

OPERATOR'S MANUAL

RM051S-XXX-XX

INCLUDING: OPERATION, INSTALLATION AND MAINTENANCE.
INCLUDE MANUALS: S-635 General Information (pn 97999-635).

RELEASED: 12-5-08
REVISED: 3-11-16
(REV: G)

RM051S-XXX-XX SINGLE POST LIFT / RAM

For use with 5 gallon / 20 liter drums (tapered or straight)



**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.
- **104302** for repair of R37121-100 regulator.
- **104453** for repair of P39344-110 filter / regulator.
- **637465** for repair of lift / ram seals.

SPECIFICATIONS

Model Series RM051S-XXX-XX
Maximum Working Pressure 125psig (8.6 bar)
Maximum Temperature Limits 10° F to 180° F (-12° C to 82° C)
Base Dimensions 14" x 17" (355.6 mm x 431.8 mm)
Height (lowered) (RM051S-BXX-XX) .. 32-7/8" (835.0 mm)
(RM051S-CXX-XX) 35" (888.8 mm)
(raised) (RM051S-BXX-XX) 50-3/8" (1279.5 mm)
(RM051S-CXX-XX) 52-1/2" (1333.3 mm)
Stroke 17-1/2" (444.5 mm)
Weight 78 lbs (35.4 kgs)
Center of Gravity 19.3" high (490.2 mm)
Noise Level @ 125psig (continuous duty) 87.7 dB(A) ①
① The pump sound pressure levels published here have been updated to an Equivalent Continuous Sound Level (LA_{eq}) to meet the intent of ANSI S1.13-1971, CAGI-PNEUROP S5.1 using four microphone locations.

GENERAL DESCRIPTION

The ARO model RM051S-XXX-XX single post lift / ram uses a 3-1/4" air powered cylinder, which is welded to a heavy gauge base. It is normally used to raise and lower a fluid handling pump and follower in and out of a standard 5 gallon / 20 liter drum, or when used as a ram, it can force high viscosity flowable material into the pump inlet.

When properly secured (see "General Information - Air Operated Lifts and Rams"), this unit has the ability to raise a pump to clear a standard 5 gallon / 20 liter drum. The operator is then able to easily remove the pump from the drum.

This lift / ram uses a rotary 3-way control valve which controls the air necessary to raise and lower the lift / ram. This unit includes an auxiliary manual air valve which is used to supply a controlled amount of air pressure to the bottom of the follower plate. When the control valve is in the "up" position, a small amount of air pressure applied under the follower plate will help raise the follower plate, pump and lift / ram by relieving the vacuum (see page 3).

IMPORTANT

This is one of four documents which support the system. Replacement copies of these forms are available upon request.

- ☒ RM051S-XXX-XX Model Operator's Manual (pn 97999-1335)
- ☐ S-635 General Information - Air Operated Lifts and Rams (pn 97999-635)
- ☐ P393XX-XXX Piggyback Filter / Regulator Operator's Manual (pn 100400-69)
- ☐ R371X1-XXX Regulator Operator's Manual (pn 100400-57)

RM051S-XXX-XX Single Post Lift / Ram

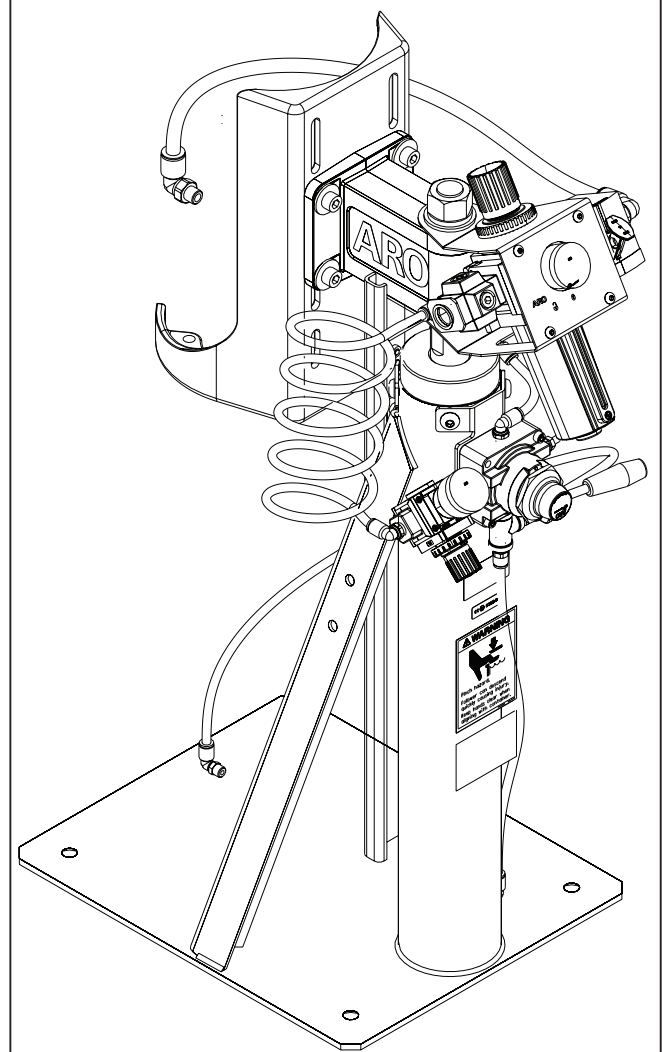


Figure 1

MODEL DESCRIPTION CHART

RM 05 1 S - X X X - X X

Container Size

05 - 5 gallon

Ram Style

1 - Single post

Ram Type

S - Standard duty

Ram Control Style

B - Basic control

C - Advanced control

Pump Mounting Option

Blank - No Follower

A - 5 gallon Container, Pump Mount Bracket

Ram Follower Style

Blank - No Follower

A - Standard Footprint

B - Large Footprint

C - Slip-On

D - Pipe Thread

Follower Plate Material

Blank - No Follower

A - Aluminium

E - Carbon Steel, Electroless Nickel Coating

S - Stainless Steel

T - Aluminium with PTFE Coating

Follower Seal Type and Material

Blank - No Follower

1 - Single-Lip, Nitrile

3 - Single-Lip, Polyethylene/Urethane

5 - Single-Lip, Nitrile /Polyethylene

7 - Single-Lip, EPR

8 - Single-Lip, Nitrile

9 - Single-Lip, Nitrile, Reduced OD

A - Double-Lip, Polyurethane

B - Double-Lip, EPR

C - Double-Lip, Nitrile

OPERATING AND SAFETY PRECAUTIONS

	WARNING = Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage.
	CAUTION = Hazards or unsafe practices which could result in minor personal injury, product or property damage.
	NOTICE = Important installation, operation or maintenance information.

