

12:1 Ratio Stainless Steel

DynaMite™ 190 Extruder

308302L

EN

Used for precision dispense of single component viscous materials for 1 quart (.95 liter) and 1 gallon (3.79 liter) containers. For professional use only.

Not approved for use in European explosive atmosphere locations.

Part No. 235871, Series D

Includes Pump and Ram

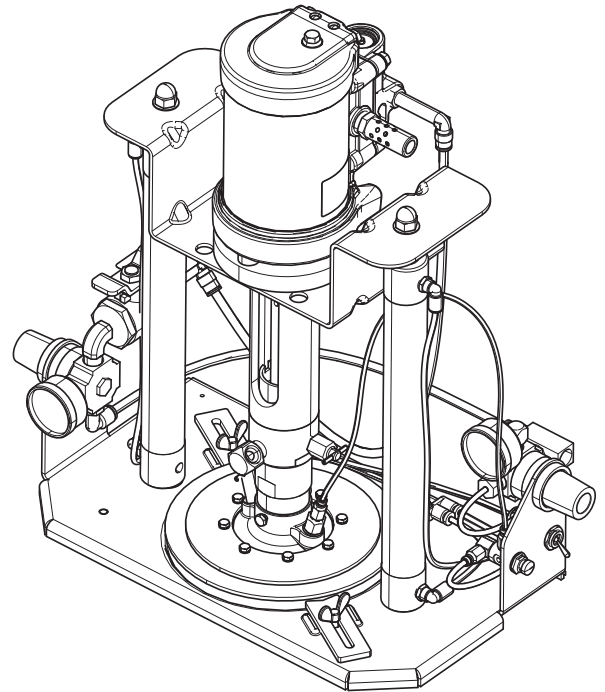
1200 psi (8.3 MPa, 83 bar) Maximum Fluid Working Pressure

100 psi (0.7 MPa, 7 bar) Maximum Air Inlet Pressure



Important Safety Instructions

Read all warnings and instructions in this manual and in all related manuals. Save all instructions.



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Related Manuals

Manuals	
Part	Description
3A3442	NXT Air Motor Repair and Parts Manual









Part Numbers

Part No.	Maximum Fluid Working Pressure	Description
235871	1200 psi (8.3 MPa, 83 bar)	DynaMite 190 Extruder Assembly, Series D -  Approved
235870	1200 psi (8.3 MPa, 83 bar)	Pump Assembly, Series D
224908*		Wiper Plate, Series A, 1 gallon (3.79 liter) size
224923*		Wiper Plate, Series B, 1 quart (.95 liter) size

* *Wiper plates must be ordered separately.*

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h1 style="margin: 0;">WARNING</h1>	
    	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from spray gun, dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point the dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.
 	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.

WARNING



FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:



- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).



- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.



- Use only grounded hoses.
- Hold dispensing device/gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read Safety Data Sheet (SDS) to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.



⚠️ WARNING



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheet (SDS) from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Component Identification

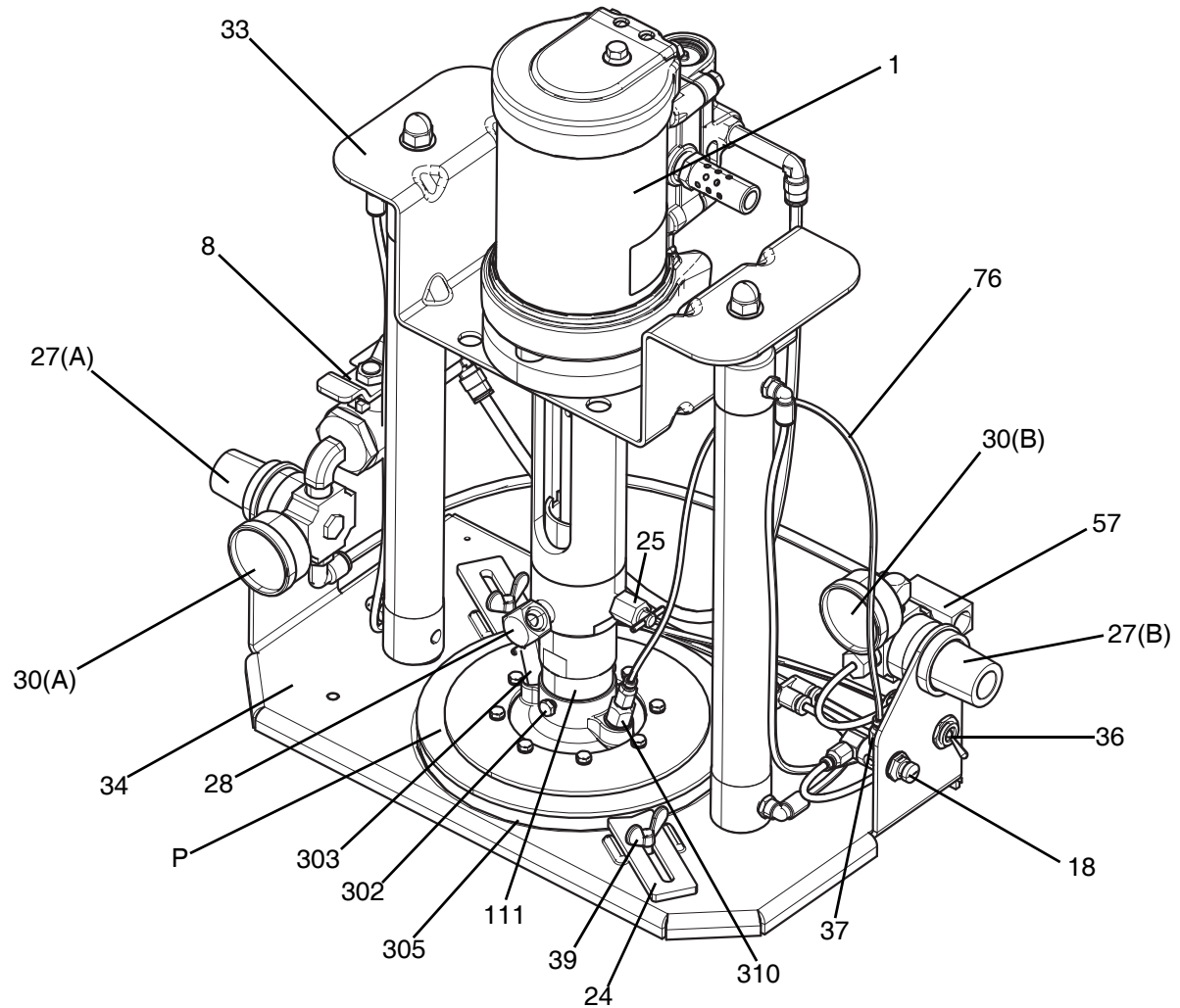


FIG. 1: System Components

Key:

P	Wiper Plate Assembly	34	Base
1	Pump	36	Ram Director Valve
8	Bleed-Type Mater Air Valve	37	Air Assist Valve Connector
18	Air Assist Valve (Push Button)	39	Clamp Wing Screws
24	Clamps	57	Air Inlet for Main Air Line
25	Pump Bleeder Valve	76	Air Tube to Wiper Plate
27 (A)	Pump Air Regulator	111	Pump Fluid Intake Housing
27 (B)	Ram Air Regulator	302	Wiper Plate Capscrews
28	Fluid Outlet Fitting	303	Wiper Bleed Valve
30 (A)	Pump Air Pressure Gauge	305	Wiper Plate Ring
30 (B)	Ram Air Pressure Gauge	310	Wiper Plate Connector
33	Pump Bracket		

Installation

Grounding



The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

Pump: unscrew the green grounding screw (W) and washer (X) located on the ram base (Z). Install a 1.5 mm² (12 awg) minimum ground wire (Y) and secure with the screw and washer. Connect the other end of the ground wire to a true earth ground.

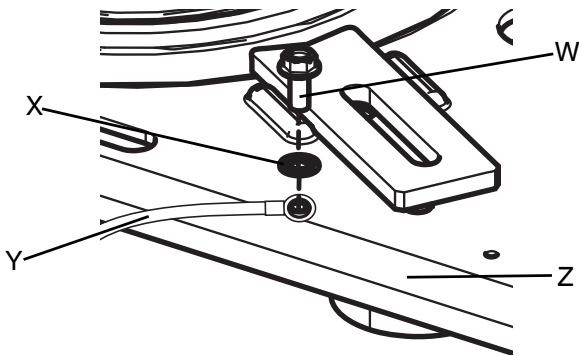


Fig. 2: Grounding Connection on Pump

Air and fluid hoses: use only electrically conductive hoses with a maximum of 500 ft. (150 m) combined hose length to ensure grounding continuity. Check electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.

