

# INSTRUCTIONS-PARTS LIST



GRACO

*First choice when  
quality counts.™*

# 306-667

Rev. G  
Supersedes Rev E  
and PCN F



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

INSTRUCTIONS

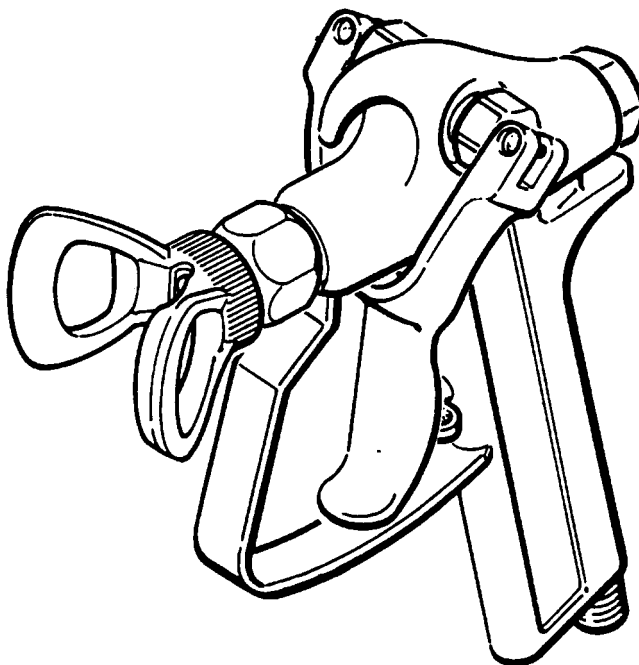
## Airless Spray Gun

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

**Model 205-591, Series T**

For non-circulating system

\* Spray tip not included. Order separately.



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

<http://www.graco.com>

©COPYRIGHT 1997, GRACO INC.

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

# Table of Contents

|                          |    |
|--------------------------|----|
| Installation .....       | 4  |
| Operation .....          | 6  |
| Troubleshooting .....    | 8  |
| Service .....            | 10 |
| Parts .....              | 12 |
| Technical Data .....     | 13 |
| Graco Warranty .....     | 16 |
| Graco Phone Number ..... | 16 |

# Symbols

## Warning Symbol



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

## Caution Symbol



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

# ! WARNING



## INJECTION HAZARD

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

- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate medical attention.**
- Do not point the spray gun at anyone or at any part of the body.
- Do not put hand or fingers over the spray tip.
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Do not “blow back” fluid; this is not an air spray system.
- Always have the tip guard and the trigger guard on the spray gun when spraying.
- Be sure the gun trigger safety operates before spraying.
- Lock the gun trigger safety when you stop spraying.
- Check gun diffuser operation weekly.
- Follow the **Pressure Relief Procedure** on page 5 whenever you: are instructed to relieve pressure; stop spraying; clean, check, or service the equipment; and install or clean the spray tip.
- Tighten all the fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.



## 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.

# WARNING



## FIRE AND EXPLOSION HAZARD

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

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



INSTRUCTIONS



## 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 usage, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of this equipment. This system has a **21.0 MPa, 210 bar (3000 psi) maximum working 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 82°C (180°F) or below -40°C (-40°F).
- 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.

# Installation

## General

### **⚠ WARNING**

#### **INJECTION HAZARD**

To reduce the risk of serious injury whenever you are instructed to relieve the pressure, always follow the **Pressure Relief Procedure** on page 5.

