INSTRUCTIONS-PARTS LIST

307–586

Rev. P
Supersedes M
and PCN P

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

INSTRUCTIONS

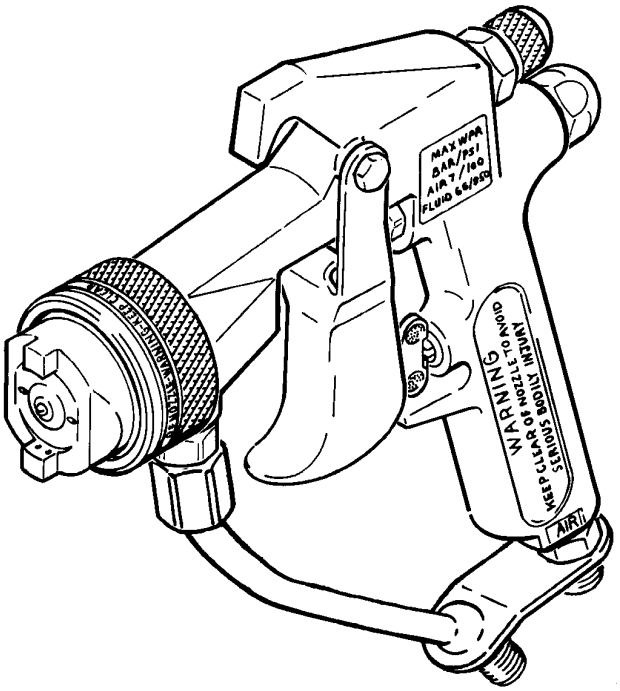
HIGH PRESSURE AIR-ASSISTED AIRLESS

Model AA 2000 ™ Spray Gun

950 psi (66 bar) Maximum Working Fluid Pressure
100 psi (7 bar) Maximum Working Air Pressure

Part Number 217–292, Series C
Includes spray tip of choice.

U.S. Patent Nos. 3,843,052; 4,386,739
United Kingdom Patent No. 2 111 406 B
Patented 1984 Canada
Brevete 1984
French Patent No. 82–21202
Foreign Patents Pending



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

Graco Inc. is registered to I.S. EN ISO 9001

⚠ WARNING

INJECTION HAZARD

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

- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate medical attention.**
- Do not point the spray gun at anyone or at any part of the body.
- Do not put hand or fingers over the spray tip.
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Do not “blow back” fluid; this is not an air spray gun.
- Check the gun diffuser operation weekly.
- 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 7 whenever you: are instructed to relieve pressure; stop spraying; clean, check, or service the equipment; or install or clean the spray tip.
- Tighten all the 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.

FIRE AND EXPLOSION HAZARD

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

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

⚠ WARNING

INSTRUCTIONS

EQUIPMENT MISUSE HAZARD

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

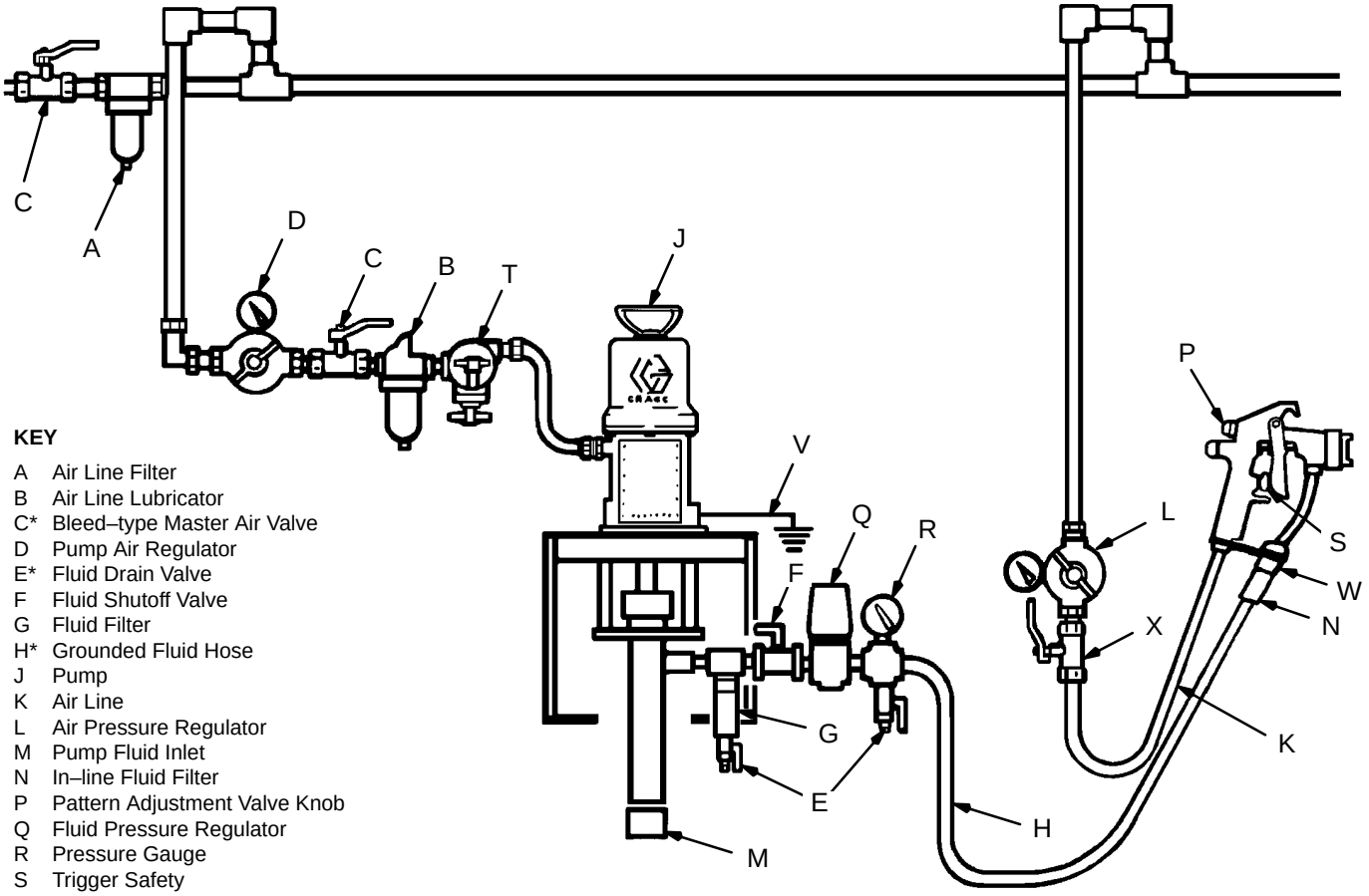
- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain about usage, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. This equipment has a **950 psi (66 bar) maximum working pressure at 100 psi (7 bar) maximum incoming air pressure**.
- Route the hoses away from the 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).
- Do not use the hoses to pull the equipment.
- Fluid hoses must have spring guards on both ends to protect them from rupture caused by kinks or bends near the couplings.
- Use fluids or solvents that are compatible with the equipment wetted parts. See the **Technical Data** section of all the equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Wear hearing protection when operating this equipment.
- Comply with all applicable local, state and national fire, electrical and other safety regulations.

