

Merkur[®] Displacement Pump

312792E
ENG

For use with high-performance finishing and coating pumps in hazardous and non-hazardous locations. For professional use only.

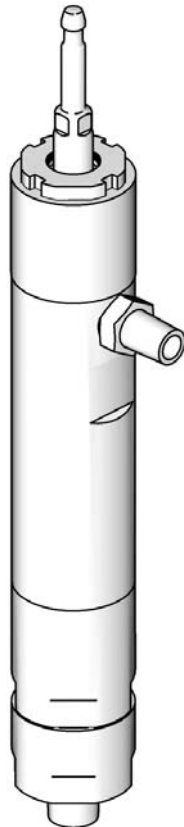


Important Safety Instructions

Read all warnings and instructions in this manual. For complete warnings and instructions see your pump or package manual. Hazard symbols refer to specific procedure risks. Save all instructions.

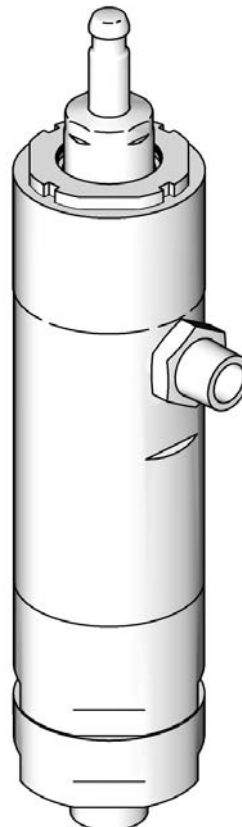
See page 3 for model information, including maximum working pressures.

LW025A



TI11643a

LW150A



TI11645

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Related Manuals

| Manual | Description |
|--------|--|
| 312796 | NXT™ Air Motor |
| 312794 | Merkur Pump Assembly |
| 312797 | Merkur Spray Packages, ambient, AA and Airless |
| 312798 | Merkur Electrostatic Spray Packages |
| 313255 | Merkur Heated Spray Packages |

Models

Check your displacement pump's identification marking for the 6-digit part number. Use the following matrix to define the construction of your displacement pump. For example, displacement pump model LW025A represents a wet-cup style stainless steel displacement pump, 25 cc, with a Chromex coated rod and 3 UHMWPE, 2 PTFE packings.



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To order replacement parts, see **Parts** section starting on page 9. The digits in the matrix do not correspond to the reference numbers in the Parts drawings and lists.

| L | W | | 025 | A | |
|---------------------|-----------------------------------|--------------------------------|--|---|----------------------------|
| First Digit | Second Digit (Description) | | Third, Fourth, and Fifth Digits (Displacement Pump Volume Per Cycle* in cc) | Sixth Digit (Packings; Displacement Rod Coating) | |
| L (Lower) | W | Wet-cup style, stainless steel | 025 | A | 3 UHMWPE, 2 PTFE; Chromex™ |
| | | | 050 | | |
| | | | 075 | | |
| | | | 100 | | |
| | | | 125 | | |
| | | | 150 | | |

* Cycle refers to combination of one upstroke and one downstroke.

| Model, Series | Maximum Working Pressure psi (MPa, bar) | Fluid Inlet | Fluid Outlet |
|-------------------------|--|--------------------|---------------------|
| LW025A, Series A | 3000 (20.7, 207) | 1/2 in. npt | 3/8 in. npt |
| LW050A, Series A | 4500 (31.0, 310) | 3/4 in. npt | 3/8 in. npt |
| LW075A, Series A | 4800 (33.1, 331) | 3/4 in. npt | 3/8 in. npt |
| LW100A, Series A | 3600 (24.8, 248) | 3/4 in. npt | 3/8 in. npt |
| LW125A, Series A | 2900 (20.0, 200) | 1 in. npt | 1/2 in. npt |
| LW150A, Series A | 2400 (16.5, 165) | 1 in. npt | 3/4 in. npt |

