

INSTRUCTIONS—PARTS LIST



307-931

Rev D
Supersedes C

This manual contains **IMPORTANT WARNINGS AND INSTRUCTIONS**
READ AND RETAIN FOR REFERENCE

WALL MOUNT, AIR-ASSISTED AIRLESS

10:1 RATIO MONARK® HYDRA-SPRAY® PUMP

950 psi (66 bar) MAXIMUM FLUID WORKING PRESSURE

95 psi (6.6 bar) MAXIMUM AIR WORKING PRESSURE

Model 230-999, Series C

For cold spray systems

Includes pump and wall bracket

Model 231-014

For cold spray systems

Includes pump 230-999, hose, gun and tip

Model 230-979, Series B

For cold spray systems

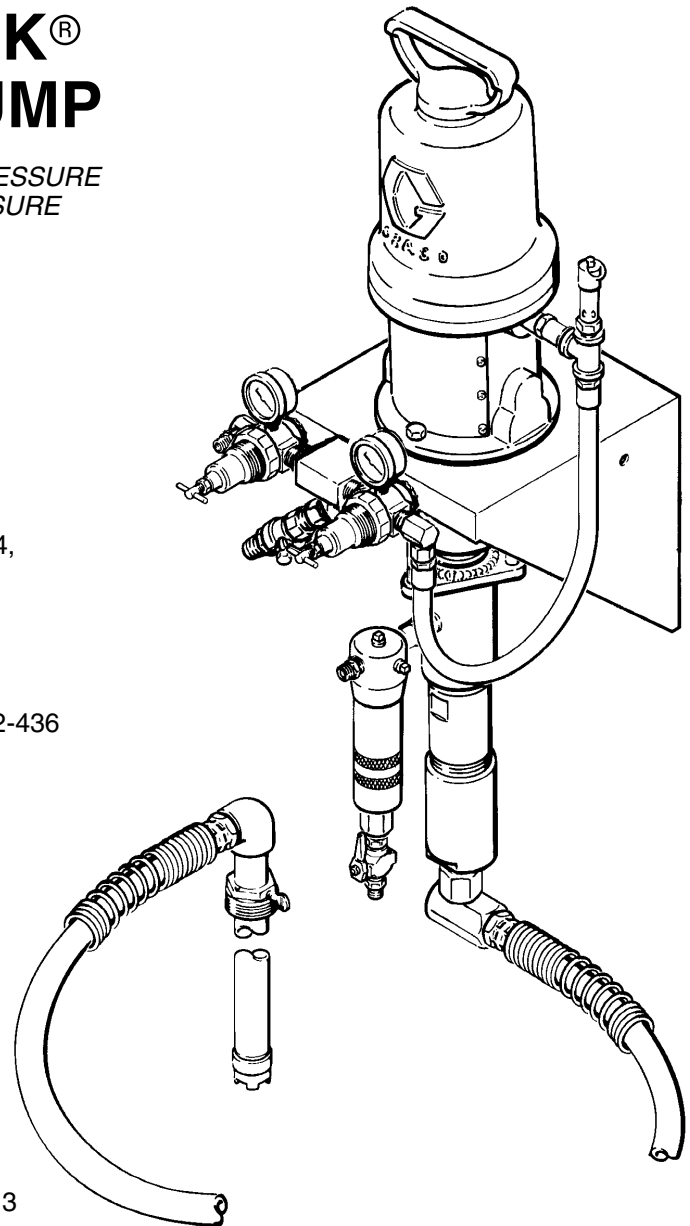
Includes pump 230-999, fluid regulation kit 222-564, hose, gun and tip

Model 221-124

For heated spray systems

Includes pump 230-999, Viscon²™ Heater*, heater mounting kit 222-269, and circulating kit 222-436

* Specify desired voltage of heater
(see page 22 for available models).



Model 230-999 Shown

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SAFETY WARNINGS

**HIGH PRESSURE FLUID CAN CAUSE SERIOUS INJURY. FOR PROFESSIONAL USE ONLY.
OBSERVE ALL WARNINGS. NEVER EXCEED 950 PSI (66 BAR) FLUID PRESSURE
WITH THIS AIR-ASSISTED AIRLESS PUMP.**

Read And Understand All Instruction Manuals Before Operating Equipment.

FLUID INJECTION HAZARD

General Safety

This equipment generates very high fluid pressure. Spray from the spray gun, leaks or ruptured components can inject fluid through your skin and into your body and cause extremely serious bodily injury, including the need for amputation. Also, fluid injected or splashed into the eyes or on the skin can cause serious damage.

NEVER point the spray gun at anyone or at any part of the body. NEVER put hand or fingers over the spray tip. NEVER try to “blow back” paint; this is NOT an air spray system.

ALWAYS follow the **Pressure Relief Procedure**, right, before cleaning or removing the spray tip or servicing any system equipment.

NEVER try to stop or deflect leaks with your hand or body.

Be sure equipment safety devices are operating properly before each use.

Medical Alert—Airless Spray Wounds

If any fluid appears to penetrate your skin, get **EMERGENCY MEDICAL CARE AT ONCE. DO NOT TREAT AS A SIMPLE CUT.** Tell the doctor exactly what fluid was injected.

Note to Physician: *Injection in the skin is a traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the blood stream. Consultation with a plastic surgeon or reconstructive hand surgeon may be advisable.*

Spray Gun Safety Devices

Be sure all spray gun safety devices are operating properly before each use. Do not remove or modify any part of the spray gun; this can cause a malfunction and result in serious bodily injury.

Safety Latch

Whenever you stop spraying, even for a moment, always set the spray gun safety latch in the closed or “safe” position, making the spray gun inoperative. Failure to set the safety latch can result in accidental triggering of the spray gun.

Diffuser

The spray gun diffuser breaks up spray and reduces the risk of fluid injection when the tip is not installed. Check the diffuser operation regularly. Follow the **Pressure Relief Procedure**, at right, then remove the spray tip. Aim the spray gun into a grounded metal pail, holding the spray gun firmly to the pail. Using the lowest possible pressure, trigger the spray gun. If the fluid emitted is not diffused into an irregular stream, replace the diffuser immediately.

EQUIPMENT MISUSE HAZARD

General Safety

Any misuse of the spray equipment or accessories, such as overpressurizing, modifying parts, using incompatible chemicals and fluids, or using worn or damaged parts, can cause them to rupture and result in fluid injection, splashing in the eyes or on the skin, or other serious bodily injury, or fire, explosion or property damage.

NEVER alter or modify any part of this equipment; doing so could cause it to malfunction.

CHECK all spray equipment regularly and repair or replace worn or damaged parts immediately.

Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

Spray Tip Safety

Use extreme caution when cleaning or changing spray tips. If the spray tip clogs while spraying, engage the spray gun safety latch immediately. ALWAYS follow the **Pressure Relief Procedure** and then remove the spray tip to clean it.

NEVER wipe off build-up around the spray tip until pressure is fully relieved and the spray gun safety latch is engaged.

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure whenever you shut off the pump, when checking or servicing any part of the spray system, when installing, cleaning or changing spray tips, and whenever you stop spraying.

1. Engage the spray gun safety latch.
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 bleed-type master air valve (supplied in your system).
4. Shut off the air regulators.
5. Disengage the spray gun safety latch.
6. Hold a metal part of the spray gun firmly to the side of a grounded metal pail, and trigger the spray gun to relieve pressure.
7. Engage the spray gun safety latch.
8. Open the drain valve (supplied in your system), having a container ready to catch the drainage.
9. Leave the drain valve open until you are ready to spray 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 air cap or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.

System Pressure

The 10:1 ratio Monark pump can develop 950 psi (66 bar) MAXIMUM WORKING PRESSURE at 95 psi (6.6 bar) MAXIMUM INCOMING AIR PRESSURE. NEVER exceed 95 psi (6.6 bar) air pressure to the pump.

Be sure that all spray equipment and accessories are rated to withstand the maximum working pressure of the pump. DO NOT exceed the maximum working pressure of any component or accessory used in the system.

Fluid Compatibility

BE SURE that all fluids and solvents used are chemically compatible with the wetted parts shown in the **TECHNICAL DATA** in the separate component manuals. Always read the manufacturer’s literature before using fluid or solvent in this pump.

HOSE SAFETY

High pressure fluid in the hoses can be very dangerous. If the hose develops a leak, split or rupture due to any kind of wear, damage or misuse, the high pressure spray emitted from it can cause a fluid injection injury or other serious bodily injury or property damage.

ALL FLUID HOSES MUST HAVE SPRING GUARDS ON BOTH ENDS! The spring guards help protect the hose from kinks or bends at or close to the coupling which can result in hose rupture.

TIGHTEN all fluid connections securely before each use. High pressure fluid can dislodge a loose coupling or allow high pressure spray to be emitted from the coupling.

NEVER use a damaged hose. Before each use, check the entire hose for cuts, leaks, abrasion, bulging cover, or damage or movement of the hose couplings. If any of these conditions exist, replace the hose immediately. **DO NOT** try to recouple high pressure hose or mend it with tape or any other device. A repaired hose cannot safely contain the high pressure fluid.

HANDLE AND ROUTE HOSES CAREFULLY. Do not pull on hoses to move equipment. Do not use fluids which are not compatible with the inner tube and cover of the hose. **DO NOT** expose Graco hoses to temperatures above 180° F (82° C) or below -40° F (-40° C).

