

PARTS LIST / AF044X-XX AND AF046X-XX

| Item | Description | (Qty) | Part No. | [Mtl] |
|------|---|-------|-----------|--------|
| ✓111 | O-Ring (1/8" X 4 1/4" OD) | (2) | Y325-242 | [B] |
| ✓113 | O-Ring (1/16" X 3/4" OD) | (4) | Y325-16 | [B] |
| *115 | Rod | (1) | | [SS] |
| ✓116 | O-Ring (3/16" X 4 1/4" OD) | (1) | Y325-344 | [B] |
| *117 | Piston | (1) | | [A] |
| *118 | O-Ring (1/16" X 1 1/16" OD) | (1) | | [B] |
| *119 | Bushing | (1) | | [C] |
| *120 | Trip Rod Assembly | (1) | | [A] |
| 122 | Head Plate | (1) | 96859 | [A] |
| ✓123 | O-Ring (3/32" X 1/2" OD) | (1) | Y325-109 | [B] |
| ✓124 | O-Ring (1/16" X 2" OD) | (1) | Y325-32 | [B] |
| 125 | Cap | (1) | 96897 | [D] |
| 126 | Sleeve | (1) | 96901 | [Br/A] |
| 127 | Ground Lug | (1) | 96878 | [Bz] |
| ✓128 | O-Ring (1/16" X 1 1/16" OD) | (1) | 96917 | [B] |
| 129 | Snap Ring (1.180" OD) | (1) | Y147-7 | [C] |
| 130 | Washer | (1) | 96894 | [C] |
| 131 | Pin | (1) | 96895 | [C] |
| 132 | Driver | (1) | 96868 | [C] |
| ✓133 | U-Cup (3/16" X 1 1/2" OD) | (1) | 96908 | [B] |
| 134 | Spool | (1) | 96875 | [A] |
| 135 | Vent Bushing | (1) | 96896 | [D] |
| ✓136 | U-Cup (5/32" X 1 3/8" OD) | (1) | 96907 | [B] |
| 137 | Tube | (1) | 96873 | [C] |
| 138 | Socket Head Screw (5/16"-18 X 1") | (8) | Y99-52-S | [SS] |
| 140 | Head Manifold | (1) | 96854 | [A] |
| ✓141 | Major Gasket | (1) | 96900 | [B] |
| 142 | Valve Plate | (1) | 96884 | [CK] |
| 143 | D-Valve | (1) | 96889-2 | [D] |
| 144 | Valve Housing | (1) | 96864 | [A] |
| 145 | Socket Head Screw (5/16"-18 X 4 1/2") | (2) | Y99-516-S | [SS] |
| 146 | Pilot Insert | (1) | 96882 | [D] |
| 147 | Pilot Valve Plate | (1) | 96883 | [CK] |
| ✓148 | Pilot Gasket | (1) | 96899 | [B] |
| 149 | Vent Plug | (1) | 96906 | [D] |
| 150 | Pilot Cover | (1) | 96865 | [A] |
| 155 | Muffler | (1) | 96916 | [C] |
| 201 | Muffler Kit (Optional, See Fig. 5) | (1) | 67445-1 | [C] |
| 202 | Regulator / Shut-Off (Optional, See Fig. 5) | (1) | 67442 | |
| ✓ | Lubriplate FML-2 Grease Packet (1/4 oz.) | (2) | 94276 | |

