INSTRUCTIONS-PARTS LIST



308237

RACO Supersedes B and PCN E



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

Silver Circulating Airless Spray Gun

5000 psi (345 bar) Maximum Working Pressure

Model 235465, Series B

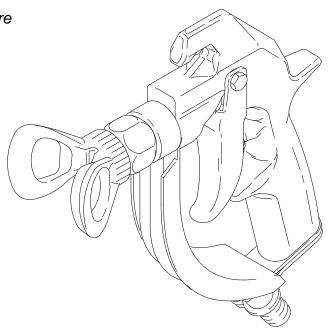
Includes the Standard (non-reversing) DripLess™ Tip Guard and 2 finger trigger. Spray tip not included; order separately.



Patents Pending

INDEX

Warnings
Installation/Operation 4
System Requirements 4
How to Use the Trigger Safety Latch 4
How to Use the Gun4
How to Adjust the Spray Pattern 5
How to Clean the Spray Tip
and Clear a Spray Tip Obstruction 5
How to Flush the Gun 6
Service 7
Parts 9
Accessories
Technical Data12
Graco Phone Numbers
Warranty



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WARNINGS

High Pressure Spray Can Cause Serious Injury. For Professional Use Only.

Observe All Warnings. Read and understand all instruction manuals before operating equipment.

FLUID INJECTION HAZARD

General Safety

This equipment generates very high fluid pressure. Spray from the gun, leaks or ruptured components can inject fluid through your skin and into your body, and cause extremely serious 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 spray gun when spraying.

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

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

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

Medical Alert—Airless Spray 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

This gun has several safety devices. Be sure all of them 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 injury.

Whenever you stop spraying, even for a moment, always set the trigger safety latch in the engaged or "safe" position, making the gun inoperative. Failure to set the trigger safety latch can result in accidental triggering of the gun. See Fig. 1.

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. See Fig. 2.

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. The fluid housing and heat shield act as a trigger guard for this gun. See Fig. 2.

Spray Tip Safety

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

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

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 or electric shock, 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.

- . Engage the trigger safety latch.
- Shut off the power supply to the pump and close any bleed-type master air valves.
- Disengage the trigger safety latch. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
- . Engage the trigger safety latch.
- . Open the pressure drain valve (required in system), having a container ready to catch the drainage. 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.

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**, above, before checking or servicing any part of the sprayer, to prevent it from starting accidentally.

RECOIL HAZARD —

Due to the high pressure fluid emitted, a strong recoil action may occur when you trigger this gun. If you are unprepared, your hand could be forced back toward your body or you could lose your balance and fall, resulting in serious injury.

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. Wear hearing protection when operating this equipment.

System Pressure

Do not exceed 5000 psi (345 bar) Maximum Working Pressure to the gun. Be sure all spray equipment and accessories used are rated to withstand 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 sprayer must be chemically compatible with the wetted parts shown in the **TECHNICAL DATA** on the back cover. Consult your chemical supplier to ensure compatibility.

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

All fluid hoses must have strain reliefs on both ends! The strain reliefs help protect the hose from kinks or bends at or close to the coupling which can result in hose rupture.

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

Never use a damaged hose. Before each use, check 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.

Handle and route hoses carefully. Do not pull on hoses to move equipment. Keep hoses clear of moving parts and hot surfaces of the pump and power supply. Do not use fluids or solvents which are not compatible with the inner tube and cover of the hose. DO NOT expose Graco hoses to temperatures above 180° F (82° C) or below -40° F (-40° C).

Hose Grounding Continuity

Proper hose grounding continuity is essential to maintaining a grounded spray system. Check the electrical resistance of your 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 hose can make your system hazardous. Also read **FIRE OR EXPLOSION HAZARD**, below.

FIRE OR EXPLOSION HAZ-

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 even a slight shock while using this equipment, **stop spraying immediately**. Check the entire system for proper grounding. Do not use the system again until the problem has been identified and corrected.

