

Instructions-Parts



Mongoose Chemical Metering Pump

3A4131B

EN

Electric metering pump for injecting chemicals at well sites. For professional use only.

Not approved for use in explosive environments or hazardous locations.

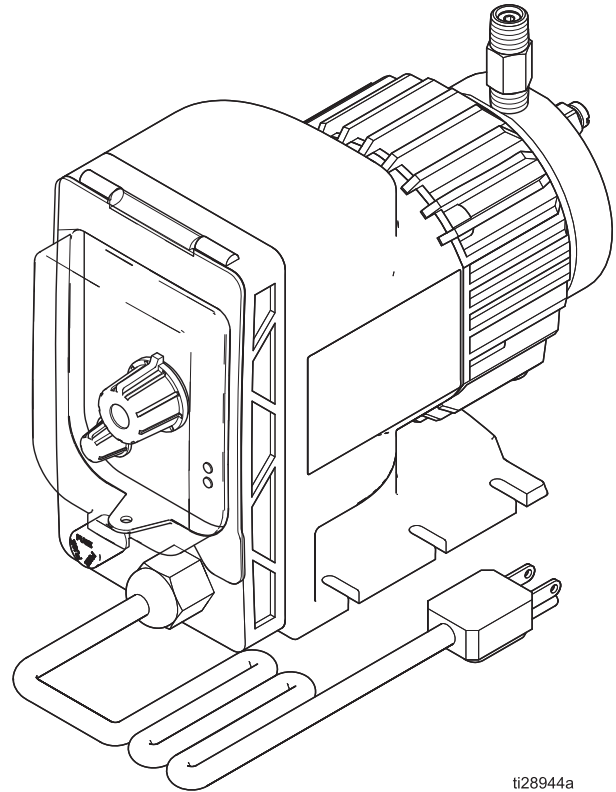
Model A21000

See page 2 for approvals.



Important Safety Instructions

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



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Contents

Warnings	3	Operation	8
Installation	5	Pressure Relief Procedure	8
Grounding	5	Flush the Equipment	8
Flush Before Using Equipment	5	Prime the Pump	8
Location Requirements	5	Adjust Feed Rate	9
Electrical Requirements	5	Adjust Stroke Length	9
Plumbing Requirements	5	Calculate Output	9
Mounting and Chemical Supply Connection	5	Troubleshooting	10
Component Identification	6	Repair	11
Typical Installation	7	Replacing the Diaphragm	11
		Replacing the Inlet Valve	11
		Replacing the Outlet Valve	11
		Parts	12
		Mongoose Metering Pump	12
		Technical Data	13
		Graco Standard Warranty	14

Approvals

RECOGNIZED
COMPONENT












Intertek
3008494

Conforms to UL STD 778
Certified to CAN/CSA C22.2 No. 108

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 symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h1 style="margin: 0;">WARNING</h1>	
 	<p>FIRE AND EXPLOSION HAZARD</p> <p>When flammable fluids are present in the work area 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. • Ground all equipment in the work area. • Keep work area free of debris, including rags and spilled or open containers of solvent. • Do not plug or unplug power cords or turn lights on or off when flammable fumes are present. • Use only grounded hoses. • Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
 	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power cord before servicing equipment. • Connect only to grounded electrical outlets. • Use only 3-wire extension cords. • Ensure ground prongs are intact on power and extension cords.
  	<p>PRESSURIZED EQUIPMENT HAZARD</p> <p>Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"> • Follow the Pressure Relief Procedure when you stop spraying/dispensing 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>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read Safety Data Sheet (SDS) 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.

WARNING



PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.



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 Safety Data Sheet (SDS) from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment regularly. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- 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.



Installation

Grounding



The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.

- Never remove ground wire from plug.

Pump: grounded through electrical cord.

Fluid lines: use only electrically conductive lines.

Fluid supply container: follow local code.

Flush Before Using Equipment

The equipment was tested with water. To avoid contaminating your fluid with water, flush the equipment with a compatible solvent before using the equipment. See **Flush the Equipment**, page 8.