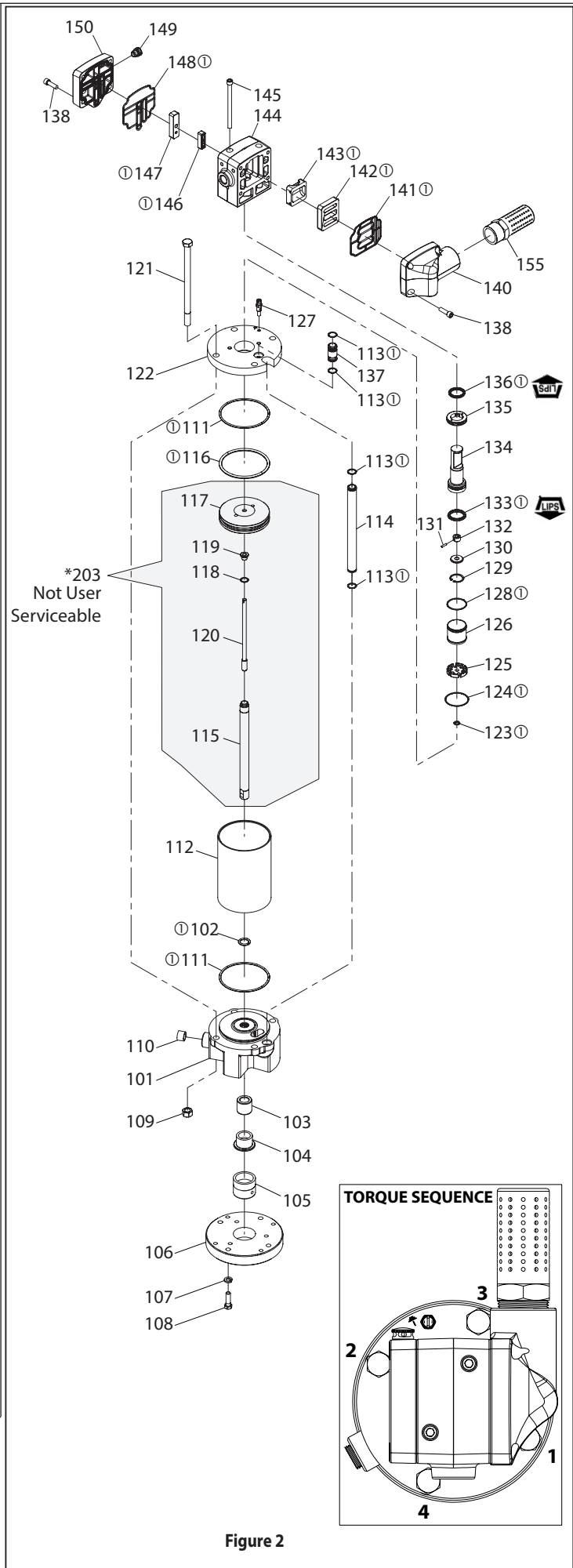


Figure 2

TORQUE REQUIREMENTS

NOTE: DO NOT OVERTIGHTEN FASTENERS.
 Tighten (109 & 121) to 10-15 ft-lbs (13.6-20.3 Nm)
 Tighten (138 & 145) to 50-60 in-lbs (5.6-6.8 Nm)

LUBRICATION / SEALANTS

① NOTE: Lubricate with Grease (ARO p/n 94276).

PARTS LIST / AF044X-XX AND AF046X-XX

| Item | Description (size) | Part No. | (Qty) | [Mtl] | AIR MOTOR MODEL NO. | | | | | | |
|------|--|-----------|-------|-------|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | | | | AF0441-XX | AF0442-XX | AF0443-XX | AF0444-XX | AF0445-XX | AF0460-XX | AF0465-XX |
| 101 | Base and Bearing (Stub)** | 65020 | (1) | [A] | | | | | | | |
| | Base and Bearing | 65023 | (1) | [A] | | | | | | | |
| | Base and Bearing (Stub) | 65775 | (1) | [A] | | | | | | | |
| | Base (Stub) | 90074 | (1) | [A] | | | | | | | |
| ✓102 | O-Ring (1/8" x 1" OD) | Y325-210 | (1) | [B] | | | | | | | |
| | O-Ring (1/8" x 1 5/8" OD) | Y325-220 | (1) | [B] | | | | | | | |
| 103 | Bushing | 93310 | (1) | [D] | | | | | | | |
| 104 | Retainer | 93311 | (1) | [SS] | | | | | | | |
| 105 | Guide | 93312 | (1) | [SS] | | | | | | | |
| 106 | Plate | 93958 | (1) | [A] | | | | | | | |
| 107 | Lock Washer | Y14-616-C | (4) | [C] | | | | | | | |
| 108 | Screw | Y6-66-C | (4) | [C] | | | | | | | |
| 109 | Nut (1/2" - 20) | Y11-8-C | (4) | [C] | | | | | | | |
| 110 | Plug (1/2-14 N.P.T. X 9/16") | 93897-1 | (1) | [PP] | | | | | | | |
| 112 | Cylinder | 96936 | (1) | [Ef] | | | | | | | |
| | | 96935 | (1) | [Ef] | | | | | | | |
| 114 | Tube | 96874-1 | (1) | [C] | | | | | | | |
| | | 96874-2 | (1) | [C] | | | | | | | |
| 121 | Bolt (1/2" - 20 x 10 1/4") | 94046-1 | (4) | [C] | | | | | | | |
| | | 94046-2 | (4) | [C] | | | | | | | |
| 151 | Washer | 90103 | (1) | [A] | | | | | | | |
| ✓152 | U-Cup (1/4" X 1 1/4" OD) | Y186-16 | (1) | [B] | | | | | | | |
| 153 | Washer | 73986 | (1) | [Br] | | | | | | | |
| 154 | Snap Ring (1.456" OD) | Y147-131 | (1) | [C] | | | | | | | |
| *203 | Piston Assembly (includes items 115, 117, 118, 119, & 120) | 67489 | (1) | -- | | | | | | | |
| | | 67490 | (1) | -- | | | | | | | |
| | | 67491 | (1) | -- | | | | | | | |
| | | 67492 | (1) | -- | | | | | | | |
| | | 67493 | (1) | -- | | | | | | | |
| | | 67494 | (1) | -- | | | | | | | |
| | | 97376 | (1) | -- | | | | | | | |

