



INSTRUCTIONS

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



APPLICATION EQUIPMENT FROM GRACO

Rev. M
Supersedes L
and PCN M

1/4 GALLON PER MINUTE, 120 VAC, 60 HZ

PT2500®

Electric Airless Paint Sprayer

3000 psi (21.0 MPa, 210 bar) Maximum Working Pressure

Model 218-796, Series E

Basic Sprayer without hose or gun.

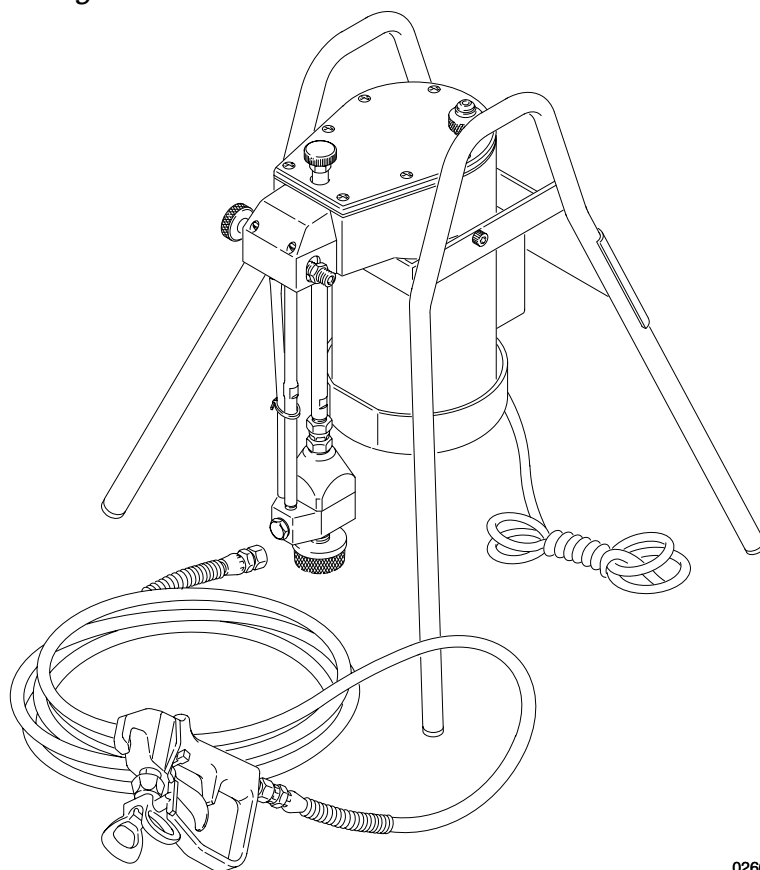
Model 218-501, Series C

Complete Sprayer with hose and gun.

U.S. Patent No. 4,616,982

U.K. Patent No. 2,165,591

Other Foreign Patents Pending



0266

Always Professional Results™

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Welcome to Graco's Painter's Team

Before you use the PT2500® Sprayer, please read this entire instruction manual. The manual contains important information that will help you operate the sprayer safely and efficiently, and will help you keep the sprayer in top operating condition.

Table of Contents

PT2500 Sprayer Description	3
Warnings	4
Setup	7
Startup	8
Maintenance	12
Application Methods	16
Troubleshooting	17
Repair Instructions	19
Parts Drawings and Lists	21
Graco Phone Number	24
Technical Data	24
Warranty	24

Manual

Change Summary

This manual was updated to include the changes from PCN M.

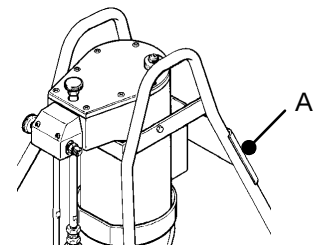
CAUTION

A torque wrench is needed to properly check and tighten the valves and screws on this sprayer. Failure to torque these parts at the specified intervals (see page 12) will result in leaking and damage to the sprayer.

Danger Labels

The DANGER label shown on below is also on your sprayer. If you have painters who do not read that language, order one of the following labels to apply to your sprayer. Apply the label at A for the best visibility. Order the labels directly from your Graco distributor without charge.

French	185-956
Spanish	185-961
German	186-041
Greek	186-045
Korean	186-049
English	185-953



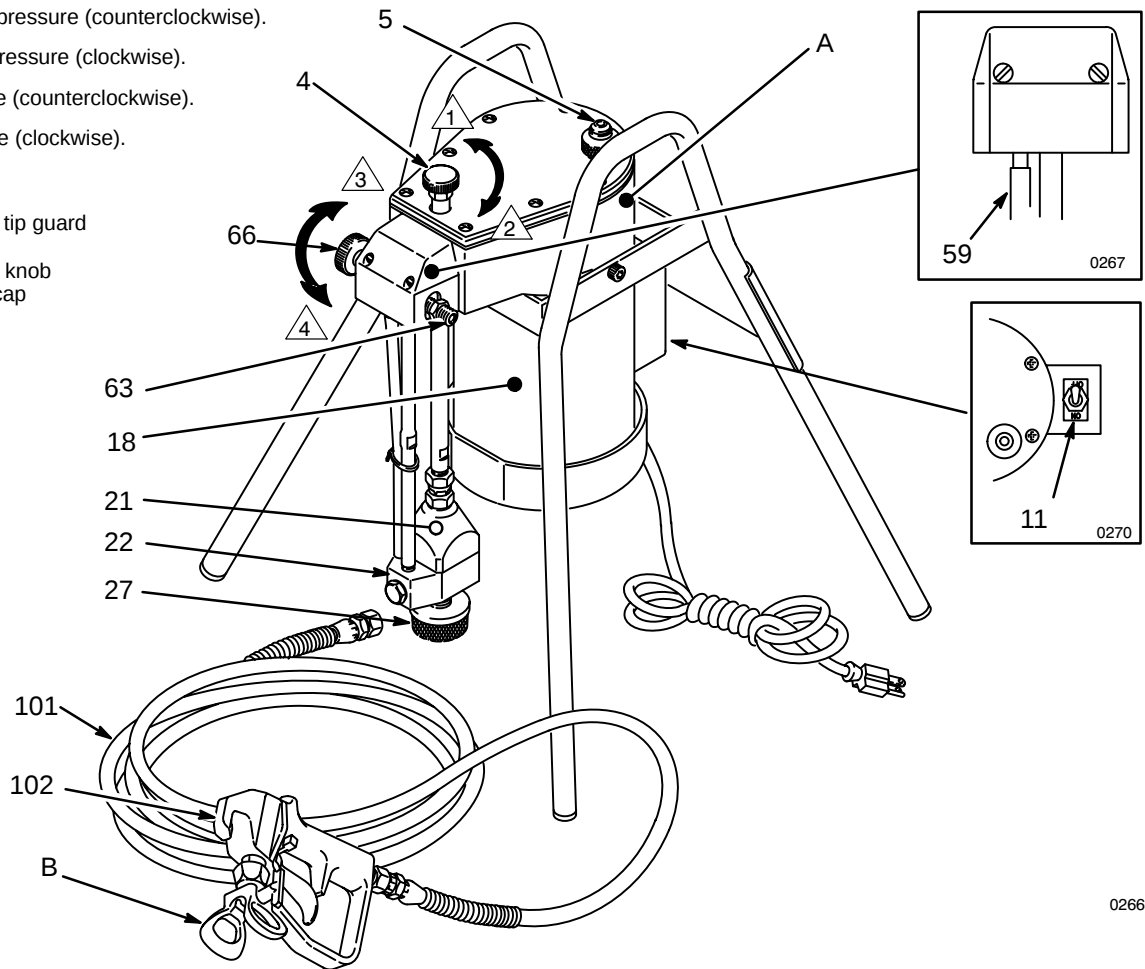
 DANGER 	
 FIRE AND EXPLOSION HAZARD	 SKIN INJECTION HAZARD
Spray painting, flushing or cleaning equipment with flammable liquids in confined areas can result in fire or explosion. Use outdoors or in extremely well ventilated areas. Ground equipment, hoses, containers and objects being sprayed. Avoid all ignition sources such as static electricity from plastic drop cloths, open flames such as pilot lights, hot objects such as cigarettes, arcs from connecting or disconnecting power cords or turning light switches on and off. Failure to follow this warning can result in death or serious injury.	Liquids can be injected into the body by high pressure airless spray or leaks – especially hose leaks. Keep body clear of the nozzle. Never stop leaks with any part of the body. Drain all pressure before removing parts. Avoid accidental triggering of gun by always setting safety latch when not spraying. Never spray without a tip guard. In case of accidental skin injection, seek immediate “Surgical Treatment”. Failure to follow this warning can result in amputation or serious injury.
READ AND UNDERSTAND ALL LABELS AND INSTRUCTION MANUALS BEFORE USE	

Sprayer Description

- 1 Decrease the pressure (counterclockwise).
- 2 Increase the pressure (clockwise).
- 3 Open the valve (counterclockwise).
- 4 Close the valve (clockwise).

