

# INSTRUCTIONS-PARTS LIST

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



308206

Rev B

## PISTOL-GRIP MASTIC FLO-GUN

*4050 psi (276 bar) MAXIMUM WORKING PRESSURE*

### **Model 224990, Series A**

#### **With Diffuser,**

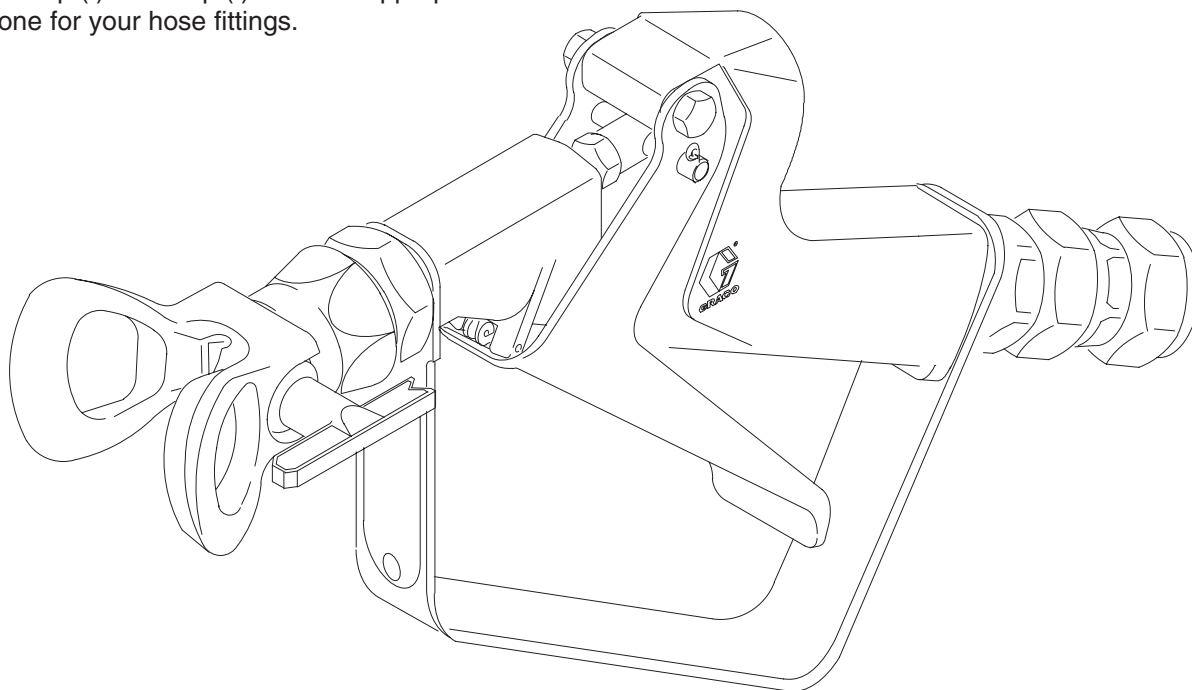
Includes H.D. RAC DripLess™ Tip Guard  
and H.D Tip (GHD535)

### **Model 224991, Series A**

#### **Without Diffuser**

Includes H.D. RAC DripLess™ Tip Guard  
and H.D Tip (GHD535)

- Both guns have 7/8–14 UNF nozzle threads.
- Both guns include two inlet adapters:  
a 1/2 npt to 1/2 npsm(f) straight swivel and  
1/2 npt(f) to 3/8 npt(f). Use the appropriate  
one for your hose fittings.



# SAFETY WARNINGS

**HIGH PRESSURE SPRAY CAN CAUSE SERIOUS INJURY.  
FOR PROFESSIONAL USE ONLY. OBSERVE ALL WARNINGS.**

**Read and understand all instruction manuals before operating the equipment.**

## FLUID INJECTION HAZARD

### General Safety

This is a high pressure dispensing gun. Fluid dispensed under high pressure could be injected through your skin and into your body, and cause extremely serious bodily injury, including the need for amputation. Also, fluid injected or splashed into the eyes or on the skin can cause serious damage.

NEVER point the spray gun at any one or at any part of the body.