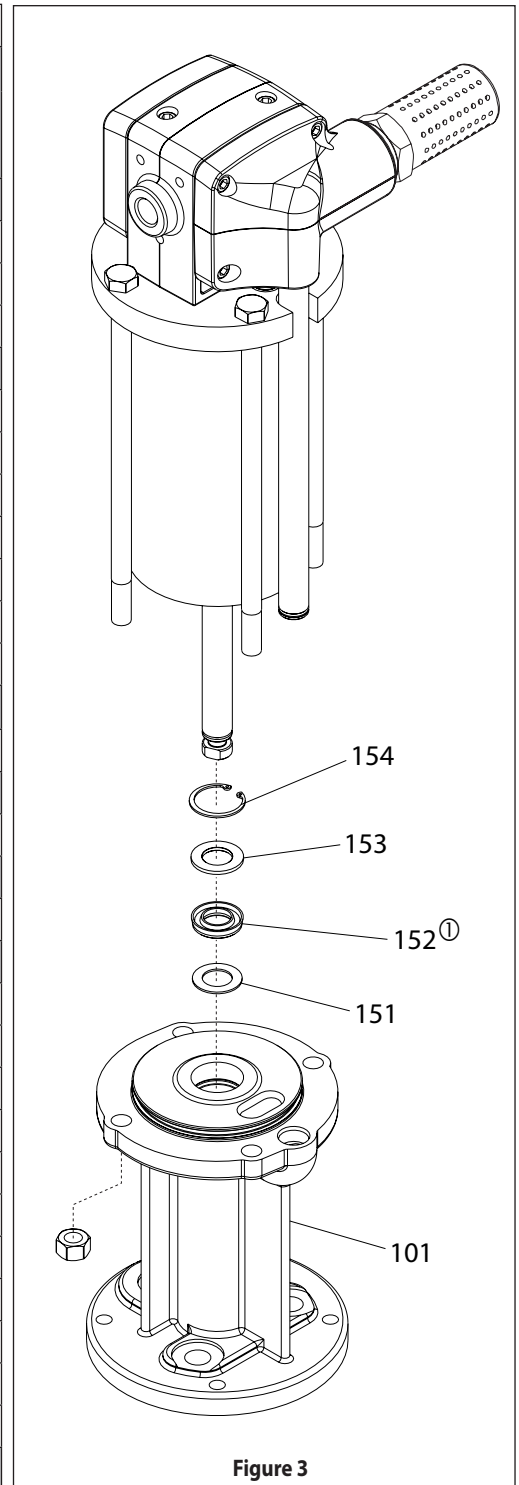


Figure 3

■ Indicates where parts are used.

✓ Items included in Service Kit (637489).

NOTE: Base styles and lower packings may vary from that shown on the cover. Refer to model number in the chart above.

For simplification of ordering and stocking, the Universal Service Kit contains service parts that can be used for every size of air motor. When repairing the motor, use only the parts that are needed for that specific motor. Extra service parts from the kit will remain after repair of the air motor.

