INSTRUCTIONS-PARTS LIST

GRACO

307-293
Rev. P
SUPERSEDES N

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

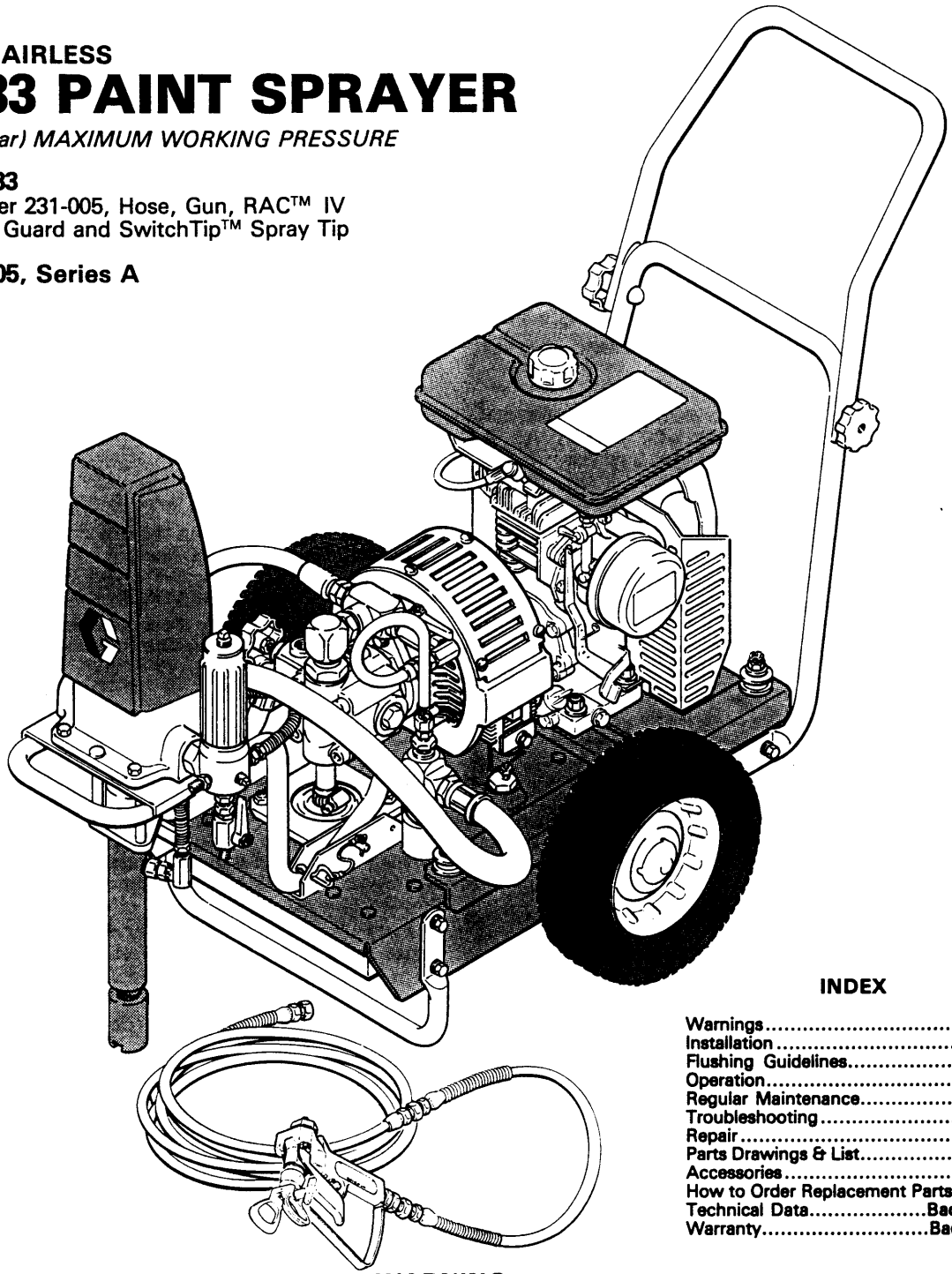
PORTABLE, AIRLESS

GH 433 PAINT SPRAYER

3000 psi (210 bar) MAXIMUM WORKING PRESSURE

Model 215-433
Includes Sprayer 231-005, Hose, Gun, RAC™ IV DripLess™ Tip Guard and SwitchTip™ Spray Tip

Model 231-005, Series A
Sprayer only



INDEX

WARNING

Hazard of Using Fluids Containing Halogenated Hydrocarbons
Never use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in this equipment. Such use could result in a serious chemical reaction, with the possibility of explosion, which could cause death, serious bodily injury and/or substantial property damage.

Consult your fluid suppliers to ensure that the fluids being used are compatible with aluminum and zinc parts.

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1444

WARNING

HIGH PRESSURE SPRAY CAN CAUSE SERIOUS INJURY. For professional use only. Observe all warnings. Read and understand all instruction manuals before operating equipment.

FLUID INJECTION HAZARD

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

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

ALWAYS have the tip guard on the spray gun when spraying.

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

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

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

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

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

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

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

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

Tip Guard
ALWAYS have the tip guard in place on the spray gun while spraying. The tip guard alerts you to the fluid injection hazard and helps reduce, but does not prevent, the risk of accidentally placing your fingers or any part of your body close to the spray tip.

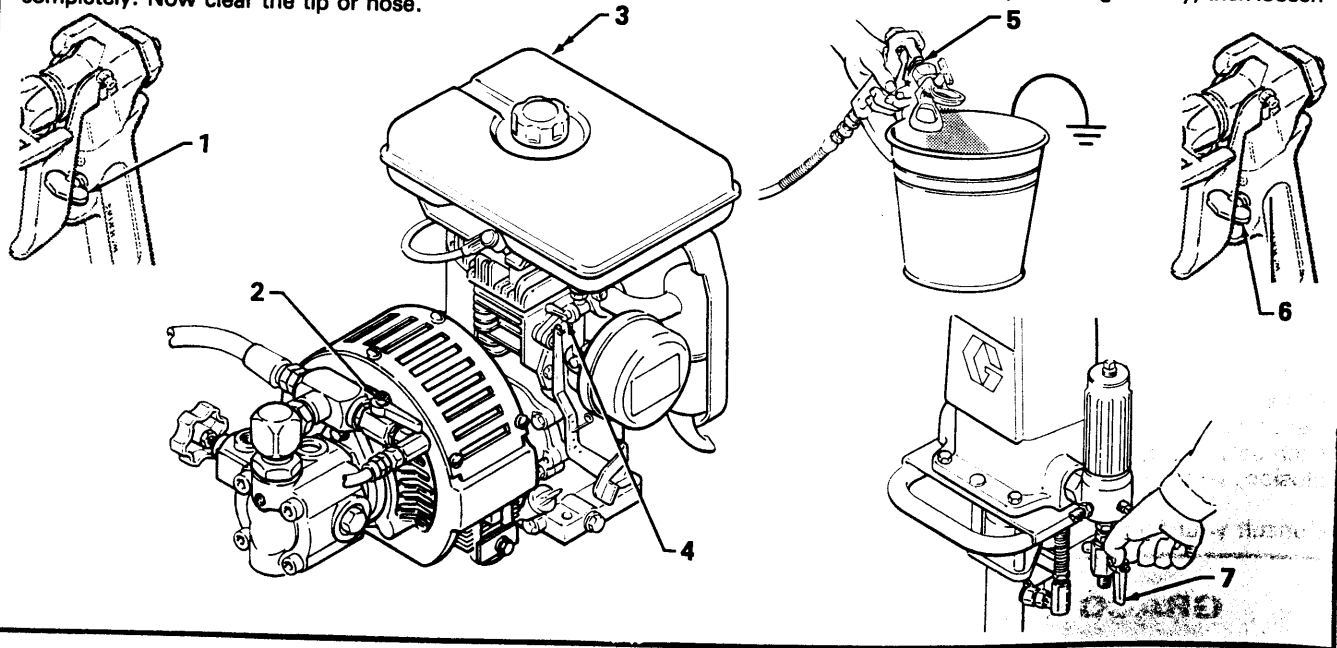
Trigger Guard
Always have the trigger guard in place on the gun when spraying to reduce the risk of accidentally triggering the gun if it is dropped or bumped.

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

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

Pressure Relief Procedure
To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure whenever you shut off the sprayer, when checking or servicing any part of the spray system, when installing, cleaning or changing spray tips, and whenever you stop spraying. (1) Engage the gun safety latch. (2) Open the bypass valve. (3) Depress the engine stop button. (4) Close the fuel shutoff valve. (5) Disengage the gun safety latch and hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure. (6) Engage the gun safety latch. (7) Open the drain valve, having a container ready to catch the drainage. (8) Leave the drain valve open until you are ready to spray again.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, VERY SLOWLY loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.



EQUIPMENT MISUSE HAZARD

General Safety

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

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

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

Read and follow the fluid and solvent manufacturer's literature regarding the use of protective clothing and equipment.

System Pressure

This sprayer can develop *3000 psi (210 bar) MAXIMUM WORKING PRESSURE.* Be sure that all spray equipment and accessories are rated to withstand the maximum working pressure of this sprayer. DO NOT exceed the maximum working pressure of any component or accessory used in the system.

Fluid Compatibility

BE SURE that all fluids and solvents used are chemically compatible with the wetted parts shown in the Technical Data on the back cover. Always read the fluid and solvent manufacturer's literature before using them in this sprayer.

HOSE SAFETY

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

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

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

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

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

Hose Grounding Continuity

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

MOVING PARTS HAZARD

Moving parts can pinch or amputate your fingers or other body parts. KEEP CLEAR of moving parts when starting or operating the sprayer. Follow the **Pressure Relief Procedure** on page 2 before checking or servicing the sprayer to prevent it from starting accidentally.

IMPORTANT

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

FIRE OR EXPLOSION HAZARD

Static electricity is created by the high velocity flow of fluid through the pump and hose. If every part of the spray equipment is not properly grounded, sparking may occur, and the system may become hazardous. Sparking may also occur when plugging in or unplugging a power supply cord. Sparks can ignite fumes from solvents and the fluid being sprayed, dust particles and other flammable substances, whether you are spraying indoors or outdoors, and can cause a fire or explosion and serious bodily injury and property damage. Always locate the sprayer at least 20 feet (6 m) away from the spray area. Do not plug in or unplug any power supply cords in the spray area when there is any chance of igniting fumes still in the air.

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

Grounding

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

1. *Sprayer:* connect the ground wire and clamp (provided) to a true earth ground. See Fig 1.

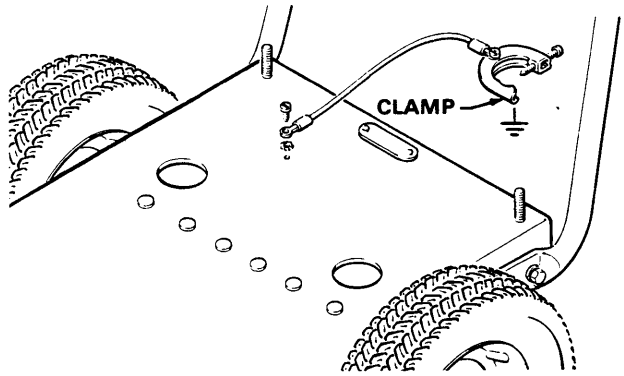


Fig 1

2. *Fluid hoses:* use only grounded hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity. Refer to the section **Hose Grounding Continuity.**
3. *Spray gun:* obtain grounding through connection to a properly grounded fluid hose and sprayer.
4. *Object being sprayed:* according to local code.
5. *Fluid supply container:* according to local code.
6. *All solvent pails* used when flushing, 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.
7. *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.