**NOTE:** Numbers and letters in parentheses in the text refer to reference numbers in the Figures and Parts Drawing.

### **⚠ WARNING**

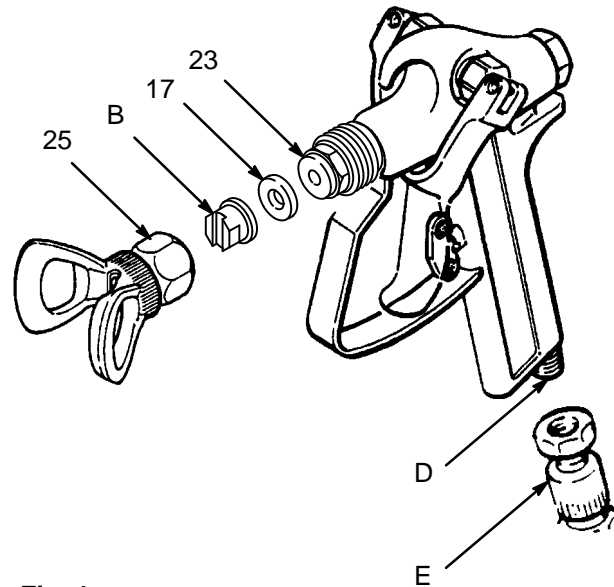
#### **INJECTION HAZARD**

Be sure your system has a bleed-type master air valve (pneumatic valves only) and a fluid drain valve. These two accessories help reduce the risk or serious injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts if you are adjusting or repairing the pump or gun.

- The bleed-type master air valve relieves air trapped between this valve and the pump after the air regulator is shut off. Trapped air can cause the pump to cycle unexpectedly.
- The fluid drain valve assists in relieving fluid pressure in the displacement pump, hose, and gun; triggering the gun to relieve pressure may not be sufficient.

1. Connect a grounded fluid hose to the gun inlet.

2. With no tip installed, start the pump/sprayer. Flush it according to the instructions supplied with it. Prime the system with the fluid you are using.
3. **Relieve the pressure.**
4. With the gun safety latch engaged, unscrew the tip guard (25) and install the tip (B) and gasket (17) in the nut of the tip guard. Screw the assembly firmly onto the gun. Tighten with a wrench. See Fig. 1.



**Fig. 1**

**NOTE:** Failure to install the tip gasket (17) will result in leaking.

5. Strain the fluid you are spraying if it contains particles which could clog the spray tip.

# Operation

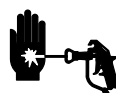
## Grounding

To reduce the risk of static sparking, ground the pump, object being sprayed, and all other spray equipment used or located in the spray area. Check your local electrical code for detailed grounding instructions for your area and type of equipment. Be sure to ground all of this spray equipment.

- *Pump or sprayer:* as instructed in your separate pump or sprayer manual.
- *Air compressor or hydraulic power supply:* according to local code.
- *Fluid hoses:* use only grounded hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity.
- *Spray gun:* obtain grounding through connection to a properly grounded fluid hose and sprayer or pump.
- *Fluid supply container:* according to local code.
- *Object being sprayed:* according to local code.
- *All solvent pails* used when flushing, according to local code. Use only metal pails, which are conductive. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
- *To maintain grounding continuity when flushing or relieving pressure,* always hold a metal part of the gun firmly to the side of a metal pail, then trigger the gun.

## Pressure Relief Procedure

### **WARNING**



#### **INJECTION HAZARD**

Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

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

1. Engage the spray gun safety latch.
2. Shut off the power supply to the pump and close any bleed-type master air valves in the air supply.
3. Disengage the gun safety latch.
4. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun into the pail to relieve pressure.
5. Engage the spray gun safety latch.
6. Open the pump fluid drain valve (required in your system), having a container ready to catch the drainage.
7. Leave the drain valve open until you are ready to spray again.

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

# Operation

## Using the Gun

### ⚠ WARNING

#### INJECTION HAZARD

To reduce the risk of serious injury whenever you are instructed to relieve the pressure, always follow the **Pressure Relief Procedure** on page 5.

### ⚠ WARNING

#### INJECTION HAZARD

To avoid fluid injection from accidental spray, engage the gun safety latch. See Fig. 2.

1. Start the pump. Adjust the fluid pressure so the spray is completely atomized. Always use the lowest pressure necessary to get the desired results. Higher pressure may not improve the spray pattern and will cause premature tip and pump wear.
2. If adjusting the pressure does not give a good spray pattern, try another tip size. Be sure to **relieve the pressure** completely before changing tips.

3. Use a full-open, full-close trigger action. Hold the gun about 350 mm (14 in.) from, and at right angles, to the work surface. Do not swing the gun in an arc. Practice to find the best length and speed of the stroke.

