

# Accu-Shot™ Electronic Grease Meter

309454D

EN

**For high pressure grease dispense. For professional use only.**

## **Part No. 233807**

English - measures in ounces and pounds

## **Part No. 233933**

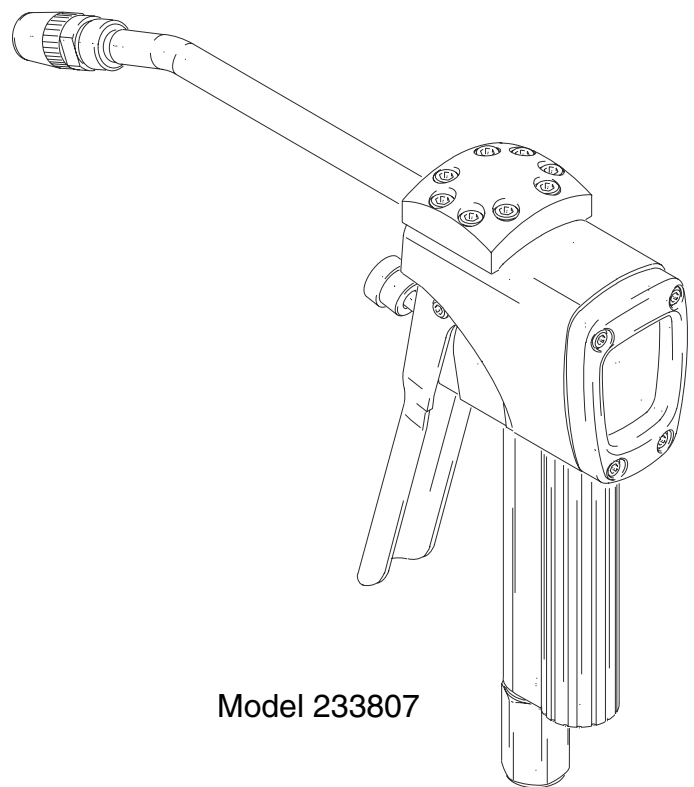
Metric - measures in grams and kilograms

*5000 psi (34.5 MPa, 345 bar) Maximum Working Pressure*



### **Important Safety Instructions**

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



Model 233807

# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.



## WARNING



### EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical 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 from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



### PRESSURIZED EQUIPMENT HAZARD

Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow the **Pressure Relief Procedure** when you stop spraying/dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.

# WARNING



## 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:

- 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.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



## SKIN INJECTION HAZARD

High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

## Common Terms

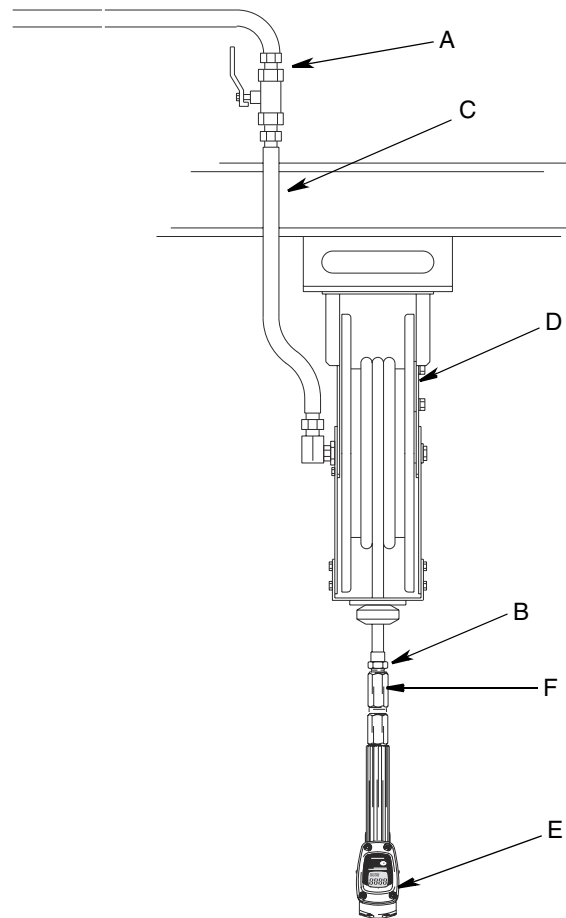
The following terms are shown on the Accu-Shot LCD display and used in this instruction manual.

