

# High Pressure Fluid Regulators

306878ZAB

EN

*For use in airless spray systems to control and regulate fluid pressure to one spray gun, dispensing valve, or atomizing head. For professional use only.*

## Model 206661, Series G

1000-3000 psi (7-21 MPa, 70-207 bar)  
Regulated Fluid Pressure Range

## Model 217576, Series D

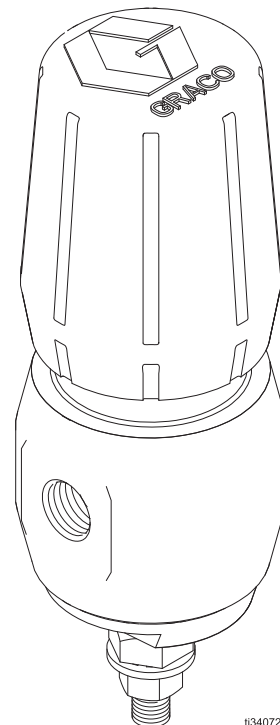
200-1000 psi (1.4-7 MPa, 14-70 bar)  
Regulated Fluid Pressure Range

*3000 psi (21 MPa, 207 bar) Maximum Working Pressure*



### Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Save these instructions.









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# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h2 style="margin: 0;">WARNING</h2>	
    	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not spray without tip guard and trigger guard installed.</li> <li>• Engage trigger lock when not spraying.</li> <li>• Do not point gun at anyone or at any part of the body.</li> <li>• Do not put your hand over the spray tip.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop spraying and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>



# WARNING



## EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.
- Wear hearing protection when operating this equipment.
- Do not lift pressurized equipment.



## TOXIC FLUID OR FUMES HAZARD

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

- Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

# Installation

Fluid pressure regulators are used for accurate positive control of the fluid pressure to spray guns, dispensing valves or atomizing heads.

Regulators installed at circulating line take-offs or pumps are used to reduce main line pressure and maintain the desired fluid pressure to the spray gun, dispensing valve, or atomizing head.

## Before Installing the Fluid Regulator

1. Determine placement of the fluid regulators in system.
2. Install a ball valve for inlet and outlet of the regulator.
3. Install temporary plumbing between the ball valves.
4. Thoroughly flush the system to remove metal chips and other contaminants and to check for leaks.

## Installing the Fluid Regulator

1. Remove the temporary plumbing and install one regulator for each spray gun. A mounting stud, washers, and locknut are provided for mounting the regulator either from the bottom or side.
2. Put sealer on threaded connections, except on swivel unions as it interferes with the swivel action.
3. Connect the fluid supply line to the 3/8 npt(f) inlet of the fluid regulator.
4. Connect the fluid line between the gun and the regulator's 1/4 npt(f) outlet of choice.

NOTE: Make sure that the direction of the fluid flow agrees with the IN and OUT markings on the regulator body.

