List of Models

Pump Part No. and Series	Pump Model	Ratio	Maximum Fluid Working Pressure	Maximum Air Input Pressure (or Hydraulic Input Pressure*)
24Y218, Series A	XL10000™	47:1	31 MPa, 310 bar (4500 psi)	0.7 MPa, 7 bar (100 psi)
24Y853, Series A	XL10000™	47:1		
24Y219, Series A	XL10000™	47:1	31 MPa, 310 bar (4500 psi)	0.7 MPa, 7 bar (100 psi)
24Y211, Series A	XL10000™	47:1	31 MPa, 310 bar (4500 psi)	0.7 MPa, 7 bar (100 psi)
24Y212, Series A	XL10000™	47:1	31 MPa, 310 bar (4500 psi)	0.7 MPa, 7 bar (100 psi)
222892, Series B	Viscount®	—	18 MPa, 179 bar (2600 psi)	10 MPa, 103 bar (1500 psi)*

Table of Contents

Symbols

Warning Symbol

⚠ WARNING

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol

⚠ CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

⚠ WARNING

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are not sure, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. Refer to the **Technical Data** on pages 32–35 for the maximum working pressure of this equipment.
- Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Do not kink or overbend hoses or use hoses to pull equipment.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 82ºC (180ºF) or below –40ºC (–40ºF).
- Wear hearing protection when operating this equipment.
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

⚠ WARNING

SKIN INJECTION HAZARD

Spray from the gun, leaks or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate surgical treatment.**
- Do not point the gun at anyone or at any part of the body.
- Do not put your hand or fingers over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove or rag.
- Do not “blow back” fluid; this is not an air spray system.
- Always have the tip guard and the trigger guard on the gun when spraying.
- Check the gun diffuser operation weekly. Refer to the gun manual.
- Be sure the gun trigger safety operates before spraying.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 12 if the spray tip clogs and before cleaning, checking or servicing the equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. Do not repair high pressure couplings; you must replace the entire hose.

MOVING PARTS HAZARD

Moving parts, such as the air motor piston, can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Before servicing the equipment, follow the **Pressure Relief Procedure** on page 12 to prevent the equipment from starting unexpectedly.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- Ground the equipment and the object being sprayed. Refer to **Grounding** on page 6.
- If there is any static sparking or you feel an electric shock while using this equipment, **stop spraying immediately**. Do not use the equipment until you identify and correct the problem.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being sprayed.
- Keep the spray area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the spray area.
- Extinguish all open flames or pilot lights in the spray area.
- Do not smoke in the spray area.
- Do not turn on or off any light switch in the spray area while operating or if fumes are present.
- Do not operate a gasoline engine in the spray area.
- Keep a fire extinguisher in the work area.

TOXIC FLUID HAZARD

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

Installation

(ALL PUMPS)

Grounding

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Before operating the pump, ground the system as explained below. Also read the section **FIRE OR EXPLOSION HAZARD** on page 5.