NEVER put your hand or fingers over the spray tip.

NEVER try to “blow back” paint; this is NOT an air spray system.

ALWAYS have the tip guard in place on the gun when spraying.

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

ALWAYS follow the **PRESSURE RELIEF PROCEDURE**, below, before cleaning or removing the spray tip or servicing any system equipment.

### Medical Alert—Airless Spray Wounds

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

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

### Spray Gun Safety Devices

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

#### Safety Latch

Whenever you stop spraying, even for a moment, always fully release the trigger. This engages the gun's safety latch and makes the gun inoperative. Failure to set the safety latch can result in accidental triggering of the gun.

#### Tip Guard

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

#### Trigger Guard

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

### Spray Tip Safety

Use extreme caution when cleaning or changing spray tips. If the spray tip clogs while spraying, engage the gun safety latch immediately. ALWAYS follow the **PRESSURE RELIEF PROCEDURE**, below, and then remove the spray tip to clean it.

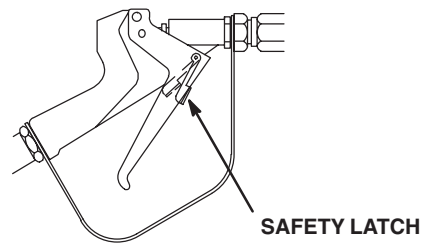
NEVER wipe off build-up around the spray tip until the pressure is fully relieved and the gun safety is engaged.

### Pressure Relief Procedure

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

1. Fully release the gun trigger to set the safety latch.
2. Disconnect the power source.
3. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure. Disengage the safety latch by pushing the latch in as you trigger the gun to relieve fluid pressure.
4. Fully release the gun trigger to set the safety latch.
5. Open the pump's pressure drain valve to help relieve fluid pressure in the pump, hose and gun. Triggering the gun to relieve pressure may not be sufficient. Have a container ready to catch the drainage.
6. Leave the 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 to relieve pressure gradually, then loosen completely. Now clear the tip or hose obstruction.*



## MOVING PARTS HAZARD

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

## EQUIPMENT MISUSE HAZARD

### General Safety

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

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

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

Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

## HOSE SAFETY

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

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

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

## FIRE OR EXPLOSION HAZARD

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

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

### Grounding

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

1. *Pump*: connect a ground wire and clamp (supplied) to a true earth ground, or plug an electric-powered unit into a properly grounded outlet.
2. *Air compressor or hydraulic power supply*: ground according to local code and manufacturer's recommendations.

### System Pressure

DO NOT exceed 4050 psi (276 bar) **MAXIMUM WORKING PRESSURE** to the spray gun. Be sure all spray equipment and accessories used are rated to withstand the this pressure. DO NOT exceed the maximum working pressure of any component or accessory used in the system.

### Fluid and Solvent Compatibility

All chemicals used in the gun must be chemically compatible with the wetted parts shown in the **TECHNICAL DATA** on the back cover. Consult your chemical supplier to ensure compatibility.

**HANDLE AND ROUTE HOSES CAREFULLY.** Do not pull on hoses to move equipment. Do not use fluids or solvents which are not compatible with the inner tube and cover of the hose. DO NOT expose hose to extreme temperatures; check with your hose supplier to determine temperature tolerances.

### Fluid Hose Grounding Continuity

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

3. *Fluid hoses*: use only grounded hoses with a maximum of 500 ft (150 m) combined hose length to ensure grounding continuity. See **Hose Grounding Continuity** above.
4. *Spray gun*: obtain grounding through connection to a properly grounded fluid hose and sprayer.
5. *Object being sprayed*: according to local code.
6. *Fluid supply container*: according to local code.
7. *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.
8. *To maintain grounding continuity when flushing or relieving pressure*, always hold a metal part of the gun firmly to the side of a grounded metal pail, then trigger the gun.

### Flushing Safety

Reduce the risk of fluid injection injury, static sparking, or splashing by following the flushing procedure given in your pump or sprayer manual. Follow the **PRESSURE RELIEF PROCEDURE** on page 2, and remove the spray tip before flushing. Hold a metal part of the gun firmly to the side of a grounded metal pail and use the lowest possible fluid pressure during flushing.