**RESET BUTTON:** when pressed, resets the Partial Delivery total to zero.

**CUMULATIVE TOTAL:** non-resettable total. Display to show the cumulative amount of grease dispense. It cannot be reset.

**PARTIAL DELIVERY TOTAL:** resettable total. Displayed to show the cumulative amount of grease that has been dispense. It can be reset to zero.

# Installation



**FIG. 1: Typical Installation**

**Key:**





- A Fluid shut-off valve
- B Hose
- C Hose reel fluid inlet hose
- D Hose reel
- E Accu-Shot electronic grease meter
- F 2 in. swivel

The installation shown in FIG. 1 is only a guide. The components shown are typical; however, it is not a complete system design. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

**NOTICE**

This dispense valve is not designed for in-line installation. Do not install with a shut-off valve on the outlet side of the meter. Such installation could result in damage to the meter housing cover.

# Grounding


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






Refer to the user manuals for the pump and other system components, and ground the following:

- Pump: follow the manufacturer's recommendations.
- Fluid hoses: use only grounded hoses.
- Air compressor: follow the manufacturer's recommendations.
- Fluid supply container: follow the local codes.

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

# Pressure Relief Procedure

 Follow the Pressure Relief Procedure whenever you see this symbol.

						
<p>This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.</p>						

1. Turn off the power supply to the pump.
2. 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.

**NOTE:** If you suspect the dispensing valve, extension or grease fitting coupler is clogged, or that pressure has not been fully relieved after following all the previous steps, using a rag, VERY SLOWLY loosen the coupler or hose end coupling and allow pressure to be relieved gradually, then loosen the part completely and clear the clog.

# Installation Procedure

						
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<b>NOTICE</b>
<p>If this is a new installation, or if the grease in the lines is contaminated, flush the lines before you install the metered valve. Contaminated lines can cause the valve to leak or malfunction.</p>

**If this is an existing installation, go to step 6.**

1. Close the fluid shut-off valve (A) at each dispense stations. (Fig 1, page 4)
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. Slowly open the main fluid valve.
3. Place the hose end (with no dispense valve connected) into a container for waste grease. Secure the hose in the container so it will not come out during flushing.

**NOTE:** 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 (A) at the dispense station. Flush out a sufficient amount of grease to ensure that the entire system is clean, and close the valve. (FIG. 1, page 4)
5. Repeat step 4 at all other dispense stations.
6. Relieve the pressure. See Pressure Relief Procedure.

<b>NOTICE</b>
<p>Always ensure that the thread of the hose (or swivel) is compatible with the thread of the Accu-Shot dispense.</p>

7. Apply thread sealant to the male threads of the hose fitting (f), thread the hose fitting into the fitting (2) of the Accu-Shot, and tighten firmly. (FIG. 2)

**NOTE:** Let the sealant cure to the manufacturer's recommendations before the system is pressurized with grease.

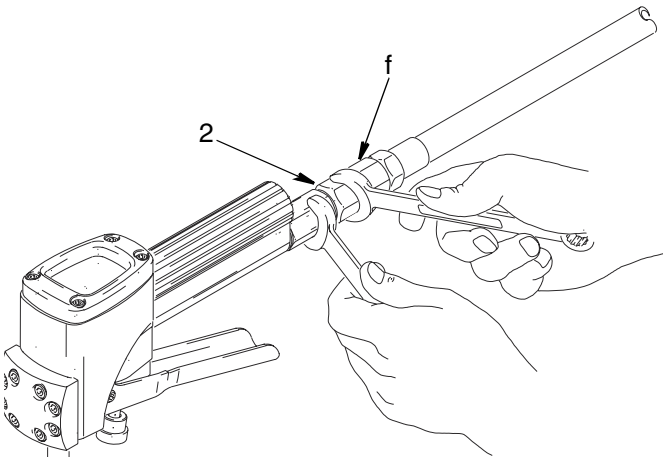


FIG. 2

8. Open all dispense position shut-off valves, and start the pump to pressurize the system. See Operation section for proper operation of meter (page 7).
9. To ensure dispensing accuracy, purge all air from the fluid lines and the dispense valve before using.