Air compressor: follow manufacturer's recommendations.

Spray gun / Dispense valve: ground through connection to a properly grounded fluid hose and pump.

Fluid supply container: follow local code.

To maintain grounding continuity when flushing or relieving pressure: hold metal part of the spray gun/dispense valve firmly to the side of a grounded metal pail, then trigger the gun/valve.

Pump Location and Set Up



NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in Figure 1 on page 7 and the parts drawings. Refer to those for installation.

If you supply your own accessories, be sure they are adequately sized and pressure-rated to meet the system's requirements. Contact your Graco distributor for assistance in designing a system to suit your needs.

1. Place the unit on a hard, level surface. Check that the unit is level in all directions. Refer to **Dimensions** on page 25 to ensure that there is sufficient overhead clearance for the pump when the ram is fully raised. Leave room on both sides so the air regulators will be easily accessible.
2. Read the section **Pump Components and Accessories** on page 9. Connect an air supply hose to the 1/4 npt(f) main air inlet fitting (57). See Figure 1 on page 7. Refer to **Connect and Disconnect Tubes** on page 9.

Wiper Plate Setup



To reduce the risk of serious injury and damage to equipment, do not shut off the air supply to the ram when the ram is raised. Doing so will cause the pump to fall uncontrolled to the bottom.

1. Unpack the wiper plate (P). Back out the screws (302) so they clear the pump fluid intake housing (111).
2. Raise the ram by setting the ram director valve switch (36) to the up position and increasing the setting of the ram air regulator (27B).
3. Place the wiper plate (P) on a 2 in. thick x 4 in. wide block of wood. Center the wiper plate and the wood block on the base, under the pump intake housing (111).

- Set the ram air regulator (27B) to zero. Set the ram director valve switch (36) to the down position. As the ram unit slowly falls, guide the pump intake housing (111) into the wiper plate (P).
- Set the ram air regulator (27B) to 10 psi (0.07 MPa, 0.7 bar). Push down on the pump to install the wiper plate (P) onto the intake housing (111). Secure the wiper plate to the pump with the two screws (302).
- Connect the 660 mm (26 in.) air line tube (76) from the connector (37) at the air assist valve (18) to the connector (310) at the wiper plate (P). Refer to **Connect and Disconnect Tubes** on this page.

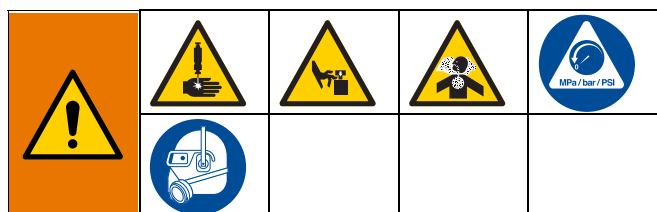
Connect and Disconnect Tubes

Follow these steps when connecting and disconnecting any air tubes on the DynaMite 190 Extruder assembly

Connection

- Grasp the tube, then slowly push it straight into the fitting until it stops.
- Be sure that the tube is securely connected, and will not pull out when air pressure is applied. To check, pull gently on the tube.

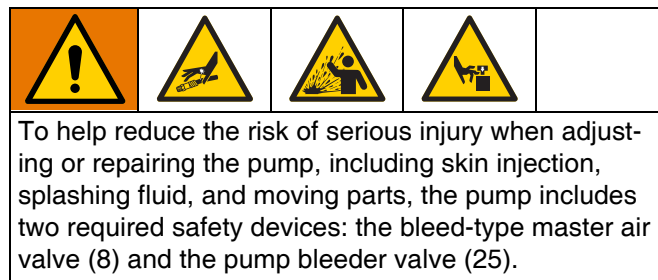
Disconnection



- Follow the **Pressure Relief Procedure** on page 10.
- Push evenly on the fitting's red release button.
- While holding the release button in, pull the tube out of the fitting.
- To reuse the tubing, cut off the previous connection portion at 90°, being careful not to damage the outer diameter of the tube.

NOTE: Use of a tube cutter is recommended. The fitting will leak if the tubing is not cut at 90°.

Pump Components and Accessories



The following components are supplied with the pump (see Figure 1 on page 7).

- The bleed-type master air valve (8)** is supplied with your system to relieve air trapped between this valve and the pump after the air is shut off. Trapped air can cause the pump to cycle unexpectedly. The valve is located close to the pump, downstream from the pump air regulator.
- The pump air regulator (27A)** controls pump speed and outlet pressure by adjusting the air pressure to the pump. The regulator is located upstream from the bleed-type master air valve.
- The ram air regulator (27B)** controls ram speed by adjusting the air pressure to the ram, and also controls the pressure exerted by the wiper plate on the fluid.
- The pump bleeder valve (25)** is supplied in your system to relieve fluid pressure in the displacement pump, hose, and dispensing valve. Triggering the dispensing valve to relieve pressure may not be sufficient. Be sure the drain hole in the valve is pointing down. This valve is also used to bleed air from the pump when priming.

Air Line

Connect an air supply line to the 1/4 npt(f) main air inlet fitting (57). Install an air line filter and lubricator in the main air line. In the main air line, upstream from all other air line accessories, install a second bleed-type master air valve to shut off all air to the system and to isolate the accessories for servicing.

Fluid Line

Connect a fluid line to the fluid outlet fitting (28). Connect a suitable dispensing valve to the free end of the line.

Operation

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid, and moving parts, follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing the equipment.

1. Lock the sprayer, dispenser, or gun/valve trigger of the equipment that is being used with this extruder.
2. Disconnect the main air line from the machine.
3. Set the ram director valve to the down position. The ram slowly drops.
4. Quickly move the ram director valve up and down to bleed air from the ram cylinder.

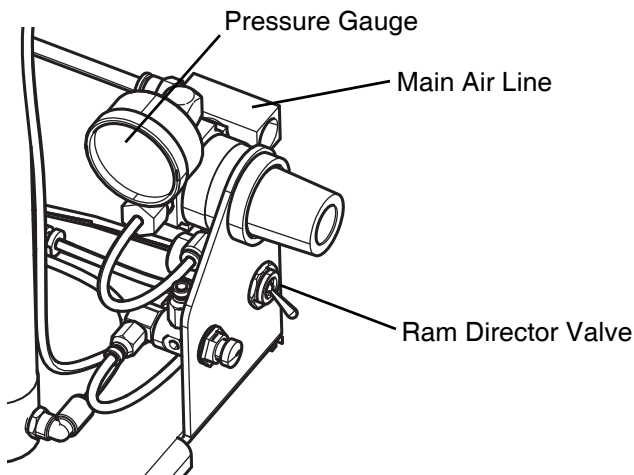


FIG. 3: Pressure Relief Components

5. Unlock the dispensing device trigger.
6. Hold a metal part of the gun/valve firmly to the side of a grounded pail and trigger the dispensing device to relieve pressure.
7. Lock the dispensing device trigger.
8. Open the pump bleeder valve.
9. Leave the pump bleeder valve open until you are ready to dispense again.

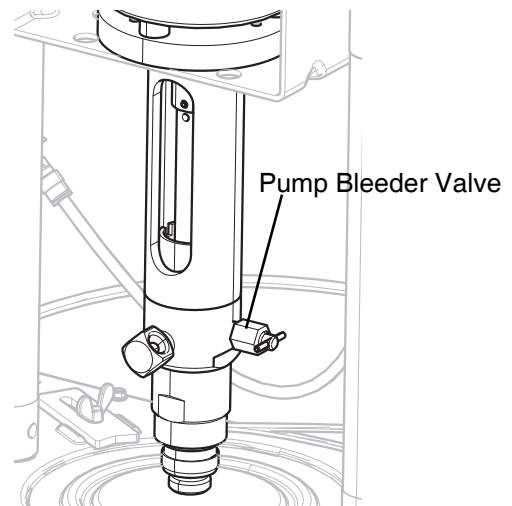
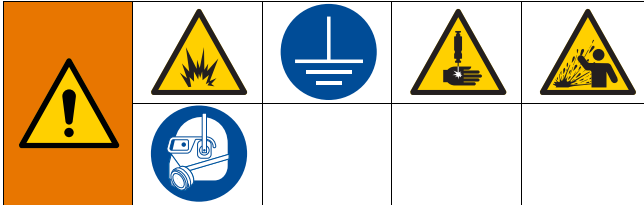


FIG. 4: Open Valves

If you suspect that the spray tip/nozzle or hose is completely clogged, or that pressure has not been fully relieved, proceed as follows:

10. Very slowly open the pump bleeder valve, having a container ready to catch the drainage.
11. Very slowly loosen the hose end coupling to relieve pressure gradually; then loosen it completely.
12. Clear the tip/nozzle or hose.

