

Electric Supply Systems for Sealants and Adhesives

3A5379B

EN

For use with non-heated bulk supply of medium to high viscosity sealants and adhesive materials. For professional use only.

Not approved for use in explosive atmospheres or hazardous locations.

D60 3 inch dual post

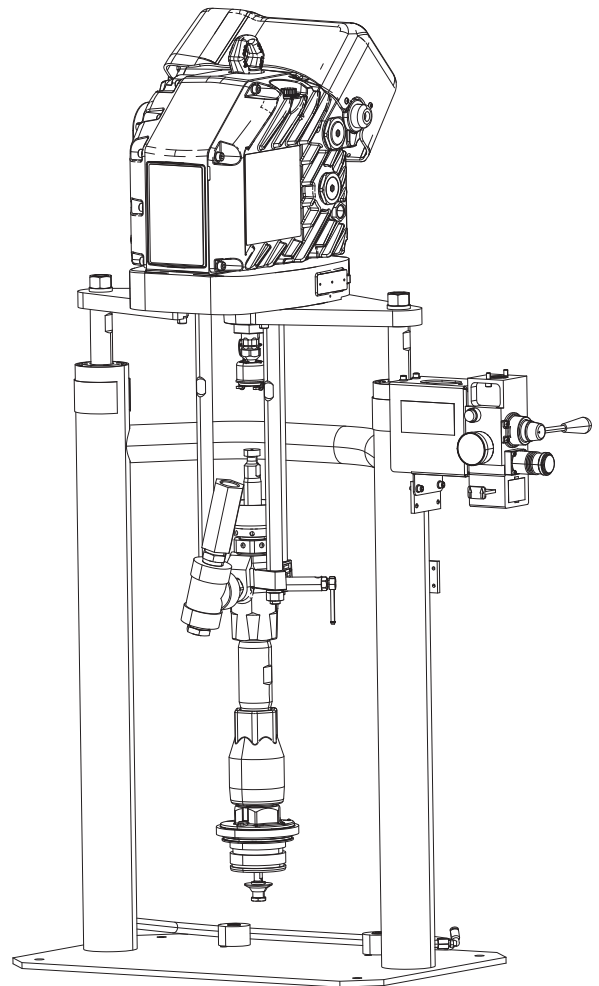
60 liter (16 gallon) size, 30 liter (8 gallon),
20 Liter (5 gallon) sizes
150 psi (1.0 MPa, 10 bar) Maximum Air Inlet Pressure

See page 3 for model information, including maximum working pressure and approvals.



Important Safety Instructions

Read all warnings and instructions in this manual and in your pump manual before using the equipment. Save all instructions.



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Related Manuals

The following manuals are available at www.graco.com.
Component Manuals in English:




Manual	Description
3A6001	Electric Pumps for Sealants and Adhesives Instructions-Parts
313527	Supply Systems Repair-Parts
312375	Check-Mate® Displacement Pumps Instructions-Parts
312376	Check-Mate® Pump Packages Instruction-Parts
312467	100 cc Check-Mate Displacement Pump Repair Parts Manual
312468	200 cc Check-Mate Displacement Pump Repair Parts Manual
312374	Air Controls Instructions-Parts
312491	Pump Fluid Purge Kit
312492	Drum Roller Kit Instruction

Models

Part No.	Pump Lower	Ram	Platen	Maximum Working Pressure psi (MPa, bar)
25E079	Check-Mate 100 CS	D60	Not Included	6000 (41.3, 413)
25E080	Check-Mate 200 CS	D60	Not Included	3300 (22.8, 228)
25E081	Check-Mate 100 SM	D60	Not Included	6000 (41.3, 413)
25E082	Check-Mate 200 SM	D60	Not Included	3300 (22.8, 228)

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>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispensing device, 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.</p> <ul style="list-style-type: none"> • Engage trigger lock when not dispensing. • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.
	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut 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 and disconnect all power sources.



WARNING



FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. 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 sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- 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.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **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.



ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing 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.



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 Safety Data Sheets (SDSs) 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.



SPLATTER HAZARD

Hot or toxic fluid can cause serious injury if splashed in the eyes or on skin. During blow off of platen, splatter may occur.

- Use minimum air pressure when removing platen from drum.



WARNING



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 Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) 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. 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.



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.

Component Identification / Typical Installation

D60 3 in. Dual Post

(Note: Do not use motor lift ring to lift entire system.)

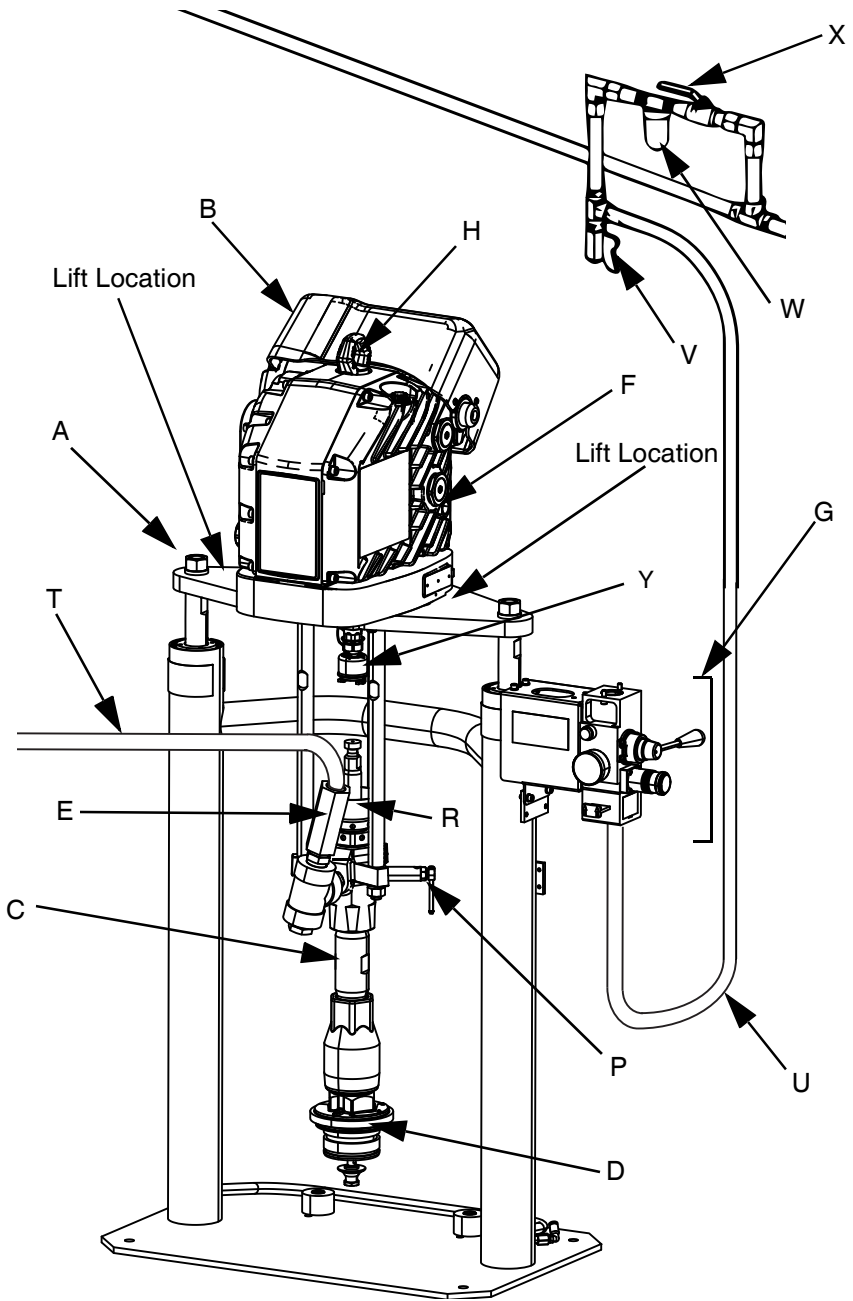
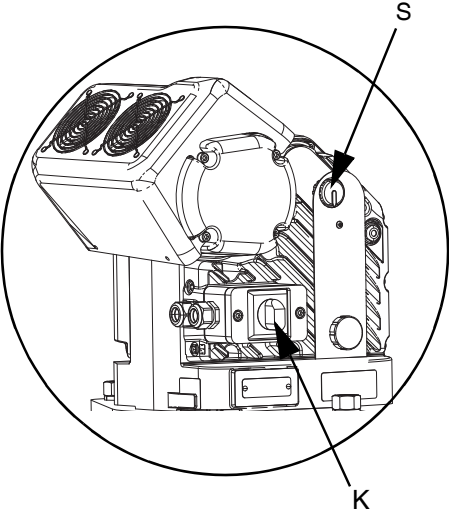


FIG. 1: Typical Installation

Key:

- A Ram Assembly
- B Electric Driver
- C Displacement Pump
- D Platen Mounting
- E Check Valve
- F Driver Oil Sight Glass
- G Integrated Air Controls (see FIG. 2)
- H Lift Ring
- K Driver Disconnect Switch
- P Pump Bleed Valve
- R Wet Cup
- S Driver Pressure Control Knob
- T Fluid Line (not supplied)
- U Air Line (not supplied)
- V Air Line Drain Valve (not supplied)
- W Air Filter (not supplied)
- X Bleed Type Air Shutoff Valve (not supplied)
- Y Driver Output Shaft

Integrated Air Controls

The integrated air controls include:

- **Main air slider valve (AA):** turns air on and off to the ram. When closed, the valve relieves pressure downstream.
- **Ram air regulator (AB):** controls ram up and down pressure and blowoff pressure.
- **Ram director valve (AC):** controls ram direction.
- **Exhaust port with muffler (AD)**
- **Blowoff button (AG):** turns air on and off to push the platen out of an empty drum.

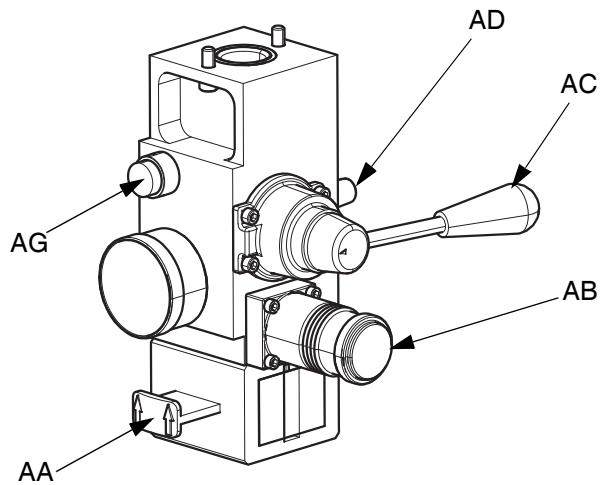


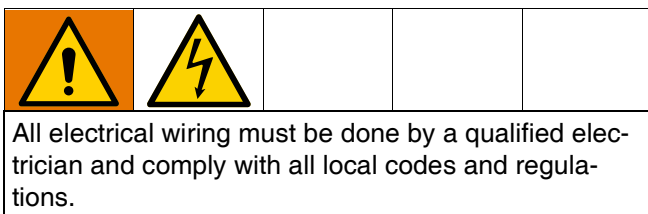
FIG. 2. Integrated Air Controls

Air Line Accessories

The following accessories are required for proper system operation.

- **Air line drain valve (V)**
- **Air line filter (W):** removes harmful dirt and moisture from the compressed air supply.
- **Bleed-type air valve (X):** isolates the air line accessories and supply system for servicing. Locate upstream from all other air line accessories.
- **Air relief valve** (attached to the ram air regulator, not visible): automatically relieves excessive pressure.

Installation



General Information

Accessories are available from Graco. Make certain all accessories are adequately sized and pressure-rated to meet the system's requirements.

NOTE: Platenes are not provided with the Electric Supply Systems and must be purchased separately. See **Platen Options** on page 47 for compatible platen information.

FIG. 1 is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

Location

NOTICE

Always lift the supply system at the proper lift locations (see FIG. 1). Do **not** lift in any other way. Failure to lift at the proper lift locations can result in damage to the supply system.

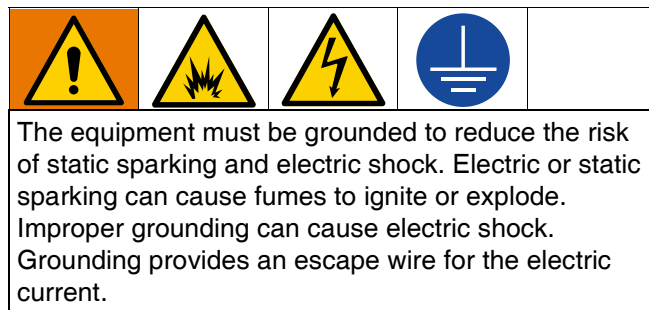
Attach a lifting sling at the proper lift spots. Lift off the pallet using a crane or a forklift.

Position the ram so the driver and air controls are easily accessible. Ensure that there is enough space overhead for the ram to raise fully. (See **Dimensions**, page 49.)

Using the holes in the ram base as a guide, drill holes for 1/2 in. (13 mm) anchors.

Ensure that the ram base is level in all directions. If necessary, level the base using metal shims. Secure the base to the floor using 1/2 in. (13 mm) anchors that are long enough to prevent the ram from tipping.

Grounding



Electric Pump: The system is grounded through the power cord.

NOTE: The grounding lug locknut (GL) can be used for additional grounding connections such as in spray applications where a ground cable could be connected between the electric driver and a metal bucket when flushing a gun into the bucket.

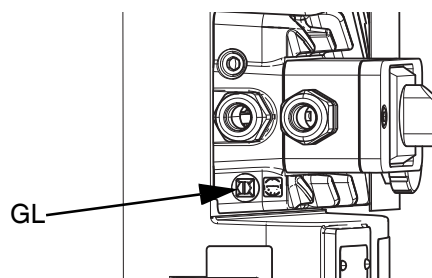


FIG. 3

Air and fluid hoses: use only electrically conductive hoses with a maximum of 500 ft. (150 m) combined hose length to ensure grounding continuity. Check the electrical resistance of the hoses. If the total resistance to ground exceeds 29 megohms, replace the hose immediately.

Air compressor: follow manufacturer's recommendations.

Spray gun/dispense valve: ground through connection to a properly grounded fluid hose and pump.

Driver: The driver is grounded through the power cord.

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 non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.

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

Power Supply

See **Table 1** for power supply requirements. The system requires a dedicated circuit protected with a circuit breaker.

Table 1: Power Supply Specifications

Voltage	Phase	Hz	Current
200-240 VAC	1	50/60	20 A

Select the minimum cord wire gauge based on length according to the table below:

Length	Gauge	mm ²
50 ft (15.24 m)	12 AWG	3.31
100 ft (30.48 m)	10 AWG	5.26
200 ft (60.96 m)	6 AWG	13.29
300 ft (91.44 m)	4 AWG	21.14

Power Disconnect Switch

A power disconnect switch must be installed within easy reach of the equipment. This switch must shut off and lock-out all electric power to the system.

Connect Power

NOTICE

To avoid equipment damage, route and secure a power cord that is long enough to allow the full range of movement for the ram.

- Cut power cord wires to the following lengths:
 - Ground wire - 6.5 inches (16.5 cm)
 - Power wires - 3.0 inches (7.6 cm)
 - Add ferrules as necessary. See Fig. 4.

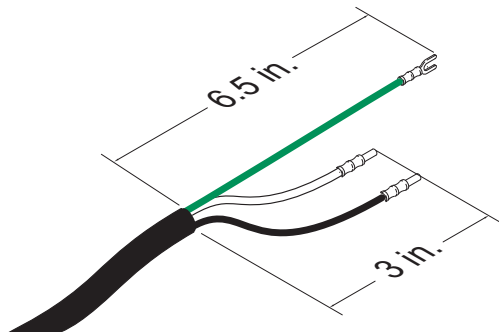


FIG. 4: Power Cord

- Remove the two screws and washers to separate the junction box cover (BA) and disconnect switch (K) from the junction box (BC) on the electrical driver.

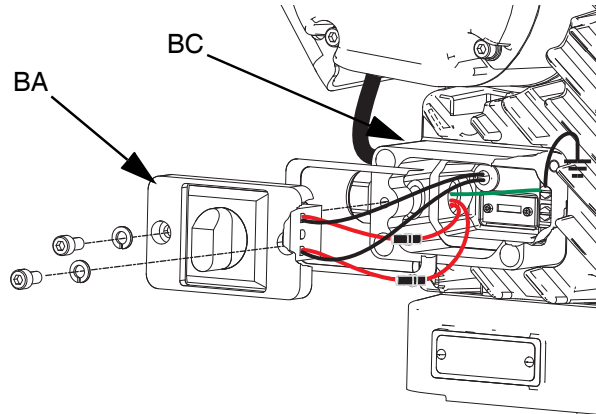


FIG. 5: Remove Junction Box Cover

NOTE: Inside the junction box, fan and power wires are connected to terminals 1L1 and 5L3 on the disconnect block. Refer to Fig. 6 for the terminal locations. Two wires are connected to each terminal and the fan ground wire is connected to the ground terminal as shown in Fig. 5.

