



This manual contains important warnings and information.
READ AND KEEP FOR REFERENCE.

INSTRUCTIONS

WALL MOUNT, AIR-ASSISTED AIRLESS 15:1 Ratio President® Hydra-Spray® Pump

WALL MOUNT SYSTEMS

1800 psi (12 MPa, 124 bar) MAXIMUM WORKING PRESSURE

* **Model 222-293, Series B**

For cold spray systems

Includes pump and wall bracket

Model 231-075

For cold spray systems

Includes pump 222-293, fluid regulation kit 222-564, hose, gun and tip

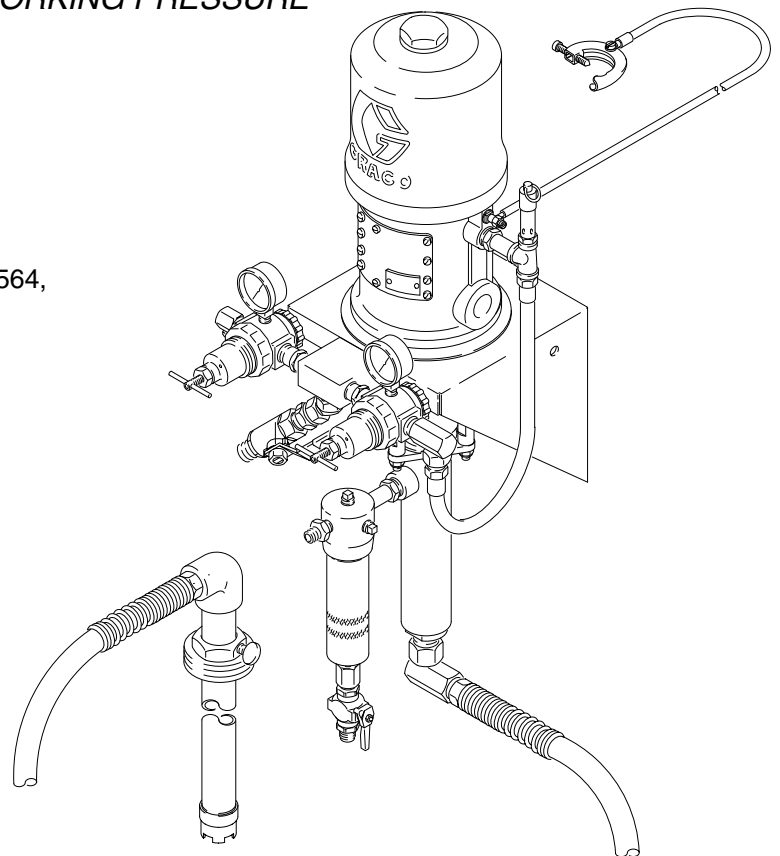
* **Model 222-294**

For heated spray systems

Includes pump 222-293, Viscon² Heater†, heater mounting kit 222-269, and circulating kit 222-436

† Specify desired voltage of heater (see page 25 for available models).

Refer to page 2 for Table of Contents.



**Model 222-293
Shown**

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Symbols

Warning Symbol



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

Caution Symbol



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

! WARNING



INSTRUCTIONS

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.
- 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 page 27 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.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 180°F (82°C) or below -40°F (-40°C).
- 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



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 medical attention.**
- 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 16 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.
- Use only Graco approved hoses. Do not remove the spring guard that is used to help protect the hose from rupture caused by kinks or bends near the couplings.



MOVING PARTS HAZARD

Moving parts 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 16 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 5.
- 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.



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.

Setup

General Information

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

NOTE: Always use Genuine Graco Parts and Accessories, available from your Graco distributor. If you supply your own accessories, be sure they are adequately sized and pressure rated for your system.

Figure 2 is only an example for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

Prepare the Operator

All persons who operate the equipment must be trained in the safe, efficient operation of all system components as well as the proper handling of all fluids. All operators must thoroughly read all instruction manuals, tags, and labels before operating the equipment.

Prepare the Site

The pump requires 12 scfm (0.34 m³/min) of compressed air while operating at 400 kPa (4 bar, 60 psi) air pressure and a flow rate of 3.8 liters/min (1.0 gpm). Ensure that you have an adequate compressed air supply.

Refer to Figure 2. Bring a compressed air supply line (B) from the air compressor to the pump location. Be sure all air hoses are properly sized and pressure-rated for your system. Use only electrically conductive hoses.

Install a bleed-type shutoff valve (G) in the air line to isolate the air line components for servicing. Install an air line moisture trap and drain valve (A) to help remove moisture from the compressed air supply.



Keep the site clear of any obstacles or debris that could interfere with the operator's movement.

Have a grounded, metal pail available for use when flushing the system or draining the fluid filter.

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 4.



1. *Pump (for pumps without pre-installed ground wire):* use the ground wire and clamp (supplied). See Fig. 1. Loosen the grounding lug locknut (W) and washer (X). Insert one end of the 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.

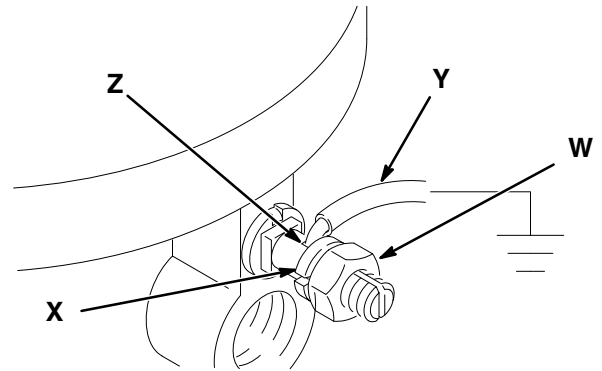


Fig. 1

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2. *Air and fluid hoses:* use only electrically conductive hoses.
3. *Heater, if used:* refer to heater manual 307–805.
4. *Air compressor:* follow manufacturer's recommendations.
5. *Spray gun:* ground through connection to a properly grounded fluid hose and pump.
6. *Fluid supply container:* follow your local code.
7. *Object being sprayed:* follow your local code.
8. *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 nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.
9. *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.

Setup

Supplied Components and Accessories

Refer to Figure 2.

⚠ WARNING

A bleed-type master air valve (27) and a fluid drain valve (13) are required, to 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.

- **The main air line filter (A)** removes harmful dirt and moisture from compressed air supply.

- **A second bleed-type air valve (G)** isolates the air line accessories for servicing. Locate upstream from all other air line accessories.
- **The air line lubricator (C)** provides automatic lubrication of air motor.
- **The fluid drain valve (13)** assists in relieving fluid pressure in displacement pump, hose, and gun. Triggering gun only, may not be sufficient to relieve pressure.
- **The air relief valve (15)** opens automatically to relieve air pressure to pump if pressure exceeds a preset level. This valve prevents overpressurization of spray gun.
- **The air regulators (18)** control pump speed and outlet pressure by adjusting air pressure to pump. The right air regulator controls air pressure to pump. The left air regulator controls air pressure to gun.
- **The bleed-type master air valve (27)** relieves air trapped between this valve and pump. See the **WARNING** at left. Trapped air can cause pump to cycle unexpectedly. **To bleed air from pump, right air regulator (18) must be open when master air valve is closed.**

KEY

A	Air Line Filter
B	Main Air Line
C	Air Line Lubricator
D	Fluid Hose
E	Spray Gun
F	Gun Air Supply Hose
G	Bleed-Type Air Valve
Y	Ground Wire
1	Pump
8	Fluid Filter
13	Drain Valve (Required)
15	Air Relief Valve
18	Air Regulators
23	Suction Kit
27	Bleed-Type Master Air Valve (Required)

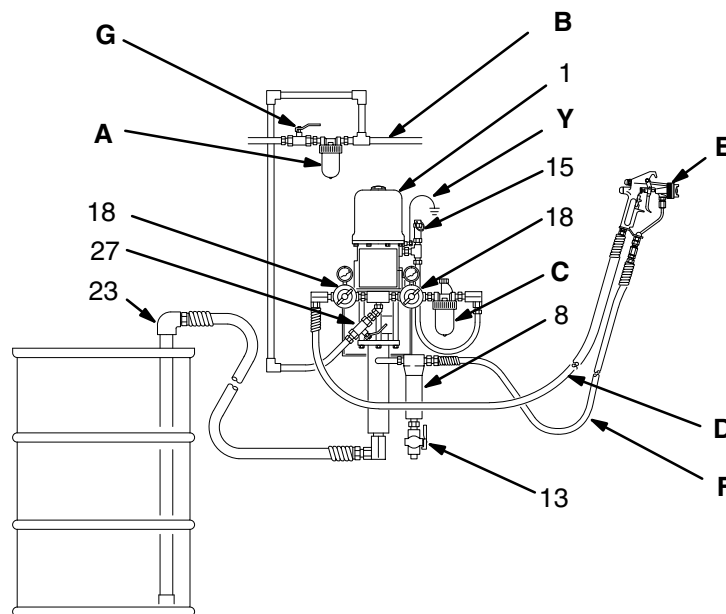


Fig. 2

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Setup

System Setup

Refer to paragraphs on this page to setup pump Models 222–293 and 231–075, for use in cold spray systems.

