



Carbon Steel 1000cc Lower

311717A

Designed for low to medium pressure, medium volume circulation of finishing materials.



Important Safety Instructions

Read all warnings and instructions in your 1000cc Dura-Flo Pump manual 311833. Save these instructions.

See page 1 for **Table of Contents**.

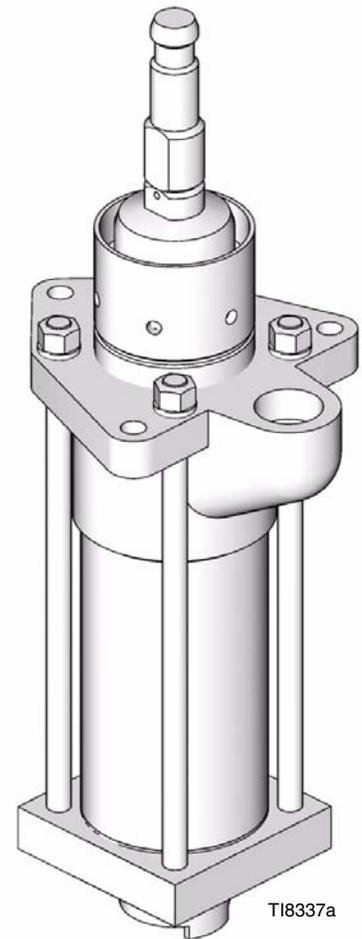
Model 253597, Series A

*1180 psi (8.1 MPa, 81bar)
Maximum Working Pressure*

Patent Pending

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PROVEN QUALITY. LEADING TECHNOLOGY.



Warnings

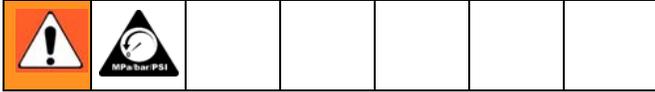
The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

|  WARNING | |
|--|---|
|  | <p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc). • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Ground all equipment in the work area. See Grounding instructions. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area. |
|  | <p>PRESSURIZED EQUIPMENT HAZARD</p> <p>Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"> • Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. |
|  | <p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • 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 Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • 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. |

|  WARNING | |
|--|---|
|  | <p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure in this manual. Disconnect power or air supply. |
|  | <p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read MSDS's 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. • Always wear impervious gloves when spraying or cleaning equipment. |
|  | <p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear • Clothing and respirator as recommended by the fluid and solvent manufacturer • Gloves • Hearing protection |
|  | <p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispense valve, 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. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispense valve at anyone or at any part of the body. • Do not put your hand over the end of the dispense nozzle. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment. |

Operation

Pressure Relief Procedure



1. Engage trigger lock.
2. *Air-Powered Pumps only:* Close the bleed-type master air valve.

Hydraulic-Powered Pumps only: Close the hydraulic supply line valve first, then the return line 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 after following the steps above, **VERY SLOWLY** loosen tip guard retaining nut or hose end coupling to relieve pressure gradually, then loosen completely. Clear hose or tip obstruction.

CAUTION

Hydraulic-Powered Pumps only: When shutting down the hydraulic system, always shut off the hydraulic supply line shutoff valve first, and then the return line shutoff valve to prevent overpressurizing the motor or its seals. When starting the hydraulic system, open the return line shutoff valve first.

Repair



- To service the pump assembly, see manual 311833.
- To service the air motor, see manual 311238.

Disconnect the Lower



- Flush the pump, if possible. Relieve the pressure, see Pressure Relief Procedure on page 4.
- Disconnect the hoses from the lower and plug the ends to prevent fluid contamination.
- Remove the pump from its mounting and place it in a vise.
- Disconnect the lower from the motor as explained in your separate pump manual.

Lower Repair

Intake Valve

- Remove the hex nuts (1) and washers (30) from the tie rods (18). Unscrew the tie rods from the intake valve. Remove the intake valve from the pump.
- Disassemble the intake valve. Take note of which set of holes the ball stop pin (14) is in.
- Clean all parts thoroughly, and inspect them for wear or damage. Replace parts as needed.
- Reassemble the valve. Place the ball stop pin (14) in the same holes from which it was removed. If you want to change the fluid flow through the pump, place the pin in a different set of holes. Refer to Check Valve Adjustment, page 6.
- If no further service is needed, reinstall the intake valve on the pump. Torque the hex nuts (1) evenly to 50-60 ft-lb (68-81 N•m), using a criss-cross tightening pattern.

Piston

- Remove the intake valve as explained above.
- Pull the cylinder (24) down, off the piston assembly.
- Unscrew the piston retainer screws (12). Remove the piston parts from the displacement rod (22).
- Clean all parts thoroughly, and inspect them for wear or damage. Replace parts as needed.
- Place the gasket (49) and ball (3) on the piston retainer (27). Install these parts in the displacement rod.



