Merkur® Pump
Assembly

For high-performance finishing and coating applications in hazardous or non-hazardous locations. For professional use only.

Important Safety Instructions
Read all warnings and instructions in this manual.
Save these instructions.

See page 4 for model information, including maximum working pressure.
Pump Part Number Matrix

Check your pump’s identification plate (ID) for the 6-digit part number. Use the following matrix to define the construction of your pump, based on the six digits. For example, Part No. **W 1 5 A A S** represents a wet cup pump (W), 15 to 1 ratio (15), 25 cc lower (A), 3 UHMWPE/2 PTFE packings with Ultralife™ rod coating, no data monitoring, low noise exhaust (A), and stainless steel construction (S).

<table>
<thead>
<tr>
<th>W</th>
<th>15</th>
<th>A</th>
<th>A</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Digit (Wet cup)</td>
<td>Second and Third Digits (pressure ratio - XX:1)</td>
<td>Fourth Digit (Displacement pump volume per cycle*)</td>
<td>Fifth Digit (Packings - X UHMWPE:X PTFE/ Piston Rod Coating/ Data Monitoring/Exhaust)</td>
<td>Sixth Digit (lower material)</td>
</tr>
<tr>
<td>W</td>
<td>03†</td>
<td>A</td>
<td>25 cc</td>
<td>A†</td>
</tr>
<tr>
<td>10</td>
<td>B</td>
<td>50 cc</td>
<td>B</td>
<td>3:2/Ultralife/DataTrak™/Low Noise</td>
</tr>
<tr>
<td>15</td>
<td>C</td>
<td>75 cc</td>
<td>E</td>
<td>3:2/Ultralife/DataTrak™ Cycle Count Only/Low Noise</td>
</tr>
<tr>
<td>18</td>
<td>D</td>
<td>100 cc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>E†</td>
<td>125 cc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>F</td>
<td>150 cc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
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<tr>
<td>45</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Cycle refers to combination of one upstroke and one downstroke.
† Model W03EAS 3:1 ratio pump uses a Chromex rod coating.
## Pump Models

<table>
<thead>
<tr>
<th>Model, Series</th>
<th>Air Motor</th>
<th>Displacement Pump</th>
<th>Maximum Fluid Working Pressure psi (MPa, bar)</th>
<th>Flow Rate at 60 cpm gpm (lpm)</th>
<th>Fluid Inlet</th>
<th>Fluid Outlet</th>
<th>Air Inlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>W03EAS, Series A</td>
<td>M02LN0</td>
<td>LW125A</td>
<td>300 (2.07, 20.7)</td>
<td>2.0 (7.5)</td>
<td>1 in. npt</td>
<td>1/2 in. npt</td>
<td>1/4 npt(f)</td>
</tr>
<tr>
<td>W03EBS, Series A</td>
<td>M02LT0</td>
<td>LW075A</td>
<td>1000 (6.9, 69)</td>
<td>1.2 (4.5)</td>
<td>3/4 in. npt</td>
<td>3/8 in. npt</td>
<td>1/4 npt(f)</td>
</tr>
<tr>
<td>W10CAS, Series A</td>
<td>M04LN0</td>
<td>LW025A</td>
<td>1500 (10.3, 103)</td>
<td>0.4 (1.5)</td>
<td>1/2 in. npt</td>
<td>3/8 in. npt</td>
<td>1/4 npt(f)</td>
</tr>
<tr>
<td>W10CBS, Series A</td>
<td>M04LT0</td>
<td>LW050A</td>
<td>1500 (10.3, 103)</td>
<td>0.8 (3.0)</td>
<td>3/4 in. npt</td>
<td>3/8 in. npt</td>
<td>1/4 npt(f)</td>
</tr>
<tr>
<td>W15AAS, Series A</td>
<td>M04LN0</td>
<td>LW150A</td>
<td>1500 (10.3, 103)</td>
<td>2.4 (9.0)</td>
<td>1 in. npt</td>
<td>3/4 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W15BAS, Series A</td>
<td>M04LN0</td>
<td>LW125A</td>
<td>1800 (12.4, 124)</td>
<td>2.0 (7.5)</td>
<td>1 in. npt</td>
<td>1/2 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W15BBS, Series A</td>
<td>M04LT0</td>
<td>LW125A</td>
<td>2300 (15.8, 158)</td>
<td>1.6 (6.0)</td>
<td>3/4 in. npt</td>
<td>3/8 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W15FAS, Series A</td>
<td>M12LN0</td>
<td>LW150A</td>
<td>2400 (16.5, 165)</td>
<td>2.4 (9.0)</td>
<td>1 in. npt</td>
<td>3/4 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W15FBS, Series A</td>
<td>M12LT0</td>
<td>LW150A</td>
<td>2800 (19.3, 193)</td>
<td>2.0 (7.5)</td>
<td>1 in. npt</td>
<td>1/2 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W18CAS, Series A</td>
<td>M12LN0</td>
<td>LW025A</td>
<td>3000 (20.7, 207)</td>
<td>0.4 (1.5)</td>
<td>1/2 in. npt</td>
<td>3/8 in. npt</td>
<td>1/4 npt(f)</td>
</tr>
<tr>
<td>W18CBS, Series A</td>
<td>M12LT0</td>
<td>LW075A</td>
<td>3000 (20.7, 207)</td>
<td>1.2 (4.5)</td>
<td>3/4 in. npt</td>
<td>3/8 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W23DAS, Series A</td>
<td>M12LN0</td>
<td>LW100A</td>
<td>3600 (24.8, 248)</td>
<td>1.6 (6.0)</td>
<td>3/4 in. npt</td>
<td>3/8 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W23DBS, Series A</td>
<td>M12LT0</td>
<td>LW050A</td>
<td>4500 (31.0, 310)</td>
<td>0.8 (3.0)</td>
<td>3/4 in. npt</td>
<td>3/8 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W24FAS, Series A</td>
<td>M18LN0</td>
<td>LW100A</td>
<td>4800 (33.1, 331)</td>
<td>1.2 (4.5)</td>
<td>3/4 in. npt</td>
<td>3/8 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
<tr>
<td>W24FBS, Series A</td>
<td>M18LT0</td>
<td>LW075A</td>
<td>4800 (33.1, 331)</td>
<td>1.2 (4.5)</td>
<td>3/4 in. npt</td>
<td>3/8 in. npt</td>
<td>1/2 npt(f)</td>
</tr>
</tbody>
</table>

