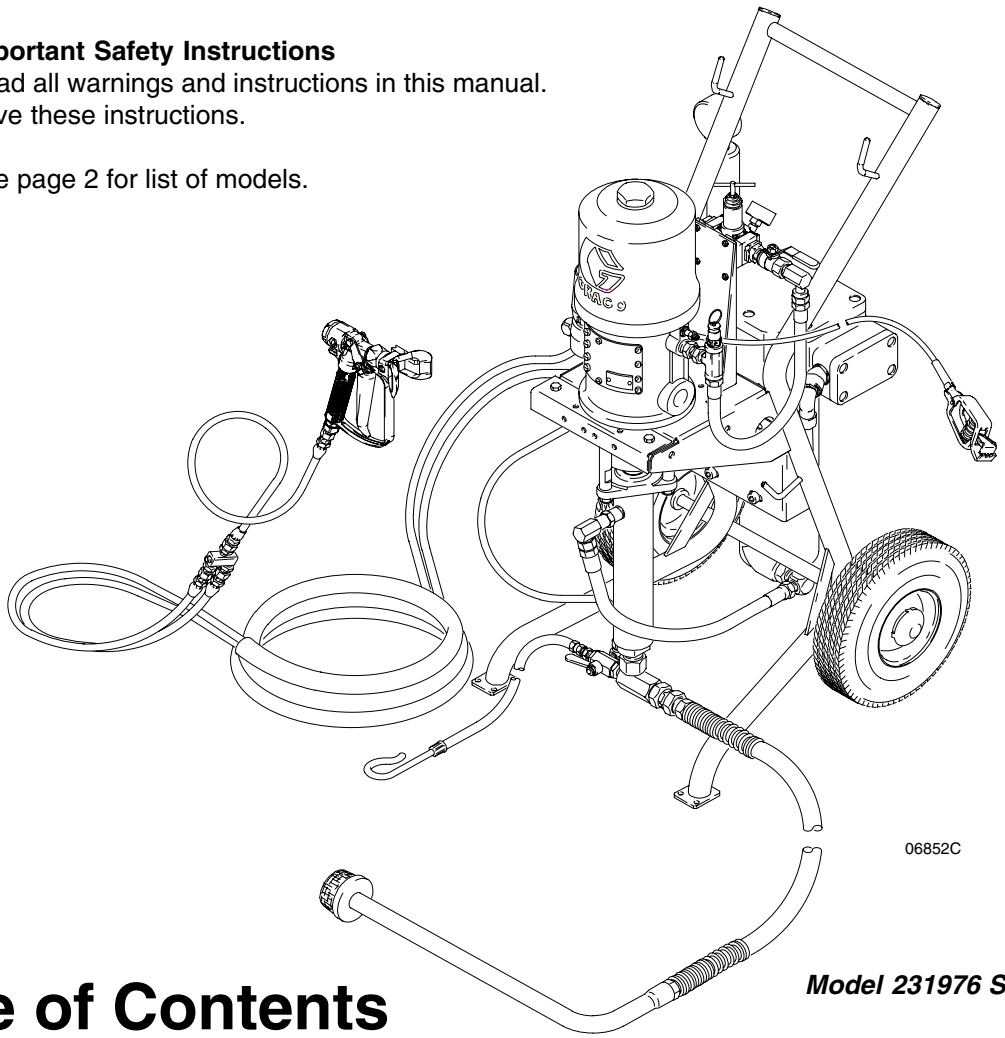
Instructions – Parts List

Cart–Mounted, Heated Airless Package

308692 rev.M

Important Safety Instructions
Read all warnings and instructions in this manual.
Save these instructions.

See page 2 for list of models.



Model 231976 Shown

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PROVEN QUALITY. LEADING TECHNOLOGY.

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440–1441

CE Ex II 2 G

List of Models

Package Part No.	Series	Pump Model	Ratio	Maximum Fluid Working Pressure	Maximum Air Input Pressure	Voltage/ Amps
231976	B	President®, carbon steel	30:1	3000 psi (21 MPa, 210 bar)	100 psi (0.7 MPa, 7 bar)	240/16.7
232044	B	Monark®, stainless steel	23:1	2760 psi (19 MPa,190 bar)	120 psi (0.8 MPa, 8 bar)	120/19.2
232045	B	Monark®, stainless steel	23:1	2760 psi (19 MPa,190 bar)	120 psi (0.8 MPa, 8 bar)	240/16.7
232047	B	Monark®, stainless steel	23:1	2760 psi (19 MPa,190 bar)	120 psi (0.8 MPa, 8 bar)	240/16.7

Symbols

Warning Symbol

⚠ WARNING

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

Caution Symbol

⚠ CAUTION

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

⚠ WARNING

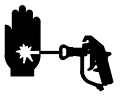
INSTRUCTIONS

EQUIPMENT MISUSE HAZARD

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

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain about usage, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. Refer to the **Technical Data** on page 22 for the maximum working pressure of this equipment.
- Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Do not use hoses to pull equipment.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 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



SKIN INJECTION HAZARD

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

- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate surgical treatment.**
- Do not point the gun at anyone or at any part of the body.
- Do not put your hand or fingers over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove or rag.
- Do not “blow back” fluid; this is not an air spray system.
- Always have the tip guard and the trigger guard on the gun when spraying.
- Check the gun diffuser operation weekly. Refer to the gun manual.
- Be sure the gun trigger safety operates before spraying.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 10 whenever you: are instructed to relieve pressure; stop spraying; clean, check, or service the equipment; and install or clean the spray tip.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.
- Use only Graco approved hoses. Do not remove any 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, such as the air motor piston, can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Before servicing the equipment, follow the **Pressure Relief Procedure** on page 10 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 7.
- 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.

Notes

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. Refer to Product Data Sheet 305812. If you supply your own accessories, be sure they are adequately sized and pressure-rated for your system.

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

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

Ensure that you have an adequate compressed air supply. Refer to the performance charts on page 23 to find the air consumption of your sprayer.

Refer to Fig. 2. Bring a compressed air supply line (A) 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. The air hose should have a 3/8 npsm(m) thread.

Install a bleed-type shutoff valve (B) in the air line to isolate the air line components for servicing. Install an air line filter (G) and a moisture trap and drain valve (C) to help remove moisture and contaminants 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.