Component Identification

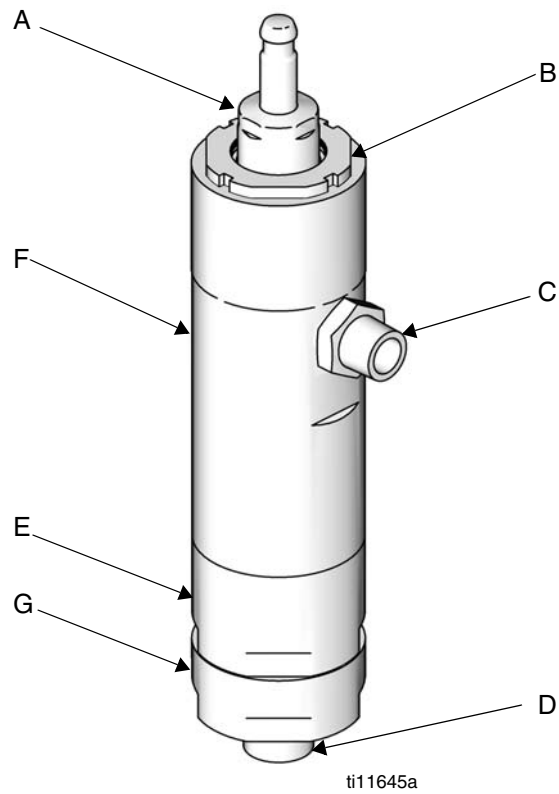


FIG. 1. Component Identification

Key:

- A Piston/Rod Assembly
- B Wet Cup
- C Fluid Outlet
- D Fluid Inlet
- E Lower Cylinder
- F Upper Cylinder
- G Intake Valve

Repair



General Information

NOTICE

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.

Preparation



Follow all warnings and instructions in your pump manual for the following preliminary steps:

1. Flush the equipment.
2. Relieve the pressure.
3. Remove the displacement pump from the pump assembly.

Disassembly

Lay out all removed parts in sequence to ease reassembly. Clean all parts with a compatible solvent and inspect them for wear or damage.

NOTICE

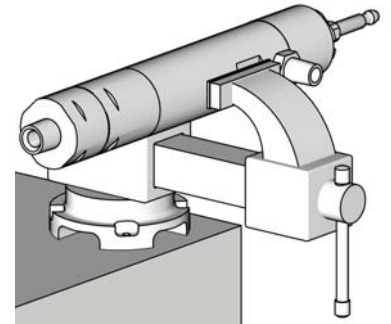
Repair Kits are available. See the chart on page 11 to order the correct kit(s) for your pump.

- Parts included in the Seal Repair Kit are marked with an *, for example 8*.
- Parts included in the Seat Repair Kit are marked with a †.
- Parts included in the Check Ball Kit are marked with a ◆.



Threads are very sharp. Use a rag to protect hands.

1. Place cylinder (1) sideways in a vise with soft jaws.
2. Use an adjustable wrench on hex of intake housing (23) to unscrew it from the lower cylinder (2). Loosen vice briefly and tip out the ball (24◆).



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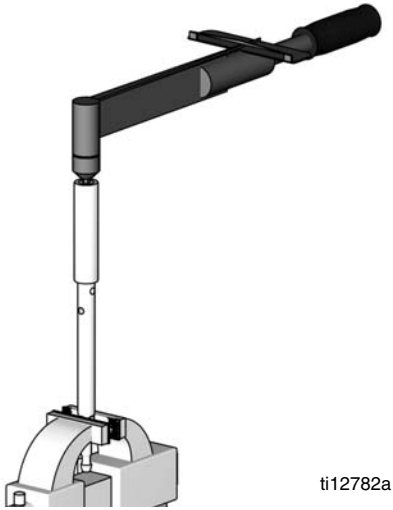
3. Remove the seat (22†) and use an o-ring pick to remove the seal (26†) from the intake housing. See FIG. 7.
4. Use an adjustable wrench on hex of lower cylinder (2) to remove it from the upper cylinder (1) and slide it straight off the pump. Be careful not to damage the piston/rod assembly (3).
5. Remove the o-ring (21*†) from the top of the lower cylinder.
6. Loosen the wet cup (5).
7. Pull the piston/rod assembly out the bottom of the upper cylinder. Remove the spring (10*), piston packings (12* and 13*) and glands (11* and 14*).
8. Remove the wet cup (5).
9. Remove the throat packings (7*, 8*) and glands (6*, 9*) from the bottom of the wet cup.