### Ventilate the Spray Area

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

## IMPORTANT

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

## OPERATION

### WARNING

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow the **Pressure Relief Procedure** on page 2 when checking, adjusting, servicing or shutting off any part of the system.

### Check for proper spring tension:

See [Adjusting the spring tension](#) on page 5.

### To engage the gun's safety latch:

Tip the gun forward and fully release the trigger. See Fig 1.

### To disengage the gun's safety latch:

Push the latch in as you squeeze the trigger. See Fig 1.

### To dispense fluid:

Start the supply pump and squeeze the trigger. Fluid flow begins with the slightest pressure and stops when the trigger is released.

### To adjust the flow rate:

Adjust the pump speed to obtain the desired flow rate; always use the lowest pressure necessary. The pressure adjustment will depend on the hose length, the viscosity of the fluid, and the nozzle size.

### Periodically inspect the vent:

Check the vent in the gun handle for build-up of fluid, which could indicate an internal leak. See Fig 1. Service the valve stem and packing as needed.

### Install the tip guard after priming the pump:

A Heavy Duty Reverse-A-Clean tip guard and tip, and the instructions for installing them, are included with the gun. However, a standard tip guard and flat tip may be used, if needed. Refer to Fig 2 to install these parts.

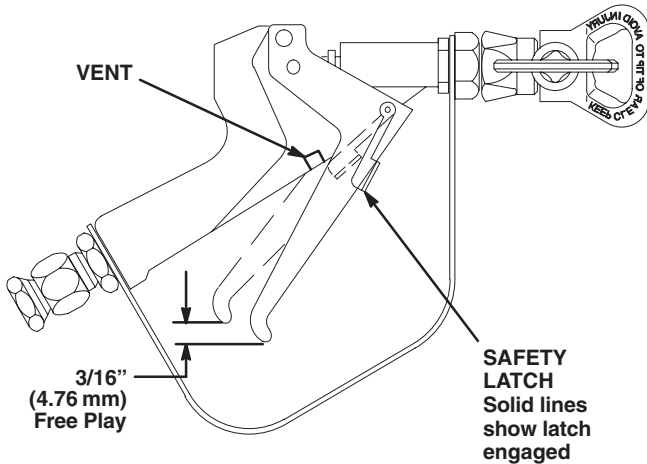


Fig. 1

**NOTE:** Do not install the spray tip until the system has been primed. Then, relieve pressure and engage the safety latch before installing the tip.

### Check the trigger "free play" before operating the gun.

A properly adjusted trigger ensures that the flow of fluid is stopped completely when the trigger is released.

1. Hold the gun horizontally as shown. With the safety latch off (see dotted lines), squeeze the trigger just until you feel resistance. See Fig 1.
2. Allow the trigger to fall forward, which engages the safety latch (see solid lines). The distance the trigger moves is the free play, which should be 3/16". See Fig 1.
3. If the free play is not 3/16", see **Adjust the trigger free travel** on page 6.