- Read and heed all warnings, cautions and safety precautions before operating.

 **WARNING** READ THE GENERAL INFORMATION MANUAL INCLUDED FOR OPERATING AND SAFETY PRECAUTIONS AND OTHER IMPORTANT INFORMATION.

 **WARNING** Store and operate the lift on a level surface.

 **WARNING** ANCHOR THE LIFT BASE OF STATIONARY UNITS SECURELY TO A CONCRETE FLOOR. An improperly secured lift could be unsafe. 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 has been secured. 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" (50.8 mm) thick.

 **WARNING** When using a portability kit with a 5 gallon / 20 liter pail and the lift in the extended position, caution must be used due to the potential danger of tipping / tilting the unit.



Shock hazard.
Striking electrical fixtures can cause injury.

Keep the area overhead clear of electrical devices.

 **WARNING** PREVENT ELECTRICAL SHOCK. Be certain the area above the lift is clear of electrical fixtures, devices and wiring. 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.



Pinch hazard.
Follower can descend quickly, causing injury.

Keep hands clear when aligning with container.

 **WARNING** PINCH HAZARD. Follower can descend quickly, causing injury. Keep hands clear when aligning

with container. In the raising and lowering function, the lift could get hung up or the descent could be temporarily restricted. The lift could, in some situations, drop suddenly and be hazardous. If the follower plate does not enter the drum properly, **DO NOT ATTEMPT TO RE-POSITION IT WITH YOUR HANDS.** Release the downward pressure, raise the lift, re-align the drum and restart.

 **WARNING** STAND CLEAR. When raising or lowering the lift, keep clear and operate from a safe position.



Hazardous pressure.
Can result in injury or property damage.

Do not exceed maximum inlet air pressure.

 **WARNING** HAZARDOUS PRESSURE. Do not exceed maximum inlet air pressure of 125psig (8.6 bar). Operating lift at higher pressure may cause lift damage and / or personal injury and / or property damage. Do not service or clean pump, hoses or dispensing valve while the system is pressurized.

 **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** Place the main valve in the "neutral" (center) position before air pressure is directly connected or turned on to the system.

 **WARNING** Depressurize the lift / ram before performing maintenance by disconnecting the main air line and rotating the main valve to relieve pressure. Replacement warning label ("Depressurize" / pn 97165) is available upon request.

 **CAUTION** Be certain all operators of this equipment have been trained for safe working practices, understand it's limitations and wear their safety goggles / equipment as required.

 **CAUTION** When the lift is in the raised position, the pump mount may be rotated away from the bucket. Rotating the pump mount 360° may damage tubing.

 **NOTICE** To extend seal life, lubricate seals with Gadus® S2 U1000 grease upon reassembly.

 **NOTICE** To prevent premature failure of the piston rod and / or seals, it is good practice to keep the piston rod clean and free of debris and any other type of contamination.

LIFT / RAM INSTALLATION

 **WARNING** Failure to properly install the lift assembly can result in severe injury and property damage. Read the warnings above.

1. This lift /ram assembly comes completely assembled.
2. Establish the desired location for the lift / ram and pay special attention to the work area above. This area above the lift must be open, without obstructions and safely away from any electrical devices.
3. **THE LIFT MOUNTING BASE PLATE MUST BE SECURELY ANCHORED TO THE CONCRETE FLOOR.** The mounting plate itself can be used as a template for establishing the proper anchor locations.
4. Assemble the pump to the pump mounting plate. **NOTE:** The combined weight of the piston pump and accessories (follower plate, etc.) **must not** exceed 150 lbs (68.0 kg).

5. Install the pump air hose and follower plate air hose from the control valve.
6. Assemble the vent plug to the follower plate.

NOTE: When assembling air line to the lift / ram air inlet, hold the air inlet port with a wrench to eliminate possible damage to filter - regulator connections.

NOTE: The ram was tested at the factory. The unit should be generally checked over for leakage, because the fittings on the system may have loosened in shipment.

NOTE: Re-torque all fasteners before operation.

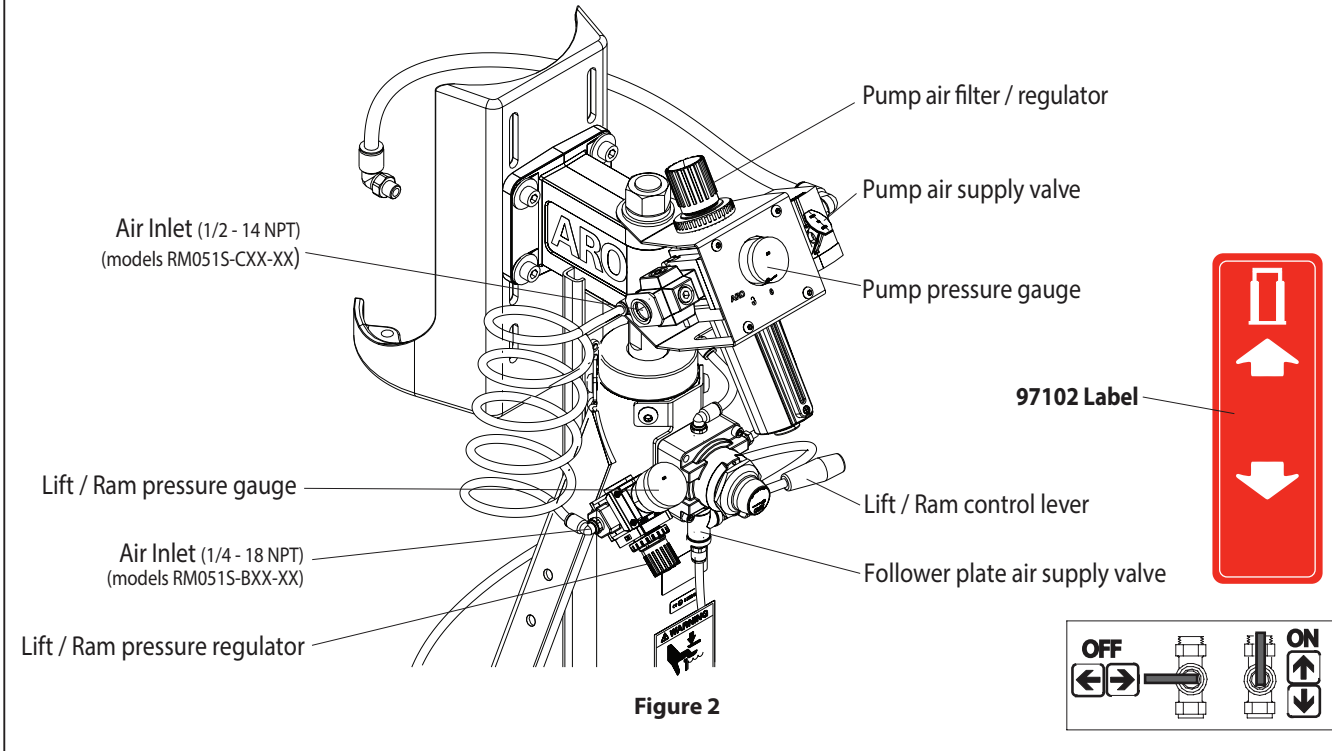
NOTE: If material leakage occurs around the follower plate, check the lift / ram air pressure and check all fittings and fasteners to be sure they are secure.