NOTICE

The jam nut can remain attached to the upper cylinder.

10. Remove the spring (4*) from the top of the upper cylinder (1).

11. Remove the wet cup seal (27*) and the upper cylinder seal (28*).
12. Clamp the piston in a vice. Use a hex wrench to remove the nut (17†) from end of piston.
 - LW025A–LW050A: 7 mm (1/4 in.) hex
 - LW075A–LW150A: 13 mm (1/2 in.) hex



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FIG. 2. Remove Flow-Through Nut

13. Remove the o-ring (18†), seat (15†) and ball (16◆). See FIG. 5.

Reassembly

1. Clean and inspect all parts.

NOTICE

Replace all o-rings removed from the pump. Compressed o-rings may cause the pump to leak.

2. Lubricate and install new wet cup seal (27*) and upper cylinder seal (28*).
3. Assemble the female gland (9*), v-packings (7*, 8*), and male gland (6*), as shown. Alternate the v-packings with the lips facing down. Lubricate the packings. Install the packing stack into the wet cup (5).

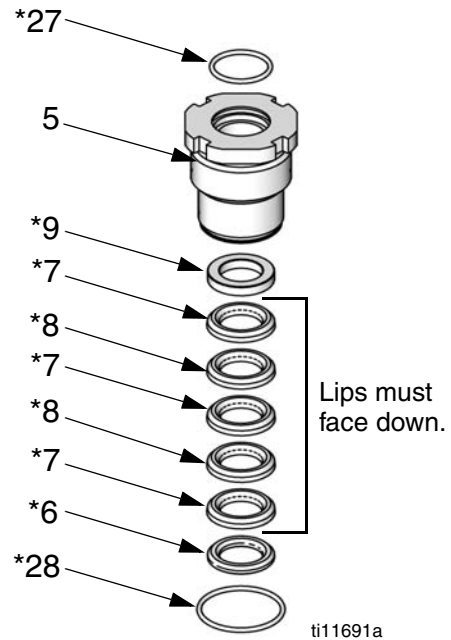


FIG. 3. Replace Throat Packings

4. Install the spring (4*) in the top of the upper cylinder.

NOTICE

All threads, packings, and seals must be well lubricated. Use Lubriplate (Graco Part Number 285791) or a similar product.

5. Lubricate the threads and screw the wet cup (5) into the upper cylinder (1), hand tight.

- Assemble the male gland (11*), v-packings (12*, 13*), and female gland (14*), as shown. Alternate the v-packings, with the lips facing up. Lubricate the packings. Install the spring (10*) and packing stack into the bottom of the upper cylinder (1).

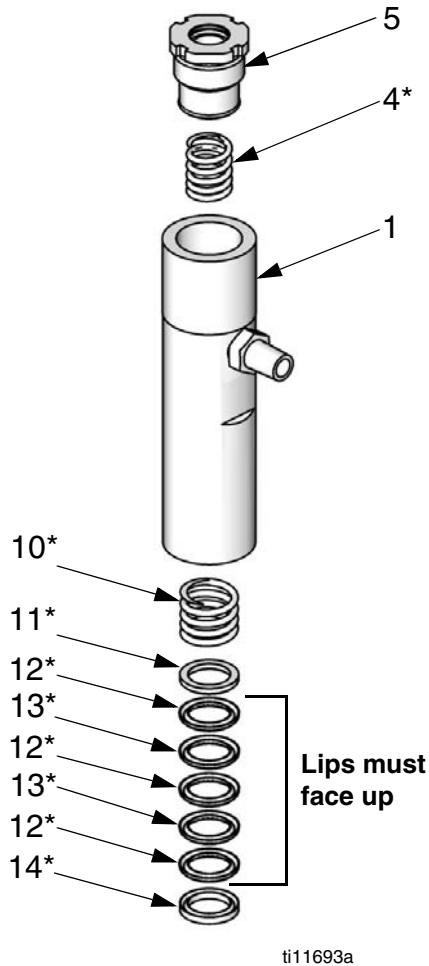


FIG. 4. Replace piston packings.

