

INSTRUCTIONS



Matrix[®] 5 & Matrix[®] 15 Meter

313046T
EN

For dispensing oils and antifreeze over wireless communication with a Matrix system.
For professional use only.

Not approved for use in European explosive atmosphere locations.

Maximum Working Pressure: 1500 psi (10 MPa, 103 bar)

Maximum Flow Rate: 14 gpm (53.0 lpm)

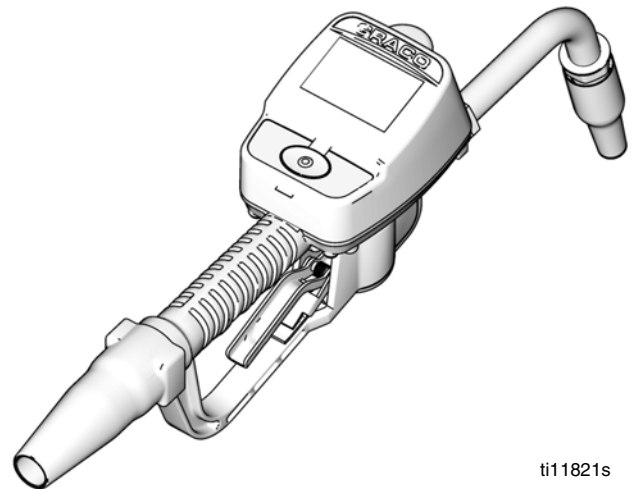


Important Safety Instructions

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

NOTICE

This dispense valve is designed to dispense petroleum-based lubricants and antifreeze only. Do not dispense windshield washer solvent with this dispense valve.



ti11821s

Matrix 5 and Matrix 15 contain an RF device with the following approval:



FCC ID: TFB-FREESTAR
IC: 5969A-FREESTAR



ABN 75082 447 194
Freestar3 ZFSM-101-3(LSR)



Models

All meters are preset to Quarts in the Graco factory.

Matrix 5 Models






Model No.	Swivel	Extension	Non-Drip Nozzle	Fluid
256282	1/2" NPT(F)	Rigid	Automatic, Quick Close	Oil, ATF
256482	1/2" NPT(F)	Flexible	Automatic, Quick Close	Oil, ATF
256483	1/2" NPT(F)	Gear Lube	Quick Close	Gear Lube
256484	1/2" NPT(F)	Rigid	Quick Close	Antifreeze
256485	1/2" NPT(F)	Flexible	Quick Close	Antifreeze
24H134	1/2" BSPP(F)	Rigid	Automatic, Quick Close	Oil, ATF
24H136	1/2" BSPP(F)	Flexible	Automatic, Quick Close	Oil, ATF
24H138	1/2" BSPP(F)	Gear Lube	Quick Close	Gear Lube
24H140	1/2" BSPP(F)	Rigid	Quick Close	Antifreeze
24H142	1/2" BSPP(F)	Flexible	Quick Close	Antifreeze
24H135	1/2" BSPT(F)	Rigid	Automatic, Quick Close	Oil, ATF
24H137	1/2" BSPT(F)	Flexible	Automatic, Quick Close	Oil, ATF
24H139	1/2" BSPT(F)	Gear Lube	Quick Close	Gear Lube
24H141	1/2" BSPT(F)	Rigid	Quick Close	Antifreeze
24H143	1/2" BSPT(F)	Flexible	Quick Close	Antifreeze

Matrix 15 Models

Model No.	Swivel	Extension	Non-Drip Nozzle	Fluid
256486	1/2" NPT(F)	Rigid	High Flow, Quick Close	Oil, ATF, Antifreeze
256487	1/2" NPT(F)	Flexible	High Flow, Quick Close	Oil, ATF, Antifreeze
256488	3/4" NPT(F)	Rigid	High Flow, Quick Close	Oil, ATF, Antifreeze
257120	3/4" NPT(F)	Flexible	High Flow, Quick Close	Oil, ATF, Antifreeze
257539	No Swivel	No Extension	No Nozzle	Oil, ATF, Antifreeze
24H144	1/2" BSPP(F)	Rigid	High Flow, Quick Close	Oil, ATF, Antifreeze
24H146	1/2" BSPP(F)	Flexible	High Flow, Quick Close	Oil, ATF, Antifreeze
24H148	3/4" BSPP(F)	Rigid	High Flow, Quick Close	Oil, ATF, Antifreeze
24H158	3/4" BSPP(F)	Flexible	High Flow, Quick Close	Oil, ATF, Antifreeze
24H145	1/2" BSPT(F)	Rigid	High Flow, Quick Close	Oil, ATF, Antifreeze
24H147	1/2" BSPT(F)	Flexible	High Flow, Quick Close	Oil, ATF, Antifreeze
24H149	3/4" BSPT(F)	Rigid	High Flow, Quick Close	Oil, ATF, Antifreeze
24H159	3/4" BSPT(F)	Flexible	High Flow, Quick Close	Oil, ATF, Antifreeze

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

 WARNING	
	<p>SKIN INJECTION HAZARD High-pressure fluid from dispense valve, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispense valve at anyone or at any part of the body. • Do not put your hand over the end of the dispense nozzle. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.
	<p>EQUIPMENT MISUSE HAZARD Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.
	<p>BATTERY SAFETY The battery may leak, explode, cause burns, or cause an explosion if mishandled:</p> <ul style="list-style-type: none"> • You must use the battery type specified for use with the equipment. • Sparking can occur when changing batteries. Only replace the battery in a non-hazardous location, away from flammable fluids or fumes. • Handle and dispose of battery properly - do not short circuit, charge, force over discharge, disassemble, crush, penetrate, incinerate, or heat the battery to a temperature exceeding 185° F (85° C).
	<p>FIRE AND EXPLOSION HAZARD When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources, such as cigarettes and portable electric lamps. • Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline. • Do not plug or unplug power cords or turn lights on or off when flammable fumes are present. • Ground all equipment in the work area. • Use only grounded hoses. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.

 **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.

CALIFORNIA PROPOSITION 65

This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

Meter Overview

Navigation and Modes



FIG. 1

5-Way Menu Navigation Keypad (FIG. 1)

- Includes 4 direction ARROWS (UP, DOWN, LEFT, RIGHT) and a center, ENTER button.
- Pressing the direction ARROWS allows user to easily scroll through menus. To select/store your selection, you **must** press the center, ENTER button on meter's keypad.
- Pressing and holding the direction ARROW down allows user to scroll through menus quickly.

Meter Display

Adjusting Screen Contrast using ARROWS

On the Main Utility Setup Screen (page 6), use the LEFT and RIGHT ARROWS to adjust the screen contrast.

- **Darken the Screen:** Press the RIGHT ARROW multiple times.
- **Brighten the Screen:** Press the LEFT ARROW multiple times.

Asleep / Awake Mode

- **Asleep:** Battery-saving mode. In dispense mode, the display goes blank after 5 minutes of inactivity.
- **Awake:** Display comes awake from sleep mode when you press any ARROW or the center ENTER button on the meter's keypad or when you squeeze the trigger to dispense fluid.

Locking and Unlocking Trigger

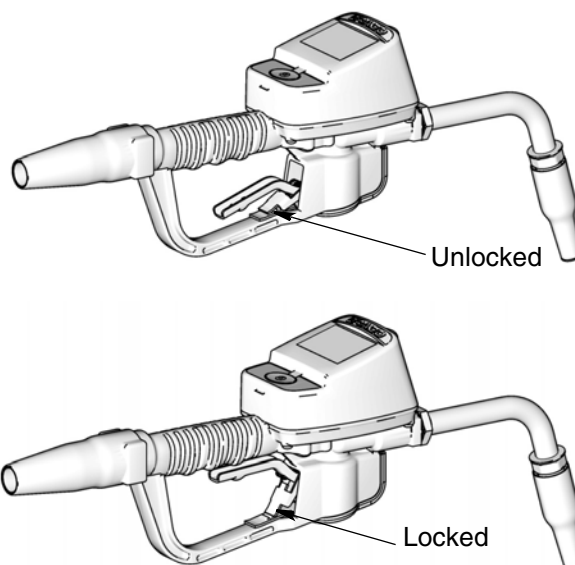


FIG. 2

The locking trigger feature allows the user to lock the trigger in the dispense position as shown in FIG. 2. To release the lock, firmly squeeze the trigger to the handle.

Registering the Meter

Graco recommends registering the meter **prior** to installation.

NOTE: Before registering the meter, use the Matrix PC software to enter setup information pertaining to the:

- Transceiver,
 - Tank Level Monitor (TLM),
 - Tank Set Up,
- and (optional)**
- Pump Air Control (PAC).

If this has not been done first, the software will display an error when attempting to set up meter.

Main Utility Setup Screens (Fig. 4)

The Main Utility Screen displays a list of available Setup Screens. This list also includes a link (QUIT) back to the Operation Screens.

