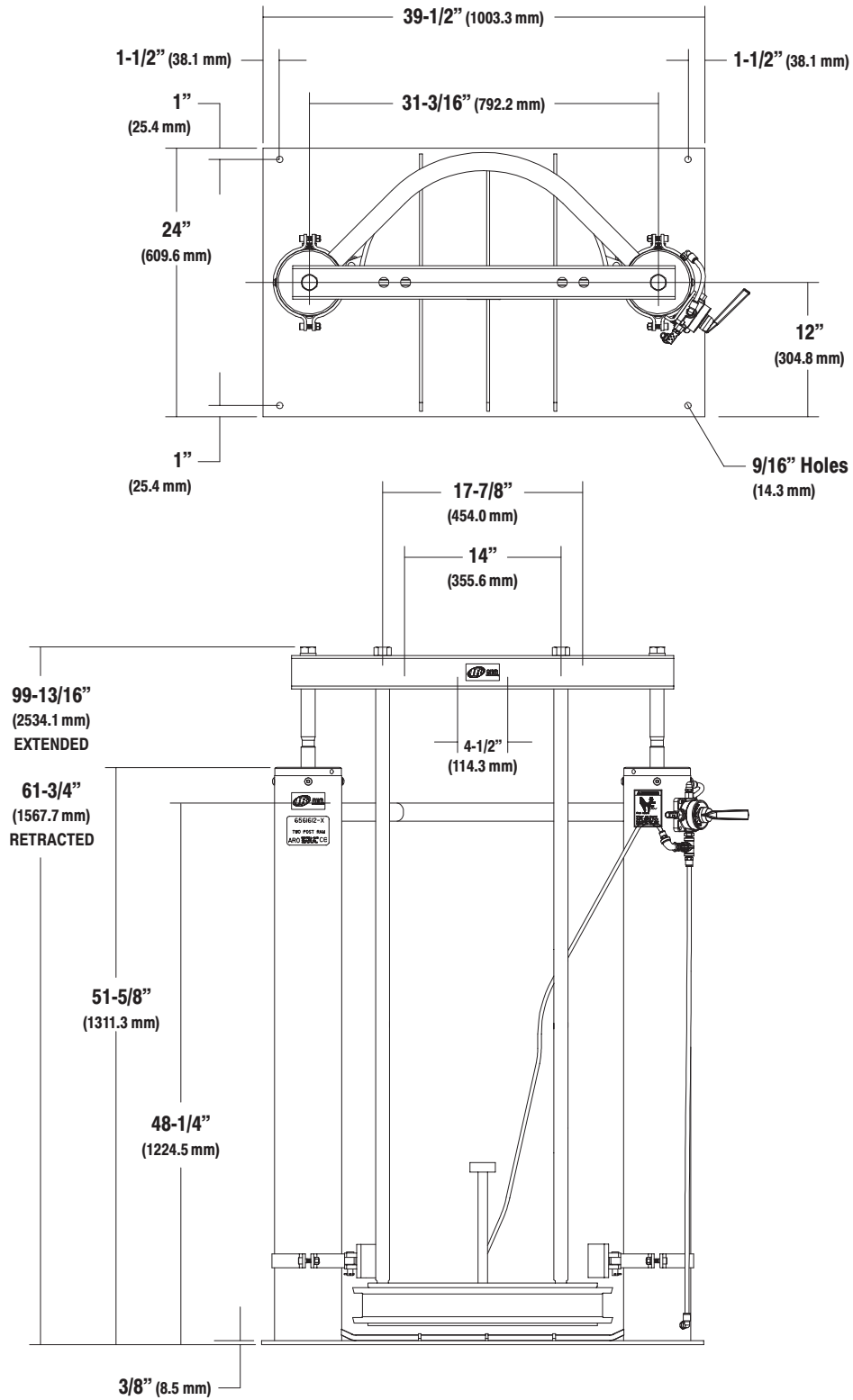


FIGURE 5