INSTRUCTIONS–PARTS LIST

308–385

Rev. C
Supersedes A
and PCN B

INSTRUCTIONS

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

AUTOMATIC ELECTROSTATIC

Model PRO 5500sc ™ Air Spray Gun

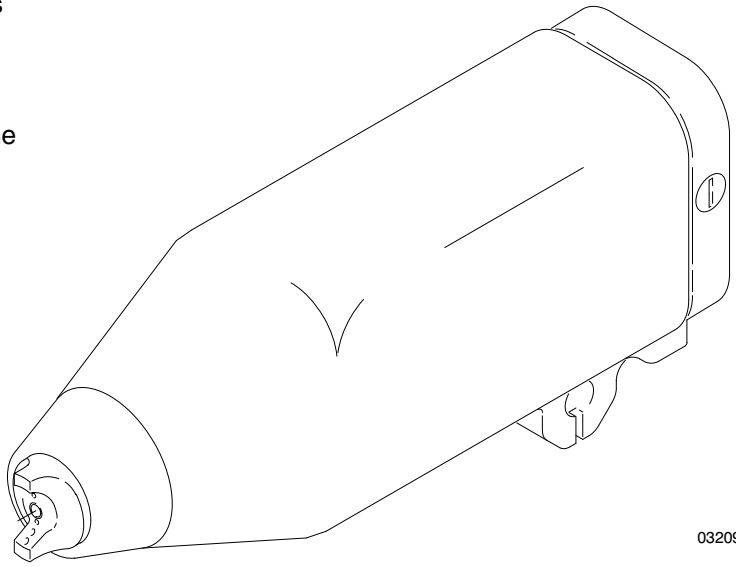
100 psi (7 bar) Maximum Working Pressure

For use with Class *I*, Group D paint spray materials

U.S. PATENT NO. 4,290,091; 4,219,865; 4,497,447; 4,462,061; 4,660,774;
5,063,350; 5,073,709; 5,080,289; 5,093,625; 5,289,977
Patented 1986, 1987 Canada
Brevete 1986, 1987
U.K. PATENT NO. 2,147,158; 2,142,559B; 2,140,327–B
Other Foreign Patents Pending

Part No. 236–683, Series A
Complete Standard PRO 5500sc Spray Gun: includes spray gun, shroud, manifold, and mounting bracket

Part No. 236–684, Series A
Complete PRO 5500sc Recirculating Spray Gun: same as part no. 236–683 spray gun only with part no. 236–851 recirculation kit installed



0320

Factory Mutual System
Approved

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

Notes

Table of Contents

Symbols

Warning Symbol

⚠ WARNING

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

Caution Symbol

⚠ CAUTION

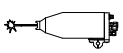
This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

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

- Electrostatic equipment must be used only by trained, qualified personnel who understand the requirements stated in this instruction manual.
- Ground the equipment, personnel in or close to the spray area, the object being sprayed, and all other electrically conductive objects in the spray area. See **Ground the System** on page 14.
- If there is any static sparking while using the equipment, **stop spraying immediately**. Identify and correct the problem.
- Provide fresh air ventilation to avoid the buildup of flammable or toxic vapors. Interlock the gun turbine air supply to prevent operation of the power supply unless the ventilating fans are on. See **Ventilate the Spray Booth** on page 9.
- When flushing or purging electrostatic equipment, use solvents with a flash point equal to or greater than that of the fluid being sprayed.
- To clean the exterior of the electrostatic equipment, use solvents with a flash point higher than 100°F (38°C).
- Do not flush the system with the gun electrostatics turned on.
- Do not turn on the gun electrostatics until all solvent is removed from the system.
- Use only non-sparking tools to clean residue from the booth and hangers.
- Extinguish all open flames or pilot lights in the spray area.
- Keep the spray area free of debris, including solvent, rags, and gasoline.
- Do not store any flammable fluids in the spray area.
- Do not turn on or off any light switch in the spray area while operating or if fumes are present.
- Do not smoke in the spray area.
- Do not operate a gasoline engine in the spray area.



PRESSURIZED EQUIPMENT HAZARD

Spray from the gun, hose leaks, or ruptured components can splash fluid in the eyes or on the skin and cause a serious injury.

- Do not point the spray gun at anyone or any part of the body.
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** on page 17 whenever you: are instructed to relieve the pressure; stop spraying; clean, check, or servicing the equipment; and install or clean the fluid nozzles.
- Tighten all the fluid connections before operating the equipment.
- Check the hoses, tubes and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.

⚠ WARNING

EQUIPMENT MISUSE HAZARD

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

- This equipment is for professional use only.
- Read all the instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain about the usage, call Graco Technical Assistance at 1–800–543–0339.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. This equipment has a **100 psi (7 bar) maximum working air and fluid pressure**.
- Use fluids that are compatible with the equipment wetted parts. See the **Technical Data** section of all the equipment manuals. Read the fluid manufacturer's warnings.
- Route the hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 180°F (82°C) or below –40°F (–40°C).
- Do not use the hoses to pull equipment.
- Wear hearing protection when operating this equipment.
- Comply with all applicable local, state, and national fire, electrical, and other safety regulations.

TOXIC FLUID HAZARD

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

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

Introduction

How the PRO 5500sc Electrostatic Air Spray Gun Operates (Refer to page 7)

The PRO 5500sc spray gun operates very similar to a traditional air spray gun. The atomization and fan air are emitted from the air cap (A). The atomization air breaks up the fluid stream and controls the droplet size. The fan air controls the shape and width of the spray pattern. The fan and atomization air can be adjusted independently.

Operating the Spray Function

Applying a minimum of 50 psi (3.5 bar) air pressure to the gun manifold's cylinder air fitting (which is marked "CYL", see page 7) will retract the gun piston, which opens the air valves and a short time later opens the fluid needle. This provides the proper air lead and lag when triggering the gun. A spring returns the piston when the cylinder air is shut off.

Operating the Electrostatics

To operate the electrostatics, air pressure is applied to the gun manifold's turbine air fitting (which is marked "TA", see page 7) through a Graco electrically conductive air hose. The air enters the manifold and is directed to the inlet of the power supply turbine (G). The air spins the turbine, which then provides electrical power to the internal high voltage power supply (H). The fluid is charged by the spray gun electrode (J). The charged fluid is attracted to the nearest grounded object, wrapping around and evenly coating all surfaces.

The turbine air is exhausted into the shroud (D) and out the back of the manifold through the fitting marked "EXH". The exhaust air helps keep contaminants out and helps keep the gun clean.

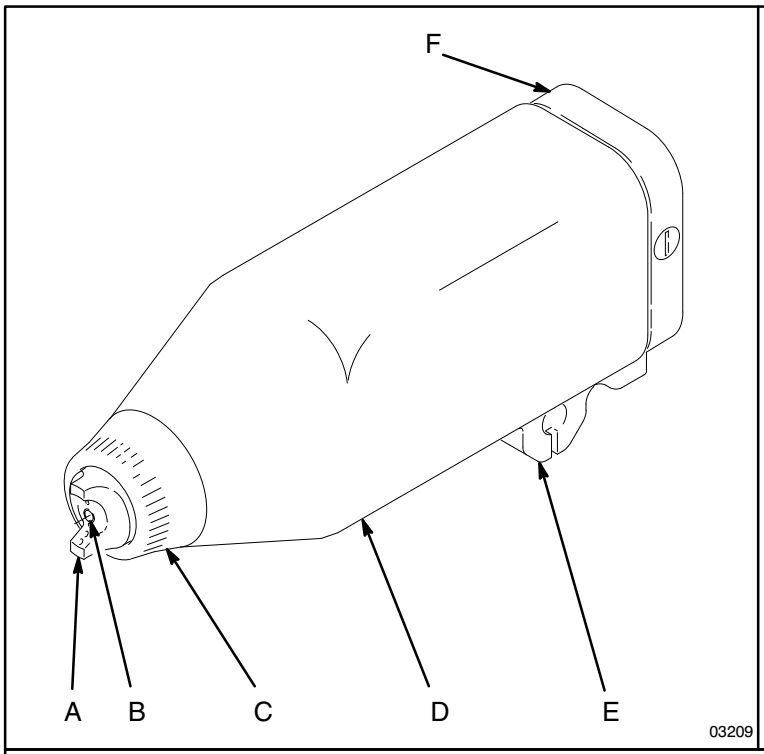
Switching to the Higher or Lower kV Setting

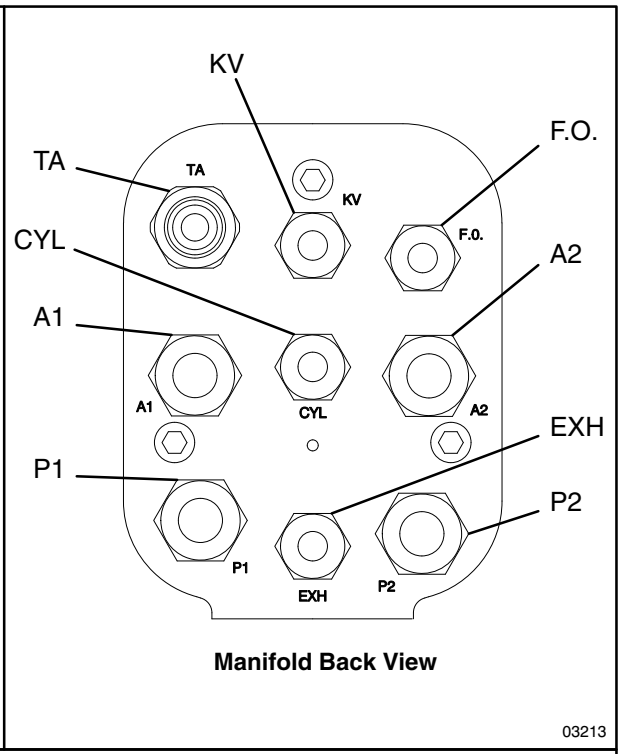
The gun's full high voltage setting is 85 kilovolts. The gun's spraying voltage can be reduced by switching to the low voltage setting for spraying in areas where too much electrostatic wrap is not desirable. Applying a minimum of 50 psi (3.5 bar) air pressure to the kV switch air inlet (which is marked "KV", see page 7) will activate it and switch to the lower voltage setting. The lower voltage is factory set to 60 kilovolts at zero microamperes. This setting can be adjusted from 45 to 80 kilovolts, as instructed on page 36. The solenoid valve used to activate the kV switch must bleed the air out of the line for the switch to draw back to the higher voltage setting.

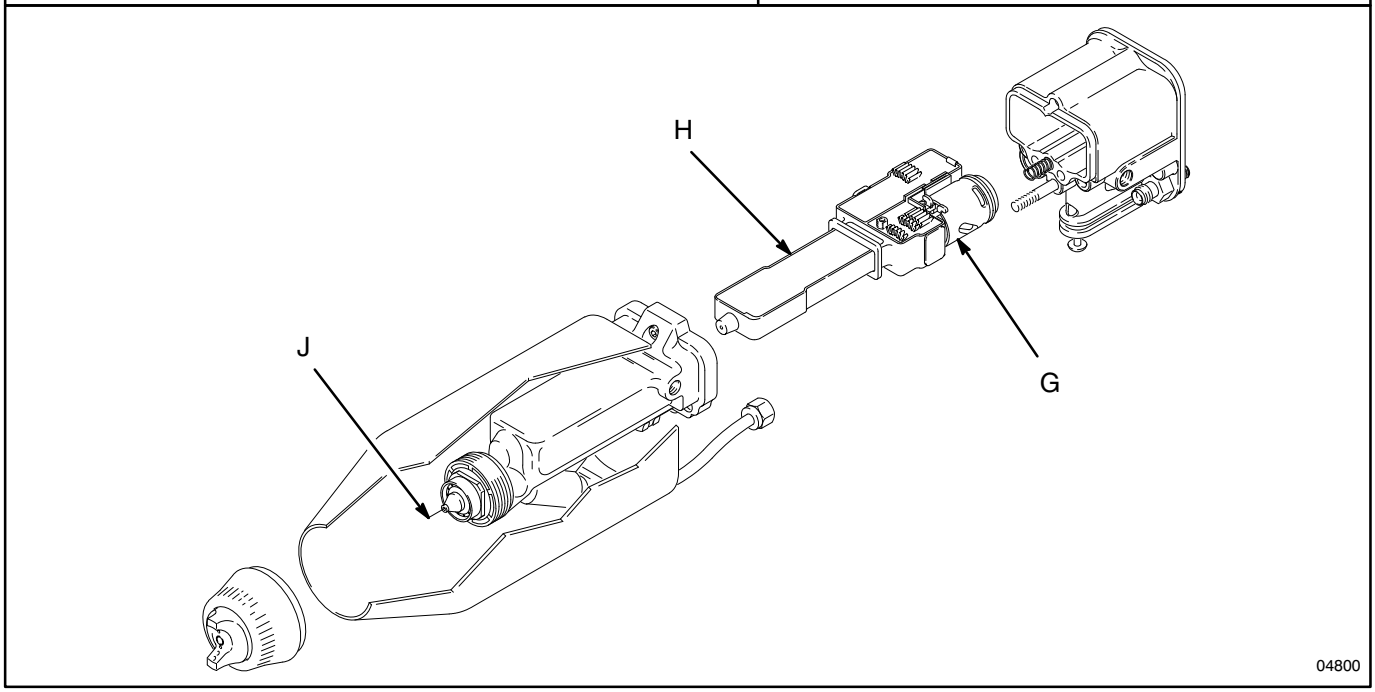
Gun Features and Options

- The gun is designed for use with a reciprocator, and it can be directly mounted to a one-half inch rod. With additional brackets, the gun can be mounted for robotic applications.
- The gun is designed for quick-disconnect, which enables the operator to quickly remove the spray gun without disconnecting the fluid and air lines to the gun.
- The gun functions are activated from a separate controller that sends the appropriate signal to the actuating solenoids (K). See Fig. 1, page 8.
- An optional fiber optic readout system can be installed to monitor the gun's spraying voltage. A fiber optic cable (V) connected to the gun manifold carries the signal from the gun to a remote ES (electrostatic) display module. See Fig. 2, page 8. An ES Display Module (R), P/N 224–117, is available and will display the gun's spraying voltage and current. A battery operated ES Display Module (S), P/N 189–762, is also available; it displays the gun's spraying voltage only.

Introduction







KEY

A Air Cap
B Fluid Nozzle
C Retaining Nut
D Shroud
E Mounting Bracket
F Manifold
G Turbine
H Power Supply
J Electrode

Manifold Markings

A1 Atomization Air Inlet Fitting
A2 Fan Air Inlet Fitting
CYL Cylinder Air Inlet Fitting
EXH Shroud Exhaust Outlet Fitting
F.O. Fiber Optic Fitting
KV kV Switch Air Inlet
P1 Fluid Supply Inlet Fitting
P2 Fluid Return Inlet Fitting
TA Turbine Air Inlet Fitting