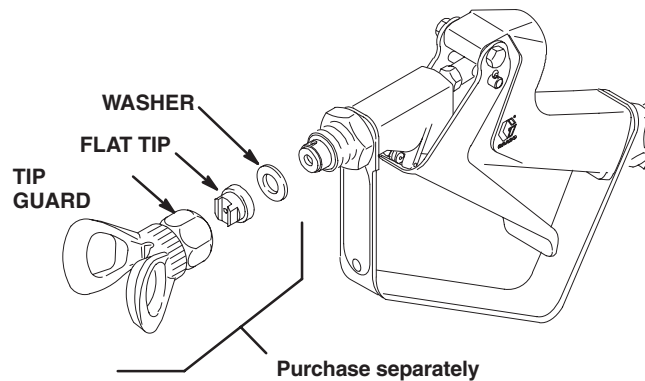


Fig. 2

**NOTE:** The numbers in parentheses in the text refer to reference numbers in the parts drawings and list.

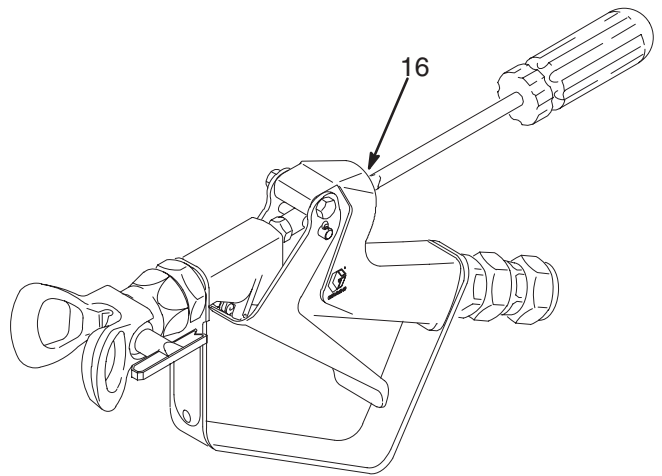
## Adjusting the spring tension. See Fig 3.

### WARNING

Proper spring tension ensures that the fluid flow stops when the trigger is released, to reduce the risk of injury from fluid injection. The spring tension is factory-set to 4050 psi (276 bar).

Proper spring tension also minimizes operator fatigue by reducing trigger pull.

1. Connect the hose to the gun. Prime the pump with the material you are spraying. Set the pump at your normal operating pressure.
2. To set the spring tension at 4050 psi (276 bar): Trigger and release the gun; the gun should shut off. **If the gun does not shut off**, turn the adjustment screw (16) in just until it does, then turn the screw one more 1/2 turn.
3. Trigger the gun several times to be sure it shuts off consistently.



**Fig. 3**

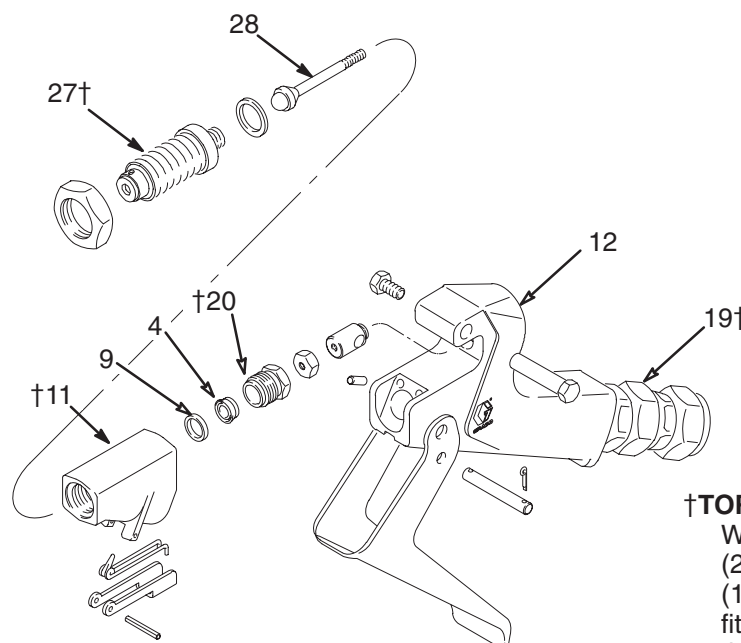
2. If the gun still leaks, follow the **Pressure Relief Procedure** on page 2.
3. Disconnect the hose from the gun. Disassemble the gun and replace the v-block packing (4) and the copper gasket (9).

## Valve needle stem and packing replacement. See Fig 4.

1. If fluid leaks past the v-block packing (4), the seal housing (20†) may be loose, or the v-block packing (4) or valve stem (28) may be worn. Tighten the seal housing (20).

### CAUTION

When tightening the bushing (19), BE SURE to grip the gun body (11), NOT the handle (12). This reduces the chance of loosening the connections and damaging the gun.



### †TORQUE NOTE:

When assembling the valve seat (27†), seal housing (20†), tube (17†) to the gun body (11), or inlet fitting (19) to the tube (17†), torque the parts to 100 in-lb (11 N.m)

**Fig. 4**

## Valve seat and stem replacement

If fluid continues to flow after the trigger is released, the gun valve may be obstructed or need adjustment. The valve stem (28) or valve seat (27) may be worn or damaged. See Fig 5. Refer to the following instructions for adjustment or repair.