## Grease Dispenser Components

Refer to FIG. 3 for the following.

### Key:

- J Accu-Shot grease extension tube
- K Measurement and recording of grease delivered by internal oval gear metering chamber and control electronics
- L The delivery control valve is activated by a steel lever provided with a safety lock. It is designed to control the flow of grease at high pressure.
- M The valve grip contains the electronic power supply battery housing.
- N Display
- P Hose connection fitting
- R Dispensing lever control knob

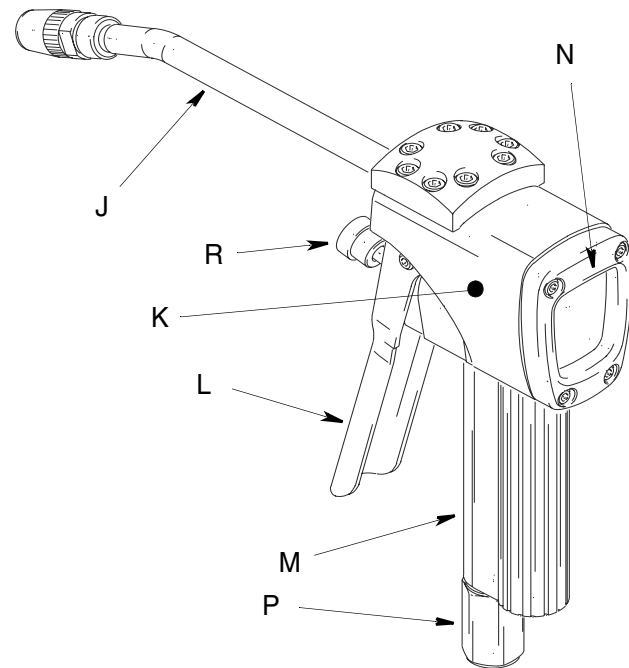


FIG. 3

# Operation

## Before Dispensing Grease

The partial delivery meter (a) must read zero. If the meter indicates a value other than zero, press the RESET button (b). (FIG. 4)

**NOTE:** The partial delivery total cannot be zero-set during the dispensing process.

## Dispensing Grease

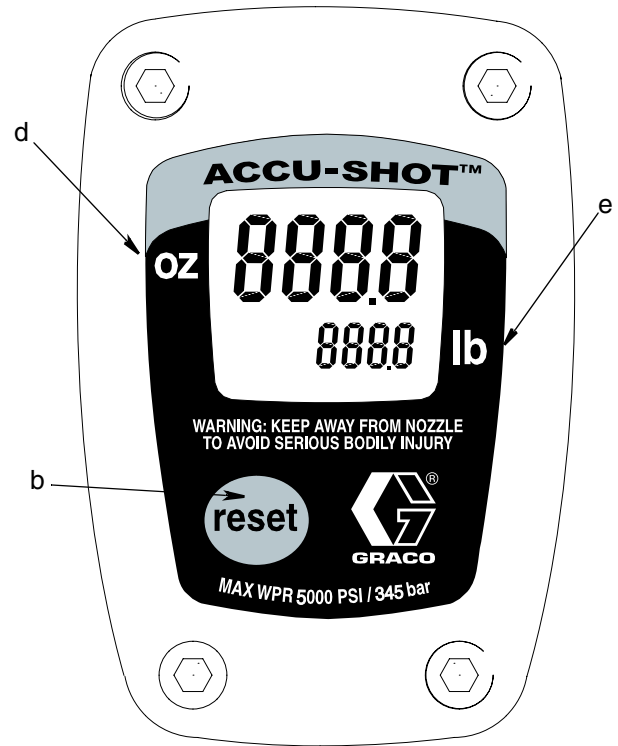
1. Pull the dispense lever.
2. Release the lever once the grease has been dispensed.

**NOTE:**

- During delivery the partial delivery meter (a) will indicate the amount of grease dispense since the last time the RESET key (b) was pressed. The cumulative total delivery meter (c) is also updated during delivery. (FIG. 4)
- Model 233933 displays grams and kilograms (decimal point is not displayed, not pictured)
- Model 233807 displays ounces and pounds.

