

Vertical Hydraulic Driver

3A0021C
EN

For use with a vertically mounted proportioning pump. For professional use only.

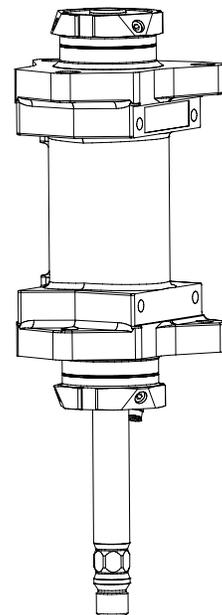
24D340 - Vertical Hydraulic Driver

1200 psi (8.2 MPa, 82.7 bar) Maximum Working Pressure



Important Safety Instructions

Read all warnings and instructions in this manual and all supplied manuals. Save all instructions.



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Contents

- Warnings 3
- Repair 4
- Parts 7
- Technical Data 8
- Graco Standard Warranty 10
- Graco Information 10

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. When these symbols appear in the body of this manual, refer back to these Warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

|  WARNING | |
|--|--|
|  | <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 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. • 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. |
|  | <p>BURN HAZARD</p> <p>Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> • Do not touch hot fluid or 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, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer. |

Repair



NOTICE

Recommended Hydraulic Oil

Use Graco-approved Hydraulic Oil, Part No. 169236 (5 gal) or 207428 (1 gal)) or a premium, ISO grade 46 petroleum-based hydraulic oil containing rust and oxidation inhibitors and anti-wear agents.

Before using any other type of oil in this motor, contact your Graco distributor. Unauthorized use of lesser grade oil or substitutes may void the warranty.

Hydraulic Oil Working Temperature

The maximum hydraulic oil operating temperature is 160 °F (71 °C). The motor seals will wear faster and leakage may occur if the pump is operated at higher oil temperatures.

If the hydraulic oil temperature approaches 160 °F (71 °C), check the hydraulic fluid supply cooling system, filters, etc. and clean or repair as needed.

Keep the hydraulic system clean

To reduce the risk of damaging the hydraulic driver, verify that the hydraulic power supply fluid lines and reservoir are clean and free from contaminants.

Carefully follow the manufacturer's recommendations on reservoir and filter cleaning, flushing, and periodic changes of hydraulic fluid.

Always plug the hydraulic inlets, outlets and lines when disconnecting them to avoid introducing dirt and other contaminants into the system.

Required Tools

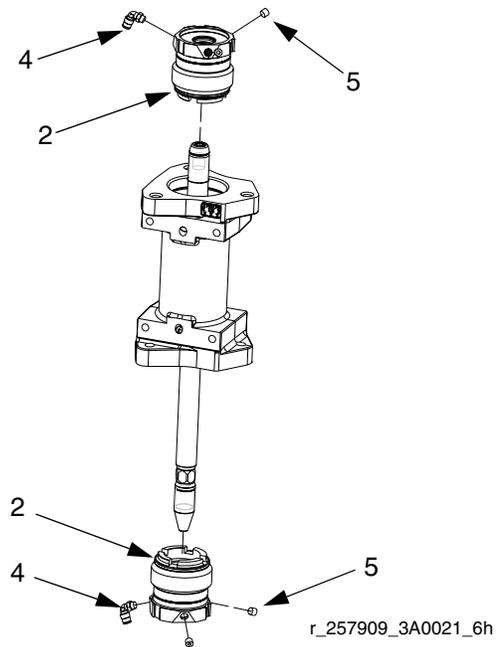
- Vise with soft jaws
- Set of adjustable wrenches
- O-ring pick
- 1/2 in. hex key
- Rubber mallet
- 18 in. pipe wrench
- Torque wrench
- Anti-seize lubricant

Disassembly

1. Relieve pressure. See system manual for pressure relief instructions.
2. Remove vertical hydraulic driver from system. See system manual for instructions.
3. Use two people to lift and clamp the cylinder (1) in a vise.
4. Remove elbow fittings (4) and pipe plugs (5) from seal housings (2).