Installation

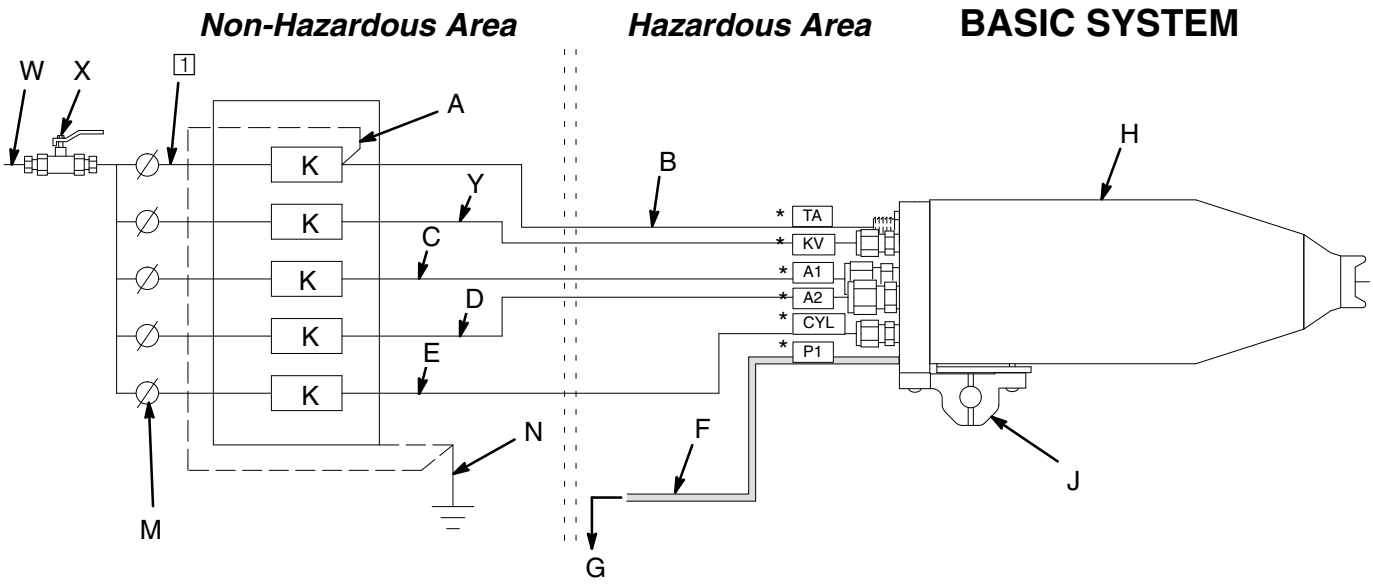


Fig. 1

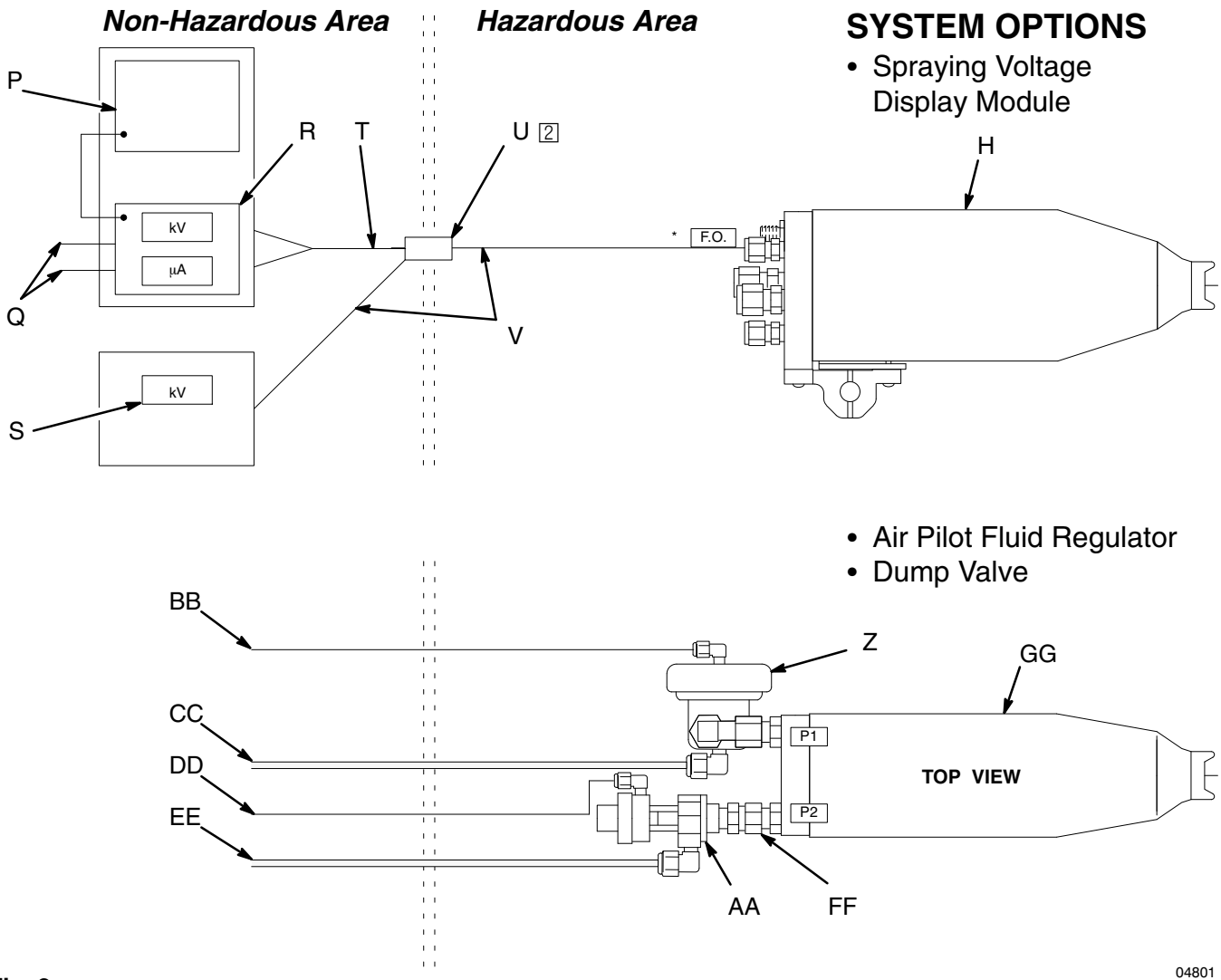


Fig. 2

Installation

KEY–Fig. 1 and 2

A Ground Wire on Graco Electrically Conductive Air Hose
B Graco Electrically Conductive Air Hose (Turbine Air Hose), See page 11 for part numbers
C Atomizing Air Hose, 3/8 inch (9.5 mm) O.D.
D Fan Air Hose, 3/8 inch (9.5 mm) O.D.
E Cylinder Air Hose, 1/4 inch (6.4 mm) O.D.
F Fluid Hose, 1/4–18.6 npsm gun fluid inlet
G To Fluid Supply
H PRO 5500sc Spray Gun, P/N 236–683
J Mounting Bracket for 1/2 inch (127 mm) rod, P/N 189–581
K Solenoid Valve, requires quick-exhaust port
M Air Pressure Regulator
N True Earth Ground
P 24 Volt Power Supply, P/N 235–301
Q 4–20 mA Outputs
R Full Feature ES Display Module, P/N 224–117
S kV Only ES Display Module (battery operated), P/N 189–762
T Fiber Optic Cable, P/N 224–680 to 224–686
U Bulkhead, P/N 189–870
V Fiber Optic Cable, P/N 224–670 to 224–676
W Main Air Line
X Bleed-type Master Air Valve
Y kV Switch Air Hose, 1/4 inch (6.4 mm) O.D., plug the gun fitting if it is not used
Z Air Pilot Fluid Regulator, P/N 236–854
AA Dump Valve, P/N 236–853, requires installation of item FF
BB Air Pilot Air Line, 1/4 inch (6.4 mm) O.D.
CC Fluid Supply Line, 3/8 inch (9.5 mm) O.D.
DD Dump Trigger Air Line, 1/4 inch (6.4 mm) O.D.
EE Fluid Return Line, 1/4 inch (6.4 mm) O.D.
FF Fluid Recirculation Kit P/N 236–851, Includes fittings and fluid tube
GG PRO 5500sc Recirculating Spray Gun, P/N 236–684, includes item FF
[1] The turbine air supply must be interlocked with the spray booth ventilation fans.
[2] A maximum of two splices with a total of 108 feet (32.94 m) of cable can be used. For the strongest light signals, use a minimum number of bulkhead splices.
* See page 11 for a description of the manifold connections.

Installing the System

⚠ WARNING

ELECTRIC SHOCK HAZARD
Installing and servicing this equipment requires access to parts which could cause an electric shock or other serious injury if the work is not performed properly.

- Do not install or service this equipment unless you are trained and qualified.
- Comply with all local, state, and national codes for the installation of electrical apparatus in a Class I, Group D Hazardous Location.
- Comply with all applicable local, state, and national fire, electrical, and other safety regulations.

Fig. 1, page 8, shows a typical Model PRO 5500sc system. Fig. 2 shows some possible system options.

Accessories are available from your Graco representative. Refer to the Product Data Sheet for the gun, Form No. 305–623.

For assistance in designing a system that is customized for your application, contact your Graco representative or Graco Technical Assistance (see back page).

Warning Signs

Mount warning signs in the spray area where they can easily be seen and read by all operators. An English Warning Sign is provided with the gun. Additional English, French, German, and Spanish signs are available at no charge.

Part No.	Description
180–060	Warning Sign (English)
180–061	Warning Sign (French)
180–062	Warning Sign (German)
180–063	Warning Sign (Spanish)

Ventilate the Spray Booth

⚠ WARNING

FLAMMABLE OR TOXIC VAPOR HAZARD
Provide fresh air ventilation to avoid the buildup of flammable or toxic vapors. Do not operate the gun unless ventilation fans are operating.

Electrically interlock the gun turbine air supply line with the ventilators to prevent operation of the electrostatic power supply unless ventilating fans are on.

Check and follow all local, state, and national codes regarding air exhaust velocity requirements. High velocity air exhaust will decrease the operating efficiency of the electrostatic system. The minimum allowable air exhaust velocity is 60 feet/minute (19 linear meters/minute).

Installation

Install the Air Line Accessories

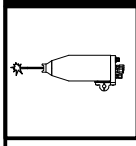
Install a bleed-type master air valve (X) on the main air supply line (W) to shut off all the air to the gun. See Fig. 1, page 8.

To ensure a dry, clean air supply to the gun, install an air line filter and an air and water separator on the air lines. Dirt and moisture can ruin the appearance of your finished workpiece and can cause the gun to malfunction.

Install an air regulator (M) on each of the air supply lines (B, C, D, E, Y) to control the air pressure to the gun.

Install a solenoid valve (K) on the fan and atomization air lines (C, D) to actuate the gun and shut off the fan and atomization air to the gun. The solenoid valves must have a quick exhaust port.

⚠ WARNING



PRESSURIZED EQUIPMENT HAZARD
Trapped air can cause the gun to spray unexpectedly, which could result in a serious injury, including splashing in the eyes or on the skin. The solenoid valves (K) must have a quick-exhaust port so trapped air will be relieved between the valve and the gun when the solenoids are shut off.

Install the Gun and Mounting Bracket

1. Loosen the mounting bracket's two square head bolts (103) and slide the mounting bracket onto a 0.50 in. (12.7 mm) mounting rod. See Fig. 3.
2. Position the gun and tighten the two bolts (103) securely.

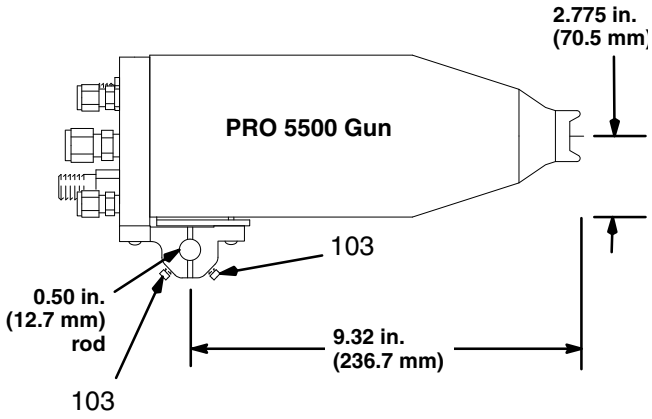


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Fig. 3

NOTE: For added positioning reliability, the mounting bracket (MM) has an 1/8 in. (3.2 mm) slot where a locating pin (NN–not included) can be inserted through the mounting rod (PP). See Fig. 4.

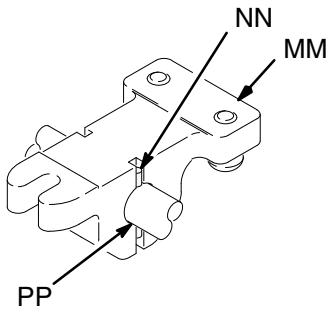

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Fig. 4

Installation

Connect the Air and Fluid Lines

See Fig. 1 and 2, page 8, for a schematic of air and fluid connections. Connect the air and fluid lines to the gun manifold as instructed at right.

Graco Electrically Conductive Air Hose

⚠ WARNING

ELECTRIC SHOCK HAZARD
To reduce the risk of an electric shock or other serious injury, you must use the Graco Electrically Conductive Air Hose for the turbine air hose, and you must connect the hose ground wire to a true earth ground.

Connect the Graco electrically conductive air hose (B) to the gun turbine air inlet and connect the hose ground wire (A) to a true earth ground. See Fig. 1, page 8. Check the electrical grounding of the gun as instructed on page 15.

NOTE: The hose and the gun have special left-hand threads to prevent connecting another type of air hose to the gun turbine air inlet.

Graco Electrically Conductive Air Hose
Required for gun operation.
100 psi (7 bar) Maximum Working Pressure
0.315 in. (8 mm) ID; 1/4 npsm(f) x 1/4 npsm(f) left-hand

	Part No.		
Length	*Black Hose*	*Grey Hose*	*Red Hose*
6 ft. (1.8 m)	220–444	223–068	235–068
15 ft. (4.6 m)	218–100	223–069	235–069
25 ft. (7.6 m)	218–101	223–070	235–070
36 ft. (11.0 m)	218–102	223–071	235–071
50 ft. (15.2 m)	218–103	223–072	235–072
75 ft. (23.0 m)	220–119	223–073	235–073
100 ft. (30. 5 m)	220–120	223–074	235–074

Black Hose: standard hose, semi-conductive nylon core, urethane outer
Grey Hose: more flexible (less durable) than black hose, modified semi-conductive polyamide core, urethane cover
Red Hose: conductive SST wire braid for grounding, polyurethane tube and cover

Fluid Line

Before connecting the fluid line, blow it out with air and flush it with solvent. Use solvent that is compatible with the fluid being sprayed.

Manifold Connections (See Fig. 5)

A1 **Atomization Air Inlet Fitting**
Connect a 3/8 inch O.D. tube between the fitting and the air supply.

A2 **Fan Air Inlet Fitting**
Connect a 3/8 inch O.D. tube between the fitting and the air supply.

CYL **Cylinder Air Inlet Fitting**
Connect a 1/4 inch O.D. tube between this fitting and the solenoid. For quicker trigger response, use the shortest hose length possible.

EXH **Shroud Exhaust Outlet Fitting**
Connect a 1/4 inch O.D. x 4 foot (1.22 m) long tube to the fitting.

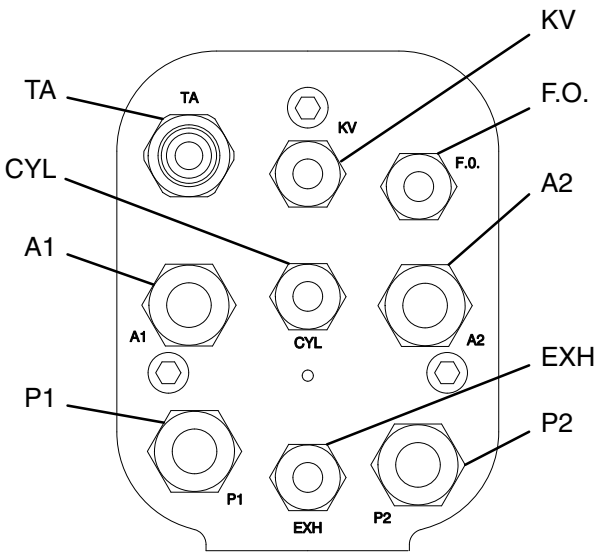
F.O. **Fiber Optic Fitting (Optional)**
Connect the Graco Fiber Optic Cable as instructed on page 13.

KV **kV Switch Air Inlet Fitting**
Connect a 1/4 inch O.D. tube between the fitting and the air solenoid.

P1 **Fluid Supply Inlet Fitting**
Connect a 1/4 inch npsm swivel fitting between the fitting and the fluid supply.

P2 **Fluid Return Inlet Fitting (Optional)**
Connect 1/4 inch O.D. tube between the fitting and the dump valve for recirculation.

TA **Turbine Air Inlet Fitting**
Connect the Graco Electrically Conductive Air Hose between this fitting (left-hand thread) and the solenoid. Connect the air hose ground wire to a true earth ground.



Manifold Back View

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Fig. 5

Notes

Installation

Optional Fiber Optic Cable Connection

An optional fiber optic fitting (37) is shipped unassembled with the gun. If an ES (kV) display module is used, install the fitting in the manifold. See Fig. 2, page 8, for a schematic of the fiber optic connections.

1. Remove the 1/8 npt plug (115) from the manifold's fiber optic port, and install the black fiber optic fitting (37). See Fig. 6.

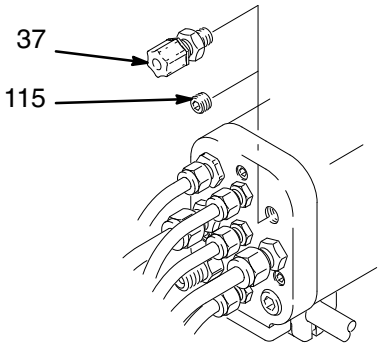

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Fig. 6

2. Remove the nut (QQ) from the fiber optic fitting (37), and slide the nut over the end of the fiber optic cable (RR). See Fig. 7.

3. Insert the cable (RR) into the fitting (37), and push the cable in until it bottoms out. Tighten the nut (QQ) to secure the cable.

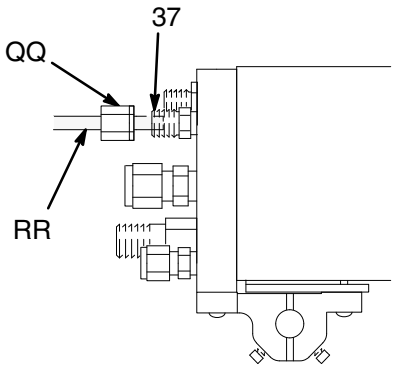

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Fig. 7

4. If you have two bulkhead splices in your system, it is recommended that you install the fiber optic lens kit, as described at right.

NOTE: Most of the fiber optic light transmission loss occurs at the bulkhead splices. For the strongest light signals, use a minimum number of bulkhead splices. A maximum of two splices, with a total of 108 feet (32.94 m) of cable, is recommended.