Grounding

⚠ WARNING

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

1. *Pump:* 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 (34) into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the wire to a true earth ground.

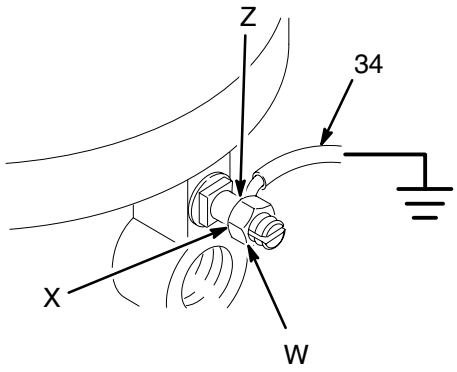


Fig. 1

2. *Air and fluid hoses:* use only electrically conductive hoses.
3. *Viscon HP Heater:* refer to the heater manual, supplied.
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

Refer to Fig. 2.

⚠ WARNING

A red-handled bleed-type master air valve (E) and a fluid drain valve (D) are supplied. These components 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 red-handled bleed-type master air valve (E)** is required in your system to relieve air trapped between it and the air motor when the valve is closed (see the **WARNING** above). Be sure the bleed valve is easily accessible from the pump, and is located **downstream** from the air regulator (F).
- **The air regulator (F)** controls pump speed and outlet pressure by adjusting the air pressure to the pump. Locate close to the pump, but **upstream** from the bleed-type master air valve (E).
- **The air relief valve (41)** opens automatically to prevent over pressurization of the pump.
- **The fluid filter (16)** includes a 60 mesh (250 micron) stainless steel element to filter particles from the fluid as it leaves the pump. It also includes the **fluid drain valve (D),** which is required in your system to relieve fluid pressure in the hose and gun (see the **WARNING** above).
- **The suction hose (25) and tube (26)** allow the pump to draw fluid from a 5 gallon (19 liter) pail (H). The strainer at the end of the suction tube keeps large particles from entering the pump.
- **The back pressure regulator (40)** controls back pressure to the gun and maintains proper circulation pressure.
- **The 3-way valve (45)** allows you to circulate fluid back to the pump or return it to the fluid container.

Fluid Heater

The fluid heater (51) heats the fluid as it passes through, to maintain the correct spraying viscosity.

Read and understand all instructions in the supplied heater manual 309524 before operating the heater.

⚠ WARNING

COMPONENT RUPTURE HAZARD
Heat causes fluid to expand. If the heated fluid is trapped with nowhere to expand, it can cause component rupture. **Be sure** to keep the heated fluid circulating (turn the 3-way valve to CIRC). **Do not** install a fluid shutoff device between the heater and the gun.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD
The Viscon HP 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 injury during installation or operation.

Refer to the **Technical Data** and to the supplied Viscon HP Heater manual 309524 for information on heater power supply requirements.

Do not plug in or unplug the power cord in any area containing flammable fluids or fumes, to avoid fire or explosion resulting in serious injury.

Do not put all flammable materials and debris on or near the heater. Keep the work area clean.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD
The heater electrical cord is rated for 105°C (221°F). Do not substitute a lower temperature rated, generally available cord.

Setup

KEY

SUPPLIED WITH THE SPRAYER

1 Cart
13 Pump
16 Fluid Filter (includes fluid drain valve D)
25 Suction Hose
26 Suction Tube
30 Air Inlet Swivel
34 Ground Wire (required; see page 7 for installation instructions)
40 Back Pressure Regulator
41 Air Relief Valve
45 3-Way Valve
51 Fluid Heater

SUPPLIED WITH THE SPRAYER

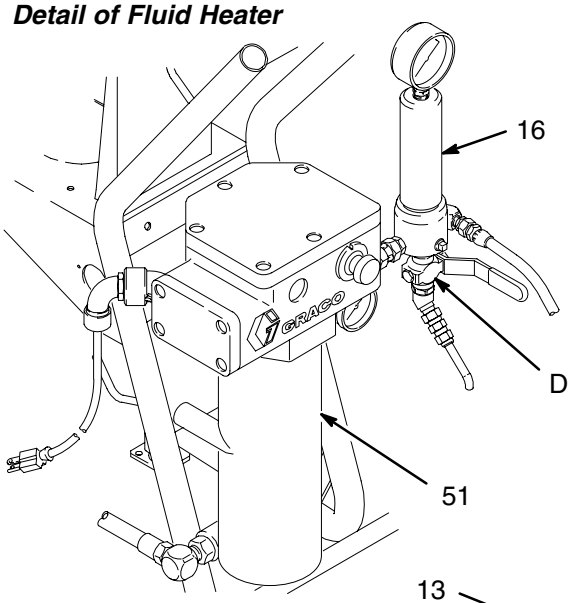
101 Electrically Conductive, Heated Fluid Supply/Return Hose
103 Fluid Whip Hose
106 Airless Spray Gun
D Fluid Drain Valve
E* Red-Handled Bleed-Type Master Air Valve (required, for pump)
F* Pump Air Regulator

* Included in Air Regulation Kit (19).