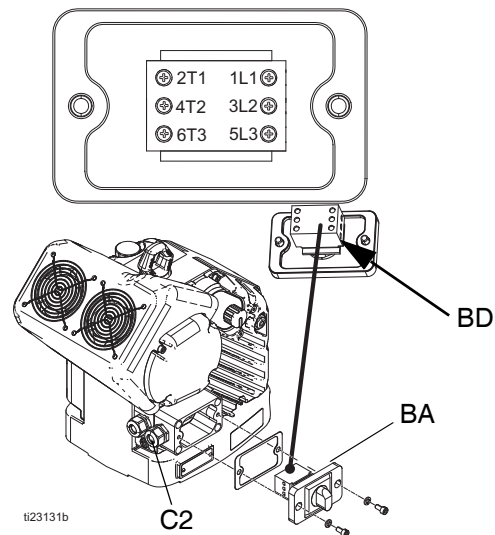
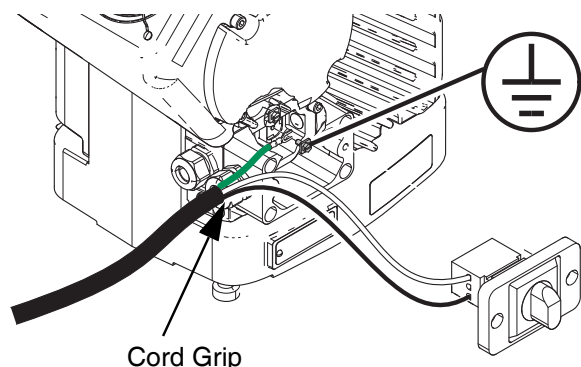


FIG. 6: Terminal Connections

- Press the junction box gasket tightly against the back of the junction box cover to ease installation of the power cord.

4. Insert the power cord through the cord grip and into the junction box.



For clarity, tan wires and other power wires not shown

FIG. 7: Connect Power

5. Attach the ground wire to the ground terminal inside the junction box as shown in FIG. 7.
6. Refer to FIG. 6 and connect the wires from the power cord into terminals 2T1 and 6T3.

NOTE: Do not attach the ground wire to the grounding lug locknut on the outside of the electric driver. Located below the fan wiring cord grip, the grounding lug locknut is used for grounding the pump lower. See **Grounding** on page 9.

7. Place the fan wires and other power wires into the open area on either side of the disconnect block (BD) as space permits.
8. Reinstall the junction box cover and disconnect switch (K) using the two screws and washers removed in step 2.

NOTICE

Make sure all wires are routed correctly before installation. If wires get pinched when the screws are tightened, damage will occur.

9. Tighten the cord grip to securely hold the power cord in the junction box.

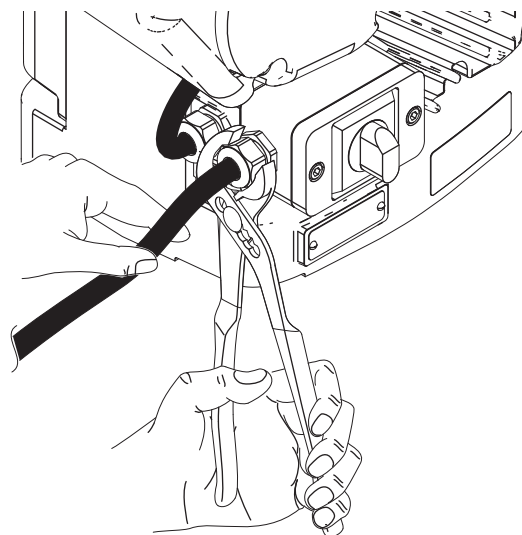


FIG. 8: Tighten Cord Grip

Install Vented Oil Cap Before Using Equipment.

The driver gear-box is shipped from the factory pre-filled with oil. The temporary unvented cap (PX) prevents oil leaks during shipment. This temporary cap must be replaced with the vented oil cap (P), supplied with the equipment, before use.

NOTE: Prior to use, check oil level. Oil level should be half way up the sight glass.

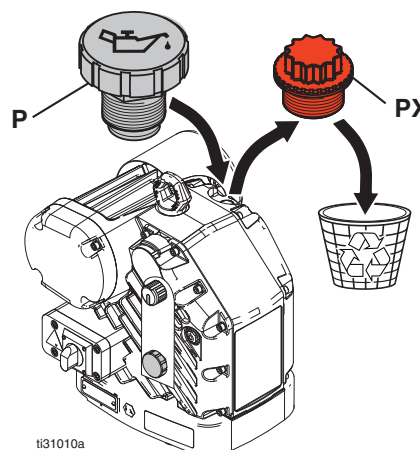


FIG. 9: Unvented and Vented Oil Caps

Attach Drum Stops

D60 Supply systems are shipped with drum stops in place to help position the drum on the ram. For replacement parts, order Kit 255477. The kit includes 2 each of capscrews (FA), lock washers (not shown), and drum stops (FB).

- Using the capscrews (FA) and lock washers (not shown), attach the drum stops (FB) to the ram base.

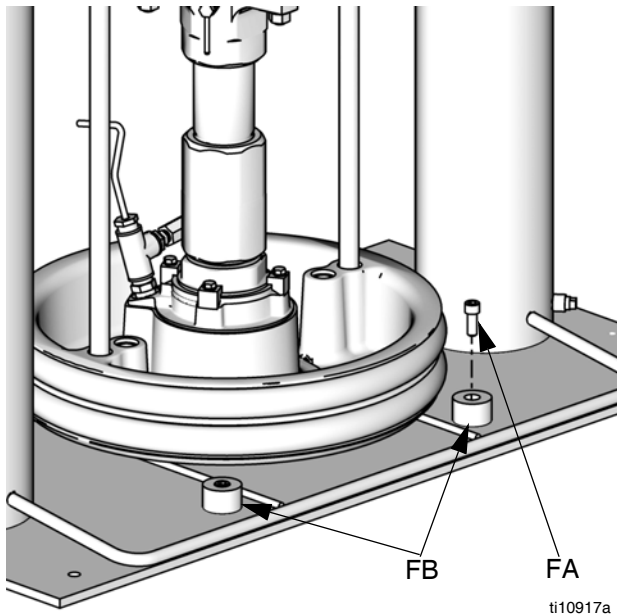


FIG. 10

- Locate the correct set of mounting holes on the ram base.

D60 Base

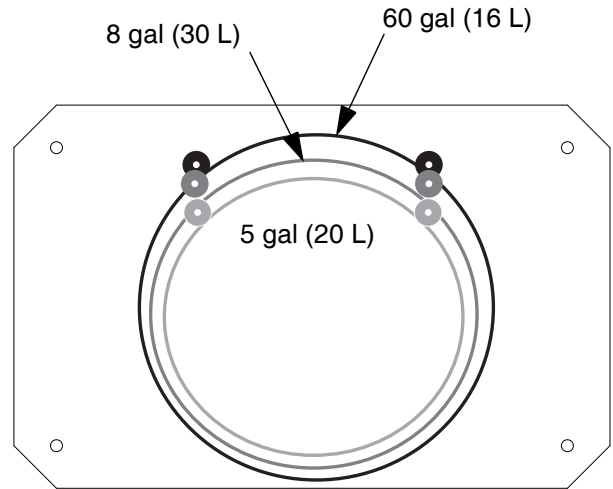


FIG. 11: Ram Base

Driver Setup

1. Pull the driver pressure adjustment knob (AK) out and turn counterclockwise until it stops. Push the knob in to lock.

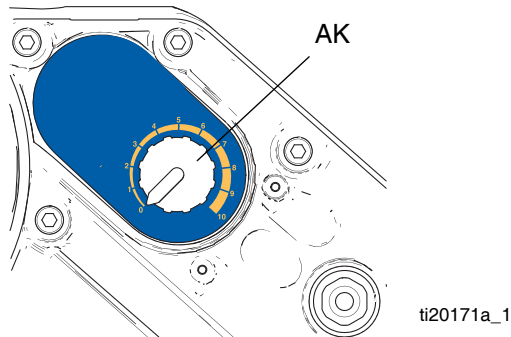


FIG. 12: Driver Pressure Adjustment Knob

2. Turn the disconnect switch (K) OFF. Connect the unit to the power source. See FIG. 5, page 10.

Mechanical Setup

1. Fill the displacement pump wet cup 2/3 full with Graco Throat Seal Liquid (TSL).
2. Back-off the air regulator to its full counterclockwise position and close all shutoff valves.
3. Connect the air line from an air source to the system air inlet. See FIG. 1. Use a supply hose capable of meeting the required flow.

Pump Operation



The driver will adjust the speed to maintain a constant fluid pressure.

Pull the driver pressure control knob (AK) out to set. Turn the knob clockwise to increase the pressure, or counter-clockwise to decrease the pressure. Push the knob to lock. See FIG. 12.

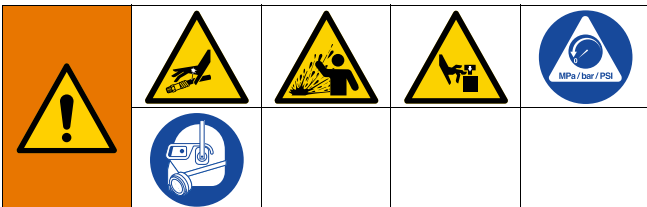
Supply System Operation



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 skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Lock the gun/valve trigger.
2. Pull the driver pressure adjustment knob (AK) out and turn counterclockwise until it stops. Push the knob in to lock.
3. Turn the driver disconnect switch (K) OFF.
4. See FIG. 2, page 8.
 - a. Close the main air slider valve (AA).
 - b. Set the ram director valve (AC) to DOWN. The ram will slowly drop.
 - c. Jog the ram director valve up and down to bleed air from the ram cylinders.
5. Unlock the gun/valve trigger.
6. Hold a metal part of the gun/valve firmly to the side of a grounded metal pail, and trigger the gun/valve to relieve pressure.
7. Lock the gun/valve trigger.

8. Open the fluid line drain valve and the pump bleed valve (P). Have a container ready to catch the drainage.
9. Leave the pump bleeder valve (P) open until ready to spray again.

If you suspect that the spray tip/nozzle or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip/nozzle or hose.

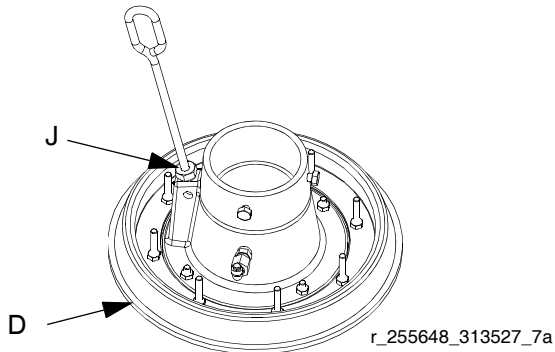
Flush Before Using Equipment

The pump was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating fluid with oil, flush the pump with a compatible solvent before use. See the pump manual for flushing directions.

Start and Adjust Ram

1. Raise ram: Open the main air slider valve (AA) and set the ram air regulator (AB) to 40 psi (0.28 MPa, 2.8 bar). Set the ram director valve handle (AC) to UP and let the ram rise to its full height.
2. Lubricate the platen seals (D) with grease or other lubricant compatible with the fluid you will pump.
3. Put a full drum on the ram base and center it under the platen (D).
4. Remove the drum cover and smooth the surface of the fluid with a straightedge. To prevent air from being trapped under the platen, scoop fluid from the center of the pail to the sides, to make the surface concave.
5. Adjust the pail to be sure it is aligned with the platen, and remove the bleed stick (BS) to open the platen bleed port (J).

6. With hands away from the pail and the platen, push down on the ram director valve (AC) handle, and lower the ram until the platen rests on the lip of the pail. Move the ram director valve handle to the horizontal position (neutral).



7. Lower ram:
 - a. Set the ram director valve (AC) to DOWN and continue to lower the ram until fluid appears at the platen bleed port (J), and close the platen bleed port. Set the ram director valve to neutral, reinstall the vent handle, and tighten securely.

Start and Adjust Pump

1. Connect the pump outlet fittings and the hose (not supplied).

NOTE: Be sure all components are adequately sized and pressure rated to meet the system's requirements.

2. Turn the driver disconnect switch (K) OFF. Then set the ram air regulator (AB) to about 50 psi (0.35 MPa, 3.5 bar). Set the ram director valve (AC) to DOWN.
3. Turn the driver disconnect switch (K) ON.
4. Start the pump. See **Pump Operation** on page 13.
5. Keep the ram director valve (AC) set to DOWN while the pump is operating.

NOTE: Increase air pressure to the ram if the pump does not prime properly with heavier fluids. Decrease air pressure if fluid is forced out around the top seal or platen.

Change Drums



Excessive air pressure in the material drum could cause the drum to rupture, causing serious injury. The platen must be free to move out of the drum. Never use drum blowoff air with a damaged drum.

1. Stop the pump by turning the disconnect switch (K) OFF.
2. Raise the platen out of the drum.
 - a. Press and hold the blowoff air button (AG) until the platen (D) is completely out of the drum. Set the ram director valve (AC) to UP to raise the platen (D). Use the minimum amount of air pressure necessary to push the platen out of the drum.
3. Release the blowoff air button and allow the ram to rise to its full height.
4. Remove the empty drum.
5. Inspect the platen and, if necessary, remove any remaining material or material build-up.
6. Place the full drum on the ram base.
7. Lower the ram and adjust the position of the drum relative to the platen. See **Start and Adjust Ram** on page 14.

Shutdown and Care of the Pump

1. Set the ram director valve (AC) to DOWN.
2. Follow the **Pressure Relief Procedure** on page 14.
3. Follow the pump shutdown instructions in the separate pump manual.

Maintenance

Driver Maintenance

NOTICE

Do not open/remove the gear cover. The gear side is not intended to be serviced. Opening the gear cover may alter the factory set bearing pre-load and may reduce the product life.

Preventative Maintenance Schedule



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

Change the Oil

NOTE: Change the oil after a break-in period of 200,000 to 300,000 cycles. After the break-in period, change the oil once per year.

1. Remove the driver from the ram. See **Remove Driver** on page 35.
2. Place a minimum 2 quart (1.9 liter) container under the oil drain port. Remove the oil drain plug (15). Allow all oil to drain from the driver.
3. Reinstall the oil drain plug (15). Torque to 18-23 ft-lb (25-30 N•m).
4. Open the fill cap (CA) and add Graco Part 16W645 ISO 220 silicone-free synthetic EP gear oil. Check the oil level in the sight glass (CC). (See FIG. 13.) Fill until the oil level is near the halfway point of the sight glass. The oil capacity is approximately 1.0 - 1.2 quarts (0.9 - 1.1 liters). **Do not overfill.**
5. Reinstall the fill cap.

Check Oil Level

Check the oil level in the sight glass (CC). (See FIG. 13.) The oil level should be near the halfway point of the sight glass when the driver is not running. If the oil is low, open the fill cap (CA) and add Graco Part No. 16W645 ISO 220 silicone-free synthetic EP gear oil. See FIG. 13.

The oil capacity is approximately 1.0 - 1.2 quarts (0.9 - 1.1 liters). **Do not overfill.**

NOTICE

Only use oil with Graco part number 16W645. Any other oil may not lubricate properly and can cause damage to the drive train.

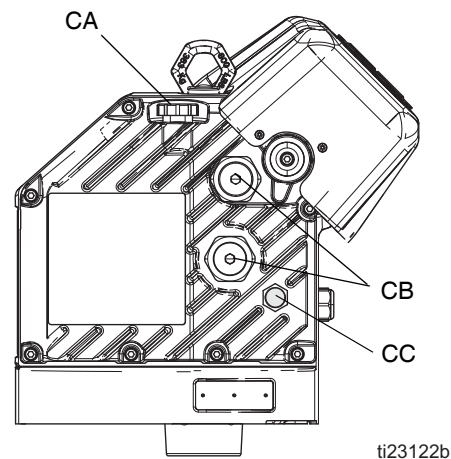


FIG. 13: Sight Glass and Oil Fill Cap

Bearing Pre-Load

See FIG. 13. The bearing pre-loads (CB) are factory set and are not user adjustable. Do not adjust the bearing pre-loads.

