

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

6641X-X

RELEASED: 2-26-82

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(REV. S)

3" AIR MOTORS

2-1/4" STROKE



**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

MODEL	MODEL	MODEL	MODEL	
66410	66412-2	66416-1	66418-1	
66411	66413-1	66417-1	66419	
66412-1	66415-1	66418		

SERVICE KITS

637066-B for all models except 66413-1 air motor.
637090-B on model 66413-1 only.
637093-B used on upper head only (see pages 2 and 3).

AIR MOTOR DATA

MODELS - See Model Description Chart above.

PISTON MATERIAL - Nitrile.

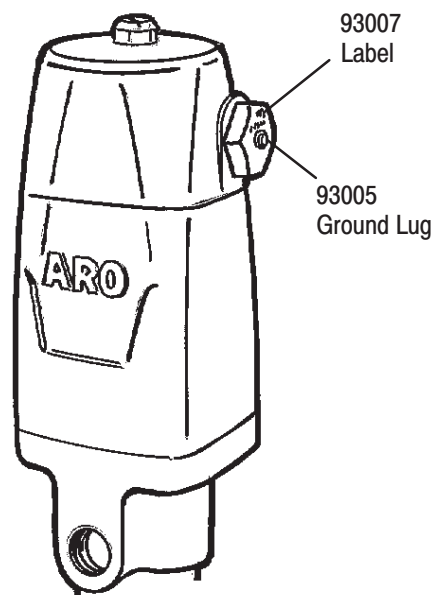
CYLINDER MATERIAL - Aluminum.

AIR MOTOR HOUSING MATERIAL - Zinc Die Cast.

NOTICE

**DO NOT OPERATE AIR MOTOR ABOVE RECOMMENDED
AIR PRESSURE OF 150 P.S.I. (10.3 BAR) OR 75 CYCLES PER
MINUTE.**

NOTICE: "Working Flow" of a pump represents performance that can be expected from a pump at 90 p.s.i. (6.2 bar) in a typical system. Under normal operating conditions, air inlet pressures should be set in the 40 to 90 p.s.i. (2.8 to 6.2 bar) range for operating efficiency and longer pump life.



**MODEL 66419 SHOWN. BASE STYLES & PISTON RODS
MAY VARY FROM THAT SHOWN.**

GENERAL DESCRIPTION

The 3" Air Motor is a general purpose power unit and is used with many pumps. Consult pump model for specific instructions. It is recommended that a muffler be connected to the exhaust port to reduce noise to acceptable OSHA standards.

Filtered and oiled air will allow the air motor to operate more efficiently and yield a longer life to operating parts and mechanisms. A filter capable of filtering particles larger than fifty microns should be used with an oiler. Keep oiler supplied with a good grade of S.A.E. No. 90W non-detergent gear oil, and set at a rate not to exceed one drop per minute.

3" AIR MOTOR PARTS LIST

Item	Description (size)	Part No. (Qty)	SERVICE KIT NO.		
			637066-B	637090-B	637093-B
1	Plug	77034			
2	Washer	77042			
3	"U" Cup (3/16" x 13/16" o.d.)	Y186-6			
4	Piston	77884			
5	"O" Ring (.106" x .587" o.d.)	15066 (3)			
6	Plug Assembly	66441			
7	Washer	77885			
8	Piston	77894			
9	"O" Ring (.074" x .453 o.d.)	79104 (3)			
10	Washer (.343" i.d. x .675" o.d.)	77953			
11	Spacer	77243			
12	Sleeve	77893			
13	"O" Ring (1/16" x 5/8" o.d.)	Y325-14			
14	Spacer	77886			
15	Screw (1/4" - 20 x 2")	Y99-46 (4)			
16	Gasket	72377 (4)			
17	Head	66425-1			
18	Plug	77890			
19	Washer	77951			
20	Cap Gasket	77954			
21	Cap Gasket	72378			
22	"U" Cup (3/16" x 11/16" o.d.)	Y183-4			
23	Body	66649			
24	Gasket	72379 (2)			
25	Cylinder Liner	72384			
■ 26	Piston Rod	77887			
27	Nut	72403			
28	Lock Washer (3/4")	Y1-963			
29	Washer (.765" i.d. x 1.5" o.d.)	72399			
30	Piston	72406			
31	Washer (1.032" i.d. x 2.937" o.d.)	72402 (2)			
32	Adapter	72407			
■ 33	Valve Rod	72401			

■ INDICATES WHERE PARTS ARE USED

■ "Smart Parts", Keep these items on hand in addition to the Service Kits for fast repair and reduction of downtime.