FIRE OR EXPLOSION HAZARD

Static electricity is created by the flow of fluid through the pump and hose. If every part of the spray equipment is not properly grounded, sparking may occur, and the system may become hazardous. Sparking may also occur when plugging in or unplugging a power supply cord. Sparks can ignite fumes from solvents and the fluid being sprayed, dust particles and other flammable substances, whether you are spraying indoors or outdoors, and can cause a fire or explosion and serious bodily injury and property damage. Do not plug in or unplug any power supply cords in the spray area when there is any chance of igniting fumes still in the air.

If you experience any static sparking or even a slight shock while using this equipment, **STOP SPRAYING IMMEDIATELY.** Check the entire system for proper grounding. Do not use the system again until the problem has been identified and corrected.

Grounding

To reduce the risk of static sparking, ground the pump, object being sprayed, and all other spray equipment used or located in the spray area. **CHECK** your local electrical code for detailed grounding instructions for your area and type of equipment. **BE SURE** to ground all of this spray equipment:

1. *Pump:* use a ground wire and clamp as shown in Fig 1.
2. *Air hoses:* use only grounded air hoses.
3. *Fluid hoses:* use only grounded fluid hoses.
4. *Heater, if used:* refer to the Viscon² Heater manual, 307-805.
5. *Air compressor:* follow manufacturer's recommendations.
6. *Spray gun:* grounding is obtained through connection to a properly grounded fluid hose and pump.
7. *Fluid supply container:* according to your local code.
8. *Object being sprayed:* according to your local code.
9. *All solvent pails used when flushing,* according to 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.

Hose Grounding Continuity

Proper hose grounding continuity is essential to maintaining a grounded spray system. Check the electrical resistance of your air and fluid hoses at least once a week. If your hose does not have a tag on it which specifies the maximum electrical resistance, contact the hose supplier or manufacturer for the maximum resistance limits. Use a resistance meter in the appropriate range for your hose to check the resistance. If the resistance exceeds the recommended limits, replace it immediately. An ungrounded or poorly grounded hose can make your system hazardous. Also, read **FIRE OR EXPLOSION HAZARD**, below.

MOVING PARTS HAZARD

The piston in the air motor, located behind the air motor plates, moves when air is supplied to the motor. Moving parts can pinch or amputate your fingers or other body parts. Therefore, **NEVER** operate the pump with the air motor plates removed. **KEEP CLEAR** of moving parts when starting or operating the pump. Before checking or servicing the pump or any system component, follow the **Pressure Relief Procedure** on page 2, to prevent the pump from starting accidentally.

10. *To maintain grounding continuity when flushing or relieving pressure,* always hold a metal part of the spray gun firmly to the side of a grounded *metal* pail, then trigger the spray gun.

To ground the pump:

To ground the pump, loosen the grounding lug locknut (W) and washer (X). Insert one end of a 1.5 mm² (12 ga) minimum ground wire (Y) into the slot in lug (Z) and tighten the locknut securely. See Fig 1. Refer to page 22 to order a grounding wire and clamp. Connect the other end of the wire to a true earth ground.

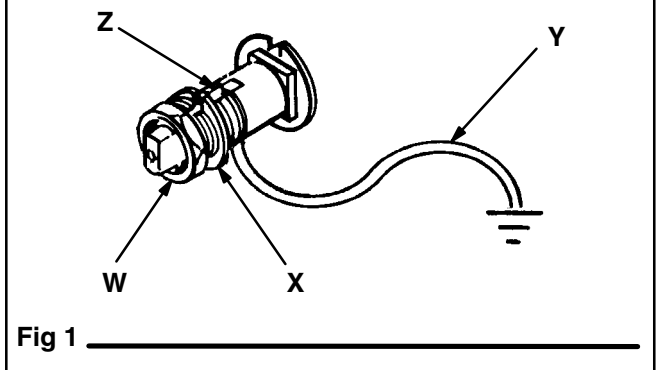


Fig 1

Flushing Safety

Before flushing, be sure the entire system and flushing pails are properly grounded. Refer to **Grounding**, at the left. Follow the **Pressure Relief Procedure** on page 2, and remove the spray tip from the spray gun. Always use the lowest possible fluid pressure, and maintain firm metal-to-metal contact between the spray gun and the pail during flushing to reduce the risk of fluid injection injury, static sparking and splashing.

IMPORTANT

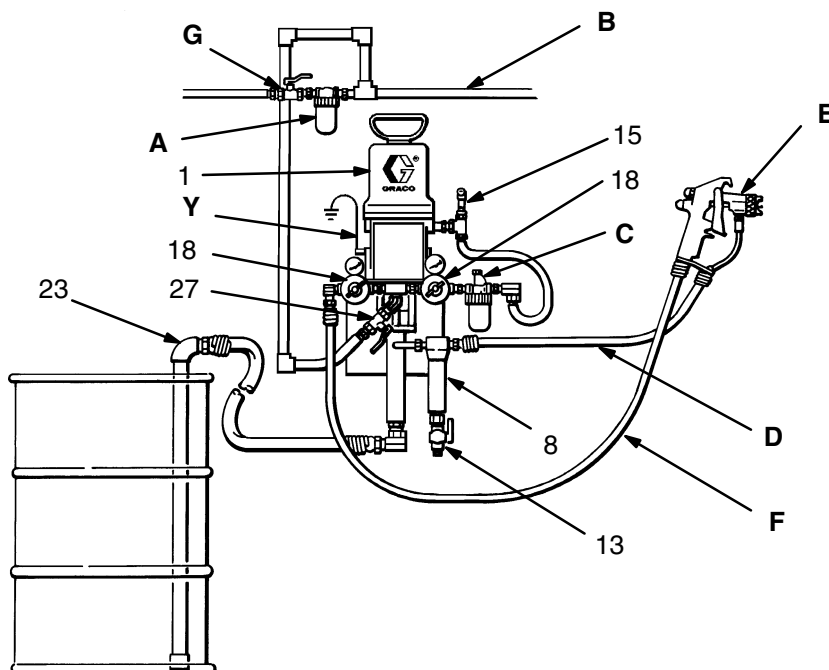
United States Government safety standards have been adopted under the Occupational Safety and Health Act. These standards – particularly the General Standards, Part 1910, and the Construction Standards, Part 1926 – should be consulted.

NOTES: _____

TYPICAL INSTALLATION

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 Master Air Valve (for accessories)
Y	Ground Wire (required, see page 3 for installation instructions)
1	Pump
8	Fluid Filter
13	Drain Valve (required)
15	Air Relief Valve (required)
18	Air Regulators
23	Suction Kit
27	Bleed-Type Master Air Valve (required)



INSTALLATION

Be sure that all operators read and understand this entire manual and the separate manuals supplied with components and accessories before using this equipment.

Reference numbers and letters in parentheses refer to the Typical Installation Drawing, Figs. 1-5 and the parts drawings and lists on pages 16-21.

Accessories mentioned in the text are available from your Graco distributor (see page 22). If you supply your own accessories, be sure they are adequately sized to meet your system's requirements.

The Typical Installation above is only an example. For assistance in designing a system to meet your particular needs, contact your Graco representative.

SYSTEM INSTALLATION

Refer to page 6 to install pump Models 230-999, 230-979, and 231-014, for use in cold spray systems.

Refer to page 8 to install pump Model 221-124, for use in heated spray systems, or to convert pump Model 230-999 to a heated system.

To convert pump Model 230-999 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

SYSTEM ACCESSORIES

Install an air line filter (A) in the main air line (B), to remove harmful dirt and moisture from the compressed air supply. To provide automatic lubrication of the air motor, install an air line lubricator (C) downstream from the pump air regulator (18). Install a second bleed valve (G) in the main air line, to isolate the accessories for servicing.

WARNING

The bleed-type master air valve (27), air relief valve (15), and fluid drain valve (13) are **supplied** in your system, to help reduce the risk of serious bodily injury including fluid injection, splashing in the eyes or on the skin, overpressurization, or 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. Trapped air can cause the pump to cycle unexpectedly. **To bleed air from the pump, the pump air regulator must be open when you close this valve.**

The *air relief valve* opens automatically to relieve air pressure to the pump if the pressure exceeds a preset level. This valve prevents overpressurization of the spray gun.

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.

INSTALLING THE PUMP (Models 230-999, 230-979 and 231-014)

Refer to Fig. 2.

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 23 and Mounting Bracket manual 306-783.
2. Install the pump (1) on the wall bracket (7), aligning the two mounting holes in the pump with those in the bracket. Install the two screws supplied with the bracket in the holes. Secure with the lockwashers and nuts from the underside of the wall bracket.
3. To install the safety relief valve (15) and connecting parts, apply thread sealant to the 3/8 npt nipple (9) and screw the nipple into the pump's air inlet.
4. The air regulators (18), manifold (28), and connecting parts are preassembled. Mount the air regulator assembly to the front of the pump mounting bracket, using the two screws (22). 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).
5. Connect the nipple (26) and bleed valve (27) to the 45° swivel (25) at the bottom of the manifold (28). When opened, the handle of the bleed valve **must** point up toward the manifold.
6. To connect the pump (right) air regulator (18) to the pump air inlet, screw one end of the air hose (16) into the lower port of the tee (14), and connect the other end to the swivel fitting of the union (17). This completes installation of the air control assembly. *If you are installing a heated system*, skip steps 7 through 9 and proceed to "Installing a Heated System" on page 8.
7. Apply pipe sealant and install the long 3/8 npt nipple (9) in the pump's fluid outlet. Connect the fluid filter (8) to this nipple.
8. Screw the swivel end of the suction kit (23) onto the pump's fluid intake.
9. Connect the air and fluid hoses and gun as explained to the right.