Grounding

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

- . *Pump or Sprayer:* provide appropriate grounding as recommended in your pump or sprayer instruction manual.
- 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.
- . *Spray gun:* obtain grounding through connection to a properly grounded fluid hose and sprayer.
- . Object being sprayed: according to local code.
- . Fluid supply container: 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 grounded metal pail, then trigger the gun.

Flushing Safety

To reduce the risk of fluid injection injury, static sparking, or splashing, be sure the system is properly grounded, relieve pressure, remove spray tip. 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.

- IMPORTANT -

Installation/Operation

System Requirements.

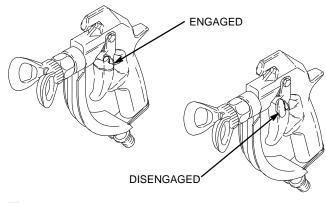
Keep the wallet-sized warning card provided with this gun with the operator at all times. The card contains important treatment information should an injection injury occur. Additional cards are available at no charge from Graco Inc.

Be sure your system has a bleed-type master air valve (pneumatic pumps only) and a pressure drain valve. These accessories help reduce the risk of serious bodily 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.

- 1. The <u>bleed-type master air valve</u> (air-powered pumps only) 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.
- 2. The pressure drain valve assists in relieving fluid pressure in the displacement pump, hose and gun: triggering the gun to relieve pressure may not be sufficient.
- 3. Strain the fluid you are spraying if it contains particles which could clog the spray tip.

How to Use the Trigger Safety Latch

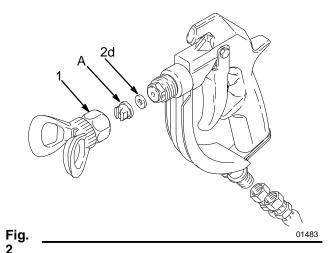
- 1. To engage the trigger safety latch, turn the latch (A) to a right angle with the gun body. See Fig. 1.
- 2. To disengage the trigger safety latch, push the latch (A) out and turn it parallel with the gun body.



How to Use the Gun.

- 1. If an accessory in-line filter is used, connect it to the grounded fluid supply hose. Connect the supply hose to one gun port and connect an electrically conductive, fluid return hose to the other
- 2. With no tip installed, start the pump. Flush the pump according to the instructions supplied with it. Prime the system with the fluid.
- 3. Follow the **Pressure Relief Procedure** on page 2. Be sure the trigger safety latch is engaged. See Fig. 1.
- 4. Unscrew the tip guard (1) and install the tip (A) and the gasket (2d) in the nut of the tip guard. Screw the assembly firmly onto the gun. Tighten the assembly with a wrench. See Fig. 2.

NOTE: If the gasket (2d) is not installed, the gun will leak.



- 5. Start the pump.Adjust the back pressure valve or the Restrict-A-Flo valve in the circulating system return line. Adjust the fluid pressure until the spray is completely atomized. Use the lowest pressure necessary to get the desired results. Higher pressure may not improve the spray pattern and will cause premature tip wear and pump wear.
- 6. If adjusting the pressure does not give a good spray pattern, follow the Pressure Relief Procedure on page 2 and then try another tip size.
- 7. Use a full-open, full-close triggering action. Hold the gun about 14 in. (350 mm) from and at right angles to the work surface. Don't swing the gun in an arc. Practice to find the best length and speed of stroke.

How to Adjust the Spray Pattern.

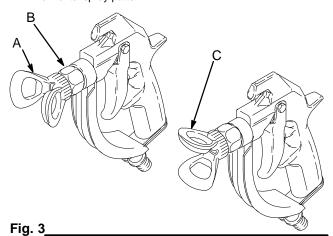
- Follow the Pressure Relief Procedure on page 2. Loosen the retaining nut (B). Turn the tip guard so the groove in the tip is horizontal (C) for a horizontal pattern and vertical (A) for a vertical pattern. Tighten the retaining nut.
- The orifice of the spray tip and the angle of the spray pattern determines the coverage and the size of the pattern. When more coverage is needed, use a larger spray tip rather than increasing the fluid pressure.