DISASSEMBLY OF 3" AIR MOTOR

NOTE: ALL THREADS ARE RIGHT HAND.

- Only if (38) base is (38C or E): Place motor in down stroke position. Remove (40) screws and (39) cover. Then hold (34X) rod by the 3/8" flats and unscrew (42) adapter and slide off (41) adapter.
- For all motors: Place motor in up stroke position by tapping the bottom of (34X) piston rod lightly with soft faced mallet.
- Vise air motor on base (38X) flats of material outlet (according to which base you have). **CAUTION: DON'T OVERTIGHTEN; IT COULD CRACK OR BREAK THE BASE.**
- Unscrew (6) plug assembly and lift off (7) washer.
- Pull (8) piston up as far as possible, exposing (26) piston rod.
- Place a 3/32" rod through provided hole in (26) piston rod and unscrew (8) piston and remove (9) "O" ring.
- Remove (1 and 18) plugs plus (2 and 19) washers.

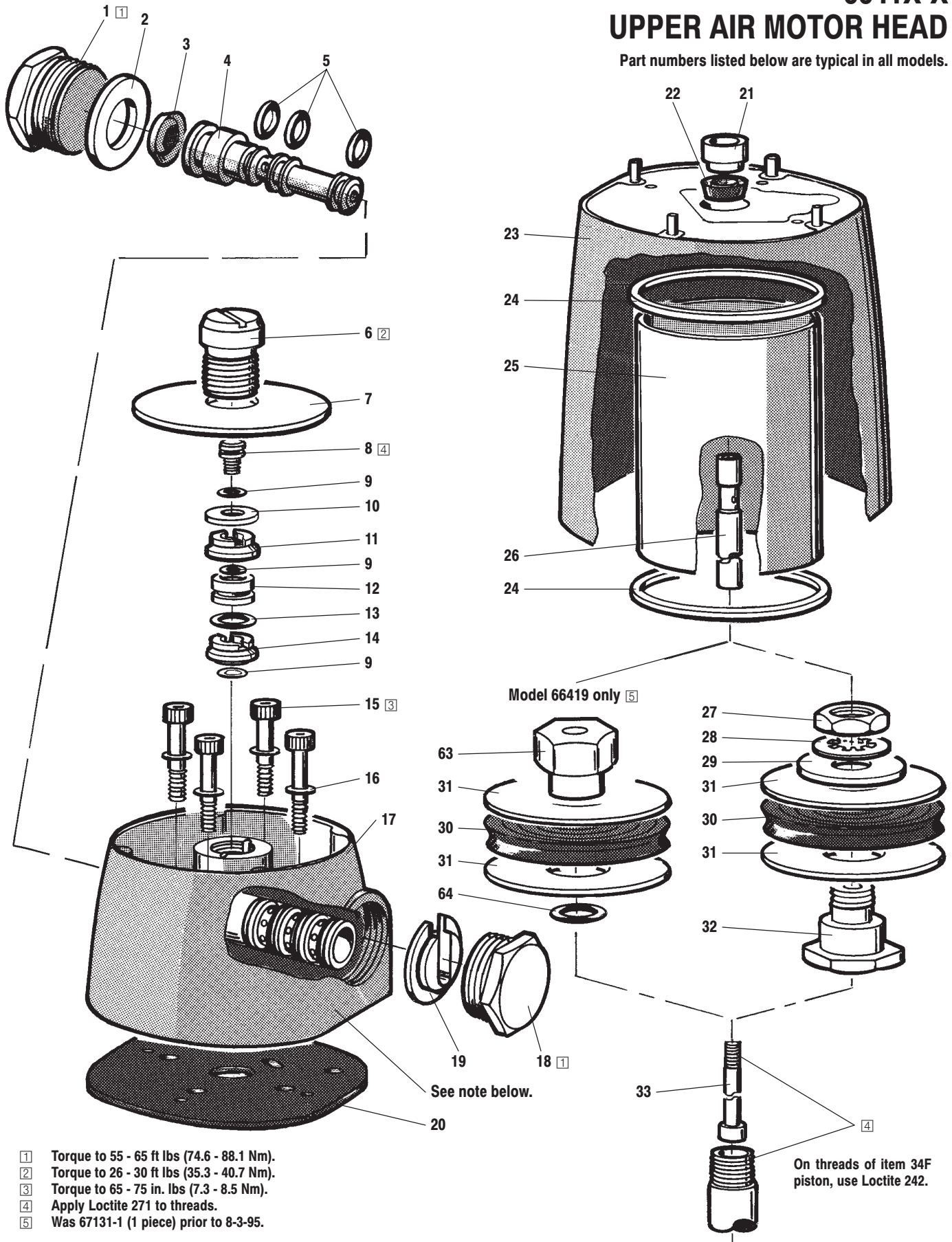
- With fingers, push out (4) piston and remove (3) "U" cup and (5) "O" ring.