- Place the ball (16♦) in the piston body. Install the seat (15†) and o-ring (18†). Lubricate the o-ring and the threads of the flow-through nut (17†). Screw the flow-through nut (17†) into the piston/rod assembly (3).

- Place piston in vice and torque flow-through nut (17†) as specified in the following table.

| Displacement Pump | Torque |
|-------------------|---------------------------|
| LW025A–LW050A | 58-62 ft-lb (78-84 N•m) |
| LW075A–LW150A | 78-82 ft-lb (105-111 N•m) |

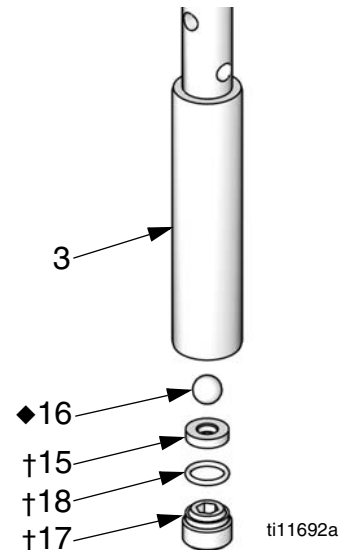


FIG. 5. Replace piston ball and seat.

- Push the piston/rod assembly (3) into the upper cylinder (1).
- Lubricate and install the seal (21*) on the top of the lower cylinder (2).
- Lubricate the threads and screw the lower cylinder (2) onto the upper cylinder (1). Torque to 95-105 ft-lb (128-142 N•m).

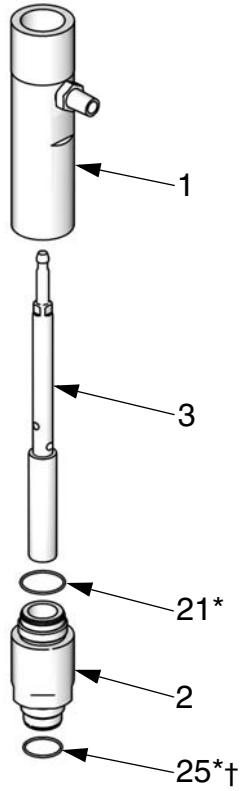


FIG. 6. Assemble piston/rod assembly and cylinders.

12. Lubricate and install the seal (25*†) on the bottom of the lower cylinder (2).
13. Install the o-ring (26†) and intake seat (22†) into the top of the inlet housing. Lubricate the o-ring. The seat (22†) is reversible. Turn over or replace as needed.