† Flush Kit Pumps do not utilize the part number matrix.
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

### FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:

- 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.

### 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 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.

### SKIN INJECTION HAZARD

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. Get immediate surgical treatment.

- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Do not spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.


**WARNING**

**PRESSURIZED EQUIPMENT HAZARD**

Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- 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.

**MOVING PARTS HAZARD**

Moving parts can pinch or amputate fingers and other body parts.

- 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.

**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 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.

**PERSONAL PROTECTIVE EQUIPMENT**

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:

- Protective eyewear
- Clothing and respirator as recommended by the fluid and solvent manufacturer
- Gloves
- Hearing protection

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**Related Manuals**

<table>
<thead>
<tr>
<th>Manual</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>312792</td>
<td>Merkur Displacement Pump</td>
</tr>
<tr>
<td>312796</td>
<td>NXT™ Air Motor</td>
</tr>
<tr>
<td>312797</td>
<td>Merkur Non-Heated Spray Packages</td>
</tr>
<tr>
<td>312798</td>
<td>Merkur Electrostatic Spray Packages, Ambient and Heated</td>
</tr>
<tr>
<td>313255</td>
<td>Merkur Heated Spray Packages</td>
</tr>
</tbody>
</table>
Component Identification

Fig. 1. Component Identification

Key:
A  Ground Wire
B  TSL Reservoir
C  Wet Cup (not visible, under TSL reservoir)
D  Fluid Outlet
E  Fluid Inlet
F  Lower Cylinder
G  Upper Cylinder
H  Tie Rod Shield
J  Displacement Pump Adapter
K  Tie Rod
L  Coupling Nut
M  Jam Nut
N  Air Motor
Installation

General Information

Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.

Always use Genuine Graco Parts and Accessories, available from your Graco distributor. If you supply your own accessories, be sure they are adequately sized and pressure-rated for your system.

Prepare the Operator

All persons who operate the equipment must be trained in the operation of all system components as well as the proper handling of all fluids. All operators must thoroughly read all instruction manuals, tags, and labels before operating the equipment.

Prepare the Site

Ensure that you have an adequate compressed air supply.

Bring a compressed air supply line from the air compressor to the pump location. Be sure all air hoses are properly sized and pressure-rated for your system. Use only electrically conductive hoses.

Keep the site clear of any obstacles or debris that could interfere with the operator’s movement.

Have a grounded, metal pail available for use when flushing the system.

Grounding

The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.

Pump: See Fig. 2. Verify that the ground screw (GS) is attached and tightened securely to the air motor. Connect the other end of the ground wire (U) to a true earth ground.

Air and fluid hoses: Static electricity may build up when fluids flow through pumps, hoses, and sprayers. At least one hose must be electrically conductive, with a maximum of 500 ft. (150 m) combined hose length to ensure grounding continuity. Check electrical resistance of hose. If total resistance to ground exceeds 25 meg-ohms, replace hose immediately.

Air compressor: follow manufacturer’s recommendations.

Spray gun / Dispense valve: Ground the spray gun through connection to a Graco-approved grounded fluid hose.

Fluid supply container: follow local code.

Object being sprayed: follow local code.

Solvent pails used when flushing: follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

To maintain grounding continuity when flushing or relieving pressure: hold metal part of the spray gun/dispense valve firmly to the side of a grounded metal pail, then trigger the gun/valve.
Mount the Pump

Mount the pump only to Graco wall bracket 15T795, or to a Graco cart, available from your distributor. Pump dimensions are shown on page 31. For wall mounted pumps, follow these guidelines:

1. Be sure the wall can support the weight of the pump, bracket, hoses and accessories, as well as the stress caused during operation.

