

Example Event Log 2: Pump cycle of an injector valve system with a pressure switch feedback.

Date	Time	Description
9/29/2010	13:28:12	Venting Completed
9/29/2010	13:23:12	Venting Detected
9/29/2010	13:23:11	Pump Run Off
9/29/2010	13:23:11	P1 Pressure Completed
9/29/2010	13:22:20	Pump Run On

Common System Events are listed below.

Pump Run On	The pump entered an on cycle and is operating and dispensing material.
Pump Run Off	The pump entered an off cycle and is not dispensing.
Pump Run Cancelled	A pump on cycle was cancelled by pressing the cancel button on the front panel and holding it for 3 seconds.
G3 Power On	The pump powered on.
G3 Power Off	The pump powered off.
Program Variable Change	The setup mode was entered.
C1 Cycle Detected	The system is set up to monitor a proximity switch on a divider valve using the sensor input (C1, C2, and/or C3) and has detected one divider valve cycle.
C2 Cycle Detected	
C3 Cycle Detected	
C1 Cycle Completed	The system is set up to monitor a proximity switch on a divider valve using the sensor input (C1, C2, and/or C3) and has achieved the number of counts required by the system for that input, completing a pump on cycle.
C2 Cycle Completed	
C3 Cycle Completed	
P1 Pressure Completed	The system is set up to monitor a pressure switch for an injector system using sensor input (P1, P2, and/or P3), the system has achieved pressure and the switch has activated, completing a pump on cycle.
P2 Pressure Completed	
P3 Pressure Completed	
Machine Count Completed	The system is set up to monitor a sensor on the equipment being lubricated using the machine count input and has achieved the number of counts required by the system for that input, completing a pump off cycle and initiating a pump on cycle.
Local Manual Run Initiated	The manual run button was pressed, initiating a pump on cycle.
Remote Manual Run Initiated	The remote manual run button was pressed initiating a pump on cycle.

Venting Detected	In an injector system, the pump on cycle has completed and the system is currently venting pressure through the vent valve.
Prelube Initiated	The pump has entered a prelube delay after powering up.
Prelube Completed	The pump has completed prelube delay and will begin a pump on cycle.
Successful Pin Code Entry	The pin code was successfully entered and the user has entered setup mode.
Firmware Update Completed	The firmware was updated.

Error Log

The Error Log lists Set Time and Clear Time for the last 400 faults and warnings. The most recent event is listed first.

The log file is stored as:

GRACO/G3_{DMS_id}/{download date - YYYYm-mDD}/ERRORLOG.CSV

Example: GRACO/G3_00025/20100911/ERROR-LOG.CSV.

Sample Error Log

G3 Error Log
 DMS ID Number: 00025 (see page 39)
 Software Part Number:16F821
 Software Version:0205
 12/31/2015 23:04:00

Date	Time	Description
12/31/2015	23:03:54	Low Level Cleared
12/31/2015	23:03:42	Low Level Fault
12/31/2015	23:03:32	Low Level Warning
12/31/2015	23:03:22	P2 Not Detected Cleared
12/31/2015	23:03:22	C1 Not Detected Cleared
12/31/2015	23:03:19	P2 Not Detected
12/31/2015	23:03:19	C1 Not Detected
12/31/2015	23:02:20	Machine Count Not Detected
12/31/2015	23:02:11	Machine Count Not Detected

Common Error Log entries are listed below.

Software Fault	An internal software error occurred. Contact Graco Customer Service.
Low Level Warning	The unit entered a low level warning mode and is running low on material. The pump continues to dispense material for the duration of the low level alarm time specified by the unit.
Low Level Fault	The alarm time in low level warning has elapsed. The unit will not pump until the reservoir is filled and the fault is cleared.
Cycle 1 Not Detected	In a divider valve system, the system has not received the programmed number of divider valve cycles for the specified input in the programmed backup time.
Cycle 2 Not Detected	
Cycle 3 Not Detected	
Pressure 1 Not Detected	In an injector system the system has not received a signal from the pressure switch in the designated backup time.
Pressure 2 Not Detected	
Pressure 3 Not Detected	
System Already Presurized 1	In an injector system the pressure switch is activated when the unit enters a pump on mode and may not have vented properly.
System Already Presurized 2	
System Already Presurized 3	
Machine Count Sensor Failure	The specified number of machine count input activations was not received within the designated backup time.
Motor Overcurrent	The unit is out of expected motor current range. Check the system to determine that it is functioning correctly (i.e., no blocked lines). Continued operation at excessive motor currents will cause degradation in pump life.

High Temperature Warning	Internal temperature of the unit is above the designated operating. Check the unit and system to determine that it is functioning correctly. Operating outside of the specified temperature range may cause reduced performance and possible unit failure.
Low Temperature Warning	Internal temperature of the unit is below the designated operating. Check the unit and system to determine that it is functioning correctly. Operating outside of the specified temperature may cause reduced performance and possible unit failure.
USB Unable to Mount	The USB flash drive that was installed was unable to connect and communicate with the pump.
USB Unsupported Device	The USB flash drive is unsupported. Use a different flash drive.
USB File Not Found	The pump program setting file was not found or created correctly. Restore the setting file to the flash drive.
USB Folder Navigation	The pump program setting file was not found or created correctly. Restore the setting file to the flash drive.
USB Invalid File	The pump program settings file was not found or created correctly. Restore the setting file to the flash drive.
Failed Pin Code Entry	A failed attempt was made to enter the pin code password.

Functional Summary

The Functional Summary contains two types of data.

- The first report type, labeled User under the Type heading in the first column of the Sample Functional Summary, only provides data compiled since the last time the Functional Summary was reset through present day (see A6 - Clearing the Functional and Technical User Summary, page 50).

This is very similar to the resettable trip odometer in your car.

- The second report type, labeled Factory under the Type heading in the first column of the Sample Functional Summary, covers the cumulative life of the pump from the first day it was put into service through present day.

This is very similar to an odometer in your car.

The log file is stored as:

GRACO/G3_{DMS_id}/{download date - YYYYm-mDD}/FUNCSUM.CSV

Example: GRACO/G3_00025/20100911/FUNCSUM.CSV

Sample Functional Summary

G3 Functional Summary											
DMS ID Number:00025 (see page 39)											
Software Part Number:16F821											
Software Version:0205											
12/27/2010 9:50:51											
Type	Start Date	Lube Cycles	Pump Run	Powered On	Local Manual Run	Remote Manual Run	Average Run Time	Average Input 1 Time	Average Input 2 Time	Average Input 3 Time	
User	12/21/2010	2	0 hrs	0 hrs	2	0	0:00:01	0:00:00	0:00:00	0:00:00	
Factory	9/30/2010	408	7 hrs	279 hrs	165	2	0:01:04	0:00:03	0:00:08	0:00:04	
		Average Duty Cycle	Max Duty Cycle	Low Level Faults	Cycle Pressure Faults	Other Faults	Fault Hours	Low Level Warnings	Cycle Pressure Warnings	Other Warnings	
		0.36%	0.36%	0	0	0	0 hrs	0	0	0	
		2.63%	56.89%	10	212	21	165 hrs	13	36	26	

Common Functional Summary Data entries are listed below.

Number of Cycles	The number of lubrication cycles the unit has started.
Total Run Hours	Total amount of hours the pump has been in the ON mode of the ON/OFF cycle.
Total Powered On Hours	Total number of hours that the unit has been powered on.
Local Manual Run	The number of times the manual run button was pressed.
Remote Manual Run	The number of times the remote manual run button was pressed.
Average Run Time	The average amount of time per lubrication cycle that the pump has been running (MM:SS).
Average Cycle 1 Time	The average amount of time the unit has been operating before the specified feedback for the sensor input was received (proximity switch counts in divider valve systems and pressure switch activation in injector systems).
Average Cycle 2 Time	
Average Cycle 3 Time	
Average Duty Cycle	The average percentage of time the unit has been pumping while it has been powered on.
Max Duty Cycle	The highest percentage of time for one lubrication cycle that the unit has been pumping while it has been powered on.
Total Low Level Faults	Total number of low level faults.
Total Cycle Pressure Faults	Total number of faults related to sensor feedback in an injector or divider valve system.
Total Other Faults	Faults other than low level or sensor feedback.
Total Fault Hours	Number of hours the system has been powered on in fault mode.
Total Low Level Warnings	Number of low level warning conditions.
Total Cycle Pressure Warnings	Total number of warning conditions related to sensor feedback. This is only applicable if fault retries are used.
Total Other Warnings	All other warnings including temperature and motor current.

Technical Summary

The Technical Summary contains two types of data.

- The first report only provides data compiled since the Pump Summary was reset to present day (see A6 - Clearing the Functional and Technical User Summary).

This is very similar to the resettable trip odometer in your car.

- The second is a report that covers the cumulative life of the pump from the first day it was put into service to present day.

This is very similar to an odometer in your car.

The log file is stored as:

GRACO/G3_{DMS_id}/{download date - YYYYm-mDD}/TECHSUM.CSV

Example: GRACO/G3_00025/20100911/TECHSUM.CSV

Common Technical Summary Data entries are listed below.

Average Input Board Voltage (DC)	The average input voltage measured by the internal circuit board.
Peak Input Board Voltage (DC)	The peak input voltage measured by the internal circuit board.
Average Motor Current	The average motor current measured by the unit.
Peak Motor Current	The peak motor current measured by the unit.
Average Internal Temperature	The average internal temperature seen by the unit.
Peak Internal Temperature	The peak internal temperature seen by the unit.
Low Internal Temperature	The lowest internal temperature seen by the unit.

Sample Technical Summary

G3 Technical Summary								
DMS ID Number: 00025 (see page 39)								
Software Part Number:16F821								
Software Version: 0205								
12/27/2010	9:50:51							
Latest Values								
Temp	Voltage							
31C	23.877							
Type	Start Date	Average Board Voltage	Peak Board Voltage	Average Motor Current	Peak Motor Current	Average Internal Temp	Peak Internal Temp	Low Internal Temp
User	12/21/2010	23.877	23.877	0.062	0.062	30C	35C	28C
Factory	9/30/2010	22.804	23.877	1.091	0.362	33C	42C	-10C

Advanced Programming

There are 9 Advanced Programming options. The following Table Identifies each option and when it is used.