TOXIC FLUID HAZARD

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

- Know the specific hazards of the fluid you are using. Read the fluid manufacturer's warnings.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Wear the appropriate protective clothing, gloves, eyewear and respirator.

Installation



KEY

A Air Line Filter
B Air Line Lubricator
C* Bleed–type Master Air Valve
D Pump Air Regulator
E* Fluid Drain Valve
F Fluid Shutoff Valve
G Fluid Filter
H* Grounded Fluid Hose
J Pump
K Air Line
L Air Pressure Regulator
M Pump Fluid Inlet
N In–line Fluid Filter
P Pattern Adjustment Valve Knob
Q Fluid Pressure Regulator
R Pressure Gauge
S Trigger Safety
T Pump Runaway Valve
V* Ground Wire
W Gun Fluid Connector
X Air Shutoff Valve

**Equipment required for safe operation of the system. Must be purchased separately.*

Fig. 1

Typical Installation

The typical installation shown in Fig. 1 is only a guide for selecting and installing air-assisted airless spray systems. It is not an actual system design. Contact your Graco distributor for assistance in designing a system to meet your needs.

The Graco fluid pump Model 217–523 is designed for use in high pressure air-assisted airless systems. It has a maximum working pressure of 950 psi (66 bar). See instruction manual 307–595 for information on this pump.

Ventilate the Spray Booth

⚠ WARNING

TOXIC FLUID HAZARD
To prevent hazardous concentrations of toxic and/or flammable vapors, spray only in a properly ventilated spray booth. **Never operate the spray gun unless ventilation fans are operating.**

Check and follow all of the National, State and Local codes regarding air exhaust velocity requirements.

Installation

Connect the Air Line

1. Install an air line filter (A) to ensure a clean, dry air supply to the gun. Dirt and moisture in the line can ruin the appearance of your finished piece. See Fig. 1.

2. Install an air pressure regulator (L) on the gun air supply line to control the air pressure to the gun.

3. Install an air pressure regulator (D) on the pump air supply line to control air pressure to the pump.

4. Install a bleed-type air shutoff valve (C) on the main air line and on the pump air line, downstream of the pump air regulator, to shut off air to the pump. Install an additional bleed-type valve on each pump air supply line to relieve air trapped between this valve and the pump after the air regulator is shut off.

⚠ WARNING

The bleed-type air shutoff valve is required in your system to relieve air trapped between this valve and the pump after the air regulator is closed. Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury.

NOTE: The gun air inlet has a 1/4–18 npsm (R1/4–19) compound male thread that is compatible with NPSM and BSP female swivel connectors.

5. Install an air shutoff valve (X) on each gun air supply line, downstream of the gun air regulator, to shut off air to the gun(s).

6. Connect the air hose (K) from the air supply to the gun air inlet.

Connect the Fluid Line

⚠ WARNING

INJECTION HAZARD
To reduce the risk of property damage or serious injury, including fluid injection, which could be caused by component rupture or unrelieved fluid pressure,

- A fluid drain valve(s) (E) is required in your system to assist in relieving fluid pressure in the displacement pump, hose and gun; triggering the gun to relieve pressure may not be sufficient.
- A fluid pressure regulator (Q) must be installed in the system if the pump's maximum working pressure exceeds the gun's maximum fluid working pressure of 950 psi (66 bar).

1. Install a fluid filter (G) and drain valve(s) (E) close to the pump's fluid outlet. The drain valve assists in relieving fluid pressure in the displacement pump, hose, and gun. See Fig. 1.
2. Install a fluid pressure regulator (Q) to control fluid pressure to the gun.

NOTE: Some applications require fine-tuned control of fluid pressure. You can control fluid pressure more accurately with a fluid pressure regulator than by regulating the air pressure to the pump.

3. Install a fluid shutoff valve (F) to shut off the fluid supply to the gun.
4. Install fluid drain valve(s) (E) close to the pump's fluid outlet.

NOTE: The gun fluid fitting (W) has a 1/4–18 npsm (R1/4–19) compound male thread that is compatible with NPSM and BSP female connectors.

5. Install an in-line fluid filter (N) on the gun fluid fitting (W) to avoid clogging the spray tip with particles from the fluid.
6. Connect the grounded fluid hose (H) to the gun fluid fitting (W) or optional in-line filter (N).

Installation

Ground the System

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Improper grounding could cause static sparking, which could cause a fire or explosion. To reduce the risk of property damage or serious injury, follow the grounding instructions below.

The following grounding instructions are minimum requirements for a system. Your system may include other equipment or objects which must be grounded. Check your local electrical code for detailed grounding instructions for your area and type of equipment. Your system must be connected to a true earth ground.

1. **Pump:** Ground the pump by connecting a ground wire and clamp between the fluid supply and a true earth ground as instructed in your separate pump instruction manual.
2. **Air compressors and hydraulic power supplies:** Ground them according to the manufacturer recommendations.
3. **Air, fluid, and hydraulic hoses connected to the pump:** Use only grounded hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity. Check the electrical resistance of your air and fluid hoses at least once a week. If the resistance exceeds the recommended limits, replace the hose immediately.
4. **Spray gun:** Ground the gun by connecting it to a properly grounded fluid hose and pump.
5. **Fluid supply container:** Ground it according to local code.
6. **Object being sprayed:** Ground it according to local code.
7. **All solvent pails used when flushing:** Ground them according to local code. Use only metal pails, which are conductive. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
8. **To maintain grounding continuity when flushing or relieving pressure:** Always hold a metal part of the gun firmly to the side of a grounded metal pail, then trigger the gun.

Operation

Safety

⚠ WARNING

INJECTION HAZARD
Remember, this is not an air spray gun. For your safety be sure to read and follow the Warnings on pages 2 and 3 and throughout the text of this instruction manual.