- REGISTER
- RF TEST
- UPGRADE
- EMERGENCY
- QUIT

Displaying Register Utility Screen

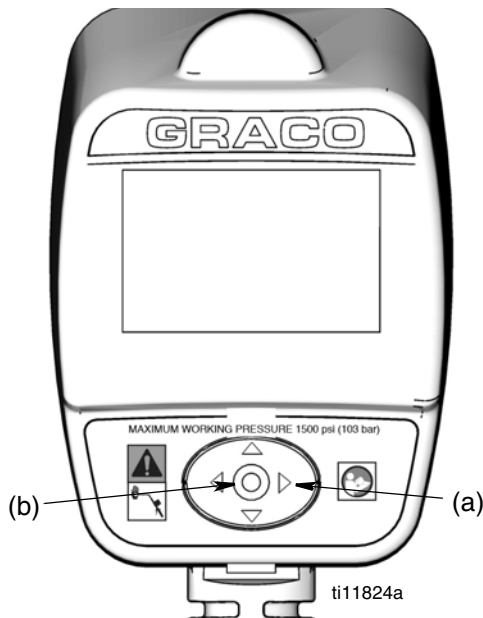


FIG. 3

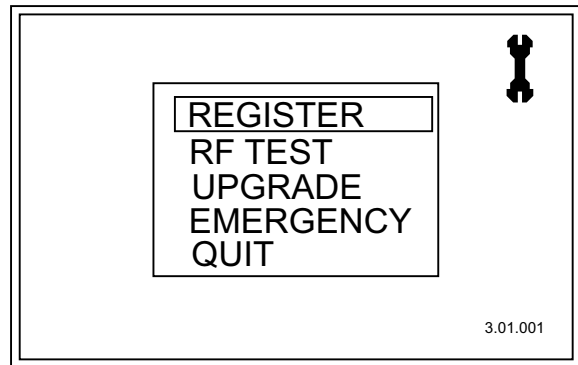


FIG. 4

1. If you are on a Dispense Screen, to display the Main Utility Screen, first hold down the RIGHT ARROW (a) only, for a few seconds (FIG. 3).
2. Then at the same time, also hold down the center, ENTER button (b) (FIG. 3). Hold both buttons down until the Main Utility Screen shown in FIG. 4 displays.

3. Use the UP or DOWN arrow to move the cursor up and down the list until it is over the REGISTER option on the list.
4. Press the center ENTER button on meter's keypad to select the REGISTER option. The Register Screen shown in FIG. 5 displays.

REGISTER Screen

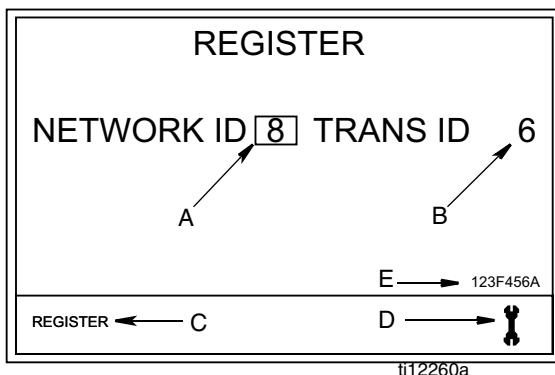


FIG. 5

A. NETWORK ID: The unique Radio Frequency (RF) assigned to components of the same operating system in a specific facility. The unique NETWORK ID assigned to the facility, prevents RF interference from other Matrix Systems operating in the vicinity, at other locations. There are 8 NETWORK ID's available.

To setup a meter to receive the correct NETWORK ID RF signal, use the UP or DOWN ARROWS to scroll, one number at a time, through the NETWORK ID numbers (1-8). When the correct NETWORK ID number assigned to your facility is displayed in the field/box, press center ENTER button on meter's keypad to lock in the choice.

B. TRANS ID: The unique RF frequency assigned to a specific transceiver in the operating system. Each transceiver in the system has its own TRANS(ceiver) ID number assigned to it. An operating system can have more than one transceiver. There are 8 TRANS ID's available.

To set up a meter to receive the correct TRANS ID RF Signal, use the UP or DOWN ARROWS to scroll, one number at a time, through the TRANS ID numbers (1-8). When the number assigned to the transceiver you are using displays in the field/box, press center ENTER button on meter's keypad to lock in the choice.

C. REGISTER /field: Sends message to Matrix PC Software to register the meter with the operating system.

Use the LEFT or RIGHT ARROWS to move the cursor over the REGISTER field/box on the display. Then press center, ENTER button on meter's keypad, to confirm the selection.

D. WRENCH Icon: Returns user to Main Utility Screen.

Use the LEFT or RIGHT ARROWS to move the cursor over the WRENCH Icon on the display. Then press center, ENTER button on meter's keypad, to confirm the selection.

E. SERIAL Number: Unique meter ID.

Registering Meter with Matrix PC Software

1. The screen displays the NETWORK ID (A) and TRANS(ceiver) ID (B) (FIG. 5) currently assigned to the meter.
2. If the ID's in both fields are correct and you do not need to make any changes, use LEFT or RIGHT ARROWS to move cursor over REGISTER (C). Press center ENTER button on meter's keypad. The meter resets to it's initial screen.

OR . . .

If the NETWORK ID or TRANS ID information shown on the display is NOT correct:

- a. Use LEFT or RIGHT ARROWS to move cursor to NETWORK ID field and/or TRANS ID field.
- b. When field you want to modify is selected, use UP or DOWN ARROWS to scroll forward or backward through the available NETWORK ID or TRANS ID numbers.
- c. When correct ID number displays, press center ENTER button on meter's keypad to confirm your choice. If necessary, use LEFT or RIGHT ARROWS to move cursor to the next field and repeat this procedure.
- d. When both the NETWORK ID and TRANS ID fields display the correct information, use LEFT or RIGHT ARROWS to move cursor over REGISTER. Press center ENTER button on the meter's keypad to complete meter registration.

- e. The meter resets and returns to its initial screen.

NOTE: If the meter is not able to communicate with the PC during registration, the message NO SIGNAL or NO PC SIGNAL appears on the meter display.

NO SIGNAL message means:

- There is no RF signal between the PC and Meter.
- The meter is out of the RF Signal range.
- The Transceiver does not have power.
- Either the NETWORK ID and/or TRANSCEIVER ID information is not correct in the meter and the correct information must be provided.

NO PC SIGNAL message means:

- The Matrix Client isn't running.
- The cable is not connected between the PC and Transceiver.

- f. After the information is programmed into the electronic meter, the meter can be connected to the dispensing hose.

NOTE: If the programmed parameters need to be changed, the meter must be reprogrammed.

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RF Test

An RF Test is performed before a Matrix System and meters are installed at a site to evaluate the strength of the RF signal and determine the number of Transceivers that will be needed and where they should be installed in the facility.

In order to perform this test, a test computer with the Matrix PC software installed and a Transceiver are located in the area of the shop that the installed Transceiver will be located. The tester then uses a meter to evaluate the strength of the RF Signal between the Transceiver and meter at each potential meter location throughout the shop.

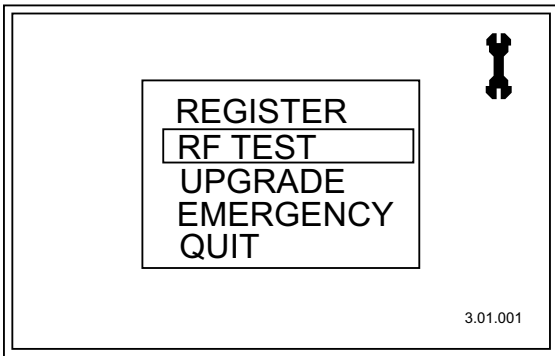


FIG. 6

1. On the Main Utility Screen, use the UP or DOWN ARROWS to select the RF TEST option on the list. Then press the center ENTER button on meter's keypad to confirm the selection.

To perform the RF TEST:

2. Holding the meter, walk around the shop to a potential meter installation work area.
3. Verify that the Network ID and Trans ID assigned to the meter are correct. If they are not correct, you must first register the meter. (See Registering the Meter, page 6).

4. Use RIGHT ARROW to move cursor over START (FIG. 7).

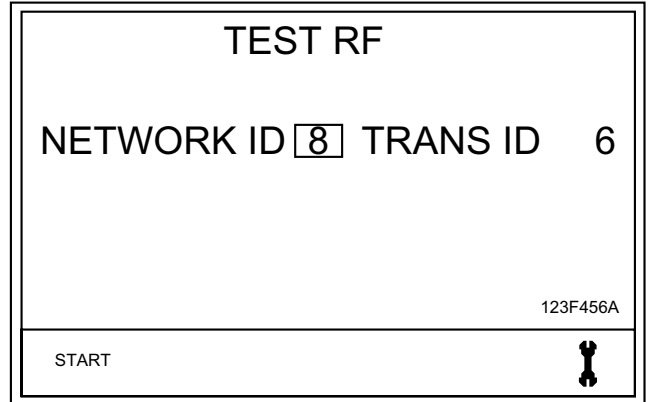


FIG. 7

5. Use center ENTER button to confirm the selection.

The meter sends an RF signal to the Transceiver.

If the signal is good on the following message displays on the meter screen (FIG. 8):

*RETRIES: 0 (or 1-5)
GOOD SIGNAL*

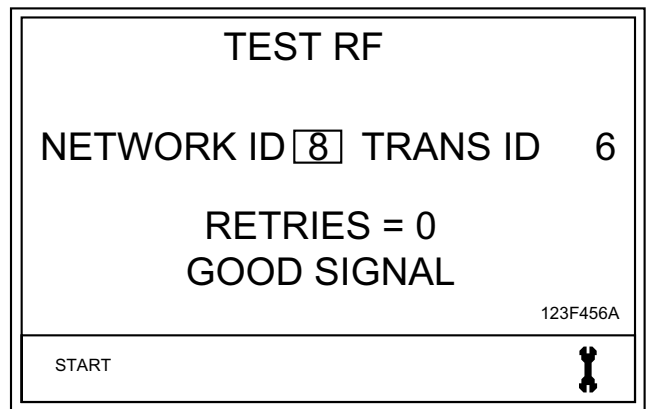


FIG. 8

If the signal is weak or there is not a signal at all, one of the following messages appears on the meter screen (FIG. 9).

NOTE: The meter is programmed to try sending a signal to the Transceiver 5 times before displaying the BAD SIGNAL message.