14. Lubricate the seal (25*†) and threads of the lower cylinder (2). Place the ball (24◆) on the seat (22†).

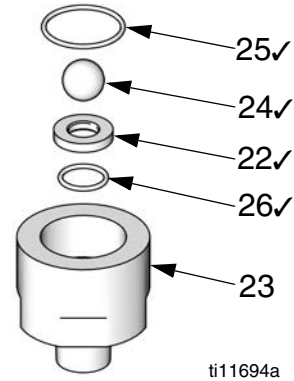


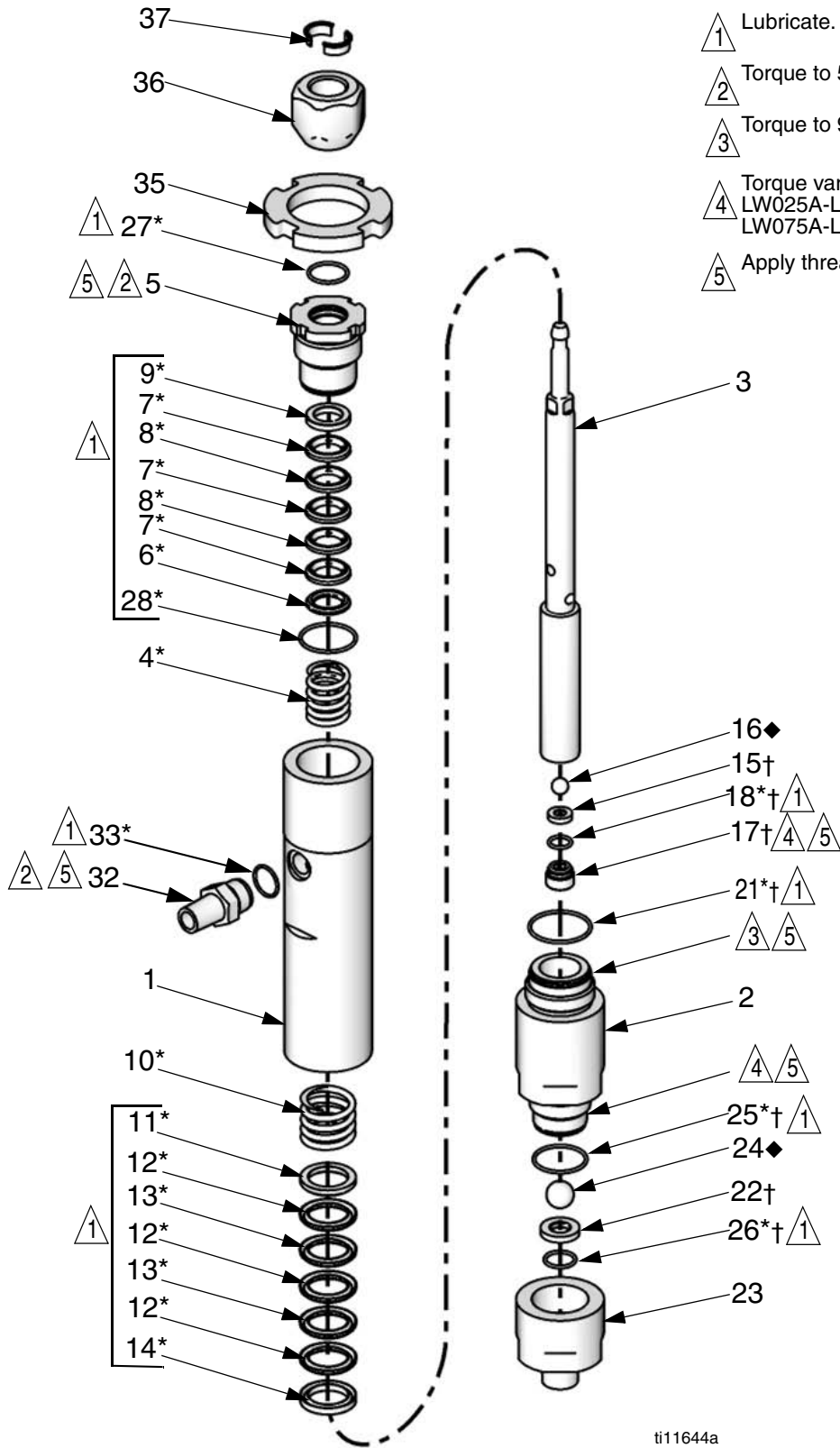
FIG. 7. Replace intake ball and seat.

15. Keep upright to screw the housing (23) into the lower cylinder (2) hand tight, so the seat remains firmly in place. Then clamp the cylinder in a vice and torque as specified in the following table.

| Displacement Pump | Torque |
|-------------------|---------------------------|
| LW025A–LW050A | 58-62 ft-lb (78-84 N•m) |
| LW075A–LW150A | 78-82 ft-lb (105-111 N•m) |

16. Torque wet cup (5) to 58-62 ft-lb (78-84 N•m).

Parts



- △1 Lubricate.
- △2 Torque to 58-62 ft-lb (78-84 N•m)
- △3 Torque to 95-105 ft-lb (128-142 N•m)
- △4 Torque varies by lower size.
LW025A-LW050A: 58-62 ft-lb (78-84 N•m)
LW075A-LW150A: 78-82 ft-lb (105-111 N•m)
- △5 Apply thread lubricant.