NOTE: Do not remove brass sleeve. If repair is necessary, it is suggested to send air motor to Aro Service Department. See notation in operator's manual.

- Remove (15) screws and (16) washers.
- Remove (17) head from (23) body. Sometimes it is necessary to lightly tap the side of (17) head with a soft faced mallet to accomplish this step.
- Turn (17) head upside down on work bench, permitting (9) "O" rings, (10) washer, (11) spacers, (12) sleeve and (13) "O" ring to fall out.
- Remove (59) washers, (60) screws and (61) screws from (38X) base. (38C and E) do not have (61) screws.

6641X-X UPPER AIR MOTOR HEAD

Part numbers listed below are typical in all models.



- [1] Torque to 55 - 65 ft lbs (74.6 - 88.1 Nm).
- [2] Torque to 26 - 30 ft lbs (35.3 - 40.7 Nm).
- [3] Torque to 65 - 75 in. lbs (7.3 - 8.5 Nm).
- [4] Apply Loctite 271 to threads.
- [5] Was 67131-1 (1 piece) prior to 8-3-95.

NOTE: 77883 sleeve and Y325-15 "O" rings (4) are not considered customer serviceable and are not normally removed. Send to ARO Service Department for repair.

3" AIR MOTOR PARTS LIST

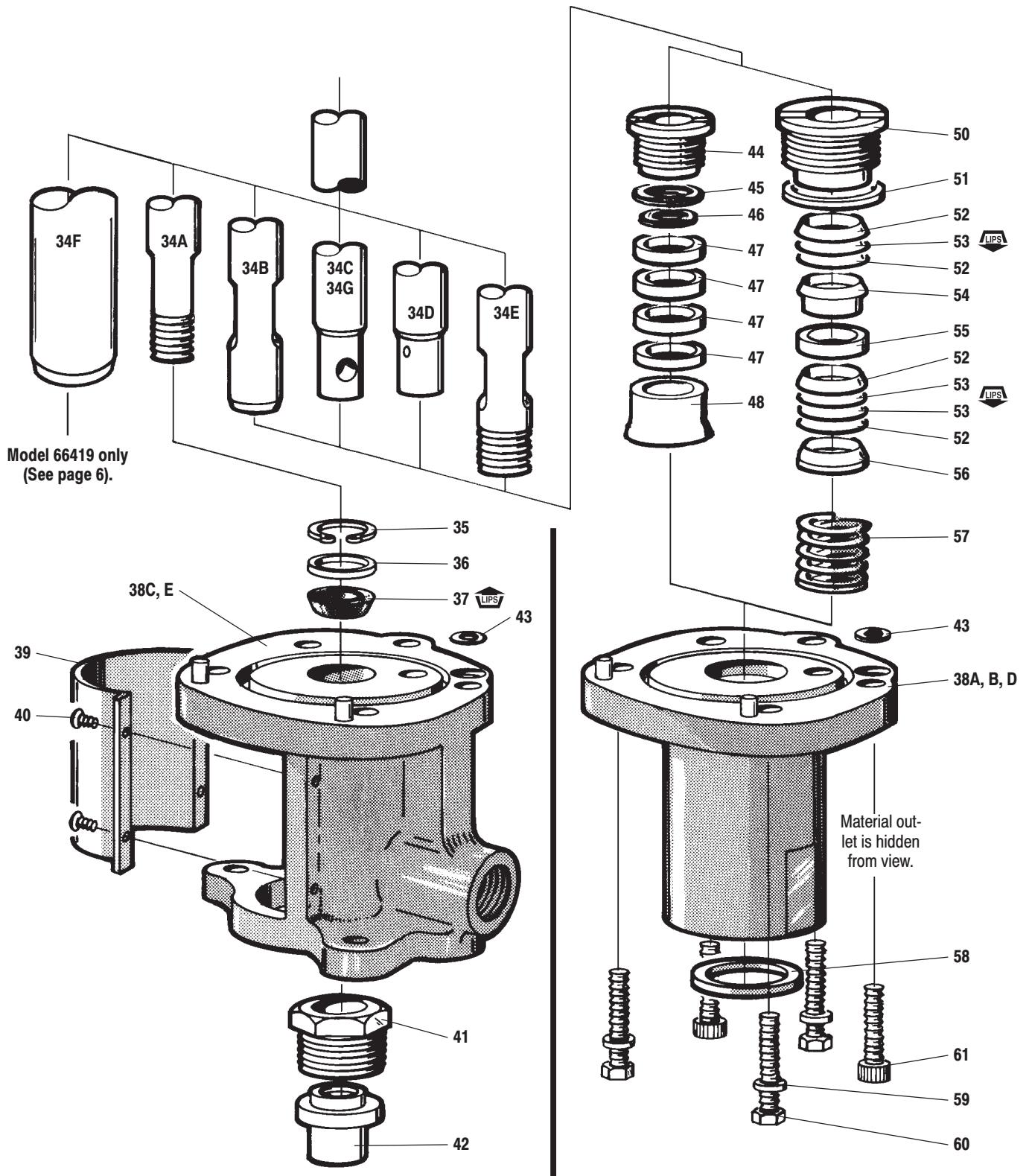
Item	Description (size)	Part No. (Qty)	AIR MOTOR MODEL NO.											SERVICE KIT NO.		
			66410	66411	66412-1	66412-2	66413-1	66415-1	66416-1	66417-1	66418	66418-1	66419	637066-B	637090-B	637093-B
34A	Piston Rod (.531" o.d.)	73032														
B	Piston Rod (.531" o.d.)	72397														
C	Piston Rod (.531" o.d.)	91303														
D	Piston Rod (.730" o.d.)	77838														
E	Piston Rod (.531" o.d.)	90639														
F	Piston Rod (1.375" o.d.)	93289														