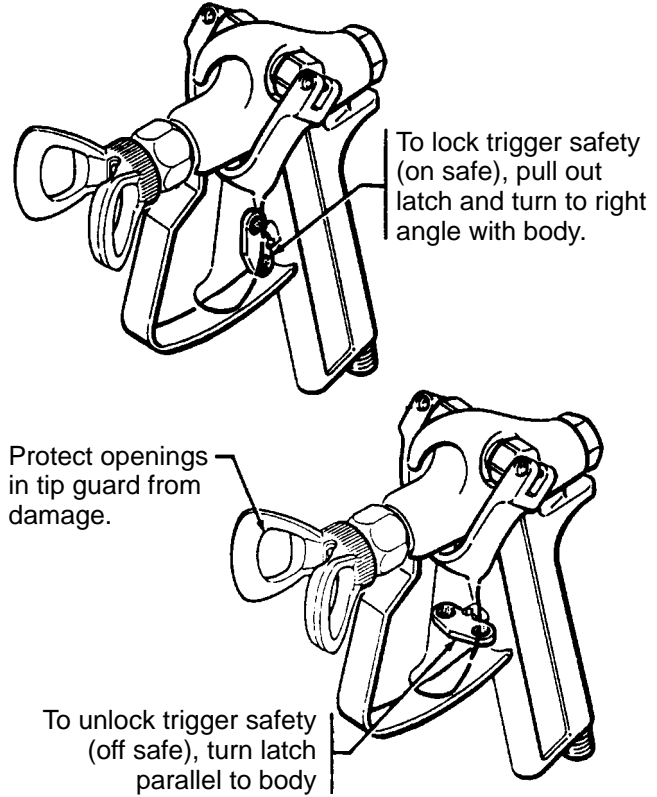


Fig. 2

# Operation

## WARNING

### INJECTION HAZARD

To reduce the risk of serious injury whenever you are instructed to relieve the pressure, always follow the **Pressure Relief Procedure** on page 5.

### Adjust the Spray Pattern

1. To adjust the spray pattern direction, **relieve the pressure**. Engage the safety latch and loosen the tip guard retaining nut. Turn the spray tip so the groove is horizontal for a horizontal spray pattern, and vertical for a vertical spray pattern. Tighten the retaining nut.
2. The spray tip orifice size and spray angle determines the coverage and size of the pattern. When more coverage is needed, use a larger spray tip rather than increasing fluid pressure.

## WARNING

### INJECTION HAZARD

To reduce the risk of an injection injury, never use the gun with the tip guard or trigger guard removed.

## CAUTION

Openings in the tip guard are designed to reduce paint buildup on the guard while spraying. Any damage to the sharp edges of the openings causes paint to collect at that area. To reduce the risk of damage, never hang the gun by the tip guard.

## Cleaning and Clearing the Spray Tip

## WARNING

### INJECTION HAZARD

To reduce the risk of fluid injection or splashing in the eyes or on the skin, do not hold your hand, body, or a rag in front of the spray tip when cleaning or checking a clogged tip. Always point the gun toward the ground or into a waste container when checking to see if the spray tip is cleared. **Relieve the pressure** before wiping buildup off the gun or spray tip.

Clean off the front of the tip frequently during the day's operation and at the end of the work day. **Relieve the pressure**, then use a solvent soaked brush to clean the spray tip and to keep fluid buildup from drying and clogging the spray tip.

If the spray tip clogs while spraying, release the spray gun trigger, engage the trigger safety, shut off the pump, and **relieve the pressure**. Then remove the spray tip and blow out the obstruction with air from the front of the spray tip, or let the spray tip and gun nozzle soak long enough to dissolve the obstruction. If it won't dissolve, jar it out by tapping the back of the spray tip against a flat surface.

## CAUTION

Never soak the entire gun in solvent. Prolonged exposure to solvent can ruin the packings.

# Operation

## ⚠ WARNING

### INJECTION HAZARD

To reduce the risk of serious injury whenever you are instructed to relieve the pressure, always follow the **Pressure Relief Procedure** on page 5.

### Flushing the Gun

## ⚠ WARNING

### FIRE AND EXPLOSION HAZARD

Before flushing, be sure the entire system and flushing pails are properly grounded. Refer to **Grounding**, on page 5. **Relieve the pressure** and remove the spray tip from the gun. Always use the lowest possible fluid pressure, and maintain firm metal-to-metal contact between the gun and the pail during flushing to reduce the risk of a fluid injection injury, static sparking, and splashing.

**Relieve the pressure**, remove the spray tip, and then flush the gun and spray system with a compatible solvent. Always flush the gun before the fluid being sprayed can dry on it.