Refer to page 9 to setup pump Model 222–294, for use in heated spray systems, or to convert pump Model 222–293 to a heated system.

To convert pump Model 222–293 to a heated unit, order the following:

- Viscon² Fluid Heater (choose one of three models)
 - Model 220–522 (120 V, single-phase, 16.7 Amp)
 - Model 220–523 (240 V, single-phase, 9.6 Amp)
 - Model 220–524 (480 V, single-phase, 4.8 Amp)
- Heater Mounting Kit 222–269
- Circulating Kit 222–436

Pump Setup

(Models 222–293 and 231–075)

Refer to Figure 3.

NOTE: Apply pipe sealant (3) to all male threads, except at swiveling connections.

1. Mount the pump wall bracket (7) 5 ft (1.5 m) above the floor. Be sure the wall is strong enough to support the weight of the pump and accessories, fluid, hoses, and stress caused during pump operation. Refer to “Mounting Dimensions” on page 25 and Mounting Bracket manual 306–783.
2. The air regulators (18), manifold (28), bleed valve (27) and connecting parts are preassembled. The **left** air regulator controls air pressure to the gun, and the **right** regulator controls pressure to the pump. The flow arrows on both regulators **must** point away from the manifold (28).

3. *If you are installing a heated system*, skip step 4 and proceed to “Heated System Setup” on page 9.
4. Connect the air and fluid hoses and gun as explained below.

Hose and Gun Setup

Connect one end of the fluid hose (D) to the filter (8) outlet nipple and the other to the fluid inlet of the gun (E). **DO NOT** install the spray tip in the gun yet. To use a second gun with the sprayer, refer to page 12.

Close the bleed-type master air valve (27) and both the air regulators (18). Connect the main air line (B) to the bleed valve (27). Connect an air supply hose (F) to the outlet nipple of the gun (left) air regulator. Connect the other end of the hose to the gun’s air inlet.

Fluid Regulation Kit 222–564 Setup (Pump Model 231–075)

WARNING

Before installing the fluid regulation kit, follow the **Pressure Relief Procedure** on page 16. Disconnect all hoses from the pump.

Assemble the fluid regulation kit (51) as shown in Detail A of Fig. 3. (Refer also to the parts list on page 20.) Install the mounting bracket (51k) on the regulator (51f) using the two screws (51p) and lockwashers (51q). Connect the fluid regulator and bracket to the side of the wall bracket (7) using the screw (51l), lockwasher (51m) and nut (51n). Connect the 22” (560 mm) hose (51h) to the outlet nipple of the fluid filter (8).

Connect the gun air supply hose (F) between the air inlet of the gun (E) and the outlet nipple of the gun (left) air regulator.

Connect the fluid hose (D) between the gun fluid inlet and the outlet nipple (51b) of the fluid regulation kit.

Setup

DETAIL A (MODEL 231-075)

Fluid Regulation Kit 222-564 includes items 51a-51q.

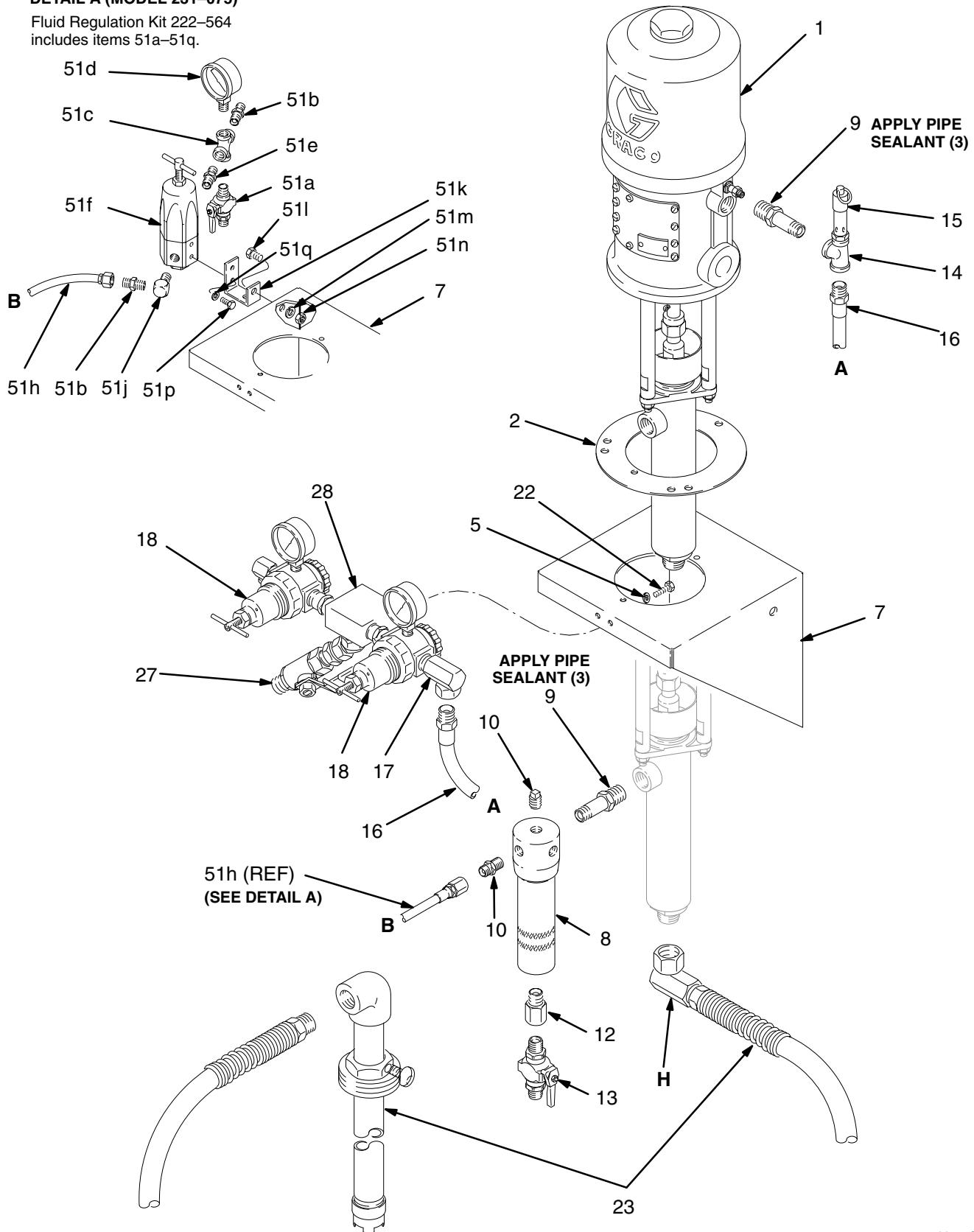


Fig. 3

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Setup

Heated System Setup (Models 222–294 and 222–293 conversion)

Refer to Figure 4.

Use the following procedures to setup Model 222–294 Heated System, or to convert an existing Model 222–293 to a heated system. The Viscon² Heater is available in three voltages (see page 25). Specify which voltage you desire.

To setup the pump, first follow steps 1–3 under “Pump Setup” on page 7.

WARNING

The Viscon² Heater must be installed by a qualified electrician in compliance with all state and local codes and regulations, to reduce the risk of electric shock or other serious bodily injury during installation or operation.

The power supply must match the heater’s requirements (see “Accessories” on page 25). Refer to the Viscon² Heater Manual, 307–805, for further information.

WARNING

Heat causes fluid to expand. If fluid in the heated portion of your system is trapped with nowhere to expand, it can cause a system rupture. A system rupture can result in serious bodily injury and property damage. Be sure your system has an adequate way to handle heat expansion.

- Use flexible hoses between the heater and gun.
- OR, install a properly sized accumulator downstream from the heater.
- OR, install a pressure relief valve, (Graco P/N 237–061) to relieve pressure when it exceeds the system’s maximum working pressure.
- And, never install any shutoff device between the heater and gun. If you are using a fluid regulator before the gun, never use it as a shutoff device.

Installing Heater Mounting Kit 222–269

WARNING

Before installing the heater, heater mounting kit and circulating kit, follow the **Pressure Relief Procedure** on page 16. Disconnect all hoses from the pump.

NOTE: Reference numbers marked with an asterisk (for example, 29*) are included in kit 222–269.

Apply pipe sealant (3*) to all male threads, except at swiveling connections.

1. Be sure the wall is strong enough to support the weight of the heater, hoses, fluid, and stress caused during operation. Locate the heater wall bracket (29*) holes 9.25” (235 mm) to the left of the pump bracket holes, and at the same height. Use the heater wall bracket as a template to mark the wall. See “Mounting Dimensions” on page 25.
2. Attach the heater wall bracket to the heater mounting posts with the M8 x 1.25 screws and lockwashers supplied with the heater (53).
3. Use M8 or 5/16” bolts of the appropriate length and lockwashers (not supplied) to fasten the heater bracket to the wall.
4. **If you are converting an existing pump**, remove the fluid filter (8) and long 3/8 npt nipple (9) from the pump fluid outlet. Discard the long nipple (9). See Fig. 3.
5. Install the 3/8 npt nipple (35*) in the heater outlet. Screw the fluid filter (8) inlet onto this nipple. Unscrew the 1/4 npt nipple (11) from the filter outlet. Screw the elbow (47*) into the filter outlet, and screw the 1/4 npt nipple (11) into the elbow.
6. Screw the elbow (30*) into the heater’s inlet. Attach the heater hose (31*) to the elbow. Attach the rigid end of the union (32*) to the other end of the hose (31*).
7. Screw the bushing (46*) into the pump outlet, then screw the elbow (34*) into the bushing. Screw the check valve (33*) into the elbow. Be sure the arrow on the check valve points down. To complete the heater connection to the pump, screw the swivel end of the union (32*) onto the check valve (33*).