HOSE AND GUN CONNECTIONS

Refer to the Typical Installation drawing on page 5. 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 pages 10-12.

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.

INSTALLING FLUID REGULATION KIT 222-564 (Pump Model 230-979)

WARNING

Before installing the fluid regulation kit, follow the **Pressure Relief Procedure** on page 2. Disconnect all hoses from the pump.

Assemble the fluid regulation kit (50) as shown in Detail A of Fig. 2. (Refer also to the parts list on page 19.) Install the mounting bracket (50k) on the regulator (50f) using the two screws (50p) and lockwashers (50q). Connect the fluid regulator and bracket to the side of the wall bracket (7) using the screw (50l), lockwasher (50m) and nut (50n). Connect the 22" (560 mm) hose (50h) 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 (50b) of the fluid regulation kit.

GROUNDING

WARNING

Before operating the pump, ground the system as explained under **FIRE OR EXPLOSION HAZARD** and **Grounding** on page 3.

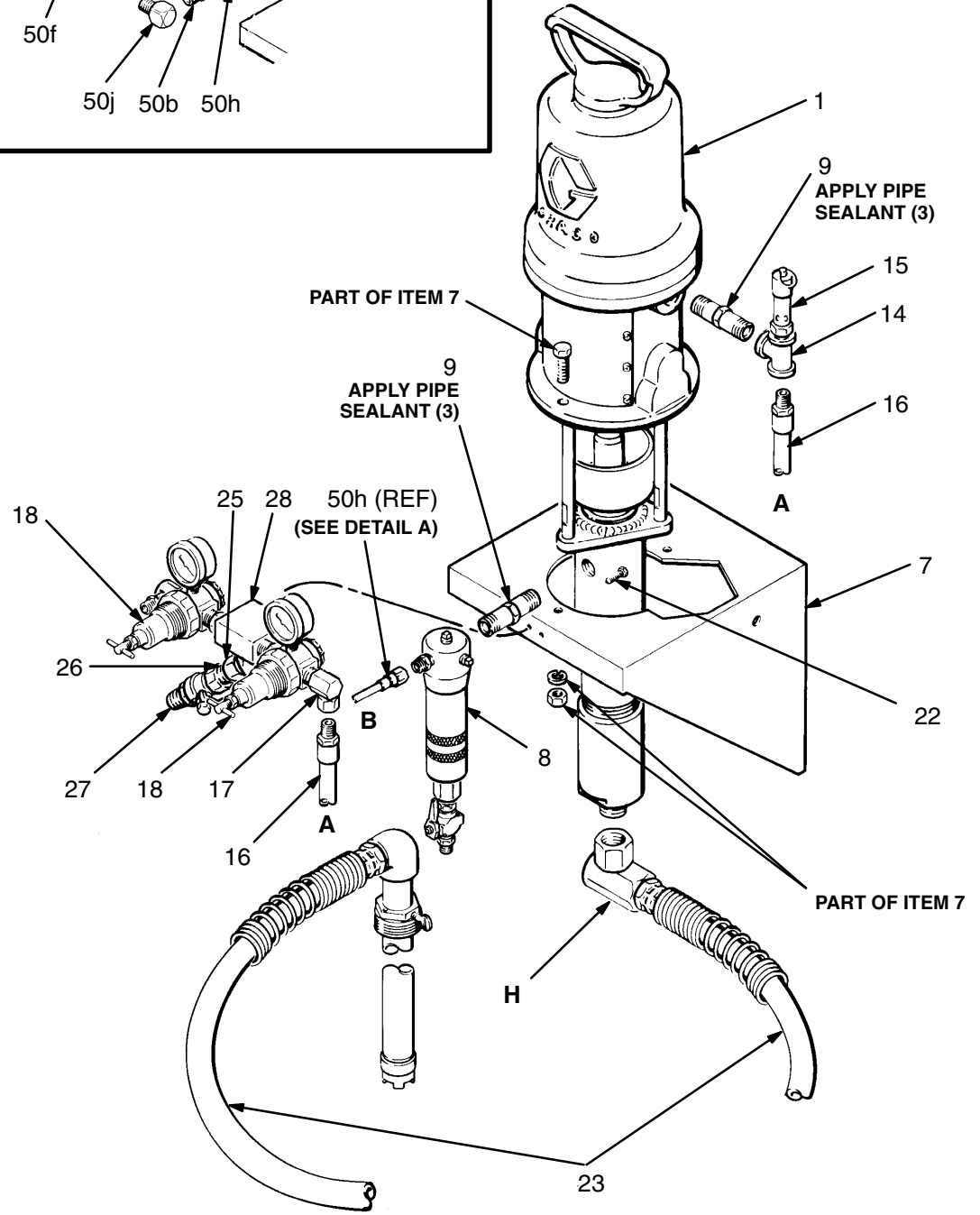
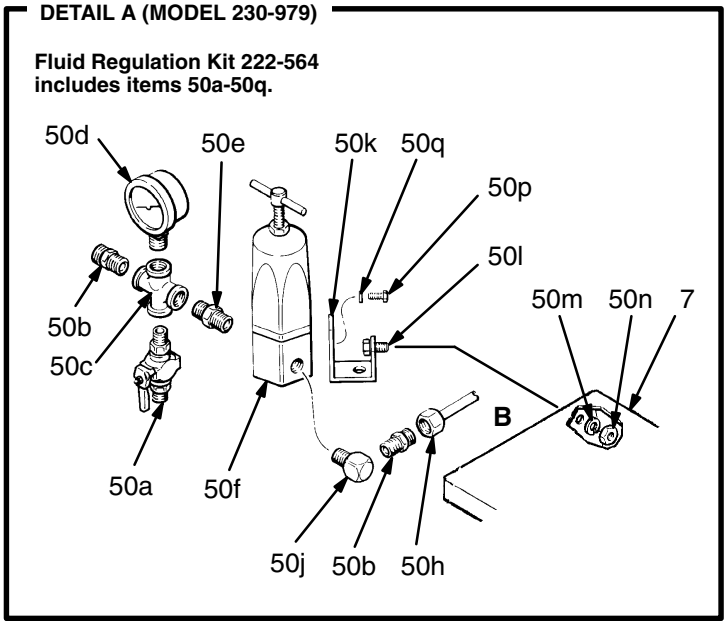


Fig. 2

INSTALLING A HEATED SYSTEM

Use the following procedures to install Model 221-124 Heated System, or to convert an existing Model 230-999 or 231-014 to a heated circulating system. The Viscon² Heater is available in three voltages (see page 22). Specify which voltage you desire.

To install the pump, first follow steps 1-6 under “Installing the Pump” on page 6.

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 22). Refer to the Viscon² Heater Manual, 307-805, for further information.

Installing Heater Mounting Kit 222-269

WARNING

Before installing the heater, heater mounting kit and circulating kit, follow the **Pressure Relief Procedure** on page 2. 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 23.
2. Attach the heater wall bracket to the heater mounting posts with the M8 x 1.25 screws and lockwashers supplied with the heater (51).
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. 2.
5. Install the 3/8 npt nipple (35*) in the heater outlet. Screw the filter (8) inlet onto this nipple. Unscrew the 1/4 npt nipple (11) from the filter outlet. Screw the elbow (46*) into the filter outlet, and screw the 1/4 npt nipple (11) into the elbow. See Fig. 3.
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*). See Fig. 3.

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7. Screw the elbow (34*) into the pump outlet. 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*).

Installing Circulating Kit 222-436

WARNING

Before installing the heater, heater mounting kit and circulating kit, follow the **Pressure Relief Procedure** on page 2. 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. 2.
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). See Fig. 3.
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 (46†) 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 6.

GROUNDING

WARNING

Before operating the pump, ground the system as explained under **FIRE OR EXPLOSION HAZARD** and **Grounding** on page 3.

