

22:1 Ratio Stainless Steel

DM-22 Supply System

3A7931C

EN

Used for precision dispense of single component viscous materials for 300 CC (0.3 liter), 600 CC (0.6 liter) and 1 Gallon (3.79 liter) containers. For professional use only.

Not approved for use in European explosive atmosphere locations.

Part No. 25T471, 300 CC

Part No. 25T472, 600 CC

Part No. 25T473, 1 Gallon

Includes Pump and Ram

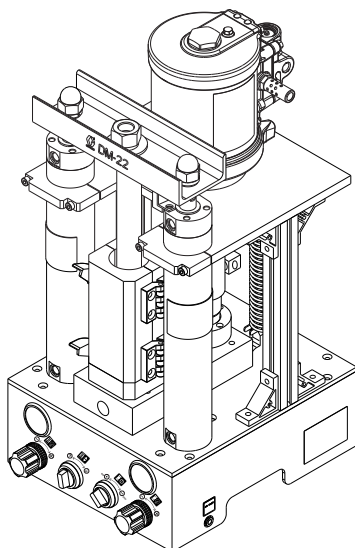
2200 psi (15.2 MPa, 152 bar) Maximum Fluid Working Pressure

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

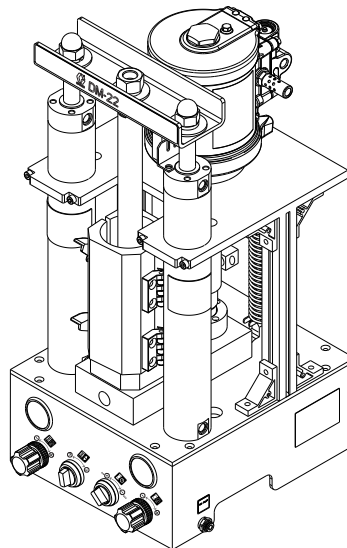


Important Safety Instructions

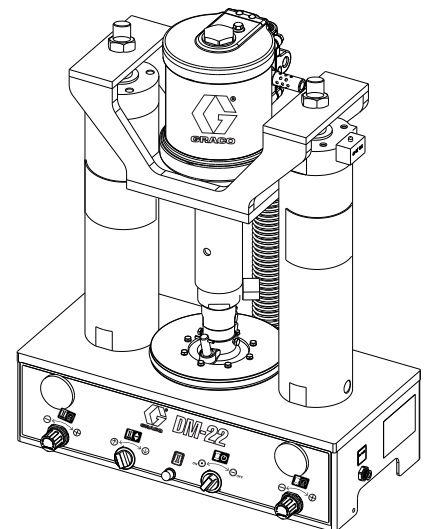
Read all warnings and instructions in this manual before using the equipment. Save these instructions.



300 CC



600 CC



1 Gallon

Contents

Warnings	3
Typical Installation	6
Component Identification	7
25T471, 300 CC	7
25T472, 600 CC	8
25T473, 1 Gallon	9
Installation	10
Grounding	10
System Location and Set Up	10
Connect and Disconnect Air Tubes	11
System Components and Accessories	11
Operation	12
Pressure Relief Procedure	12
Flush the System	13
Start and Adjust the Ram	13
Start and Adjust the Pump	14
Prime the Pump and Pump Fluid	16
Change the Fluid Cartridge/Can	16
Shutdown and Care of the Pump	17
Recycling and Disposal	17
End of Product Life	17
Troubleshooting	18
Repair	19
Disassembly	19
Reassembly	20
Parts	22
Accessory	24
Can Opener (not supplied with system)	24
Dimensions	24
25T471, 300 CC	24
25T472, 600 CC	25
25T473, 1 Gallon	25
Technical Specifications	26
California Proposition 65	27
Graco Standard Warranty	28

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.

 WARNING	
    	SKIN INJECTION HAZARD High-pressure fluid from 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. • Do not point 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.
 	MOVING PARTS HAZARD Moving parts can pinch, cut or amputate fingers and other body parts. • 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 (SDSs) 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.



SPLATTER HAZARD

Hot or toxic fluid can cause serious injury if splashed in the eyes or on skin. During blow off of platen, splatter may occur.

Use minimum air pressure when removing platen from drum.



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 Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** 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.





WARNING

**BURN HAZARD**

Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.

**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.

Typical Installation

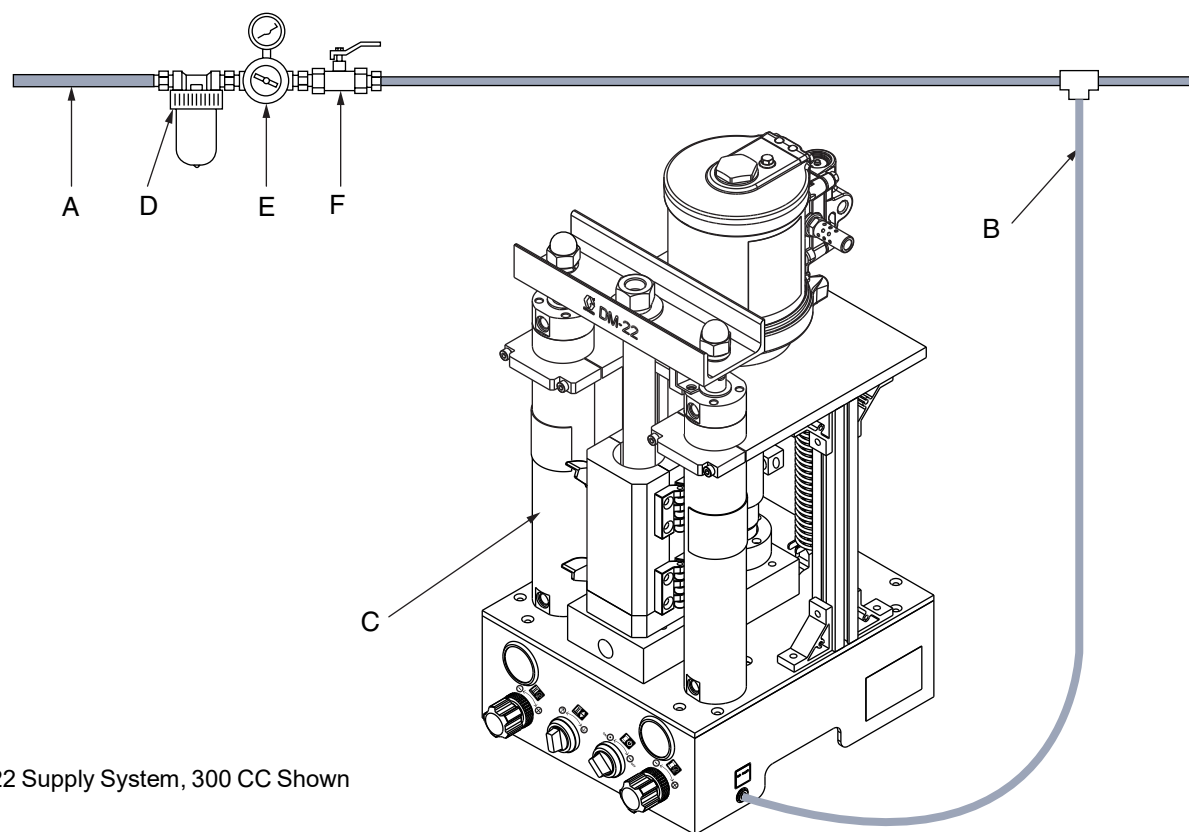


FIG. 1: Typical Installation

Key:

- A Main Air Line
- B Supply System Air Line
- C DM-22 Supply System
- D Air Filter (Required, but not supplied)
- E Pressure Regulator Valve (Required, but not supplied)
- F Bleed-type Master Air Valve (Required, but not supplied)