Advanced Option	Model	Setting	Format/ Description	Why Use This?
A1	Max	Lockout Code (Optional)	Secures setup modes with PIN	Prevents unauthorized users to adjusting settings.
A2	Max	Low Level Alarm Time	MM:SS (minutes:seconds) sets amount of time between Low Level Warning to Low Level Fault. Default = 3 minutes	To accommodate most lubrication situations, a conservative amount of time is programmed between the low level warning and fault to help protect unit from running dry. If necessary the amount of time the unit runs before stopping due to a low level fault can be adjusted.
A3	Max	Vent Valve Time	MM:SS (minutes:seconds) sets amount of time vent valve stays open after Pump ON Mode. Default = 5 minutes	<ul style="list-style-type: none"> In an injector based system that does not use a sensor for feedback, determines the amount of time the system vents. Vent time can be modified.
A4	Max	Alarm Retry	Sets number of automatic retries after a Cycle or Pressure Alarm. Default = 0	Establishes the number of times the unit automatically retries lubricating after a cycle or pressure alarm to determine if a temporary or false signal can be cleared.
A5	Max	Active Alarm	Changes alarm output behavior. Default = OFF	<p>Uses alarm output to determine if a unit has an alarm AND/OR loses power.</p> <p>The output turns ON when power is applied. It turns OFF when power is lost or an alarm occurs.</p> <p>Normal operation (OFF) will only activate alarm output in an alarm condition when power is on.</p> <p>Can change (set to ON) to activate alarm with power ON and deactivate with power OFF OR warning.</p> <p>Used to manage power outage.</p>
A6	DMS™ Equipped Models	Functional and Technical User Summary Reset	Clears the Functional and Technical User Summaries	Allows user to track lube events from a specific point (reset), i.e. a month to month evaluation.
A7	Max	Constant Alarm Output on Fault	Changes alarm output behavior. Default = OFF	This function changes the behavior of the alarm output in a fault from either toggling once every second or steady on.

Firmware 6.02 and later

A8	Max	4 Digit Hour Off Time	Changes maximum OFF time. Default = OFF	This function changes OFF time from HH:MM to HHHH. It allows a maximum of 9999 hours of OFF time.
A9	Max and "08" option	Toggle Low Level Output on Warning or Fault	Changes Low Level Indication behavior. Default = OFF	This function changes the behavior of the low level output in a warning or fault from either steady on or toggling once per second.

Entering a PIN Code for the First Time

A1 - Setting Up PIN Code

A PIN Code can be programmed into the G3 to protect the settings from inadvertently being changed by unauthorized users.

1. Press the UP ARROW button for 10 seconds.



The LED next to the LOCK ICON on the display lights, indicating you have entered the PIN Mode.



2. The word OFF appears in the display. Press the UP or DOWN ARROW button to change this to ON.



3. Press the ENTER button to enter the PIN Code.



4. The cursor automatically is positioned to enter the first character of the PIN Code. Use the UP and DOWN ARROW buttons to move up and down through the numbers 0-9 until the first number in the PIN code is displayed in the field.



5. Press the ENTER button to set the number. The cursor automatically moves to the next number field.



6. Repeat steps 4 and 5 for each PIN Code prompt field.

7. Press the ENTER button to save the PIN Code and exit Advanced Setup.



Entering Advanced Setup

Press the UP ARROW button for 10 seconds.



If the G3 was previously set up to require a PIN Code, the LED next to the LOCK ICON lights, indicating a PIN Code is required.

1. The cursor is automatically positioned to enter the first character of the PIN Code. Use the UP and DOWN ARROW buttons to move up and down through the numbers 0-9 until the first number in the PIN code is displayed in the field.



2. Press the ENTER button to set the number. The cursor automatically moves to the next number field.



3. Repeat steps 1 and 2 for each PIN Code prompt field.

If the PIN Code you entered is correct, the first editable character on the display will flash.

Selecting Advanced Setup Options

1. Press the UP or DOWN ARROW button to move up or down through Advanced Options A1 - A7.



2. Press the ENTER button to set the selection.



A2 - Low Level Alarm Time

Pump ON mode only.

Programs the amount of time in MM: SS (minutes and seconds) the pump can run between a Low Level Warning and a Low Level Fault to help protect unit from running dry.

The maximum recommended length of time is 3:00 minutes.

Fault, and Low Level LED illuminate. (*Max Model Display shown in illustration below*).



FIG. 34

NOTE: When programming a time of less than 10 minutes you **must** program a leading zero in the first number field and press the ENTER button to save the zero selection.

1. To set the time use the UP or DOWN ARROW button to scroll through numerals 0 to 9 until the desired number appears in the first MM (minutes) field.



2. Press the ENTER button to lock in the selection. The next MM number field to the right flashes indicating it is ready for programming.



3. Use the UP or DOWN ARROW button to scroll through numerals 0 to 9 until the desired number appears in the second MM number field.



4. Press the ENTER button to lock in the selection.



The next number field to the right flashes and the LED lights under SS; indicating it is ready to program the seconds fields.

5. Repeat steps 1 - 4 to set the SS (seconds) fields.
6. After pressing the ENTER button to set the last SS field, all the programmed ON Time information is saved.



Unit exits Advanced Programming.

A3 - Vent Valve Time

The Vent Valve Time is the amount of time the vent valve stays open after a cycle is completed.

The recommended Vent Valve Time is 5 minutes.

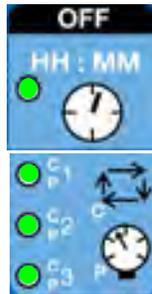
To bypass the Vent Valve Time enter a value of 00:00.

Vent Valve time must be less than the programmed OFF time (page 36). If it is not set to a value less than the programmed OFF time, the G3 will automatically adjust the time to a value 2 seconds less than the set OFF time.

To set Vent Valve Time:

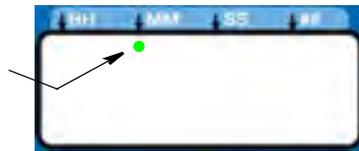
NOTE:

- The LED next to the clock in the OFF field lights and P1, P2, and P3, indicating the Vent Valve Time is being programmed.

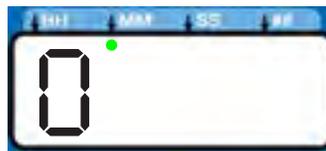


- Time is set as minutes and seconds (MM:SS) only.

- The small flashing LED under the MM indicates you are setting Minutes.



- The first field (left side of display) blinks indicating the device is ready for you to begin programming.



- When programming a time of less than 10 minutes you **must** program a leading zero in the first number field and press the ENTER button to save the zero selection.

- To set the Time use the UP or DOWN ARROW button to scroll through numerals 0 to 5 until the desired number appears in the first minute field.

- Press the ENTER button to lock in the selection. The next minute field to the right flashes indicating it is ready for programming.



- Use the UP or DOWN ARROW button to scroll through numerals 0 to 9 until the desired number appears in the second minute field.



- Press the ENTER button to lock in the selection.



- The next number field to the right flashes and the LED lights under SS; indicating it is ready to program the Seconds fields.



- Repeat steps 1 - 4 to set the MM (seconds) fields.

- After pressing the ENTER button to set the last seconds field, all the programmed Time information is saved.



Unit exits Advanced Programming.

A-4 Alarm Retry

Programs the number of times G3 will automatically retry running a lubrication cycle after a cycle or pressure alarm activates. The default setting is 0. For assistance determining a reasonable number of Alarm Retries to program for your application, contact Graco Customer Service or your local Graco distributor.

1, 2, and 3 and Fault LED's illuminate.



FIG. 35

To set the Alarm Retry:

- The default value 0000 appears in the display.



- Press the UP or DOWN ARROW button to move up or down through number 0-9.



- When the correct number displays, press the ENTER button to set the number. 
- Repeat 2 - 3 to set the remaining fields.
- Press the ENTER button to exit Advanced Programming. 

A-5 Active Alarm

Changes the alarm output behavior. Uses output to determine if a fault has occurred.

Fault and ON LED's illuminate.



FIG. 36

- The default OFF displays. 
- Press the UP or DOWN ARROW button to change OFF to ON on the display to activate alarm condition. 

- Press the ENTER button to exit Advanced Programming. 

A6 - Clearing the Functional and Technical User Summary (DMS™ Models only)

The Pump Summary shows run details since the last time the summary was cleared.



FIG. 37

- Press the UP or DOWN ARROW button to move through Advanced Options until Advanced Option A6 is displayed. 
- Press the ENTER button. 
- "Data" displays. 
- Press the RESET button. "Reset" displays. The summary data is cleared.  
- Press the RESET or ENTER button to exit.  

A-7- Constant Alarm Output on Fault

This function changes the behavior of the alarm output in a fault from either toggling once every second (default) or steady on.

Fault and Warning LEDs Illuminate

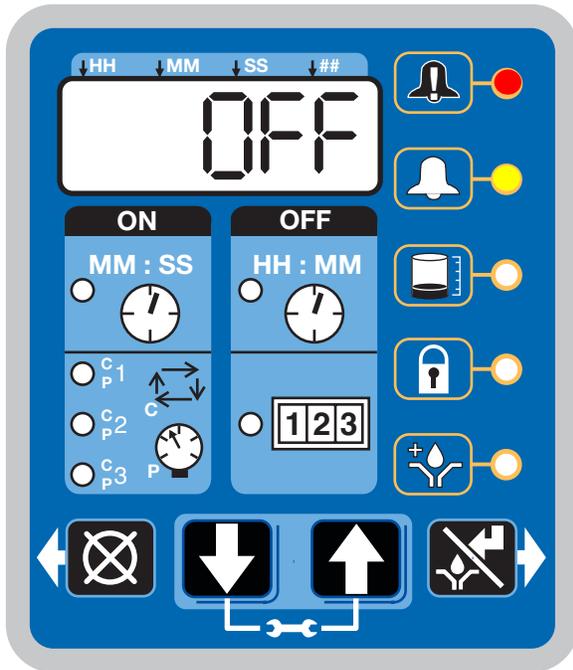


FIG. 38

1. The default OFF is displayed. The alarm output will toggle once a second.



2. Press the UP or DOWN ARROW to change OFF to ON on the display to change the alarm output to be on steady



3. Press the ENTER button to exit Advanced Programming.



A-8 - 4 Digit Hour OFF Time

Changes the OFF time from HH:MM to HHHH. Allows for a maximum of 9999 hours of OFF time.

OFF LED illuminates.



FIG. 39

1. The default OFF displays.



2. Press the UP or DOWN ARROW button to change OFF to ON on the display to activate alarm condition.



3. Press the ENTER button to exit Advanced Programming.



A-9- Toggle Low Level Output on Low Level Warning or Fault

This function changes the behavior of the low level output in a warning or fault from either steady on (default) or toggling once every second.

Low Level and Warning LEDs Illuminate



Fig. 40

1. The default OFF is displayed. The alarm output will toggle once a second.



2. Press the UP or DOWN ARROW to change OFF to ON on the display to change the alarm output to be on steady



3. Press the ENTER button to exit Advanced Programming.



Run Mode

Time Control

After setup is complete, the G3 automatically begins to run the OFF Time sequence (FIG. 41).

- The G3 runs the programmed OFF sequence.

(Notice the OFF Time LED on the display lights and the OFF Time counts down on the display.)