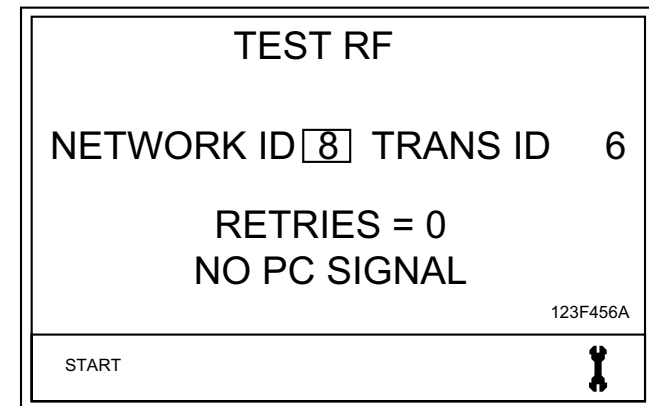
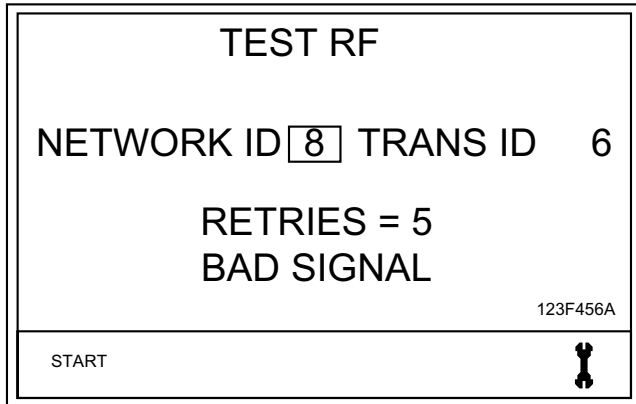


FIG. 9

6. After the final area has been tested, use the LEFT ARROW to move the cursor to the Wrench Icon. Press the center ENTER button on meter's keypad to confirm the selection and return to the Main Utility Screen.

Upgrade

This feature is used to modify the firmware software used by the meter when a new and upgraded version of the software is released or a new feature is added. When this is required, your Graco distributor will contact you to arrange the upgrade.

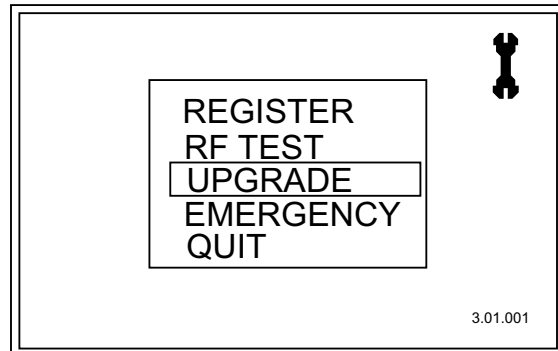


FIG. 10

Emergency

If the communication link between the meter and PC is lost due to power loss or the computer crashing, the meter will continue to function if it is placed in Emergency Mode.

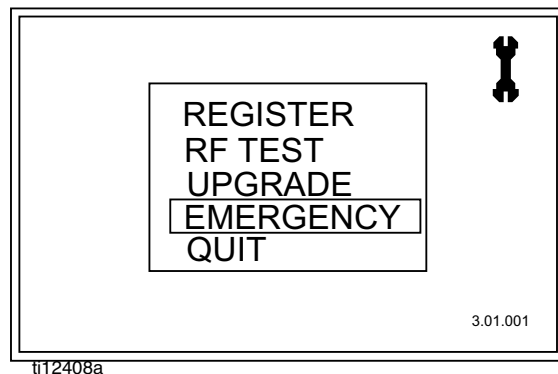


FIG. 11

1. On the Main Utility Screen, use the UP or DOWN ARROWS to select the EMERGENCY option on the list. Then press the center ENTER button to confirm the selection.

- The Emergency Screen appears. The cursor is already in position for entering the first number of the Emergency Code. Use the UP or DOWN ARROWS to scroll through the numbers 0-9 until the first number of the unique Emergency Code assigned to that meter appears in the field.

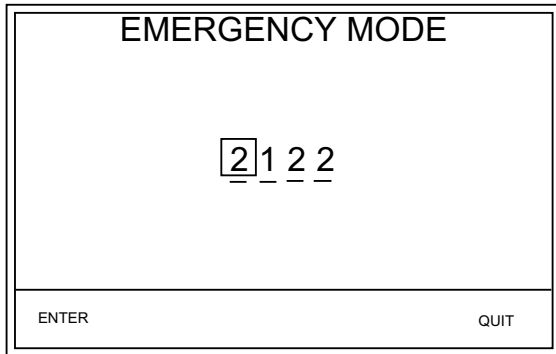


FIG. 12

- Use the center ENTER to confirm the selection. The cursor moves to the next field.
- Repeat steps 2-3 until all 4 numbers have been entered. After the 4th number of the Emergency Code is entered the cursor automatically moves to the ENTER on the display.
- Press the center ENTER button to confirm the selection.
- The Dispense Screen displays on the meter.

NOTE: When the meter is put in Emergency Mode:

- All pending work orders will be deleted from the work order queue in the meter. They will have to be entered again by the System Administrator on the PC.
- New work orders cannot be added at the meter.

Installation

Typical Installations (FIG. 13)

The typical installation shown in FIG. 13 is only a guide. It is not a complete system design. Contact your Graco distributor for assistance in designing a system to suit your needs.

NOTICE

The dispense valve is not designed for in-line installation.

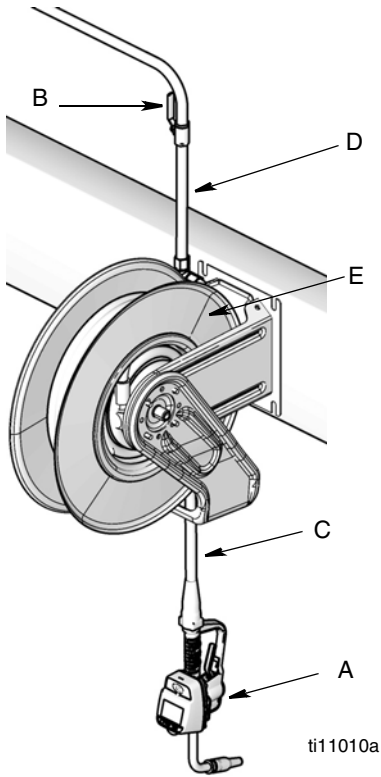


FIG. 13

ITEM	DESCRIPTION
A	Electronic metered dispense valve
B	Fluid shut-off valve
C	Hose
D	Hose reel fluid inlet hose
E	Hose reel

A Thermal Relief Kit (not shown) is required. The kit required will vary by pump selected.

Mounting Bracket (FIG. 14)

Mounting Bracket Kit 249440 is available for resting the dispense valve on a console.

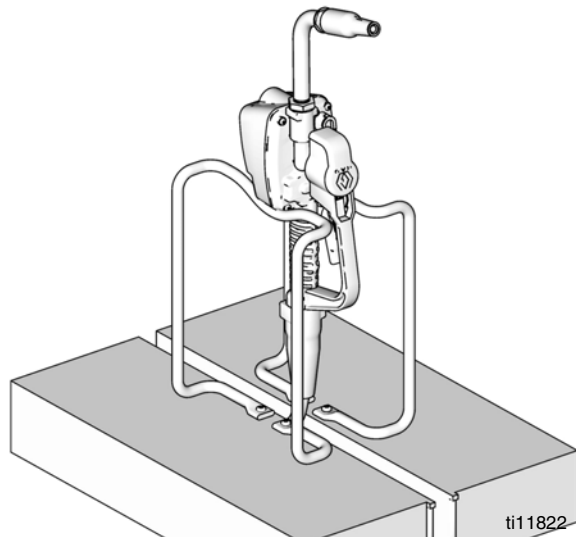


FIG. 14

Oil Bar (Fig. 15)

An Oil Bar Kit is available for mounting one to three meters. See your Graco Distributor or contact Graco Customer Service for ordering details.

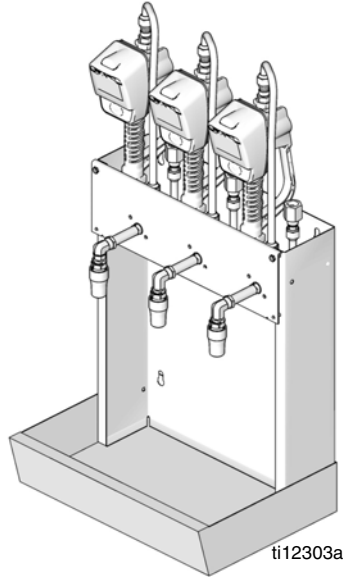


FIG. 15

Pressure Relief Procedure



This equipment will stay pressurized until the pressure has been manually relieved. To reduce the risk of serious injury from pressurized fluid, accidental spray from the dispense valve or splashing fluid, follow this **Pressure Relief Procedure** when ever you:

- Are instructed to relieve pressure.
 - Check, clean or service any system equipment.
 - Install or clean fluid nozzles or filter.
1. Turn off power supply to the pump or close upstream ball valve.
 2. Open nozzle. Trigger the dispense valve into a waste container to relieve pressure.
 3. Open any bleed-type master air valves and fluid drain valves in the system.
 4. Leave the drain valve open until you are ready to pressurize the system.

Grounding

<p>FIRE HAZARD: Conductive metal surfaces on the meter must not make contact with any positively charged metal surface, including (but not limited to), the starter solenoid terminal, alternator terminal or battery terminal. Such contact could cause electrical arcing and a fire.</p>					

<p>The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.</p>					

Pump: Follow manufacturer’s recommendations.

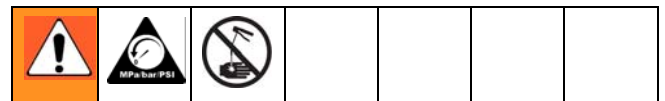
Air and fluid hoses: Only use electrically conductive hoses. Check electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.

Air compressor: Follow manufacturer’s recommendations.

Fluid supply container: Follow local code.