Component Identification

25T471, 300 CC

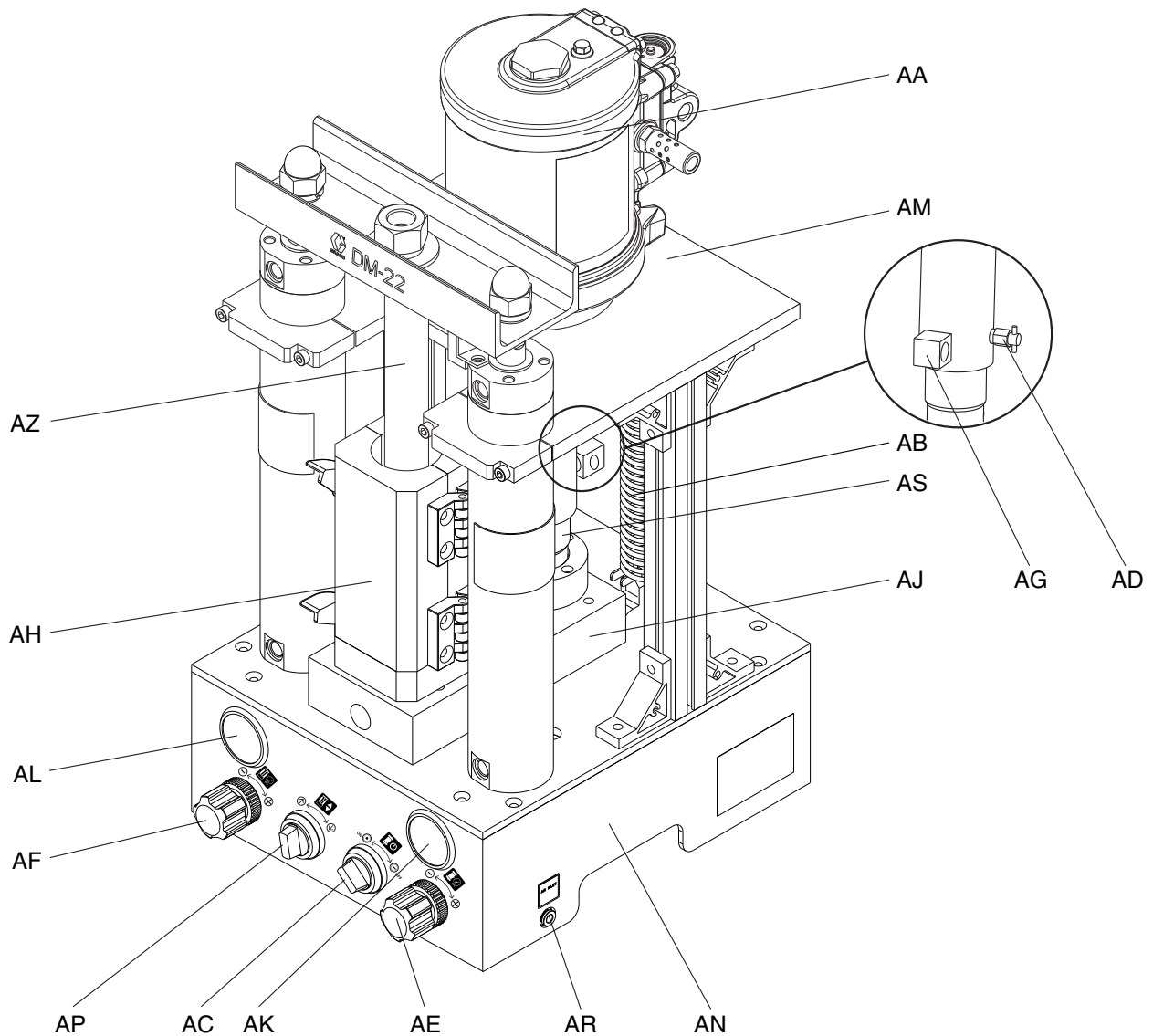


FIG. 2: System Components - 300 CC

Key:

AA Pump	AJ Manifolds
AB Ground Wire	AK Pump Air Pressure Gauge
AC Bleed-Type Master Air Switch	AL Ram Air Pressure Gauge
AD Pump Bleeder Valve	AM Pump Bracket
AE Pump Air Regulator	AN Base
AF Ram Air Regulator	AP Ram Director Switch
AG Fluid Outlet Fitting	AR Main Air Line Inlet Fitting
AH Cartridge Housing	AS Pump Fluid Intake Housing
	AZ Cartridge Rod

25T472, 600 CC

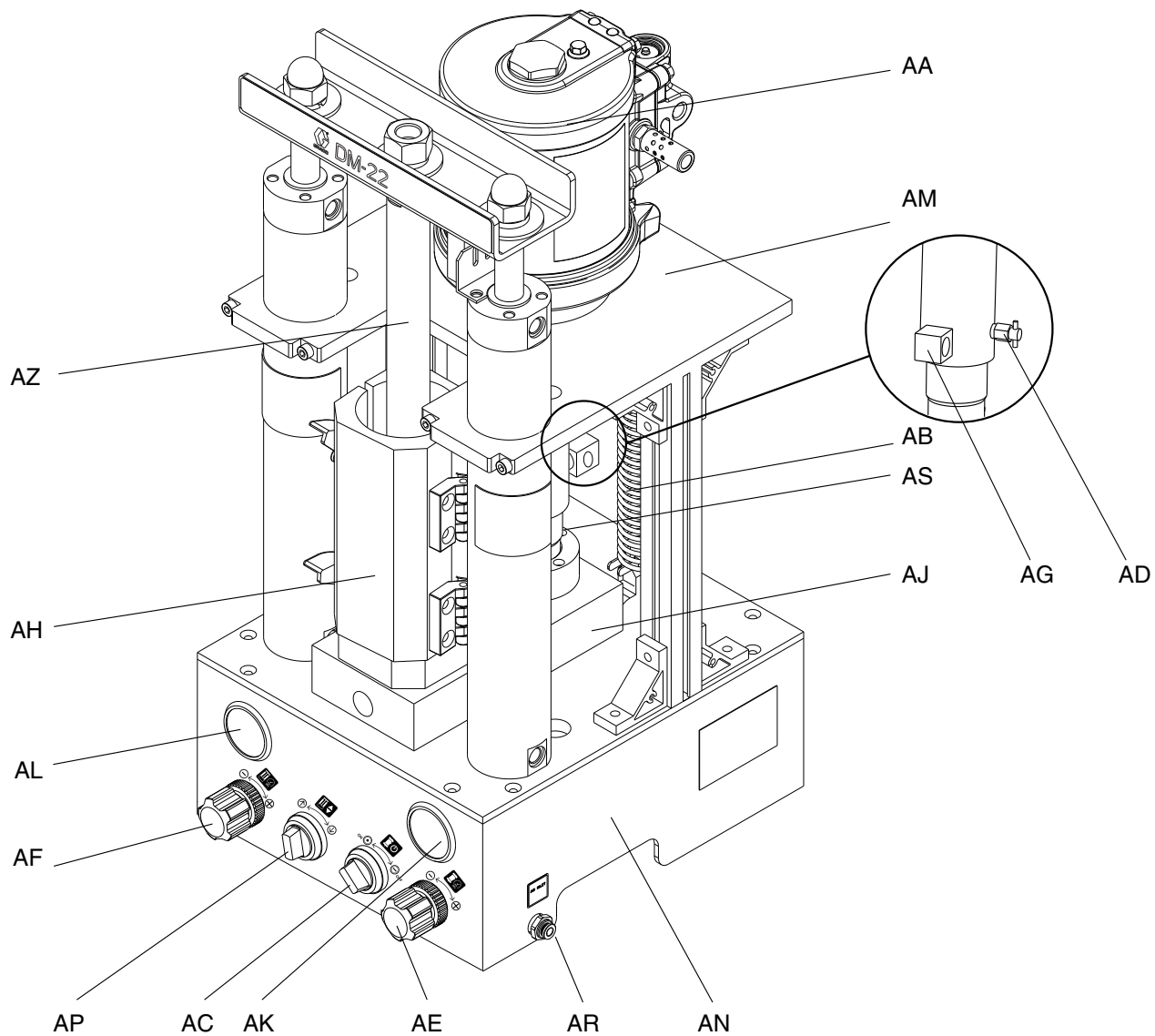


FIG. 3: System Components - 600 CC

Key:

AA Pump	AJ Manifolds
AB Ground Wire	AK Pump Air Pressure Gauge
AC Bleed-Type Master Air Switch	AL Ram Air Pressure Gauge
AD Pump Bleeder Valve	AM Pump Bracket
AE Pump Air Regulator	AN Base
AF Ram Air Regulator	AP Ram Director Switch
AG Fluid Outlet Fitting	AR Main Air Line Inlet Fitting
AH Cartridge Housing	AS Pump Fluid Intake Housing
	AZ Cartridge Rod