NOTICE

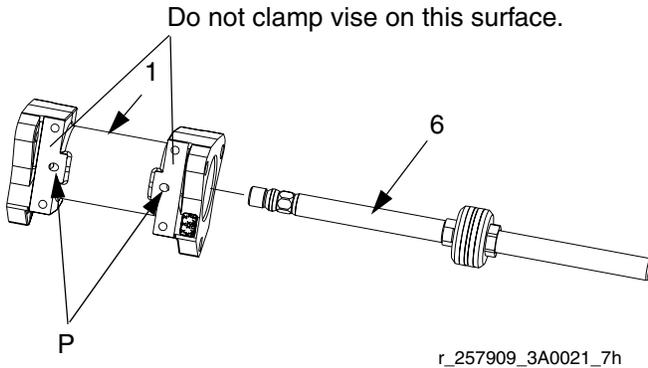
To prevent damage to the driver, avoid getting dust or dirt in the driver during service.



5. Place a waste container below the seal housing (2) to drain any residual hydraulic oil from inside the cylinder (1). Use a 3 1/4 in. wrench to remove both seal housings (2) from cylinder.
6. Remove o-rings (2a) from each seal housing (2).

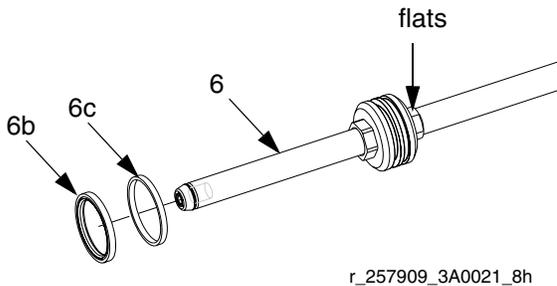
| | | | | | | | |
|---|---|--|--|--|--|--|--|
|  |  | | | | | | |
| <p>Residual hydraulic oil in the cylinder can spray out of ports during removal of the piston assembly.</p> | | | | | | | |

- Place a cloth over the hydraulic ports (P). Use a rubber mallet to tap piston rod assembly (6) out of cylinder (1).



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| NOTICE |
| <p>To avoid damaging the piston rod, do not clamp piston rod surface.</p> |

- Clamp piston rod flats (6) in a vise to prevent damage to the piston rod.

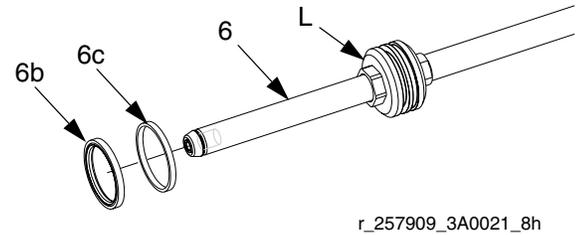


- Use o-ring pick to remove sealing ring and rubber energizing ring of bidirectional seal (6b). Remove bearing (6c).
- Thoroughly clean all metal parts in a compatible solvent and inspect for wear or damage. Replace as necessary.

Assembly

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| NOTICE |
| <p>To avoid damaging the piston rod, do not clamp piston rod surface.</p> |

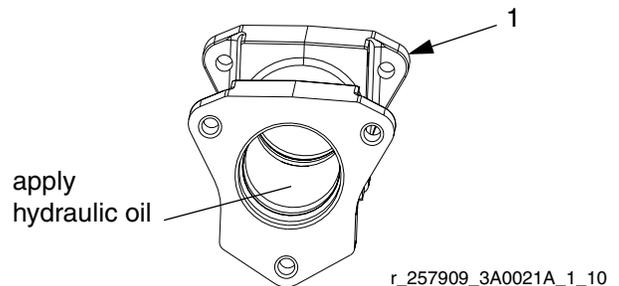
- Clamp piston rod (6) flats or hex in a vise to prevent damage to the piston rod.
- Lubricate piston lead-in (L) of piston with hydraulic oil to ensure rubber energizing ring of bidirectional seal (6b) seats properly. Install one edge of rubber energizing ring in deep piston groove and press the rest of the rubber energizing ring down while preventing the ring from twisting.



- Install sealing ring of bidirectional seal (6b) over rubber energizing ring and install bearing (6c).

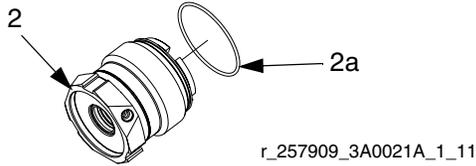
| |
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| NOTICE |
| <p>Only expand the sealing ring of bidirectional seal (6b) and bearing (6c) as much as needed to fit over the piston. Damage will occur when the sealing ring or bearing are opened wider than necessary.</p> |

- Remove piston assembly (6) from vise and apply grease to seals.
- Apply a light amount of hydraulic oil on the inside of the cylinder (1) to allow easy installation of the piston assembly (6). Continue to next step if the cylinder hasn't been flushed and there is residual hydraulic oil.