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| Ref. | Description | Part | Qty. | |
|------|---|--------|------|--------|
| 1 | CYLINDER KIT, upper; includes 21, 28, 32, and 33 (qty. 1) | | 1 | |
| | | LW025A | | 24A813 |
| | | LW050A | | 24A814 |
| | | LW075A | | 24A815 |
| | | LW100A | | 24A816 |
| | | LW125A | | 24A817 |
| | LW150A | 24A818 | | |
| 2 | CYLINDER KIT, lower; includes 21 and 25 | | 1 | |
| | | LW025A | | 24A822 |
| | | LW050A | | 24A823 |
| | | LW075A | | 24A824 |
| | | LW100A | | 24A825 |
| | | LW125A | | 24A826 |
| | LW150A | 24A827 | | |
| 3 | PISTON/ROD, assembly; includes 15-18, 36, and 37 (qty. 1) | | 1 | |
| | | LW025A | | 24A643 |
| | | LW050A | | 24A644 |
| | | LW075A | | 24A645 |
| | | LW100A | | 24A646 |
| | | LW125A | | 24A647 |
| | LW150A | 24A648 | | |
| 4* | SPRING, throat | ----- | 1 | |
| 5 | WET CUP; includes 27 and 28 (qty. 1 each) | | 1 | |
| | | LW025A | | 24A807 |
| | | LW050A | | 24A808 |
| | | LW075A | | 24A809 |
| | | LW100A | | 24A810 |
| | | LW125A | | 24A811 |
| | LW150A | 24A812 | | |
| 6* | GLAND, male, throat | ----- | 1 | |
| 7* | PACKING, throat, UHMWPE | ----- | 3 | |
| 8* | PACKING, throat, PTFE | ----- | 2 | |
| 9* | GLAND, female, throat | ----- | 1 | |
| 10* | SPRING, piston | ----- | 1 | |
| 11* | GLAND, male, piston | ----- | 1 | |
| 12* | PACKING, piston, UHMWPE | ----- | 3 | |
| 13* | PACKING, piston, PTFE | ----- | 2 | |
| 14* | GLAND, female, piston | ----- | 1 | |
| 15† | SEAT, piston valve, tungsten carbide | ----- | 1 | |
| 16◆ | BALL, piston valve, stainless steel | ----- | 1 | |
| 17† | NUT, flow through | ----- | 1 | |
| 18*† | O-RING, piston | ----- | 1 | |

| Ref. | Description | Part | Qty. | |
|------|--|---------------|------|--------|
| 21*† | O-RING, lower cylinder | ----- | 1 | |
| 22† | SEAT, intake valve, tungsten carbide | ----- | 1 | |
| 23 | INTAKE VALVE KIT; includes 26 | | 1 | |
| | | LW025A | | 24A834 |
| | | LW050A | | 24A835 |
| | | LW075A | | 24A836 |
| | | LW100A | | 24A837 |
| | | LW125A | | 24A838 |
| | LW150A | 24A839 | | |
| 24◆ | BALL, intake valve, stainless steel | ----- | 1 | |
| 25*† | O-RING, lower cylinder | ----- | 2 | |
| 26*† | O-RING, intake valve | ----- | 1 | |
| 27* | O-RING, wet cup; package of 10 | | 1 | |
| | | LW025A | | 24A630 |
| | | LW050A-LW075A | | 24A631 |
| | | LW100A | | 24A632 |
| | LW125A-LW150A | 24A633 | | |
| 28* | O-RING, wet cup | ----- | 1 | |
| 32 | FITTING, outlet, 3/8-18 npt X 3/4-16 unf; includes 33 (qty. 1) | | 1 | |
| | | LW025A-LW100A | | 24A840 |
| | | LW125A | | 24A841 |
| | | LW150A | | 24A842 |
| 33* | O-RING, outlet; package of 10 | | 1 | |
| | | LW025A-LW100A | | 24E457 |
| | | LW125A | | 24E458 |
| | LW150A | 24E459 | | |
| 35 | JAM NUT | | 1 | |
| | | LW025A | | 24A634 |
| | | LW050A | | 24A635 |
| | | LW075A | | 24A636 |
| | | LW100A | | 24A637 |
| | | LW125A | | 24A638 |
| | LW150A | 24A639 | | |
| 36 | NUT, coupling | | 1 | |
| | | LW025A | | 15M758 |
| | LW050A-LW150A | 15T311 | | |
| 37 | COLLAR, coupling; pkg. of 10 | | 1 | |
| | | LW025A | | 24A618 |
| | | LW050A-LW150A | | 24A619 |

----- Not sold separately.