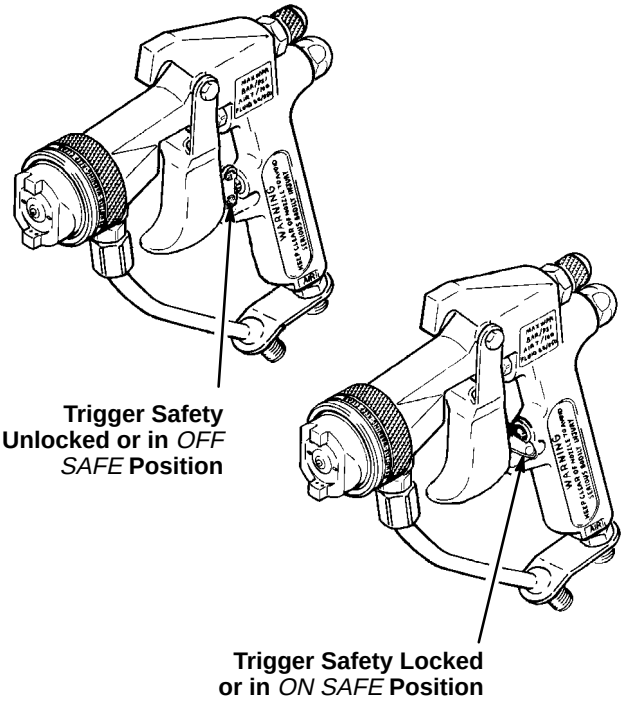
Keep the wallet sized warning card 179–960, provided with the gun, with the operator of this equipment at all times. The card contains important treatment information should an injection injury occur. Additional cards are available at no charge from Graco.

Pressure Relief Procedure

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.

1. Lock the spray gun trigger safety to avoid accidentally triggering the gun. See Fig. 2.
2. Shut off the power to the pump.
3. Close the bleed-type master air valve (required in the system).
4. Unlock the gun trigger safety.
5. Hold a metal part of the gun firmly to the side of a grounded metal waste container and trigger the gun to relieve the fluid pressure.
6. Lock the gun trigger safety again.
7. Open the pump drain valve (required in the system) to help relieve fluid pressure in the displacement pump. In addition, open the drain valve connected to the fluid pressure gauge (in a system with fluid regulation) to help relieve fluid pressure in the hose and gun. Triggering the gun to relieve pressure may not be sufficient. Have a container ready to catch the drainage.
8. Leave the drain valve(s) open until you are ready to spray again.
9. 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 hose end coupling and relieve pressure gradually, then loosen the coupling completely. Now clear the tip or hose obstruction.



Trigger Safety Unlocked or in *OFF SAFE* Position

Trigger Safety Locked or in *ON SAFE* Position

Fig. 2

Operation

How the Air-Assisted Airless Spray Gun Operates

The air-assisted airless spray gun combines airless and air spraying concepts. The spray tip shapes the fluid into a fan pattern, as does a conventional airless spray tip. Air from the air cap further atomizes the fluid and completes the atomization of the paint tails into the pattern to produce a more uniform pattern. The pattern adjustment valve controls the width of the pattern.

Note that the air-assisted airless spray gun differs from an air spray gun in that increasing the pattern air reduces the pattern width. To increase the pattern width, less pattern air or a larger size tip must be used.

The spray gun has a built-in lead and lag operation. When triggered, the gun begins emitting air before the fluid is discharged. When the trigger is released, the fluid stops before the air flow stops. This helps assure the spray is atomized and prevents fluid buildup on the air cap.

Select a Spray Tip and Air Cap

The fluid output and pattern width depend on the size of the spray tip, the fluid viscosity, and the fluid pressure. Use the **Spray Tip and Air Cap Selection Charts**, on pages 18 and 19, as a guide for selecting an appropriate spray tip and air cap for your application.

NOTE:

- Using a Fine Finish Spray Tip may improve the finish of certain urethanes, clearcoats, or lightweight air-dry enamels. Refer to the **Fine Finish Spray Tip Selection Chart** on page 19.
- If you are applying a solid stream of fluid, such as mastics or sealants, refer to the **Solid Stream Spray Tip Selection Chart** on page 19.
- When spraying at fluid pressures below 500 psi (35 bar) or spraying light viscosity fluids, use optional fluid needle 220–413 (see page 20). The standard needle may not provide positive shut off at those pressures or for such fluids.
- When spraying acid catalyzed varnishes, use optional fluid needle 222–497 (see page 20). Using a standard needle may decrease needle life and leakage may occur.

Install a Spray Tip

⚠ WARNING

INJECTION HAZARD
To reduce the risk of a fluid injection injury, follow the **Pressure Relief Procedure** on page 7 before removing or installing a spray tip.

Install a spray tip in the gun. The air cap and spray tip position determines the direction of the spray pattern.

Rotate the air cap (the spray tip rotates with it) as needed for the desired spray pattern direction. See Fig. 3.

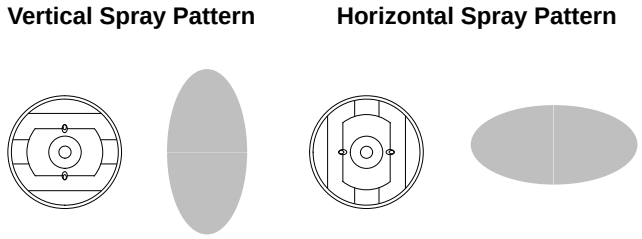


Fig. 3

Operation

Adjust the Spray Pattern

⚠ WARNING

INJECTION HAZARD
To reduce the risk of component rupture and serious injury, including injection, do not exceed the gun's maximum fluid working pressure of 950 psi (66 bar) or the maximum working pressure of the lowest rated component in the system.

NOTE: Optional gun parts are available for special applications. See page 20.

1. Set the fluid pressure at 300 psi (21 bar) with the fluid regulator.

2. Trigger the gun to check the atomization; do not be concerned about the pattern shape yet.

3. Increase the fluid pressure just to the point where a further increase in fluid pressure does not significantly improve fluid atomization.

4. Close the pattern adjustment valve by turning the knob (see Fig. 4) counterclockwise all the way. This sets the gun for its widest pattern.

5. Set the atomizing air pressure at about 20 psi (1.4 bar). Check the spray pattern, then adjust the air pressure until the tails are completely atomized and pulled into the spray pattern. See Fig. 5. Do not exceed 100 psi (7 bar) air pressure to the gun.

   For a narrower pattern, turn the pattern adjustment valve knob clockwise. If the pattern is still not narrow enough, increase the air pressure to the gun slightly or use a different size tip.

NOTE: For some spray tips, when the line air pressure to the gun is increased to a certain level, the spray pattern will become round. This is the smallest pattern width. Further increases in air pressure will force the pattern to turn from horizontal to vertical or from vertical to horizontal.

Apply the Fluid

When applying the fluid, keep the gun a consistent distance, 8 to 10 inches (200 to 250 mm), from the surface of the object being sprayed. Always hold the gun at a right angle from the surface. Do not make an arc with the gun as it causes an uneven coat of fluid. See Fig. 6.

