INSTRUCTION MANUAL

MANUAL NUMBER X030566 | REVISION A | ENGLISH (US)

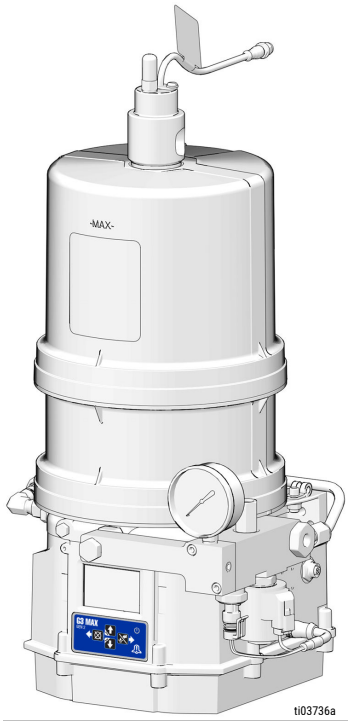
G3® Max HF Automatic Lubrication Pump

For dispensing NLGI Grades #000 to #2 greases. For professional use only.

Not approved for use in explosive atmospheres or hazardous (classified) locations.

Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Be familiar with the proper control and usage of the equipment. Save these instructions.



Images are for illustrative purposes only

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MODELS

Part numbers reflect distinct features and characteristics of the G3 Max HF Automatic Lubrication Pump.

The Part Number is a six-digit unique number used to order the pump.

For pumps with cellular network connection:

Contain FCC ID MCQ-XB3M2

Contain IC: 1846A-XB3M2

This device complies with Part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions:

- This device must not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Maximum Pump Output pressure (all models): 3500 psi (24.1 MPa, 241.3 bar)

G3 MAX HF AUTOMATIC LUBRICATION PUMP 4 L AND 8 L MODELS

Table 1-1: 4 Liter Models

PART NUMBER	DESCRIPTION	CELLULAR	LEVEL DETECTION	FOLLOWER PLATE	AUTO-FILL SHUT OFF (AFSO)
96G617	PUMP, G3 MAX HF, 4L, LLSW, PRTRANS	–	Low level switch	–	–
96G627★	PUMP, G3 MAX HF, W/CELL, 4L, LVLSNS, PRTRANS, FP	Yes	Level transducer	Yes	–

Table 1-2: 8 Liter Models

PART NUMBER	DESCRIPTION	CELLULAR	LEVEL DETECTION	FOLLOWER PLATE	AUTO-FILL SHUT OFF (AFSO)
96G619	PUMP, G3 MAX HF, 8L, LLSW, PRTRANS	–	Low level switch	–	–
96G635	PUMP, G3 MAX HF, 8L, LLSW, PRTRANS, FP	–	Low level switch	Yes	–
96G636	PUMP, G3 MAX HF, 8L, LLSW, PRTRANS, FP, AFSO	–	Low level switch	Yes	Yes
96G629★	PUMP, G3 MAX HF, W/CELL, 8L, LVLSNS, PRTRANS, FP	Yes	Level transducer	Yes	–
96G637★	PUMP, G3 MAX HF, W/CELL, 8L, LVLSNS, PRTRANS, FP, AFSO	Yes	Level transducer	Yes	Yes

★ These pumps are used for US and Canada only.

RELATED MANUALS

Additional documents are available to support the operation, repair, and maintenance of the G3 Max HF Automatic lubrication Pump. Find English manuals and any available translations at www.graco.com.

Table 2-1: Related Manuals for G3 Max HF Automatic Lube Manual , X021678

ENGLISH MANUAL	DESCRIPTION
333393	Fill Valve, Instruction

SAFETY SYMBOLS

The following safety symbols appear throughout this manual and on warning labels. Read the table below to understand what each symbol means.

SYMBOL	MEANING
	Cleaning Solvent Hazard
	Fire and Explosion Hazard
	Moving Parts Hazard
	Skin Injection Hazard
	Skin Injection Hazard
	Splash Hazard

SYMBOL	MEANING
	Do Not Place Hands or Other Body Parts Near Fluid Outlet
	Do Not Stop Leaks with Hand, Body, Glove or Rag
	Follow Pressure Relief Procedure
	Read Manual
	Wear Personal Protective Equipment

Safety Alert Symbol

This symbol indicates: Attention! Become Alert! Look for this symbol throughout the manual to indicate important safety messages.

GENERAL WARNINGS FOR G3 MAX HF

The following warnings apply throughout this manual. Read, understand, and follow the warnings before using this equipment. Failure to follow these warnings can result in serious injury.

⚠ 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.

⚠ WARNING

SKIN INJECTION HAZARD

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.**

- 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.

PRESSURIZED EQUIPMENT HAZARD

Over-pressurization can result in equipment rupture and serious injury.

- A pressure relief valve is required at each pump outlet.
- Follow the **Pressure Relief Procedure** in this manual before servicing.

PLASTIC PARTS CLEANING SOLVENT HAZARD

Many cleaning solvents can degrade plastic parts and cause them to fail, which could cause serious injury or property damage.

- Use only compatible solvents to clean plastic structural or pressure-containing parts.
- See **Technical Specifications** in all equipment manuals for materials of construction. Consult the solvent manufacturer for information and recommendations about compatibility.

MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

⚠ 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.

TECHNICAL SPECIFICATIONS

The table provides important information related to the G3 Max HF Pump, including product attributes, measurements, and performance characteristics that support the use of the equipment.

Table 5-1: Technical Specifications for G3 Max HF Pump

	US	METRIC
Pump output pressure	3500 psi	24.1 MPa, 241.3 bar
Power		
24 VDC	18-30 VDC; 4.0 amp current, inrush/locked rotor 30amp.	
Outputs - Vent Valve		
Vent Valve Type	Normally open	
Vent Valve Voltage		
24 VDC	Input Voltage	
Power		
24 VDC	0.8 A current, 19 W	
Outputs - Signal Output 1 and 2		
Max Operating Voltage	30 VDC	
Max Operating Current	50 mA, sinking	
Closed Impedance	130 ohms, +/- 20 percent	
Cellular		
Frequency Bands	2*, 4*, 5, 12*, 14, 17* (* minimum required bands)	
Fluid		
Grease Models	Grease NLGI #000 - #2	
Pumps		
Pump Output	1.5 in.³ (24.6 cm³) / per minute	
Pump Outlet	¼ - 18 NPSF. Mates with ¼ - 18 NPT male fittings	
Reservoir Size	4, 8, liters	
Sensor Inputs	Pressure sensor or pressure switch	
Ambient Temperatures	-22°F to 158°F	-30°C to 70°C
IP Rating	IP69K	
Noise (dBa)		

	US	METRIC
Maximum sound pressure	<70dBa	
Materials of Construction		
Wetted Parts	Nylon 6/6 (PA), amorphous polyamide, zinc plated steel, carbon steel, alloy steel, stainless steel, nitrile rubber (buna-N), bronze, nickel plated alnico, chemically lubricated acetal, aluminum, PTFE	
*Minimum required for coverage. All trademarks or registered trademarks are the property of their respective owners.		

Table 5-2: Pump Maximum Weight (lbs)

MODEL	WITHOUT FOLLOWER PLATE	WITH FOLLOWER PLATE	WITH AUTO-FILL SHUT OFF
4 L	22.8	25.0	N/A
8 L	24.3	26.5	29.4

The diagram highlights the controls and features on the G3 Max HF Automatic Lubrication Pump that are used during typical operation.

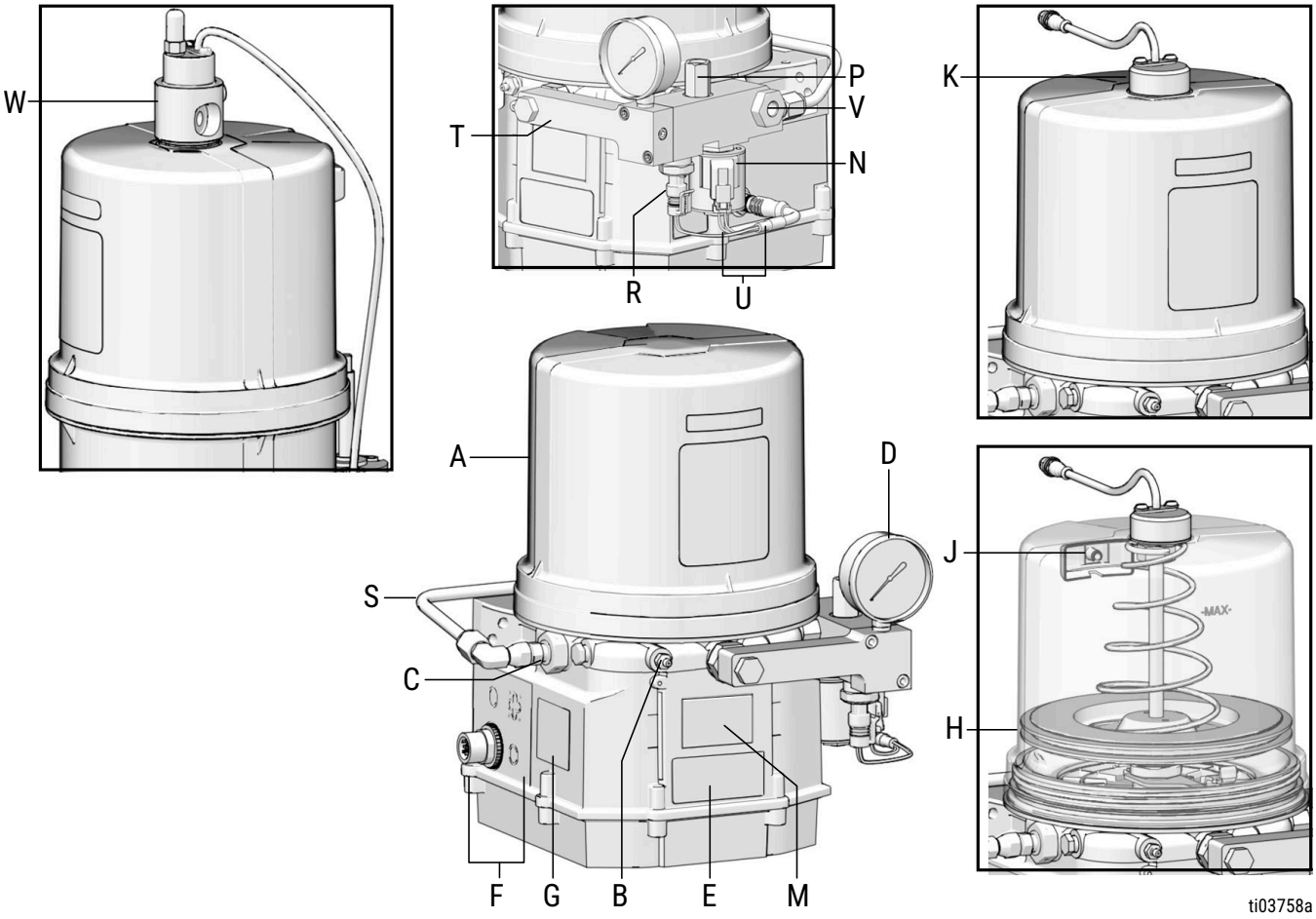

Figure 6-1: Components for G3 Max HF Automatic Lubrication Pump Typical Installation

KEY	
A	Reservoir Cups
B	Zerk Inlet Fill Fitting (included/grease models only)
C	Pump Element (3 included)
D	Pressure Gauge
E	Control Panel
F	Power/Sensor Panel (both sides; only one side shown)
G	Part Number/Model Number
H	Follower Plate (not available on all models)
J	Vent Hole
K	Low Level Sensor (not available on all models)
L	Power Cord (not shown)
M	LCD Display
N	Vent Valve 24 VDC
P	Pressure Relief
R	Pressure Transducer/Pressure Switch
S	Tube to Connect Outlets
T	Manifolds
U	Vent Valve / Pressure Transducer Cable
V	Pump Outlet
W	Auto-Fill Shutoff

FILL WITHOUT REMOTE FILL MANIFOLD WITH AUTO-FILL SHUTOFF

The diagram highlights the fill without remote fill manifold with auto-fill shutoff on the G3 Max HF Automatic Lubrication Pump that is used during typical operation.

The installation shown is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to meet your needs.

NOTE: The remote filling station pump stalls (dead heads) when the reservoir is full. If the pump does not stall (dead heads) there is a leak in the system.

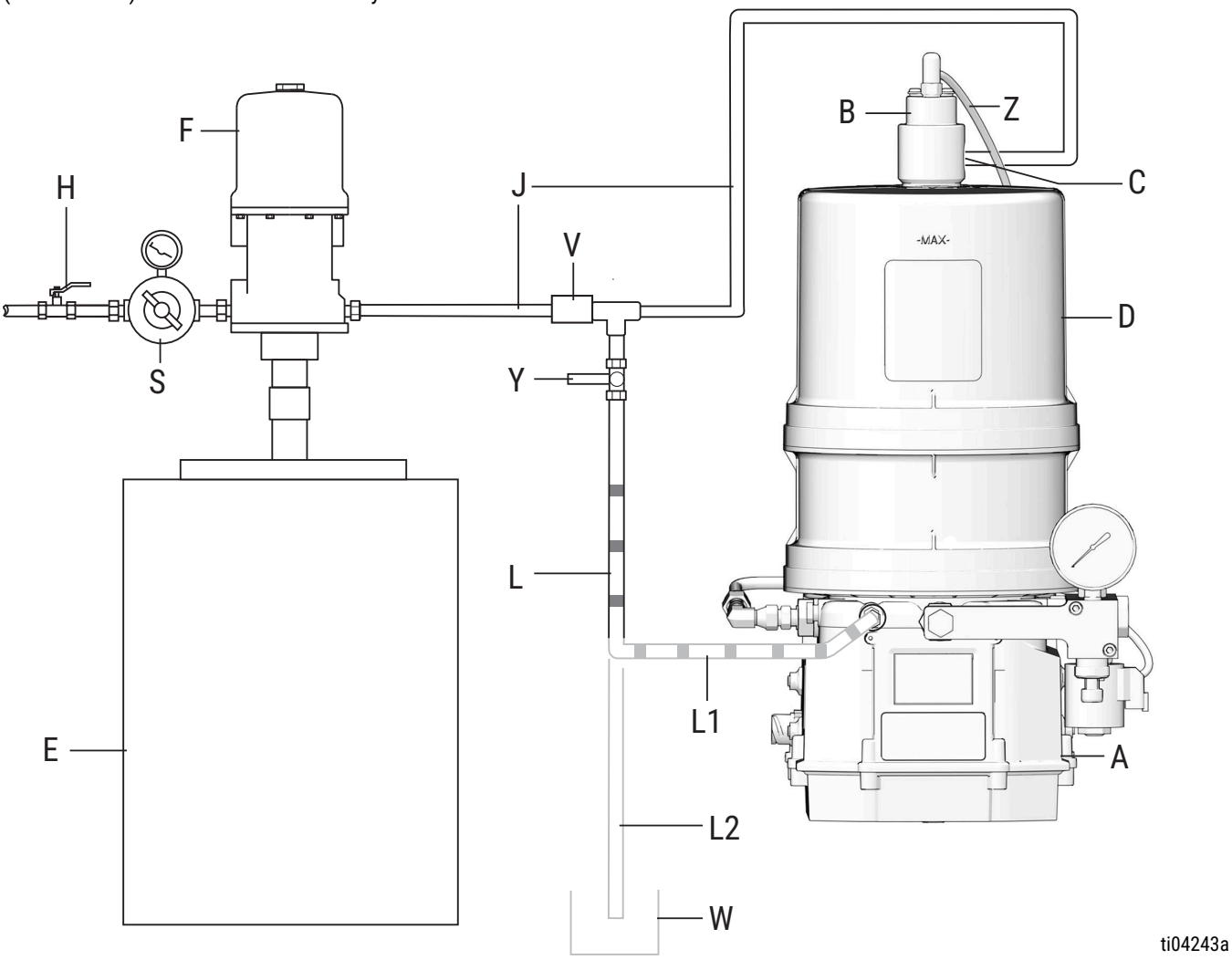

Figure 7-1: Components for G3 Max HF Automatic Lubrication Pump Fill Without Remote Fill Manifold with Auto-Fill Shutoff Typical Installation

KEY	
A	G3 Pump
B	Auto-Fill Shutoff Valve
C	Auto-Fill Inlet
D	G3 Reservoir
E	Remote Fill Reservoir
F	Remote Fill Pump
H	Air Supply to Refilling Pump
J	Supply Hose
L	Drain Tube
	L1 Option - To reservoir
	L2 Option - To Overflow Container
S	Pressure Regulator and Gauge
V	Quick Disconnect
W	Overflow Container
Y	Supply Hose Pressure Relief Valve ◆
Z	Level Sensor

◆ To relieve stall pressure in the fill line a ball valve (Y) must be installed in the system.

FILL WITH AUTO-FILL SHUTOFF VALVE AND REMOTE FILL SYSTEM

The diagram highlights the fill with auto-fill shutoff valve and remote fill manifold on the G3 Max HF Automatic Lubrication Pump that are used during typical operation.

The installation shown is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to meet your needs.

NOTE: The remote filling station pump stalls (dead heads) when the reservoir is full. if the pump does not stall (dead heads) there is a leak in the system.

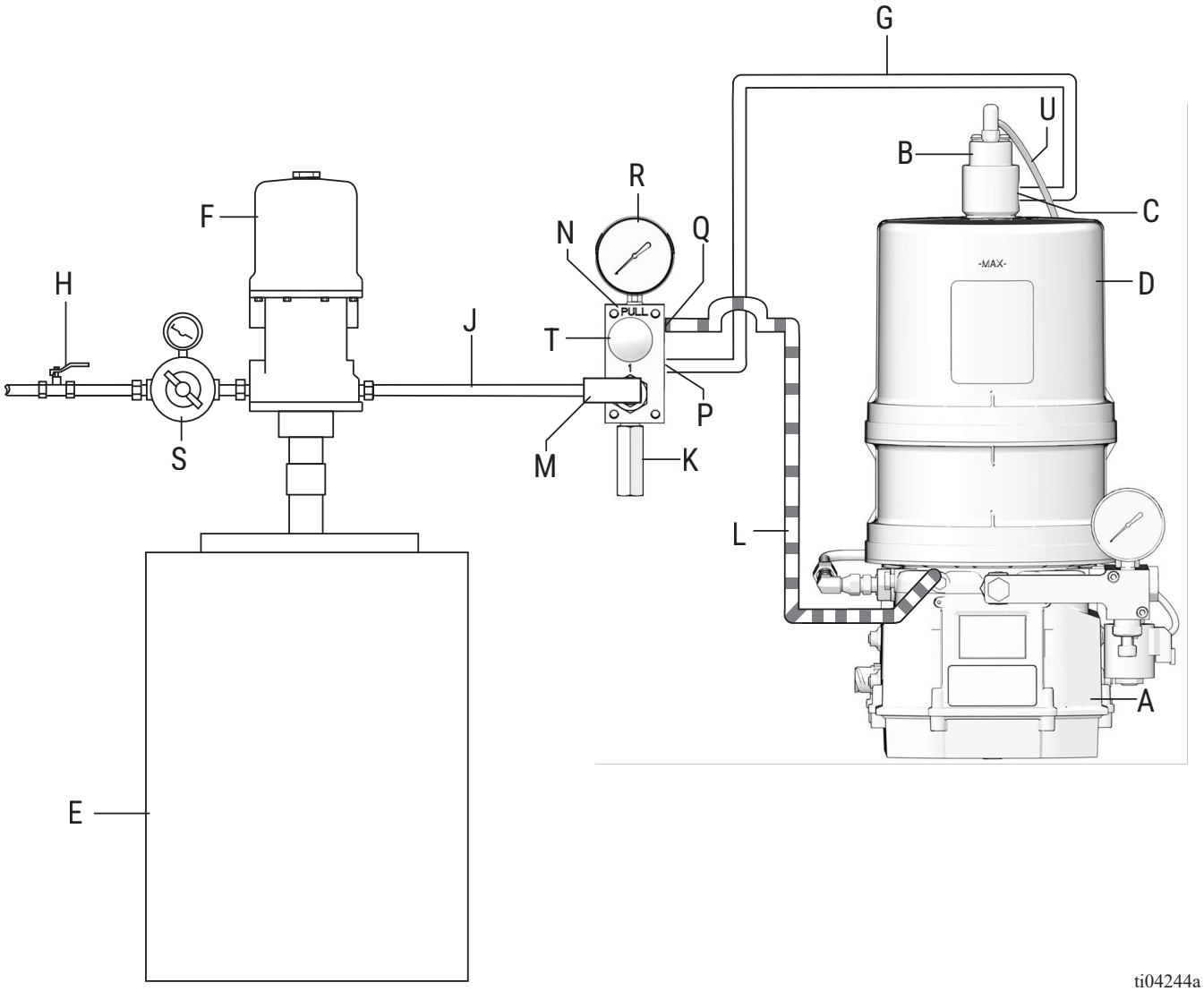

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Figure 8-1: Components for G3 Max HF Automatic Lubrication Pump Fill With Auto-Fill Shutoff Valve and Remote Fill Manifold Typical Installation

KEY	
A	G3 Pump
B	Auto-Fill Shutoff Valve
C	Auto-Fill Inlet
D	G3 Reservoir
E	Remote Fill Reservoir
F	Remote Fill Pump
G	Refilling Line
H	Air Supply to Refill Pump
J	Supply Hose
K	Pressure Relief valve
L	Drain Hose
M	Fill Coupler/Inlet (quick disconnect)
N	Fill Manifold ◆
P	Fill Manifold Outlet
Q	Fill Manifold Vent Port
R	Pressure Gauge
S	Pressure Regulator and Gauge
T	Pressure Relief Knob
U	Level Sensor

◆ To relieve stall pressure in the fill line a fill manifold (N) must be installed in the system.

LOW LEVEL SWITCH (GREASE)

The pump is equipped with a rotating paddle and as the grease level reduces to the minimum level, the paddle momentarily triggers the reed switch (one time per paddle revolution). When the set quantity of triggers are detected, it activates the low level condition.