G	Piston Rod (.531" o.d.)	see page 7														
35	Retaining Ring (31/32" o.d.)	Y147-87														
36	Packing	75676														
37	"U" Cup Packing (1/8" x 25/32" o.d.)	72375														
38A	Air Motor Base	72391-1														
B	Air Motor Base	65093														
C	Air Motor Base	73054-2														
D	Air Motor Base	61147														
E	Air Motor Base	73184														
F	Air Motor Base	93991														
39	Cover	73050														
40	Screw (#8 - 32 x 1/4")	Y8-83-C (4)														
41	Adapter	75674														
42	Adapter	75675														
43	"O" Ring (3/32" x 9/16" o.d.)	Y325-110														
44	Gland	72682														
45	"O" Ring (1/16" x 1-1/8" o.d.)	Y325-22														
46	"O" Ring (3/32" x 11/16" o.d.)	Y325-112														
47	Washer (17/32" x 31/32" o.d.)	72684 (4)														
48	Rod Seal	93921														
50	Gland	76963														
51	Gasket	77061														
52	Vee Packings (.730" i.d.)	76969 (4)														
53	Vee Packings (.730" i.d.)	76970 (3)														
54	Adapter	76972														
55	Female Packing Washer	76973														
56	Male Packing Washer	76971														
57	Spring	90311														
58	Gasket	70834														
	Gasket	76976														
59	Washer (1/4" i.d.)	Y14-416 (X)	(3)	(5)	(3)	(3)	(3)	(3)	(5)	(3)	(3)	(3)				
60	Screw (1/4" - 20 x 1-1/4")	Y6-46-C (X)	(3)	(5)	(3)	(3)	(3)	(3)	(5)	(3)	(3)	(3)				
61	Screw (1/4" - 20 x 1")	Y99-42-C (2)														
62	"O" Ring (1/8" x 1-5/8 o.d.)	Y325-220														
63	Adapter	94112														
64	"O" Ring (1/16" x 7/8" o.d.)	Y325-18														