MATERIAL CODE

| | |
|--------------------|---|
| [A] = Aluminum | [D] = Acetal |
| [B] = Buna Nitrile | [PP] = Polypropylene |
| [Br] = Brass | [SS] = Stainless Steel |
| [Bz] = Bronze | [Ef] = Epoxy - Fiberglass Filament Reinforced |
| [C] = Carbon Steel | |
| [CK] = Ceramic | |

DISASSEMBLY OF AIR MOTOR

NOTE: All threads are right hand.

1. Force the piston assembly up by pushing the (115) rod toward the top of the air motor.
2. Remove the (155) muffler/(201) muffler assembly for ease of disassembly.
3. Remove four (138) socket head screws from the (140) head manifold. Remove the (140) head manifold by pulling up and outward to remove from tubes (114) and (137).
4. Remove (141) major gasket from the (140) head manifold.
5. Remove tubes (114) and (137) by pulling upward.
6. Remove the four (113) O-rings from both tubes (114) and (137).

(continued on page 4)

DISASSEMBLY OF AIR MOTOR (CONT'D)

7. Remove the (142) valve plate and the (143) D-valve from the (144) valve housing.
8. Remove the four (138) socket head screws to extract the (150) pilot cover.
9. Remove the (148) pilot gasket from the (150) pilot cover.
10. Remove the (147) pilot valve plate and the (146) pilot insert from the (144) valve housing.
11. Remove the two (145) socket head screws from the (144) valve housing.
12. Remove the (144) valve housing by pulling straight up.
13. Remove the (124) O-ring, the (135) vent bushing, and the (136) U-cup from the (144) valve housing.
14. Remove the (128) O-ring and the (126) sleeve from the motor assembly by sliding it straight up.
15. Pull the (134) spool as far from the motor assembly as possible to expose the under side of the spool itself.
16. Locate and remove the (129) snap ring from the (134) spool utilizing snap ring pliers.
17. Lift to remove the (134) spool and remove the (133) U-cup.
18. Slide the (131) pin to remove the (132) driver, (130) washer, and (129) snap ring from the (120) trip rod assembly.
19. Remove the four (109) nuts from (121) hex head bolts.
20. Remove the four (121) bolts from the (122) head plate and the (101) base assembly.
21. Remove (122) head plate from the (112) air cylinder.
22. Remove the (111) O-ring, the (125) cap, and (123) O-ring from the (122) head plate.
23. Pull upward on (112) air cylinder until (203) piston assembly separates from the (101) base assembly. If, in this step, the (203) piston assembly is not pulled from the (101) base assembly, then remove it after removing the (112) air cylinder.
24. If the (112) air cylinder and (203) piston assembly are removed as one unit, then remove the (203) piston assembly from the (112) air cylinder.
25. Remove the (116) O-ring from the (117) piston.
26. Remove the (111) O-ring from (101) base assembly.
27. For model AF0460-XX, remove (154) snap ring, (153) washer, (152) U-cup, and (151) washer from the (101) base assembly. For all other models remove the (102) O-ring from the (101) base assembly.

REASSEMBLY OF AIR MOTOR

1. Apply grease to all O-rings, U-cups, and other rubber goods before installing.
2. For model AF0460-XX, install (151) washer, (152) U-cup, (153) washer, and (154) snap ring into the (101) base assembly. For all other models, install the (102) O-ring into the (101) base assembly.
3. Install the (111) O-ring in the groove on the (101) base assembly.
4. Install the (116) O-ring in the groove on the (117) piston.
5. Push (115) piston rod thru the (101) base assembly, being careful not to damage the lips of the (152) U-cup or the (102) O-ring.
6. Lubricate the inside diameter of the (112) air cylinder and slide it down over the (203) piston assembly and onto the (101) air motor base assembly. (See Figure 2 on page 2).