Flushing Safety

Reduce the risk of fluid injection injury, static sparking, or splashing by following the specific flushing procedure given on page 6 of this manual. Follow the **Pressure Relief Procedure** on page 2, and *remove the spray tip before flushing.* Hold a metal part of the gun firmly to the side of a *grounded metal* pail and use the lowest possible fluid pressure during flushing.

GAS ENGINE HAZARDS

NEVER fill the fuel tank while the engine is running or hot. Fuel spilled on a hot surface can ignite and cause a fire. *ALWAYS* pour fuel in slowly to avoid spilling.

NEVER operate the engine in a closed building unless the engine exhaust is piped outside. The exhaust contains carbon monoxide, a poisonous, odorless and invisible gas which can cause serious illness and even death if inhaled.

NEVER alter the throttle setting which is factory set at the maximum full load engine speed of 2800 RPM. Tampering with this can damage the sprayer and will void the warranty.

TERMS

WARNING: Alerts user to avoid or correct conditions that could cause bodily injury.

CAUTION: Alerts user to avoid or correct conditions that could cause damage to or destruction of equipment.

NOTE: Identifies essential procedures or extra information.

TYPICAL INSTALLATION

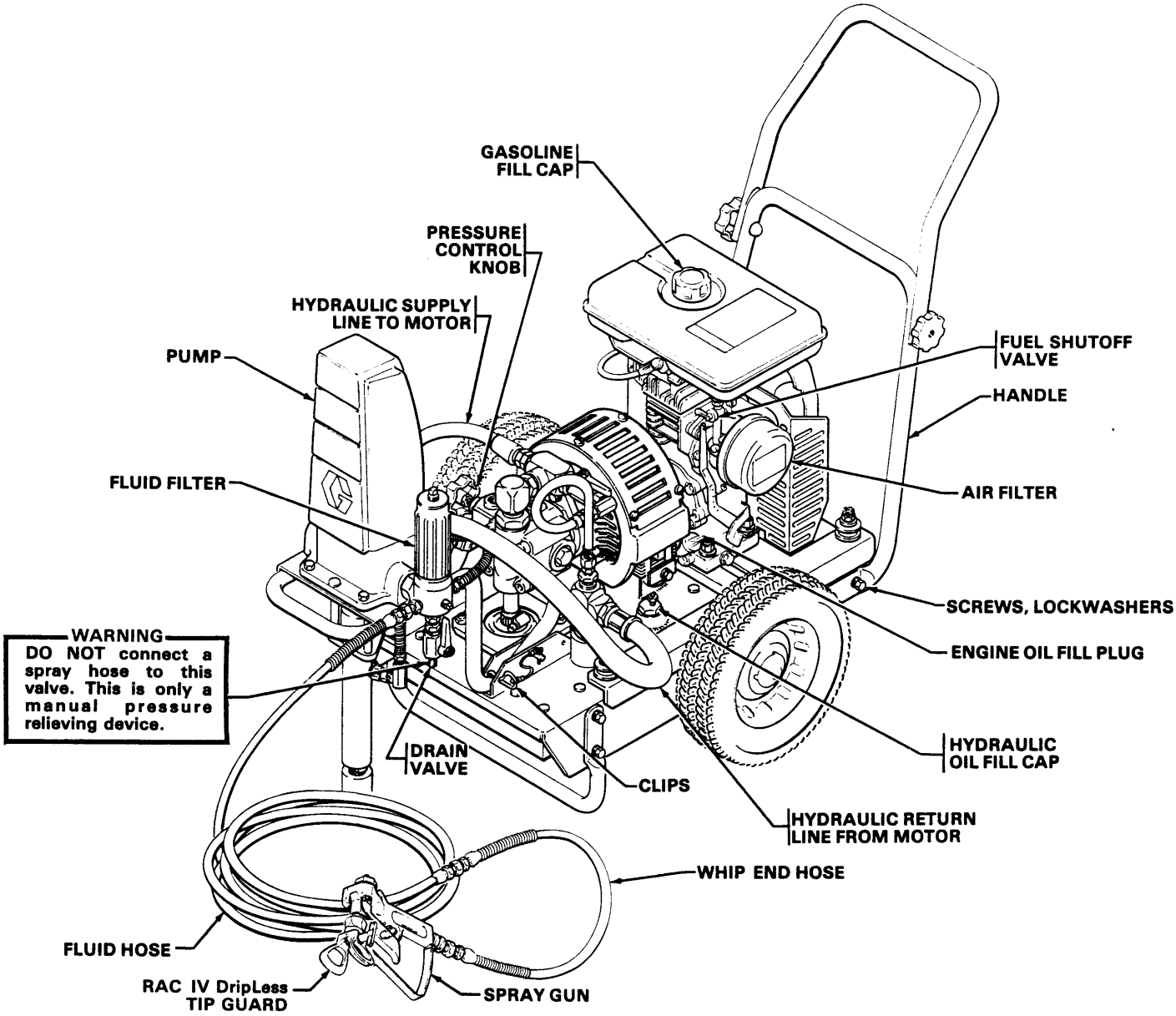


Fig 2

SETUP

NOTE: Numbers in parentheses refer to the parts list on page 19.

1. **Install the handle** (58) on the back of the cart, using the screws (33) and lockwashers (9) provided.

   Pull out the two clips (23) from the pump support pivots and swing the pump (110) down. Put the clips into the forward holes to secure the pump.

2. **Install the accessory suction tube,** if used. See page 20.

3. **Connect the Hose and Gun**
   a. Remove the plastic cap plug from the fluid filter (88) outlet nipple and screw on the fluid hoses (170a, 170b) and the spray gun (170c).

   b. Don't use thread sealant on the swiveling nut of hose couplings, and don't install the spray tip yet!

NOTE: Use thread sealer on all male threads except at swivel unions. Swivel unions are made to self-seal, and using thread sealer prevents the swivel from turning freely to ease connecting or disconnecting parts.

4. **Fill the Packing Nut/Wet Cup** (141) 1/4 full with Graco Throat Seal Liquid (TSL), supplied.

5. **Check the Hydraulic Oil Level**
   a. Unscrew the oil fill cap. See Fig 3. The dipstick is attached to the cap. Wipe off the dipstick and set it in the hole, but do not thread it in place. The oil should be up to the full line on the dipstick.

CAUTION

To prevent damage to the cooling system and hydraulic pump, use *only* Graco Hydraulic Oil, part no. 169-236 (5 gal./*20 liter*) or part no. 207-428 (1 gal./*3.8 liter*). Other types of hydraulic oil may damage the hydraulic components.

   b. Add oil as needed to the proper level. A completely full hydraulic system contains about 2-1/2 gallons (9.5 liter) of oil.

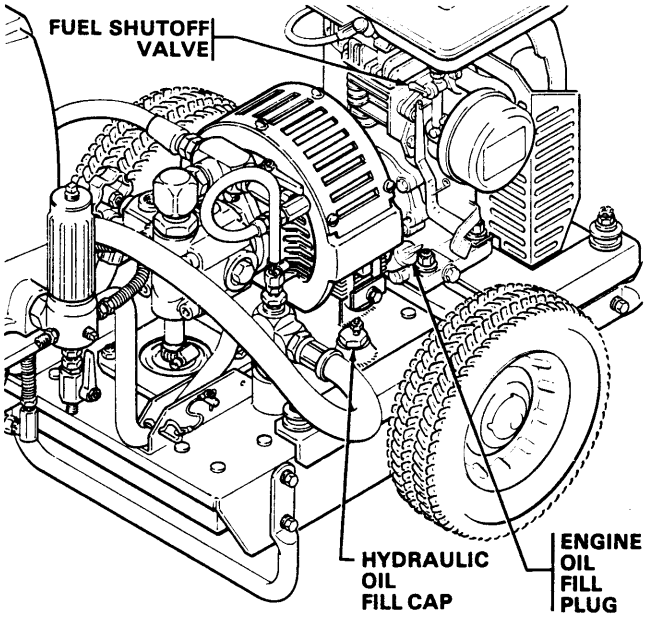


Fig 3

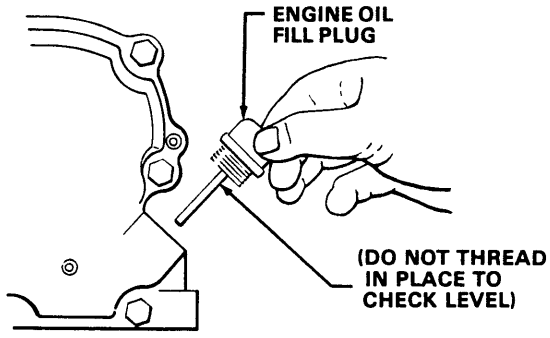


Fig 4

6. **Check the Engine Oil Level**
   a. Unscrew the oil fill plug. See Fig 3 and 4. The dipstick is attached to the plug.
   b. Without threading the plug into place, check to be sure the oil is up to the top mark on the dipstick.
   c. If oil is needed, see the chart below for the recommended oil type and weight.

RECOMMENDED ENGINE OIL: Use a high quality, detergent oil classified "FOR SERVICE SD or SE", for regular use and for the breaking-in of a new engine.

GRADE OF ENGINE OIL CHART	
SEASON OR TEMPERATURE	GRADE OF OIL
Spring, Summer, Autumn	SAE 30
30°F to 0° Winter	SAE 10W-30

Crankcase capacity: 1-1/4 pints (0.6 liters)

7. **Fill the Fuel Tank**

WARNING

Fuel spilled on a hot surface can cause a fire or explosion and cause serious bodily injury and property damage. Always shut off the engine and let it cool before filling the tank, and carefully follow steps 7.a. to 7.c., below, being sure not to spill any fuel.

   a. Close the fuel shutoff valve. See Fig 3.
   b. Use only clean, fresh well-known brands of *unleaded regular grade gasoline.* The minimum octane requirements are 86 octane in the U.S.A. and 96 octane elsewhere.
   c. Remove the gasoline fill cap and fill the tank, which holds about 1 gallon (3.8 liters) of fuel. Be sure the air vent in the fill cap is not plugged so fuel can flow to the carburetor, then replace the cap. See Fig 2.

8. **Grounding**

WARNING

To reduce the risk of static sparking, fire or explosion which can result in serious bodily injury and property damage, always ground the sprayer and system components, and the object being sprayed as instructed under **FIRE OR EXPLOSION HAZARD** on page 3.

9. **Flush the sprayer** to remove the oil which was left in the pump after factory testing to protect the pump from corrosion. See "Flushing Guidelines" on page 6.