Flush the System



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

NOTE: The pump is tested with lightweight oil, which is left in to protect the pump parts. If the fluid you are using might be contaminated by the oil, flush it out with a compatible solvent before using the pump.

Flush with a fluid that is compatible with the fluid you are pumping and with the wetted parts in your system. Check with your fluid manufacturer or supplier for recommended fluids and flushing frequency. Always flush the pump before fluid dries on the displacement rod.

NOTICE

Never leave water or water-based fluid in a carbon steel pump overnight. If you are pumping water-based fluid, flush with water first, then with a rust inhibitor, such as mineral spirits. Relieve pressure, but leave rust inhibitor in the pump to protect parts from corrosion.

1. Follow the **Pressure Relief Procedure** on page 10.
2. Remove the tip/nozzle from the dispensing device you are using with the pump.
3. Hold a metal part of the dispensing device firmly to the side of a grounded metal pail.
4. Start the pump. See **Start and Adjust the Pump** on page 12. Always use the lowest possible fluid pressure when flushing.
5. Trigger the dispensing device.
6. Flush the system until clear solvent flows from the dispenser.
7. Relieve the pressure. See page 10.

Start and Adjust the Ram



To reduce the risk of serious injury and damage to equipment, do not shut off the air supply to the ram when the ram is raised. Doing so will cause the pump to fall uncontrolled to the bottom. Also, as the ram is raised and lowered, the wiper plate, ram tubes, and pump mounting bracket move. To reduce the risk of pinching or amputation of fingers, keep your hands away from the wiper plate, lip of the fluid can, pump bracket, ram tubes, and air motor coupling cavity while the pump is operating.

NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in Figure 1 on page 7 and the parts drawings. Refer to those for operation.

1. Close all air regulators and bleed-type air valves.
2. Open the air valve in the main air line and set the ram air regulator (27B) to 28 psi (200 kPa, 2 bar). Set the ram director valve switch (36) to the up position and let the ram rise to its full height. To change the speed at which the ram raises and lowers, adjust the air regulator to increase or decrease the air volume.
3. Check that the fluid can is not dented or out of shape, which will damage the wiper plate and cause leakage around the wiper. Cut off the top of the fluid can with the can opener, or remove the bottom of the can. Be sure that the edge is free of burrs, which will damage the wiper plate. If necessary, bend the edge back with pliers so the wiper plate will enter the can easily. Lubricate the wiper ring (305) to help the plate enter the can easily.
4. Set a can of fluid on the ram base, centering it under the wiper plate (P).



If the can has a welded seam, position it with the seam facing the rear of the pump to avoid injury due to splattering fluid if the can leaks at the seam.

- Loosen the wiper plate bleed valve (303) enough to allow air trapped under the wiper plate to escape. With your hands away from the lip of the can and the wiper plate, set the ram director valve switch (36) to the down position and lower the ram until the wiper plate enters the can. Reduce the air pressure when the plate enters the can.

NOTE: If the wiper plate does not enter the can easily, increase the ram pressure; once it enters the can, immediately reduce the pressure.

- Continue to lower the ram until fluid appears at the wiper plate vent hole. Tighten the wiper plate bleed valve (303) securely. See Figure 1 on page 7.
- Clamp the can in place with the clamps (24) and wing screws (39), being sure the clamp catches the lip of the can.

- Adjust the air motor regulator until the pump starts.

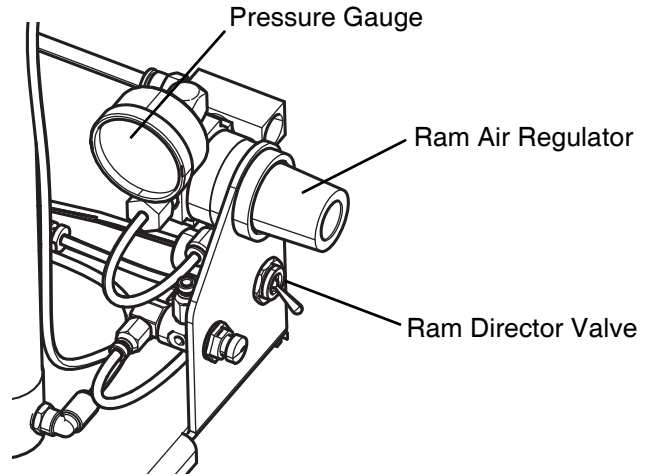


FIG. 5: Set Ram Director Valve for Startup

Start and Adjust the Pump



The air motor piston and fluid piston (located inside the air motor cylinder and coupling) move when air is supplied to the motor. Do not place your hand or fingers into the air motor coupling cavity while the pump is operating.

Also, keep hands and fingers away from the priming piston (see Figure 11 on page 22) during operation and whenever the pump is charged with air. During operation, the priming piston extends beyond the intake housing to pull material into the pump and can amputate a hand or finger caught between it and the intake housing. Follow the **Pressure Relief Procedure** on page 10 before checking, clearing, or cleaning the priming piston.

- Cycle the pump slowly until all air is pushed out and the pump and hoses are fully primed.
- Release the dispensing device trigger and lock the safety. The pump should stall against the pressure.



To reduce the risk of skin injection, do not use your hand or fingers to cover the bleed hole on the underside of the bleeder valve when priming the pump. Use the handle or a crescent wrench to open and close the bleeder plug. Keep your hands away from the bleed hole.

- Supply fluid to the pump per the requirements of your system. See **Prime the Pump and Pump Fluid** on page 13.
- Close the pump air regulator (27A).
- Set the ram air regulator (27B) to 50 psi (3.5 bar).
- Set the ram director valve (36) to the down position.
- Reduce the air motor regulator pressure to zero and open the air motor valve.

- If the pump fails to prime properly, open the pump bleeder valve slightly. Use the bleed hole on the underside of the valve as a priming valve until the fluid appears at the hole. Then close the plug.

NOTE: Always use the lowest possible fluid pressure to bleed air out of the pump.

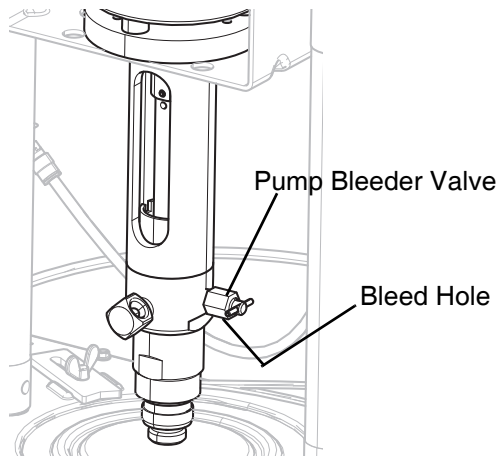


FIG. 6: Pump Bleeder Valve

NOTE: When changing fluid containers with the hose and dispensing device already primed, open the pump bleeder valve to help prime the pump and vent air before it enters the hose. Close the valve when all air is eliminated.

NOTICE

Do not allow the pump to run dry. It will quickly accelerate to a high speed, causing damage. If your pump is running too fast, stop it immediately and check the fluid supply. If the container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines, or flush and leave it filled with a compatible solvent. Eliminate all air from the fluid system.

10. With the pump and lines primed, and with adequate air pressure and volume supplied, the pump starts and stops as you open and close the dispensing device. In a circulating system, the pump speeds up or slows down on demand until the air supply is shut off.
11. Use the air motor regulator to control the pump speed and the fluid pressure.

NOTICE

Always use the lowest air pressure necessary to get the desired results. Higher pressures cause premature tip/nozzle and pump wear.

Prime the Pump and Pump Fluid

1. Be sure the pump air regulator (27A) is closed. Then set the ram air regulator (27B) to be about 22 psi (150 kPa, 1.5 bar). Set the ram director valve switch (36) to the down pump.
2. Open the bleed-type master air valve (8). Set the pump air regulator (27A) to 28 psi (200 kPa, 2 bar).
3. Open the pump bleeder valve (25) to allow air to bleed from the pump. When the pump is fully primed, close the valve.
4. Keep the director valve switch (36) in the down position while the pump is operating.