CAUTION

The openings in the tip guard reduce paint buildup on the tip guard while spraying. Any damage to the sharp edges of the openings causes paint to collect at that area. Never hang the gun by the tip guard.

KEV

- A The tip guard is shown in the position for a vertical spray pattern.
- B Retaining nut.
- C The tip guard is shown in the position for a horizontal spray pattern.



How to Clean the Spray Tip and Clear a Spray Tip Obstruction.

WARNING

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

DO NOT try to "blow back" paint; this is NOT an air spray gun.

DO NOT wipe fluid buildup off the gun or spray tip until pressure is relieved.

Cleaning during the day.

- 1. Follow the **Pressure Relief Procedure**, page 2.
- Clean the front of the tip frequently during the day to help reduce buildup. Also clean the tip and tip guard at the end of each work day. Use a solventsoaked brush to clean the spray tip.

Clearing an obstruction.

If the spray tip clogs while spraying, immediately stop spraying, then:

Gun 235465 - with standard tip guard

- Engage the trigger safety latch, open the pressure drain valve.
- 2. Remove the spray tip and blow out the obstruction by applying air to the front of the spray tip. Or, let the spray tip and gun nozzle soak 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

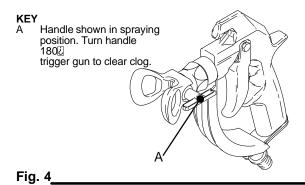
Never soak the entire gun in solvent. Prolonged exposure to solvent can ruin the packings.

Continued on page 6.

Installation/Operation

If using the accessory RAC IV tip guard

- 1. Engage the trigger safety latch. Rotate the RAC IV tip handle 180°. See Fig.4.
- 2. Disengage the safety latch. Trigger the gun into a pail or onto the ground to remove the clog.
- 3. Engage the safety latch. Rotate the tip handle to the spraying position.
- 4. If the tip is still clogged, engage the safety latch, shut off the sprayer and disconnect the power source, and open the pressure drain valve to relieve pressure. Clean the spray tip as shown in manual 307–848, supplied with the RAC IV.



How to Flush the Gun.

- WARNING

This gun uses a pre—orifice in the seat to develop the type of spray pattern required in most circulating systems. The pre-orifice *does not* diffuse the spray from the nozzle into an irregular pattern, as with the other airless spray guns you may have used. Therefore, to reduce the risk of an injection injury when the tip guard is not installed, such as during cleaning, take extra precautions to keep your hands and body away from the nozzle of the gun.

Always flush the pump and the gun before the fluid being sprayed can dry in it.

NOTE: If it is available, the flushing procedure provided in your pump or sprayer manual should be used instead of this procedure.

- 1. Follow the **Pressure Relief Procedure**, page 2.
- 2. Remove the tip guard and spray tip. Soak and clean the parts.
- Put the pump intake in a grounded pail of water or solvent.
- 4. Start the pump at its lowest pressure.
- 5. Trigger the gun into the original pail. When solvent appears, release the trigger.
- 6. With the gun trigger released, circulate the fluid until the system is thoroughly flushed.
- 7. Follow the **Pressure Relief Procedure**, page 2.

- WARNING

To reduce the risk of serious bodily injury, including splashing fluid in the eyes or on the skin, or static electric discharge when flushing:

- Be sure the entire system, including flushing pails, are properly grounded.
- Remove the tip guard and spray tip.
- Maintain metal to metal contact between the gun and the flushing pail.
- Use the lowest possible pressure.



Service

CAUTION -

Do not attempt to install an old style needle in this gun. The front of the new needle is marked with a + below the Graco symbol.

Notes:

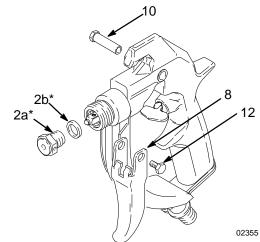
Use Needle Kit 235475.

Use all the new parts for the best results. Parts included in the kit are shown with one asterisk, (2a*).