2. Position the wall bracket about 1.2-1.5 m (4-5 ft) above the floor. For ease of operation and service, make sure the pump air inlet, fluid inlet, and fluid outlet ports are easily accessible.

3. Using the wall bracket as a template, drill 10 mm (0.4 in.) mounting holes in the wall. Wall mounting dimensions are shown on page 32.

4. Attach the bracket to the wall. Use 9 mm (3/8 in.) screws that are long enough to keep the pump from vibrating during operation.

NOTE: Be sure the bracket is level.

Air and Fluid Hoses

Be sure all air hoses (N) and fluid hoses (M) are properly sized and pressure rated for your system. See Fig. 3. Use only electrically conductive fluid hoses.

Accessories

Install the following accessories in the order shown in Fig. 3, using adapters as necessary.

Air Line

• **Bleed-type master air valve (E):** required in your system to relieve air trapped between it and the air motor and gun when the valve is closed.

![Warning]
Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing or moving parts.

Be sure the valve is easily accessible from the pump and located downstream from the air regulator.

• **Pump air regulator (H):** controls pump speed and outlet pressure. Locate it close to the pump.

• **Air line filter (B):** removes harmful dirt and moisture from compressed air supply.

• **Air shutoff valve (A):** isolates air line accessories for servicing. Locate upstream from all other air line accessories.

• **Gun air regulator (D):** controls air pressure to the air-assisted spray gun.

Fluid Line

• **Fluid filter (P):** with a 60 mesh (250 micron) stainless steel element to filter particles from the fluid as it leaves the pump.

• **Fluid drain valve (W):** required in your system, to relieve fluid pressure in the hose and gun.

• **Gun or valve (L):** dispenses the fluid. The gun shown in Fig. 3 is an air-assisted spray gun for light to medium viscosity fluids.

• **Fluid line swivel (K):** for easier gun movement.

• **Suction kit (V):** enables the pump to draw fluid from a container.

Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing or moving parts.
Typical Installation

A  Air Shutoff Valve
B  Air Filter (optional accessory)
C  Gun Air Pressure Gauge
D  Gun Air Pressure Regulator
E  Bleed Type Master Air Valve
F  DataTrak
G  Pump Air Pressure Gauge
H  Pump Air Pressure Regulator
J  Solenoid Release Button
  (not visible)
K  Gun Swivel
L  Air-Assisted Spray Gun
M  Gun Fluid Supply Hose
N  Gun Air Supply Hose
P  Fluid Filter
R  Pump Fluid Outlet
S  Grounding Wire
T  Wet-Cup (not visible, see Fig. 4, page 11)
U  Pump Fluid Inlet
V  Suction Hose
W  Fluid Drain Valve

G15 Spray Gun Shown with Supply Hose

Fig. 3. Typical Installation. (Graco Cart-Mounted Package Shown.)
Operation

Pressure Relief Procedure

1. Engage the 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 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.

Flush Before Using Equipment

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment. See Maintenance, page 13.

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.

Wet Cup

Before starting, fill wet cup (T) 1/3 full with Graco Throat Seal Liquid (TSL) or compatible solvent.
Prime and Adjust the Pump

1. Lock gun trigger. Remove tip guard and spray tip from gun. Refer to gun manual.

2. Close gun air regulator and pump air regulator (H) by turning knobs counterclockwise reducing pressure to zero. Close bleed-type air valve (E). Also verify that all drain valves are closed.

3. Check that all fittings throughout system are tightened securely.

4. Position pail close to pump. Do not stretch suction hose tight/let it hang to assist fluid flow into pump.

5. Hold metal part of gun (L) firmly to side of grounded metal pail, unlock trigger, and hold trigger open.

6. *Pumps with runaway protection:* Enable the prime/flush function by pushing the prime/flush button on the DataTrak.

7. Open bleed-type air valve (E). Slowly open the pump air regulator (H) until the pump starts.

8. Cycle pump slowly until all air is pushed out and the pump and hoses are fully primed.

9. *Pumps with runaway protection:* Disable the prime/flush function by pushing the prime/flush button on the DataTrak.

10. Release gun trigger and lock trigger safety. Pump should stall against pressure.

11. With the pump and lines primed, and with adequate air pressure and volume supplied, the pump will start and stop as you open and close the gun/valve.

12. Use the air regulator to control the pump speed and the fluid pressure. Always use the lowest air pressure necessary to get the desired results. Higher pressures cause premature tip/nozzle and pump wear.

**NOTICE**

Never allow the pump to run dry of the fluid being pumped. A dry pump quickly accelerates to a high speed, possibly damaging itself. If your pump accelerates quickly, or is running too fast, stop it immediately and check the fluid supply. If the supply container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines with fluid, or flush and leave it filled with a compatible solvent. Be sure to eliminate all air from the fluid system.

Shutdown and Care of the Pump

For a brief shutdown, relieve the pressure, page 11. Stop the pump at the bottom of its stroke to prevent fluid from drying on the exposed displacement rod and damaging the throat packings.

