

INSTRUCTIONS—PARTS LIST

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



307-483

Rev. V
Supersedes S

Model AS5000™

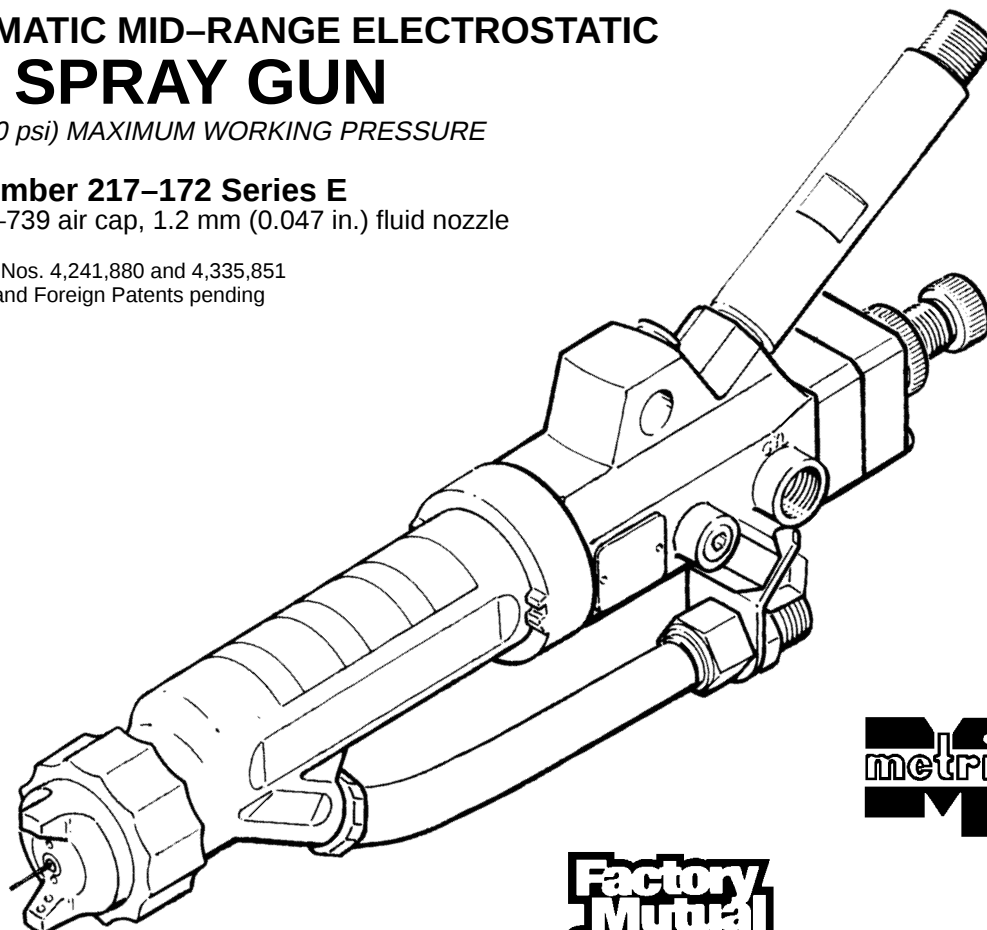
AUTOMATIC MID-RANGE ELECTROSTATIC AIR SPRAY GUN

7 bar (100 psi) MAXIMUM WORKING PRESSURE

Part Number 217-172 Series E

With 180-739 air cap, 1.2 mm (0.047 in.) fluid nozzle

U.S. Patent Nos. 4,241,880 and 4,335,851
Other U.S. and Foreign Patents pending



**Factory
Mutual
System**

Approved

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SAFETY WARNINGS

SERIOUS BODILY INJURY, EXPLOSION, FIRE, OR ELECTRIC SHOCK CAN OCCUR IF THE PRECAUTIONS BELOW ARE NOT FOLLOWED.

READ AND UNDERSTAND ALL INSTRUCTION MANUALS, TAGS, AND WARNING LABELS BEFORE OPERATING EQUIPMENT.

ELECTROSTATIC EQUIPMENT SHALL ONLY BE INSTALLED AND USED BY TRAINED, QUALIFIED PERSONNEL WHO SHALL BE FULLY CONVERSANT WITH THE REQUIREMENTS STATED WITHIN THIS INSTRUCTION MANUAL.

EQUIPMENT MISUSE HAZARD

General Safety

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

NEVER point the spray gun at anyone or at any part of the body. NEVER put hand or fingers over the fluid nozzle.

ALWAYS follow the **Pressure Relief Procedure**, at right, before cleaning or removing the fluid nozzle or servicing any system equipment.

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

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

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

System Pressure

This gun has a maximum working pressure of 7 bar (100 psi). Never exceed the maximum working pressure of the gun or any other component or accessory used in the system.

Fluid Compatibility

BE SURE all fluids and solvents used are chemically compatible with the "Wetted Parts" shown in the **TECHNICAL DATA**. Always read the fluid and solvent manufacturer's literature before using the fluid or solvent in this gun.

Pressure Relief Procedure

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

1. **Turn off the high voltage power supply.**
2. Turn off the air and fluid supply to the gun.
3. Actuate the gun into a grounded metal waste container to relieve fluid pressure.
4. Open the pump drain valve, having a waste container ready to catch the drainage.
5. Leave the pump drain valve open until you are ready to spray again.

HAZARDOUS FLUID HAZARD

Improper handling of hazardous fluids or inhaling vapors can cause extremely serious bodily injury, even death, due to splashing in the eyes, ingestion, inhalation, or bodily contamination.

Be sure you know what fluid you are pumping and its specific hazards. Observe all precautions when handling known or potentially hazardous fluids, including, but not limited to, the following.

1. Store hazardous fluids in approved containers.
2. Dispose of any waste fluid according to all Local, State and Federal regulations pertaining to the disposal of hazardous wastes.

3. Read and follow the fluid and solvent manufacturer's literature regarding the use of protective clothing and equipment such as eye protection, respiratory protection, and gloves.
4. Provide for the safe piping and disposal of all exhaust air.
5. Provide proper ventilation in accordance with accepted industry standards and governmental regulations. Refer to **Ventilate the Spray Booth**, on page 5.

HOSE SAFETY

TIGHTEN all fluid connections securely before each use.

NEVER use a damaged hose. Before each use, check the entire hose for cuts, leaks, abrasion, bulging cover, or damage or movement of the hose couplings. If any of these conditions exist, replace the hose immediately.

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.

FIRE OR EXPLOSION HAZARD

To reduce the risk of fire, explosion, or electric shock, which may result from electrical discharge, it is essential that:

- All parts of the electrostatic system are properly grounded.
- All personnel in or close to the spray area are properly grounded.
- All electrically conductive objects or devices in the spray area, including paint containers, wash cans and tools, are properly grounded.

When operating the electrostatic device, any ungrounded objects in the spray area (such as people, containers, tools, etc.) can become electrically charged. Arcing may occur if these objects then come in contact or close to ground. Arcing of sufficient energy levels can ignite the fluid being sprayed, fumes from solvents, dust particles, and other flammable substances. This can cause a fire or explosion and result in serious bodily injury and property damage.

Static electricity can also be generated by the flow of fluid through the pump, hose, gun, and nozzle, but it is dissipated through proper grounding as described in **Grounding** below.

If you experience any arcing or feel even a slight shock, **STOP SPRAYING IMMEDIATELY**. Check for proper grounding of the entire system. Be sure you have corrected the problem before starting to spray again.

Grounding

The following are *minimum* requirements for grounding a basic electrostatic system. Your system may include other equipment or objects which must also be grounded. Always check your local electrical code for detailed grounding instructions. Be sure your system is connected to a true earth ground.

1. *Pump*: ground by using a ground wire and clamp as described in your separate pump instruction manual.
2. *Air compressors and hydraulic power supplies*: ground according to the manufacturer's recommendations.
3. *High voltage power supplies*: must be properly grounded and located outside the spray/hazardous area. Ground according to the manufacturer's recommendations.
4. *High voltage cable*: obtain grounding through connection of an undamaged cable to a properly grounded power supply.
5. *All electric cables* going to the power supply must be properly grounded.
6. *Electrostatic Spray Gun*: obtain grounding through connection to a properly grounded high voltage cable.
7. *Object being sprayed*: keep the workpiece hangers clean and grounded at all times. Contact points must be sharp points or knife edges.

8. *All electrically conductive objects or devices in the spray area*, including paint containers and wash cans, must be properly grounded.
6. *All persons entering the spray area*: shoes must have conductive soles, such as leather, and personal grounding straps must be worn. Rubber or plastic soles are not conductive.
7. *The floor of the spray area* must be electrically conductive and grounded. Do not cover the floor with cardboard or any non-conductive material which would interrupt grounding continuity.
8. *Flammable liquids* in the spray area must be kept in approved, grounded containers. Do not store more than the quantity needed for one shift.
9. *All solvent pails*: use only grounded metal pails, which are conductive. Do not place the pail on any non-conductive surface, such as cardboard or paper, which would interrupt grounding continuity.

Flushing and Cleaning Safety

To reduce the risk of static sparking or splashing, always follow the **Pressure Relief Procedure** on page 2.

Be sure the high voltage power supply is OFF before flushing or cleaning any part of the spray system.

Use the lowest possible pressure to flush. Trigger the gun into a grounded metal waste container.

To flush or purge equipment, ALWAYS use solvents with a flash point equal to or greater than that of the fluid being sprayed.

To clean the exterior of the equipment, ALWAYS use solvents with a flash point of higher than 38° C (100° F).

ALWAYS remove all solvent from the system before reactivating the spray gun.

Use only non-sparking tools to clean residue from the booth and hangers.

Ventilate the Spray Booth

To prevent hazardous concentrations of toxic and/or flammable vapors, spray only in a properly ventilated spray booth.

The High Voltage Power Supply must be electrically interlocked with the ventilators to prevent operation of the power supply unless ventilating fans are operating.

NEVER operate the spray gun unless the ventilating fans are operating.

Check and follow all National, State and Local codes regarding air exhaust velocity requirements. Check and follow all local safety and fire codes and OSHA standard 1910-107(b)(5)(i).