- The example shown in FIG. 41 shows an OFF Time of 1 hour and 32 minutes before the lubrication cycle begins.



FIG. 41

- When the OFF Time count reaches zero, the G3 Automatic Lubrication Pump turns the pump on and it runs for the programmed ON Time cycle (FIG. 42).

(Notice the ON Time LED is now illuminated on the display.)

- The example shown in FIG. 42 shows an ON Time of 8 minutes and 42 seconds before the lubrication cycle ends.



FIG. 42

- When the ON Time count reaches zero, the pump shuts off again and the system again runs OFF Time cycle and the OFF Time LED is now again illuminated (FIG. 41).

This sequence repeats itself until the device is reprogrammed or an alarm occurs.

- If power to the pump is lost during a lubrication cycle, when power is restored the pump will resume the cycle with the same amount of time remaining in the cycle as when the power was lost.

Lubrication Mode (Pump ON) Controls

In Max models the Lubrication Mode (Pump ON) can be controlled by either cycle and/or pressure sensors.

If cycle and/or pressure controls have been set to something other than OFF the display will alternate between cycles (C1, C2, C3) and/or active sensors (P1, P2, P3) and Backup Time.

If cycle or pressure controls have been set to OFF then the Lubrication Mode (Pump ON) will be controlled by On Time (see Time Control, page 53).

With cycle and/or pressure controls set, the lubrication cycle (Pump ON) is ended by meeting **all** required cycle and/or pressure settings.

Cycle Control

- A set number of triggered counts in a cycle based system (C1). Typically a proximity switch connected to a divider valve.
- The LED next to the appropriate sensor (C/P1, C/P2, C/P3) illuminates.
- The display indicates the sensor (C1, C2, C3) and the remaining cycles for that sensor (FIG. 43).

The example shown in FIG. 43 shows sensor C1 with 5 cycles remaining.

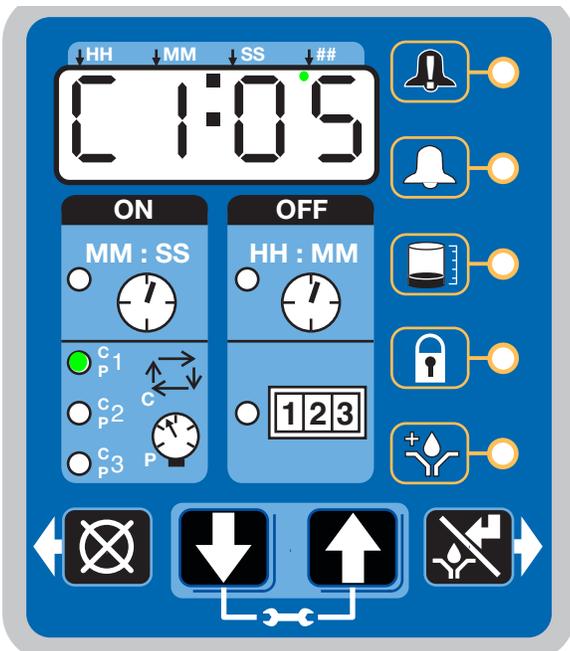


FIG. 43

Pressure Control

- A single triggered count in a **pressure based system** (P1). Typically a pressure switch on the end of a line of injectors.
- The LED next to the appropriate sensor (C/P1, C/P2, C/P3) illuminates (FIG. 44 and FIG. 45).
- The display indicates the sensor (P1, P2, P3) and whether the pressure switch for that sensor has been triggered or not.

- 01 = pressure switch has not been triggered
- 00 = pressure switch is triggered.

The example shown in FIG. 44 shows sensor P1 with a pressure switch that has been triggered.

FIG. 45 (page 55) shows sensor P2 with a pressure switch that has NOT been triggered.

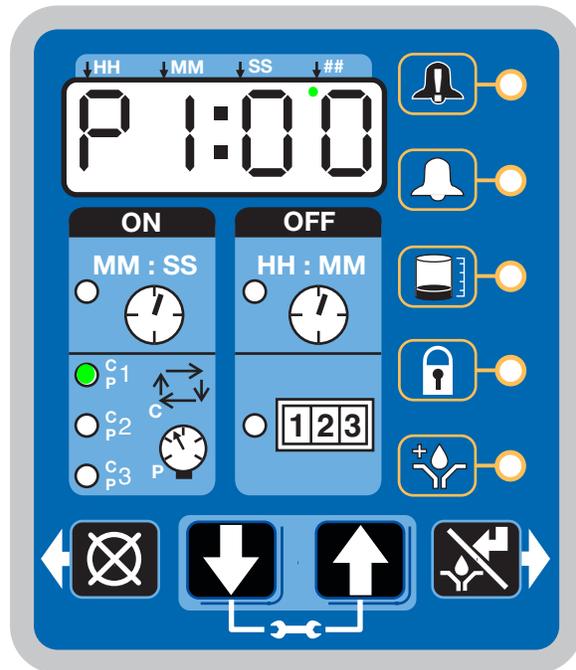


FIG. 44



FIG. 45

Backup Time

- In both Cycle and Pressure modes a Backup Time (maximum run time) has been set.
- The LED(s) next to all programmed sensors (C/P1, C/P2, C/P3) illuminate.
- The display shows time remaining until a fault.

The example shown in FIG. 46 shows 14 minutes and 33 seconds left until the fault occurs.

- If all cycle and/or pressure requirements are met the unit exits the lubrication cycle (Pump ON) and enter the rest cycle (Pump OFF).



FIG. 46

Rest Mode (Pump OFF) Controls

In Max models the Rest Mode (Pump OFF) is controlled by machine counts.

If the Machine Count is set to a value greater than **0000** and the Backup Time option **is activated**, the display will alternate between Machine Counts and Backup Time.

If Machine Count has been set to a value greater than **0000** and the Backup Time option is **NOT activated**, the display will only show the number of Machines Counts remaining.

With machine count set, the Rest Cycle (Pump OFF) is ended when the machine count reaches zero (0000).

Machine Count

- A set number of triggered counts.
- The LED next to 1-2-3 illuminates (FIG. 47).
- The display indicates the number of machine counts remaining.

The example shown in FIG. 47 shows the remaining number of machine counts is 0045.

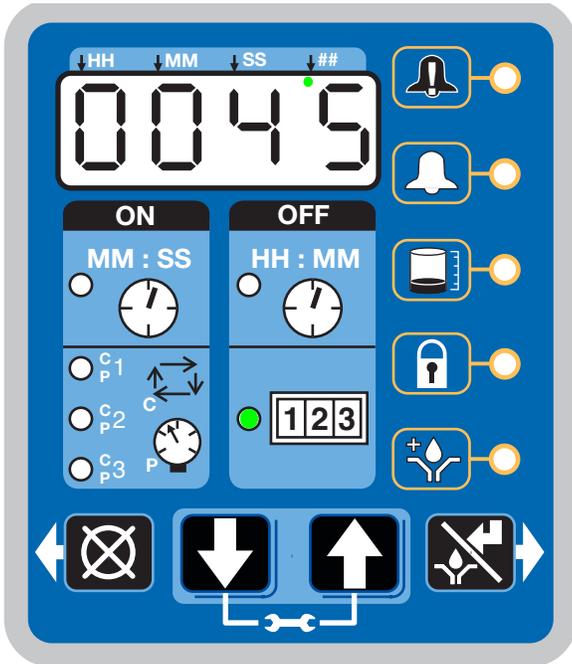


FIG. 47

Backup Time

In Machine Count mode, if a Backup Time (maximum rest time) has been set:

- The LED next to 1-2-3 illuminates (FIG. 48).
- The display shows the amount of time remaining till a fault.

The example shown in FIG. 48 shows 4 hours and 17 minutes remaining until a fault occurs.

- If the Machine Count requirements are met the unit will exit the Rest Mode (Pump OFF) and enter the Lubrication Mode (Pump ON).



FIG. 48

OFF Time

In Max models if the Machine Count is set to **0000** then Reset Mode (Pump OFF) is controlled with OFF Time (see Time Control, page 53).

Additional Controls

Venting

In Max models a Vent Time can be set using the Advanced Programming mode (page 48). This is typically done in a Pressure Based System (P1) to allow injectors to reset.

- Unit vents for a set amount of time (not displayed).
- The LED's next to C/P1, C/P2, C/P3 flash while unit is venting.
- If Machine Count is set, the display will alternate between machine counts remaining and backup time (Max Model Rest Mode, page 55).
- If Machine Count has been set the LED next to 1-2-3 illuminates (FIG. 47, page 56).
- If Machine Count has not been set the display shows OFF Time (See Time Control, page 53).
- If Machine Count has not been set the LED next to the clock in the OFF field illuminates (See Time Control, page 53).

Prelube / Prelube Delay

In all models a power OFF/ON cycle can be controlled with the Prelube and Prelube Delay functions.

Prelube

The Prelube function has been selected. Prelube delay is set to 00:00:

- Power to the unit cycles OFF then ON.
- Unit immediately begins a lubrication cycle.
- Max Model - display shows Cycle/Pressure/Backup Time (See Max Model Lubrication Mode Controls, page 54).

Prelube Delay

The Prelube function has been selected. Prelube delay is set to something other than 00:00:

- Power to the unit cycles OFF then ON.
- Unit immediately begins the Prelube Delay count down until the lubrication cycle begins.
- The LED next to the clock in the OFF field is illuminated (FIG. 49).
- The Prelube LED lights (FIG. 49).

- The display shows time remaining until lubrication cycle begins. The example shown in FIG. 49 shows 8 minutes and 14 seconds left until a lubrication cycle begins.



FIG. 49

Manual Run Cycle



To run an extra (non-programmed) lubrication cycle, push the Manual Start button.

NOTE: Manual Run option is not available while unit is in Vent Mode.

Alarms: Firmware Versions 6.01 and Below

Any time a Fault / Warning occurs, a combination of LED's will illuminate to notify you there is a problem and help identify the kind of Fault / Warning has occurred.

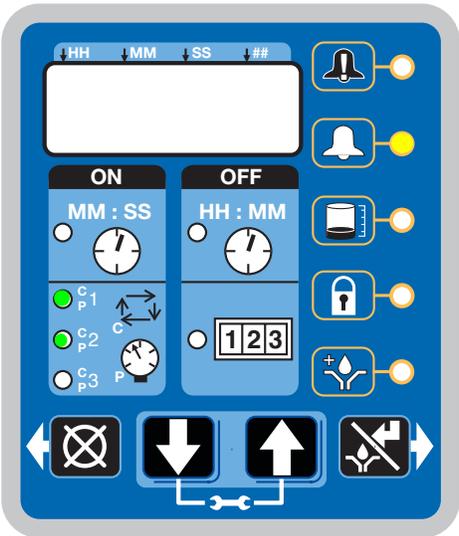
- Faults and Warnings will not automatically clear.
- To clear an fault, press and hold the RESET button on the display button pad for 3 seconds.
- To clear a warning press and immediately release the RESET button.