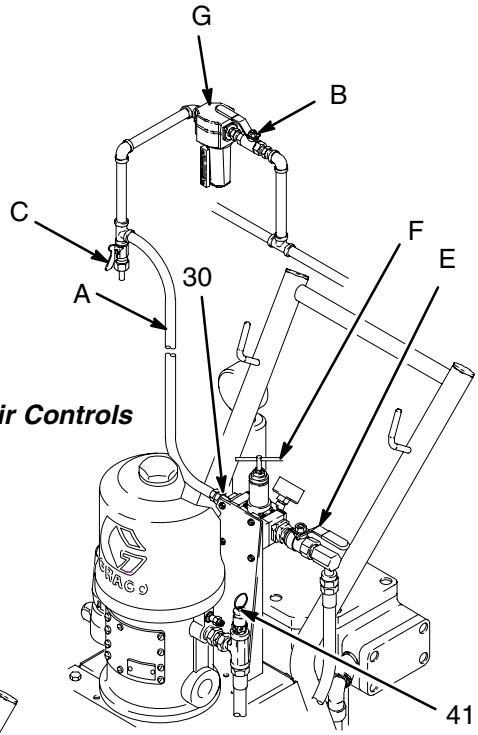
COMPONENTS YOU MUST SUPPLY

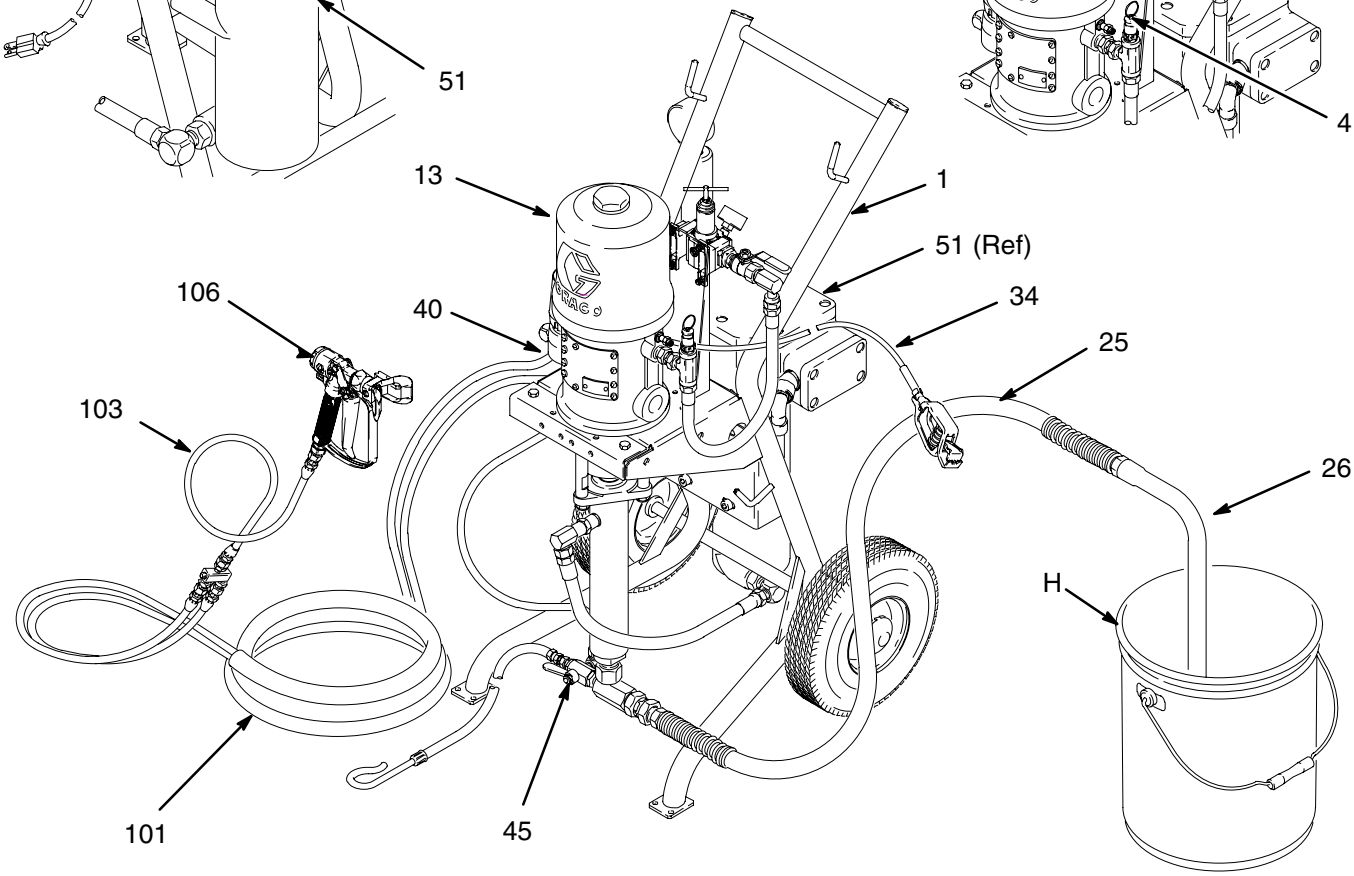
A Electrically Conductive Air Supply Hose
B Bleed-Type Master Air Valve (for accessories)
C Air Line Moisture Trap and Drain Valve
G Air Line Filter
H Grounded 5 Gallon (19 Liter) Pail

Detail of Fluid Heater



Detail of Air Controls





Model 231976 Shown

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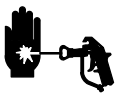
Fig. 2

Operation

Pressure Relief Procedure

⚠ WARNING



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

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

⚠ WARNING

HOT SURFACE HAZARD
Do not touch the heater while it is operating. Allow the heater to cool for at least 10 minutes before flushing or servicing it.

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Do not plug in or unplug the power cord in any area containing flammable fluids or fumes, to avoid fire or explosion resulting in serious injury.

1. Lock the gun trigger safety.
2. Unplug the heater power cord.
3. Circulate the fluid for at least 10 minutes to cool the heated fluid and the heater.
4. Close the red-handled bleed-type master air valve (E, required in your system). See Fig. 3.
5. Turn the 3-way valve (45) to DRAIN. Hook the drain hose (46) onto a waste container.
6. Unlock the gun trigger safety.
7. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
8. Lock the gun trigger safety.
9. Open the drain valve (D, required in your system), having a container ready to catch the drainage.
10. 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 tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.

Packing Nut

Before starting, fill the packing nut (J) 1/3 full with Graco Throat Seal Liquid (TSL) or compatible solvent. See Fig. 3.

⚠ WARNING

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

The packing nut is torqued at the factory and is ready for operation. If it becomes loose and there is leaking from the throat packings, relieve pressure, then torque the nut as specified in your separate pump manual. Do this whenever necessary. Do not overtighten the packing nut.

Flush the Pump Before First Use

The pump is tested with lightweight oil, which is left in to protect the pump parts. If the fluid you are using may be contaminated by the oil, flush it out with a compatible solvent. See **Flushing** on page 15.

Operation

⚠ CAUTION

To avoid tip-over, the cart must be on a flat and level surface. Failure to follow this caution could result in injury or equipment damage.

Prime the Pump

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Do not plug in or unplug the power cord in any area containing flammable fluids or fumes, to avoid fire or explosion resulting in serious injury.