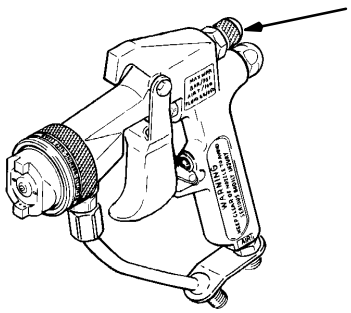
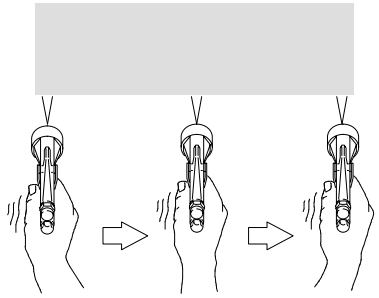


Fig. 4

Fig. 5 0792



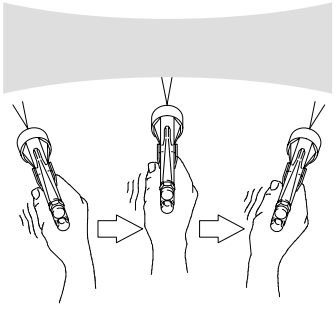


Fig. 6 0793A

Operation

Clean the Spray Gun and System Daily

⚠ WARNING

INJECTION HAZARD
To reduce the risk of an injection injury or splashing fluid in the eyes or on the skin:

- Follow the **Pressure Relief Procedure** on page 7 before cleaning, removing, or installing a spray tip and whenever you are instructed to relieve pressure.
- Do not wipe fluid buildup off the gun or spray tip until pressure is relieved.

⚠ CAUTION

To avoid damaging the gun:

- Never immerse the gun in solvent as this could damage packings and allow solvent in the air passages.
- Do not use metal tools to clean holes in the air cap or spray tip.

NOTE: Clean the front of the tip frequently during the day to help reduce buildup.

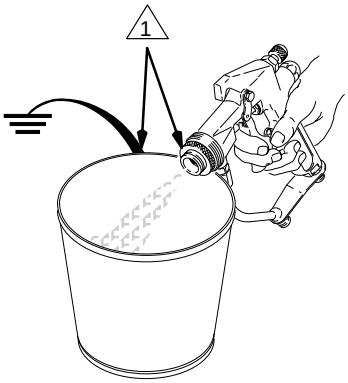
1. Relieve the pressure as instructed on page 7.
2. Clean the outside of the gun and the tip guard with a soft cloth dampened with compatible solvent.
3. To avoid damaging the spray tip and air cap, clean them with a compatible solvent and soft brush. To clean the air cap passages, use a soft brush or other soft tool, with an air blow gun.
4. If using an in-line filter, remove and clean it thoroughly in a compatible solvent.
5. Clean the system's fluid filter and air line filter.

Check the Diffuser-seat Operation Weekly

⚠ WARNING

INJECTION HAZARD
The gun diffuser-seat breaks up spray when the gun is sprayed without the spray tip installed, such as during flushing. This reduces the risk of an injection injury. Check the diffuser-seat operation weekly.

1. Relieve the pressure as instructed on page 7.
2. Remove the tip guard and spray tip.
3. Start the pump and operate it at its lowest pressure.
4. Hold a metal part of the gun firmly against a grounded metal waste container, and trigger the gun. See Fig. 7. If the fluid coming from the gun is not diffused into an irregular stream, replace the diffuser-seat immediately.



1 Maintain firm metal-to-metal contact between the gun and a grounded metal container.

Fig. 7 0794A

Operation

Flush the Gun Daily

⚠ WARNING

INJECTION HAZARD
To reduce the risk of a fluid injection injury, follow the **Pressure Relief Procedure** on page 7 before cleaning, removing, or installing a spray tip and whenever you are instructed to relieve pressure.

⚠ WARNING

To reduce the risk of serious injury, including splashing fluid in the eyes or on the skin, or static electric discharge when flushing:

- Be sure the entire system, including flushing pails, are properly grounded.
- Remove the tip guard and spray tip.
- Maintain metal-to-metal contact between the gun and a grounded metal waste container. See Fig. 7, page 10.
- Use the lowest possible pressure.

NOTE:

- Flush the pump and gun before the fluid can dry in it.
- If it is available, the flushing procedure provided in the pump or sprayer manual should be used instead of this procedure.

1. Relieve the pressure as instructed on page 7.
2. Disconnect the atomizing air hose and the fluid supply line.
3. Remove the tip guard and spray tip. Clean the parts.
4. Connect a compatible solvent supply to the gun.
5. Start the pump and operate it at its lowest pressure.
6. Hold a metal part of the gun firmly against a grounded metal waste container, and trigger the gun until all the paint is removed from the gun passages.
7. Relieve the pressure as instructed on page 7.
8. Disconnect the solvent supply.

Troubleshooting

⚠ WARNING

INJECTION HAZARD
To reduce the risk of a fluid injection injury, follow the **Pressure Relief Procedure** on page 7 before checking or servicing any of the system equipment and whenever you are instructed to relieve pressure.

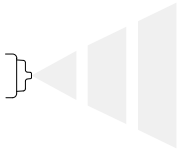
NOTE:

- Check all possible remedies in the troubleshooting charts before disassembling the gun.
- Some improper patterns are caused by the improper balance between air and fluid.

General Troubleshooting

Problem	Cause	Solution
Fluid leakage from back of fluid needle	Worn packings (47) or needle (5) shaft	Replace packings or needle. See page 14.
Air leakage from front of gun	Air valve (52) not seating properly	Clean/service air valve. See page 14.
Fluid leakage from front of gun	Fluid needle (5) worn or damaged	Replace fluid needle. See page 14.
	Worn diffuser-seat (30) housing	Replace the diffuser-seat and gasket (33). The gasket must be replaced whenever the diffuser-seat is removed. See page 14.
Fluid in air passages	Fluid tip (28) seal leaking	Tighten or replace fluid tip.
	Leaking around diffuser-seat (30) housing	Replace the diffuser-seat gasket (33). The gasket must be replaced whenever the diffuser-seat is removed. See page 14.
	Fluid inlet fitting (67) leaking	Replace the fluid fitting gasket (33). The gasket must be replaced whenever the fluid fitting is removed. See page 15.

Spray Pattern Troubleshooting

Problem	Cause	Solution
Fluttering or spitting spray 	Insufficient fluid supply	Adjust fluid regulator or fill fluid supply tank.
	Air in paint supply line	Check, tighten siphon hose connections, bleed air from paint line.
Irregular pattern	Fluid build-up or spray tip partially plugged	Clean spray tip. See page 10.
	On defective side of pattern, air horn holes are partially or totally plugged	Clean air horn holes with solvent and soft brush. See page 10.
Pattern pushed to one side, same side of air cap gets dirty	Air horn holes partially or totally plugged	Clean air horn holes with solvent and soft brush. See page 10.