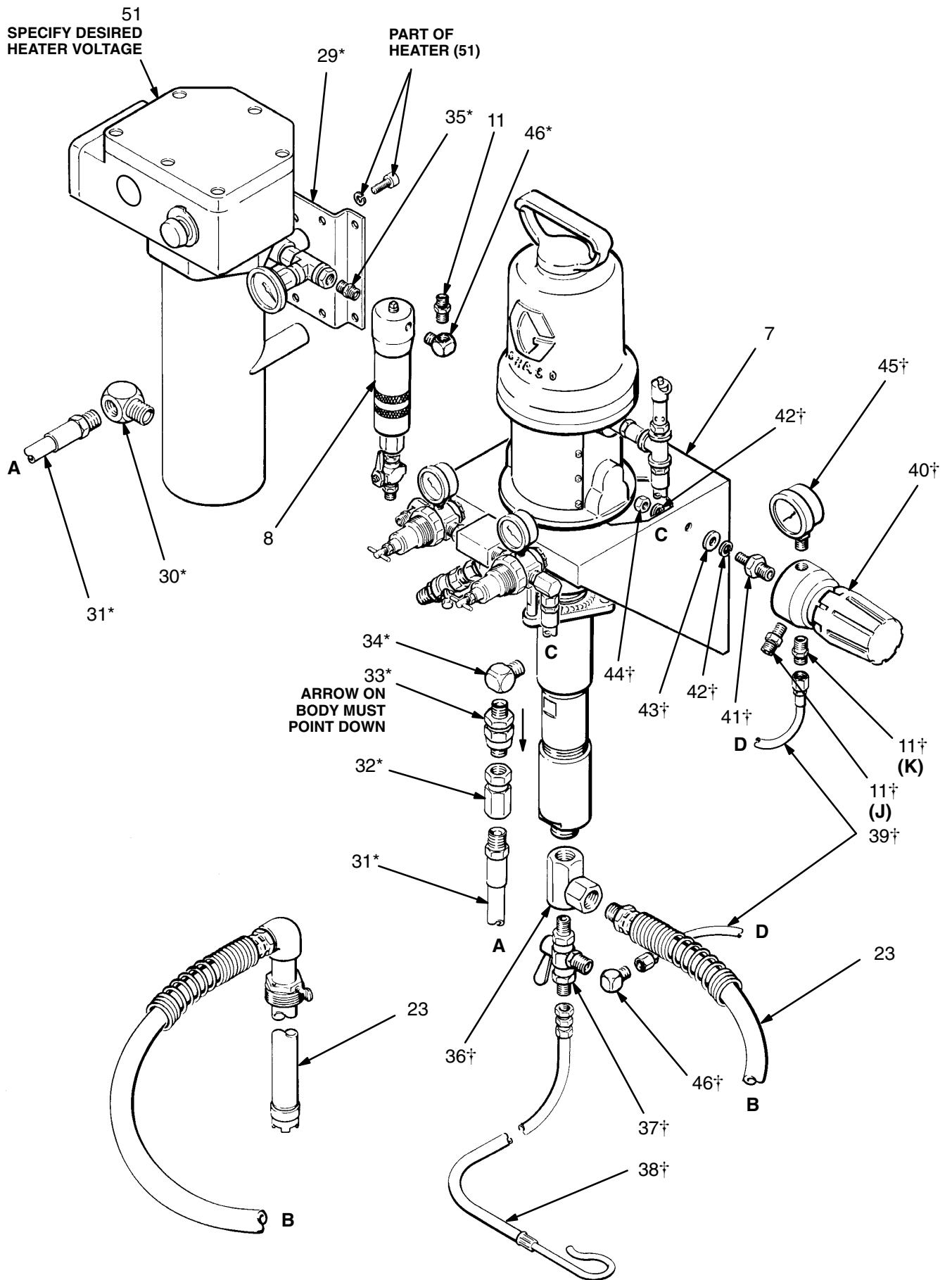


Fig. 3

CONVERTING TO A TWO-GUN SYSTEM

To convert your sprayer to a two-gun system, refer to the following applicable paragraph for your model (refer to page 12 for Models 230-979 and 221-124). Order the parts listed, and perform the assembly procedure.

Models 230-999 and 231-014 (Refer to Figs 4 and 5, and the Parts Drawing on page 16)

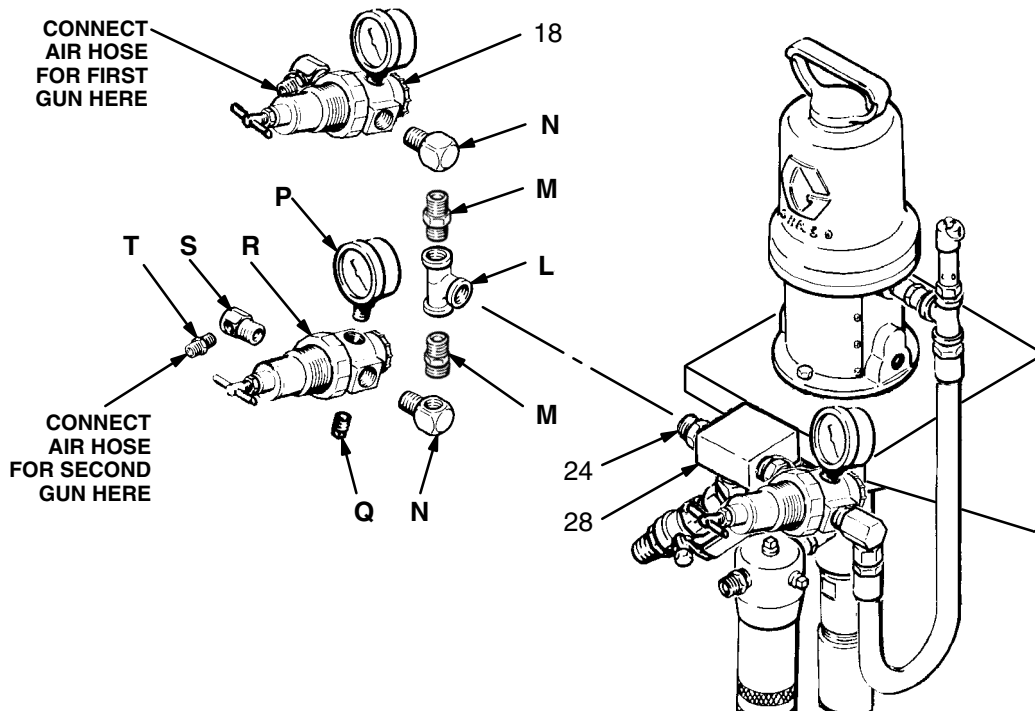
WARNING

Before performing this procedure, follow the **Pressure Relief Procedure** on page 2. Disconnect all hoses from the pump.

NOTE: For Model 230-999, order two 217-292 Guns, two 210-867 Air Hoses, and two 214-698 Fluid Hoses. Model 231-014 includes a hose and gun set, so you should order only one additional gun, air hose and 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
162-453	NIPPLE; 1/4 npt x 1/4 npsm	2
217-292	GUN, spray, air-assisted airless	2
210-867	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 Fig 4.
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 5. This is the fluid connection for the second gun.
6. Connect the fluid and air hoses to the guns as explained on page 6 (see Detail E of Fig 5).



AIR REGULATOR CONNECTIONS FOR A TWO-GUN SYSTEM (ALL MODELS)

Fig 4

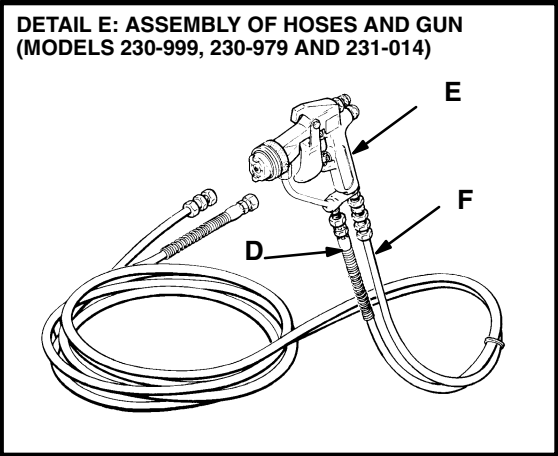
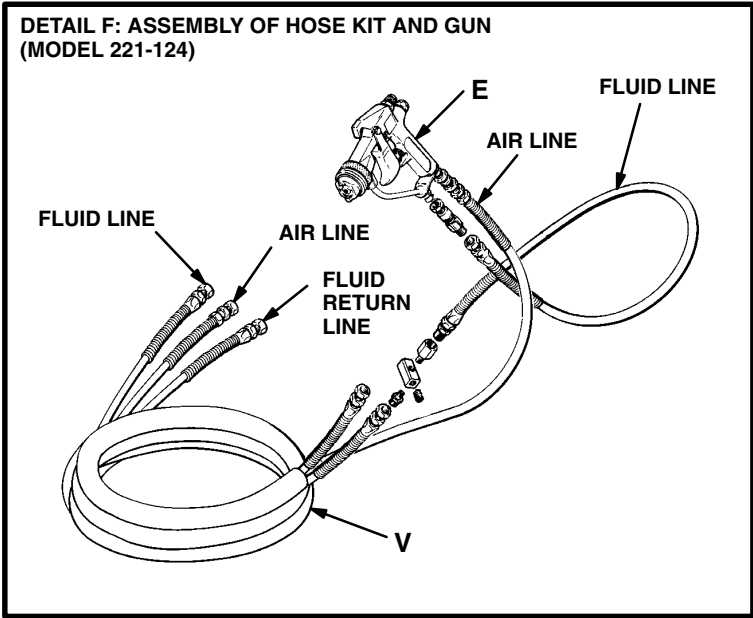
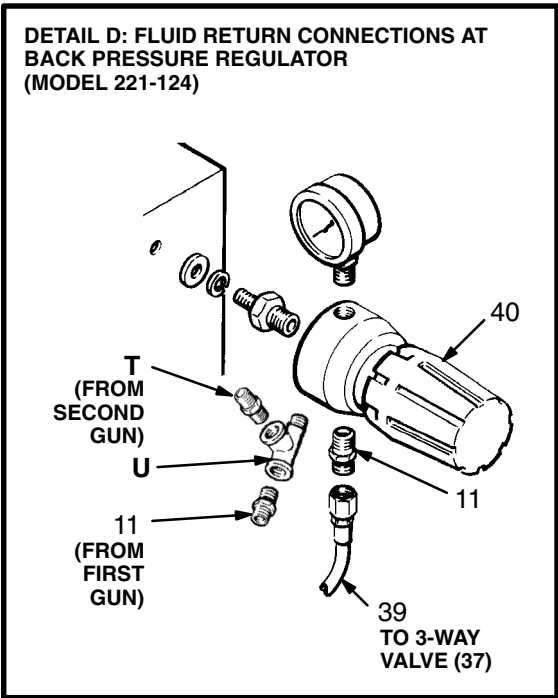
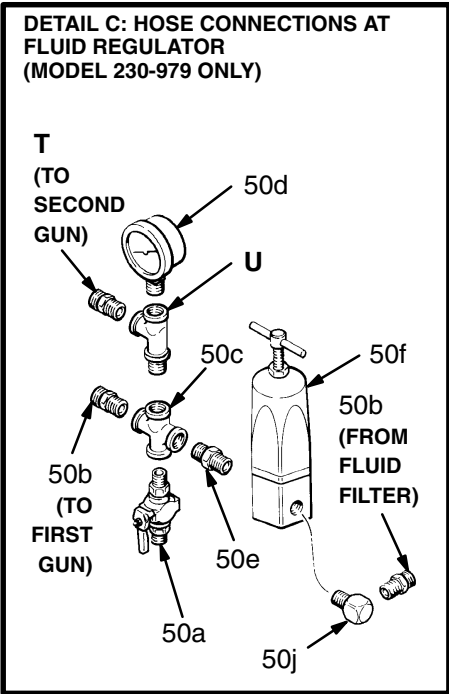
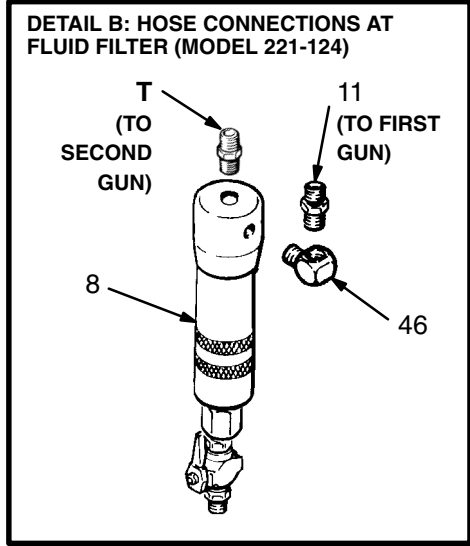
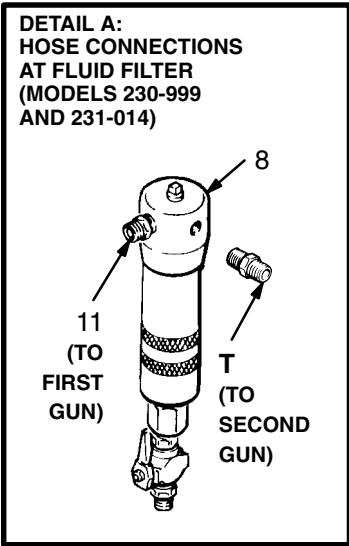