5. See manual 308–265 to install a Graco ES Display Module.

Optional Fiber Optic Lens Kit Installation

NOTE: The fiber optic lens kit is not included with the gun. Order it separately; the part number is 236–852.

1. Remove the gun from the manifold as instructed on page 29.

2. Make sure the lens (TT) is clean. Push the lens into the counterbore (VV) in the manifold fiber optic port (SS). See Fig. 8 and 9.

3. Press the lens retainer (UU) into the manifold fiber optic port (SS) until it is flush with the manifold surface.

4. Assemble the gun to the manifold as instructed on page 39.

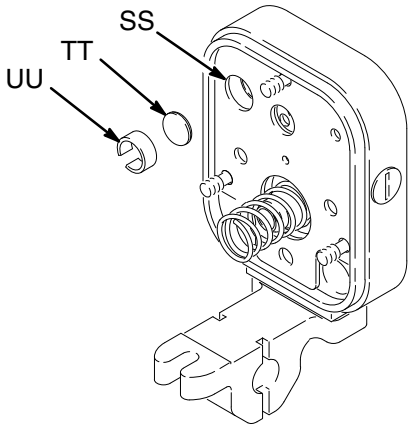

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Fig. 8

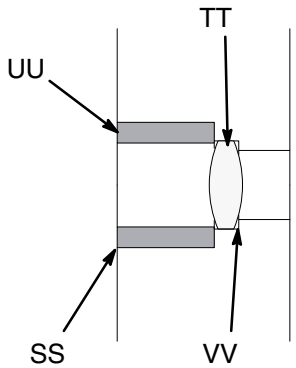

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Fig. 9

Installation

Ground the System

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

When operating the electrostatic gun, any ungrounded objects in the spray area (such as people, containers, tools, etc.) can become electrically charged. Improper grounding can result in static sparking, which can cause a fire, explosion, or electric shock. Follow the grounding instructions below.

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

1. *Pump:* ground the pump by connecting a ground wire and clamp as described in your separate pump instruction manual.

2. *Air compressors and hydraulic power supplies:* ground the equipment according to the manufacturer's recommendations.

3. *PRO 5500sc Electrostatic Air Spray Gun:* ground the gun by connecting the Graco Electrically Conductive Air Hose and connecting the air hose ground wire to a true earth ground. Check the electrical grounding of the gun as instructed on page 15.

4. *Air lines, fluid lines, and the electric cables:* must be properly grounded.

5. *All persons entering the spray area:* their shoes must have conductive soles, such as leather, or personal grounding straps must be worn. Rubber or plastic soles are not conductive.

6. *Object being sprayed:* keep the workpiece hangers clean and grounded at all times. Contact points must be sharp points or knife edges.

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 electrically conductive objects or devices in the spray area:* including fluid containers and wash cans, must be properly grounded.

Installation

Check the Electrical Grounding (See Fig. 10)

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

Megohmmeter P/N 218–979 (WW-see Fig. 10) is not approved for use in a hazardous area. To reduce the risk of sparking, do not use the megohmmeter to check electrical grounding unless:

- All spraying devices in the hazardous area are turned off.
- Ventilation fans in the hazardous area are operating.
- There are no flammable vapors in the area, such as open solvent containers or fumes from spraying.

Failure to follow this warning could cause fire, explosion, electric shock and result in serious injury and property damage.

1. Have a qualified electrician check the electrical grounding continuity of the spray gun and turbine air hose.

2. Make sure the turbine air hose (B) is connected and the hose ground wire is connected to a true earth ground.

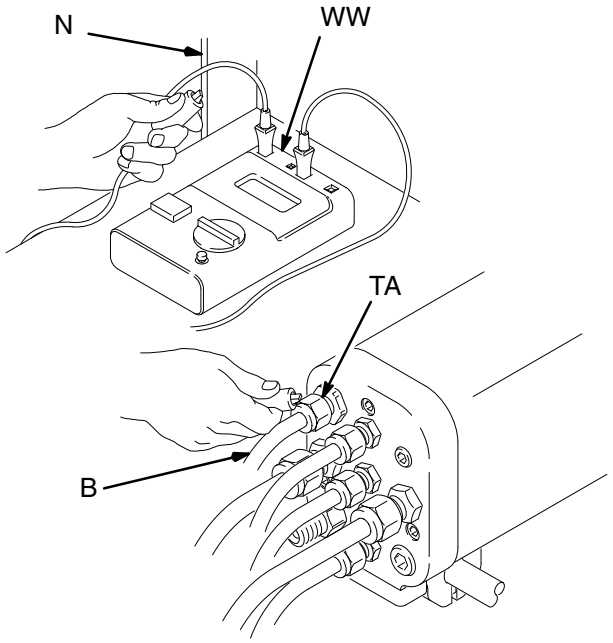
3. The air and fluid supplies to the gun must be turned off, and the fluid hose must not have any fluid in it when checking the continuity.

4. Measure the resistance between the turbine air inlet fitting (TA) and a true earth ground (N).

   a. *If using a black or grey turbine air hose,* use a megohmmeter (WW) to measure the resistance. Use an applied voltage of 500 minimum to 1000 volts maximum. Resistance should not exceed 2 megohms.

   b. *If you are using a red turbine air hose,* use an ohmmeter to measure the resistance. Resistance should not exceed 100 ohms.

5. If the resistance is greater than the maximum reading specified above for your hose, check the tightness of the ground connections and be sure the turbine air hose ground wire is connected to a true earth ground. If the resistance is still too high, replace the turbine air hose.



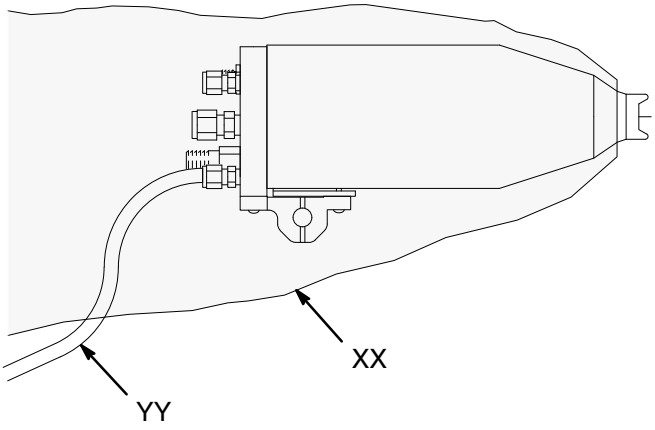
03214

Fig. 10

Installation

Install the Fabric Cover

1. Install a fabric cover (XX) over the front of the gun and slide it back to cover the exposed tubing and hoses at the back of the manifold. See Fig. 11.
2. Route the exhaust tube (YY) outside the cover. This enables you to monitor the exhaust tube for the presence of any paint or solvent. See **Check for Fluid Leakage** on page 23. Strap down the exhaust tube to prevent it from moving around.



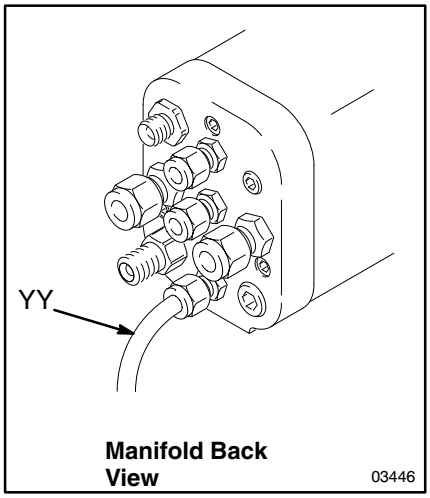
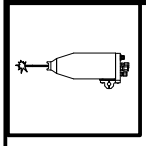


Fig. 11

Operation

Pressure Relief Procedure

⚠ WARNING



PRESSURIZED EQUIPMENT HAZARD
The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. To reduce the risk of an injury from accidental spray from the gun, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

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

1. Turn off all the air to the spray gun except the cylinder air, which triggers the gun. If an air pilot fluid regulator is used in the system, the air pressure is needed at the regulator air inlet.
2. Turn off the fluid supply to the gun.
3. Trigger the gun into a grounded metal waste container to relieve fluid pressure.
4. If the air pilot fluid regulator is used, turn off the air pressure at the regulator air inlet.
5. Relieve fluid pressure in the fluid supply equipment as instructed in its instruction manual.
6. Turn off the main air supply by closing the bleed-type master air valve on the main air supply line. Leave the valve closed 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 the operators are properly trained to safely operate an automatic, electrostatic air spray system as instructed in this manual.

____ 2. Be sure all the operators are trained how to properly relieve system pressure as instructed at left.

____ 3. Be sure the warning sign provided with the gun is mounted in the spray area where it can be easily seen and read by all operators.

____ 4. Be sure the system is thoroughly grounded. See **Ground the System**, page 14.

____ 5. Be sure the operator and all persons entering the spray area are properly grounded by wearing shoes with conductive soles or personal grounding straps.

____ 6. Be sure all the conductive objects in the spray area are electrically grounded and the floor of the spray area is electrically conductive and grounded.

____ 7. Be sure all flammable liquids in the spray booth are in approved, grounded containers.

____ 8. Be sure the workpiece hangers are clean and grounded. Contact points must be sharp points or knife edges.

____ 9. Be sure the ventilation fans are operating properly.

____ 10. Be sure all the debris, including flammable liquids and rags, is removed from the spray area.

____ 11. Be sure to check the manifold exhaust tubes for the presence of any fluid as instructed in **Check for Fluid Leakage**, page 23**.**

Selecting a Fluid Nozzle and Air Cap

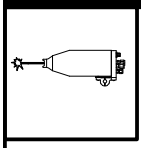
The gun is supplied with a 1.5 mm (0.06 in.) fluid nozzle, P/N 185–158, and air cap, P/N 177–033. If your application requires a different nozzle and air cap combination, use instruction manual 307–803 or consult your authorized Graco distributor or Graco Technical Assistance (see back page) to select the appropriate fluid nozzle and air cap.

Operation

Adjusting the Spray Pattern

Follow the steps below to establish the correct fluid flow and air flow. **Do not** turn on the turbine air (TA) yet.

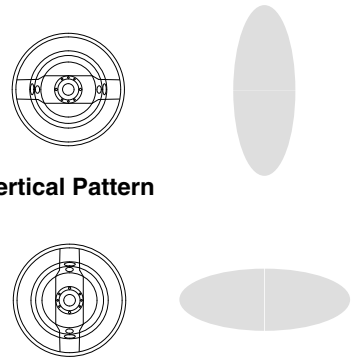
⚠ WARNING



PRESSURIZED EQUIPMENT
To reduce the risk of a serious injury, follow the **Pressure Relief Procedure** on page 17 whenever you are instructed to relieve the pressure.

1. Make sure the system pressure is relieved.

2. Loosen the air cap retaining ring, and rotate the air cap for a vertical or horizontal spray pattern. See Fig. 12. Then tighten the retaining ring until the air cap is held firmly in place; you should not be able to rotate the air cap horns by hand.



Vertical Pattern

Horizontal Pattern

02020

Fig. 12

3. Adjust the fluid flow with the fluid line pressure regulator. Refer to instruction manual 307–803 to set the fluid pressure for various fluid flows, according to the size of the fluid nozzle being used.

4. Use the air pressure regulator on the atomization air supply line (A1) to adjust the degree of atomization. Refer to Fig. 13. For example, for a fluid flow rate of 10 ounces per minute (0.3 liters/min.), a typical atomization pressure would be 20 to 30 psi (1.4 to 2.1 bar) at the gun manifold.

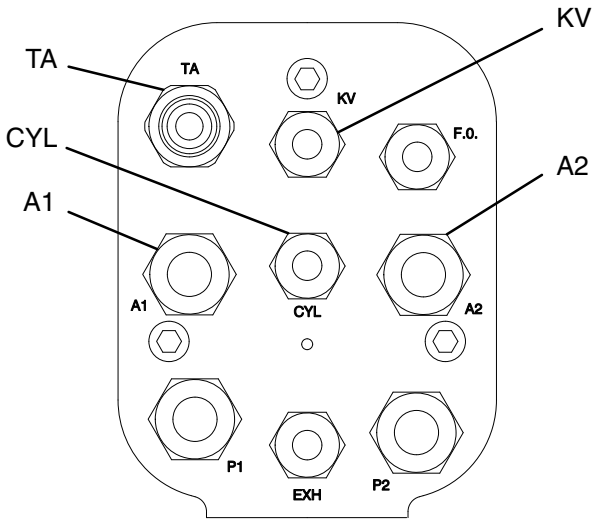
5. Use the air pressure regulator on the fan air supply line (A2) to adjust the pattern size.

NOTES:

- For the most efficiency, always use the lowest air pressure possible.

- When increasing to a wide, flat pattern, it may be necessary to increase the supply of fluid to the gun to maintain the same amount of coverage over a large area.

- See **Spray Pattern Troubleshooting** on page 24 to correct spray pattern problems.



Manifold Back View

03213

Fig. 13

Operation

Activating and Adjusting the Electrostatics

⚠ WARNING

FIRE AND EXPLOSION HAZARD
The fan (A2) and atomizing (A1) air must be on before turning on the turbine air (TA). Actuating the turbine air without fan and atomizing air flow could damage the gun and could create hazardous operating conditions and result in a serious injury and property damage.

1. Make sure the fan (A2) and atomizing (A1) air are on, then turn on the turbine air (TA). Refer to Fig. 13.

2. The turbine air pressure should be adjusted to 30 psi (2.1 bar) at the gun manifold inlet when air is flowing. Do not exceed 40 psi (2.8 bar) air pressure as there is no added benefit and turbine life could be reduced.

   Use the chart below to set the proper pressure at the turbine hose inlet. Do not exceed these recommended pressures or turbine life will be reduced.

Turbine Air Hose Length	Dynamic pressure at the turbine hose inlet required for full voltage
15 ft. (4.6 m)	36 psi (2.5 bar)
25 ft. (7.6 m)	38 psi (2.7 bar)
50 ft. (15.3 m)	40 psi (2.8 bar)
75 ft. (22.9 m)	42 psi (2.9 bar)
100 ft. (30.5 m)	45 psi (3.1 bar)

3. Check the voltage output of the gun using a high voltage probe and meter or by reading the ES (kV) Display Module.

NOTE: The gun's normal high voltage reading is 60 to 70 kV. If a ball end high voltage measurement probe is used, the gun voltage will rise to about 85 kV. This will happen with all resistive electrostatic guns.

See **Electrical Troubleshooting** on page 26 to correct voltage problems.

Activating the kV Switch

Apply a minimum of 50 psi (3.5 bar) air pressure to the kV switch air fitting (KV) to activate it and switch to the lower voltage setting. Refer to Fig. 13. The lower voltage setting is factory set to 60 kilovolts at zero microamperes. To change this setting, see page 36.

The solenoid valve used to activate the kV switch must bleed the air out of the line for the switch to draw back to the higher voltage setting.

Spraying

⚠ WARNING

ELECTRIC SHOCK HAZARD
To reduce the risk of an electric shock, do not touch the gun electrode or come within 4 inches (101.6 mm) of the nozzle during gun operation.

1. Apply a minimum of 50 psi (3.5 bar) air pressure to the cylinder air fitting (CYL) to activate the on/off sequence of atomization air (A1), fan air (A2), and fluid (P1). Refer to Fig. 13.

2. Turn the gun functions off and on by using the air solenoid valves on the cylinder (CYL) and turbine (TA) air supply lines.

⚠ WARNING

FIRE AND EXPLOSION HAZARD
If any fluid leakage from the gun is detected, stop spraying immediately!
Fluid leakage into the gun shroud could cause fire or explosion and result in serious injury and property damage. See **Check for Fluid Leakage**, page 23.

Triggering the Fluid Alone

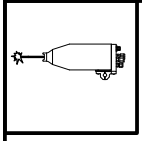
1. Shut off and relieve the air pressure to the atomization (A1) and fan (A2) air lines, using the bleed-type air shut-off valves.

2. Apply 50 psi (3.5 bar) air pressure to the cylinder air fitting (CYL) to trigger the fluid.

Operation

Shutdown

⚠ WARNING



PRESSURIZED EQUIPMENT
To reduce the risk of a serious injury, follow the **Pressure Relief Procedure** on page 17 when you stop spraying and whenever you are instructed to relieve the pressure.

1. Relieve the system pressure.
2. Flush and clean the equipment. Follow the instructions in the **Maintenance** section, below.

Maintenance

Daily Care and Cleaning

⚠ CAUTION

- Clean all parts with a non-conductive solvent, compatible with the fluid being sprayed. Conductive solvents can cause the gun to malfunction.
- *Methylene chloride* is not recommended as a flushing or cleaning solvent with this gun as it will damage nylon components.
- Fluid in the air passages could cause the gun to malfunction and could draw current and reduce the electrostatic effect. Fluid in the power supply cavity can reduce the alternator life. Whenever possible, point the gun down while cleaning it. Do not use any cleaning method which could allow fluid into the gun air passages.

Do not immerse the gun in fluid.

03512

Do not point the gun up while cleaning it.

03513

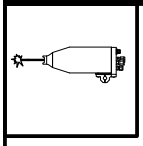
Do not wipe the gun with a cloth that is heavily saturated; wring out the excess fluid.

