

3:1 Ratio Bulldog® Transfer Pump

306642F

- For use in lubrication applications only -

Model: 205028

With inductor, guide bars and release bar

Model: 205148, Series E

Without inductor, guide bars and release bar



300 psi (2.1 MPa, 21 bar) Maximum Working Pressure



100 psi (0.7 MPa, 7 bar) Maximum Air Input Pressure

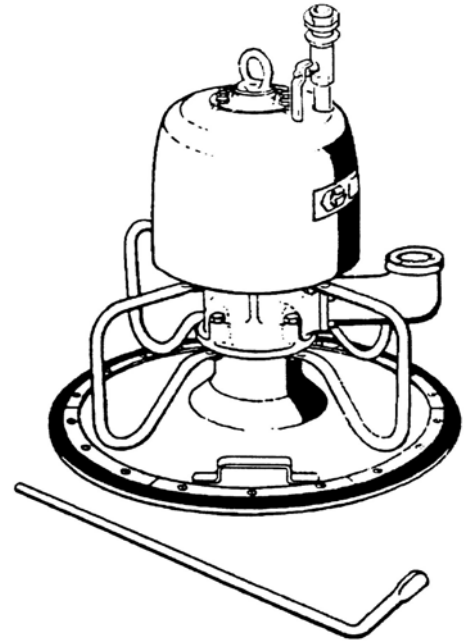


Important Safety Instructions

Read all warnings and instructions in this manual.
Save these instructions.

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|
|  |  | | | | | |
| <p>Use with lubrication applications only! This pump is designed to be used for pumping non-corrosive and non-abrasive lubricants and greases only. Any other use of the pump can cause unsafe operating conditions and result in component rupture, fire or explosion, which can cause serious bodily injury.</p> | | | | | | |

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|  |  | | | | | |
| <p>Priming Piston Hazard This pump has a priming piston which extends below the foot valve during operation. This piston could pinch or amputate your fingers or hands as it moves up, into the cylinder. To reduce the risk of injury, keep your fingers and hands and all tools away from the priming piston during operation and whenever the air and fluid pressure in the pump is not fully relieved.</p> | | | | | | |









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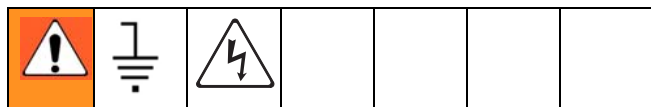
Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard 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>When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes 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 cigarettes and portable electric lamps. • Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline. • Do not plug or unplug power cords or turn lights on or off when flammable fumes are present. • Ground all equipment in the work area. • Use only grounded hoses. • 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>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. |
|  | <p>ELECTRIC SHOCK HAZARD</p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment. • Connect only to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations. |
|  | <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>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. |

Installation

Grounding



In a low pressure air spray system, static sparking is generally not a problem; however some simple precautions should be taken to reduce the risk. Check your local code for detailed grounding instructions for your area and type of equipment. Ground all equipment.

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:* (FIG. 1) Use ground wire and clamp (supplied). Loosen grounding lug locknut (a) and washer (b). Insert one end of ground wire (c) into the slot in the lug (d). Tighten locknut securely. Connect other end of wire to a true earth ground.