## After Dispensing Grease

Tighten the dispense lever safety lock.



Model 233807 Shown

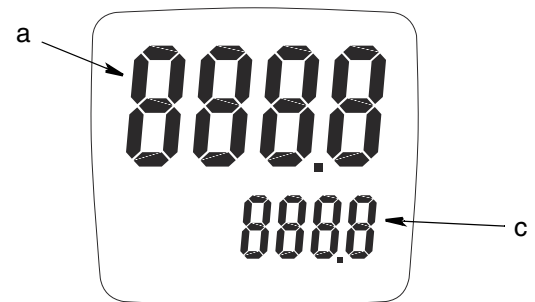


FIG. 4

# Maintenance

## Battery Replacement

Refer to FIG. 5 for the following instructions.



The display will remain off after the batteries have been replaced. This is because the Accu-Shot is equipped with a system that prevents powering the electrical components during battery replacement. To turn the LCD display on press the RESET button. The Accu-Shot will display the same cumulative total as before battery replacement and the partial delivery meter will display zero.

The Accu-Shot is supplied with two standard alkaline batteries Size AA 1.5 Volt. The batteries must be replaced when the LCD display starts to fade or disappears.

1. Press the RESET button to update the cumulative total.
2. Unscrew the battery cap (34).
3. Remove the old batteries (28).
4. Insert the new batteries (28) with the polarity as shown.
5. Replace the battery cap (34). Ensure that the gasket (32) and tapered spring (31) are correctly positioned.

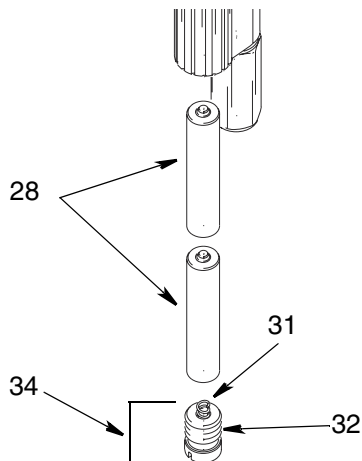


FIG. 5

## Cleaning the Metering Chamber

Refer to FIG. 6 for the following instructions.



The Accu-Shot metering chamber very rarely requires cleaning. However, when necessary, cleaning can be performed quickly and easily without having to remove the Accu-Shot from production.

1. Relieve pressure, see Pressure Relief Procedure, page 5.
  2. Unscrew the eight cover fastening screws (1) and slide out the washers (2).
  3. Remove the cover (3) and o-ring (7).
  4. Remove the two oval gears (5).
  5. Clean gears and internal fluid section. Use a brush or pointed object for this operation. Be careful not to damage the body or the gears.
  6. Replace the two oval gears (5).
- NOTE:** Only one of the gears has magnets. It must be re-installed with magnets facing the Accu-Shot body as shown in Fig. Fit the second gear (without magnets) with its largest axis at right angles to the first gear. Torque to 7.38 ft-lbs (10 N.m).
7. Replace the o-ring (7) and cover (3).
  8. Replace the washers (2) and cover fastening screws (1). Torque to 7.38 ft-lbs (10 N.m).

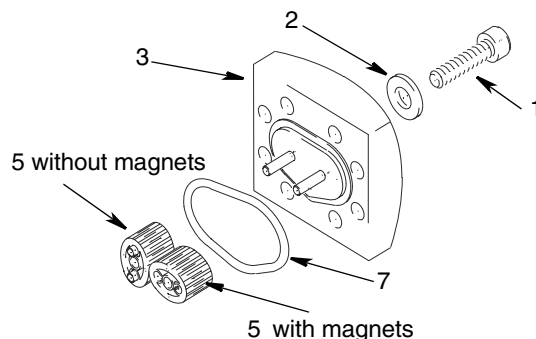


FIG. 6



## Adjusting the Operating Lever



Refer to FIG. 7 for the following instructions.

The Accu-Shot valve operating lever (36) can be adjusted using the adjustment set screw (41) and check nut (40). The Accu-Shot is shipped with the lever already locked and set and therefore does not normally require adjustment. It may need adjusting after being used for some time or when the valve is removed.