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

Pre-Installation Procedure



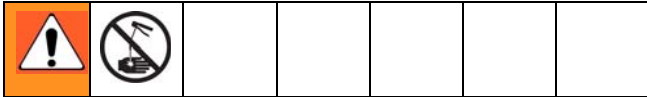
1. **Relieve pressure**, page 13.
2. Close the shut-off valve (B, FIG. 13).
3. Ground the hose and reel or console, page 13. Leave at least two threads bare when using PTFE tape. The bare threads ensure a ground is maintained.

Installation Procedure

NOTICE

- If this is a new installation or if the fluid lines are contaminated, flush the lines before you install the metered valve. Contaminated lines could cause the valve to leak.
- Never dispense compressed air with meter. Doing so will damage meter.

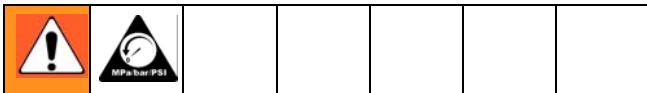
Flushing



If this is an existing installation, go to *Installing Meter section, page 14*. The following procedure, Steps 1-5 are the *Flushing Procedure*.

1. Close the fluid shut-off valve (B, FIG. 13, page 12) at each dispense position.
2. Make sure:
 - the main fluid outlet valve at the pump is closed,
 - the air pressure to the pump motor is adjusted, **and**
 - the air valve is open.
3. Slowly open the main fluid valve.
 - a. Place the hose end (with no dispense valve connected) into a container for waste oil.
 - b. Secure the hose in the container so it will not come out during flushing.
 - c. If you have multiple dispense positions, first flush the dispense position farthest from the pump and work your way toward the pump.
4. Slowly open the shut-off valve (B) at the dispense position. Flush out a sufficient amount of oil to ensure that the entire system is clean; then close the valve.
5. Repeat Step 4 at all other positions.

Installing Meter (FIG. 16)



1. Relieve pressure, page 13.

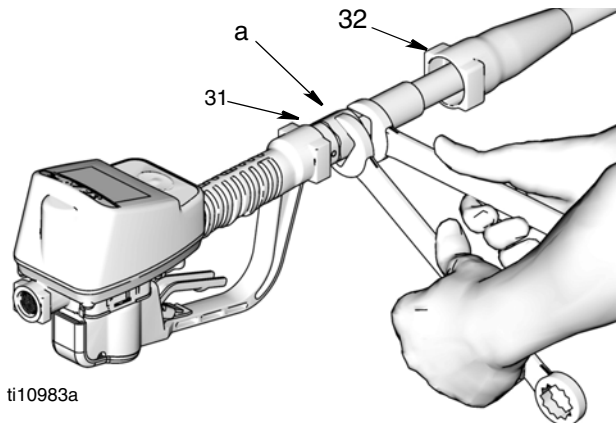


FIG. 16

2. Slide the swivel boot (32) back, over the hose, small end first to access the swivel fitting (a).
3. Apply thread sealant to the male threads of the hose fitting. Thread the hose fitting into the meter swivel (31). Use two wrenches to tighten securely (FIG. 16).

NOTE: Make sure you let the sealant cure to the manufacturer's recommendations before circulating fluid through the system.

Installing Tube Extension (FIG. 17)

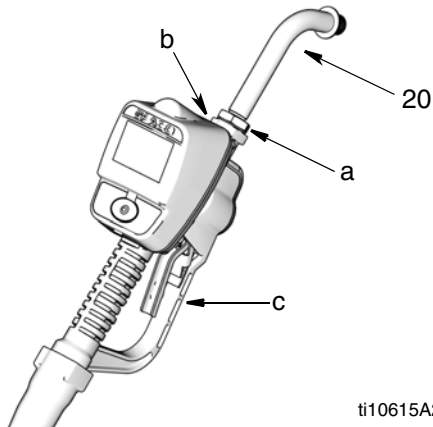


FIG. 17

1.
 - a. Loosen nut (a).
 - b. Thread extension (20) into housing (b) until it bottoms out.
 - c. Align extension (20) with meter housing and handle (c).
 - d. Firmly tighten nut (a).

Installing Nozzle (FIG. 18)

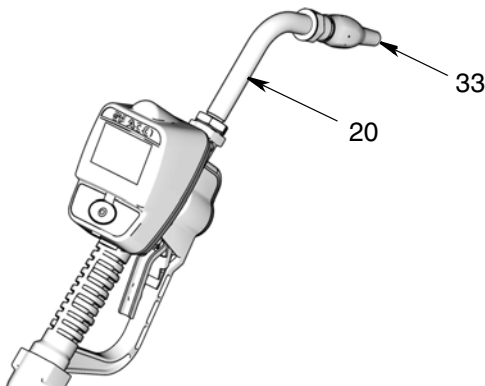


FIG. 18

1.
 - a. Thread new nozzle (33) onto extension (20).
 - b. With an open-end adjustable wrench on flats of nozzle bushing, tighten firmly.

NOTE:

- Only tighten nozzle with wrench on flats of the nozzle bushing.
 - **Do not disassemble the bushing from nozzle.** Disassembly will affect performance of the nozzle.
2. Open automatic twist lock nozzle and all fluid shut-off valves. Start pump to pressurize system.
 3. To ensure dispensing accuracy, purge all air from the fluid lines and dispense valve before you use it.
 4. Set the system flow to the desired flow rate.

Impact Guard Kit (24W327)

Impact Guard Kit, 24W327 is available. This guard provides additional protection for the meter housing and bezel.

1. Install the bezel guard (a) over the meter bezel as shown in FIG. 19.
2. Then install the housing guard (b) over the nozzle/extension and onto the meter and bezel guard (a) as shown in FIG. 19.

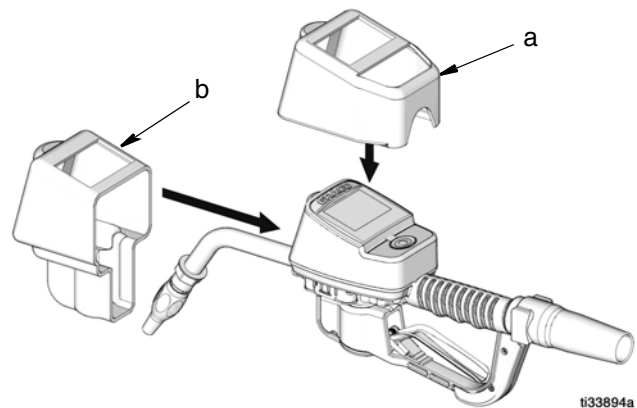


FIG. 19

Setup

Battery Indicator

A battery icon appears on the upper right corner of most Setup and Dispense screens. When the batteries are fully charged, the battery will be completely filled in. As the battery discharges, the amount of battery that is filled in will decline. For example, the battery in FIG. 20 is at about 50%.

NOTE: The meter's operating parameters are controlled by the Matrix PC Software and setup by the System Administrator. See the Matrix 3 Software instruction manual for these instructions.

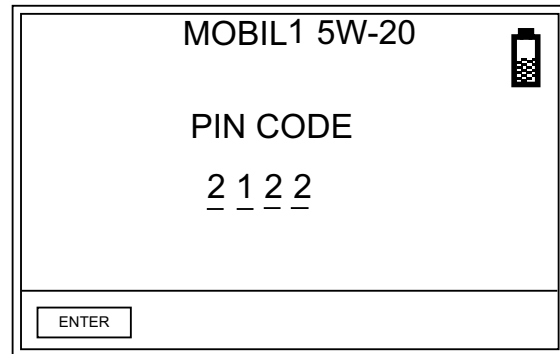


FIG. 20

Meter Calibration

Meter calibration is performed using the Matrix PC software. Refer to the Matrix 3 Software instruction manual for this procedure.

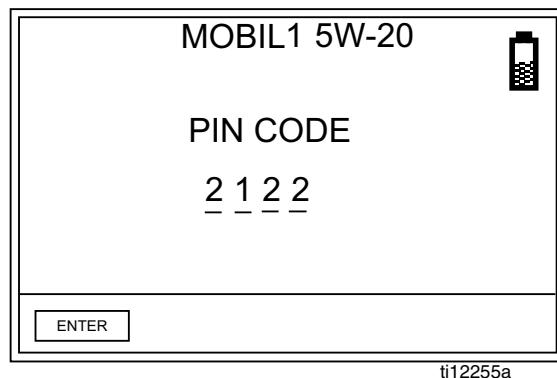
Security Modes

When the meter was originally programmed by the system administrator, one of the following security choices was entered:

- PIN Code
- Parts Room Authorization
- System Monitoring

Prior to dispensing, it may be necessary to complete one of the following security procedures, depending on the security mode set by the system administrator.

PIN Code (FIG. 21)



ti12255a

FIG. 21

PIN Code (Personal Identification Number) means that a four digit number must be entered at the meter **before every new dispense** to obtain dispense authorization. To use a meter with PIN Code security:

1. Use the UP or DOWN ARROWS to select the first PIN Code number field.

2. Press the UP or DOWN ARROWS to scroll through the numbers 0-9. When the correct numeral appears in the field, press center ENTER button on meter's keypad to select the number. After a number is entered, the cursor automatically moves to the right, to the next number field.
3. Continue this process until the complete, 4-digit PIN Code has been entered.
4. After the last number is entered, the cursor moves over ENTER. Press center ENTER button on the meter's keypad to send the PIN Code entry to the PC.
5. The PC recognizes the PIN Code entered, and authorizes the meter to begin the dispense.