The piston retainer (27) must not obstruct the ports in the displacement rod (22).

- Install one cup packing (17) on the displacement rod (22). Be sure the lips of the packing face up.
- Install the packing spacer (16). Position one cup packing (17) on the displacement rod so the lips of the packing face down.
- Install the piston guide (21). Install the four screws (12) through the piston assembly and screw them into the displacement rod (22). Torque the screws evenly to 30-40 ft-lb (41-54 N•m), using a cross-cross tightening pattern.
- If no further service is needed, go to Throat Packings. If no further service is needed, slide the cylinder (24) and gaskets (49*) over the piston assembly. Install the intake valve. Torque the nuts (1) evenly to 50-60 ft-lb (68-81 N•m).

Throat Packings

- Remove the intake valve and the cylinder (24) as explained in the previous sections.
- Remove the wet cup (45).
- Pull the displacement rod (22) out of the bottom of the outlet housing (46).
- Remove the throat packings and glands from the outlet housing (46).
- Clean all parts thoroughly, and inspect them for wear or damage. Replace parts as needed.

 Always replace the male gland (40) and the bearing (47) when the throat packings are replaced.

6. Install the throat packings into the outlet housing (46) one at a time in the following order, with the lips of the v-packings facing down:

The male gland (40*), two UHMWPE v-packings (41*), one leather v-packing (42*), one UHMWPE v-packing, one leather v-packing (42*), one UHMWPE v-packing, and the bearing (41). Loosely install the wet cup (45).

7. Push the displacement rod (22) up into the outlet housing (46) until it protrudes from the wet cup (45). Continue reassembling the pump in the reverse order of disassembly. Tighten the wet cup just tight enough to prevent leakage.