25T473, 1 Gallon

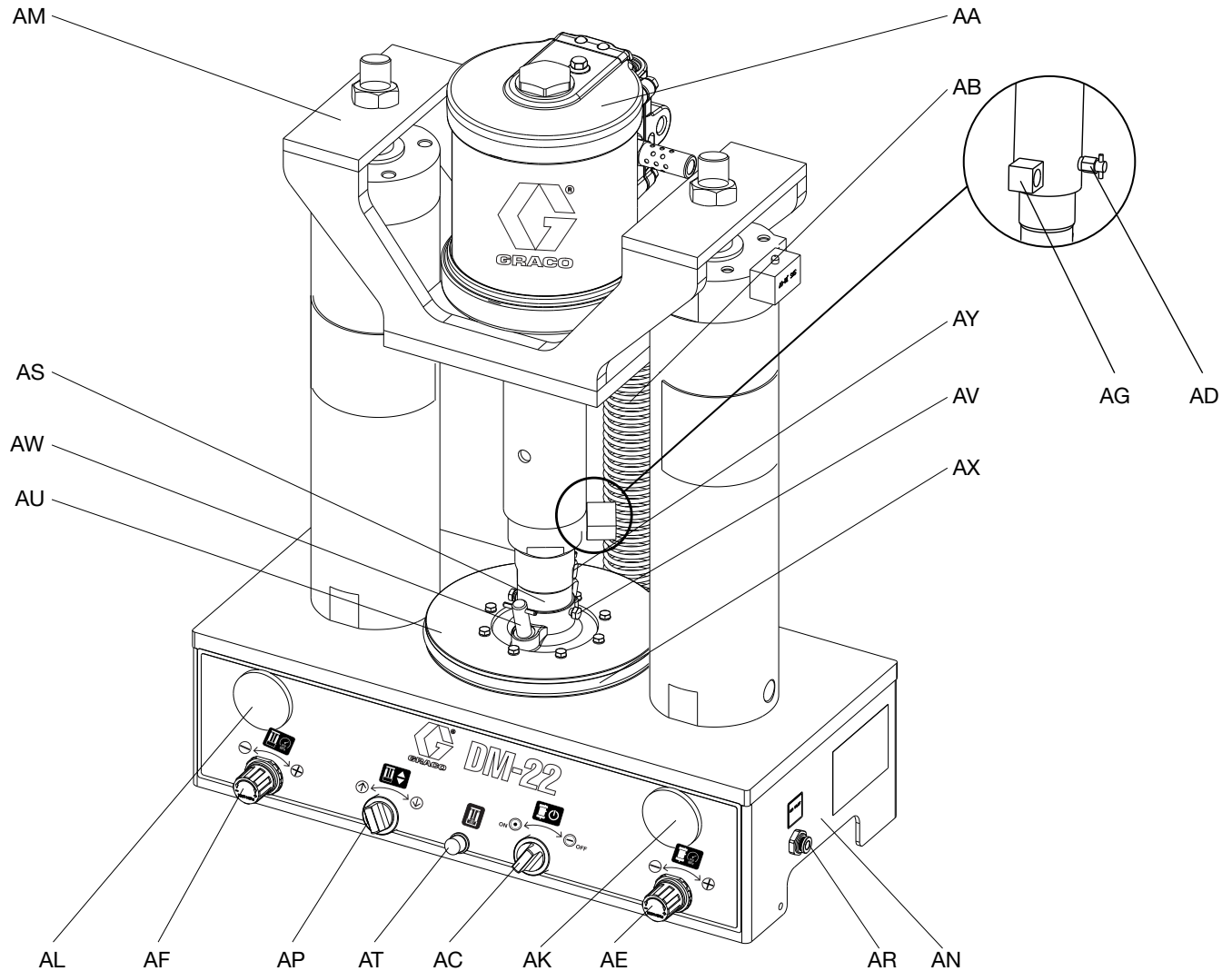


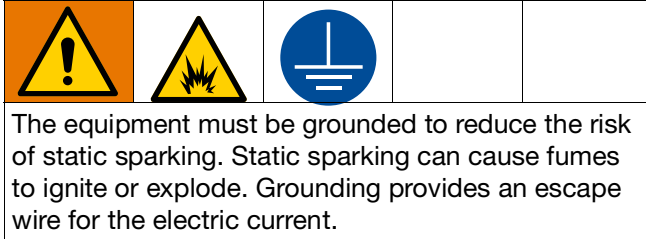
FIG. 4: System Components - 1 Gallon

Key:

- | | | | |
|----|------------------------------|----|--------------------------------|
| AA | Pump | AN | Base |
| AB | Ground Wire | AP | Ram Director Switch |
| AC | Bleed-Type Master Air Switch | AR | Main Air Line Inlet Fitting |
| AD | Pump Bleeder Valve | AS | Pump Fluid Intake Housing |
| AE | Pump Air Regulator | AT | Air Assist Valve (Push Button) |
| AF | Ram Air Regulator | AU | Wiper Plate Assembly |
| AG | Fluid Outlet Fitting | AV | Wiper Plate Cap Screws |
| AK | Pump Air Pressure Gauge | AW | Wiper Plate Bleed Valve |
| AL | Ram Air Pressure Gauge | AX | Wiper Plate Ring |
| AM | Pump Bracket | AY | Wiper Plate Connector |

Installation

Grounding



DM-22 Supply System (C): Connect the supplied ground wire and clamp to a true earth ground.

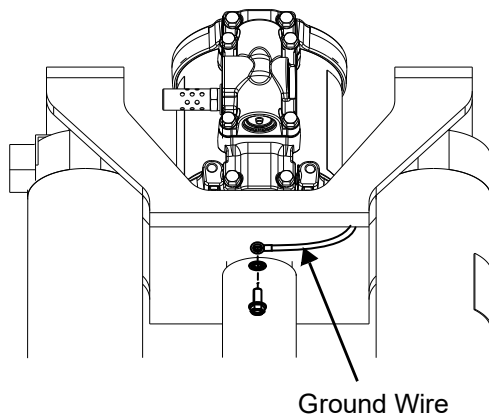


FIG. 5 Grounding

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 hoses' electrical resistance. 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.

System Location and Set Up

NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in FIG. 2, FIG. 3 and FIG. 4 on page 7, 8 and 9 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 system on a hard, level surface. Check that the system is level in all directions. Refer to **Dimensions** on page 24 to ensure there is sufficient overhead clearance for the pump when the ram is fully raised. Leave room on both sides for air regulators to be easily accessible.
2. Connect air tubes. Refer to **Connect and Disconnect Air Tubes** on page 11. Connect an air supply hose to the 8 mm(f) Main Air Line Inlet Fitting (AR).

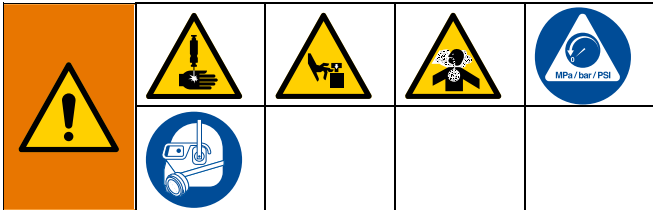
Connect and Disconnect Air Tubes

Follow these steps when connecting and disconnecting any air tubes on the DM-22 supply system.

Connection

1. Grasp the tube, then slowly push it straight into the fitting until it stops.
2. To avoid disconnection when air pressure is applied, pull gently on the tube to ensure a secure connection.

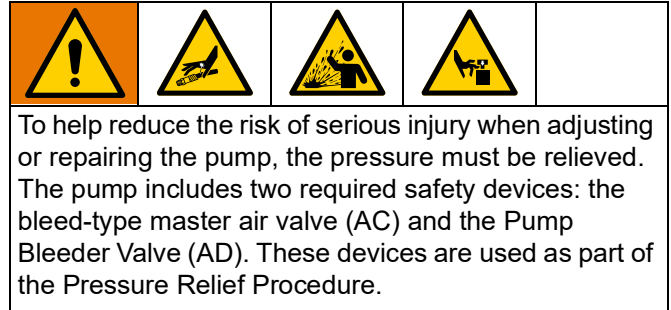
Disconnection



1. Follow the **Pressure Relief Procedure** on page 12.
2. Push evenly on the fitting's red release button.
3. While pressing the release button, pull tube out of fitting.
4. To reuse the tubing, cut off the previous connection portion at 90° while being careful not to damage the outer diameter of the tube.

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

System Components and Accessories



The following components are supplied with the pump (see FIG. 2, FIG. 3 and FIG. 4 on page 7, 8 and 9).

- **The Bleed-type Master Air Valve (AC)** 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 (AE)** 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 (AF)** controls ram speed by adjusting air pressure to the ram and pressure exerted by the wiper plate on the fluid.
- **The Pump Bleeder Valve (AD)** is supplied with your system to relieve fluid pressure in the displacement pump, hose, and dispensing valve. However, triggering the dispensing valve may not be sufficient to fully relieve pressure. Ensure 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 8 mm(f) Main Air Line Inlet Fitting (AR). 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 accessories for servicing.

Fluid Line

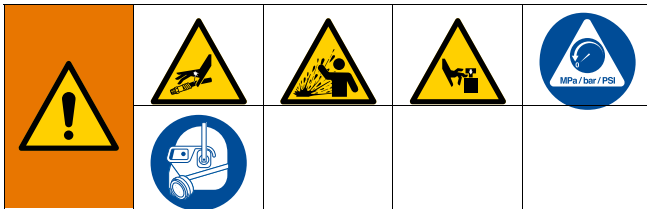
Connect a fluid line to the Fluid Outlet Fitting (AG). Connect a suitable dispensing valve to the free end of the line.

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 dispense device trigger being used with the DM-22 supply system.
2. Disconnect the main air line from the machine.
3. Set the Ram Director Switch (AP) to the “down” position. The ram will gradually drop.
4. Quickly move the Ram Director Switch (AP) up and down to bleed air from the ram cylinder when the ram is dropping down.