5. Flush and test the entire system.

# Typical Installation

## Single Direct Spray Station

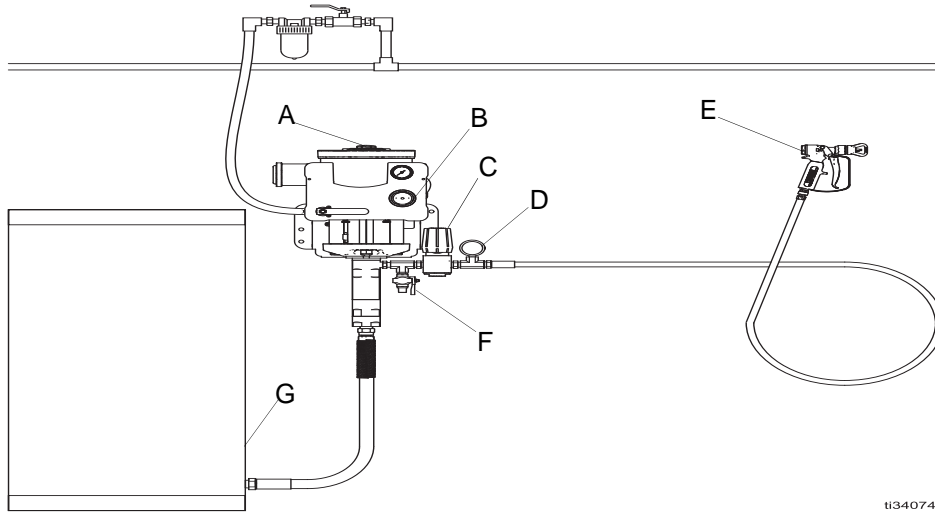


Figure 1

ti34074a

## Multiple Circulating Spray Station

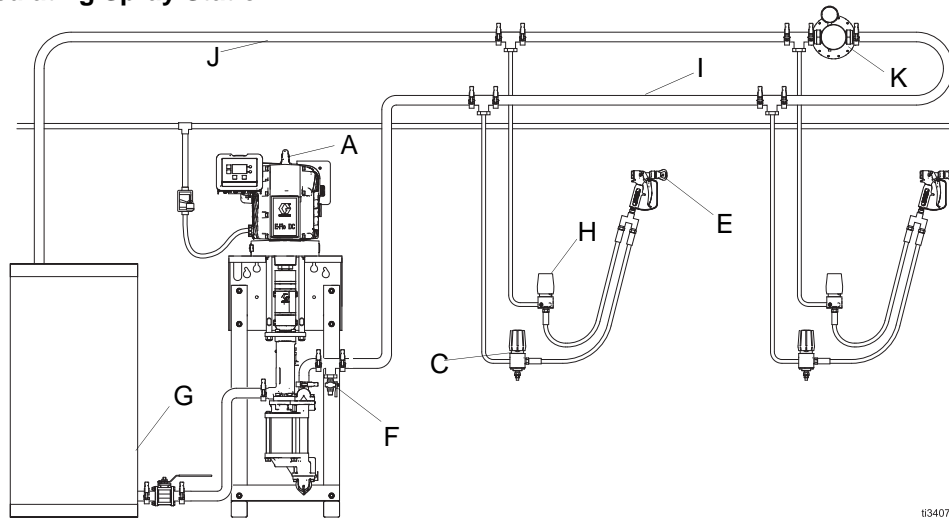


Figure 2

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### KEY

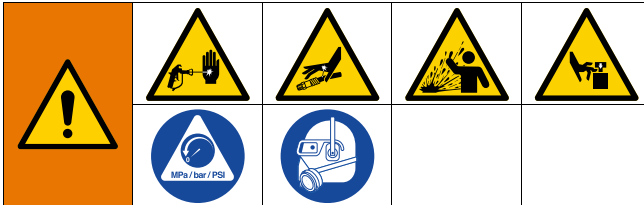
- A Pump
- B Air Regulator
- C Fluid Regulator
- D Gauge
- E Spray Gun
- F Fluid Drain Valve
- G Supply Container
- H Back Pressure Valve
- I Fluid Supply Line
- J Fluid Return Line
- K Back Pressure Regulator

# Operation

## Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid, and moving parts, follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing the equipment.

1. Engage trigger lock.
2. Close the bleed-type master air valve.
3. Disengage the trigger lock.
4. Hold a metal part of the gun firmly to a grounded metal pail. Trigger the gun to relieve pressure.
5. Engage the trigger lock.
6. Open all fluid drain valves in the system, having a waste container ready to catch drainage. Leave drain valve(s) open until you are ready to spray again.
7. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved:
  - a. **VERY SLOWLY** loosen the tip guard retaining nut or the hose end coupling to relieve pressure gradually.
  - b. Loosen the nut or the coupling completely.
  - c. Clear the obstruction in the hose or tip.