OPERATING INSTRUCTIONS

OPERATING INSTRUCTIONS / INITIAL SETUP PROCEDURE.

⚠ WARNING STAND CLEAR WHEN RAISING OR LOWERING THE LIFT. Read the warnings on page 2.

LIFT / RAM, PUMP AND FOLLOWER PLATE AIR CONTROLS



TO RAISE LIFT, (THE FIRST TIME):

1. Take note of the pump / drum clearance above. Be certain the lift / ram is clear of any objects above. Also, refer to "Operating and Safety Precautions", found on page 2.
2. Connect the air supply (125psig / 8.6 bar maximum) to the air inlet. Adjust the air pressure on the lift / ram pressure regulator (turn knob clockwise) to 20psig (1.4 bar).
3. Shift the control valve lever to the "up" position.
4. Raise the lift / ram high enough to clear the height of the drum. Stop the lift upward travel by moving the control valve lever to the "neutral" (center) position.
5. Once the lift / ram assembly and pump are in the "up" position, place and center an opened drum of material on the lift / ram base.
6. Lubricate the lower follower wiper plate seal with grease.
NOTE: Make certain the grease is compatible with the material being dispensed. This ensures a smooth fit into the drum, as well as prevents curing type compounds from bonding to the seal.
7. Check the vent plug on the follower plate to be sure it easily threads in and out. It is recommended to lubricate the threads of the plug to help prevent possible set up of the compound at this point.

TO LOWER LIFT:

⚠ WARNING PINCH HAZARD. Follower can descend quickly, causing injury. Keep hands clear when aligning with container. Read the warnings on page 2.

NOTE: Be certain the follower plate vent plug has been removed so that the air trapped between the follower and the material is allowed to escape from this vent.

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

1. Shift the control valve lever to the "down" position and proceed to lower the pump.
2. Replace the vent plug once the material begins to ooze from the vent opening.
3. Models RM051S-CXX-XX: The unit is now ready for operation. Open the pump air supply valve. Adjust the air pressure on the pump filter / regulator (turn the pump regulator knob clockwise) until the pump begins to cycle.
4. Trigger the gun to prime the pump with material.

TO RAISE LIFT, (NORMAL OPERATION):

1. Models RM051S-CXX-XX: Close the pump air supply valve.
2. Shift the control valve lever to the "up" position.
3. Raise the lift / ram high enough to clear the height of the drum. Stop the lift upward travel by moving the control valve lever to the "neutral" (center) position.

TO CHANGE DRUM:

NOTE: The control valve lever should be in the "neutral" position and the pump air supply valve should be closed.

1. To avoid damage, **DO NOT OVER-PRESSURIZE THE DRUM.**
2. Open the follower plate air supply valve to allow air under the follower plate.
3. Shift the control valve lever to the "up" position.
4. Place and center a new drum into position. Remove cover.

PARTS LIST / RM051S-XXX-XX

Item	Description (size)	Qty	Part No.
1	Nut (M24 x 3 - 6h)	(2)	96693
2	Lock Washer (24.5 mm i.d. x 40 mm o.d.)	(2)	94036746
3	Washer (25 mm i.d. x 44 mm o.d.)	(1)	96705611
④ 4	"O" Ring (3/16" x 3-1/4" o.d.)	(2)	Y325-336
5	Piston	(1)	96677
④ 6	"O" Ring (1/8" x 1-1/4" o.d.)	(1)	Y325-214
7	Stop	(1)	96679
8	Piston Rod	(1)	96671
9	Base and Cylinder Assembly	(1)	96828
10	Tubing (5/16" o.d. x 18")	(1)	94980-(①)
11	Connector (1/4 - 18 NPT x 5/16" o.d. tube)	(2)	59474-158
12	Pipe Tee (1/4 - 18 NPT)	(1)	Y43-32-C
13	Bracket Assembly	(1)	97095
14	Rotary Lever Valve	(1)	M512LR
15	Male Elbow (1/4 - 18 NPT x 5/16" o.d. tube)	(4)	59756-158
16	Tubing (5/16" o.d. x 3-3/4")	(1)	94980-(①)
17	Washer (models RM051S-BXX-XX)	(1)	75682
18	Ram Head	(1)	96668-1
19	Washer (10.5 mm i.d. x 30 mm o.d.)	(8)	96756
20	Lock Washer (10.2 mm i.d. x 18.1 mm o.d.)	(4)	96753918
21	Nut (M10 x 1.5 - 6h)	(4)	96691
22	Pump Mount	(1)	96692
23	Cap	(1)	96674
④ 24	Wear Ring (1-3/8" i.d. x 1-1/2" o.d.)	(1)	96753
④ 25	"U" Cup (3/16" x 1-3/4" o.d.)	(1)	96752
26	Tubing (5/16" o.d. x 30")	(1)	94980-(①)
27	Male Elbow (1/8 - 27 NPT x 5/16" o.d. tube)	(1)	59756-58
28	Washer	(1)	75682
29	Nipple (1/4 - 18 NPT x 7/8")	(2)	Y27-12-C
30	Shut-Off Valve (1/4 - 18 NPT)	(1)	Y28-1
31	Cap Screw (M6 x 1 - 6g x 40 mm)	(2)	96719
32	Cap Screw (M10 x 1.5 - 6g x 35 mm)	(4)	96702170
33	Button Head Screw (M10 x 1.5 - 6g x 18 mm)	(4)	96696
34	Gauge (0 - 160psig / 0 - 11 bar)	(1)	29850
35	Regulator (1/4 - 18 NPT)	(1)	R37121-100