7. Align notch in (122) head plate with the port in (101) base assembly and press the (122) head plate down until it is seated against the (112) air cylinder. The (120) trip rod assembly must lead thru the center of the (122) head plate.
8. Assemble the four (121) bolts thru the (122) head plate and the (101) base assembly.
9. Assemble the four (109) nuts to (121) hex head bolts and tighten per specified torque sequence and value.
10. Pull the (120) trip rod assembly as far out of the air motor assembly as possible, slide the (123) O-ring over the (120) trip rod assembly and down into the gland found in the (122) head plate.
11. Slide the (125) cap over the (120) trip rod assembly and down into the bore found in the (122) head plate.
12. Slide the (129) snap ring first and the (130) washer secondly, onto the (120) trip rod assembly.
13. Slide the (132) driver onto the (120) trip rod assembly. Align the hole of the (132) driver with the hole in the (120) trip rod assembly and insert the (131) pin.
14. Assemble the (133) U-cup to the (134) spool. Take note of the (133) U-cup lips should point down towards the (122) head plate.
15. Slide the (134) spool onto the (120) trip rod assembly over the (132) driver and insert the (130) washer behind it. Utilizing snap ring pliers, assemble the (129) snap ring to the internal groove found in the (134) spool. Be certain that the (129) snap ring is fully engaged into the groove. Slide the (134) spool downward into the bore of the (122) head plate nesting on top of the (125) cap.
16. Lubricate the inside diameter of the (126) sleeve and slide it onto the (134) spool and locating it into the (125) cap. Take note that large taper on (126) Sleeve is to locate into (125) Cap.
17. Install the (128) O-ring onto the top gland of the (126) sleeve.
18. Install the (136) U-cup, the (135) vent bushing into the center bottom bore of the (144) valve housing. Take note that the (136) U-cup lips must be facing up towards the top of the (144) valve housing. Install the (124) O-ring into the bottom recess gland of the (144) valve housing.
19. Install the (144) valve housing to the motor assembly by sliding the center bore onto the (134) spool and the (126) sleeve. Take caution not to dislodge any of the O-rings (124 & 128). Take note to align the large valve pocket on the side of the (144) valve housing towards the notch in the (122) head plate.
20. Install the two (145) socket head screws thru the (144) valve housing and thread into the (122) head plate. The (144) valve housing may need to be rotated slightly to align the tapped holes. Tighten the (145) socket head screws per specified torque value.
21. Install the (146) pilot insert, with pocket facing outward, thru the (144) valve housing and into the (134) spool. The (134) spool may need to be turned to orient its' shallower slot to face the smaller pocket of the (144) valve housing.
22. Install the (147) pilot valve plate, with identification dimple facing outward, into the (144) valve housing covering the (146) pilot insert.
23. Install the (148) pilot gasket into the (150) pilot cover and assemble to the (144) valve block using four (138) socket head screws. Tighten to torque specifications.
24. Install the (143) D-valve, with pocket facing outward, thru the (144) valve housing and into the (134) spool.

(continued on page 5)

REASSEMBLY OF AIR MOTOR (CONT'D)

25. Install the (142) major valve plate, with identification dimple facing outward, into the (144) valve housing covering the (143) D-valve.
26. Install the four (113) O-rings onto both (114 & 137) tubes.
27. Loosely install the (137) tube into the bore in the (122) head plate.
28. Loosely install the (114) tube into the bore in the (101) base assembly.
29. Install the (141) manifold gasket into the (140) manifold and telescope onto both (114 & 137) tubes until the (113) O-rings are seated. Fasten the (140) manifold to the (144) valve block using four (138) socket head screws. Tighten to torque specifications.
30. Install the (155) muffler/(201) muffler assembly.

TROUBLESHOOTING

Air leakage out of main exhaust.

- Damaged (141) track gasket. Replace (141) track gasket.
- Worn (116) piston seal. Replace (116) piston seal.

Continual air leakage out (149) pilot exhaust.

- Worn (136) "U" cup. Damaged (148) track gasket. Replace (136) "U" cup and (148) track gasket.

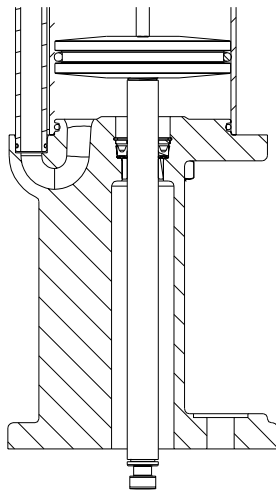
Air leakage out (149) pilot exhaust only during the down stroke.

- Worn (133) "U" cup. Rolled or damaged (128) "O" ring. Replace (133) "U" cup and (128) "O" ring.

Air leakage around (115) piston rod.

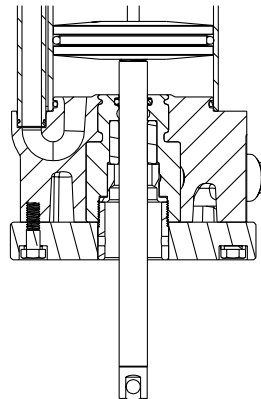
- Worn or damaged (102) "O" ring or (152) "U" cup depending on motor model. Replace (102) "O" ring or (152) "U" cup depending on motor model.