Platen Maintenance



See FIG. 14. If the platen does not come out of the pail easily when the pump is being raised, the air assist tube (AT), or check valve may be plugged. A plugged valve prevents air from reaching the underside of the plate to assist in raising it from the pail.

1. Perform the **Pressure Relief Procedure** on page 14.
2. Refer to the parts illustration on page 43 and disassemble the air assist valve as shown.
3. Clear the air assist tube (AT) in the platen. Clean all parts of the valve and reassemble.
4. Remove the bleed stick (BS) from the platen. Push the bleed stick through the bleed relieve ports to remove material residue.

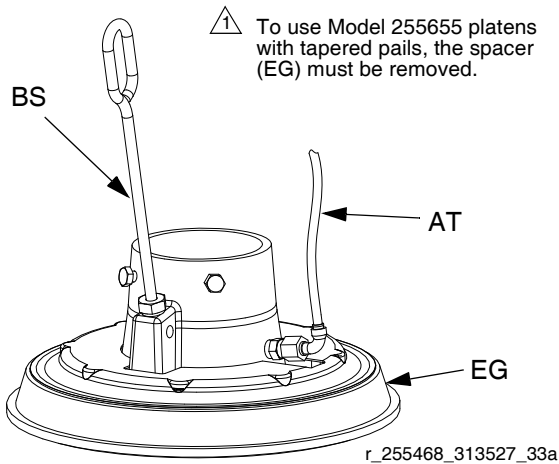


FIG. 14

Adjust Spacers

Use Platen with Tapered and Straight Sided Pails

The platen is supplied for use with 20 liter (5 gallon), 30 liter (8 gallon), and 60 liter (16 gallon) straight sided pails, but only single wiper platens can be easily modified for use with tapered pails.

Use platen with tapered pails

1. *Working from the bottom*, use a screwdriver to pry the spacer (EG) loose. Work the spacer upward completely above the flange of the platen. See FIG. 15.
2. By hand, angle the spacer (EG) and work it off the plate, pulling it down over the flange and bottom wipers (EB). See FIG. 16.
3. Save the spacer (EG), as it is required for other applications.

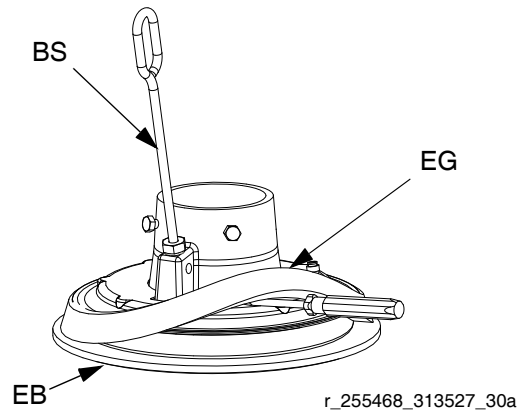


FIG. 15

Use platen with straight sided pail

1. Ensure the large diameter of the spacer (EG) is facing **down**. Work the spacer (EG) up over the platen by hand completely above the flange of the platen. See FIG. 16.
2. *Working from the top*, use a screwdriver to position the spacer (EG) between the flange and wipers (EB). See FIG. 17.

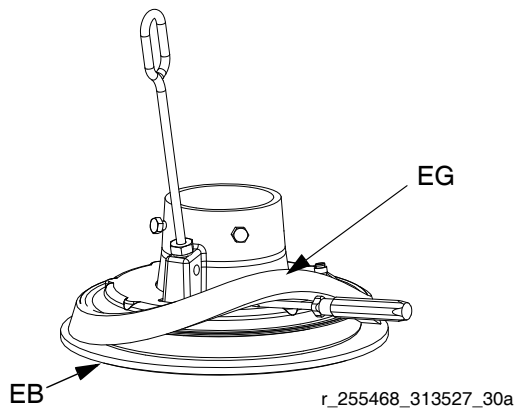


FIG. 16: Sliding spacer

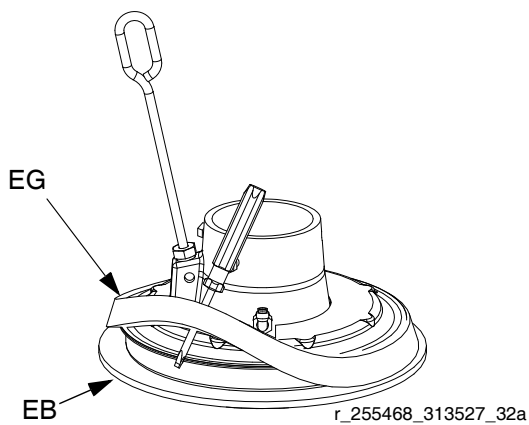


FIG. 17: Installing Spacer

Remove and Reinstall Wipers

Disassemble 20, 30, and 60 Liter Wiper Assemblies

1. Remove the wiper assembly; see FIG. 18:
 - a. For all single wiper platens: Remove the two clips (470) with needle nose pliers and remove the platen cover (469).
 - b. Remove the eight nuts (459) that hold the wiper assembly to the platen casting (451) and remove the wiper assembly.
 - c. See **Reassemble 20, 30, and 60 Liter Wiper Assemblies** to change wiper sizes, styles, or a complete wiper assembly.
2. Remove the eight nuts (459) on the wiper assembly.
3. Separate the top plate (457), spacer (452), wiper(s) (453), wiper support (454), and bottom plate (455).
4. Clean, inspect, and replace worn components.

Reassemble 20, 30, and 60 Liter Wiper Assemblies

1. Assemble the wiper assembly.

- a. *For single wiper assemblies:* Place the bottom plate (455) on a flat surface. Place the wiper support (454), wiper (453), spacer (452), and top plate (457) on the bottom plate (455).
- b. *For single wiper assemblies with SST platen:* Place the bottom plate (455) on a flat surface. Place the wiper support (454), wiper (453), flowered wiper support (460), PTFE spacer (452), and top plate (457) on the bottom plate (455).
- c. *For double wiper assemblies:* Place the bottom plate (455) on a flat surface. Place the wiper support (454), wiper (453), spacer (452), wiper (453) and top plate (457) on the bottom plate (455).
- d. Install eight nuts (409) on the outer ring. Torque to 45 in-lbs (61 N•m).
- e. Replace the o-ring (456), or install a new o-ring under the platen casting (451). Use lubricant to hold in place.
- f. Install the platen casting (451). Tighten with four nuts (509).

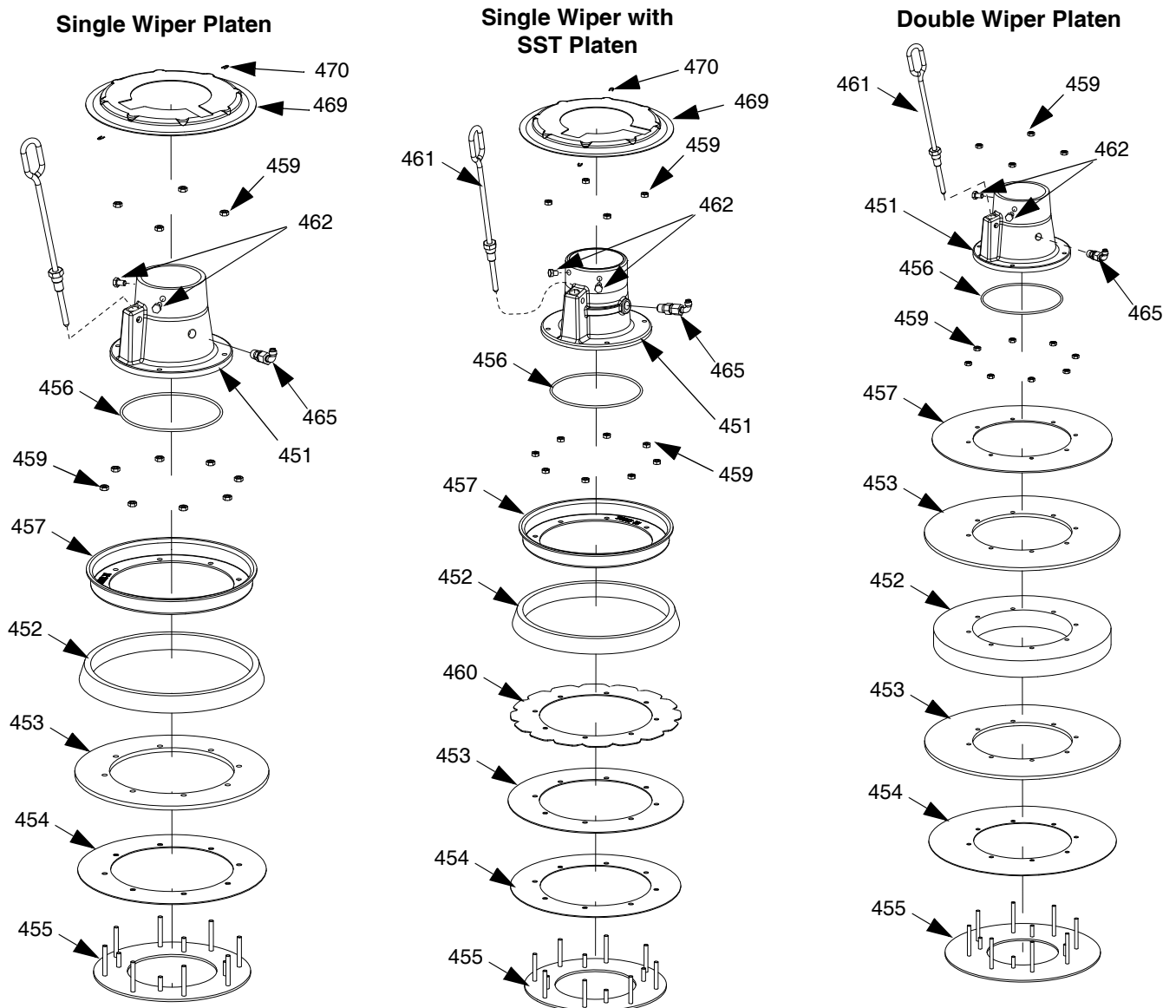


FIG. 18: Single and Double Wiper Assemblies

Driver Troubleshooting



Power Saving Mode

When fast blinking is displayed, the driver has entered Power Saving Mode. When the driver is on and pressurized, but the pump has not moved any material in 30 minutes, the driver will enter Power Saving Mode and will decrease pressure to 75% of the maximum pressure while stalling.

Power Saving Mode will be exited when:

- Material starts to dispense and causes the pump to move, OR
- The pressure knob is adjusted, OR
- Power is cycled OFF and ON

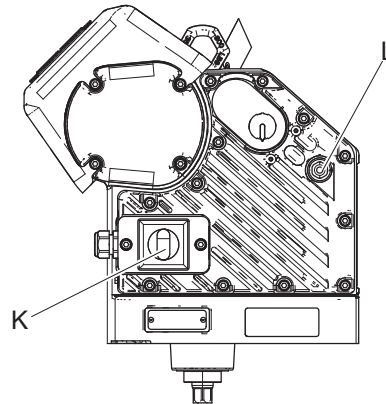
Error Codes

Error codes can take two forms:

Alarm: alerts you to the alarm cause and shuts down the pump.

Deviation: alerts you to the problem, but the pump may continue to run past the set limits until the system's absolute limits are reached.

NOTE: The blink code is displayed using the power indicator (L) on the driver. The blink code listed below indicates the sequence. For example, blink code 2 indicates two blinks, a pause, and then the sequence repeats.



NOTE: To clear an error code, first try turning the driver pressure adjustment knob (AK) counterclockwise until it stops. If the status indicator (L) does not stop blinking shortly after turning the knob to zero, cycle the power by turning the disconnect switch (K) to the OFF position for at least 30 seconds before turning it back ON.

Blink Code	Error Type	Troubleshooting Steps
1	Alarm	<p>Voltage Too Low</p> <ul style="list-style-type: none"> • Verify that the line voltage is within the range specified in Technical Specifications, page 51. • Use the recommended cord (see page 10). • Cycle the power and check the status indicator to see if the error is still active.
2	Alarm	<p>Voltage Too High</p> <ul style="list-style-type: none"> • Verify that the line voltage is within the range specified in Technical Specifications, page 51. • Cycle the power and check the status indicator to see if the error is still active. • Verify that the outlet check valve is installed on the pump and functions properly. A faulty outlet check valve can result in excessive pump speed, causing high voltage internally to the electric driver.
3	Deviation	<p>Low Temperature</p> <ul style="list-style-type: none"> • Warm equipment. • Contact your Graco distributor or Tech Service for more information.
4	Deviation	<p>High Temperature</p> <p>The temperature of the system is near the maximum operation temperature. The performance has been reduced to prevent the driver from completely shutting down.</p> <ul style="list-style-type: none"> • Check fan operation. Clean the fan and driver housing. Verify the fuses are intact in the junction box. • Reduce the pressure, duty cycle, or gun tip size. • Move the unit to a cooler location.
5	Alarm	<p>Driver Motor Temperature Fault</p> <p>The motor is running too hot. Allow the unit to cool.</p> <ul style="list-style-type: none"> • Check fan operation. Clean the fan and driver housing. Verify the fuses are intact in the junction box. • Reduce the pressure, duty cycle, or gun tip size. • Move the unit to a cooler location.
6	Alarm	<p>Board Temperature Fault</p> <p>The control board is running too hot. Allow the unit to cool.</p> <ul style="list-style-type: none"> • Check fan operation. Clean the fan and driver housing. Verify the fuses are intact in the junction box. • Reduce the pressure, duty cycle, or gun tip size. • Move the unit to a cooler location.
7	Alarm	<p>Driver Motor Encoder Calibration Error</p> <ul style="list-style-type: none"> • Cycle the power and check the status indicator to see if the error is still active. • Calibrate the encoder (see page 29). • Contact your Graco distributor or Tech Service for more information.

Blink Code	Error Type	Troubleshooting Steps
8	Alarm	Encoder Error <ul style="list-style-type: none"> • Cycle the power and check the status indicator to see if the error is still active. • Verify that the encoder cable is connected securely. • The encoder may need to be replaced. • Contact your Graco distributor or Tech Service for more information.
9	Alarm	Software Versions Do Not Match <ul style="list-style-type: none"> • Obtain the software update token and follow Software Update Procedure on page 30 (contact your Graco distributor or Tech Service for more information).
10	Alarm	Circuit Board Communication Failure <ul style="list-style-type: none"> • Cycle the power and check the status indicator to see if the error is still active. • Contact your Graco distributor or Tech Service for more information.
11	Alarm	Internal Circuit Board Hardware Failure <ul style="list-style-type: none"> • Cycle the power and check the status indicator to see if the error is still active. • Contact your Graco distributor or Tech Service for more information.
12, 13	Alarm	Internal Software Error <ul style="list-style-type: none"> • Cycle the power and check the status indicator to see if the error is still active. • Contact your Graco distributor or Tech Service for more information.
Fast Flash	Deviation	See Power Saving Mode , page 20.

Problem	Cause	Solution
Driver does not turn over and LED is off	Over voltage (greater than 300 V)	<ul style="list-style-type: none"> • Check the power supply
	No power to control board	<ul style="list-style-type: none"> • Contact your Graco distributor or Tech Service for more information.
Driver does not turn over and LED is on	Encoder fault	<ul style="list-style-type: none"> • Cycle the power. • Contact your Graco distributor or Tech Service for more information.
Oil is leaking	Oil was over-filled	<ul style="list-style-type: none"> • Drain and refill as stated in Check Oil Level, page 16.
	Drain plug not tightened properly	<ul style="list-style-type: none"> • Torque to 18-23 ft-lb (25-30 N•m).
	Seal cartridge o-ring missing or damaged.	<ul style="list-style-type: none"> • Replace the shaft bearing assembly.

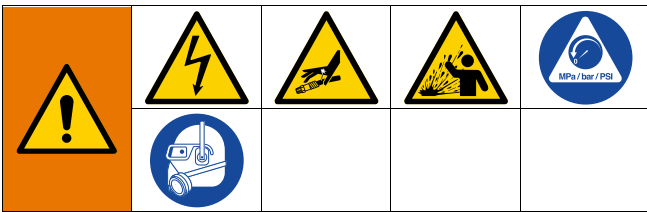
Ram Troubleshooting



Check all possible problems before disassembling the ram, pump, or platen. Refer to the appropriate pump manual for pump troubleshooting.