DISASSEMBLY

1. Raise the pump, follower and ram out of the drum.
2. Disconnect the air supply and depressurize the ram by rotating the (14) valve into the "up" and "down" positions.
3. Models RM051S-CXX-XX: Disconnect (39) tubing from (50) male elbow and (42) hose from (40) male elbow.
4. Disconnect (26) tubing from follower and remove pump from ram.
5. Unthread (1) nut and remove (2 and 28) washers.
6. Remove (22) pump mount and components and (17) washers.
7. Models RM051S-CXX-XX: Remove (51) bracket and pump air control components.
8. Remove (58) channel and (33) screws to release Guide Bracket Assembly (56) from (9) Base and Cylinder Assembly.
9. Disconnect (10 and 16) tubing.
10. Remove (33) screws, releasing (13) bracket assembly and ram air control components.
11. Remove (23) cap from (9) base and cylinder assembly and (8) piston rod.
12. Remove (8) piston rod and components from (9) base and cylinder assembly.
13. Remove (1) nut, releasing (2 and 3) washers, (5) piston and (7) stop.

Item	Description (size)	Qty	Part No.
36	Decal (warning)	(1)	93922
37	Muffler (1/4 - 18 NPT)	(1)	20313-2
53	Clamp Spacer Kit	(2)	104394
54	Pipe Adapter	(1)	104474-2
55	Guide	(2)	96947
56	Bracket Assembly	(1)	96949
57	Screw	(4)	96704754
58	Channel	(1)	96951
Items listed below used on models RM051S-CXX-XX only			
38	Male Elbow (1/4 - 18 NPT x 1/2" o.d. tube)	(1)	59756-162
39	Tubing (1/2" o.d. x 35")	(1)	94978-(②)
40	Male Elbow (1/4 - 18 NPT x 5/16" o.d. tube)	(2)	59756-158
41	Filter / Regulator (1/2 - 14 NPT)	(1)	P39344-110
42	Self-Storing Hose (5/16" o.d. x 60")	(1)	628005-(③)
43	Washer (6.4 mm i.d. x 12 mm o.d.)	(4)	97115
44	Nut (M6 x 1 - 6h)	(4)	97118
45	Manifold Block (1/2 - 14 NPT)	(1)	104413-4-2
46	Pipe Plug (1/4 - 18 NPT x 13/32")	(3)	Y227-3-L
47	Cap Screw (M6 x 1 - 6g x 16 mm)	(4)	97105
48	Gauge (0 - 160psig / 0 - 11 bar)	(1)	29850
49	Lock-Out Valve (1/2 - 14 NPT)	(1)	104392-4
50	Male Elbow (1/2 - 14 NPT x 1/2" o.d. tube)	(2)	59756-362
51	Bracket	(1)	96694
52	T - Type Wall Mount	(2)	104401
①	Bulk Tubing (5/16" o.d. x 100')	(1)	94980-100
②	Bulk Tubing (1/2" o.d. x 100')	(1)	94978-100
③	Bulk Coil Tubing (5/16" o.d. x 100')	(1)	628005-100
④	Gadus S2 U1000 packet	(1)	94833
④	Items included in service kit	(1)	637465
⑤	Anti-Rotation Kit	(1)	67479

REASSEMBLY

1. Grease and assemble (4 and 6) "O" rings to (5) piston.
2. Assemble (7) stop, (5) piston and (3) washer to (8) piston rod, securing with (2) lock washer and (1) nut. **NOTE:** Tighten (1) nut to 75 ft lbs (101.7 Nm).
3. Carefully slide piston rod and components into (9) base and cylinder assembly.
4. Grease and assemble (4) "O" ring, (25) "U" cup (note the lip direction) and (24) wear strip to (23) cap.
5. Assemble (23) cap over the end of (8) piston rod and into (9) base and cylinder assembly, being careful not to damage (25) "U" cup.
6. Place (13) bracket assembly and ram air control components into place and secure with (33) screws. **NOTE:** Tighten (33) screws to 20 ft lbs (27.1 Nm)
7. Models RM051S-BXX-XX: Assemble (58) channel with (56) bracket assembly into (8) piston rod, tighten (33) screws to 20 ftlbs (27.1 Nm), one (17) washer, (18) ram head and components and (28) washer to (8) piston rod. Models RM051S-CXX-XX: Assemble (58) channel with (56) bracket assembly into (8) piston rod, tighten (33) screws to 20 ftlbs (27.1 Nm), (51) bracket and pump air control components to (18) ram head. Assemble (18) ram head and components, (51) bracket and components and (28) washer to (8) piston rod.
8. Assemble (2) lock washer and (1) nut. **NOTE:** Tighten (1) nut to 75 ft lbs (101.7 Nm).
9. Assemble pump to (22) pump mount.
10. Reconnect all tubing.

👉 ASSEMBLY TORQUE REQUIREMENTS 👈

NOTE: DO NOT OVERTIGHTEN FASTENERS.

- (1) nut, 75 ft lbs (101.7 Nm).
 (31) cap screw, 95-100 in. lbs (10.7 - 11.3 Nm).
 (32) cap screw, 20 ft lbs (27.1 Nm).
 (33) screw, 20 ft lbs (27.1 Nm).
 (53) screw, 4 (0,45 Nm)
 (57) screw, 15-20 (1.69-2.25 Nm)

LUBRICATION / SEALANTS

- ① Lubricate all "O" rings, "U" cups and mating parts with Gadus S2 U1000.
② Apply anaerobic pipe sealant to male pipe threads at assembly.
★ For RM051S-CXX-XX, remove the washer (item 17) shown in View "B".