1. See Fig. 3. Unplug the heater power cord before priming the pump.
2. Remove the tip guard and spray tip from the gun (106). See the gun manual.
3. Close the air regulator (F) and bleed-type air valves (B, E).
4. Close the fluid drain valve (D).
5. Connect the air line (A) to the air inlet swivel (30).
6. Check that all fittings throughout the system are tightened securely.
7. Turn the 3-way valve (45) to CIRC. Hook the drain hose (46) onto a waste container.
8. Place the pump suction tube (26) into the fluid supply container.
9. Open the back pressure regulator (40) (fully counterclockwise).
10. Open the bleed-type air valves (B, E).
11. Hold a metal part of the gun (106) firmly to the side of a grounded metal pail and hold the trigger open.
12. Slowly open the air regulator (F) until the pump starts.

NOTE: To open the air regulator, turn the T-handle in (clockwise). To close the regulator, turn the handle counterclockwise. To lock the regulator setting, tighten the jam nut.

13. Cycle the pump slowly until all air is pushed out and the pump and hoses are fully primed.
14. Release the gun trigger and lock the trigger safety. The pump will continue to cycle as long as air is supplied and the back pressure regulator is open.
15. If the pump fails to prime properly, open the drain valve (D). Use the drain valve as a priming valve until the fluid flows from the valve. Close the valve.

NOTE: When changing fluid containers with the hose and gun already primed, open the drain valve (D) to help prime the pump and vent air before it enters the hose. Close the drain valve when all air is eliminated.

Operation

Install the Spray Tip

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 10.

Relieve the pressure. Install the spray tip and tip guard as explained in your separate gun manual, supplied.

The spray tip shapes the fluid into a fan pattern. The orifice size determines the flow rate, and the orifice shape determines the width of the fan pattern.

Adjust the Spray Pattern

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Do not plug in or unplug the power cord in any area containing flammable fluids or fumes, to avoid fire or explosion resulting in serious injury.

1. Start the pump. Plug in the heater power cord. Turn the 3-way valve to CIRC.

2. Set the heater control to a trial point (4 or 5).

3. Circulate fluid through the pump for at least 10 minutes, at very low pressure. Check the temperature on the heater thermometer.

4. Adjust the fluid pressure and temperature to the lowest settings necessary to get the desired results. Use the air regulator (F) to adjust the pump speed and fluid pressure until the spray is completely atomized. Refer to the back pressure valve and heater manuals (supplied) for adjustment procedures. Higher pressures and temperatures may not improve the spray pattern and will cause premature component wear.

⚠ WARNING

COMPONENT RUPTURE HAZARD
To reduce the risk of overpressurizing your system, which could cause component rupture and serious injury, *never exceed the specified Maximum Air Input Pressure* (see the **Technical Data,** on page 22).

Heat causes fluid to expand. If the heated fluid is trapped with nowhere to expand, it can cause component rupture. **Be sure** to keep the heated fluid circulating (turn the 3-way valve to CIRC). **Do not** install a fluid shutoff device between the heater and the gun.

5. Use a full-open, full-close triggering action. Hold the gun about 14 in. (350 mm) from and at right angles to the work surface. Move the gun in a straight stroke; do not swing the gun in an arc. Practice to find the best length and speed of stroke.

6. If adjusting the pressure and temperature does not give a good spray pattern, relieve the pressure and try another tip size. When more coverage is needed, use a larger spray tip rather than increasing the fluid pressure.

7. With the pump and lines primed, and with adequate volume supplied, the pump will continue to cycle as long as air is supplied and the back pressure regulator is open.

⚠ CAUTION

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

Operation

KEY

16	Fluid Filter (includes fluid drain valve D)	101	Electrically Conductive, Heated Fluid Supply/Return Hose	F	Pump Air Regulator
25	Suction Hose			A	Electrically Conductive Air Supply Hose
26	Suction Tube	103	Fluid Whip Hose	B	Bleed-Type Master Air Valve (for accessories)
30	Air Inlet Swivel	106	Airless Spray Gun		
40	Back Pressure Regulator	D	Fluid Drain Valve	H	Grounded 5 Gallon (19 Liter) Pail
45	3-Way Valve	E	Red-Handled Bleed-Type Master Air Valve (required, for pump)	J	Packing Nut/Wet-Cup (partially hidden)
46	Fluid Return Drain Hose				
51	Fluid Heater				