Location Requirements

Select a mounting location convenient to both the chemical supply and a source of power for the pump.

NOTICE

Do not install the pump in a location where the ambient temperature exceeds 120° F (50° C). Higher temperatures will affect the output as well as the useful life of the pump.

Electrical Requirements

The Mongoose pump has a voltage regulated internal power supply capable of operating in the range of approximately 95 to 135 VAC and will draw 0.6 amp typically using .066 kw.

- Use a supply voltage of 100 to 120 VAC for best results. The 3-wire grounded plug must be used in a 3-wire wall plug.

Plumbing Requirements

The Mongoose pump uses carefully matched components to achieve a predictable metering output. This predictability can only be maintained if all fitting sizes remain unaltered.

NOTE: Inlet and outlet fittings are both 1/4 in. NPT.

All connections should be double checked to insure against leakage. If hazardous chemicals are being pumped, use shielding around outlet fluid lines.

NOTES:

- There is an approximate 2.5 psi capability lost for every 1 foot of vertical rise of the outlet fluid line to the injection point.
- **Do not** attempt to reduce tubing size; may reduce performance of unit.

Mounting and Chemical Supply Connection

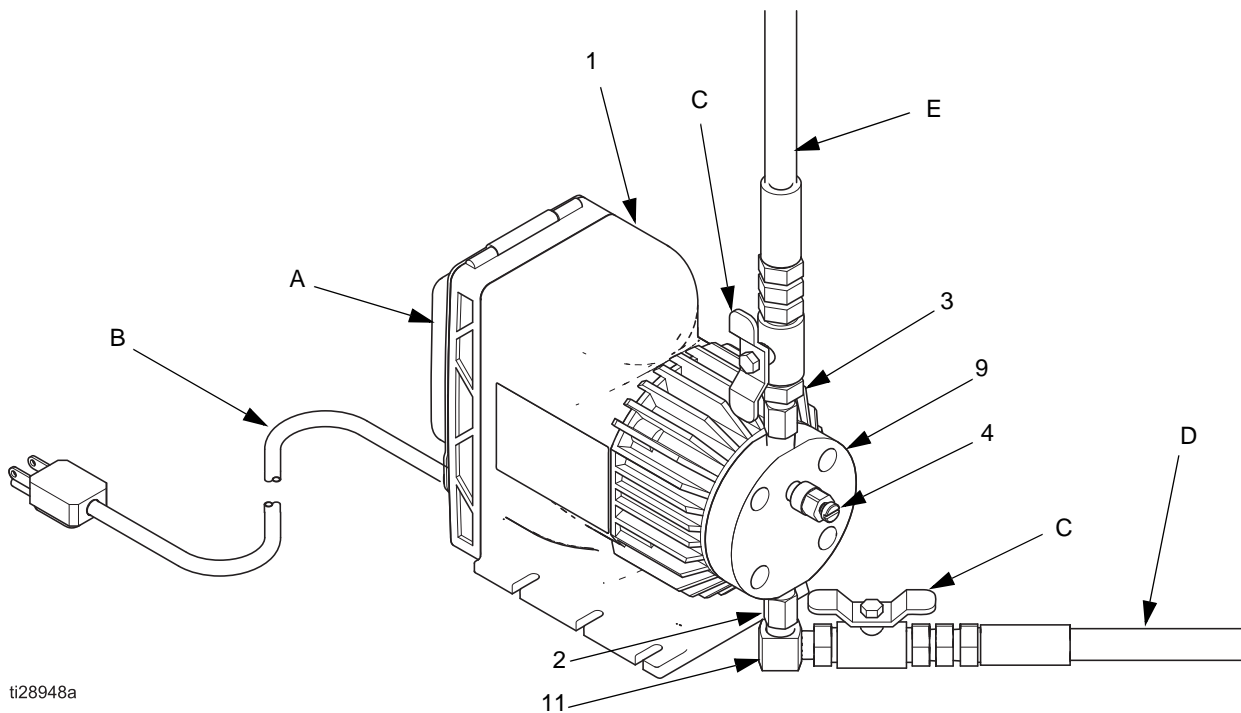


Failure of the diaphragm or a rupture in the fluid lines may cause exposure to toxic fumes or a loss of solution in the tank. Install a fluid line shutoff valve as close to the chemical tank as possible to minimize the loss of, and exposure to, potentially toxic chemicals.