Setup

Installing Circulating Kit 222–436

Refer to Figure 4.

WARNING

Before installing the heater, heater mounting kit and circulating kit, follow the **Pressure Relief Procedure** on page 16. Disconnect all hoses from the pump.

NOTE: Reference numbers marked with a symbol (for example, 36†) are included in kit 222–436. Some kit parts are not used on this pump.

Apply pipe sealant (3†) to all male threads, except at swiveling connections.

1. **If you are converting an existing pump**, remove the suction kit (23) from the pump's fluid intake. See Fig. 3.
2. Unscrew the swivel elbow (H) from the end of the suction kit (23) and discard the elbow. See Fig. 2. Screw the rigid end of the manifold (36†) onto the pump intake, and attach its swivel end to the suction kit (23).
3. Screw the mounting stud (41†) into the outlet in the base of the back pressure regulator (40†). Install the fluid pressure gauge (45†) in the inlet of the back pressure regulator. Remove the plugs from the optional inlet and outlet of the back pressure regulator. Install one 1/4 npt nipple (11†) in the regulator's optional outlet (K), and the other 1/4 npt nipple (11†) in the optional inlet (J).
4. Place a lockwasher (42†) and washer (43†) on the mounting stud, and insert the stud through the mounting hole in the right side of the pump wall bracket (7). Secure the regulator with a lockwasher (42†) and nut (44†) on the inside of the pump wall bracket.
5. Install the CIRC end of the three-way ball valve (37†) in the open port of the pump fluid intake manifold (36†). Screw the elbow (47†) onto the IN branch of the three-way valve. Connect one end of the hose (39†) to this elbow, and the other end to the nipple (11†) at the back pressure regulator's optional outlet (K).
6. Connect the drain hose (38†) to the DRAIN end of the three-way valve (37†).
7. Connect the fluid return line to the nipple (11†) at the back pressure regulator's optional inlet (J).
8. Connect the air and fluid hoses and gun as explained on page 7.

Setup

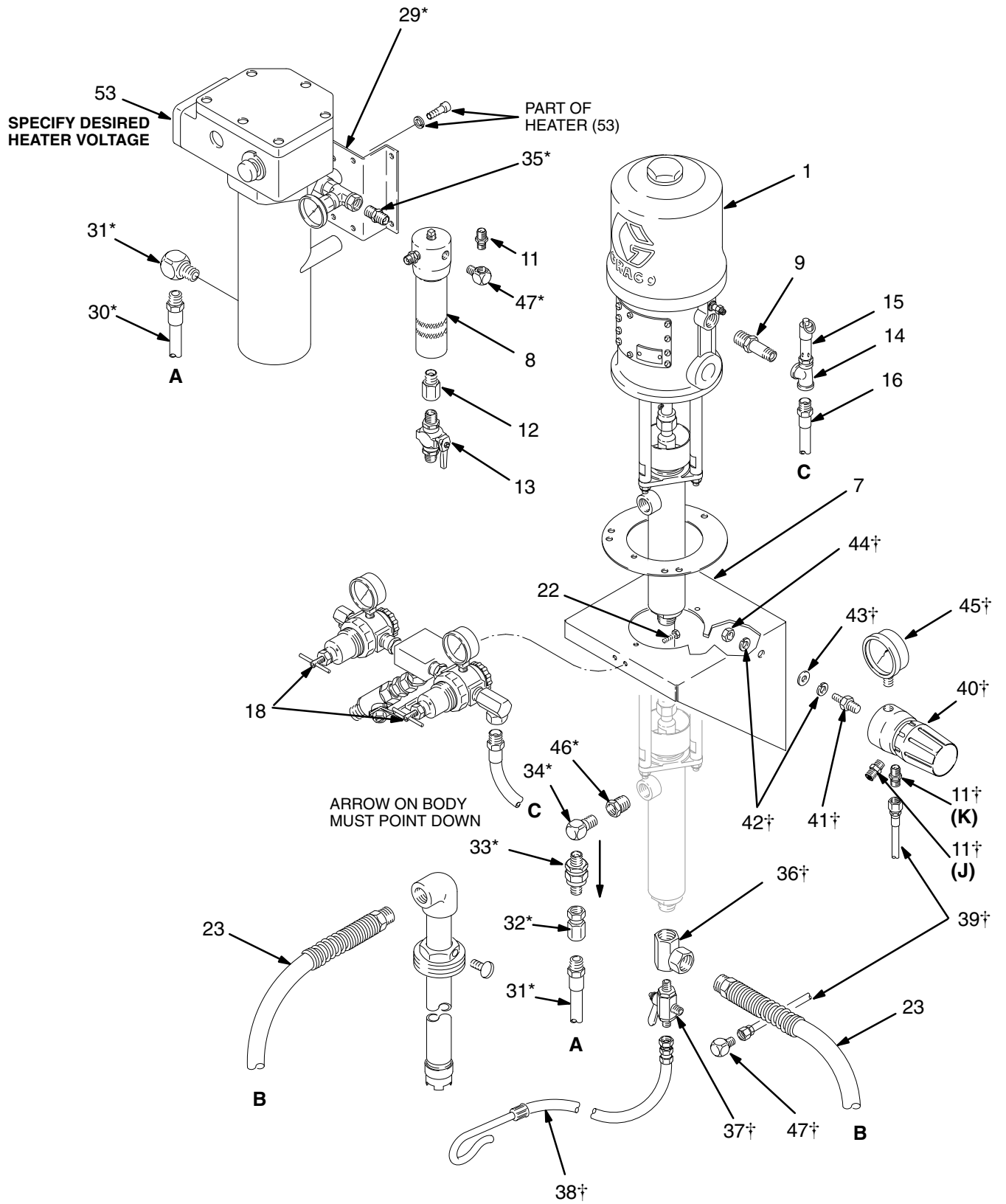


Fig. 4

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Setup

Converting to a Two-Gun System

To convert your sprayer to a two-gun system, order parts listed, and perform assembly procedures. Refer to this page for model 222–293. For models 231–075 and 222–294, see page 15).

Model 222–293 Two-Gun Conversion

(Refer to Figs 5 and 6, and the Parts Drawing on page 18)

WARNING

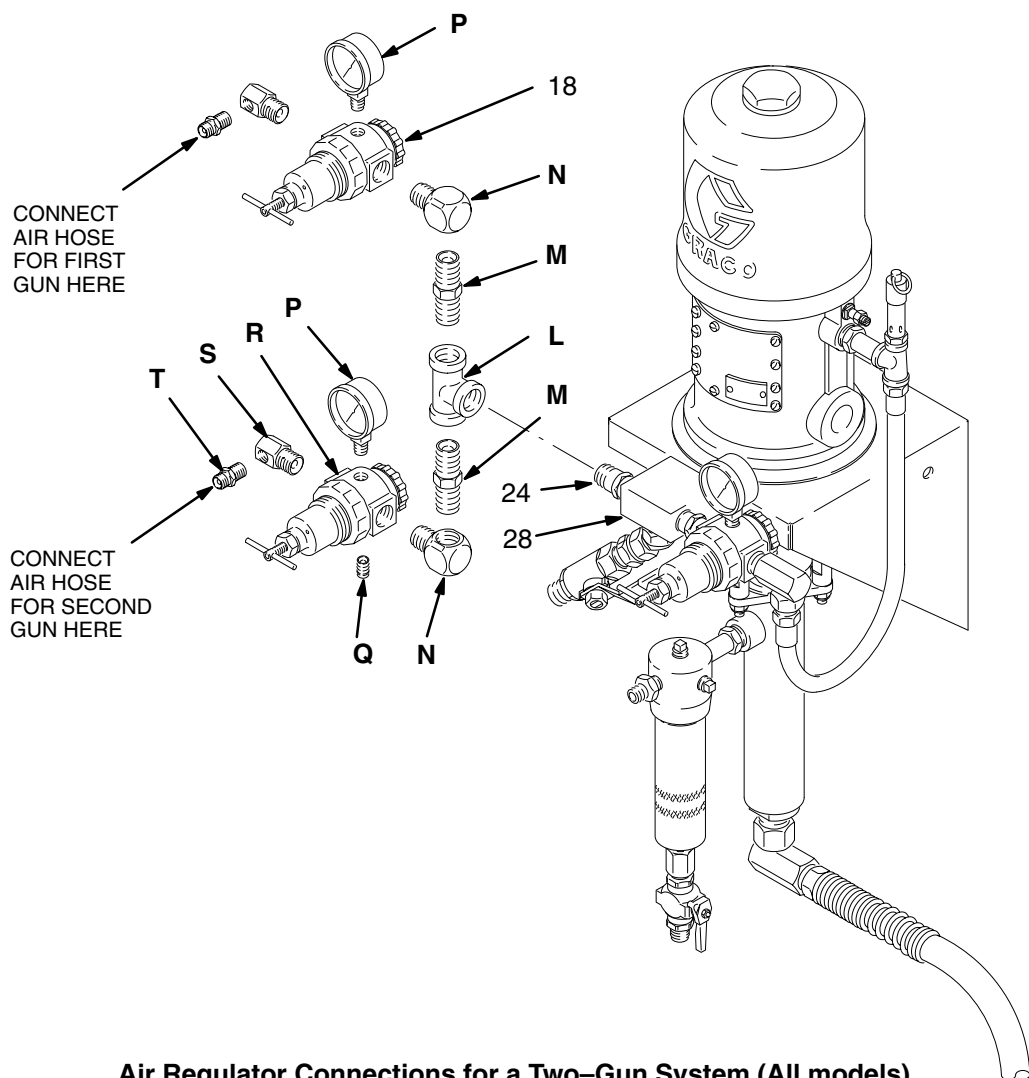
Before performing this procedure, follow the **Pressure Relief Procedure** on page 16. Disconnect all hoses from the pump.