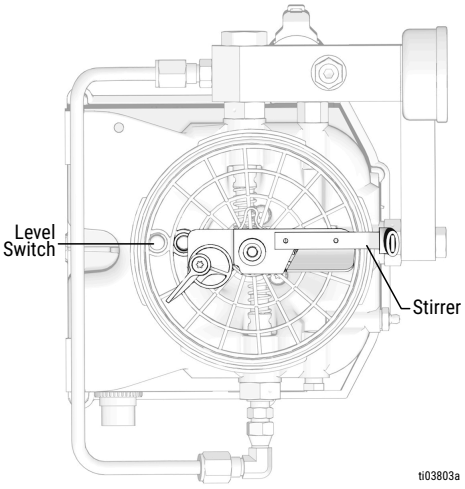


Figure 9-1: Low Level Switch

LEVEL SENSOR (GREASE PUMP)

The level transducer continuously monitors the fluid level and warns when the follower plate (grease models) reaches the distance set in the controller programming from the bottom of the reservoir.

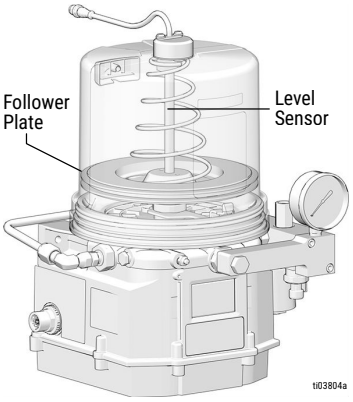


Figure 9-2: Level Sensor

The pressure switch (S) is factory-set to 3000 psi. When the pressure in the system reaches 3000 psi the pressure switch closes.

The pressure transducer is used for continuous pressure monitoring.

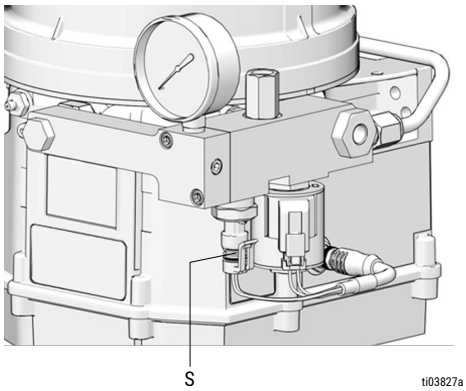


Figure 10-1: Pressure Switch

Table 10-1: Pressure Switch

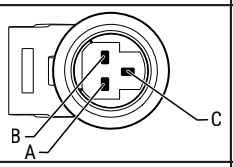
OUTPUT TYPE	1 SWITCH OUTPUT NO.
Operating Voltage	24 VDC
Current	5 amp
Connection Type	Packard Metri-Pack 150 series
Pre Set Pressure	3000 psi

Table 10-2: Pressure Transducer

OUTPUT TYPE	ANALOG 0.5 - 4.5 V
Operating Voltage	8-32 VDC
Connection Type	Packard Metri-Pack 150 series
Pre Set Pressure	0-5000 psi

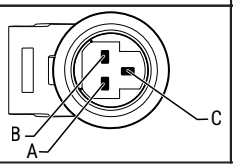
CONNECTOR PIN OUT

Pressure Switch



PIN	PIN Name
A	Not Used
B	Vs
C	Pressure Out

Pressure Transducer



PIN	PIN Name
A	GND
B	Vs
C	Pressure Out

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Figure 10-2: Pressure Switch and Pressure Transducer Pin-Outs

VENT VALVE

The pump design includes a self-contained vent valve (P). The vent valve reduces system pressure in series single line systems and reseting the injectors.

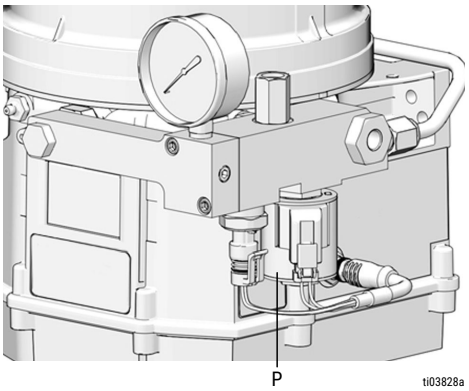


Figure 11-1: Vent Valve

PRESSURE RELIEF VALVE

The pump design includes a self-contained pressure relief valve (R). When needed the valve relieves pressure back into the pump reservoir (A).

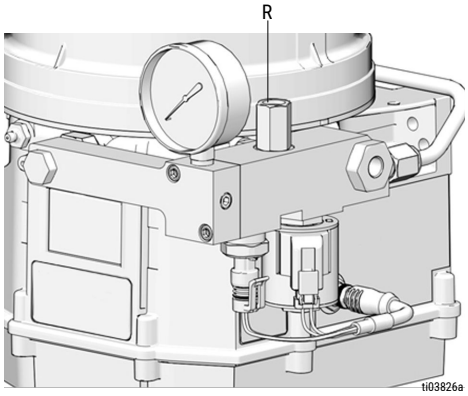


Figure 12-1: Pressure Relief Valve

TYPICAL INJECTOR INSTALLATION

A typical installation of the G3 Max HF pump includes connection to a power source, a user-supplied supply hose, and injector that supplies lubrication material to the lube points.

The diagram highlights a typical Injector installation on the G3 Max HF Automatic Lubrication Pump that is used during typical operation.

The installation shown is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to meet your needs.

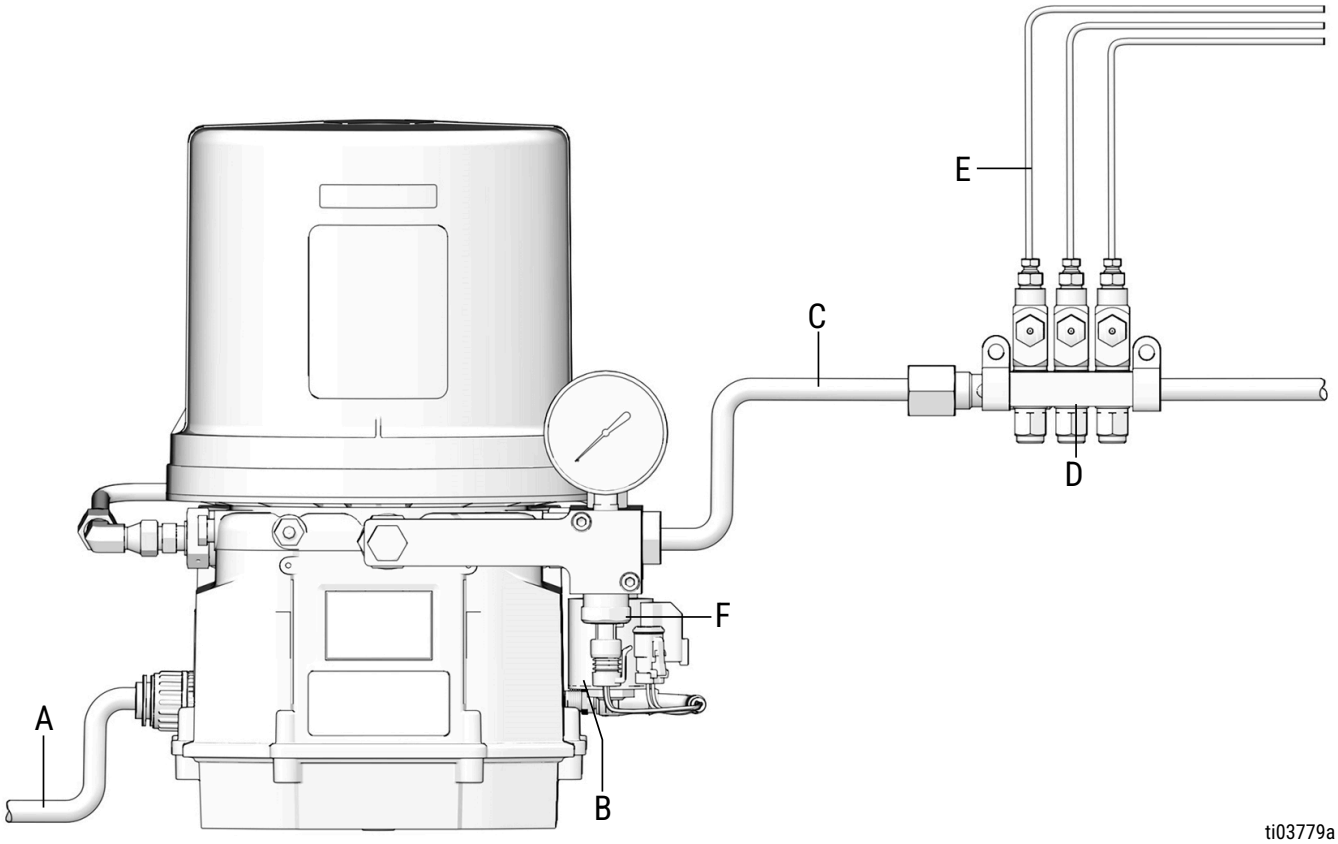


Figure 13-1: Components for a typical injector installation for the G3 Max HF Automatic Lubrication Pump

KEY	
A	Connected to fused power source
B	Vent Value
C	Supply Hose (user supplied)
D	Injector
E	To lube points
F	Pressure Transducer

UNPACK THE PUMP

NOTICE

To prevent equipment damage, observe precautions for handling electrostatic sensitive devices. Touch ground before handling pump.

The pump module was carefully packaged for shipment. When the package arrives, perform the following procedure to unpack the units:

1. Inspect the shipping box carefully for shipping damage. Contact the carrier promptly if damage is discovered.
2. Unseal the box and inspect the contents carefully. There should not be any damaged parts.
3. Compare the packing slip against all items included in the box. Any shortages or other inspection problems should be reported immediately.

CHOOSE AN INSTALLATION LOCATION

⚠ WARNING

AUTOMATIC SYSTEM ACTIVATION HAZARD

The system is equipped with an automatic timer that activates the pump lubrication system when power is connected or when exiting the programming function. Unexpected activation of the system could result in serious injury, including skin injection and amputation.

Before you install or remove the lubrication pump from the system, disconnect and isolate all power supplies and relieve all pressure.

- Select a location that will adequately support the weight of the G3 pump and lubricant, and all plumbing and electrical connections.
- Refer to the mounting hole layouts in **Dimensions, page 78**. No other installation configuration should be used.
- Use designated mounting holes and provided configurations only.
- Always mount the G3 oil models upright.
- If the G3 grease model is going to be operated in a tilted or inverted position, use a model that includes a follower plate; otherwise, the pump must be mounted upright.
- Use the two fasteners (included) to secure the pump to the mounting surface.

SYSTEM CONFIGURATION AND WIRING

FUSES (DC MODELS)

NOTICE

Fuses (user supplied) are required on all DC models. To avoid equipment damage:

- Never operate G3 Max HF Pump DC models without a fuse installed.
- A fuse of the correct current must be installed in line with the power entry to the equipment.

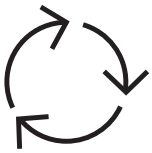
Fuse Kits are available from Graco. This table identifies the correct fuse to use for your input voltage and the corresponding Graco Kit number.

INPUT VOLTAGE	FUSE VALUE	GRACO KIT NO.
24 VDC	7.5 A	25C986

WIRING AND INSTALLATION DIAGRAMS

NOTE:

Not all models include all of these features.

DIAGRAM	SYMBOL
Power CPC DC	 ti04437a
Inputs (M12):	
Cycle Count	
Machine Count	 ti02845a
Level Sensor	 ti02844a
Pressure Sensor and Vent Valve	
Illuminated Manual Run Input	 ti04438a

POWER CPC DC – 2 WIRE

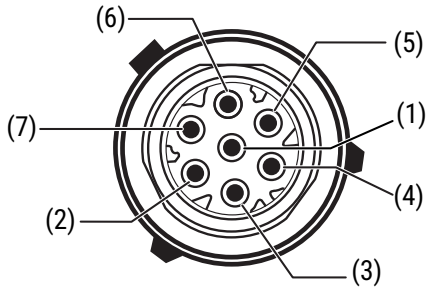
Table 13-1: Power CPC DC – 2 Wire

PART NUMBER	DESCRIPTION
127783	15 ft (4.5 m)

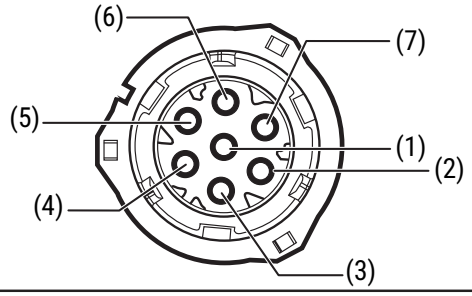
Table 13-2: Pin and Related Wire Color

Pin	Pin Name	Color
1	Unused	Unused
2	-VDC	Black
3	+VDC	White
4	Unused	Unused
5	Unused	Unused
6	Unused	Unused
7	Unused	Green

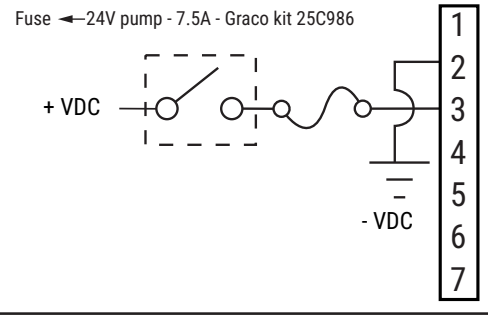
Connector on Housing



Connector on Cable



Example Wiring Diagram



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POWER CPC DC – 5 WIRE

Table 13-3: Power CPC DC – 7 Wire

PART NUMBER	DESCRIPTION
2003467	15 ft (4.5 m)
2003896	30 ft (9.1 m)

An Illuminated Remote Run Button kit is used to start a manual run cycle when used with a 5-wire CPC cable. Kits 571030 and 571031 are available from Graco. Contact your local Graco distributor or Graco Customer Service for information about these kits.

Table 13-4: Pin and Related Wire Color

Pin	Pin Name	Color
1	Unused	Unused
2	-VDC	Black
3	+VDC	Red
4	LED+	White
5	Manual Run Switch	Orange
6	Unused	Unused
7	LED-	Green

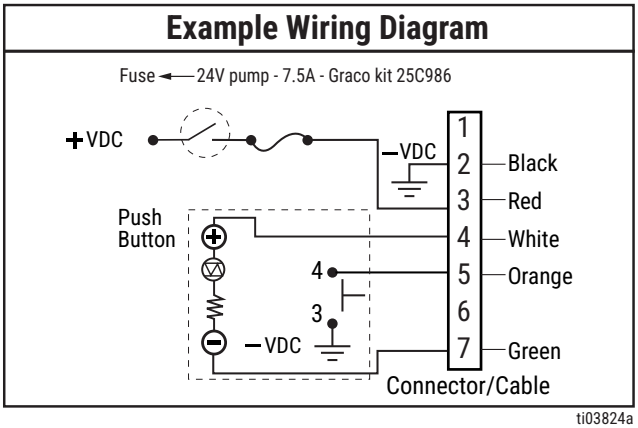


Figure 13-2: Example Wiring Diagram

POWER CPC DC – 7 WIRE

Table 13-5: Power CPC DC – 7 Wire

PART NUMBER	DESCRIPTION
2001714	15 ft (4.5 m)
2001715	30 ft (9.1 m)

An Illuminated Remote Run Button kit is used to start a manual run cycle when used with a 7-wire CPC cable. Kits 571030 and 571031 are available from Graco. Contact your local Graco distributor or Graco Customer Service for information about these kits.

Table 13-6: Pin and Related Wire Color

Pin	Pin Name	Color
1	Signal 1/Alarm Output Signal	Brown*
2	-VDC	Black
3	+VDC	Red
4	LED+	Yellow
5	Manual Run Switch	Orange
6	Signal 2/Alarm Output Signal	Blue*
7	LED-	Blue

* Signal 1 and Signal 2 are terminated as 2-pin female Deutsch connector cable of length 18 in.

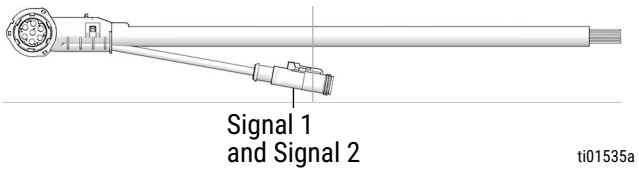


Figure 13-3: Signal 1 and Signal 2 termination

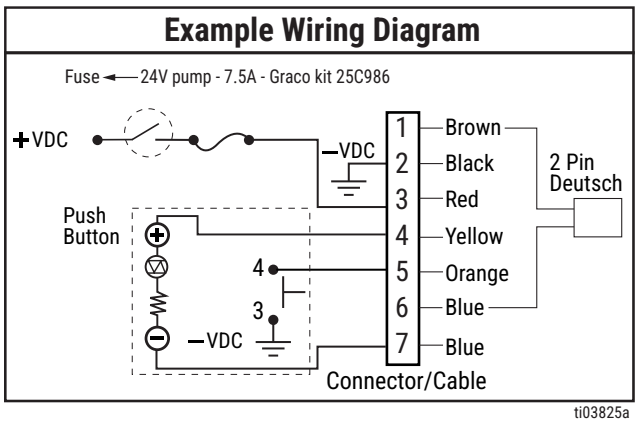


Figure 13-4: Example Wiring Diagram

CYCLE COUNT AND MACHINE COUNT INPUTS (M12)

NOTE:

Not all models include this feature.

NOTE:

See **Technical Specifications, page 9** for ratings.

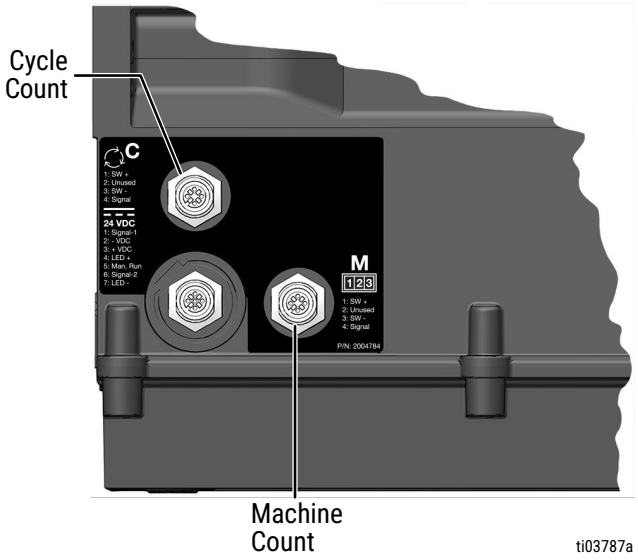
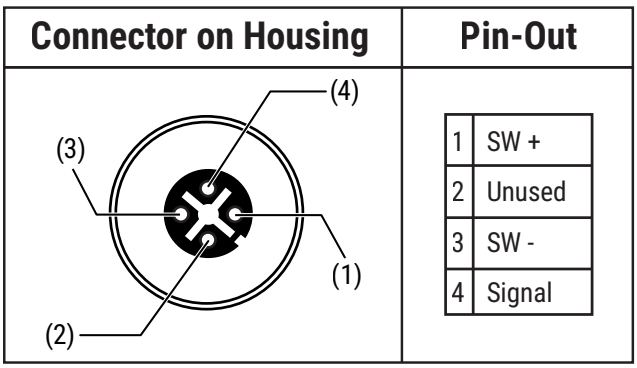


Figure 13-5: Cycle Count and Machine Count



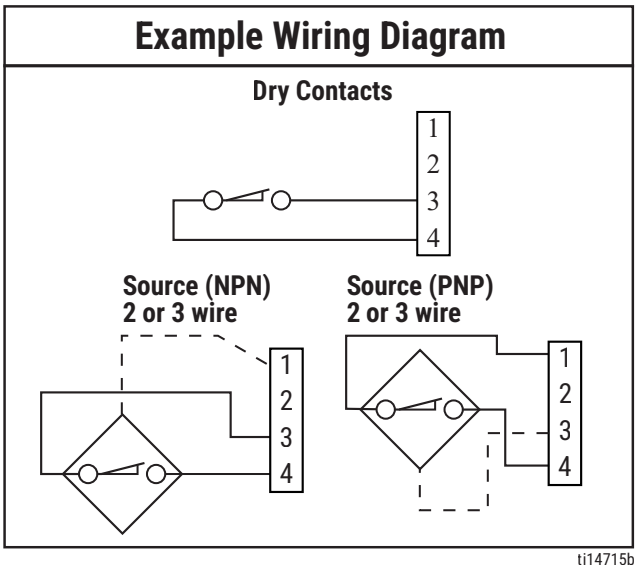


Figure 13-6: Example Wiring Diagram

PRESSURE SENSOR AND VENT VALVE OUTPUTS (M12)

NOTE:

See **Technical Specifications, page 9** for ratings.