02027

Maintenance

Daily Care and Cleaning (continued)

⚠ WARNING



PRESSURIZED EQUIPMENT
To reduce the risk of a serious injury, follow the **Pressure Relief Procedure** on page 17 before doing any maintenance on the gun or system.

- Clean the fluid and air line filters daily.
- Clean the outside of the gun daily with a soft cloth dampened in a compatible solvent.
- Clean the air cap and fluid nozzle daily, minimum. Some applications require more frequent cleaning. Replace the fluid nozzle and air cap if they are damaged. See **Clean the Air Cap and Fluid Nozzle**, page 22.
- Check the electrode wire: straighten it if it is bent and replace it if it is broken or damaged. See **Electrode Needle Replacement**, page 31.
- Check for fluid leakage from the gun and fluid hoses. See **Check for Fluid Leakage**, page 23. Tighten fittings or replace equipment as needed.
- Check all of the work hangers for fluid buildup; clean them if necessary.
- Flush the gun before changing colors and whenever you are done operating the gun.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD
To reduce the risk of a fire, explosion, or electric shock, be sure the turbine air (TA) is off before flushing the gun or any part of the system.

Maintenance

Clean the Air Cap and Fluid Nozzle

Equipment needed:

Soft bristle brush (supplied)
Solvent compatible with fluid being sprayed

Procedure:

1. Relieve the system pressure.

2. Remove the air cap assembly (1, 12) and gun shroud (2). See Fig. 14.

3. Wipe the fluid nozzle (14), shroud (2), and exterior of the gun (P) clean with a cloth dampened in solvent. Avoid getting any solvent into the air passages. Whenever possible, point the gun down while cleaning it.

4. If it appears that there is paint inside the fluid nozzle (14) air passages, remove the gun from the line for servicing.

5. Clean the air cap (12) with the soft bristle brush and solvent or submerge the air cap in suitable solvent and wipe it clean.

⚠ CAUTION

03511

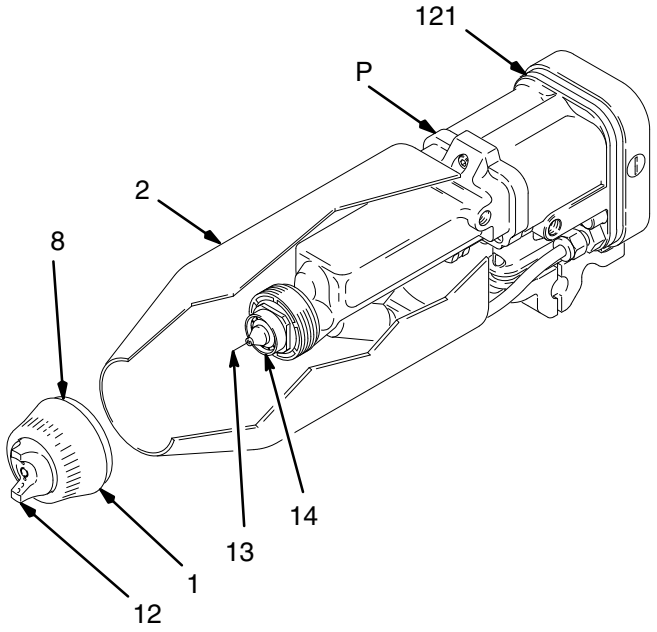
Do not use metal tools to clean the air cap or fluid nozzle holes as this could scratch them, and make sure the electrode wire is not damaged. Scratches in the air cap or nozzle or a damaged electrode wire can distort the spray pattern.

6. Slide the shroud (2) onto the gun (P). Make sure the shroud o-ring (121) is in place.

7. Carefully install the air cap (12). Avoid bending the electrode (13) and be sure to insert the electrode wire through the center air cap hole. Rotate the air cap horns to the desired position.

8. Make sure the o-ring (8) is in place on the retaining ring (1). Tighten the air cap retaining ring (1) until the air cap is held firmly in place; you should not be able to rotate the air cap horns by hand.

9. Test the gun resistance as instructed on page 27.



03211

Fig. 14

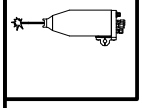
Maintenance

Check for Fluid Leakage (See Fig. 15)

⚠ WARNING

FIRE AND EXPLOSION HAZARD
If any fluid leakage from the gun is detected, stop spraying immediately!
Fluid leakage into the gun shroud could cause fire or explosion and result in serious injury and property damage.

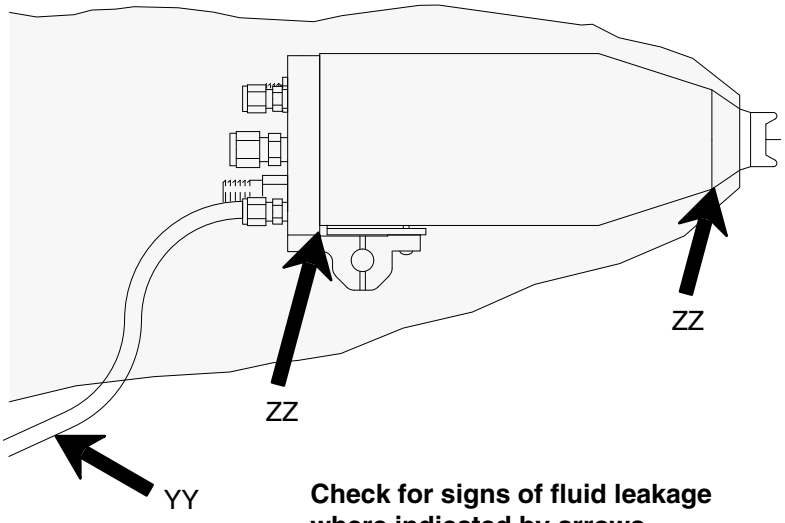
⚠ WARNING



PRESSURIZED EQUIPMENT
To reduce the risk of a serious injury, follow the **Pressure Relief Procedure** on page 17 when you stop spraying and whenever you are instructed to relieve the pressure.

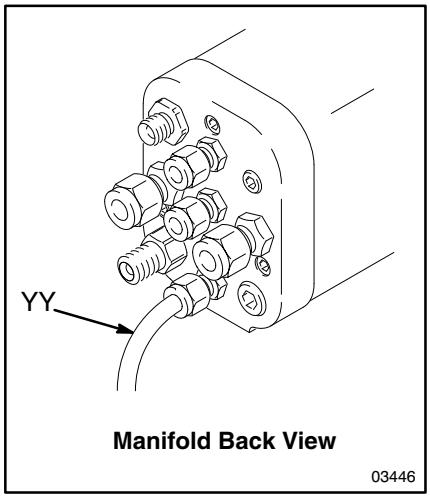
During operation, periodically check the manifold exhaust tube (YY) and both ends of the gun shroud (ZZ) for the presence of fluid. Fluid in these areas would indicate fluid leakage into the shroud, which could be caused by leaks at the fluid tube connections or fluid packing leakage.

If fluid is seen in any of these areas, stop spraying immediately! Relieve the system pressure, then remove the gun for repair.



Check for signs of fluid leakage where indicated by arrows.

03445



Manifold Back View

03446

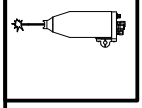
Fig. 15

Troubleshooting

⚠ WARNING

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

⚠ WARNING

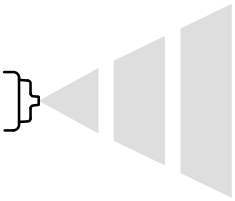
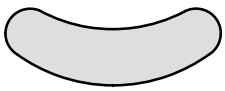
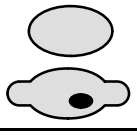
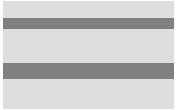


PRESSURIZED EQUIPMENT
To reduce the risk of a serious injury, follow the **Pressure Relief Procedure** on page 17 before doing any maintenance or service on the gun or system.

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

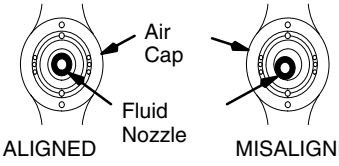
Spray Pattern Troubleshooting

NOTE: Some spray pattern problems are caused by the improper balance between air and fluid.

PROBLEM	CAUSE	SOLUTION
Fluttering or spitting spray 	The fluid supply is insufficient.	Adjust the fluid regulator, or fill the fluid tank.
	The fluid nozzle is loose, or the fluid nozzle taper seat is damaged.	Tighten or replace the fluid nozzle; see page 30.
	There is dirt between the fluid nozzle, taper seat, and gun body.	Clean the parts; see page 22.
	The coupler at the fluid inlet is loose or cracked.	Tighten or repair the coupler.
Gun is spitting when triggered or detriggered.	The air cap is damaged or dirty.	Clean or replace the air cap; see page 22.
	The actuator arm is out of position (it is too close to the fluid needle).	Reposition the actuator arm; see page 34.
	The fluid seat is worn.	Replace the fluid nozzle and/or electrode needle; see page 30 and 31.
	There is fluid buildup on the air cap; partially clogged horn holes; or full air pressure from the clean horn hole forces the fan pattern toward the clogged end.	Clean the air cap with a soft implement or submerge it in water and wipe it clean; see page 22.
	The electrode is bent.	Straighten the electrode.
	The fluid nozzle or air cap holes are damaged.	Replace the damaged part; see page 30.
	There is fluid buildup on the perimeter of the fluid nozzle orifice, or a partially clogged fluid nozzle orifice.	Remove the obstruction; never use wire or hard instruments; see page 22.
	The electrode is bent.	Straighten the electrode.
	The fan air pressure is too high.	Reduce the fan air pressure.
	The fluid is too thin.	Reduce the fluid viscosity.
	There is not enough fluid pressure.	Increase the fluid pressure.
	The fan air pressure is too low.	Increase the fan air pressure.
	The fluid is too thick.	Reduce the fluid viscosity.
	There is too much fluid.	Reduce the fluid flow.
Streaks 	The last coat of fluid is applied too wet.	Apply a drier finish using multiple strokes.
	There is too much air pressure.	Decrease the air pressure.
	The air pressure is insufficient.	Increase the air pressure.
	The spray pattern is non-uniform.	Clean or replace the air cap; see page 22.

Troubleshooting

Gun Operation Troubleshooting

PROBLEM	CAUSE	SOLUTION
Fluid leakage from the fluid packing area	The fluid rod packings or fluid rod are worn.	Replace the packings or rod; see page 32.
Fluid leakage from the front of the gun	The fluid rod is worn or damaged.	Replace the fluid rod; see page 32.
	The fluid seat is worn.	Replace the fluid nozzle and/or electrode needle; see page 30 and 31.
	The resistor stud is loose.	Tighten the resistor stud; see page 30.
	The fluid nozzle is loose.	Tighten the fluid nozzle; see page 30.
	The resistor stud o-ring is damaged.	Replace the o-ring; see page 30.
"Orange Peel" finish	The air pressure is insufficient.	Increase the air pressure; use the least air pressure needed for good results.
	The fluid is poorly mixed or filtered.	Remix or refilter the fluid.
	An improper thinner is being used.	Use the proper thinner.
Excessive spray fog	The air pressure is too high.	Reduce the air pressure; use the least air pressure needed for good results.
	The fluid is thinned too much.	Properly thin the fluid.
No fluid sprays from the gun	The fluid supply is low.	Check the fluid supply; add fluid if necessary.
	The fluid nozzle is dirty or clogged.	Clean the fluid nozzle; see page 22.
	The fluid nozzle is damaged.	Replace the fluid nozzle; see page 30.
	The piston is not actuating.	Check the cylinder air; check the piston u-cup; see page 33.
	The actuator arm is out of position.	Check the actuator arm and nuts; see page 34.
The equipment is covered with fluid	The exhaust air flow is insuf ficient or not directed properly.	Check for the proper CFM; check the baffles and direction of the air flow.
	The distance between the gun and work-piece is incorrect.	Adjust the spraying distance to 8 to 12 inches (203 to 305 mm).
Dirty air cap	The electrode is bent.	Straighten the electrode.
	The nozzle orifice is damaged.	Replace the fluid nozzle; see page 30.
	The fluid is coming on before the air.	Check the actuator arm and nuts; see page 34.
	The air cap and fluid nozzle are mis-aligned. 	Check the air cap and fluid nozzle seat for fluid buildup. Clean or replace parts as needed; see page 22 or 30.
Air leakage from the air cap	The o-rings on the piston stem are worn.	Inspect the o-rings; replace them as needed; see page 33.
Air leakage from the manifold	The manifold gasket is damaged, or the manifold is not tight.	Replace the gasket or tighten the manifold screws; see page 39.
Fluid leakage at the quick-disconnect	The manifold is not tight.	Tighten the manifold screws; see page 39.
	The o-rings on the fluid hose are worn or missing.	Inspect or replace the o-rings.

Troubleshooting

Electrical Troubleshooting

PROBLEM	CAUSE	SOLUTION
Poor wrap-around	The turbine air is not on.	Turn on the turbine air.
	The distance between the gun and workpiece is incorrect.	Adjust the spraying distance to 8 to 12 inches (203 to 305 mm).
	The parts are poorly grounded.	Clean the workpiece hangers; check for proper grounding on the conveyor or track.
	Booth exhaust velocity is too high.	Reduce the exhaust velocity within the code limits.
	The atomizing air pressure is too high.	Reduce the atomizing air pressure.
	The fluid pressure is too high.	Reduce the fluid pressure.
	The fluid viscosity is not right for electrostatic spray.	Check with the supplier for proper fluid viscosity for electrostatic spray.
	The voltage output is too low.	Check the possible causes listed below.
	The turbine alternator is not operating.	Check the air supply to the gun.
	The gun resistance is faulty.	Check the gun resistance; see page 27.
	Fluid leaks from the fluid rod packing and causes a short.	Clean the fluid rod cavity, replace the packing; see page 32.
	The turbine alternator is faulty.	Be sure the plug is in place on the back of the turbine alternator housing; remove and test the turbine alternator; see page 37.
	The kV switch is stuck on low.	Check the switch actuation; replace the kV switch if necessary.
The operator gets a shock	The operator is not properly grounded or is near an ungrounded object.	Be sure the floor and the operator are properly grounded; see **Ground the System**, page 14.
	The gun is not properly grounded.	See **Check the Electrical Grounding**, page 15.
The operator gets a shock when touching the workpiece	The workpiece is not properly grounded.	Clean the workpiece hangers; check for proper grounding on the conveyor or track.
No or low voltage output reading on the gun ES (kV) display module	The fiber optic cable or connection is damaged.	Check the cables and connections; replace the parts if they are damaged.
	The turbine air is not on.	Turn on the turbine air.
		See other causes under **Problem** – **Poor wrap-around**, above.
		Refer also to the Graco ES display module manual 308–265.

Electrical Tests

The performance of the spray gun is directly affected by the condition of the electrical components contained inside the gun. The electrical tests at right and on page 28 can be used to determine the condition of the power supply (40) and the resistor stud (15) as well as the continuity of the electrical path between the components.

Use megohmmeter P/N 218–979 (L) and an applied voltage of 500 volts to complete these electrical tests. Connect the leads as shown.

Remove the gun from the manifold and bracket, as instructed on page 29, before performing the electrical tests.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

To reduce the risk of sparking, which could cause a fire, explosion, or electric shock and result in a serious injury, do not use the megohmmeter in the hazardous area. Remove the gun from the hazardous area before testing the gun.

Test Gun Resistance (See Fig. 16)

Measure the resistance between the end of the electrode (13) and the gun body (29). The resistance should be between 329 to 401 megohms. If the resistance is outside the specified range, go to the next test. If the resistance is correct, refer to **Electrical Troubleshooting** on page 26 for other possible causes of poor performance.

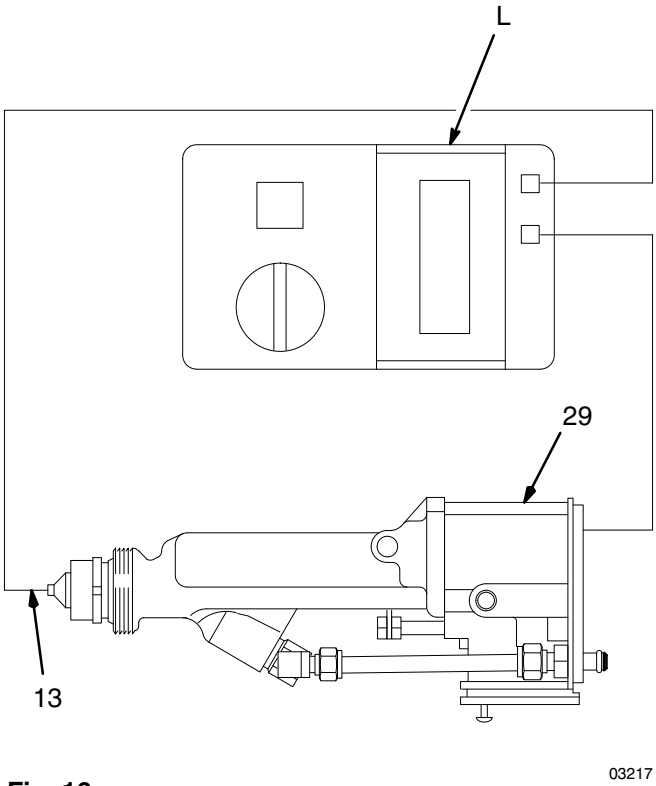


Fig. 16

Electrical Tests

Test Power Supply Resistance (See Fig. 17)

Remove the power supply (40) from the gun body (29) as instructed on page 36.