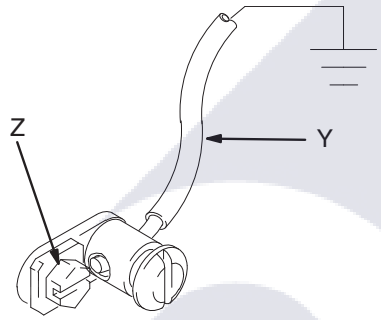

Fig. 1

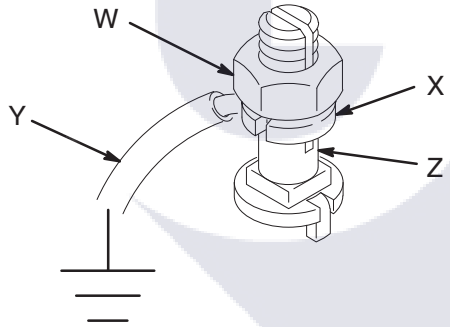

Fig. 2

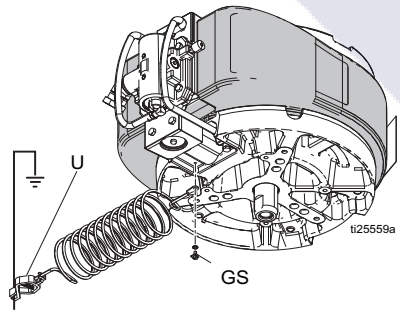

Fig. 3

1. *King Pumps*: use a ground wire and clamp. See Fig. 1. Remove the ground screw (Z) and insert through eye of ring terminal at the end of ground wire (Y). Fasten ground screw back onto pump and tighten securely. Connect the other end of ground wire to a true earth ground. Order Part No. 222011 Ground Wire and Clamp.

   XL 10000 Pumps™: See figure 3. Verify that the ground screw (GS) is attached and tightened securely to the air motor. Connect the clamp (U) of the static ground cable (H) to a true earth ground. For a ground wire and clamp, order part No. 244524.

   All Other Pumps: use a ground wire and clamp. See Fig. 2. Loosen the grounding lug locknut (W) and washer (X). Insert one end of a 1.5 mm@ (12 ga) minimum ground wire (Y) into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the wire to a true earth ground. Order Part No. 237569 Ground Wire and Clamp.

2. *Air, hydraulic, and fluid hoses:* use only electrically conductive hoses.
3. *Air compressor or hydraulic power supply:* follow manufacturer's recommendations.
4. *Spray gun:* ground through connection to a properly grounded fluid hose and pump.
5. *Fluid supply container:* follow your local code.
6. *Object being sprayed:* follow your local code.
7. *Solvent pails used when flushing:* follow your local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
8. *To maintain grounding continuity when flushing or relieving pressure,* hold a metal part of the spray gun firmly to the side of a grounded metal pail, then trigger the gun.

Notes

Installation

(AIR-POWERED PUMPS)

NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.

Fig. 4 is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

Assembling Models 24Y218, 24Y211, and 24Y212

If you have Models 24Y218, 24Y211, or 24Y212 Pumps, assemble the displacement pump (105) to the XL10000™ air motor (101) as instructed on page 18.

TYPICAL INSTALLATION

KEY

- **A** Pump
- **B** Wall Bracket
- **C** Pump Runaway Valve
- **D** Air Line Lubricator
- **E** Bleed-Type Master Air Valve (required, for pump)
- **F** Pump Air Regulator
- **G** Air Manifold
- **H** Electrically Conductive Air Supply Hose
- **J** Air Line Filter
- **K** Bleed-Type Master Air Valve (for accessories)
- **L** Fluid Filter
- **M** Fluid Drain Valve (required)
- **N** Electrically Conductive Fluid Supply Hose
- **P** Fluid Whip Hose
- **R** Gun/Valve Swivel
- **S** Airless Spray Gun or Dispensing Valve
- **T** Drum Suction Kit
- **Y** Ground Wire (required; see page 6 for installation instructions)