IMPORTANT

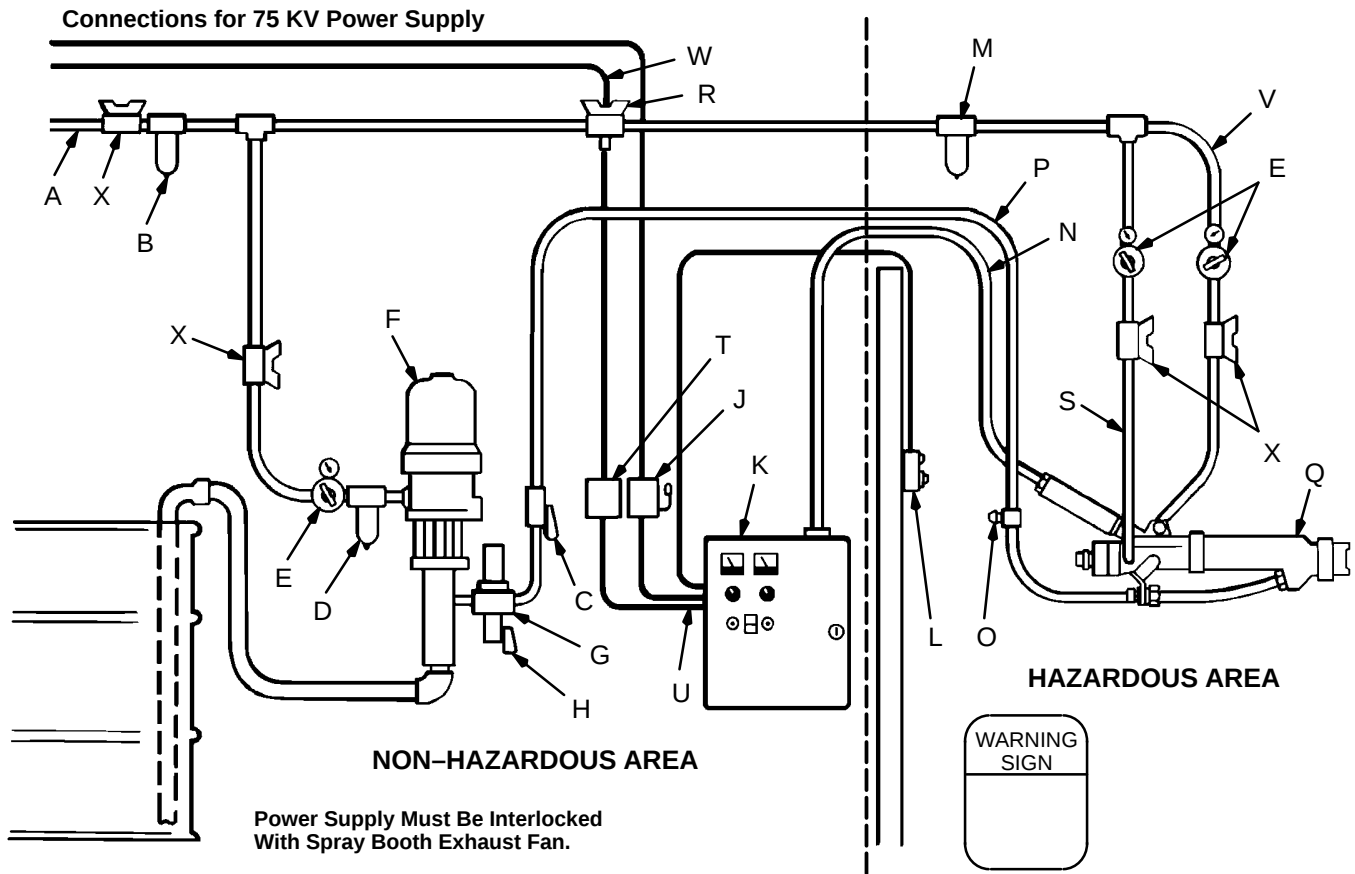
United States Government safety standards have been adopted under the Occupational Safety and Health Act. These standards—particularly the General Standards, Part 1910.107 and any other appropriate regulations—should be consulted in connection with the installation, operation, and maintenance of electrostatic spray painting equipment.

HOW THE ELECTROSTATIC AIR SPRAY GUN WORKS

A transformer supplies high voltage current through the cable to the gun's ionizing electrode, where the electrostatic field is developed. The pump supplies fluid to the hose and gun, where the fluid is electrostatically

charged as it passes the electrode. The charged fluid is attracted to the grounded workpiece, wrapping around it and evenly coating all surfaces.

TYPICAL INSTALLATION



KEY

A	Main Air Supply Line	K	High Voltage Power Supply (located outside the spray/hazardous area)	R	Normally Closed, 3-way Air Solenoid Valve or 3-way Manual Valve
B	Air Line Filter	L	Remote Switch & Lights	S	Atomizing Air Line
C	Ball Valve	M	Air Filter (40 micron)	T	Relay for Electric Signal
D	Air Line Lubricator	N	High Voltage Cable	U	Connection Between Relay & Power Supply
E	Air Regulator	O	Fluid Regulator	V	Cylinder (CYL) Air Line
F	Pump	P	Fluid Line	W	Electrical Signal Required to Actuate Air
G	Fluid Filter	Q	Electrostatic Automatic Gun	X	Air Supply Shutoff Valve (bleed-type)
H	Drain Valve				
J	ON-OFF (D.P.-D.T.) Switch				

The Typical Installation shown above is only a guide for selecting and installing electrostatic air spray systems. It is not an actual system design. The particular type and size system for your operation must be custom designed for your needs. For assistance in designing a system, contact your Graco representative.

Warning Signs

Mount warning signs in the spray area where they can easily be seen and read by all operators. See the **ACCESSORIES** section to order.

WARNING

Installing and servicing this equipment requires access to parts which may cause electric shock or other serious bodily injury if work is not performed properly. **Do not install or service this equipment unless you are trained and qualified.**

Be sure your installation complies with National, State and Local codes for the installation of electrical apparatus in a Class 1, Group D, Divisions 1 and 2 Hazardous Location.

Ventilate the Spray Booth

WARNING

To prevent hazardous concentrations of toxic and/or flammable vapors, spray only in a properly ventilated spray booth. The High Voltage Power Supply must be electrically interlocked with the ventilators to prevent operation of the power supply unless the ventilation fans are operating. **Never operate the spray gun unless ventilation fans are operating.**

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

Check and follow all local safety and fire codes and OSHA standard 1910–107(b)(5)(i).

NOTE: High velocity air exhaust will decrease the operating efficiency of the electrostatic system. Air exhaust velocity of 21 linear meters/minute (70 ft/min) should be sufficient.

Connect the High Voltage Power Supply

The electrical connections to the power supply (K) must be performed by a qualified electrician, in accordance with all applicable local, state and national codes.

Connect the High Voltage Cable

Connect one end of the high voltage cable (N) to the gun (Q) in the spray booth area. Insert the high voltage cable into the insulator tube of the gun and tighten the cable retaining nut.

Route the high voltage cable (N) to the power supply (K).

To avoid permanent indentations of the cable and cable failures due to unnecessary stress to the cable, follow these steps:

1. Support the cable overhead to keep people from walking on it and vehicles from driving over it.
2. **DO NOT** clamp the cable too tightly at supports.
3. Avoid sharp kinks and bends in the cable.

Check the Electrical Grounding (See Fig 1)

WARNING

Proper electrical grounding of every part of your system is essential. For your safety, read the warning section, **FIRE OR EXPLOSION HAZARD**, on page 3. Ground the system as explained there. Then check your system as explained below.

1. Make sure the high voltage power supply (K) is properly grounded and located outside the spray area.

The power supply case and spray gun actuator can become charged if the case is not well grounded. The ground wire is part of the high voltage circuit and **MUST**, without fail, be connected to a true earth ground. As an added precaution, attach a separate ground wire to the case of the high voltage power supply.

2. Shut off the power supply and the air and fluid lines to the gun.
3. Have a qualified electrician check the electrical grounding continuity of the spray gun. Use an ohmmeter to measure resistance between the actuator of the gun and a true earth ground. See Fig 1.

WARNING

If the resistance is over 20 ohms, the gun is not properly grounded, and the system may be hazardous. Check again that you have properly grounded your system components, see **FIRE OR EXPLOSION HAZARD**, page 3.

Since the gun is grounded through connection to an undamaged properly grounded, high voltage cable and power supply, check for a grounding problem with the cable and power supply first. **BE SURE** you have corrected the problem before using the system.

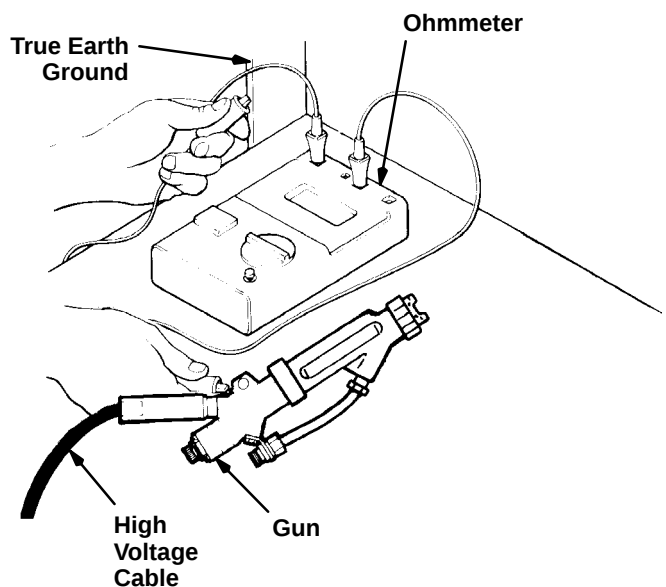


Fig 1

Mount the Spray Gun

Mount the gun (Q) on a stationary support or on a reciprocating arm. The mounting rod must be *properly grounded*. Mount the gun head 254 to 300 mm (10 to 12 in.) from the workpiece.

Connect the Air Lines (Refer to the Typical Installation Drawing)

1. Install an air line filter (B) on the air line to ensure a dry, clean air supply to the gun. Dirt and moisture in the air line can ruin the appearance of your finished workpiece and can cause the power supply to malfunction.
2. Install an air line lubricator (D) as close to the pump (F) as possible.
3. Install a normally closed, 3-way air solenoid (R), or hand valve in the air supply line (A).
4. Install a bleed-type air regulator (E) on the pump and gun air supply lines to control air pressure to the pump and gun.
5. Install a bleed-type air shutoff valve (X) on the main air line, the pump line, and each gun air supply line to shut off air to the pump and/or gun(s). Install an additional bleed-type valve on each pump air supply line to relieve air trapped between this valve and the pump after the air regulator is shut off.

WARNING

The *bleed-type air shutoff valve* (X) is required in your system to relieve air trapped between this valve and the pump after the air regulator is closed. Trapped air can cause the pump to cycle unexpectedly, which could result in serious bodily injury, including splashing in the eyes or on the skin and injury from moving parts.

6. Connect the atomizing air line (S) between the main air supply line and the gun's 1/4 npt(f) atomizing air inlet.

7. Connect the cylinder air line (V) between the solenoid valve or hand valve and the gun's 1/4 npt(f) cylinder air inlet.

Connect the High Voltage Control (Refer to the Typical Installation Drawing)

An electrical signal (W) is required to actuate the normally closed, 3-way air solenoid valve (R). The air solenoid valve opens the cylinder air to the actuator, which opens the fluid needle, allowing the fluid to spray.