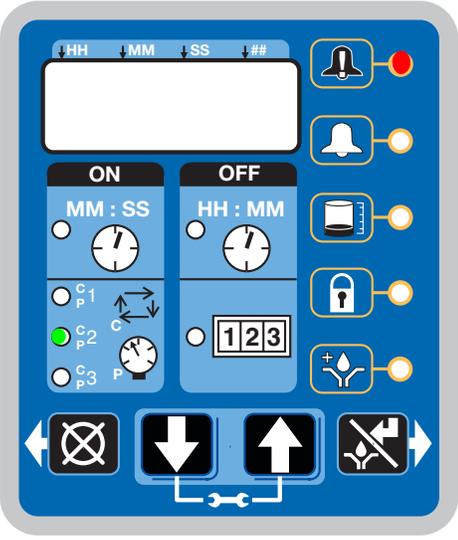
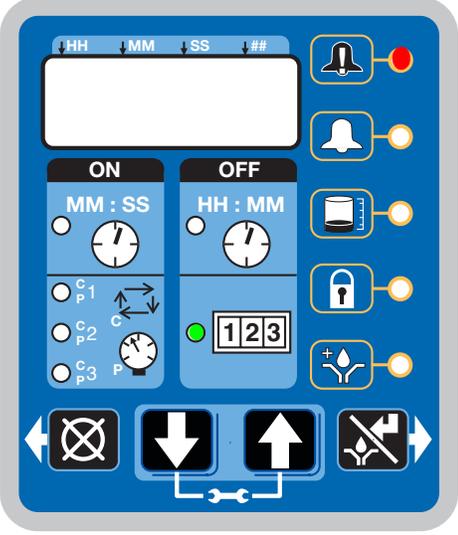


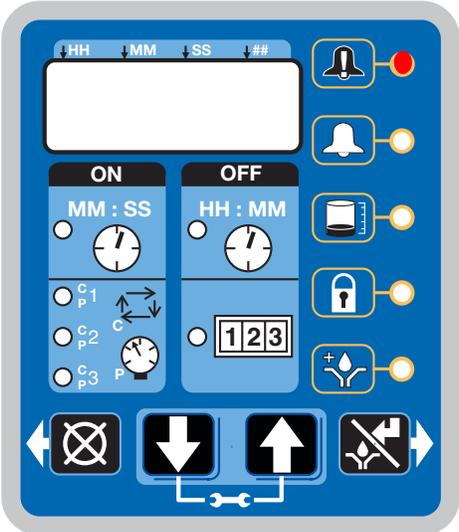
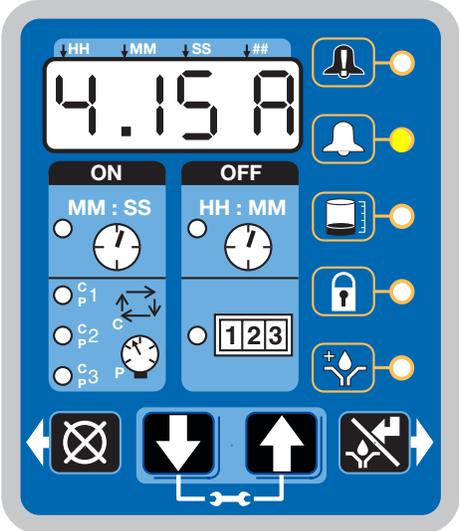
Fault / Warning Scenarios

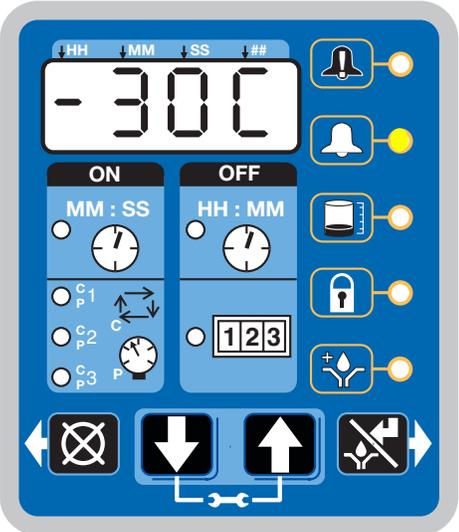
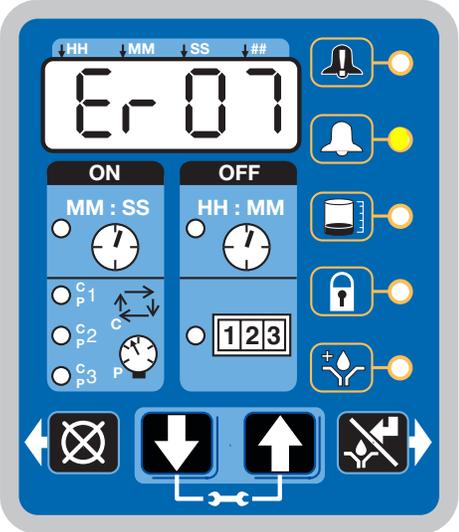
The following pages describe the most likely fault / warnings you could receive.

Alarm Type	What it Looks Like	What it Indicates	Solution
Low Level Warning		<p>Level of lubricant in reservoir is low and additional lubricant needs to be added.</p> <p>Unit continues to operate as normal for a limited period of time until a low level alarm is triggered.</p>	<p>Add lubricant to reservoir.</p> <p>After lubricant is added, press the RESET button to clear the warning.</p> 

<p>Low Level Fault</p>		<p>Level of lubricant in reservoir is low and additional lubricant needs to be added.</p> <p>Unit stops pumping and displays amount of accumulated time since the alarm was triggered.</p>	<p>Add lubricant to reservoir.</p> <p>After lubricant is added press and hold the RESET button to clear fault.</p> <p>If repriming pump is required, the low level alarm time should be decreased. See A-2: Advanced Programming, Low Level Alarm Time page 48.</p> 
<p>Cycle / Pressure Warning</p>		<p>System fails to relieve pressure or a lubrication cycle was not completed in the user-defined amount of time.</p> <p>Unit will continue to operate for the number of lubrication cycles set by the warning retry parameter (see Advanced Programming, page 46).</p> <p>If the warning condition clears itself on the next automatic lubrication cycle, the warning is cleared and the unit continues normal operation.</p>	<p>Examine system to determine if you have a plugged or broken line or other component failure, i.e., divider valve, injector.</p> <p>Press the RESET button to clear warning.</p> 

<p>Cycle / Pressure Fault</p>		<p>In pressure mode indicates that unit is over pressurized or a lubrication cycle was not completed in the user-defined amount of time.</p> <p>In cycle mode indicates that a cycle was not completed in the user-defined amount of time.</p> <p>LED corresponding to the affected sensor input blinks.</p> <p>Could be more than one sensor alarm at the same time.</p>	<p>Examine system to determine if you have a plugged or broken line or other component failure, i.e., divider valve, injector.</p> <p>Press and hold the RESET button to clear fault.</p> 
<p>Machine Count Fault</p>		<p>Unit has not received the correct number of machine counts in the user defined Backup Time.</p>	<p>Examine system to determine if the machine sensor is operating properly.</p> <p>Press and hold the RESET button to clear fault.</p> 

<p>System Fault</p>		<p>An internal fault has occurred.</p>	<p>Contact Graco Customer Service.</p>
<p>Motor Current Warning</p>		<p>The measured motor current is above the recommended operating maximum value. Continued use at excessive motor currents could reduce life or cause permanent damage.</p>	<p>Examine system to make sure it is operating correctly. A blocked line could create excessive motor current</p> <p>Examine pump to ensure that it is rotating properly.</p> <p>If necessary, contact Graco Customer Service.</p>

<p>Temperature Warning</p>		<p>The internal temperature of the unit is out of its recommended operating range.</p> <p>Use of the unit outside of the recommended temperature range could cause degraded system performance and possible damage.</p>	<p>Ensure the unit is used in the correct operating environment for the specific temperature: -13° F to 158° F (-25° C to 70°C).</p> <p>If necessary contact Graco Customer Service.</p>
<p>USB Error</p>		<p>An error occurred during a DMS operation.</p>	<p>Read the Troubleshooting section of this manual (page 69) for error numbers and fault descriptions.</p>

Alarms: Firmware Versions 6.02 and Above

Any time a Fault / Warning occurs, a combination of LED's will illuminate to notify you there is a problem and help identify the kind of Fault / Warning has occurred. An error message will display and flash every 2 seconds for an alarm, temperature or current warning and every 10 seconds for all other types of warnings.

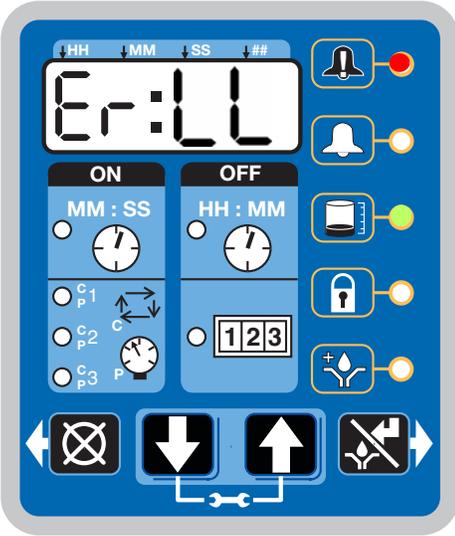
- Faults will not automatically clear.
- To clear an fault, press and hold the RESET button on the display button pad for 3 seconds.
- To clear a warning press and immediately release the RESET button.