Problem	Cause	Solution
Ram will not raise or lower.	Closed air valve or clogged air line.	Open, clear.
	Not enough air pressure.	Increase.
	Worn or damaged piston.	Replace. See Supply Unit Repair on page 36.
	Hand valve closed or clogged.	Open, clear.
Ram raises and lowers too fast.	Air pressure is too high.	Decrease.
Air leaks around cylinder rod.	Worn rod seal.	Replace. See Supply Unit Repair on page 36.
Fluid squeezes past ram plate wipers.	Air pressure too high.	Decrease.
	Worn or damaged wipers.	Replace. See Remove and Reinstall Wipers on page 18.
Pump will not prime properly or pumps air.	Closed air valve or clogged air line.	Open, clear.
	Not enough air pressure.	Increase.
	Worn or damaged piston.	Replace. See pump manual.
	Hand valve closed or clogged.	Open, clear. See Platen Maintenance on page 17.
	Hand valve is dirty, worn, or damaged.	Clean, service.
Air assist valve will not hold drum down or push plate up.	Closed air valve or clogged air line.	Open, clear. See Platen Maintenance on page 17.
	Not enough air pressure.	Increase.
	Valve passage clogged.	Clean. See Platen Maintenance on page 17.

Repair



To prevent skin injection and splashing, never open an applicator fitting while there is pressure in the fluid line. Perform the **Pressure Relief Procedure**, page 14, before performing any repair procedure.

All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

Replace Shaft Bearing Assembly



1. Stop the pump at the bottom of its stroke. Shut off and remove power to the driver.
2. Perform the **Pressure Relief Procedure**, page 14.
3. Disconnect the lower from the driver. See **Remove Driver** on page 35.
4. Drain the oil from the driver. See **Change the Oil**, page 16.
5. Reinstall the oil drain plug. Torque to 18-23 ft-lb (25-30 N•m).
6. Unscrew the shaft bearing assembly (14) from the driver. See **Parts**, page 38.
7. Install the new shaft bearing assembly. Torque to 175-200 ft-lb (240-280 N•m).
8. Fill with oil. See **Change the Oil**, page 16.
9. Reconnect the lower to the driver.
10. Turn the power ON and resume operation.

Replace Fan Fuses



1. Perform the **Pressure Relief Procedure**, page 14.
2. Disconnect the unit from the power source.
3. Remove two screws (53) and remove the junction box cover (BA) from the driver to gain access to the disconnect block (BD). Gently pull out the fuse holders.
4. Unscrew the fuse holder, remove the old fuse, and replace with the new fuse (Graco part number 116682) (5 mm x 20 mm, 500 mA, 250V, Slow Blow). Reconnect the fuse holder and tighten.

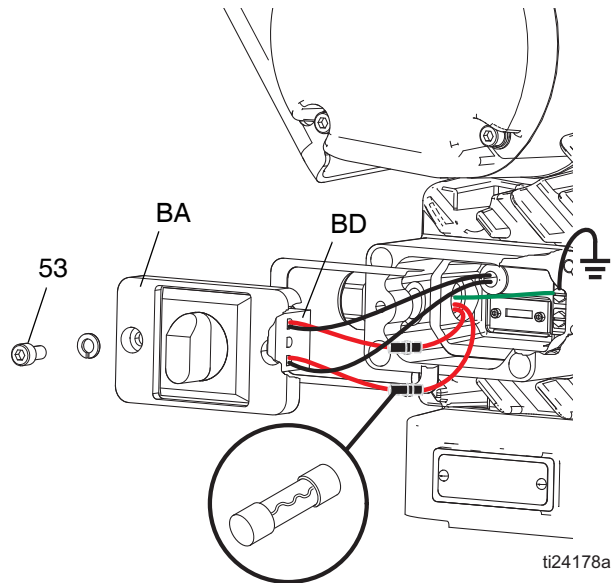


FIG. 19: Fuse Location

5. Repeat step 4 with the second fuse.
6. Tuck the wires back into the junction box (BC) around the disconnect block (BD) and reinstall the junction box with two screws and washers.

NOTICE

Make sure all wires are routed correctly before installation. If wires get pinched when the screws are tightened, damage will occur.

Replace Fan Assembly



1. Perform the **Pressure Relief Procedure**, page 14.
2. Disconnect the unit from the power source.
3. Remove two screws (53) and remove the junction box cover (BA) from the driver to gain access to the disconnect block (BD). See FIG. 19.
4. Loosen screws for 1L1 and 5L3 and gently remove the wires from each location.

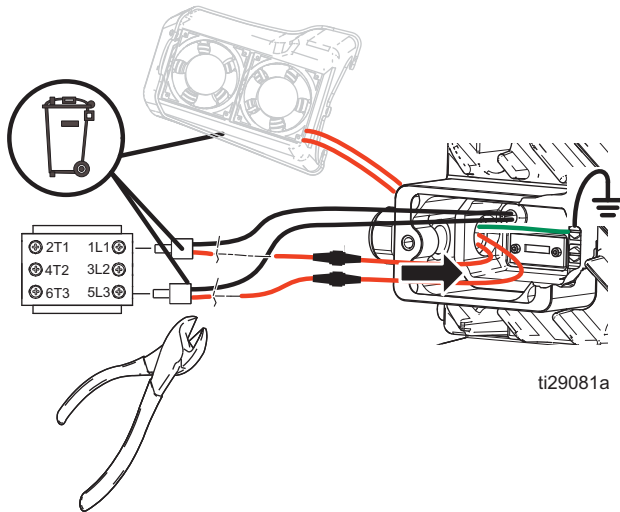


FIG. 20: Remove Wires

5. Use a wire cutter to cut ferrule tips from the fan wires and motor power wires close to the ferrules.

NOTE: Do not cut the tip off of the ground wire. See FIG. 20.

6. Remove the grounding screw (GS) and disconnect the green grounding wire coming out of the fan cord grip (C1) attached to the driver (not the junction box).

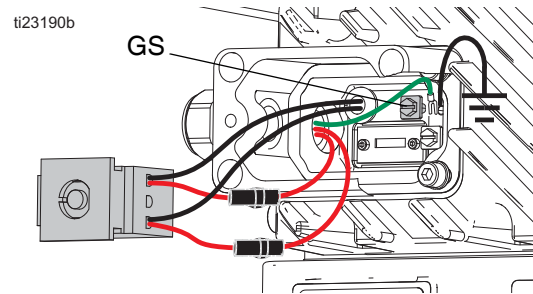


FIG. 21: Grounding Screw

7. Loosen the fan cord grip (C1) attached to the driver and pull out the fan wires.

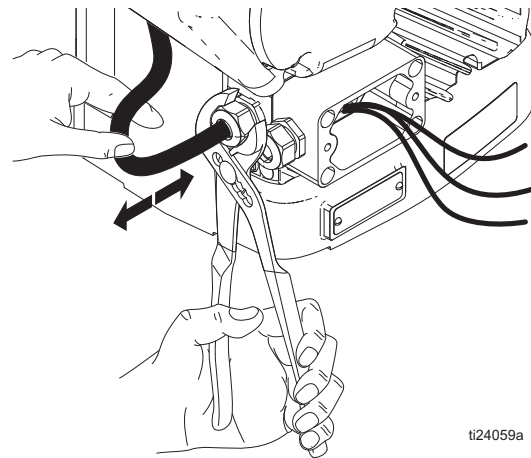


FIG. 22: Remove Fan Wires

8. Remove the screws that attach the fan assembly to the driver and pull up on the end farthest from the junction box. Slide the assembly toward the junction box to remove.

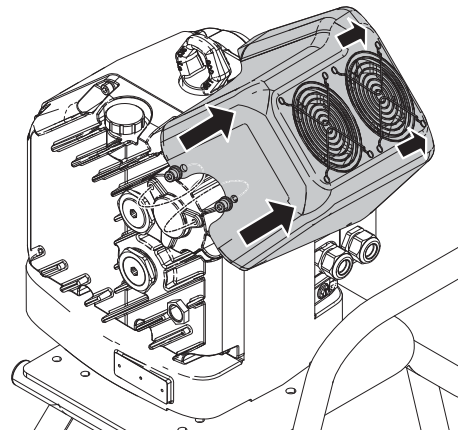


FIG. 23: Fan Assembly Removal

9. Install the new fan assembly. To reattach the fan assembly, slide the cover into the slots for tabs located on the junction box side, and gently push down the far end. Apply thread locker and use the supplied fasteners and washers. Torque to 15 - 20 ft-lb (20 - 27 N•m).

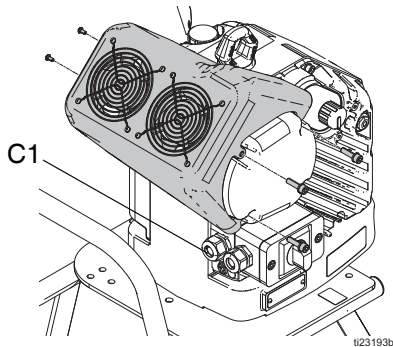
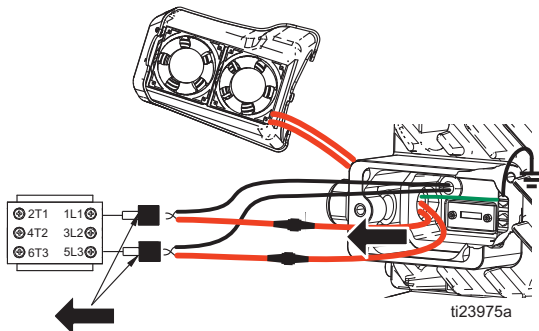


FIG. 24: Fan Assembly Installation

10. Route the wires through the fan cord grip (C1) attached to the driver (not the junction box (BC)).
11. Reattach the ground wire to the grounding screw. Tighten the ground screw. See FIG. 21.



12. Use a ferrule to connect each fan wire to one of the two wires coming out of the motor grommet. Then attach one wire set into the disconnect box location 1L1, and the other wire into location 5L3. See FIG. 21.
13. Gently tuck the wires back into the junction box (BC) around the disconnect block (BD) and reinstall the junction box cover (BA). Replace the two screws (53) and washers, then tighten. See FIG. 19, page 24.

NOTICE

If wires get pinched when the screws are tightened, damage will occur. Make sure all wires are routed correctly before installation.

14. Tighten cord grip attached directly to driver assembly.

Replace Electronics Cover

Removal



1. Perform the **Pressure Relief Procedure**, page 14.
2. Disconnect the unit from the power source.
3. Remove the lower from the driver. See **Remove Driver** on page 35.

NOTE: This is required to complete the calibration procedure (page 29).

4. Remove two screws (6) and remove the junction box cover (5).

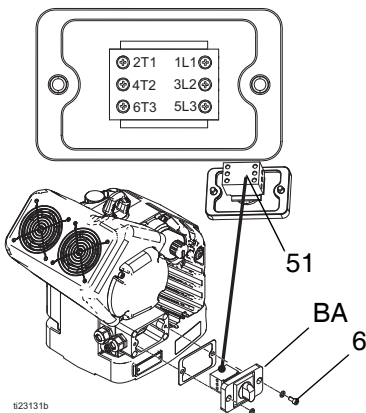


FIG. 25: Junction Box Cover

5. Loosen the cord screws on the disconnect block (51) and disconnect the wires from locations 1L1 and 5L3.

NOTE: Power cord cables (excluding the ground wire) may remain attached.

6. Unscrew the ground screws from the fan and power cord ground wires.

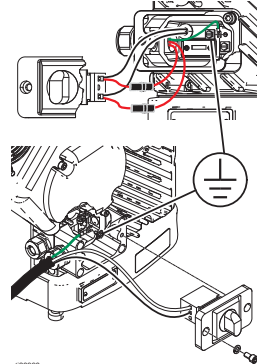


FIG. 26: Ground Screw Location

7. Use a wire cutter to cut ferrule tips from the fan wires and motor power wires.

NOTE: Cut the wires as close to the ferrules as possible. Do not cut the tip off of the ground wires.

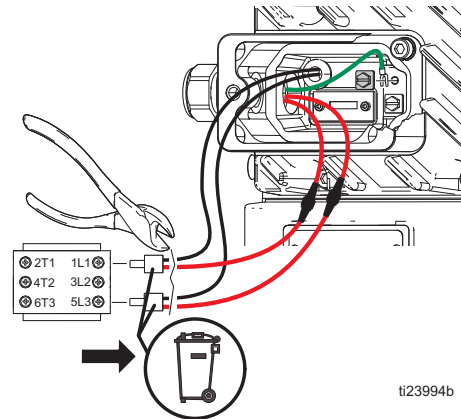


FIG. 27: Disconnect Fan Wires

8. Use an adjustable wrench to loosen the fan cord grip (C1).

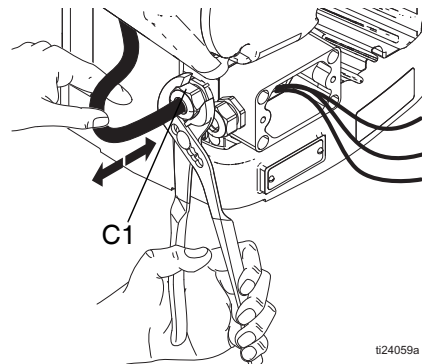


FIG. 28: Loosen Cord Grip

9. Pull the fan wires out through the cord grip.

10. Remove the four bolts (56) and washers, the gasket (52), and the junction box sleeve (101).

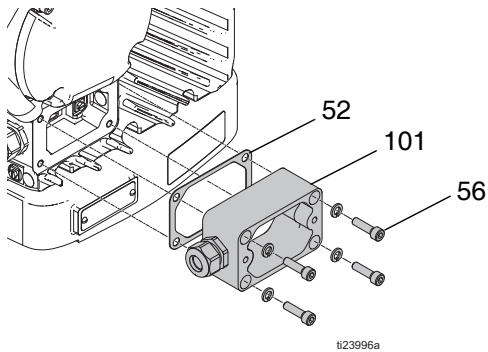


FIG. 29: Junction Box Sleeve

11. Remove the 12 screws (20) and washers from the electronics cover (50).

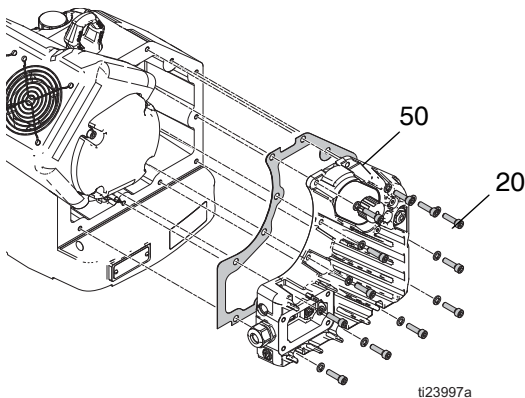


FIG. 30: Electronics Cover Removal

12. Carefully tilt the electronics cover (50) down.

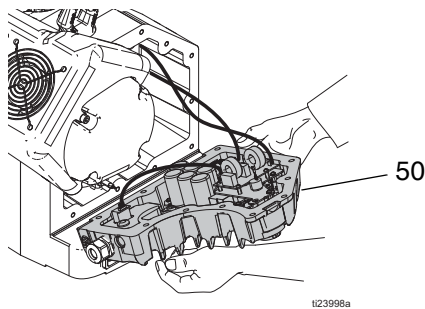


FIG. 31: Tilt Electronics Cover

NOTICE

All wires must be disconnected before the cover is completely removed. Hold the cover in place while disconnecting wires or let the cover rest on a work surface to avoid damaging the wires and connections.

13. Pull the wire connectors down, out of the harness clip, and disconnect the motor power and motor temperature wires (TW).