Reconnect the Lower

1. Reinstall the displacement pump on the motor as explained in your pump manual.

2. Reconnect the ground wire to the motor.

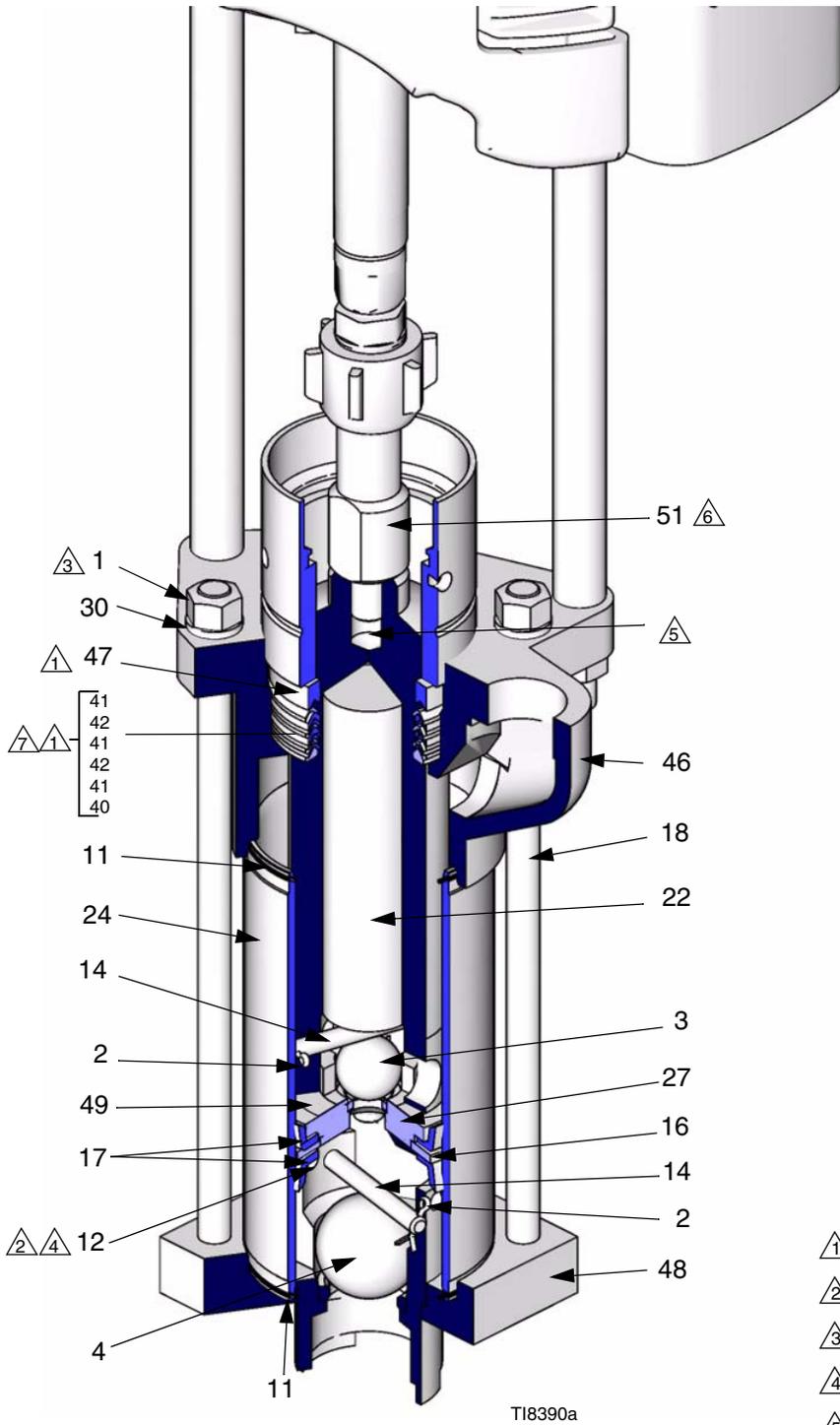
Check Valve Adjustment

The fluid piston and intake valves are factory-set for high-volume pumping of heavy, spray-viscosity fluids.

*For lighter fluids or lower volume requirements, or to reduce surging at the stroke change-over, decrease the travel of the balls (3 and 4). Move the pins (2) to a lower set of holes. See **Parts**, page 8 and refer to disassembly procedure above.*

 If the ball travel is too short for the fluid being pumped, the fluid flow will be restricted.

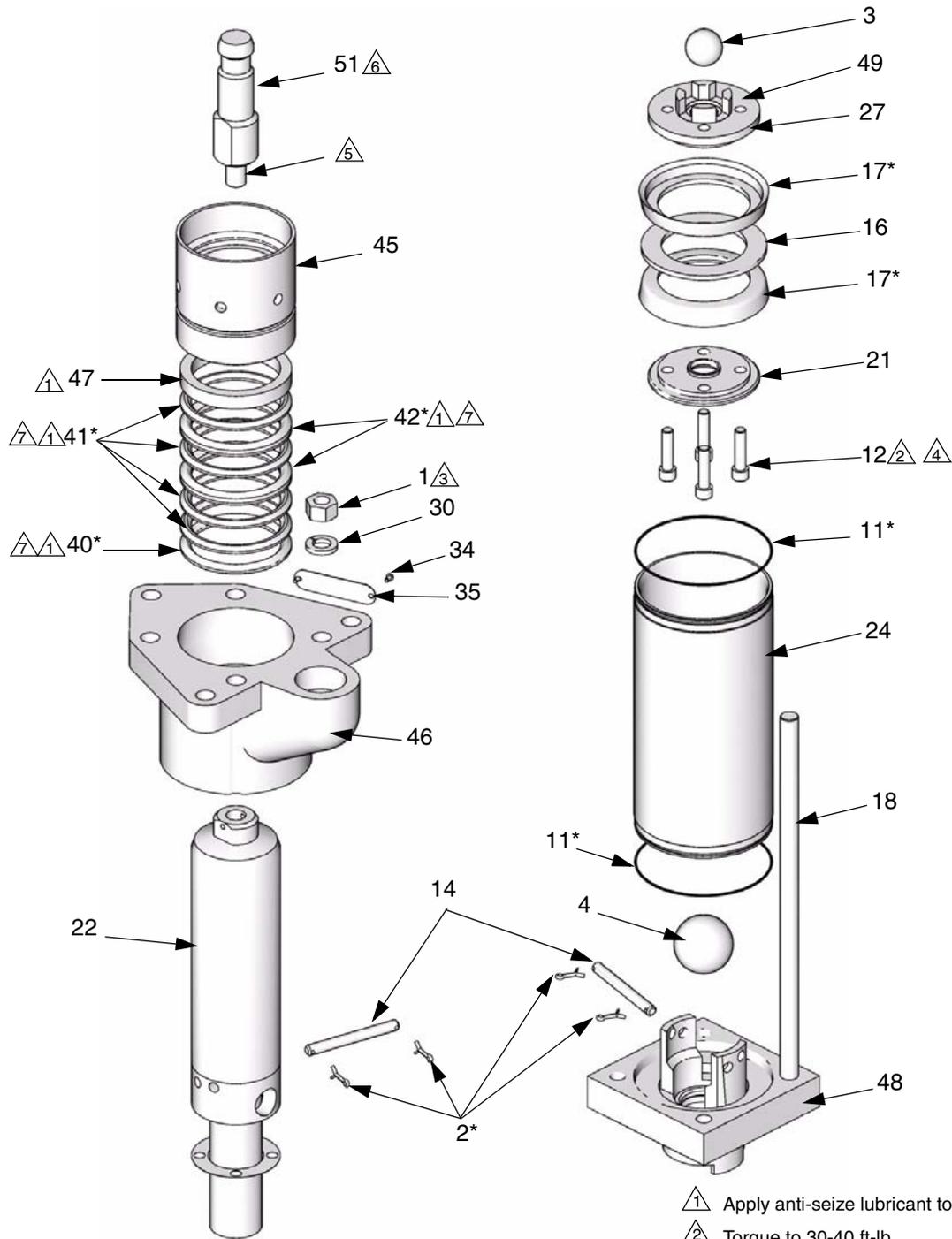
*For heavier fluids or to increase the flow, increase the travel of the balls (3 and 4). See **Parts**, page 8 and refer to disassembly procedure above.*