NOTE: Adjust the air pressure to the ram as needed, but do not increase it to a level where fluid is forced past the wiper plate.

Change the Fluid Can





1. Stop the pump.
2. Close the bleed-type master air valve (8), but leave air pressure on to the ram.
3. Set the ram air regulator (27B) to below 30 psi (210 kPa, 2.1 bar).
4. Open the dispensing valve and relieve all fluid pressure in the system. See the **Pressure Relief Procedure** on page 10.
5. Set the ram director valve switch (36) to up.
6. Push in the air assist valve (18) and hold it in until the wiper plate clears the top of the can.

NOTICE







If the fluid has set up and the wiper plate (P) is stuck in the can, do not increase the setting of the ram air regulator (27B) to remove the plate. Excessive pressure in the can may cause the can to rupture. If you cannot pull the can off the plate by hand, loosen the two screws (302) holding the plate to the pump (1), disconnect the air tube (76) from the plate, and remove the can and plate. It may be necessary to cut the can to remove the plate.

- Loosen the clamps (24) and remove the empty can. Set the full can on the ram base and position it under the wiper plate.

				
<p>If the can has a welded seam, position it with the seam facing the rear of the pump to avoid injury due to splattering fluid if the can leaks at the seam.</p>				

- Lower the ram and adjust the position of the can relative to the wiper plate. See **Start and Adjust the Ram** on page 11.
- Clamp the can in place.

Shutdown and Care of the Pump

NOTICE

Never leave water or water-based fluid in a carbon steel pump overnight. If you are pumping water-based fluid, flush with water first, then with a rust inhibitor, such as mineral spirits. Relieve pressure, but leave rust inhibitor in the pump to protect parts from corrosion.

- Stop the pump at the bottom of the stroke to prevent fluid from drying on the exposed displacement rod and damaging the throat packings.

- Set the ram director valve to the down position.

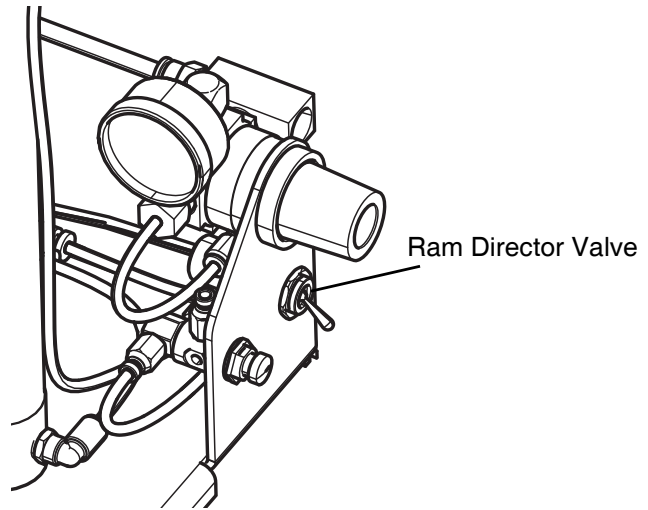
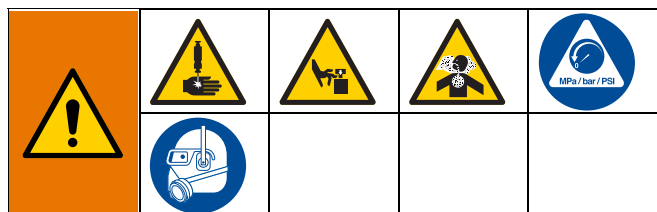


FIG. 7: Ram Director Valve Position for Shutdown.

- Follow the **Pressure Relief Procedure** on page 10.
- Always flush the pump before the fluid dries on the displacement rod.

Troubleshooting



Before servicing this equipment always make sure to follow the **Pressure Relief Procedure** on page 10.

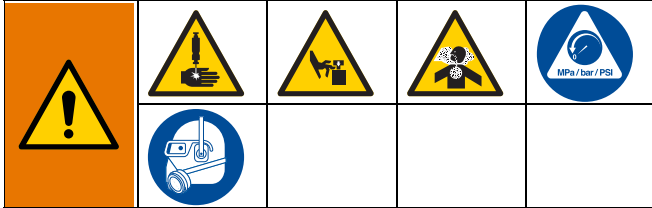
Check all possible problems and solutions before disassembling the pump.

Problem	Cause	Solution
Pump fails to operate.	Restricted line or inadequate air supply; closed or clogged valves.	Clear; increase air supply. Ensure that all valves are open.
	Obstructed fluid hose or gun/valve; fluid hose ID is too small.	Open, clear*; use a hose with a larger ID.
	Fluid dried on displacement rod.	Clean. Always stop pump at the bottom of the stroke. Keep enclosed wet cup 1/3 filled with a compatible solvent.
	Dirty, worn, or damaged motor parts.	Clean or repair; see separate motor manual.
Pump operates, but output is low.	Fluid is too heavy for pump priming	Use drain/purge valve. use a ram.
	Held open or worn intake valve or seals.	Clear valve. Replace seals.
Erratic or accelerated pump.	Exhausted fluid supply.	Refill and prime.
	Fluid is too heavy for pump priming.	Use drain/purge valve.
	Held open or worn intake valve of seals.	Clear valve. Replace seals.
	Held open or worn priming piston.	Clear; service.
	Worn packings in displacement pump.	Replace packings.

* To determine if the fluid hose or gun is obstructed, **relieve the pressure**. Disconnect the fluid hose and place a container at the pump fluid outlet to catch any fluid. Turn on the air just enough to start the pump (about 20-40 psi [140–280 kPa, 1.4–2.8 bar]). If the pump starts when the air is turned on, the obstruction is in the fluid hose or dispensing device.

Service

Disassembly



NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in Figure 8 on page 18 and the parts drawings. Refer to those for service.

NOTE: Repair Kit 223894 is available to repair the fluid pump. Parts included in the kit are marked with a † symbol in the parts list on page 23. For the best results, use all the new parts in the kit.