1. Relieve pressure, see Pressure Relief Procedure, page 5.
2. Loosen the check nut (40).
3. Tighten or loosen the set screw (41) until the required position is reached.
4. Fully lock the check nut (40) keeping the set screw (41) in position.

**NOTE:** When the adjustment set screw is loosened, the operating lever rest position (valve closed) moves away from the grip. Once the adjustment has been performed the position of the lever with respect to the grip must be as illustrated in the overall Dimensions. See page 13.

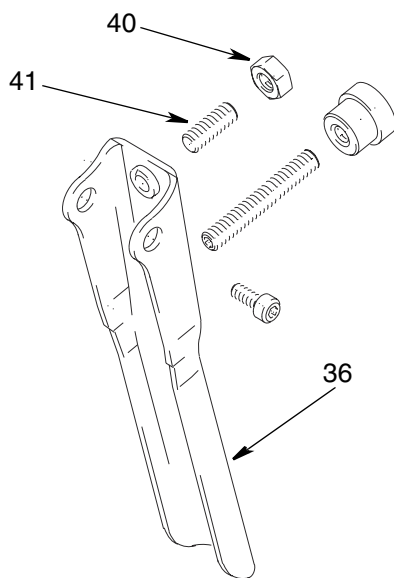
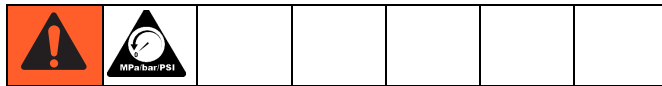


FIG. 7

## Cleaning the Valve



Refer to FIG. 8 for following instructions unless otherwise indicated.

1. Relieve pressure, see Pressure Relief Procedure, page 5.
2. Loosen the nut (40) and remove it all together with the set screw (41). (FIG. 7)
3. Unscrew the battery cap (34) and remove the two batteries (28). (FIG. 5)
4. Unscrew the 4 fastening screws (23) and remove the outlet housing (24), the plate (25), and the plate gasket (26).
5. Remove the screws (21) along with the electronics (17).

### NOTE:

- Handle the card and all components very carefully.
  - Before beginning Step 5, obtain a container to hold the disassembled internal components of the valve.
6. Unscrew and remove the valve plug (16).
  7. Using a small screw driver, dislodge the valve pin (11) by pressing through the hole where the nut and set screw had been previously removed. Together the pin (11), the valve seat (13), and the ball (12) should come out of the valve. If the o-ring (10) and the retaining ring (9) do not come out together with the pin (11), remove both using a hooked tool, being careful not to damage these parts. In order to remove them, it may be necessary to work with the hooked tool on the lever side.
  8. Clean all the valve components, removing the residual grease using a clean cloth. Also re-clean the valve seat. make sure all dirt is removed:
    - from the valve plug (16)
    - inside the valve seat hole (13)
    - in the pin conical cavity (11)
    - inside the valve

**NOTE:** Use compressed air to clean these parts. Grease all parts before reassembly. Avoid pinching the o-rings during reassembly.

9. Refit the following components in the valve seat in the order given below, being careful not to damage them.
  - The retaining ring (9) and o-ring (10) using a plug.
  - The valve pin (11).
  - The ball (12).
  - The valve seat (13)- hole chamber must face the ball.
  - The valve plug (16) complete with retaining ring (15) and o-ring (14).

**NOTE:** The retaining ring must be outside the o-ring (retaining ring facing the electronics side, o-ring facing the Accu-Shot body side, torque to 14.75-16.23 ft-lbs [20-22 N.m]).

10. Replace the electronics (17) with the screws (21) ensuring that the battery contact goes back into position inside the battery compartment. Fit the sensor inside the hole. Torque to 4 to 6 in-lbs (0.45 to 0.68 N.m).

**NOTE:** The wire should push the sensor to the end of the hole and not curl up.

**NOTICE**

Incorrect assembly of the sensor could affect operation of the meter.