KEY

- A Hydraulic pump
- B Rac IV DripLess tip guard and spray tip
- 4 Pressure control knob
- 5 Hydraulic oil fill cap
- 11 ON/OFF switch
- 18 Motor
- 21 Diaphragm
- 22 Paint pump
- 27 Strainer
- 59 Drain tube
- 63 Outlet valve
- 66 Bypass valve
- 67 Outlet
- 101 Paint hose
- 102 Spray Gun



Motor

The sprayer has a 1/2 hp, 120 V, 60 HzAC, single phase, 1725 rpm motor (18). The motor is supplied with a three-wire power supply cord and a three-prong plug. The sprayer ON/OFF switch is located on the side of the motor. The motor drives the hydraulic pump. The motor runs continuously when it is turned on to keep the paint at the desired pressure.

Paint Pump

The paint pump (22) is immersed into a 5 gallon paint pail, so the pump is actually being pressure fed without the mess and trouble of pouring paint into a hopper.

Hydraulic Pump

The hydraulic pump (A) is located inside the hydraulic reservoir. The motor drives an eccentric bearing which pushes the piston in and out of the hydraulic pump. The pump reciprocates the hydraulic fluid to operate the diaphragm.

Diaphragm

The diaphragm (21) separates the hydraulic and paint portions of the paint pump. Hydraulic oil causes the diaphragm to move up and down almost 30 times per second, no matter what pressure you are spraying at.

Pressure Control Knob

The paint pressure is regulated by turning the pressure control knob (4) clockwise to increase the pressure and counterclockwise to decrease the pressure.

Bypass Valve

The bypass valve (66) has two functions: (1) to assist in priming the paint pump during initial startup, and (2) to provide positive relief of paint pressure from the gun, hose, and sprayer.

Paint Hose

One electrically-conductive, nylon paint hose (101) is supplied with the sprayer Model 218–501. This 25 foot (7 m) hose has a 1/4 inch ID, 1/4 npsm (fbc) couplings and spring guards on both ends.

Spray Gun, Reverse-A-Clean (RAC) IV Tip Guard and Spray Tip

The spray gun supplied with Model 218–501 (102) has a tough, lightweight plastic body. The gun has a trigger safety lever which prevents accidentally triggering the gun when the lever is set in the safe position. (See **WARNINGS**, page 4).

The RAC IV Tip Guard (B) uses high pressure fluid to unclog the spray tip without removing it from the gun. (See page 10). The RAC IV includes a safety tip guard which helps reduce the risk of a fluid injection injury. A No. 215 spray tip for use with latex paint is also included.

Symbols

Warning Symbol



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

Caution Symbol



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

WARNING



INSTRUCTIONS

EQUIPMENT MISUSE HAZARD

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

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are not sure, call Graco Technical Assistance at 1-800-543-0339.
- Do not alter or modify this equipment.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. Refer to the **Technical Data** on page 24 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 82°C (180°F) or below -40°C (-40°F).
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.
- Hearing protection is recommended when working around the sprayer. Refer to the **Technical Data** section on page 24 for the sound data.

WARNING



INJECTION HAZARD

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

- Fluid injected into the skin is a serious injury. The injury may look like just a cut, but it is a serious injury. Get immediate medical attention.
- Do not point the gun at anyone or at any part of the body.
- Do not put your hand or fingers over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove or rag.
- Do not “blow back” fluid; this is not an air spray system.
- Always have the tip guard and the trigger guard on the gun when spraying.
- Check the gun diffuser operation weekly. Refer to the gun manual.
- Be sure the gun trigger safety operates before spraying.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 8 if the spray tip clogs and before cleaning, checking or servicing the equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. Do not repair high pressure couplings; you must replace the entire hose.
- Fluid hoses must have spring guards on both ends, to help protect them from rupture caused by kinks or bends near the couplings.



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.

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.

- 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.



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 8 to prevent the equipment from starting unexpectedly.

Setup

1. **Prepare the paint according to the manufacturer's recommendations.**

This is probably the most important step toward trouble-free spraying!

Remove any skin that may have formed on the top of the paint. If necessary, thin the paint. Finally, strain the paint through a fine nylon mesh bag (available at most paint dealers) to remove particles that could clog the spray tip.

2. **Install a spray tip and RAC IV tip guard** on the spray gun as instructed in manual 307–848.
3. **Connect the hose and gun.** Connect the other end of the hose to the sprayer.
4. **Check the hydraulic oil level.** Unscrew the fill cap (5). The oil should be 25 mm from the top of the plate. If the oil is low, fill as necessary with lightweight hydraulic oil; use only Graco Hydraulic Oil, Part No. 218–797. Install the fill cap. See Fig. 1.
5. **Check the electrical service** which must be 120 V, 60 HzAC, 15 Amp (minimum). Be sure the electrical outlet is properly grounded.

You can use up to 100 ft (30 m) of 3 wire, 14 gauge (minimum) extension cord. Longer extension cords may affect the sprayer performance. Use more spray hose, not longer extension cords.

Do not remove the third (grounding) prong of the plug, and do not use an adapter.

6. **Plug in the sprayer.** First be sure the ON/OFF switch (11) is OFF and the pressure control (4) is turned fully **counterclockwise**. Plug the sprayer into a grounded outlet that is at least 20 feet (6 m) away from the spray area to reduce the chance of a spark igniting spray vapors or dust particles.

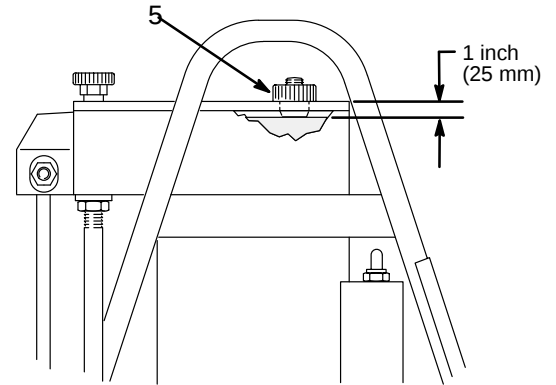


Fig. 1 0269

- 1 Decrease pressure (counterclockwise).
- 2 Increase pressure (clockwise).

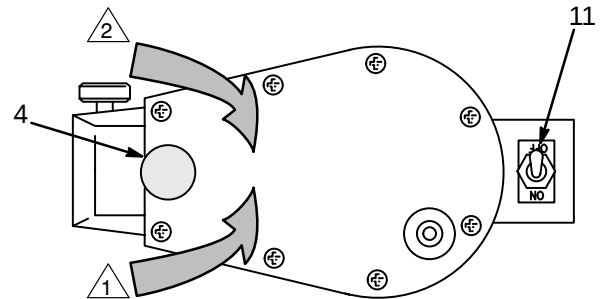


Fig. 2 0270

Startup

CAUTION

The wallet sized warning card provided with the gun should be kept with the operator at all times. The card contains important information on reducing the risk of a fluid injection injury, and treatment information should an injection injury occur. Additional copies of this card are available at no cost.

Pressure Relief Procedure

WARNING



INJECTION HAZARD

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

- are instructed to relieve the pressure,
 - stop spraying,
 - check or service any of the system equipment,
 - or install or clean the spray tip.
1. Shut off the sprayer and unplug it.
 2. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun into the pail to relieve pressure.
 3. Lock the trigger safety lever.
 4. Turn the bypass valve **counterclockwise** one turn to drain paint back into the pail.

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 to relieve pressure gradually, then loosen completely. Now clear the tip or hose obstruction.

1. Open the bypass valve (66) ONE turn **counterclockwise**. Do not place the pump intake in the pail yet. See Fig. 3.
2. Turn the pressure control fully (4) **clockwise** to increase pressure. See Fig. 3.
3. Remove the inlet strainer (27) and place your hand over the inlet valve to be sure it is drawing a vacuum.

NOTE: If the inlet valve (26) is not drawing a vacuum, turn the sprayer OFF. Turn the sprayer over. Press down on the stem (A) inside the inlet valve lightly with a small screwdriver, and pour about a teaspoon of mineral spirits or solvent into the valve. See Fig. 4. Release the valve and turn the sprayer upright. With the pressure turned up, turn on the sprayer. This should free any sticking parts in the pump. Now check again for a vacuum. Shut off the sprayer and install the inlet strainer (27).

4. Place the paint pump assembly into a properly prepared 5 gallon pail of paint.
5. Turn the sprayer ON and allow the paint to circulate through the bypass valve (4) for one or two minutes.

NOTE: If the paint does not circulate back into the pail, turn down the pressure and turn the motor on and off several times to help prime the sprayer.

Startup

- Turn the bypass valve (66) **clockwise** (finger tight) to close it; this allows the pump to build up pressure.