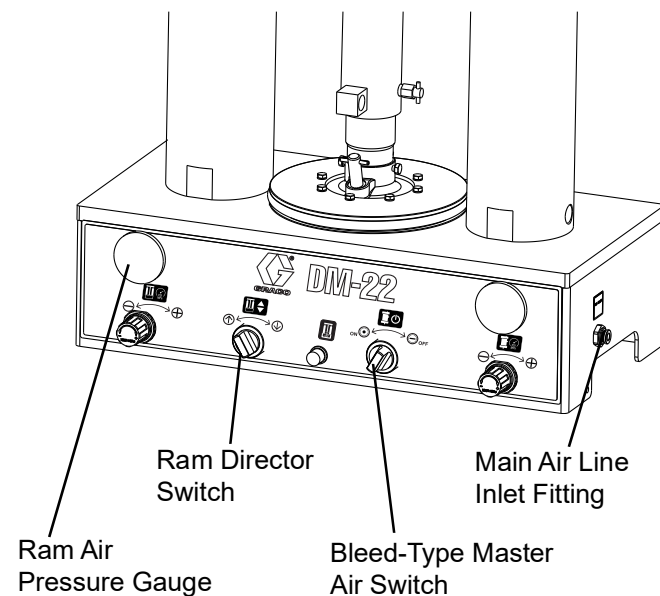


FIG. 6: Pressure Relief Components

5. Set the Bleed-type Master Air Switch (AC) to the ‘OFF’ position. The air in the air motor should be relieved.
6. Unlock the dispensing device trigger.
7. Hold a metal part of the gun/valve firmly to the side of a grounded pail. Trigger the dispensing device to relieve pressure.
8. Lock the dispensing device trigger.
9. Open the Pump Bleeder Valve (AD).
10. Leave the Pump Bleeder Valve (AD) open until ready to dispense again.

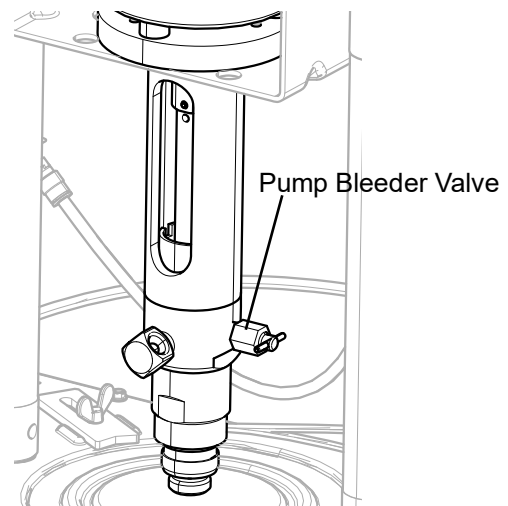
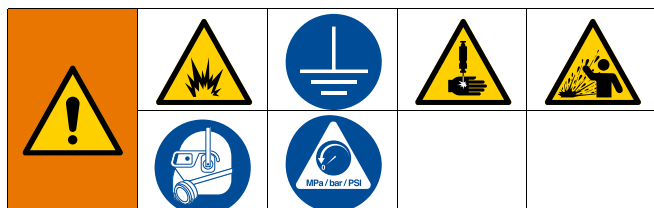


FIG. 7: Open Valves

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

11. Ready container to catch drainage. Then, slowly open the Pump Bleeder Valve (AD).
12. Slowly loosen the hose end coupling to gradually relieve pressure, then loosen it completely to empty tip/nozzle or hose.
13. 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 remains to protect pump parts. If the fluid you are using might be contaminated by the oil, flush the oil out with a compatible solvent before using the pump.

Always flush the pump with a liquid or solvent compatible with the fluid you plan to pump through the system's wetted parts. Check with your fluid manufacturer or supplier for recommended fluids and flush 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 12.
2. Remove the tip/nozzle from the dispensing device you are using with the system.
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 14. Always use the lowest possible fluid pressure when flushing (For 1 Gallon model only).
5. Trigger the dispensing device.
6. Flush the system until clear solvent flows from the dispenser.
7. Follow the **Pressure Relief Procedure** on page 12.

Start and Adjust the Ram



The pump will fall to the bottom slowly if shut off the air supply to the ram when the ram is raised. Also, as the ram is raised and lowered, the Wiper Plate (AU) (for 1 Gallon model only), 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 (AU), lip of the fluid can, pump bracket, ram tubes, and air motor coupling cavity while the pump is operating.

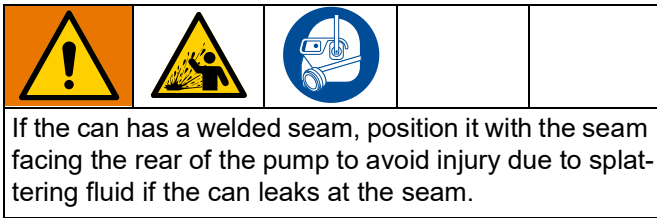
NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in FIG. 2, FIG. 3 and FIG. 4 on page 7, 8 and 9 and the parts drawings. Refer to those for operation.

1. Close all air regulators and bleed-type air valves.
2. Open air valve in the main air line and set the Ram Air Regulator (AF) to 28 psi (0.2 MPa, 2 bar). Set the Ram Director Switch (AP) 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.

NOTE: If the system is 300 CC model or 600 CC model, do only Steps 1 and 2. The remaining steps apply to 1 Gallon model only.

3. Check the fluid can is not dented or out of shape, which would damage the Wiper Plate (AU) and cause leakage around the wiper. Cut off the top of the fluid can with a can opener, or remove the bottom of the can. Ensure the edge is free of burrs, which would damage the Wiper Plate (AU). If necessary, bend the edge back with pliers so the Wiper Plate (AU) can enter the can without obstruction. Lubricate Wiper Plate Ring (AX) to help Wiper Plate (AU) enter the can easily.

4. Set a can of fluid on the ram base, centering it under the Wiper Plate (AU).



5. Loosen the Wiper Bleed Valve (AW) enough to allow any air trapped under the wiper plate to escape. Keeping hands away from the lip of the can and the wiper plate, set the ram director valve switch (AP) to the “down” position. Lower the ram until the wiper plate enters the can, then reduce the air pressure.

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

6. Continue lowering the ram until fluid appears through the wiper plate vent hole. Stop lowering the ram, then tighten the Wiper Bleed Valve (AW) securely. See FIG. 4 on page 9.

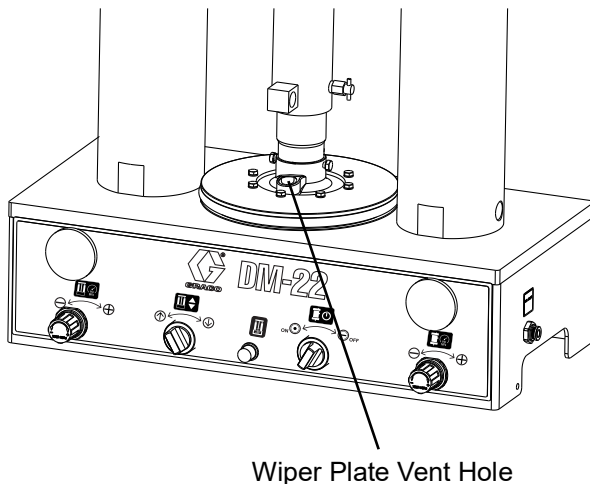


FIG. 8: Wiper Plate Vent Hole

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 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. This can amputate a hand or finger caught between the priming piston and intake housing. Follow the **Pressure Relief Procedure** on page 12 before checking, clearing, or cleaning the priming piston.

1. Supply fluid to the pump per the requirements of your system. See **Prime the Pump and Pump Fluid** on page 16.
2. Close the Pump Air Regulator (AE).
3. Set the Ram Air Regulator (AF) to 50 psi (3.5 bar).
4. Adjust the Ram Director Switch (AP) to the “up” position.
5. Install the fluid can into the cartridge or onto the ram base.
6. Set the Ram Air Regulator (AF) to 25 psi (1.8 bar)
7. **For 300 CC model or 600 CC model:** Move the Ram Director Switch (AP) to the “down” position, then lower the Cartridge Rod (AZ) slowly until it touches the fluid cartridge cover.
For 1 Gallon model: Move the Ram Director Switch (AP) to the “down” position, then lower the Wiper Plate (AU) slowly until it touches the fluid’s surface. For detailed information, see step 5 and 6 of **Start and Adjust the Ram**.
8. Reduce the air motor regulator pressure to zero and open the Bleed-type Master Air Switch (AC).

9. Adjust Pump Air Regulator (AE) pressure until the pump starts.

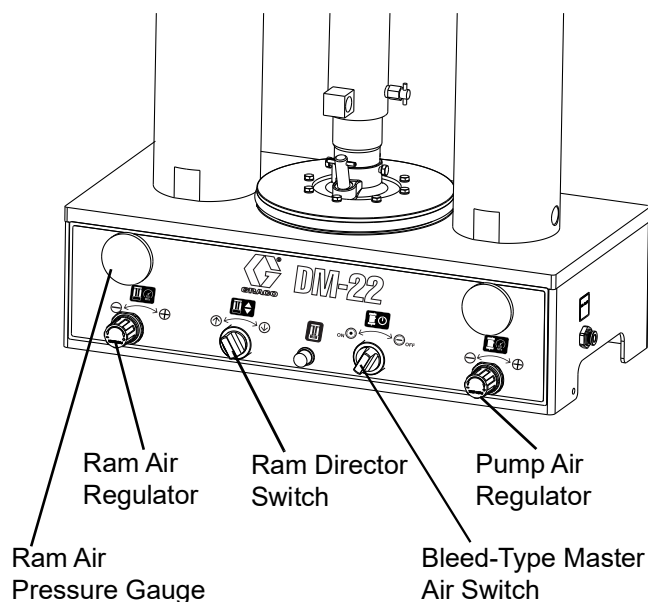


FIG. 9: Set Ram Director Switch for Startup

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

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

12. If the pump fails to prime properly, open the Pump Bleeder Valve (AD) slightly. Use the bleed hole on the underside of the valve as a priming valve until the fluid appears through the hole, then close the plug.