The electrical signal (W) also actuates a relay (T). A set of contacts from this relay is connected to pins 5 and 6 on the terminal strip marked *Remote Spraying Switch* in the 75 KV power supply. This allows the high voltage to be turned on and off automatically.

Connect the Fluid Line (Refer to the Typical Installation Drawing)

1. Before connecting the fluid line (P), blow it out with air and flush it with solvent. Use solvent which is compatible with the fluid to be sprayed.
2. Connect the fluid line between the outlet of the pump and the gun's 3/8 npsm(m) fluid inlet.
3. Install a fluid filter (G) and drain valve (H) at the pump outlet.

WARNING

The *fluid drain valve* (H) is required in your system to assist in relieving fluid pressure in the displacement pump, hose and gun; triggering the gun to relieve pressure may not be sufficient. Install a drain valve close to the pump's fluid outlet. The drain valve reduces the risk of property damage or serious bodily injury, including splashing in the eyes or on the skin and contamination from hazardous fluids.

4. Install a fluid regulator (O) on the fluid line to control fluid pressure to the gun.

WARNING

Pressure Relief Procedure

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

1. **Turn off the high voltage power supply.**
2. Turn off the air and fluid supply to the gun.
3. Trigger the gun into a grounded metal waste container to relieve fluid pressure.
4. Open the pump drain valve, having a waste container ready to catch the drainage.
5. Leave the pump drain valve open until you are ready to spray again.

Operating Checklist

Check the following list daily, before starting to operate the system, to help ensure you of safe, efficient operation.

- 1. Be sure all operators are properly trained to safely operate an automatic electrostatic air spray system.
- 2. Be sure all operators are trained how to properly and completely relieve system pressure.
- 3. Be sure the system is thoroughly grounded. See **FIRE OR EXPLOSION HAZARD** on page 3, and **Check the Electrical Grounding** on page 5.
- 4. Be sure the operator and all persons entering the spray area are properly grounded by wearing shoes with conductive soles and personal grounding straps.
- 5. Be sure ventilation fans are operating properly.
- 6. Be sure the workpiece hangers are clean and grounded. Contact points must be sharp points or knife edges.
- 7. Be sure all refuse is removed from the spray booth.
- 8. Be sure all flammable liquids in spray booth are in approved, grounded containers.
- 9. Be sure all conductive objects within 6 m (20 ft) of the gun are electrically grounded and the floor of the spray area is electrically conductive and grounded.

Filter the Fluid

Filter the fluid to remove coarse particles and sediment which could clog the spray nozzle.

Adjust the Spray Pattern

Follow these steps to establish the correct fluid flow and air flow. **DO NOT** turn the power supply on yet:

1. Set the atomizing air pressure at 2 bar (30 psi) and the fluid pressure at 0.25 bar (3 to 4 psi).
2. Choose the correct fluid nozzle and air cap combination for your application. Use instruction manual 307–803 to select the appropriate fluid nozzle and air cap. Both flow rate and fluid viscosity must be considered. A 1.2 mm (0.047 in.) fluid nozzle is furnished with the gun.
3. Adjust the fluid flow by using the fluid pressure regulator installed in the fluid line.
4. Adjust the fluid adjusting screw (39) so that needle travel is not over 4.7 mm (0.187 in.) when air is supplied to the cylinder port of the actuator. See Fig 2.
5. Use an air pressure regulator to adjust the degree of atomization. Always use the lowest air pressure possible for the most efficiency.
6. Use the fan valve (57) to change the shape of the spray pattern. See Fig 2. Turn the fan valve knob *counterclockwise for a wide pattern* and *clockwise for a solid, round pattern*.

NOTE: When increasing to a wide, flat pattern, you may have to increase the supply of fluid to the gun to maintain the same amount of coverage over a large area.

KEY

- 39 Fluid Adjusting Screw
57 Fan Valve

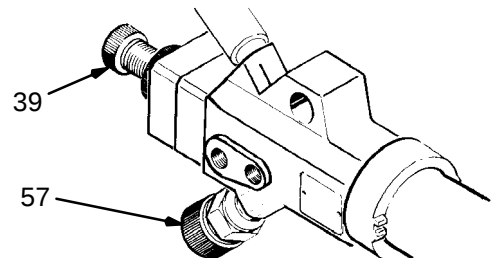


Fig 2

OPERATION

Adjust the Spray Pattern (Continued)

7. **BE SURE** all the checks have been completed under the **Operating Checklist**, page 7. Then turn on the high voltage power supply.

WARNING

To reduce the risk of serious bodily injury, including electric shock, **ALWAYS** turn off the high voltage power supply before making any adjustments to the gun which require contact with the gun (such as adjusting the fan valve or fluid adjusting screw).

8. Test the spray pattern with the power supply on. Make further adjustments as necessary. See the **Spray Pattern Troubleshooting Chart** on page 10 to correct spray pattern problems.

NOTE: Adjust the system's control device so the gun starts spraying just before meeting the workpiece and stops as soon as the workpiece has passed.

Adjustment for Gun Mounted Above the Workpiece

If the gun is mounted above the workpiece, adjust the air bleed valve (43) to prevent fluid from dripping from the front of the gun onto the workpiece. Use the following procedure.

1. Follow the **Pressure Relief Procedure** on page 7.
2. Remove the plug (86). See Fig 3 .

3. Turn the air bleed valve (43) about 1/8 of a turn *counterclockwise*.
4. Install the plug (86).
5. Spray with the gun, then shut it off. Check to see that the air flow from the air cap is enough to prevent fluid from building up and dripping off. Adjust the air bleed valve again if needed.

WARNING

For your safety, BE SURE to follow the **Pressure Relief Procedure** before adjusting the air bleed valve (43).

ALWAYS make sure the plug (86) is installed before operating the spray gun.

KEY

- 86 Plug
43 Bleed Valve

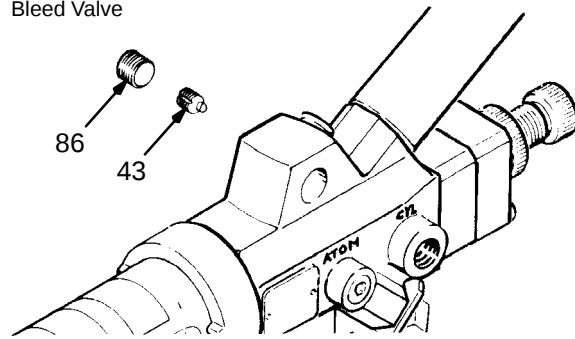


Fig 3

MAINTENANCE

Daily Care and Cleaning

WARNING

To reduce the risk of serious bodily injury, including splashing in the eyes or on the skin or electric shock, always follow the **Pressure Relief Procedure Warning** on page 7 when shutting off the system, when you stop spraying and before checking, servicing, installing, cleaning or changing any part in the system.

1. Clean the fluid and air line filters daily.
2. Clean the outside of the gun daily with a soft cloth dampened in a compatible solvent. **BE SURE** to follow the **CAUTION** on page 9.
3. Clean the air cap and fluid nozzle daily, minimum; some applications require more frequent cleaning. Follow the procedure in **Clean the Air Cap and Fluid Nozzle**, page 9. Replace the fluid nozzle and air cap if they are damaged.
4. Check the electrode wire. Straighten if bent, and replace if broken or damaged. See **Electrode Replacement**, page 14.
5. Check all of the work hangers for build-up of material; clean them, if necessary.

Clean the Air Cap and Fluid Nozzle

CAUTION

Clean all parts with a non-conductive solvent, compatible with the fluid being sprayed. Conductive solvents can cause the gun to malfunction.

Do not use any cleaning method which may allow solvent into the gun air passages. Clogged air passages cause poor atomization and excessive current demands. Point the gun down while cleaning to prevent dirty solvent from running back into air passages. **NEVER IMMERSE THE GUN IN SOLVENT.**

To avoid scratching the air cap holes and distorting the spray pattern, **DO NOT** use metal tools to clean the air cap holes. Also, make sure the electrode wire is not damaged.

Equipment needed:

- Soft bristle brush (supplied)
- Fluid nozzle wrench (supplied)
- Solvent compatible with fluid being sprayed

Procedure:

1. Follow the **Pressure Relief Procedure Warning** on page 7.
2. Engage any equipment safety locks.
3. Note the position of the fluid adjusting screw (39). See Fig 2. Turn the fluid adjusting screw to relieve spring tension on the needle assembly.
4. Remove the air cap retaining nut (27) and air cap (32). See Fig 4. With the wrench (79b) supplied, remove the fluid nozzle (30).
5. With the front of the gun pointed down, clean the air cap, fluid nozzle, and front of the gun, using the soft bristle brush and solvent.
6. Screw the fluid nozzle back into the gun. Tighten the nozzle securely with the wrench (79b). Torque the fluid nozzle to 1.1 to 1.4 N•m (10 to 12 in-lb). **DO NOT** over tighten.

7. Carefully reinstall the air cap and retaining nut. Avoid bending the electrode. Tighten the retaining nut until it is snug, allowing the air cap to turn with resistance. If it is too tight, the spray pattern will be distorted.

KEY

- 27 Retaining Nut
- 30 Fluid Nozzle
- 32 Air Cap
- 55 Electrode

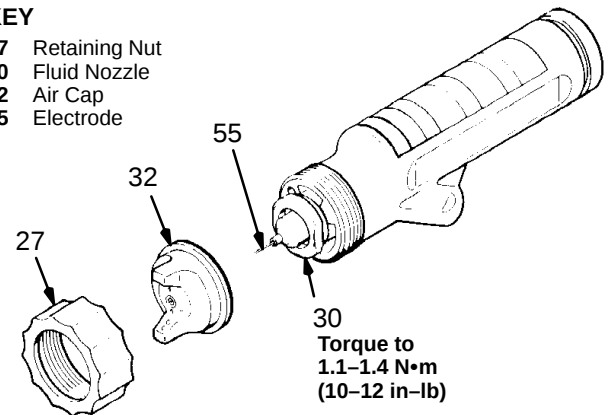


Fig 4

Flush the Spray Gun

WARNING

To reduce the risk of fire or explosion and serious bodily injury, the high voltage power supply must be **OFF** before flushing.

1. Follow the **Pressure Relief Procedure Warning** on page 7.
2. Disconnect and plug the fluid supply line.
3. Connect the solvent supply to the gun.
4. Flush the gun with solvent until it is clean.
5. Follow the **Pressure Relief Procedure Warning**, then disconnect the solvent supply.
6. Reconnect the fluid supply line.
7. Turn on the fluid and air supplies. **DO NOT turn on the power supply!**
8. Trigger the gun until it is clear of solvent.