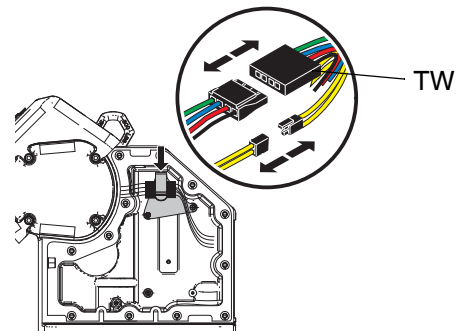


FIG. 32: Motor Wires

14. Disconnect the stroke position sensor wire (SW).

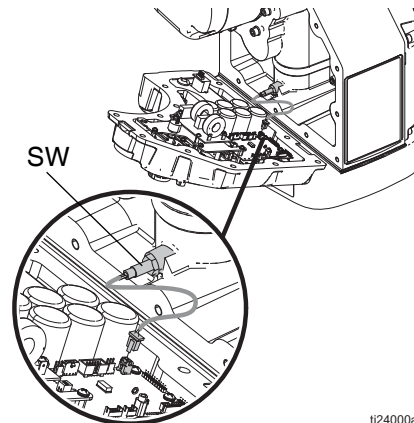


FIG. 33: Stroke Position Wire

15. Disconnect the encoder wire (EW).

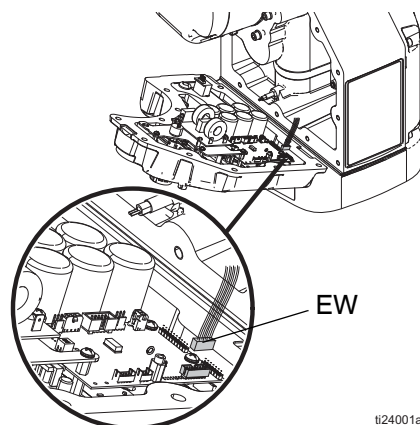


FIG. 34: Encoder Wire

16. Discard the used cover gasket (53) and the junction box gasket (52).

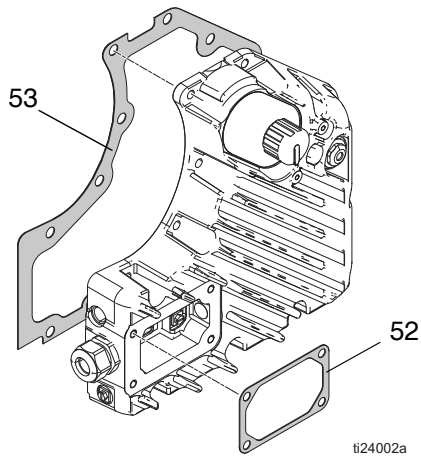


Fig. 35: Electronics Cover and Junction Box Gaskets

Installation

1. Install the new cover gasket (53) (included in the electronics cover kit). See FIG. 35, page 29.
2. Reconnect all wires.
3. Install the electronics cover (50) and tighten all 12 screws (20). Torque to 15-20 ft-lb (20-27 N•m). See FIG. 30, page 28.

NOTICE

If wires get pinched when the cover screws are tightened, damage will occur. Make sure all wires are positioned inside the cover before installation.

4. Install the new junction box gasket (8).
5. Route the fan cable through the fan cord grip.
6. Connect the stripped fan wire to the motor wire and crimp the wires together.

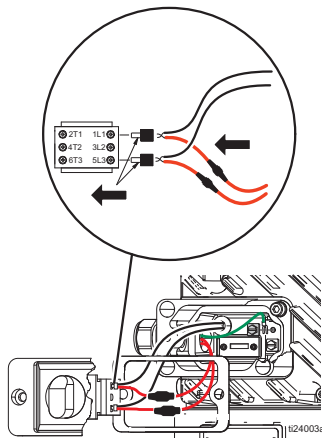


Fig. 36: Install Fan Wires

7. Connect the fan ground wire. See FIG. 29, page 28. See FIG. 26, page 27.
8. Use an adjustable wrench to tighten the fan cord grip (C1). See FIG. 28, page 27.
9. Install the gasket (52), the junction box sleeve (101), and tighten all four bolts (56). See FIG. 29, page 28.
10. Install the junction box cover (BA) and tighten the two screws (6). See FIG. 25, page 27.
11. Install the wires into the disconnect switch (51) and tighten the wire screws.

NOTE: The lower must be removed from the system in order to calibrate correctly. The calibration stroke length is longer than the operating stroke. Leaving the lower attached will cause the driver rod to contact the lower rod and it will not calibrate correctly.

12. Connect the power cord.
13. Engage power.

Driver Motor Encoder Calibration

NOTE: The driver must be de-coupled from the lower and must be able to cycle freely with no obstructions.

1. Cycle power to the driver by first turning the disconnect switch (K) to OFF, and then to ON again.
2. Wait for the status indicator LED (L) to turn on solid or start blinking.
3. Within 30 seconds, rapidly turn the driver pressure control knob (AK) back and forth from 0 to 10 at least five times and then set the knob back to 0. If the status indicator LED (L) was solid before, it will begin blinking an encoder calibration error (code 8) during the calibration process.
4. The driver output shaft (Y) will run up and down slowly over the course of several minutes.
5. Midway through the auto-calibration process, the driver output shaft (Y) will pause as it moves to the next step.
6. The driver output shaft (Y) will move up and down faster 5-6 times.
7. Ensure the auto-calibration process is complete before continuing. Wait for the LED to stop blinking.

Repair Token Cable



1. Perform the **Pressure Relief Procedure**, page 14.
2. Disconnect the unit from the power source.
3. Remove all 12 screws (20) and washers from the electronics cover (50). See FIG. 30, page 28.
4. Carefully tilt the electronics cover (50) down. See FIG. 31, page 28.

NOTICE

All wires must be disconnected before the cover is completely removed. Hold the cover in place while disconnecting wires or let the cover rest on a work surface to avoid damaging the wires and connections.

5. Check the token wire (T) connections. Replace the wire if it is damaged.

NOTE: Make sure the token wire connection is positioned with the wires facing the bottom of the driver (as seen below).

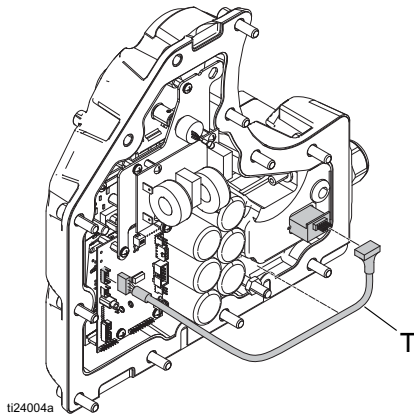


FIG. 37: Token Wire

6. Install the cover and tighten all 12 screws (20) and washers. Torque to 15-20 ft-lb (20-27 N•m).

NOTICE

If wires get pinched when the cover screws are tightened, damage will occur. Make sure all wires are positioned inside the cover before installation.

7. Connect the power cord.

Software Update Procedure



1. Perform the **Pressure Relief Procedure**, page 14.
2. Disconnect the unit from the power source.
3. Remove the two screws (53) and washers. Then remove the junction box cover (BA) from the driver to gain access to the token slot (TS).

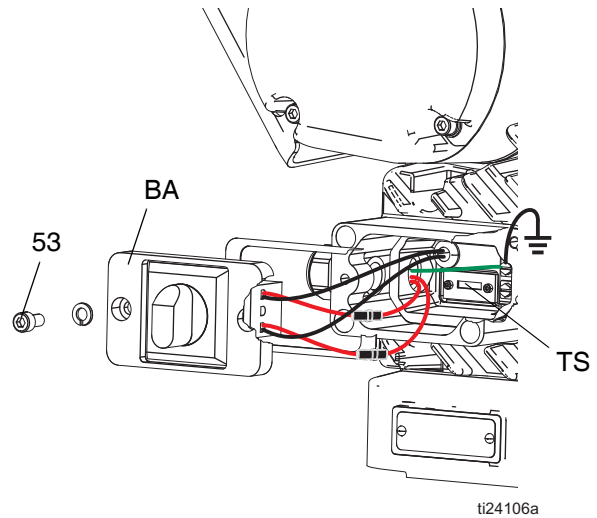


FIG. 38: Token Slot Location

4. Insert and press the token firmly into the slot.

NOTE: The token has no preferred orientation.

5. Tuck the wires back into the junction box (BC) and reinstall the junction box cover (BA) with two screws and washers.

NOTICE

If wires get pinched when the cover screws are tightened, damage will occur. Make sure all wires are positioned inside the cover before installation.

6. Connect the unit to the power source and turn it ON.
7. The red indicator light (L) will flash while the software is being loaded (approximately 30 seconds). When the software is completely loaded, the red light will turn off for four seconds before the software version flashes. Then a solid light will stay on.

NOTE: Whenever the unit is powered on and the token is present in the token slot, the indicator light will flash the three series software code one time. Example: 1.02.003 would be one blink, a pause, two blinks, a pause, then three blinks. Normal operation will resume after the software version displays.

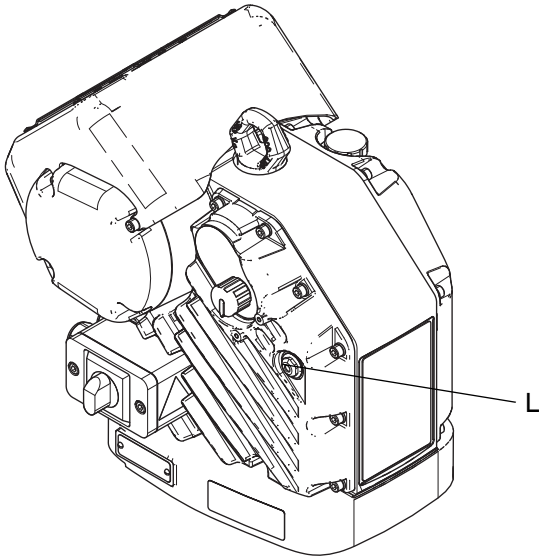


FIG. 39: Red Indicator Light Location

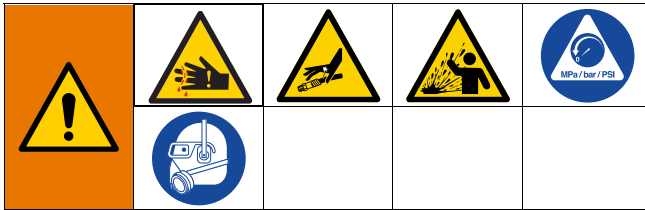
8. Turn off the unit and disconnect from the power source.
9. Remove the two screws (53) and washers. Then remove the junction box cover (BA) from the driver to gain access to the token slot (TS).
10. Remove the token from the slot.
11. Tuck the wires back into the junction box (BC) and reinstall the junction box cover (BA) with two screws and washers.

NOTICE

If wires get pinched when the cover screws are tightened, damage will occur. Make sure all wires are positioned inside the cover before installation.

NOTE: The latest software version for each system can be found by searching “Software Version Change History for 17N254” at Graco Technical Support. Contact a technical support representative before upgrading.

Remove Displacement Pump



Keep hands and fingers away from the priming piston during operation and whenever the pump is pressurized to reduce the risk of injury. On the pump downstroke the priming piston extends beyond the intake housing to pull the material into the pump. The priming piston works under extreme force. During operation and whenever the pump is pressurized, the priming piston can severely injure or amputate a hand or finger, or break a tool, caught between it and the intake housing. Always relieve the pressure before checking, clearing, cleaning, flushing, or servicing any part of the pump.

Refer to your appropriate pump manual to repair the displacement pump.

1. Flush the pump; see your pump manual for flushing directions. Stop the pump at the bottom of its stroke.
2. Perform the **Pressure Relief Procedure** on page 14.
3. Disconnect power from the driver.
4. Disconnect the fluid hose. Hold the fluid outlet fitting with a wrench to keep it from being loosened while you disconnect the fluid hose.

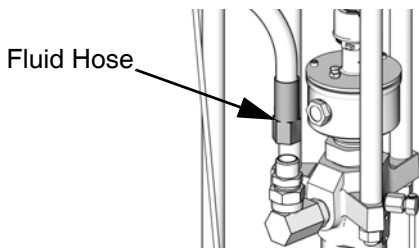
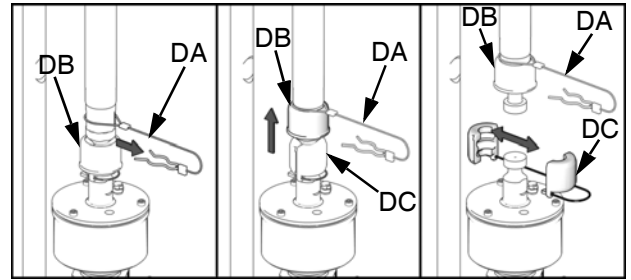


FIG. 40:

5. Remove the platen from the displacement pump.
6. If the driver does not require servicing, leave it attached to its mounting.

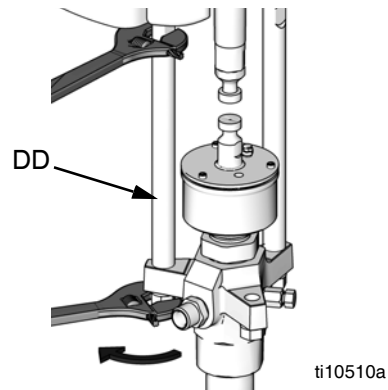
7. Remove the clip (DA), and slide the coupling cover (DB) up to remove the coupling (DC).



ti10508a

FIG. 41:

8. Use a wrench to hold the tie rod flats to keep the rods from turning. Unscrew the nuts from the tie rods (DD) and carefully remove the displacement pump.



ti10510a

FIG. 42:

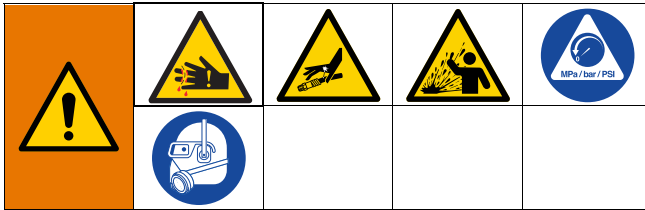
9. Raise the ram assembly to lift the driver away from the displacement pump.
10. Remove the displacement pump and service as needed.



Be sure to use at least two people when lifting, moving, or disconnecting the pump. This pump is too heavy for one person. If you are disconnecting the displacement pump from a motor that is still mounted (for example, on a ram), be sure to support the displacement pump while it is being disconnected, to prevent it from falling and causing injury or property damage. Do this by securely bracing the displacement pump, or by having at least two people hold it while another disconnects it.

11. Refer to the appropriate pump manual to service the displacement pump.

Install Displacement Pump



Keep hands and fingers away from the priming piston during operation and whenever the pump is pressurized to reduce the risk of injury. On the pump downstroke the priming piston extends beyond the intake housing to pull the material into the pump. The priming piston works under extreme force. During operation and whenever the pump is pressurized, the priming piston can severely injure or amputate a hand or finger, or break a tool, caught between it and the intake housing. Always relieve the pressure before checking, clearing, cleaning, flushing, or servicing any part of the pump.

1. Verify power is disconnected from the driver.
1. Raise the ram to install the displacement pump to the platen.
2. Insert the displacement pump on the platen.
3. Carefully place the displacement pump on the tie rods (DD).



Be sure to use at least two people when lifting, moving, or disconnecting the pump. This pump is too heavy for one person. If you are disconnecting the displacement pump from a motor that is still mounted (for example, on a ram), be sure to support the displacement pump while it is being disconnected, to prevent it from falling and causing injury or property damage. Do this by securely bracing the displacement pump, or by having at least two people hold it while another disconnects it.

4. Screw the nuts onto the tie rods (DD) and torque to 50-60 ft-lb (68-81 N•m).

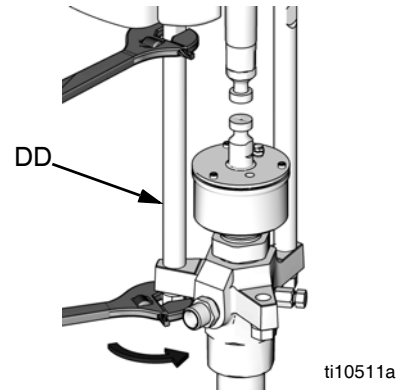


FIG. 43:

5. Install the coupling (DC), and slide the coupling cover (DB) down. Install the clip (DA).

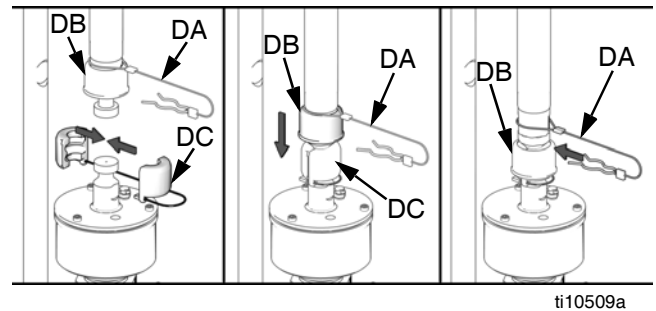


FIG. 44:

6. Reconnect all hoses, and reconnect the ground wire.
7. Fill the wet cup (R) 1/3 full of Graco Throat Seal Liquid or a compatible solvent.
8. Attach the platen to the displacement pump. Follow steps to **Connect Platen** on page 34.
9. Turn the driver disconnect switch (K) ON.
10. Run the pump slowly to ensure that it is operating properly.

Disconnect Pump from Platen



20, 30, and 60 Liter Platen

1. Perform the **Pressure Relief Procedure** on page 14.
2. Disconnect power from the driver.
3. Loosen two 5/16 in. screws (462) from the platen.
4. Carefully pull the pump away to prevent damage to the pump inlet. If using a pump with an intake adapter, remove the screws (472), adapter (471), and o-rings (473, 463) from the pump inlet.