The fluid end (9) of the pump, shown in FIG. 1, is set up to accommodate mounting of the pump next to the chemical supply container (G), shown in FIG. 2.

NOTE: The fluid end (9) must be kept in a vertical position for proper operation. The end can be removed and rotated 90° if needed to keep the inlet (2) and outlet (3) valves in a vertical position.

Component Identification



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FIG. 1: Component Identification

Components Supplied by Graco

The following components are supplied by Graco:

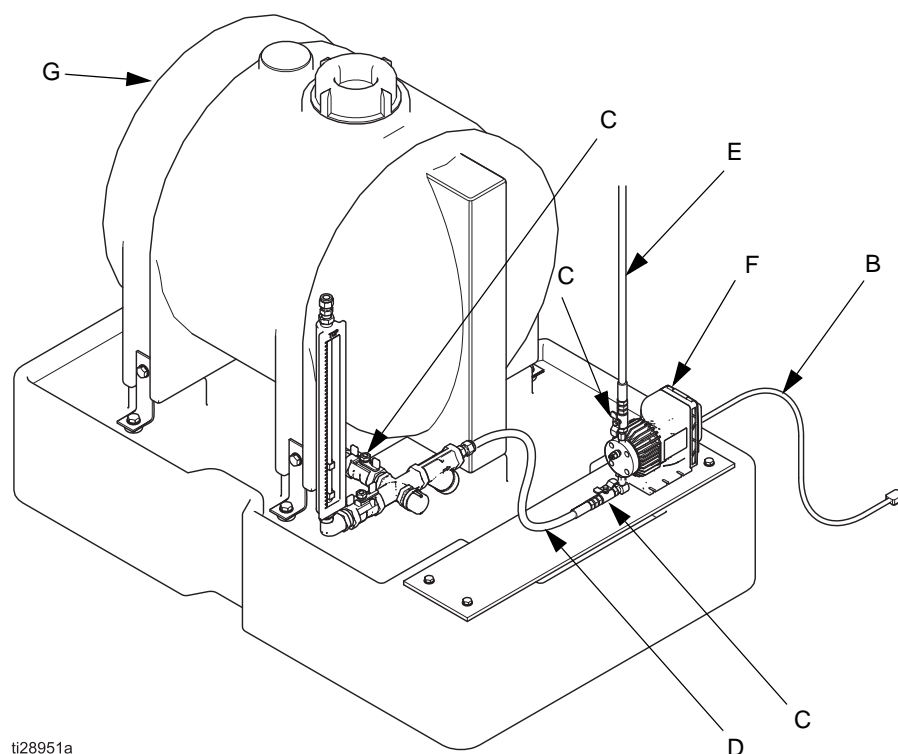
- 1 Motor Assembly
- 2 Inlet Valve
- 3 Outlet Valve
- 4 Bleed Valve
- 9 Fluid End
- 11 Elbow Fitting
- A Control Panel
- B Power Cord

Components Supplied by Customer

The following components are supplied by the customer:

- C Shutoff Valve (Inlet/Outlet)
- D Inlet Fluid Line
- E Outlet Fluid Line

Typical Installation



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FIG. 2: Typical Installation

FIG. 2 is an example of an installation with a Mongoose chemical metering pump. Your installation may differ from what is shown here. The Mongoose pump (F) and the attached power cord (B) are the only components in FIG. 2 supplied by Graco. All other components are supplied by customer.

Key:

- B Power Cord
- C Shutoff Valve (Inlet/Outlet)
- D Inlet Fluid Line
- E Outlet Fluid Line
- F Pump
- G Chemical Supply

Operation

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as splashing fluid, follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing the equipment.