Parts Room Authorization (Fig. 22)

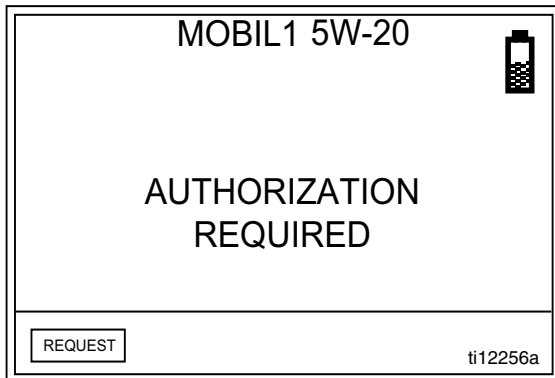


Fig. 22

This mode provides highest level of security and requires a Parts Room Administrator to authorize each dispense. Before each dispense the meter displays the message: **AUTHORIZATION REQUIRED**. To send an authorization request to the Parts Room Administrator:

1. Move cursor to select the REQUEST on the display and push the center ENTER button on meter's keypad to send the authorization request to the Parts Room.

2. After sending the request, the message PLEASE WAIT appears at the top of the screen as shown in Fig. 23.

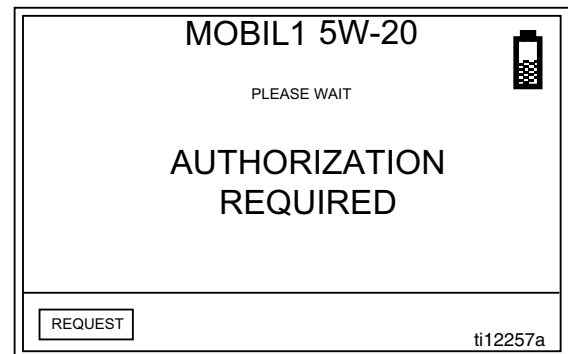


Fig. 23

3. You will not receive a message at the meter saying the Parts Room Administrator has authorized the meter to begin the dispense.

There are two ways to determine when the meter is ready:

- Press the center ENTER button to select REQUEST again. If the meter has received authorization from the Parts Room Administrator, the meter display will change to either the Dispense Screen or, if the meter was programmed to process work orders, the Work Order Enter/Select screen will appear (see Work Orders and Job Numbers, page 18).

OR

- Wait for the meter to fall asleep. When you press any button to wake it up, if the meter has been authorized for the dispense, the Dispense Screen will display.

NOTE: The Parts Room Administrator can choose to reject the dispense request. If a request is rejected, the PLEASE WAIT message on the display will be replaced with REJECTED and the meter will not be allowed to dispense.

System Monitoring

When system monitoring is selected, no security authorization is required prior to making a dispense. Any amount of fluid dispensed is automatically sent by the meter to the PC where it is recorded for future reference.

Work Orders and Job Codes

Refer to the Matrix 3 Software manual for instructions on creating and sending Work Orders and Job Codes using the PC and/or Global Work Orders.

The System Administrator can program the meter to process work orders using one of the following methods:

- Work Order/Job Code at the PC only
- Work Order/Job Code at the PC and Meter

Work Orders can have a maximum of (8) characters. The Job Code can have a maximum of (3) characters. The Work Order number is separated from the Job Code with a dash (-) (FIG. 24).

ENTER W.O

1 2 3 4 5 6 7 8 -
W E B

CANCEL

ENTER

ti12271a

FIG. 24

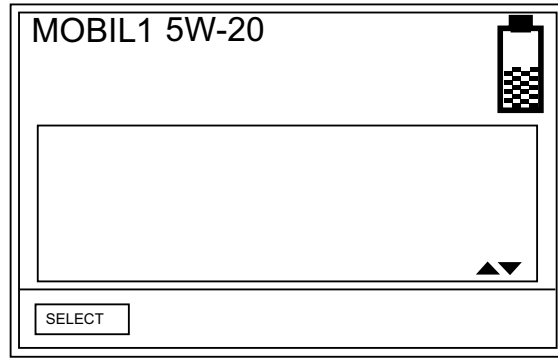
The numbers, 0 - 9; alphabet characters, A - Z; and period (.), forward slash (/) and dash (-) or space characters can be used when assigning a Work Order or Job Number. One Work Order can require more than one service.

NOTE: One naming convention that can be implemented for identifying different services on a Work Order is adding an extension to the end of the order number (i.e., 123456.oil, 123456.atf).

On meters configured to enter Work Orders and Job Codes at the PC only, the screen shown in FIG. 25 displays before the Dispense Screen.

The meter can receive any number of work orders. New work orders added at the PC will appear at the end of the work order list.

On the meter, use the UP or DOWN ARROWS to scroll through the list of entered work orders.

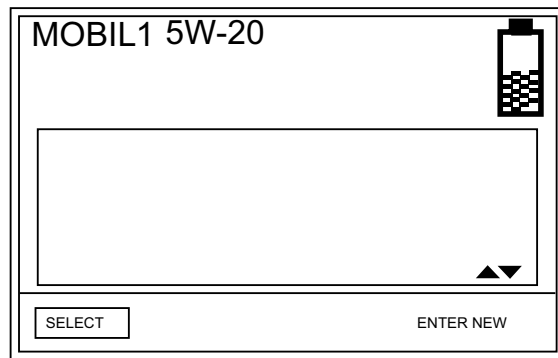


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FIG. 25

On meters configured to enter Work Orders and Job Codes at the PC **and** meter, the screen shown in FIG. 26 displays before the Dispense Screen.

Work orders entered at the meter appear at the beginning of the Work Order list on the meter and are placed ahead of Work Orders previously entered on the PC.



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FIG. 26

To Display PC Created Work Order on the Meter:

The screen shown in FIG. 27 (a) (meters set to receive Work Orders and Job Numbers from the PC only) or (b) (meter set to receive Work Orders and Job Numbers from the PC or created at the meter), displays before a dispense can be made by the meter.

To view the Work Orders in the Work Order Queue:

1. Use the UP or DOWN ARROWS to display the work orders.
2. When the work order that applies to the vehicle you are servicing appears on the display, press the ENTER button to start a dispense.

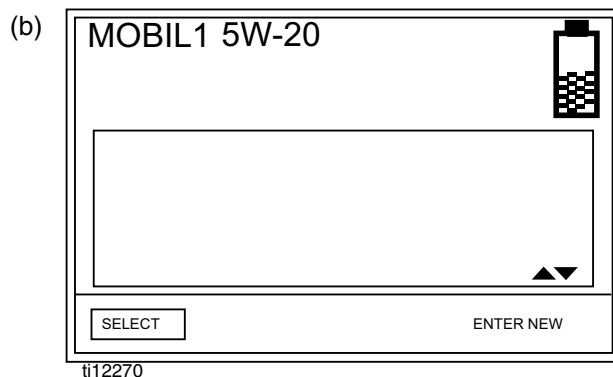
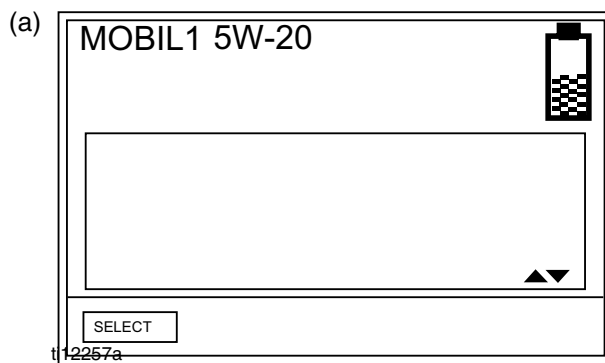


FIG. 27

Creating Work Order at the Meter (FIG. 28)

Using the UP ARROW displays the numbers, 0 - 9 and then alphabet letters, A - Z. By using the DOWN ARROW when the blank field is displays will also provide the period (.); forward slash (/); dash (-) characters; or space can be used.

To enter a new work order at the meter:

1. Use the LEFT ARROW to position the cursor over ENTER NEW.
2. Press center ENTER button on the meter's keypad to select the ENTER NEW option.
3. The cursor automatically is positioned on the first field of the Enter Work Order screen. Use the UP or DOWN ARROWS to scroll through the list of numbers, letters and characters or a field can be left blank.

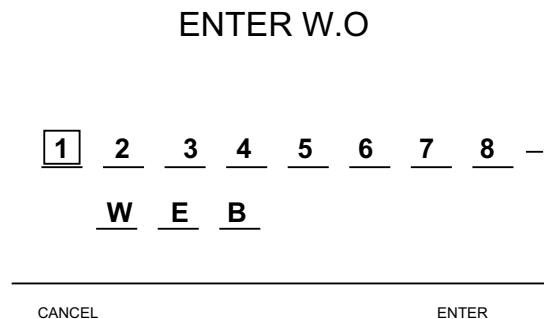


FIG. 28

4. When the number, letter or character you want to use displays, press the center ENTER button on meter's keypad to confirm the selection. The cursor automatically advances to the next field.
5. Repeat this procedure for all Work Order and Job Number fields on the display.

After the last field has been completed, the cursor will automatically move to the CANCEL.

6. To **Cancel** the new Work Order and Job Number you just created on the meter, press the center ENTER button on meter's keypad to select the Cancel option.

To **Select** the new Work Order and Job Number you just created on the meter, use the LEFT ARROW to move the cursor to ENTER on the display. Press the

center ENTER button on the meter's keypad. This new work order now appears as the first item in the Work Order Queue.

7. The work order selection screen displays. You can either select the work order you just created or use the UP or DOWN ARROWS to scroll through the list of all work orders in the queue until you find the work order that applies to the vehicle you are servicing.

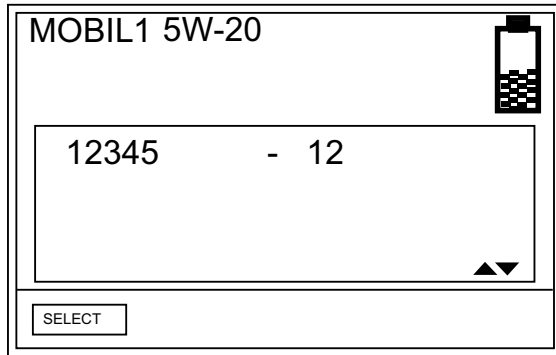


FIG. 29

8. Use the LEFT or RIGHT ARROWS to move cursor to SELECT. Press the center ENTER button on the meter's keypad to confirm the work order selection.