For Model 222–293, order the following parts:

Part No.	Description	Qty
156–877	NIPPLE; 1/2 npt; 2.5" long	2
158–683	ELBOW, 90°; 1/2 npt (m x f)	2
103–475	TEE; 1/2 npt(f) run; 1/2 npt(f) branch	1
104–267	AIR REGULATOR	1
101–180	GAUGE, pressure, air	1
100–509	PLUG, pipe; 1/4 npt	1
166–999	ELBOW, street, reducing; 1/2 npt(m) x 1/4 npt(f)	1
162–453	NIPPLE; 1/4 npt x 1/4 npsm	2
238–402	SPRAY GUN, AA plus air–assisted airless	2
205–406	HOSE, air; nylon; 1/4" ID; cpld 1/4 npsm (fbe) swivel; 25 ft (7.6 m) long	2
214–698	HOSE, fluid; nylon; 3/16" ID; cpld 1/4 npsm(f) swivel x 1/4 npt(m); 25 ft (7.6 m) long	2

1. Remove the gun air regulator (18) from the nipple (24) coming off the air manifold (28). Do not remove any parts from the regulator. Save the regulator for use in step 4. See figure 5.
2. Install a 101–180 Gauge (P) and 100–509 Plug (Q) on a 104–267 Air Regulator (R). Screw a 166–999 Elbow (S) into the outlet port of this air regulator, and screw a 162–453 Nipple (T) into the elbow.
3. Screw the branch of the 103–475 Tee (L) onto the nipple (24) at the air manifold (28). Install a 156–877 Nipple (M) in each open port of the tee. Screw a 158–683 Elbow (N) onto each nipple.
4. Install the air regulator removed in step 1 onto one of the elbows (N). This is the air control for the first gun. Install the air regulator assembled in step 2 onto the other elbow (N), so both regulators are facing the same way. This is the air control for the second gun.
5. Remove the plug (10) from the optional outlet port of the fluid filter (8). Install a 162–453 Nipple (T) in its place. See Detail A of Fig 6. This is the fluid connection for the second gun.
6. Connect the fluid and air hoses to the guns as explained on page 7 (see Detail E of Fig 6).

Setup



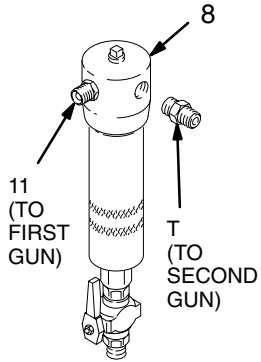
Air Regulator Connections for a Two-Gun System (All models)

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Fig. 5

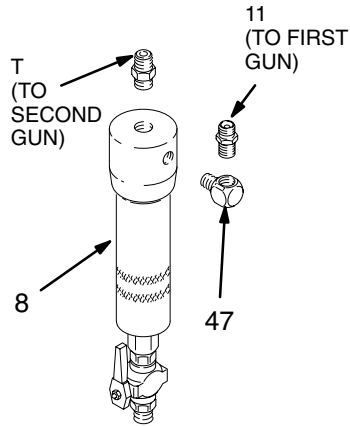
Setup

DETAIL A: HOSE CONNECTIONS AT FLUID FILTER (MODEL 222-293)



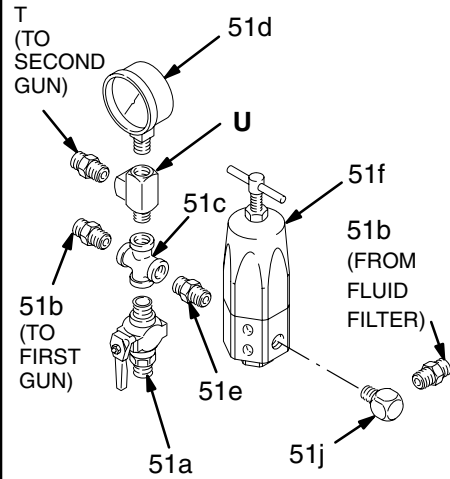
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DETAIL B: HOSE CONNECTIONS AT FLUID FILTER (MODEL 222-294)



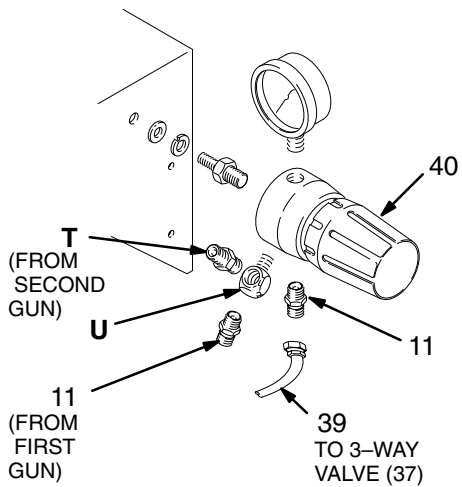
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DETAIL C: HOSE CONNECTIONS AT FLUID REGULATOR (MODEL 231-075)



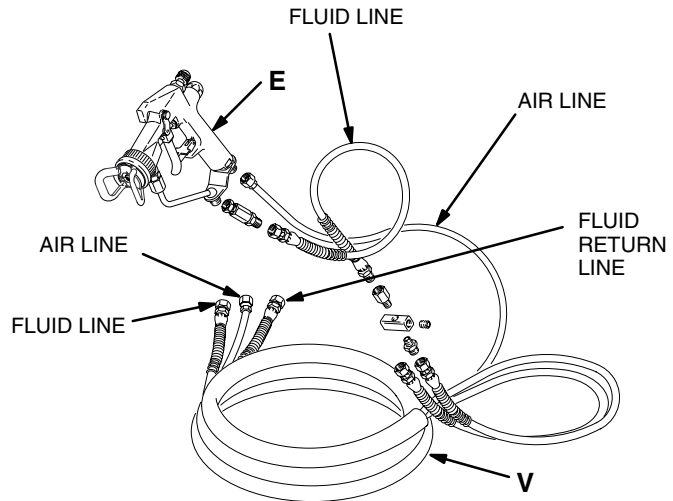
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DETAIL D: FLUID RETURN CONNECTIONS AT BACK PRESSURE REGULATOR (MODEL 222-294)



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DETAIL F: ASSEMBLY OF HOSE KIT AND GUN (MODEL 222-294)



DETAIL E: ASSEMBLY OF HOSES AND GUN (MODELS 222-293 AND 231-075)

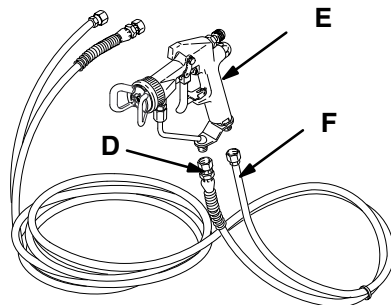


Fig. 6

Setup

Model 231–075 Two–Gun Conversion

(Refer to Figs 5 and 6, and the Parts Drawing on page 20)

WARNING

Before performing this procedure, follow the **Pressure Relief Procedure** on page 16. Disconnect all hoses from the pump.

NOTE: Model 231–075 includes a hose and gun set, so you should order only one 238–402 Gun, 205–406 Air Hose, and 214–698 Fluid Hose.