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

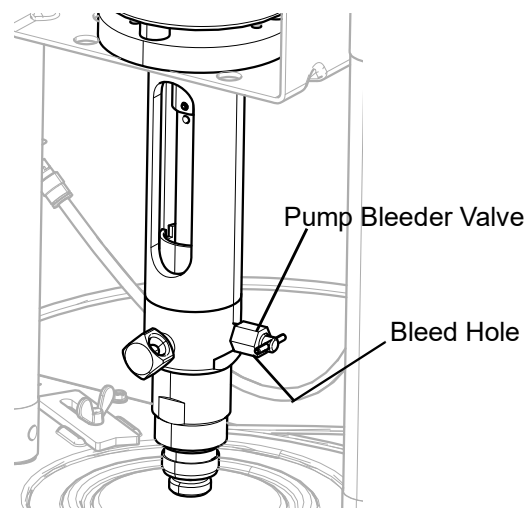


FIG. 10: Pump Bleeder Valve

NOTE: When changing fluid containers after the initial priming, open the Pump Bleeder Valve (AD) to re-prime the pump and vent any trapped air before new fluid 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 re-prime the pump and the lines, or flush and leave it filled with a compatible solvent. Eliminate all air from the fluid system.

13. With the pump and lines primed, and adequate air pressure and volume supplied, the pump starts and stops as the user opens and closes the dispensing device. In a circulating system, the pump speeds up or slows down on demand until the air supply is shut off.
14. Use the air motor regulator to control pump speed and 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. Ensure the Pump Air Regulator (AE) is closed, then set the Ram Air Regulator (AF) to about 22 psi (0.15 MPa, 1.5 bar). Set the Ram Director Switch (AP) to the “down” position.
2. Open the Bleed-type Master Air Switch (AC), then set the Pump Air Regulator (AE) to 28 psi (0.2 MPa, 2 bar).
3. Open the Pump Bleeder Valve (AD), allowing air to bleed from the pump. When the pump is fully primed, close the valve.
4. Keep the Ram Director Switch (AP) 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. (For 1 Gallon model only)

Change the Fluid Cartridge/Can



When the fluid has reached the minimum fill line, the stopping valve should cut air pressure from the air motor automatically.

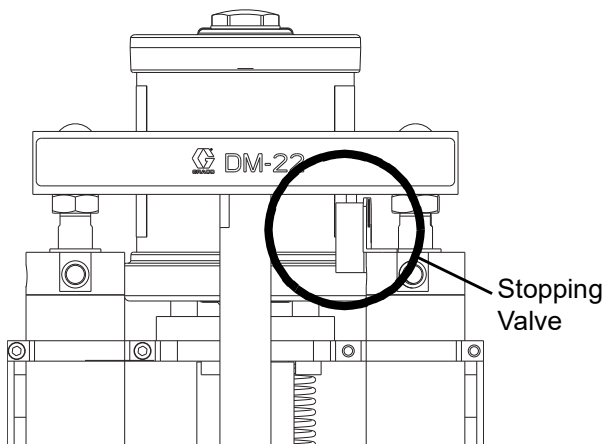


FIG. 11: Stopping Valve Position

For 300 CC model or 600 CC model

1. To stop the air pump but keep air pressure on the ram, move the Bleed-type Master Air Switch (AC) to the “OFF” position.

2. Set the Ram Air Regulator (AF) to below 30 psi (0.21 MPa, 2.1 bar).
3. Open the dispensing valve and relieve all fluid pressure in the system. Follow the **Pressure Relief Procedure** on page 12.
4. Set the Ram Director Switch (AP) to the “up” position.
5. Open the Cartridge Housing (AH), then change the fluid cartridge.

For 1 Gallon model

1. Perform the steps from 1 to 4 of 300 CC model or 600 CC model.
2. Push in the Air Assist Valve (AT) and hold it down until the Wiper Plate (AU) leaves the top of the can.

NOTICE

If the fluid has thickened or solidified and the wiper plate (AU) is stuck in the can, do not increase the setting pressure of the Ram Air Regulator (AF) to remove the Wiper Plate (AU). Excessive pressure in the can may cause the can to rupture. If you cannot pull the can off the Wiper Plate (AU) by hand, loosen the two screws (AV) holding the Wiper Plate (AU) to the pump (AA), disconnect the air tube from the Wiper Plate (AU), and remove the can and Wiper Plate (AU). It may be necessary to cut the can to remove the Wiper Plate (AU).

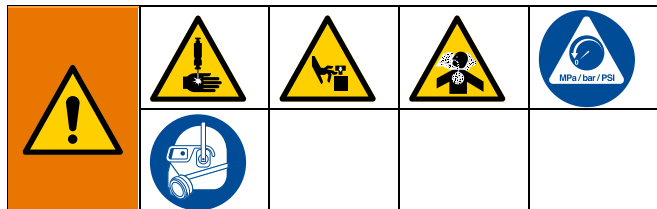
3. Loosen clamps and remove the empty can. Set a new full can on the ram base and position it under the wiper plate.



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.

4. Lower the ram and adjust the can's position relative to the Wiper Plate (AU). See **Start and Adjust the Ram** on page 13.

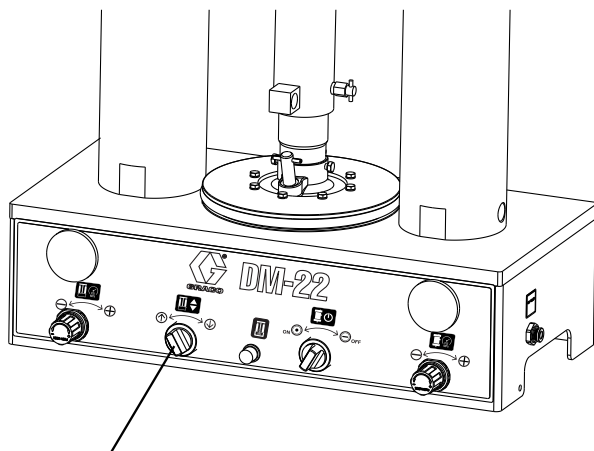
Shutdown and Care of the Pump



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. After flushing with the rust inhibitor, relieve pressure to the system, but leave rust inhibitor in the pump to protect parts from corrosion.

1. Stop the pump at the bottom of the stroke to prevent fluid from drying on the exposed displacement rod and damaging the throat packings.
2. Set the Ram Director Switch (AP) to the “down” position.



Ram Director Switch

FIG. 12: Ram Director Switch Position for Shutdown

3. Follow the **Pressure Relief Procedure** on page 12.
4. Always flush the pump before fluid dries on the displacement rod.

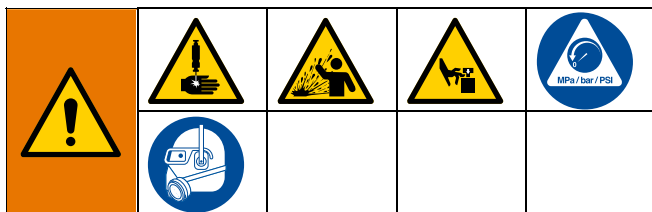
Recycling and Disposal

End of Product Life

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedure** on page 12.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Deliver remaining product to a recycling facility.

Troubleshooting



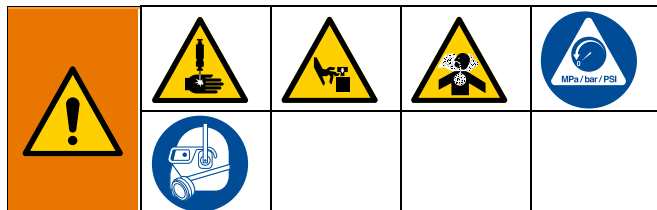
1. Follow the **Pressure Relief Procedure**, on page 12, before checking or repairing the system.
2. Check all possible problems and causes before disassembling system.

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 and 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.
	Intake valve is held open or worn or seals are worn.	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.
	Intake valve is held open or worn or seals are worn.	Clear valve; replace seals.
	Priming piston is held open or worn.	Clear; service.
	Packings in displacement pump are worn.	Replace packings.

* To determine if the fluid hose or gun is obstructed, follow the **Pressure Relief Procedure** on page 12. 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 [0.14–0.28 MPa, 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.

Repair

Disassembly



NOTE: Reference numbers in parentheses in the text refer to the callouts in section **Parts** on page 22. Refer to those for service.