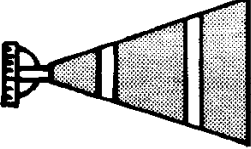
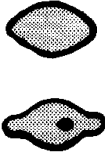
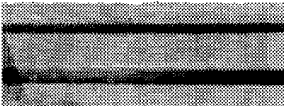
SPRAY PATTERN TROUBLESHOOTING CHART

WARNING

Installing and servicing this equipment requires access to parts which may cause electric shock or other serious bodily injury if the work is not performed properly. Do not install or service this equipment unless you are trained and qualified.

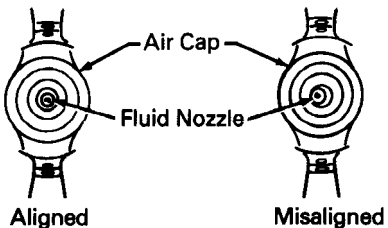
To reduce the risk of serious bodily injury, including splashing fluid or solvent in the eyes or on the skin, always follow the **Pressure Relief Procedure Warning** on page 7 before checking, adjusting, cleaning or repairing the gun or any part of the system. Disconnect the fluid hose from the gun.

NOTE: Check all possible remedies in the Troubleshooting Charts before disassembling the gun.

PROBLEM: IMPROPER SPRAY PATTERN	CAUSE	SOLUTION
Fluttering or spitting spray 	Insufficient fluid supply. Loose or cracked coupler at fluid inlet. Loose fluid tube in cup or tank. Loose fluid nozzle or damaged fluid nozzle taper seat. Dirt between fluid nozzle and barrel. Dry or worn fluid needle packing or loose packing nut permits air to get into fluid passage.	Adjust fluid regulator or fill fluid tank. Tighten or repair. Tighten. Tighten or replace fluid nozzle See page 9. Clean. See page 9. Lubricate or replace packing or tighten packing nut. See page 16.
	Fluid build-up on air cap; partially clogged horn holes. Full air pressure from clean horn hole forces fan pattern toward clogged end. Damaged fluid nozzle or air cap holes.	Clean with soft implement or submerge in suitable solvent and wipe clean. See page 9. Replace damaged part. See page 9.
	Fluid build-up on the perimeter of fluid nozzle orifice, or partially clogged fluid nozzle orifice.	Remove obstruction. Never use wire or hard instruments. See page 9.
	Too high atomization air pressure. Fluid too thin. Not enough fluid pressure.	Reduce air pressure or adjust fan air adjusting valve. Regulate fluid viscosity. Increase fluid pressure.
	Low atomization air pressure. Fluid too thick. Too much fluid.	Increase air pressure. Regulate fluid viscosity. Reduce fluid flow. Reduce fluid pressure on pressure feed guns and/or adjust fluid adjusting screw until proper pattern is obtained.
Streaks 	Last coat of fluid applied too wet. Too much air pressure. Insufficient air pressure. Non-uniform spray pattern.	Apply drier finish with multiple strokes. Use least air pressure necessary. Increase air pressure. Clean or replace air cap. See page 9.

NOTE: Some improper patterns are caused by the improper balance between air and fluid.

GUN OPERATION TROUBLESHOOTING CHART

PROBLEM	CAUSE	SOLUTION
Leakage from fluid packing nut.	Loose packing nut. Worn needle packing.	Tighten. See page 15. Replace packing assembly. See page 16.
Air leakage from front of gun.	Air valve not seating properly. Air bleed valve is open.	Clean, service. See page 19. Check, adjust or close as required. See page 8, Fig 3.
Fluid leakage from front of gun.	Electrode worn or damaged. Worn fluid seat. Fluid packing too tight. Loose fluid nozzle. Cylinder air to gun not completely shut off.	Replace electrode. See page 14. Replace fluid nozzle and/or electrode. See page 9 or 14. Adjust packing nut. See page 15. Tighten fluid nozzle. See page 9. Completely shut off cylinder air.
Fluid leaks from rear needle packing nut or drain hole.	Worn needle packing . Worn needle shaft.	Replace packing. See page 16. Replace worn needle shaft. See page 15.
"Orange Peel" finish.	Insufficient air pressure. Fluid poorly mixed or filtered. Improper thinner being used.	Increase, use least air pressure needed for good results. Remix or refilter fluid. Use proper thinner.
Excessive spray fog.	Too much air pressure. Fluid thinned too much.	Reduce, use least air pressure needed for good results. Properly thin fluid.
No fluid sprays from gun.	Fluid low. Damaged air cap. Dirty or clogged fluid nozzle. Damaged fluid nozzle. Air valve not actuating. Damaged fluid needle.	Check, add if necessary. Replace air cap. See page 9. Clean fluid nozzle. See page 9. Check, replace fluid nozzle. See page 9. Check cylinder air, fluid needle packing, and needle. Replace parts as necessary. See page 16. Replace fluid needle. See page 15.
Equipment covered with fluid.	Exhaust air flow insufficient or not directed properly. Improper distance between gun and workpiece.	Check for proper CFM, check baffles and direction of air flow. Adjust distance to 203–305 mm (8–12 in.).
Dirty air cap.	Misalignment between air cap and fluid nozzle. 	Remove and clean air cap and fluid nozzle as described in Clean the Air Cap and Fluid Nozzle , page 9, then reinstall them.

ELECTRICAL TROUBLESHOOTING CHART

PROBLEM	CAUSE	SOLUTION
Poor wrap-around.	Parts poorly grounded. High booth exhaust velocity. Fluid pressure too high. Fluid viscosity. Low or no electrostatic voltage. Faulty gun resistance. Improper distance between gun and workpiece. Atomizing air pressure too high. Fluid resistivity too low. Faulty power supply resistance. Faulty needle electrode assembly.	Clean hangers, check for proper ground on conveyer or track. Reduce within code limits. Reduce fluid pressure. Check supplier for proper fluid for electrostatic spray. See below. Check gun resistance. Resistance should be 250 megohms $\pm$ 20 from the end of the gun electrode to the end of the high voltage cable, where it connects to the power supply. If resistance is lower, check resistance of the resistor and resistor stud. Adjust spraying distance to 203–305 mm (8–12 in.). Reduce air pressure. Check fluid resistivity with paint meter and probe. Check power supply resistance. See instruction manual supplied with power supply. Replace needle electrode assembly. See page 14.
Low or no electrostatic wrap.	Power supply is off. Blew fuse on inside of power supply. Power line voltage is incorrect.	Line power switch is off, should be turned on. Replace fuse. Adjust for correct voltage.
Low or no electrostatic wrap. (Spraying voltage light does not come on.)	Faulty high voltage power supply. Air flow switch is stuck or sluggish. Gun held too close to part being painted. Fluid is too conductive. Electrical short in the high voltage cable. Electrical short in gun. Faulty high voltage power supply.	See instruction manual supplied with power supply. Replace or repair air flow switch. Increase distance between part and gun. Lower conductivity of fluid. Replace the high voltage cable. Disassemble gun and visually check the resistor tube, resistor stud, fluid packings, and resistor and packing cavities in the gun barrel and body for dirt and/or damage. Clean and replace parts as required. See instruction manual supplied with power supply.

ELECTRICAL TROUBLESHOOTING CHART

PROBLEM	CAUSE	SOLUTION
Low or no electrostatic wrap. (Spraying voltage light is on all the time.)	Faulty resistor stud. Resistor not making good connection with contact inside of gun body. High voltage cable not making good contact with resistor. Cable insulation punctured. Spring at transformer end of cable not making good contact. Electrical short in gun. Faulty high voltage power supply.	Replace resistor stud. See page 18. Service. See page 18. Replace conductive spring as required. Replace cable. Stretch spring. Disassemble gun and visually check the resistor tube, resistor stud, fluid packings, and resistor and packing cavities in the gun barrel and body for dirt and/or damage. Clean and replace parts as required. See instruction manual supplied with power supply.
Spraying voltage stays on when gun is not actuated.	Gun actuating device is faulty.	Check actuating device, replace if faulty.
Operator gets mild shock.	Operator not properly grounded or is in contact with ungrounded object. Gun not properly grounded.	Be sure floor is properly grounded. Wear shoes with conductive soles and wear personal grounding straps. Be sure operator is not in contact with or carrying any metallic items which could build up electrical charge. See Check the Electrical Grounding, page 5.
Operator gets mild shock when touching workpiece.	Workpiece not properly grounded.	Clean workpiece hangers. Check for proper ground on conveyor or track.

Gun Disassembly

WARNING

Installing and servicing this equipment requires access to parts which may cause electric shock or other serious bodily injury if the work is not performed properly. Do not install or service this equipment unless you are trained and qualified.

Follow the **Pressure Relief Procedure Warning**, page 7, before servicing the gun or any part of the system.

NOTE: Check all possible remedies in the **Troubleshooting Charts** before disassembling the gun.

CAUTION

If the plastic parts of the gun must be held securely, ALWAYS clamp them in padded vice jaws to prevent damage to the parts.

ALWAYS lubricate o-rings and seals with petroleum jelly.

ALWAYS remove gun from worksite for service or repair. Service or repair area must be clean.

Flush the gun as described under **Flush the Spray Gun** in the Operation Section. Follow the **Pressure Relief Procedure Warning** on page 7.

To disconnect the gun from the power supply and the fluid and air supplies follow these steps:

1. Turn off the high voltage at the power supply.
2. Turn off the line voltage input to the power supply.
3. Shut off the fluid pump and actuate the gun to relieve the pressure.
4. Disconnect the fluid hose and air lines from the gun.
5. Flush the gun with a compatible solvent.
6. Disconnect the high voltage cable from the power supply. Cover the ends of the cable.

Electrode Replacement

1. Remove the air cap and fluid nozzle as described in **Clean the Air Cap and Fluid Nozzle**, page 9.
2. Remove the electrode (55) with the wrench (79d) supplied. See Fig 5.
3. Install the new electrode with the wrench. **DO NOT** over tighten.

CAUTION

To avoid damaging the plastic threads or contact wire, be very careful when installing the electrode.

4. Install the air cap and fluid nozzle as described in **Clean the Air Cap and Fluid Nozzle**.

KEY

79d Wrench

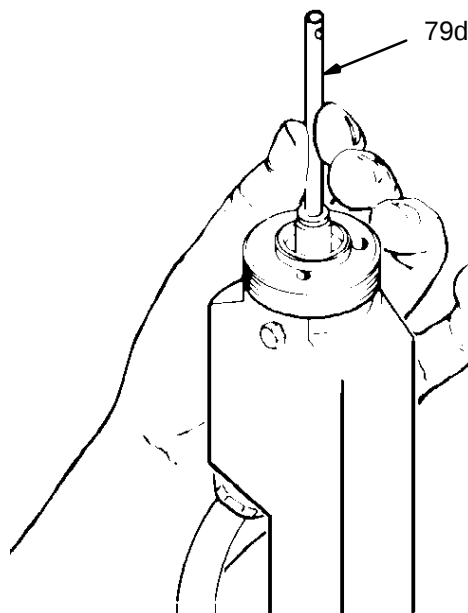


Fig 5

Fluid Needle Removal

1. Remove the air cap and fluid nozzle as described in **Clean the Air Cap and Fluid Nozzle**, page 9.
2. Remove the electrode (55) with the wrench (79d) supplied. See Fig 5.
3. Note the position of the adjusting screw (39). Then remove the adjusting screw, retaining nut (35), spring (63), and washer (68). See Fig 6.
4. Remove the four screws (12) and the plate (37) .
5. Loosen the needle packing nut (23) half a turn, using the wrench (79c) supplied. See Fig 7.
6. With a long nose pliers, pull out the needle assembly (61) from the back of the actuator. See the **Parts Drawing**, page 20.