## Spray Tip Installation and Removal

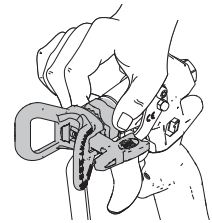


To avoid serious injury from skin injection, do not put your hand in front of the spray tip when installing or removing the spray tip and tip guard.

**NO**



**YES**



## Trigger Lock

Always engage the trigger lock when you stop spraying to prevent the gun from being triggered accidentally by hand or if dropped or bumped.

## Adjusting the Regulator

The fluid pressure regulator controls pressure down stream from its outlet.

**NOTE:** The inbound fluid pressure needs to be higher than the set point fluid pressure.

To adjust the fluid regulator, first, back the knob out until there is no spring pressure. Then, turn the knob clockwise to increase the pressure.

**NOTE:** If you are using an accessory fluid pressure gauge, relieve the spray gun line when reducing pressure to ensure a correct gauge reading.

Adjust the pump air pressure and the fluid regulator for the best spraying combination. In a circulating system, also adjust the back pressure valve.

Record all the settings for future reference. The valve cylinder (7) has exterior markings (set points 1 to 8) for repeat settings.

## Flush the Equipment



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

- Flush before changing colors, before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.
  - Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
  - Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.
1. Record the pressure adjustment setting of the regulator before flushing.
  2. Shut off the pump and follow the **Pressure Relief Procedure**.
  3. Never exceed the maximum working pressure of the lowest rated system component.
  4. Open the fluid regulator by turning the adjusting knob (6) fully *clockwise*.
  5. Supply solvent to the system. Set pump to the lowest possible pressure, and start pump.
  6. Flush until thoroughly clean.
  7. Adjust the fluid regulator to return to the desired fluid pressure setting.



# Maintenance



**COMPONENT RUPTURE HAZARD**

To reduce the risk of serious bodily injury, including fluid injection or splashing in the eyes or on the skin:

- Always follow the **Pressure Relief Procedure** on page 7 before adjusting, cleaning, repairing, or removing the regulator from the system.
- **Never** pressurize the system with the fluid regulator adjusting knob removed.
- **Never** completely remove the adjusting knob when system pressure is present.

## Flushing

Refer to **Flush the Equipment** on page 8 for the flushing procedure.

## Cleaning

When changing fluids or colors, the regulator should be disassembled and cleaned. Regular cleaning and inspection, and lubrication of the piston (15) and piston packing (10) are necessary to keep the fluid regulator working properly.

1. Relieve all the air and fluid pressure in the system.
2. Remove the regulator from the system.
3. Disassemble the regulator. See **Parts** on page 9. Clean and inspect all parts.

### NOTICE

Use special care when handling the hard carbide portions of the piston (13) and seat (12). Damage will cause poor operation and leakage.

## Repairing

Normally, only the ball support (21), seat (20) and piston packing (10) will ever need replacement. Repair Kit 220139 is available to replace these parts. See **Parts** on page 9.

1. Lubricate the piston packing (10), piston (15), and spring locater (11) with lithium base grease.
2. Place the washer (19) over the pointed end of the piston (15).
3. Place the packing (10), with its lips facing down, over the pointed end of the piston (15) and against the washer (19).
4. Insert the piston (15) into the bottom of the cylinder (7) and gently work it into place.
5. Reassemble the remaining parts in reverse order of disassembly. Torque the valve seat (20) into the housing to 175-200 in-lb (20-22 N•m). Over-tightening could break off the hex portion of the seat.