DISASSEMBLY OF 3" AIR MOTOR (CONTINUED)

- Remove (20) cap gasket. Then remove (23) body from (38X) base and remove (24) gasket from inside of (23) body.
- Remove (25) cylinder.
- Pull piston and rod assembly from (38X) base. Vise on the hex of (32) adapter, remove (27) nut, (28) lockwasher, (29) washer, (31) washers and (30) piston.
- With (32) adapters still vised, remove (34X) piston rod, which also permits the removal of (26) piston rod and (33) valve rod assembly.
- Vise on shank of (33) valve rod and unscrew (26) piston rod.
- Remove (24) gasket and (43) "O" ring from (38X) base.
- On models with (38C or E) base, remove (35) retaining ring, (36) packing and (37) "U" cup packing.
- On models with (38A, B or D) base, remove (44) gland with 637402 special wrench, then remove (45 and 46) "O" rings, (47) washers and (48) rod seal.
- On model 66413-1 only, remove (50) gland with 70559-T special wrench. Next, remove (51) gasket, (52) packings, (53) packings, (54) adapter, (55) washer, (56) washer and (57) spring.

6641X-X AIR MOTOR PISTON ROD AND BASE VIEW

See chart on page 4 for each model.
See page 7 for models 66418 and 66418-1.

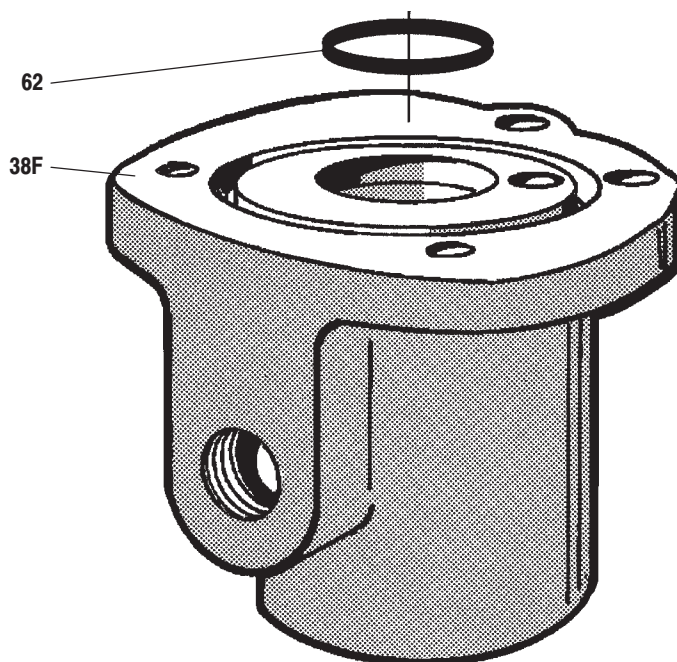


SERVICE NOTE: Part no. 637405 is available separately to insert the (48) rod seal. This will prevent damage to the outside diameter of the packing.

REASSEMBLY OF 3" AIR MOTOR

NOTE: GREASE ALL "O" RINGS, "U" CUPS AND PACKINGS BEFORE INSTALLING INTO PISTON.