KEY

- 12 Screw
- 35 Retaining Nut
- 37 Plate
- 39 Adjusting Screw
- 63 Spring
- 68 Washer

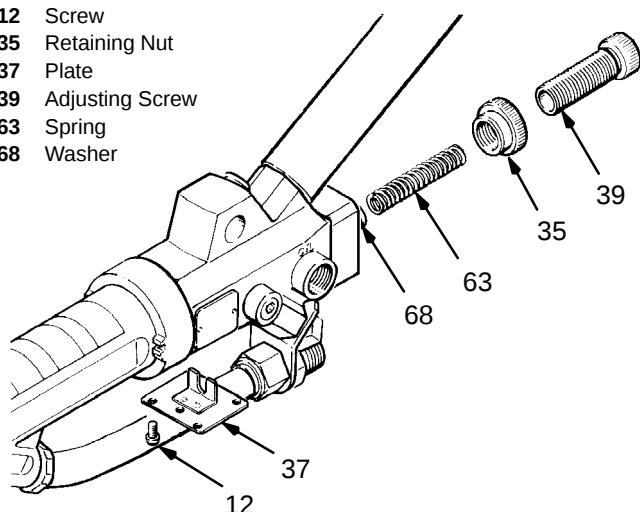


Fig 6

KEY

- 23 Packing Nut
- 79c Wrench

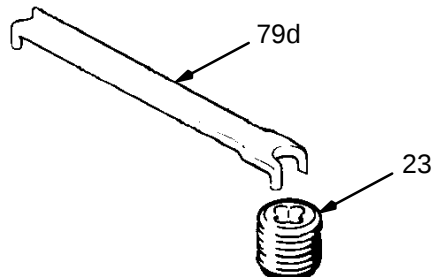


Fig 7

Fluid Needle Replacement

NOTE: The fluid needle assembly (61) and the actuator shaft (42) are sent from the factory with the retaining nuts (34) set for the correct length. If these nuts are moved, reset them to the proper dimension shown in Fig 8.

1. Before replacing the needle assembly, thoroughly lubricate it with petroleum jelly. Twist the needle when installing it into the gun.
2. Install the adjusting screw (39), retaining nut (35), spring (63) and washer (68). See Fig 6. Set the adjusting screw to its original position and tighten the retaining nut.
3. Install the electrode (55) with the wrench (79d). See Fig 5.
4. Install the fluid nozzle (30) and air cap (32) as described in **Clean the Air Cap and Fluid Nozzle**.
5. Apply air to the gun cylinder (CYL) air port.
6. Adjust the packing nut (23) with the wrench (79c) just tight enough to prevent leakage. See Fig 7.
7. Install the plate (37) with the four screws (12). See Fig 6.
8. If the fluid needle packing (23) or resistor tube (48) must be replaced, the barrel (60) must be removed from the gun body (56).

KEY

- 34 Retaining Nut
- 42 Actuator Shaft
- 61 Fluid Needle

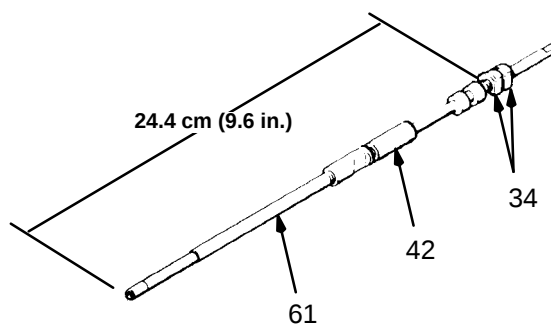


Fig 8

Barrel Removal

1. Remove the fluid needle as instructed in **Fluid Needle Replacement**, page 15.
2. Disconnect the fluid tube fitting (5) from the adapter (26). See Fig 9. Pull the fluid tube (47) out of the adapter (26).
3. Loosen the barrel nut (28), using wrench (79b) supplied.
4. Pull the gun barrel (60) forward, off the resistor tube. Be careful not to lose the gasket (24). See Fig 12.s

KEY

5	Tube Fitting	39	Adjusting Screw
26	Adapter	47	Fluid Tube
27	Retaining Nut	60	Gun Barrel
28	Barrel Retaining Nut	79b	Wrench
32	Air Cap		

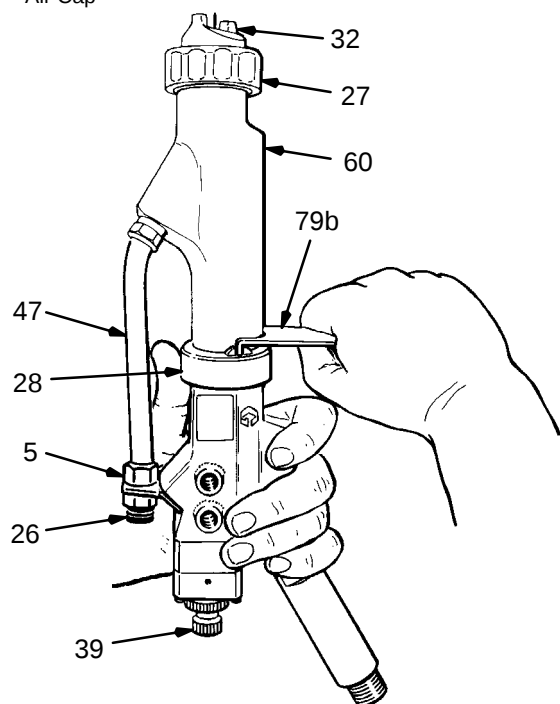


Fig 9

Fluid Packing Removal

1. Remove the barrel as instructed in **Barrel Removal**.
2. Remove the packing nut (23) from the rear of the barrel, using the wrench (79c) supplied. See Fig 7.
3. Remove the insulator (44) from gun barrel. See Fig 10.
4. Place the barrel on the bench in a vertical position with the back of the barrel touching the bench. Insert rod (79e) supplied (see Parts Drawing) into the front of the barrel. Gently tap out the fluid needle packings (4, 29, 91) and retaining nuts (92).

CAUTION

Use extreme care when handling the packing (4) because it is very brittle. You may want to keep extra packings on hand.

Clean all of the parts in non-conductive solvent compatible to the fluid being used, such as xylol or mineral spirits.

5. Check all parts for wear or damage. Replace if necessary.
6. Slide the packing nut (23) onto the fluid needle shaft (61). Then slide the insulator (44) onto the fluid needle. The holes in the one end of the insulator (44) must face toward the electrode (55) end of the fluid needle shaft (61). Refer to **Parts Drawing**, page 20.
7. Install the fluid needle packings (4, 29, 91) and retaining nuts (92) onto the fluid needle shaft (61) in the order shown in Fig 10.

KEY

4	Packing	49	Bracket
5	Tube Fitting	60	Gun Barrel
23	Packing Nut	70	Washer
26	Adapter	84	Fitting
28	Barrel Ret. Nut	85	Nut
29	O-Ring	91	O-Ring
44	Insulator	92	Retaining Nut
47	Fluid Tube		

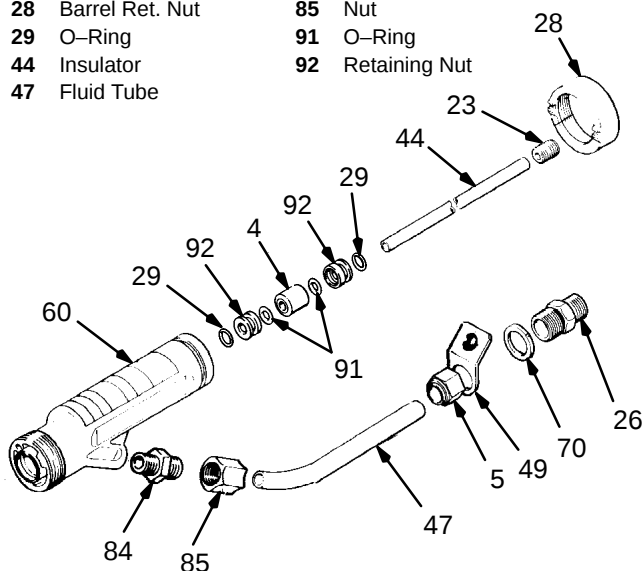


Fig 10

Barrel Reassembly

1. Insert the needle shaft assembly into the barrel and very lightly tighten the packing nut (23) with the wrench (79c). See Fig 7 and 10. Then pull the needle back out of the barrel.
2. Assemble the barrel to the actuator, tightening the barrel retaining nut (28) with the wrench (79b). See Fig 9.
3. Place fluid tube (47) back into the adapter (26). Tighten the tube fitting (5) over the adapter. See Fig 10.
4. Install the needle assembly as instructed in **Fluid Needle Replacement**, page 15.

Resistor Assembly Replacement

1. Remove the barrel as instructed in **Barrel Removal**, page 16.
2. Using a megohmmeter, check the resistance of the resistor (62) from the end of the spring (58) to the end of the high voltage cable. The resistance should be 225 megohms, ± 20 .
3. If the resistor (62) needs replacement, pull out the spring (58) and the resistor (62) from the resistor tube (48). See Fig 11.
4. When replacing the resistor (62) the plugged end of the resistor must face toward the back part of the gun barrel (60). Be sure that the spring (66) is in the tube (48).

CAUTION

The conductive spring (58, 66) and Viton® o-ring (6, 7) *MUST* be in place or the gun will malfunction. See Fig 12, page 18.

5. Assemble the gun barrel to the actuator, tightening the barrel nut (28) with the wrench (79b). See Fig 9.
6. Place the fluid tube (47) back into the adapter (26), and tighten the tube fitting (5) over the adapter.
7. Install the needle assembly as instructed in **Fluid Needle Replacement**, page 15.