Part No.	Description	Qty
156–877	NIPPLE; 1/2 npt; 2.5" long	2
158–683	ELBOW, 90°; 1/2 npt (m x f)	2
103–475	TEE; 1/2 npt(f) run; 1/2 npt(f) branch	1
104–267	AIR REGULATOR	1
101–180	GAUGE, pressure, air	1
100–509	PLUG, pipe; 1/4 npt	1
166–999	ELBOW, street, reducing; 1/2 npt(m) x 1/4 npt(f)	1
103–048	TEE, street; 1/4 npt(f) branch; 1/4 npt(f) x 1/4 npt(m) run	1
162–453	NIPPLE; 1/4 npt x 1/4 npsm	2
238–402	SPRAY GUN, AA plus air–assisted airless	2
205–406	HOSE, air; nylon; 1/4" ID; cpld 1/4 npsm (fbe) swivel; 25 ft (7.6 m) long	1
214–698	HOSE, fluid; nylon; 3/16" ID; cpld 1/4 npsm(f) swivel x 1/4 npt(m); 25 ft (7.6 m) long	1

1. Perform steps 1–4 of the procedure for Model 222–293 (see page 10).
2. Unscrew the gauge (51d) from the cross (51c) of the fluid regulation kit. Install the 103–048 Tee (U) in the cross (see Detail C of Fig 5). Screw a 162–453 Nipple (T) in the branch of the tee (U). Screw the gauge (51d) in the open port of the tee. This is the fluid connection for the second gun.
3. Connect the fluid and air hoses to the guns as explained on page 6 (see Detail E of Fig 5).

Model 222–294 Two–Gun Conversion

(Refer to Figs 5 and 6, and the Parts Drawing on page 22)

WARNING

Before performing this procedure, follow the **Pressure Relief Procedure** on page 16. Disconnect all hoses from the pump.

For Model 222–294, order the following parts:

Part No.	Description	Qty
238–402	SPRAY GUN, AA plus air–assisted airless	2
222–264	HOSE KIT, insulated; nylon; two fluid lines, one air line; 1/4" ID; cpld 1/4 npsm (fbe) swivel; 25 ft (7.6 m) long	2
156–877	NIPPLE; 1/2 npt; 2.5" long	2
158–683	ELBOW, 90°; 1/2 npt (m x f)	2
103–475	TEE; 1/2 npt(f) run; 1/2 npt(f) branch	1
104–267	AIR REGULATOR	1
101–180	GAUGE, pressure, air	1
100–509	PLUG, pipe; 1/4 npt	1
166–999	ELBOW, street, reducing; 1/2 npt(m) x 1/4 npt(f)	1
162–453	NIPPLE; 1/4 npt x 1/4 npsm	3
103–048	TEE, street; 1/4 npt(f) branch; 1/4 npt(f) x 1/4 npt(m) run	1

1. Perform steps 1–4 of the procedure for Model 222–293 (see page 12).
2. Remove the plug (10) from the top outlet port of the fluid filter (8). Install a 162–453 Nipple (T) in its place. See Detail B of Fig 6.
3. See Fig 3. Remove the nipple (11) from the optional inlet (J) of the back pressure regulator (40). Save the nipple for later use.
4. Screw a 103–048 Tee (U) into the optional inlet of the back pressure regulator (40), as shown in Detail D of Fig 6. Install the nipple (11) removed in step 3 in one of the open ports of the tee. Install a 162–453 Nipple (T) in the other open port.
5. Connect the fluid and air lines of one of the insulated hose kits (V) to the fluid and air inlets of one of the guns (E). Repeat for the other hose kit and gun. See Detail F of Fig 6.
6. Connect the air line of one of the hose kits (see Detail F of Fig. 6) to the outlet nipple of one of the air regulators (see Fig 5). Connect the air line of the second hose kit to the outlet nipple of the other air regulator.
7. Connect the fluid supply line of the first hose kit (V) to the outlet nipple (11) of the fluid filter (8). Connect the fluid supply line of the second hose kit to the other outlet nipple (T). See Detail B of Fig 6. Similarly, connect the fluid return lines of the two hose kits (V) to the inlet nipples (11 and T) of the back pressure regulator (40). See Detail D of Fig 6.

Operation

Pressure Relief Procedure

WARNING



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 trigger safety.
2. Shut off the main power to the heater, if used. Circulate the fluid for at least 10 minutes to allow it and the heater to cool.
3. Close the red-handled bleed-type master air valve (G, supplied in your system).
4. Shut off the air regulators.
5. Unlock the gun trigger safety.
6. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
7. Lock the gun trigger safety.
8. Open the drain valve (13, required in your system), having a container ready to catch the drainage.
9. Leave the drain valve open until you are ready to spray again.
10. *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.*

Flushing

WARNING



FIRE AND EXPLOSION HAZARD

Before flushing, read the section **FIRE OR EXPLOSION HAZARD** on page 4. Be sure the entire system and flushing pails are properly grounded. Refer to **Grounding** on page 5.

Flush the pump:

- Before the first use
- When changing colors or fluids
- Before fluid can dry or settle out in a dormant pump (check the pot life of catalyzed fluids)
- Before storing the pump.

CAUTION

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

WARNING

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

1. **Relieve the pressure.**
2. Remove the tip guard and spray tip from the gun. See the gun instruction manual.
3. Fill the pail with solvent or place the suction tube in a container of solvent.
4. Hold a metal part of the gun firmly to the side of a grounded *metal* pail.
5. Start the pump. Always use the lowest possible fluid pressure when flushing.
6. Trigger the gun.
7. Flush the system until clear solvent flows from the gun.
8. **Relieve the pressure.**

Operation

- Clean the tip guard and spray tip separately, then reinstall them.
- Clean the inside and outside of the pail or suction tube.

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 flushing fluids and flushing frequency.

Starting and Adjusting the Pump

Refer to figures 3 and 4.

Be sure the air regulators and bleed-type master air valve are closed. **DO NOT INSTALL THE SPRAY TIP YET!**

Place the suction tube (23) in the fluid pail. Open the bleed-type master air valve and the gun air regulator. Hold a metal part of the spray gun firmly to the side of a grounded metal pail and trigger the gun. Slowly open the pump air regulator until the pump starts. Allow the pump to cycle slowly until all the air is pushed out of the fluid lines. Release the gun trigger and engage the safety latch; the pump will stall against the pressure.

With the pump and lines primed, and with adequate air pressure and volume supplied, the pump will start and stop as the spray gun is triggered and released.

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 16.

Relieve the pressure, then install the spray tip in gun.

Use the pump air regulator to control the pump speed and fluid pressure. Always use the lowest pressure necessary to achieve the desired results. Higher pressures waste fluid and cause premature wear of the pump packings and spray tip.

The fluid regulator (51f) used on pump model 231–075 is a fluid pressure type. It allows you to run the pump at an “efficient” air pressure (above 210 kPa [2.1 bar, 30 psi]) while adjusting fluid pressure with the regulator. The back pressure regulator (40, see figure 4) used on model 222–294 does the same by requiring a minimum flow rate and also setting the minimum circulating rate needed to prevent fluid from settling.

Keep the wet-cup filled with Graco Throat Seal Liquid (TSL) to help prolong the packing life. Check the tightness of the packing nut weekly. The packing nut should be tight enough to prevent leakage – no tighter. Always follow the **Pressure Relief Procedure Warning** on page 16 before adjusting the packing nut.

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 supply container and prime the pump and lines with fluid, being sure to eliminate all air from the fluid system, or flush the pump as described in “Shutdown and Care”, on this page.

Heated Systems

Operating instructions for a heated circulating system are provided in the Viscon² Heater manual, 307–805. Read and understand all warnings and instructions in the heater manual before operating a heated system.

The three-way ball valve (37) can be set for either fluid circulation or draining. To circulate fluid back to the pump, turn the handle toward the CIRC end of the valve. To drain fluid, turn the handle toward the DRAIN end.