Measure the resistance from the power supply's ground contact point (R) to the contact inside of the power supply seal (40d) *[the conductive rubber contact may be slightly recessed into the seal]*.

The resistance should be 297 to 363 megohms. If the resistance is outside the specified range, the power supply is defective and must be replaced. If the resistance of the power supply is correct, proceed to the next test.

NOTE: Be sure the seal (40d) is in place on the end of the power supply before installing the power supply back into the gun.

Test Resistor Stud Resistance (See Fig. 18)

Remove the resistor stud (15) as instructed on page 30. Check the resistance between the black resistor stud ring contact (S) and the needle contact ring (T). You may have to press down on the contact ring (S) in several places to get a good reading.

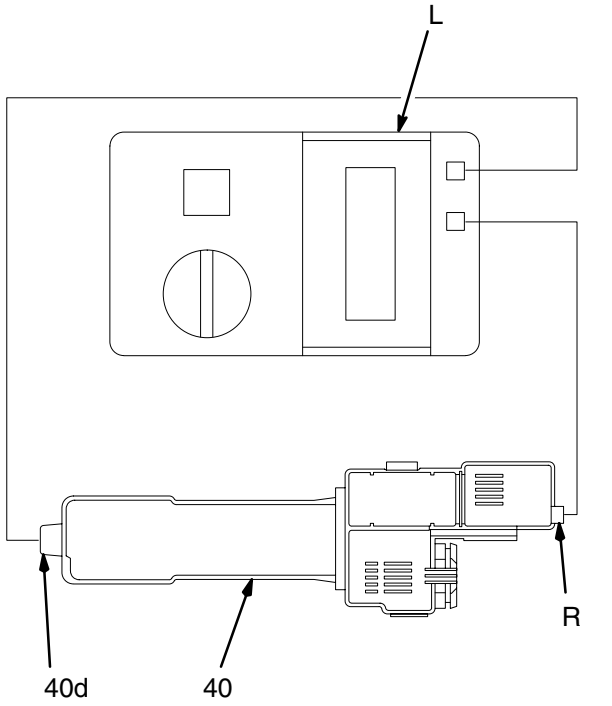
The resistance should be 21 to 29 megohms. If the resistance is correct, make sure the metal contact in the gun barrel and the needle contact ring (T) are clean. If the resistance is outside the specified range, the resistor is defective and the resistor stud (15) must be replaced. See page 30 to replace the resistor stud.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

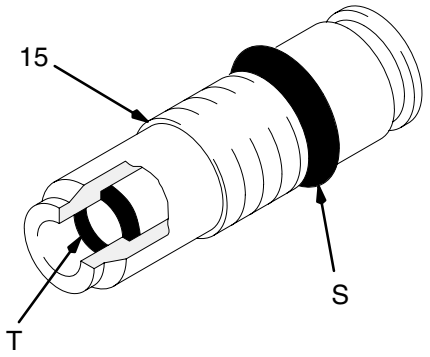
The resistor stud contact ring (S) is a conductive contact ring, not a sealing o-ring. See Fig. 18. To reduce the risk of sparking, which could cause a fire, explosion, or electric shock, **do not** remove the contact ring (S) from the resistor stud or operate the gun without the contact ring in place. If the resistor stud (15) is being replaced, only use a genuine Graco part.

If you still have problems, refer to **Electrical Troubleshooting** for other possible causes of poor performance, or contact the nearest authorized service agency.



0441

Fig. 17



0442

Fig. 18

Service

Tools Included with the Gun

- Nozzle Wrench
- Electrode Wrench
- Ball End Wrench
- 8 mm Allen Wrench
- 9 mm Hex Nut Driver

Prepare the Gun for Service

NOTE:

- Check all the possible remedies in **Troubleshooting**, pages 24 to 26, before disassembling the gun.
- If the plastic parts of the gun must be held in a vise, use padded vise jaws to avoid damaging parts.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

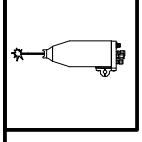
To reduce the risk of a fire, explosion, or electric shock:

- Be sure the turbine air (TA) is off before flushing the gun or any part of the system.
- Clean all the parts with a compatible solvent that is suitable for electrostatic equipment.
- Do not service this equipment unless you are trained and qualified.
- Do not touch the gun nozzle or come within 4 inches (101.6 mm) of the nozzle during gun operation.

⚠ CAUTION

Methylene chloride is not recommended as a flushing or cleaning solvent with this gun as it will damage nylon components.

⚠ WARNING



PRESSURIZED EQUIPMENT

To reduce the risk of a serious injury, follow the **Pressure Relief Procedure** on page 17 when you stop spraying, before servicing the gun, and whenever you are instructed to relieve the pressure.

1. Flush the gun with a compatible solvent.
2. Relieve the system pressure.

NOTE: The service area must be clean. Remove the gun from the worksite as instructed in the following steps.

3. Loosen the bottom gun screw (21) until the gun (B) sits loosely in the mounting bracket slot (A). Refer to Fig. 19.

⚠ CAUTION

The piston return spring (105) is compressed between the manifold (101) and gun body when they are assembled. To avoid sudden movement of the gun, loosen the bottom gun screw (21) before loosening the three manifold bolts (106). This allows the gun to move forward gradually as the manifold bolts are loosened. Hold the gun firmly in hand while loosening the manifold bolts.

4. Holding the gun (B) firmly in hand, loosen the three bolts (106) from the back of the manifold (101) with the ball end wrench (77–*not shown*).
5. Remove the gun (B) from the manifold (101), and take it to the service area.

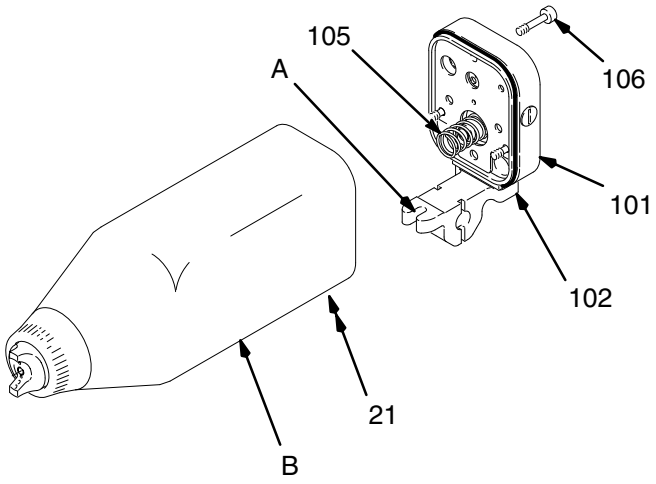


Fig. 19

Air Cap/Nozzle/Resistor Stud Replacement

1. Prepare the gun for service as instructed on page 29.

2. Point the front end of the gun up while removing the air cap assembly (1, 3, 9, 12). See Fig. 20.

⚠ CAUTION

Hold the front end of the gun up while removing the nozzle and resistor stud to help drain the gun and prevent any fluid left in the gun from entering the air passages.

3. Remove the fluid nozzle (14) with the nozzle wrench (76).

   The resistor stud (15) should come out with the fluid nozzle. If the resistor stud remains in the gun, start the nozzle threads onto the resistor stud and pull it out.

4. Unscrew the resistor stud (15) from the fluid nozzle (14) with the hex key wrench (83). See Fig. 21.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

The resistor stud contact ring (S) is a conductive contact ring, not a sealing o-ring. See Fig. 20. To reduce the risk of sparking, which could cause a fire, explosion, or electric shock, **do not** remove the contact ring (S) from the resistor stud or operate the gun without the contact ring in place. If the resistor stud (15) is being replaced, only use a genuine Graco part.

5. Lightly lubricate the o-ring (16) with petroleum jelly and install it on the resistor stud (15). See Fig. 20.

[1] Apply a very light coat of lubricant to the o-ring (16).
[2] Tighten the nozzle (14) hand-tight, then 1/8 to 1/4 turn more.

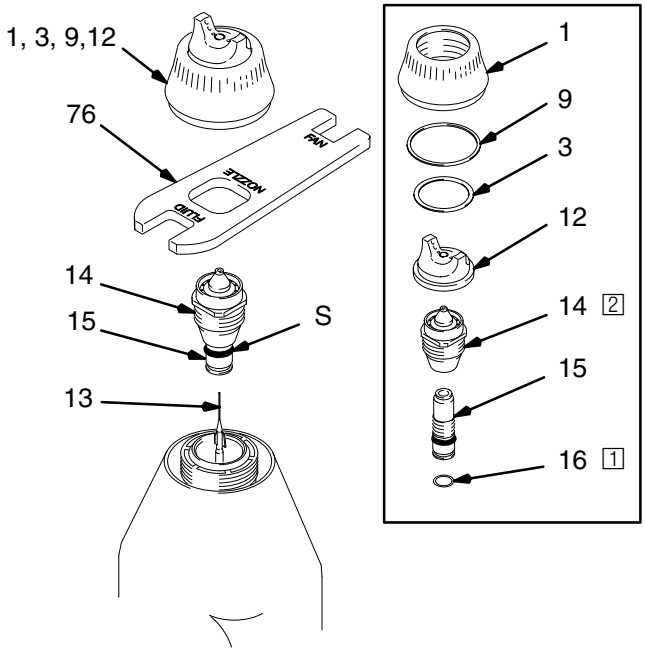


Fig. 20 03455

[1] Tighten the resistor stud (15) into the nozzle (14) to 10 in-lbs (1.15 N•m).

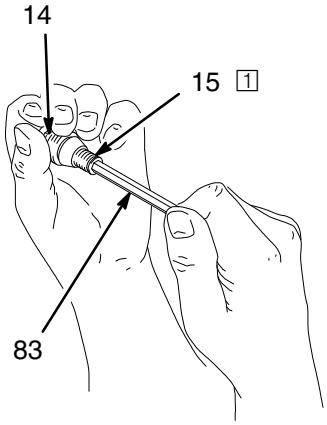


Fig. 21 0444

Continued on next page.

Air Cap/Nozzle/Resistor Stud Replacement (continued)

6. Make sure the electrode needle (13) is tightened properly. Refer to Fig. 22.

7. Install the resistor stud (15) in the fluid nozzle (14). Tighten to 10 in-lb (1.12 N•m). See Fig. 21.

8. Install the fluid nozzle (14) and resistor stud (15) assembly with the nozzle wrench (76). See Fig. 20. Tighten until the fluid nozzle seats in the gun barrel (1/8 to 1/4 turn past hand-tight).

9. Carefully install the air cap (12). Avoid bending the electrode wire (13) and be sure to insert the electrode wire through the center air cap hole. Rotate the air cap horns to the desired position.

10. Make sure the o-ring (9) is in place on the retaining ring (1). Tighten the air cap retaining ring (1) until the air cap is held firmly in place; you should not be able to rotate the air cap horns by hand.

11. Test the gun resistance as instructed on page 27.

12. Install the gun onto the manifold and bracket as instructed on page 39.

Electrode Needle Replacement

1. Prepare the gun for service as instructed on page 29.

2. Remove the air cap, fluid nozzle, and resistor stud as instructed on page 30. Remove the gun shroud.

3. Unscrew and remove the electrode needle (13) with the electrode wrench (82). See Fig. 22. Be careful not to damage the contact wire.

   If the fluid rod turns, hold the back end of the fluid rod (C).

4. Apply low-strength *(purple)* Loctite® or equivalent thread sealant to the fluid rod threads.

   Hold the back end of the fluid rod (C) to prevent it from turning while installing the new electrode needle (13) finger-tight. Do not over-tighten the electrode needle.

5. Install the gun shroud.

⚠ CAUTION

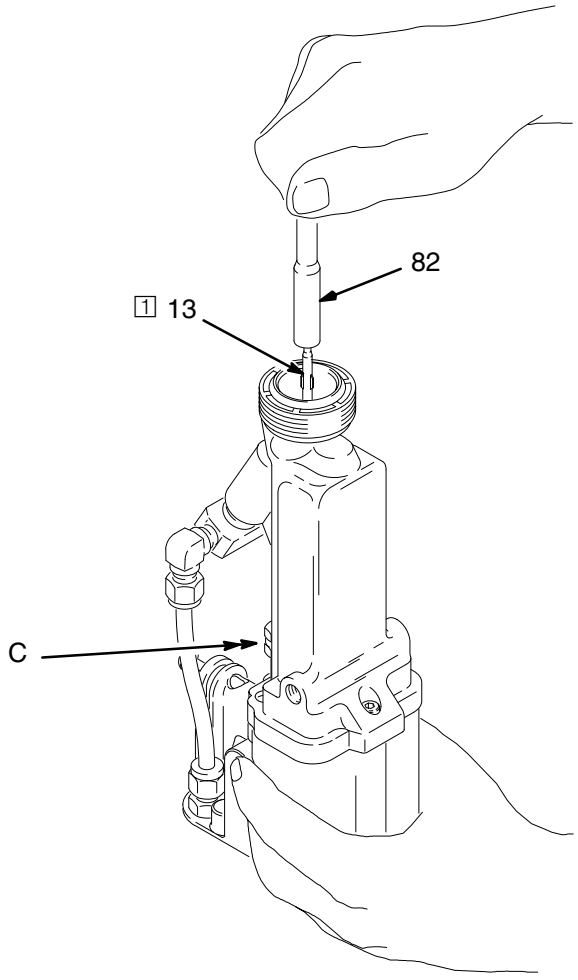
To avoid damaging the plastic threads or contact wire, be very careful when installing the electrode needle.

6. Install the fluid nozzle, resistor stud, and air cap assembly as instructed at left.

7. Test the gun resistance as instructed on page 27.

8. Install the gun onto the manifold and bracket as instructed on page 39.

[1] Apply low-strength *(purple)* Loctite or equivalent to the fluid rod threads, then install the electrode needle (13) finger-tight; do not over-tighten.



03219

Fig. 22

Service

Fluid Packing Rod Removal and Repair

NOTE: The fluid packing rod can be replaced as individual parts or as an assembly. If the assembly is purchased, it is pre-adjusted at the factory.

1. Prepare the gun for service as instructed on page 29.

2. Remove the air cap assembly and the gun shroud.

3. Remove the jam nut (46) and actuator arm (19). See Fig. 25 on page 33.

NOTE: The fluid nozzle must be in place when removing or installing the jam nut and actuator arm.

4. Remove the fluid nozzle, resistor stud, and electrode needle as instructed on page 30.

5. Remove the fluid packing rod assembly (28) with the 9 mm hex nut driver (79). See Fig. 23.

6. Clean all the parts, and check them for wear or damage. Replace the parts if necessary.

   Before installing the fluid packing rod assembly (28), clean the internal surfaces of the barrel with a soft brush or cloth. Check the inside of the barrel for marks from high voltage arcing. If the marks are present, replace the barrel.

⚠ CAUTION

Clean all the parts in non-conductive solvent compatible with the fluid being used, such as xylol or mineral spirits. Use of conductive solvents can cause the gun to malfunction.

7. *If the parts are purchased separately,* assemble them as instructed in steps 8 to 11 and as shown in Fig. 24, on page 33.

   If installing the complete fluid rod assembly, go to step 12, page 33.

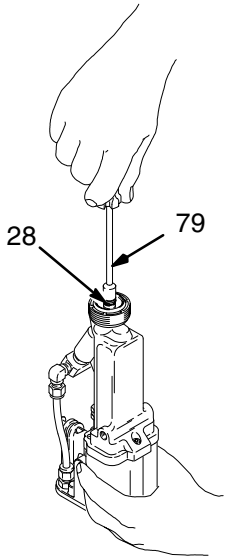


Fig. 23

Fluid Packing Rod Removal and Repair (continued)

8. Place the packing nut (28c) and o-ring (28g) on the fluid rod (28b). The flats on the packing nut must be facing toward the back of the fluid rod.

9. Fill the entire inner cavity of the spacer (28d) with petroleum jelly. Place the spacer on the fluid rod (28b), in the direction shown in Fig. 24. Generously apply petroleum jelly to the outside of the spacer.

10. Place the fluid packing (28f), needle packing (28e), and housing (28a) on the fluid rod (28b) as shown in Fig. 24.

11. Lightly tighten the packing nut (28c). The packing nut is properly tightened when there is 2 lbs. (9 N) of drag force when sliding the packing housing (28a) assembly along the shaft. Tighten or loosen the packing nut as needed.

12. Lubricate the o-ring (28h) on the outside of the packing housing (28a).

13. Install the fluid packing rod assembly (28) into the gun barrel. Using the 9 mm hex nut driver (79), tighten the assembly until it is just snug, then check the drag on the fluid rod. See Fig. 23.