For a longer shutdown, or overnight, always flush the pump before the fluid dries on the displacement rod. Relieve the pressure, page 11.
Maintenance

Preventive Maintenance Schedule

The operating conditions of your particular system determine how often maintenance is required. Establish a preventive maintenance schedule by recording when and what kind of maintenance is needed, and then determine a regular schedule for checking your system.

Tighten Threaded Connections

Before each use, check all hoses for wear or damage. Replace as necessary. Check that all threaded connections are tight and leak-free.

Flush the Pump

Flush at the lowest pressure possible. Flush with a fluid that is compatible with the fluid you are pumping and with the wetted parts in your system. Check with your fluid manufacturer or supplier for recommended flushing fluids and flushing frequency.

1. Follow Pressure Relief Procedure, page 11.

2. Remove tip guard and spray tip from gun. Refer to separate gun manual.

3. Place siphon tube in grounded metal pail containing cleaning fluid.

4. Set pump to lowest possible fluid pressure, and start pump.

5. Hold a metal part of the gun firmly to a grounded metal pail.

6. Units with runaway protection only: enable the prime/flush function by pushing the prime/flush button on the DataTrak.

7. Trigger gun. Flush system until clear solvent flows from gun.

8. Units with runaway protection only: disable the prime/flush function by pushing the prime/flush button on the DataTrak.


10. Clean the tip guard, spray tip, and fluid filter element separately, then reinstall them.

11. Clean inside and outside of suction tube.

Wet Cup

Fill the wet cup one-half full with Graco Throat Seal Liquid (TSL). Maintain level daily.
# Troubleshooting

**NOTE:** Check all possible problems and causes before disassembling the pump.

**Relieve the pressure** before checking or servicing the equipment.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump output low on both strokes.</td>
<td>Restricted air supply lines.</td>
<td>Clear any obstructions; be sure all shutoff valves are open; increase pressure, but do not exceed maximum working pressure.</td>
</tr>
<tr>
<td></td>
<td>Exhausted fluid supply.</td>
<td>Refill and reprime pump.</td>
</tr>
<tr>
<td></td>
<td>Clogged fluid outlet line, valves, etc.</td>
<td>Clear.</td>
</tr>
<tr>
<td></td>
<td>Worn piston packing.</td>
<td>Replace. See displacement pump manual 312792.</td>
</tr>
<tr>
<td>Pump output low on only one stroke.</td>
<td>Held open or worn ball check valves.</td>
<td>Check and repair.</td>
</tr>
<tr>
<td></td>
<td>Worn piston packings.</td>
<td>Replace.</td>
</tr>
<tr>
<td>No output.</td>
<td>Improperly installed ball check valves.</td>
<td>Check and repair.</td>
</tr>
<tr>
<td>Pump operates erratically.</td>
<td>Exhausted fluid supply.</td>
<td>Refill and reprime pump.</td>
</tr>
<tr>
<td></td>
<td>Held open or worn ball check valves.</td>
<td>Check and repair.</td>
</tr>
<tr>
<td></td>
<td>Worn piston packing.</td>
<td>Replace.</td>
</tr>
<tr>
<td>Pump will not operate.</td>
<td>Restricted air supply lines.</td>
<td>Clear any obstructions; be sure all shutoff valves are open; increase pressure, but do not exceed maximum working pressure.</td>
</tr>
<tr>
<td></td>
<td>Exhausted fluid supply.</td>
<td>Refill and reprime pump.</td>
</tr>
<tr>
<td></td>
<td>Clogged fluid outlet line, valves, etc.</td>
<td>Clear.</td>
</tr>
<tr>
<td></td>
<td>Damaged air motor.</td>
<td>See air motor manual 312796.</td>
</tr>
<tr>
<td></td>
<td>Fluid dried on piston rod.</td>
<td>Disassemble and clean pump. See page 15 and manual 312792. In future, stop pump at bottom of stroke.</td>
</tr>
<tr>
<td></td>
<td>Runaway solenoid has tripped.</td>
<td>Retract solenoid. See air motor manual 312796.</td>
</tr>
</tbody>
</table>
Repair

General Information

- Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.

- Always use Genuine Graco Parts and Accessories, available from your Graco distributor. If you supply your own accessories, be sure they are adequately sized and pressure rated for your system.

Disconnect the Displacement Pump

1. Stop the pump in the middle of the stroke.

2. Flush the pump, if possible. (See page 13). Relieve the pressure. (See page 11).

3. Disconnect the air and fluid hoses and the ground wire (13).

4. Remove the tie rod shield (11). Hold the drip shield out of the way.

5. Hold the flats of the air motor piston rod with a wrench. Use another wrench to loosen the coupling nut (9).

   NOTE: All W03xxx, W15BAS, W15BBS, W10CAS, and W10CBS models use a threaded adapter coupling between the air motor piston rod and the coupling nut. When loosening the coupling nut, hold the wrench flats of the adapter coupling, not the flats on the air motor piston rod.