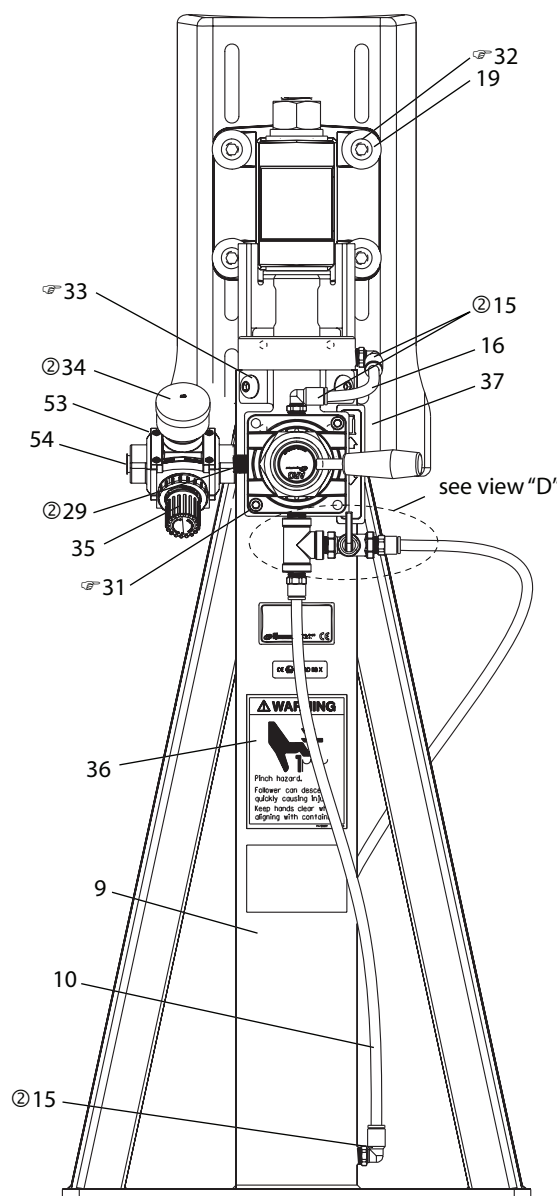
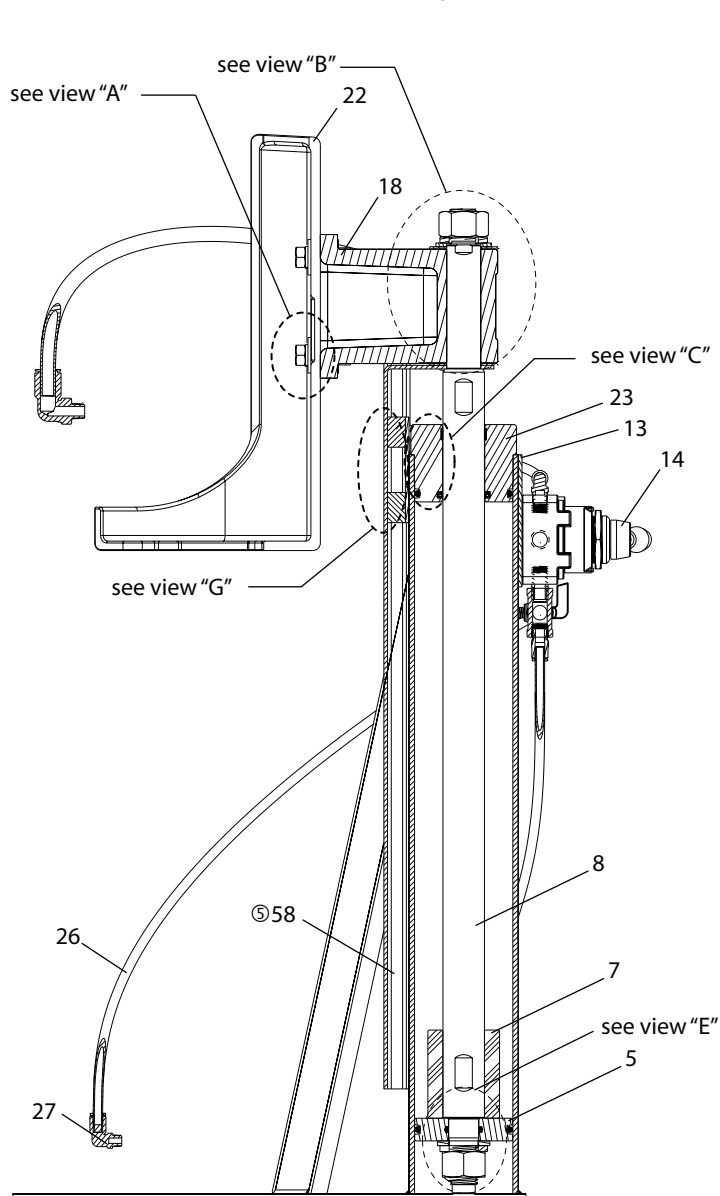
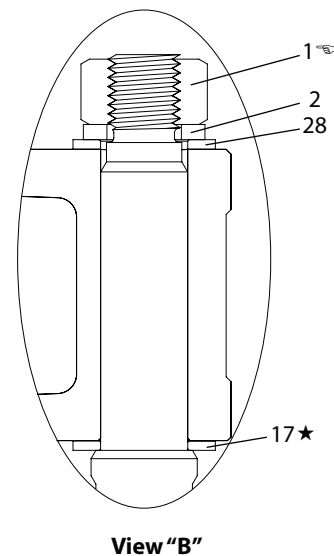
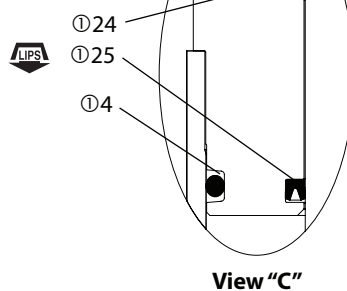
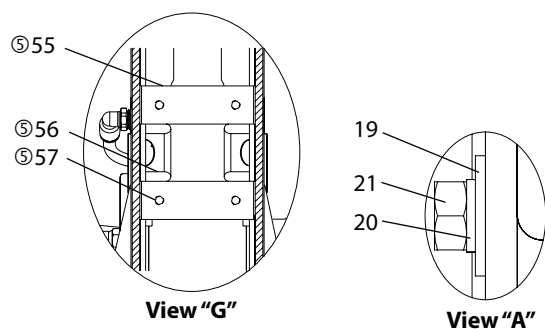
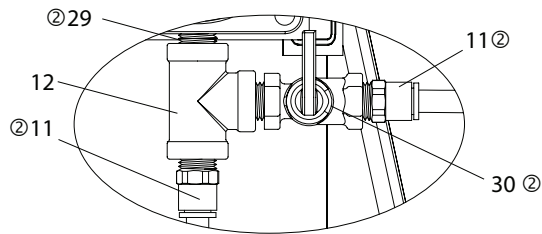
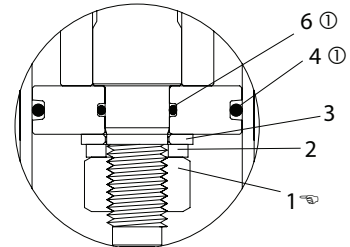


Figure 3

PARTS LIST / RM051S-XXX-XX



View "D"



View "E"