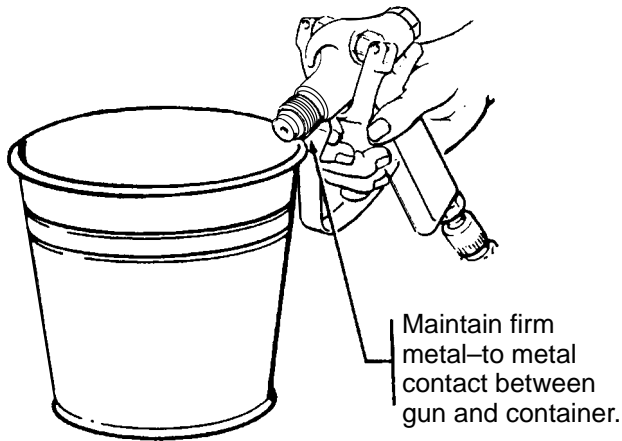


Fig. 3

# Troubleshooting

- If your gun leaks at the tip when you release the trigger, the needle or seat is worn or damaged and must be repaired. See **Gun Packings** on page 11.
- If the gun sprays with the trigger safety on, the needle travel must be adjusted. See **Adjusting the Needle** on page 11.





# Service

## **WARNING**

### **INJECTION HAZARD**

To reduce the risk of serious injury whenever you are instructed to relieve the pressure, always follow the **Pressure Relief Procedure** on page 5.

### **NOTES:**

- A repair kit, Part No. 214–969, is available for repairing the gun. Use all new parts in the kit for the best results.
- Parts included in the kit are shown with a dagger, for example (24†), indicate that these parts are included in the repair kit.
- Periodically disassemble the gun to clean and inspect parts.

### **Needle**

1. **Relieve the pressure.**
2. Screw out the spring retainer (19). Remove the spring (7) and needle (24). Unscrew the seat (23). See the Parts Drawing, page 12.
3. Soak parts in clean solvent. Use the brushes supplied to clean the parts and gun body passages. Replace worn or damaged parts.
4. If installing a new needle (24), remove the two nuts (20, 21) from the old needle, counting the number of turns needed to remove them. Screw the nuts onto the new needle the same number of turns and lock them together. Note that the thickest nut (21) goes on first.
5. Adjust the needle as instructed below before operating the gun.

# Service

## Adjusting the Needle

### WARNING

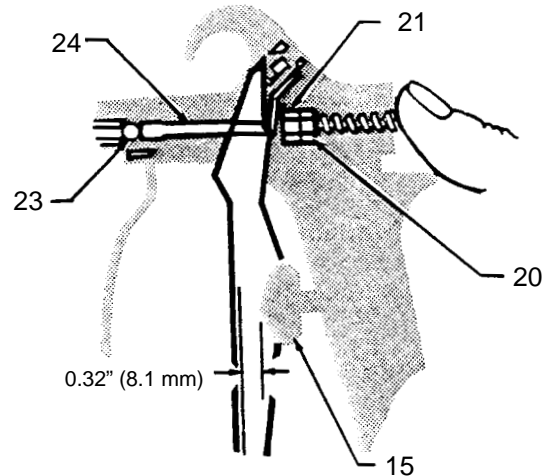
#### INJECTION HAZARD

Proper adjustment of the needle is essential to be sure the trigger safety latch makes the gun inoperative when engaged. Improper adjustment may result in serious injury, including fluid injection and splashing in the eyes or on the skin.

1. Tighten the seat (23) to 23 N•ym (200 in-lb).
2. Install the needle and spring in the gun and hold them in place with your thumb. See Fig. 4.
3. Check the travel of the trigger from the free position to when it stops against the safety latch (15). The travel should be about 8.1 mm (0.32 in.).
4. To adjust the travel, turn the two nuts (20 and 21) toward the front (clockwise) to increase travel, or toward the back to decrease travel.
5. Connect the hose.
6. Install the tip guard and prime the system.
7. Trigger the gun and release it. The fluid flow should stop immediately. Now engage the safety latch and try to trigger the gun. No fluid should flow. If the gun fails either test, **relieve the pressure**, disconnect the hose, and readjust the needle.

## Gun Packings

1. Remove the trigger (14) and screws (1). See the Parts Drawing on page 12.
2. Remove the packing nuts (13) on both sides of the gun.
3. Remove the packings (10), glands (9† and 1) and camshaft (12).