14. Make sure the spring (11) is installed on the nut (U) as shown in Fig. 24.

15. Install the electrode needle, fluid nozzle and resistor stud as instructed on page 31.

16. Install and adjust the actuator arm (19) and jam nut (46) as instructed on page 34.

17. Test the gun resistance as instructed on page 27.

18. Install the gun shroud and air cap assembly.

19. Install the gun onto the manifold and bracket as instructed on page 39.

[1] Apply a very light coat of lubricant to the o-ring (28h).
[2] Fill the inner spacer (28d) cavity with petroleum jelly and generously lubricate the outside of the spacer.
[3] Tighten the packing nut (28c) to 2 lbs (9 N) of drag force.
[4] The spring (11) is not included with the fluid packing rod assembly (28).

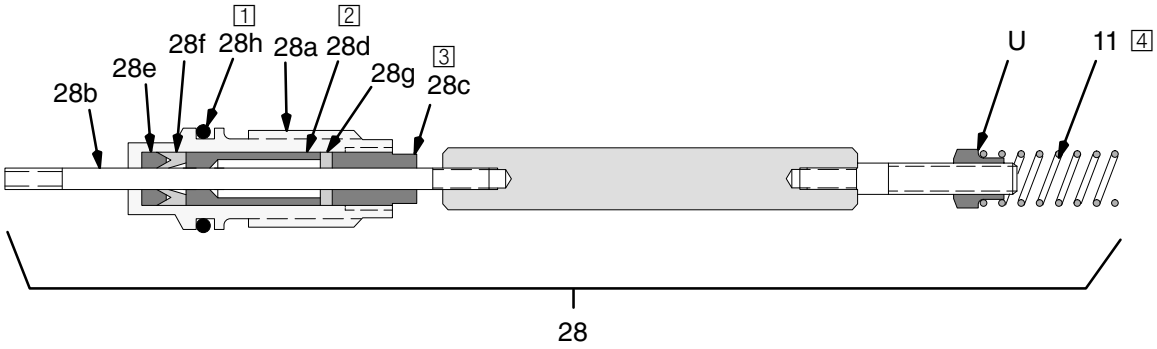


Fig. 24

Piston Repair

1. Prepare the gun for service as instructed on page 29.

2. Remove the air cap assembly and the gun shroud.

3. Remove the jam nut (46), actuator arm (19), and adjustment nut (36). See Fig. 25.

NOTE: The fluid nozzle must be in place when removing or installing the jam nut and actuator arm.

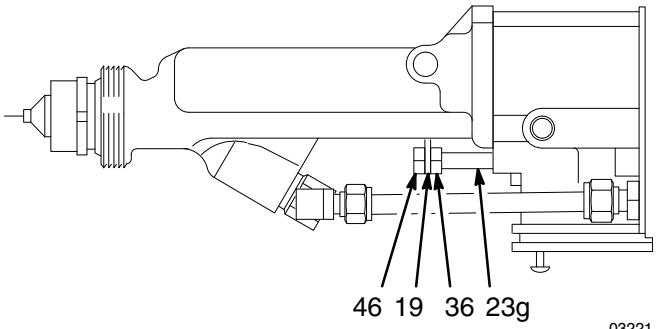


Fig. 25

Continued on next page.

Piston Repair (continued)

4. Push on the piston rod (23g) to push the piston assembly out the back of the gun.
5. Inspect the o-rings (23a, 23b, 23c) and u-cup packing (23f) for damage. See Fig. 26. Refer to Fig. 27 to isolate any air leakage problems.
6. Lubricate the o-rings (23a, 23b, 23c) and u-cup packing (23f) with petroleum jelly.
7. Align the two stems (23d) with the holes in the gun body and press the piston assembly into the back of the gun until it bottoms.

[1] Apply a very light coat of lubricant to the o-rings (23a, 23b, 23c) and u-cup (23f).
[2] Align the two stems (23d) with the holes in the gun body and press the piston assembly until it bottoms.

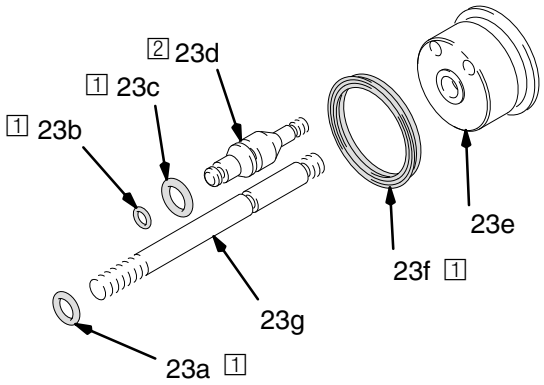


Fig. 26

Description	Function
O-Ring (23a) Shaft Air Seal	It seals the cylinder air along the piston rod. If the air leaks along the piston rod (23g), replace this o-ring (23a).
O-Ring (23b) Front Air Seal	It is the air shut-off seal. If the air leaks from the air cap when the gun is detrigged, replace these o-rings.
O-Ring (23c) Back Air Seal	It separates the cylinder air pressure from the fan and atomizing air pressure.
U-cup (23f) Cylinder Air Seal	If the air leaks from the small vent hole in the back of the manifold when the gun is triggered, replace the u-cup.

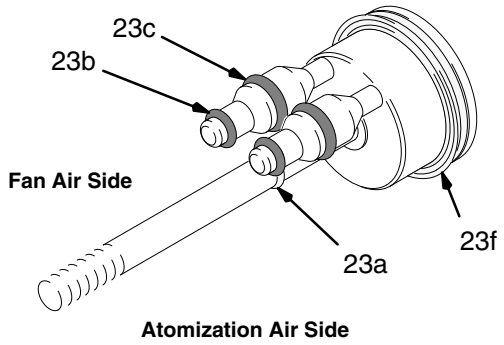


Fig. 27

8. **Installing the Actuator Arm and Nuts:**
   a. Install the adjustment nut (36), actuator arm (19), and jam nut (46) onto the piston rod (23g). See Fig. 25 on page 33.
   b. Thread the jam nut (46) flush with the end of the piston rod (23g).Tighten the adjustment nut (36) against the actuator arm (19). When properly assembled, there should be about a 0.125 in. (3 mm) gap between the actuator arm (19) and the fluid packing rod nut (U), which allows the atomizing air to actuate before the fluid actuates. See Fig. 28. In addition, there should be 3 to 4 mm of electrode needle travel when the gun is triggered. If necessary, adjust the jam nut (46) position to obtain these dimensions.

NOTE: The jam nut (46) has a slightly larger hex and a thinner profile than the adjustment nut (36).

[1] There should be a 0.125 in. (3 mm) gap between the actuator arm (19) and the fluid packing rod nut (U).

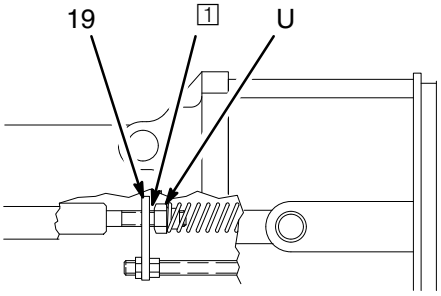


Fig. 28

9. Test the gun resistance as instructed on page 27.
10. Install the gun shroud and air cap assembly.
11. Install the gun onto the manifold and bracket as instructed on page 39.

Service

Barrel Removal

1. Prepare the gun for service as instructed on page 29.
2. Remove the air cap assembly and the shroud from the gun.
3. Carefully loosen the fluid fitting nut (43). See Fig. 30. Pull the tube (33) out of the fitting. Make sure that both ferrules and the nut stay with the tube.
4. Remove the jam nut (46) and actuator arm (19).

NOTE: The fluid nozzle (14) must be in place when removing or installing the jam nut and actuator arm.

5. Loosen the three screws (24) with the ball end wrench (77–*not shown*). See Fig. 29.
6. Hold the gun body (29) with one hand and pull the barrel (26) straight away from the body to remove it.

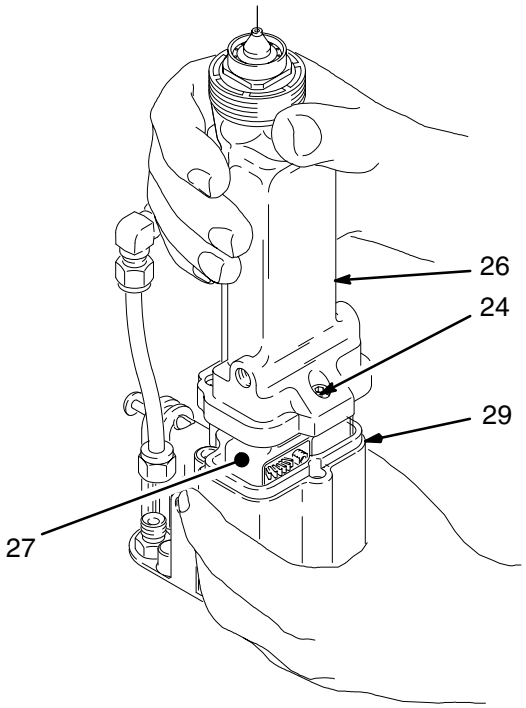


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Fig. 29

⚠ CAUTION

To avoid damaging the power supply (27), pull the gun barrel straight away from the gun body. If necessary, gently move the barrel from side to side to free the power supply from the gun body.

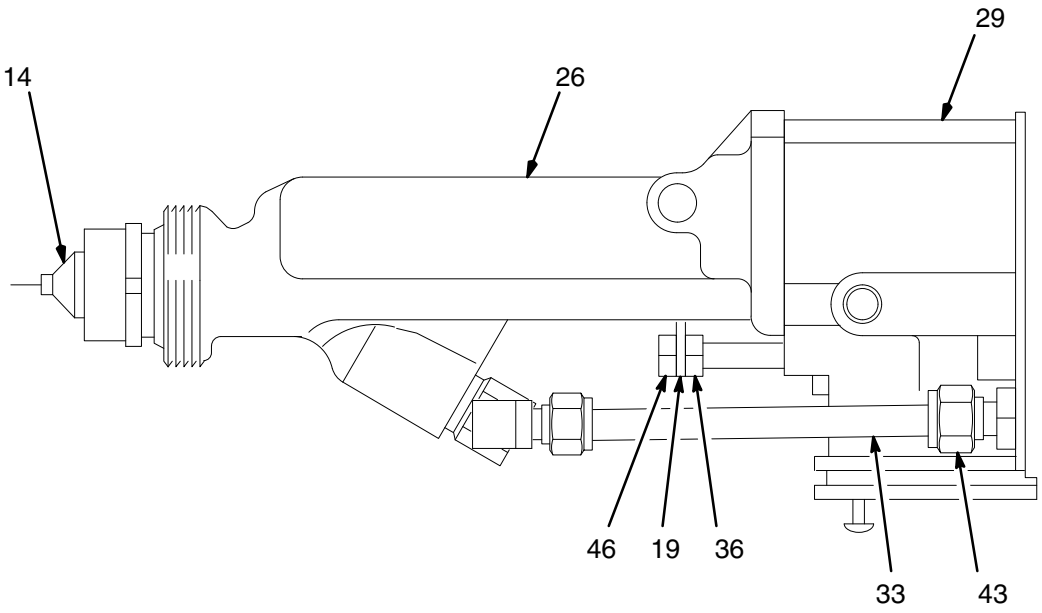

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Fig. 30

Service

Power Supply Removal and Replacement

NOTES:

- To avoid a loss in electrostatic performance, inspect the gun body power supply cavity for dirt or moisture. Clean the cavity with a clean, dry rag.
- Do not expose the seal (27d) or gasket (27a) to solvents as this will damage them.

1. Prepare the gun for service as instructed on page 29.
2. Remove the barrel as instructed on page 35.
3. Grasp the power supply (27) with your hand. With a gentle side-to-side motion, being careful not to damage the power supply, pull the power supply free from the gun body (29), then pull it straight out. See Fig. 31.
4. Inspect the power supply for any physical damage. Check the electrical resistance as instructed in **Test Power Supply Resistance**, page 28. If necessary, replace the power supply.
5. Before installing the power supply, inspect the seal (27d) for any damage or swelling; replace the seal if necessary. Make sure the gaskets and pads (27a–27e) are in place.
6. Lubricate the o-ring (25a) and install the power supply (27) in the gun body (29).
7. Assemble the gun as instructed on page 38.

Power Supply Adjustment

The kV switch, in the manifold, enables you to switch between full voltage and a lower voltage output. The lower voltage is factory set at 60 kV, but can be adjusted between 45 and 80 kV.

To adjust the low voltage setting, use a small blade end screw driver to turn the potentiometer (W). Turn it clockwise to increase the voltage or counterclockwise to decrease it; fully clockwise is 80 kV, fully counterclockwise is 45 kV.

[1] Apply a very light coat of lubricant to the o-ring (25a).
[2] Do not expose the seal (27d) or gasket (27a) to solvents.

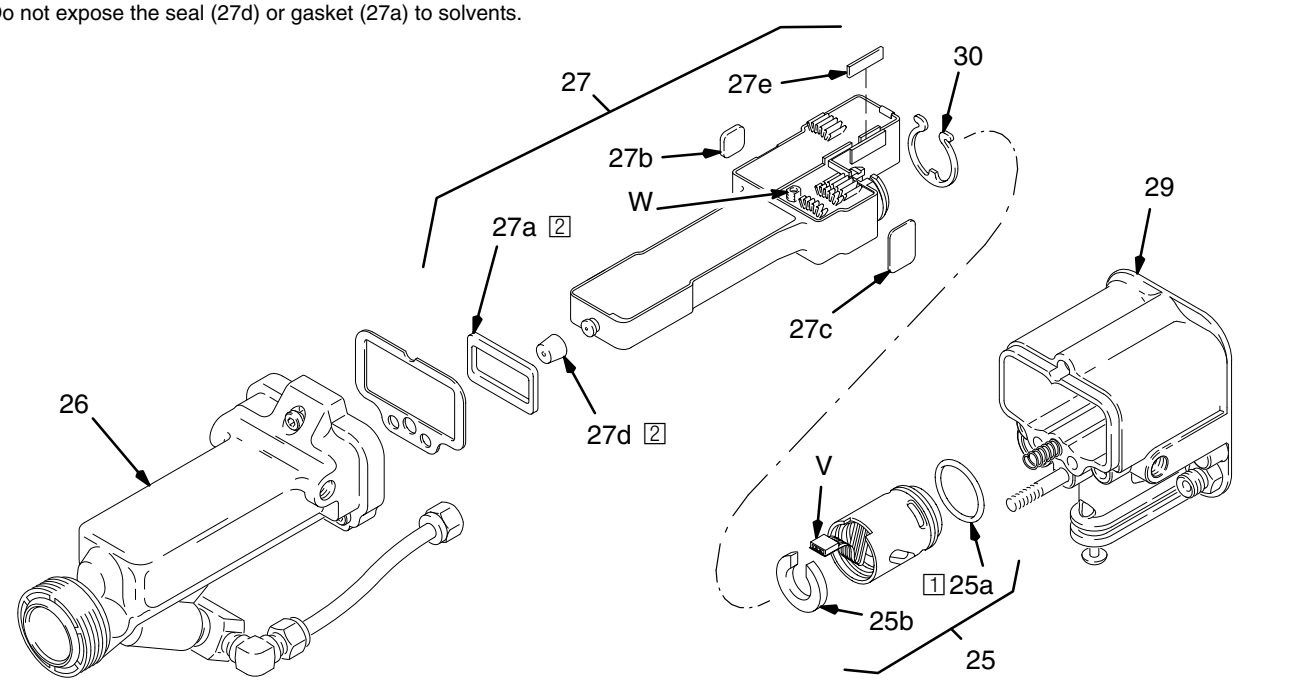


Fig. 31

Turbine Alternator Removal and Replacement

NOTE: Replace the turbine bearings after 2000 hours of operation. See your authorized Graco representative.

1. Prepare the gun for service as instructed on page 29.
2. Remove the power supply from the gun body as instructed on page 36.
3. Squeeze the two ends of the retaining ring (30) together and carefully pull the alternator (25) away from the power supply (27) until the wire connector (V) disengages. See Fig. 31.
4. Use an ohmmeter to test the turbine alternator coil. Measure the resistance between the two outer terminals of the 3-wire connector (V). Resistance should be 3 to 5 ohms. If the reading varies from this value, replace the alternator.
5. Connect the 3-wire connector to the 3 prongs in the power supply. Push the alternator (25) onto the power supply (27) until the retaining ring (30) engages with the alternator.
6. Install the power supply in the gun body as instructed on page 36.
7. Assemble the gun as instructed on page 38.

Barrel Installation

1. Be sure the gaskets (20, 27a) and spring (11) are in place. See Fig. 32. Replace the parts if they are damaged.

2. Place the barrel (26) over the power supply (27) and onto the gun body (29). Make sure the fluid needle spring (11) is seated properly.

3. Using the ball end wrench (77–*not shown*), tighten the three screws (24) oppositely and evenly to 18 in-lbs (2 N•m) maximum (about a half turn past snug); do not over-tighten.

⚠ CAUTION

To avoid damaging the gun, do not over-tighten the screws (24). Tighten them to 18 in-lbs (2 N•m) maximum (about a half turn past snug), using the wrench (77) supplied.