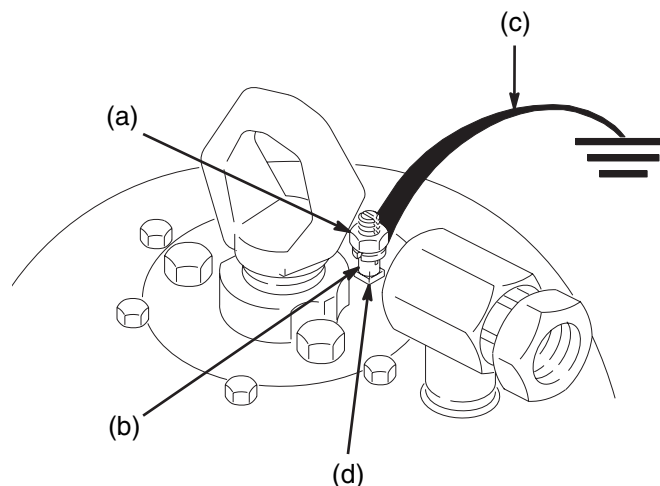


FIG. 1

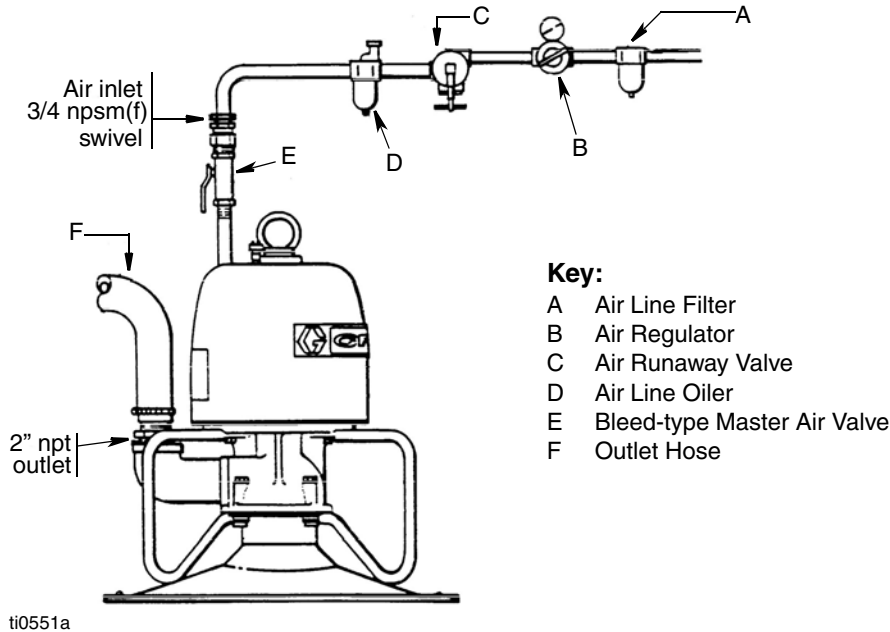
- *Air Compressor:* according to manufacturer's recommendations.
- *Object being sprayed:* according to local code.
- *Fluid supply container:* according to local code.
- *All solvent pails used when flushing:* according to local code.

Only use conductive, metal pails. Do not place the pail on a non-conductive surface such as paper or cardboard, which interrupts the grounding continuity.

- *To maintain grounding continuity when flushing or relieving pressure,* always hold metal part of the dispenser firmly to the side of a grounded metal pail, then squeeze trigger.

Air and Transfer Lines (FIG. 2)

The typical installation shown in FIG. 2 is only provided as a guide for selecting and installing required and optional accessories. Be sure all air and fluid accessories are properly sized for your system and are compatible with the fluid you are pumping. Contact your Graco representative for assistance in designing a transfer system to suit your specific needs.



Key:

- A Air Line Filter
- B Air Regulator
- C Air Runaway Valve
- D Air Line Oiler
- E Bleed-type Master Air Valve
- F Outlet Hose

FIG. 2

- 3/4 in. ID **Air Supply Line**
- 3/4 npt(f) **Air Inlet Swivel**
- On the **Air Supply Line** install:
 - **Air Filter (A)** to remove harmful dirt and moisture from the compressed air supply
 - **Air Regulator (B)** to control pump speed
 - **Air Runaway Valve (C)** to stop the pump automatically if the supply container is empty.
 - **Air Line Oiler (D)** for automatic air motor lubrication
- **Bleed-type master air valve (E):** required in your system to relieve air trapped between it and the air motor when the valve is closed.