VARIETIES OF BASE (101) AND PISTON ROD END (115)



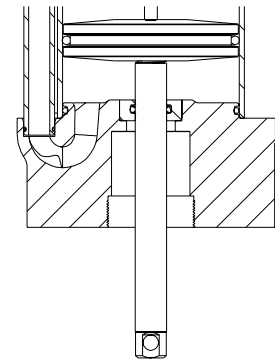
TYPE -0-

Divorced Base, Quick Coupled Rod
65023 BASE and
67489 PISTON ASSEMBLY



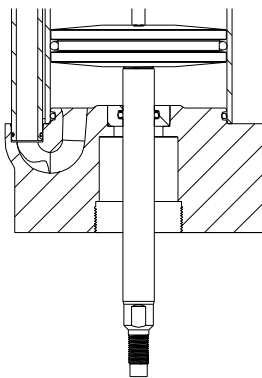
TYPE -1-

Divorced Base, Pin Coupled Rod
65020 BASE with 93958 INSERT and
67494 PISTON ASSEMBLY



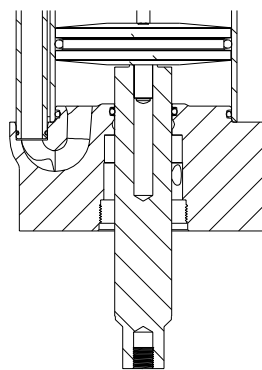
TYPE -2-

Coupled Base, Pin Coupled Rod
65775 BASE and
67493 PISTON ASSEMBLY



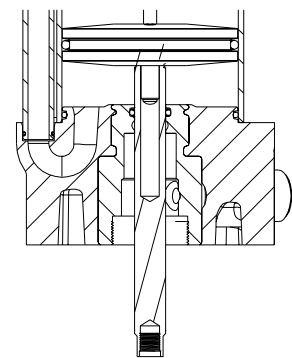
TYPE -3-

Coupled Base, Male Threaded Rod
65775 BASE and
67490 PISTON ASSEMBLY



TYPE -4-

Coupled Base, Female Threaded Rod
90074 BASE and
67492 PISTON ASSEMBLY



TYPE -5-

Coupled High Pressure Base,
Female Threaded Rod
65020 BASE and
67491 PISTON ASSEMBLY (4" Stroke)
or 97376 PISTON ASSEMBLY (6" Stroke)

Air Motor Base and Rod Combination

- 0 – Divorced pump base with quick coupled rod connection
- 1 – Divorced pump base with pin coupled rod connection
- 2 – Coupled pump base with pin coupled rod connection
- 3 – Coupled pump base with male threaded rod connection
- 4 – Coupled pump base with female threaded rod connection
- 5 – Coupled high pressure pump base with female threaded rod connection