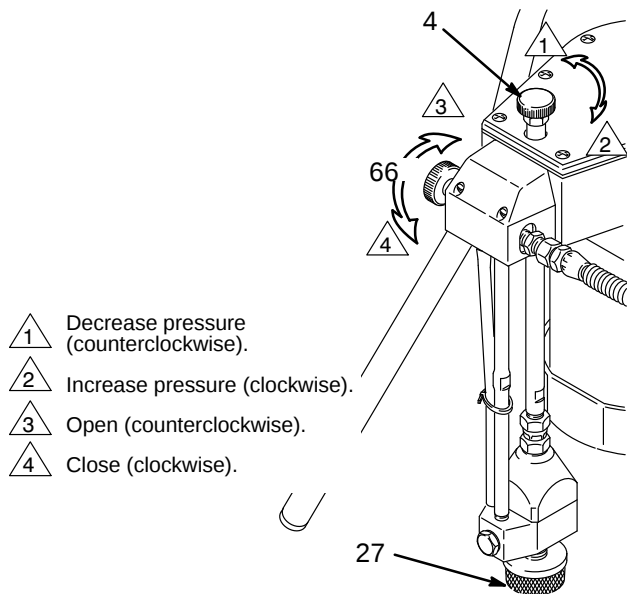


Fig. 3 0271

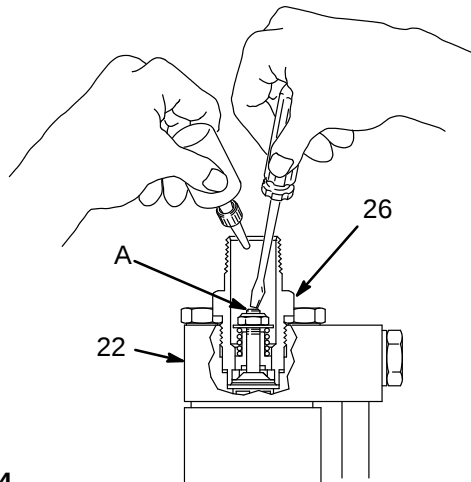


Fig. 4 0272

- Release the trigger safety lever and trigger the gun onto a piece of paper to check the spray pattern. Adjust the pressure setting to obtain the best atomization and spray pattern. **Always use the lowest pressure necessary.** Excessive pressure causes premature tip wear and pump wear.

NOTE: If you cannot obtain a good spray pattern or adequate atomization, your paint may be too thick. Thin the paint according to the manufacturer's recommendations until you can get good atomization.

- Whenever you stop spraying, even for a moment, always set the trigger safety lever to prevent accidentally trigger the gun.

- Whenever you stop spraying for more than a moment, or if you must leave the sprayer unattended, shut it off and follow the **Pressure Relief Procedure** on page 8.

NOTE: The sprayer will not restart if it was left pressurized after shutting it off. Relieve pressure, then start the sprayer.

- Lubricate the threads.
- Torque to 170–200 in-lb (19–23 N.m.)
- Torque to 320–360 in-lb (36–41 N.m.)

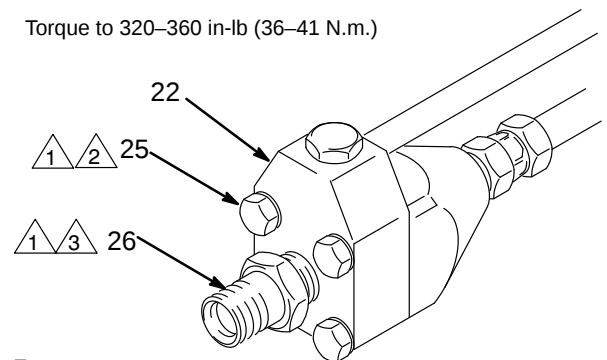


Fig. 5 0273

- After the first 3 to 5 hours of operation** torque the four screws (25) on the bottom of the paint pump (22) to 170–200 in-lb (19–23 N.m.) See Fig. 5.
- Also torque** the inlet valve (26) to 320–360 in-lb (36–41 N.m.)

CAUTION

Failure to properly tighten the inlet valve and screws at the intervals indicated will result in oil leaking from the hydraulic system into the paint, and can cause costly damage to the sprayer.

- Repeat these torques** after another 3 to 5 hours of operation, and then after each 25 hours of operation (about weekly).

startup procedure continued on page 10

Startup

⚠ CAUTION

Never start the electric motor with the inlet valve removed to avoid damaging the diaphragm.

13. *If you have a Reverse-A-Clean IV tip guard on your gun and the tip clogs while spraying, release the gun trigger, lock the trigger safety lever, and rotate the spray tip handle 180°. See Fig. 6.*
14. Unlock the safety lever and trigger the gun into a grounded metal waste container. Hold a metal part of the gun firmly to the side of the container to reduce the risk of static sparking and splashing. The fluid pressure should force the obstruction from the tip. Lock the safety lever.
15. Return the handle to the original position, unlock the safety lever, and resume spraying.

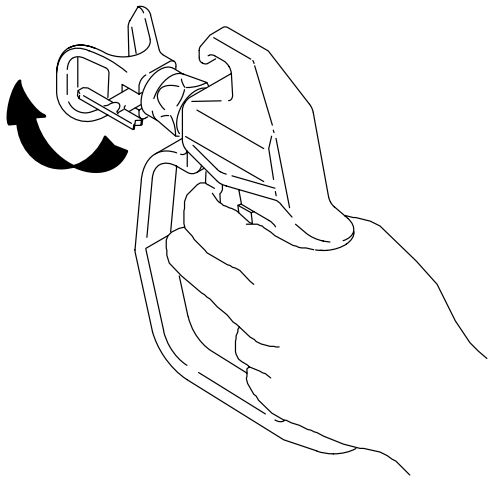


Fig. 6

0278

16. *If the tip is still clogged, lock the trigger safety lever, shut off and unplug the sprayer, and open the bypass valve one turn **counterclockwise**. Disassemble the tip in the reverse order of assembly (see manual 307–848). Thoroughly clean all parts in a compatible solvent and inspect for wear or damage. Replace parts as needed and reassemble. Be sure to use a new seal and gasket when changing tips.*
17. *If you have a tip guard on your gun which is not self-clearing, follow step 12 on page 9.*
18. Spraying techniques are given on page 16.
19. Important maintenance procedures are given on pages 12, 13, and 14.

[illegible]

Maintenance

⚠ CAUTION

Thorough flushing and proper maintenance are essential to keep the sprayer working properly and avoid costly damage to the sprayer or the object being sprayed.

Diaphragm Failure: Always replace the diaphragm after every 500 hours of operation (once every 4 to 6 months). The diaphragm weakens with use. If the diaphragm ruptures, hydraulic oil and paint may mix, damaging the sprayer and/or the surface of the object being sprayed may be damaged.

Follow the Maintenance Intervals outlined below.

3. Check to be sure the trigger safety lever is locked. Remove the spray tip from the gun. Unlock the safety lever. Hold a metal part of the gun firmly to the side of a grounded metal pail. Close the bypass valve. Trigger the gun into the pail. Turn on the sprayer. Watch the side of the pail for solvent to appear. Then release the gun trigger. Turn off the sprayer.
4. With the bypass valve closed, turn on the sprayer, trigger the gun into the flushing pail and allow the solvent to circulate through the hose and gun for two to three minutes, using the lowest possible pressure. See Fig. 8. Release the gun trigger and lock the safety lever. Turn off the sprayer.

Maintenance Intervals

Flushing	Immediately after each use.
Lubricate the intake valve.	Immediately after each use.
Tighten the paint pump screws and the inlet valve.	1. After the first 3 to 5 hours of operation. 2. After the next 3 to 5 hours of operation. 3. Each 25 hours thereafter (about weekly).
Check or change the hydraulic oil.	1. Check the oil after each use of the sprayer. 2. Change the oil after the first 20 hours of operation. 3. Change the oil each 50 hours thereafter (about twice monthly).
Replace the diaphragm.	After every 500 gallons of paint sprayed (4 to 6 months).

Flushing Procedure

1. Shut off the sprayer. Lock the gun trigger safety lever. Open the bypass valve ONE turn **counterclockwise**. Raise the paint pump just above the paint and turn on the sprayer to drain the paint. Now turn off the sprayer. See Fig. 7.
2. Place the paint pump in a grounded flushing pail of solvent.