FLUSHING GUIDELINES

When to Flush

1. **New Sprayer.** Your new GH 433 Sprayer was factory tested in lightweight oil which was left in to protect pump parts from corrosion.
   Before using oil-base paint, flush with mineral spirits only.
   Before using water-base paint, flush with mineral spirits, followed by soapy water, then a clean water rinse.
2. **Changing Colors.** Flush with a compatible solvent such as mineral spirits.
3. **Changing from water-base to oil-base paint.** Flush with soapy water, then mineral spirits.
4. **Changing from oil-base to water-base paint.** Flush with mineral spirits, followed by soapy water, then a clean water flush.
5. **Storage.**
   Water-base paint: flush with water, then mineral spirits and leave the pump, hose and gun filled with mineral spirits to prevent corrosion. Follow the **Pressure Relief Procedure Warning** on page 2 or 8.
   Oil-base paint: flush with mineral spirits. Follow the **Pressure Relief Procedure Warning** on page 2 or 8.
6. **Startup after storage.**
   Before using water-base paint, flush out mineral spirits with soapy water and then a clean water flush.
   When using oil-base paint, flush out the mineral spirits with the fluid to be sprayed and the sprayer is ready to use.

How to Flush

WARNING

Follow the **Pressure Relief Procedure Warning** on page 2 or 8. Then remove the spray tip before flushing.

1. Be sure the gun safety latch is engaged, and there is *no* spray tip in the gun.
2. Pour enough clean, compatible solvent into a large, empty, *grounded metal* pail to fill the pump and hoses.
3. Place the accessory suction tube into the pail or tilt the sprayer back (it will support itself) and place the pail under the pump. Then tilt the sprayer forward to lower the pump into the pail.
4. Turn the pressure control knob *counterclockwise* until all spring tension is relieved. You will be able to feel it. The sprayer is now set at the lowest pressure setting. Turning the knob further will cause it to fall off. Tighten the knob locknut to set. See Fig 5.
5. Open the bypass valve. The lever will be parallel to the body of the valve. See Fig 5.

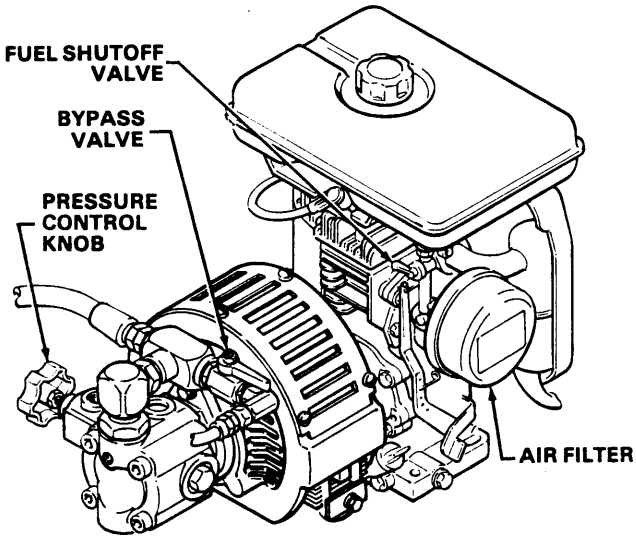


Fig 5

6. Open the fuel shutoff valve by screwing it out as far as it will go. See Fig 5.
7. Turn the choke off by turning the lever so it is horizontal. See Fig 6.
8. Brace one foot against the frame and gently pull the starter rope out until you feel it engage, then continue pulling all the way out and let it recoil slowly into the starter. Then, holding the starter rope firmly, rapidly pull the rope to start the engine. If it does not start after one or two attempts, open the choke a little more. If the engine floods, open the choke all the way and continue pulling the rope.

WARNING

Always hold the starter rope firmly while pulling or recoiling it to reduce the chance of being hit and injured by the rope or of jamming and damaging the starter assembly.

9. After the engine is warm, gradually open the choke lever and close the bypass valve. See Fig 5 and 6.

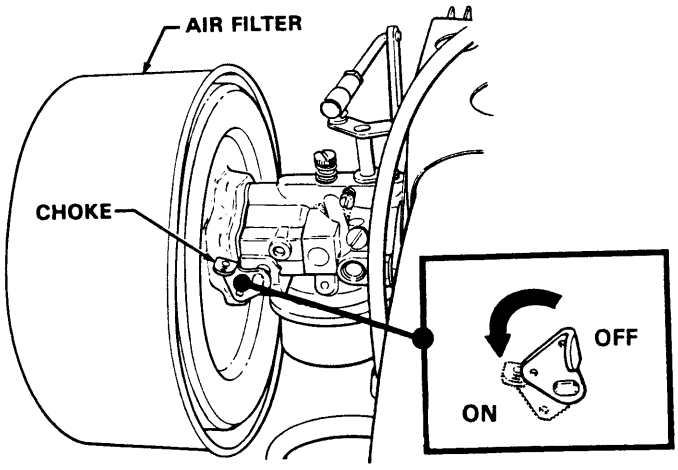


Fig 6

10. Point the gun into the metal pail and hold a metal part of the gun firmly against the pail. See Fig 7.

WARNING

To reduce the risk of static sparking, which can cause fire or explosion, always hold a metal part of the gun firmly against a grounded metal pail when flushing. This also reduces splashing.

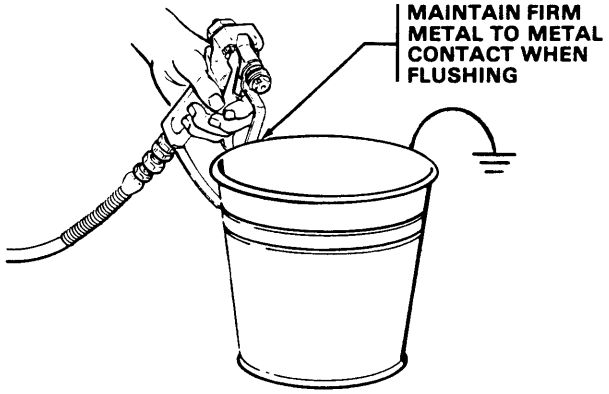


Fig 7

11. Disengage the gun safety latch and squeeze the gun trigger. At the same time, slowly turn the pressure control knob clockwise just enough to start the pump. See Fig 5.

12. Allow the pump to operate until clean solvent comes from the gun.

13. Release the trigger and engage the gun safety latch.

14. **If you are going to start spraying,** place the pump or accessory suction tube into the supply container. Release the gun safety latch and trigger the gun into another empty, metal container, holding a metal part of the gun firmly against the metal pail, and force the solvent from the pump and hose. Engage the gun safety latch until you are ready to prime the pump (see Step 3, page 9).

15. **If you are going to store the sprayer,** remove the accessory suction tube or pump from the solvent pail, holding a metal part of the gun firmly against the metal pail, and force the solvent from the pump and hose. Engage the gun safety latch. Refer to the "Storage" procedure in the section "When To Flush", see page 6.

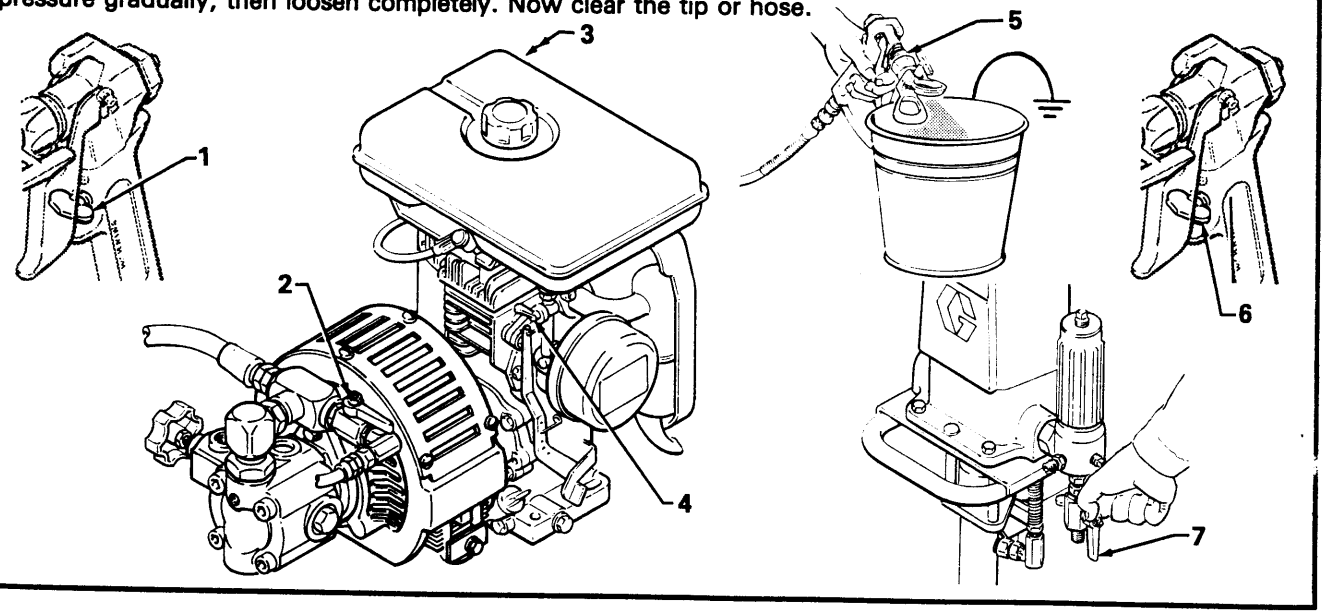
16. **Whenever you shut off the sprayer,** follow the **Pressure Relief Procedure Warning,** on page 2 or 8.

WARNING

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure whenever you shut off the sprayer, when checking or servicing any part of the spray system, when installing, cleaning or changing spray tips, and whenever you stop spraying. (1) Engage the gun safety latch. (2) Open the bypass valve. (3) Depress the engine stop button. (4) Close the fuel shutoff valve. (5) Disengage the gun safety latch and hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure. (6) Engage the gun safety latch. (7) Open the drain valve, having a container ready to catch the drainage. (8) Leave the drain valve open until you are ready to spray again.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, VERY SLOWLY loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.



1. **Prepare the Fluid**
   a. Prepare the fluid according to the fluid manufacturer's recommendations.
   b. Place the pump or accessory suction tube into the fluid container.
2. **Starting the Sprayer**
   a. Open the bypass valve to make startup easier. In the open position, the valve lever is parallel to the body of the valve. Refer to Fig 8. Close the filter drain valve.
   b. Turn the pressure control knob *counterclockwise* until all spring tension is relieved. You will be able to feel it. The sprayer is now set at the lowest pressure setting. Turning the knob further will cause it to fall off.
   c. Open the fuel shutoff valve to a vertical position. See Fig 8.
   d. If the engine is cold, close the choke by turning the lever to the ON position (horizontal). See Fig 9.
   e. Brace one foot against the frame and gently pull the starter rope until you feel it engage, then continue pulling all the way out and let it recoil slowly into the starter. Then, holding the starter rope firmly, rapidly pull the rope to start the engine. If it does not start after one or two attempts, open the choke a little more. If the engine floods, open the choke all the way and continue pulling the rope.

WARNING

Always hold the starter rope firmly while pulling or recoiling it to reduce the chance of being hit and injured by the rope or of jamming and damaging the starter assembly.