Fig 5

Model 230-979 (Refer to Figs 4 and 5, and the Parts Drawing on page 18)

Model 221-124 (Refer to Figs 4 and 5, and the Parts Drawing on page 20)

WARNING

Before performing this procedure, follow the **Pressure Relief Procedure** on page 2. Disconnect all hoses from the pump.

WARNING

Before performing this procedure, follow the **Pressure Relief Procedure** on page 2. Disconnect all hoses from the pump.

NOTE: Model 230-979 includes a hose and gun set, so you should order only one 217-292 Gun, 210-867 Air Hose, and 214-698 Fluid Hose.

NOTE: For Model 221-124, order two 217-292 Guns and two 222-264 Hose Kits.

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
217-292	GUN, spray, air-assisted airless	1
210-867	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

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	3
103-048	TEE, street; 1/4 npt(f) branch; 1/4 npt(f) x 1/4 npt(m) run	1
217-292	GUN, spray, 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

1. Perform steps 1-4 of the procedure for Models 230-999 and 231-014 (see page 10).
2. Unscrew the gauge (50d) from the cross (50c) 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 (50d) 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).

1. Perform steps 1-4 of the procedure for Models 230-999 and 231-014 (see page 10).
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 5.
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 5. 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. These are the fluid return line connections.
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 5.
6. Connect the air line of one of the hose kits (see Detail F) to the outlet nipple of one of the air regulators (see Fig 4). 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 5. Similarly, connect the fluid return lines of the two hose kits to the inlet nipples (11 and T) of the back pressure regulator (40). See Detail D.

WARNING

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure whenever you shut off the pump, when checking or servicing any part of the spray system, when installing, cleaning or changing spray tips, and whenever you stop spraying.

1. Engage the spray gun safety latch.
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 bleed-type master air valve (supplied in your system).
4. Shut off the air regulators.
5. Disengage the spray gun safety latch.
6. Hold a metal part of the spray gun firmly to the side of a grounded metal pail, and trigger the spray gun to relieve pressure.
7. Engage the spray gun safety latch.
8. Open the drain valve (supplied in your system), having a container ready to catch the drainage.
9. Leave the drain valve open until you are ready to spray 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 air cap or hose end coupling and relieve pressure gradually , then loosen completely. Now clear the tip or hose.

WARNING

For your safety , before operating the equipment be sure all operators have read and fully understand all the warnings, cautions and instructions in this manual and all manuals supplied with each component or accessory.

Flush the Pump Before Using

Pumps are tested with lightweight oil which is left in to protect the pump parts. To prevent contamination of the fluid, flush the pump with a compatible solvent before using it.

WARNING

Before flushing, be sure the entire system and flushing pails are properly grounded. Refer to **Grounding** on page 3. Follow the **Pressure Relief Procedure Warning** above, and *remove the spray tip from the gun*. Always use the lowest possible fluid pressure, and maintain firm metal-to-metal contact between the gun and the pail during flushing to reduce the risk of fluid injection, static sparking, and splashing in the eyes or on the skin.

Starting and Adjusting the Pump

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.

Follow the **Pressure Relief Procedure Warning** at left, then install the spray tip in the 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 (50f) used on pump model 230-979 is a fluid pressure type. It allows you to run the pump at an “efficient” air pressure (above 30 psi [2.1 bar]) while adjusting fluid pressure with the regulator. The back pressure regulator (40) used on model 221-124 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) or other compatible solvent, to help prolong the packing life.

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 page 14.

Heated Systems

Operating instructions for a heated circulating system are provided in the V iscon² 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

Always follow the **Pressure Relief Procedure Warning** on page 13, whenever you shut off the pump. Stop the pump at the bottom of its stroke to keep fluid from drying on the exposed displacement rod and damaging throat packings.

Always flush the pump with a compatible solvent before

the fluid can dry on the displacement rod, and at the end of each day. If you are pumping water-based fluid, flush first with water and then with mineral spirits to protect the pump parts. If you are pumping oil-based fluids, flush with mineral spirits only.

Relieve pressure and leave the mineral spirits in the pump to prevent corrosion.