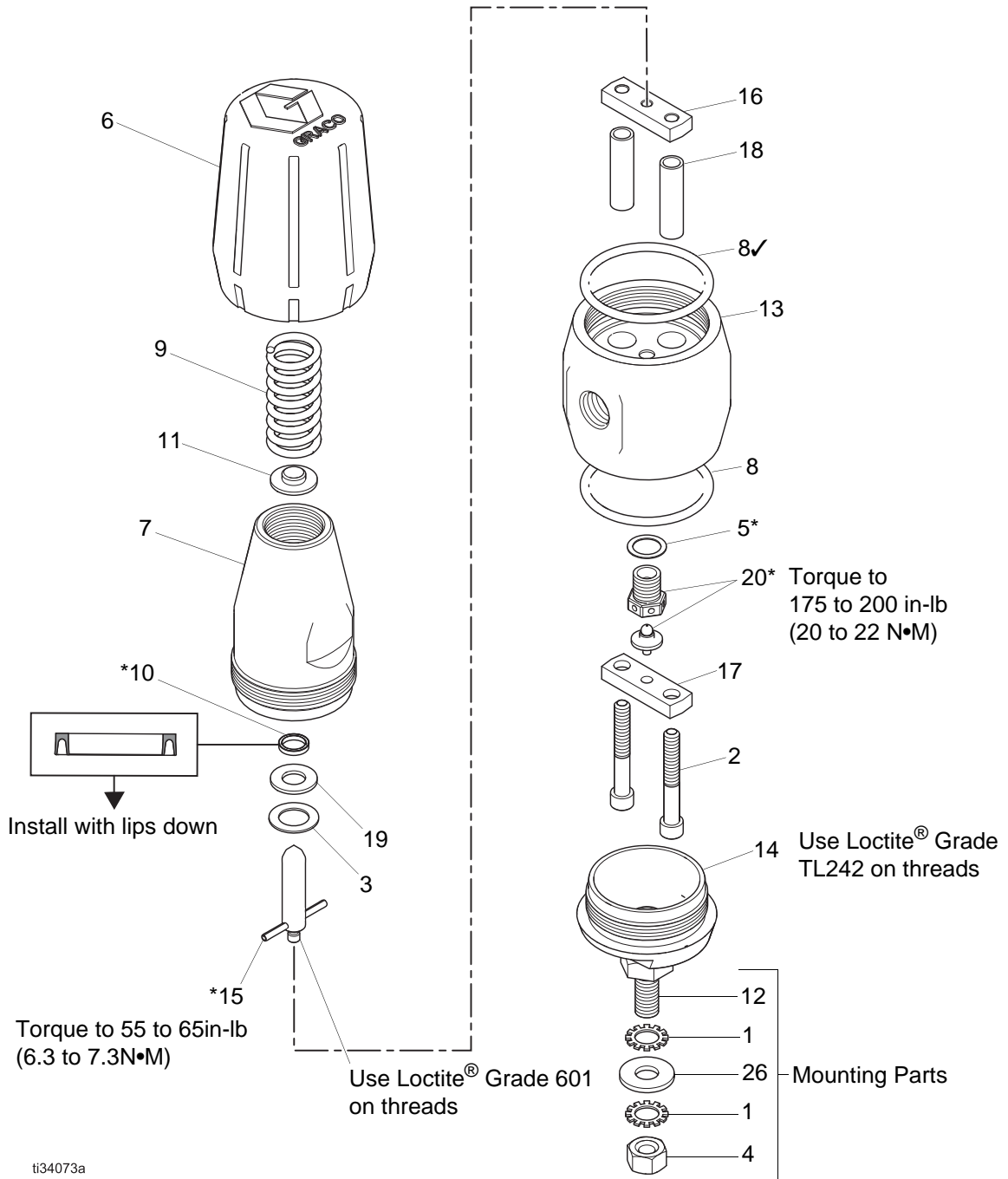
# Parts

## Model 206661, Series G

Includes items 1-20

## Model 217576, Series D

Includes items 1-26



**Model 206661, Series G**

Includes items 1-20

**Model 217576, Series D**

Includes items 1-26

Ref.	Part	Description	Qty.
1	100322	LOCK WASHER, ext shkprf; 7/16" (Model 206661 only)	2
	100639	LOCK WASHER, ext shkprf; 3/8" (Model 217576 only)	2
2	101885	SCREW, soc hd cap; 1/4-20 x 1-3/4"	2
3	101954	RING, int retaining; 0.75" (19 mm) housing dia.; cadmium plated	1
4	150513	NUT, jam; 7/16-20 (Model 206661 only)	1
	100307	NUT, jam; 3/8-16 (Model 217576 only)	1
5*	150670	GASKET; copper	1
6	166976	KNOB, adjusting	1
7	166982	CYLINDER, regulator	1
8✓	166985	SEAL, o-ring; PTFE	2
9	166986	SPRING, helical compression (Model 206661 only)	1
	501511	SPRING, helical compression (Model 217576 only)	1
10*	111796	PACKING, u-type; PTFE	1
11	166988	LOCATER, spring	1
12	167001	STUD, mounting; 1/4 npt; 7/16-20 (Model 206661 only)	1
	156953	STUD, mounting; 1/4 npt; 3/8-16 (Model 217576 only)	1
13	177125	HOUSING, regulator	1
14	167016	CAP, end	1
15*	220900	PISTON, valve	1
16	167018	BAR, piston	1
17	167019	BAR, valve ball support	1
18	167020	SPACER, bar	2
19	171885	WASHER, back-up; acetal homopolymer	1
20*	248899	SEAT, valve, support ball	1
26	100023	WASHER; 3/8" (Model 217576 only)	1

\* Parts included in Kit 220139 (purchase separately).

✓ Keep these spare parts on hand to reduce down time.

# Accessories

*Use Only Genuine Graco Parts and Accessories*

## Fluid Pressure Gauges

Attaches to optional regulator outlet.  
2 in. (51 mm) dial.

- 102397** 0–3000 psi (0–21 MPa, 0–207 bar) 1/4 npt(m) center back fitting
- 101696** 0–1000 psi (0–7 MPa, 0–70 bar) 1/4 npt(m) bottom fitting

## UHMW Polyethylene U-Type Packing 108317 (included in Repair Kit 220135)

Use instead of 111796 (ref. 10), with abrasive fluids.