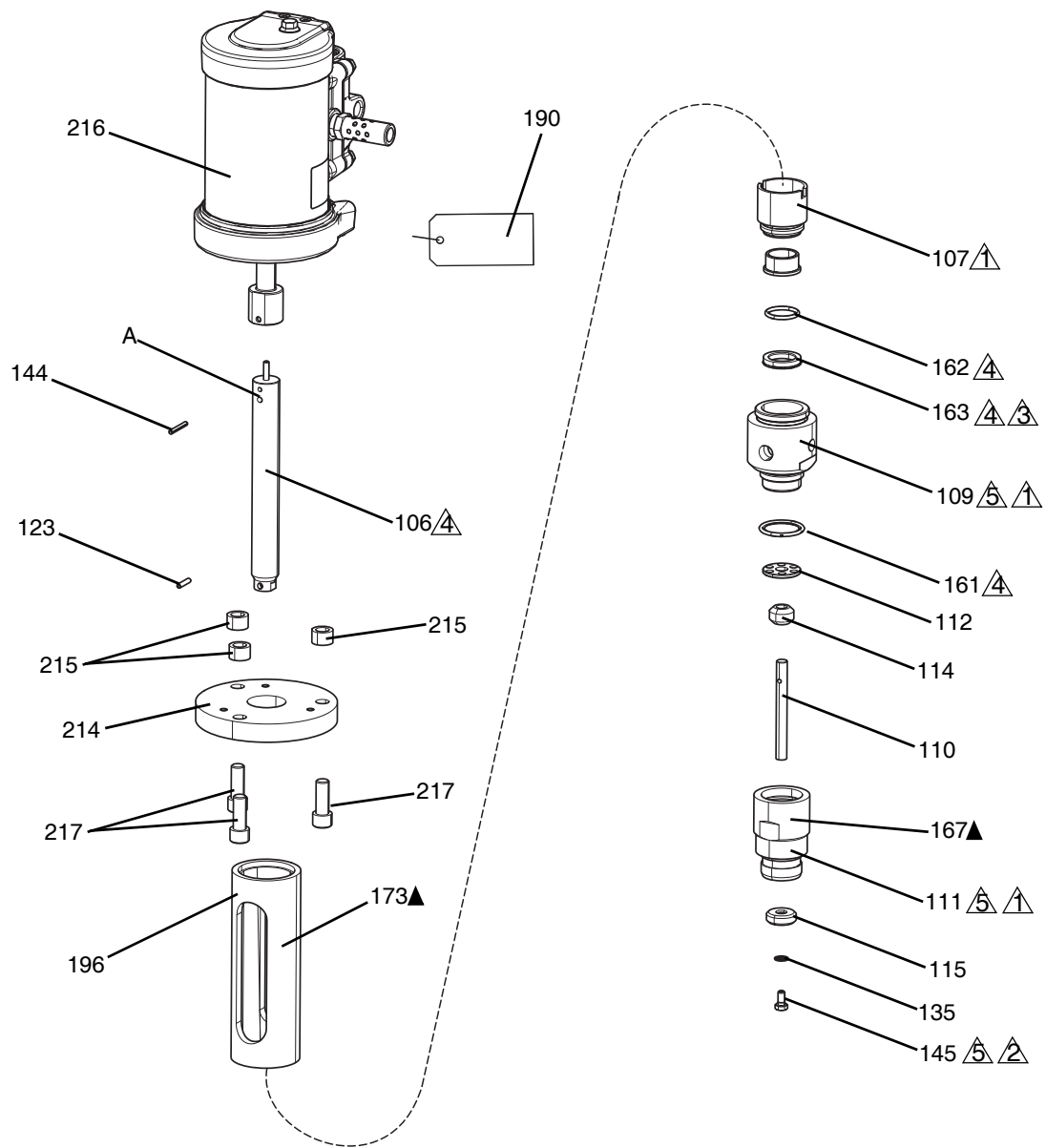
1. **Follow the Pressure Relief Procedure** on page 10.
2. Disconnect all hoses. Remove the wiper plate. Remove the fluid outlet elbow (28), noting its position relative to the air inlet. Remove only the three screws (38) and lock washers (41) holding the pump to the mounting bracket (33).
3. Rotate the pump so the bleeder valve (25) is aligned with the slot in the mounting bracket (33), and lift the pump straight up through the bracket.
4. Remove the pin (144) from the fluid piston (106). Unscrew the air motor shaft from the fluid piston by turning the screw (145).
5. Unscrew the adapter (214) from the cylinder coupling (196). Pull the air motor coupling straight up until it clears the fluid piston (106).
6. Hold the fluid piston (106) steady by inserting a small screwdriver or punch into the 4 mm diameter hole (A). Remove the screw (145) and lock washer (135) holding the priming piston (115) to the priming piston rod (110).
7. Pull the priming piston rod (110) and fluid piston (106) straight up out of the fluid housing (109). Remove the pin (123), and unscrew the priming piston rod from the fluid piston.
8. Unscrew the intake valve housing (111) from the fluid housing (109). Remove the o-ring (161) from the intake valve housing.
9. Remove the intake valve (114) and valve stop (112) from the intake valve housing (111).
10. Unscrew the wet-cup/packing nut (107). Remove the u-cup packing (163) from the throat. Remove the o-ring (162) from the wet-cup/packing nut.
11. 13. Clean all parts with a solvent compatible with the fluid you are pumping, and inspect for wear or damage. Reassemble as explained on this page.

Reassembly

NOTE: Lubricate all packings and o-rings with a compatible grease before reassembling.

1. Install the u-cup packing (163) in the throat of the fluid housing (109), with the lips facing down. Install the o-ring (162) into the groove above the bearing of the wet-cup/packing nut (107). Apply thread lubricant and install the wet-cup/packing nut in the fluid housing (109). Torque to 298-314 in-lb (35–37 N•m).
2. Screw the priming piston rod (110) into the fluid piston (106) until the holes align. Install the pin (123) in the holes. Carefully slide the assembled piston and rod down through the wet-cup and fluid housing.
3. Place the intake valve (114) onto the seat of the intake valve housing (111). Insert the valve stop (112) into the intake valve housing, with the flat side facing up. Be sure the valve stop (112) seats on the lip of the intake housing. Lubricate the o-ring (161). Bend it into a kidney shape, then carefully push it into the inner groove of the intake valve housing (111), to avoid damaging it.
4. Apply thread lubricant to the lower threads of the fluid housing (109). Bring the fluid housing and intake valve housing (111) together, making sure the priming piston rod (110) passes straight through the valve stop (112) and intake valve (114) installed in the housing (111) onto the fluid housing (109), then torque to 298-314 in-lb (35–37 N•m).

5. Apply lubricant to the threads of the screw (145). Hold the fluid piston (106) steady by inserting a small screwdriver or punch into the 4mm diameter hole (A). Install the priming piston (115) onto the end of the priming piston rod (110), using the screw (145) and lockwasher (135). Torque to 14-20 in-lb (1.7–2.3 N•m).
6. Apply lubricant to the top threads of the fluid housing (109). Screw the air motor coupling (105) onto the fluid housing, and torque to 298-314 in-lb (35–37 N•m).
7. Thread the fluid piston (106) into the air motor shaft (213) until the holes line up. Use the screw (145) to turn the fluid piston, if necessary. Once the holes in the air motor shaft and fluid piston are aligned, insert the pin (144).
8. Lower the pump through the mounting bracket (33). Orient it in the correct direction and secure to the bracket using the three screws (38) and washers (141). Torque the screws to 17-33 in-lb (2–4 N•m). Reinstall the fluid outlet fitting (28).
9. Reinstall the wiper plate assembly on the fluid intake housing (111). Secure with the two cap-screws (302). Reconnect all hoses and return the pump to service.



- ⚠ Torque to 298-314 in-lb (35-37 N•m).
- ⚠ Torque to 14-20 in-lb (1.7-2.3 N•m).
- ⚠ Lips must face down.
- ⚠ Lubricate
- ⚠ Apply thread lubricant.