- Install **Transfer Hose (F)** to the 2 in. npt(f) pump outlet and tighten securely.



For air requirements and additional Technical Data see page 10.

Install the Pump

1. Remove cover from a full, open head drum of lubricant.
2. To help eliminate air pockets, which is essential for good priming, smooth surface of the lubricant with a straight edge until it is level.
3. Lift pump from the inductor plate and wipe bottom of plate clean.
4. Press inductor plate down onto the lubricant. Rock plate back and forth to firmly seat it and to exhaust air trapped under the plate. Continue with this motion until some lubricant is forced up into the neck of the inductor plate.
5. Place pump on the inductor plate.

| | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| | | | | | | |
| <p>Never operate this pump with the bleed-type master air valve (E) (supplied with the air motor) removed. When closed, this valve relieves air trapped between it and the air motor. Trapped air can cause the pump to cycle unexpectedly and cause serious bodily injury from moving parts.</p> | | | | | | |

Operation

Pressure Relief Procedure



The system pressure must be manually relieved to prevent the system from starting accidentally, which could cause moving parts to pinch or amputate your fingers. To reduce the risk for injury, always follow this procedure whenever you:

- are instructed to relieve the pressure
- check or service any part of the pump or system.

1. Shut off main air supply.
2. Close the air regulator and bleed-type master air valve.
3. Loosen a fluid fitting near the pump outlet to relieve fluid pressure.

Startup

Reference numbers and letters in parentheses in the text refer to the callouts in the FIG. 2.

1. Turn on the main air supply.
2. Open Air Valve (E) and slowly open the Air Regulator (B) until the pump is running smoothly. Always use the lowest pressure necessary to deliver lubricant at the desired quantity.

CAUTION

Do not let the pump run dry. A dry pump quickly speeds up and may damage itself. If the pump is running erratically or speeds up suddenly, *relieve pump pressure* following Pressure Relief Procedure (page 5) and change the lubricant drum. Use an Air Runaway Valve (D) to shut off the pump automatically when the drum is empty.

3. Shut off the pump and *relieve pressure*, page 5, when the pump is not in use.

Clearing Obstructions



KEEP YOUR FINGERS AND HANDS AWAY FROM THE PRIMING PISTON! The priming piston, located at the pump intake, could pinch or amputate your fingers as it moves into the intake cylinder.

1. Always *relieve pressure*, page 5, before attempting to clear any obstructions.
2. Disconnect Air Hose. Grip 1-3/4 inch hex in the center of the piston to unscrew it.

Removing Inductor Plate from Drum

Reference numbers and letters in parentheses in the text refer to the callouts in FIG. 3.

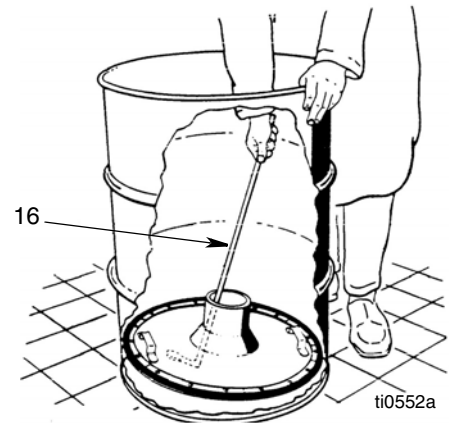


FIG. 3

1. *Relieve pressure*, page 5.
2. Lift pump off inductor plate.
3. Insert the release bar (15) into the neck of the plate and position it so that by applying leverage, the vacuum seal which formed beneath the plate, is broken.
4. Remove the plate.