6. Lower the coupling nut (9) enough to remove the coupling collars (10), and then remove the coupling nut (9).

7. Pull up on TSL reservoir (7) to remove.

8. Use a hammer and brass rod to loosen the jam nut (4). Unscrew the jam nut as far as possible.

9. Unscrew the displacement pump by hand and place on work bench.

   Threads are very sharp. Use a rag to protect hands when hand turning or carrying the pump.
Reconnect the Displacement Pump

1. Tilt the air motor onto its back, then hand turn the displacement pump into the adapter plate. Set the pump upright again.

2. Hold the air motor piston rod up with one hand. With your other hand, put the coupling nut (9) on the displacement rod.

3. Put the coupling collars (10) into the coupling nut (9) so large flanges point upward.

4. Gently let the air motor piston rod drop onto the displacement rod. Hand tighten the coupling nut (9).

5. Screw the displacement pump into the adapter plate (3) until the cylinder top is flush with the top of the adapter plate.

6. Align fluid outlet as shown and tighten the jam nut.

7. Align the TSL reservoir (7) and push it down into place.

8. Hold the flats of the motor rod with a wrench. Use another wrench to tighten the coupling nut (9).

NOTE: All W03xxx, W15BAS, W15BBS, W10CAS, and W10CBS models use a threaded adapter coupling between the air motor piston rod and the coupling nut. When loosening the coupling nut, hold the wrench flats of the adapter coupling, not the flats on the air motor piston rod.

Torque the coupling nut according to the following table.

<table>
<thead>
<tr>
<th>Motor</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>M02xxx</td>
<td>23-26 ft-lb (31-35 N•m)</td>
</tr>
<tr>
<td>M02xxx (on W03xxx models only)</td>
<td>75-80 ft-lb (102-108 N•m)</td>
</tr>
<tr>
<td>M04xxx</td>
<td>50-55 ft-lb (68-75 N•m)</td>
</tr>
<tr>
<td>M07xxx - M34xxx</td>
<td>75-80 ft-lb (102-108 N•m)</td>
</tr>
</tbody>
</table>

**Fig. 6. Align cylinder and adapter plate.**
Disconnect the Air Motor

NOTE: See manual 312796 for air motor service and parts information.

1. Flush the pump, if possible. (See page 13.) Relieve the pressure. (See page 11.)

2. Disconnect the air and fluid hoses, the ground wire (13), and the tie rod shield (11).

3. Hold the flats of the air motor piston rod with a wrench. Use another wrench to loosen the coupling nut (9).

   NOTE: All W03xxx, W15BAS, W15BBS, W10CAS, and W10CBS models use a threaded adapter coupling between the air motor piston rod and the coupling nut. Hold onto the wrench flats of the adapter coupling when loosening the coupling nut, not the flats on the air motor piston rod.

4. Use a socket to remove the tie rod nuts (6): 13 mm for M02xxx, 23 mm for all others.

   NOTE: All W03xxx models use an adapter plate (14) between the tie rods (5) and the air motor (1). There is no need to remove the tie rod nuts (6) on these models. Instead, slide the drip shield (12) down towards the lower unit as far as it will go. Using a 5/16” Allen wrench, remove the three socket head cap screws (15) that secure the air motor (1) to the adapter plate (14).

5. Use a 13 mm socket to remove the top two mounting screws (MS).

   NOTE: Not required for W03xxx models.

6. Lift up on the air motor to remove it. The tie rods (5) and drip shield (12) will remain attached.

   **Cart Mount:** Remove the two screws on the arms and tip back or remove the air control panel for easier removal of the air motor.

   NOTE: On W03xxx models, the tie rods (5), drip shield (12), and adapter plate (14) may remain attached to the lower unit assembly.

7. Slide the drip shield (12) off the tie rods (5).

   NOTE: Not required for W03xxx models.

8. Use a socket on the flats of the tie rods (5) to remove them from the bottom cover of the air motor.

   NOTE: Not required for W03xxx models.
Reconnect the Air Motor

1. Slide the drip shield (12) onto the tie rods (5).
   NOTE: Not required for W03xxx models.

2. Screw the tie rods (5) into the bottom cover of the air motor. Torque according to the following table:

<table>
<thead>
<tr>
<th>Motor</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>M02xxx</td>
<td>5-10 ft-lb (7-13.5 N•m)</td>
</tr>
<tr>
<td>All Other Sizes</td>
<td>50-55 ft-lb (68-75 N•m)</td>
</tr>
</tbody>
</table>

NOTE: On W03xxx models, place the air motor on top of the adapter plate (14) and secure it using the cap screws (15.) Torque the cap screws to 5-10 ft-lb (7-13.5 N•m). Torque the tie rods to 50-55 ft-lb (68-75 N•m).

3. As needed for the larger air motors, use two people to reattach. Align the tie rods (5) with the holes in the pump adapter (3). Carefully lower the air motor into place.
   NOTE: Not required for W03xxx models.

4. Attach the tie rod nuts (6) and torque according the following table:

<table>
<thead>
<tr>
<th>Motor</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>M02xxx</td>
<td>15-20 ft-lb (20-27 N•m)</td>
</tr>
<tr>
<td>All Other Sizes</td>
<td>50-60 ft-lb (68-81 N•m)</td>
</tr>
</tbody>
</table>

NOTE: Not required for W03xxx models unless the tie rod nuts (6) were removed. In that case, torque to 50-60 ft-lb (68-81 N•m).