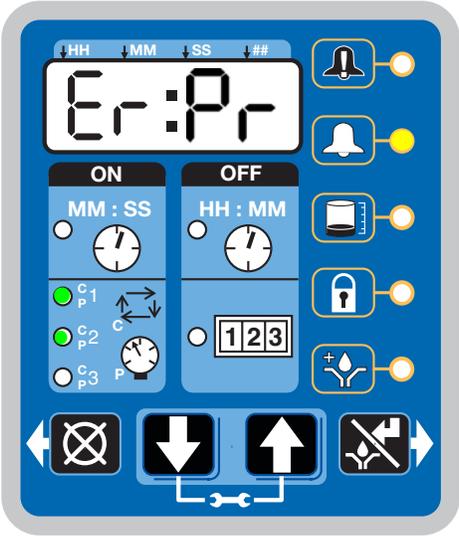
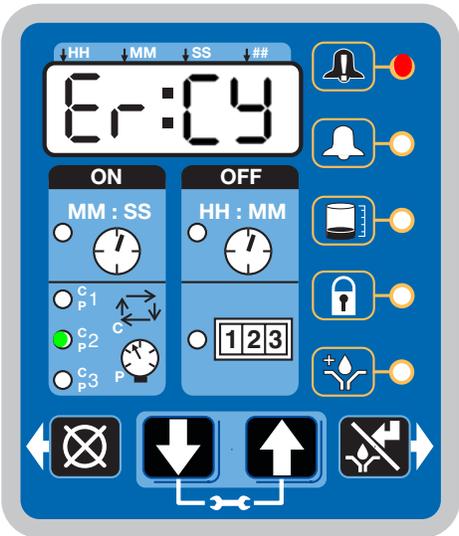


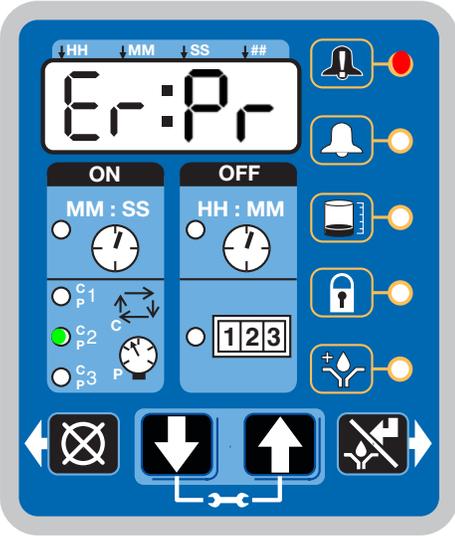
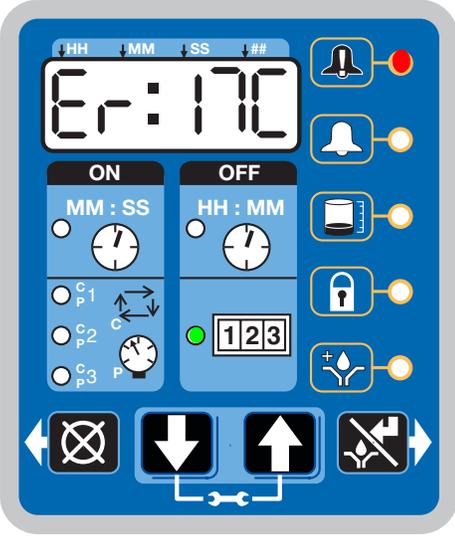
Fault / Warning Scenarios

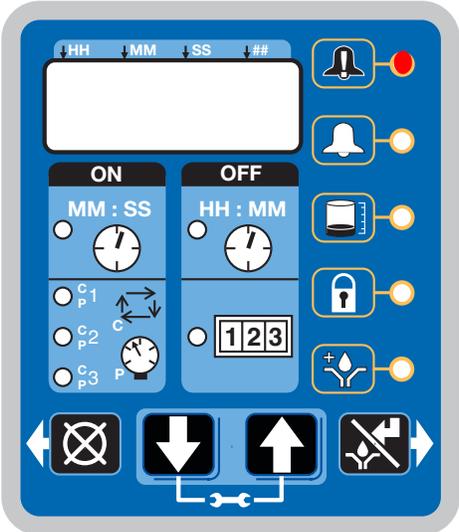
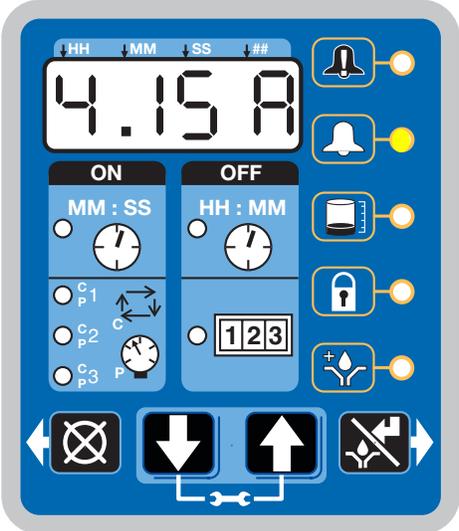
The following pages describe the most likely fault / warnings you could receive.

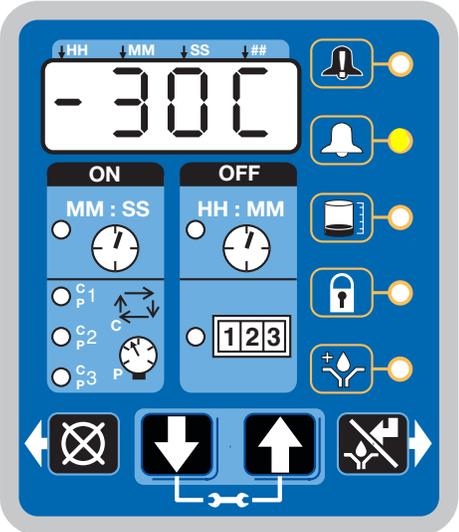
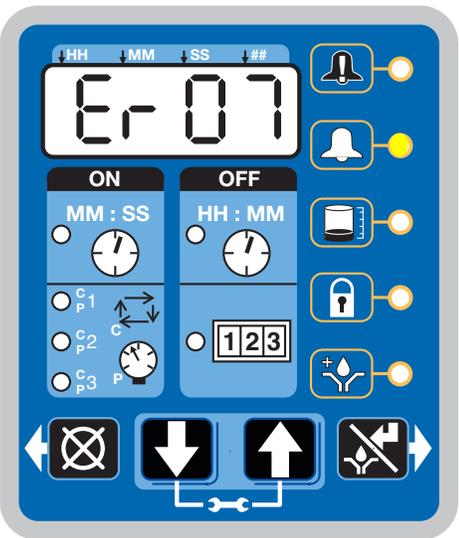
Alarm Type	What it Looks Like	What it Indicates	Solution
Low Level Warning		<p>Level of lubricant in reservoir is low and additional lubricant needs to be added.</p> <p>Unit continues to operate as normal for a limited period of time until a low level alarm is triggered or until the reservoir is filled and 30 seconds has passed at which time the warning will self-clear.</p>	<p>Add lubricant to reservoir.</p> <p>After lubricant is added, press the RESET button to clear the warning.</p>

<p>Low Level Fault</p>		<p>Level of lubricant in reservoir is low and additional lubricant needs to be added.</p> <p>Unit stops pumping and displays amount of accumulated time since the alarm was triggered.</p>	<p>Add lubricant to reservoir.</p> <p>After lubricant is added press and hold the RESET button to clear fault.</p>  <p>If repriming pump is required, the low level alarm time should be decreased. See A-2: Advanced Programming, Low Level Alarm Time page 48.</p>
<p>Cycle Warning</p>		<p>A lubrication cycle was not completed in the user-defined amount of time.</p> <p>Unit will continue to operate for the number of lubrication cycles set by the warning retry parameter (see Advanced Programming, page 46).</p> <p>If the warning condition clears itself on the next automatic lubrication cycle, the warning is cleared and the unit continues normal operation.</p>	<p>Examine system to determine if you have a plugged or broken line or other component failure, i.e., divider valve, injector.</p> <p>Press the RESET button to clear warning.</p> 

<p>Pressure Warning</p>		<p>System fails to relieve pressure in the user-defined amount of time.</p> <p>Unit will continue to operate for the number of lubrication cycles set by the warning retry parameter (see Advanced Programming, page 46).</p> <p>If the warning condition clears itself on the next automatic lubrication cycle, the warning is cleared and the unit continues normal operation.</p>	<p>Examine system to determine if you have a plugged or broken line or other component failure, i.e., divider valve, injector.</p> <p>Press the RESET button to clear warning.</p> 
<p>Cycle Fault</p>		<p>In cycle mode indicates that a cycle was not completed in the user-defined amount of time.</p> <p>LED corresponding to the affected sensor input blinks.</p> <p>Could be more than one sensor alarm at the same time.</p>	<p>Examine system to determine if you have a plugged or broken line or other component failure, i.e., divider valve, injector.</p> <p>Press and hold the RESET button to clear fault.</p> 

<p>Pressure Fault</p>		<p>In pressure mode indicates that unit is over pressurized or a lubrication cycle was not completed in the user-defined amount of time.</p> <p>LED corresponding to the affected sensor input blinks.</p> <p>Could be more than one sensor alarm at the same time.</p>	<p>Examine system to determine if you have a plugged or broken line or other component failure, i.e., divider valve, injector.</p> <p>Press and hold the RESET button to clear fault.</p> 
<p>Machine Count Fault</p>		<p>Unit has not received the correct number of machine counts in the user defined Backup Time.</p>	<p>Examine system to determine if the machine sensor is operating properly.</p> <p>Press and hold the RESET button to clear fault.</p> 

<p>System Fault</p>		<p>An internal fault has occurred.</p>	<p>Contact Graco Customer Service.</p>
<p>Motor Current Warning</p>		<p>The measured motor current is above the recommended operating maximum value. Continued use at excessive motor currents could reduce life or cause permanent damage.</p> <p>Warning will self-clear any time after 15 seconds On Time start if the system correction is made.</p>	<p>Examine system to make sure it is operating correctly. A blocked line could create excessive motor current</p> <p>Examine pump to ensure that it is rotating properly.</p> <p>If necessary, contact Graco Customer Service.</p>

<p>Temperature Warning</p>		<p>The internal temperature of the unit is out of its recommended operating range.</p> <p>Use of the unit outside of the recommended temperature range could cause degraded system performance and possible damage.</p>	<p>Ensure the unit is used in the correct operating environment for the specific temperature: -13° F to 158° F (-25° C to 70°C).</p> <p>If necessary contact Graco Customer Service.</p>
<p>USB Error</p>		<p>An error occurred during a DMS operation.</p>	<p>Read the Troubleshooting section of this manual (page 69) for error numbers and fault descriptions.</p>