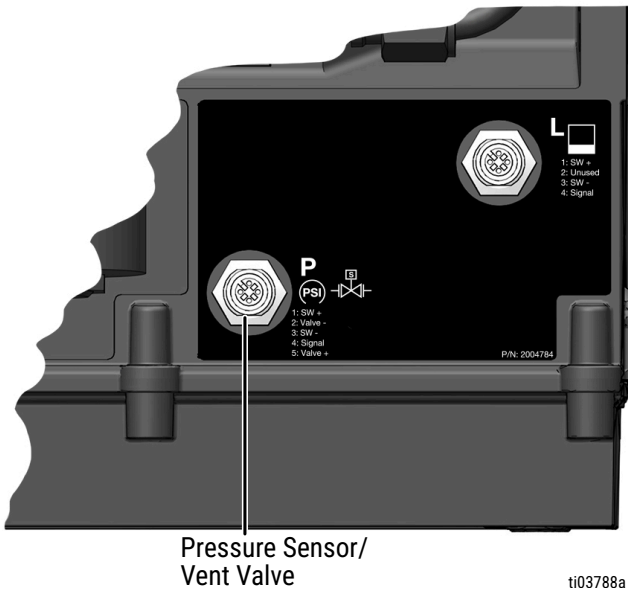


Figure 13-7: Pressure Sensor and Vent Valve Outputs

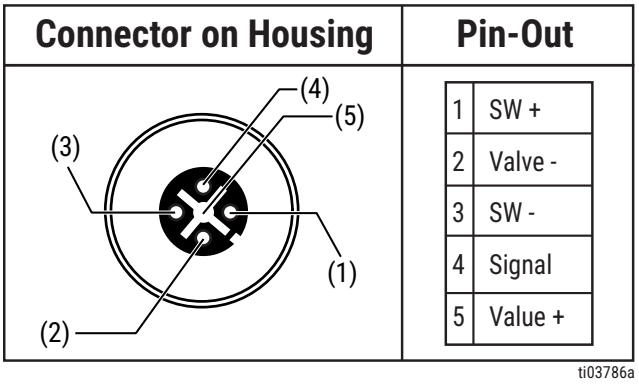


Figure 13-8: Connector on Housing

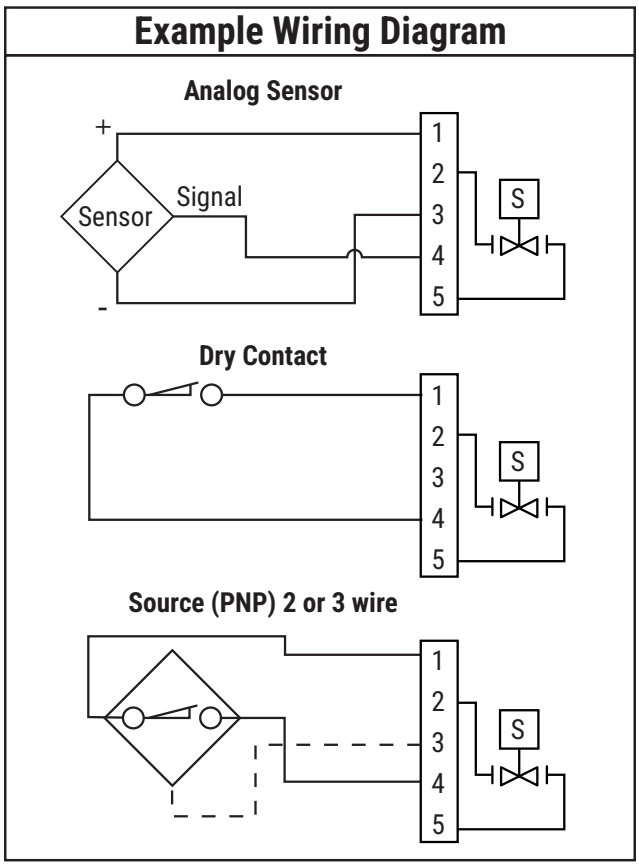


Figure 13-9: Example Wiring Diagram

LEVEL SENSOR INPUT (M12)

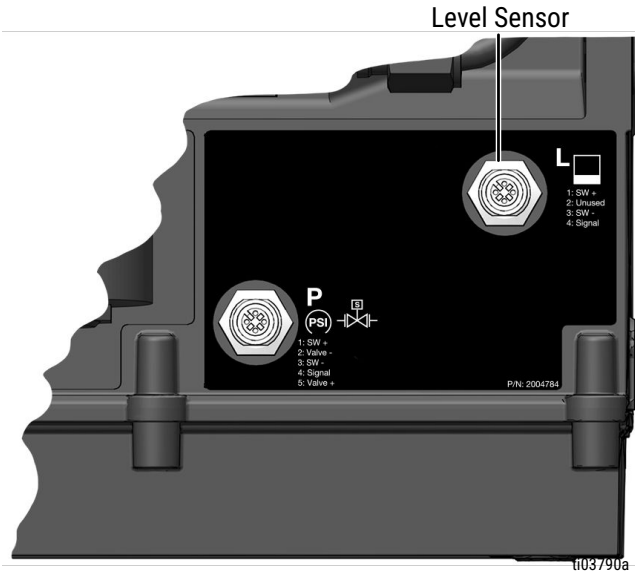


Figure 13-10: Level Sensor

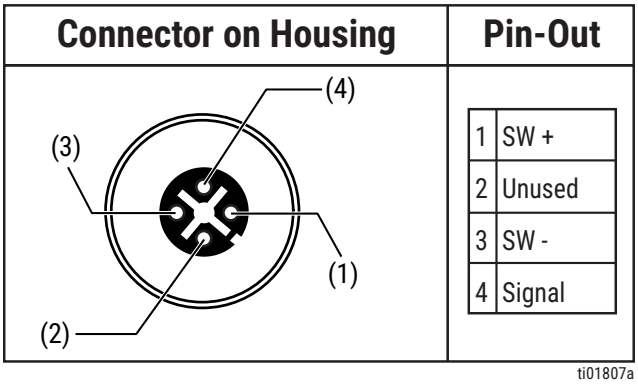


Figure 13-11: Connector on Housing

EXTERNAL CABLES

CABLE PIN OUT (M12) FOR 5M CABLE

Table 13-7: Cable Pin Out (M12) for 5m Cable

PART NUMBER	DESCRIPTION
124333	16 ft (5 m)

Table 13-8: Wire Color

Item No.	Color
1	Brown
2	White
3	Blue
4	Black

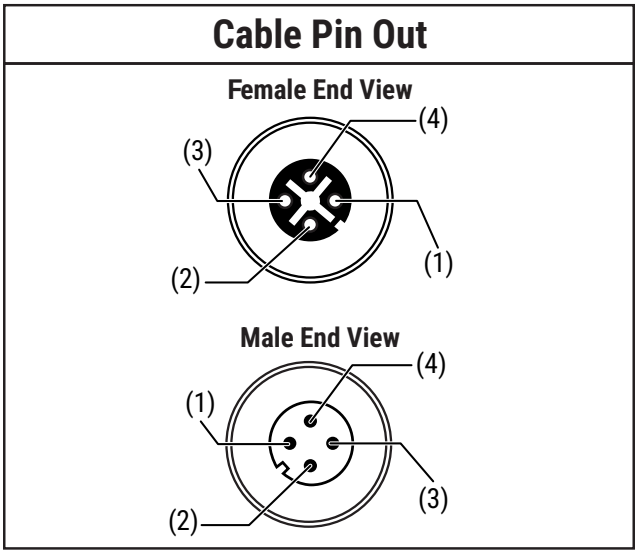


Figure 13-12: Cable Pin Out

MALE FLYING LEAD PIN OUT (M12)

Table 13-9: Male Flying Lead Pin Out (M12)

PART NUMBER	DESCRIPTION
124300	16 ft (5 m)

Table 13-10: Wire Color

Item No.	Color
1	Brown
2	White
3	Blue
4	Black

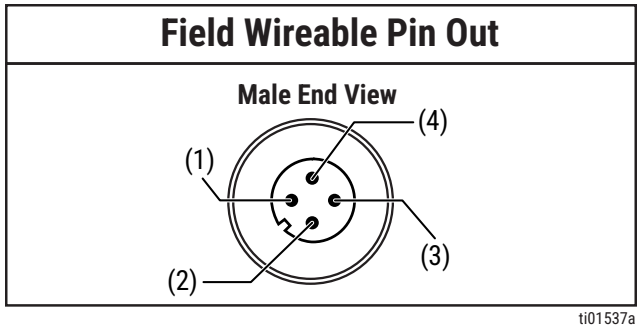


Figure 13-13: Male End View

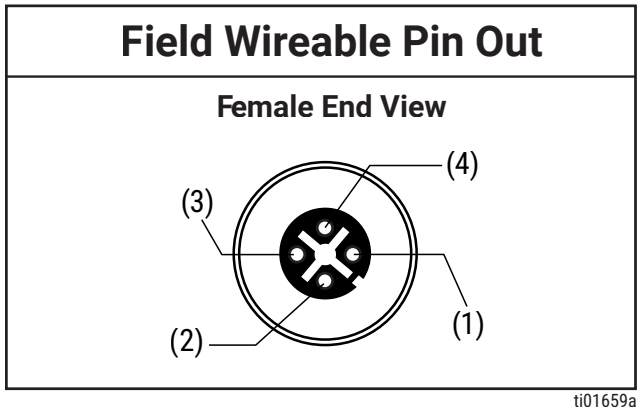


Figure 13-14: Female End View

4-PIN (M12)MALE FIELD WIREABLE CONNECTOR FOR 6 TO 8 MM CABLE

Table 13-11: 4-Pin (M12) Male Field Wireable Connector for 6 to 8 mm Cable

PART NUMBER	DESCRIPTION
124594	20-26 ft (6-8 m)

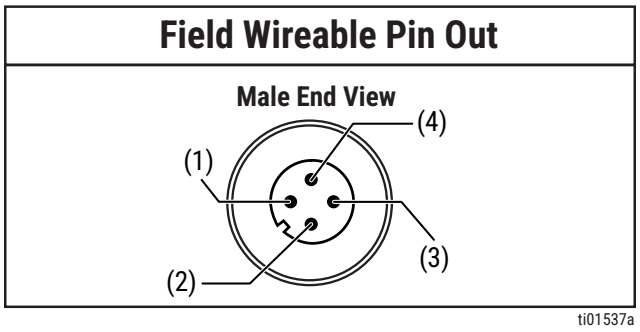


Figure 13-15: Cable Pin Out

NOTE:

Field wirable connectors are for sensors with integtrated cable.

5-PIN (M12) MALE FIELD WIREABLE CONNECTOR FOR 8 TO 11 MM CABLE

Table 13-12: 5-Pin (M12) Male Field Wireable Connector for 8 to 11 mm Cable

PART NUMBER	DESCRIPTION
124595	26-36 ft (8-11 m)

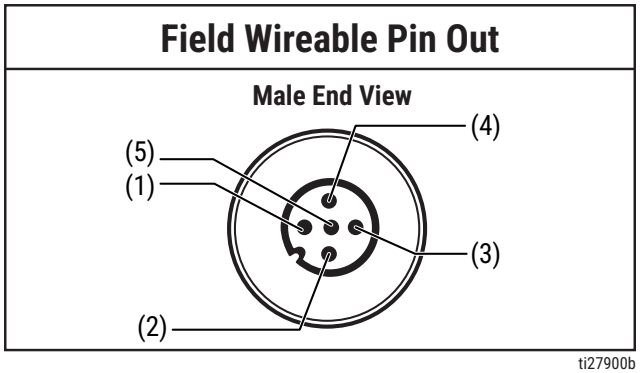


Figure 13-16: Cable Pin Out

PRESSURE RELIEF PROCEDURE

To prevent injury, follow the pressure relief procedure before cleaning, checking, or servicing the G3 pump.

Follow the Pressure Relief Procedure whenever you see this symbol.

⚠ WARNING

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 dispensing and before cleaning, checking, or servicing the equipment.

Relieve pressure at the pump element using two wrenches working in opposite directions on the pump element and pump element fitting to slowly loosen fitting only until fitting is loose and no more lubricant or air is leaking from fitting. Repeat for each pump element installed.

NOTE:

When loosening pump element fitting, do not loosen pump element. Loosening pump element will change the output volume.

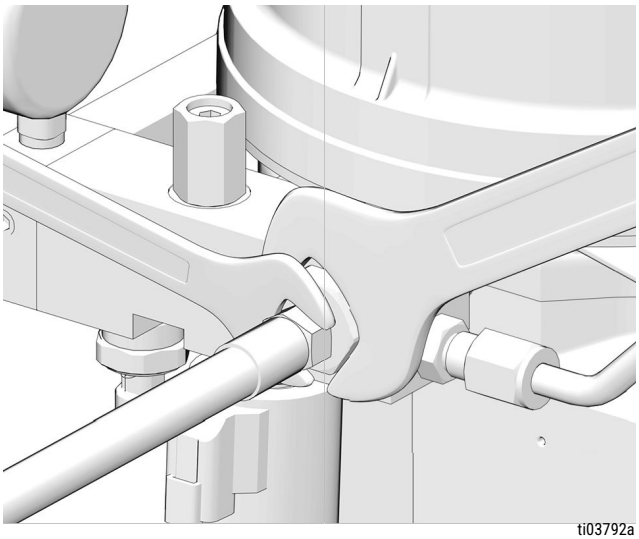


Figure 14-1: Loosen the pump element fitting

CONNECT TO AUXILIARY FITTINGS

⚠ WARNING

NOTICE

Do not attach unsupported equipment to auxiliary fittings such as fill ports and pump element. Attaching unsupported equipment to these fittings can result in irreparable housing damage.

- Always use two wrenches working in opposite directions when connecting anything to pump element or auxiliary fittings.
- Torque pump element fittings to 50 in. lbs (5.6 N•m).
- When connecting pump element into housing torque to 50 in. lbs (5.6 N•m).

PRESSURE RELIEF VALVES

A pressure relief valve should be installed to avoid over-pressurization.

⚠ WARNING


To prevent over-pressurization, which can result in equipment rupture and serious injury, a pressure relief valve appropriate for the lubrication system must be installed close to every pump outlet to alleviate unintended pressure rises in the system and protect the G3 pump from damage.

- Only use a pressure relief valve that is rated for no more than the working pressure of any component installed in the system. See **Technical Specifications, page 9**.
- Install a pressure relief valve close to every pump outlet, before any auxiliary fitting.

NOTE:

A pressure relief valve can be purchased from Graco. See **Pressure Relief Valve, page 20** for information on the factory installed pressure relief valve and **Parts, page 68** for part lists.

FILL GREASE RESERVOIR

Follow this procedure to fill the G3 grease pump reservoir.

To ensure optimal performance:

- Only use NLGI #000 - #2 greases appropriate for your application, automatic dispensing, and the equipment's operating temperature. Consult with machine and lube manufacturer for details.
- The reservoir can be filled using a hand operated pump, pneumatic pump or electric transfer pump.
- Do not overfill.
- Do not operate the pump without the reservoir attached.

NOTICE

- Always clean inlet fitting (D) with a clean dry cloth prior to filling reservoir. Dirt and/or debris can damage pump and/or lubrication system.
- When changing greases, always use compatible fluids or greases.
- When filling the reservoir using a pneumatic or electric transfer pump, do not over-pressurize and break the reservoir.

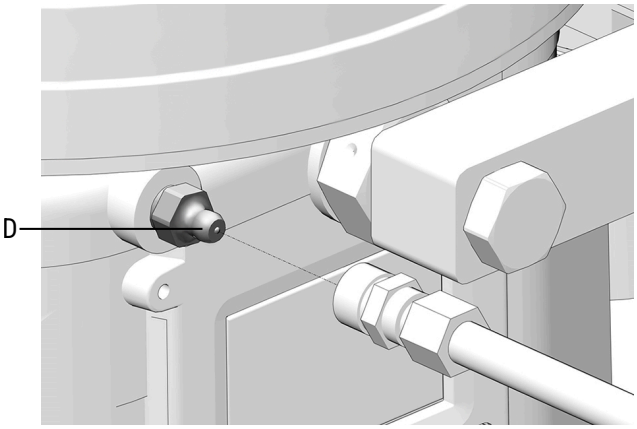


Figure 14-2: Zerk inlet fill fitting

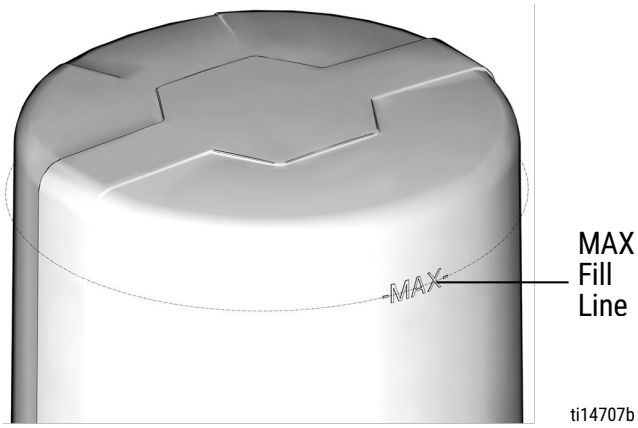


Figure 14-3: Maximum fill line

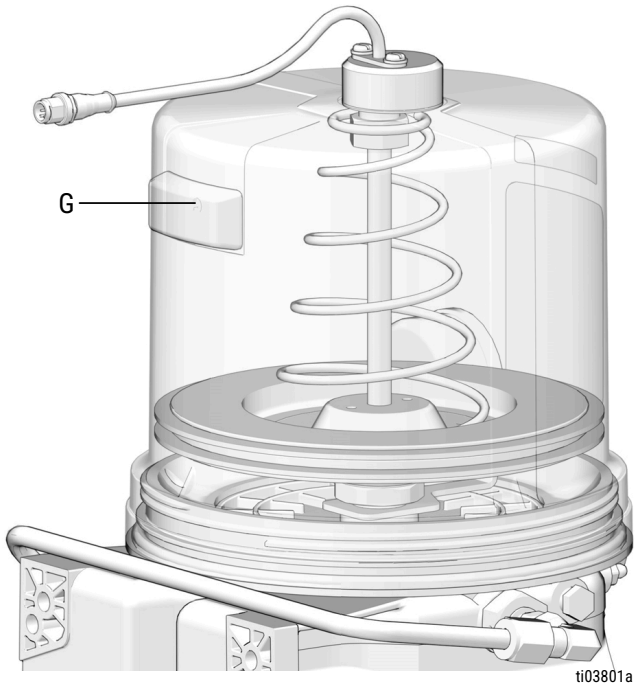


Figure 14-4: Vent port

MODELS WITHOUT A FOLLOWER PLATE

Follow this procedure to fill a G3 reservoir that does not have a follower plate.

1. Connect the fill hose to the Zerk inlet fill fitting (D).
2. For higher viscosity fluids, start the pump to rotate the stirring paddle while filling, to prevent air pockets from forming in the grease. Do not exceed a maximum run time of 15 minutes.

   For models with an internal controller, press the manual run button to start the pump.

   For models with an external controller, follow the controller instructions to start the pump.
3. Fill the reservoir with NLGI grease up to the MAX fill line.

   NOTE:

   The vent port (G), located at the rear of the reservoir, should not be used as an overfill port/ indicator.
4. Remove the fill hose.

MODELS WITH A FOLLOWER PLATE

Follow this procedure to fill a G3 reservoir that has a follower plate.

1. Connect the fill hose to the Zerk inlet fill fitting (D).
2. For higher viscosity fluids, start the pump to rotate the stirring paddle while filling, to prevent air pockets from forming in the grease. Do not exceed a maximum run time of 15 minutes.

   For models with an internal controller, press the manual run button to start the pump.

   For models with an external controller, follow the controller instructions to start the pump.
3. Fill reservoir with grease until seal of follower plate breaches the vent hole and the majority of air is expelled from the reservoir.
4. Turn off the air supply to the refill pump.
5. Remove the fill hose.

REMOTE FILL RESERVOIR

The pump reservoir can be filled with a supply from a remote filling station. There is a specific pressure relief procedure for the remove filling station.

REMOTE FILL WITH REMOTE FILL MANIFOLD

⚠ WARNING

The remote filling station pump stalls (dead-heads) when the reservoir is full, causing the supply system pressure to rise to the maximum output pressure of the filling station pump. To help prevent equipment damage or serious injury caused by pressurized fluid, such as skin injection or injury from splashing fluid, always use a remote filling station pump with a maximum output pressure of 5100 psi (35.1 MPa, 351.6 bar) and use supply hoses with a minimum pressure rating of 5100 psi (35.1 MPa, 351.6 bar).

⚠ WARNING

COMPONENT RUPTURE HAZARD

The maximum working pressure of each component in the system may not be the same. To reduce the risk of over-pressurizing any component in the system, be sure you know the maximum working pressure of each component. **Never** exceed the maximum working pressure of the lowest rated component in the system. Over-pressurizing any component can result in rupture, fire, explosion, property damage, and serious injury.

Regulate input pressure to the remote fill pump so that no fluid line, component, or accessory is over pressurized.

The reference letters used in the following instructions refer to **Typical Installation - With Remote Fill Manifold**, page 11.

The fill valve is used to relieve pressure in the refill line and to reset the Auto Fill Shutoff. See Fill Valve instruction manual 333393. Graco fill valve, part no. 77X542 is available. Contact your local Graco distributor.

1. Pull out and hold the Pressure Relief Knob (T) long enough to relieve line pressure between Fill Manifold (N) and Auto-Fill Shutoff Valve (B).
2. Verify the Auto-Fill Shutoff (B) pin is down, indicating it is reset.

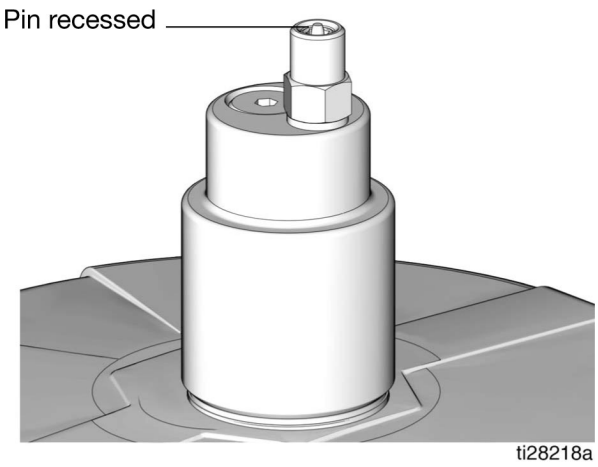


Figure 14-5: Auto-Fill Shutoff Valve with Pin Recessed

3. Remove yellow Dust Cover from Fill Coupler (M).
4. Connect Supply Hose (J) between the Remote Filling Station Pump (F) and Fill Coupler port marked with an "I".
5. Start Remote Filling Station Pump (F).
6. When the G3 Reservoir (D) is filled:
   - the Remote Filling Station Pump (F) stalls (dead-heads),
   - the Auto-Fill Shutoff (B) pin pops up.

- the Pressure Gauge (R) rises to the fill pump's set pressure.

NOTE:

If the pump does not stall (dead-head) there is a leak in the system.