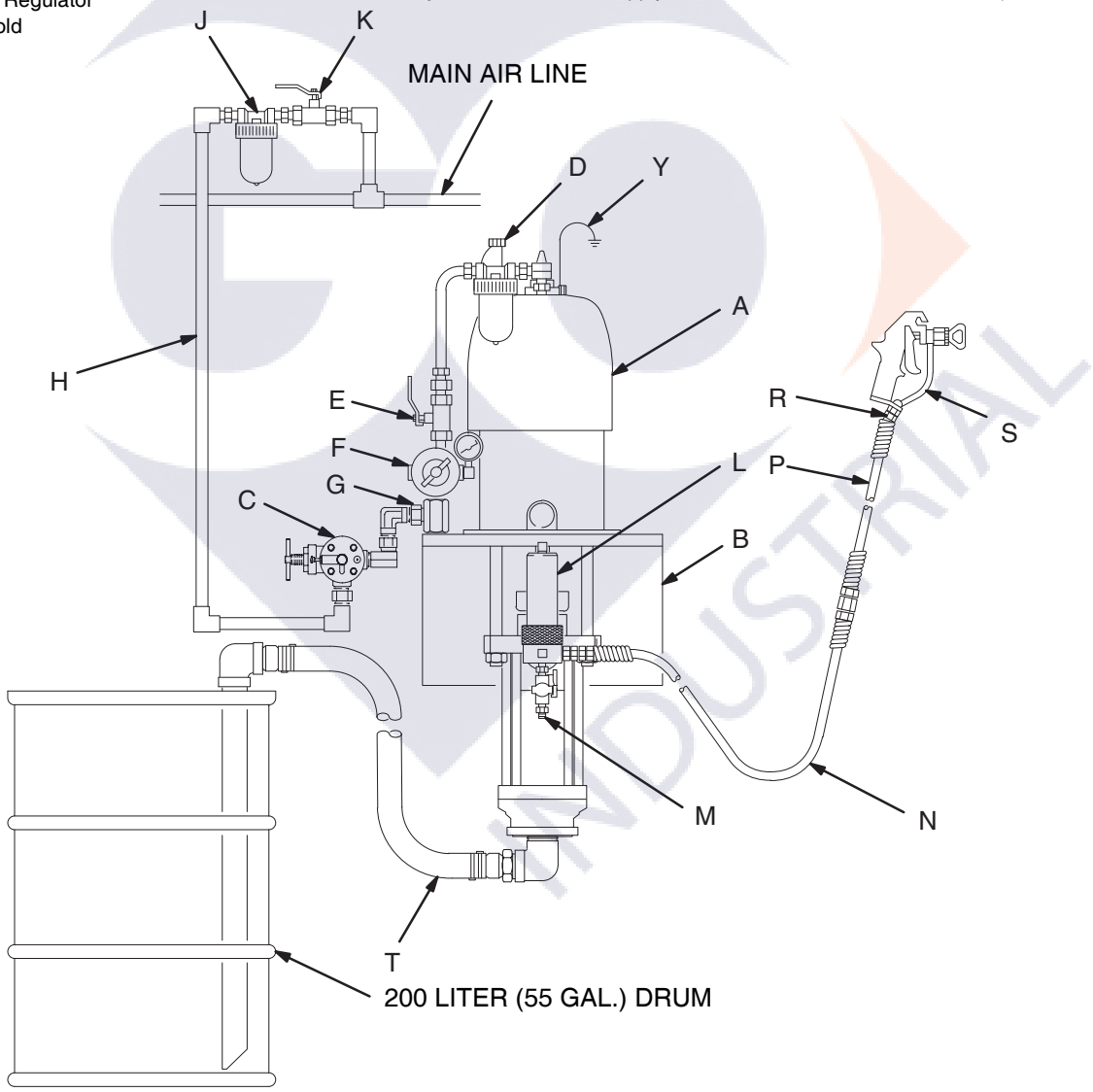

Fig. 4

Installation

(AIR-POWERED PUMPS)

SYSTEM ACCESSORIES

⚠ WARNING

A bleed-type master air valve (E) and a fluid drain valve (M) are required in your system. These accessories help reduce the risk of serious injury, including fluid injection and splashing of fluid in the eyes or on the skin, and injury from moving parts if you are adjusting or repairing the pump.

The bleed-type master air valve relieves air trapped between this valve and the pump after the air is shut off. Trapped air can cause the pump to cycle unexpectedly. Locate the valve close to the pump.

The fluid drain valve assists in relieving fluid pressure in the displacement pump, hose, and gun. Triggering the gun to relieve pressure may not be sufficient.

Air and Fluid Hoses

Be sure all air hoses (H) and fluid hoses (N and P) are properly sized and pressure-rated for your system. Use only electrically conductive hoses. Fluid hoses must have spring guards on both ends. Use a whip hose (P) and a swivel (R) between the main fluid hose (N) and the gun/valve (S) to allow freer gun/valve movement.