Repair

6. Install o-rings (2a) on seal housings (2). Lubricate o-rings (2a) and seals inside of each seal housing with hydraulic oil.

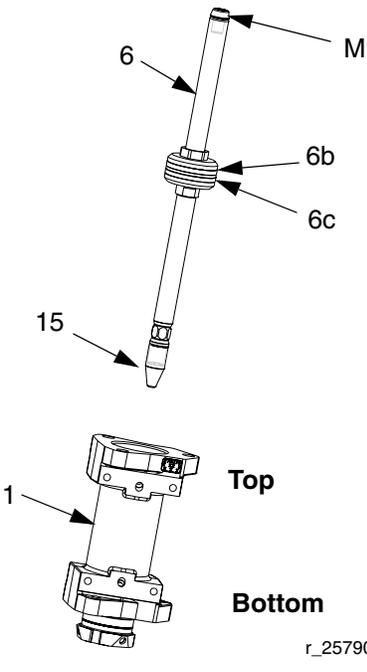


7. Install one assembled seal housing (2) on cylinder (1). Fully tighten with a wrench.

NOTICE

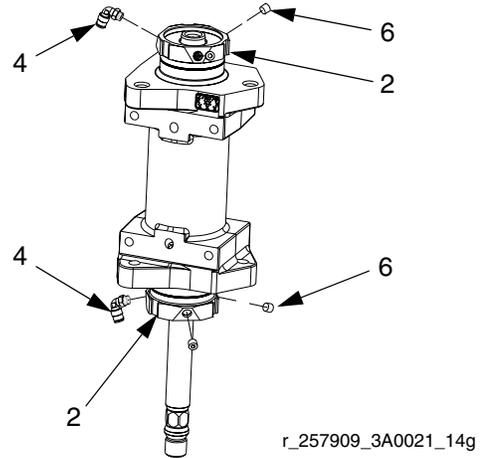
Install seal installation tool (15) on the piston rod assembly to prevent damage to seal housing seals.

8. Install the seal installation tool (15) from a repair kit on the bottom of the piston rod assembly (6). Lubricate the seal installation tool (15) with hydraulic oil.
9. Install the bearing end of the piston rod assembly (6) through the top of the cylinder (1) so that the female end of the piston rod exits the top of the cylinder. Use rubber mallet to tap piston rod assembly until the piston is approximately at the middle of the cylinder.