PARTS LIST / RM051S-CXX-XX

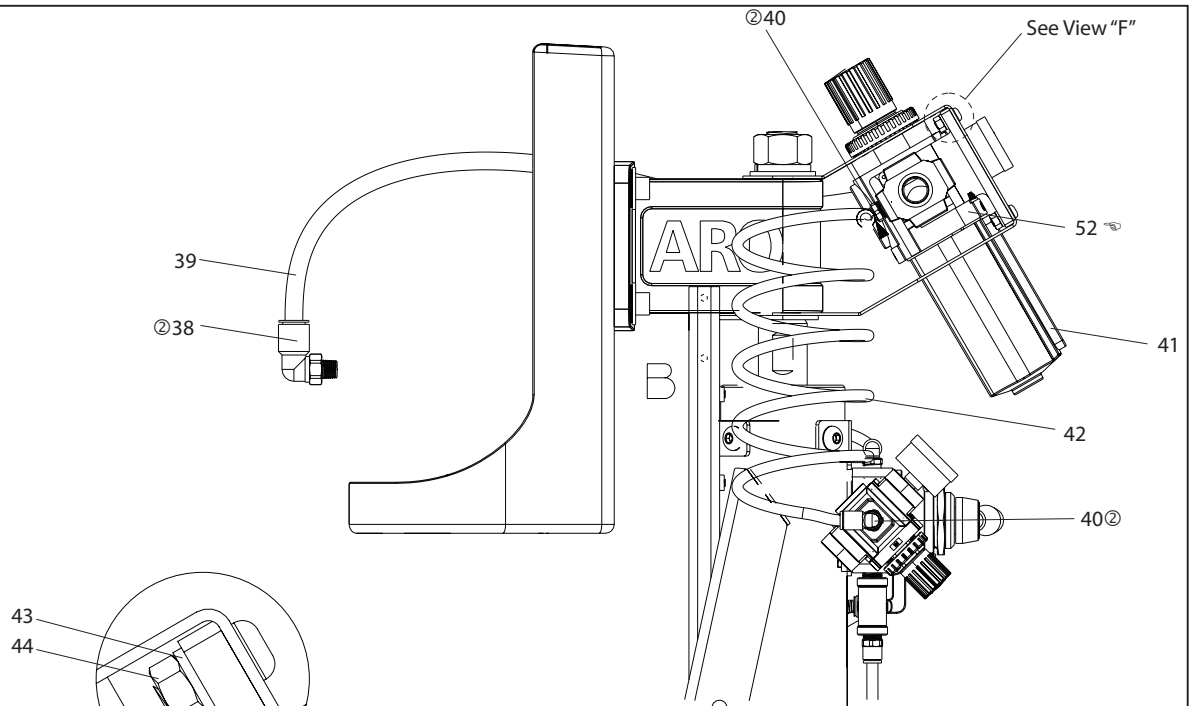
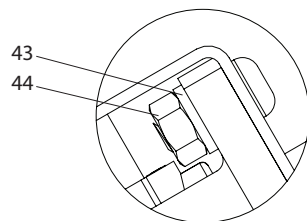


Figure 4



View "F"

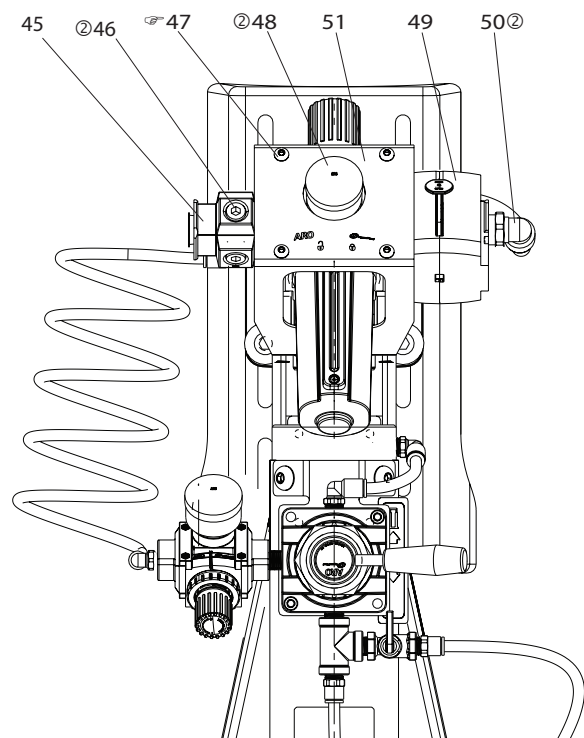


Figure 5

ASSEMBLY TORQUE REQUIREMENTS

NOTE: DO NOT OVERTIGHTEN FASTENERS.

(1) nut, 75 ft lbs (101.7 Nm).

(47) cap screw, 95 - 100 in. lbs (10.7 - 11.3 Nm).

(52) screw, 17 in. lbs (1.9 Nm).

LUBRICATION / SEALANTS

① Lubricate all "O" rings, "U" cups and mating parts with Gadus S2 U1000.

② Apply anaerobic pipe sealant to male pipe threads at assembly.

ACCESSORIES

67425 Portability Kit

Item	Description (size)	Qty	Part No.
P1	Handle	(1)	96805
P2	Button Head Screw (M10 x 1.5 - 6g x 40 mm)	(4)	97091
P3	Nut (M10 x 1.5 - 6h)	(4)	96691
P4	External Retaining Ring	(2)	Y180-62

Item	Description (size)	Qty	Part No.
P5	Wheel (5/8" o.d. shaft x 10" diameter)	(2)	96743
P6	Axle Assembly	(1)	67411
P7	Flange Nut (M12 x 1.75 - 6h)	(2)	95053-1
P8	Flat Head Bolt (M12 x 1.75 - 6g x 25 mm)	(2)	96690