Check-Mate Mounting

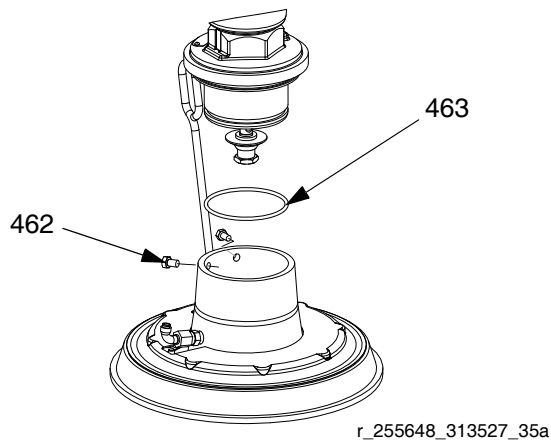


FIG. 45: 20, 30, and 60 liter mounting kit

Connect Platen

20, 30, and 60 Liter Platen

NOTE: Before installing the 20, 30, or 60 liter platen to a pump with an intake adapter, install the adapter and o-ring from mounting kit 257630 using the two set screws. See FIG. 45.

1. Place the o-ring (473) from mounting kit 257630 on the pump intake. Loosen the mounting bracket screws (401) and carefully lower the pump onto the o-ring (463) and platen.
2. Secure the pump's intake flange to the plate with screws (401).

Remove Wipers

See **Remove and Reinstall Wipers** on page 18.

Install Wipers

See **Remove and Reinstall Wipers** on page 18.

Remove Driver



3. Follow the steps to **Remove Displacement Pump** on page 32.
4. Unscrew the four bolts (111) shown in FIG. 46, and remove the driver by attaching a secure hoist to the driver lift ring (H).

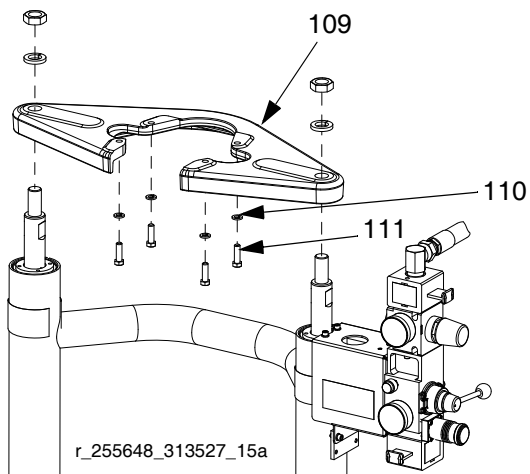


FIG. 46: Electric Driver on D60 with Ram

Install Driver

1. Using a secure hoist, attach the motor to the mounting plate (109) with screws (111) and washers (110). See FIG. 46 on page 35.
2. Follow the steps to **Install Displacement Pump** on page 33.

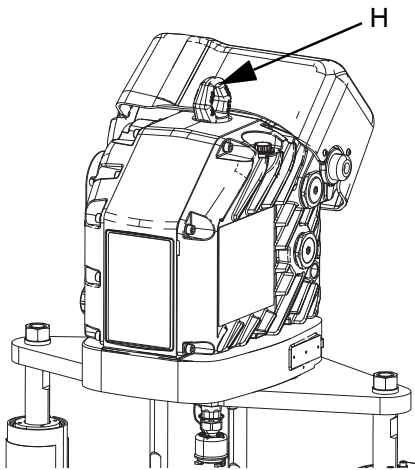





FIG. 47: Driver Lift Ring

Supply Unit Repair

				
<p>To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the Pressure Relief Procedure on page 14. Do not use pressurized air to remove the guide sleeve or the piston.</p>				

Always service both cylinders at the same time. When you service the piston rod, always install new o-rings in the piston rod seal and the ram piston.

Disassemble Piston Rod Seal and Bearing

1. Perform the **Pressure Relief Procedure** on page 14.
2. Disconnect power.
3. Remove the pump package. See **Remove Driver** on page 35.
4. Access the piston rod seal and bearing.
 - a. Ensure the ram is in the lowest position. Remove nuts (383) and lockwashers (382) from the piston rods (302n). Remove the entire pump package, including the mounting plate (381) off of the piston rods (302n). Secure the pump package so the pump and platen will not fall. See pages 40 and 42.
5. Remove the retaining ring (203, 803).
6. Remove the piston rod seal and bearing.
 - a. Slide the end cap (202a), pin (202b), o-ring (202c), and spring (202m) up and off of the piston rod (202n). Remove the retaining ring (202k) and bearing (202j) from the end cap (202a) and remove the o-ring (202d).
7. Inspect all parts for wear or damage. Replace as necessary.

NOTE: Do not reinstall the end cap assembly if the ram piston (202e, 802e) needs to be removed from the piston rod. See the next page for ram piston repair instructions.

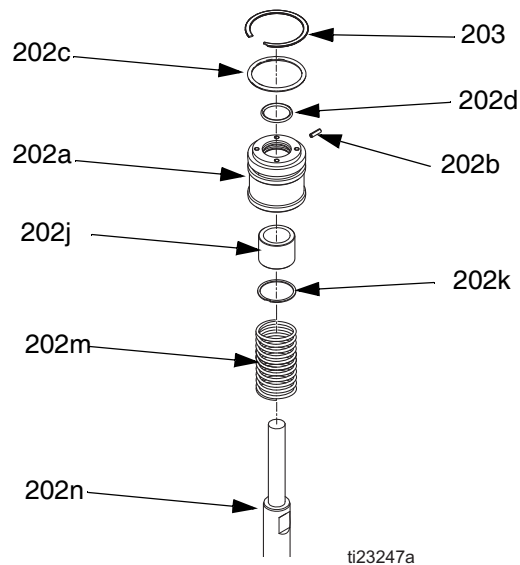


FIG. 48: 3 in. Piston Rod Seal

Assemble Piston Rod Seal and Bearing

See FIG. 48 on page 36.

1. Lubricate the o-ring (202d) and bottom bearing (202j).
 - a. Install the o-ring (202d), bottom bearing (202j), and retaining ring (202k) into the end cap (202a).
 - b. Install the new o-ring (202c) and pin (202b) on the end cap (202a).
 - c. Lubricate the o-ring (202c) and end cap (202a).
 - d. Slide the spring (202m) and end cap (202a) onto the piston rod (202n, 302n).
2. Install the retaining ring (203).
3. Remount the mounting plate (381) and attach the nuts (383) and lockwashers (382). Torque to 40 ft-lb (54 N•m).

Disassemble Ram Piston

1. Complete steps 1-4 from **Disassemble Piston Rod Seal and Bearing** on page 36 to remove the end cap from the piston rod.

NOTICE

Do not tilt the piston rod to one side when removing it from the base or when installing it. Such movement can damage the piston or inside surface of the base cylinder.

2. Carefully lay the piston (202e, 802e) and rod (202n, 302n, 802n) down so the piston rod will not be bent. Remove the nut (202f, 802f), washer (202g, 802g), piston (202e, 802e), outer o-ring (202c, 802c), and inner o-ring (202h, 802h).
3. Inspect all parts for wear or damage. Replace as necessary.

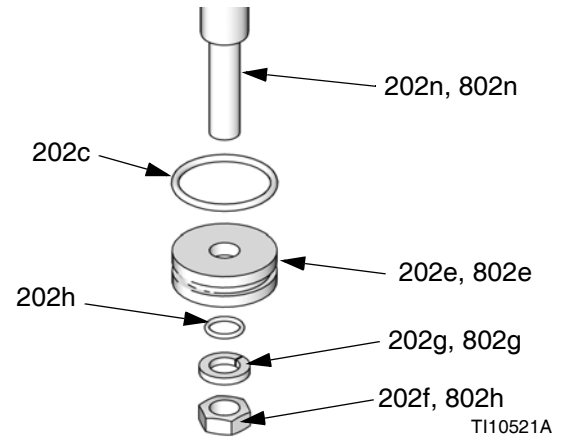


FIG. 49: 3 in. Ram Piston

Assemble Ram Piston

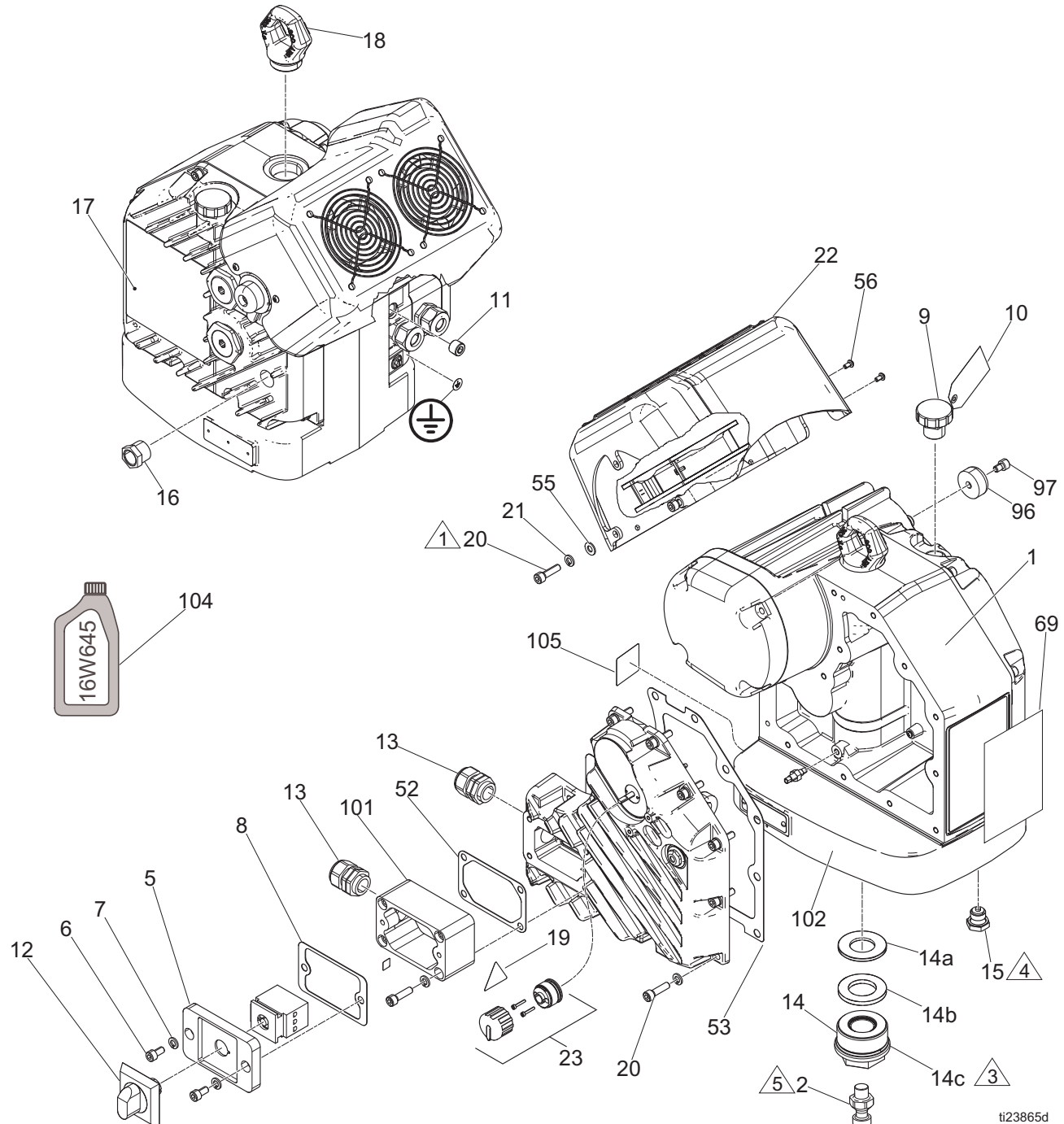
1. Install new o-rings (202h, 802h, 202c, 802c).
2. Lubricate the piston (202e, 802e) and o-rings.
3. Apply medium strength thread sealant. Install the piston (202e, 802e), washer (202g, 802g), and nut (202f, 802f) on the piston rod (202n, 302n, 802n).
4. Carefully insert the piston (202e, 802e) into the cylinder, and push the piston rod (202n, 302n, 802n) straight down into the cylinder.
5. Slide the spring (202m, 802m) and end cap (202a, 802a) onto the piston rod (202n, 302n, 802n).
6. Install the retaining ring (203) and the mounting plate with nuts (383, 857) and washers (382, 858) with the pump package and platen.

Parts

Use this table to identify which pump mounting kit and platen are compatible with each driver and supply system.

Supply System	Pump Mounting Kit	Platens Gallons (liters)	Pump Mounting Kit Page	Platens Page
D60 3 in. Dual Post (see page 40)	257624	5 (20), 8 (30), 16 (60)	pg. 42	pg. 43