### Adjusting the trigger free play. See Fig 5.

1. Relieve pressure. See page 2.
2. Disconnect the gun from the hose.

#### CAUTION

Squeeze the trigger when removing the valve seat (27). Handle the valve seat and valve stem (28) carefully to avoid damaging the hard carbide portion of these parts.

3. Squeeze the gun trigger. Remove the valve seat (27). Let the spring (5) push the valve stem (28) forward and then loosen the nut (1).
4. Remove the actuating pin (21). Turn the adjusting nut (18) out a couple of turns.
5. Reassemble the gun and check the free play of the trigger. It should be approximately 3/16 in. (4.76 mm). See Fig 1.
6. Repeat the procedure, turning the adjusting nut (18) as needed, to obtain the correct free travel.

### Inspecting the valve for obstruction or damage. See Fig 5.

1. Relieve pressure. See page 2.
2. Disconnect the hose from the gun.

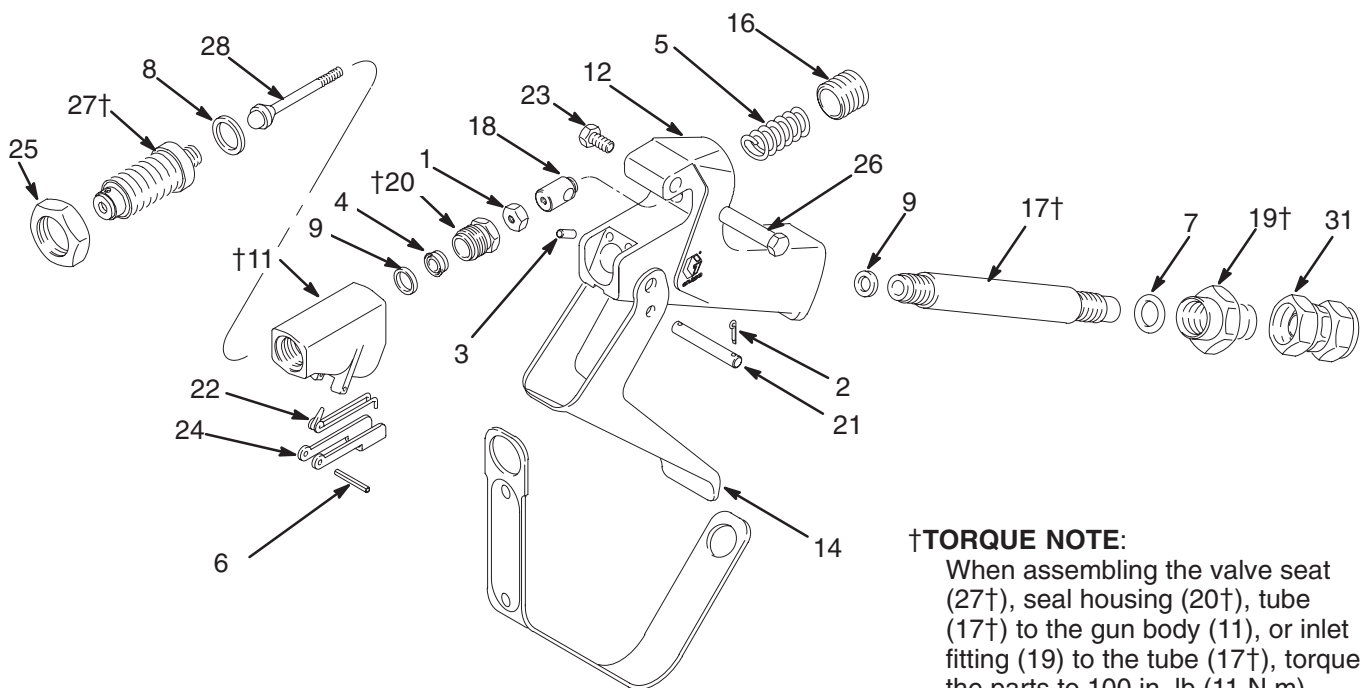
#### CAUTION

Squeeze the trigger when removing the valve seat (27). Handle the valve seat and valve stem (28) carefully to avoid damaging the hard carbide portion of these parts.