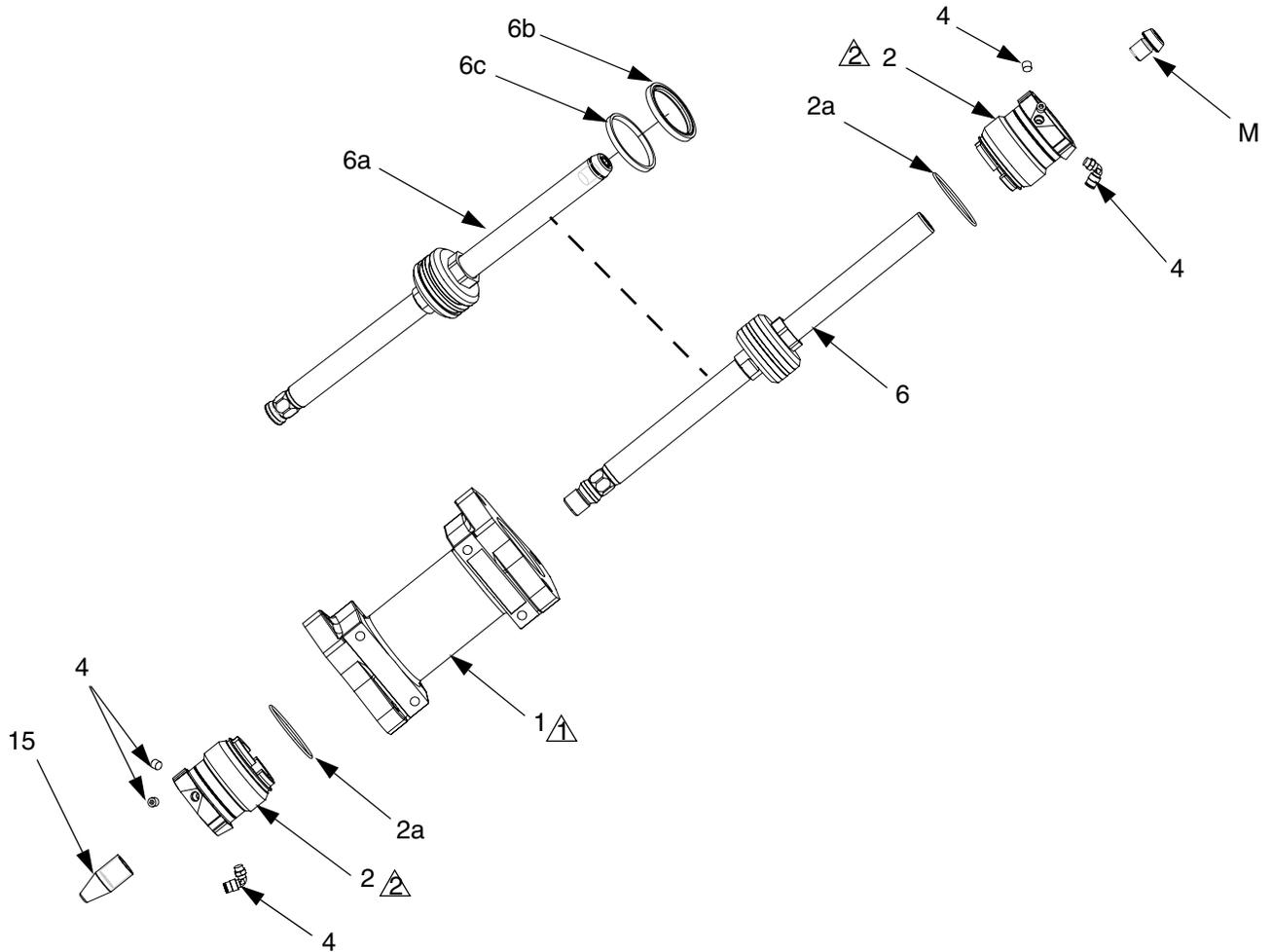
10. Remove rod installation tool (15) after it has exited the bottom seal housing (2). Install magnet housing (M; not included).

11. Install second seal housing (2) on cylinder. Fully tighten with a wrench. Remove installation tool (15).



12. Apply pipe sealant on elbow fittings (4) and install in each seal housing (2).

Parts



Apply a light coating of lubricant to seals and surfaces.

Fully tighten with a wrench.

| Ref. | Part | Description | Qty. |
|------|--------|--|------|
| 1‡ | 24D361 | CYLINDER, hydraulic, iron | 1 |
| 2‡ | 24D339 | HOUSING, rod seals, vertical driver, assembly | 2 |
| 2a | 113570 | O-RING, fluoroelastomer | 1 |
| 4 | 100839 | FITTING, elbow, street | 2 |
| 5 | 100139 | PLUG, pipe | 4 |
| 6 | 24D341 | ROD, piston, 4-3/4 in., assembly'; includes 6a-6c | 1 |
| 6a | | ROD, piston, hydraulic | 1 |
| 6b◆ | | SEAL, bidirectional; includes seal ring and rubber energizing ring | 1 |
| 6c◆ | | BEARING, wear, piston | 1 |
| 15◆ | | TOOL, seal installation | 1 |

◆ Parts included in Piston Seal Kit 24D360 (purchase separately).

‡ Includes Seal Installation Tool (15).

✖ Magnet housing (M), part no. 24D339 (purchase separately).

Technical Data

| | |
|--|-------------------------------------|
| Maximum hydraulic working pressure | 1200 psi (8.3 MPa, 83 bar) |
| Maximum fluid temperature | 160°F (71°C) |
| Maximum hydraulic fluid flow | 10.3 gpm (38.9 liter/min) |
| Maximum cycle rate | 40 cycles per minute |
| Hydraulic fluid consumption | 1 gal. (3.8 liters) per 3.9 cycles |
| Effective piston area | 6.1 sq. in. (39.2 cm ²) |
| Piston rod diameter | 1.125 in (28.6 mm) |
| Stroke length | 4.75 in. (120.65 mm) |
| Thrust at 1200 psi (8.3 MPa, 83 bar) | 7300 lbf (32,472 N) |
| Weight | approx. 42 lb. (19.1 kg) |

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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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.

Toll Free: 1-800-746-1334 **Fax:** 330-966-3006

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For patent information, see www.graco.com/patents.

Original instructions. This manual contains English. MM 3A0021

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