Troubleshooting



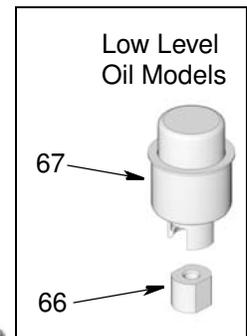
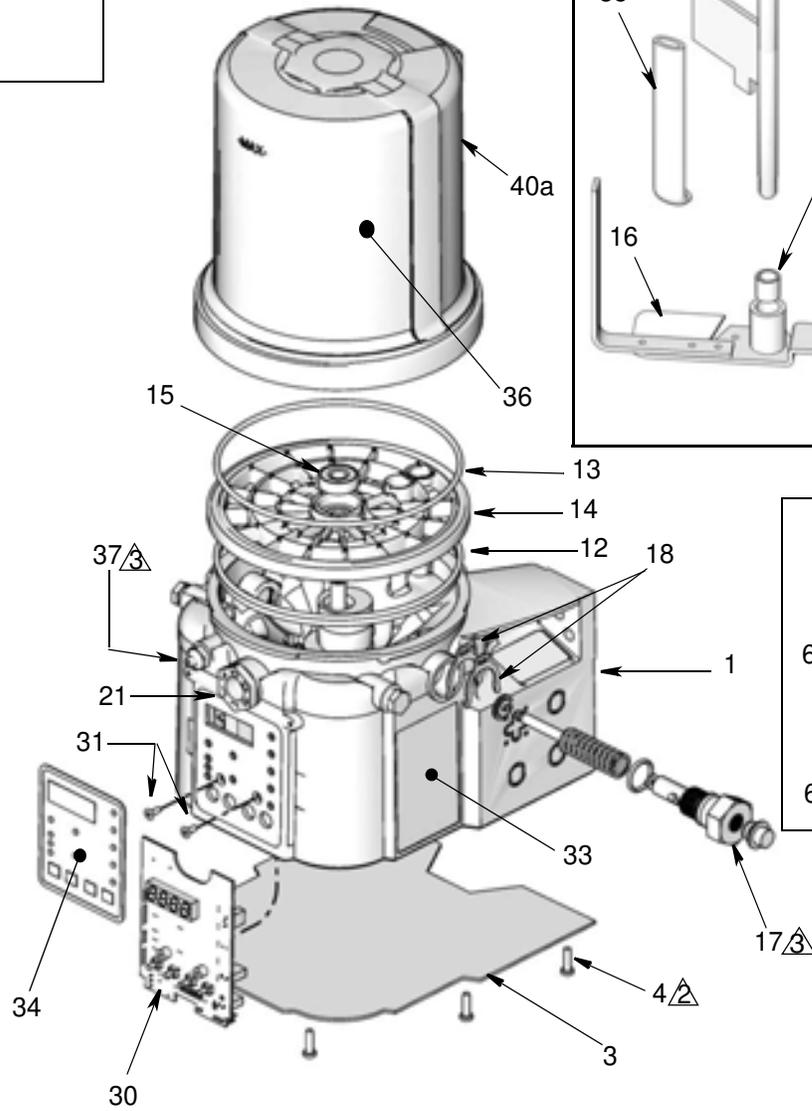
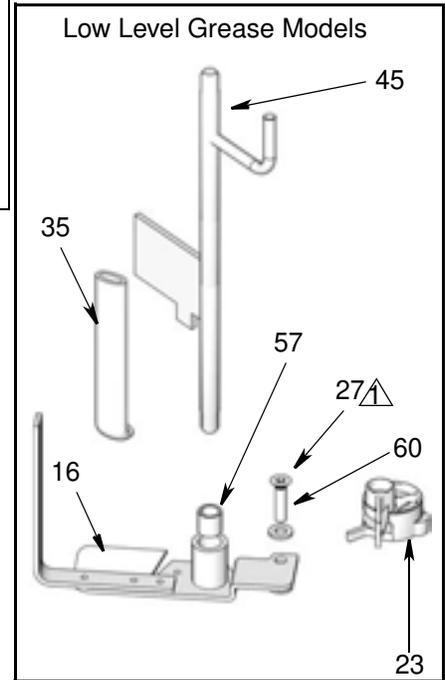
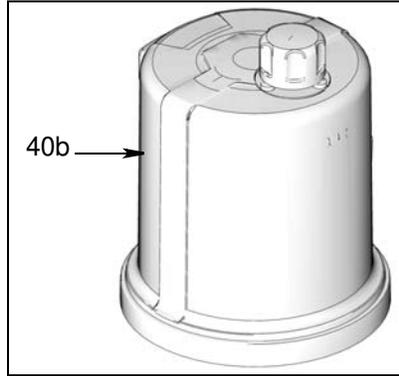
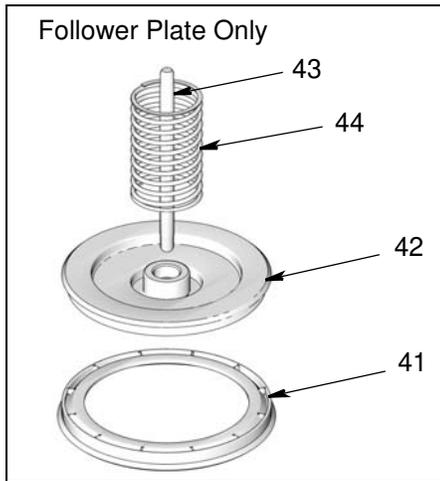
Problem	Cause	Solution
Unit does not power on	Incorrect/loose wiring	Refer to Installation instructions, page 8.
Unit does not power on (DC models only)	Tripped external fuse due to internal component failure	Contact Graco Customer Service.
	Tripped external fuse due to pumping non-cold weather lubricant in cold weather -13°F (-25°C)	Replace lubricant with pumpable lubricant, rated for environmental conditions and application. Replace fuse.
Unit does not power on (AC models only)	Tripped internal power supply fuse due to power supply failure	Contact Graco Customer Service.
Can't set desired ON/OFF times	Maximum duty cycle is 33% (2 minutes OFF for each minute ON)	Adhere to allowable duty cycle. Contact Graco Customer Support if other duty cycles are required for application.
Unit is not operating based on the time that was programmed	Time entered was misinterpreted as MM:SS instead of HH:MM (or visa versa)	Verify the unit was programmed as intended, referencing programming instructions. Note the dot designation for hours, minutes, seconds on the top row of the display.
Lubricant leaks past seal located on the bottom of the reservoir	Reservoir retaining tabs are cracked or broken	Replace reservoir.
	Reservoir is being pressurized during filling	Ensure vent hole is not plugged. If problem persists, contact Graco Customer Service or your local Graco distributor for assistance.
Unit not pumping during ON cycle, but controller lights and functions	Failed motor	Replace unit.
Follower plate is not going down	Air is trapped in the reservoir between the follower plate and lubricant	Add grease following Loading Grease instructions, page 22. Ensure air is purged.
Pump takes several minutes before it begins pumping at the highest pump volume setting (no stroke adjust spacers installed)	Pumping non-cold weather lubricant in cold weather -13°F (-25°C)	Add 1 stroke adjust spacer and adjust lube cycle time to accommodate the difference in pump volume per stroke.
Dim display, unit is not operating	Tripped internal, resettable fuse due to internal component failure or sensor short circuit condition	Verify sensor and manual run inputs have not created a short circuit condition. Cycle power.
Unit indicates a cycle or pressure alarm before the lubrication cycle could complete	The ON Time was not entered correctly	Refer to programming ON Time, pages 32 and 54.

Problem	Cause	Solution
In an Injector System without sensor feedback, unit does not vent properly	Vent valve time needs to be configured	Refer to Advanced Programming to set ON Time, page 46.
Display acts erratically	Faulty cycle/pressure wiring connection to unit	Unplug cycle/pressure cables from G3. Plug cables in one at a time to identify the faulty connection.
USB Error 00	Flash drive was removed during operation	Keep the flash drive plugged in until the unit has completed the operation.
USB Error 07	Flash drive unable to mount (initialize)	<ul style="list-style-type: none"> • Unplug the flash drive and re-install. • Cycle power and re-install the flash drive. • Retry using a different flash drive. <p>If any of the above do not rectify the error, contact Graco Customer Service.</p>
USB Error 11	Pump program setting file not found	Verify that the pump program setting folder structure and file are stored correctly on the flash drive. See Storing Pump Program Settings to the Flash Drive, page 38 for instructions.
USB Error 12	Pump program settings directory not found.	Verify that the pump program setting folder structure and file are stored correctly on the flash drive. See Storing Pump Program Settings to the Flash Drive, page 38 for instructions.
USB Error 13	Bad pump program settings file	The pump programs settings file is corrupt. Restore file to the flash drive. See Storing Pump Program Settings to the Flash Drive, page 38 for instructions.
All other USB errors		<p>The following operations can be attempted if another error occurs using the USB.</p> <ul style="list-style-type: none"> • Unplug the flash drive and re-install. • Cycle power and re-install the flash drive. • Retry using a different flash drive. <p>If any of the above do not rectify the error, contact Graco Customer Service.</p>

Maintenance

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.