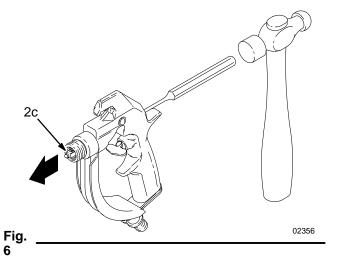
Keep parts very clean. Dried paint or other contaminants cause friction which causes parts to wear faster.

Needle Replacement.

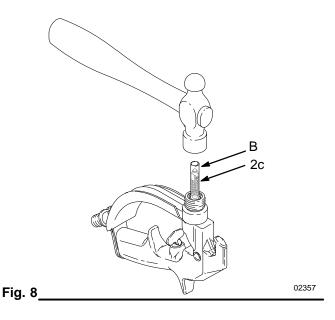
- 1. Follow the **Pressure Relief Procedure**, page 2.
- 2. Remove the hose, tip guard, spray tip and gasket.
- 3. Remove the diffuser/seat (2a*) and gasket (2b*). Remove the screw (12), pivot pin (10), and trigger (8). See Fig. 5.
- 4. Insert a punch into the rear of the gun and tap it to push the needle (2c*) out the front of the gun. See Fig. 6.
- 5. Clean the internal passages of the gun.
- 6. Grease the rings (A) of the new needle (2c*). See Fig. 7.











7. Slide the rear of the needle (2c*) into the front of the gun. Slide the tool (B), provided with the repair kit, into the gun, around the needle. Lightly tap the tool with a hammer or lightly press the tool against a flat surface to seat the needle. See Fig. 8. Remove the tool.

CAUTION

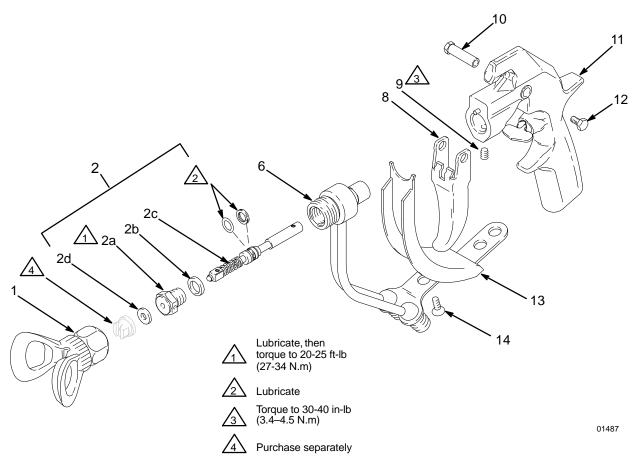
Tapping or pressing the tool too hard may jam the tool and damage the needle.

8. Grease the end of the needle.

- 9. Grease the diffuser/seat threads. Place the new gasket (2b*) on the diffuser/seat (2a*) and screw the assembly into the fluid housing (6). Torque to 20–25 ft-lb (27–34 N.m). See Fig. 5.
- 10. Install the trigger (8), pivot pin (10) and screw (12). See Fig. 5.

NOTE: No needle or trigger adjustment is needed.

Parts



Model 235465, Series B Includes items 1 to 16

Ref No.	Part No.	Description	Qty.	Ref No.	Part No.	Description	Qty.	
1	220222	STANDARD TIP GUARD	1	13	188128	HEAT SHIELD	1	
2	235475	NEEDLE KIT		14	107091	SCREW, 1/4-20	2	
		Includes items 2a to 2d	1	15▲	187987	WARNING TAG not shown	1	
2a*	\Diamond	. DIFFUSER/SEAT	1	16▲	222385	WARNING CARD not shown	1	
2b*	\Diamond	. GASKET, copper	1					
2c*	\Diamond	. NEEDLE	1	* Th	ese parts a	re also included in Repair Kit		
2d*	162863	. TIP GASKET	1	235–475, which may be purchased separately. Kit also includes installation tool.				
6	235484	FLUID HOUSING	1					
8	187985	TRIGGER	1					
9	102207	SETSCREW, 1/4-20	1	♦ Pa	art not sold s	separately		
10	187965	PIVOT PIN	1					
11	235471	GUN HANDLE	1	▲ Re	eplacement	Danger and Warning labels, tag	s and	
12	203953	SCREW, hex washer hd, 10-24	1	_	•	ilable at no cost.		