Resistor Stud Testing

1. Remove the barrel as instructed in **Barrel Removal**, page 16.
2. Insert a conductive rod (B) into the gun barrel and against the metal contact in the front of the barrel. See Fig 12.
3. Measure the resistance between the conductive rod (B) and the electrode (55). The resistance should be 20–30 megohms. If the resistance is correct, refer to the **Electrical Troubleshooting Chart** for other possible causes of poor performance, or contact the nearest authorized service agency.
4. If the resistance is outside the specified range, remove the electrode (55). See **Electrode Replacement**, page 14. Measure the resistance between the conductive rod (B) and the resistor in the inside diameter of the resistor stud (83).
5. The resistance should be 20–30 megohms. If the resistance is correct, the electrode is defective and must be replaced. If the resistance is outside the specified range, the resistor is defective and the resistor stud (83) must be replaced. See **Resistor Stud Replacement**, page 18.

KEY

- 6 O-Ring
- 48 Resistor Tube
- 58 Spring
- 60 Gun Barrel
- 62 Resistor
- 66 Spring

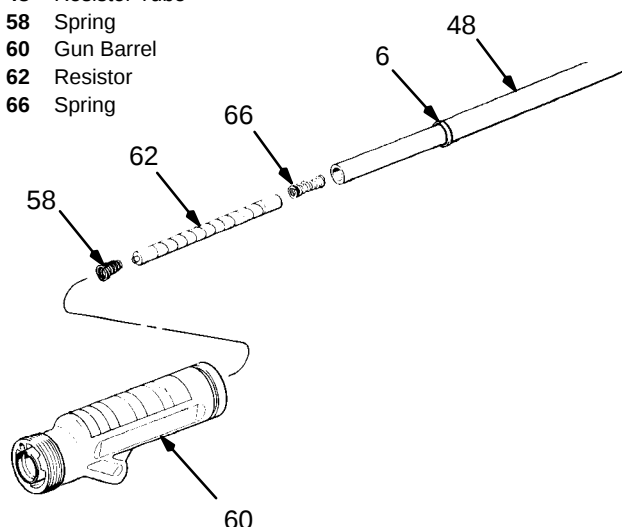


Fig 11

KEY

- A Megohmmeter
- B Conductive Rod
- 55 Electrode
- 60 Gun Barrel

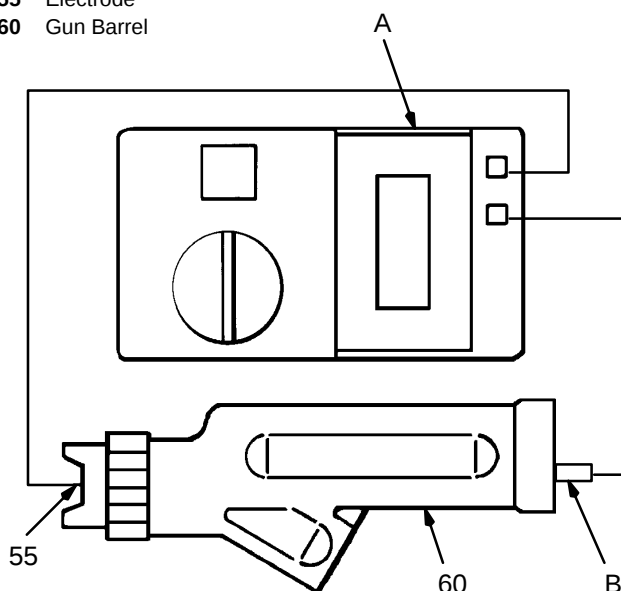


Fig 12

KEY

- 6 O-Ring
- 7 O-Ring
- 22 Retaining Ring
- 24 Gasket
- 28 Barrel Retaining Nut
- 48 Resistor Tube
- 52 Retainer
- 53 Insulator
- 56 Gun Body
- 58 Spring
- 60 Gun Barrel
- 62 Resistor
- 66 Spring

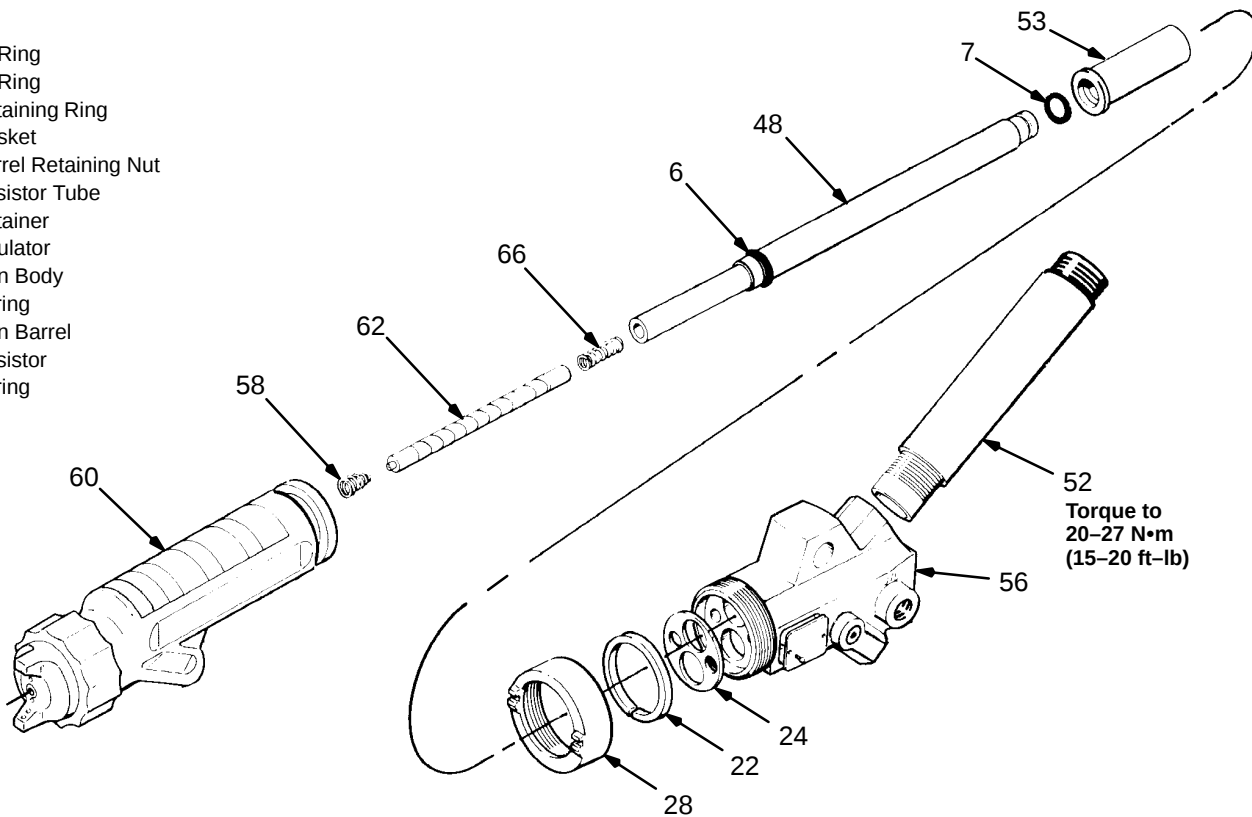


Fig 13

Resistor Tube Replacement

1. Remove the barrel as instructed in **Barrel Removal**, page 16.
2. Remove the gasket (24) from the gun barrel. See Fig 13.
3. Remove the spring (58) and o-rings (6). Inspect for damage and replace if necessary.

CAUTION

Clean all of the parts in non-conductive solvent compatible to the fluid being used, such as xylol or mineral spirits.

4. Remove the retainer (52).
5. Pull the resistor tube (48) from the front part of the gun body (56).
6. Push the new resistor tube into the gun body. The resistor tube should protrude 120.6 mm (4-11/16 in.) from the top of the gun body (56). See Fig 14.
7. Install the o-ring (7). See Fig 13.
8. Install the insulator (53) over the end of the resistor tube (48).

NOTE: Place the insulator (53) shoulder end first over the resistor tube (48).

9. Install the retainer (52) over the resistor tube and into the gun body.

10. Slide the o-ring (6) into place over resistor tube (48).
11. With the spring (58) and gasket (24) in place, slide the gun barrel (60) over the resistor tube (48). Tighten the barrel nut (28) with the wrench (79b). See Fig 9.
12. Install the retaining needle as described in **Fluid Needle Replacement**, page 15.

KEY

- 48 Resistor Tube
- 56 Gun Body

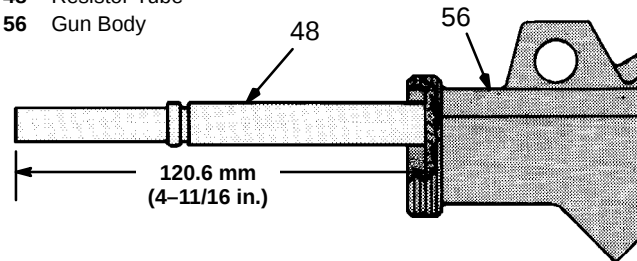


Fig 14

Resistor Stud Replacement

1. Remove the air cap (32) and fluid nozzle (30) as described in **Clean the Air Cap and Fluid Nozzle**.
2. Remove the electrode (55) as described in **Electrode Replacement**.
3. Using the tool (79g) supplied, unscrew and remove the resistor stud (83) with the o-ring (6) and washer (89). See Fig 15.

4. To replace the contact (90), push it out the front of the gun barrel (36) with the rod (79e) supplied. Press the new contact into the gun body until it bottoms out.
5. Lubricate the o-ring (6) with petroleum jelly and install it on the resistor stud (83).
6. Install the washer (89) in the gun barrel.
7. Using the resistor stud tool (79g), reinstall the resistor stud in the front of the gun barrel (60). Tighten until snug.
8. Install the electrode (55) as instructed under **Electrode Replacement**.
9. Install the fluid nozzle (30) and air cap assembly (32) as described in **Clean the Air Cap and Fluid Nozzle**.