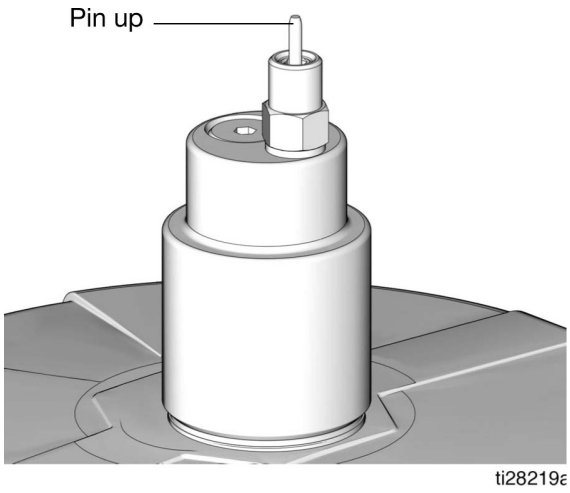


Figure 14-6: Auto-Fill Shutoff Valve with Pin Up

7. Turn off the Remote Filling Station Pump (F).
8. Pull out and hold the Pressure Relief Knob (T) long enough to relieve line pressure between Fill Manifold (N) and Auto-Fill Shutoff Valve (B) and between Remote Filling Station Pump (F) and Fill Manifold (N).

NOTE:

The length of time it takes to vent varies depending on the system design and installation. In some installations it may be necessary to repeat Step **Remote Fill With Remote Fill Manifold, page 34** to ensure pressure is relieved.

9. Disconnect Supply Hose (J) at Fill Coupler (M).
10. Replace yellow Dust Cover over Fill Coupler (M).

REMOTE FILL WITHOUT REMOTE FILL MANIFOLD

The reference letters used in the following instructions refer to **Optional Installation - Without Remote Fill Manifold**, page 12.

1. A supply hose pressure relief valve (Y) and overflow container (W) (for collecting excess fluid that drains during pressure relief) **must** be installed in an easily accessible location between the remote filling station pump (F) and the Auto-Fill Shutoff (B). This pressure relief valve is used to relieve pressure in the refill line and to reset the Auto-Fill Shutoff. See **Typical Installation**, starting on page 10.

   A Pressure Relief Kit (247902) is available from Graco. Contact your local Graco distributor or Graco Customer Service for information about this kit.

   See **Parts, page 68**.
2. Connect Supply Hose (J) at Quick Connect (V).
3. Turn on remote filling station pump (F) and fill the G3 reservoir (D) until the indicator pin on the Auto-Fill Valve pushes up as shown in **Remote Fill Without Remote Fill Manifold, page 35**. The pressure in the refill pump (F) builds and the pump stalls.

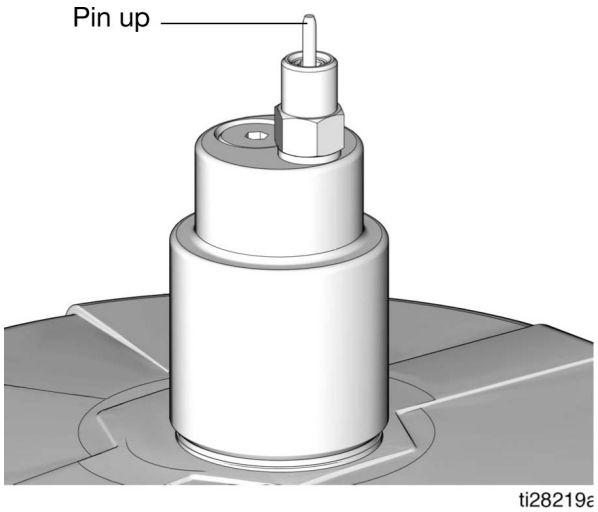


Figure 14-7: Auto-Fill Shutoff Valve with Pin Up

4. Turn off the air supply (H) to pump (F).
5. Relieve remote filling station pump pressure using the following Remote Filling Station Pressure Relief procedure:

REMOTE FILLING STATION PRESSURE RELIEF

The reference letters used in the following instructions refer to **Optional Installation - Without Remote Fill Manifold**.

The following Pressure Relief Procedure is only used with the Auto-Fill Shutoff Valve to relieve remote filling station and lubricant supply line pressure.

⚠ WARNING

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 dispensing and before cleaning, checking, or servicing the equipment.

1. To relieve pressure between the Refill Pump (F) and Auto-Fill Shutoff (B), open the Supply Hose Pressure Relief Valve (Y). Pressure will be released and excess fluid will drain out of the drain tube (L) and into the lubrication overflow container (W).

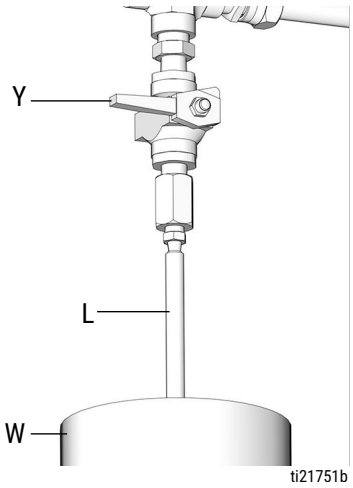


Figure 14-8: Supply Hose Pressure Relief Valve

2. Close Supply Hose Pressure Relief Valve (Y) when all pressure has been relieved.
3. Disconnect the supply hose (J) from Quick Connect (V).

CONTROL PANEL OVERVIEW

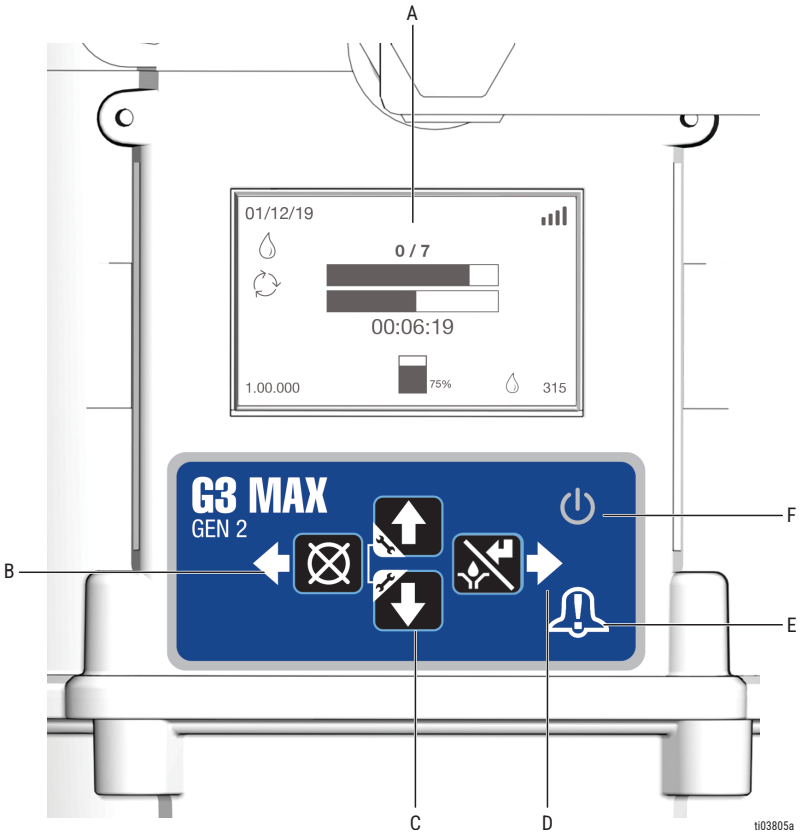


Figure 15-1: Control Panel

A LCD display

B Left direction arrow/reset

- In SETUP, the left arrow moves the cursor in the display one field to the left. It also navigates back to the previous screen and cancels parameter change.
- If the pump is lubricating, momentarily pressing this button cancels the event and the pump stops lubricating.
- In ALARM, press and hold for three seconds to silence the alarm.

C Up and down arrow

- Press and hold the up and down arrow keys simultaneously for three seconds to enter SETUP.
- In SETUP, the up and down arrow keys highhlight menu options or increase or decrease number values in the display. If a button is not pressed for two minutes, the pump controller returns to idle. To save a change in SETUP, select ACCEPT.

D Right direction arrow/Manual Run/Enter

- In SETUP, the right arrow saves the entry or selects a menu choice.
- When not in SETUP, the right arrow starts the pump for one complete lubrication event.

E Alarm LED

- Red solid: System Alarm
- Red blinking: Low Level Alarm

F Power LED

- Green: Normal/On
- Amber solid: System Alert and Alarm
- Amber blinking: Low Level Alert and Alarm

LCD SCREEN

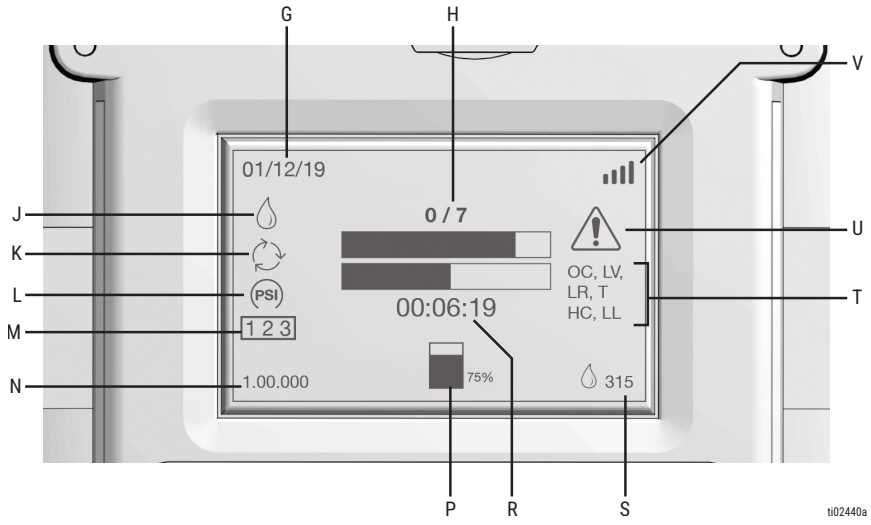


Figure 15-2: LCD Screen

NOTICE

Clean the LCD screen with water and soft towel only.

G	Date (MM/DD/YY)
H	Count or pressure
J	Lubrication on
K	Cycle count
L	Pressure sensor
M	Machine count
N	Firmware version
P	Fluid level
R	Timer
S	Completed lubrication events
T	Alert ID
U	Alert
V	Cellular signal strength

SETUP MENU

The Setup menu enables you to configure the operation of the G3 Max pump.

NOTE:

Some pump models may have different menu features available.

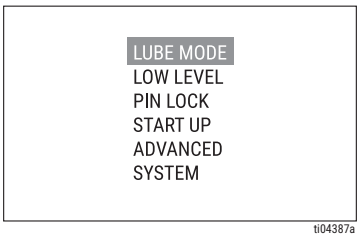


Figure 15-3: Setup Menu

The Setup menu consists of the following options:

- Lube Mode
- Low Level
- PIN Lock
- Start Up
- Advanced
- System

LUBE MODE

The Lube Mode menu option defines the length and frequency of a lubrication event. Configure these settings to fit the specific application.

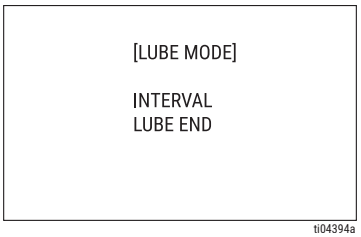


Figure 15-4: Lube Mode Menu

The Lube Mode menu consists of the following options:

- INTERVAL
- LUBE END

INTERVAL

INTERVAL configures how frequently the pump lubricates, by time or machine count.

- TIMER defines the amount of time between each lubrication event. For lubrication systems such as Series Progressive or Single Line Parallel, that have a varied lubrication event duration (due to environmental conditions such as temperature), the pump adjusts the idle time automatically to meet the interval requirements. For example if the pump is configured to lubricate every 60 minutes:
  - For a lubrication event that lasts 15 minutes, the idle timer is adjusted to start at 45 minutes.
  - For a lubrication event that lasts 17 minutes, the idle timer is adjusted to start at 43 minutes.
- MACHINE COUNT defines the number of machine actions between lubrication events.
  - COUNT – the number of machine count inputs between lubrication events.
  - TIMEOUT – enables/disables an interval timeout.
  - INTERVAL – when TIMEOUT is enabled, defines the time when an ACTION (LUBE or ALARM) is taken.
  - ACTION – action taken when a machine count interval timeout occurs.
  - LUBE – the lubrication event starts.
  - ALARM – an alarm occurs.

LUBE END

LUBE END configures when a lubrication event ends and selects the method to transition from lubrication to idle.

NOTICE

The pump should not lubricate for more than 30 minutes at a time, and needs to follow a 33 percent duty cycle. For example, with a 15 minute interval, the pump lubrication time must be 5 minutes or less.

- TIMER – the lubrication event ends after a specified amount of time.
- PRS SWITCH (Pressure Switch) – the lubrication event ends when the system reaches a specific pressure. This is commonly used with Single Line Parallel (Injector) systems that utilize a pressure switch.

  The pressure switch must be physically set to the appropriate target pressure. Only use a PNP style or dry contact pressure switch.

  – TIMEOUT is the maximum allowable time to reach the target pressure. If the pump does not receive an input from the pressure switch before the specified timeout, the pump enters an alarm state.
- PRS SENSOR (Pressure Sensor) – the lubrication event ends when the system reaches a specific pressure. This is commonly used with Single Line Parallel (Injector) systems that use a pressure sensor.

  The pressure sensor must have a voltage range of either 0.5-4.5 V, 0-5 V, 1-5 V, or 0-10 V.

  – TIMEOUT is the maximum allowable time to reach the target pressure. If the pump does not reach the specified pressure threshold before the set timeout, the pump enters an alarm state.

  – TYPE selects the pressure sensor voltage range (0.5-4.5 V, 0-5 V, 1-5 V, or 0-10 V).

  – UNITS selects the units label to display with the pressure measurement: percent, PSI, or bar.

  – FULL SCALE is the maximum pressure that the sensor can read.

  – THRESHOLD is the pressure that the system must reach to end the lubrication event.

LOW LEVEL

When Low Level is detected, the pump stops lubricating. You can choose from multiple types of Low Level detection methods from this menu.

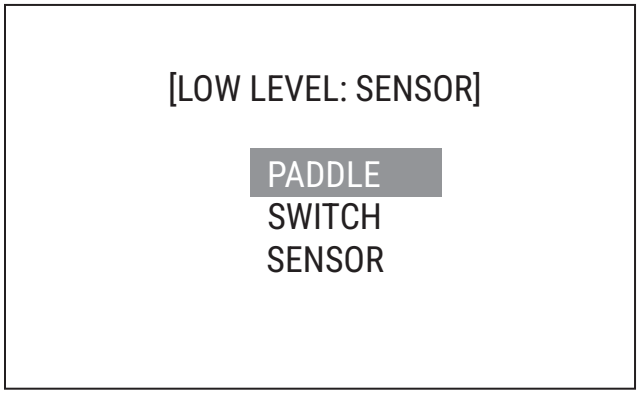


Figure 15-5: Low Level Menu

The pump program is preconfigured to match the Low Level detection method installed at the factory.

The Low Level menu consists of the following options:

- PADDLE (Grease Pumps)
- SWITCH (Oil Pumps)
- SENSOR

NOTE:

Some lubricant will likely be present in the reservoir when the Low Level Alarm is activated.

PADDLE

Used with paddle-style low level sensors in grease reservoirs. When the reservoir is nearly empty, a paddle will trigger a switch while the pump rotates.

Once the pump accumulates enough paddle switch triggers, the pump enters an alert or alarm state.

If the pump runs for at least 30 seconds with no paddle switch triggers, the accumulated triggers reset.

- ALERT enables/disables Low Level Alert. The pump continues to lubricate while in an Alert state.
- ALERT COUNT is the number of Low Level triggers to cause an Alert. The default setting for G3 Max HF pump Alert Count is 5 triggers.
- ALARM enables/disables the Low Level Alarm.The pump stops lubrication while in an Alarm state.

- ALARM COUNT is the number of Low Level triggers to cause Alarm. The default setting for G3 Max HF pump Alarm Count is 30 triggers.
- AUTO-CLEAR starts a lube event on power up to automatically check for grease, if the pump is power cycled while in a low level alarm.

SWITCH

Use with float-style low level sensors in oil reservoirs. When the reservoir is almost empty, the float triggers a switch.

Select either an Alert or Alarm state when the float-style sensor is triggered.

SENSOR

Use with continuous, analog level sensors. The level is displayed as a percentage (%).

- SENSOR TYPE selects the type of level sensor output: 0.5-4.5 V or 0-10 V. The default is 0.5-4.5 V, and is required for use with the included level sensor.
- ALERT enables/disables the Low Level Alert. The pump will continue to lubricate while in an Alert state.
- ALERT % defines the reservoir level that triggers a Low Level Alert.
- ALARM enables/disables the Low Level Alarm. While the pump is in an alarm state, it will stop lubrication.
- ALARM % defines the level that triggers a Low Level Alarm.

PIN LOCK

By default, the controller does not require a PIN (Personal ID Number) to use the SETUP menu. The SETUP menu can be locked by entering a PIN with the PIN Lock menu.

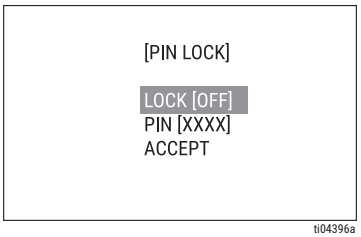


Figure 15-6: PIN Lock Menu

The PIN Lock menu consists of the following options:

- LOCK toggles on/off lockout PIN protection, which requires a PIN to use the SETUP menu.
- PIN enables you to specify a four-digit PIN to unlock the SETUP menu.

If the PIN lock is enabled when accessing the SETUP menu, the PIN entry screen appears with the first digit highlighted. The user uses the arrow buttons to enter the PIN.

After entering the last digit, the user presses the right arrow button to accept the PIN. If the PIN matches the PIN that was entered on the PIN Lock menu, the SETUP menu is enabled. Otherwise, the SETUP menu remains locked.

START UP

The Start Up menu defines the behavior of the pump at power up.

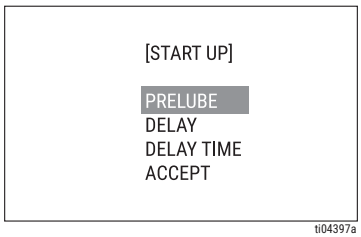


Figure 15-7: Start Up Menu

The Start Up menu consists of the following options:

- PRE-LUBE configures the pump to immediately start a lubrication event when powered on.
- DELAY enables/disables a delay between the time the device is powered on and when the pump resumes normal operation. This delays the pre-lube event.
- DELAY TIME defines the duration of the start up delay.

ADVANCED

The Advanced menu controls various pump behaviors and outputs.

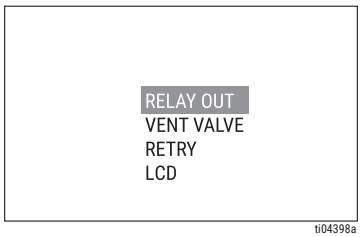


Figure 15-8: Advanced Menu

The Advanced menu consists of the following options:

- RELAY OUT (DIN Pumps Only)
- SIGNAL OUTPUTS (CPC Pumps Only)
- VENT VALVE
- RETRY
- LCD

NOTE:

The relay output requires external power. Ensure that the provided power and load device are within the maximum ratings.

SIGNAL OUT (CPC PUMPS ONLY)

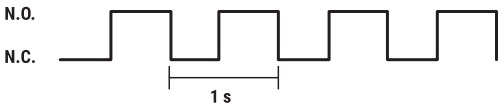
Pumps that are configured with CPC power connectors have additional signal outputs available to assist in monitoring the pump status. These are Open to Ground (-VDC) style outputs and are used with external monitoring systems, such as a PLC.

There are two signal outputs available, and each can be configured separately. For wiring the signal outputs, see **Wiring and Installation Diagrams, page 23**.

- SOURCE defines what activates the selected signal output:
  - ALL activates during any system alert or alarm.
  - LEVEL activates only during a low level alert or alarm.
  - MOTOR activates when the motor is running and the system is lubricating.
- TYPE (only available when the Source is set to All or Level) specifies if an alert or alarm will activate the selected signal output.
- ACTIVE specifies the active state of the selected signal output.

- PULSED (only available when the Type is set to ALARM & ALERT) while PULSED is enabled, the output toggles between Open and Ground (-VDC) every second during an alarm. This assists in distinguishing between an alert or alarm state.

Table 15-1: Pulsed Alarm Relay Response

	OUTPUT TIED TO COMMON
Normal Status	
Alert	
Alarm	

The pump has several outputs available that provide information about the system status:

- Tri-Color Remote Illumination: An external, remote manual run button with built in LED.
- Relay Alarm Output (DIN power pumps only): The pump contains an internal dry-contact relay to switch external power for another device, such as an external stack light.
- Signal Outputs (CPC power pumps only): NPN style signal outputs for use with PLC or other monitoring devices.

The table describes the default behaviors of the relay alarm, signal outputs, and remote illumination.

Table 15-2: Remote Illumination, Relay Alarm, Signal Output Responses

	TRI-COLOR REMOTE ILLUMINATION	RELAY ALARM OUTPUT (DIN POWER ONLY)	SIGNAL OUTPUT 1 (CPC POWER ONLY)	SIGNAL OUTPUT 2 (CPC POWER ONLY)
Pump is Idle	Off	Off	Open	Open
Pump is Lubricating	Green (solid)	Off	Open	Open
System Alert	Amber (solid)	On	Open	Open
System Alarm	Red (solid)	Toggles on/off once per second	Closed to -VDC	Open
Low Level Alert	Amber (flashing)	On	Open	Closed to -VDC
Low Level Alarm	Red (flashing)	Toggles on/off once per second	Closed to -VDC	Toggles open/closed once per second

VENT VALVE

Single Line Parallel (Injector) systems use an external vent valve solenoid to control pressure buildup.

Some lubrication systems require additional time at pressure to allow for the injectors to fire. Setting a dwell time delays when the vent valve relieves pressure.

- DWELL specifies the length of time to keep the vent valve energized after the end of a lubrication event.