Notes			

Accessories

FILTERS

3000 psi (210 bar) Maximum Working Pressure.

Adequate filtering is important for a good surface finish and to minimize tip clogging. These filters provide secondary filtering. Various screen meshes are available.

Mounts in hose

213068 Includes filter body, spring and one

100 mesh screen.

213069 Includes filter spring and one

60 mesh screen.

Use with above filter body.

210742 Includes filter spring and one

100 mesh screen.

Use with above filter body.

210729 Includes assembly 213–068 plus a

3 ft (0.9 m) whip hose for more

flexible gun movement.

Mounts between hose and gun

210500 Includes swivel, adapter and one

100 mesh screen

Replacement screens for above filters

210731 Three 60 mesh (250 micron) screens **210732** Three 100 mesh (149 micron) screens **210733** Three 200 mesh (74 micron) screens

SWIVELS and WHIP HOSES

Swivels and whip hoses provide more flexible gun movement for easier handling and less fatigue. Working pressures are listed in the descriptions.

214925 Swivel, 1/4 npsm x 3/8 npt(f)

5000 psi (350 bar) Max. Working Pressure

207946 Swivel, 1/2 npsm x 3/8 npt(f)

5000 psi (350 bar) Max. Working Pressure

204940 Swivel, 1/4 npt x 1/4 npsm

3000 psi (210 bar) Max. Working Pressure

214701 Whip hose, nylon, coupled 1/4 npsm(f)

x 3/8 npt(m), spring guards both ends. 3000 psi (210 bar) Max. Working Pressure

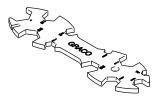
TOOLS

NYLON BRUSHES

Use to thoroughly clean the gun's fluid passages.

101891 0.375" (9 mm) dia. 101892 0.625" (16 mm) dia.

WRENCH 171147
Fits all hexes on the gun.



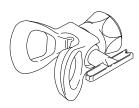
TIP GUARDS

These tip guards fit all Graco airless spray guns. Choose the one that's right for your application. One of these tip guards is included with every Graco airless gun.

220422 RAC☑ [™] Tip Guard. Includes

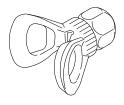
SwitchTip of choice. See your distributor

for available sizes.



220222 Standard DripLess™ Tip Guard. Order

flat tip separately. See your distributor for available sizes.



222674 Heavy Duty RAC ip Assembly.

Order SwitchTip separately. See your

distributor for available sizes.

Technical Data

Maximum Working Pressure 5000 psi (350 bar)
Fluid Orifice Size 0.037 in. (0.94 mm)
Wetted Parts Stainless steel, Polyethylene,
Polyurethane, Nylon, PTFE
Maximum Fluid Temperature
Weight
Inlet 1/4 npsm(m)
Maximum material temperature 120°F (50°C)
Sound Data
Sound Pressure Level 78 dB(A)*
Sound Power Level 87 dB(A)*
 Measured while spraying waterbase paint – gravity
1.36 through a 517 tip at 3,000 psi (207 bar).
Per ISO 3744

Graco Phone Numbers

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you: **1–800–328–0211 Toll Free.**

FOR TECHNICAL ASSISTANCE, service repair information or assistance regarding the application of Graco equipment: 1–800–543–0339 Toll Free.

Manual Change Summary

Added CE logo to front page.

Added Recoil Hazard and hearing protection data to **WARNINGS** data to page 2 and 3.

Deleted Zinc-plated carbon steel from wetted parts in **Technical Data** section on page 12.

Added Maximum Material Temperature and Sound Data to **Technical Data** on page 12.

The Graco Warranty and Disclaimers

WARRANTY

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

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

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective 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.

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