KEY

- | | |
|----|---------------|
| 6 | O-Ring |
| 60 | Gun Barrel |
| 83 | Resistor Stud |
| 89 | Washer |
| 90 | Contact |

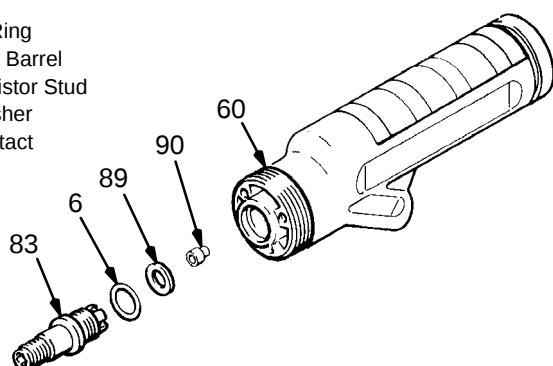


Fig 15

Servicing the Actuator

1. Remove the needle as instructed in **Fluid Needle Removal**, page 15.

KEY

- | | | | | | |
|----|---------------|----|-----------------|----|------------|
| 9 | Screw | 38 | Housing | 65 | Housing |
| 14 | O-Ring | 39 | Adjusting Screw | 68 | Washer |
| 16 | O-Ring | | | 71 | Lockwasher |
| 17 | Spring | 40 | Piston | 72 | Gasket |
| 35 | Retaining Nut | 63 | Spring | 76 | O-Ring |

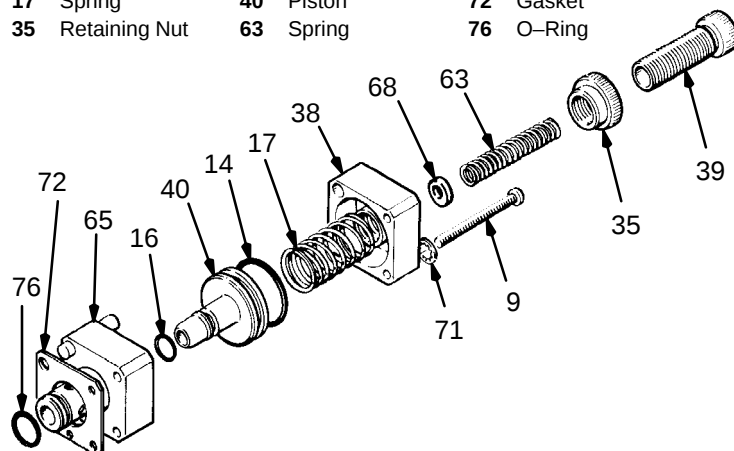


Fig 16

2. Remove the four slotted head screws (9) and lockwasher (71). See Fig 16.
3. Remove the retaining housing (38) and spring (17) from the valve housing (65).
4. Remove the valve housing (65). The piston parts from the gun body (56) will come out with the housing. Clean all the parts and replace any worn parts.

NOTE: To inspect the o-ring (16), the piston (40) must be tapped lightly through the center hole of the housing (65) with a small punch.

5. Lightly coat all the parts with petroleum jelly, then reassemble the parts as shown in Fig 16.
6. Assemble the gun as instructed in **Fluid Needle Replacement**, page 15.

Fan Air Valve Replacement

1. Place a wrench on the flats of the fan valve assembly housing (AA) and remove it from the gun body. See Fig 17.
2. Rotate the adjusting screw (CC) *counterclockwise*, removing it from the valve housing (AA). Clean all the parts, inspect them for wear or damage, and replace as necessary.
3. Lubricate the o-ring (DD) and the threads of the adjusting screw (CC) with petroleum jelly.
4. Install the retaining ring (BB) on the adjusting screw (CC). Then back the adjusting screw out of the housing (AA) until it bottoms out against the retaining ring (BB).
5. Apply Loctite® pipe sealant to the threads of the housing (AA). Install the housing into the gun body and torque it to 20–27 N•m (14–20 ft-lb).

KEY

- | | |
|----|-----------------|
| AA | Housing |
| BB | Retaining Ring |
| CC | Adjusting Screw |
| DD | O-Ring |

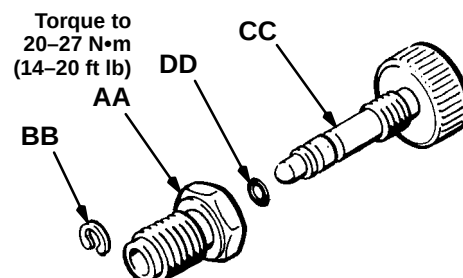
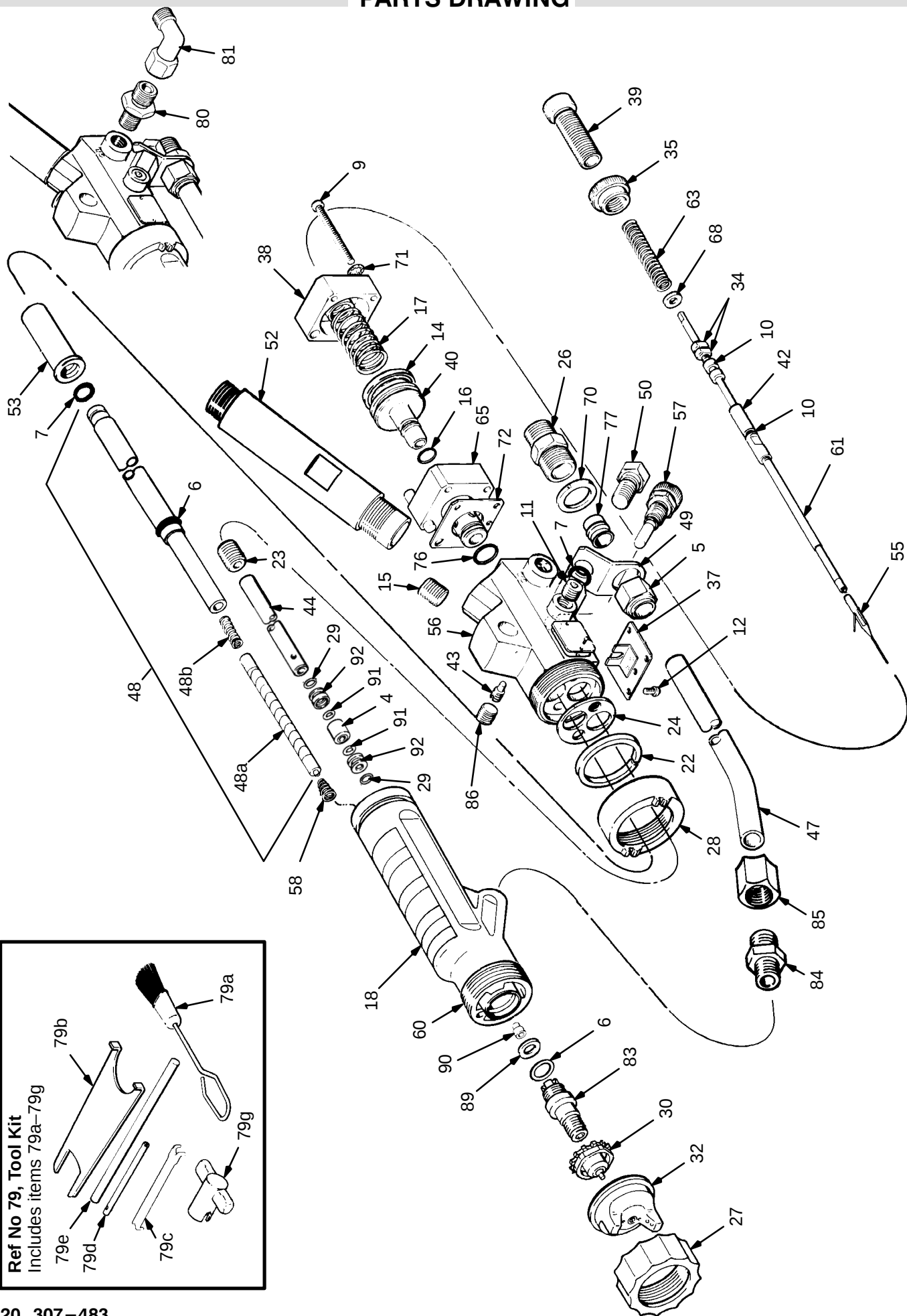


Fig 17

PARTS DRAWING



PARTS LIST

REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
4*	105-662	PACKING, needle; Teflon®	1	53	177-000	INSULATOR	1
5	106-262	FITTING, tube	1	55	181-824	ELECTRODE	1
6*	105-667	O-RING, Viton®	2	56	215-951	BODY, gun	1
7*	105-668	O-RING, Viton	2	57	215-952	FAN VALVE ASSY.	1
9	105-797	SCREW, slotted hd; M4 x 0.7 x 45	4	58	177-233	SPRING, taper	1
10*	105-798	O-RING, Viton	2	60	180-066	BARREL, gun	1
11	104-765	PLUG, pipe	1	61	218-652	NEEDLE ASSY., fluid	1
12	105-800	SCREW, slotted hd; M3 x 0.5 x 6	4	63	724-391	SPRING	1
14	598-706	SEAL, u-cup; UHMWPE	1	65	217-066	HOUSING, valve	1
15	106-144	SETSCREW; M10 x 1.5 x 16	1	68*	102-360	WASHER, flat; 3/16	1
16*	155-685	O-RING, buna-N	1	70*	177-839	WASHER	1
17	170-253	SPRING, compression	1	71*	157-021	LOCKWASHER, int. tooth; 3/16	4
18**	179-790	LABEL, warning	1	72*	177-200	GASKET	1
22	176-930	RING, retaining	1	76	105-796	O-RING; Viton	1
23	176-936	NUT, packing	1	77	178-131	ADAPTER	1
24*	176-947	GASKET, housing	1	79	215-642	TOOL KIT; Includes items 79a to 79g	1
26	181-384	ADAPTER, fluid; 3/8-18.6 special form straight pipe thread	1	79a	105-749	•BRUSH, cleaning	1
27	176-968	NUT, retaining	1	79b	177-004	•WRENCH, fluid nozzle	1
28	176-969	NUT, retaining, barrel	1	79c	177-732	•WRENCH, packing nut	1
29*	106-167	O-RING, perfluoroelastomer	2	79d	177-007	•WRENCH, needle	1
30	181-299	FLUID NOZZLE; See Manual 307-803	1	79e	179-803	•ROD, packing removal	1
32	180-739	AIR CAP; See Manual 307-803	1	79f	107-158	•WRENCH, resistor stud	1
34	177-197	NUT, retaining	2	79g	183-107	•TOOL, resistor stud	1
35	177-198	NUT, retaining	1	80	162-453	NIPPLE; 1/4 npt X 1/4 npsm	2
37	177-203	PLATE	1	81	722-615	ELBOW; 1/4 npt(m) x 12/4 npsm(f) swivel	2
38	177-204	HOUSING, retaining	1	83	220-923	STUD, resistor	1
39	177-205	ADJUSTING SCREW	1	84	107-207	FITTING, male	1
40	681-332	PISTON, valve	1	85	107-208	NUT, ferrule	1
42	181-541	SHAFT, actuator	1	86	103-147	PLUG, pipe	1
43	177-209	VALVE, bleed	1	88**	176-898	TAG, warning (not shown)	1
44	183-739	INSULATOR	1	89	181-825	WASHER	1
47	178-246	TUBE, fluid; 19.6 cm (7.7 in.); polyethylene	1	90	181-827	CONTACT	1
48	217-271	TUBE, resistor; Includes items 48a & 48b	1	91	106-174	O-RING; Kalrez®	2
48a		•RESISTOR, primary	1	92	177-918	NUT, retaining; M14 x 1.25	2
438b		•SPRING	1				
49	177-444	BRACKET, tube	1				
50	177-445	PLUG; M12 x 1.25	1				
52	177-837	RETAINER, sleeve	1				

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

**Extra warning tags and labels are supplied at no charge.

Safety warning signs available at no charge. Must be ordered separately. See page 22.