RETRY

If the system is unable to complete a lubrication event, by default the pump enters an alarm state. When the pump enters an alarm state, operation stops and waits for the user to address and clear the alarm.

In some instances, it may be best to allow the pump to retry lubrication and give the system an opportunity to automatically recover.

- RETRIES specifies the number of retry attempts before the pump enters an alarm. A Lubrication Retry (LR) alert is displayed to indicate the pump has recently retried a lubrication cycle.

NOTE:

This only affects the Cycle Timeout and Pressure Timeout alarms.

LCD

LCD configures the backlight on the LCD display to always remain on, to turn off after a period of inactivity, or to always remain off.

SYSTEM

The System menu includes options for updating the system firmware, setting the date and time, and recovering from a lost cellular network connection (for models with celluar connectivity).

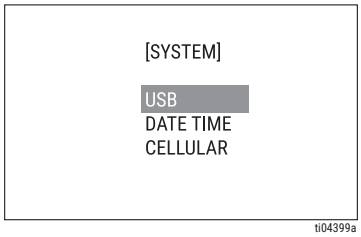


Figure 15-9: System Menu

The System menu consists of the following options:

- USB enables you to update the controller firmware by copying the update from a USB drive. See **Update Firmware, page 50**.
- DATE TIME
  - DATE specifies the current date in the format MMDDYY.
  - TIME specifies the time of day on a 24-hour clock (example: 2:00 pm = 14:00).
- CELLULAR displays the Graco Unique Identification Number (UID) as "RADIO IMEI" under VERSION INFO.
- CLOUD OVERRIDE (only available when a cellular-equipped pump loses its cellular connection) refreshes the SETUP menu and enables you to access the SETUP menu functions.

During pump operation, an alert or alarm indicates an issue with the lubrication system. You can update the pump firmware and configure the celluar connectivity function (if equipped).

ALERTS

When the pump has detected an issue with the lubrication system, it may enter an alert state.

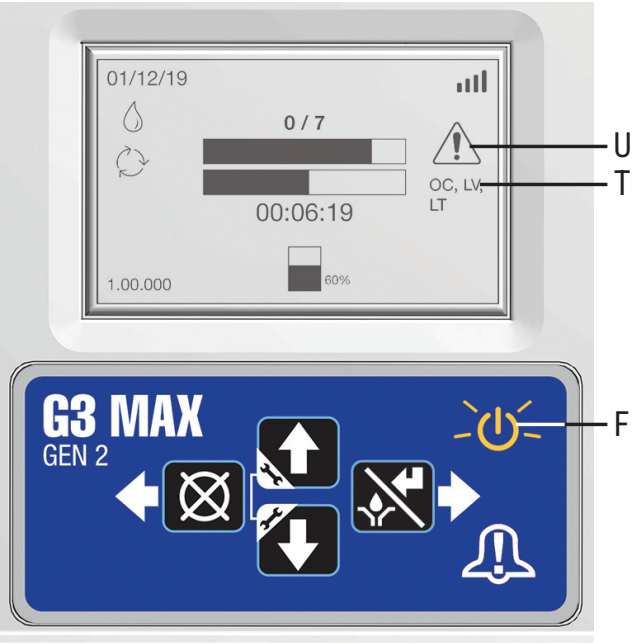


Figure 16-1: Alert Screen

During a alert:

- The pump continues to operate.
- The POWER LED (F) turns amber. During a low level alert, the POWER LED flashes.
- The screen will display an alert icon (U) and an Alert ID (T).

Alerts automatically clear when the issue is resolved. For example, the low level alert automatically clears once the reservoir is filled.

Table 16-1: Alert Types

ALERT ID	ALERT TYPE	DESCRIPTION
LL	Low Level	The lubricant has been depleted from the reservoir. Refill soon.
LR	Lubrication Retry	The lubrication cycle timed out before completion. The system retries lubrication program (idle + Lubrication) again.
OC	Motor Overcurrent	The motor was detected operating at a very high current. As a protection, the motor stopped and will retry the lubrication event after it idles. If the problem persists, the system will enter an alarm.
LV	Low Voltage	The voltage provided is low. Check or replace the battery or power source for the pump.
T	Temperature	The system is outside of the operating temperature specifications. Low temperatures may make dispensing grease difficult. Ensure that appropriate temperature grease is being used or the system may fail to apply lubrication.
HC	Motor High Current	The motor is operating at higher than expected current. Check for debris and blockage in the lubrication system to prevent motor damage. If the lubricant is contaminated or has a high solids content, the pump element may need to be replaced. Replacement pump elements are available from your Graco Lubrication Equipment distributor.

ALARMS

When the pump has detected an issue with the lubrication system, it may enter an alarm state.

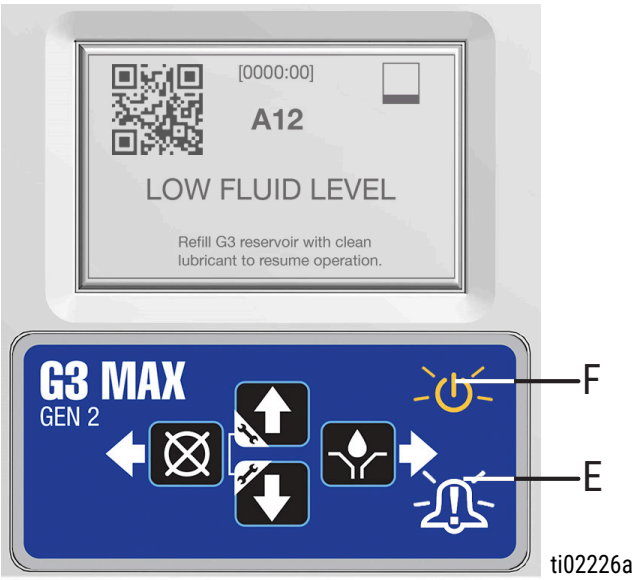


Figure 16-2: Alarm Screen

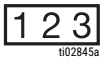
During an alarm:

- The pump immediately stops operation.
- The POWER LED (F) turns amber. The ALARM LED (E) turns red. During a low level alarm, both LEDs flash.
- An alarm screen displays.

Alarms typically require an operator to resolve the issue. To clear an alarm:

- Resolve the issue that caused the alarm.
- Press and hold the RESET/Left Arrow button for at least three seconds. The alarm screen is removed and the pump resumes operation.

Table 16-2: Alarm Types

ALARM ID	ALARM TYPE	ALARM ICON	DESCRIPTION
A11	Low Cycle Count		The divider valve (metering device) has not fully cycled within the allowed time. The Cycles and Timeout are configurable in the pump menu. Select a Timeout length long enough for the number of cycles, plus add 50 percent more to the time, to prevent a false alarm. Note that colder temperatures may cause the system to move slower, and require a longer Timeout setting. If the configuration appears correct, check for broken or blocked lubrication lines, and replace as needed. Purge air from any new lines. Check the proximity switch or cycle switch, along with the wiring from the switch to the pump. Repair or replace any damaged components. To confirm pump operation, check the system pressure at the pump outlet. If the pump does not build pressure, it may need to be repaired or replaced. Replacement pump elements are available from your Graco Lubrication Equipment distributor.
A12	Low Fluid Level		Lubricant has been emptied from the reservoir. Refill immediately to resume lubrication system operation.
A13	Lowe Machine Count		The pump setup menu is configured to receive a signal from the machine when lubricated within the Timeout setting. If this is not received during the Timeout setting, the alarm activates. Verify that the pump is operational and that the switch or sensor for the machine count and wiring are in good condition. Replace any damaged components. Verify that the Timeout has been set with enough time to receive the correct number of machine count signals.

ALARM ID	ALARM TYPE	ALARM ICON	DESCRIPTION
A14	Low Pressure	 ti02846a	The injectors (metering devices) require system pressure to trigger lubrication dispensing. To make sure that the necessary pressure is achieved during each lubrication event, the system is monitored by a pressure sensor. The Pressure setting and the Timeout length are configurable in the pump setup menu. Select a Timeout length long enough for the number of cycles, plus add 50 percent more to the time, to prevent a false alarm. Note that colder temperatures may cause the system to move slower, and require a longer Timeout setting. If the configuration appears correct, check for broken or blocked lubrication lines, and replace as needed. Check the pressure sensor and wiring from the sensor to the pump. Repair or replace any damaged components. Verify that the part number on the vent valve is the number for a Normally Open vent valve. The vent valve may not be holding pressure. Replace vent valve. To confirm pump operation, check the system pressure at the pump outlet. If the pump does not build pressure, it may need to be repaired or replaced. Replacement pump elements are available from your Graco Lubrication Equipment distributor.
A15	Pressure Not Vented	 ti02846a	The injectors (metering devices) require system pressure to trigger lubrication dispensing, and that pressure is vented between lubrication events to allow for the injectors to reset for the next lubrication event by a vent valve. The vent valve returns some lubricant to the reservoir. If the vent valve is not operating correctly, the injectors are unable able to reset between lubrication events, and prevent functioning. Verify that the part number on the vent valve is the number for a Normally Open vent valve. If the number is for a Normally Closed vent valve, it needs to be replaced. Inspect the vent valve and the electrical connector for damage, and replace as needed. Verify that the cable from the pump base to the vent valve is intact and connected at both ends. Replace the cable as needed. Make sure that enough power is being delivered to the vent valve, and that there are no short circuits. Test the electrical solenoid by holding a piece of ferrous metal near the solenoid during pump operation. The solenoid is an electro-magnet, so it should attract ferrous metal during operation. If it does not attract the ferrous metal, it is not functioning properly.

ALARM ID	ALARM TYPE	ALARM ICON	DESCRIPTION
A16	Pressure Sensor	 ti02848a	Review the documentation for the sensor output signal range. Compare this to the setup menu to verify that the pump is programmed to receive the correct signal. Verify that the sensor is wired correctly. Make sure the pins on the pump are connected to the correct pins on the sensor. For example, Pin 1 of the pump may not connect to Pin 1 of the sensor.
A17	Level Sensor	 ti02844a	Review the documentation for the sensor output signal range. Compare this to the setup menu to verify that the pump is programmed to receive the correct signal. Verify that the sensor is wired correctly. Make sure the pins on the pump are connected to the correct pins on the sensor. For example, Pin 1 of the pump might not connect to Pin 1 of the sensor.
A18	Motor Short	 ti02847a	Verify that a pressure relief valve is installed in the lubrication system. The pressure relief valve is normally teed into the outlet of the pump element, or incorporated into the vent valve manifold. If no pressure relief valve is installed, contact your Graco Lubrication Equipment distributor to order one, and install as soon as possible. This is a safety device and is required for every system. When the temperature is cold, warm the system up for a few minutes, and then clear the alarm. Then try to run the pump again. If the Overcurrent alarm returns, even after the system is warm, the motor may need to be replaced.
A19	Sensor Power Short	 ti02847a	Check the sensor and wiring for short circuits or other damage. Replace any damaged components as needed. Verify that the sensor is wired correctly. Make sure the pins on the pump are connected to the correct pins on the sensor. For example, Pin 1 of the pump might not connect to Pin 1 of the sensor. An electrician may be required to ensure correct wiring of the sensor to the pump.
A20	Low Input Voltage	 ti02847a	The voltage to the lubrication system is low. Check the battery or power source for the pump, and replace as needed.

ALARM ID	ALARM TYPE	ALARM ICON	DESCRIPTION
A21	Vent Valve Short	 ti02847a	Troubleshoot the electrical solenoid and the wiring from the pump to the vent valve solenoid. Replace any damaged components.
A23	Motor Overcurrent	 ti02847a	Verify that a pressure relief valve is installed in the lubrication system. The pressure relief valve is normally tied into the outlet of the pump element, or incorporated into the vent valve manifold. If no pressure relief valve is installed, contact your Graco Lubrication Equipment distributor to order one, and install as soon as possible. This is a safety device and is required for every system. See **Pressure Relief Valves, page 32**. When the temperature is cold, warm the system up for a few minutes, and then clear the alarm. Then try to run the pump again. If the Overcurrent alarm returns, even after the system is warm, the motor may need to be replaced.
A25	Power Brownout	 ti02847a	There is not enough current to power the pump. If the pump is DC powered, try a different ground. For mobile equipment, check the age of the battery.

UPDATE FIRMWARE

To ensure that the G3 Max pump is using the latest features and security enhancements, update the firmware.

1. Prepare a USB drive and copy the firmware update file to the drive.
   - The USB drive must be formatted as FAT32.
   - Only use firmware provided directly from Graco.
2. Follow **Pressure Relief Procedure, page 31**.
3. Make sure that the pump is powered on and in idle.
4. Remove the USB plug from the bottom cover.

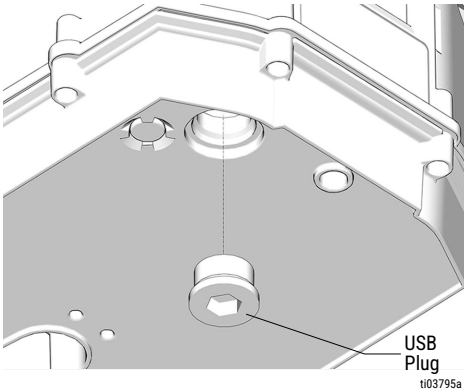


Figure 16-3: USB Plug

5. Enter SETUP and navigate to SYSTEM.
6. In the SYSTEM menu, navigate to USB.
7. Highlight FIRMWARE UPDATE (MAIN), then press the ENTER/Right Arrow key.

8. Confirm that the firmware file is correct to start the update. When the update is complete, the pump resumes normal operation.

   NOTICE

   The update process may take several minutes. Do not remove power to the pump while updating. This may damage the pump.

9. Verify that the update is complete by checking the firmware version in the lower left corner of the main screen.

   If the update fails, try reseating the USB drive. Verify that the USB was formatted as FAT32. Then retry the update.

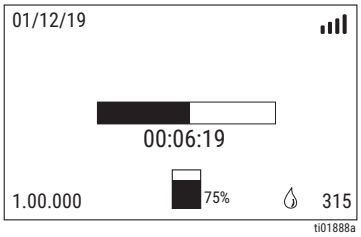


Figure 16-4: Check the Firmware Version

10. Confirm that the pump settings have not changed after the firmware update.
11. Remove the USB drive from the pump.
12. Replace the USB plug and torque to 65 in. lb (7.3 N•m).

CELLULAR SETUP

G3 Max pumps equipped with cellular connectivity can be set up and configured to be monitored and controlled through the Graco Trace website.

Cellular connected pumps rely on cellular service to communicate. Make sure that the installation site has sufficient cellular coverage prior to installation.

External cellular signal boosters can be used to increase cellular connectivity at installation sites. See **Technical Specifications, page 9** for the cellular bands used.

INITIAL CELLULAR SETUP

To use the pump remote monitoring features, access the Graco Trace website at https://glc.gracotrace.com using your web browser.

For detailed information on how to use Graco Trace, access https://graco.com/trace for Graco Trace supporting information.

ACCESSING THE UID

When adding pumps to Graco Trace, a pump unique identification number (UID), a 15-digit unique identifier, is required. The UID is located on the serial label on the side of the pump.

The UID can also be found by accessing the pump setup menu, navigating to SYSTEM > CELLULAR > VERSION INFO. The UID is listed as the RADIO IMEI in this menu.

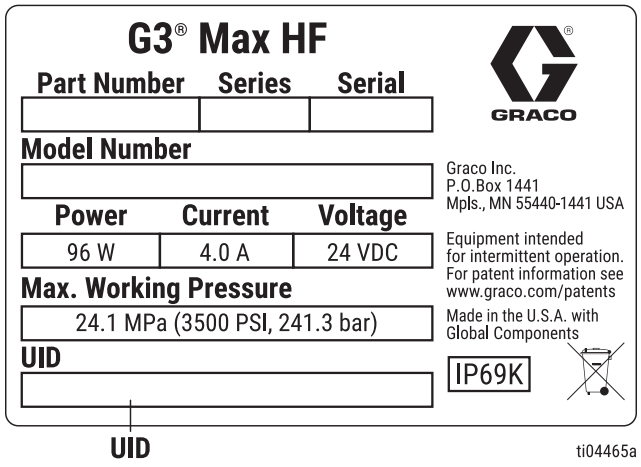


Figure 16-5: Locating the UID

CLOUD CONFIGURED PUMPS

Graco Trace provides the option to remotely configure the lubrication settings for the pump. After a pump is configured remotely through Graco Trace, the configuration is managed by the cloud.

NOTE:

When a pump configuration is managed by the cloud, users can only make changes to the pump settings by accessing Graco Trace.

A PIN code is automatically applied to the pump when the configuration is managed by the cloud. The set PIN code can be accessed through Graco Trace when the pump is disconnected from the cloud.

If the pump loses cellular connection, the pump configuration may be temporarily overridden. Access the pump setup menu, navigate to SYSTEM > CLOUD OVERRIDE. Selecting CLOUD OVERRIDE refreshes the setup menu and provides temporary access to all of the pump settings.

NOTE:

Once the pump reconnects to cellular service, any temporary changes will be reverted. To make the changes permanent, either update the pump configuration to match the new settings through Graco Trace, or set the pump as a locally managed configuration through Graco Trace.

FREQUENCY	COMPONENT	REQUIRED MAINTENANCE
Daily and at refill	Zerk Fittings	Keep all fittings clean using a clean dry cloth. Dirt and/or debris can damage pump and/or lubrication system.
Daily	G3 Pump Unit and Reservoir	Keep pump unit and reservoir clean using a clean dry cloth.
Daily	Display	Keep display clean using a clean dry cloth.
Monthly	External Wiring Harness	Verify external harnesses are secure.

END OF PRODUCT LIFE

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform **Pressure Relief Procedure**.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Remove motors, batteries, circuit boards, LCDs (liquid crystal displays), and other electronic components. Recycle according to applicable regulations.
- Do not dispose of electronic components with household or commercial waste. 
- Deliver remaining product to a recycling facility.

TROUBLESHOOTING

Detailed instructions and solutions for diagnosing and resolving common issues encountered during the use of the G3 Max HF pump.

Follow the **Pressure Relief Procedure, page 31** before checking or repairing the equipment.

For additional troubleshooting information, see the Graco website at: https://graco.com/G3Support.

NOTE:

Check all possible problems and causes before disassembling the equipment.

Table 19-1: Power Problems, G3 Max HF Pump

PROBLEM	CAUSE	SOLUTION
Unit does not power on	Incorrect/loose wiring	Refer to **System Configuration and Wiring**.
Unit does not power on (DC models only)	Tripped external fuse due to internal component failure	Check wiring. If problem persists, contact your local Graco distributor.
	Tripped external fuse due to pumping non-cold weather lubricant in cold weather -13°F (-25°C)	Replace lubricant with pumpable lubricant, rated for environmental conditions and application. Replace fuse.

Table 19-2: Pressure Problems, G3 Max HF Pump

PROBLEM	CAUSE	SOLUTION
The system is overpressurized and grease is leaking from the pressure relief valve.	In injector system, the pressure switch/sensor is not working	Set the pressure switch/sensor to a lower pressure. Check the pressure switch/sensor wiring.
	There is a system blockage	Check the metering devices and grease line for blockages.
The pump is not building pressure.	The reservoir is low on grease	Add grease. See **Fill Grease Reservoir, page 32**.
	There is a leak in the pipeline	Repair the leak.
	The pump elements are not working	Repace the pump elements.
	The vent valve is not closed or is leaking internally	Check vent valve wiring. Replace the vent valve.
The pressure is not venting in an injector system.	The vent valve is clogged	Replace the vent valve.

Table 19-3: General Problems, G3 Max HF Pump

PROBLEM	CAUSE	SOLUTION
Cannot set desired Interval/Lube times	Maximum duty cycle is 33 percent	Adhere to allowable duty cycle. Contact Graco Customer Support if other duty cycles are required for application.
Lubricant leaks past seal on the bottom of the reservoir	Reservoir retaining tabs are cracked or broken	Replace reservoir. If problem persists contact your local Graco distributor.
	Reservoir is being pressurized during filling	Ensure that the vent hole is not plugged. If problem persists, contact your local Graco distributor.
Not pumping during ON cycle, but controller lights and functions	Failed motor	If problem persists, contact your local Graco distributor.
Follower plate is not going down	Air is trapped in the reservoir between the follower plate and lubricant	Add grease. Ensure that air is purged. See **Fill Grease Reservoir, page 32**.
Cycle or pressure alarm before the lubrication cycle completes	No cycle switch or pressure switch/ sensor input within the Time Out	Check cycle switch or pressure switch/sensor wiring. Increase the Time Out setting.
Display refreshes slowly	Low ambient temperature	Relocate pump to warmer environment.

When replacing parts, follow the instructions to restore the components on the G3 Max HF Automatic Lubrication Pump.

1. Follow **Pressure Relief Procedure, page 31** to depressurize the pump.
2. Turn off the power to the pump.
3. Disconnect the power cord.
4. Remove the screws (3) from the bottom of the pump.
5. Remove the cover (2).

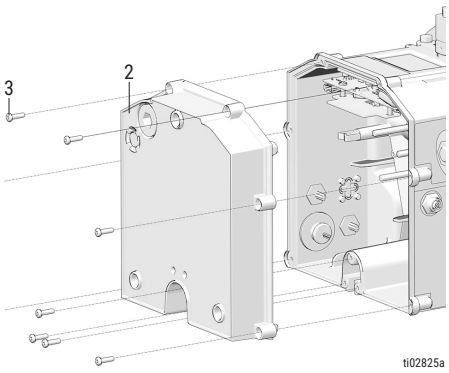


Figure 20-1: Remove Cover

The various internal components can now be accessed for repair.

REMOVE CELLULAR BOARD

Follow this procedure to remove the cellular control board from the G3 Max HF Automatic Lubrication Pump.