Figure 4

Available Options for AF04XX-XX Air Motors

202
Optional
67442
Self-Relieving
Ball Valve
Regulator / Shut-Off
(AF0465-XX)

201
Optional
67445-1
Muffler Kit

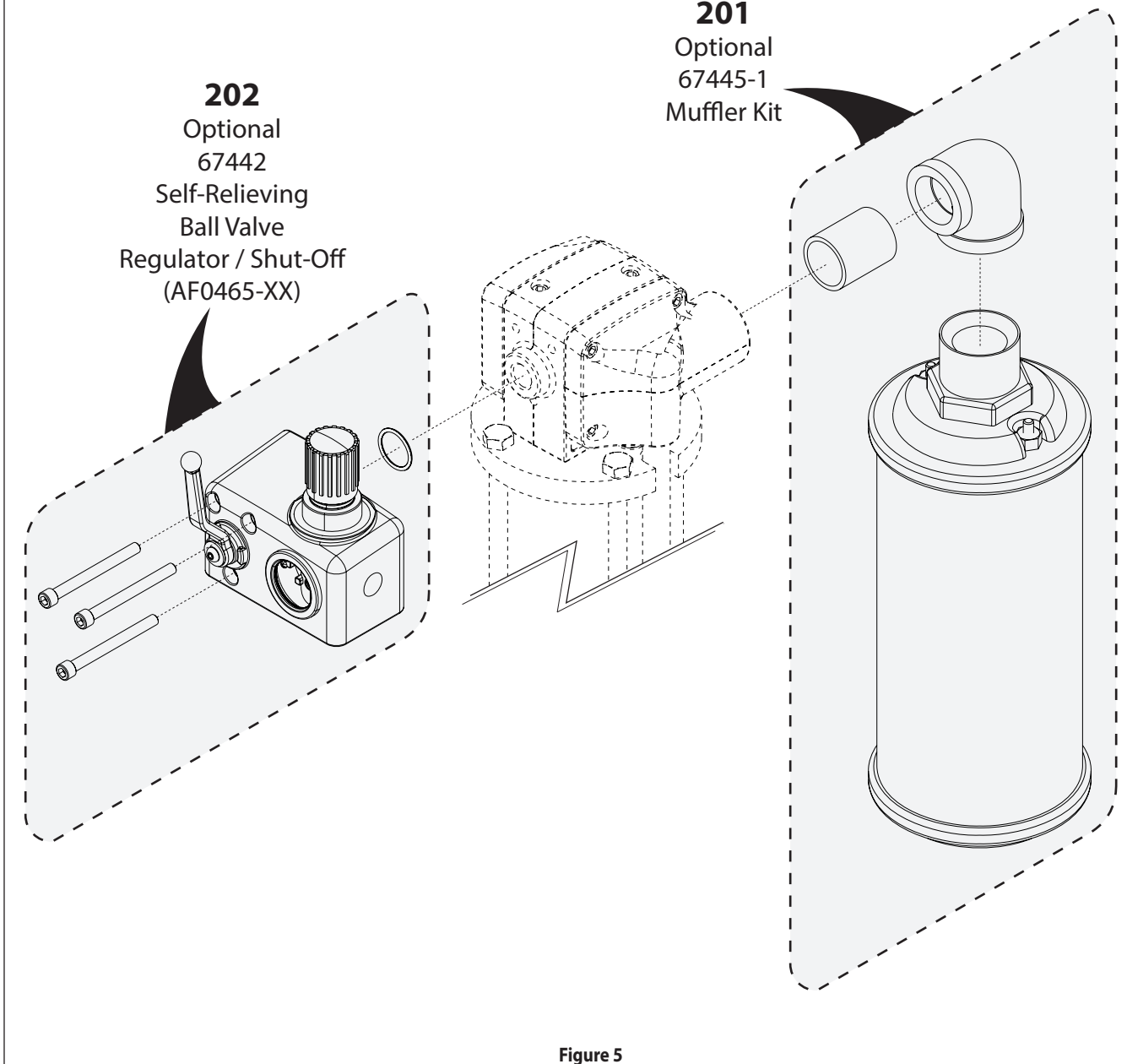
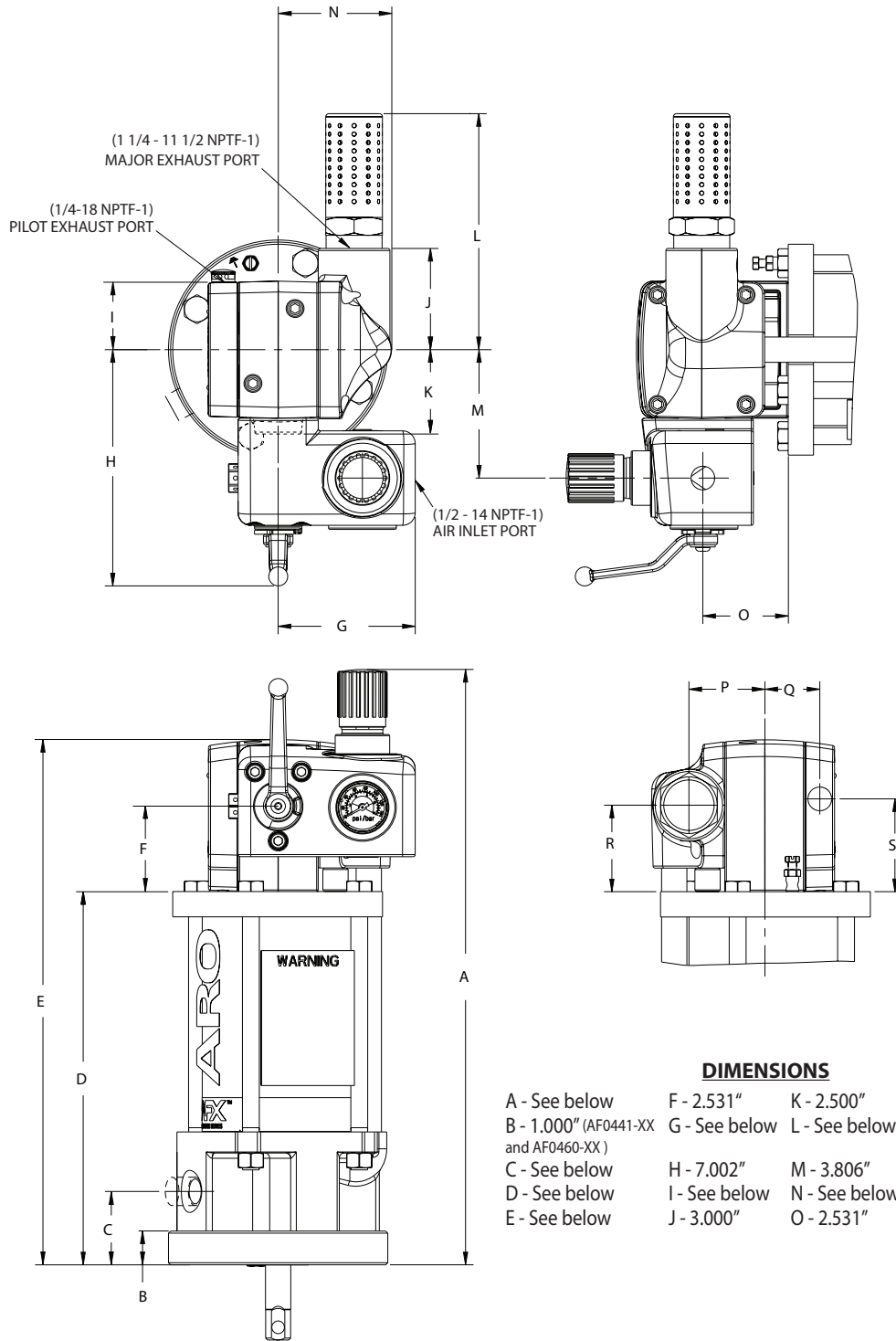