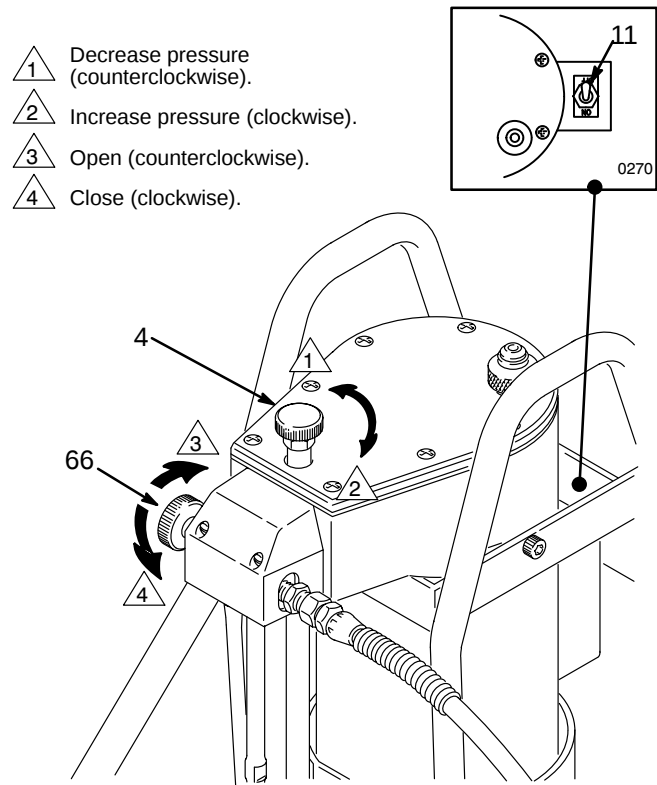


Fig. 7

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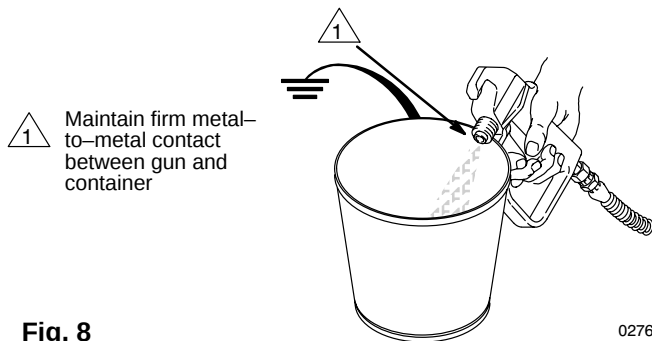


Fig. 8

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Maintenance

5. Open the bypass valve (66) ONE turn **counter-clockwise**.
6. Raise the paint pump above the solvent, turn on the sprayer, and allow the pump to run itself dry. Turn the sprayer OFF.
7. Using a clean pail of water or solvent, and the lowest possible pressure, flush again to be sure all paint particles are removed.
8. Remove the paint strainer and clean it thoroughly.
9. Now lubricate the inlet valve.
3. Set the sprayer upright. Increase the pressure control setting half way. Turn on the sprayer for a few seconds, then turn it OFF.
4. Now tighten the paint pump screws (25) and the inlet valve (26).

Lubricate the Inlet Valve. See Fig. 9.

1. Follow the **Pressure Relief Procedure** on page 8. Remove the inlet screen.
2. Turn the sprayer over. Press down lightly on the stem (A) of the inlet valve (26) with a small screwdriver. Pour about a teaspoon of mineral spirits or solvent into the valve, then remove the screwdriver.

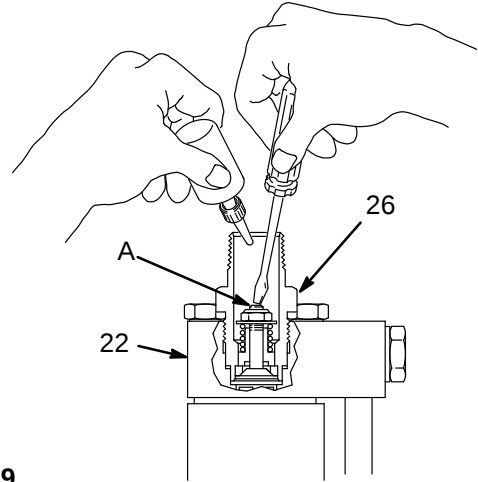


Fig. 9

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The maintenance procedure is continued on the next page.

Maintenance

Tighten the Paint Pump Screws and Inlet Valve

See Fig. 10.

1. Follow the **Pressure Relief Procedure** on page 8.
2. Torque the four screws (25) on the paint pump (22) to 170–200 in-lb (19–23 N.m).
3. Torque the inlet valve (26) to 320–360 in-lb (36–41 N.m).

Check and/or Change the Hydraulic Oil

See Fig. 11.

1. Follow the **Pressure Relief Procedure** on page 8.
2. Remove the fill cap (5). The oil should be 1 inch (25 mm) from the top of the plate. If the oil is low, add oil as necessary. Use only Graco lightweight hydraulic oil, part no. 218–797. Reinstall the fill cap, hand tight, if you are not going to change the oil.
3. To change the oil, turn the sprayer over and drain the oil through the fill cap hole.

1. Lubricate the threads.
2. Torque to 170–200 in-lb (19–23 N.m).
3. Torque to 320–360 in-lb (36–41 N.m).

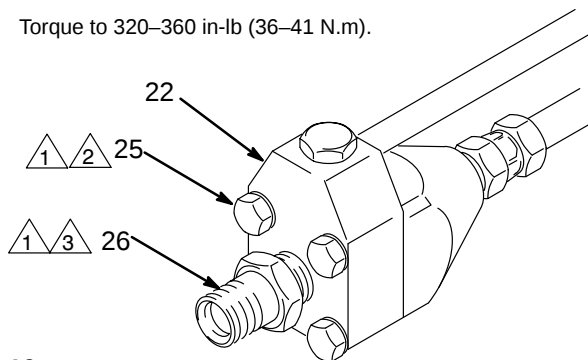


Fig. 10

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⚠ CAUTION

Whenever you remove the fill cap, be very careful not to let any dirt, paint particles, or other contaminants get into the hydraulic system. Contaminants can cause damage to the hydraulic system.

4. Fill the hydraulic pump housing with 16.5 ounces (55 ml) of Graco lightweight hydraulic oil. Reinstall the fill cap.
5. Plug in the sprayer. Turn the pressure control (4) fully **counterclockwise** (no pressure). Turn on the sprayer and let it run for two minutes to fill the hydraulic system. Increase the pressure to the maximum and turn the sprayer on and off four times to help rid the hydraulic system of air.

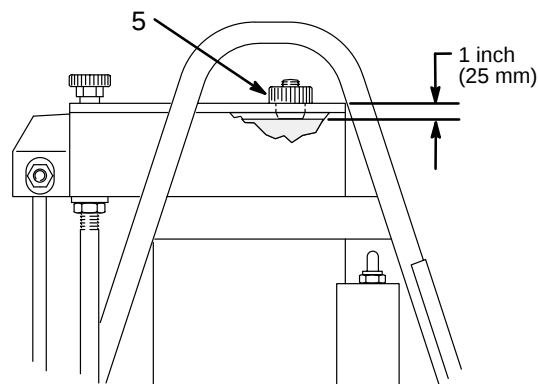


Fig. 11

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Application Methods

Always hold the gun perpendicular to the surface and keep the gun at an even 12 to 14 inches (300 to 356 mm) from the surface you are spraying. See Fig. 12.

Begin moving the gun in a horizontal direction at a steady rate. Start the spray stroke off the target surface and pull the trigger *as the gun is moving*. Then, while the gun is still moving, and as you approach the other edge, release the trigger. This method avoids excess paint build-up at the end of each stroke.

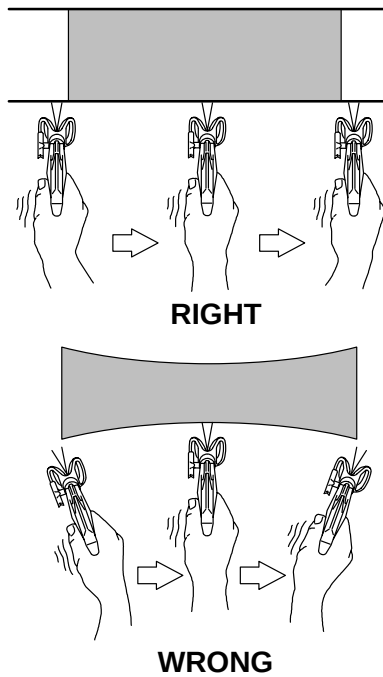


Fig. 12

The correct speed for moving the gun will allow a full, wet coating to be applied without runs or sags. Lapping each stroke about 50% over the previous stroke produces uniform paint thickness. Spraying in a uniform pattern alternately from right to left and then left to right, provides a professional finish. See Fig. 13.

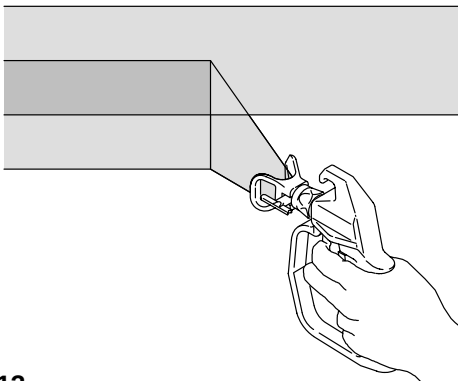


Fig. 13

The best way to control the rate of coverage is with the gun tip size. A small tip orifice applies less paint. A larger tip orifice applies more paint. The width of the pattern depends on the fan pattern of the tip you choose.

Do not try to increase coverage by increasing the fluid pressure! Using the lowest pressure necessary to get the results you want will help prolong the life of your sprayer and minimize paint lost by overspray.

For interior corners, such as on a bookcase or inside a cabinet, aim the gun toward the center of the corner to spray. By dividing the spray pattern this way, the edges on both sides are sprayed evenly. See Fig. 14.