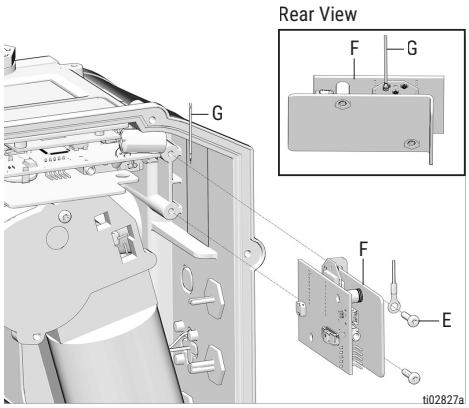


Figure 20-2: Remove Cellular Board

1. Loosen and remove the two screws (E) from the cellular board (F).
2. Disconnect the interlocking connectors from the cellular board (F).
3. Remove the pop-on connector for the antenna (G), mounted on the inside wall.
4. If needed, remove the antenna (G) from the base of the pump unit and discard. To replace the antenna (G):
   a. Remove half of the paper adhesive on the back of the antenna.
   b. Position the antenna (G) with the cable facing upward.
   c. Remove the other half of the paper adhesive and push the antenna against the wall until secure.
5. Disconnect the cable interlocking connectors to the cellular board (F).

REPLACE CELLULAR BOARD

Follow this procedure to replace the cellular control board from the G3 Max HF Automatic Lubrication Pump.

1. Reconnect the cable interlocking connectors to the cellular board (F).
2. Reconnect the antenna (G) to the cellular module board bracket.

   NOTE:

   Be sure to connect to the correct spot or the cell will not work.

3. Tuck the cable into the base wall.
4. Set the bracket into the base wall, lining up the mounting holes.
5. Reconnect the cable between the main board and the cellular bracket.
6. Replace the bottom screw (E) and partially tighten.
7. Line the bracket up with the eyelet ground wire.
8. Replace the top screw (E) and tighten.

   NOTE:

   The pump may be damaged if the screws (E) are overtightened.

VERIFY CELLULAR CONNECTIVITY

1. Connect the cover (2) to the pump.
2. Replace the screws (3).
3. Turn power on.
4. Check the display:
   a. If there is a bars symbol in the upper right-hand corner of the display, the cellular board is connected.
   b. If there is no symbol display, the cellular board is not connected.

   NOTE:

   If the pump shows faded bars and does not connect to cellular service after a few minutes, check the antenna connection.

REMOVE LEVEL SENSOR

Follow this procedure to remove the level sensor from the G3 Max HF Automatic Lubrication Pump.

The reservoir needs to be empty for this process.

IF THE RESERVOIR IS NOT EMPTY

1. On the display, set level sensor type to 0 - 10 V.
2. Disable the Low Level Alert and Alarm features.
3. Accept the changes.
4. Run the pump to empty grease from the reservoir.

AFTER THE RESERVOIR IS EMPTY

1. Disconnect the power to the pump.
2. Disconnect the level sensor (M) from the base of the pump. (N) shows the optional level sensor with auto-fill shutoff.

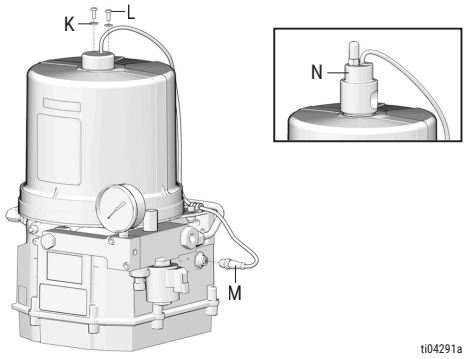


Figure 20-3: Disconnect Sensor

3. Use a hex key and wrench to loosen and remove fasteners (P, S, and T) .

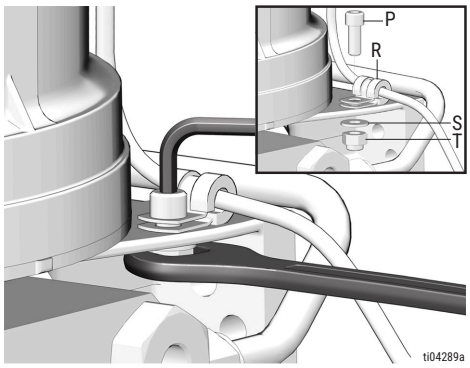


Figure 20-4: Remove Fasteners

4. Remove the holding clip (R).

NOTE:

The reservoir is spring loaded.

5. Remove the two screws (L) and washers (K) from the level sensor (M).
6. Use a flat screwdriver and lightly tap the flange to rotate the flange until the screwdriver fits underneath.
7. Use the flat screwdriver to push up on the flange (FL).

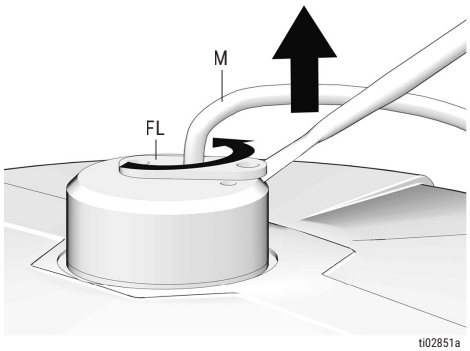


Figure 20-5: Push on Flange

8. Pull the level sensor (M) out of the reservoir.

REPLACE LEVEL SENSOR

Follow this procedure to replace the level sensor from the G3 Max HF Automatic Lubrication Pump.

1. Lubricate the level sensor (M) stem lightly with grease.
2. Replace the level sensor (M) through the top of the block on the reservoir.
3. Push the level sensor (M) through the hole in the follower plate (V).

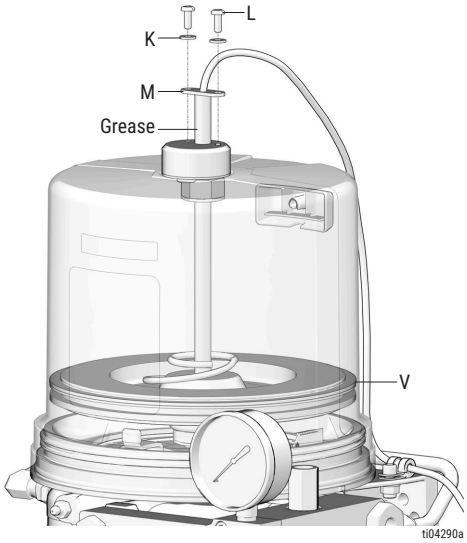


Figure 20-6: Level Sensor

4. Align the level sensor flange over the screw holder.
5. Replace the two washers (K) and screws (L), and torque to 15 - 25 in.-lb (1.7 -2.8 N•m).
6. Attach the fastener clip (R) to the level sensor cord.
7. Place the fastener clip (R) with the screw (P) and washer (S) and tighten.

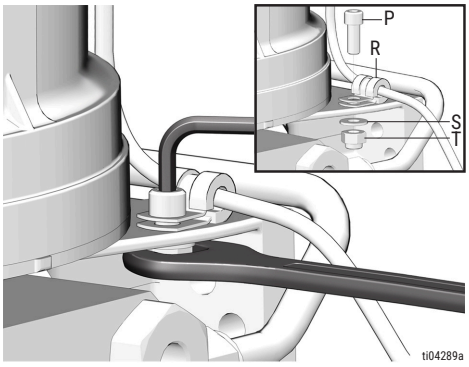


Figure 20-7: Fastener Clip

8. Reconnect the level sensor (M) to the pump base.

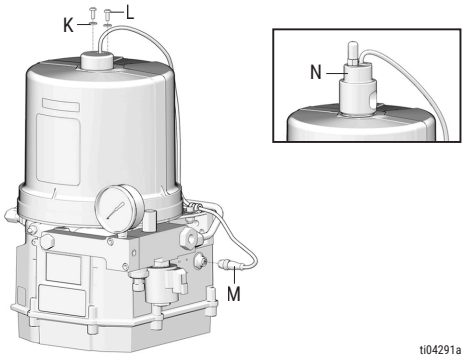


Figure 20-8: Reconnect Power

9. Restore power to the pump.
10. On the display, set level sensor type to 0.5 - 4.5 V.
11. Enable the Low Level Alert and Alarm features.
12. Follow the installation procedure.

REMOVE MAIN BOARD

Follow this procedure to remove the main control board from the G3 Max HF Automatic Lubrication Pump.

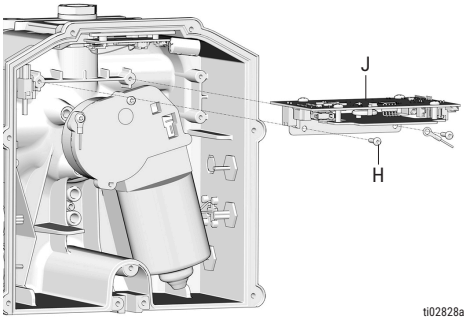


Figure 20-9: Remove Cellular Board

1. Disconnect the four interlocking connectors on the left side of the pump.
2. Remove the main board two bracket screws (H).
3. Disconnect the four (or five) interlocking connections on the right side of the pump.
4. Remove the main board bracket assembly (J).

REPLACE MAIN BOARD

Follow this procedure to replace the main control board from the G3 Max HF Automatic Lubrication Pump.

1. Connect the main board assembly (J) starting with the screw through the ground eyelet on the bottom right of the bracket.
2. Replace the main board two bracket screws (H) and partially tighten.
3. Reconnect the four (or five) interlocking connectors on the right side of the pump.
4. Tighten the main board two bracket screws (H).

NOTE:

The pump may be damaged if the screws (H) are overtightened.

5. Reconnect the four interlocking connectors on the left side of the pump.

REMOVE RESERVOIR WITH LEVEL SENSOR

Follow this procedure to replace the reservoir with level sensor from the G3 Max HF Automatic Lubrication Pump.

NOTE:

The reservoir is spring loaded.

IF THE RESERVOIR IS NOT EMPTY

1. On the display, set level sensor type to 0 - 10 V.
2. Disable the Low Level Alert and Alarm features.
3. Accept the changes.
4. Run the pump to empty grease from the reservoir.

AFTER THE RESERVOIR IS EMPTY

1. Disconnect the power to the pump.
2. Disconnect the level sensor (M) from the base of the pump. (N) shows the optional level sensor with auto-fill shutoff.

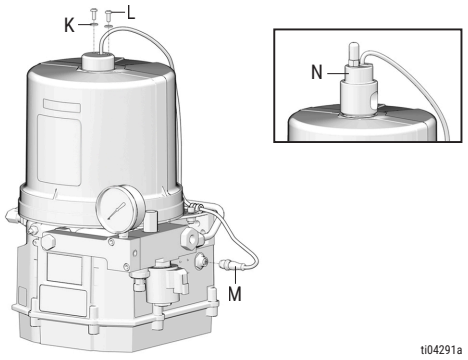


Figure 20-10: Disconnect Sensor

3. Use a hex key and wrench to loosen and remove fasteners (P, S, and T) .

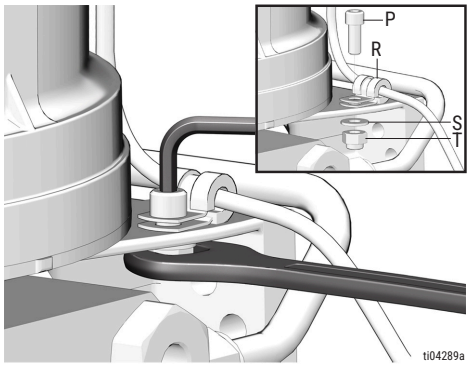


Figure 20-11: Remove Fasteners

4. Remove the holding clip (R).

NOTE:

For removal of 4 L or larger reservoirs, use special tool 133410 to prevent adapter ring rotation while turning the reservoir. The tool is installed with two sets of fasteners to the back of the pump.

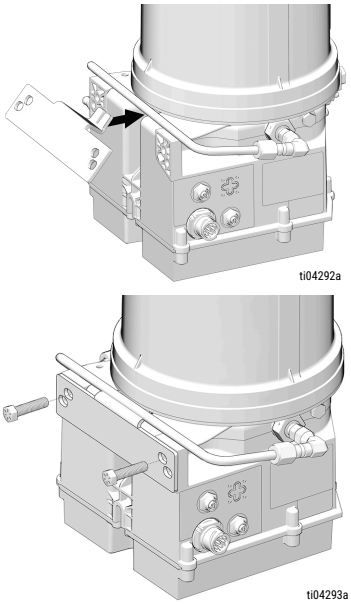


Figure 20-12: Install Special Tool (133410)

NOTE:

The reservoir is spring loaded.

5. Position the strap wrench over the reservoir (W) and turn counter-clockwise to remove from the pump base.

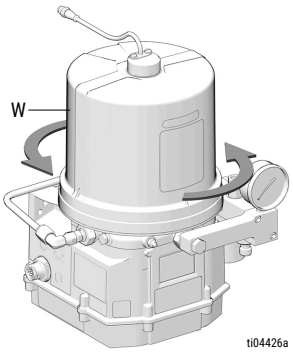


Figure 20-13: Remove Reservoir

6. Remove the spring (Y).
7. Remove the follower plate (Z).

8. Remove the bearing (AA).

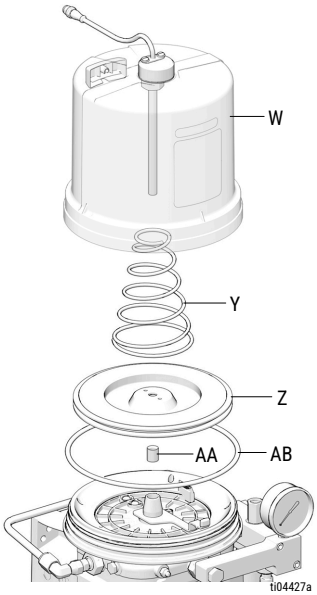


Figure 20-14: Remove Bearing

9. Remove the stirrer (AC) by rotating clockwise (left hand threaded).

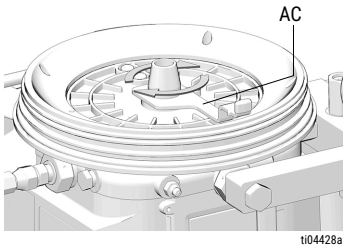


Figure 20-15: Remove Stirrer

10. Remove the O-ring (AB) from the adapter ring (B).

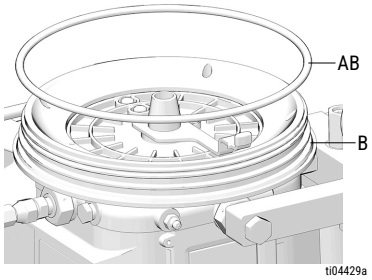


Figure 20-16: Remove O-Ring

11. Discard all parts.

REPLACE RESERVOIR WITH LEVEL SENSOR

Follow this procedure to remove the reservoir with level sensor from the G3 Max HF Automatic Lubrication Pump.

1. Place new O-ring (AB) on adapter ring (B).

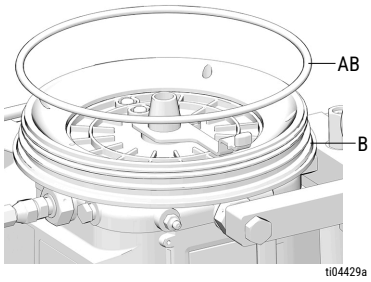


Figure 20-17: O-Ring

2. Apply grease to adapter ring (B).
3. Place and tighten new stirrer (AC) by rotating counter-clockwise (left hand threaded).

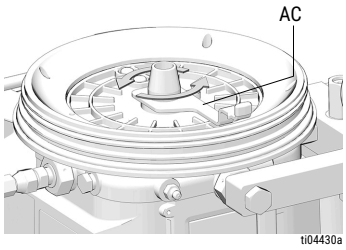


Figure 20-18: Stirrer

4. Place the new bearing (AA) into the center of the stirrer (AC).

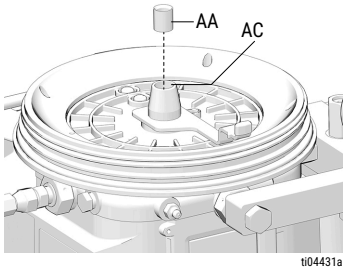


Figure 20-19: Bearing Placement

5. Place the new follower plate (Z) onto the stirrer (AC).

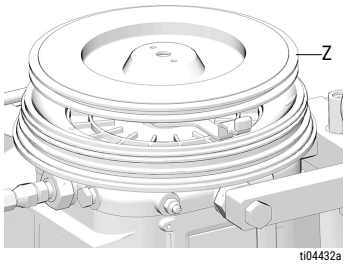


Figure 20-20: Follower Plate

6. Apply grease to the follower plate (Z) seal.
7. Place new spring (Y).
8. Put the new reservoir (W) with the level sensor (M) on the base, and align the level sensor (M) rod with the center hole. Push down and turn clockwise.

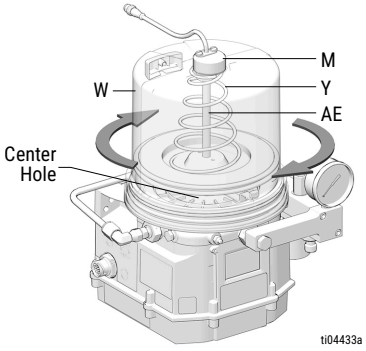


Figure 20-21: New Reservoir

9. Position the strap wrench around the reservoir (W) and turn the reservoir (W) two full turns clockwise, until the front of the reservoir aligns with the front of the pump base.
10. Replace the two washers (K) and screws (L), and torque to 15-25 in.-lb (1.7-2.8N•m).
11. Attach the fastener clip (R) to the level sensor cord (M).

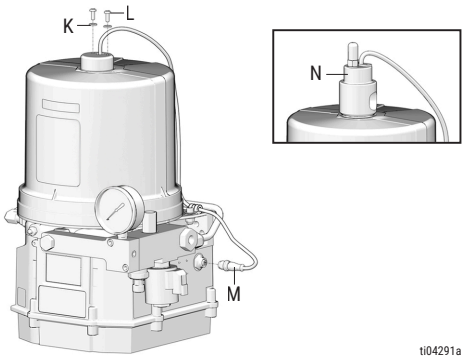


Figure 20-22: Sensor Cord

12. Place the fastener clip (R) to with the screw (P) and washer (S) and tighten.

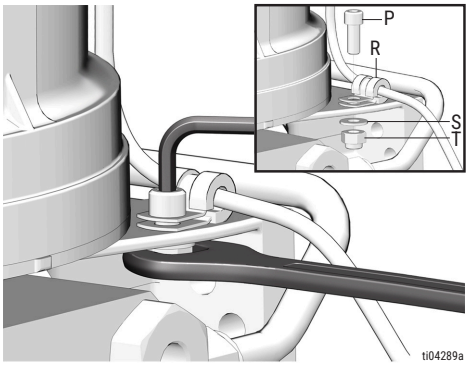


Figure 20-23: Fastener Clip

13. Restore power to the pump.
14. On the display, set level sensor to 0.5 - 4.5 V.
15. Enable the low level alert and alarm features.
16. Follow the installation instructions.

REMOVE RESERVOIR WITH LEVEL SENSOR AND AUTO-FILL SHUTOFF (AFSO)

Follow this procedure to remove the reservoir with level sensor and auto-fill shutoff from the G3 Max HF Automatic Lubrication Pump.

NOTE:

The reservoir needs to be empty for this process.

IF THE RESERVOIR IS NOT EMPTY

1. On the display, set level sensor type to 0 - 10 V.
2. Disable the Low Level Alert and Alarm features.
3. Accept the changes.
4. Run the pump to empty grease from the reservoir.

AFTER THE RESERVOIR IS EMPTY

1. Disconnect the power to the pump.
2. Disconnect the level sensor (M) from the base of the pump. (N) shows the optional level sensor with auto-fill shutoff.

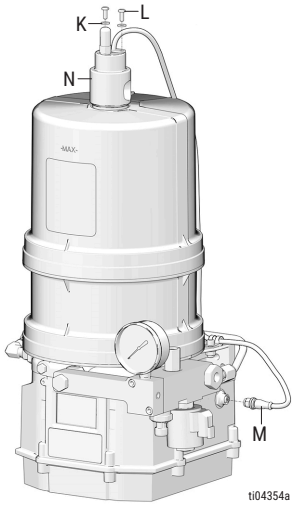


Figure 20-24: Disconnect Sensor

3. Use a hex key and wrench to loosen and remove fasteners (P, S, and T) .

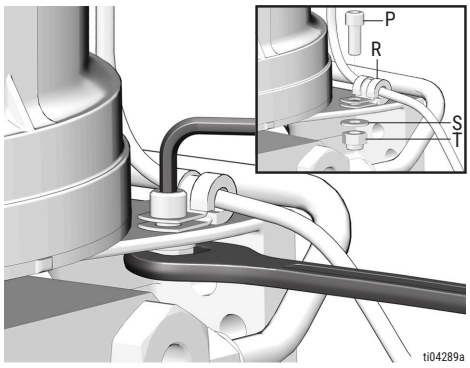


Figure 20-25: Remove Fasteners

4. Remove the holding clip (R).

NOTE:

For removal of 4 L or larger reservoirs, use special tool 133410 to prevent adapter ring rotation while turning the reservoir. The tool is installed with two sets of fasteners to the back of the pump

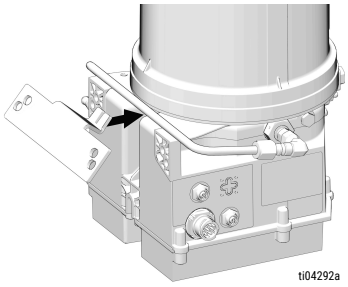


Figure 20-26: Adapter Ring

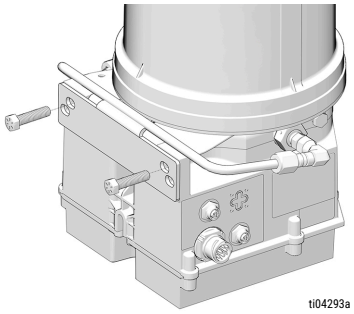


Figure 20-27: Adapter Ring

NOTE:

The reservoir is spring loaded.