**PARTS DRAWINGS
and
PARTS LISTS**

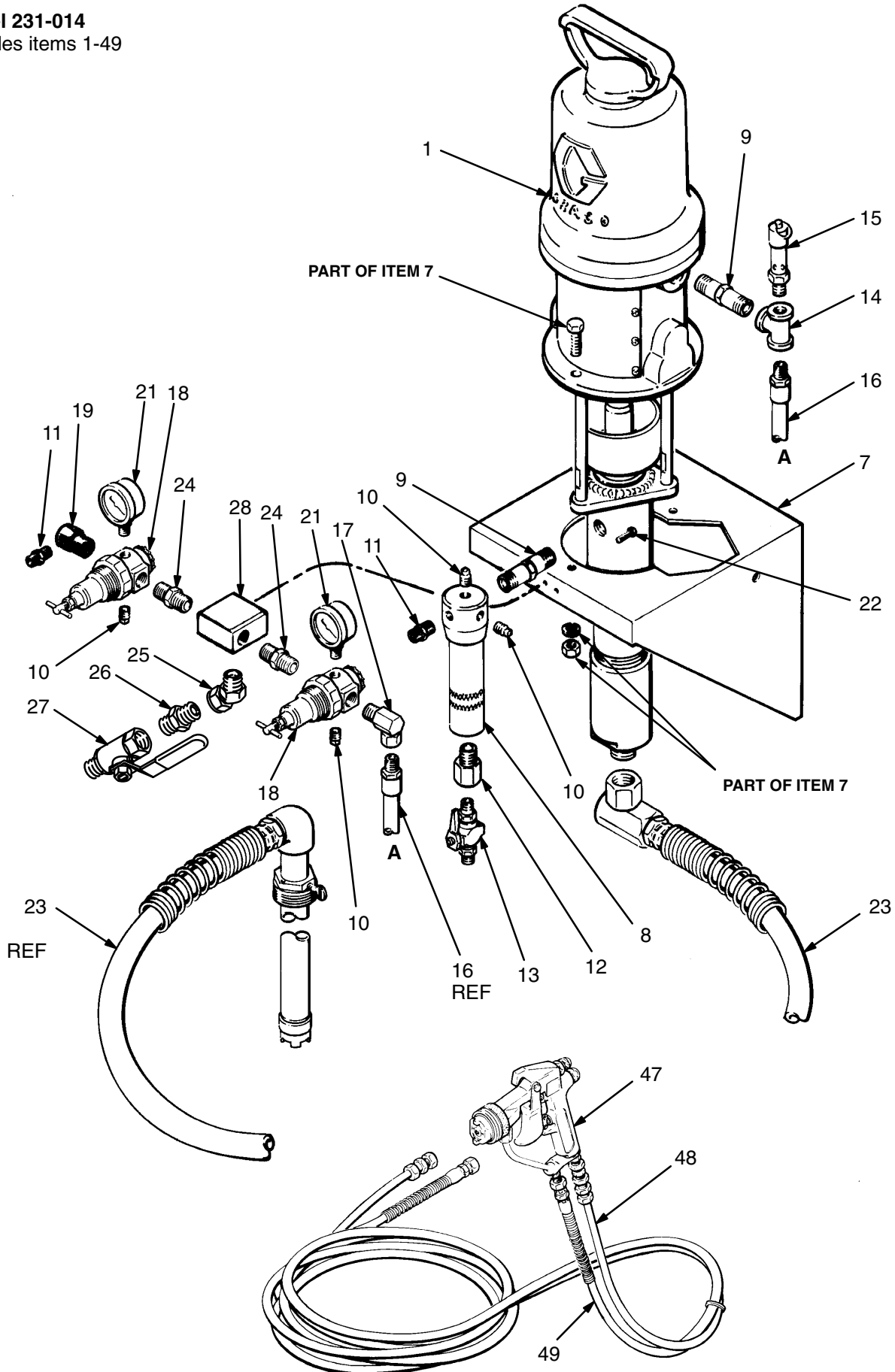
PARTS DRAWING

Model 230-999, Series C

Includes items 1-28

Model 231-014

Includes items 1-49



PARTS LIST

Model 230-999, Series C

Includes items 1-28

Model 231-014

Includes items 1-49

REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
1	217-523	10:1 MONARK PUMP See 307-595 for parts	1	19	166-999	ELBOW, street, reducing; 1/2 npt(m) x 1/4 npt(f)	1
3	110-110	SEALANT, pipe, sst; 6 ml (not shown)	1	21	101-180	GAUGE, pressure, air; 0-200 psi (0-14 bar)	2
4	206-994	THROAT SEAL LIQUID; 8 oz (not shown)	1	22	102-254	SCREW, hex hd; 1/4-20 x 7/8" long	2
7	207-365	BRACKET, wall, pump See 306-783 for parts	1	23	208-259	SUCTION KIT	1
8	218-029	FLUID FILTER Includes attaching hardware See 307-273 for parts	1	24	156-877	NIPPLE; 1/2 npt; 2.5" long	2
9	156-850	NIPPLE; 3/8 npt; 2.5" long	2	25	222-297	UNION, adapter, 45°; 1/2 npt(m) x 1/2 npsm(f) swivel	1
10	100-509	PLUG, pipe, sq hd; 1/4 npt	4	26	158-491	NIPPLE, hex; 1/2 npt	1
11	162-453	NIPPLE; 1/4 npt x 1/4 npsm	2	27	107-142	VALVE, air, bleed-type; 1/2 npt (m x f)	1
12	150-286	ADAPTER; 3/8 npt (m x f)	1	28	179-749	MANIFOLD, air; 1/2 npt inlet; two 1/2 npt outlets	1
13	210-658	DRAIN VALVE; 3/8 npt(mbe) See 306-861 for parts	1	47	217-292	AA2000 AIR-ASSISTED AIRLESS SPRAY GUN See 307-586 for parts	1
14	171-987	TEE; 3/8 npt x 1/4 npt run; 3/8 npt branch	1	48	210-867	HOSE, air; nylon; 1/4" ID; cpld 1/4 npsm (fbe) swivel; 25 ft (7.6 m) long	1
15	103-347	VALVE, relief, air	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
16	204-560	HOSE, air; buna-N; 3/8" ID; cpld 3/8 npt (mbe); 18" (457 mm) long	1				
17	161-037	UNION, adapter, 90°; 1/2 npt(m) x 3/8 npsm(f) swivel	1				
18	104-267	AIR REGULATOR 1/2 npt inlet and outlet 0-125 psi (0-9 bar) range See 308-167 for parts	2				

HOW TO ORDER PARTS

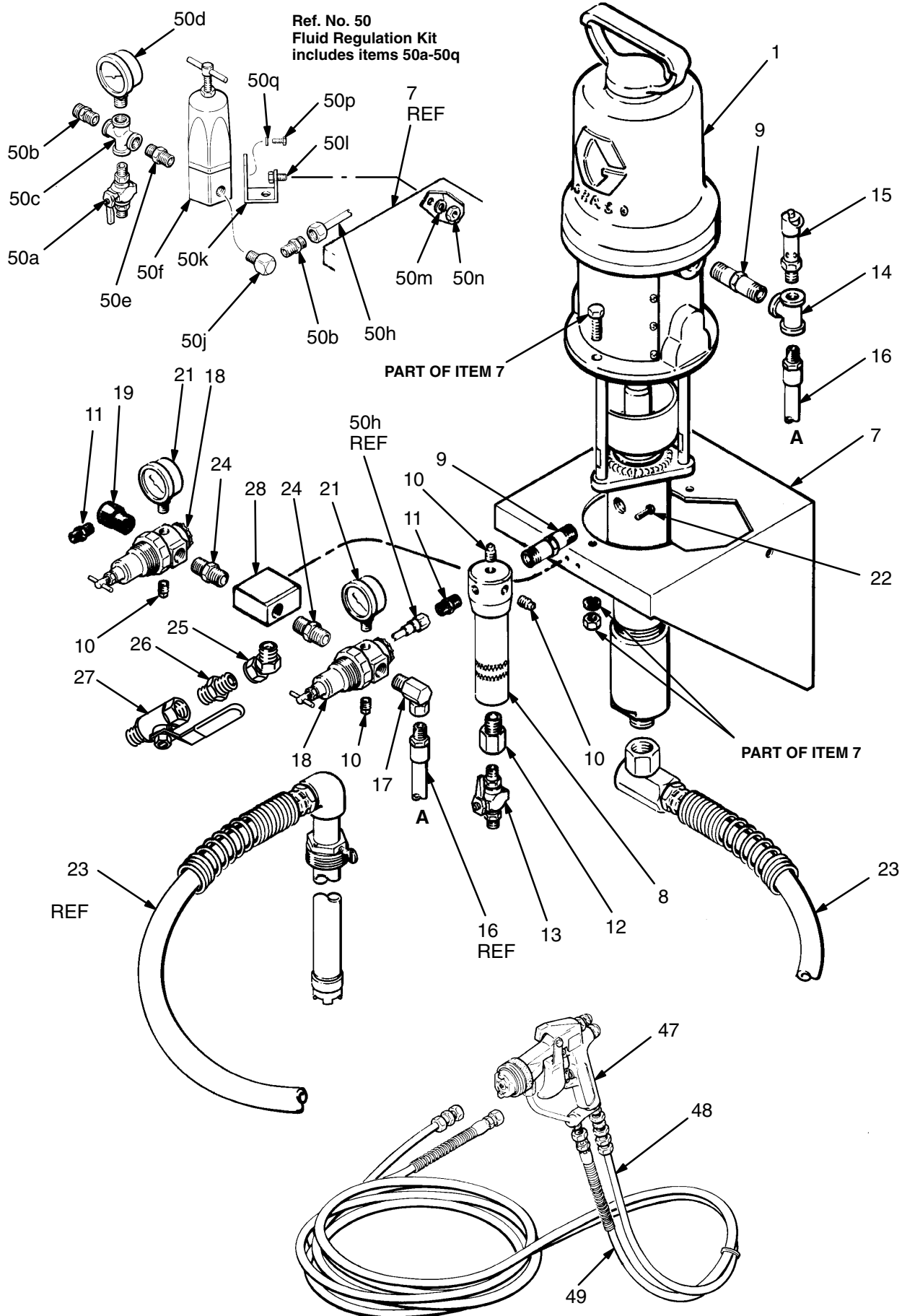
1. To be sure you receive the correct replacement parts, kits or accessories, always give all of the information requested in the chart below.
2. Check the parts list to identify the correct part number; do not use the ref. no. when ordering.
3. Order all parts from your nearest Graco distributor.

6 digit Part Number	Qty	Part Description

PARTS DRAWING

Model 230-979, Series B

Includes items 1-50



PARTS LIST

Model 230-979, Series B

Includes items 1-50

REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
1	217-523	10:1 MONARK PUMP See 307-595 for parts	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	47	217-292	AA2000 AIR-ASSISTED AIRLESS SPRAY GUN	1
4	206-994	THROAT SEAL LIQUID; 8 oz (not shown)	1	48	210-867	See 307-586 for parts HOSE, air; nylon; 1/4" ID; cpld 1/4 npsm (fbe) swivel;	1
7	207-365	BRACKET, wall, pump Includes attaching hardware 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;	1
8	218-029	FLUID FILTER See 307-273 for parts	1	50	222-564	spring guards both ends FLUID REGULATION KIT	1
9	156-850	NIPPLE; 3/8 npt; 2.5" long	2			Includes items 50a-50q	1
10	100-509	PLUG, pipe, sq hd; 1/4 npt	4	50a	210-657	. VALVE, ball; 1/4 npt (mbe)	1
11	162-453	NIPPLE; 1/4 npt x 1/4 npsm	2	50b	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	50c	102-959	. CROSS, pipe; 1/4 npt(f)	1
13	210-658	DRAIN VALVE; 3/8 npt(mbe) See 306-861 for parts	1	50d	802-072	. GAUGE, pressure, fluid	1
14	171-987	TEE; 3/8 npt x 1/4 npt run; 3/8 npt branch	1	50e	156-971	. NIPPLE; 1/4 npt	1
15	103-347	VALVE, relief, air	1	50f	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	50g	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	50h	110-192	. HOSE; PTFE; 0.20" ID; cpld 1/4 npsm (fbe) swivel;	1
18	104-267	AIR REGULATOR 1/2 npt inlet and outlet 0-125 psi (0-9 bar) range See 308-167 for parts	2	50j	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	50k	185-251	. BRACKET, regulator	1
21	101-180	GAUGE, pressure, air; 0-200 psi (0-14 bar)	2	50l	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	50m	100-133	. LOCKWASHER; 3/8"	1
23	208-259	SUCTION KIT	1	50n	100-307	. NUT, hex; 3/8-16 unc	1
24	156-877	NIPPLE; 1/2 npt; 2.5" long	2	50p	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	50q	100-016	. LOCKWASHER; 1/4"	2
26	158-491	NIPPLE, hex; 1/2 npt	1				
27	107-142	VALVE, air, bleed-type; 1/2 npt (m x f)	1				