Mounting Accessories

Mount the pump (A) to suit the type of installation planned. Fig. 4 illustrates a wall-mounted system. Pump dimensions and the mounting hole layout are shown on pages 36 and 37.

If you are using an elevator or a cart, refer to the separate manuals supplied with those components for installation and operation instructions.

Air Line Accessories

Install the following accessories in the order shown in Fig. 4, using adapters as necessary:

- **An air line lubricator (D)** provides automatic air motor lubrication.
- **A bleed-type master air valve (E)** is required in your system to relieve air trapped between it and the air motor when the valve is closed (see the **WARNING** above). Be sure the bleed valve is easily accessible from the pump, and is located **downstream** from the air regulator.
- **An air regulator (F)** controls pump speed and outlet pressure by adjusting the air pressure to the pump. Locate the regulator close to the pump, but **upstream** from the bleed-type master air valve.
- **A pump runaway valve (C)** senses when the pump is running too fast and automatically shuts off the air to the motor. A pump which runs too fast can be seriously damaged.
- **An air manifold (G)** has a swivel air inlet. It mounts to a wall bracket, and provides ports for connecting lines to air-powered accessories.
- **An air line filter (J)** removes harmful dirt and moisture from the compressed air supply.
- **A second bleed-type air valve (K)** isolates the air line accessories for servicing. Locate upstream from all other air line accessories.

Fluid Line Accessories

Install the following accessories in the positions shown in Fig. 4, using adapters as necessary:

- **A fluid filter (L)** with a 60 mesh (250 micron) stainless steel element, to filter particles from the fluid as it leaves the pump. It includes a **fluid drain valve (M)**, which is required in your system to relieve fluid pressure in the hose and gun (see the **WARNING** at left).
- **A gun or valve (S)** dispenses the fluid. The gun shown in Fig. 4 is an airless spray gun for light to medium viscosity fluids.
- **A gun swivel (R)** allows freer gun movement.
- **A suction kit (T)** allows the pump to draw fluid from a 200 liter (55 gallon) drum.

Installation

(HYDRAULIC-POWERED PUMPS)

NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.

NOTE: Accessories are available from your Graco distributor. If you supply your own accessories, be sure they are adequately sized and pressure-rated to meet the system's requirements.

Fig. 5 is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

⚠ CAUTION

It is very important to keep the hydraulic supply system clean at all times. Be sure that all hydraulic fluid lines are absolutely clean. Blow out the lines with air and flush thoroughly with solvent before connecting to the hydraulic motor, to avoid introducing harmful contaminants into the motor. Plug the hydraulic lines immediately when they are disconnected.

Do not exceed 37.8 liter/min (10 gpm) hydraulic oil volume to the motor, to avoid stalling the pump.

For optimum pump performance, keep the temperature of the hydraulic oil below 54ºC (130ºF).

TYPICAL INSTALLATION

KEY

- **A** Pump
- **B** Wall Bracket
- **C** Hydraulic Supply Line
- **D** Hydraulic Return Line
- **E** Drain Line (from pressure reducing valve)
- **F** Pressure Gauge
- **G** Flow Control Valve
- **H** Pressure Reducing Valve
- **J** Accumulator
- **K** Drain Line (from motor drip pan)
- **L** Fluid Filter
- **M** Fluid Drain Valve (required)
- **N** Electrically Conductive Fluid Supply Hose
- **P** Fluid Whip Hose
- **R** Gun/Valve Swivel
- **S** Airless Spray Gun or Dispensing Valve
- **T** Drum Suction Kit
- **U** Hydraulic Supply Line Shutoff Valve
- **V** Hydraulic Return Line Shutoff Valve
- **Y** Ground Wire (required, see page 6 for installation instructions)
- **AA** Hydraulic Return Line Filter