1. Follow the **Pressure Relief Procedure** on page 12.
2. Disconnect all hoses. Remove the wiper plate. Remove the fluid outlet fitting, noting its position relative to the air inlet. Remove only the three screws and lock washers holding the pump to the mounting bracket.
3. Remove fluid outlet fitting and pump bleeder valve, then lift the pump straight up through the bracket.
4. Remove the pin (212) from the fluid piston (201). Unscrew the air motor shaft from the fluid piston (201) by turning the screw (227).
5. Unscrew the adapter (224) from the cylinder coupling (223). Pull the air motor coupling straight up until it clears the fluid piston (201).
6. Hold the fluid piston (201) steady by inserting a small screwdriver or punch into the 4 mm diameter hole (BA). Remove the screw (213) and lock washer (211) holding the priming piston (208) to the priming piston rod (204).
7. Pull the priming piston rod (204) and fluid piston (201) straight up out of the fluid housing (203). Remove the pin (210), and unscrew the priming piston rod (204) from the fluid piston (201).
8. Unscrew the pump fluid intake housing (205) from the fluid housing (203). Remove the o-ring (214) from the intake valve housing (205).
9. Remove the intake valve (207) and valve stop (206) from the pump fluid intake housing (205).
10. Unscrew the wet-cup/packing nut. Remove the u-cup packing (215) from the throat. Remove the washer (216) from the wet-cup/packing nut.
11. Unscrew the piston rod housing (232). Remove the u-cup packing (215) from the fluid housing (203).
12. Clean all parts with a solvent compatible with the fluid you are pumping, and inspect for wear or damage.

Air Motor

1. Use a 10 mm socket wrench to remove four screws (411). Remove the air valve (414) and gasket (409).
2. Remove four screws (411) and remove the manifold (420) and two gaskets (408).
3. Use a 10 mm socket wrench to remove the pilot valves (413) from the top and bottom cover.
4. Use a 13 mm socket wrench to remove the tie bolts (412).
5. Remove the top cover (410). Remove the o-ring (402). *On 3.5 in. motors only*, remove the plug (431) and o-ring (430).
6. Remove the shield (406) and cylinder (405).
7. Remove the o-ring (404) from the piston.
8. Secure the piston (419) in a vise with soft jaws. Use a wrench on the flats of the rod (418) to remove the rod and bottom cover assembly (401) from the piston.
9. Remove the rod from the bottom cover assembly.
10. Remove retaining ring (417), u-cup seals (407), and o-ring (402) from the bottom cover.

Reassembly

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

1. Install one u-cup packing (215) in the throat of the fluid housing (203), with the lips facing down. Apply thread lubricant and install the piston rod housing (232) with the rod guide (231) into the fluid housing (203). Torque to 298-314 in-lb (35–37 N•m).
2. Install the second u-cup packing (215) in the throat of the piston seal retainer (202) with lips facing the threads. Place the washer (216) over the seal. Apply thread lubricant and install the seal retainer (202) onto the fluid housing (203). Torque to 298-314 in-lb (35–37 N•m).
3. Screw the priming piston rod (204) into the fluid piston (201) until the holes align. Install the pin (210) in the holes. Carefully slide the assembled piston and rod down through the wet-cup and fluid housing.
4. Place the intake valve (207) onto the seat of the intake valve housing (205) with the snap-ring facing up. Insert the valve stop (206) into the intake valve housing. Be sure the valve stop (206) seats on the lip of the intake housing. Lubricate the o-ring (214). Bend it into a kidney shape, then carefully push it into the inner groove of the intake valve housing (205), to avoid damaging it.
5. Apply thread lubricant to the lower threads of the fluid housing (203). Bring the fluid housing and intake valve housing (205) together. Make sure the priming piston rod (204) passes straight through the valve stop (206) and intake valve (207) already installed in the housing (205). Screw together the fluid housing (203) and the fluid intake housing (205), then torque to 298-314 in-lb (35–37 N•m).
6. Apply lubricant to the threads of the screw (213). Hold the fluid piston (201) steady by inserting a small screwdriver or punch into the 4mm diameter hole (BA). Install the priming piston (208) onto the end of the priming piston rod (204), using the screw (213) and lockwasher (211). Torque to 14-20 in-lb (1.7–2.3 N•m).
7. Apply lubricant to the top threads of the fluid housing (203). Screw the cylinder coupling (223) onto the fluid housing, and torque to 298-314 in-lb (35–37 N•m).
8. Thread the fluid piston (201) into the shaft of the air motor (418) until the holes line up. Use the screw (213) to turn the fluid piston, if necessary. Once the holes in the air motor shaft and fluid piston are aligned, insert the pin (212).
9. Lower the pump through the mounting bracket. Orient it in the correct direction and secure to the bracket using the three screws and washers. Torque the screws to 17-33 in-lb (2–4 N•m). Reinstall the fluid outlet fitting.
10. Reinstall the wiper plate assembly on the fluid intake housing (205). Secure with the two wiper plate cap screws (302). Reconnect all hoses and return the pump to service.

Air Motor

NOTE: For easier reassembly, start with the top cover (210) turned over on the workbench and assemble the air motor upside-down.

1. Lubricate and install the o-ring (402) on the top cover (410).
2. Lubricate the inside of the cylinder (405). Lower the cylinder onto the top cover (410).
3. Install the shield (406) around the cylinder (405) and in the groove on the top cover (410).
4. See FIG. 13. Lubricate and install new u-cup seal (407) in the bottom of the bearing in the bottom cover (401). The lips must face down. Lubricate and install new u-cup seal (407) in the top of the bearing. Lips must face up. Install retaining ring (417).

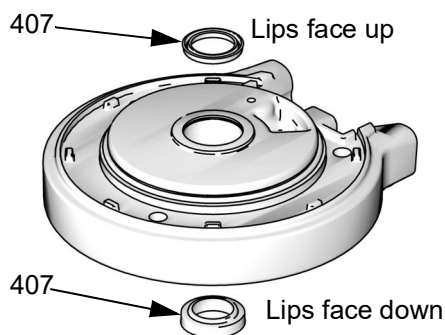


FIG. 13. Air Motor U-cup Installation

5. Lubricate and install the o-ring (402) on the bottom cover (401).
6. Carefully push the threaded end of the rod (418) up through the bottom cover (401).
7. Apply 16G561 adhesive to the threads of the rod (418). Screw the piston (419) onto the rod. Place the piston in a vise with soft jaws and torque to 35-40 ft-lb (47-54 N•m).
8. Lubricate and install the o-ring (404) on the piston (419).
9. See FIG. 14. Carefully place the bottom cover/piston assembly on the cylinder (405), sliding the piston (419) into the cylinder. The manifold surfaces of the top and bottom covers must align. Be sure the

shield (406) is in the groove on both the top and bottom covers.