- ① Apply anti-seize lubricant to all packings.
- ② Torque to 30-40 ft-lb (22-30 N•m).
- ③ Torque to 50-60 ft-lb (37-44 N•m).
- ④ Apply thread sealant.
- ⑤ Apply medium strength threadlocker.
- ⑥ Torque 75-80 ft-lb (55-59 N•m).
- ⑦ Lips of v-packings must face down.

FIG. 1

Parts



TI8335a1

- ① Apply anti-seize lubricant to all packings.
- ② Torque to 30-40 ft-lb.
- ③ Torque to 50-60 ft-lb.
- ④ Apply thread sealant.
- ⑤ Apply medium strength threadlocker.
- ⑥ Torque 75-80 ft-lb.
- ⑦ Lips of v-packings must face down.

Part 253597, Stainless Steel Lower

| Ref. | Part | Description | Qty |
|------|--------|------------------------|-----|
| 1 | 100127 | NUT; mscr, hex | 4 |
| 2* | 100579 | PIN; cotter | 4 |
| 3 | 101178 | BALL; metallic | 1 |
| 4 | 101718 | BALL; steel | 1 |
| 11* | 111334 | PACKING; o-ring | 2 |
| 12 | 104272 | SCREW; cap; sch | 4 |
| 14 | 161599 | PIN; ball stop | 2 |
| 16 | 166597 | SPACER; packing | 1 |
| 17* | 188846 | PACKING; cup | 2 |
| 18 | 171692 | ROD; tie | 4 |
| 21 | 171696 | GUIDE; piston | 1 |
| 22 | 178508 | ROD; displacement | 1 |
| 24 | 181269 | CYLINDER; motor; hydr | 1 |
| 27 | 223438 | RETAINER; piston | 1 |
| 28▲ | 172479 | TAG; warning | 1 |
| 30 | 100128 | WASHER; lock | 4 |
| 34 | 100055 | SCREW; drive; #6 | 2 |
| 38 | 178509 | PLUG; disp. rod | 1 |
| 40* | 104260 | GLAND; pkg; male | 1 |
| 41* | 108845 | PACKING; vee | 4 |
| 42* | 104263 | PACKING; vee; leather | 2 |
| 45 | 186054 | CUP; wet | 1 |
| 46 | 15J780 | HOUSING; outlet; pump | 1 |
| 47 | 186056 | BEARING | 1 |
| 48 | 223437 | HOUSING; valve; intake | 1 |
| 49 | 110728 | GASKET | 1 |
| 51 | 15H773 | ADAPTER | 1 |

* Included in Repair Kit 223439.

** Recommended spare parts. Keep these spare parts on hand to reduce down-time.

▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

Packing Conversion Kit 223443

Use to convert pump to UHMWPE and PTFE packings. Order kit separately. Includes:

| Part | Description | Qty. |
|--------|-----------------------------------|------|
| 100103 | PIN, cotter; 1.5 in. (38 mm long) | 1 |
| 100579 | PIN, cotter; 1 in (25.4 mm) long | 4 |
| 111334 | O-RING; PTFE | 2 |
| 188846 | PACKING, cup; UHMWPE | 2 |
| 104260 | GLAND, male | 1 |
| 108845 | V-PACKING; UHMWPE | 4 |
| 111327 | V-PACKING; PTFE | 2 |
| 186056 | BEARING, peek | 1 |

Technical Data

Maximum Fluid
 Working Pressure 1180 psi (8.1 MPa, 81 bar)
 Fluid Outlet Size 1-1/2 in. npt
 Fluid Inlet Size. 2 in. npt
 Wetted Parts 303 Grade Stainless Steel,
 Carbon Steel, Chrome Steel,
 Chrome, Zinc, and electroless Nickel Plating,
 Buna-N, Tungsten Carbide, Nylon,
 Ultra-High Molecular Weight Polyethylene,
 Leather, PTFE, Polyetheretherketone

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.

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 Information

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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