1 Torque as specified in your separate pump manual.

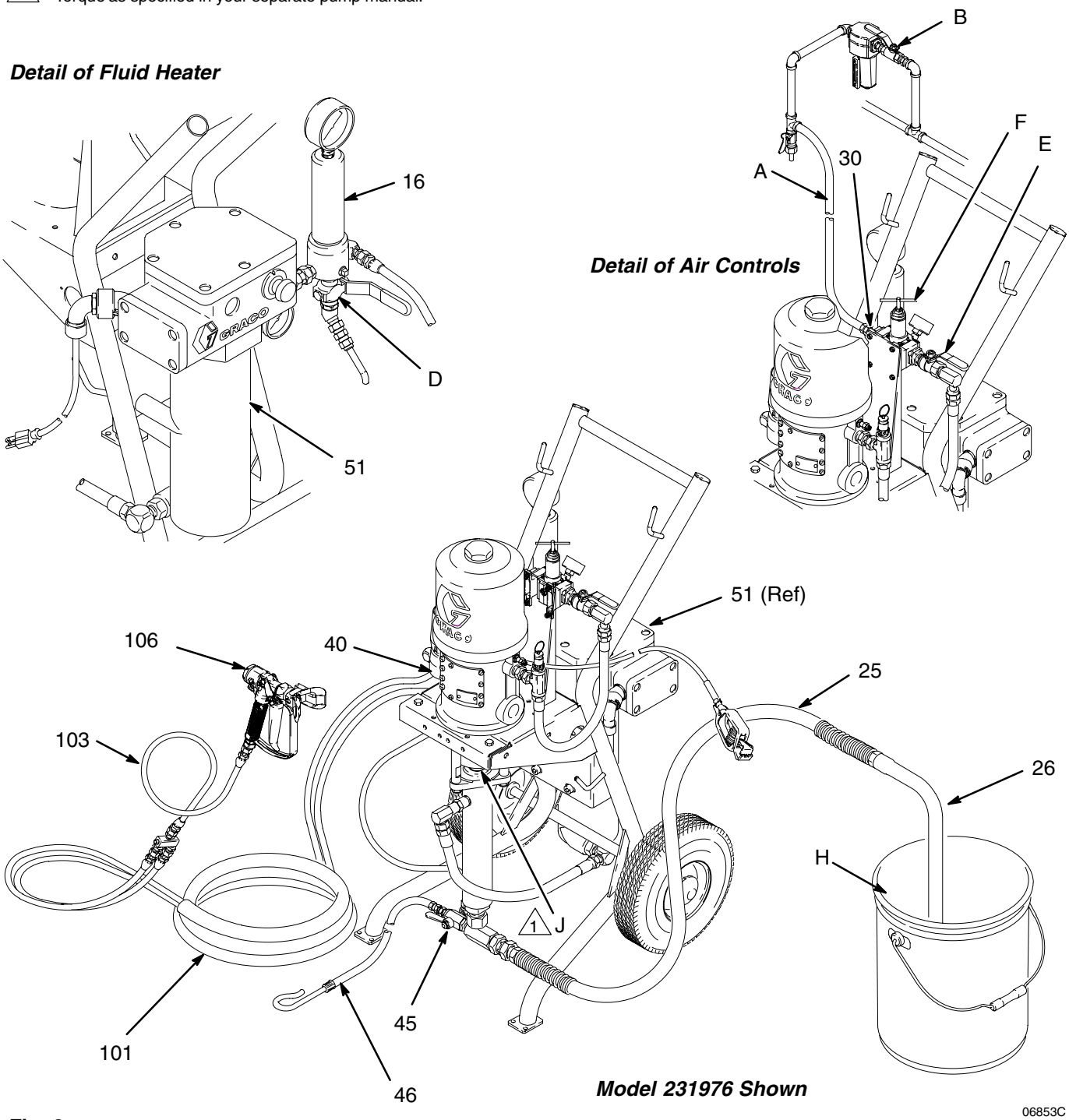


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Fig. 3

Operation

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 10.

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 15.

Operation

Flushing

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Before flushing, read the section **FIRE AND EXPLOSION HAZARD** on page 5. Be sure the entire system and flushing pails are properly grounded. Refer to **Grounding** on page 7.

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.

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.

⚠ CAUTION

If you have a carbon steel package, 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 10.

⚠ WARNING

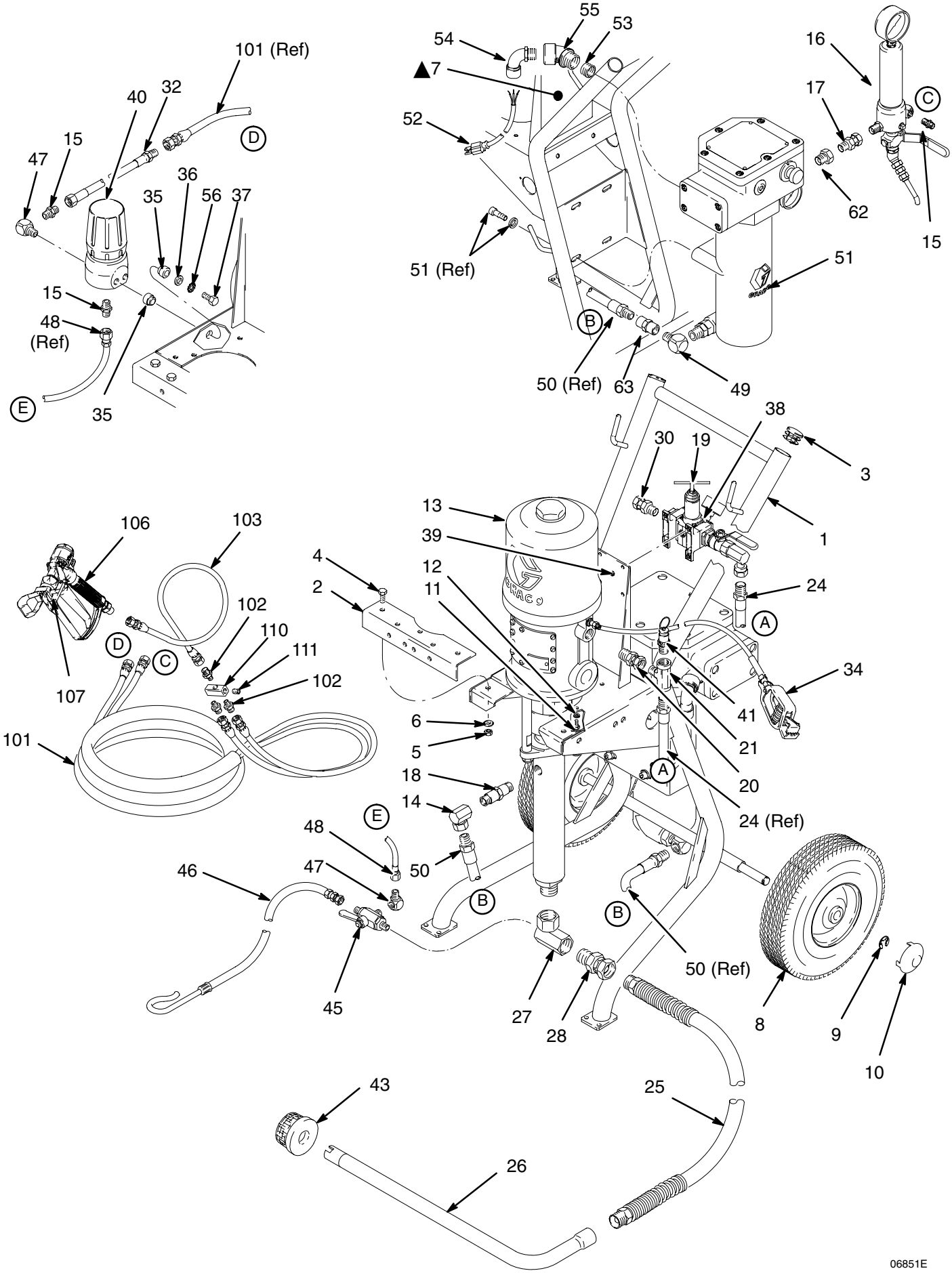
HOT SURFACE HAZARD
Do not touch the heater while it is operating. Allow the heater to cool for at least 10 minutes before flushing or servicing it.