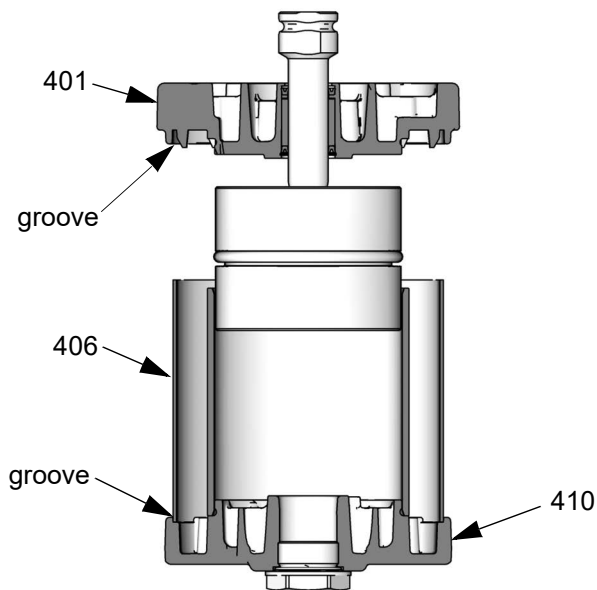


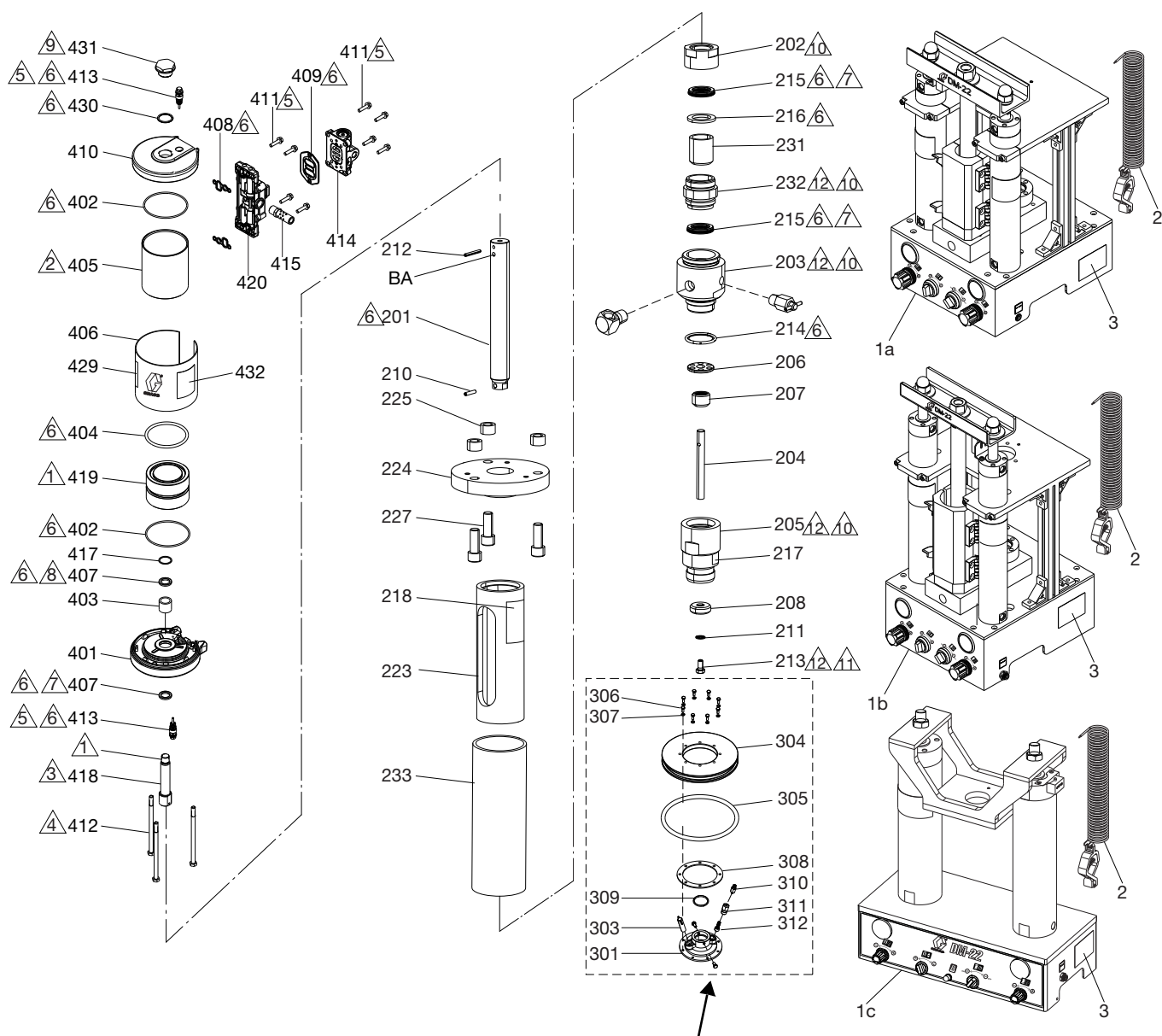
FIG. 14. Align Shield in Grooves on Covers

10. Install the tie bolts (412) hand tight.
11. Install two gaskets (408) on the manifold (420). Install the manifold (420). Torque screws (411) to 95-105 in-lb (10.7-11.9 N•m).

NOTE: The manifold is reversible for ease of placement of muffler or remote exhaust.

12. Align the air valve gasket (409) on the manifold, then attach the air valve (414). Torque screws (411) to 95-105 in-lb (11-12 N•m).
13. Tighten the tie bolts (412) halfway. Work in a criss-cross pattern. Check that the shield (406) remains in the grooves on both covers. Continue tightening the bolts in pattern to 11-13 ft-lb (15-18 N•m).
14. *On 3.5 in. motors only*, lubricate the o-ring (430). Install it and the plug (431) in the top cover (410).
15. Lubricate and install pilot valves (413) in top and bottom cover. Torque to 95-105 in-lb (11-12 N•m).

Parts



For 1 Gallon Model Only

Apply adhesive (200 series) to threads, per directions on packet.

Lubricate inside surface of cylinder with grease.

Torque to 35-40 ft-lb (47-54 N•m).

Torque to 11-13 ft-lb (15-18 N•m).

Torque to 95-105 in-lb (10.7-11.9 N•m).

Lubricate with grease.

Lips face down.

Lips face up.

Torque to 30-35 ft-lb (41-47 N•m).

Torque to 298-314 in-lb (35-37 N•m).

Torque to 14-20 in-lb (1.7-2.3 N•m).

Apply thread lubricant.

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1a	CU7051	ASSEMBLY, pump bracket, 300 CC, model 25T471	1	413 ¹⁾	247391	VALVE, pilot (pack of 2)	2
1b	CU7085	ASSEMBLY, pump bracket, 600 CC, model 25T472	1	414	24P018	VALVE, air; includes items 409 and 411 (qty 4)	1
1c	CU7059	ASSEMBLY, pump bracket, 1 gallon, model 25T473	1	415	15M213	MUFFLER	1
2	238908	Wire, ground	1	417 ^{1) 2)}	15M227	RING, retaining	1
3	190774	LABEL, series	1	418	CU7027	ROD, air motor	1
201 ⁶⁾	26A962	ROD, piston, fluid	1	419	CU7028	KIT, piston, motor; includes 16G561 adhesive.	1
202	18C131	RETAINER, seal, piston	1	420	15M130	MANIFOLD, assembly, includes 408, 409, and 411 (qty. 4)	1
203	187578	HOUSING, fluid	1	429 ⁵⁾	CU7128	LABEL, warning, English	1
204 ⁶⁾	26A963	ROD, plunger	1	430 ²⁾	110782	O-RING, top plug	1
205	186283	VALVE, intake	1	431	16C431	PLUG, top cover	1
206 ⁶⁾	26A964	STOP, fluid	1	432 ⁵⁾	CU7148	LABEL, warning, Chinese	1
207 ⁴⁾	26A965	CARTRIDGE, valve, fluid	1	301 ⁷⁾	187596	PLATE, inductor	1
208 ⁶⁾	17T152	PLUNGER, fluid	1	302 ⁷⁾	111639	SCREW, cap, hex hd	2
210 ⁶⁾	110893	PIN, spring	1	303 ⁷⁾	223746	VALVE, bleed	1
211	111640	WASHER, lock, internal	1	304 ⁷⁾	18G065	PLATE, 1gal, O-ring wiper	1
212 ⁶⁾	112120	PIN, spring	1	305 ⁷⁾	18G066	O-RING, ID 149.5 mm x 8.4 mm	2
213	111639	SCREW, cap, hex hd	1	306 ⁷⁾	130362	SCREW, cap, hex hd	8
214 ⁴⁾	110966	PACKING, o-ring	1	307 ⁷⁾	111637	WASHER, lock	8
215 ⁴⁾	18B719	SEAL, triple, lip	2	308 ⁷⁾	18G067	RING, backup	1
216	18C133	WASHER, spacer, seal	1	309 ^{6) 7)}	110954	PACKING, o-ring	1
217 ⁵⁾	186501	LABEL, safety, warning	1	310 ⁷⁾	110932	CONNECTOR, male	1
218 ⁵⁾	186500	LABEL, safety, warning	1	311 ⁷⁾	187683	HOUSING, valve	1
223	187582	COUPLING, cylinder	1	312 ⁷⁾	224918	VALVE, check	1
224	17J516	ADAPTER	1				
225	17J517	SPACER	3				
227	25A641	SCREW, shcs, 3/8 - 24 x 1.00	3				
231 ⁶⁾	18C132	GUIDE, rod, piston	1				
232 ⁶⁾	18C130	HOUSING, rod, piston	1				
233	17T317	GUARD, pinch	1				
401 ¹⁾	15M127	KIT, cover, bottom; includes 402 (qty 1), 403, 407, 413 (qty 1), and 417	1				
402 ^{1) 2)}	111624	O-RING, cover	2				
403 ¹⁾	15M223	BEARING	1				
404 ^{2) 3)}	117336	O-RING, piston	1				
405	15M211	CYLINDER, motor	1				
406	CU7117	COVER, cylinder	1				
407 ^{1) 2)}	108158	SEAL, u-cup	2				
408 ²⁾	15R001	GASKET, manifold	2				
409 ²⁾	15M182	GASKET, air valve	1				
410	15M128	KIT, cover, top; includes 402 and 413 (qty 1 of each). 15X353 also includes 430 and 431.	1				
411	15R553	SCREW, M6 x 25	8				
412	15M314	BOLT, tie, hex head	3				

¹⁾ Parts included in Kit 24G696 (purchase separately).

²⁾ Parts included in Kit 24G700 (purchase separately).

³⁾ Parts included in Kit 117336 (purchase separately).

⁴⁾ These parts are included in Pump Repair Kit 26A972, which may be purchased separately. This kit also includes two Part No. 110954 PTFE O-rings for use with the wiper plate.

⁵⁾ Replacement safety labels, tags, and cards are available at no cost.

⁶⁾ These parts can be purchased separately.

⁷⁾ For 1 Gallon model only.

Accessory

Can Opener (not supplied with system)

For use with containers that have a lip at the top that needs to be removed.

Graco Kit 111002 is available and can be purchased separately.