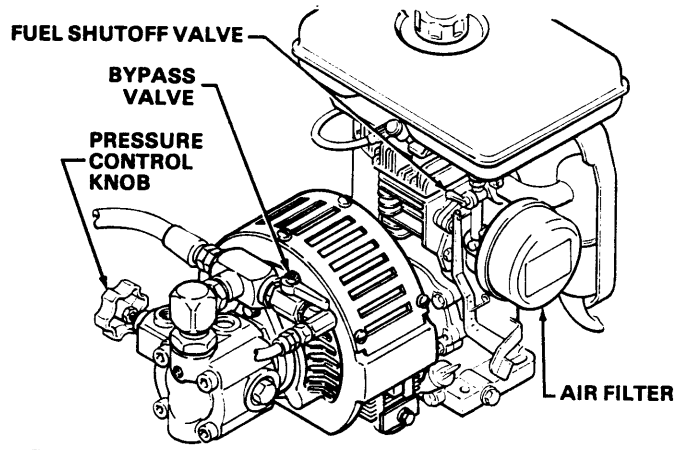


Fig 8

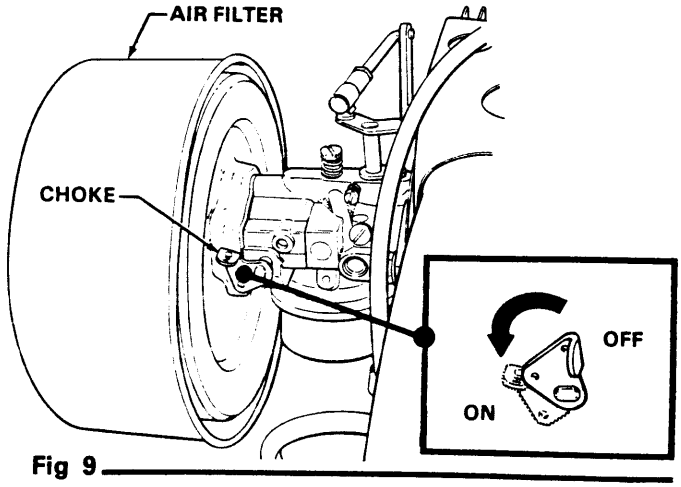


Fig 9

f. After the engine is warm, gradually open the choke lever and close the bypass valve. See Fig 8 and 9.

NOTE: In cold weather, run the engine for about 15 minutes with the bypass valve open before starting the displacement pump to help avoid hydraulic motor stalling.

g. Follow the **Pressure Relief Procedure Warning,** on page 8, to shut off the sprayer.

WARNING

To stop the engine in an emergency, depress the engine STOP button. Close the bypass valve if possible. See Fig 8. Then relieve the fluid pressure in the pump and hose as instructed in the **Pressure Relief Procedure Warning,** on page 8.

3. **Prime the Pump**
   a. Be sure the gun safety latch is engaged.
   b. Don't install the spray tip yet!
   c. If the engine has not been started, follow the procedure in Step 2, page 8.
   d. Disengage the gun safety latch.
   e. Point the gun into a metal pail and hold a metal part of the gun *firmly* against the pail. See Fig 10.
   f. Squeeze the trigger and *slowly* turn the pressure control knob *clockwise* just enough to start the pump. See Fig 8.
   g. Operate the pump until all air is purged from the pump and hoses and fluid is flowing freely from the gun.
   h. Release the trigger and engage the gun safety latch.
   i. Turn the pressure control knob *counterclockwise* until all spring tension is relieved. You will be able to feel it. The sprayer is now set at the lowest pressure setting. Turning the knob further will cause it to fall off.
   j. Follow the **Pressure Relief Procedure Warning** on page 8. Then install the spray tip in the gun as instructed in your separate gun or nozzle instruction manual. If using the RAC IV, refer to manual 307-848, supplied with the gun.

CAUTION

DO NOT move the sprayer while the engine is operating. Tilting the sprayer during operation will cause lubrication problems.

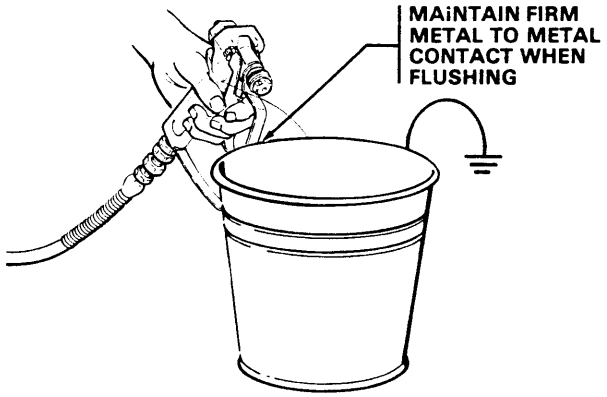


Fig 10

4. **Adjusting the Pressure**
   a. Turn the pressure control knob *clockwise* to increase and *counterclockwise* to decrease pressure. Tighten the knob locknut to set.
   b. Always use the lowest pressure necessary to completely atomize the fluid.

CAUTION

Operating the sprayer at a higher pressure than needed wastes fluid, causes early tip wear, and shortens sprayer life.

   c. If more coverage is needed, use a larger tip rather than increasing the pressure.
   d. Check the spray pattern. The tip size and angle determine the pattern width and flow rate. Refer to the separate instruction manual received with your gun.

CAUTION

The engine throttle has been set and locked at 2800 RPM. The sprayer warranty will be voided and the hydraulic pump life shortened if this adjustment is changed.

5. **Cleaning a Clogged Tip**

WARNING

To reduce the risk of a fluid injection injury, NEVER hold your hand, body, or rag in front of the spray tip when cleaning or checking for a cleared tip. Always point the gun toward the ground or into a waste container when checking to see if the tip was cleared or when using a self-clearing tip.

   a. Follow the **Pressure Relief Procedure Warning** on page 8.
   b. Clean the front of the tip frequently during the day to keep fluid from building up and clogging the tip. To clean, and to clear a tip if it clogs while spraying, refer to your separate gun or nozzle instruction manual for the proper procedure. If using the RAC IV, refer to manual 307-848, supplied with the gun.

6. **When Shutting Off the Sprayer**
   a. Whenever you stop spraying, even for a short break, follow the **Pressure Relief Procedure Warning** on page 8.
   b. Clean the tip and gun as recommended by your separate gun instruction manual.
   c. Flush the sprayer at the end of each work day if the fluid you are spraying is water-based or if it could harden in the sprayer overnight. See "Flushing" on page 6. Use a compatible solvent to flush, then fill the pump and hoses with an oil-based solvent such as mineral spirits to help prevent pump corrosion. **Be sure to relieve pressure in the pump after filling with mineral spirits!**
   d. For long term shutdown or storage, *always* fill the sprayer with mineral spirits to prevent pump corrosion. **Be sure to relieve pressure in the pump after filling it with mineral spirits!**

1. **Always stop the pump a the bottom of its stroke** when you take a break and at the end of the day. This helps keep fluid from drying on the rod and damaging the packings.

2. **Keep the displacement pump packing nut/wet-cup 1/4 full of TSL** at all times. The TSL helps protect the packings and rod.

3. **Check the tightness of the packing nut daily.** It should be tight enough to stop leakage, but no tighter. Overtightening will damage the packings.

CAUTION

Proper engine and hydraulic oil level is important to prevent costly damage to the sprayer. Check it as often as recommended in Steps 4 and 5, below.

4. **Check the hydraulic oil level weekly.** The oil must be up to the top mark on the dipstick (25). Use only Graco Hydraulic Oil, see ACCESSORIES.

5. **Check the engine oil level at least weekly.** The oil must be up to the top mark on the dipstick with the fill cap unthreaded. The engine should not use more than one ounce of oil per hour of operation. Consult the engine manual, supplied, for additional recommended maintenance.

6. **Inspect the return line filter (55) frequently** for clogging. Replace it after every 500 hours of operation or every six months, whichever comes first. A clogged or worn out filter reduces filter capability and will damage the hydraulic pump.

7. **Change the hydraulic oil after every 2000** hours of operation or every 12 months, whichever comes first. For continuous operation in temperatures above 85°F (30°C), change the oil after every 1000 hours or six months of use. Refer to Step 8 for procedure.

CAUTION

Cleanliness is essential when servicing the hydraulic system. Use special care to avoid getting dust or dirt into the hydraulic system to prevent damage to the hydraulic components.

8. **To change the hydraulic oil:**
   a. Follow the **Pressure Relief Procedure Warning,** on page 8. Allow the oil to cool before proceeding.
   b. Place a waste container under the drain plug (7) of the hydraulic reservoir. See Fig 11. Unscrew the plug, and drain the reservoir. Reinstall the plug before proceeding.
   c. Remove the nuts (4) and reservoir (66).
   d. Remove the return line filter (55) and install a new filter assembly.
   e. Inspect the inlet filter (21) and replace if needed.
   f. Install the reservoir and nuts. Then pour in 2-1/2 gallons (9.5 liters) of Graco Hydraulic Oil through the dipstick hole (25). See Fig 11. Install the dipstick.

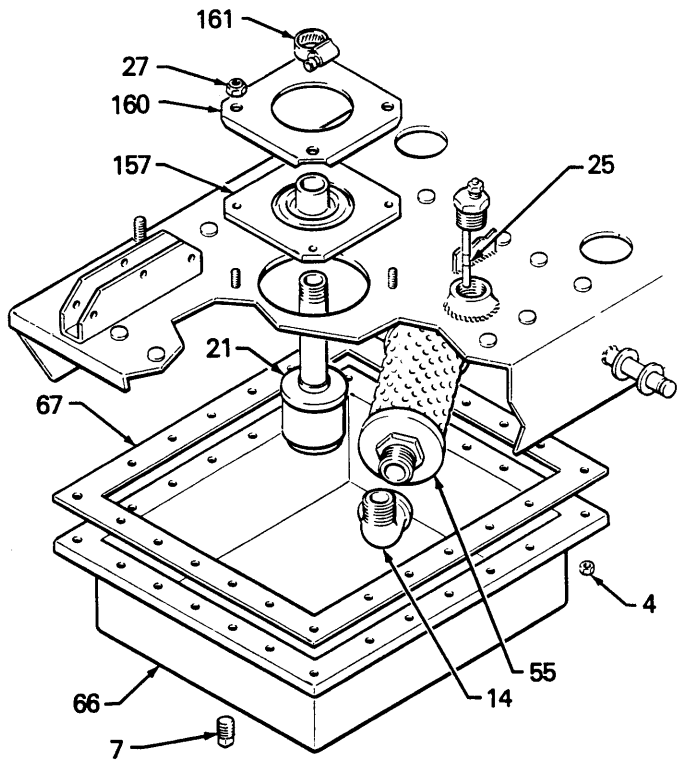


Fig 11

WARNING

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure Warning** as given on page 2 or 8 before troubleshooting or repairing your sprayer.