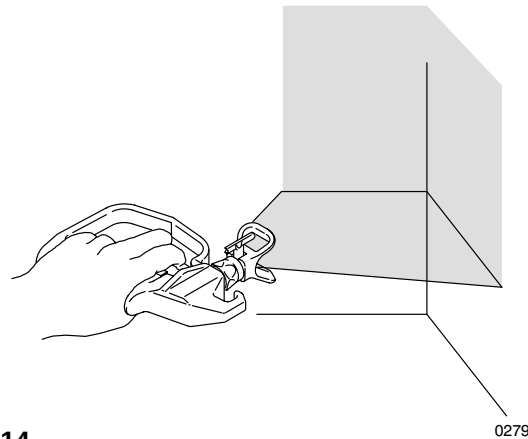


Fig. 14

If there is a wind, angle the spray pattern into the wind to minimize drifting. Paint from the ground to the roof.

To avoid getting paint on these objects:

Shrubs. When next to the house, tie back shrubs from the surface to be painted with rope and stakes. Then cover them with a canvas dropcloth as the painter approaches the area. Remove the canvas dropcloth as soon as the area is painted to prevent possible damage to the shrubs.

Concrete walks. If the walkways will be walked on, cover them with a canvas dropcloth to avoid slipping. Otherwise a plastic cloth is all that is needed.

Electrical outlets and lamps. Protect electrical outlets with masking tape. Cover lamps with plastic bags secured with masking tape.

Nearby objects. Move objects such as automobiles, picnic tables, lawn furniture, etc. upwind of the surface to be sprayed. In the case of a nearby home, make a protective barrier by hanging plastic between two long poles.

Troubleshooting

WARNING



INJECTION HAZARD

To reduce the risk of serious injury, follow the illustrated **Pressure Relief Procedure** warning on page 8 whenever you are instructed to relieve pressure.

NOTE: Repairs, other than those for which instructions are given on page 19, should be performed by a trained and qualified repair agency.

NOTE: If your sprayer is not operating well, or will not operate at all, check for obvious problems first. Follow the **Startup** procedure exactly (see page 8). Then if the sprayer won't start, use the Troubleshooting Chart for help in identifying the possible cause.

NOTE: Remember, taking the time after each use of the sprayer to perform all of the maintenance procedures given on pages 12, 13, and 14 will help prevent down time and costly repair bills.

PROBLEM	CAUSE	SOLUTION
Poor spray pattern	Spray tip worn Paint too thick	Change tip Thin, try larger tip
Spray gun won't shut off	Worn ball Worn diffuser Paint build-up between needle and diffuser	Repair gun; order kit no. 218-588 Replace gun Disassemble and clean gun
Spray gun leaks	Worn seal or loose fluid fitting	Repair gun; order Kit no. 218-588; tighten fluid fitting.
Spray gun won't spray, or low output from gun	Paint supply empty Spray tip clogged Gun filter, if used, is clogged	Refill and reprime system. Use Reverse-A-Clean feature to clear tip clog; see page 10 Clean or replace.
Sprayer will not start	Sprayer not plugged in ON/OFF switch turned off Sprayer left pressurized when shut off Motor overheated Blown building fuse or circuit breaker tripped No voltage or low voltage in electrical outlet Damaged power supply cord or extension cord, or wrong type of extension cord Starter switch (18a) damaged Motor worn or damaged	Plug in. Turn switch on. Relieve pressure first, then start. Shut off, relieve pressure, allow to cool NOTE: Sprayer restarts automatically when cool if it is left on Replace or reset Test the outlet or try plugging sprayer into another outlet Return for repair; use only 3 wire, 16 gauge (minimum) extension cord with a 3 prong plug and a maximum length of 100 feet (30 m). Replace; see page 19. Return for repair
Motor runs but sprayer won't run	Air in diaphragm housing	Bleed air

PROBLEM	CAUSE	SOLUTION
Sprayer starts but will not suck paint	Paint supply empty Inlet screen clogged Inlet valve stuck or damaged Outlet valve stuck Air trapped in hydraulic system Hydraulic oil level low or empty Wrong grade of hydraulic oil or wrong fluid in hydraulic system Inlet valve not tight Damaged diaphragm	Refill and prime pump Clean See page 19. See page 19. See page 19, Diaphragm , step 9 See page 14. Use only Graco approved hydraulic oil, part no. 218–797 Tighten; see page 14. Replace; see page 19.
Sprayer sucks paint but does not build up pressure	Pressure control valve not turned up Outlet valve stuck, dirty or had worn parts Hydraulic oil low Inlet valve leaks Damaged diaphragm Damaged bypass valve Damaged hydraulic system Damaged paint pump	Adjust See page 19. See page 14. See page 19. Replace; see page 19. Replace. Return sprayer for repair. Replace.
Sprayer sucks paint, builds pressure, but pressure drops when gun is triggered	No spray tip on gun Spray tip orifice too large for the paint or worn tip Inlet screen clogged Optional gun filter clogged Optional gun filter screen too fine for type of paint Paint too thick Worn outlet valve Leaking bypass valve Worn or damaged inlet valve Worn or damaged pressure control valve	Shut off sprayer and install tip Try a smaller tip or a new tip Clean Clean or replace Install larger mesh filter or strain and thin the paint Thin and/or strain Replace; see page 19. Replace. See page 19. See page 19.
Pressure fluctuations	Outlet valve stuck, dirty or worn Leaking or dirty bypass valve Dirty, leaking, worn or damaged inlet valve Dirty pressure control knob Damaged diaphragm, or paint pump, or hydraulic system	See page 19. Replace. Replace; see page 19. Clean or replace; see page 19. Return for repair.
Paint in hydraulic system	Ruptured diaphragm	Return for repair.
Hydraulic oil in paint	Ruptured diaphragm	Return for repair.

Service

Repairs, other than those for which instructions are given below, should be performed by a trained and qualified repair agency.

 WARNING	
	INJECTION HAZARD
	To reduce the risk of serious injury, follow the illustrated Pressure Relief Procedure warning on page 8 whenever you are instructed to relieve pressure.

Inlet Check Valve. See Fig. 15.

1. Unscrew the inlet check valve (26) from the paint pump (22).
2. Clean the gasket (26a), the inlet valve (26), and the paint pump (22) threads and check for erosion. If any of the parts are eroded, replace them.
3. Be sure the threads in the paint pump are clean.
4. Lubricate the threads of the inlet valve with petroleum jelly. Install the gasket on the valve, then install the valve and torque it to 320–360 in-lb (36–41 N.m).

Outlet Check Valve. See Fig. 15.

1. Unscrew the plug (28d) and the housing (28b).
2. Use a pick, such as a dentist's pick, to remove the seal (28a) from the paint pump (23). The seal may be hard to remove. **DO NOT LEAVE THE SEAL IN THE PAINT PUMP HOUSING.**
3. Clean the parts thoroughly, including the threads in the pump, with a compatible solvent. Check all parts for wear or damage and replace as needed.
4. Lubricate the threads of the housing (28b) and plug (28d).
5. Install a NEW seal (28a) in the pump housing. ALWAYS replace the seal (28a). Do not try to reuse the old seal as it will be deformed.

 CAUTION
Be sure you do not install a new seal until the old one is removed. Having two seals in the valve will cause performance problems.

6. Install the housing (28b) and torque to 14–17 N.m.

7. The last coil on one end of the spring is turned in. Place this end over the stud in the plug (28d). Install the ball (28e), washer (28f) and plug, and torque to plug to 32–34 N.m.

Pressure Control. See Fig. 15.

When removing the pressure control (4) to check or clean it, always replace the seal (4a). When replacing the pressure control, torque the new control (4) to 125–150 in-lb (14–17 N.m).

Starter Switch. See Fig. 15.

Remove the cover of the switch box. Remove the two screws holding the starter switch (18a). Remove the old switch and install a new one.

Diaphragm. See Fig. 15.

8. Remove the inlet strainer (27). Remove the four paint pump screws (25) and lockwashers (24).
9. Remove the bypass valve (66) and the fluid outlet nipple (67), and then remove the screws (35) and shield (3).
10. Remove the screw (36) and lockwasher (37) from the bracket (38).
11. Pull the paint pump assembly away from the hydraulic housing (20) and remove the old diaphragm (21).

 CAUTION
Never start the electric motor with the inlet valve (26) removed to avoid damaging the diaphragm.

 CAUTION
Be careful not to get any dirt or paint on the new diaphragm or the hydraulic housing. Contaminants in the hydraulic system can cause the sprayer to malfunction and result in costly damage to the sprayer.
DO NOT TAMPER with the nut (C). The nut is factory set to hold the spring to a specific dimension.

12. Check the gasket (22a) for wear or damage and replace it if needed. Clean the top of the paint pump and the hydraulic housing thoroughly.
13. Install the new diaphragm assembly (21), lubricate the internal threads of the housing (20), and reassemble the parts.

Service

14. Lubricate the screws (25) and then install and torque them to 170–200 in-lb (19–23 N.m).

15. Check the hydraulic oil level and add Graco-approved oil as necessary until the level is 1 inch (25 mm) from the top of the plate. See Fig. 11.

⚠ CAUTION

Whenever you remove the paint pump screws, torque them as instructed above, and then retorque them after 3 to 5 hours of operation.

16. Turn the pressure control fully **counterclockwise** (no pressure). Plug in the sprayer and turn it on. Run the sprayer for two minutes to fill the hydraulic system. Increase the pressure to maximum and turn the sprayer on and off four times to help rid the hydraulic system of air.