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Do not plug in or unplug the power cord in any area containing flammable fluids or fumes, to avoid fire or explosion resulting in serious injury.

1. Unplug the heater power cord and circulate the fluid for at least 10 minutes to cool the heated fluid and the heater.
2. Relieve the pressure.
3. Remove the tip guard and spray tip from the gun. See the gun manual.
4. Remove the filter element from the fluid filter (16). Reinstall the filter bowl.
5. Open the back pressure regulator (40). Set the 3-way valve (45) to CIRC.
6. Place the suction tube (26) in a container of solvent.
7. Hold a metal part of the gun firmly to the side of a grounded *metal* pail.
8. Start the pump. Always use the lowest possible fluid pressure when flushing.
9. Trigger the gun. Flush the system until clear solvent flows from the gun.
10. Release the gun trigger and lock the trigger safety. The pump will continue to cycle as long as air is supplied and the back pressure regulator is open.
11. Set the 3-way valve (45) to DRAIN. Hook the drain hose (46) onto a waste container and continue flushing until clear fluid comes from the hose.
12. Relieve the pressure.
13. Clean the tip guard, spray tip, and fluid filter element separately, then reinstall them.
14. Clean the inside and outside of the suction tube (26).

Parts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E
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B
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06851E

Parts

NOTE: Part numbers vary by package. To find the part number used in your package, read down the chart to find the desired ref. no., then read left to right to find the part number for your package.

Ref. No.	Description	Packages		Qty
		CST 231976	SST 232044, 232045, 232047	
1	CART, portable; includes replaceable items 2–10	238938	238938	1
2	. BRACKET, front	191902	191902	1
3	. CAP	112853	112853	2
4	. CAPSCREW, hex hd; M8 x 1.25; 16 mm (5/8 in.)	108768	108768	2
5	. NUT, keps, hex; M8	113761	113761	2
6	. WASHER, flat; 8 mm	108788	108788	2
7▲	. LABEL, warning	290331	290331	1
8	. WHEEL	106062	106062	2
9	. RING, retaining	101242	101242	2
10	. HUBCAP	104811	104811	2
11	CAPSCREW, hex hd; 1/4–20 x 5/8 in. (16 mm)	100270		2
	CAPSCREW, hex hd; 1/4–20 x 3/4 in. (19 mm); not shown		100022	2
12	LOCKWASHER, spring; 1/4 in.	100016	100016	2
13	PUMP, 30:1 President; cst; *see manual 306981*	223586		1
	PUMP, 23:1 Monark; sst; *see manual 307619*		237958	1
14	UNION, swivel, 90°; cst; 3/8 npt(f) x 1/2 npsm(f)	159801		1
	UNION, swivel, 90°; sst; 1/2 npt(fbe)		113934	1
15	NIPPLE; cst; 1/4 npt x 1/4 npsm	162453		3
	NIPPLE; sst; 1/4 npt x 1/4 npsm		166846	3
16	FLUID FILTER; cst; *see manual 307273*	239244		1
	FLUID FILTER; sst; *see manual 307273*		239300	1
17	UNION, swivel; cst; 3/8 npt(m) x 3/8 npsm(f)	155665		1
	UNION, swivel; sst; 3/8 npt(m) x 3/8 npsm(f)		235207	1
18	NIPPLE; cst; 3/8 npt	156850		1
	NIPPLE; sst; 3/8 npt x 1/2 npt		112027	1
19	AIR REGULATOR KIT; *see manual 308686*	238980	238980	1
20	UNION, swivel; cst; 1/2 npt(m) x 3/8 npsm(f)	158256		1
	UNION, swivel; cst; 3/8 npt(m) x 3/8 npsm(f)		155665	1
21	TEE; 3/8 npt(f) run x 3/8 npt(m) branch	113777	113777	1
24	HOSE, air; 3/8 in. (10 mm) ID; 3/8 npt(mbe); 22 in. (559 mm) long	239061	239061	1
25	HOSE, suction; 3/4 in. (19 mm) ID; 3/4 npt (mbe) cst fittings; 3.5 ft (1 m) long	214960		1
	HOSE, suction; 3/4 in. (19 mm) ID; 3/4 npt (mbe) sst fittings; 3.5 ft (1 m) long		236075	1
26	TUBE, suction; aluminum	192121		1
	TUBE, suction; sst		112191	1

▲ *Replacement Danger and Warning labels, tags and cards are available at no cost.*
This label is also available in the following languages:
German (Part No. 290396)
French (Part No. 290397)
Spanish (Part No. 290398).

Parts

NOTE: Part numbers vary by package. To find the part number used in your package, read down the chart to find the desired ref. no., then read left to right to find the part number for your package.