FIG. 8: Pump Service Components

235871, Series D Parts

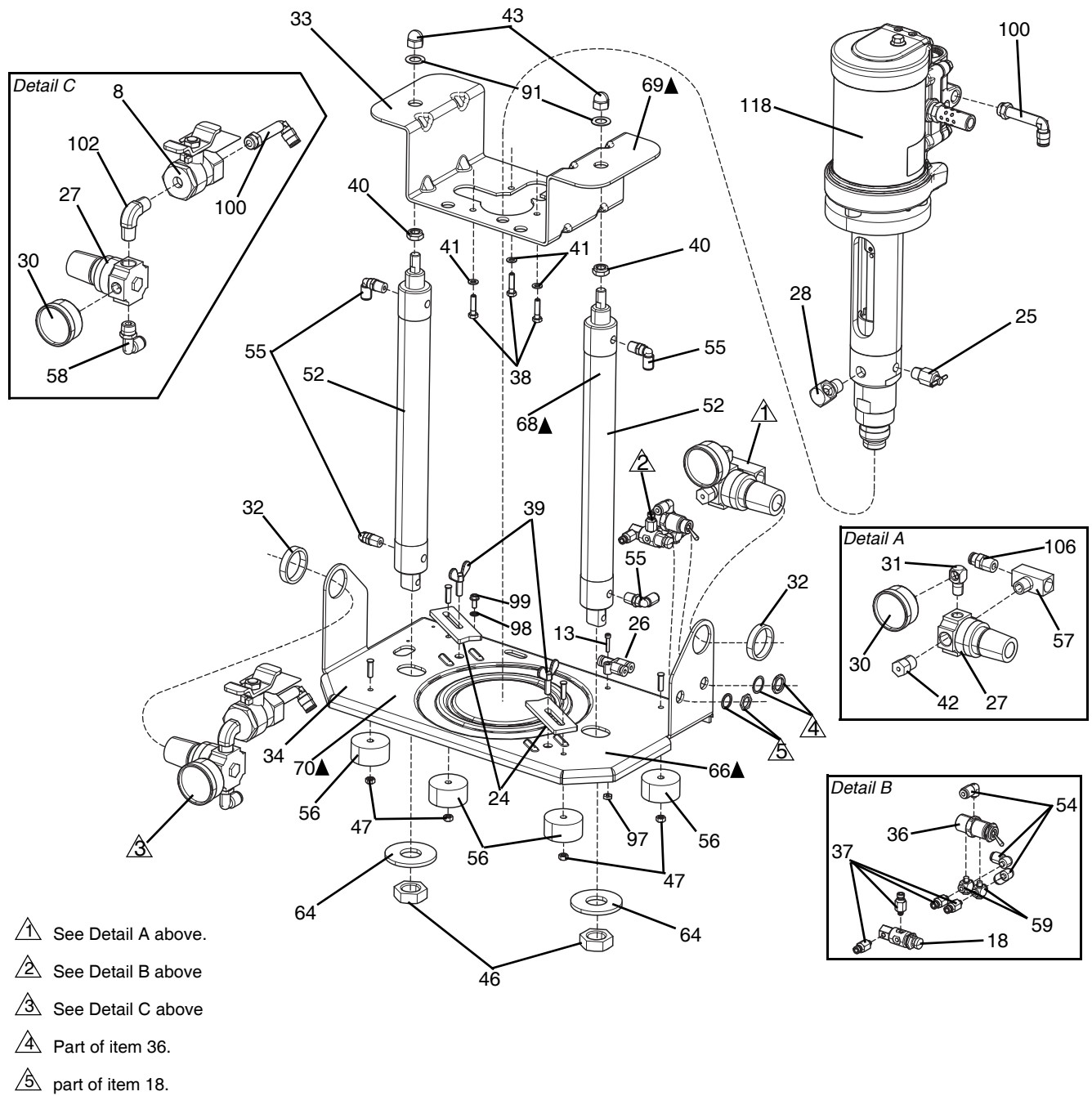


FIG. 9: DynaMite 190 Extruder Assembly Parts without Air Tubing

Ref	Part	Description	Quantity
8	110223	VALVE, vented 2 way	1
13	112338	SCREW, cap, button hd	1
18	110914	VALVE, button, push	1
24	186291	CLAMP, pail	2

Ref	Part	Description	Quantity
25	223730	VALVE, assy	1
26	112189	FITTING, y	1
27	110318	REGULATOR, air, 1/4 in. npt	2
28	166866	FITTING, elbow, street	1
30	108190	GAUGE, pressure, air	2
31	100839	FITTING, elbow, street	1
32	110209	NUT, regulator	2
33	188852	BRACKET	1
34	236062	BASE, elevator	1
36	110859	VALVE, air, manual	1
37	110932	CONNECTOR, male	4
38	110873	SCREW, cap, hex hd	3
39	110888	SCREW, wing	2
40	186361	RETAINER, nut	2
41	110874	WASHER, flat	3
42	110933	CONNECTOR, male	1
43	110889	NUT, hex, crown	2
46	100071	NUT, hex	2
47	110911	NUT, hex	4
52	110910	CYLINDER, mount, universal	2
54	109193	FITTING, tube, male, elbow	3
55	198171	FITTING, elbow	4
56	110930	BUMPER,	4
57	110936	FITTING, tee, pipe	1
58	110937	ELBOW, male	1
59	110940	FITTING, adjustable, tee	2
64	110947	WASHER, plain	2
66	186503▲	LABEL, caution	1
68	186502▲	LABEL, caution	2
69	186505▲	LABEL, warning	1
70	186531▲	LABEL, warning	1
91	158019	SHIM, washer	2
93	111002*	OPENER, can	1
97	100975	NUT	1
98	157021	WASHER, lock, int	1
99	111593	SCREW, grounding	1
100	112188	FITTING, elbow	2
102	110249	ADAPTER, male elbow 90 degr	1
106	112186	CONNECTOR, male	1
118	235870❖	PUMP, extruder, sst, 190, series D	1

* Not shown.

▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

❖ See page 22.

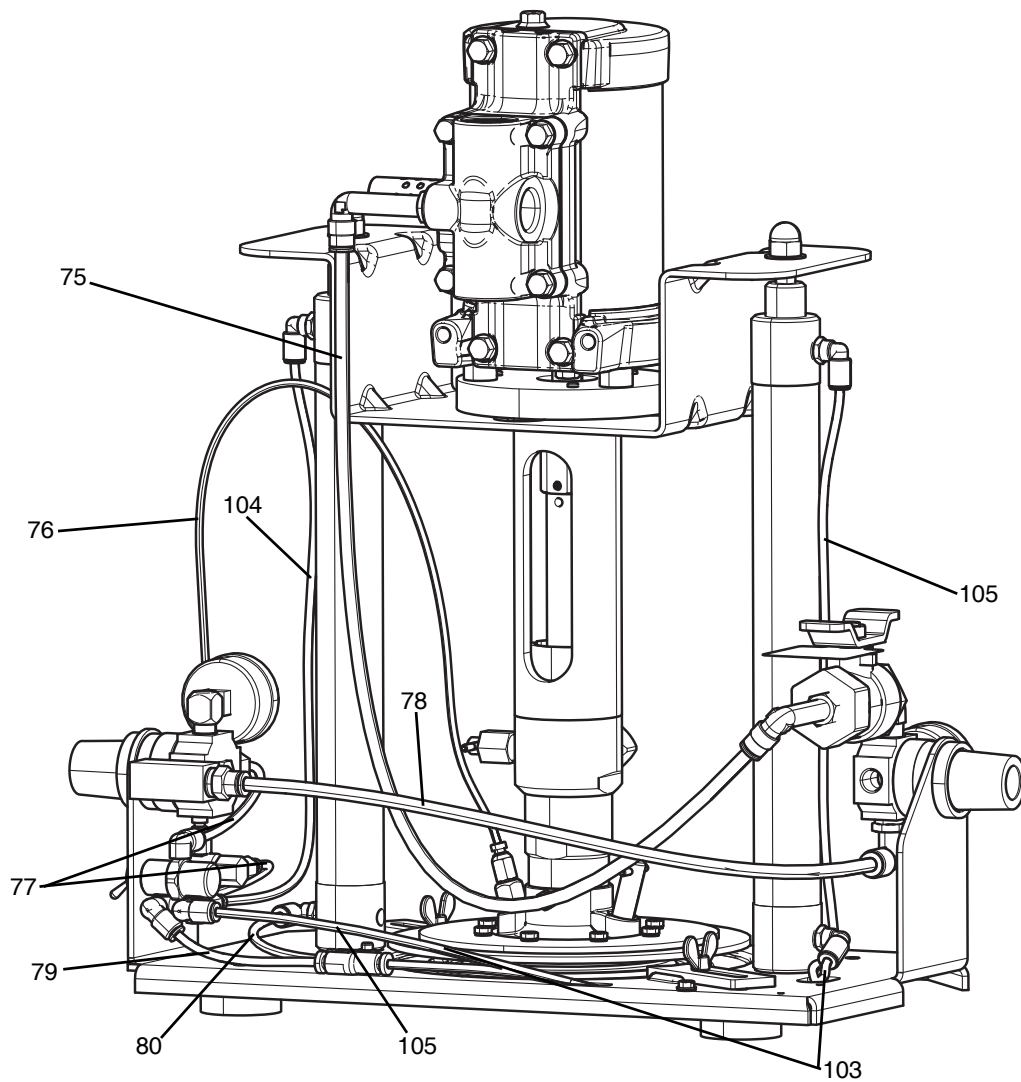


FIG. 10: DynaMite 190 Extruder Assembly Air Tubing Parts

Ref	Part	Description	Quantity
75	186532	TUBE, air	1
76	186533	TUBE, air	1
77	186534	TUBE, air	2
78	188963	TUBE, air	1
79	188964	TUBE, air	1
80	188965	TUBE, air	1
103	188966	TUBE, air	1
104	188967	TUBE, air	1
105	188968	TUBE, air	1