5. Position the strap wrench over the reservoir (W) and turn counter-clockwise to remove from the pump base.

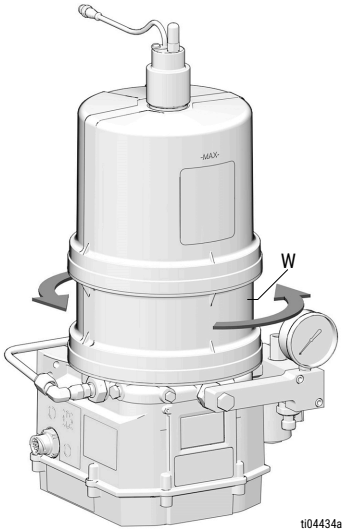


Figure 20-28: Remove Reservoir

6. The reservoir should come apart as an assembly. Remove and discard.

NOTE:

If the reservoir does not come apart as an assembly, remove and discard all individual components in the reservoir.

7. Remove the stirrer (AC) by rotating clockwise (left hand threaded).

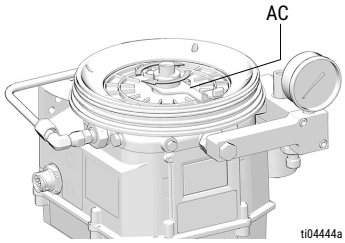


Figure 20-29: Remove Stirrer

8. Remove the O-ring (AB) from the adapter ring (B).

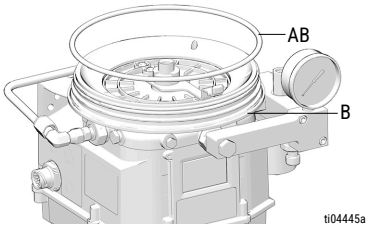


Figure 20-30: Remove O-Ring

9. Discard all parts.

REPLACE RESERVOIR WITH LEVEL SENSOR AND AUTO-FILL SHUTOFF (AFSO)

Follow this procedure to replace the reservoir with level sensor and auto-fill shutoff (AFSO) from the G3 Max HF Automatic Lubrication Pump.

1. Place the new o-ring (AB) on the adapter ring (B).

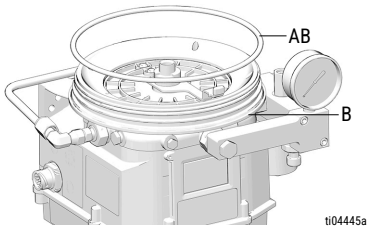


Figure 20-31: O-Ring Placement

2. Apply grease to the adapter ring (B).
3. Place the new stirrer (AC) onto the adapter ring (B), rotate counter-clockwise (left hand threaded) to tighten.

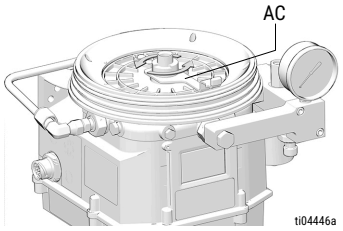


Figure 20-32: Stirrer Placement

4. Place the new reservoir with Level Sensor and Auto-Fill Shutoff onto the base.

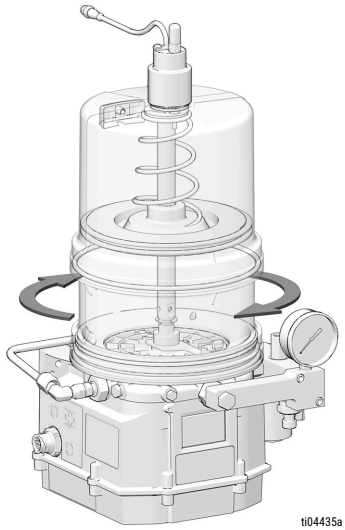


Figure 20-33: Reservoir Placement

5. Position the strap wrench around the reservoir (W) and turn the reservoir (W) two full turns clockwise, until the front of the reservoir aligns with the front of the pump base.
6. Replace the two washers (K) and screws (L), and torque to 15 - 25 in.-lb (1.7 -2.8 N•m).
7. Attach the fastener clip (R) to the level sensor cord (M).
8. Place the fastener clip (R) with the screw (P) and washer (S) and tighten.

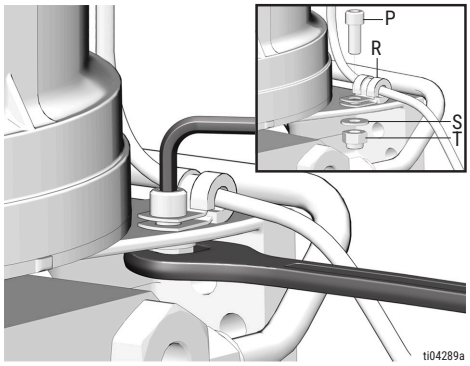


Figure 20-34: Fastener Clip

9. Attach level sensor (M) to the base.

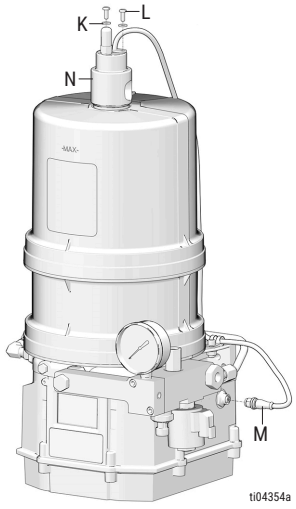


Figure 20-35: Sensor Cord

10. Restore power to the pump.
11. On the display, set level sensor type to 0.5 - 4.5 V.
12. Enable the Low Level Alert and Alarm features.
13. Follow the installation procedure.

G3 MAX HF 4L AND LARGER RESERVOIR PARTS DIAGRAM AND LIST

The parts illustration and list shows the components of the G3 Max HF 4L and Larger Reservoir and their connections that are required for assembly, repair, and maintenance.

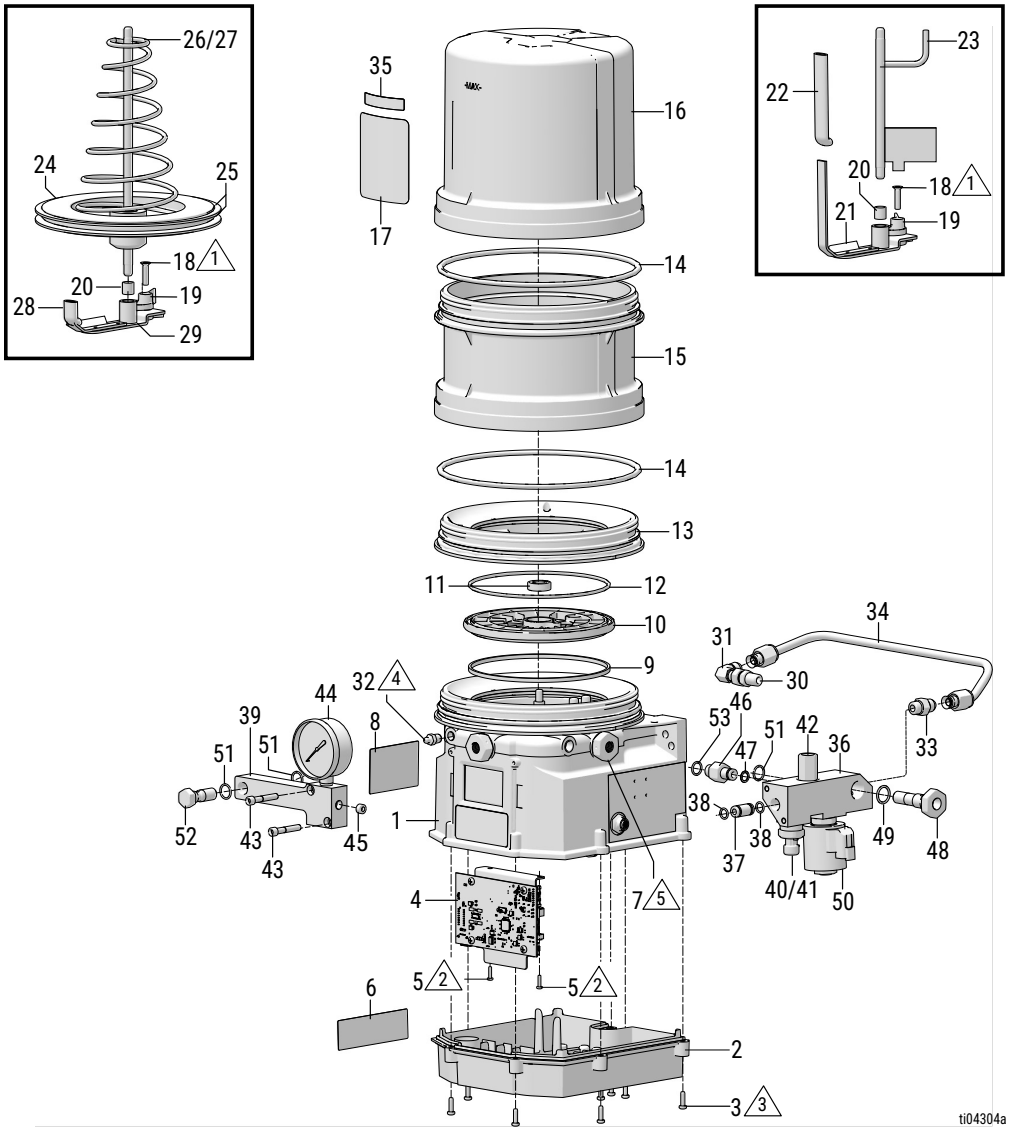


Figure 21-1: G3 Max HF 4L and Larger Reservoir Parts Diagram

1 Torque to 14 in-lb (1.6 N·m)

2 Torque to 15 in-lb (1.7 N·m)

3 Torque to 30 in-lb (3.4 N·m)

4 Torque to 35 in-lb (3.9 N·m)

5 Torque to 50 in-lb (5.7 N·m)

PARTS LIST

REF.	PART	DESCRIPTION	QTY.
1	- - -	Base, 3 pump housing	1
2	- - -	Cover, bottom	1
3	- - -	Screw, mach, torx pan hd, o-ring	9
4❖	- - -	Main controller board w/ bracket	1
5❖	- - -	Screws	2
6▲	2011888	Label, safety	1
7	25C987	Pump Element	1
8▲	- - -	Pump Identification Label	1
9	- - -	RECT-seal	1
10	- - -	Plate, ricer	1
11	- - -	Bearing, ball	1
12◆	- - -	O-ring	1
13◆	- - -	Adapter, reservoir	1
14◆ ✖#	- - -	Seal, oval, 4L, 8L	1
15	25C764	Reservoir mid-section, 8L (includes 14)	1
16◆	- - -	Reservoir 4L, grease	1
17◆ ✚	- - -	Branding label	1
18✖ #	- - -	Screw, M6	1
19✖ #	- - -	Paddle, low level, grease models	1
20✖ #	- - -	Bearing, sleeve	1
21✖	- - -	Paddle, stirring, 4L grease models, w/o follower plate	1
22✖	- - -	Wiper, stirring (for models without follower plate)	1
23	24E246	Baffle, low level, 4L models	1
	24F836	Baffle, low level, 8L models	1
24★	- - -	Plate, follower, 4L, 8L models	1
25★	- - -	Seal, follower, 4L, 8L models	2
26	- - -	Spring, follower, 4 L models	1
27	- - -	Spring, follower, 8L models	1
28#	- - -	Wiper, stirring, 4 L, 8 L follower plate models	1
29#	- - -	Paddle, stirring, 4 L, 8 L, grease models with follower plate	1
30✔	- - -	ADAPTER, 9/16 - 18 JIC x ¼ in. NPT	1
31✔	- - -	FITTING, elbow, swivel, 90, JIC06 FM, CS	1
32✔	555888	Grease fitting	1
33✔	- - -	FITTING, straight	1
34✔	- - -	BENT TUBE	1
35◆	- - -	Label, max fill	1
36✚ ✻	- - -	BLOCK, side vent RH	1
37✚ ✻	- - -	SLEEVE, manifold	1
38✚ ✻	- - -	PACKING, o-ring	2
39✚ ✻	- - -	BLOCK, front RH	1
40✚	- - -	SWITCH, pressure, 3000 psi	1
41✻	- - -	PRESSURE TRANSDUCER, 5000 psi	1
42✚ ✻	- - -	VALVE, pressure relief, 4000 psi	1

REF.	PART	DESCRIPTION	QTY.
43✚ ✻	- - -	SCREW, soc hd cap, 1/4	2
44✚ ✻	- - -	GAUGE, press, fluid	1
45✚ ✻	- - -	PLUG, pipe, headless, 1/8-27	1
46✚ ✻	- - -	BOLT, vent valve, alignment	1
47✚ ✻	- - -	O-RING, 2-012 V75	1
48✚ ✻	- - -	BOLT, vent valve mount	1
49✚ ✻	- - -	O-RING, 908 FKM	1
50✚ ✻	- - -	VALVE, hf, cartridge 24 VDC DEU	1
51✚ ✻	- - -	PACKING, o-ring	3
52✚ ✻	- - -	BOLD, banjo	1
53✚ ✻	- - -	PACKING, o-ring	1

▲ Replacement safety labels, tags, and cards are available at no cost.

❖ Main controller board kit 2008169.

✔ Pump Element Output Union Kit (PN 2011787).

◆ Reservoir Kit 571183, 4L model, grease low level.

★ Repair Kit follower plate (PN 24X192).

✖ Repair Kit, 4 L, replacement paddle, without follower plate (PN 571046).

Repair Kit,4 L, replacement paddle, with follower plate (PN 571047).

✚ Vent Valve Kit Pressure Switch (PN 2012025).

✻ Vent Valve Kit Pressure Transducer (PN 2012394).

NOTE:

For removal of 4L or larger reservoir, use special tool 113410.

G3 MAX HF 4L AND 8L RESERVOIR WITH LEVEL SENSOR AND CELLULAR CONNECTIVITY PARTS DIAGRAM AND LIST

The parts illustration and list shows the components of the G3 MAX HF 4L and 8L Reservoir with Level Sensor and Cellular Connectivity and their connections that are required for assembly, repair, and maintenance.

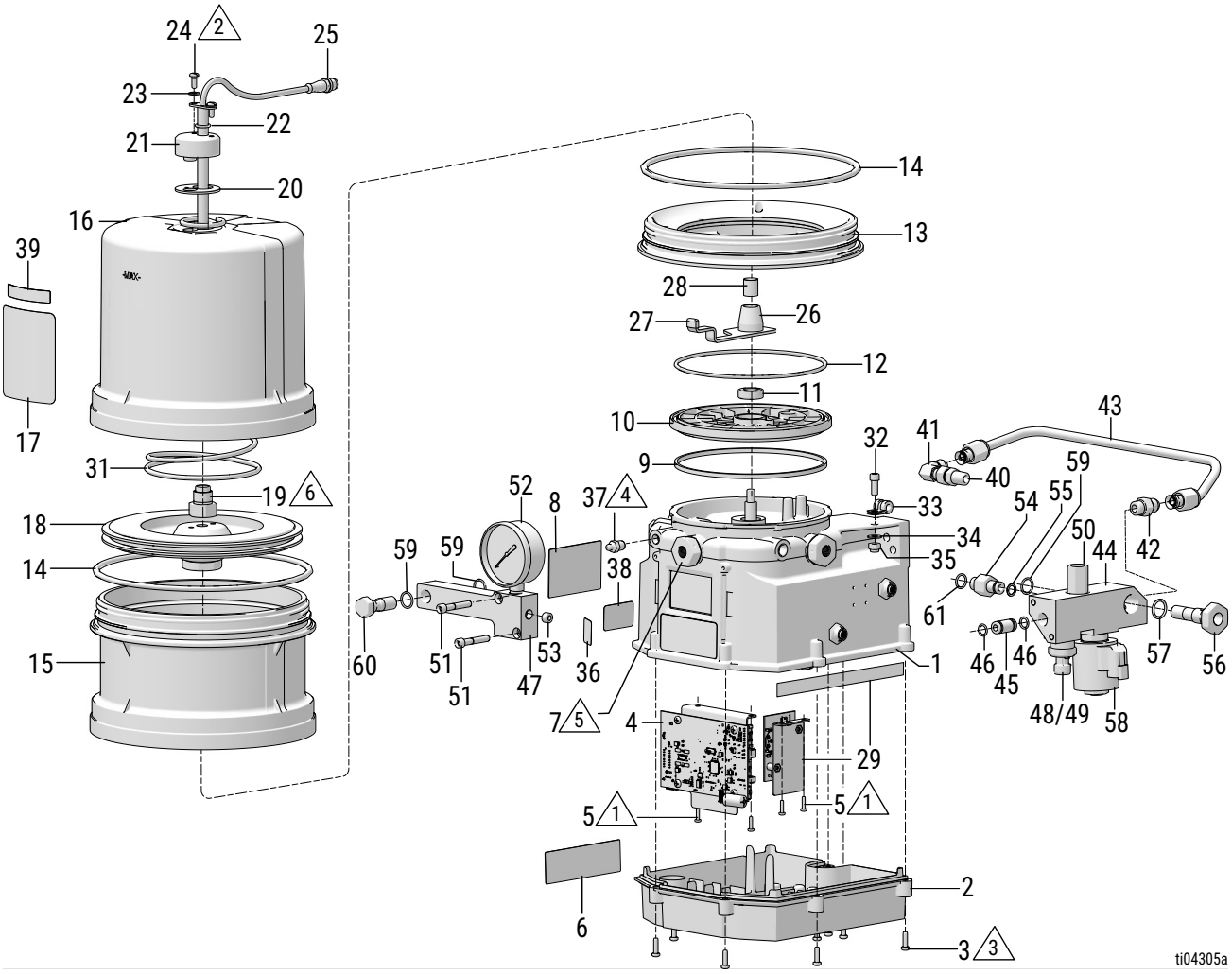


Figure 21-2: G3 MAX HF 4L and 8L Reservoir with Level Sensor and Cellular Connectivity Parts Diagram

1 Torque to 15 in-lb (1.7 N·m)

2 Torque to 15-25 in-lb (1.7-2.8 N·m)

3 Torque to 30 in-lb (3.4 N·m)

4 Torque to 35 in-lb (3.9 N·m)

5 Torque to 50 in-lb (5.7 N·m)

6 Torque to 20 ft-lb (28 N·m)

PARTS LIST

REF.	PART	DESCRIPTION	QTY.
1	- - -	Base, 3 pump housing	1
2	- - -	Cover, bottom	1
3	- - -	Screw, mach, torx pan hd, o-ring	9
4❖	- - -	Main controller board w/ bracket	1
5❖ ✻	- - -	Screws	4
6▲	2011888	Label, safety	1
7	25C987	Pump Element	3
8	- - -	Pump identification label	1
9	- - -	RECT-seal	1
10	- - -	Plate, ricer	1
11	- - -	Bearing, ball	1
12	- - -	O-ring	1
13	- - -	Adapter, reservoir	1
14◆ ✺	- - -	Seal, oval, 4L, 8L	1
15✺ ✖	25C764	Reservoir mid-section, 8L (includes 14)	1
16◆ ✺	- - -	Reservoir, 4 L, grease, level sensor	1
17✺ ◆	- - -	Branding label	1
18◆ ✺	- - -	Follower plate assy with seal magnet for level sensor, 4L, 8L	1
19◆ ✺	- - -	Spacer, seal cap	1
20◆ ✺	- - -	Seal, upper reservoir	1
21◆ ✺	- - -	Block cap	1

REF.	PART	DESCRIPTION	QTY.
22◆ ✺	- - -	O-ring, level sensor	1
23◆ ✺ ✿ ✚	- - -	Washer, flat	2
24◆ ✺ ✿ ✚	- - -	Screw machined	2
25◆ ✿	- - -	Level sensor, 4L	1
✺ ✚	- - -	Level sensor, 8L	1
26◆ ✺	- - -	Paddle, stirring, 4 L grease models, level sensor	1
27◆ ✺	- - -	Wiper, stirring, level sensor	1
28◆ ✺	- - -	Bearing, sleeve, level sensor	1
29✻	- - -	Cell board with bracket and antenna	1
31◆	- - -	Spring reservoir level sensor 4L	1
✺	- - -	Spring reservoir level sensor 8L	1
32◆ ✺ ✿ ✚	- - -	Screw clip level sensor	2
33◆ ✺ ✿ ✚	- - -	Clip level sensor	1
34◆ ✺ ✿ ✚	- - -	Washer clip level sensor	1
35◆ ✺ ✿ ✚	- - -	Lock nut clip level sensor	1
36▲	- - -	Graco "Trace" label	1
37	555888	Grease fitting	1

REF.	PART	DESCRIPTION	QTY.
38▲	- - -	Graco radio safety label	1
39◆ ✺	- - -	Label, max fill	1
40★	- - -	ADAPTER, 9/16-18 JIC x ¼ NPT	1
41★	- - -	FITTING, elbow swv, 90, JIC06, FM, CS	1
42★	- - -	FITTING, straight	1
43★	- - -	BENT TUBE	1
44✔ #	- - -	BLOCK, side vent RH	1
45✔ #	- - -	SLEEVE, manifold	1
46✔ #	- - -	PACKING, o-ring	2
47✔ #	- - -	BLOCK, front RH	1
48✔	- - -	SWITCH, pressure, 3000 psi	1
49#	- - -	PRESSURE TRANSDUCER, 5000 psi	1
50✔ #	- - -	VALVE, pressure relief, 4000 psi	1
51✔ #	- - -	SCREW, soc hd cap, /14	2
52✔ #	- - -	GAUGE, press, fluid	1
53✔ #	- - -	PLUG, pipe, headless, 1/8-27	1
54✔ #	- - -	BOLT, vent valve, alignment	1
55✔ #	- - -	O-RING, 2-012 V75	1
56✔ #	- - -	BOLT, vent valve mount	1
57✔ #	- - -	O-RING, 908 FKM	1
58✔ #	- - -	VALVE, hf, cartridge 24 VDC DEU	1
59✔ #	- - -	PACKING, o-ring	3
60✔ #	- - -	BOLT, banjo	1
61✔ #	- - -	PACKING, o-ring	1

▲ Replacement safety labels, tags, and cards are available at no cost.

❖ Main controller board kit 2008169.

◆ Reservoir Kit 2008166, 4L model, grease low level.

✺ Reservoir Kit 2008167, 8L model, grease low level.

✿ Level Sensor, 4L, Kit 2008008.