3. Disassemble the gun.
4. Clean and inspect the parts. Replace any worn or damaged parts and reassemble the gun.
5. Adjust the trigger free play as instructed to the left.

#### CAUTION

When tightening the bushing (19), BE SURE to grip the gun body (11), NOT the handle (12). This reduces the chance of loosening the connections and damaging the gun.

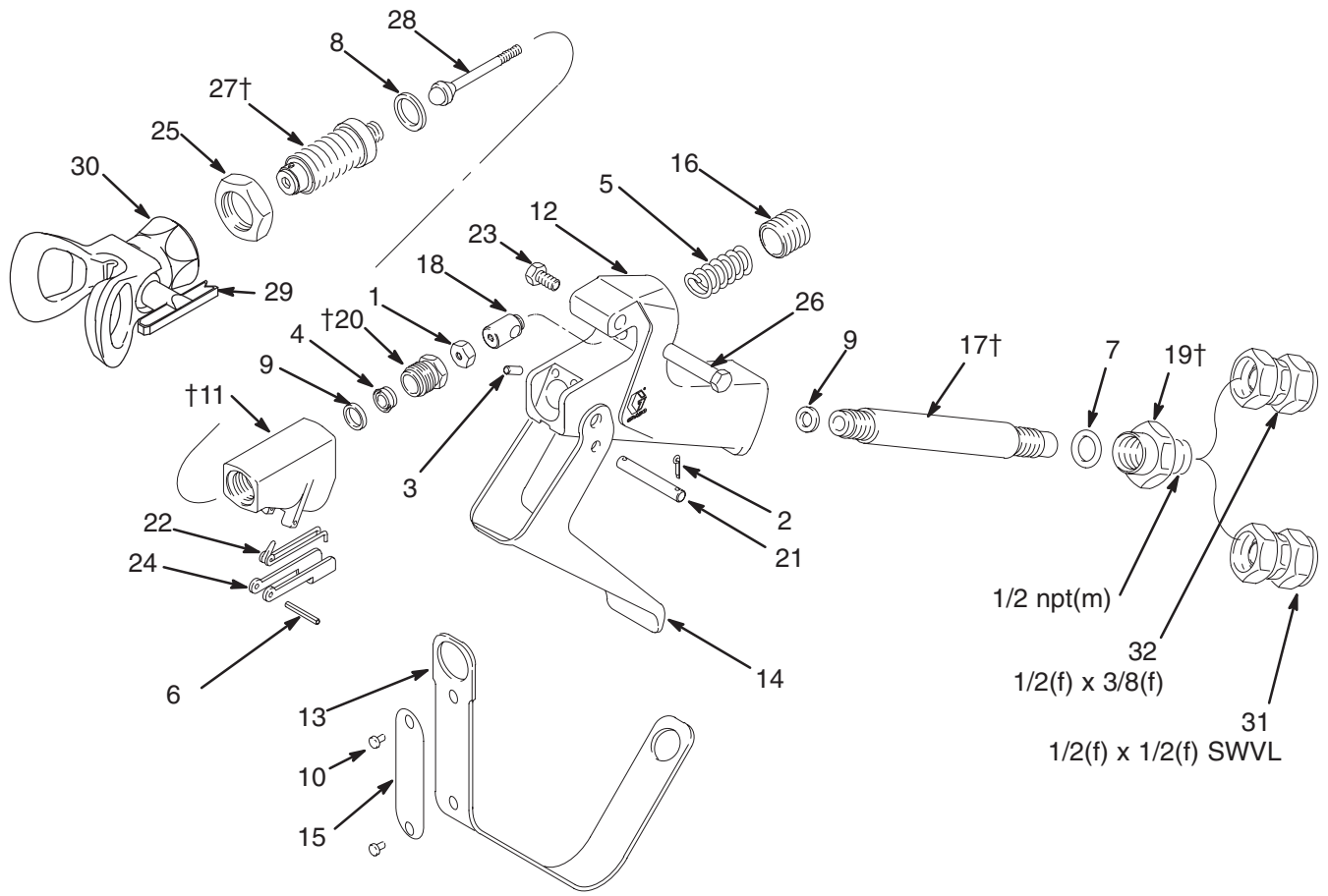


#### †TORQUE NOTE:

When assembling the valve seat (27†), seal housing (20†), tube (17†) to the gun body (11), or inlet fitting (19) to the tube (17†), torque the parts to 100 in-lb (11 N.m)