NOTE: Always discharge fluid into an approved container or location.

1. Turn SPEED knob (H) to off and disconnect power cord (B).
2. Shut off the inlet and outlet lines using shutoff valves (C).
3. Slowly crack the fitting connected to the outlet check valve to relieve downstream fluid pressure.

Flush the Equipment



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.
1. Follow the **Pressure Relief Procedure**.
 2. Connect inlet fluid line (D) to the supply source of the flushing fluid.
 3. Connect outlet fluid line (E) to a waste container.
 4. Run the pump until the dispensed fluid is predominantly flushing fluid.
 5. Follow the **Pressure Relief Procedure**.

Prime the Pump



1. Connect power (B) to the pump.
2. Set the STROKE % knob (J) to 100%. (See FIG. 3 on page 9.)
3. Set the SPEED knob (H) to maximum cycles per second.

While pump is operating, if fluid begins moving, no further priming is required.

If fluid is not moving, open bleed valve (4) approximately one turn until fluid begins to move. When the inlet fluid line (D) fills, close bleed valve (4).

NOTICE

Do not over tighten bleed valve. Damage may occur.

Adjust Feed Rate

The Mongoose pump allows for the exact setting of the pump's SPEED knob (H) on the pump's control panel. See FIG. 3.

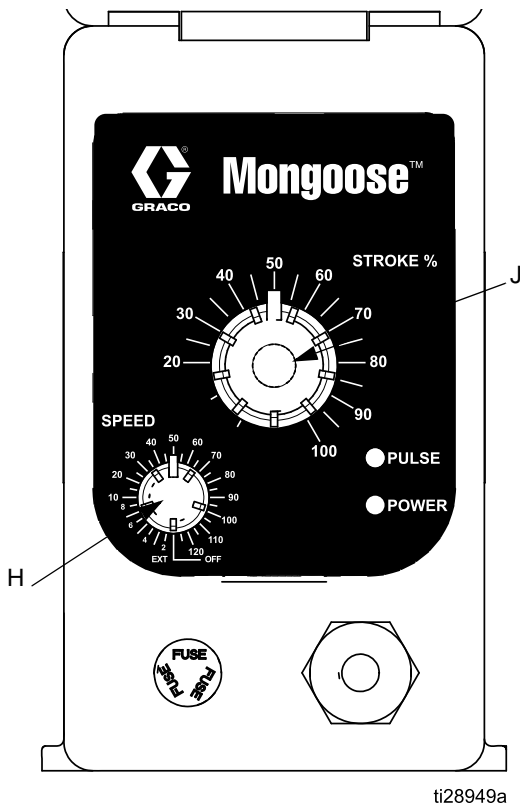


FIG. 3: Mongoose Control Panel

NOTE: Standard cycles per minute settings available are: 1, 2, 3, 4, 5, 6, 7, 8, 10, and increase by 5 thereafter up to the maximum of 125.

Adjust Stroke Length

The stroke length can be adjusted on the Mongoose pump. This is a mechanical adjustment made using STROKE % knob (J) on the control panel.

NOTICE

To avoid damage to the pump, this adjustment should only be made while the pump is running at a high-stroking rate.

Calculate Output

A pump's output per minute can be determined by dividing the maximum rated gallons per day by 1440 (minutes per day).

For example, a 30 gallons per day (gpd) pump at a maximum stroke length and speed setting of 125 cycles per minute (cpm) will pump 0.000167 gallons per stroke (gps).

$$30 \text{ gpd} \div 1440 \text{ min/day} = 0.0208 \text{ gpm} \div 125 \text{ spm} = 0.000167 \text{ gal/stroke}$$

With this value and the pump's speed setting (cycles per minute) you can calculate your pump's output at it's rated pressure.