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

HOW TO ORDER PARTS

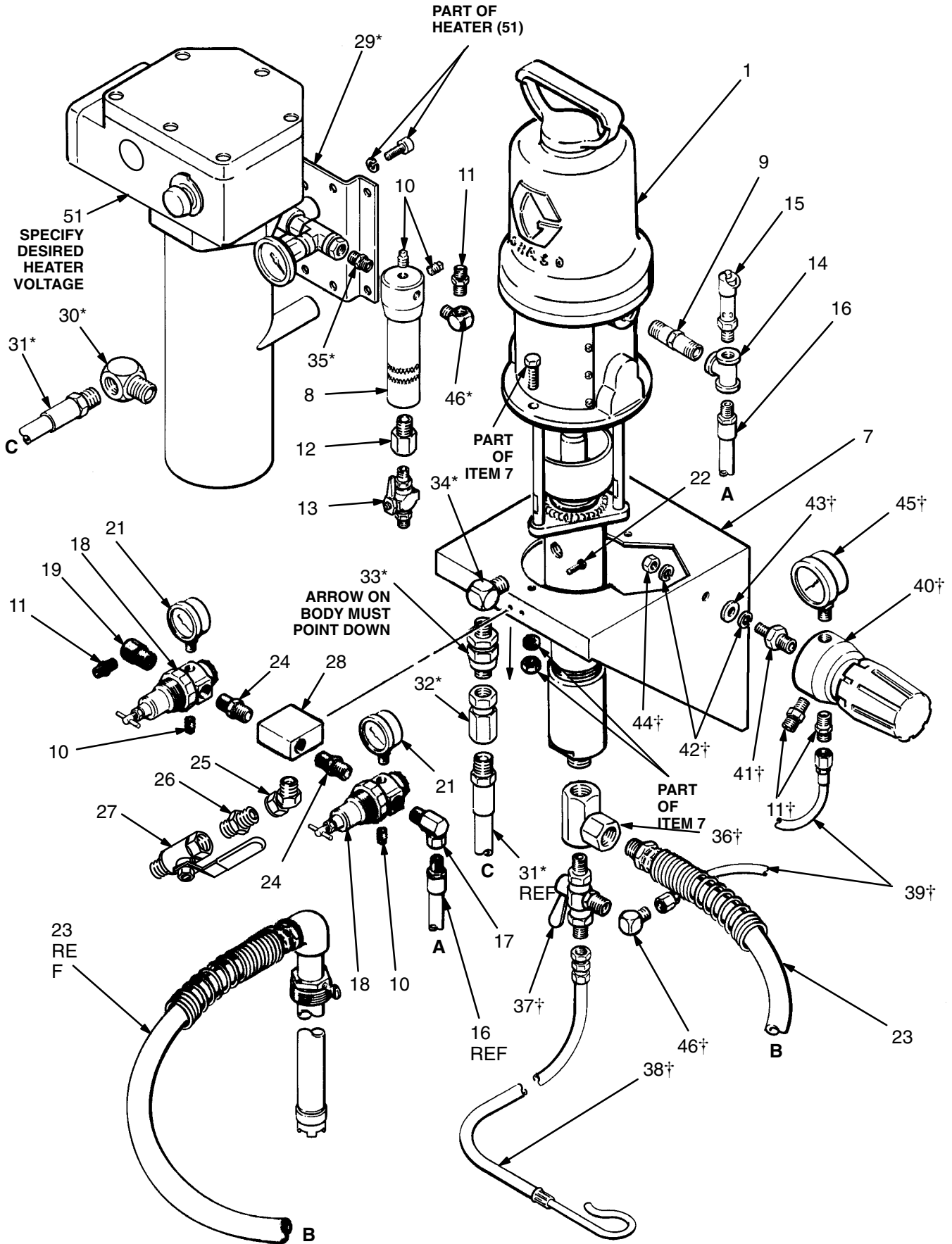
1. To be sure you receive the correct replacement parts, kits or accessories, always give all of the information requested in the chart below.
2. Check the parts list to identify the correct part number; do not use the ref. no. when ordering.
3. Order all parts from your nearest Graco distributor.

6 digit Part Number	Qty	Part Description

PARTS DRAWING

Model 221-124

Includes items 1-51



PARTS LIST

Model 221-124

Includes items 1-51

REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
1	217-523	10:1 MONARK PUMP See 307-595 for parts	1	40	222-405†	REGULATOR, back pressure See 306-860 for parts	1
3	110-110*†	SEALANT, pipe, sst; 6 ml (not shown)	1	41	156-953†	STUD, mounting; 1/4 npt x 3/8 unc (mbe)	1
4	206-994	THROAT SEAL LIQUID; 8 oz (not shown)	1	42	100-639†	LOCKWASHER; 3/8"	2
7	207-365	BRACKET, wall, pump Includes attaching hardware	1	43	100-023†	WASHER, flat; 3/8"	1
8	218-029	FLUID FILTER See 306-783 for parts	1	44	100-307†	NUT, full, hex; 3/8-16 unc	1
9	156-850	NIPPLE; 3/8 npt; 2.5" long	1	45	102-814†	GAUGE, pressure, fluid 0-5000 psi (0-350 bar)	1
10	100-509	PLUG, pipe, sq hd; 1/4 npt	4	46	100-840*†	ELBOW, street, 90°; 1/4 npt (m x f)	3
11	162-453†	NIPPLE; 1/4 npt x 1/4 npsm	4	51	—	VISCON ² HEATER Order desired voltage (see page 22)	1
12	150-286	ADAPTER; 3/8 npt (m x f)	1				
13	210-658	DRAIN VALVE; 3/8 npt(mbe) See 306-861 for parts	1				
14	171-987	TEE; 3/8 npt x 1/4 npt run; 3/8 npt branch	1				
15	103-347	VALVE, relief, air	1				
16	204-560	HOSE, air; buna-N; 3/8" ID; cpld 3/8 npt (mbe); 18" (457 mm) long	1				
17	161-037	UNION, adapter, 90°; 1/2 npt(m) x 3/8 npsm(f) swivel	1				
18	104-267	AIR REGULATOR 1/2 npt inlet and outlet 0-125 psi (0-9 bar) range See 308-167 for parts	2				
19	166-999	ELBOW, street, reducing; 1/2 npt(m) x 1/4 npt(f)	1				
21	101-180	GAUGE, pressure, air; 0-200 psi (0-14 bar)	2				
22	102-254	SCREW, hex hd; 1/4-20 x 7/8" long	2				
23	208-259	SUCTION KIT	1				
24	156-877	NIPPLE; 1/2 npt; 2.5" long	2				
25	222-297	UNION, adapter, 45°; 1/2 npt(m) x 1/2 npsm(f) swivel	1				
26	158-491	NIPPLE, hex; 1/2 npt	1				
27	107-142	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				
29	183-982*	BRACKET, wall, heater	1				
30	158-683*	ELBOW, 90°; 1/2 npt (m x f)	1				
31	235-022*	HOSE, fluid; nylon; 1/2" ID; cpld 1/2 npt (mbe); 3' (0.9 m) long	1				
32	161-077*	UNION, adapter; 1/2 npt(f) x 3/8 npsm(f)	1				
33	206-962*	CHECK VALVE; 3/8 npt (mbe)	1				
34	155-699*	ELBOW, street, 90°; 3/8 npt (mbe)	1				
35	156-849*	NIPPLE; 3/8 npt	1				
36	166-998†	MANIFOLD, inlet; 1/4 npt(f) x 3/4 npt(f) x 3/4 npsm(f) swivel	1				
37	214-711†	BALL VALVE, three-way; 1/4 npt(m) See 306-861 for parts	1				
38	206-965†	HOSE, drain; nylon; 1/4" ID; cpld 1/4 npsm(f)	1				
39	206-966†	HOSE; PTFE; 1/4" ID; cpld 1/4 npsm (f) swivel; 18" (457 mm) long	1				

* Included in Heater Mounting Kit 222-269.

† Included in Circulating Kit 222-436.

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

HEATER MOUNTING KIT 222-269

Required to convert Models 230-999 and 231-014 to a heated unit. The heater is not included in this kit and must be ordered separately, by desired voltage (see page 22). Kit consists of:

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

Part No. 100-081 Bushing is included in kit 222-269, but is not used with this pump.

CIRCULATING KIT 222-436

Required to convert Models 230-999 and 231-014 to a circulating unit. The heater is not included in this kit and must be ordered separately, by desired voltage (see page 22). 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
46	2

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

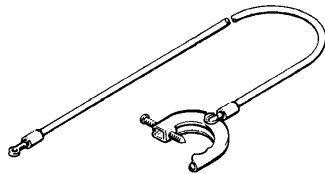
USE GENUINE GRACO PARTS AND ACCESSORIES

Must be purchased separately.