235870, Series D Parts

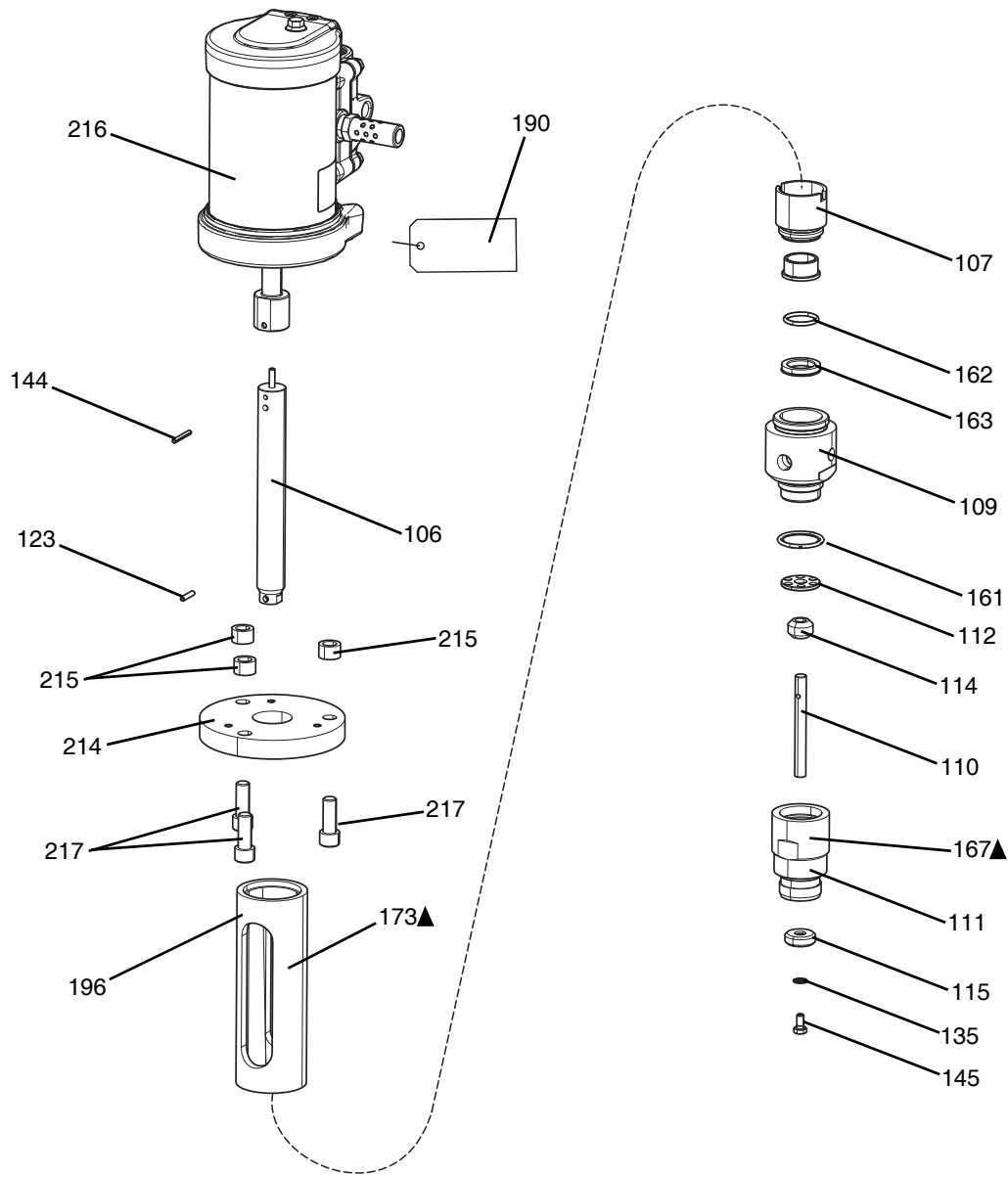


FIG. 11: Pump Assembly Parts

Ref	Part	Description	Quantity
106	187579	PISTON, fluid	1
107	235838	CUP, wet	1
109	187578	HOUSING, fluid	1
110	187586	ROD, plunger	1
111	186283	VALVE, intake	1
112	186285	STOP	1
114	186296†	VALVE, fluid	1
115	187759	PLUNGER, priming piston	1
123	110893	PIN, spring	1
135	111640	WASHER, lock, internal	1
144	112120	PIN, spring	1
145	111639	SCREW, cap, hex hd	1
161	110966†	PACKING, o-ring	1
162	110946†	PACKING, u-cup	1
163	110955†	PACKING, o-ring	1
167	186501▲	LABEL, warning	1
173	186500▲	LABEL, caution	1
190	172479▲	TAG, warning	1
196	187582	COUPLING, cylinder	1
214	17J516	ADAPTER	1
215	17J517	SPACER	3
216	25A641	MOTOR, air, 2.5 in., .75 in. stroke	1
217	128762	SCREW, shcs, 3/8-24 x 1.00, zc	3

† *These parts are included in Pump Repair Kit 223894, which may be purchased separately. This kit also includes two Part No. 110954 PTFE O-rings for use with the wiper plate.*

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Wiper Plate Parts

NOTE: The wiper plate is not supplied with the pump and must be ordered separately.

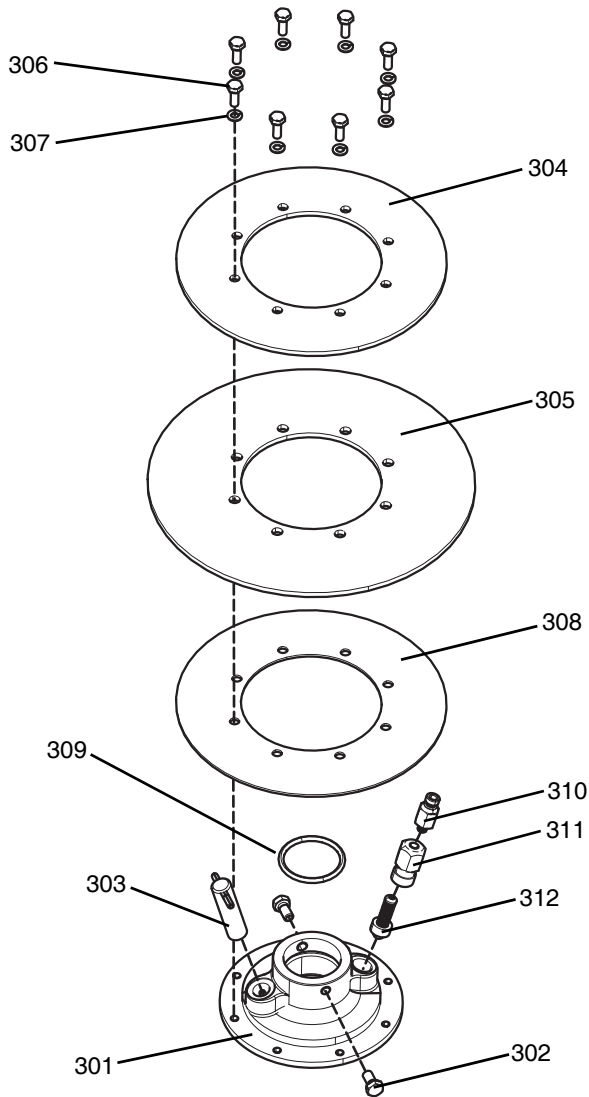


FIG. 12: Wiper Plate Parts

Part No. 224908 1 Gallon (3.79 liter) Size

Includes items 301-312

Ref	Part	Description	Quantity
301	187596	PLATE, inductor	1
302	111639	SCREW, cap, hex hd	2
303	223746	VALVE, bleed	1
304	187597	RING, sst.	1
305	187599	WIPER,	1
306	111638	SCREW, cap, hex hd	8
307	111637	WASHER, lock	8
308	187600	RING, backup	1
309	110954†	PACKING, o-ring	1
310	110932	CONNECTOR, male	1
311	187683	HOUSING, valve	1
312	224918	VALVE, check	1

Part No. 224923 1 Quart (.95 liter) Size

Includes items 301-312

Ref	Part	Description	Quantity
301	187596	PLATE, inductor	1
302	111639	SCREW, cap, hex hd	2
303	223746	VALVE, bleed	1
304	187738	RING, sst.	1
305	187740	WIPER,	1
306	111638	SCREW, cap, hex hd	8
307	111637	WASHER, lock	8
308	187741	RING, backup	1
309	110954†	PACKING, o-ring	1
310	110932	CONNECTOR, male	1
311	187683	HOUSING, valve	1
312	224918	VALVE, check	1

† For both models. These parts are included in Pump Repair Kit 223894, which may be purchased separately. This kit also includes two Part No. 110954 PTFE O-rings for use with the wiper plate.