SERVICE INFORMATION

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

ASSEMBLY CHANGED	PART STATUS	REF NO.	PART NO.	NAME
217-172 Spray Gun	OLD	18	172-045	Label
	NEW	18	179-790	Label
	OLD	24	178-271	Gasket
	NEW	24	176-947	Gasket
	OLD	29	176-926	Support
	NEW	29	106-167	O-Ring
	OLD	44	180-600	Insulator
	NEW	44	183-739	Insulator
	OLD	55	179-755	Electrode
	NEW	55	181-824	Electrode
	DELETED	78	176-921	Screw
	ADDED	79g	183-107	Tool
	OLD	83	179-404	Stud
	NEW	83	220-923	Stud
	DELETED	87	107-155	Spring
	OLD	89	180-208	Washer
	NEW	89	181-825	Washer
	ADDED	90	181-827	Contact
	ADDED	91	106-174	O-Ring
	ADDED	92	177-918	Nut

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

WARNING

When servicing use only genuine Graco replacement parts. Use of other parts could alter the grounding continuity of the gun, which could cause fire and explosion and result in property damage and serious bodily injury.

HOW TO ORDER REPLACEMENT PARTS

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

6 digit Part Number	Qty	Part Description

ACCESSORIES

Accessories must be purchased separately.
Use only **GENUINE GRACO PARTS AND ACCESSORIES**.

WARNING

NEVER operate your equipment at a working pressure rating that is higher than the lowest rated component in your system. Lower rated components may not be able to withstand the pressure developed by the pump and may rupture, causing serious bodily injury or property damage.

The accessories in this box are approved by Factory Mutual.

GROUNDING AIR SUPPLY HOSE 217-069

12 bar (175 psi) MAXIMUM WORKING PRESSURE
7.87 mm (0.31 in.) ID, 1/4 npsm(fbe),
15 m (50 ft) long, buna-N

GROUNDING AIR SUPPLY HOSE (Nylon)

15.75 bar (225 psi) MAXIMUM WORKING PRESSURE
6.35 mm (0.25 in.) ID, 1/4 npsm(fbe)

215-630	8 m (25 ft)
215-631	15 m (50 ft)
215-632	23 m (75 ft)
215-633	30.5 m (100 ft)
215-634	46 m (150 ft)

FLUID HOSE ASSEMBLIES (Nylon)

15.75 bar (225 psi) MAXIMUM WORKING PRESSURE
6.35 mm (0.25 in.) ID, 3/8 npsm(fbe)

215-637	8 m (25 ft)
215-638	15 m (50 ft)

HIGH VOLTAGE POWER SUPPLIES

Contact your Graco distributor for information.

HIGH VOLTAGE CABLES for 75 KV Power Supplies

217-306	8 m (25 ft)
217-305	15 m (50 ft)
217-308	23 m (75 ft)
217-309	30.5 m (100 ft)
217-310	46 m (150 ft)

SAFETY WARNING SIGNS

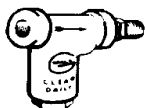
Available at no charge from Graco.

172-049	Warning Sign (English)
172-149	Warning Sign (French)
172-150	Warning Sign (German)
172-772	Warning Sign (Spanish)

The accessories below and on the following page have NOT been tested by Factory Mutual.

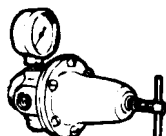
FILTER (AIR OR PAINT) 202-271

52 bar (750 psi) MAXIMUM WORKING PRESSURE
With 250 micron (60 mesh) element,
3/8 npt(f) inlet, 3/8 npt(m) outlet



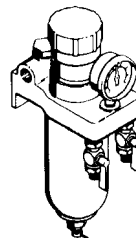
HIGH VOLUME AIR REGULATOR 206-199

0-9 bar (0-125 psi) Regulated Pressure
14 bar (200 psi) Steel Pressure Gauge
1/2 npt(f) inlet and outlet



AIR FILTER & MOISTURE SEPARATOR 202-660

12.6 bar (180 psi) MAXIMUM WORKING PRESSURE
Removes harmful moisture and contaminants from compressed air supply. Porous bronze 50 micron filter and a 100 micron mesh inlet strainer. 1/2 npt(f) inlet and two 1/4 npt(m) regulated outlets.



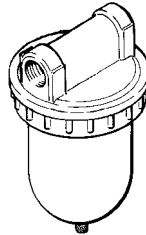
ACCESSORIES

AIR LINE FILTER

17.5 bar (250 psi) MAXIMUM WORKING PRESSURE
Removes harmful moisture and contaminants from compressed air supply. Porous bronze 40 micron filter element. Manual bowl drain.

106-148 3/8 npt(f) inlet and outlet

106-149 1/2 npt(f) inlet and outlet



FILTER-REGULATOR ASSEMBLY 217-075

14 bar (200 psi) MAXIMUM WORKING PRESSURE
Removes harmful moisture and contaminants from compressed air supply. Porous bronze 40 micron filter. 1/2 npt(f) inlet, two 3/8 npt(F) outlets, and two 1/4 npt(m) regulated outlets.

AIR LINE LUBRICATORS

17.5 bar (250 psi) MAXIMUM WORKING PRESSURE

214-847 3/8 npt inlet and outlet

214-848 1/2 npt inlet and outlet

214-849 3/4 npt inlet and outlet

STAINLESS STEEL FLUID PRESSURE REGULATORS

17.5 bar (250 psi) MAXIMUM WORKING PRESSURE
0.3-6.8 bar (5-100 psi) REGULATED PRESSURE
1/4 npt air inlet (Model 214-980 only), 3/8 npsm fluid inlet, 3/8 npt fluid outlet and 1/4 npt gauge port.

Spring Operated Fluid Regulators

214-895 Without pressure gauge & mounting tube.

214-706 With 6.8 bar (100 psi) pressure gauge & gauge mounting tube.

214-971 With 6.8 bar (100 psi) chrome plated gauge & stainless steel gauge mounting tube.

Air Operated Fluid Regulator

214-980 1 bar (15 psi) MAXIMUM INBOUND AIR PRESSURE

TWIST-LOCK RECIRCULATING COUPLER 210-017

14 bar (200 psi) MAXIMUM WORKING PRESSURE
1/4 npsm(m) circulating ports.

TWIST-LOCK COUPLER 208-087

14 bar (200 psi) MAXIMUM WORKING PRESSURE
3/8 npsm(f)

3-WAY AIR VALVE 722-502

PAINT RESISTANCE METER 722-886

Used with 722-860 Paint Probe to measure resistance of paint. **Not for use in Hazardous areas.**

PAINT PROBE 722-860

Used with 722-886 Paint Resistance Meter to measure resistance of paint. **Not for use in Hazardous areas.**

UNIVERSAL GUN BRACKET 590-236

RECIPROCATING GUN BRACKET 725-973

Note: All safety barriers and interlocks are to be supplied by the customer

STATIONARY GUN MOUNTING STAND 722-562

STATIONARY GUN BRACKET 724-344

REMOTE SWITCH & SIGNAL LIGHT 728-386



CONTROL PANEL 218-394

For one or two gun operation. Includes cabinet mounted air regulator, air filter, three-way triggering valve and air atomizing gauge.

CONDUCTIVE (SOLVENT BASE) HOSE KIT 218-622

For converting gun to handle conductive (solvent base) fluids.

CONDUCTIVE (WATER BASE) HOSE KIT 218-621

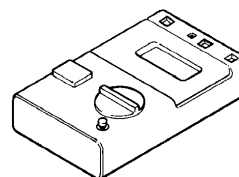
For converting gun to handle conductive (water base) fluids.

WATER BASE PACKING KIT 220-015

For converting packings to handle water base fluids.

MEGOHMMETER 218-979

500 Volt output; 0.01-2000 megohms.
Not for use in Hazardous areas.



TECHNICAL DATA

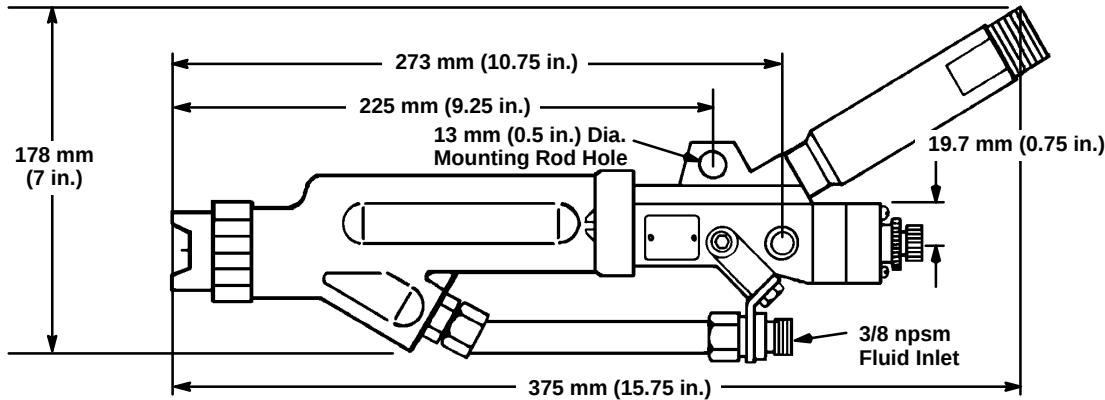
Operating Voltage Range 0–75 KV
Maximum Working Air Pressure 7 bar (100 psi)
Maximum Fluid Working Pressure 7 bar (100 psi)
Minimum Air Cylinder Operating Pressure .. 3.4 bar (50 psi)
Fluid Inlet 3/8 npsm(m)
Atomizing Air Inlet 1/4 npt(f)
Cylinder Air Inlet 1/4 npt(f)
High Voltage Connector M18 x 1.5 (m)

Weight (*without cable*) 0.425 Kg (1 lb 15 oz)
Paint Resistivity Range 7 megohm cm to infinity
Wetted Parts Nylon, Stainless Steel, Polyethylene,
Acetal Copolymer, Teflon®, Delrin®

Teflon®, Viton®, and Delrin® are registered trademarks of the DuPont Co.

Loctite® is a registered trademark of the Loctite Corporation.

DIMENSIONAL DRAWING



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 or two thousand hours of operation from time of sale, repair or replace any part of the equipment proven defective. However, any deficiency in the internal power supply and alternator (excluding turbine bearings) will be repaired or replaced for thirty six months or six thousand hours of operation from time of sale. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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

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

DISCLAIMERS AND LIMITATIONS

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

EQUIPMENT NOT COVERED BY GRACO WARRANTY

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO ACCESSORIES, EQUIPMENT, MATERIALS, OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motor, switches, hose, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

Factory Branches: Atlanta, Chicago, Dallas, Detroit, Los Angeles, West Caldwell (N.J.)

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

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