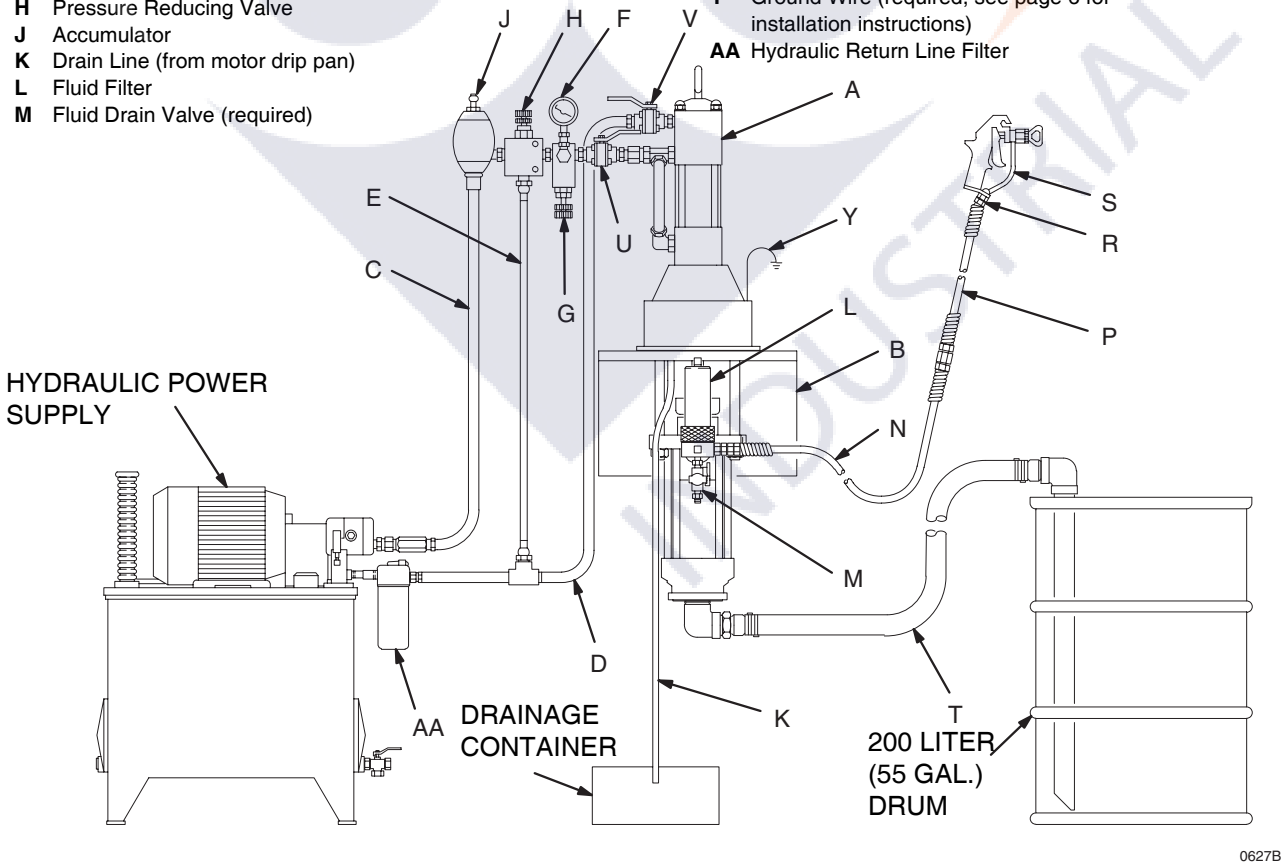

Fig. 5

Installation

(HYDRAULIC-POWERED PUMPS)

SYSTEM ACCESSORIES

⚠ WARNING

A fluid drain valve (M) is required in your system. This accessory helps reduce the risk of serious bodily injury, including fluid injection and splashing of fluid in the eyes or on the skin, and injury from moving parts if you are adjusting or repairing the pump.

The fluid drain valve assists in relieving fluid pressure in the displacement pump, hose, and gun. Triggering the gun to relieve pressure may not be sufficient.

Mounting Accessories

Mount the pump (A) to suit the type of installation planned. Fig. 5 illustrates a wall-mounted system. Pump dimensions and the mounting hole layout are shown on pages 36 and 37.