* Included in Seal Repair Kit. See page 11.

† Included in Seat Repair Kit. Stainless steel seats also are available. See page 11.

◆ Included in Check Ball Kit. Tungsten carbide check balls also are available. See page 11.

Repair Kits

| Kit Description | LW025A | LW050A | LW075A | LW100A | LW125A | LW150A |
|--|--------|--------|--------|--------|--------|--------|
| * Seal Repair Kit Throat v-packings (7* and 8*) and glands (6* and 9*), piston v-packings (12* and 13*) and glands (11* and 14*), o-rings (18*, 21*, 25*, 26*, 27*, 28*, and 33*), and springs (4*and 10*) | 24A251 | 24A252 | 24A253 | 24A254 | 24A255 | 24A256 |
| † Seat Repair Kit Seats (15† and 22†), o-rings (18†, 21†, 25†, and 26†), and flow-through nut (17†) | | | | | | |
| Tungsten Carbide (Standard) | 24A781 | 24A782 | 24A783 | 24A784 | 24A785 | 24A786 |
| Stainless Steel | 24A794 | 24A795 | 24A796 | 24A797 | 24A798 | 24A799 |
| ◆ Check Ball Kit Piston ball (16◆) and intake ball (24◆) | | | | | | |
| Stainless Steel (Standard) | 24A261 | 24A261 | 24A263 | 24A264 | 24A264 | 24A264 |
| Tungsten Carbide | 24A667 | 24A667 | 24A669 | 24A670 | 24A670 | 24A670 |
| Wet-Cup O-Ring (27) Package of 10 | 24A630 | 24A631 | 24A631 | 24A632 | 24A633 | 24A633 |
| Coupling Collars (37) Package of 10 | 24A618 | 24A619 | 24A619 | 24A619 | 24A619 | 24A619 |

Optional Kits

| Kit Description | LW025A | LW050A | LW075A | LW100A | LW125A | LW150A |
|--|--------|--------|--------|--------|--------|--------|
| Reinforced PTFE V-Packing Kit** Reinforced PTFE throat packings and glands, reinforced PTFE piston packings and glands, o-rings, and springs | 24J852 | 24J853 | 24J854 | 24J855 | 24J856 | 24J857 |