Troubleshooting

| Problem | Cause | Solution |
|----------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pump doesn't operate | Insufficient air supply | Be sure adequate volume of air is supplied to pump. See Technical Data on back cover. Check for restriction in air line or closed valves or regulators. |
| | Check valve plate held closed by obstruction | Follow the Pressure Relief Procedure above. Remove pump from inductor plate and clean pump intake. |
| | Damaged air motor | See motor manual 307049, supplied. |
| Air motor operates but lubricant flow is low | Empty lubricant drum | Change drums. |
| | Insufficient air supply | Increase air pressure. Do not exceed 100 psi (.7 MPa, 7 bar) |
| Erratic pump operation | Worn, damaged or obstructed check valve plate | Follow the Pressure Relief Procedure, page 5. Remove pump from inductor plate and clean and/or repair intake. |
| Leakage from weep hole | Worn or damage throat packings | Replace v-packings and glands. See page 7. |

Repair

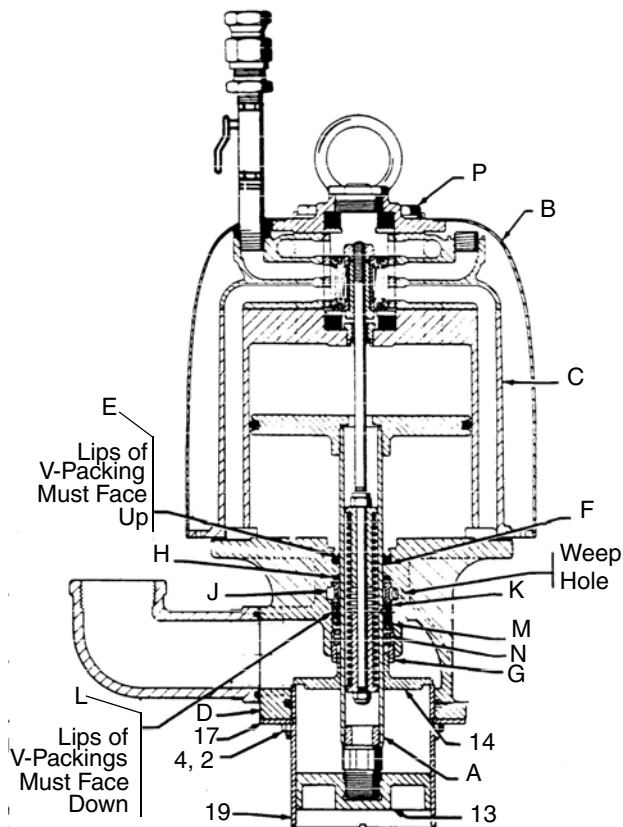
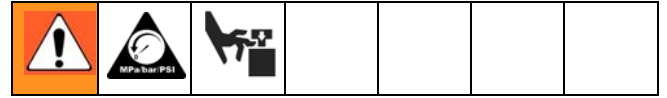


FIG. 4

Throat Packing Repair (FIG. 4)



- The throat packings are actually located in the base of the air motor, but function as the throat packings for the pump. To identify part numbers and order repair parts, refer to parts list page for air motor 208357 in instruction manual 307049, supplied.
- Reference numbers and letters in parentheses in the text refer to the callouts in FIG. 4 and Parts List page 9.

1. **Relieve pressure**, page 5.
2. Disconnect air hose and transfer hose. Remove air inlet fittings.
3. Remove pump from inductor plate (20).
4. Unscrew priming piston (13) from connecting tube (A). The priming piston has a 1-3/4 in. hex in the center.
5. Remove nuts and lock washers (4, 2) holding pump guides (12) and collars (17). Remove these parts.
6. Pull intake cylinder (19) straight down.
7. Remove screws (P) and air motor shield (B).
8. Remove screws and washers holding air motor cylinder (C) to base (D). Pull base straight off, being careful not to damage smooth surfaces of connecting tube and cylinder.
9. Inspect v-packing (E) in base. If it is worn or damaged, remove it. Grease new packing and carefully tuck it into base. Be sure washer (F) is in place in base.
10. Unscrew packing retainer (G) and remove the spring and packings.
11. Clean all parts thoroughly and inspect for wear or damage. Replace all packings and glands and other parts as necessary.
12. Grease all parts thoroughly with light, waterproof grease.