11. Ensure that the key spacer (22) is correctly fitted on the left RESET button of the card.

12. Fit the plate gasket (26), the plate (25), and the housing (24) along with the screws (23).
13. Fit the set screw (41) and tighten the nut (40) on the lever (36). Adjust the set screw to correctly position the lever, referring to the Dimensions Drawing on page 13.
14. Tighten the nut (40). (FIG. 7)
15. Insert the batteries (28) into the battery compartment on the handle (29) following the Battery Replacement Procedure (page 8).
16. Tighten the battery cap (34) complete with o-ring (32) and spring (31). (FIG. 5)
17. Press the RESET button to re-activate the Accu-Shot and check that the LCD comes on.

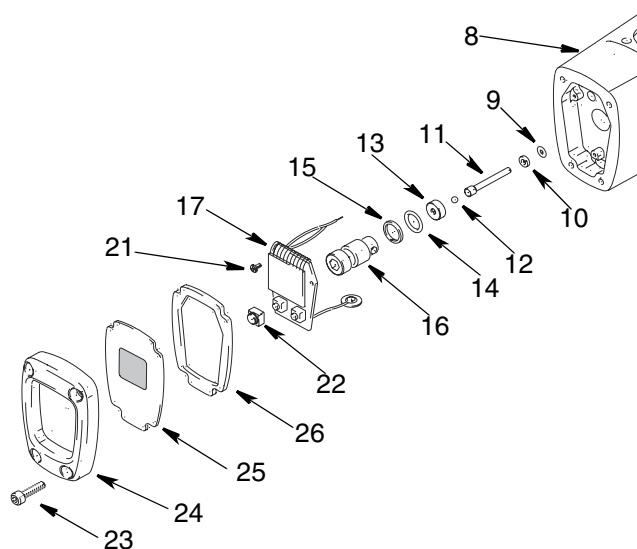
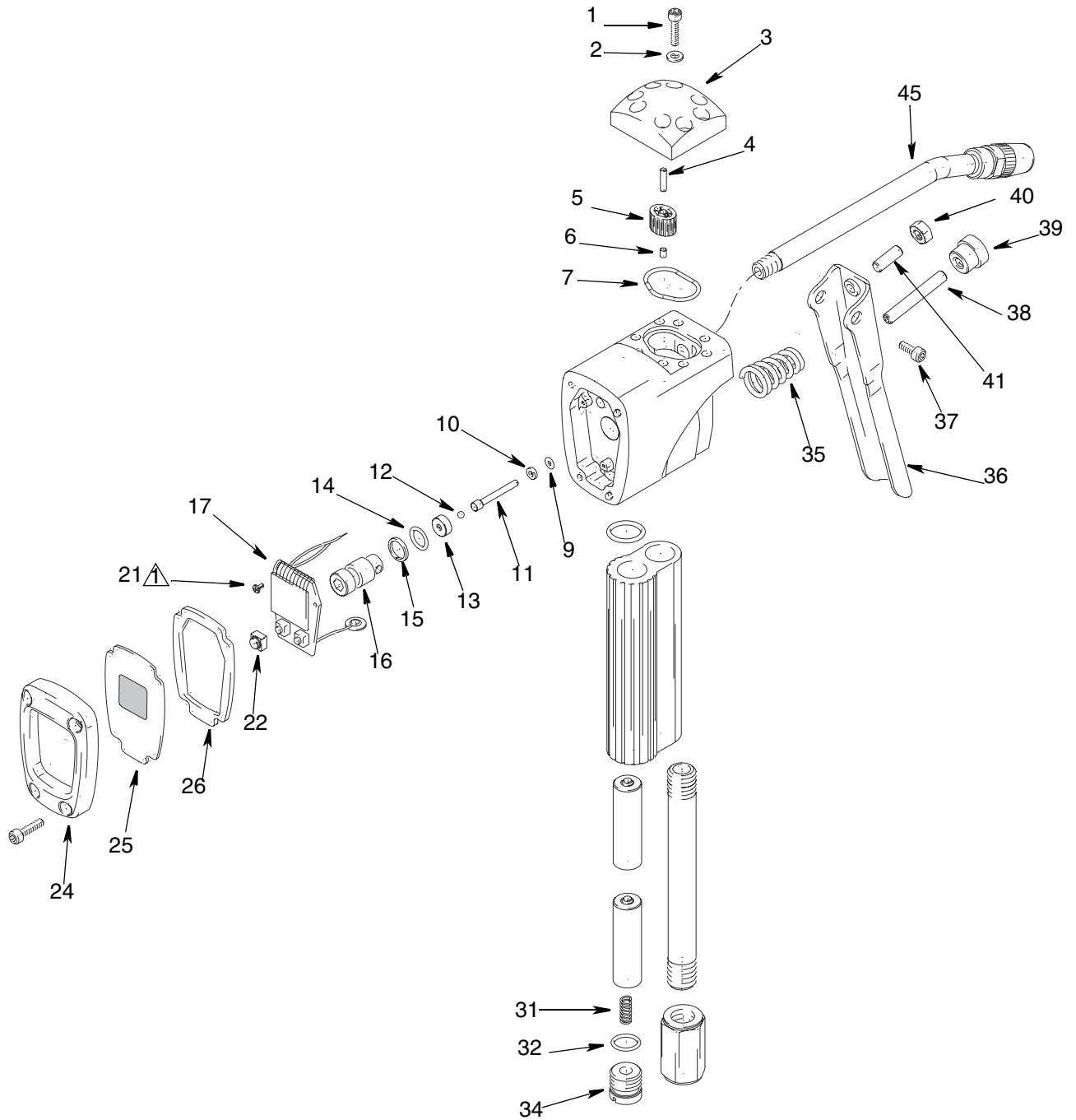