4. Install the fluid tube back into the fluid fitting (4) and tighten the nut (43).
5. Install and adjust the actuator arm (19) and jam nut (46) as instructed on page 34.
6. Test the gun resistance as instructed on page 27.
7. Install the gun shroud and air cap assembly.
8. Install the gun onto the manifold and bracket as instructed on page 39.

[1] Tighten the screws (24) to 18 in-lbs (2 N•m) maximum (about half turn past snug), using the wrench (77) provided.
[2] Install the nut (46) flush to the end of the piston rod (23g).
[3] Adjust the nut (36) to create 0.125 in. (3 mm) gap between the actuator arm (19) and the nut.

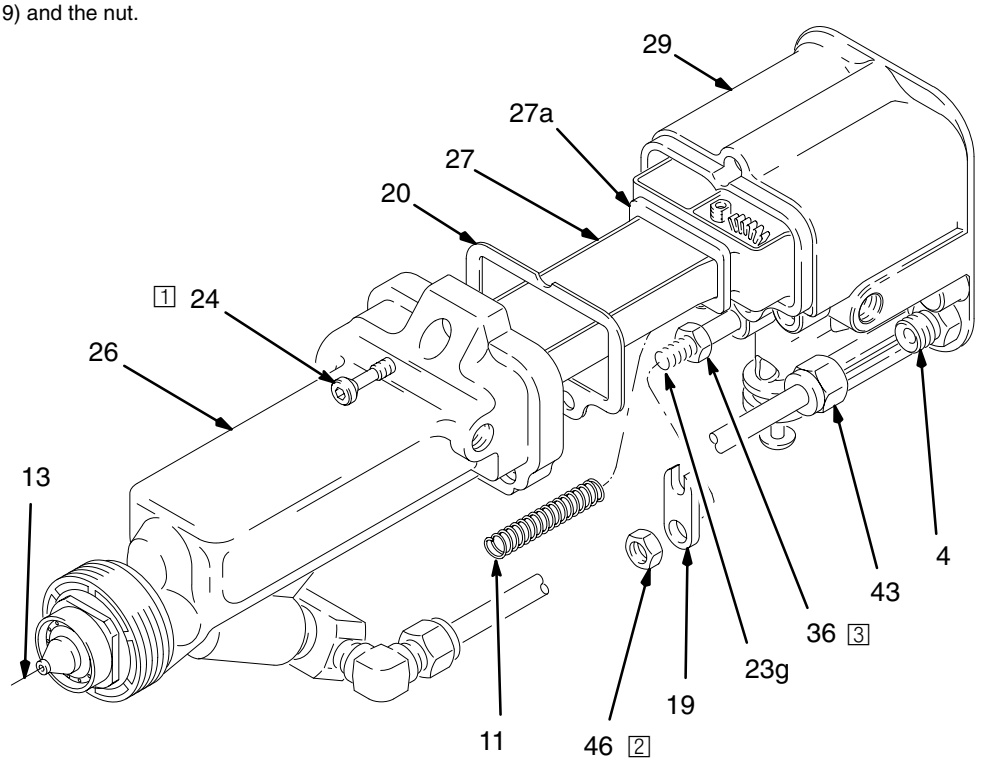


Fig. 32

Install the Gun onto the Manifold

1. Make sure the gaskets (108, 121) and spring (105) are in place on the manifold (101). See Fig. 33. Inspect the parts for damage and replace them as needed.

2. Secure the gun (B) to the manifold (101) by tightening the three screws (106) with the ball end wrench (77–*not shown*).

3. Secure the gun (B) to the mounting bracket (102) by tightening the screw (21) with the ball end wrench (77).

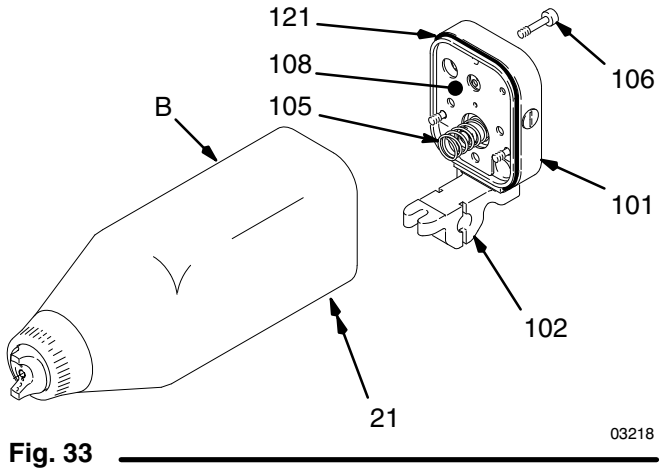
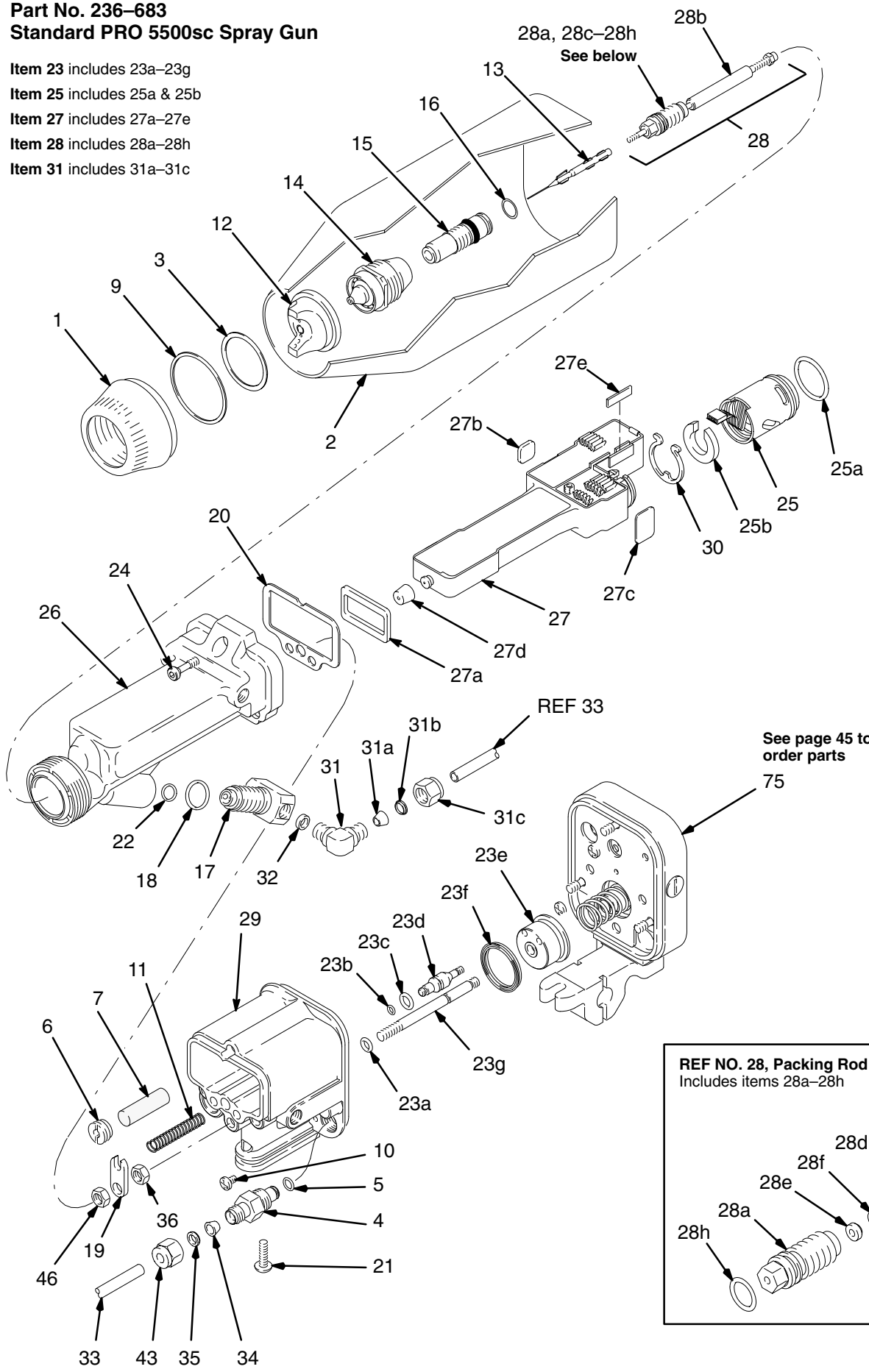


Fig. 33

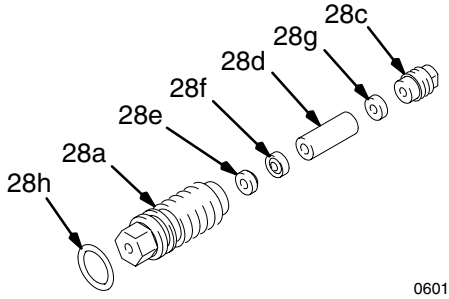
Standard Spray Gun Parts

Part No. 236–683
Standard PRO 5500sc Spray Gun

Item 23 includes 23a–23g
Item 25 includes 25a & 25b
Item 27 includes 27a–27e
Item 28 includes 28a–28h
Item 31 includes 31a–31c



REF NO. 28, Packing Rod Assembly
Includes items 28a–28h



03227

Standard Spray Gun Parts

⚠ WARNING

EQUIPMENT MISUSE HAZARD
Use only genuine Graco replacement parts. Using non-Graco parts could alter the gun's grounding continuity or cause parts to rupture or fail, which could result in a serious injury and property damage.

Part No. 236–683
Standard PRO 5500sc Spray Gun Assembly
Includes items 1–85

Ref. No.	Part No.	Description	Qty.
1	189–768	RETAINING RING, air cap	1
2	189–770	SHROUD	1
3†	189–786	GASKET, air cap nut	1
4	189–549	FITTING, fluid, quick-disconnect	1
5*	111–450	O-RING; fluoroelastomer	1
6	189–367	CAP, exhaust	1
7	185–122	MUFFLER/FLAME ARRESTOR	1
9†	110–492	O-RING, PTFE®	1
10	108–290	SCREW	1
11	185–111	SPRING, compression	1
12	177–033	AIR CAP; See Manual 307–803 for available air caps	1
13	185–107	NEEDLE, electrode	1
14	185–158	NOZZLE, fluid; See Manual 307–803 for available nozzles	1
15	223–977	STUD, resistor	1
16*	111–507	O-RING, fluoroelastomer	1
17	189–757	FITTING, fluid	1
18*	102–982	O-RING; PTFE	1
19	186–766	ARM, actuator	1
20†	185–113	GASKET, manifold; polyethylene	1
21	112–689	SCREW, socket; 1/4 x 0.75"	1
22*	111–316	O-RING, fluoroelastomer	1
23	236–826	PISTON ASSY; Includes items 23a–23g	1
23a†	111–508	• O-RING; fluoroelastomer	1
23b†	111–504	• O-RING; fluoroelastomer	2
23c†	112–319	• O-RING; fluoroelastomer	2
23d	189–355	• STEM, piston	2
23e	189–747	• PISTON	1
23f†	189–752	• PACKING, u-cup; UHMW polyethylene	1
23g	189–754	• ROD, piston	1
24	185–096	SCREW, cap, relieved; M5 x 0.8	3
25	222–319	ALTERNATOR, turbine Includes items 25a & 25b	1
25a†	110–073	• O-RING, Viton	1
25b	185–124	• CUSHION	1
26	223–940	BARREL, gun	1
27	224–093	POWER SUPPLY ASSY; 85 kV Includes items 27a–27e	1
27a	186–840	• GASKET, power supply	1
27b	185–099	• PAD	1
27c	185–145	• PAD	1
27d	186–637	• SEAL	1
27e	185–141	• CUSHION	1
28	224–747	PACKING ROD ASSY Includes items 28a–28h	1
28a	185–495	• HOUSING, packing	1
28b	223–981	• ROD, fluid	1
28c	185–488	• NUT, packing	1
28d*	186–069	• SPACER, packing	1
28e	178–763	• PACKING, rod	1
28f*	178–409	• PACKING, fluid	1
28g*	111–504	• O-RING, fluoroelastomer	1
28h*	111–316	• O-RING, fluoroelastomer	1
29	190–055	BODY, gun	1
30	185–114	RETAINER RING, alternator	1
31	111–370	ELBOW; Includes items 31a–31c	1
31a*	111–286	• FERRULE	1
31b*	111–285	• FERRULE	1
31c	112–644	• NUT; for 1/4" O.D. tube fitting	1
32*	112–642	SPACER	1
33*	189–769	TUBE	1
34*	111–286	FERRULE	1
35*	111–285	FERRULE	1
36	102–025	NUT, hex; 1/4"-20	1
37	112–638	FITTING, fiber optic *(shown on page 44)*	1
43	112–644	NUT; for 1/4" O.D. tube fitting	1
46	101–324	NUT, hex jam; 1/4"–20	1
75	236–830	MANIFOLD ASSY. See separate parts list on page 45	1
76‡	187–421	WRENCH, nozzle	1
77‡	107–460	WRENCH, ball end	1
78‡▲	180–060	SIGN, warning, English	1
79‡	110–087	DRIVER, hex nut; 9 mm	1
81‡	105–749	BRUSH	1
82‡	185–123	WRENCH, electrode	1
83‡	110–088	WRENCH, allen; 8 mm	1
84‡▲	179–791	TAG, warning	1
85‡	189–888	COVER, gun	1

* *These parts are included in Fluid Seal Repair Kit 236–828, which may be purchased separately.*

† *These parts are included in Air Seal Repair Kit 236–827, which may be purchased separately.*

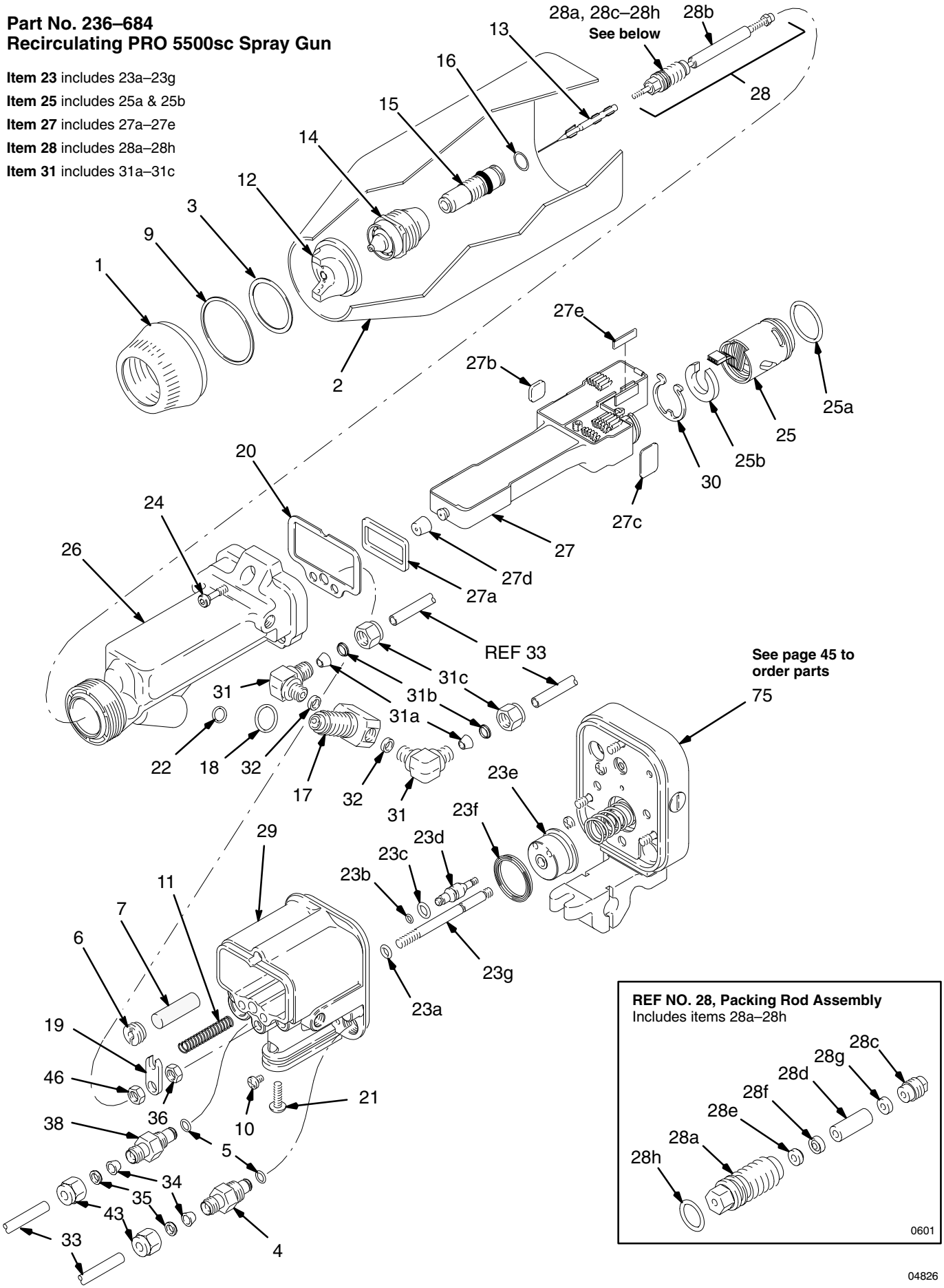
‡ *These parts are not shown in the parts drawing.*

▲ *Replacement Danger and Warning labels, tags and cards are available at no cost. French, German, and Spanish warning signs are also available.*

Recirculating Spray Gun Parts

Part No. 236–684
Recirculating PRO 5500sc Spray Gun

Item 23 includes 23a–23g
Item 25 includes 25a & 25b
Item 27 includes 27a–27e
Item 28 includes 28a–28h
Item 31 includes 31a–31c



REF NO. 28, Packing Rod Assembly
Includes items 28a–28h

04826

Recirculating Spray Gun Parts

⚠ WARNING

EQUIPMENT MISUSE HAZARD
Use only genuine Graco replacement parts. Using non-Graco parts could alter the gun's grounding continuity or cause parts to rupture or fail, which could result in a serious injury and property damage.