Fig. 5

## PARTS DRAWING



## PARTS LIST

**Model 224990, Series A, with Diffuser**  
**Model 224991, Series A, without Diffuser**

REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
1	100975	NUT, hex, No. 5-40	1	20	168689	HOUSING, seal	1
2	101421†	PIN, cotter, 0.062" (1.59 mm) x 0.375" (9.52 mm)	2	21	187340*	PIN	1
3	102232	PIN, spring, 0.094" (2.38 mm) x 0.25" (6.4 mm)	2	22	168691*	SPRING, safety	1
4		SEAL	1	23	168692*	PIN, pivot	1
	102921*	V-BLOCK, polyurethane	1	24	168693	LATCH, safety	1
	110959†	V-BLOCK, fluorocarbon	1	25	187774	NUT, jam, 7/8-14 unf	1
5	102924*	SPRING, compression	1	26	203953	SCREW, lock	1
6	102925*	PIN, spring	1	27	235005*	SEAT, valve (with diffuser), 7/8-14 unf For Model 224990	1
7	154771†	O-RING, nitrile rubber	1		235006*	SEAT, valve (without diffuser) 7/8-14 unf For Model 224991	1
8	156766†	GASKET, copper, valve seat	1	28	215224	STEM, valve	1
9	160079†	GASKET, copper, gun body2	1	29	GHD535	SPRAY TIP, 535 size	1
10	111578	RIVET	2	30	222674	HEAVY-DUTY RAC TIP GUARD	1
11	168674	BODY, gun	1	31	155865	UNION, adapter, 1/2 npt (f) x 1/2 npt(f) swivel	1
12	187336	HANDLE	1	32	161077	UNION, adapter, 1/2 npt(f) x 3/8 npt(f)	1
13	187209	GUARD, trigger	1				
14	168682	TRIGGER	1				
15	187145**	PLATE, Warning	1				
16	168685*	SCREW, spring adjusting	1				
17	187143	TUBE, insert	1				
18	168687*	NUT, adjusting	1				
19	187255	NIPPLE, adapter, 1/2 npt(m)	1				

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

*\*\*Replacement Warning plates available at no charge.*

*† Included in Teflon® Conversion Packing Kit 223932.*

## ACCESSORIES

*Must be purchased separately.*

### TEFLON PACKING CONVERSION KIT 223932

For Gun Model 224990 & 224991. Refer to the Parts Drawing and List on page 7.

### ZEE SWIVEL 207948

6000 psi (415 bar) MAXIMUM WORKING PRESSURE  
1/2 npsm(f) x 1/2 npt(m)

### STRAIGHT SWIVEL 207947

6000 psi (415 bar) MAXIMUM WORKING PRESSURE  
1/2 npsm(f) x 1/2 npt(m)

## TECHNICAL DATA

Maximum working pressure . . . . . 4050 psi (276 bar)  
Inlet port size . . . . . 12/ npt(m)  
Outlet port size . . . . . 7/8–14 unf  
Wetted parts . . . . . Steel, Tungsten Carbide,  
Copper, buna–n, Polyurethane, Stainless Steel  
Dimensions  
Height . . . . . 6" (152 mm)  
Length . . . . . 9" (229 mm)  
Weight . . . . . 1.7 lb (.8 kg)

## IMPORTANT PHONE NUMBER

**TO PLACE AN ORDER**, contact your Graco distributor, or call this number to identify the distributor closest to you: **1–800–690–2894 Toll Free.**

## THE GRACO WARRANTY AND DISCLAIMERS

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 présent 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.

### **ADDITIONAL WARRANTY COVERAGE**

Graco does provide extended warranty and wear warranty for products described in the "Graco Contractor Equipment Warranty Program".

**Sales Offices:** Minneapolis, Detroit  
**Foreign Offices:** Belgium, Korea, Hong Kong, Japan

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