- 1 Torque to 125–150 in-lb (14–17 N.m).
- 2 Apply sealant to the threads.
- 3 Lubricate the internal threads.
- 4 Torque to 125–150 in-lb (14–17 N.m).
- 5 Torque to 280–300 in-lb (32–34 N.m).
- 6 Lubricate the threads.
- 7 Torque to 320–360 in-lb (36–41 N.m).
- 8 Torque to 170–200 in-lb (19–23 N.m).
- 9 Do not alter the position of the nut.
- 10 The start switch is located in the switch box.

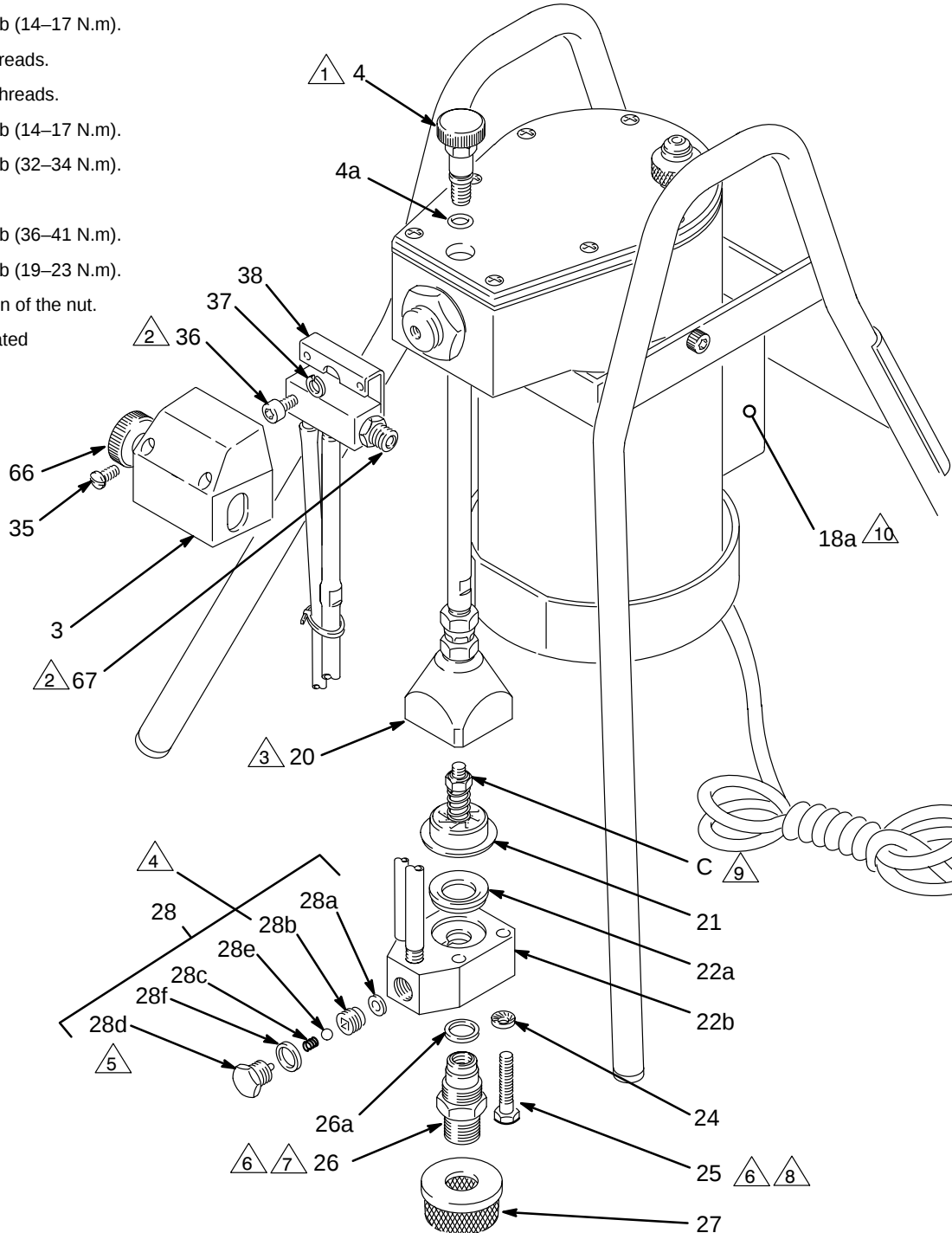


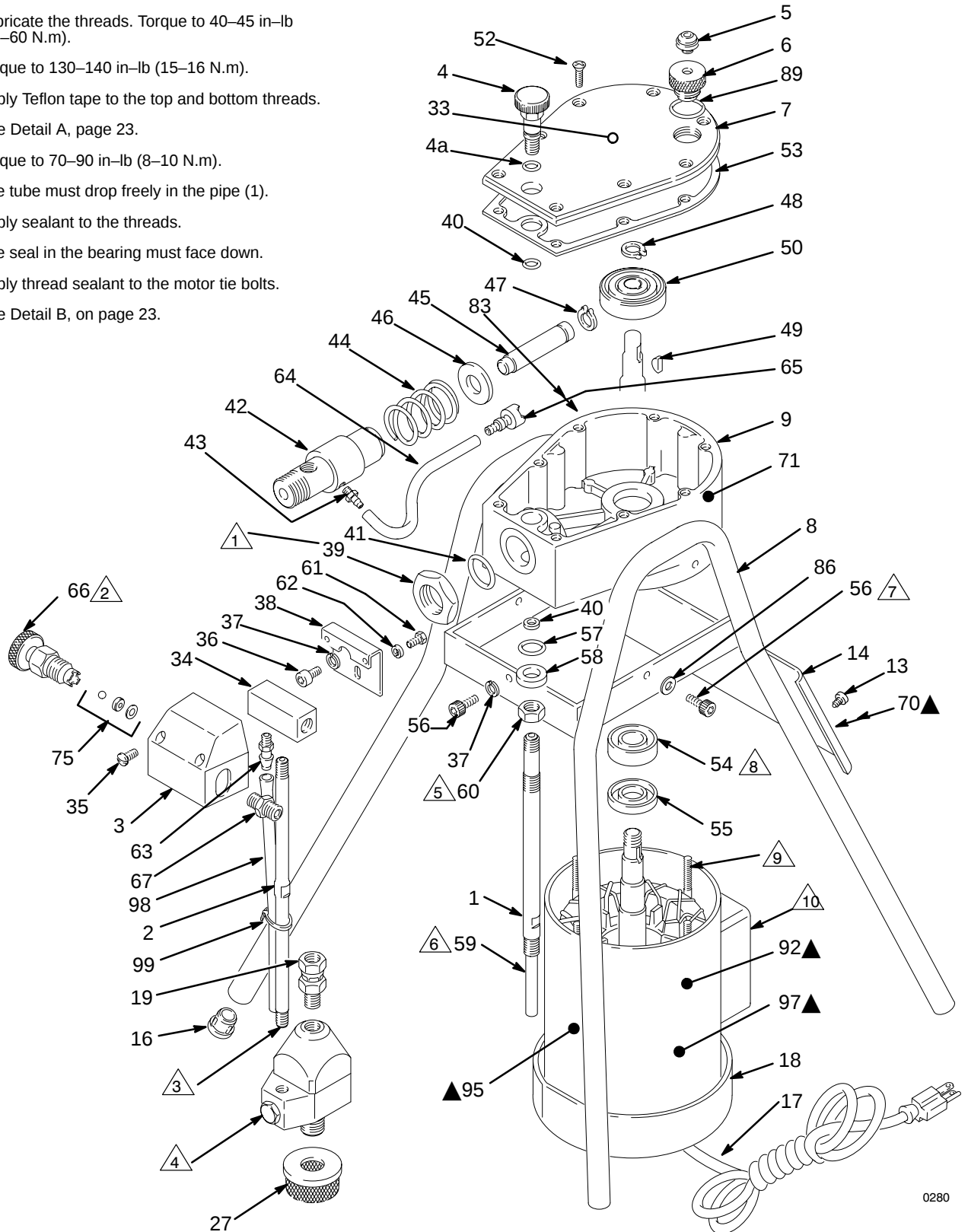
Fig. 15

0284

Parts

Model 223-635, Series C, with a hose and a gun.

- 1 Lubricate the threads. Torque to 40–45 in-lb (54–60 N.m).
- 2 Torque to 130–140 in-lb (15–16 N.m).
- 3 Apply Teflon tape to the top and bottom threads.
- 4 See Detail A, page 23.
- 5 Torque to 70–90 in-lb (8–10 N.m).
- 6 The tube must drop freely in the pipe (1).
- 7 Apply sealant to the threads.
- 8 The seal in the bearing must face down.
- 9 Apply thread sealant to the motor tie bolts.
- 10 See Detail B, on page 23.