Dispense

The meter dispense options are determined by the System Administrator at the time the meter is programmed. Meter dispense options include:

- Manual Dispense Mode
- Preset Dispense Mode
- Restricted Preset Dispense Mode
- Fixed Preset Dispense Mode

NOTE: To change the meter from one mode to another, you must edit the meter's profile.

Manual Dispense Mode

To dispense fluid in this mode:

1. If necessary, enter the PIN Code or Parts Room Authorization request (16 and 17) and, if the meter is set to use Work Orders and Job Codes, select or add a Work Order (page 18).
2. The Manual Dispense Screen (FIG. 30) displays. Press the center ENTER button on the meter's keypad to select ACTIVATE. You will hear a loud click at the meter indicating it is now ready to begin dispensing fluid

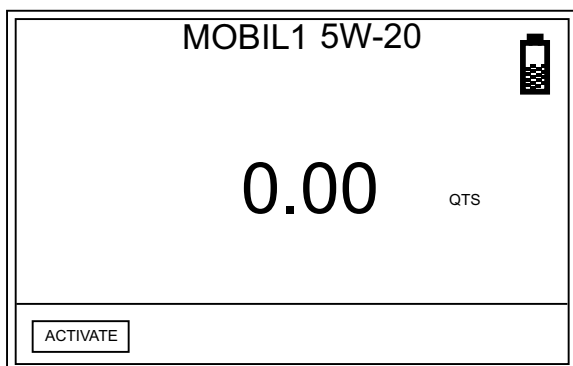


FIG. 30

3. Pull the trigger to begin the dispense. The meter counts up until you release the trigger.

4. When you have finished the dispense, press the center ENTER button on the meter's keypad to select END (FIG. 31).

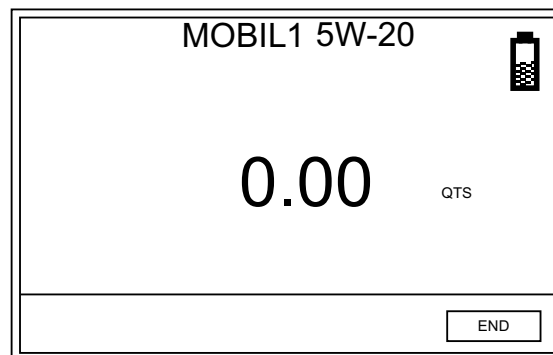


FIG. 31

The meter sends the dispense report to the PC.

Preset Dispense

To dispense fluid in this mode:

1. If necessary enter the PIN Code or Parts Room Authorization request (pages 16 and 17) and, if the meter is set to use Work Orders and Job Codes, select or add a Work Order (page 18).
2. The Preset Dispense Screen displays. Press the center ENTER button on the meter's keypad to select the ACTIVATE. You will hear a loud click at the meter indicating it is now ready to begin dispensing fluid.

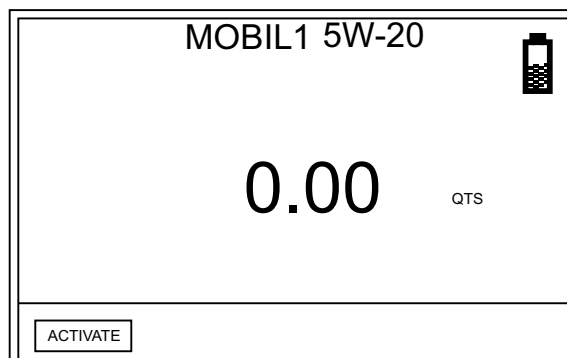


FIG. 32

- The display changes to show the Preset Amount.

The UP or DOWN ARROWS can be used to increase or decrease this amount. **If you change the amount you must press the center ENTER button on the meter's keypad to confirm the new amount before you begin dispensing fluid.**

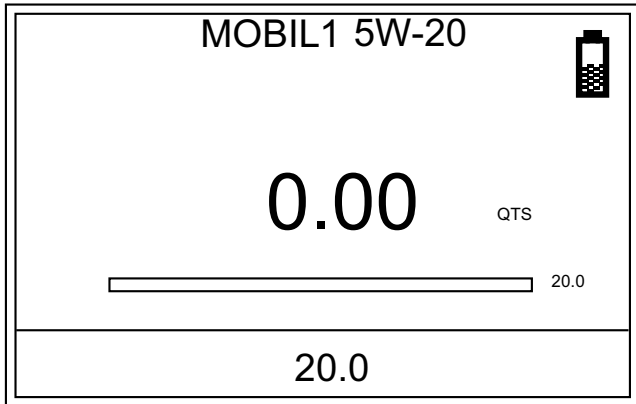


FIG. 33

- Pull the trigger to begin the dispense. The meter counts up from 0. The progression bar also provides a visual display of the dispense.

NOTE: If at any time before reaching the preset dispense amount, you want to stop the dispense, STOP on the bottom of the screen can be selected.

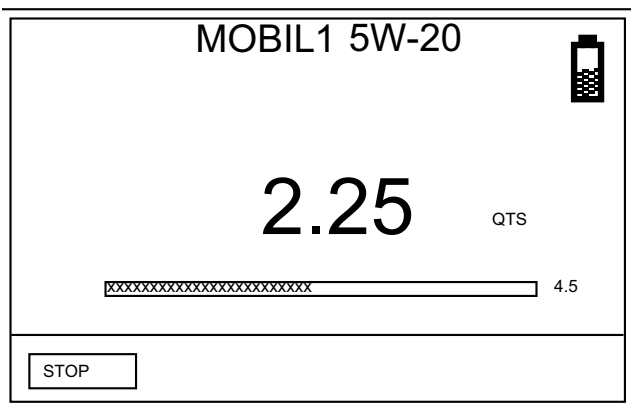


FIG. 34

The screen shown in FIG. 35 displays. Use the LEFT or RIGHT ARROW and center ENTER s to select one of three options:

- TOP OFF - the dispense can be continued in TOP OFF mode (see description of TOP OFF, on this page).

- PRESET - returns meter to PRESET mode and continues the current preset dispense where it was stopped.
- END - ends the dispense and sends final report to PC.

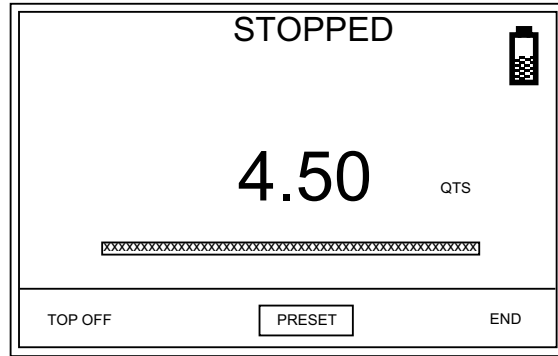


FIG. 35

- When the preset amount has been dispensed the meter will click loudly and release the trigger, stopping the dispense.
- You now have the option to choose either:
 - TOP OFF if you need to add additional fluid. The amount of top off allowed can be limited during meter programming.

OR...

 - END to finish the dispense and send the dispense report to the PC.

TOP OFF

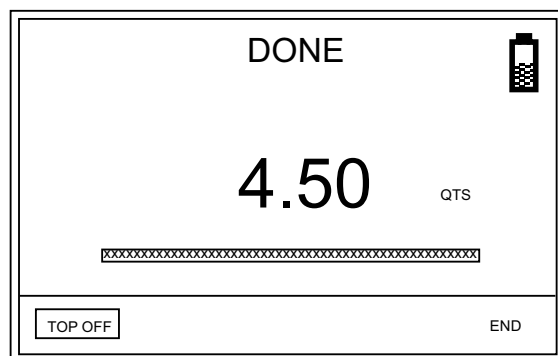


FIG. 36

1. To TOP OFF, press the center ENTER button on the meter's keypad to select TOP OFF on the display (the cursor will automatically be positioned over this option when the meter clicks off).
2. Squeeze trigger to dispense additional fluid.

The amount dispensed on the display will continue to count up. Unless there is a preset limit on the amount you are allowed to top off and you have reached the limit, you can squeeze the trigger again to dispense more fluid.

To end the TOP OFF release trigger. The cursor will be over the END option on the display.

3. Use the center ENTER button on the meter's keypad to select END on the display.

The meter sends the dispense report to the PC.

END

If you do not need to dispense additional fluid, use the LEFT ARROW to move the cursor to END on the display. Press center ENTER button on the meter's keypad to confirm the selection.

The meter sends the dispense report to the PC.

Restricted Preset Dispense

When meters are programmed in restricted preset mode, workorders are required for proper operation. The specified dispense value cannot be increased, only decreased. The functionality of this feature is identical to Preset Dispense Mode except that the preset value can only be decreased with the DOWN ARROW.

Fixed Preset Dispense

When meters are programmed in fixed preset mode, Global workorders and workorder entry at the meter are required for proper operation. The specified dispense valve cannot be increased or decreased. The functionality of this feature is identical to Preset Dispense Mode except that the preset valve cannot be modified.

Troubleshooting



- **Relieve pressure**, page 13, before you check or repair the meter. Be sure all other valves, controls and pump are operating properly.
- When calling for Technical Assistance you may be asked to provide the Software Version that is being used by your meter. Refer to FIG. 5, page 7, item E for help determining where this information is shown on your meter.