Check everything in the Troubleshooting Chart before disassembling the sprayer.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Gas engine doesn't work properly.		Consult engine manual, supplied.
Gas engine operates, but displacement pump doesn't operate.	Hydraulic motor stalled.	See "Starting the Sprayer," page 8.
	Pressure setting too low.	Increase pressure. See page 9.
	Displacement pump outlet filter (if used) dirty or clogged.	Clean the filter.
	Tip or tip filter (if used) clogged.	Remove tip and/or filter and clean.
	Hydraulic fluid too low.	Shut off sprayer and add fluid immediately.* See page 5.
	Hydraulic pump worn or damaged.	Return sprayer for repair.
	Hydraulic motor worn or damaged.	Return sprayer for repair.
	Displacement pump rod seized by dried paint.	Service pump. See page 13.
Displacement pump operates, but output is low on upstroke.	Piston ball check not seating properly.	Service piston ball check. See page 13.
	Piston packings worn or damaged.	Replace packings. See page 13.
Displacement pump operates but output is low on downstroke and/or on both strokes.	Piston packings worn or damaged.	Replace packings. See page 13.
	Intake valve ball check not seating properly.	Service intake valve ball check. See page 13.
Paint leaks into wet-cup.	Loose wet-cup.	Tighten just enough to stop leakage.
	Throat packings worn or damaged.	Replace packings. See page 13.
Excessive leakage around hydraulic motor piston rod wiper.	Piston rod or seal worn or damaged.	Replace these parts. See manual 306-980.
Fluid delivery is low.	Pressure setting too low.	Increase pressure.
	Displacement pump outlet filter (if used) dirty or clogged.	Clean filter.
	Hydraulic pump worn or damaged.	Return sprayer for repair.
	Hydraulic motor worn or damaged.	Return sprayer for repair.
	Large pressure drop in fluid hose.	Use larger diameter hose.
Spitting from gun.	Air entrained in fluid pump or hose.	Check for loose connections on suction assembly, tighten, then reprime pump.
	Fluid supply is low or empty.	Refill supply container.

*Check the hydraulic fluid level often. Do not allow it to become too low. Use only Graco approved hydraulic fluid; see page 5.

Disconnect the Displacement Pump

1. Solvent flush the displacement pump if possible. Stop the pump on the down stroke.
2. Follow the **Pressure Relief Procedure Warning** on page 8.
3. Remove the accessory suction tube, if used, and remove the fluid hose from the displacement pump.
4. Unscrew the three tie rod locknuts (114).
5. Remove the lower cotter pin (112).
6. Unscrew the displacement rod from the connecting rod.
7. Pull the pump off the tie rods (116).

Displacement Pump Service

NOTE: Packing Repair Kit No. 208-919 is available for servicing the displacement pump. See page 18. For the best results, use all the new parts in the kit.

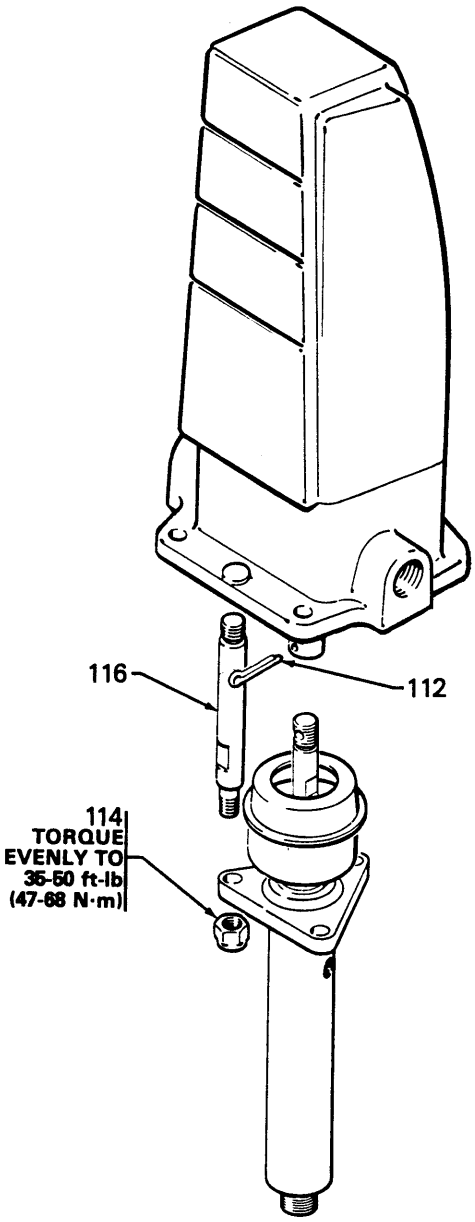


Fig 12

Intake Valve (See Fig 13)

1. Unscrew the extension (62), if used, and remove the retaining ring (52) and strainer (51) from the extension. Clean the parts in solvent.
2. Screw the intake valve housing (138) out of the pump housing (140).
3. Remove the ball stop pin (132), ball guide (136), ball (125) and o-ring (133)from the intake valve housing.
4. Clean all the parts and inspect them for wear or damage, replacing parts as needed.
5. If no further pump service is needed, reassemble the valve and screw it into the pump housing, torquing to 65 to 75 ft-lb (88 to 102 N·m).

Piston, Cylinder, or Displacement Rod (See Fig 13)

1. Screw the intake valve housing out of the pump housing.
2. Loosen the packing nut (141) and push the displacement rod (142) down and out of the housing.
3. Secure the rod in a vise and screw the piston stud (139) out of the displacement rod.
4. Remove the ball (124), retainer (130), glands (137, 135) and packings (127, 131).
5. Clean all parts and inspect them carefully for wear or damage. Inspect the outside of the rod and the inside of the cylinder for scoring or wear. Replace these parts if needed. A worn rod or cylinder will cause premature wear of the packings.
6. Stack a female gland (135), one Teflon® v-packing (131) and four leather v-packings (127), male gland (137) and packing retainer (130) on the piston stud. Be sure the lips of the v-packings face **UP.**
7. Grease the outside of the packings, place a ball (124) on the piston, and install the piston in the rod. Torque to 65 to 75 ft-lb (88 to 102 N·m).

NOTE: If you are installing a new sleeve, be sure to install it with the *tapered end down* and place a new gasket (128) between the sleeve and housing. If the old sleeve cannot be removed easily, contact your nearest Graco Factory Branch or Service Depot.

8. Slide the displacement rod up into the housing from the bottom until it protrudes from the packing nut. Reinstall the intake valve.

Throat Packings (See Fig 13)

1. Screw the intake valve housing out of the pump housing.
2. Remove the piston and rod as explained above.
3. Remove the packings (131, 127) and glands (135, 137) from the throat of the pump housing (140).
4. Clean the throat.
5. Grease the inside of the packings, then install the male gland (137), four leather v-packings (127), one Teflon® v-packing (131) and the female gland (135), one at a time into the throat, being sure they "nest" properly. Be sure the lips of the v-packings face **DOWN.**

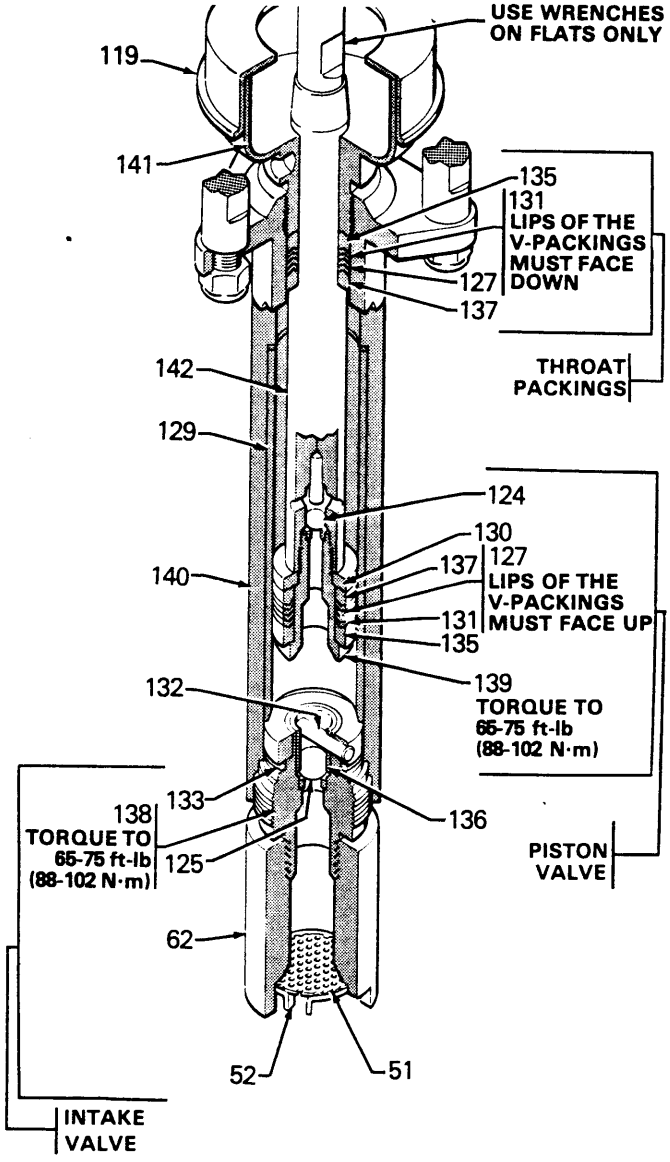


Fig 13

6. *Loosely* install the packing nut/wet-cup (141).
7. Reinstall the displacement rod and intake valve.

Reassembly (See Fig 12)

1. Secure the displacement rod to the motor with a cotter pin (112).
2. Secure the pump housing (140) to the tie rods (116) and tighten the tie rod locknuts (114) evenly to 35 to 50 ft-lb (47 to 68 N·m).
3. Tighten the packing nut just enough to stop leakage, but no tighter. Fill the wet-cup 1/4 full with TSL.
4. Install the extension (62) assembly or accessory suction tube.
5. Start the pump and operate it slowly to check the tie rods for binding. Adjust the tie rod locknuts, if necessary, to eliminate binding.
6. Reinstall the pump in its mounting.
7. Before operating the pump, reconnect the sprayer ground wire if it was disconnected during repair.

Replacing the Hydraulic Pump

1. Follow the **Pressure Relief Procedure Warning** on page 8. Let the hydraulic system cool before beginning the service procedure.
2. Unscrew the reservoir drain plug (7), having a container ready to catch the draining fluid.
3. Disconnect the hydraulic inlet hose (92) from the 90° swivel union (45) at the motor and from the tee (54).
4. Disconnect the bypass hose (85) from the ball valve (84).
5. Remove the four nuts (27) from the seal plate (160) on the reservoir cover (90).
6. Remove the two screws (8), lockwashers (11) and washers (98) holding the hydraulic pump (70).
7. Pull the pump away and loosen the setscrews (38a) on the pump half of the coupler (38).
8. Raise the pump and turn it to unthread the inlet filter (21) which is in the oil reservoir.
9. Be sure the new hydraulic pump has the same part number as the old one. Check the numbers stamped on the pumps to verify them.
10. Remove all fittings from the old pump and install them on the new pump in the same order.
11. Install the new pump, being sure to connect the inlet filter (21) to the bottom of the pump.
12. Check the dimension as shown in Fig 15. When the dimension is correct, tighten the setscrews (38a).

CAUTION

The correct coupling dimension is critical to avoid improper coupler engagement to the coupler spider which will damage the coupler and make the sprayer inoperable.

13. Reconnect the hoses. Reinstall the reservoir plug (7), and refill the reservoir with clean, Graco-approved hydraulic oil.