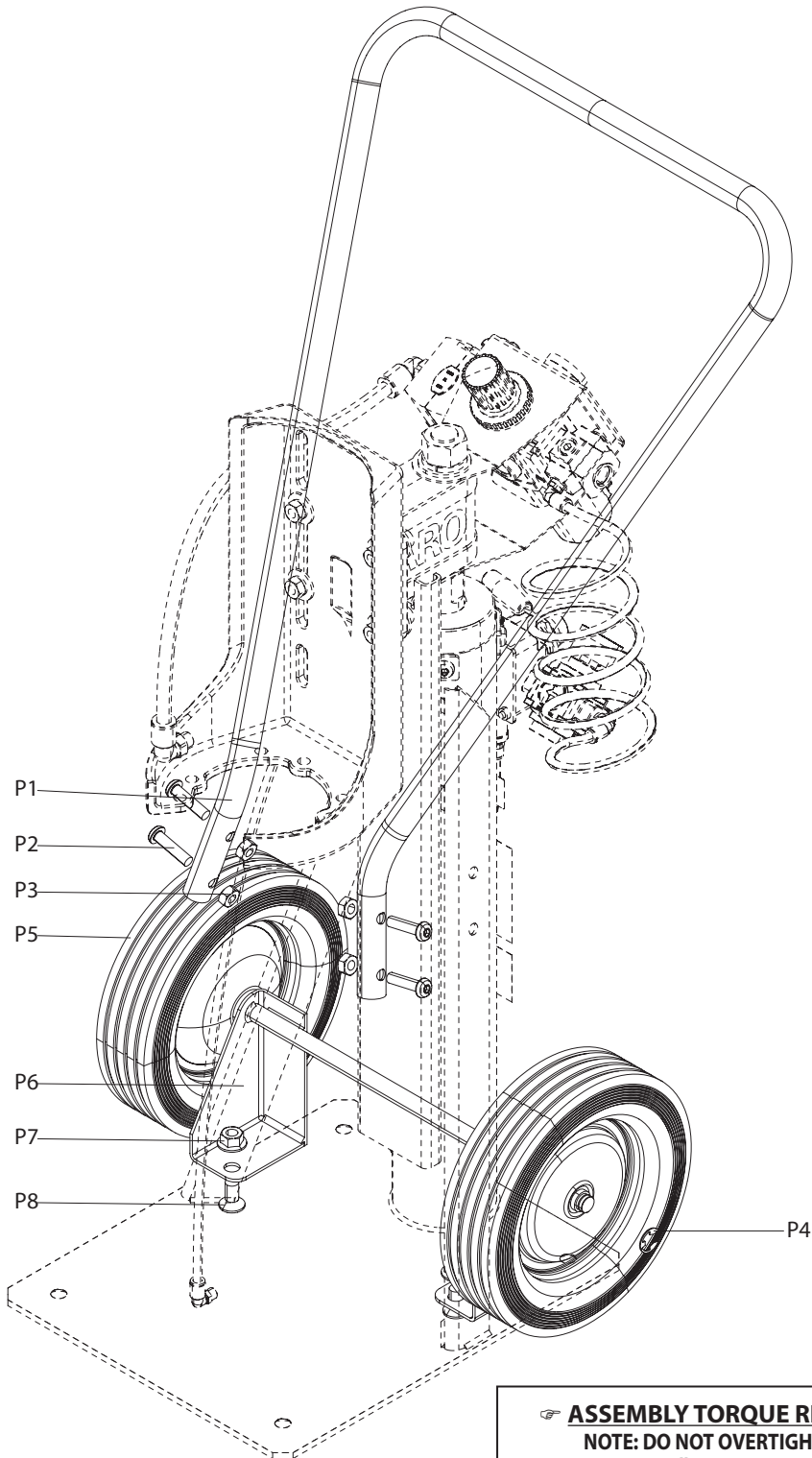


Figure 6

ASSEMBLY TORQUE REQUIREMENTS

NOTE: DO NOT OVERTIGHTEN FASTENERS.

(P2) screw, 80 - 85 in. lbs (9.0 - 9.6 Nm).

(P8) bolt, 30 ft lbs (40.7 Nm).

MODEL DESCRIPTION / FOLLOWER PLATE OPTIONS

Model	Description	Pump Size	Follower Material	Seal Material	Follower Asm.
RM051S-XXA-A7	Standard Footprint	Small	Aluminium	ERP, Single Tube	67347-2
RM051S-XXA-A8				Nitrile, Single Tube	67347-1
RM051S-XXA-T7			Aluminium with PTFE Coating	ERP, Single Tube	67347-12
RM051S-XXA-T8				Nitrile, Single Tube	67347-11
RM051S-XXA-E1			Carbon Steel, Electroless Nickel Coating	Nitrile, Single Lip	67342-2
RM051S-XXA-E3				Polyethylene/Urethane, Single Lip	67342-1
RM051S-XXA-E5				Nitrile/Polyethylene, Single Lip	67342-3
RM051S-XXA-E9				Nitrile, Single Lip, reduced OD	66469
RM051S-XXA-EA				Polyethylene, Double Lip	66732-1
RM051S-XXA-EB				ERP, Double Lip	66732-2
RM051S-XXA-EC				Nitrile, Double Lip	66732
RM051S-XXB-A1	Large Footprint	Large	Aluminium	Nitrile, Single Lip	67362-2
RM051S-XXB-A3				Polyethylene/Urethane, Single Lip	67362-1
RM051S-XXB-A5				Nitrile/Polyethylene, Single Lip	67362-3
RM051S-XXC-E1	Slip-On	Small	Carbon Steel, Electroless Nickel Coating	Nitrile, Single Lip	651840-2
RM051S-XXC-E3				Polyethylene/Urethane, Single Lip	651840-1
RM051S-XXC-E5				Nitrile/Polyethylene, Single Lip	65840-3
RM051S-XXC-EA				Polyethylene, Double Lip	66731-1
RM051S-XXC-EB				ERP, Double Lip	66731-2
RM051S-XXC-EC				Nitrile, Double Lip	66731
RM051S-XXC-S3			Stainless Steel	Polyethylene/Urethane, Single Lip	651841-1
RM051S-XXD-S3	Pipe Thread			Polyethylene/Urethane, Single Lip	651842-1