Figure 5

DIMENSIONAL DATA

Dimensions shown are for reference only, they are displayed in inches.



DIMENSIONS

| | | | |
|--------------------------------------|---------------|---------------|---------------|
| A - See below | F - 2.531" | K - 2.500" | P - See below |
| B - 1.000" (AF0441-XX and AF0460-XX) | G - See below | L - See below | Q - See below |
| C - See below | H - 7.002" | M - 3.806" | R - See below |
| D - See below | I - See below | N - See below | S - See below |
| E - See below | J - 3.000" | O - 2.531" | |

| | Model | | | | | | | | | | | |
|-----------|--------------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| | A | C | D | E | G | I | L | N | P | Q | R | S |
| AF0441-XX | 17.65" | 2.18" | 11.06" | 15.56" | 4.06" | 2.00" | 7.00" | --- | 2.25" | 1.63" | 2.56" | 2.75" |
| AF0442-XX | 16.33" | --- | 9.75" | 14.25" | 4.06" | 2.00" | 7.00" | 3.36" | 2.25" | 1.63" | 2.56" | 2.75" |
| AF0443-XX | 16.33" | --- | 9.75" | 14.25" | 4.06" | 2.00" | 7.00" | 3.36" | 2.25" | 1.63" | 2.56" | 2.75" |
| AF0444-XX | 16.33" | 1.50" | 9.75" | 14.25" | 4.06" | 2.00" | 7.00" | 3.36" | 2.25" | 1.63" | 2.56" | 2.75" |
| AF0445-XX | 16.65" | 1.18" | 10.06" | 14.56" | 4.06" | 2.00" | 7.00" | 3.36" | 2.25" | 1.63" | 2.56" | 2.75" |
| AF0460-XX | 23.27" | --- | 16.69" | 21.19" | 4.06" | 2.00" | 7.00" | --- | 2.25" | 1.63" | 2.56" | 2.75" |
| AF0465-XX | 18.65" | 1.18" | 12.06" | 16.56" | 4.06" | 2.00" | 7.00" | --- | 2.25" | 1.63" | 2.56" | 2.75" |

Figure 6