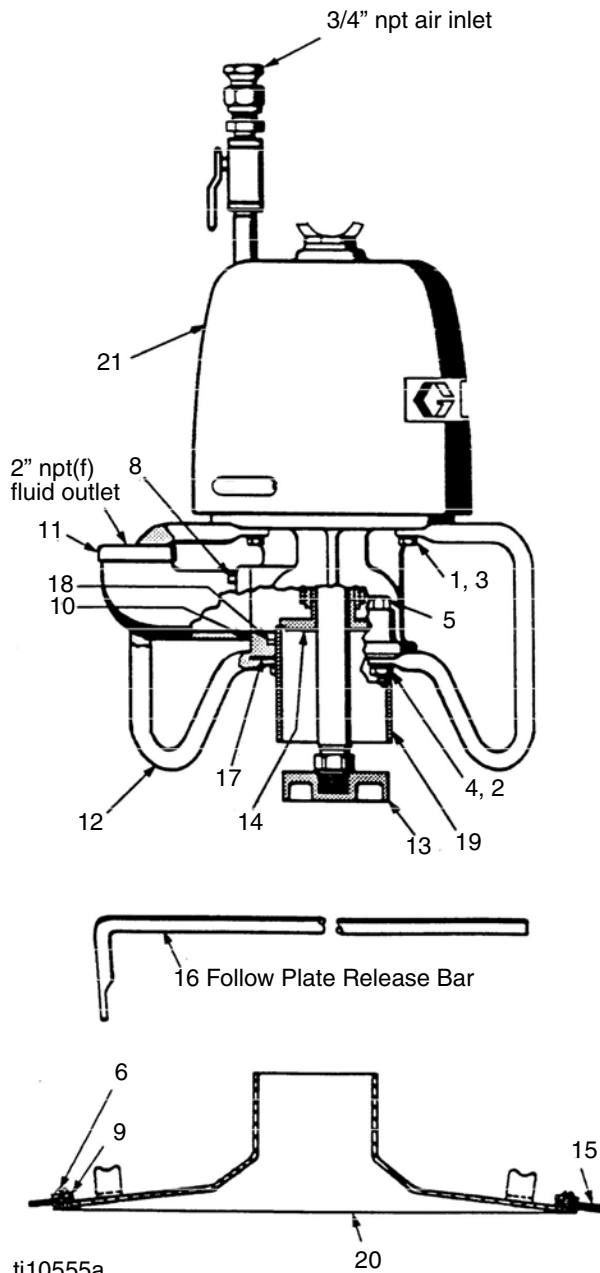
13. One at a time, install a washer (H), bearing (J), female gland (K), four leather v-packings (L) *with lips of the v-packings facing out of the base*, male gland (M), spring (N) and retainer (G).
14. Turn retainer in about 3 times.
15. Lubricate connecting tube (A) with light, waterproof grease.
16. Carefully push base onto tube and secure it to the cylinder with screws and washer. Then tighten packing retainer (G) snugly.
17. Inspect o-ring (18) in air motor base. Replace it if it is damaged. Grease new o-ring before installing it.
18. Install air motor shield and screws.
19. Install check valve plate (14), cylinder (19) collars (17), and pump guides (12). Secure with lock washers (2) and nuts (4) on screws (5).
20. Screw priming piston (13) onto connecting tube (A).

Pump Intake Repair (FIG. 4)



1. **Relieve pressure**, page 5.
2. Disconnect air hose from motor.
3. Remove pump from inductor plate.
4. Remove nuts and lock washers (4, 2) holding pump guides (12). Remove collars (17).
5. Pull cylinder (19) straight down.
6. Unscrews priming piston (13) from connecting tube (A). The priming piston has a 1-3/4 in. hex in the center.
7. Remove check valve plate (14).
8. Clean all parts thoroughly and inspect for wear or damage. Replace parts as necessary and reassemble.