Ref. No.	Description	Packages		Qty
		CST 231976	SST 232044, 232045, 232047	
27	MANIFOLD, inlet; cst; 1/4 npt(f) x 3/4 npt(f) x 3/4 npsm(f)	166998		1
	MANIFOLD, inlet; sst; 1/4 npt(f) x 3/4 npt(f) x 3/4 npsm(f)		113927	1
28	UNION, swivel; cst; 3/4 npt(m) x 3/4 npsm(f)	157785		1
	UNION, swivel; sst; 3/4 npt(m) x 3/4 npsm(f)		112268	1
30	UNION, swivel; cst; 3/8 npt(m) x 3/8 npsm(f)	155665	155665	1
32	HOSE, fluid; nylon;1/4 in. (6 mm) ID; 1/4 npt(m) x 1/4 npsm(f); 10 in. (0.25 m) long; cst fittings	239368		1
	HOSE, fluid; nylon;1/4 in. (6 mm) ID; 1/4 npt(m) x 1/4 npsm(f); 10 in. (0.25 m) long; sst fittings		239373	1
33	THROAT SEAL LIQUID; 1 pint (0.5 liter); not shown	206994	206994	1
34	GROUND WIRE AND CLAMP	238909	238909	1
35	INSULATOR, heat	167002	167002	4
36	WASHER; 1/4 in.	100527	100527	2
37	CAPSCREW, hex hd; 1/4–20 x 3/4 in. (19 mm)	100022	100022	2
38	SCREW, socket; M5 x 0.8; 16 mm (5/8 in.)	113768	113768	4
39	NUT, hex, self-locking; M5 x 0.8	105332	105332	4
40	REGULATOR, back pressure; cst; *see manual 306860*	206819		1
	REGULATOR, back pressure; sst; *see manual 306860*		238926	1
41	VALVE, relief; 125 psi (0.86 MPa, 8.6 bar)	113769		1
	VALVE, relief; 150 psi (1.05 MPa, 10.5 bar)		113916	1
43	STRAINER, suction tube; 1/2 npt(f); sst	181073		1
	STRAINER, suction tube; 3/4 npt(f); sst		183770	1
44	NUT, hex; 1/4–20; not shown		100015	2
45	VALVE, 3-way; 1/4 npt(m); cst	214711		1
	VALVE, 3-way; 1/4 npt(m); sst		113834	1
46	HOSE, drain; nylon; 1/4 in. (6 mm) ID; 1/4 npsm(f) cst fittings	206965		1
	HOSE, drain; nylon; 1/4 in. (6 mm) ID; 1/4 npsm(f) sst fittings		239062	1
47	ELBOW; 1/4 npt (m x f); cst	100840		2
	ELBOW; 1/4 npt (m x f); sst		166866	2
48	HOSE, fluid; nylon; 0.25 in. (6 mm) ID; 1/4 npsm (fbe) cst fittings; 3 ft (0.9 m) long	H42503		1
	HOSE, fluid; nylon; 0.15 in. (4 mm) ID; 1/4 npsm (fbe) sst fittings; 14 in. (0.36 m) long		239109	1
49	ELBOW, 90°; cst; 1/2 npt (m x f)	158683		1
	ELBOW, 90°; sst; 1/2 npt (m x f)		166242	1
50	HOSE, fluid; nylon; 1/2 in. (13 mm) ID; 1/2 npt (mbe) cst fittings; 19.5 in. (0.5 m) long	239148		1
	HOSE, fluid; nylon; 1/2 in. (13 mm) ID; 1/2 npt (mbe) sst fittings; 19.5 in. (0.5 m) long		239153	1
56	LOCKWASHER, external tooth; 1/4 in.	100985	100985	2
62	BUSHING, reducer, pipe	502265	502265	1
63	FITTING, coupler	117627	117627	1

Hose and Gun Parts

NOTE: Part numbers vary by package. To find the part number used in your package, read down the chart to find the desired ref. no., then read left to right to find the part number for your package.

Ref. No.	Description	Packages		Qty
		CST 231976	**SST 232044, 232045, 232047**	
101	HOSE, fluid, twin; nylon; 1/4 in. (6 mm) ID; 1/4 npsm (fbe) cst fittings; 24.6 ft (7.5 m) long	239164		1
	HOSE, fluid, twin; nylon; 1/4 in. (6 mm) ID; 1/4 npsm (fbe) sst fittings; 24.6 ft (7.5 m) long		239341	1
102	NIPPLE; 1/4 npsm x 1/8 npt; cst	191872		3
	NIPPLE; 1/4 npsm x 1/8 npt; sst		191929	3
103	HOSE, whip, fluid; nylon; 3/16 in. (5 mm) ID; 1/4 npsm (fbe) cst fittings; 23.6 in. (0.6 m) long	238708		1
	HOSE, whip, fluid; nylon; 3/16 in. (5 mm) ID; 1/4 npsm (fbe) sst fittings; 23.6 in. (0.6 m) long		239069	1
106	AIRLESS SPRAY GUN, with GHD519 tip; *see manual 310743*	XTR502	XTR502	1
107	SPRAY TIP, HD RAC (519 tip included)	GHDxxx	GHDxxx	1
110	MANIFOLD, hose; cst; 1/8 npt(f)	169795		1
	MANIFOLD, hose; sst; 1/8 npt(f)		191923	1
111	PLUG; cst; 1/8 npt	100139		1
	PLUG; sst; 1/8 npt		107570	1

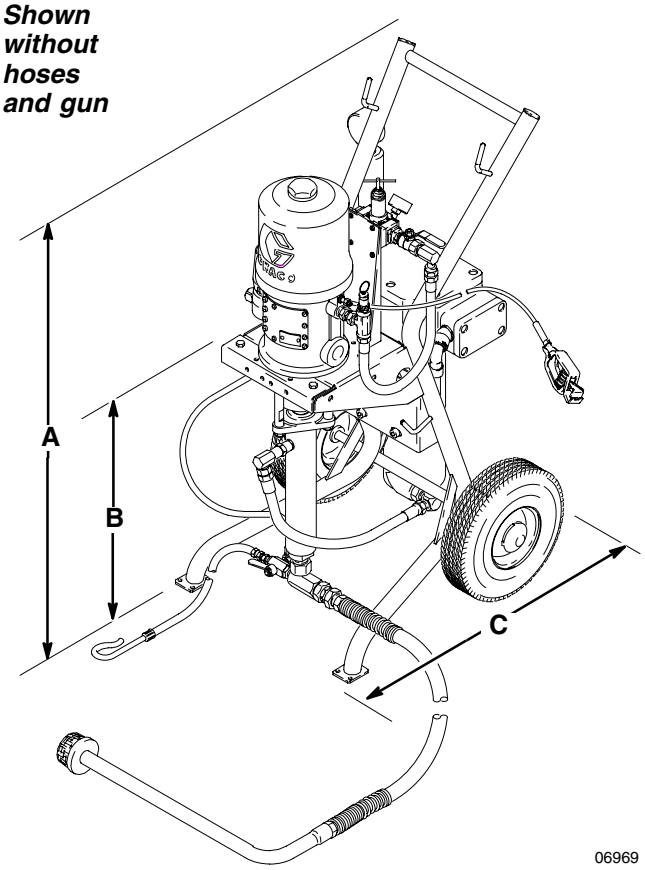
Heater Parts

NOTE: This chart includes the heater and related parts which vary by package. The packages are grouped by heater voltage, so they are in different columns from the preceding charts. To find the part number used in your package, read down the chart to find the desired ref. no., then read left to right to find the correct part number.