PRESS NEEDLE AGAINST SEAT TO CHECK TRAVEL

Fig. 4

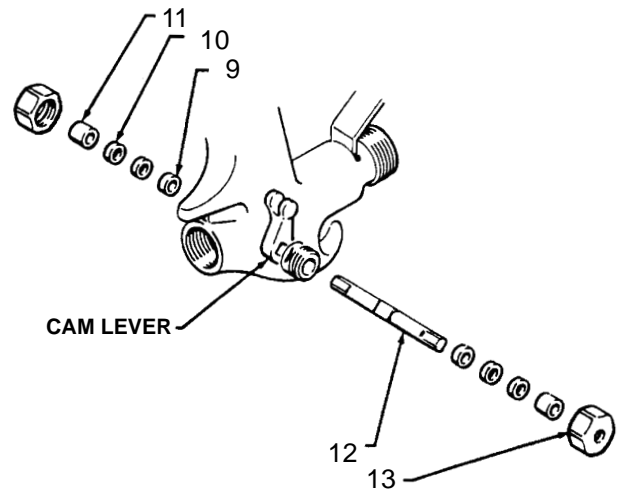
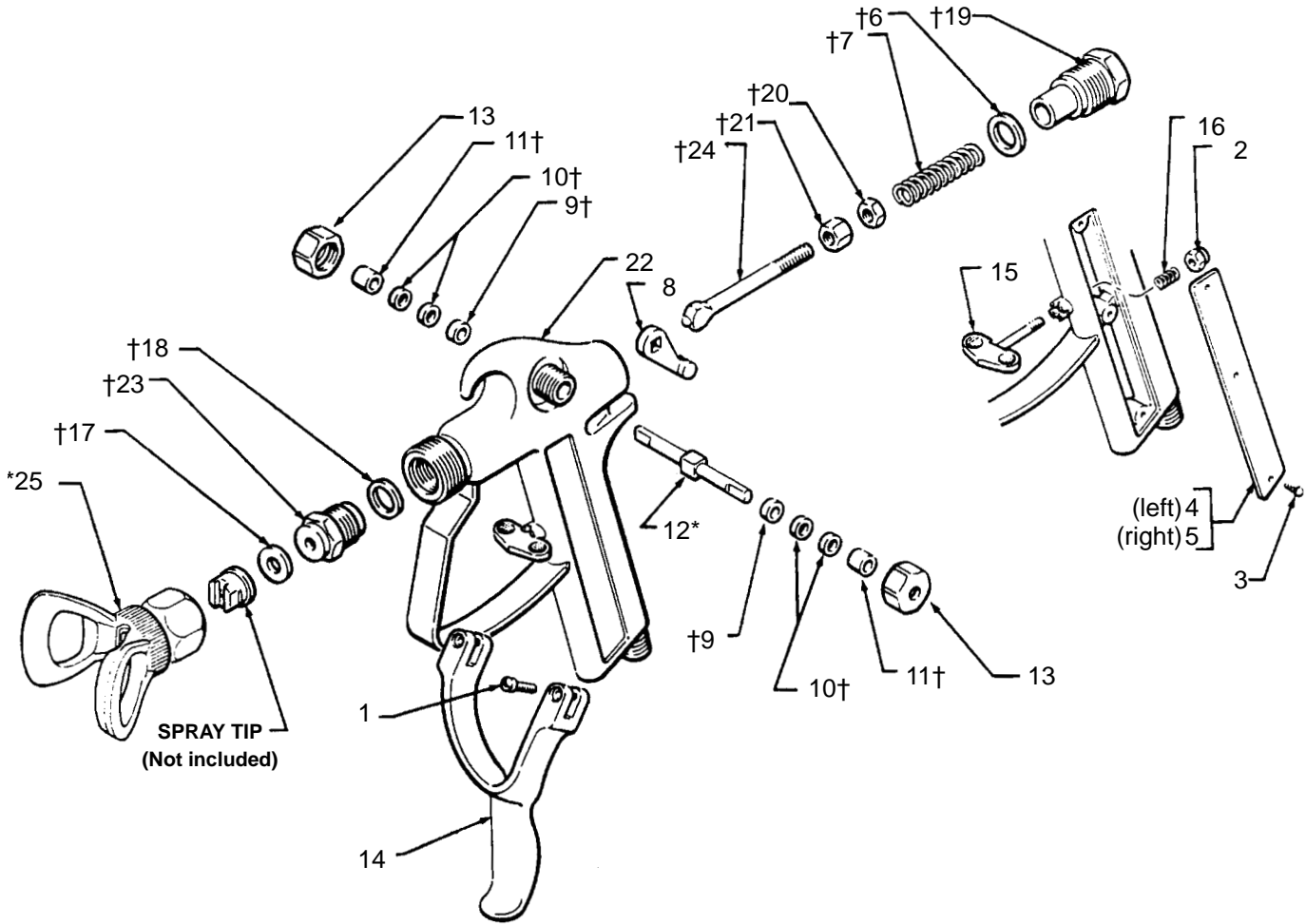