Filters

Be sure your hydraulic power supply is equipped with a suction filter to the hydraulic pump and a system return line filter (AA) of 10 micron size.

Carefully follow the manufacturer's recommendations on reservoir and filter cleaning, and periodic changes of hydraulic fluid. Use only Graco-approved hydraulic oil. Order Part No. 169236, 5 gal. (19 liter) or 207428, 1 gal. (3.8 liter). Do not substitute a lower grade oil or one with a lower flash point.

Hydraulic Lines

The motor has a 3/4 npt(f) hydraulic oil supply fitting, and a 1 in. npt(f) hydraulic oil return fitting. Use a minimum 13 mm (1/2 in.) ID hydraulic supply line, and a minimum 22 mm (7/8 in.) ID return line.

On the hydraulic supply line (C), install the following accessories in the order shown in Fig. 5, using adapters as necessary:

- **A shutoff valve (U)** isolates the pump for service.
- **A fluid pressure gauge (F)** to monitor hydraulic oil pressure to the motor and to avoid overpressurizing the motor or displacement pump, and **a pressure and temperature-compensated flow control valve (G)** to prevent the motor from running too fast and possibly damaging itself.
- **A pressure reducing valve (H), with a drain line (E)** run directly to the hydraulic return line (D).
- **An accumulator (J)** to reduce the hammering effect caused by the motor reversing direction.
- **A shutoff valve (V)** isolates the pump for service.
- **A filter (AA)** of 10 micron size.

Hydraulic Motor Drip Pan

The hydraulic motor has a drip pan to collect any leakage. Connect a 6 mm (1/4 in.) ID drain line (K) to the barbed fitting on the drip pan, and place the free end in a container to receive the drainage.

Fluid Supply Hoses

Be sure all fluid supply hoses (N and P) are properly sized and pressure-rated for your system. Use only electrically conductive hoses. Fluid hoses must have spring guards on both ends. Use a whip hose (P) and a swivel (R) between the main fluid hose (N) and the gun/valve (S) to allow freer gun/valve movement.

Fluid Line Accessories

Install the following accessories in the positions shown in Fig. 5, using adapters as necessary:

- **A fluid filter (L)** with a 60 mesh (250 micron) stainless steel element, to filter particles from the fluid as it leaves the pump. It includes a **fluid drain valve (M)**, which is required in your system to relieve fluid pressure in the hose and gun (see the **WARNING** at left).
- **A gun or valve (S)** dispenses the fluid. The gun shown in Fig. 5 is an airless spray gun for light to medium viscosity fluids.
- **A gun swivel (R)** allows freer gun movement.
- **A suction kit (T)** allows the pump to draw fluid from a 200 liter (55 gallon) drum.

Operation/Maintenance

(ALL PUMPS)

Pressure Relief Procedure

⚠ WARNING

SKIN INJECTION HAZARD
The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure,
- stop spraying,
- check or service any of the system equipment,
- or install or clean the spray tips.

1. Lock the gun/valve trigger safety.
2. Shut off the air or hydraulic supply to the pump.
3. *In air-powered systems*, close the bleed-type master air valve (required in your system).

   In hydraulic-powered systems, close the hydraulic supply line valve first, then the return line valve.
4. Unlock the gun/valve safety latch.
5. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun/valve to relieve pressure.
6. Lock the gun trigger safety.
7. Open the drain valve (required in your system) and/or the pump bleeder valve, having a container ready to catch the drainage.
8. Leave the drain valve open until you are ready to spray/dispense again.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.

Packing Nut/Wet-Cup

Fill the packing nut/wet-cup (3) 1/3 full with Graco Throat Seal Liquid (TSL) or compatible solvent. See Fig. 6. Using the supplied wrench (104), adjust the packing nut weekly so it is just snug; do not overtighten. Follow the **Pressure Relief Procedure** at left.

Flushing the Pump

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

⚠ WARNING

For your safety, read the warning section, **Fire or Explosion Hazard** on page 5 before flushing, and follow all recommendations given there.