Parts



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FIG. 5

Model 205148

Pump, 3:1 Bulldog

| Ref. No. | Part No. | Description | Qty. |
|----------|----------|-----------------------------------------|------|
| 2 | 100133 | LOCKWASHER, spring, 3/8" | 4 |
| 4 | 100340 | NUT, hex; 3/8-16 | 4 |
| 5 | 100454 | CAPSCREW, hex hd; 3/8-16x3" | 4 |
| 8 | 101864 | CAPSCREW, soc hd; 5/16-18 x 1" | 4 |
| 10 | 162841 | O-RING | 1 |
| 11 | 162842 | ADAPTER | 1 |
| 13 | 162844 | PLATE, priming shovel | 1 |
| 14 | 162846 | PLATE, check valve | 1 |
| 17 | 162933 | COLLAR, cylinder mounting | 2 |
| 18 | 162934* | O-RING | 1 |
| 19 | 162936 | CYLINDER, pump intake | 1 |
| 21 | 208357 | AIR MOTOR (see manual 307049 for parts) | 1 |

* Recommended "tool box" spare parts. Keep on hand.

Model 205028

Pump, 3:1 Bulldog with inductor

| Ref. No. | Part No. | Description | Qty. |
|----------|----------|-----------------------------------|------|
| 1 | 100057 | SCREW, hex hd cap; 5/16-18 x 3/4" | 4 |
| 3 | 100214 | LOCKWASHER, spring 5/16 | 4 |
| 6 | 100799 | SCREW, rd hd mach; 1/4-20 x 1/2" | 18 |
| 9 | 161288 | SEGMENT, full barrel, 400 lb | 6 |
| 12 | 162843 | GUIDE, pump | 4 |
| 15 | 162852* | WIPER, follow plate | 1 |
| 16 | 162853 | BAR, follow plate release | 1 |
| 20 | 205144 | PLATE, follow | 1 |

* Recommended "tool box" spare parts. Keep on hand.

Technical Data

| | |
|------------------------------------------|--------------------------------------------------------|
| Fluid Pressure Ratio | 3:1 |
| Air Pressure Range | 40 - 100 psi (0.28 - 0.7 MPa, 2.8 - 7 bar) |
| Maximum Working Fluid Pressure | 300 psi (2.1 MPa, 21 bar) |
| Maximum Recommended Pump Speed | 60 cycles/minute |
| Air Motor Effective Diameter | 7 in. (178 mm) |
| Stroke | 4-3/4 in. (120 mm) |
| Air Inlet Size | 3/4 npsm(f) swivel |
| Fluid Outlet Size | 2 in. npt(f) |
| Fluid Inlet | Priming Piston |
| Height | 28.25 in. (718 mm) |
| Inductor Diameter | 22.5 in. (570 mm) |
| Weight | 121 lb (53 Kg) approximate |
| Wetted Parts | Aluminum, steel, Buna-N, Leather, Brass, neoprene/duck |

Graco Warranty and Disclaimers

Warranty

Graco warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment proven 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, 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 incompatibility with Graco equipment of structures, accessories, equipment or materials not supplied by Graco, or 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 claim. 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.

Disclaimers and Limitations

The terms of this warranty constitute purchaser's sole and exclusive remedy and are in lieu of any other warranties (express or implied), including warranty of merchantability or warranty of fitness for a particular purpose, and of any non-contractual liabilities, including product liabilities, based on negligence or strict liability. Every form of liability for direct, special or consequential damages or loss is expressly excluded and denied. In no case shall Graco's liability exceed the amount of the purchase price. Any action for breach of warranty must be brought within two (2) years of the date of sale.

Equipment Not Covered by Graco Warranty

Graco makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose, with respect to 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.

*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.*

This manual contains English. MM 306642

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