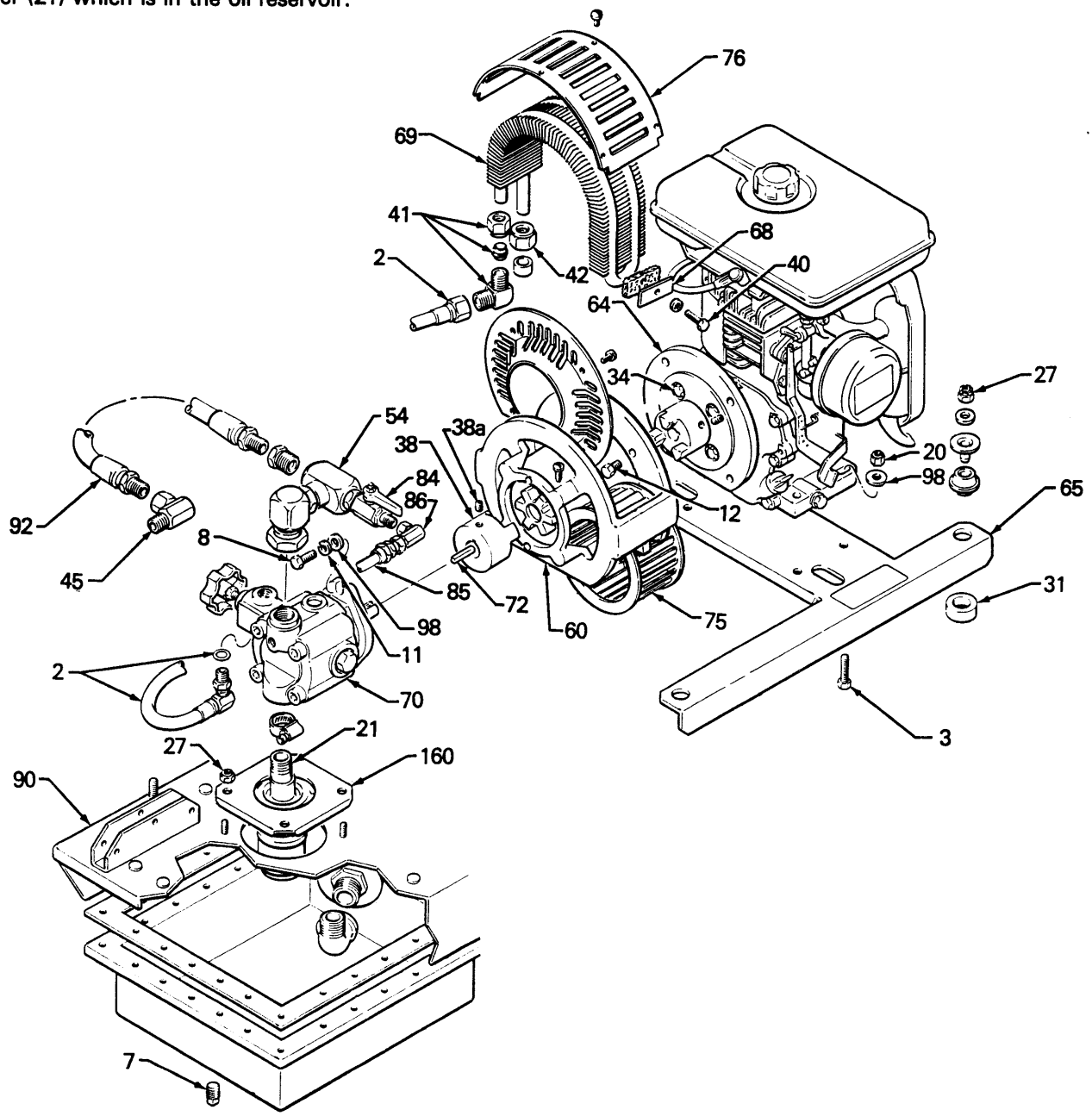


Fig 14

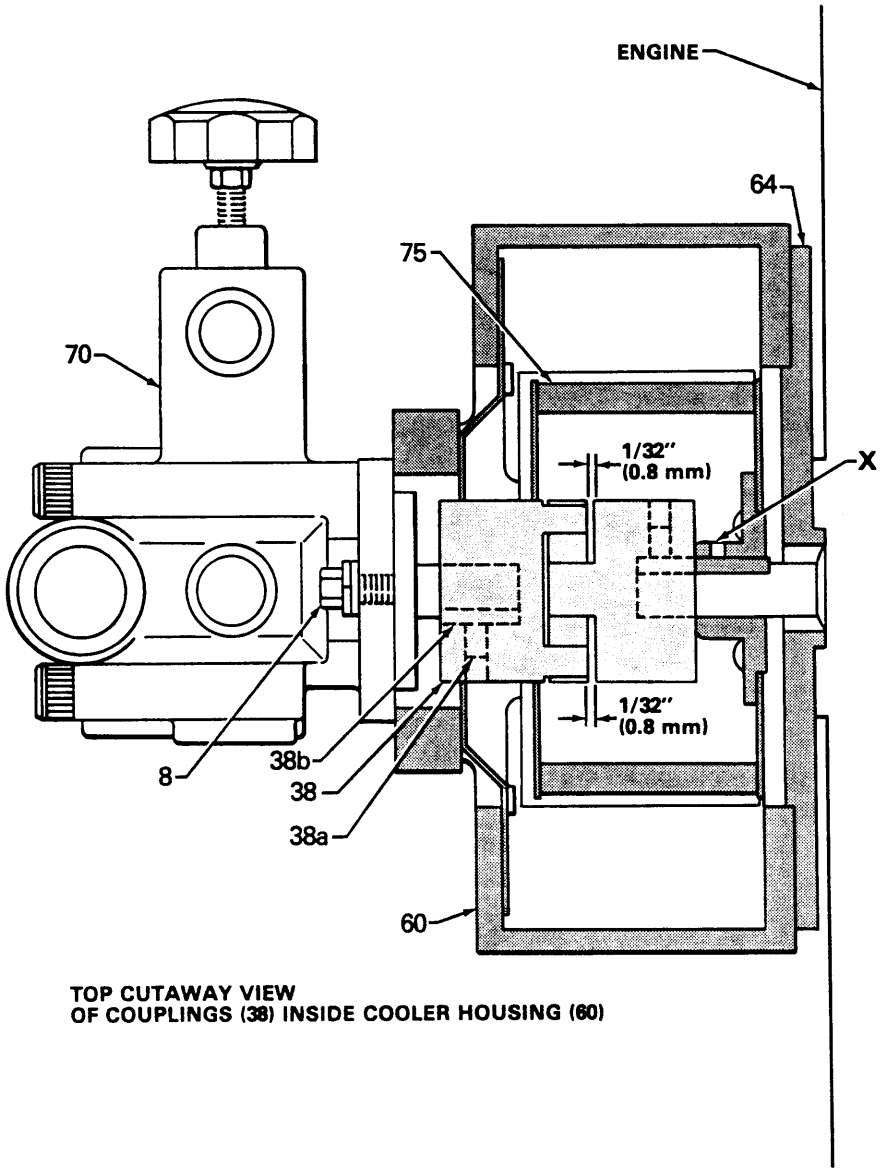
Drive Unit (See Figs 14 and 15)

1. Disconnect the hydraulic inlet hose (92) from the paint pump's 90° swivel union (45).
2. Loosen the coupling nut of the elbow (41) and disconnect the hydraulic oil drain hose (2) from the oil cooler inlet elbow (41).
3. Disconnect the bypass hose (85) from the bypass valve (84).
4. Remove the oiler cooler (69), the fan guard (76), the cooler retaining screw (40) and clamp (68), and the drain hose (2). Loosen the cooler drain connector nut (42). Pull the cooler up, out of the housing.
5. Remove the locknuts (27) from the four engine mounts (31).
6. Remove the four locknuts (27) from the filter seal plate (160) screws.
7. Lift up the entire drive assembly (engine, fan, and hydraulic pump) and tilt it forward.
8. Remove the four screws (12) holding the cooler housing (60) to the adapter plate (64) and take the hydraulic pump (70) and cooler housing off of the engine (32).
9. Insert a hex socket wrench between the blades of the fan wheel (75) and loosen the coupling setscrew (38a) so you can remove the flexible coupling (38) and key (38b). Loosen the fan wheel setscrew (X) and remove the fan wheel (75).
10. Unscrew the four capscrews (34) and remove the adapter plate (64) from the engine.
11. Unscrew the four locknuts (20) from the engine mounting screws (3) and lift the engine off the mounting plate (65).
12. Replace parts as needed and reassemble in reverse order of disassembly with special attention to the following:

NOTE: Set the gap between the two halves of the flexible coupling (38) at 1/32 in. (0.8 mm) and tighten the setscrews firmly. See Fig 15.

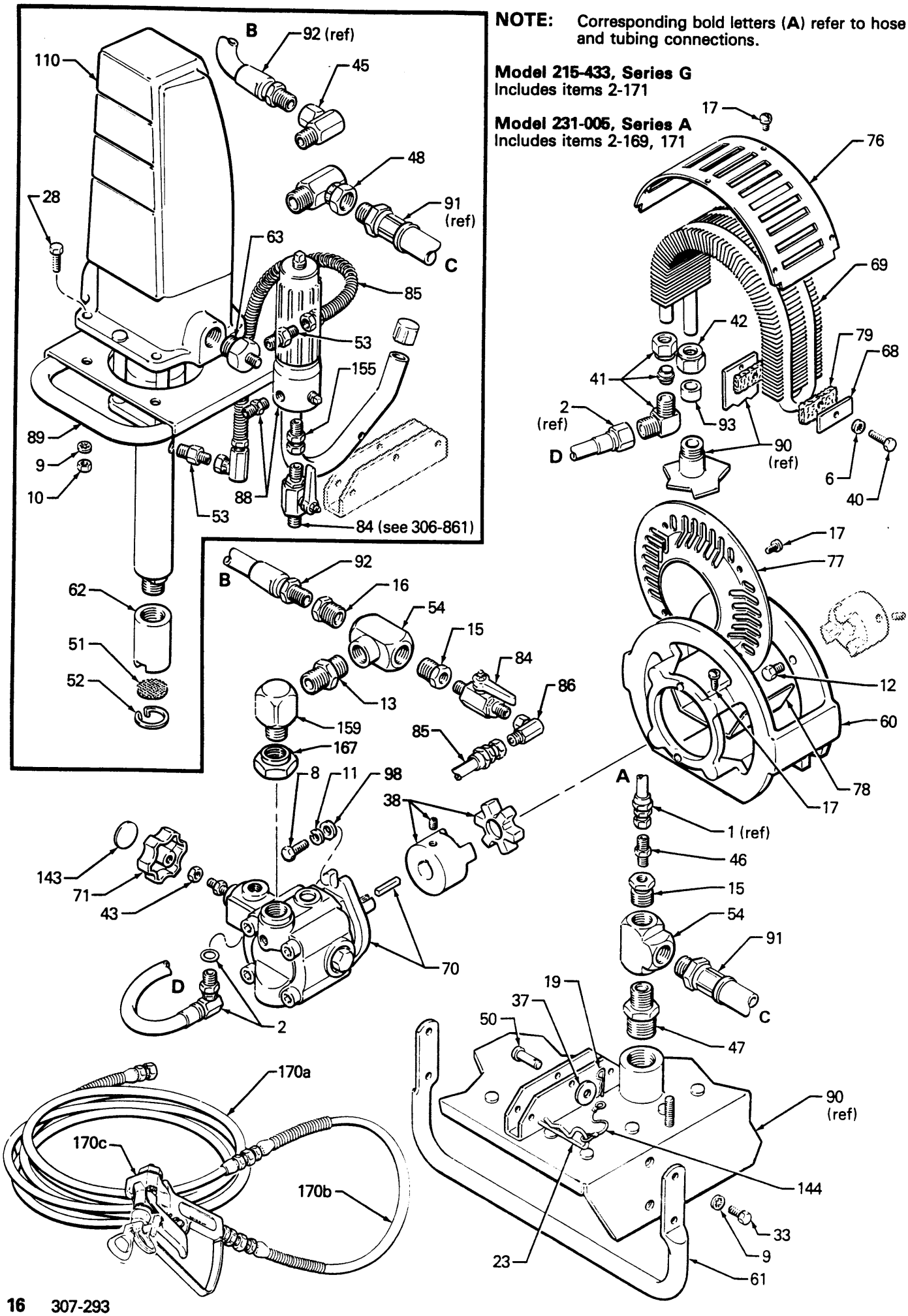
CAUTION

The correct coupling dimension is critical to avoid improper coupler engagement to the coupler spider which will damage the coupler and make the sprayer inoperable.