Model 24Y192 Shown

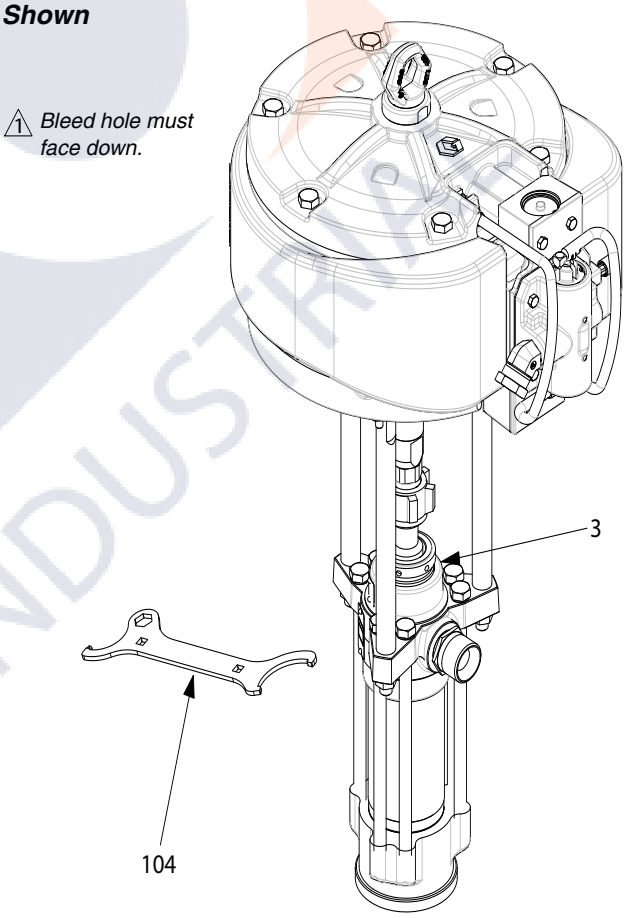

Fig. 6

Operation/Maintenance

(AIR-POWERED PUMPS)

Starting and Adjusting the Pump

1. Refer to Fig. 4 on page 8. Connect the suction kit (T) to the pump's fluid inlet, and place the tube into the fluid supply.

2. Be sure the air regulator (F) is closed. Then open the pump's bleed-type master air valve (E). Hold a metal part of the spray gun/dispensing valve (S) firmly to the side of a grounded metal pail and hold the trigger open. Now slowly open the air regulator until the pump starts.

3. Cycle the pump slowly until all air is pushed out and the pump and hoses are fully primed. Release the gun/valve trigger and lock the trigger safety latch. The pump should stall against pressure when the trigger is released.

⚠ WARNING

SKIN INJECTION HAZARD

To reduce the risk of fluid injection, do not use your hand or fingers to cover the bleed hole on the underside of the bleeder valve body (34) when priming the pump. Use a crescent wrench to open and close the bleeder plug (35). Keep your hands away from the bleed hole.

4. If the pump fails to prime properly, open the bleeder valve (35) slightly. Use the bleed hole on the underside of the valve body (34) as a priming valve until the fluid appears at the hole. See Fig. 6. Close the plug (35).

NOTE: When changing fluid containers with the hose and gun already primed, open the bleeder valve plug (35), to assist in priming the pump and venting air before it enters the hose. Close the bleeder valve when all air has been eliminated.

5. With the pump and lines primed, and with adequate air pressure and volume supplied, the pump will start and stop as the gun/valve is opened and closed. In a circulating system, the pump will speed up or slow down on demand, until the air supply is shut off.

6. Use the air regulator to control the pump speed and the fluid pressure. Always use the lowest air pressure necessary to get the desired results. Higher pressures cause premature tip/nozzle and pump wear.

⚠ WARNING

COMPONENT RUPTURE HAZARD

To reduce the risk of overpressurizing your system, which could cause component rupture and serious injury, *never exceed the specified Maximum Incoming Air Pressure to the pump* (see the **Technical Data** on pages 32–35).