Dimensions

25T471, 300 CC

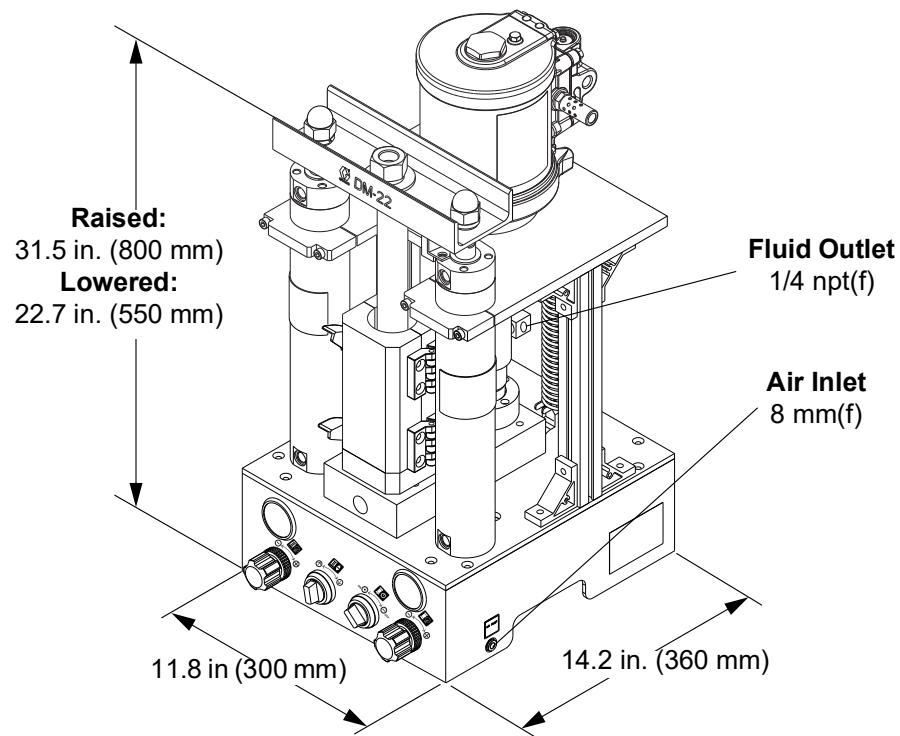


FIG. 15: DM-22 Supply System Dimensions - 300 CC

25T472, 600 CC

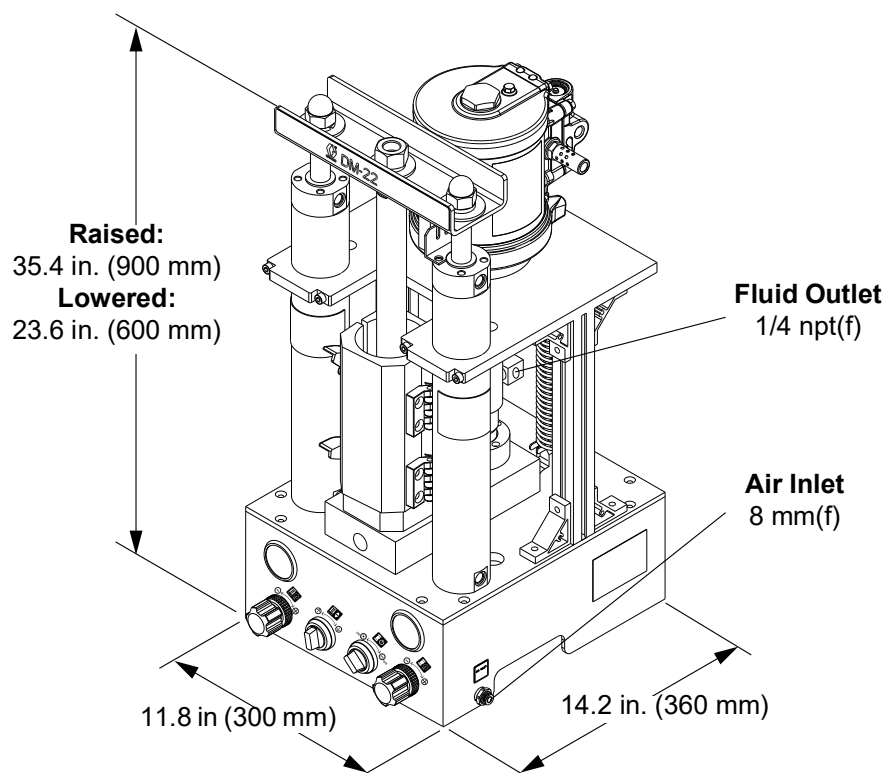


FIG. 16: DM-22 Supply System Dimensions - 600 CC

25T473, 1 Gallon

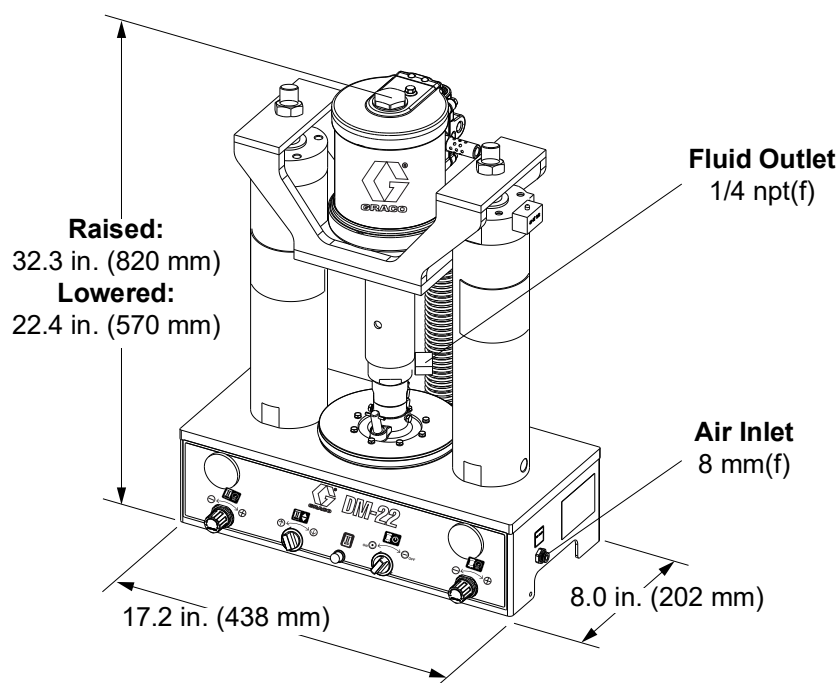
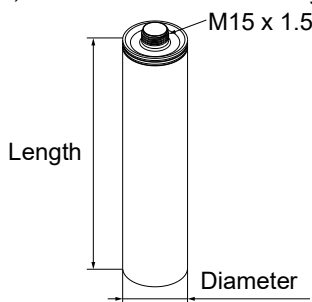


FIG. 17: DM-22 Supply System Dimensions - 1 Gallon

Technical Specifications

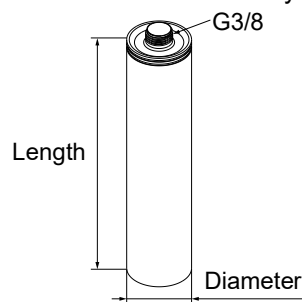
DM-22 Supply System		
	US	Metric
Maximum fluid output pressure	2200 psi	15.2 MPa, 152 bar
Air input pressure	0-100 psi	0-0.7 MPa, 0-7 bar
Maximum fluid viscosity	1,000,000 cps	
Volume per stroke	0.17 oz	5.0 cc
Recommended pump speed for continuous operation	40 cycles per minutes (cpm)	
Maximum recommended pump speed	60 cpm	
Stroke length	3/4 in.	19 mm
Maximum pump operating temperature	140 °F	60 °C
Net Weight		
25T471, 300 CC ⁽¹⁾	75 lb	34 kg
25T472, 600 CC ⁽²⁾	79 lb	36 kg
25T473, 1 Gallon	62 lb	28 kg
Sound Data		
Sound power*	84.5 dB(A)	
Sound pressure**	77.9 dB(A)	
Inlet/Outlet Sizes		
Air inlet size	8 mm(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		
* Sound power at 70 psi (0.48 MPa, 4.8 bar), 80 cpm. Sound power measured per ISO-9614-2.		
** Sound pressure was tested 3.28 feet (1 m) from equipment.		
All trademarks or registered trademarks are the property of their respective owners.		

- (1) For aluminium cartridge, M15 x 1.5, length < 230 mm, diameter: 47-50 mm only.



If the cartridge size or material is different, please contact with Graco sales representative for custom solution.

- (2) For EFD plastic cartridge, G3/8, length < 260 mm, diameter: 67-68.5 mm only.



If the cartridge size or material is different, please contact with Graco sales representative for custom solution.

California Proposition 65

CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

Sealant and Adhesive Dispensing Equipment

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor, go to www.graco.com, or call to identify the nearest distributor.

If calling from the USA: 1-800-746-1334

If calling from Asia Pacific: 00-86-512-6260-5711 or 00-86-21-2310-6198

If calling from Europe: 00-32-89-770-862

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. MM 3A7931C

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA
Copyright 2020, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.

www.graco.com

Revision C, September 2023