Ref. No.	Description	Packages		Qty
		120V PACKAGES: 232044,	**240V PACKAGES: 231976, 232045, 232047**	
51	HEATER, fluid, 120V; *see manual 309524*	245848		1
	HEATER, fluid, 240V; *see manual 309524*		245863	1
	HEATER, fluid, 200V; *see manual 309524*			1
52	CORD, electrical; with plug; 12 AWG; 600V; 20 AMP; 221°F (105°C); 6.5 ft (2 m) long	110160	110160	1
	CORD, electrical; without plug; 12 AWG; 600V; 20 AMP; 221°F (105°C); 6.5 ft (2 m) long		113922	1
53	BUSHING; 3/4 npt(m) x 1/2 npt(f)	107219	107219	1
54	STRAIN RELIEF, 90°	112408	112408	1
	STRAIN RELIEF, clamp		113162	1
55	ELBOW, conduit, 45°; 3/4 npt (m x f)	113778	113778	1

Dimensions

Shown without hoses and gun



All Packages

A	B	C	Width Across Wheels	Weight
38.5 in. (978 mm)	22.5 in. (572 mm)	21 in. (534 mm)	20 in. (508 mm)	145 lb (66 kg)

Technical Data

Category	Data
Maximum fluid working pressure	*Part Nos. 231976* 3000 psi (21 MPa, 210 bar) *Part Nos. 232044, 232045, 232047:* 2760 psi (19 MPa, 190 bar)
Maximum air input pressure	*Part Nos. 231976* 100 psi (0.7 MPa, 7 bar) *Part Nos. 232044, 232045, 232047:* 120 psi (0.8 MPa, 8 bar)
Ratio	*Part Nos. 231976 :* 30:1 *Part Nos. 232044, 232045, 232047:* 23:1
Maximum Heater Voltage and Amperage	*Part Nos. 232044:* 120V, 19.2 Amp *Part Nos. 231976* *232045, 232047:* 240V, 16.7 Amp
Maximum operating temperature	120°F (50°C)
Wetted parts	*Pump:* See applicable pump manual *Spray Gun:* See gun manual 310743 *Fluid Filter:* See filter manual 307273 *Fluid Hoses:* Nylon

● These 200V packages are only available in Asia.

Sound Pressure Levels (dBa)

(measured at 1 meter from unit)

	Input Air Pressures at 15 cycles per minute		
Air Motor	**40 psi (0.28 MPa, 2.8 bar)**	**70 psi (0.48 MPa, 4.8 bar)**	**100 psi (0.7 MPa, 7 bar)**
President	73.6 dB(A)	78.34 dB(A)	80.85 dB(A)
Monark	73.25 dB(A)	75.85 dB(A)	77.65 dB(A)

Sound Power Levels (dBa)

(tested in accordance with ISO 9614–2)

	Input Air Pressures at 15 cycles per minute		
Air Motor	**40 psi (0.28 MPa, 2.8 bar)**	**70 psi (0.48 MPa, 4.8 bar)**	**100 psi (0.7 MPa, 7 bar)**
President	87.4 dB(A)	92.09 dB(A)	94.62 dB(A)
Monark	87.0 dB(A)	89.65 dB(A)	91.43 dB(A)

Technical Data

Performance Charts

To find Fluid Outlet Pressure (psi/MPa/bar) at a specific fluid flow (lpm/gpm) and operating air pressure (psi/MPa/bar):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black). Follow left to scale to read fluid outlet pressure.

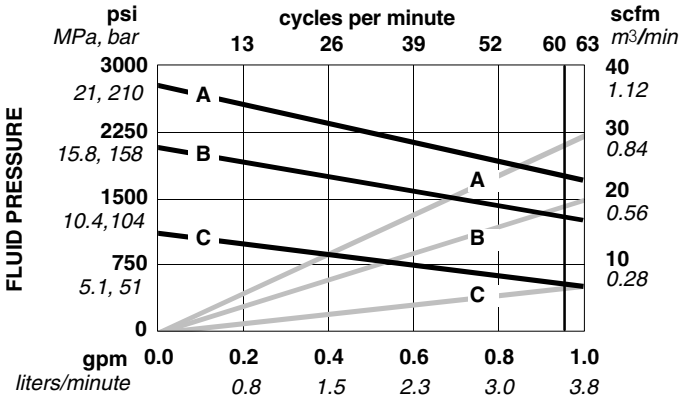
To find Pump Air Consumption (m^3/min or scfm) at a specific fluid flow (lpm/gpm) and air pressure (psi/MPa/bar):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve (gray). Follow right to scale to read air consumption.

KEY: Fluid Outlet Pressure – Black Curves
Air Consumption – Gray Curves

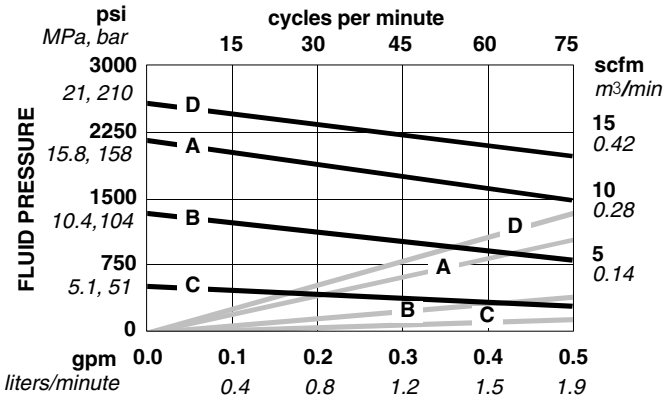
- **A** 100 psi (0.7 MPa, 7 bar) air pressure
- **B** 70 psi (0.49 MPa, 4.9 bar) air pressure
- **C** 40 psi (0.28 MPa, 2.8 bar) air pressure
- **D** 120 psi (0.8 MPa, 8 bar) air pressure (23:1 Monark only)

PRESIDENT 30:1



FLUID FLOW (TEST FLUID: NO. 10 WEIGHT OIL)

MONARK 23:1



FLUID FLOW (TEST FLUID: NO. 10 WEIGHT OIL)

Graco Standard Warranty

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

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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.

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