Notes

Service

⚠ WARNING

INJECTION HAZARD
To reduce the risk of a fluid injection injury, follow the **Pressure Relief Procedure** on page 7 before checking or servicing any of the system equipment and whenever you are instructed to relieve pressure.

NOTE:

- Follow the **Service Notes** in Fig. 8 when reassembling the gun. Also refer to the parts drawing on page 16 for parts not shown in Fig. 8.
- Gun Repair Kit 224–949 is available. See page 17. The reference numbers with asterisks in the service procedures are included with the kit.

Air Valve Service

1. Relieve the pressure as instructed on page 7.
2. Remove the trigger (3) and valve cap (11). See the parts drawing and Fig. 8.
3. Unscrew the needle nut (49) while holding the flats of the air valve (52*) stem with a long nose pliers.

⚠ CAUTION

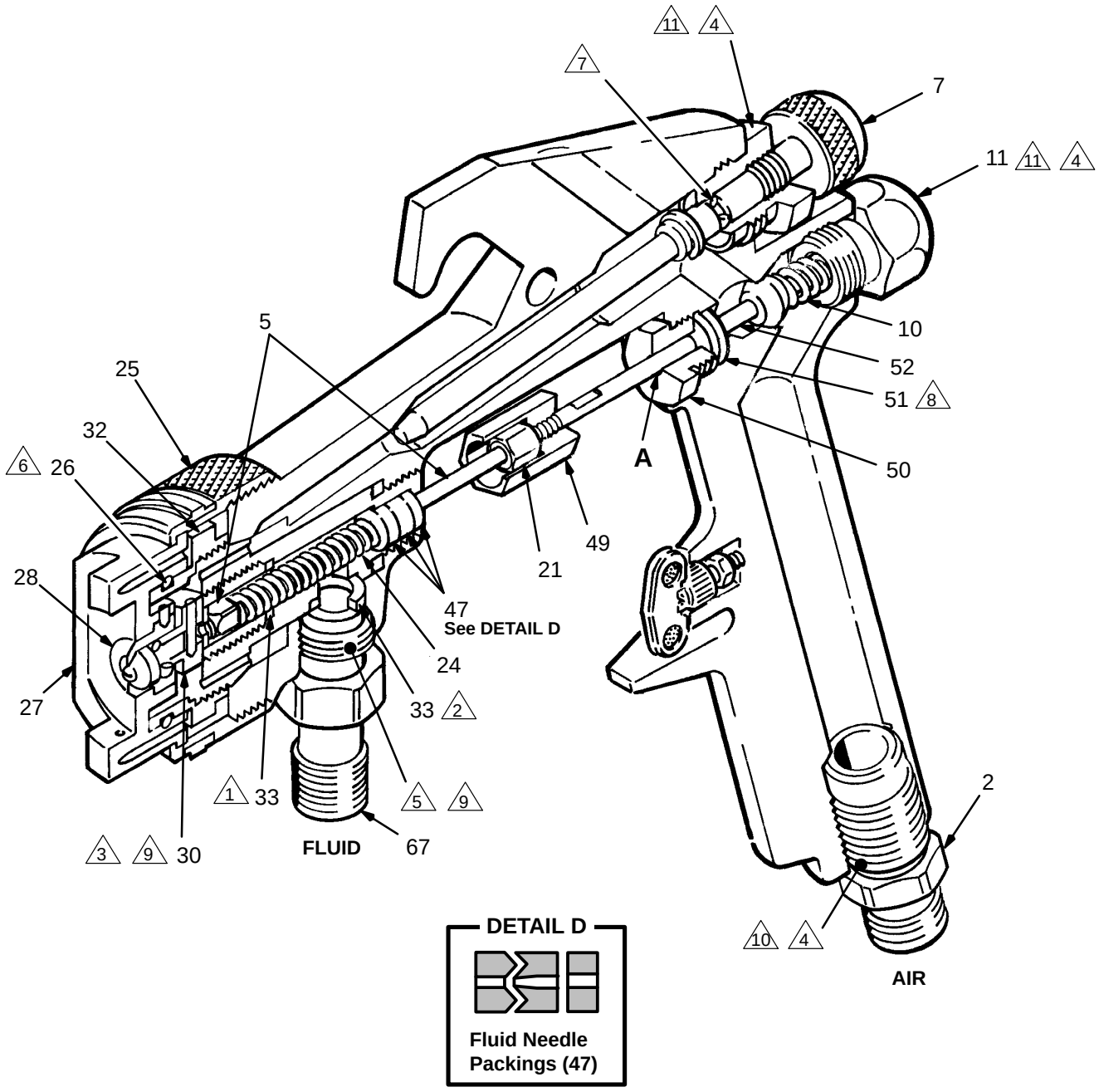
To avoid leakage, be careful not to scratch the air valve stem.

4. Remove the spring (10*) and air valve (52*).
5. If there is air leakage at the air valve (52), unscrew the packing nut (50) and carefully remove the u-cup packing (51*). Replace the packing if it is worn or damaged. When re-installing, be sure the u-cup faces inward.
6. If leakage occurs internally or the front of the gun leaks air when it is not triggered, clean and inspect the air valve and the spring for wear or damage. Replace as needed.
7. For the best air valve life, lubricate the external air valve shaft (point A) with light oil after each day's use.

Fluid Packing Replacement

Follow the procedure below to remove the fluid packings for cleaning or replacement and to inspect the needle shaft when there is leakage from the back of the needle.

1. Relieve the pressure as instructed on page 7.
2. Remove the air cap retainer (25), air cap (27), spray tip (28), and air separator (32). See Fig. 8.
3. Trigger the gun to back the fluid needle ball off the seat. Remove the diffuser-seat (30*) and gasket (33*). Install a new gasket.
4. Remove the trigger (3). See the Parts Drawing, page 16.
5. Remove the hex nut (21*) from the fluid needle (5*), while holding the square part of the fluid needle.
6. Pull the fluid needle (5) and compression spring (24*) from the front of the gun.
7. To remove the old packings (47*), insert the packing tool (55*) into the front of the gun and screw it into the packings. Pull the packings from the front of the gun.
8. Clean the parts with a compatible solvent and a soft brush. Inspect the fluid needle (5) for wear or damage, and replace it if necessary.
9. Insert the new packings (47) onto the fluid needle (5) shaft as shown in Detail D of Fig. 8.
10. Install the fluid needle (5). Do not damage the packings.
11. Screw the hex nut (21) all the way onto the fluid needle (5). Do not over-tighten it.
12. Install the trigger.
13. Trigger the gun while screwing the diffuser-seat (30) back into the gun. Torque the diffuser-seat to 23 to 27 ft-lbs (31 to 37 N•m).
14. Install the air separator (32), spray tip (28), air cap (27), and air cap retainer (25).