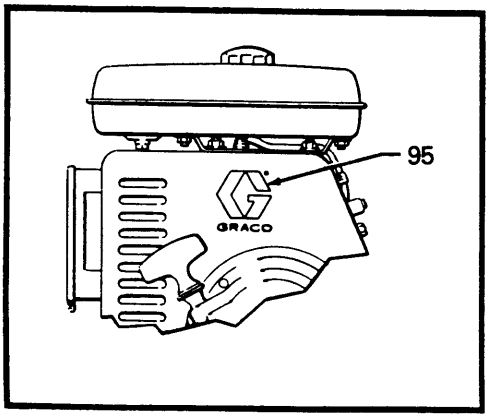
TOP CUTAWAY VIEW
OF COUPLINGS (38) INSIDE COOLER HOUSING (60)

Fig 15


NOTE: Corresponding bold letters (A) refer to hose and tubing connections.
Model 215-433, Series G
Includes items 2-171
Model 231-005, Series A
Includes items 2-169, 171
110
B
92 (ref)
45
48
91 (ref)
C
28
63
85
53
155
89
9
10
53
88
84 (see 306-861)
62
51
52
B
92
16
54
15
84
86
13
159
167
85
8
11
98
38
A
1 (ref)
46
15
54
91
C
47
143
71
43
D
2
70
19
37
50
90 (ref)
144
33
9
23
61
170a
170c
170b
17
76
69
42
79
68
41
2 (ref)
D
93
90 (ref)
6
40
17
77
12
60
78
17

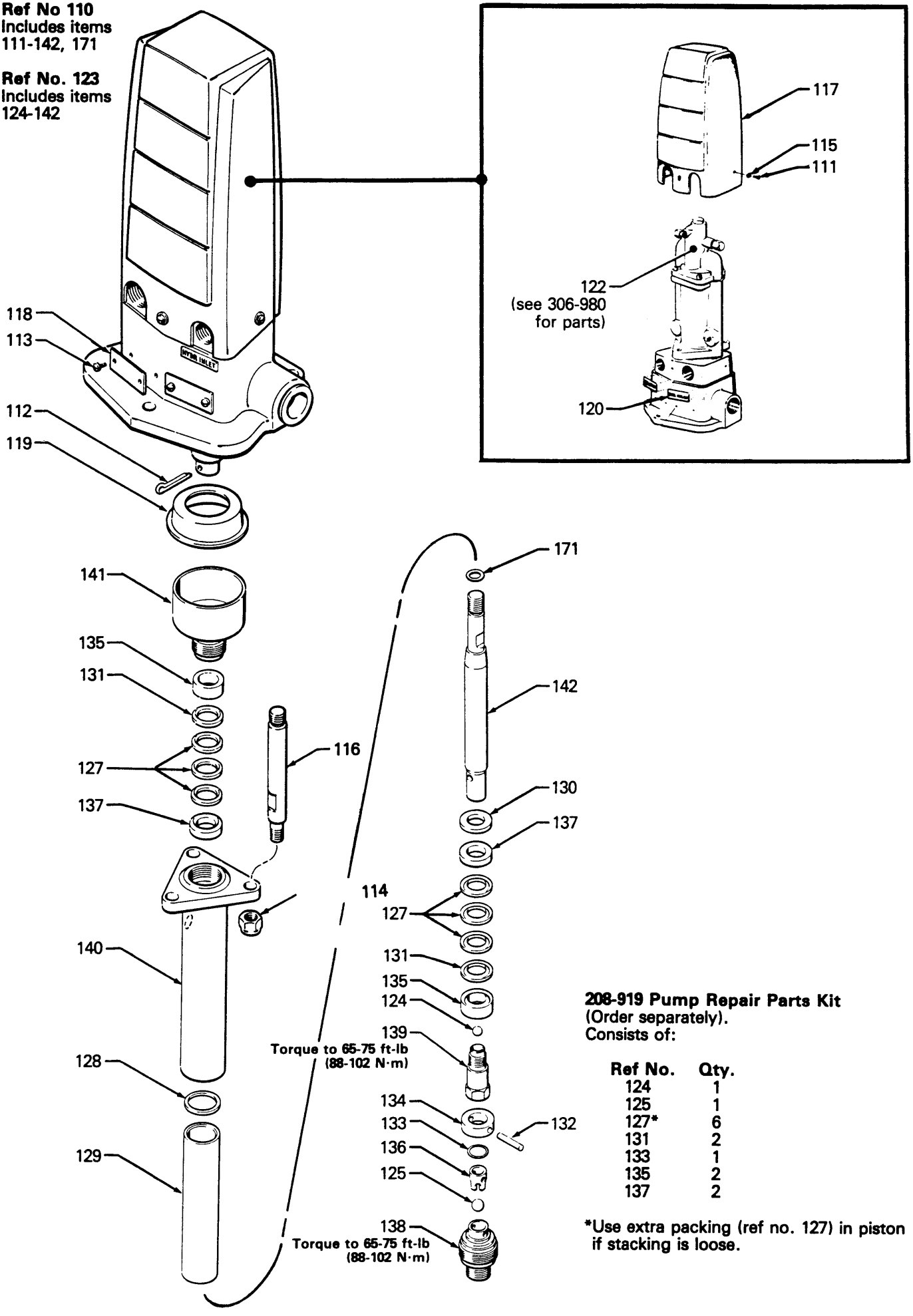
Model 215-433, Series G
Includes items 2-171

Model 231-005, Series A
Includes items 2-169, 171



Ref No 110
Includes items
111-142, 171

Ref No. 123
Includes items
124-142



208-919 Pump Repair Parts Kit
(Order separately).
Consists of:

Ref No.	Qty.
124	1
125	1
127*	6
131	2
133	1
135	2
137	2

*Use extra packing (ref no. 127) in piston if stacking is loose.

Model 215-433
Includes items 2-171

REF NO.	PART NO.	DESCRIPTION	QTY
2	215-969	HOSE, 3/8" ID; buna-N tube, cpld 3/8" npt(f), 90° swivel w/o-ring; 1 ft lg.	1
3	100-003	CAPSCREW, hex hd; 3/8-16 x 1-1/2"	4
4	104-858	NUT, flange; 1/4-20	24
6	100-028	LOCKWASHER, int tooth; 1/4"	1
7	100-040	PLUG, pipe; 3/8 npt	1
8	100-101	CAPSCREW, hex hd; 3/8-16 x 1'	2
9	100-186	LOCKWASHER, int tooth; 5/16"	15
10	100-188	NUT, hex; 5/16"	3
11	100-133	LOCKWASHER; 3/8"	4
12	100-575	CAPSCREW, hex hd; 3/8-16 x 5/8"	4
13	160-032	NIPPLE, pipe; 3/4 npt x 1-3/8"	1
14	100-467	ELBOW, street; 1" npt	1
15	100-615	BUSHING, pipe; 3/4 x 1/4 npt	2
16	100-896	BUSHING, pipe; 3/4 x 1/2 npt	1
17	104-869	SCREW, pnh, self-tapping, 10-24 x 3/8"	12
18	101-242	RING, retaining, ext.	2
19	178-392	CLIP, retaining	2
20	101-566	LOCKNUT, nylon insert; 3/8-16	4
21	177-267	FILTER, hydraulic fluid	1
23	102-801	CLIP, retaining	2
25	215-971	INDICATOR, hydraulic oil level	1
27	103-460	LOCKNUT, hex; 5/16-18	8
28	104-120	CAPSCREW, hex hd; 5/16-18 x 1"	3
30	104-761	KNOB, removable	2
31	104-766	MOUNT, engine	4
32	104-768	ENGINE, gasoline; 4.6 hp	1
33	100-001	CAPSCREW, hex hd; 5/16-18 x 5/8"	8
34	105-180	CAPSCREW, hex hd; 5/16-24 x 3/4"	4
35	161-401	PLATE, support, diaphragm	4
36	104-772	BOLT, carriage; 5/16-18 x 2"	2
37	102-782	WASHER, plain; 1/4"	2
38	105-793	COUPLING, flexible	1
40	100-014	CAPSCREW, hex hd; 1/4-20 x 1-1/4"	1
41	105-457	ELBOW, union; 3/8-18 (fbe)	1
42	104-782	NUT, compression	1
43	100-187	NUT, hex; 5/16-24	1
44	154-636	WASHER, flat	6
45	155-470	UNION, 90° adapter; 1/2 npt(m) x 1/2 npsm(f) swivel	1
46	156-971	NIPPLE, short; 1/4 npt	1
47	158-555	NIPPLE, hex reducing; 1" x 3/4 npt	1
48	160-327	UNION, 90°; adapter 3/4 npt(m) x 3/4 npt(f) swivel	1
50	104-832	PIN, clevis	2
51	164-717	STRAINER, pump	1
52	164-718	RING, retaining	1
53	165-198	NIPPLE, hex reducing; 3/8 x 1/4 npt	2
54	166-466	TEE, pipe; 3/4 npt(f)	2
55	167-748	FILTER, fluid	1
58	174-019	HANDLE, lower	1
59	174-020	HANDLE, upper	1
60	177-266	HOUSING, cooler	1
61	174-028	SUPPORT, frame	1
62	174-029	HOUSING, screen	1
63	174-032	FITTING, pump; 3/4 npt(m) x 1/4 npt(m)	1
64	174-035	PLATE, adapter	1
65	174-038	PLATE, mounting	1
66	214-607	RESERVOIR	1
67	174-040	GASKET, reservoir	1
68	174-041	CLAMP, pad	1
69	177-270	COOLER	1
70	177-269	PUMP, hyd., 950 psi (66.5 bar) max., 6 gpm max.	1
71	219-099	KNOB, pump	1
72	—	KEY, parallel; 0.187" square; 1.875" long	1
73	179-811	WHEEL, semi-pneumatic	2
74	174-065	SPACER, wheel	2
75	174-066	WHEEL, blower	1
76	174-076	GUARD, fan	1
77	172-809	GUARD, fan	1
78	174-079	GUARD, fan, lower	1
79	174-077	PAD, cooler	2
81	206-994	THROAT SEAL LIQUID, 1 pint	1
84	210-657	BALL VALVE, see 306-861 for parts	2
86	214-638	HOSE, static free airless; 1/4" ID nylon tube, cpld 1/4" npt(m x f); 14" lg (350 mm), w/spring guards; includes item 86	2
86	157-676	.UNION, 90° adapter; 1/4"(f) x 1/4 npsm(f) swivel	1
88	214-570	FLUID FILTER, see instruction manual 307-273	1
89	214-580	SUPPORT, pump	1
90	215-970	COVER, reservoir	1
91	214-595	HOSE, 3/4" ID, cpld 3/4 npt(mbe)	1
92	214-601	HOSE, 1/2" ID, cpld 1/2 npt(mbe)	1
93	104-781	SLEEVE, compression	1
94	172-532	LABEL, warning	1
95	167-812	EMBLEM, Graco	1
97	150-707	PLATE, designation	1
98	100-731	WASHER, flat	6