Shutdown and Care of the Pump

WARNING

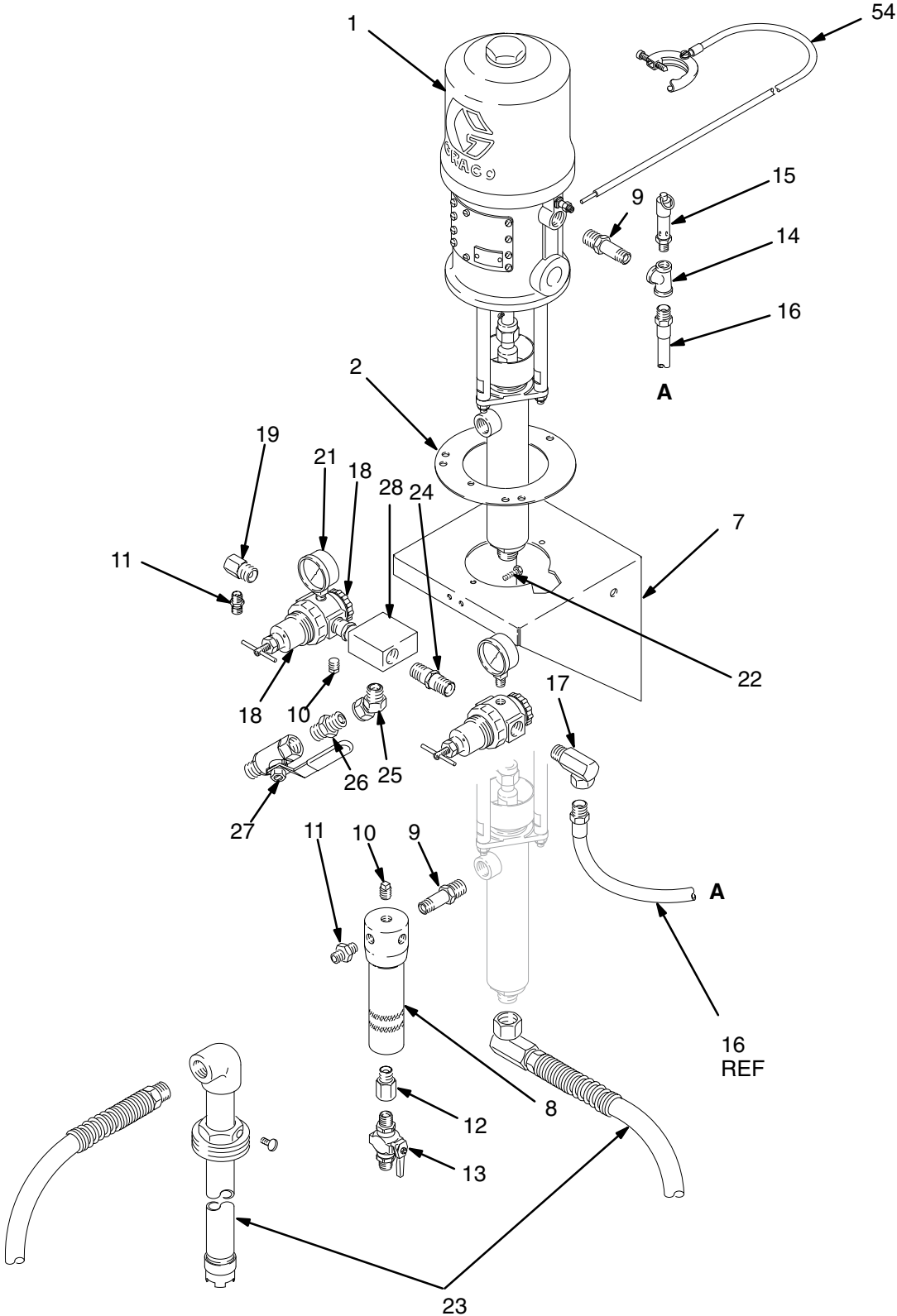
To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 16.

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

Always flush the pump before the fluid dries on the displacement rod. See **Flushing** on page 16.

Parts

Model 222-293, Series B
Includes items 1-54



06773A

Parts

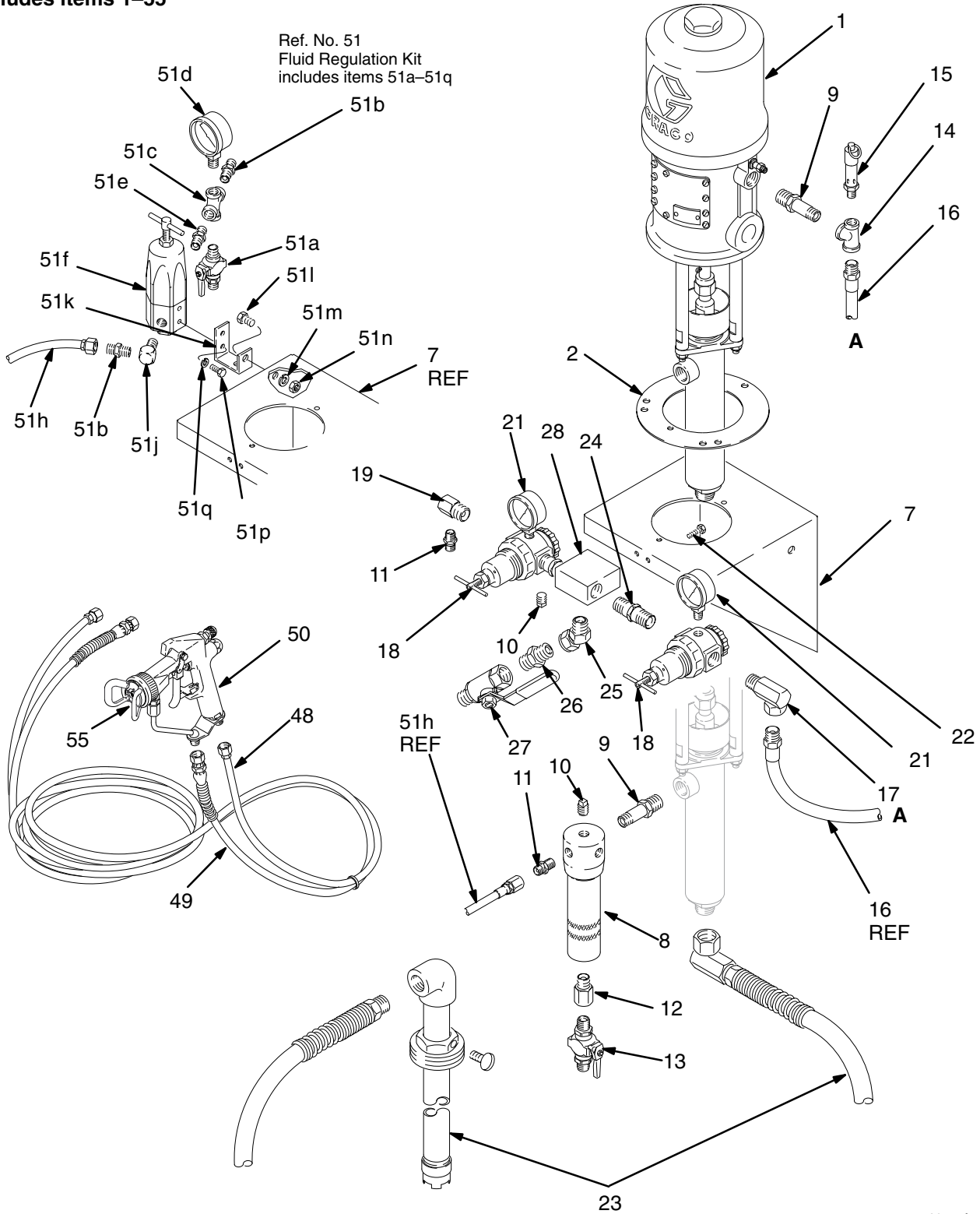
Model 222–293, Series B

Includes items 1–54

Ref No.	Part No.	Description	Qty	Ref No.	Part No.	Description	Qty
1	217–580	15:1 PRESIDENT PUMP See 306–936 for parts	1	16	204–560	HOSE, air; buna–N; 3/8" ID; cpld 3/8 npt (mbe); 18" (457 mm) long	1
2	166–392	GASKET	1	17	161–037	UNION, adapter, 90°; 1/2 npt(m) x 3/8 npsm(f) swivel	1
3	110–110	SEALANT, pipe, sst; 6 ml (not shown)	1	18	104–267	AIR REGULATOR 1/2 npt inlet and outlet 0–0.9 MPa (0–9 bar, 0–125 psi) range	2
7	207–365	BRACKET, wall, pump See 306–783 for parts	1	19	166–999	ELBOW, street, reducing; 1/2 npt(m) x 1/4 npt(f)	1
8	218–029	FLUID FILTER See 307–273 for parts	1	21	101–180	GAUGE, pressure, air; 0–1.4 MPa (0–14 bar, 0–200 psi)	2
9	158–979	NIPPLE, reducing; 1/2 npt x 3/8 npt	2	22	102–254	SCREW, hex hd; 1/4–20 x 7/8" long	2
10	100–509	PLUG, pipe, sq hd; 1/4 npt	4	23	208–259	SUCTION KIT	1
11	162–453	NIPPLE; 1/4 npt x 1/4 npsm	2	24	156–877	NIPPLE; 1/2 npt; 2.5" long	2
12	150–286	ADAPTER; 3/8 npt (m x f)	1	25	222–297	UNION, adapter, 45°; 1/2 npt(m) x 1/2 npsm(f) swivel	1
13	210–658	DRAIN VALVE; 3/8 npt(mbe) See 306–861 for parts	1	26	158–491	NIPPLE; 1/2 npt	1
14	171–987	TEE; 3/8 npt x 1/4 npt run; 3/8 npt branch	1	27	113–269	VALVE, air, bleed–type; 1/2 npt (m x f)	1
15	113–286	VALVE, relief, air	1	28	179–749	MANIFOLD, air; 1/2 npt inlet; two 1/2 npt outlets	1
				52	206–994	THROAT SEAL LIQUID; 8 oz (0.5 liter); not shown	1
				54	237–569	GROUND WIRE AND CLAMP	1