Problem	Cause	Solution
Battery dead icon is present.	Batteries are low.	Replace batteries, page 27.
Display does not activate.	Batteries are defective.	Replace batteries, page 27.
	Electronic control is malfunctioning.	Replace the electronic bezel assembly. Order Kit 255886.
	Transceiver not connected to PC	Check USB connection between Transceiver and PC and reconnect if loose or disconnected.
Cannot read display	Contrast is set too high or too low to be viewed in work area	Adjust contrast. See Adjusting Screen Contrast Using LEFT or RIGHT ARROWS, page 5.
Slow or no fluid flow.	Filter is clogged.	<ol style="list-style-type: none"> 1. Relieve pressure, page 13. 2. Clean or replace filter. Order Filter Kit 255885. 3. If the problem remains, contact your Graco distributor for repair or replacement.
	Pump pressure is low.	Increase pump pressure.
	Twist lock nozzle not fully open.	Aim nozzle into bucket or rag. Fully open nozzle. Do not trigger meter when nozzle is closed! If you do accidentally trigger the meter with the nozzle closed, point nozzle into a waste bucket and open the nozzle to relieve pressure and expel built up fluid.
	Shut-off valve is not fully open.	Fully open shut-off valve.
	Foreign material is jammed in the meter housing.	Contact your Graco distributor for repair or replacement.
Displayed dispensed amount is not accurate.	Unit needs to be calibrated for the fluid that is being dispensed.	Calibrate the meter for the fluid that is being dispensed.
Meter leaks from cover/control.	Poor seal at metering cover chamber.	Contact your Graco distributor for repair or replacement.

Problem	Cause	Solution
Meter leaks from twist lock nozzle. <ul style="list-style-type: none"> It is important to distinguish between the two causes of this problem. A new nozzle will NOT correct a fluid leak caused by a faulty valve. 	Twist lock nozzle has a damaged seal.	Replace nozzle. See Step 1 in Installation Procedure, page 15.
	Valve has damaged or obstructed seals.	Clean valve stem o-rings.
Meter leaks from swivel.	Poor swivel/hose connection.	Apply PTFE tape (leave a minimum 2 engaged threads uncovered for electrical continuity) or sealant to threads of hose and tighten the connection. See Step 3 in Installation Procedure, page 14.
	Poor swivel/meter housing connection.	Torque the fitting to 20-25 ft.-lbs.
	Swivel seals have deteriorated and leak.	Replace swivel.
Unit does not stop dispensing when assumed preset amount is dispensed.	Valve is dirty or seals are defective.	Clean valve or replace valve seal.
	Low battery.	Replace batteries, page 27.
	Solenoid not functioning (Preset only).	Replace solenoid.



Error Codes

Error codes are listed below. Even in an error condition the unit keeps track of the amount dispensed. With any error code displayed you must end a dispense.

Error Code	Cause	Solution
Error 2	Switch Error: Error occurred with pick-up in internal gear. <i>or</i> Unit was dropped or unit encountered excessive vibration during shipping.	Ensure that your flow rate is not higher than 14 gpm (37.8 lpm). For further assistance, contact your Graco distributor. End Dispense
Error 4	Flow has continued after it should have shut off. <i>or</i> Flow has occurred in lockout condition.	End Dispense
Error 7	CAP ERROR: Error has occurred in control.	Replace electronic bezel assembly. Order Kit 255886.

Service

Replacing the Battery

						
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- Only use the size and type of batteries specified in this manual.

Batteries required to meet life expectancy:

- Energizer E91

- Be sure to follow the correct polarity when installing batteries in the battery compartment (FIG. 37). Reversed batteries may damage this meter.
- Do not mix different types of batteries together or old batteries with fresh ones. Always replace all 4 batteries with 4, fresh, new batteries.

To change the battery:

- Press firmly on battery compartment cover. Using a flat screwdriver turn latch screw counter-clockwise 1/2 turn.
- Remove the battery compartment cover and batteries.
- Install new batteries. See FIG. 37 for battery orientation.

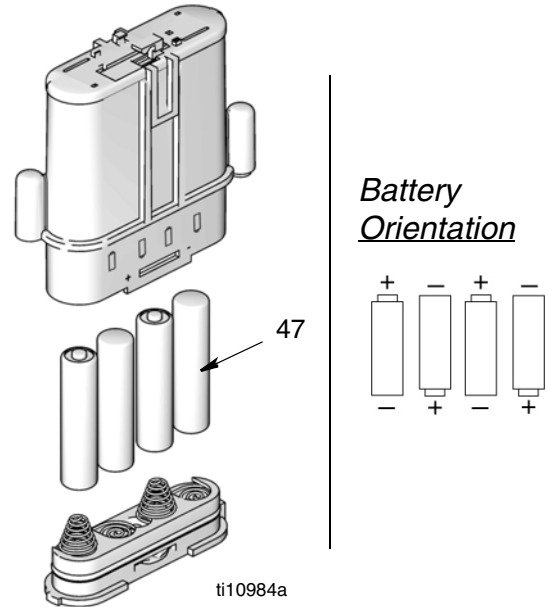


FIG. 37

- Replace cover. The cover is designed to only fit on battery compartment one way. The notch (a) on cover fits into slot (b) on compartment. (FIG. 38).

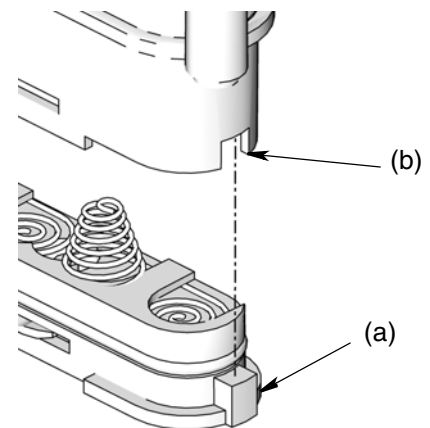


FIG. 38

- Press down firmly on cover. Using a flat screwdriver turn latch screw clockwise 1/4 turn.