Fig. 5

4. Soak the new leather packings (10\*) in oil until they are pliable, then install the packing, glands (9† and 11†) and camshaft (12).
5. Install the packing nuts (13) and tighten snugly.
6. Install the trigger (14) and screws (1). If the camshaft is too tight, loosen the spring retainer (19).

# Parts



| Ref. No. | Part No. | Description                          | Qty. | Ref. No. | Part No. | Description                      | Qty. |
|----------|----------|--------------------------------------|------|----------|----------|----------------------------------|------|
| 1*       | 101-890  | SCREW, fill hd mach; no. 6-32 x 7/16 | 2    | 16       | 166-938  | SPRING, compression              | 1    |
| 2        | 101-965  | NUT, lock                            | 1    | 17†      | 166-969  | GASKET, flat Delrin®; 1/16 thick | 1    |
| 3        | 102-817  | SCREW, type "u" drive; no. 0 x 3/16  | 6    | 18†      | 167-730  | GASKET, copper; diffuser-seat    | 1    |
| 4        | 164-108  | PLATE, name                          | 1    | 19†      | 168-330  | RETAINER, spring                 | 1    |
| 5        | 164-109  | PLATE, serial                        | 1    | 20†      | 171-240  | NUT, lock                        | 1    |
| 6†       | 164-111  | GASKET, Delrin®                      | 1    | 21†      | 171-241  | NUT, adjusting                   | 1    |
| 7†       | 164-112  | SPRING, compression                  | 1    | 22       | 205-598  | BODY, gun                        | 1    |
| 8        | 164-114  | LEVER, cam                           | 1    | 23†      | 214-966  | DIFFUSER SEAT                    | 1    |
| 9†       | 164-115  | GLAND, packing (inner)               | 2    | 24†      | 208-137  | NEEDLE, fluid valve              | 1    |
| 10†      | 164-116  | PACKING, cam shaft leather           | 4    | 25*      | 220-222  | TIP GUARD                        | 1    |
| 11†      | 164-117  | GLAND, packing (outer)               | 2    |          |          |                                  |      |
| 12*      | 164-118  | SHAFT, cam                           | 1    |          |          |                                  |      |
| 13       | 164-119  | NUT, cam shaft packing               | 2    |          |          |                                  |      |
| 14       | 164-123  | TRIGGER                              | 1    |          |          |                                  |      |
| 15       | 164-822  | STOP, trigger                        | 1    |          |          |                                  |      |

\* Recommended "Tool Box" spare parts. Keep on hand to reduce down time.

† Supplied in Repair Kit 214-969.

# Technical Data

| Category                       | Data  |
|--------------------------------|---|
| Maximum fluid working pressure | 21.0 MPa, 210 bar (3000 psi)  |
| Fluid passage orifice size     | 3.18 mm (0.125 in.) dia.  |
| Wetted parts                   | Cast Manganese Bronze, Stainless Steel, Tungsten Carbide, Delrin <sup>®</sup> , Thiokol Impregnated leather |
| Sound pressure level*          | 78 dB(A)  |
| Sound power level*             | 87 dB(A)  |

Delrin<sup>®</sup> is a registered trademark of the DuPont Company.

\* Measured while spraying water-base paint, gravity 1–36, through a 517 tip at 21.0 MPa, 210 bar (3000 psi) per ISO 3744.





# Graco Warranty

Graco warrants all equipment manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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

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

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

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

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

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

## **FOR GRACO CANADA CUSTOMERS**

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

# Graco Phone Number

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

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

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

<http://www.graco.com>

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

PRINTED IN U.S.A. 306-667 October 1959, Revised January 1998