5. Tighten the mounting screws.

6. Hand tighten the coupling nut, then torque according to the following table:

<table>
<thead>
<tr>
<th>Motor</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>M02xxx</td>
<td>23-26 ft-lb (31-35 N•m)</td>
</tr>
<tr>
<td>M02xxx (on W03xxx models with adapter plate only)</td>
<td>75-80 ft-lb (102-108 N•m)</td>
</tr>
<tr>
<td>All Other Sizes</td>
<td>75-80 ft-lb (102-108 N•m)</td>
</tr>
</tbody>
</table>

7. Connect the air and fluid hoses, the ground wire, and the tie rod shield.
Torque varies by air motor size. See Disconnect the Air Motor on page 17 and Reconnect the Air Motor on page 18.

Torque varies by displacement pump size.
- 25 cc: 23-26 ft-lb (31-35 N·m)
- 3.5" Air Motor, 25 cc - 75 cc: 50-55 ft-lb (68-75 N·m)
- All others: 75-80 ft-lb (102-108 N·m)

Torque to 70-75 ft-lb (95-102 N·m)
## Pump Parts

**NOTES:**
- For parts that vary by model, see page 21.
- For Flush Kit Pumps 262287 and 262392, see manual 310863 for additional parts information.
- For Flush Kit Pump 257463, see manual 313289 for additional parts information.

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>See Table</td>
<td>MOTOR</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>See Table</td>
<td>DISPLACEMENT PUMP</td>
<td>1</td>
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<tr>
<td>3*</td>
<td>See Table</td>
<td>ADAPTER, pump</td>
<td>1</td>
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<tr>
<td>4</td>
<td>See Table</td>
<td>NUT, jam</td>
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<tr>
<td>5*</td>
<td>15M661</td>
<td>ROD, tie</td>
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<td>15M662</td>
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<td>All other motor sizes and W03xxx pumps with adapter plate (14)</td>
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<td>6*</td>
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<td>NUT, tie rod</td>
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<tr>
<td>7*</td>
<td>See Table</td>
<td>RESERVOIR, TSL</td>
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<td>8*</td>
<td>See Table</td>
<td>ADAPTER, 1/2-20 ID X M22 x 1.5 OD</td>
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<table>
<thead>
<tr>
<th>Ref.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9*</td>
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<td>NUT, coupling LW025x displacement pumps</td>
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<td>10*</td>
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<td>COLLAR, coupling; see page 22 to order package of 10</td>
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</tr>
<tr>
<td>11*</td>
<td>See Table</td>
<td>SHIELD, tie rod</td>
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</tr>
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<td>12*</td>
<td>See Table</td>
<td>SHIELD, drip</td>
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<td>14</td>
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<td>15</td>
<td>C20019</td>
<td>SCREW, cap socket head, W03xxx pumps with adapter plate (14) only</td>
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</table>

----- Not sold separately.

* Included in Connecting Kit. See page 22 to order the correct kit for your pump.

**NOTE:** Replacement Warning labels, signs, tags, and cards are available at no cost.
### Parts That Vary by Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor (1)</th>
<th>Motor Piston Diam. (in.)</th>
<th>Displacement Pump (2)</th>
<th>Pump Adapter (3)</th>
<th>Jam Nut (4)</th>
<th>TSL Reservoir (7, includes o-ring)</th>
<th>Adapter (8)</th>
<th>Tie Rod Shield (11, includes screw)</th>
<th>Drip Shield (12)</th>
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## Repair Kits

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<th>Kit Description</th>
<th>LW025A</th>
<th>LW050A</th>
<th>LW075A</th>
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<td>3.5 in. motor</td>
<td>3.5 in. motor</td>
<td>6-7.5 in. motor</td>
<td>6-7.5 in. motor</td>
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<td>Coupling Collars (10)</td>
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<td>Connecting Kit</td>
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<tr>
<td>Includes pump adapter (3), three tie rods (5), three tie rod nuts (6), TSL reservoir and o-ring (7), adapter (8), coupling nut (9), two coupling collars (10), tie rod shield and screw (11), drip shield (12), adapter (14), and screws (15).</td>
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<td>24A283</td>
<td>24A285</td>
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</table>

### NOTE:
For **displacement pump repair kits**, see manual 312792.
For **air motor repair kits**, see manual 312796.
Performance Charts

Model W03xxx
3:1 Ratio, 125 cc/cycle

Fluid Flow gpm (lpm) tested in No. 10 weight oil

Air Flow scfm (m³/min)

Cycles per Minute

Fluid Outlet Pressure psi (MPa, bar)

KEY

A = 100 psi (0.7 MPa, 7 bar)
B = 70 psi (0.5 MPa, 5 bar)
C = 40 psi (0.3 MPa, 3 bar)