0280

Parts

Model 218–796, Series E

Includes items 1 to 99

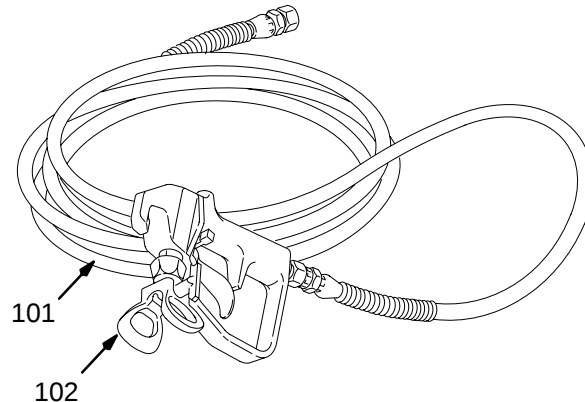
Model 218–501, Series C

Includes items 1 to 102

NOTE: Part numbers and drawings for items 10–12, 15, 18a, 20–26 and 28 are shown on page 23.

Ref. No.	Part No.	Description	Qty.
1	180–462	PIPE, pump, 5 gallon size	1
2	180–467	TUBE, paint, 5 gallon size	1
3	275–658	SHIELD	1
4	218–728	CONTROL, pressure <i>Includes replaceable item 4a</i>	1
4a	180–447	.SEAL	1
5	108–152	VALVE, plug, fill	1
6	180–983	PLUG, fill	1
7	275–637	COVER, pump housing	1
8	218–743	STAND, pump	1
9	180–396	HOUSING, motor	1
13	104–859	SCREW, pan head, No. 10 x 0.375"	2
14	180–931	SUPPORT, leg	1
16	108–175	PLUG	4
17	218–651	CORD SET, power, 60 Hz	1
18	185–635	MOTOR, electric, 1/2 HP, 115V, 60Hz, 1725 RPM, single phase <i>Includes 18a</i>	1
18a	110–900	. STARTER SWITCH	1
19	156–823	UNION, 1/4 npt(m) x 1/4 npt swivel	1
27	218–798	STRAINER	1
33	181–067	LABEL, identification	1
34	187–952	HOUSING, pressure control	1
35	105–335	SCREW, pan head, M4 x 0.7 x 10	2
36	107–530	CAPSCREW, M6 x 1.0	1
37	108–050	LOCKWASHER, spring, Sz 6	2
38	180–648	BRACKET, shroud	1
39	183–839	NUT, hex, M25 x 1.0	1
40	180–447	SEAL, washer	2
41	103–255	O–RING, cylinder	1
42	183–840	CYLINDER, pump	1
43	108–153	FITTING, hose, barbed	1
44	107–511	SPRING, compression	1
45	180–479	PISTON	1
46	180–480	WASHER, spring	1
47	107–517	RING, retaining, external	1
48	107–524	RING, retaining, external	1
49	107–513	KEY, woodruff	1
50	218–909	ECCENTRIC ASSY	1
52	108–042	SCREW, oval head, M4 x 14.0	8
53	180–650	GASKET, housing	1
54	107–518	BEARING, ball	1
55	107–519	SEAL, shaft	1
56	108–288	CAPSCREW, sch, M6 x 16	3
57	108–165	PACKING, o–ring, Buna–N	1
58	181–032	SEAL, tube	1
59	180–466	ROD, displacement, 5 gallon	1
60	108–151	NUT, hex, 9/16" thread	1
61	108–053	CAPSCREW, hex head, M4 x 0.7 x 10	1
62	107–584	WASHER, plain	1
63	108–154	FITTING, hose, barbed	1
64	180–996	TUBE, filter	1
65	180–998	FILTER, hydraulic oil	1
66	235–198	BYPASS VALVE KIT	1
67	191–872	ADAPTER, 1/8–27 npt to 1/4–18 npsm	1
69	185–653	LABEL, designation	1
70▲	185–952	LABEL, DANGER, English	1
71	181–066	LABEL, identification	1
75	224–771	SEAT KIT	1
81▲	179–761	TAG, warning	1
83	181–100	LABEL	1
86	100–086	WASHER, plain, 3/16 inch	1
89	108–284	O–RING	1
90	218–933	SPRING SET <i>Includes 2 replacement springs, same as item 28c</i>	1
92▲	181–325	LABEL, Warning	1
95▲	186–126	LABEL, Warning	1
97▲	185–955	LABEL, DANGER, French	1
98	186–549	TUBE, drain	1
99	102–478	TIE, strap	1
101	223–540	HOSE, nylon, 1/4 inch ID, cpld 1/4 npsm, spring guards on both ends, 7.1 m (25')	1
102	220–730	GUN, spray <i>See manual 307–821</i>	1

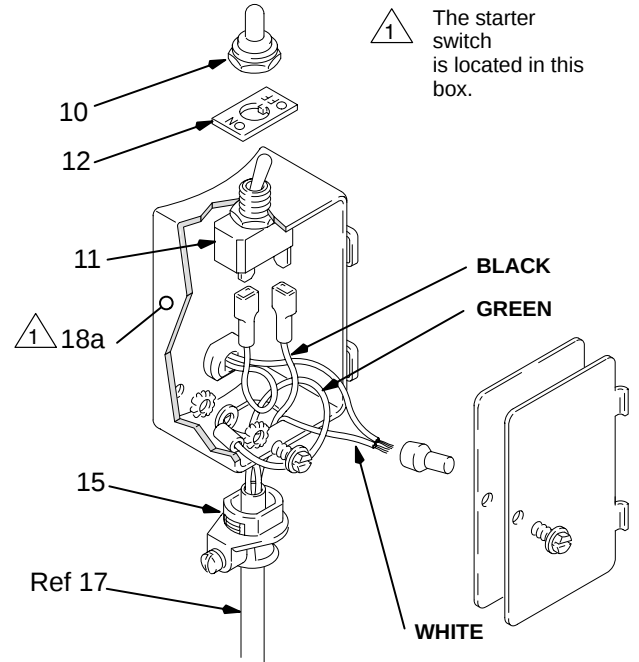
▲ Replacement Danger and Warning labels, tags and cards are available at no cost.



Parts

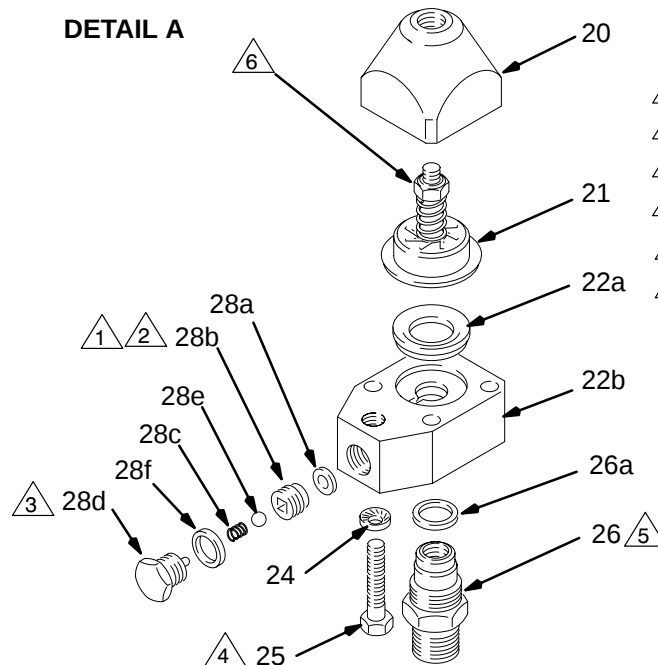
Ref. No.	Part No.	Description	Qty.
10	105-659	TOGGLE BOOT	1
11	105-679	SWITCH, toggle	1
12	105-774	PLATE, switch, ON/OFF	1
15	106-013	STRAIN RELIEF BUSHING	1
18a	110-900	.STARTER SWITCH	1
20	180-406	HOUSING, diaphragm	1
21	218-727	DIAPHRAGM ASSEMBLY	1
22	224-624	PUMP HOUSING KIT	1
		<i>Includes 22a, 22b</i>	
22a	187-185	GUIDE, diaphragm	1
22b	187-339	HOUSING, pump	1
24	109-042	WASHER, spring, rib	4
25	107-514	CAPSCREW, hex head, M8 x 1.25 mm	4
26	218-726	VALVE, inlet check	1
		<i>Includes replaceable item 26a</i>	
26a	180-446	.GASKET	1
28	236-954	OUTLET CHECK VALVE ASSY	1
		<i>Includes items 28a-28f</i>	
28a	180-455	.SEAL, washer	1
28b	218-968	.HOUSING, seat, valve	1
28c	112-619	.SPRING, compression	1
28d	218-505	.PLUG, ball stop	1
28e	112-618	.BALL, carbide	1
28f	180-454	.WASHER	1

DETAIL B



0282

DETAIL A



- 1 Lubricate the threads.
- 2 Torque to 125-150 in-lb (14-17 N.m).
- 3 Torque to 280-300 in-lb (32-34 N.m).
- 4 Torque to 170-200 in-lb (19-23 N.m).
- 5 Torque to 320-260 in-lb (36-41 N.m).
- 6 Do not alter the position of the nut.