Electric Driver



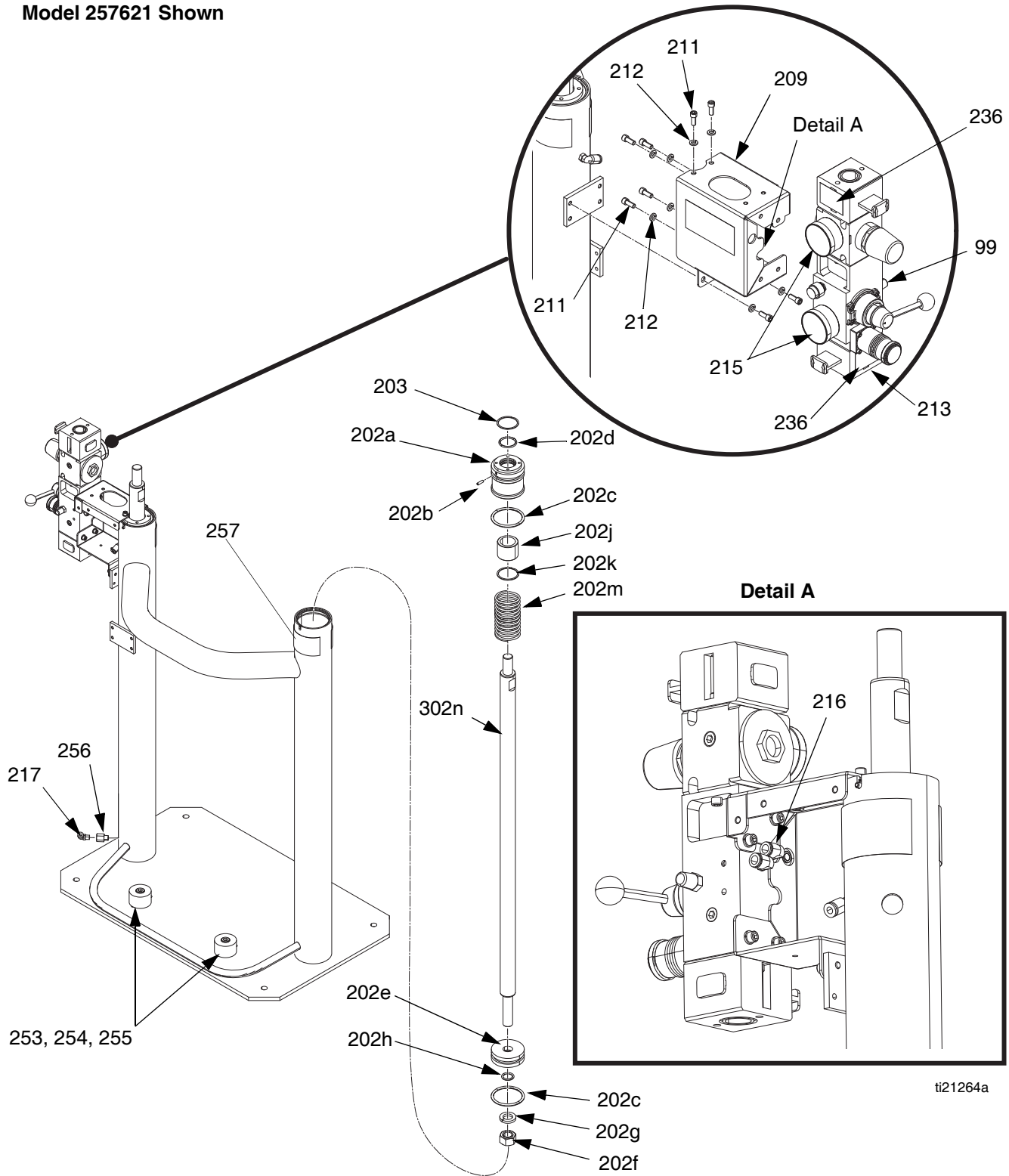
ti23865d

Electric Driver

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.															
1		CHASSIS	1	97	127463	SCREW, cap, socket head	1															
2	15H392	ADAPTER, rod Xtreme	1	101‡	17B505	SLEEVE, junction box	1															
5†	17B507	COVER, junction box	1	102	17B553	ERROR CODE LABEL	1															
6†	115264	SCREW, cap, socket head	2		16Y491	TOKEN CABLE (not shown)	1															
7†	104572	WASHER, lock spring	2	104	16W645	GEAR LUBE	0															
8*†	17B509	GASKET, cover, junction box	1		116682	FUSE (not shown)	1															
9	15H525	CAP, fill	1		24W120	SENSOR, stroke position	1															
10		TAG, oil	1	105▲	195792	LABEL, warning	1															
11	555448	PLUG, stl, 3/8 pipe hex	1	* 24W078 KIT, electronics, cover (includes 8, (12x) 20, (12x) 21, 23, 50, 53, and ferrules)																		
12	123971	KNOB, disconnect, operator	1	† 127854 Junction Box Cover Kit (includes 5, 8, (2x) 6, (2x) 7)																		
13	121171	GRIP, cord, .35-.63, 3/4	2	‡ 127855 Junction Box Sleeve Kit (includes (4x) 20, (4x) 21, 101)																		
14	See Part 14 Table			▲ Replacement Warning labels, signs, tags, and cards are available at no cost.																		
15	15H432	PLUG, oil drain	1	★ The driver gear-box is shipped from the factory pre-filled with oil. Additional oil must be purchased sepa- rately.																		
16	24E315	SIGHT GLASS	1	Part 14 Table:																		
17▲	16W360	LABEL, safety, warning	1	<table border="1"> <thead> <tr> <th>Ref.</th> <th>Description</th> <th>Driver 24V016 Part No.</th> </tr> </thead> <tbody> <tr> <td>14</td> <td>CARTRIDGE, out- put seal</td> <td>25C164</td> </tr> <tr> <td>14a</td> <td>KIT, washer, sup- port</td> <td>25C162</td> </tr> <tr> <td>14b</td> <td>KIT, bumper, lower</td> <td>25C163</td> </tr> <tr> <td>14c</td> <td>O-RING</td> <td>25C165 (pack of two)</td> </tr> </tbody> </table>				Ref.	Description	Driver 24V016 Part No.	14	CARTRIDGE, out- put seal	25C164	14a	KIT, washer, sup- port	25C162	14b	KIT, bumper, lower	25C163	14c	O-RING	25C165 (pack of two)
Ref.	Description	Driver 24V016 Part No.																				
14	CARTRIDGE, out- put seal	25C164																				
14a	KIT, washer, sup- port	25C162																				
14b	KIT, bumper, lower	25C163																				
14c	O-RING	25C165 (pack of two)																				
18	15F931	RING, lift, sst	1	<p>✗ Kit 24K341 does not include part 14b. 16K679 must be ordered separately.</p>																		
19▲	16T764	LABEL, warning	1	Part Specifications:																		
	17J476	LABEL, warning	1	<table border="1"> <thead> <tr> <th>Ref.</th> <th>Instruction</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Torque to 20 - 27 N•m (15-20 ft-lb)</td> </tr> <tr> <td>3</td> <td>Torque to 240 -280 N•m (175-200 ft-lb)</td> </tr> <tr> <td>4</td> <td>Torque to 25-30 N•m (18-23 ft-lb)</td> </tr> <tr> <td>5</td> <td>Torque to 195-210 N•m (145-155 ft-lb). Apply service- able medium thread locker.</td> </tr> </tbody> </table>				Ref.	Instruction	1	Torque to 20 - 27 N•m (15-20 ft-lb)	3	Torque to 240 -280 N•m (175-200 ft-lb)	4	Torque to 25-30 N•m (18-23 ft-lb)	5	Torque to 195-210 N•m (145-155 ft-lb). Apply service- able medium thread locker.					
Ref.	Instruction																					
1	Torque to 20 - 27 N•m (15-20 ft-lb)																					
3	Torque to 240 -280 N•m (175-200 ft-lb)																					
4	Torque to 25-30 N•m (18-23 ft-lb)																					
5	Torque to 195-210 N•m (145-155 ft-lb). Apply service- able medium thread locker.																					
20*‡	109114	SCREW, cap, sch	31																			
21*‡	104572	WASHER, lock, spring	28																			
22	24V224	COVER, fan, assy (includes fan, cable and fasteners)	1																			
23*	16U113	KNOB KIT	1																			
50*		ELECTRONICS COVER	1																			
51	262657	SWITCH, power, 40A	1																			
52	16Y458	GASKET, junction box	1																			
53*	16Y460	GASKET, side cover	1																			
55	108788	WASHER, flat	1																			
56	124165	SCREW, cap, socket head	1																			
69		LABEL, branding, Xtreme Z45	1																			
		LABEL, branding, Xtreme Z25	1																			
96	127721	KNOB, impact control, preventer	1																			

D60 3 in. Dual Post Supply Unit

Model 257621 Shown

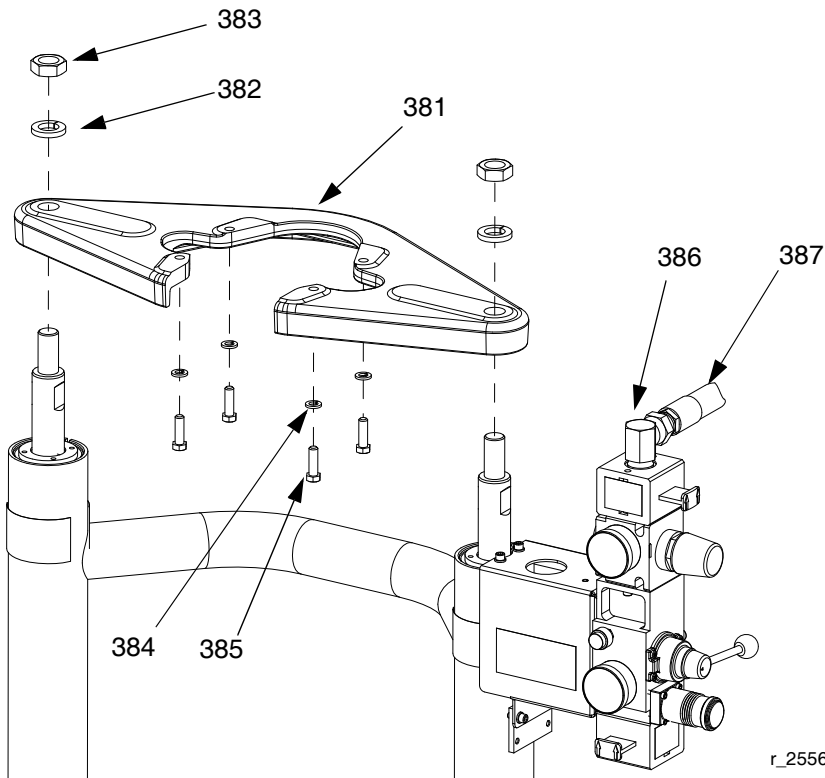


D60 3 in. Supply Units, 257621

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
202		PISTON, ram, subassembly; includes 202a-202m	1	216	132848	ELBOW, plug in	2
202a*		BEARING, ram end cap	2	217	128863	ELBOW	2
202b*	107092	PIN, spring, straight	2	236▲	15V954	LABEL, valve shutoff air control	4
202c*		O-RING	4	253	C19853	SCREW, cap, socket hd	2
202d*		O-RING	2	254	C38185	WASHER, lock	2
202e*	183943	PISTON	2	255	C32467	STOP, drum	2
202f*		NUT, jam	2	256	16T421	ADAPTER, pipe hex; 5/8 in.	1
202g*		WASHER, split	2	257▲	15J074	LABEL, safety, crush & pinch	1
202h*		O-RING	2	99		VALVE, safety relief	1
202j*		BEARING, ram end cap	2	▲ <i>Replacement Danger and Warning labels, tags, and cards are available at no cost.</i>			
202k*		RETAINER, retaining ring	2	❖ <i>Not shown.</i>			
202m*		SPRING, compression	2	* <i>Parts included in Supply Units Repair Kit 257622 (purchase separately).</i>			
302n*	257655	ROD, piston, ram	2	<i>See the Air Controls Instructions - Parts manual for two-button interlock parts.</i>			
203*	127510	RING, retaining, 3.06 dia	2				
301		RAM	1				
209		BRACKET, mounted	1				
211	101682	SCREW, cap, sch	8				
212	100016	WASHER, lock	8				
213	255650	CONTROL, air; see the Air Controls Instructions - Parts manual	1				
215	101689	GAUGE, pressure, air	2				

D60 Pump Mounts 257623 and 257624 for 5 Gallon (20 Liter), 8 Gallon (30 Liter), and 16 Gallon (60 Liter) Platens

Note: See page 38 for kit configuration table.



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Ref.	Part	Description	Qty.
381	‡	BRACKET, shelf, NXT2200	1
	✱	BRACKET, shelf, NXT3400 and NXT6500	
382	101533	WASHER, spring lock	2
383	101535	NUT, hex	2
384	100133	WASHER, lock	4
385	C38372	SCREW, cap, hex head	4
386	105281	FITTING, 3.4 nptf x 3/4 npsm, 45°	1
387	C12034	HOSE, coupled 72 in.	1
388	X	SLEEVE, protective; 72 in.	1
389	X	STRAP, tie	2
390	X	HOLDER, cable tie, rotating	2
391	X160327	FITTING, 3/4 nptf x 3/4 npsm, 90°	1

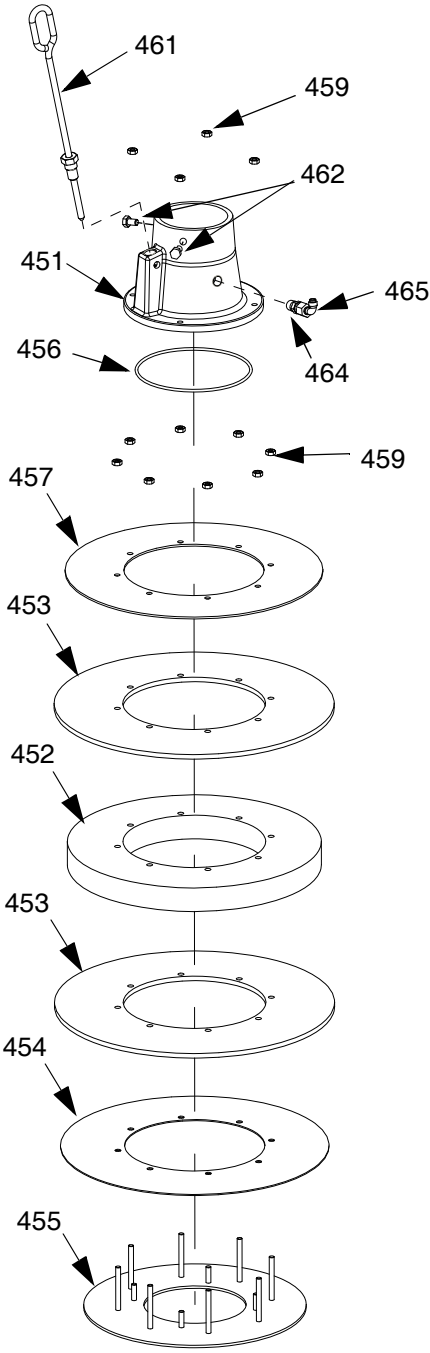
‡ For 257623 only.

✱ For 257624 only.

X Not shown.

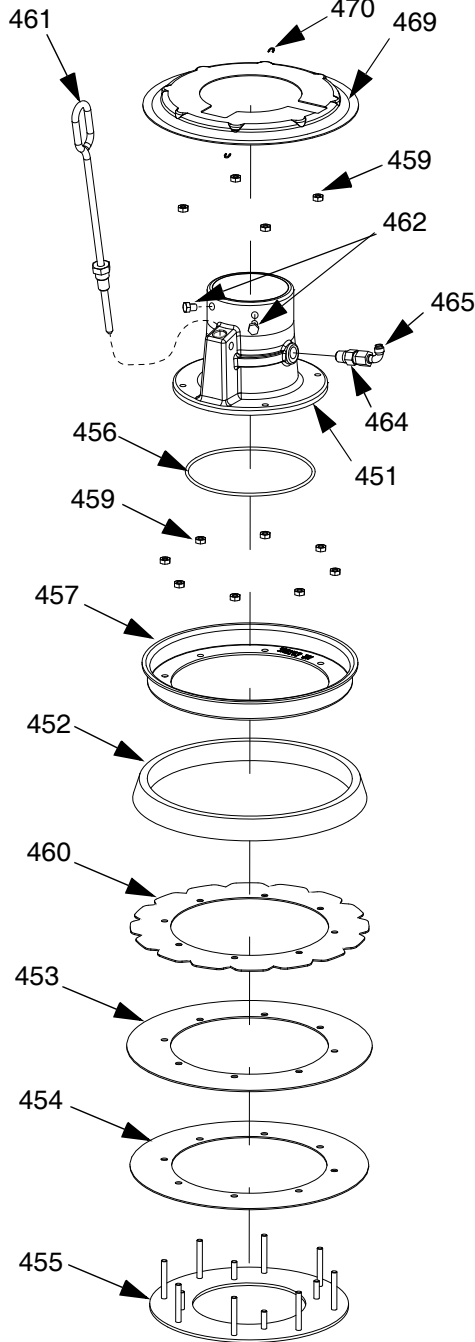
20 Liter (5 Gallon), 30 Liter (8 Gallon), and 60 Liter (16 Gallon) Platens

Double Wiper Platen



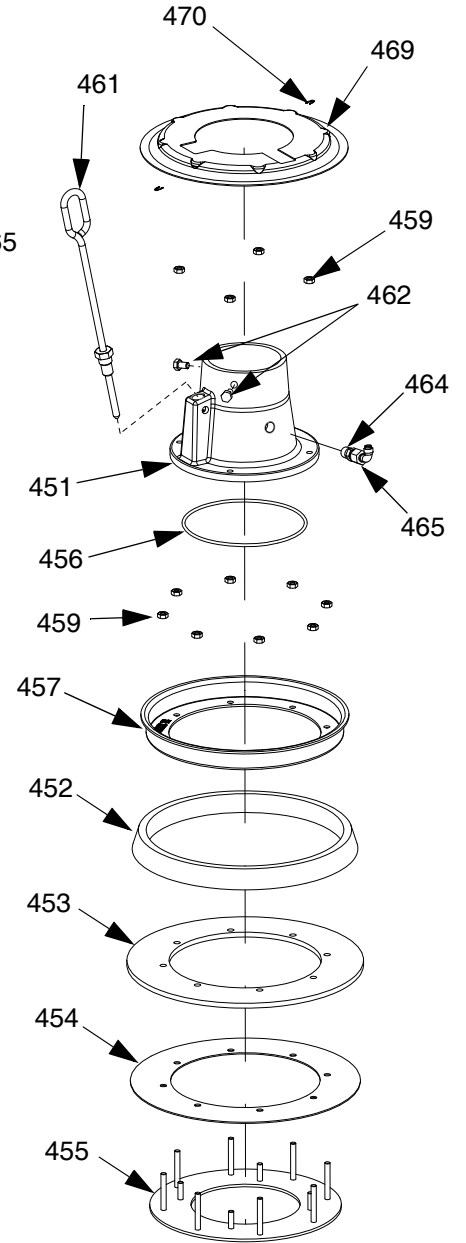
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Single Wiper with SST Platen



r_255648_313527_34a

Single Wiper Platen



r_255648_313527_26a

Platen Descriptions

Platen	Platen Size	Platen Material	Seal Material	Wiper Assembly Kit
257727✳	20 Liter (see page 45)	CS	Nitrile	257639
257728✳		CS	PolyUrethane	257640
257729✳		SST	PTFE-coated Nitrile	257641
257730✳		CS	Nitrile	257642
257731✳		CS	PolyUrethane	257643
25A206✳		SST	Nitrile (FDA Approved)	25A207
257732✳	30 Liter (see page 45)	CS	Nitrile	257644
257733✳		CS	PolyUrethane	257645
257734✳		SST	PTFE-coated Nitrile	257646
257735✳		CS	Nitrile	257647
257736✳		CS	PolyUrethane	257648
257737✳	60 Liter (see page 46)	CS	Nitrile	257649
257740✳		CS	PolyUrethane	257650
257738✳		SST	PTFE-coated Nitrile	257651
257739✳		CS	Nitrile	257652
257741✳		CS	PolyUrethane	257653

✳ *Single wiper*

✳ *Double wiper*

See page 45-46 for parts.

Common Parts

The parts listed below are common among all 20, 30, and 60 liter platens. Parts that vary are found in the tables on page 45-46.