7. Never allow the pump to run dry of the fluid being pumped. A dry pump will quickly accelerate to a high speed, possibly damaging itself. A pump runaway valve (C), which shuts off the air supply to the pump if the pump accelerates beyond the pre-set speed, is available. See Fig. 4 on page 8. If your pump accelerates quickly, or is running too fast, stop it immediately and check the fluid supply. If the supply container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines with fluid, or flush and leave it filled with a compatible solvent. Be sure to eliminate all air from the fluid system.

Shutdown and Care of the Pump

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 12.

For overnight shutdown, **relieve the pressure**. Stop the pump at the bottom of its stroke to prevent fluid from drying on the exposed displacement rod and damaging the throat packings.

Always flush the pump before the fluid dries on the displacement rod. Never leave water or water-based fluid in the pump overnight. First, flush with water or a compatible solvent, then with mineral spirits. Relieve the pressure, but leave the mineral spirits in the pump to protect the parts from corrosion.

Operation/Maintenance

(HYDRAULIC-POWERED PUMPS)

Starting and Adjusting the Pump

1. Refer to Fig. 5 on page 10. Connect the suction kit (T) to the pump's fluid inlet, and place the tube into the fluid supply.
2. Check the hydraulic fluid level before each use, and add fluid as necessary.
3. Make certain that the supply line shutoff valve (U) and the return line shutoff valve (V) are closed.
4. Start the hydraulic power supply.
5. Hold a metal part of the gun/valve (S) firmly to the side of a grounded metal pail and hold the trigger open.
6. Open the return line shutoff valve (V) first, then slowly open the supply line shutoff valve (U).
7. Cycle the pump slowly until all air is pushed out and the pump and hoses are fully primed. Release the gun/valve trigger and engage the safety latch. The pump should stall against pressure when the trigger is released.

⚠ WARNING

SKIN INJECTION HAZARD

To reduce the risk of fluid injection, do not use your hand or fingers to cover the bleed hole on the underside of the bleeder valve body (34) when priming the pump. Use a crescent wrench to open and close the bleeder plug (35). Keep your hands away from the bleed hole.

8. If the pump fails to prime properly, open the bleeder valve (35) slightly. Use the bleed hole, on the underside of the body (34), as a priming valve until the fluid appears at the hole. See Fig. 6. Close the plug (35).

NOTE: When changing fluid containers with the hose and gun already primed, open the bleeder valve plug (35), to assist in priming the pump and venting air before it enters the hose. Close the bleeder valve when all air has been eliminated.

9. With the pump and lines primed, and with adequate hydraulic volume supplied, the pump will start and stop as the gun/valve is opened and closed. In a circulating system, the pump will speed up or slow down on demand, until the hydraulic power supply is shut off.
10. Use the fluid pressure gauge (F) and flow control valve (G) to control the pump speed and the fluid outlet pressure. Always use the lowest hydraulic flow and pressure necessary to get the desired results. Higher pressures cause premature tip/nozzle and pump wear.

⚠ WARNING

COMPONENT RUPTURE HAZARD

To reduce the risk of overpressurizing your system, which could cause component rupture and serious injury, *never exceed 10 MPa, 103 bar (1500 psi) Maximum Hydraulic Input Pressure to the pump, or 140 bar (2000 psi) Maximum Fluid Working Pressure* (see the **Technical Data** on page 35).

To prevent overpressurizing the hydraulic motor or its seals, always shut off the supply line valve (U) *first*, then shut off the return line valve (V).

⚠ CAUTION

Do not allow the hydraulic oil temperature to exceed 54°C (130°F). The pump seals will wear faster and leakage may occur if the pump is operated at higher oil temperatures.

11. Never allow the pump to run dry of the fluid being pumped. A dry pump will quickly accelerate to a high speed, possibly damaging itself. If your pump accelerates quickly, or is running too fast, stop it immediately and check the fluid supply. If the supply container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines with fluid, or flush and leave it filled with a compatible solvent. Be sure to eliminate all air from the fluid system.