A 30 gpd pump set at 50 cycles per minute:

$$50 \text{ cpm} \times .000167 \text{ gps} \times 1440 \text{ min/day} = 12.02 \text{ gpd}$$

Reducing the stroke length will reduce the pump's output again. If the example pump above had it's stroke length reduced to 50% the 12.02 gallons per day output is reduced to 6.01. (Example: 12.02 gpd x 0.50 = 6.01 gpd).

A higher product viscosity will reduce the output. Pressures lower than the pump's rating can increase the output.

Troubleshooting



1. Follow **Pressure Relief Procedure**, page 8, before checking pump.

Problem	Cause	Solution
Pump does not achieve or maintain prime	Air trapped in inlet line	Straighten inlet line to eliminate high spots.
	Worn or contaminated check valves	Inspect check valves in fluid end for cleanliness.
	Split or pinch in inlet tube	Inspect inlet tube through its full length to assure there are no splits at the connections or other restrictions. Move objects or equipment which impinges upon the inlet tube, or reroute as required to assure a smooth transition from foot valve to pump.
	Low chemical level	Check fluid level in chemical supply tank.
Insufficient fluid	Stroke adjustment set too low	Check operation of STROKE % knob. If pump delivers too low adjustable rate, check settings. Readjust as required.
	Worn or contaminated check valves	Inspect check valves.
	Obstruction in inlet line	Check inlet line for obstructions, clogging, kinks, or pinch points.
	Blown fuse	Replace fuse with like kind.
Excessive fluid	Excessive stroke rate	Lower the stroke rate if adjustable on your pump.
	Improper stroke length	Reduce stroke length.
Pump will not pump	System pressure too high	Check system pressure to assure that it is within system-rated parameters of the pressure.
	Diaphragm improperly installed	Ensure the diaphragm is screwed fully onto shaft.
	Check valves worn or clogged	Clean or replace as required.
Pump will not run	Pump not turned on or plugged in	Check outlet with meter to assure that correct voltage is present, and that power supply cord is in good condition and plugged in.
	Blown fuse	Replace fuse with like kind.
Excessive noise	Pump not primed	Prime pump.

Repair



Replacing the Diaphragm

1. Follow the **Pressure Relief Procedure**, page 8.
2. **Flush the Equipment**, page 8.
3. Disconnect the power (B).
4. Drain the fluid from the outlet fluid line (E).
5. Disconnect the outlet fluid line (E).
6. Remove the four fluid end screws (10) from the fluid end (9).
7. Remove the fluid end from the motor assembly (1).
8. Unscrew the diaphragm (7) counterclockwise from the pump shaft.
9. Inspect the pump shaft and support ring (8) for damage.
10. Screw the new diaphragm (7) clockwise onto the pump shaft.
11. Replace the fluid end (9) and the four screws (10). Tighten the screws evenly.
12. Reconnect the outlet fluid line (E).
13. Reconnect power (B).
14. **Prime the Pump**, page 8.

NOTE: Tighten fluid end screws (10) after the pump's initial week of operation.

Replacing the Inlet Valve

1. Follow the **Pressure Relief Procedure**, page 8.
2. **Flush the Equipment**, page 8.
3. Disconnect the power (B).
4. Close the inlet shutoff valve (C).
5. Disconnect the shutoff valve (C) from the inlet valve (2).
6. Remove the inlet valve (2) from the fluid end (9) and replace.
7. Reattach the inlet valve (2) to the fluid end (9).
8. Reconnect the shutoff valve (C) to the inlet valve (2).
9. Reconnect the power (B).
10. **Prime the Pump**, page 8.