GROUNDING CLAMP 103-538

GROUND WIRE 208-950

25 ft (7.6 m) long, 12 gauge (1.5 mm²)

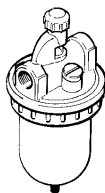


AIR LINE LUBRICATOR

250 psi (17.5 bar) MAXIMUM WORKING PRESSURE

214-848 1/2 npt inlet and outlet

214-849 3/4 npt inlet and outlet

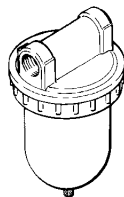


AIR LINE FILTER

250 psi (17.5 bar) MAXIMUM WORKING PRESSURE

106-149 1/2 npt inlet and outlet

106-150 3/4 npt inlet and outlet



GROUNDING BUNA-N AIR SUPPLY HOSE

175 psi (12 bar) MAXIMUM WORKING PRESSURE

Part No.	ID	Length	Thd. Size
205-418	1/2" (13 mm)	6 ft (1.8 m)	1/2 npt(m)
205-216	1/2" (13 mm)	15 ft (4.5 m)	1/2 npt(m)
205-273	1/2" (13 mm)	25 ft (7.6 m)	1/2 npt(m)
208-594	1/2" (13 mm)	50 ft (15 m)	1/2 npt(m)

BACK PRESSURE REGULATOR 222-405

1000 psi (70 bar) MAXIMUM WORKING PRESSURE

Use in fluid return line of air-assisted airless circulating system to regulate back pressure to gun and maintain proper circulating pressure.

FLUID PRESSURE REGULATOR 217-576

1000 psi (70 bar) MAXIMUM WORKING PRESSURE

Use at each gun drop in multiple gun systems, to regulate fluid pressure to each gun.

22 307931D

GROUNDING NYLON FLUID HOSE

3000 psi (210 bar) MAXIMUM WORKING PRESSURE

Part No.	ID	Length	Thd. Size
214-700	3/16" (4.8 mm)	2 ft (610 mm)	1/4 npsm (fbe) swivel
214-701	3/16" (4.8 mm)	3 ft (914 mm)	1/4 npt(m) x 1/4 npsm(f) swivel
223-540	1/4" (6.4 mm)	25 ft (7.6 m)	1/4 npsm (fbe) swivel
223-541	1/4" (6.4 mm)	50 ft (15.2 m)	1/4 npsm (fbe) swivel
214-703	3/8" (9.5 mm)	25 ft (7.6 m)	3/8 npt (mbe)
214-705	3/8" (9.5 mm)	50 ft (15.2 m)	3/8 npt (mbe)
214-920	3/8" (9.5 mm)	100 ft (30.4 m)	3/8 npt (mbe)

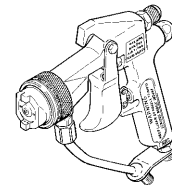
INSULATED HOSE KIT 222-264

3000 psi (210 bar) 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.

AA2000™ AIR-ASSISTED AIRLESS SPRAY GUN 217-292

950 psi (66 bar) MAXIMUM WORKING PRESSURE



VISCON² FLUID HEATER

4000 psi (276 bar) 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)

VISCON² HEATER CORD 110-160

12 gauge, rated at 105° C.

WARNING: Not for use in hazardous areas containing flammable materials or fumes.

SST PIPE SEALANT 110-110

Apply to all non-swiveling pipe connections.

6 ml supply.

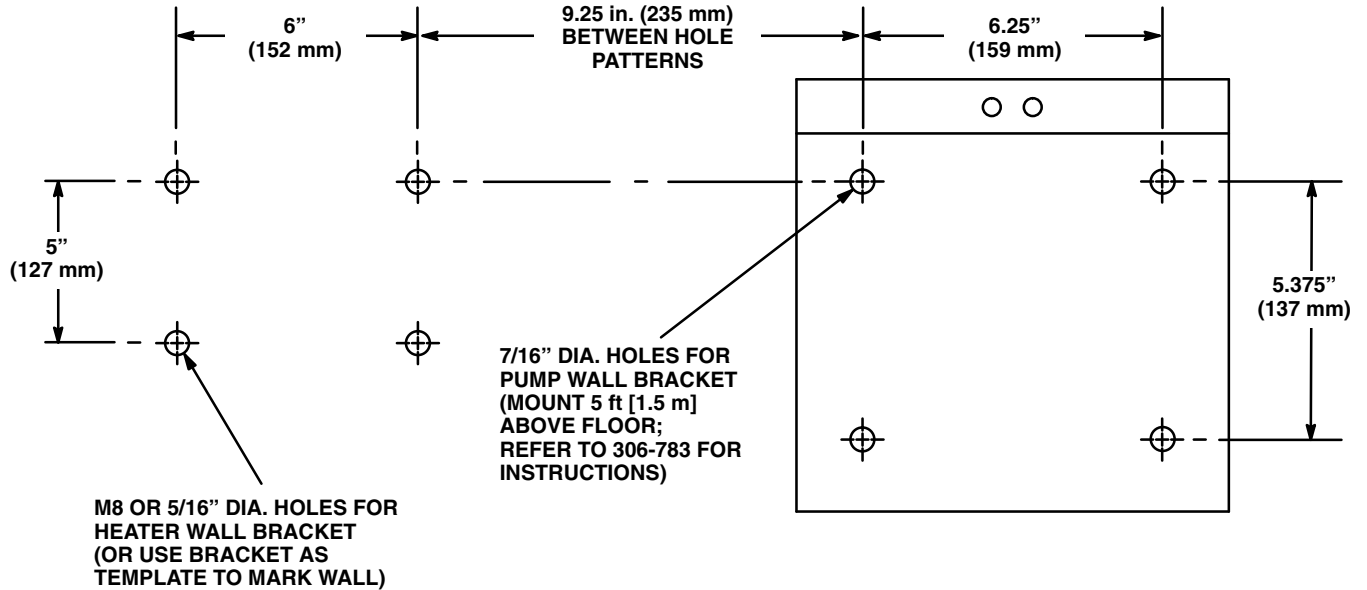
HEATER CONVERSION KITS

Use to convert pump Models 230-999 and 231-014 to a heated spray system. See pages 20 and 21 for parts. Viscon² Heater must be ordered separately.

222-269 Heater Mounting Kit

222-436 Circulating Kit

MOUNTING DIMENSIONS



SERVICE INFORMATION

Listed below by the assembly changed are Old, New, and Deleted parts.

Assembly Changed	Status	Ref No.	Part No.	Name
All Models	Deleted*	2	100-015	Nut
	Deleted*	5	100-016	Lockwasher
	Deleted*	6	100-022	Capscrew
	Old		100-122	Close Nipple
	New	26	158-491	Hex Nipple
Models 230-999, 231-014, & 230-979	Old		205-406	Air Hose
	New	48	210-867	Air Hose
Model 230-979	Old		101-696	Gauge
	New	50d	802-072	Gauge
Model 221-124	Old		221-102	Fluid Hose
	New	31	235-022	Fluid Hose

* These parts are now included in the wall bracket (7).

NOTE: New parts replace the Old parts listed directly above them.

TECHNICAL DATA

Maximum working pressure	950 psi (66 bar)
Maximum incoming air pressure	95 psi (6.6 bar)
Ratio	10:1
Maximum recommended pump speed	60 cpm (1.0 gpm [3.8 liters/min]) at continuous operation
Air consumption	approx. 15 scfm (0.43 m ³ /min) at 1.0 gpm (3.8 liter/min) flow rate at 95 psi (6.6 bar) air pressure
Wetted parts	See separate component instruction manuals
PTFE®	

THE GRACO WARRANTY AND DISCLAIMERS

WARRANTY

Graco warrants all equipment manufactured by it 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. As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment proven 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, 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 with Graco equipment of 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 claim. 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.

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THE TERMS OF THIS WARRANTY CONSTITUTE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AND ARE IN LIEU OF ANY OTHER WARRANTIES (EXPRESS OR IMPLIED), INCLUDING WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY NON-CONTRACTUAL LIABILITIES, INCLUDING PRODUCT LIABILITIES, BASED ON NEGLIGENCE OR STRICT LIABILITY. EVERY FORM OF LIABILITY FOR DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS IS EXPRESSLY EXCLUDED AND DENIED. IN NO CASE SHALL GRACO'S LIABILITY EXCEED THE AMOUNT OF THE PURCHASE PRICE. ANY ACTION FOR BREACH OF WARRANTY MUST BE BROUGHT WITHIN TWO (2) YEARS OF THE DATE OF SALE.

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IMPORTANT PHONE NUMBERS

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you: **1-800-328-0211 Toll Free**

FOR TECHNICAL ASSISTANCE, service repair information or assistance regarding the application of Graco equipment: **1-800-543-0339 Toll Free**

Factory Branches: Atlanta, Chicago, Dallas, Detroit, Los Angeles, Mt. Arlington (N.J.)

Subsidiary and Affiliate Companies: Canada; England; Switzerland; France; Germany; Hong Kong; Japan; Korea

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Parts Change Notice

Some parts in Rev. D of manual 307-931 have changed but have not yet been changed in the instruction manual. Please note the changes below and mark them in your manual or keep this sheet with your manual.

Assembly No.	Series Letter Change	Part That Changed	Ref No.	Part Description	Description of Change
Models 231-014 and 230-979	-	210-867	48	Hose, air	Replaced by Part No. 216-069; Hose, air; nylon; 1/4" (6.3 mm) ID; cpd 1/4 npsm (fbs) swivel; 26 ft (7.9 m) long
		182-XXX	52	Spray Tip (customer's choice)	This part is added to the parts list. The spray tip size is selected by the customer.
Model 221-124 and Circulating Kit 222-436	-	100-840	46	Elbow	Change quantity to 4. Added parts are used at the back pressure valve (item 40).