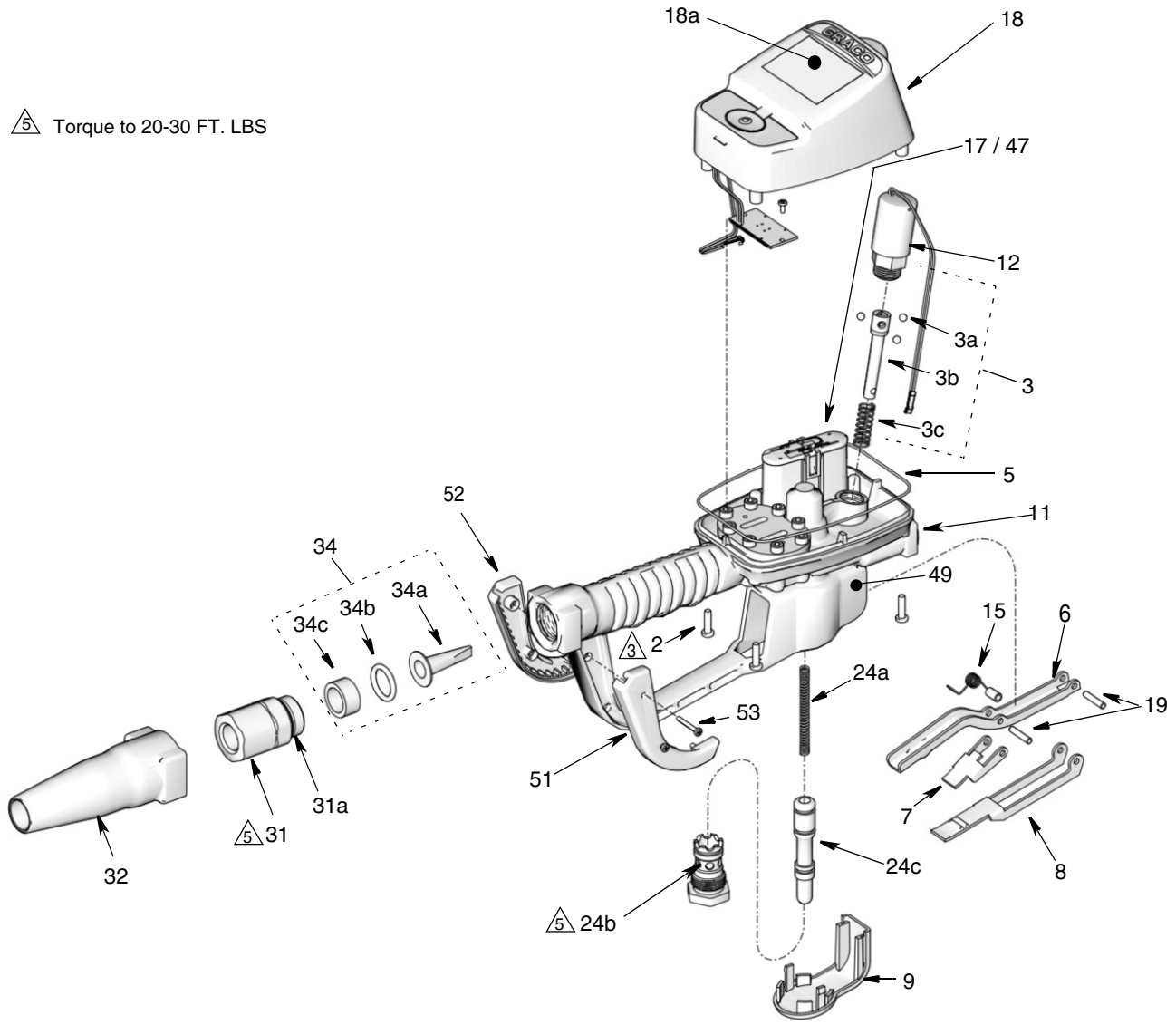
Meter Parts

Ref	Part	Description	Qty	Ref	Part	Description	Qty
2	115477	SCREW, mach, torx pan hd	6	15T369	BOOT, swivel, 3/4" hose, NPT and BSPT, green	1	
3	255889	KIt, repair, trip rod, includes 3a-3c and instruction manual 312944	1	15T370	BOOT, swivel, 3/4" hose, NPT and BSPT, yellow	1	
3a		BALL, 5 MM, carbide	3	125961	BOOT, swivel, SD, BSPP, black	1	
3b		ROD	1	126115	BOOT, swivel, SD, BSPP, red	1	
3c		SPRING, compression 10.67 mm	1	126116	BOOT, swivel, SD, BSPP, blue	1	
5	120812	O-RING, seal	1	126117	BOOT, swivel, SD, BSPP, green	1	
6	15K418	TRIGGER, meter	1	126118	BOOT, swivel, SD, BSPP, yellow	1	
7	15K443	ARM, trip	1	34	255885	KIT, filter, includes 34a-34c	1
8	15K446	PLATE, ratchet	1	34a		KIT, filter, wire, 40 mesh	10
9	15K464	GUARD, bumper	1	34b		PACKING, o-ring (not included on 257539)	10
11		HOUSING, meter	1	34c		SPACER, strainer	10
12	15W093	SOLENOID	1	47	121413	BATTERY, pkg, 4 count, alkaline, AA (page 27)	1
15	15K602	SPRING, torsion	1	49▲	15T259	LABEL, CE	1
17	255197	MODULE, battery	1	51	15T603	GUARD, right	1
18	255886	KIT, repair, electronic bezel, includes 18a and instruction manual 312942	1	52	15T604	GUARD, left	1
18a		LABEL, control, overlay	1	53	117436	SCREW, thd forming	2
19	120850	PIN, dowel M4	2				
24	16F811	KIT, repair, valve and seal, includes 24a-24f and instruction manual 312939	1				
24a		SPRING, compression 6.1 x 76mm	1				
24b		CARTRIDGE, valve	1				
24c		STEM, valve	1				
31	247344	SWIVEL, straight, 1/2-14 NPT, includes 31a (used with 256282, 256482, 256483, 256484, 256485, 256486, 256487)	1				
	247345	SWIVEL, straight, 3/4-14 NPT includes 31a (used with 256488 & 257120)	1				
	24H097	SWIVEL, straight, 1/2-14 BSPT includes 31a (used with 24H135, 24H137, 24H139, 24H141, 24H143, 24H145, 24H147)	1				
	24H099	SWIVEL, straight, 3/4-14 BSPT includes 31a (used with 24H149 & 24H159)	1				
	24H098	SWIVEL, straight, 1/2-14 BSPP includes 31a (used with 24H134, 24H136, 24H138, 24H140, 24H142, 24H144, 24H146)	1				
	24H100	SWIVEL, straight, 3/4-14 BSPP includes 31a (used with 24H148 & 24H158)	1				
31a	105765	O-RING	1				
32	15T366	BOOT, swivel, 3/4" hose, NPT and BSPT, black (standard with meter)	1				
	15T367	BOOT, swivel, 3/4" hose, NPT and BSPT, red	1				
	15T368	BOOT, swivel, 3/4" hose, NPT and BSPT, blue	1				

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

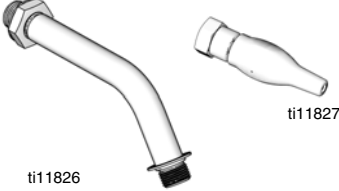
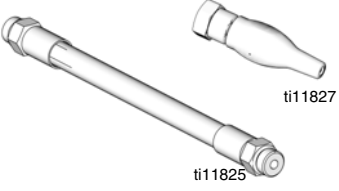
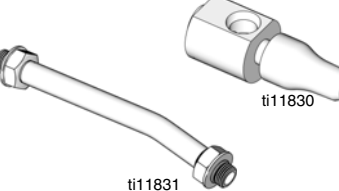
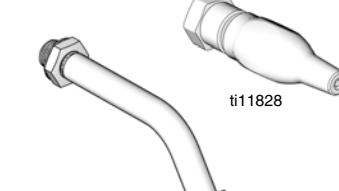
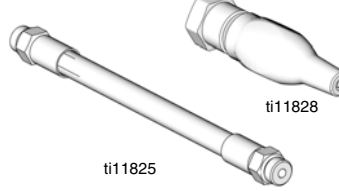
⚠️ 3 Torque to 15-25 IN. LBS

⚠️ 5 Torque to 20-30 FT. LBS



ti10617b

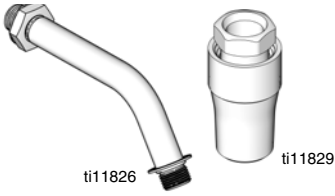
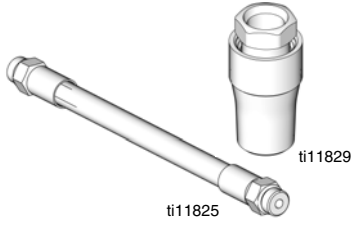
Nozzle (33) and Extension (20) Kits

Part No.	Description	Fluid Type	
255852*	Automatic, quick close, non-drip nozzle with rigid extension.	Oil, ATF	
255853*	Automatic, quick close, non-drip nozzle with flexible extension	Oil, ATF	
255854	Quick close, non-drip nozzle with rigid extension	Gear Lube	
255855*	Quick close, non-drip nozzle with rigid extension	Anti-freeze	
255856*	Quick close, non-drip nozzle with flexible extension	Anti-freeze	

*Used for dispensing 5gpm (22.7 lpm) or less.

continued on page 32

Nozzle (33) and Extension (20) Kits

Part No.	Description	Fluid Type	
255857	High flow, quick close, non-drip nozzle with rigid extension	Oil, ATF, Anti-freeze	
255858	High flow, quick close, non-drip nozzle with flexible extension	Oil, ATF, Anti-freeze	

Nozzle (33) Kits

255459*	Automatic, quick-close non-drip, nozzle	Qty	Oil
	• BODY, nozzle	1	
	• O-RING, packing	1	
	• SPRING, compression	1	
	• O-RING, packing	1	
	• STEM, nozzle, valve	1	
	• SEAT, valve	1	
255460*	Quick close, , non-drip, quick-close nozzle		Anti-freeze
	• BODY, nozzle	1	
	• SPRING, compression	1	
	• O-RING, packing	1	
	• STEM, nozzle, valve	1	
	• O-RING, packing	1	
	• SEAT, valve	1	
255461	High flow, quick close, non-drip, high-flow nozzle		Oil and Antifreeze
	• STEM, nozzle	1	
	• BODY, nozzle	1	
	• O-RING, packing	1	
	• O-RING, packing	1	
	• O-RING, packing	1	
255470	Quick close, non-drip nozzle		Gear Lube
	• Housing	1	
	• Body, nozzle	1	
	• O-RING, packing	1	
	• O-RING, packing	1	
	• Plug, Hollow, hex	1	

*Used for dispensing 5gpm (22.7 lpm) or less.

Thermal Relief Kits (page 5)

Part No.	Description	PSI (bar) Rating
112353	Diaphragm pump for fuel dispense, valve only	50 psi (3.4 bar)
235998	Mini Fire-Ball™ 225, 3:1	600 psi (41 bar)
237601	Fire-Ball 425, 3:1	600 psi (41 bar)

Nozzle (33) and Extension (20) Kits

Part No.	Description	PSI (bar) Rating
237893	Mini Fire-Ball 300, 5:1 and Fire-Ball 425, 6:1	900 psi (62 bar)
248296	Mini Fire-Ball 300, 5:1 and Fire-Ball 425, 6:1 (same as 237893 without bung adapter and swivel. Includes 6-foot hose)	900 psi (62 bar)
238899	Diaphragm pump	150 psi (10.4 bar)
240429	Fire-Ball 425, 10:1	1600 psi (110 bar)
248324	Fire-Ball 425, 10:1 (same as 240429 minus bung adapter and swivel. Includes 6-foot hose)	1600 psi (110 bar)

Technical Specifications

Flow range*	0.1 to 14 gpm (0.4 to 53 lpm)
Maximum Working Pressure	1500 psi (103.4 bar)
Units of Measure	pints, quarts, gallons, liters (factory set to quarts)
Weight	5 pounds (2.26 kg)
Dimensions (without extension)	
Length	13 inches (33 cm)
Width	3.75 inches (9.5 cm)
Height	5.75 inches (14.6 cm)
Units of measure	factory set in quarts maximum totalizer amount = 999,999 gallons or liters maximum recorded dispensed volume = 999.99 units maximum preset volume = 999.9 units
Inlet	1/2-14 npt or 3/4-14 npt
Outlet	3/4-16 straight thread o-ring boss
Operating temperature range	4 °F to 158°F (-16°C to 70°C)
Storage temperature range	-40°F to 158°F (-40°C to 70°C)
Battery**	4AA alkaline or lithium batteries
Expected battery life in typical shop environment	6 months
Wetted parts	aluminum, stainless steel, PBT/PC, zinc, nitrile rubber, CS
Fluid compatibility	antifreeze, gear oil, crankcase oil, ATF
Meter pressure loss	80 psi @ 10 gpm
Accuracy†	+/- 0.5 percent
RF Frequency	2405-2480 MHz
RF Transmit Power	10dBm/10mW

*Tested in 10W motor oil. Flow rates vary with fluid pressure, temperature and viscosity.

**Battery required to meet life expectancy: Energizer® Alkaline E91.

† At 2.5 gpm (9.5 lpm), at 70°F (21°C), with 10-weight oil and 1 gallon dispensed. May require calibration; out-of-box accuracy is +/- 1.25 percent.

Graco 7-Year Meter and Valve 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 from the date of sale as defined in the table below, repair or replace equipment covered by this warranty and 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.

Graco 7-Year Meter and Valve Extended Warranty	
Components	Warranty Period
Structural Components	7 years
Electronics	3 years
Wear Parts - including but not limited to o-rings, seals and valves	1 year

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within one (1) year past the warranty period, or two (2) years for all other parts.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6928 **or Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

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

Original instructions. This manual contains English. MM 313046

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