✚ Level Sensor, 8L, Kit 2008010.

✻ Cellular Board Kit 2008170.

★ Pump Element Output Union Kit (PN 2011787).

✔ Vent Valve Kit Pressure Switch (PN 2012025).

Vent Valve Kit Pressure Transducer (PN 2012394).

NOTE:

For removal of 4L or larger reservoir, use special tool 113410.

G3 MAX HF 8L RESERVOIR WITH AUTO-FILL SHUTOFF, WITH OR WITHOUT LEVEL SENSOR, AND CELLULAR CONNECTIVITY PARTS DIAGRAM AND LIST

The parts illustration and list shows the components of the G3 Max HF 8L Reservoir with Auto-Fill Shutoff, with or without Level Sensor, and Cellular Connectivity and their connections that are required for assembly, repair, and maintenance.

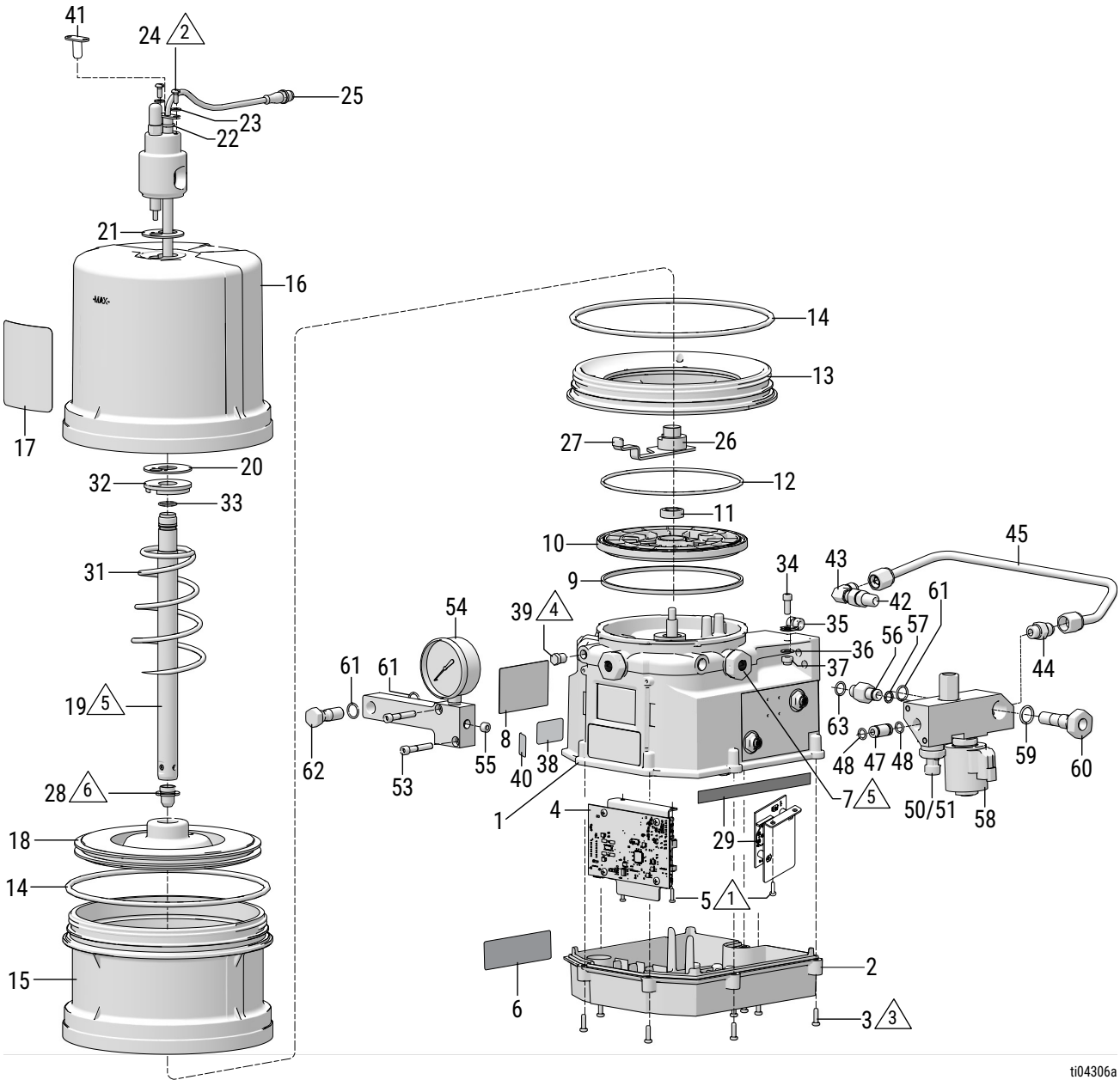


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Figure 21-3: G3 Max HF 8L Reservoir with Auto-Fill Shutoff, with our without Level Sensor, and Cellular Connectivity Parts Diagram

1 Torque to 15 in-lb (1.7 N·m)

2 Torque to 15-25 in-lb (1.7-2.8 N·m)

3 Torque to 30 in-lb (3.4 N·m)

4 Torque to 35 in-lb (3.9 N·m)

5 Torque to 50 in-lb (5.7 N·m)

6 Torque to 20 ft-lb (28 N·m)

PARTS LIST

REF.	PART	DESCRIPTION	QTY.
1	- - -	Base, 3 pump housing	1
2	- - -	Cover, bottom	1
3	- - -	Screw, mach, torx pan hd, o-ring	9
4❖	- - -	Main controller board w/ bracket	1
5❖ ✿	- - -	Screws	4
6▲	2011888	Label, safety	1
7	25C987	Pump Element	1
8	- - -	Pump Identification Label	1
9	- - -	RECT-seal	1
10	- - -	Plate, ricer	1
11	- - -	Bearing, ball	1
12	- - -	O-ring	1
13	- - -	Adapter, reservoir	1
14◆	- - -	Seal oval, 8L	2
15◆	25C764	Reservoir mid-section, 8L (includes 14)	1
16◆	- - -	Reservoir, 4 L, grease, level sensor, AFSO	1
17◆	- - -	Branding label	1
18◆	- - -	Follower plate assy with seal magnet for level sensor, AFSO, 8L	1
19◆	- - -	Tube center fill, AFSO and level sensor, 8L	1
20◆	- - -	Seal, lower, reservoir	1
21◆	- - -	Seal, upper, reservoir	1
22◆	- - -	O-ring, level sensor	1
23◆ ✺	- - -	Washer, flat	2

REF.	PART	DESCRIPTION	QTY.
24◆ ✺	- - -	Screw, machined	2
25◆ ✺	- - -	Level sensor, 8 L, AFSO	1
26◆	- - -	Paddle, stirring, 4L grease models, level sensor, AFSO	1
27◆	- - -	Wiping, stirring, level sensor, AFSO	1
28◆	- - -	Bearing, level sensor, cap	1
29✿	- - -	Cellular board with bracket and antenna	1
31◆	- - -	Spring reservoir level sensor, 8L	1
32◆	- - -	Spacer, seal, torque limiting	2
33◆	- - -	O-ring refill tube	1
34◆ ✺	- - -	Screw clip level sensor	1
35◆ ✺	- - -	Clip level sensor	1
36◆ ✺	- - -	Washer clip level sensor	1
37◆ ✺	- - -	Lock nut clip level sensor	1
38▲	- - -	Graco radio safety label	1
39	- - -	Plug, 1/8 in.	1
40▲	- - -	Graco "Trace" label	1
41✖	- - -	PLUG, AFSO	1
42✔	- - -	ADAPTER, 9/16 - 18 JIC x ¼ in. NPT	1
43✔	- - -	FITTING, elbow swivel, 90, JIC 06, FM, CS	1
44✔	- - -	FITTING, straight	1
45✔	- - -	BENT TUBE	1

REF.	PART	DESCRIPTION	QTY.
46✚ ✻	- - -	BLOCK, side vent rh	1
47✚ ✻	- - -	SLEEVE, manifold	1
48✚ ✻	- - -	PACKING, o-ring	2
49✚ ✻	- - -	BLOCK, front rh	1
50✚	- - -	SWITCH, pressure, 3000 psi	1
51✻	- - -	PRESSURE TRANSDUCER, 5000 psi	1
52✚ ✻	- - -	VALVE, pressure relief, 4000 psi	1
53✚ ✻	- - -	SCREW, soc hd cap, 1/4	2
54✚ ✻	- - -	GAUGE, press, fluid	1
55✚ ✻	- - -	PLUG, pipe, headless, 1/8-27	1
56✚ ✻	- - -	BOLT, vent valve, alignment	1
57✚ ✻	- - -	O-RING, 2-012 V75	1
58✚ ✻	- - -	BOLT, vent valve mount	1
59✚ ✻	- - -	O-RING, 908 FKM	1
60✚ ✻	- - -	VALVE, high flow, cartridgd, 24 VDC DEU	1
61✚ ✻	- - -	PACKING, o-ring	3
62✚ ✻	- - -	BOLT, banjo	1
63✚ ✻	- - -	PACKING, o-ring	1

▲ Replacement safety labels, tags, and cards are available at no cost.

❖ Main controller board kit 2008169.

✔ Pump Element Output Union Kit (PN 2011787).

◆ Reservoir Kit 2008168, 8 L model, grease level sensor with AFSO.

✺ Level Sensor Kit 2008018, 8L with AFSO.

✿ Cellular Board Kit 2008170.

✚ Vent Valve Kit Pressure Switch (PN 2012025).

✻ Vent Valve Kit Pressure Transducer (PN 2012394).

✖ For pumps with auto fill shutoff without level sensors.

NOTE:

For removal of 4L or larger reservoir, use special tool 113410.

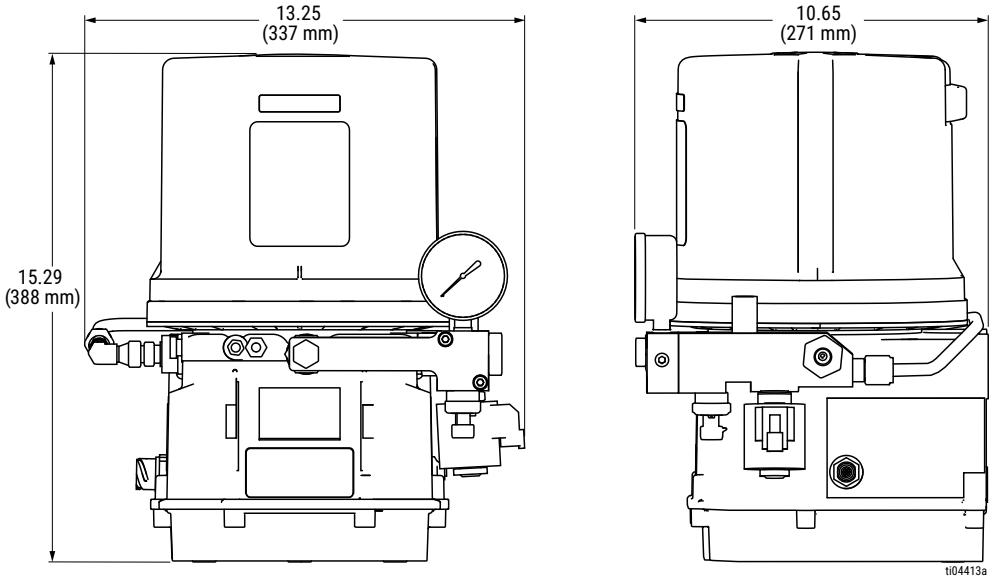

Figure 22-1: 4-Liter Model Dimensions

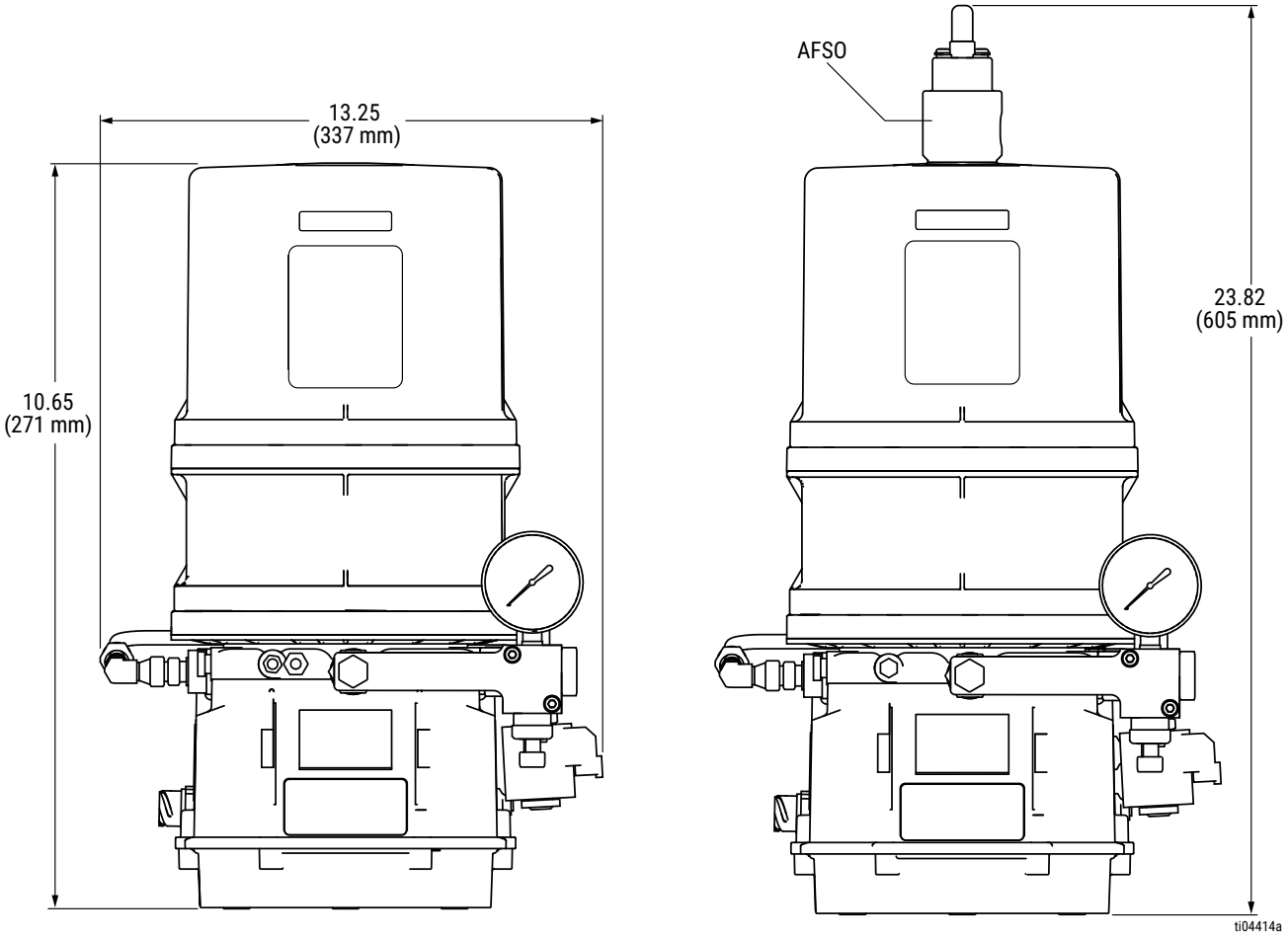

Figure 22-2: 8-Liter Model Dimensions

AFSO	Auto Fill Shutoff

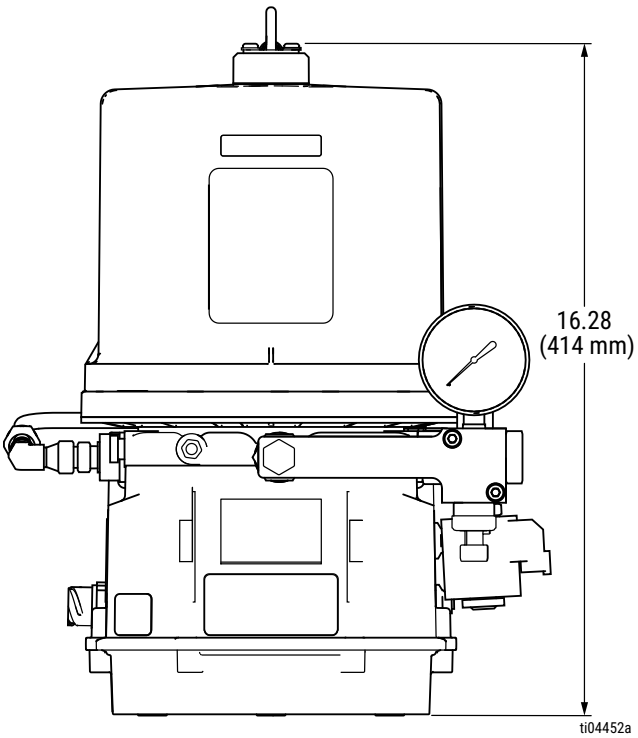

Figure 22-3: 4-Liter Model with Level Sensor Dimensions

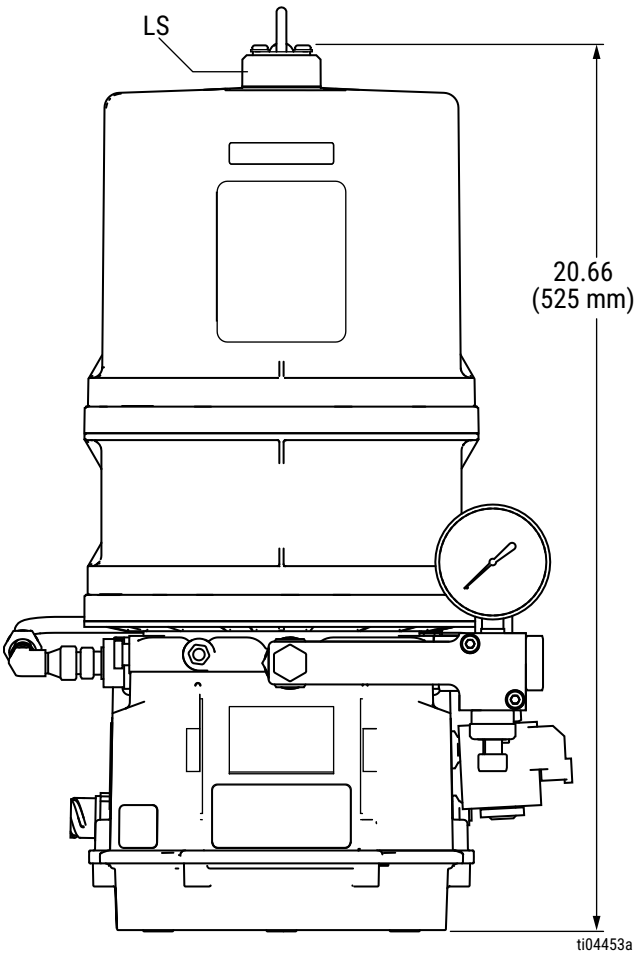

Figure 22-4: 8-Liter Model with Level Sensor Dimensions

LS	Level Sensor

MOUNTING PATTERN

There are two options for mounting the G3 Max HF pump.

NOTE:

A Graco mounting bracket (2010478) can be purchased to mount the pump.

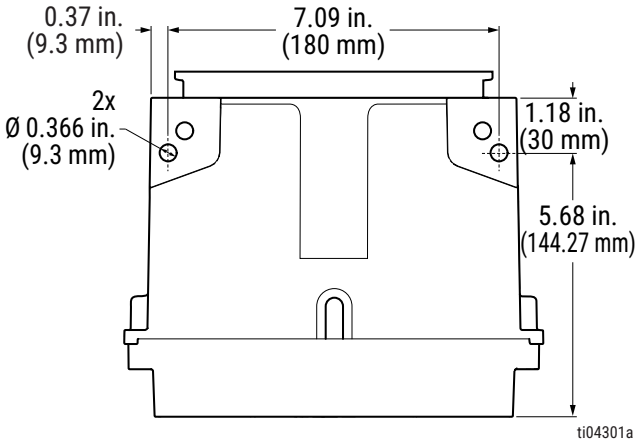

Figure 23-1: Mounting Option 1

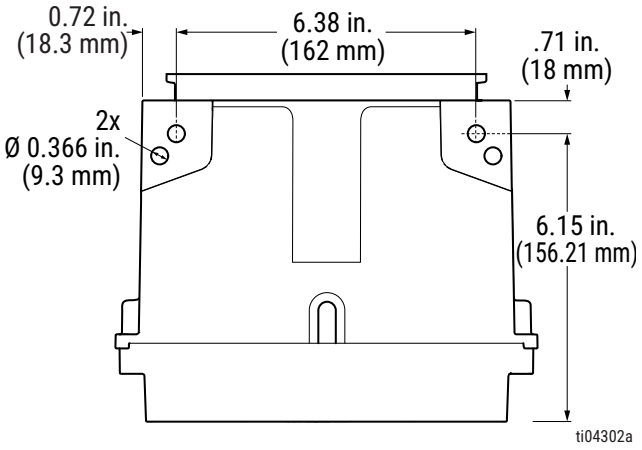

Figure 23-2: Mounting Option 2

MOUNTING BRACKET

A Graco mounting bracket (2010478) can be purchased to mount the pump.

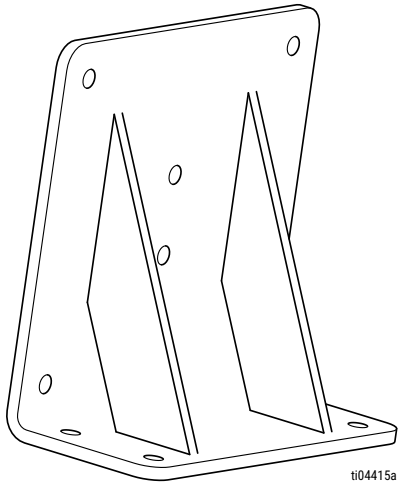

Figure 23-3: Mounting Bracket (2010478)

CALIFORNIA PROPOSITION 65

CALIFORNIA RESIDENTS

⚠**WARNING** Cancer and reproductive harm — www.P65warnings.ca.gov.

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.

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