## Compression Springs

**NOTE:** On Model 206661, standard spring 166986 (ref. 9) works best at 2000–3000 psi (13.5–21 MPa, 135–207 bar), although it will work at 1000–2000 psi (7–13.5 MPa, 70–135 bar). For best results at pressures less than 2000 psi (13.5 MPa, 135 bar), order the following applicable spring:

- 501510** Recommended for 1000–2000 psi (7–13.5 MPa, 70–135 bar). Red color.
- 501511** Recommended for 200–1000 psi (1.4–7 MPa, 14–70 bar) range. Blue color. (Standard on model 217576)

## Optional Valve Seat 206523

For use in low flow rate applications.

# Technical Specifications

<b>High Pressure Fluid Regulators</b>		
	<b>US</b>	<b>Metric</b>
Maximum Fluid Inlet Pressure	3000 psi	21 MPa, 207 bar
Regulated Fluid Pressure Range		
Model 206661	1000–3000 psi	7–21 MPa, 70–207 bar
Model 217576	200–1000 psi	1.4–7 MPa, 14–70 bar
Maximum Flow Rate	3.5 gpm with 70 centipoise fluid at 75°F	13.25 liters/min with 70 centipoise fluid at 23°C
Fluid Inlet		3/8 npt(f)
Fluid Outlet (two)		1/4 npt(f)
Height	6 in.	152 mm
Diameter	2.687 in.	68 mm
Wetted Parts	Tungsten Carbide, Copper, Cadmium and Zinc-plated Steels, Acetal Homopolymer, PTFE, Chrome-plated Stainless Steel	
Canadian Registration Number (CRN) Alberta: 0C04874.52 Ontario: 0C4874.5R1	Models 206661 and 217576	
<b>Notes</b>		
Loctite® is a registered trademark of the Henkel Corporation		

## California Proposition 65

### CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm. – [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale 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.

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# Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

*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.*

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