0281

Technical Data

Power Requirements 120 VAC, 60 Hz,
1 Phase, 15 AMP minimum
Pressure Operating Range 0–3000 psi
(0–21.0 MPa, 0 – 210 bar)
Maximum Delivery 0.28 GPM (1.1 liter/min)
Power Cord No. 16 AWG, 3 wire,
8.5 feet (2.6 m) long
Inlet Paint Strainer 16 mesh

Fluid Outlet Nipple 1/4 npsm (m)
Weight – without hose and gun 33 lb (14.8 Kg)
Dimensions Height: 20 inch (508 mm)
Width: 17.5 inch (444.5 mm)
Depth: 17.5 inch (444.5 mm)
Wetted Parts Stainless Steel, Zinc-Plated Steel,
Carbide, Aluminum, Nylon, Delrin®, Monel

Delrin® is a registered trademark of the DuPont Company

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.**

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

The Graco Warranty and Disclaimers

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

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, gas engines, 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.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

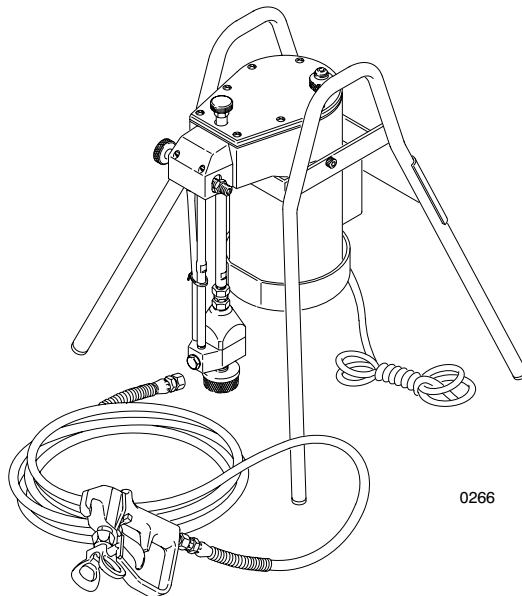
The parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.*

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

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

PRINTED IN U.S.A. 307-711 January 1985, Revised August 1997



Model 218-796, Basic Sprayer
Model 218-501, Complete Sprayer
With 25 ft (7.6 m) 1/4 in. I.D. hose, and Black Max™ gun with RAC IV
DripLess™ Tip Guard and 513 SwitchTip™

Technical Data

Maximum Working Pressure 3000 psi (210 bar)
Electric Motor 1/3 HP, totally enclosed,
fan cooled, industrial grade
Power Requirements 120 VAC, 60 Hz,
1 phase, 15 amp
Power Cord 3-strand, no. 16 AWG wire,
8.5 ft (2.6 m)
Extension Cord No. 14 AWG, 3 wire,
up to 100 ft (30 m)
Delivery 0.28 gpm (1.06 lpm)
Tip Size one gun to 0.015 inch tip
with latex at 2000 psi (138 bar)
Inlet Paint Strainer 16 mesh (1190 micron)
reusable stainless steel screen
Fluid Outlet Nipple 1/4 npsm(m)
Pump Material stainless steel, zinc-plated steel,
carbide, aluminum, nylon, Delrin®, monel

Spray Hose Requirements grounded,
non-wire braid, spring guards on both ends,
up to 100 feet (30 m) with 30 feet (9.1 m)
rise in elevation using 3/8 inch (10 mm) hose

Application

Use with all common paints, stains, and architectural coatings. **Do not** use with solvents such as methylene chloride or other HHCs.

U.S. patent numbers 4,616,982; 2,165,591.

Foreign patents pending.

Dimensions

Height 20 in. (508 mm)
Length 17.5 in. (445 mm)
Width 17.5 in. (445 mm)
Weight (without hose or gun) 33 lb (14.8 kg)



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

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PRINTED IN U.S.A. 327-711 August 1995

TO PLACE AN ORDER, call
1-800-367-4023 Toll Free

FOR TECHNICAL ASSISTANCE, call
1-800-543-0339 Toll Free

3Z7-711

Rev B

E-Z REFERENCE

Supplement to instruction manual 307-711.

PT2500[®] Airless Paint Sprayer

⚠ WARNING



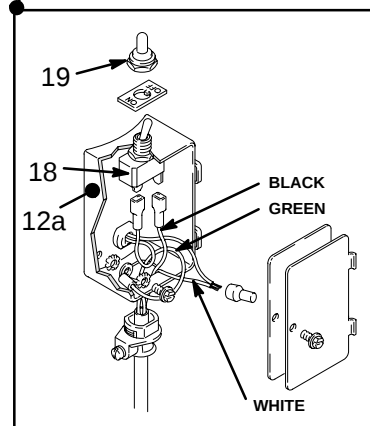
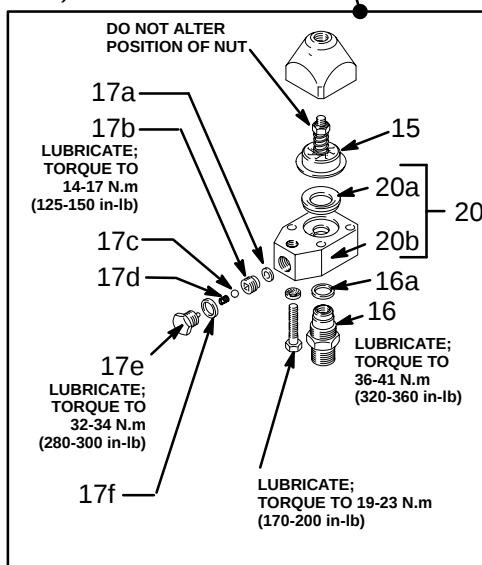
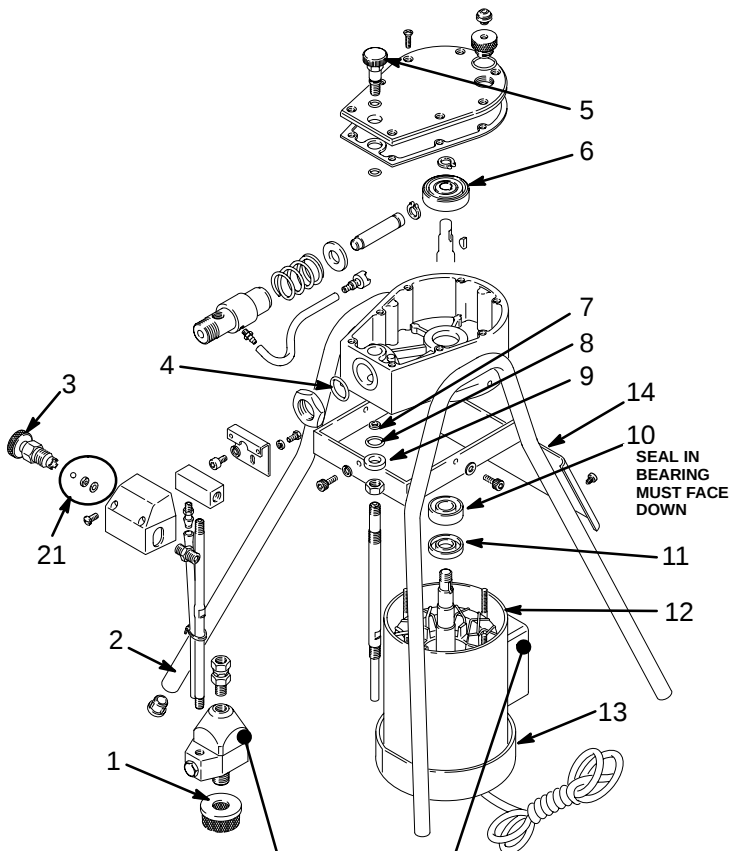
INJECTION HAZARD

This form is only a quick reference to the features and frequently ordered parts of this sprayer. To reduce the risk of serious injury, including fluid injection, while operating or repairing this sprayer, follow the warnings and instructions in manual 307-711.

Model 218-796, Series D

Ref

No.	Part No.	Description
1	218-798	Strainer
2	218-743	Pump Stand
3	235-198	Bypass Valve Kit <i>(includes item 21)</i>
4	103-255	O-ring
5	218-728	Pressure Control
6	218-909	Eccentric Assembly
7	180-447	Washer Seal
8	108-165	Packing O-Ring
9	181-032	Tube Seal
10	107-518	Ball Bearing
11	107-519	Shaft Seal
12	185-635	Motor
12a	110-900	Start Switch <i>(included with new motor)</i>
13	110-159	Fan for Doerr Motor
	110-154	Fan for Franklin Motor
14 ▲	185-952	Warning Label
15	218-727	Diaphragm Assembly
16	218-726	Inlet Check Valve
16a	180-446	.Gasket
17	236-954	Outlet Check Valve Assembly
17a	180-455	.Washer Seal
17b	218-968	.Valve Seat Housing
17c	112-618	.Carbide Ball
17d	112-619	.Compression Spring
17e	218-505	.Ball Stop Plug
17f	180-454	.Washer
18	105-679	Toggle Switch
19	105-659	Toggle Boot
20	224-624	Pump Housing Kit
20a	187-185	.Diaphragm Guide
20b	187-339	.Pump Housing
21	224-771	Seal Kit



▲ Extra danger and warning labels are available for free.