Parts - 2 Liter Models

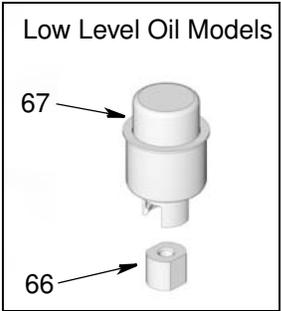
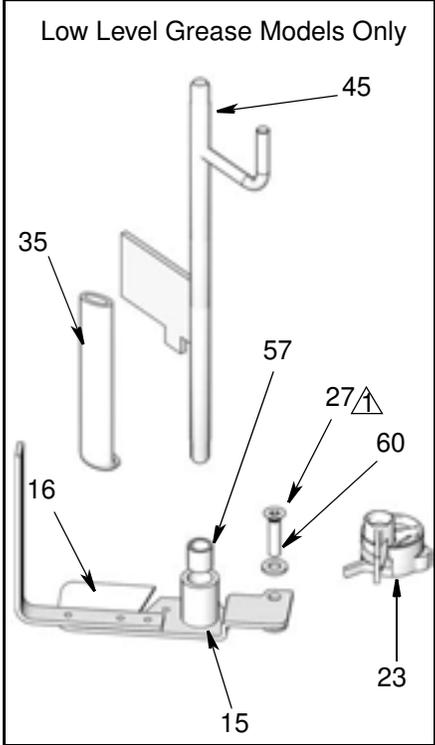
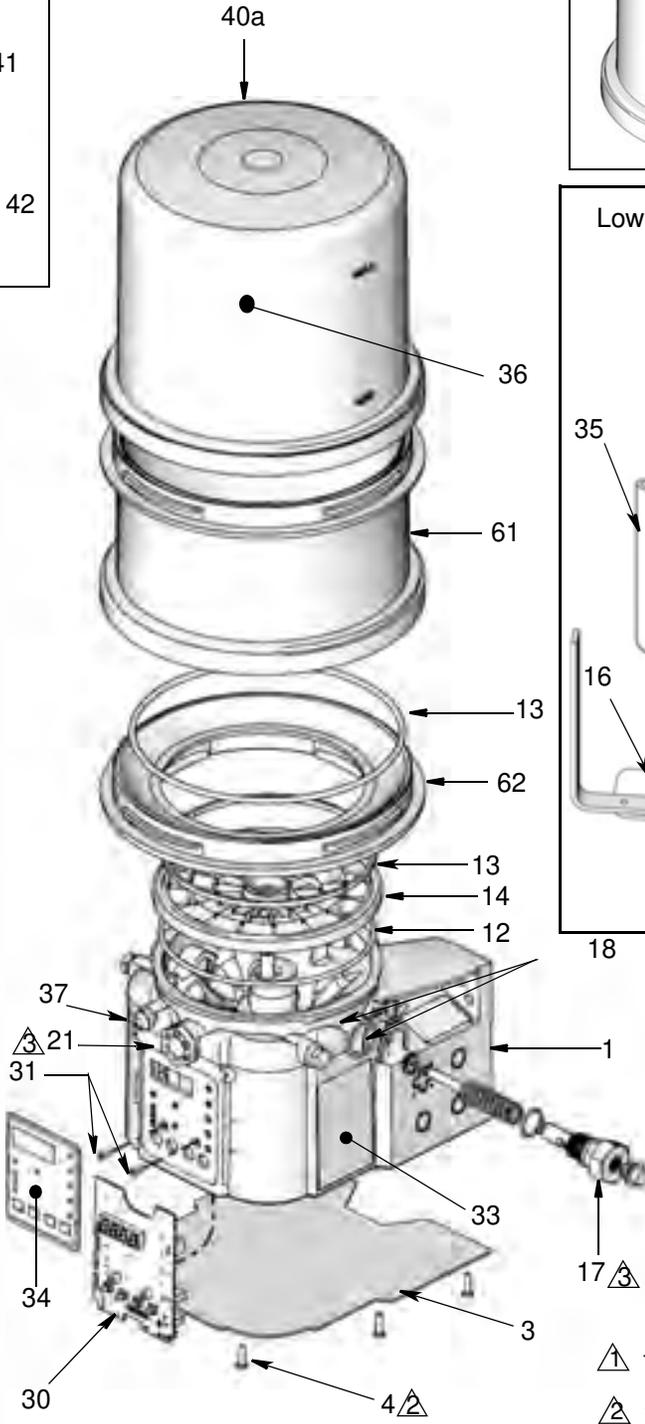
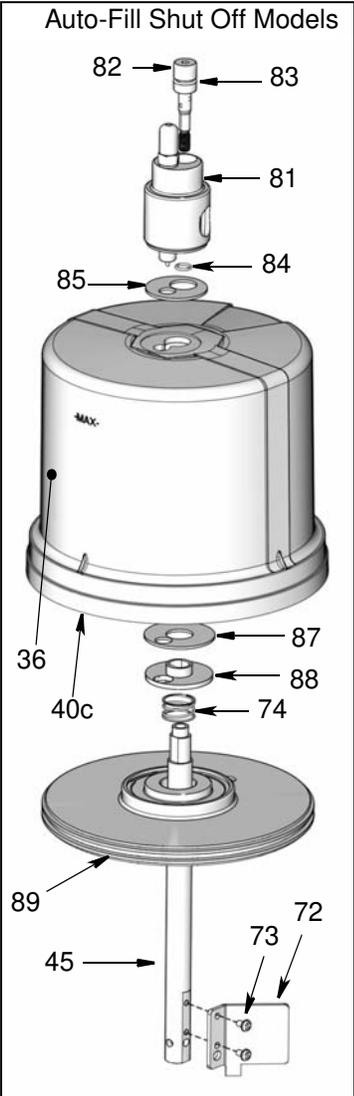
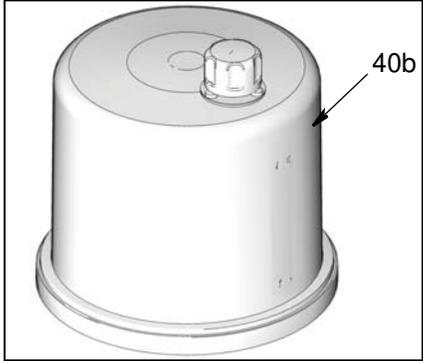
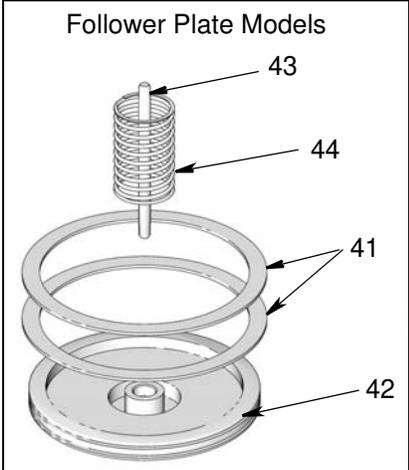


Torque to 4 in. lbs (0.45 N.m)

Torque to 30 in. lbs (3.4 N.m)

Torque to 50 in. lbs (5.6 N.m)

Parts - 4 Liter and Larger Models



- Torque to 4 in. lbs (0.45 N.m)
- Torque to 30 in. lbs (3.4 N.m)
- Torque to 50 in. lbs (5.6 N.m)

Parts

Ref	Part	Description	Qty
1		BASE, three pump housing	1
3	278142	COVER, bottom, with seal	1
4	115477	SCREW, mach, torx pan hd	9
12	127079	RECT-RING, included in Kit 571042, 571069, 571179	1
13	124396	O-RING, 258, included in Kit 571042, 571044, 571045, 571069, 571179	2
14		PLATE, ricer	1
15		BEARING, ball	1
16		PADDLE, stirring, 2 Liter models without follower plate, included in Kit 571044	1
		PADDLE, stirring, 4 Liter models and larger without follower plate	1
		PADDLE, stirring, 2 Liter models with follower plate, included in Kit 571045	1
		PADDLE, stirring, 4Liter models and larger with follower plate	1
17		PUMP, element, included in Kit 571041	1
18	16F368	SPACER, stroke adjust, included in Kit 571041	2
21	278145	PLUG, pump, 3/4-16	2
23❖	278136	PADDLE, low level	1
27	123025	SCREW, M6	1
30 ‡★	258697	BOARD, circuit, Max, models	1
‡★	262463	BOARD, circuit, Max, DMS™ models	1
31	119228	SCREW, machine, flat head	2
33▲	16A579	LABEL, safety	1
34	16A073	LABEL, overlay	1
35		WIPER, stirring, models without follower plate, included in Kit 571044	1
		WIPER, stirring, models with follower plate, included in Kit 571045	1

Ref	Part	Description	Qty
36		LABEL, brand	1
37	123741	FITTING, Zerk, grease	1
40a	24E984	RESERVOIR, 2 liter, grease, included in Kit 571042, 571069	1
40b	16G021	RESERVOIR, 2 liter, oil, included in Kit 571179	1
40a	24B702	RESERVOIR, 4 liter, grease, included in Kit 571183	1
40b	16G020	RESERVOIR, 4 Liter, oil, included in kit 571182	1
40c	17F484	RESERVOIR, 4 Liter, G3 AF50	1
41	278139	SEAL, follower plate, 2 liter models	1
	16F472	SEAL, follower plate, 4 liter models	2
42		PLATE, follower	1
43		ROD, follower plate	1
44		SPRING, compression	1
45†	24D838	BAFFLE, low level, 2 liter models	1
†	24E246	BAFFLE, low level, 4 liter models	1
†	24F836	BAFFLE, low level, 8 liter models	1
†	24F923	BAFFLE, low level, 12 liter models	1
†	24F924	BAFFLE, low level, 16 liter models	1
57	117156	BEARING, sleeve	1
58▲	196548	LABEL	1
60	16D984	WASHER, low level models	2
61		RESERVOIR, mid-section (see quantity by size / model below)	
		8 Liter models	1
		12 Liter models	2
		16 Liter models	3
62		ADAPTER, reservoir	1
66	126417	NUT, oil	1
67	24N806	FLOAT, oil	1

Ref	Part	Description	Qty
72		PLATE, baffle, low level	1
73		SCREW, machine	2
74		SPRING, plate, valve, reset	1
81		VALVE, AF50	1
82		BOLT, mounting	1
83		PACKING, o-ring	1
84		PACKING, o-ring	1
85		SEAL, upper, reservoir	1
87		SEAL, lower, reservoir	1
88		SPACER, seal, base	1
89		PLATE, valve	1
200	127783	CABLE, 15 ft (4.5 m), SOOW w/7pos, 3 pin, 90 deg	1
	127780	CABLE, 15 ft (4.5 m), SOOW w/7 pos, 5 pin, 90 deg	1
	127781	CABLE, 20 ft (6.1 m), SOOW, w/7 pos, 5 pin, 90 deg	1
	127782	CABLE, 30 ft (9.1m) SOOW, w/7 pos, 5 pin, 90 deg	1
	16U790	CABLE, DIN, bare)	1
201	124300	CABLE, M12, 15 ft., 4 wire, straight male to flying leads	1
	124333	CABLE, M12, 15 ft., 4 wire, straight male to female	1
202	124301	CONNECTOR, Eurofast, fem, straight, 4Pin	1
	124594	CONNECTOR, Eurofast, 4 Pin	1
	124595	CONNECTOR, Eurofast, 5 Pin	1

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

❖ Also order Ref 27, Part No. 123025 and Ref 60, Part No. 16D984

‡★ Also order Ref 31, Part No. 119228 and Ref 34, Part No. 16A073

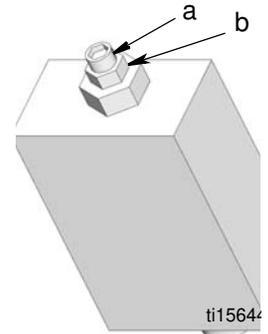
† Also order Ref. 57, Part No. 117156 when ordering this part.

Pressure Relief Valves

Important Information regarding Pressure Relief Valve 16C807.

◆ **Pressure Relief Valve 16C807 can only be used on the G3 Pump.** It is not intended for use with any other products.

The pressure relief valve uses a pressure adjustment screw (a) to set the pressure release point. **It is not intended as a way to relieve pressure during normal operation,** but as a protective measure in the event there is an unintended pressure increase in the system. Do not use this pressure relief valve as a means of relieving pressure in day-to-day, normal cycle operation.



a = adjustment screw
b = locking nut

The pressure adjustment screw will require periodic adjustments. Whenever the valve is set/adjusted (after the set point is found) it is important to ensure that the valve is not bottomed out and there is at least 1/2 turn of adjustment remaining. This is determined by turning the screw (a) 1/2 turn and then back turning it out again.

NOTE: Turning adjustment screw (a) clockwise increases pressure.