FOLLOWER PLATE

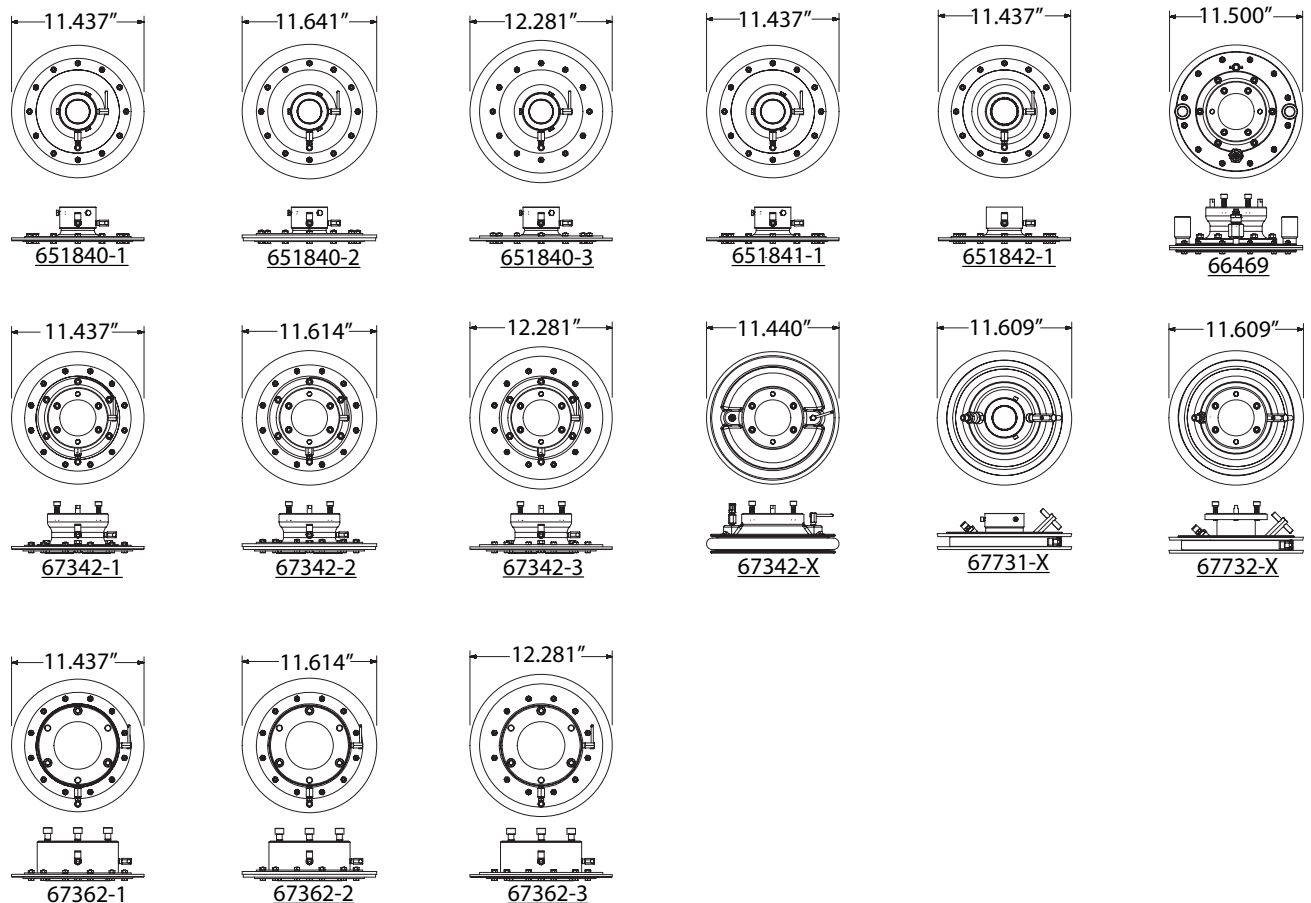


Figure 7

DIMENSIONAL DATA

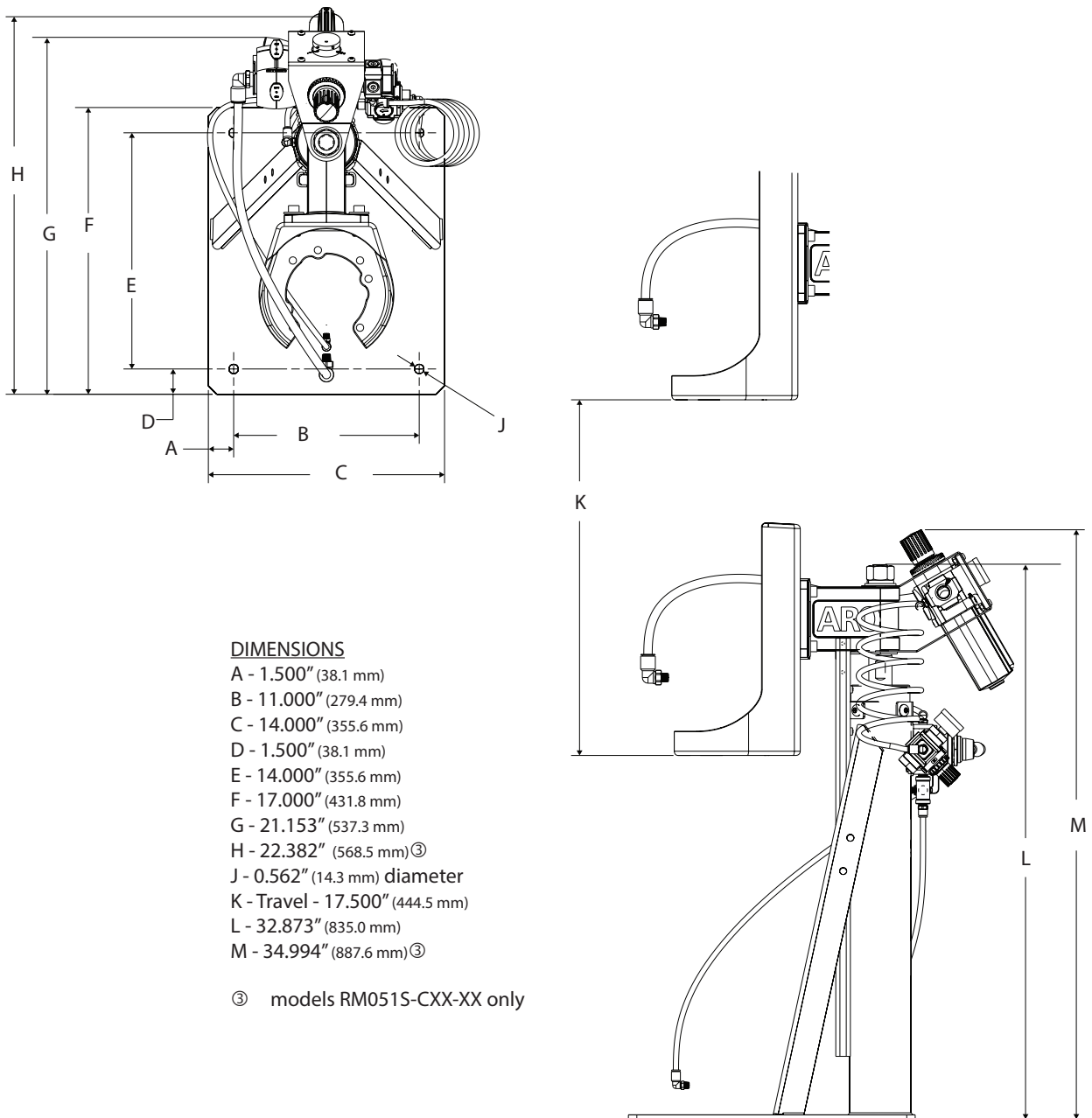


Figure 8

NOTES