** Use with materials that cause chemical compatibility concerns with UHMWPE, such as acid catalyst materials.

Dimensions

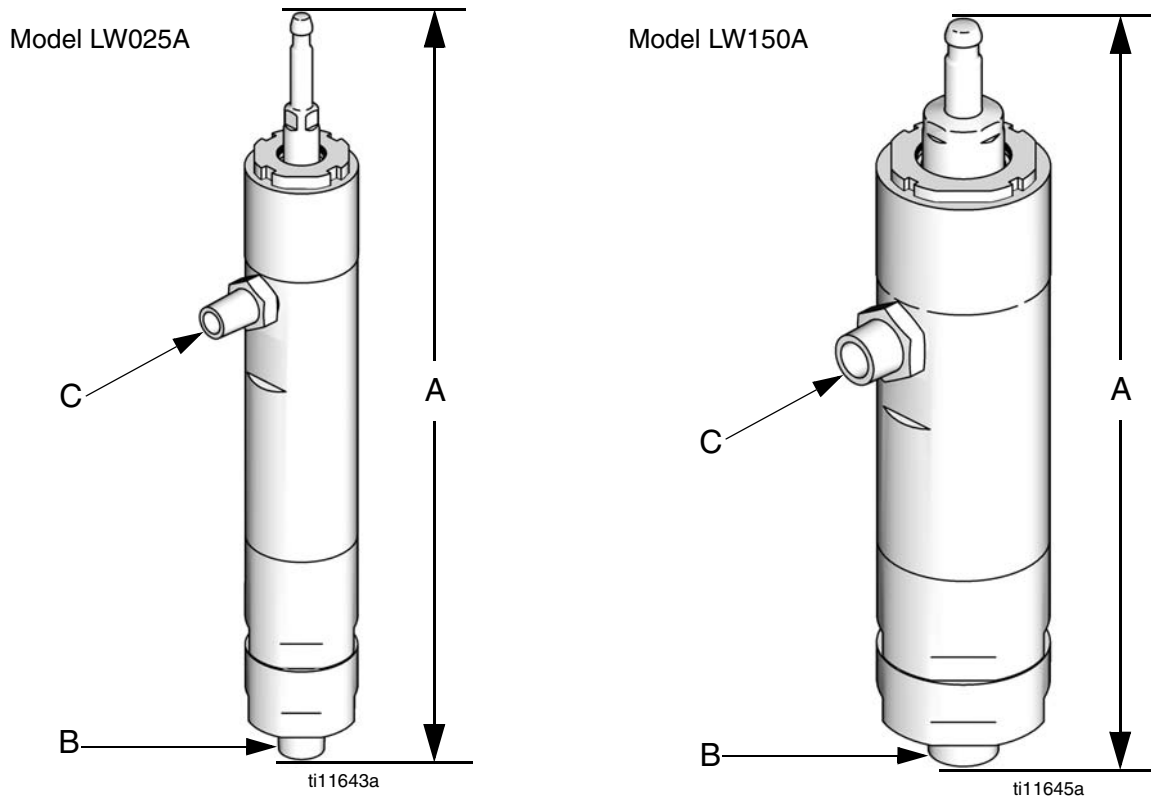


FIG. 8

Displacement Pump Dimensions

| Displacement Pump | A (Height*) in. (mm) | B (Inlet Size) in. npt | C (Outlet Size) in. npt | Weight lbs (kg) |
|-------------------|-------------------------|---------------------------|----------------------------|--------------------|
| LW025A | 14.9 (378) | 1/2 in. | 3/8 in. | 9.0 (4.1) |
| LW050A | 14.8 (376) | 3/4 in. | 3/8 in. | 13.2 (6) |
| LW075A | 15.4 (391) | 3/4 in. | 3/8 in. | 15.3 (6.9) |
| LW100A | 15.4 (391) | 3/4 in. | 3/8 in. | 18.6 (8.4) |
| LW125A | 15.6 (396) | 1 in. | 1/2 in. | 21.2 (9.6) |
| LW150A | 15.6 (396) | 1 in. | 3/4 in. | 22.0 (10) |

* Height measured at mid-stroke.

Technical Data

Maximum fluid working pressure

| | |
|------------------|------------------------------|
| LW025A | 3000 psi (20.7 MPa, 207 bar) |
| LW050A | 4500 psi (33.1 MPa, 310 bar) |
| LW075A | 4800 psi (33.1 MPa, 331 bar) |
| LW100A | 3600 psi (24.8 MPa, 248 bar) |
| LW125A | 2900 psi (20.0 MPa, 200 bar) |
| LW150A | 2400 psi (16.5 MPa, 165 bar) |

Maximum operating temperature 160°F (71°C)

Fluid inlet size

| | |
|--------------------------|-------------|
| LW025A | 1/2 in. npt |
| LW050A– LW100A | 3/4 in. npt |
| LW125A–LW150A | 1 in. npt |

Fluid outlet size

| | |
|-------------------------|-------------|
| LW025A–LW100A | 3/8 in. npt |
| LW125A | 1/2 in. npt |
| LW150A | 3/4 in. npt |

Stroke length 2.5 in.

Wetted parts stainless steel, tungsten carbide, UHMWPE, PTFE

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.

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.*

Original instructions. *This manual contains English. MM 312792*

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Revised 06/2011