1. Clamp (32) adapter in vise. Place (33) valve rod in (32) adapter, threaded end first. Thread in vise. Thread (34X) piston rod in (32) adapter and tighten it. Use provided 3/8" flats on (34X) piston rod. **CAUTION: DO NOT MAR OR DAMAGE GROUND SURFACE OF (34X) PISTON ROD.**
2. Clean threads and vise (33) valve rod on shank portion. Apply Loctite 271 on cleaned threads and put (26) piston rod on (33) valve rod. Tighten with a 3/32" rod in provided hole of (26) piston rod. **CAUTION: DO NOT MAR OR DAMAGE GROUND SURFACE OF (26) PISTON ROD.**
3. Clamp (32) adapter assembly in vise. Place (31) washer, (30) piston, (31) washer, (29) washer, (28) lockwasher and (27) nut on (32) adapter and tighten. Consult operator's manual for correct sequence of parts.
4. Clamp (38X) base in vise and assemble the following for models with (38C or E) base, (37) "U" cup packing, (36) packing and (35) retaining ring.
5. For models with (38A, B or D) base, place the (48) rod seal (use special tool # 637405 to insert rod seal), (47) washers, (46 and 45) "O" rings with (38) base. Consult view on page 5 for correct sequence of these parts. Install (44) gland into (38X) base.
6. For model 66413-1, place (57) spring, (56) washer, (52 and 53) packings, (55) washer, (54) adapter and (51) gasket into (38X) base. Consult view on page 5 for correct sequence of these parts. Install (50) gland with (38X) base, **DO NOT OVERTIGHTEN.**
7. Install (30) piston and rod assembly into (38X) base through above packing assembly. Models with (38A, B or D) bases, tighten (44) gland with 637402 special wrench. On model 66413-1, tighten (50) gland with 70559-T special wrench.
8. Place (24) gasket and (43) "O" ring on (38X) base.
9. Place (25) cylinder liner into position over (30) piston assembly. For easier assembly, apply grease to inside of cylinder liner. Also, tilt cylinder liner over piston assembly when assembling unit.
10. Place (24) gasket into inside of (23) body. Place (23) body on (38X) base. Be sure to align the roll pins with provided holes in (38X) base.
11. Tighten (38A) base to (23) body by installing (59) washers and (60) screws. Also install (61) screws in (38A, B or D) bases.
12. Install (22) "U" cup packing and (21) retainer on (23) body.
13. Place (20) cap gasket and (17) head on (23) body. **Be sure (23) gasket is aligned with holes in (23) body.**
14. Tighten (17) head with (15) screws and (16) gaskets. NOTE: (15) screws should be tightened evenly to a torque of 65 - 75 in. lbs (7.3 - 8.5 Nm).
15. Install (5) "O" rings and (3) "U" cup packing on (4) piston. Slide (4) piston assembly into brass bushing of (17) head. Put the small end in first.
16. Install (2) washer and (1) plug and tighten to 55 - 65 ft lbs (74.6 - 88.1 Nm).
17. Install (19) washer and (18) plug and tighten to 55 - 65 ft lbs (74.6 - 88.1 Nm). **NOTE: Be sure to align small plug on (19) washer with provided hole in (17) head.**
18. Place (9) "O" rings, (10) washers, (11) spacers, (12) sleeve and (13) "O" ring onto rod.
19. On (8) piston, clean the threads and install (9) "O" ring.
20. Apply Loctite 271 to threads of (8) piston and screw onto (26) rod. To tighten, place a 3/32" rod through provided hole in (26) rod and use a flat blade screwdriver on (8) piston. **CAUTION: DO NOT MAR OR DAMAGE GROUND SURFACE OF (26) ROD.**
21. Place (7) washer into piston. Then put a liberal amount of grease inside of (6) plug assembly and tighten down over (8) piston. NOTE: Tighten (6) plug to 26 - 30 ft lbs (35.3 - 40.7 Nm).
22. Models with (38C or E) base, place motor in the down stroke position. Install (41 and 42) adapters on (34X) piston assembly and tighten. Also install (39) cover and (40) screws.



Model 66419

66418 AND 66418-1 AIR MOTOR PISTON ROD AND BASE