= fluid flow

= air consumption
### Performance Charts

**Model W10xxx**

**10:1 Ratio, 75 cc/cycle**

<table>
<thead>
<tr>
<th>Fluid Outlet Pressure psi (MPa, bar)</th>
<th>Air Flow scfm (m³/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (100 psi, 0.7 MPa, 7 bar)</td>
<td>16 (0.45)</td>
</tr>
<tr>
<td>B (70 psi, 0.5 MPa, 5 bar)</td>
<td>14 (0.4)</td>
</tr>
<tr>
<td>C (40 psi, 0.3 MPa, 3 bar)</td>
<td>12 (0.34)</td>
</tr>
</tbody>
</table>

**KEY**

- A = 100 psi (0.7 MPa, 7 bar)
- B = 70 psi (0.5 MPa, 5 bar)
- C = 40 psi (0.3 MPa, 3 bar)

- **Solid Line** = fluid flow
- **Dashed Line** = air consumption

**Fluid Flow gpm (lpm) tested in No. 10 weight oil**

**Model W15Axx**

**15:1 Ratio, 25 cc/cycle**

<table>
<thead>
<tr>
<th>Fluid Outlet Pressure psi (MPa, bar)</th>
<th>Air Flow scfm (m³/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (100 psi, 0.7 MPa, 7 bar)</td>
<td>9 (0.25)</td>
</tr>
<tr>
<td>B (70 psi, 0.5 MPa, 5 bar)</td>
<td>8 (0.23)</td>
</tr>
<tr>
<td>C (40 psi, 0.3 MPa, 3 bar)</td>
<td>7 (0.2)</td>
</tr>
</tbody>
</table>

**KEY**

- A = 100 psi (0.7 MPa, 7 bar)
- B = 70 psi (0.5 MPa, 5 bar)
- C = 40 psi (0.3 MPa, 3 bar)

- **Solid Line** = fluid flow
- **Dashed Line** = air consumption

**Fluid Flow gpm (lpm) tested in No. 10 weight oil**
Model W15Bxx
15:1 Ratio, 50 cc/cycle

Fluid Flow gpm (lpm) tested in No. 10 weight oil

Fluid Outlet Pressure psi (MPa, bar)

Air Flow scfm (m³/min)

KEY

A = 100 psi (0.7 MPa, 7 bar)
B = 70 psi (0.5 MPa, 5 bar)
C = 40 psi (0.3 MPa, 3 bar)

= fluid flow
= air flow

Model W15Fxx
15:1 Ratio, 150 cc/cycle

Fluid Flow gpm (lpm) tested in No. 10 weight oil

Fluid Outlet Pressure psi (MPa, bar)

Air Flow scfm (m³/min)
Performance Charts

Model W18xxx
18:1 Ratio, 125 cc/cycle

Fluid Flow gpm (lpm) tested in No. 10 weight oil

KEY

A = 100 psi (0.7 MPa, 7 bar)
B = 70 psi (0.5 MPa, 5 bar)
C = 40 psi (0.3 MPa, 3 bar)

= fluid flow
= air flow

Model W23xxx
23:1 Ratio, 100 cc/cycle

Fluid Flow gpm (lpm) tested in No. 10 weight oil
Model W24xxx
24:1 Ratio, 150 cc/cycle

Cycles per Minute

Fluid Outlet Pressure psi (MPa, bar)

Fluid Flow gpm (lpm) tested in No. 10 weight oil

Model W28xxx
28:1 Ratio, 125 cc/cycle

Cycles per Minute

Fluid Outlet Pressure psi (MPa, bar)

Fluid Flow gpm (lpm) tested in No. 10 weight oil

KEY
A = 100 psi (0.7 MPa, 7 bar)
B = 70 psi (0.5 MPa, 5 bar)
C = 40 psi (0.3 MPa, 3 bar)

= fluid flow
= air flow
Model W30Axx
30:1 Ratio, 25 cc/cycle

Cycles per Minute

Fluid Flow gpm (lpm) tested in No. 10 weight oil

Air Flow scfm (m³/min)

Fluid Outlet Pressure psi (MPa, bar)

Model W30Cxx, 257463
30:1 Ratio, 75 cc/cycle

Cycles per Minute

Fluid Flow gpm (lpm) tested in No. 10 weight oil

KEY

A = 100 psi (0.7 MPa, 7 bar)

B = 70 psi (0.5 MPa, 5 bar)

C = 40 psi (0.3 MPa, 3 bar)

= fluid flow

= air flow
Model W36xxx
36:1 Ratio, 100 cc/cycle

Cycles per Minute

Fluid Outlet Pressure psi (MPa, bar)

Air Flow scfm (m³/min)

Fluid Flow gpm (lpm) tested in No. 10 weight oil

KEY

A = 100 psi (0.7 MPa, 7 bar)
B = 70 psi (0.5 MPa, 5 bar)
C = 40 psi (0.3 MPa, 3 bar)

= fluid flow
= air flow

Model W45xxx, 262287, 262392
45:1 Ratio, 50 cc/cycle

Cycles per Minute

Fluid Outlet Pressure psi (MPa, bar)

Air Flow scfm (m³/min)