Part No. 236–684
Recirculating PRO 5500sc Spray Gun Assembly
Includes items 1–85

Ref. No.	Part No.	Description	Qty.
1	189–768	RETAINING RING, air cap	1
2	189–770	SHROUD	1
3†	189–786	GASKET, air cap nut	1
4	189–549	FITTING, fluid, quick-disconnect	1
5*	111–450	O-RING; fluoroelastomer	2
6	189–367	CAP, exhaust	1
7	185–122	MUFFLER/FLAME ARRESTOR	1
9†	110–492	O-RING, PTFE®	1
10	108–290	SCREW	1
11	185–111	SPRING, compression	1
12	177–033	AIR CAP; See Manual 307–803 for available air caps	1
13	185–107	NEEDLE, electrode	1
14	185–158	NOZZLE, fluid; See Manual 307–803 for available nozzles	1
15	223–977	STUD, resistor	1
16*	111–507	O-RING, fluoroelastomer	1
17	189–756	FITTING, fluid	1
18*	102–982	O-RING; PTFE	1
19	186–766	ARM, actuator	1
20†	185–113	GASKET, manifold; polyethylene	1
21	112–689	SCREW, socket; 1/4 x 0.75"	1
22*	111–316	O-RING, fluoroelastomer	1
23	236–826	PISTON ASSY; Includes items 23a–23g	1
23a†	111–508	• O-RING; fluoroelastomer	1
23b†	111–504	• O-RING; fluoroelastomer	2
23c†	112–319	• O-RING; fluoroelastomer	2
23d	189–355	• STEM, piston	2
23e	189–747	• PISTON	1
23f†	189–752	• PACKING, u-cup; UHMW polyethylene	1
23g	189–754	• ROD, piston	1
24	185–096	SCREW, cap, relieved; M5 x 0.8	3
25	222–319	ALTERNATOR, turbine Includes items 25a & 25b	1
25a†	110–073	• O-RING, Viton	1
25b	185–124	• CUSHION	1
26	223–940	BARREL, gun	1
27	224–093	POWER SUPPLY ASSY; 85 kV Includes items 27a–27e	1
27a	186–840	• GASKET, power supply	1
27b	185–099	• PAD	1
27c	185–145	• PAD	1
27d	186–637	• SEAL	1
27e	185–141	• CUSHION	1
28	224–747	PACKING ROD ASSY Includes items 28a–28h	1
28a	185–495	• HOUSING, packing	1
28b	223–981	• ROD, fluid	1
28c	185–488	• NUT, packing	1
28d*	186–069	• SPACER, packing	1
28e	178–763	• PACKING, rod	1
28f*	178–409	• PACKING, fluid	1
28g*	111–504	• O-RING, fluoroelastomer	1
28h*	111–316	• O-RING, fluoroelastomer	1
29	190–055	BODY, gun	1
30	185–114	RETAINER RING, alternator	1
31	111–370	ELBOW; Includes items 31a–31c	2
31a*	111–286	• FERRULE	2
31b*	111–285	• FERRULE	2
31c	112–644	• NUT; for 1/4" O.D. tube fitting	2
32*	112–642	SPACER	2
33*	189–769	TUBE	2
34*	111–286	FERRULE	2
35*	111–285	FERRULE	2
36	102–025	NUT, hex; 1/4"-20	1
37	112–638	FITTING, fiber optic *(shown on page 44)*	1
38	189–550	FITTING, fluid return, quick-disconnect	1
43	112–644	NUT; for 1/4" O.D. tube fitting	2
46	101–324	NUT, hex jam; 1/4"–20	1
75	236–831	MANIFOLD ASSY. See separate parts list on page 45	1
76‡	187–421	WRENCH, nozzle	1
77‡	107–460	WRENCH, ball end	1
78‡▲	180–060	SIGN, warning, English	1
79‡	110–087	DRIVER, hex nut; 9 mm	1
81‡	105–749	BRUSH	1
82‡	185–123	WRENCH, electrode	1
83‡	110–088	WRENCH, allen; 8 mm)	1
84‡▲	179–791	TAG, warning	1
85‡	189–888	COVER, gun	1

* *These parts are included in Fluid Seal Repair Kit 236–828, which may be purchased separately.*

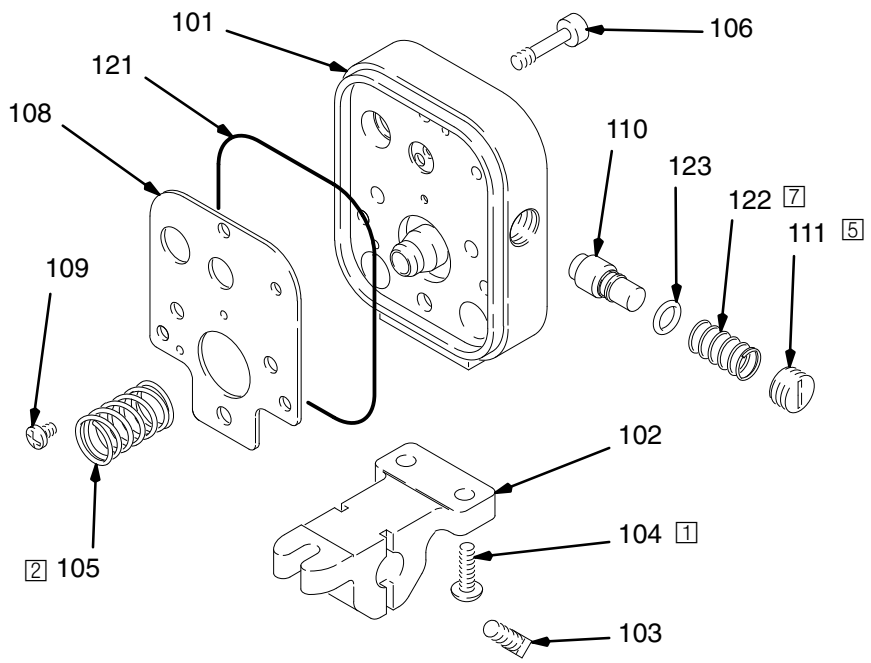
† *These parts are included in Air Seal Repair Kit 236–827, which may be purchased separately.*

‡ *These parts are not shown in the parts drawing.*

▲ *Replacement Danger and Warning labels, tags and cards are available at no cost. French, German, and Spanish warning signs are also available.*

Manifold Parts

Front View



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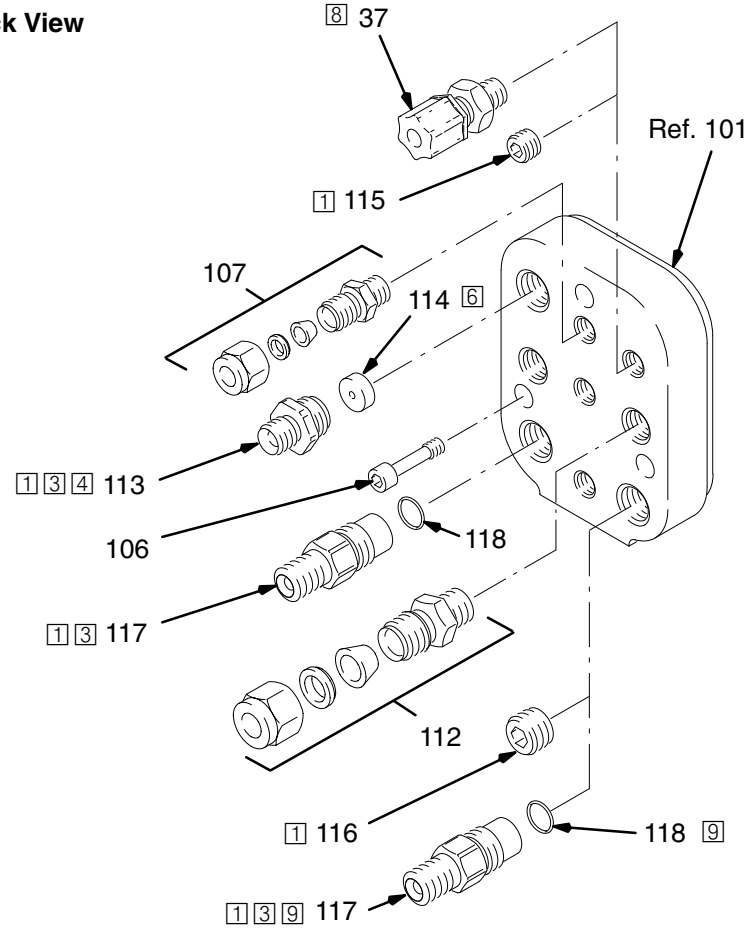
Back View



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1. Apply low strength *(purple)* Loctite® or an equivalent sealant to the threads.
2. Press fit the spring (105)
3. Tighten the fitting until the hex bottoms against the manifold.
4. This fitting (113) has left-hand threads.
5. Install the kV cap (111) flush to the outside surface.
6. Concave side of the disk (114) faces toward the manifold.
7. Replace the spring (122) every 300,000 cycles.
8. An optional fiber optic fitting (37) is included with the gun assembly; see page 41 or 43. Remove the plug (115) and install the fitting (37) if a kV display is being used.
9. Included with Part No. 236–831 Manifold only

Manifold Parts

⚠ WARNING

EQUIPMENT MISUSE HAZARD
Use only genuine Graco replacement parts. Using non-Graco parts could alter the gun's grounding continuity or cause parts to rupture or fail, which could result in a serious injury and property damage.

Part No. 236–830 Gun Manifold
For Standard PRO 5500sc Spray Gun**;**
Includes items 101–123

Part No. 236–831 Gun Manifold
For Recirculating PRO 5500sc Spray Gun**;**
Includes items 101–123

Ref. No.	Part No.	Description	Qty.
101	190–056	MANIFOLD	1
102	189–581	MOUNTING BRACKET	1
103	110–465	BOLT, square head	2
104	112–689	SCREW; 1/4–20 x 0.75"	2
105	112–640	SPRING, compression	1
106	186–846	BOLT, manifold; M5 x 0.8	3
107	111–157	FITTING, tube; for 1/4" OD tube	3
108†	189–363	GASKET, manifold	1
109	108–290	SCREW; 8–32 x 1/4"	2
110	236–696	kV SWITCH	1
111	189–365	kV CAP	1
112	110–078	FITTING, tube; for 3/8" OD tube	1
113	186–845	FITTING, turbine; 1/4–18 npsm left hand thread	1
114	107–107	DISK, regulator	1
115	112–645	PLUG; 1/8–27 npt	1
116	112–646	PLUG; 5/8–18 x 5/8"	1
117	189–551	FITTING, fluid, quick-disconnect	☆
118*	111–450	O-RING; CV–75	☆
121†‡	190–301	GASKET, foam	1
122	112–641	SPRING	1
123†	111–316	O-RING, fluoroelastomer	1

* *These parts are included in Fluid Seal Repair Kit 236–828, which may be purchased separately.*

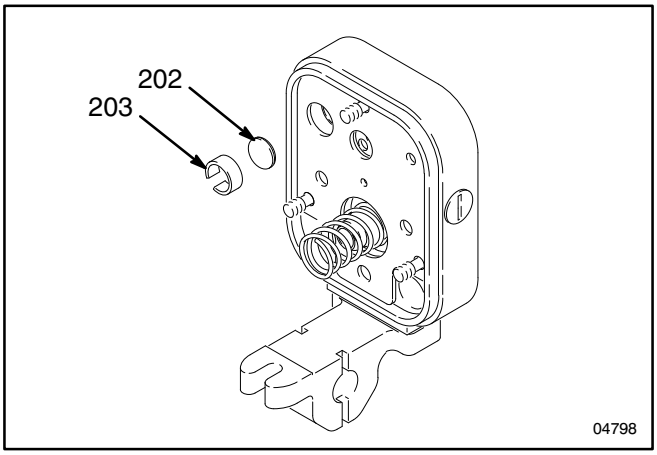
† *These parts are included in Air Seal Repair Kit 236–827, which may be purchased separately.*

‡ *Optional gaskets are available:*
Part No. 111–180: Viton®
Part No. 111–333: Ethylene Propylene

☆ *Part No. 236–830 Manifold includes one fluid fitting (117) and o-ring (118). Part No. 236–831 Manifold includes two fluid fittings (117) and o-rings (118).*

Part No. 236–852 Optional Fiber Optic Kit
The kit is not included with the gun. The kit is only for use with the ES Display Part No. 224–117 to improve light transmission when two bulkhead splices are used. The kit includes items 201–203.

Ref. No.	Part No.	Description	Qty.
201	112–638	FITTING, fiber optic; see item 37 on page 44	1
202	111–224	LENS	1
203	189–875	SLEEVE	1



Part No. 236–851
PRO 5500sc Recirculation Kit
To convert the standard PRO 5500sc spray gun to a recirculating spray gun. The kit includes the following parts:

Part No.	Description	Qty.
189–756	FITTING, fluid, recirculating	1
111–370	FITTING, tube, elbow	1
112–642	SPACER	1
189–769	TUBE, fluid	1
189–550	FITTING, return, quick-disconnect	1
189–551	FITTING, fluid, quick-disconnect	1
111–450	O-RING; CV–75	2
108–290	SCREW; 8–32 x 1/4"	1
102–982	O-RING;PTFE	1
111–316	O-RING, fluoroelastomer	1

Technical Data

Weight *(gun & manifold)* . . . . . 3.57 lb (1620 g)
Maximum Working Pressure . . . . . 100 psi (7 bar)
Air Pressure Operating Range . . . 0–100 psi (0–7 bar)
Fluid Pressure Operating Range . 0–100 psi (0–7 bar)
Voltage Output . . . . . 0–85 kV
Short Circuit Current Output . . . . . 120 μA
Paint Resistivity Range . . . . . 3 megohm cm to infinity
Maximum Fluid Temperature . . . . . 120°F (49°C)
Turbine Air Inlet . . . . . 1/4 npsm(m), left hand
Wetted Parts . . . . . Stainless Steel, Nylon, Acetal, PTFE®, Kalrez ®, Ultra High Molecular W eight Polyethylene, Ceramic, Chemraz ®, Fluoro-polymer

Maximum Noise Level with fan and atomization air at 100 psi (7 bar):
Sound Pressure † . . . . . 101.5 Db(A)
Sound Power ‡ . . . . . 107.0 Db(A)

† Sound pressure was measured per Cagi Pneurop, 1969. The measurement was taken 3.28 feet (1 meter) from the air cap.

‡ Sound power was measured per ISO–3744, 1981.

PTFE *, Viton®, and Kalrez®*

Loctite® is a registered trademark of the Loctite Corporation.

Chemraz® is a registered trademark of the Green, Tweed, & Co.

Manual Change Summary

The following parts have been changed in this manual revison.

Assembly Changed	Part Status	Ref No.	Part No.	Name
236–683	Old		106–560	
	New	23d	111–508	O-Ring
	Old		168–518	
	New	23e	111–504	O-Ring
	Old		168–110	
	New	23f	112–319	O-Ring
	Added	37	112–638	F.O. Fitting
236–830	Old		111–180	O-Ring
	New	121	190–301	Gasket

Additional Changes:

- Added FM, CSA, and CE marks.
- Added Model 236–684 Recirculating Gun and Model 236–831 Recirculating Manifold.
- Updated drawings and procedures.
- Added 111–180 and 111–333 gaskets as optional replacements for reference no. 121.
- Added optional Fiber Optic Kit 236–852 and Recirculation Kit 236–851.
- Added noise levels to Technical Data.

Notes

The Graco Warranty and Disclaimers

WARRANTY
Graco warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months 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 gun barrel, gun body, manifold, mounting bracket, 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.

Graco Phone Numbers

TO PLACE AN ORDER, contact your Graco distributor, or call Graco: **1–800–367–4023 Toll Free**

FOR TECHNICAL ASSISTANCE, service repair information or answers about the application of Graco equipment, call: **1–800–543–0339 Toll Free**

Sales Offices: Atlanta, Chicago, Dallas, Detroit, Los Angeles, Mt. Arlington (N.J.)
Foreign Offices: Canada; England; Switzerland; France; Germany; Hong Kong; Japan; Korea

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