Ref. Part	Description	Qty.
456	121829 O-RING	1
459	113504 NUT, keps, hex hd (For CSTL platens)	12
461	257697 HANDLE, bleed, sst	1
463	109482 O-RING; see page 46	1
465	C20350 ELBOW, 90°; 1/4 OD x 1/4 npt	1

Varying Parts - 20 Liter (5 Gallon) Platens

The following table indicates which parts (according to reference number) are included with each platen.

Ref.	Description	Reference Numbers						Qty:
		257727	257728	257729	257730	257731	25A206	
451	BASE	257665	257665	257662	257665	257665	257662	1
452‡	SPACER	276049	276049	276049	257694	257694	276049	1
453‡	WIPER, main	257672	257678	257675	257672 (2)	257678 (2)	25A208	1 (2)
454‡	WIPER, PE support	257681	257681	257681	257681	257681	257681	1
455‡	PLATE, bottom	257668	257668	257671	257668	257668	257671	1
457‡	PLATE, top - clamp retainer	257692	257692	257698	257686	257686	257698	1
460‡	WIPER, support			257689			n/a	1
462‡	SCREW, cap, hex hd	100057	100057	112894	100057	100057	112894	2
464	VALVE, check	122056	122056	501867	122056	122056	501867	1
468‡	TAG, instructions	n/a	n/a	n/a			n/a	1
469‡	COVER	15W184	15W184	15W184			15W184	1
470‡	PIN, hairpin, cotter (10 pack)	16U740	16U740	16U740			16U740	2

Parts designated n/a are not available separately.

‡ See page 44 for wiper assembly kits.

Varying Parts - 30 Liter (8 Gallon) Platens

The following table indicates which parts (according to reference number) are included with each platen.

Ref.	Description	Reference Numbers					Qty:
		257732	257733	257734	257735	257736	
451	BASE	257665	257665	257662	257665	257665	1
452‡	SPACER	194148	194148	194148	257695	257695	1
453‡	WIPER, main	257673	257679	257676	257673 (2)	257679 (2)	1 (2)
454‡	WIPER, PE support	257682	257682	257682	257682	257682	1
455‡	PLATE, bottom	n/a	n/a	n/a	n/a	n/a	1
457‡	PLATE, top	n/a	n/a	n/a	n/a	n/a	1
460‡	WIPER, support			257690			1
462‡	SCREW, cap, hex hd	100057	100057	112894	100057	100057	2
464	VALVE, check	122056	122056	501867	122056	122056	1
468‡	TAG, instructions	n/a	n/a	n/a			1
469‡	COVER	15X403	15X403	15X403			1
470‡	PIN, hairpin, cotter (10 pack)	16U740	16U740	16U740			2

Parts designated n/a are not available separately.

‡ See page 44 for wiper assembly kits.

Varying Parts - 60 Liter (16 Gallon) Platens

The following tables indicates which parts (according to reference number) are included with each platen.

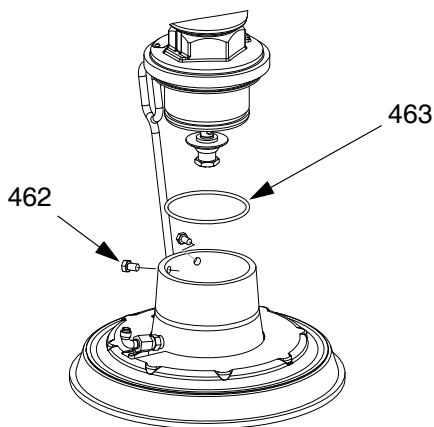
Ref.	Description	Reference Numbers					Qty:
		257737	257740	257738	257739	257741	
451	BASE	257665	257665	257662	257665	257665	1
452 ‡	SPACER	257684	257684	257684	257696	257696	1
453 ‡	WIPER, main	257674	257680	257677	257674 (2)	257680 (2)	1 (2)
454 ‡	WIPER, PE support	257683	257683	257683	257683	257683	1
455 ‡	PLATE, bottom	n/a	n/a	n/a	n/a	n/a	1
457 ‡	PLATE, top	n/a	n/a	n/a	n/a	n/a	1
460 ‡	WIPER, support			257691			1
462 ‡	SCREW, cap, hex hd	100057	100057	112894	100057	100057	2
464	VALVE, check	122056	122056	501867	122056	122056	1
468 ‡	TAG, instructions	n/a	n/a	n/a			1
469 ‡	COVER	15X404	15X404	15X404			1
470 ‡	PIN, hairpin, cotter (10pack)	16U740	16U740	16U740			2

Parts designated n/a are not available separately.

‡ See page 44 for wiper assembly kits.

Platen Mounting Kits

Check-Mate Mounting



r_255648_313527_35a

Ref.	Part	Description	Qty.
463	109482	O-RING	1
471		ADAPTER	1
472		SCREW, socket-hd	2
473	109458	O-RING	1

Accessories

Platen Options

NOTE: Platens are not provided with the Electric Supply Systems and must be purchased separately.

Part No.	Platen Size	Platen Style	Seal Material
257727	20 L (5 Gal)	Single Wiper	Nitrile
257728	20 L (5 Gal)	Single Wiper	Polyurethane
257729	20 L (5 Gal)	Single Wiper	PTFE
257730	20 L (5 Gal)	Dual Wiper	Nitrile
257731	20 L (5 Gal)	Dual Wiper	Polyurethane
257732	30 L (8 Gal)	Single Wiper	Nitrile
257733	30 L (8 Gal)	Single Wiper	Polyurethane
257734	30 L (8 Gal)	Single Wiper	PTFE
257735	30 L (8 Gal)	Dual Wiper	Nitrile
257736	30 L (8 Gal)	Dual Wiper	Polyurethane
257737	60 L (16 Gal)	Single Wiper	Nitrile
257738	60 L (16 Gal)	Single Wiper	PTFE
257739	60 L (16 Gal)	Dual Wiper	Nitrile
257740	60 L (16 Gal)	Single Wiper	Polyurethane
257741	60 L (16 Gal)	Dual Wiper	Polyurethane

Wiring Diagram

AIR FLOW DIRECTION

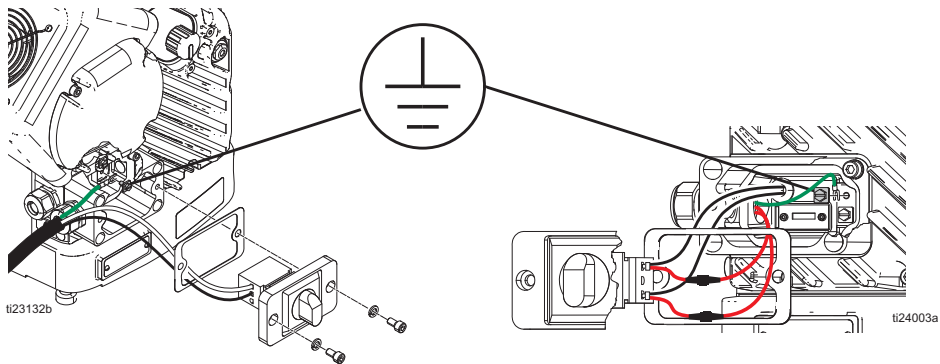
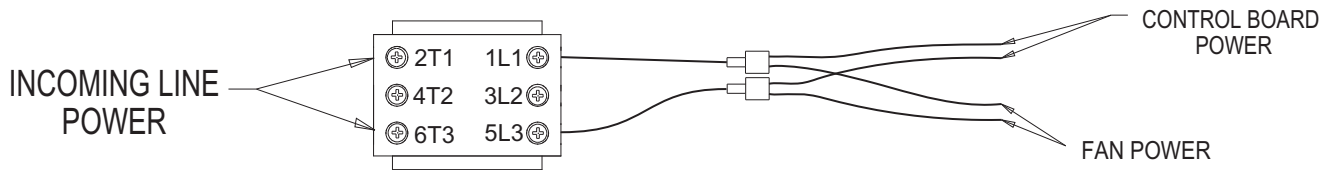
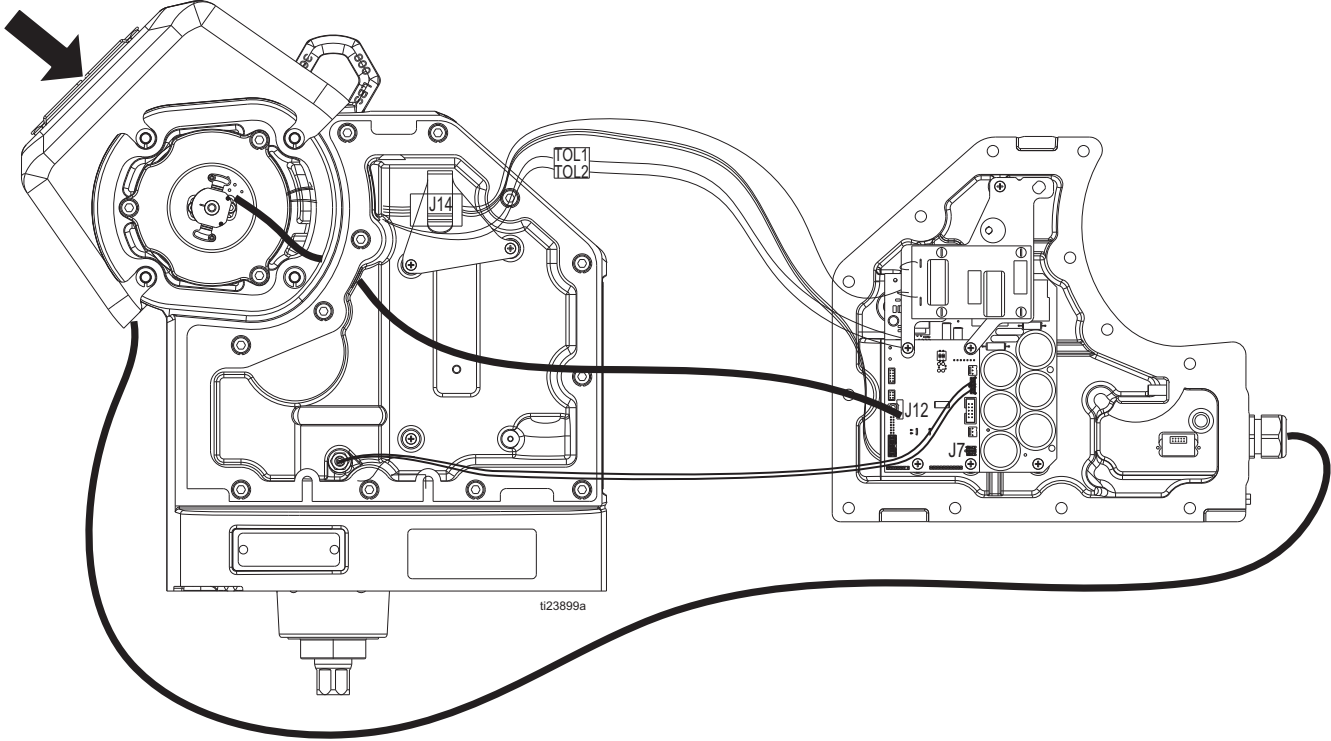
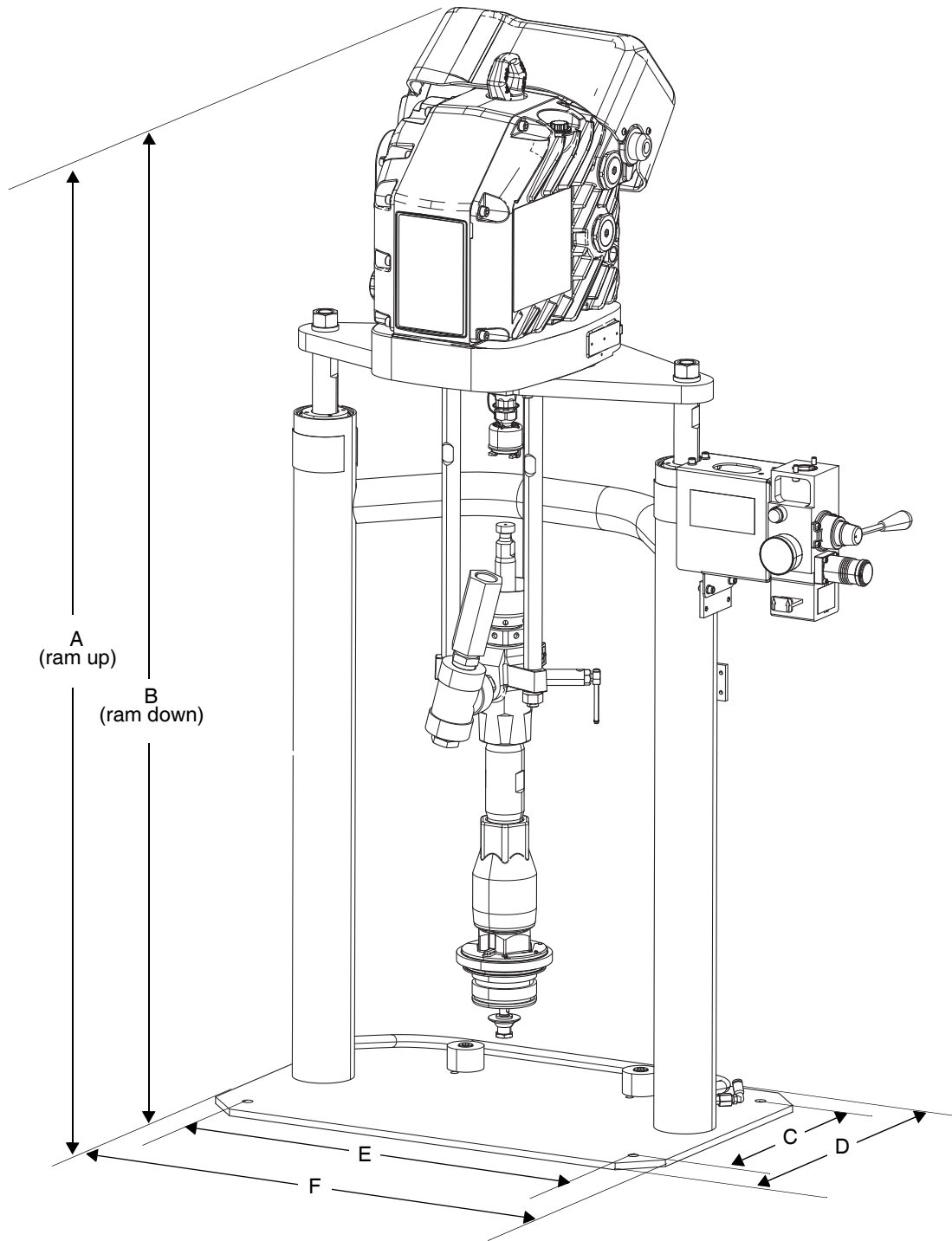


FIG. 50: Wiring Diagram

Dimensions

Supply Systems



Dimensions

Ram Model	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)
D60	89 (2260.6)	59 (1498.6)	14 (355.6)	18 (457.2)	24 (609.6)	28 (711.2)

Weight

Use the table below to identify the maximum weight for each available platen size.

Platen Size Gallons (Liters)	Maximum Weight lbs (kg)
30 (115)	44 (20)
16 (60)	25 (11.3)
8 (30)	21 (9.5)
5 (20)	19 (8.7)

Technical Specifications

Electric Supply System		
	US	Metric
Maximum air input pressure (supply system)		
D60 - 3 in. dual post, 16 gal. (60 L), 5 gal. (20 L), 30 gal. (115 L)	150 psi	1.0 MPa, 10 bar
Maximum fluid, air working pressure and weight (displacement pump)	For Check-Mate pump packages, see the Check-Mate Pump Instructions-Parts manual.	
Pump Wetted parts	For Check-Mate displacement pumps, see the Check-Mate Displacement pumps Instructions-Parts manual.	
Air Inlet Sizes		
D60 - 3 in. dual post, 16 gal. (60 L), 5 gal. (20 L), 30 gal. (115 L)	3/4 in. npt(f)	

Electric Pumps		
	US	Metric
Maximum continuous cycle rate (To prevent premature pump wear, do NOT exceed maximum recommended speed of fluid pump)	33 cycles per minute	
Weight	115 lb	52 kg
Operating temperature range	23° to 120° F	-5° to 50° C
Input voltage	200-240 VAC, single phase, 50/60 Hz	
Input current	20A maximum	
Oil capacity†	1.5 quarts	1.4 liters
Oil specification†	Graco part number 16W645 ISO 220 silicone-free synthetic EP gear oil†	
Maximum force	4200 lbf	18.7 kN
Noise (dBa)		
Sound data	74 dB	

† The driver gear-box is shipped from the factory pre-filled with oil. Additional oil must be purchased separately.

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Original instructions. This manual contains English. MM 3A5379

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