Model 231-005, Series A
Includes items 2-169, 171

REF NO.	PART NO.	DESCRIPTION	QTY
100	101-845	SCREW, self-tapping; type "f", 6-32 x 3/8"	1
101	103-181	LOCKWASHER, ext tooth; no. 6	1
102	103-538	CLAMP, ground	1
103	208-950	CONDUCTOR, ground Includes items 104 & 105	1
104	065-136	.WIRE, electrical	25 ft
105	102-302	.TERMINAL, ring	1
110	214-605 Series A	VISCOUNT 3000 Pump Assy, includes items 111-142, 171	1
111	100-078	.SCREW, rd hd mach; 8-32 x 1"	3
112	*100-103	.PIN, cotter; 1/8 x 1-1/2"	1
113	101-330	.SCREW, drive; type "U", No. 2 x 1/4"	2
114	101-566	.LOCKNUT, 3/8-16 screw size	3
115	102-360	.WASHER, flat	3
116	168-221	.ROD, tie; 5-3/4" (146 mm)	3
117	169-453	.SHIELD	1
118	169-455	.PLATE, designation	1
119	167-817	.CAP	1
120	169-933	.LABEL, hydraulic inlet	1
122	208-666 Series C	.VISCOUNT HYDRAULIC MOTOR see 306-980 for parts	1
123	208-916 Series A	.DISPLACEMENT PUMP ASSY, includes items 123-142	1
124	**100-065	..BALL, chrome alloy; 5/16" dia	1
125	**100-084	..BALL, chrome alloy; 1/2" dia	1
127	**164-477	..V-PACKING, leather	6
128	*164-480	..GASKET, Teflon®	1
129	164-481	..SLEEVE, housing	1
130	164-484	..RETAINER, piston packing	1
131	**164-862	..V-PACKING, Teflon®	2
132	165-049	..PIN, ball stop	1
133	**165-052	..SEAL, o-ring; Teflon®	1
134	165-279	..RETAINER, o-ring	1
135	**165-895	..GLAND, packing; female	2
136	170-257	..GUIDE, ball	1
137	**171-146	..GLAND, packing; male	2
138	205-981	..HOUSING, intake valve	1
139	206-345	..SEAT, piston valve	1
140	207-420	..HOUSING, displacement pump	1
141	207-731	..NUT, packing; w/lubricant cup	1
142	210-041	..DISPLACEMENT ROD	1
144	206-755	CABLE	2
145	104-811	CAP, hub	2
146	102-472	RIVET, blind	2
156	156-823	UNION, straight adapter; 1/4 npt(m x f)	1
157	176-680	SEAL, flange	1
159	166-590	ELBOW, street; 3/4-14 npt (mbe)	1
160	176-681	PLATE, seal	1
161	103-927	CLAMP, hose	1
162	177-661	GUARD, muffler	1
163	510-161	FASTENER, screw, 3/4" lg	2
164	105-972	CLIP, retaining	2
166	158-223	WASHER, special; 9/32"	2
167	105-429	NUT, seal	1
168	176-140	LABEL, identification	1
169	176-139	LABEL, warning	1
170	220-962	HOSE & GUN KIT includes items 170a-170c	1
170a	210-541	.HOSE, 1/4" ID; nylon, cpld 1/4 npsm(f); 50 ft (15 m) long; spring guards both ends	1
170b	214-701	.HOSE, 3/16" ID; nylon, cpld 1/4 npsm(f) x 1/4 npt(m); 3 ft (0.9 m) long; spring guards both ends	1
170c	220-955	.AIRLESS SPRAY GUN See 307-614 for parts	1
171	154-771	O-RING; buna-N	1

306 & 307 Numbers in description refer to separate instruction manuals.

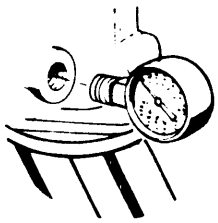
**Recommended "tool box" spare parts. Keep on hand to reduce down time.*

***Supplied in repair kit 208-919.*

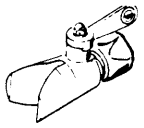
See "How To Order Replacement Parts" on page 21.

ACCESSORIES (Must be purchased separately)

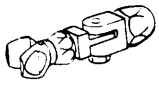
FLUID GAUGE 102-814
5000 psi (350 bar) MAXIMUM WORKING PRESSURE
Install to read pressure in hydraulic fluid system.
KEEP DIRT OUT OF SYSTEM



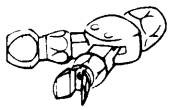
SELECT-A-FAN (with tips) 206-310
3000 psi (210 bar) MAXIMUM WORKING PRESSURE
Fits the fan pattern to both wide and narrow surfaces and clears tip stoppages.



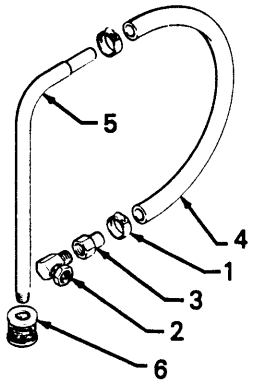
DIRECTIONAL ADAPTER (less tips) 206-235
3000 psi (210 bar) MAXIMUM WORKING PRESSURE
Adjustable 180° swiveling nozzle permits changing the spray pattern direction to satisfy work piece demands.



DUAL ADAPTER (less tips) 206-236
3000 psi (210 bar) MAXIMUM WORKING PRESSURE
Two spray tips controlled by one spray gun—used where one tip does not provide sufficiently wide spray pattern or work piece demands two spray patterns angled in opposite directions.



5 GAL. (19 liter) SUCTION TUBE KIT 208-920

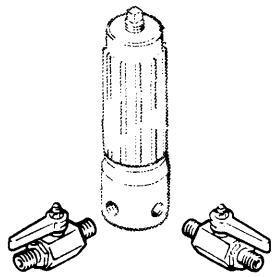


REF NO.	PART NO.	DESCRIPTION	QTY
1	101-818	CLAMP, hose	1
2	160-327	UNION, 90° swivel; 3/4 npt(m x f)	1
3	170-705	ADAPTER, intake	1
4	170-706	HOSE, 1" ID x 48"; nylon tube	1
5	170-957	TUBE, suction	1
6	181-072	STRAINER	1

STATIC FREE FLUID HOSE (Nylon)
3000 psi (207 bar) MAXIMUM WORKING PRESSURE

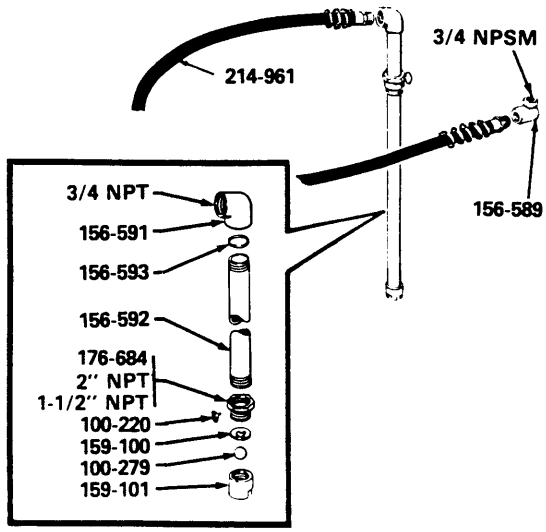
Part No.	ID	Length	Thd. Size
214-701	3/16 in.(4.8 m)	3 ft(0.9 m)	1/4 npt(m x f)
210-540	1/4 in.(6.4 mm)	25 ft(7.6 m)	1/4 npsm(f)
210-541	1/4 in.(6.4 mm)	50 ft(15.2 m)	1/4 npsm(f)
214-703	3/8 in.(9.5 mm)	25 ft(7.6 m)	3/8 npt(m)
214-705	3/8 in.(9.5 mm)	50 ft(15.2 m)	3/8 npt(m)

BALL VALVE 210-657—FOR 2-GUN HOOKUP
5000 psi (350 bar) MAXIMUM WORKING PRESSURE



HYDRA-CLEAN® CONVERSION KIT 214-664
Converts GH 433 from an airless paint sprayer to an airless pressure washer. Includes:
208-508 Displacement Pump Kit
214-665 Gun and Hose Kit
208-571 Suction Kit
307-297 Instruction Manual

55-GAL SUCTION TUBE 207-485



HYDRAULIC FLUID (approved type)
169-236 5 gallons (20 liters)
207-428 1 gallon (3.8 liters)

SERVICE INFORMATION

Listed below by the assembly changed are OLD and NEW parts.

ASSEMBLY CHANGED	PART STATUS	REF NO.	PART NO.	NAME
215-433 and Sprayer	OLD		218-918	Hose & Gun Kit
	NEW	170	220-962	Hose & Gun Kit

INTERCHANGEABILITY NOTE: NEW parts replace the OLD parts listed directly above them.

HOW TO ORDER REPLACEMENT PARTS

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

6 digit PART NUMBER	QTY	PART DESCRIPTION

TECHNICAL DATA

Engine	:	Wisconsin Robin, Model EY 18W, 4 cycle, single cylinder, air cooled, 4.6 HP (3.43 kW)
Gasoline Tank	:	1 gallon capacity
Hydraulic Pump	:	4 gpm (15 liter/min) maximum volume; 600-900 psi (41-62 bar) pressure range
Hydraulic Fluid Sump	:	2-1/2 gallons (9.5 liters) operating level
Hydraulic Pump Suction Filter	:	100 mesh (149 microns) monel wire cloth with 16 mesh (1190 microns) monel wire cloth backup; reusable type.
Hydraulic Oil Return Filter	:	400 sq. in. (2580 cm^2) surface area; 25 micron filtration; disposable type
Fluid Filter	:	60 mesh (250 microns), 18 sq. in. (116 cm^2) stainless steel screen with 3/8 npt(f) inlets and 1/4 npt(f) outlets; reusable type
Displacement Pump	:	3000 psi (210 bar) maximum working pressure; 1 gpm (3.8 liter/min) output at 1500 psi (105 bar) 60 cycles per gallon; 60 cycles per minute maximum recommended speed for continuous operation.
Wetted Parts	:	Nitralloy, Rubber Impregnated Leather, Teflon® , Stainless Steel, Bronze, Aluminum
Weight	:	180 lb (80 kg) (not including hydraulic oil, gasoline and motor oil)
Noise Level	:	Does not exceed 90 dBAs (3 ft from machine)
Overall Dimensions	:	Setup — Length: 56" (1400 mm) Width: 28" (700 mm) Height: 35" (900 mm) Folded — Length: 48" (1200 mm) Height: 32" (800 mm)

Teflon® is a registered trademark of the Du Pont Company.

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 for examination by Graco to verify 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 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.

Factory Branches: Atlanta, Dallas, Detroit, Los Angeles, West Caldwell (N.J.)
Subsidiary and Affiliate Companies: Canada; England; Switzerland; France; Germany; Hong Kong; Japan
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