Parts

Model 231-075, Series B
Includes items 1-55



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Parts

Model 231–075, Series B

Includes items 1–55

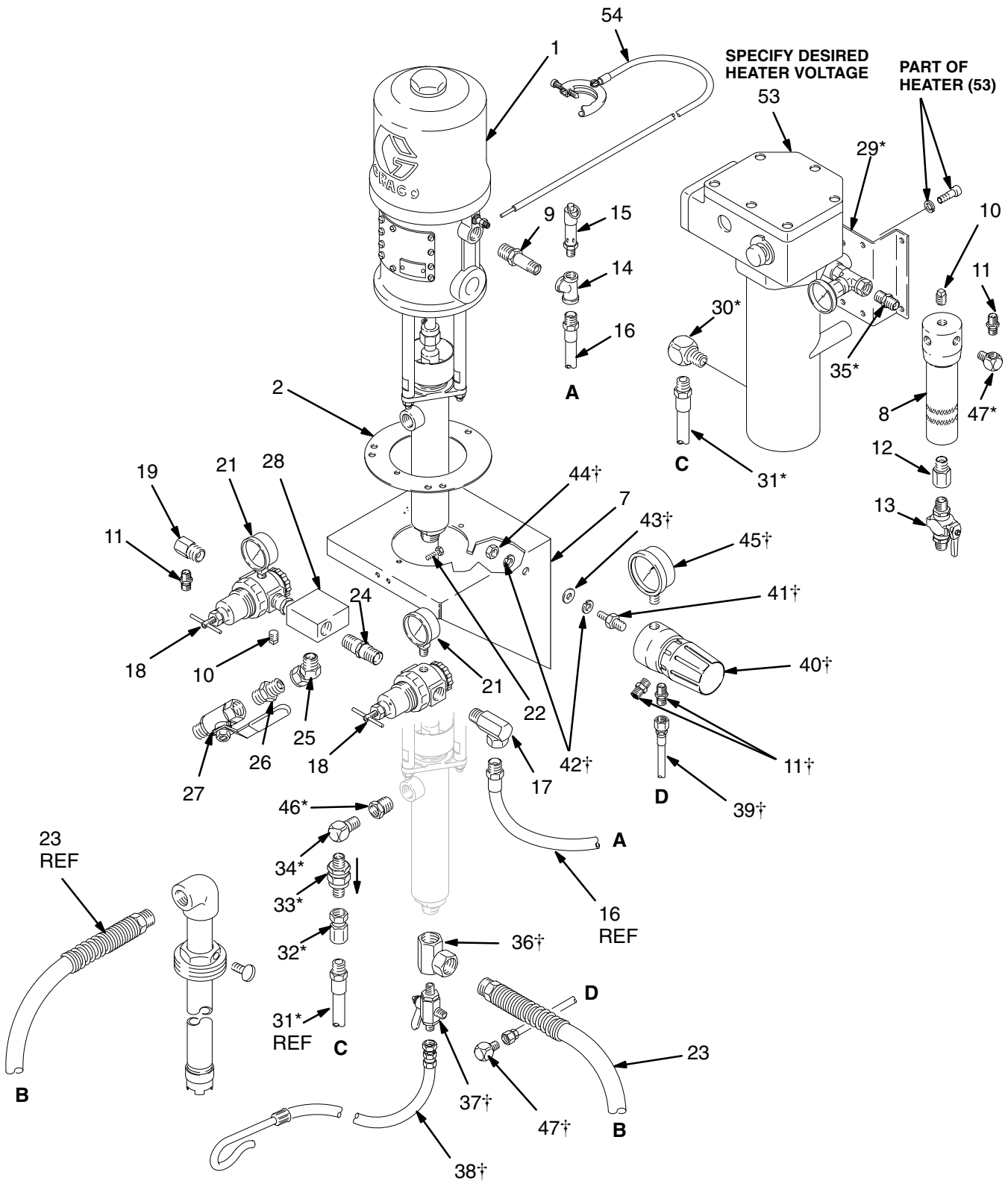
Ref No.	Part No.	Description	Qty	Ref No.	Part No.	Description	Qty
1	217–580	15:1 PRESIDENT PUMP See 306–936 for parts	1	27	113–269	VALVE, air, bleed–type; 1/2 npt (m x f)	1
2	166–392	GASKET	1	28	179–749	MANIFOLD, air; 1/2 npt inlet; two 1/2 npt outlets	1
3	110–110	SEALANT, pipe, sst; 6 ml (not shown)	1	48	216–069	HOSE, air; nylon; 1/4" ID; cpld 1/4 npsm (fbe) swivel; 25 ft (7.6 m) long	1
7	207–365	BRACKET, wall, pump See 306–783 for parts	1	49	214–698	HOSE, fluid; nylon; 3/16" ID; cpld 1/4 npsm(f) swivel x 1/4 npt(m); 25 ft (7.6 m) long; spring guards both ends	1
8	218–029	FLUID FILTER See 307–273 for parts	1	50	238–852	AA PLUS AIR–ASSISTED AIRLESS SPRAY GUN See 308–640 for parts	1
9	158–979	NIPPLE, reducing; 1/2 npt x 3/8 npt	2	51	222–564	FLUID REGULATION KIT Includes items 51a–51q	1
10	100–509	PLUG, pipe, sq hd; 1/4 npt	4	51a	210–657	. VALVE, ball; 1/4 npt (mbe)	1
11	162–453	NIPPLE; 1/4 npt x 1/4 npsm	2	51b	162–453	. NIPPLE; 1/4 npt x 1/4 npsm (only 2 used with this sprayer)	3
12	150–286	ADAPTER; 3/8 npt (m x f)	1	51c	102–959	. CROSS, pipe; 1/4 npt(f)	1
13	210–658	DRAIN VALVE; 3/8 npt(mbe) See 306–861 for parts	1	51d	101–696	. GAUGE, pressure, fluid; 0–6.9MPa (0–69 bar, 0–1000 psi) range	1
14	171–987	TEE; 3/8 npt x 1/4 npt run; 3/8 npt branch	1	51e	156–971	. NIPPLE; 1/4 npt	1
15	113–286	VALVE, relief, air	1	51f	222–121	. FLUID PRESSURE REGULATOR See 307–886 for parts	1
16	204–560	HOSE, air; buna–N; 3/8" ID; cpld 3/8 npt (mbe); 18" (457 mm) long	1	51g	110–220**	. ADAPTER, 45°; 1/4 npt(m) x 1/4 npsm(f) swivel	1
17	161–037	UNION, adapter, 90°; 1/2 npt(m) x 3/8 npsm(f) swivel	1	51h	110–192	. HOSE; PTFE; 0.20" ID; cpld 1/4 npsm (fbe) swivel; 22" (560 mm) long	1
18	104–267	AIR REGULATOR 1/2 npt inlet and outlet 0–0.9MPa (0–9 bar, 0–125 psi) range See 308–167 for parts	2	51j	100–840	. ELBOW, street, 90°; 1/4 npt (m x f) (only 1 used with this sprayer)	2
19	166–999	ELBOW, street, reducing; 1/2 npt(m) x 1/4 npt(f)	1	51k	185–251	. BRACKET, regulator	1
21	101–180	GAUGE, pressure, air; 0–1.4MPa (0–14 bar, 0–200 psi)	2	51l	100–469	. SCREW, cap, hex hd; 3/8–16 x 3/4" long	1
22	102–254	SCREW, hex hd; 1/4–20 x 7/8" long	2	51m	100–133	. LOCKWASHER; 3/8"	1
23	208–259	SUCTION KIT	1	51n	100–307	. NUT, hex; 3/8–16 unc	1
24	156–877	NIPPLE; 1/2 npt; 2.5" long	2	51p	100–270	. SCREW, cap, hex hd; 1/4–20 x 5/8" long	2
25	222–297	UNION, adapter, 45°; 1/2 npt(m) x 1/2 npsm(f) swivel	1	51q	100–016	. LOCKWASHER; 1/4"	2
26	158–491	NIPPLE; 1/2 npt	1	52	206–994	THROAT SEAL LIQUID; 8 oz (0.5 liter); not shown	1
				55	GG4–XXX	SPRAY TIP (select spray tip as needed)	2