Fluid Flow gpm (lpm) tested in No. 10 weight oil
Model W48xxx
48:1 Ratio, 75 cc/cycle

Cycles per Minute

Fluid Outlet Pressure psi (MPa, bar)

Fluid Flow gpm (lpm) tested in No. 10 weight oil

Air Flow scfm (m³/min)

KEY

A = 100 psi (0.7 MPa, 7 bar)
B = 70 psi (0.5 MPa, 5 bar)
C = 40 psi (0.3 MPa, 3 bar)

= fluid flow
= air flow
## Pump Dimensions

<table>
<thead>
<tr>
<th>Pump Model</th>
<th>A in. (mm)</th>
<th>B in. (mm)</th>
<th>C in. (mm)</th>
<th>D in. (mm)</th>
<th>Weight lbs (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W03xxx</td>
<td>25.6 (650)</td>
<td>4.2 (107)</td>
<td>7.4 (187)</td>
<td>9.0 (229)</td>
<td>45 (20)</td>
</tr>
<tr>
<td>W10xxx</td>
<td>24.6 (625)</td>
<td>5.6 (142)</td>
<td>5.8 (147)</td>
<td>7.8 (198)</td>
<td>30 (14)</td>
</tr>
<tr>
<td>W15Axx</td>
<td>24.1 (612)</td>
<td>4.2 (107)</td>
<td>5.1 (130)</td>
<td>6.2 (157)</td>
<td>15 (7)</td>
</tr>
<tr>
<td>W15Bxx</td>
<td>24.0 (610)</td>
<td>5.6 (142)</td>
<td>5.8 (147)</td>
<td>7.8 (198)</td>
<td>28 (13)</td>
</tr>
<tr>
<td>W15Fxx</td>
<td>25.2 (640)</td>
<td>8.6 (218)</td>
<td>11.7 (297)</td>
<td>11.4 (290)</td>
<td>53 (24)</td>
</tr>
<tr>
<td>W18xxx</td>
<td>25.2 (640)</td>
<td>8.6 (218)</td>
<td>11.7 (297)</td>
<td>11.4 (290)</td>
<td>53 (24)</td>
</tr>
<tr>
<td>W23xxx</td>
<td>25.1 (638)</td>
<td>8.6 (218)</td>
<td>11.7 (297)</td>
<td>11.4 (290)</td>
<td>51 (23)</td>
</tr>
<tr>
<td>W24xxx</td>
<td>25.2 (640)</td>
<td>10.1 (257)</td>
<td>14.8 (375)</td>
<td>12.9 (328)</td>
<td>56 (25)</td>
</tr>
<tr>
<td>W28xxx</td>
<td>25.2 (640)</td>
<td>10.1 (257)</td>
<td>14.8 (375)</td>
<td>12.9 (328)</td>
<td>56 (25)</td>
</tr>
<tr>
<td>W30Axx</td>
<td>24.1 (612)</td>
<td>5.6 (142)</td>
<td>5.8 (147)</td>
<td>7.8 (198)</td>
<td>22 (10)</td>
</tr>
<tr>
<td>W30Cxx, 257463</td>
<td>25.0 (635)</td>
<td>8.6 (218)</td>
<td>11.7 (297)</td>
<td>11.4 (290)</td>
<td>48 (22)</td>
</tr>
<tr>
<td>W36xxx</td>
<td>25.1 (638)</td>
<td>10.1 (257)</td>
<td>14.8 (375)</td>
<td>12.9 (328)</td>
<td>54 (24)</td>
</tr>
<tr>
<td>W45xxx, 262287, 262392</td>
<td>24.5 (622)</td>
<td>8.6 (218)</td>
<td>11.7 (297)</td>
<td>11.4 (290)</td>
<td>46 (21)</td>
</tr>
<tr>
<td>W48xxx</td>
<td>25 (635)</td>
<td>10.1 (257)</td>
<td>14.8 (375)</td>
<td>12.9 (328)</td>
<td>51 (23)</td>
</tr>
</tbody>
</table>
Wall Bracket Mounting Dimensions

Four 0.40 in. (10 mm) mounting holes

11 in. (279 mm)

4 in. (102 mm)
Technical Data

Maximum fluid working pressure . . . . . . . . . . . . . . . . . . . . See Models, page 4
Maximum air inlet pressure . . . . . . . . . . . . . . . . . . . . . . . . See Models, page 4
Minimum air inlet pressure . . . . . . . . . . . . . . . . . . . . . . . . . 10 psi (0.07 MPa, 0.7 bar)
Air consumption . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . See Performance Charts
Fluid flow at 60 cycles per minute . . . . . . . . . . . . . . . . . See Models, page 4
Maximum ambient air temperature . . . . . . . . . . . . . . . . . . 120°F (49°C)
Maximum fluid temperature . . . . . . . . . . . . . . . . . . . . . . . 160°F (71°C)
Stroke length . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2.5 in. (63.5 mm)
Sound data . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . See Technical Data in air motor manual 312796.
Wetted parts . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Stainless steel, tungsten carbide with 6% nickel, UHMWPE, PTFE
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For patent information, see www.graco.com/patents.

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