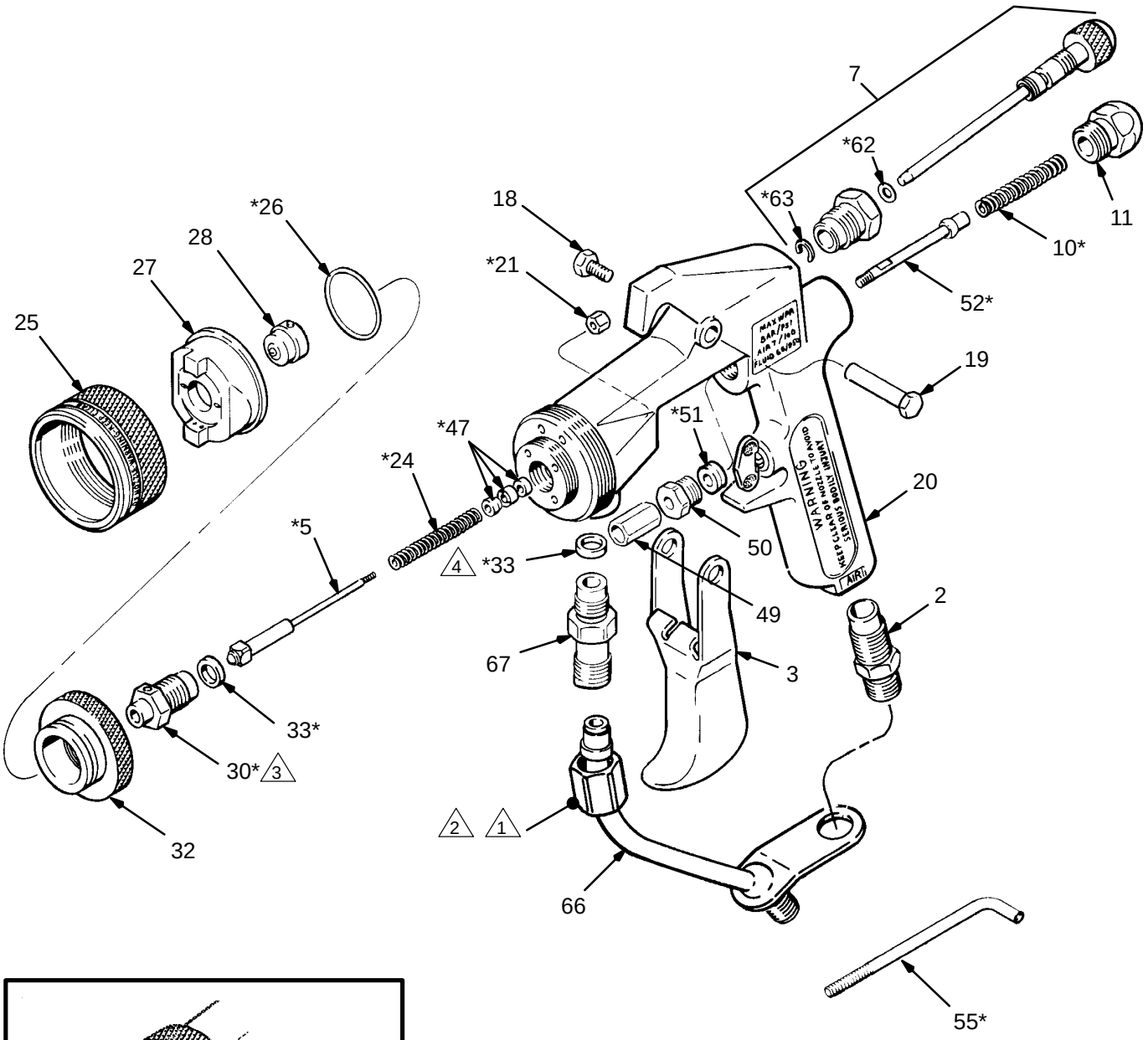


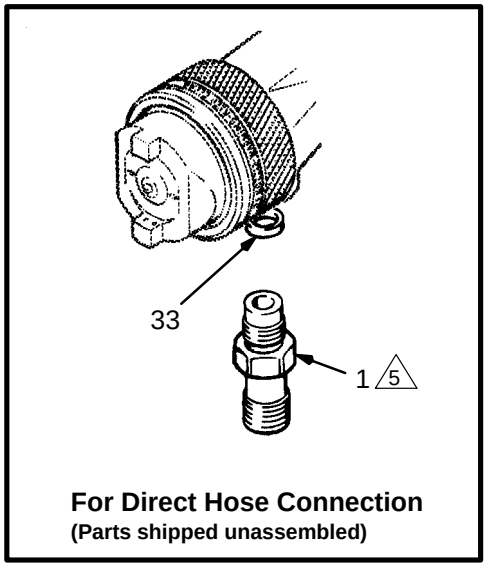
SERVICE NOTES:

1. Diffuser-seat gasket (33) must be replaced if diffuser-seat (30) is removed or replaced to avoid fluid leakage
2. Fluid fitting gasket (33) must be replaced if fluid fitting (67) is removed or replaced to avoid fluid leakage
3. Lubricate threads
4. Apply anaerobic pipe sealant to threads
5. Apply high strength sealant to threads
6. Do not lubricate
7. Lubricate with light-weight oil
8. U-cup lips face inward
9. Torque to 23–27 ft-lb (31–37 N•m)
10. Torque to 20–24 ft-lb (27–32 N•m)
11. Torque to 15–19 ft-lb (20–26 N•m)

Fig. 8

Parts





For Direct Hose Connection
(Parts shipped unassembled)

SERVICE NOTES (See Fig. 8 for additional information):

1. Lubricate threads
2. Torque to 23–27 ft-lb (31–37 N•m)
3. Diffuser-seat gasket (33) must be replaced if diffuser-seat (30) is removed or replaced to avoid fluid leakage.
4. Fluid fitting gasket (33) must be replaced if fluid fitting (67) is removed or replaced to avoid fluid leakage.
5. Torque to 10–14 ft–lb (14–19 N•m)