Dimensions

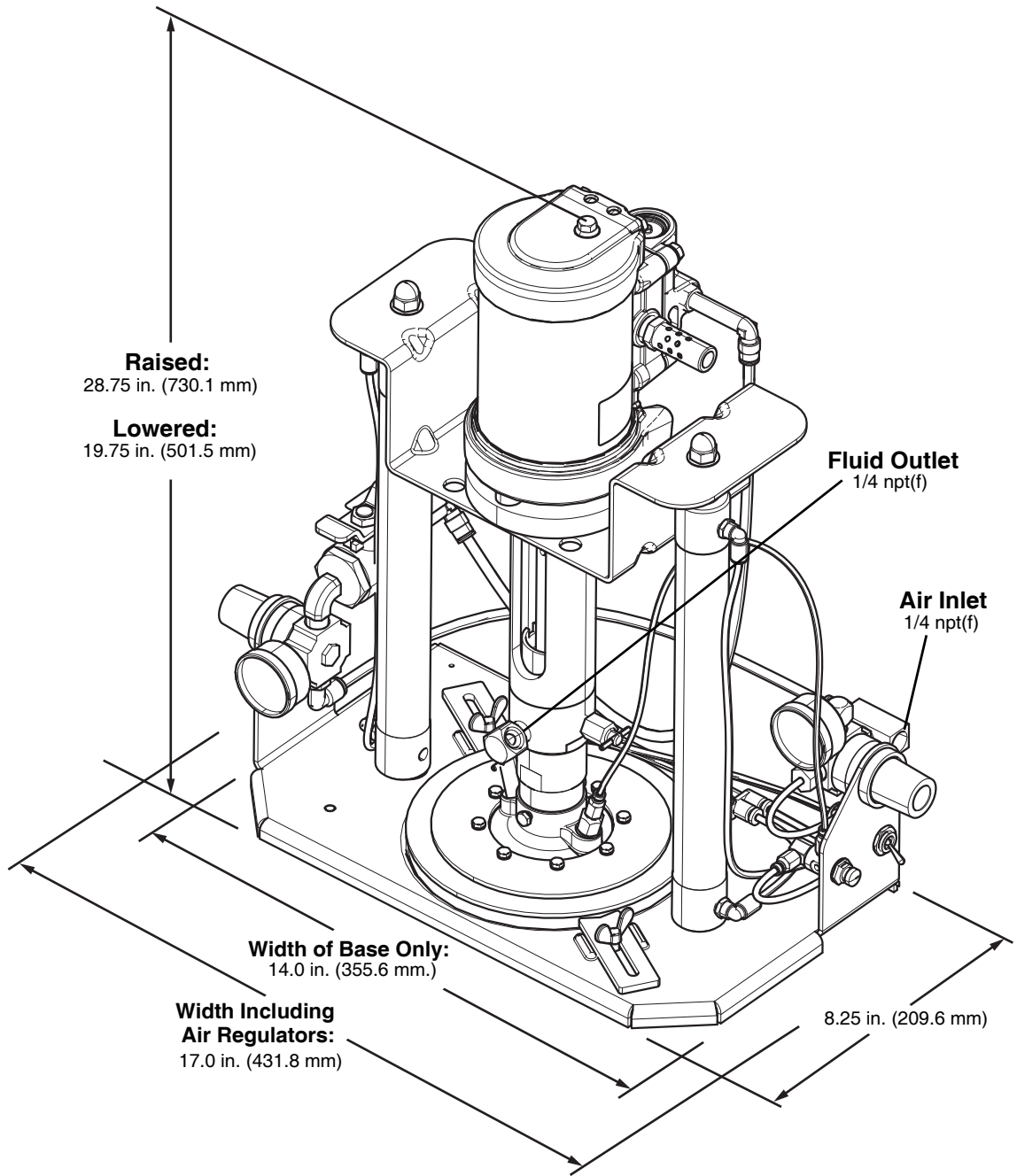


FIG. 13: DynaMite 190 Extruder Assembly Dimensions

Technical Data

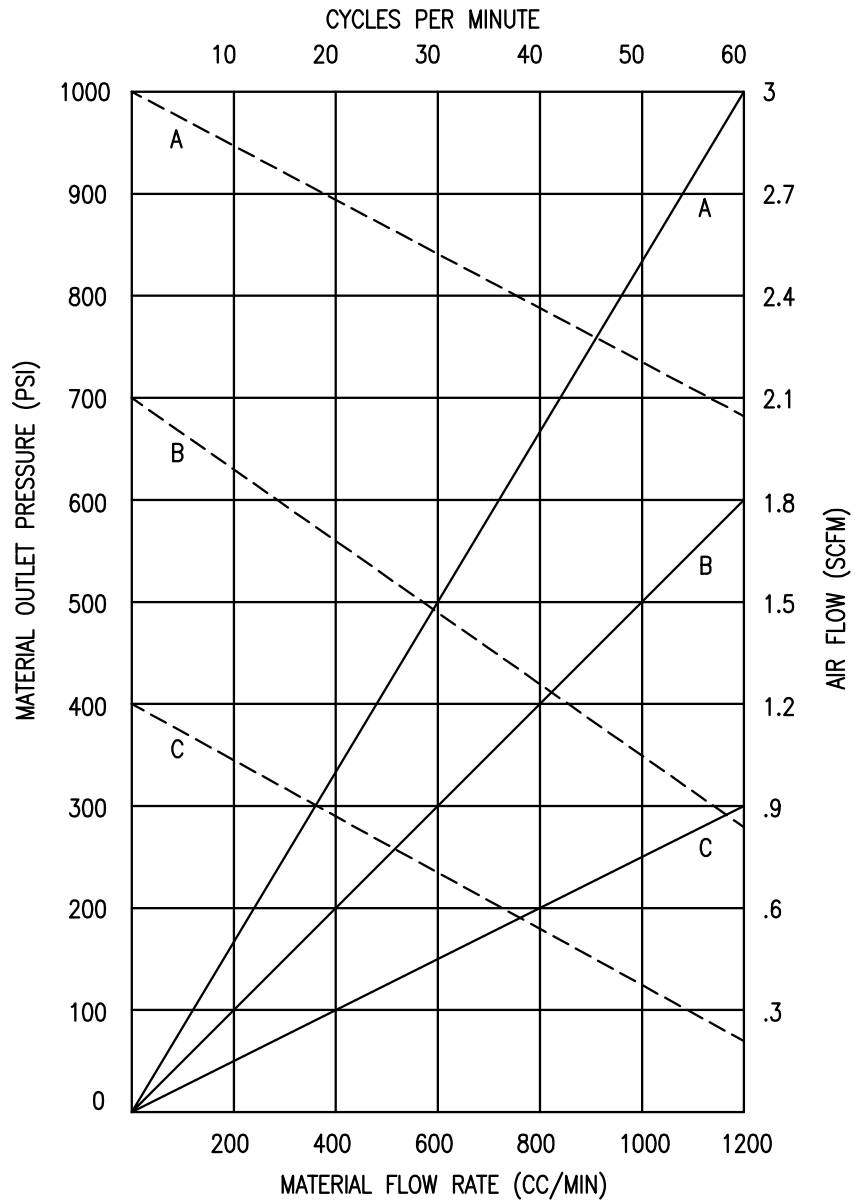
DynaMite 190 Extruder		
	US	Metric
Maximum fluid output pressure	1200 psi	8.3 MPa, 83 bar
Air input pressure	35-100 psi	243-700 KPa, 2.4-7.0 bar
Maximum fluid viscosity	600,000 cps	
Volume per stroke	0.17 oz	5.0 cc
Recommended pump speed for continuous operation	40 cycles per minutes (cpm)	
Maximum recommended pump speed	60 cpm	
Maximum flow (250,000 cps fluid)	32 oz/min 5.8 scfm air consumption at 100 psi	940 cc/min 0.162 m ³ /min air consumption at 0.7 MPa, 7 bar
Stroke length	3/4 in.	19 mm
Maximum pump operating temperature	140° F	60° C
Weight	18.5 lb	8.4 kg
Sound pressure level*		
At 70 psi (0.48 MPa, 4.8 bar), 80 cpm	76.5 dB(A)	
Sounds power level*		
At 70 psi (0.48 MPa, 4.8 bar), 80 cpm	83.2 dB(A)	
Inlet/Outlet Sizes		
Air inlet size	1/4 in. npt(f)	
Pump fluid outlet size	1/4 in. npt(f)	
Materials of Construction		
Wetted parts	304 and 17-4 pH stainless steel; PTFE, fluoroelastomer, PEEK	
Notes		
<i>*Sound pressure measured 1 meter (3.28 ft) from the pump resting on the floor. Sounds power level measured per ISO standard 9614-2.</i>		

Technical Data - Fluid Flow Chart

A = 100 PSI (0.7 MPa, 7 bar)
 B = 70 PSI (0.5 MPa, 5 bar)
 C = 40 PSI (0.3 MPa, 3 bar)

— = AIR FLOW
 - - - = FLUID FLOW

MATERIAL VISCOSITY (150,000 CENTIPOISE)



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Revision L, January 2016