Part	Description	Qty
16C807◆	VALVE, pressure relief, 500-3500 psi (3.44 MPa, 34.4 bar - 24.1 MPa, 241 bar), Set pressure 3000 psi ± 10% (20.68 MPa, 206.8 bar ± 10%) Included in Kit 571028	1
563156	VALVE, pressure relief, 750 psi (5.17 MPa, 51.71 bar)	1
563157	VALVE, pressure relief, 1000 psi (6.89 MPa, 68.95 bar)	1
563158	VALVE, pressure relief, 1500 psi (10.34 MPa, 103.42 bar)	1
563159	VALVE, pressure relief, 2000 psi (13.78 MPa, 137.89 bar)	1
563160	VALVE, pressure relief, 2500 psi (17.23 MPa, 172.36 bar)	1
563161	VALVE, pressure relief, 3000 psi (20.68 MPa, 206.84 bar)	1
563190	VALVE, pressure relief, 5500 psi (37.92 MPa, 379.21 bar)	1

Fuses

Part	Description	Qty
571039	FUSE, 12 volt DC	1
571040	FUSE, 24 volt DC	1

Installation and Repair Kits

Kit No.	Description	Manual Number
571026	KIT, output union, 3 pump	3A0523
571063	KIT, output union, 2 pump	
571028	KIT, return to reservoir NPT, includes pressure relief valve 16C807	3A0525
571071	KIT, return to reservoir BSPP, includes pressure relief valve 16C807	
571030	KIT, remote manual run, 12 volt DC	3A0528
571031	KIT, remote manual run, 24 volt DC	
571032	KIT, remote manual run, 12 volt DC, with cable	
571033	KIT, remote manual run, 24 volt DC with cable	
571036	KIT, cover with "G" label	NA
571041	KIT, pump element, includes Ref 17, 18, 33	3A0533
571042	KIT, repair, 2 liter reservoir, includes Ref 13, 36, 40	3A0534
571069	KIT, repair, 2 liter reservoir, for models with follower plate, includes Ref 13, 36, 40	
571044	KIT, replacement, paddle, 2 liter, for models without follower plate, includes Ref 13, 16, 35, 57	3A0535
571045	KIT, replacement, paddle, 2 liter, for models with follower plate, includes Ref 13, 16, 35, 40a, 42, 57	
571046	KIT, replacement, paddle, 4-16 liter, for models without follower plate, includes Ref 13, 16, 35, 57	
571047	KIT, replacement, paddle, 4 liter, for models with follower plate, includes Ref 13, 16, 35, 57	
571058	KIT, output adapter, NPT	3A0522
571070	KIT, output, adapter, BSPP	
571060	KIT, fill, zerk, leakproof	NA
571179	KIT, repair, reservoir oil, 2 liter models, includes Ref 13, 36, 40b	3A0534
571182	KIT, repair, reservoir, oil 4 liter models, includes Ref 13, 36, 40b	
571183	KIT, repair, reservoir, grease, 4 liter models, includes Ref 13, 36, 40b	
127685	RING, fixing for CPC connector	NA

Technical Data

Pump Output Pressure	5100 psi (35.1 MPa, 351.6 bar)
Fill Inlet Pressure	5000 psi (34.4 MPa, 344.7 bar)
Power	
100-240 VAC	88 - 264 VAC; 0.8 A current, 90 VA Power, 47/63 Hz, Single phase, inrush/locked rotor, max 40A (1ms)
12 VDC	9 - 16 VDC; 5 A current, 60 W, inrush/locked rotor 12 A
24 VDC	18 - 32 VDC; 2.5 A current, 60 W, inrush/locked rotor 6 A
Outputs - Alarm Relay	
Rated Load	Resistive: 0.4 A at 125 VAC, 2 A at 30 VDC Inductive: 0.2 A at 125 VAC, 1 A at 30 VDC
Max Operation Voltage	Resistive: 250 VAC, 220 VAC Inductive: 250 VAC, 220 VDC
Max Operating Current	Resistive: 3 A (AC), 3A (DC) Inductive: 1.5 A (AC), 1.5 A (DC)
Max Switching Capacity	Resistive: 50 VA, 60 W Inductive: 25 VA, 30 W
Min Permissible Load	Resistive: 10 μ A, 10m VDC Inductive: 10 μ A, 10m VDC
Outputs - Vent Valve	
Required Vent Valve Type	Normally closed
Output Voltage	
100/240 VAC	24 VDC
12 VDC	Input Voltage
24 VDC	Input Voltage
Max Operating Current	2 A
Max Operating Power	48 W
Inputs - Cycle Pressure, 1, 2, 3, Machine Count	
Required Switch Type	Normally open (sink, source, or dry contact)
Sensor Voltage	
100/240 VAC	24 VDC
12 VDC	Input Voltage
24 VDC	Input Voltage
Load Current	
100/240 VAC	22mA @ 24 VDC
12 VDC	11mA @ 12 VDC
24 VDC	22mA @ 24 VDC
Maximum Residual Voltage	
100/240 VAC	4 V
12 VDC	2 V
24 VDC	4 V
Maximum Off Current	
100/240 VAC	1.5 mA
12 VDC	1 mA
24 VDC	1.5 mA
Input Impedance	1.1 K
Response Time	60 ms
Cycle Rate	8.0 Hz (50% duty cycle)

Technical Data

Fluid	Grease NLGI 000 - #2
Grease Models	At least 40 cSt oil.
Oil Models	Up to 3
Pumps	0.12 in. ³ (2 cm ³) / minute per outlet - 2 spacers
Pump Output	0.18 in. ³ (3 cm ³) / minute per outlet - 1 spacer
	0.25 in. ³ (4 cm ³) / minute per outlet - 0 spacers
Pump Outlet	1/4-18 NPSF. Mates with 1/4-18 NPT male fittings
Reservoir Size	2, 4, 8, 12, 16 Liters
IP Rating	IP69K
Sensor Inputs	3 (any of pressure or cycle)
	1 (machine count)
Ambient Temps	-40°F - 158°F (-40°C to 70°C)
Weight (Dry - includes power cord and plug)	
Without follower plate	13.3 lbs (6.03 kg)
With follower plate	14.2 lbs (6.44 kg)
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
Sound Data	<60 dB

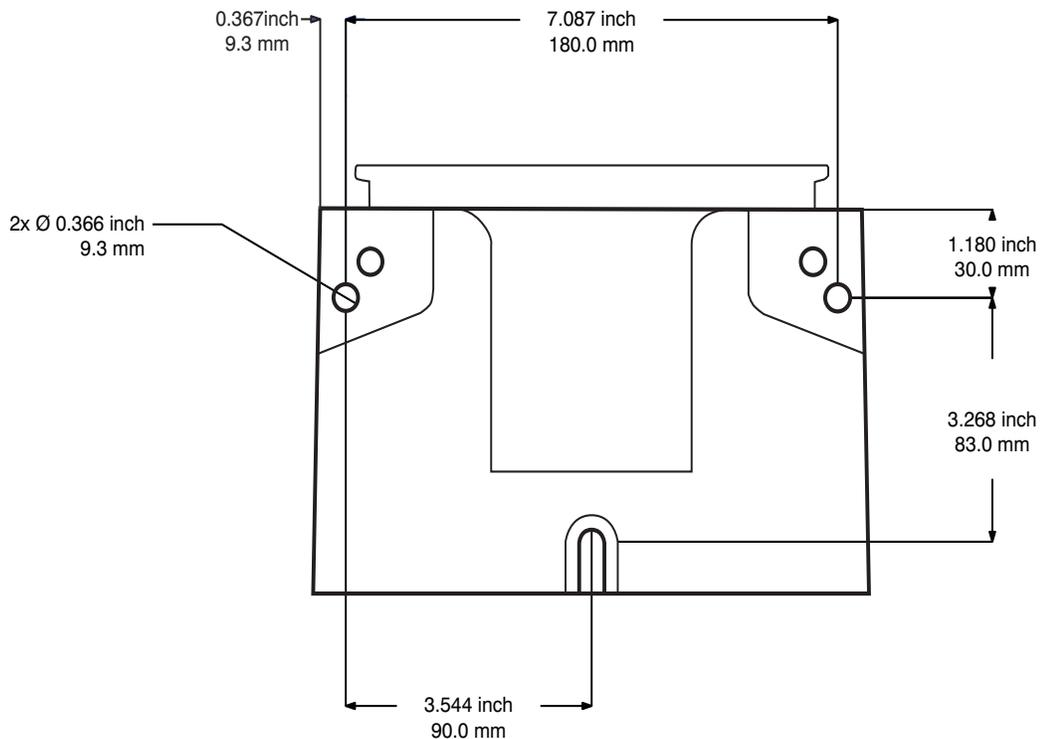
Dimensions

Model	Height		Width		Depth	
	Inches	cm	Inches	cm	Inches	cm
2L	13.25	33.65	8.00	20.32	9.00	22.86
4L	14.50	36.83	9.25	23.50	10.00	25.40
8L	18.50	47.00	9.25	23.50	10.00	25.40
12L	23.00	58.42	9.25	23.50	10.00	25.40
16L	27.50	69.85	9.25	23.50	10.00	25.40

Mounting Pattern

(For correct mounting configuration, choose either Option 1 or Option 2). See P/N 126916 template.

Option 1



Option 2

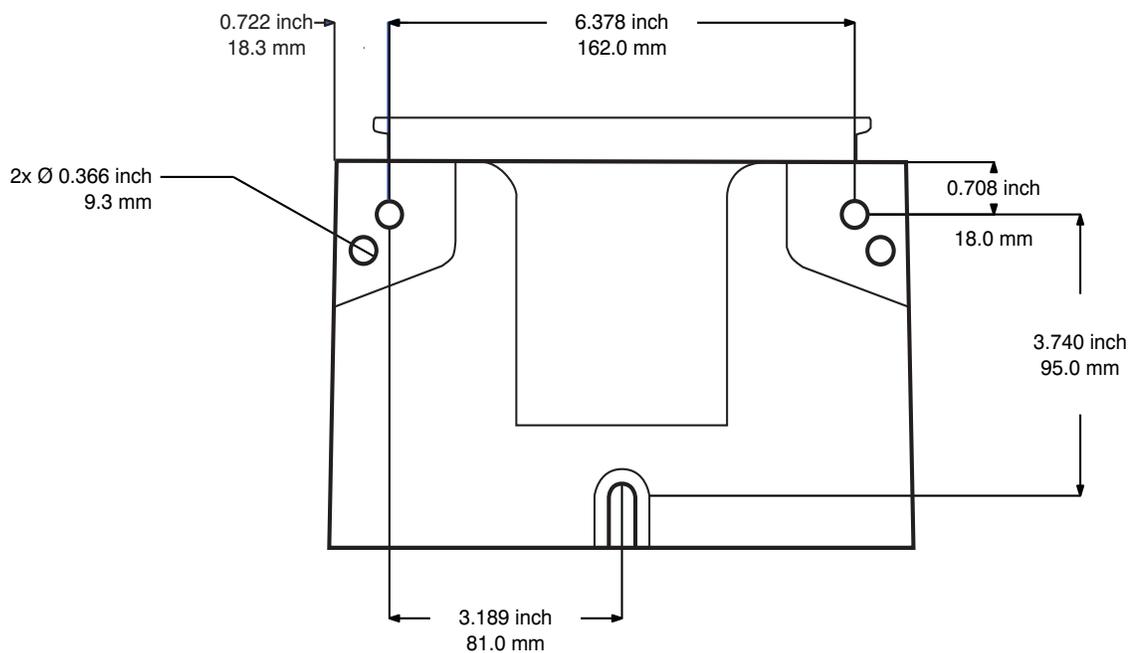


FIG. 50

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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Original instructions. This manual contains English. MM 332305

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