Parts

Use Only Genuine Graco Parts and Accessories

Ref. No.	Part No.	Description	Qty.
1	178–415	CONNECTOR, fluid (not assembled)	1
2	106–917	ADAPTER, air	1
3	178–454	TRIGGER, gun	1
5*	217–488	NEEDLE, fluid; *Optional Plastic Ball Tipped Needle* available, see page 20	1
7	217–489	VALVE, pattern adjustment; Includes items 62 & 63	1
10*	106–903	SPRING, compression, air valve	1
11	178–408	CAP, valve, air	1
18	203–953	CAP SCREW, hex head, 10–24 x 0.375” long	1
19	160–217	PIN, pivot	1
20	217–516	BODY, gun	1
21*	177–528	NUT, hex	1
24*	109–022	SPRING, compression, fluid; *Optional Spring* available, see page 20	1
25	217–526	RETAINER, air cap	1
26*	107–079	O-RING, PTFE	1
27	217–303	AIR CAP	1
28	182–XXX	SPRAY TIP; Customer’s choice. See Chart on page 18.	1
30*	217–300	DIFFUSER-SEAT	1
32	178–414	SEPARATOR, air	1
33*	178–422	GASKET, fluid, Delrin®; (1 sent unassembled)	3
47*	218–042	PACKING KIT, needle, Delrin & UHMW polyethylene; *Optional UHMW Polyethylene Kit* available, see page 20	1
49	178–767	NUT, needle, air	1
50	178–765	NUT, packing, air	1
51*	105–452	U-CUP, PTFE	1
52*	217–487	VALVE, air	1
55*	178–798	TOOL, packing	1
62*	168–110	O-RING, nitrile rubber; Included with item 7	1
63*	105–456	RETAINER, clip; Included with item 7	1
64▲	179–960	WARNING CARD (not shown)	1
66	218–566	GUARD, trigger	1
67	180–547	CONNECTOR, fluid	1

* *These parts are included in Repair Kit 217–525, which must be purchased separately.*

NOTE: *Repair Kit 238–224 is also available. It includes the same parts as Repair Kit 217–525 except it includes a fine-finish diffuser-seat, part no. 223–139, instead of the standard diffuser-seat, part no. 217–300.*

▲ *Replacement Danger and Warning labels, tags and cards are available at no cost.*

Spray Tip and Air Cap Selection Charts

STANDARD SPRAY TIPS

Orifice Size *inches (mm)*	*Inches (mm)* **Fan Width at 12" (300 mm)**	***Light to Medium Viscosity** *fl oz/min (liters/min)*	***Heavy Viscosity** *fl oz/min (liters/min)*	**Part No.**
0.007 (0.178)	2–4 (50–100) 4–6 (100–150) 6–8 (150–200)	4.0 (0.1)		**182–107** **182–207** **182–307**
0.009 (0.229)	4–6 (100–150) 6–8 (150–200) 8–10(200–250)	7.0 (0.2)		**182–209** **182–309** **182–409**
0.011 (0.279)	4–6 (100–150) 6–8 (150–200) 8–10 (200–250) 10–12 (250–300) 12–14 (300–350)	10.0 (0.3)		**182–211** **182–311** **182–411** **182–511** **182–611**
0.013 (0.330)	4–6 (100–150) 6–8 (150–200) 8–10 (200–250) 10–12 (250–300) 12–14 (300–350)	13.0 (0.4)		**182–213** **182–313** **182–413** **182–513** **182–613**
0.015 (0.381)	4–6 (100–150) 6–8 (150–200) 8–10 (200–250) 10–12 (250–300) 12–14 (300–350)	17.0 (0.5)		**182–215** **182–315** **182–415** **182–515** **182–615**
0.017 (0.432)	4–6 (100–150) 6–8 (150–200) 8–10 (200–250) 10–12 (250–300) 12–14 (300–350)	22.0 (0.7)	17.0 (0.5)	**182–217** **182–317** **182–417** **182–517** **182–617**
0.019 (0.483)	6–8 (150–200) 8–10 (200–250) 10–12 (250–300) 12–14 (300–350) 14–16 (350–400)	28.0 (0.8)	21.0 (0.6)	**182–319** **182–419** **182–519** **182–619** **182–719**
0.021 (0.533)	8–10 (200–250) 10–12 (250–300) 12–14 (300–350) 14–16 (350–400) 16–18 (400–460)	35.0 (1.0)	27.0 (0.8)	**182–421** **182–521** **182–621** **182–721** **182–821**
0.023 (0.584)	8–10 (200–250) 10–12 (250–300) 12–14 (300–350) 14–16 (350–400) 16–18 (400–460)	40.0 (1.2)	34.0 (0.97)	**182–423** **182–523** **182–623** **182–723** **182–823**
0.025 (0.635)	8–10 (200–250) 10–12 (250–300) 12–14 (300–350) 14–16 (350–400) 16–18 (400–460)	50.0 (1.5)	42.0 (1.2)	**182–425** **182–525** **182–625** **182–725** **182–825**

Orifice Size *inches (mm)*	*Inches (mm)* **Fan Width at 12" (300 mm)**	***Light to Medium Viscosity** *fl oz/min (liters/min)*	***Heavy Viscosity** *fl oz/min (liters/min)*	**Part No.**
**0.027 (0.689)	8–10 (200–250) 12–14 (300–350)	58.5 (1.7)	50.0 (1.4)	**182–427** **182–627**
**0.029 (0.737)	8–10 (200–250) 12–14 (300–350) 14–16 (350–400)	68.0 (1.9)	59.0 (1.7)	**182–429** **182–629** **182–729**
**0.031 (0.787)	8–10 (200–250) 12–14(300–350)	78.0 (2.2)	69.0 (2.0)	**182–431** **182–631**
**0.035 (0.889)	8–10 (200–250) 10–12 (250–300) 12–14 (300–350)	98.0 (2.8)	89.0 (2.5)	**182–435** **182–535** **182–635**
**0.039 (0.991)	8–10 (200–250) 10–12 (250–300) 12–14 (300–350)	118.0 (3.4)	109.0 (3.1)	**182–439** **182–539** **182–639**
**0.041 (1.041)	8–10 (200–250) 10–12 (250–300) 12–14 (300–350)	138.0 (4.0)	129.0 (3.7)	**182–441** **182–541** **182–641**
**0.043 (1.092)	8–10 (200–250) 10–12 (250–300) 12–14 (300–350)	158.0 (4.6)	149.0 (4.3)	**182–443** **182–543** **182–643**

* *Fluid output at 600 psi (41 bar).*

** *Requires air cap 218–336.*

Fluid output (Q) at other pressures (P) can be calculated by this formula: $Q = (0.041)\ (QT)\ (\sqrt{P})$.

Where QT = Fluid output (fl oz/min) from the above table for the selected orifice size.

NOTE: Other tips are available on special work order. Allow 4 to 6 weeks for delivery.

Spray Tip and Air Cap Selection Charts

SOLID STREAM SPRAY TIPS

For use in applications requiring a solid stream of fluid such as with mastics or sealers. All these tips **require Air Cap 218–336.**

Orifice Size *inches (mm)*	**Part No.**	**Pattern**
0.027 (0.689)	**182–027**	Solid stream, approximately 0.25" (6.35 mm)
0.029 (0.737)	**182–029**	
0.031 (0.787)	**182–031**	
0.033 (0.838)	**182–033**	
0.035 (0.889)	**182–035**	
0.037 (0.940)	**182–037**	
0.039 (0.991)	**182–039**	
0.041 (1.041)	**182–041**	
0.043 (1.092)	**182–043**	
0.045 (1.143)	**182–045**	
0.047 (1.194)	**182–047**	

FINE FINISH SPRAY TIPS

For use in application of certain urethanes, clearcoats, and light-weight air-dry enamels. All these tips **require** replacement of standard diffuser-seat with **Diffuser-seat part no. 223–139**.