** This part is not pictured as it is not used on this sprayer.

Parts

Model 222-294

Includes items 1-54



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Parts

Model 222–294

Includes items 1–54

Ref No.	Part No.	Description	Qty	Ref No.	Part No.	Description	Qty
1	217–580	15:1 PRESIDENT PUMP See 306–936 for parts	1	29	183–982*	BRACKET, wall, heater	1
2	166–392	GASKET	1	30	158–683*	ELBOW, 90°; 1/2 npt (m x f)	1
3	110–110*†	SEALANT, pipe, sst; 6 ml (not shown)	1	31	235–022*	HOSE, fluid; 1/2" ID; cpld 1/2 npt (mbe); 3' (0.9 m) long	1
7	207–365	BRACKET, wall, pump See 306–783 for parts	1	32	161–077*	UNION, adapter; 1/2 npt(f) x 3/8 npsm(f)	1
8	218–029	FLUID FILTER See 307–273 for parts	1	33	206–962*	CHECK VALVE; 3/8 npt (mbe)	1
9	158–979	NIPPLE, reducing; 1/2 npt x 3/8 npt	1	34	155–699*	ELBOW, street, 90°; 3/8 npt (mbe)	1
10	100–509	PLUG, pipe, sq hd; 1/4 npt	4	35	156–849*	NIPPLE; 3/8 npt	1
11	162–453†	NIPPLE; 1/4 npt x 1/4 npsm	4	36	166–998†	MANIFOLD, inlet; 1/4 npt(f) x 3/4 npt(f) x 3/4 npsm(f) swivel	1
12	150–286	ADAPTER; 3/8 npt (m x f)	1	37	214–711†	BALL VALVE, three-way; 1/4 npt(m)	1
13	210–658	DRAIN VALVE; 3/8 npt(mbe) See 306–861 for parts	1	38	206–965†	HOSE, drain; nylon; 1/4" ID; cpld 1/4 npsm(f)	1
14	171–987	TEE; 3/8 npt x 1/4 npt run; 3/8 npt branch	1	39	206–966†	HOSE; PTFE; 1/4" ID; cpld 1/4 npsm (fbe) swivel; 18" (457 mm) long	1
15	113–286	VALVE, relief, air	1	40	222–405†	REGULATOR, back pressure See 306–860 for parts	1
16	204–560	HOSE, air; buna–N; 3/8" ID; cpld 3/8 npt (mbe); 18" (457 mm) long	1	41	156–953†	STUD, mounting; 1/4 npt x 3/8 unc (mbe)	1
17	161–037	UNION, adapter, 90°; 1/2 npt(m) x 3/8 npsm(f) swivel	1	42	100–639†	LOCKWASHER; 3/8"	2
18	104–267	AIR REGULATOR 1/2 npt inlet and outlet 0–0.9 MPa (0–9 bar, 0–125 psi) range See 308–167 for parts	2	43	100–023†	WASHER, flat; 3/8"	1
19	166–999	ELBOW, street, reducing; 1/2 npt(m) x 1/4 npt(f)	1	44	100–307†	NUT, full, hex; 3/8–16 unc	1
21	101–180	GAUGE, pressure, air; 0–1.4 MPa (0–14 bar, 0–200 psi)	2	45	102–814†	GAUGE, pressure, fluid 0–35 MPa (0–350 bar, 0–5000 psi)	1
22	102–254	SCREW, hex hd; 1/4–20 x 7/8" long	2	46	100–081*	BUSHING; 1/2 npt(m) x 3/8 npt (f)	1
23	208–259	SUCTION KIT	1	47	100–840*†	ELBOW, street, 90°; 1/4 npt (m x f)	4
24	156–877	NIPPLE; 1/2 npt; 2.5" long	2	52	206–994	THROAT SEAL LIQUID; 8 oz (0.5 liter); not shown	1
25	222–297	UNION, adapter, 45°; 1/2 npt(m) x 1/2 npsm(f) swivel	1	53	—	VISCON ² HEATER Order desired voltage (see page 22)	1
26	158–491	NIPPLE; 1/2 npt	1	54	237–569	GROUND WIRE AND CLAMP	1
27	113–269	VALVE, air, bleed–type; 1/2 npt (m x f)	1				
28	179–749	MANIFOLD, air; 1/2 npt inlet; two 1/2 npt outlets	1				

* Included in Heater Mounting Kit 222–269.

† Included in Circulating Kit 222–436.

Refer to "How To Order Parts" on page 19.

Note:

Model 222–294 Heated Sprayer includes a VISCON² Heater. When ordering, specify the heater voltage desired to ensure that your sprayer is equipped with the correct model heater.

Parts

Heater Mounting Kit 222–269

Required to convert Model 222–293 Cold Sprayer to a heated unit. The heater is not included in this kit and must be ordered separately, by desired voltage (see page 25). Kit consists of:

Ref	No.	Qty
	3	1
	29	1
	30	1
	31	1
	32	1
	33	1
	34	1
	35	1
	46	1
	47	1

Circulating Kit 222–436

Required to convert Model 222–293 Cold Sprayer to a circulating unit. The heater is not included in this kit and must be ordered separately, by desired voltage (see page 25). Kit consists of:

Ref	No.	Qty
	3	1
	11	2
	36	1
	37	1
	38	1
	39	1
	40	1
	41	1
	42	2
	43	1
	44	1
	45	1
	47	4

Part Nos. 167–002 Insulators, 100–527 Washers, and 102–254 Screws are included in kit 222–436, but are not used with this pump.

Accessories

Insulated Hose Kit 222–264

21 MPa (210 bar , 3000 psi) **MAXIMUM WORKING PRESSURE**
 25 ft. (7.6 m) nylon fluid hose for use with heated circulating systems. Includes in-line fluid filter, circulating manifold, 3 ft. (0.9 m) whip hose, and air supply hose for air-assisted airless spray gun.

Viscon² Fluid Heater

27.6 MPa (276 bar , 4000 psi) **MAXIMUM WORKING PRESSURE**
 Specify desired voltage when ordering (see below). Heater reduces fluid viscosity for easier spraying. Stainless steel. Refer to Instruction Manual 307–805.

- Model 220–522** (120 V, single-phase, 16.7 Amp)
- Model 220–523** (240 V, single-phase, 9.6 Amp)
- Model 220–524** (480 V, single-phase, 4.8 Amp)

⚠ WARNING

Heater cord 110–160 not for use in hazardous areas containing flammable materials or fumes.

Viscon² Heater Cord 110–160

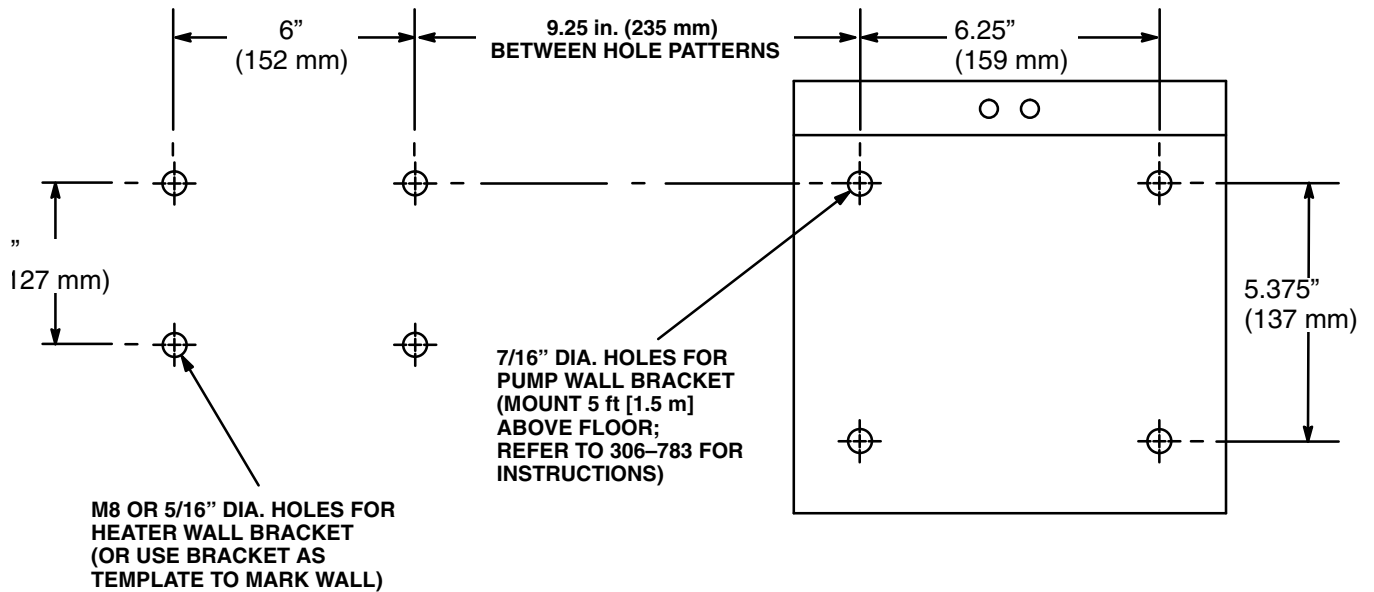
12 gauge, rated at 105° C.

Heater Conversion Kits

Use to convert pump Model 222–293 to a heated spray system. Viscon² Heater must be ordered separately. See pages 22 – 24 for parts.

- 222–269** Heater Mounting Kit
- 222–436** Circulating Kit

Mounting Dimensions



Technical Data

Maximum working pressure	12 MPa (124 bar, 1800 psi)
Maximum incoming air pressure	0.8 MPa (8 bar, 120 psi)
Ratio	15:1
Maximum recommended pump speed	70 cpm (1.0 gpm [3.8 liters/min])
Air consumption	approx. 12 scfm (0.34 m ³ /min) at 1.0 gpm (3.8 liters/min) flow rate at 400 kPa (4 bar, 60 psi) air pressure
Wetted parts	See separate component instruction manuals
Product weight:	Model 222–293: 78 lb (35.4 kg) Model 222–294: see weight of individual components
Maximum pump operating temperature (fluid)	Models 222–293 and 222–294: 180°F (82°C)
* Sound pressure level	Models 222–293 and 222–294: 92 dBA
* Sound power level	Models 222–293 and 222–294: 106 dBA
* Sound level measured at 100 psi (70 kPa, 7 bar) air, at 60 cycles per minute. Measured per ISO 3744–1981.	

PTFE®

Manual Change Summary

Summary

This manual reflects a change from Revision C to Revision H. This change brings Model 222–293 to a Series B configuration. All units have increased maximum working pressure. Pump setup instructions are changed to reflect the new series. Manual style and format have also been updated to improve manual clarity and usability for both illustrations and text.

The Graco Warranty and Disclaimers

WARRANTY

Graco warrants all equipment listed in this manual which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. 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.

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In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or for 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.

Graco Phone Number

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:
1-800-367-4023 Toll Free

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