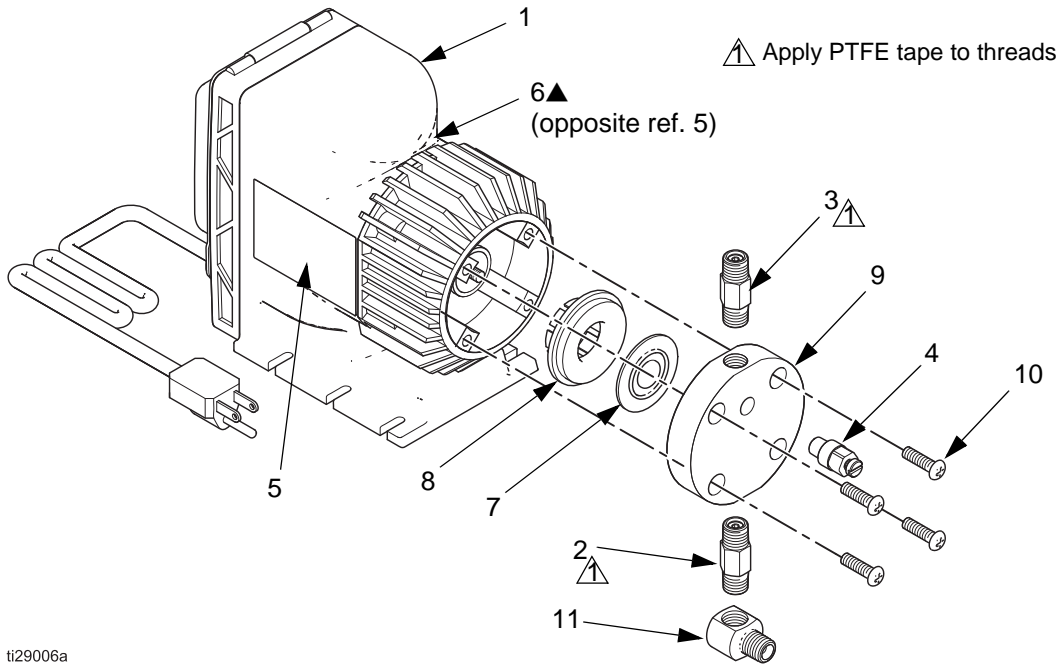
Replacing the Outlet Valve

1. Follow the **Pressure Relief Procedure**, page 8.
2. **Flush the Equipment**, page 8.
3. Disconnect the power (B).
4. Close the inlet shutoff valve (C).
5. Disconnect the shutoff valve (C) from the outlet valve (3).
6. Remove the outlet valve (3) from the fluid end (9) and replace.
7. Reattach the inlet valve (3) to the fluid end (9).
8. Reconnect the shutoff valve (C) to the outlet valve (3).
9. Reconnect the power (B).
10. **Prime the Pump**, page 8.

Parts

Mongoose Metering Pump

Model A21000 shown



Mongoose Metering Pump Parts List

Ref.	Part	Description	Qty
1	--	Motor assembly	1
2	B32279	Inlet check valve	1
3	B32280	Outlet check valve	1
4	B32191	Bleed valve	1
5	--	Branding label	1
6▲	17M292	Warning label	1
7	B32282	Diaphragm	1
8	--	Support ring	1
9	--	Fluid end	1
10	--	Fluid end screws	4
11	17M529	Elbow fitting	1

▲ Replacement Warning label is available at no cost.

Technical Data

Mongoose Chemical Metering Pump		
	US	Metric
Maximum fluid working pressure	250 PSI	1.72 MPa (17.2 bar)
Maximum cycle rate	125 cpm	
Input Voltage	95 - 135 VAC	
Amperage Max Load	.35 A	
Frequency	50/60 Hz	
Fuse	3A Barrel Style 314	
Environmental temperature range	-40°– 120°F	-40°– 50°C
Inlet/Outlet Sizes		
Fluid inlet size	1/4 in. NPT	
Fluid outlet size (1/4" plungers only)	1/4 in. NPT	
Prime/bleed size (1/4" plungers only)	1/16 in. NPT	
Wetted Parts		
Pump/Diaphragm Seal Material	PEEK and PTFE unless otherwise noted.	
Other	316 stainless steel unless otherwise noted.	
Check Valve Seal Material	FFKM	
Weight		
All models	10 lbs.	4.5 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.

FOR GRACO CANADA CUSTOMERS

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Graco Information

For the latest information about Graco products, visit www.graco.com.

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

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 3A4131

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