Orifice Size *inches (mm)*	**Light Viscosity** *fl oz/min* (liters/min)*	**Fan Width at 12" (300 mm)** *inches (mm)*	**Fine Finish Spray Tip Part No.**
0.012 (0.305)	10.0 (0.3)	6–8 (152–203)	**182–312**
0.014 (0.356)	13.6 (0.4	6–8 (152–203)	**182–314**
0.012 (0.305)	10.0 (0.3)	10–12 (250–300)	**182–512**
0.014 (0.356)	13.6 (0.4	10–12 (250–300)	**182–514**
0.016 (0.406)	17.0 (0.5)	10–12 (250–300)	**182–516**
0.018 (0.457)	20.9 (0.6)	10–12 (250–300)	**182–518**
0.020 (0.508)	25.8 (0.8)	10–12 (250–300)	**182–520**

* *Fluid output at 600 psi (41 bar).*

AIR CAPS

Application	**Tip Size Used With** *inches (mm)*	**Air Consumption**	**Part No.**
Standard	smaller than 0.025 (0.635)	3–5 scfm	**217–303**†
Standard	0.027 (0.689) and larger	3–5 scfm	**218–336**
Fine Finish	smaller than 0.025 (0.635)	5–7 scfm	**219–093**††
High Solids	smaller than 0.025 (0.635)	5–7 scfm	**219–094**
Fine Finish with Pattern Adjustment	smaller than 0.025 (0.635)	5–7 scfm	**222–507**
High Atomization	smaller than 0.025 (0.635)	5–7 scfm	**222–607**
High Efficiency Low Pressure™	smaller than 0.025 (0.635)	5–7 scfm	**222–608**

† *Air cap provided with spray gun.*

†† *The pattern adjustment valve must be open (turned fully clockwise) when using this air cap.*

Accessories

Use Only Genuine Graco Parts and Accessories

Four Finger Trigger 183–104
Longer than standard trigger. Reduces trigger pull when spraying mastics and heavy fluids. *Replaces item 3, in the parts list, page 17.*

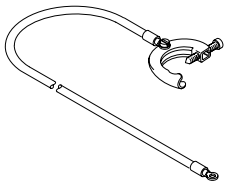
Plastic Ball Tipped Fluid Needle 220–413
For fluid pressures below 500 psi (35 bar) and light viscosity fluid. *Replaces item 5, in the parts list, page 17.*

Ruby Ball Tipped Fluid Needle 222–497
For use with acid catalyzed finishes. *Replaces item 5, in the parts list, page 17.*

Fluid Needle Compression Spring 106–452
For spraying higher solids or heavier viscosity fluids. *Replaces item 24, in the parts list, page 17.*

Ultra High Molecular Weight Polyethylene Needle Packing Kit 221–150
Use to replace needle packings *(item 47, in the parts list, page 17)* when spraying urethane fluids. Helps eliminate isocyanate crystallization in packing area.

Grounding Clamp and Wire 222–011
12 ga, 25 ft (7.6 m) wire

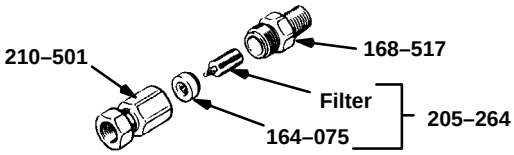


Brush 101–892
For cleaning the gun.

High Pressure Ball Valves, Viton® Seals
5000 psi (350 bar) Maximum Working Pressure
Can be used as fluid drain valve.

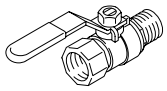
210–657 1/2 npt(m)
210–658 3/8 npt(m)
210–659 3/8 x 1/4 npt(m)

In-line Fluid Filter 210–500
5000 psi (350 bar) Maximum Working Pressure
100 mesh. Fits onto the gun's fluid connector. 1/4–18 npsm.

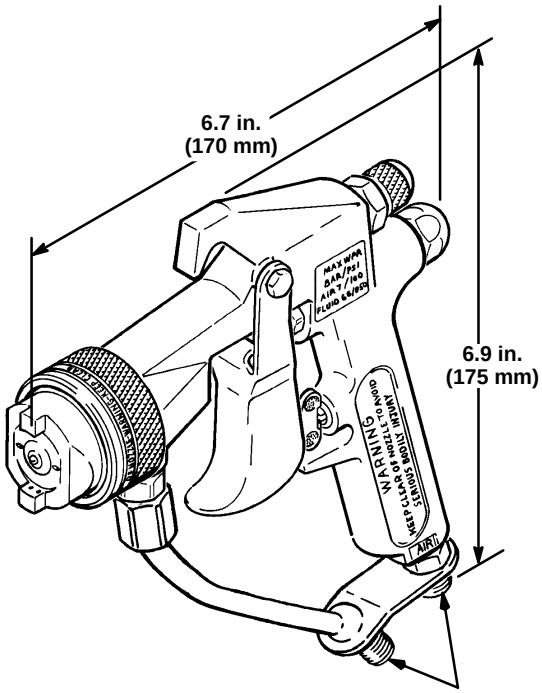


Bleed-type Master Air Valve
300 psi (21 bar) Maximum Working Pressure
Relieves air trapped in the air line between the pump air inlet and this valve when closed.

107–141 3/4 npt(m x f) inlet & outlet
107–142 1/2 npt(m x f) inlet & outlet



Dimensions



Technical Data

Maximum Working Fluid Pressure . . . 950 psi (66 bar)
Maximum Working Air Pressure . . . . . 100 psi (7 bar)
Maximum Working Fluid Temperature . 120° F (49° C)
Weight (less filter) . . . . . 1.2 lb (0.55 Kg)
Wetted Parts . . . . . Stainless Steel, Carbide, Ultra High Molecular Weight Polyethylene, PTFE, Delrin®

Delrin® is a registered trademark of the DuPont Company.

Notes

Notes

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.

DISCLAIMERS AND LIMITATIONS

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.

EQUIPMENT NOT COVERED BY GRACO WARRANTY

Graco makes no warranty, and disclaims all implied **warranties of merchantability and fitness for a particular purpose**, with respect to accessories, equipment, materials, or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motor, switches, hose, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

Graco Phone Number

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

Manual Change Summary

1. Added "do" and "do not" lubricate notes to Service section drawing.
2. Added Repair Kit 238–224.

Sales Offices: Atlanta, Chicago, Detroit, Los Angeles
Foreign Offices: Belgium, Canada, England, Korea, Switzerland, France, Germany, Hong Kong, Japan

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