FIG. 8

## Troubleshooting

Problem	Cause	Solution
LCD fades or disappears	Batteries are low.	Replace. See Battery Replacement Procedure, page 8.
Display does not activate	Batteries are defective or dead.	Replace. See Battery Replacement Procedure, page 8.
Slow or no grease	Pump pressure is low.	Increase pump pressure.
	Shut-off valve is not fully open.	Fully open shut-off valve.
	Foreign material is jammed in the meter housing.	Clean the metering chamber. See procedure on page 8.

# Parts



 Torque to 4 to 6 in-lb (0.45 to 0.68 N.m)

**Parts**

Ref.	Part	Description	Qty.
45	200389	ADAPTER, hydraulic	1

**Kit No. 245632, Electronic, English Repl. Kit**

Ref.	Description	Qty.
17	ELECTRONICS	1
21	SCREW	3
22	SPACER, key	1
24	HOUSING	1
25	PLATE, lcd	1
26	GASKET, plate	1

**Kit No. 245633, Valve Kit**

Ref.	Description	Qty.
9	RING, retaining BU 5 x 9 x 3 x 1.4 PTFE	1
10	O-RING, 2012 Ø2.9 x 1.78 90SH	1
11	PINS, valve	1
12	BALL, Ø 1/8"	1
13	SEAT, valve	1
14	O-RING, 2037 Ø9.25x1.78 90SH	1
15	RING, retaining BG 12.5 x 9.9 x 1.4 PTFE	1
16	PLUG, valve	1

**Kit No. 245634, Trigger Kit**

Ref.	Description	Qty.
35	LEVER, spring	1
36	LEVER	1
37	SCREW, UNI 5931 M4 x 10, sst	2
38	SCREW, UNI 5923 M6 x 40	1
39	KNOB, M6 x Ø 17 x 15 female	1
40	NUT, UNI 5588 M6 ZN	1
41	SCREW, set screw UNI 5923, M6 x 16	1

**Kit No. 245635, Battery Repair Plug Kit**

Ref.	Description	Qty.
31	SPRING, battery cap	1
32	O-RING, 2043 Ø 10.82 x 1.78	1
34	CAP, battery	1

**Kit No. 245636, Oval Gear Repair Kit**

Ref.	Description	Qty.
5	GEAR, oval, 13.9 x 9.98 x 10	2
6	MAGNET, Ø 3 x4	2
7	O-RING, 2100 025. 12 x 1.78	1

**Kit No. 245637, Cover Repair Kit**

Ref.	Description	Qty.
3	COVER, machined	1
4	PINS, oval gear (pins are pressed into item 3)	2

**Kit No. 245638, Cover Screws Repair Kit**

Ref.	Description	Qty.
1	SCREW, UNI 5931 TCEI M5 x 20 8.8 ZN	8
2	WASHER, 10 x 5 x 1 ZN	8

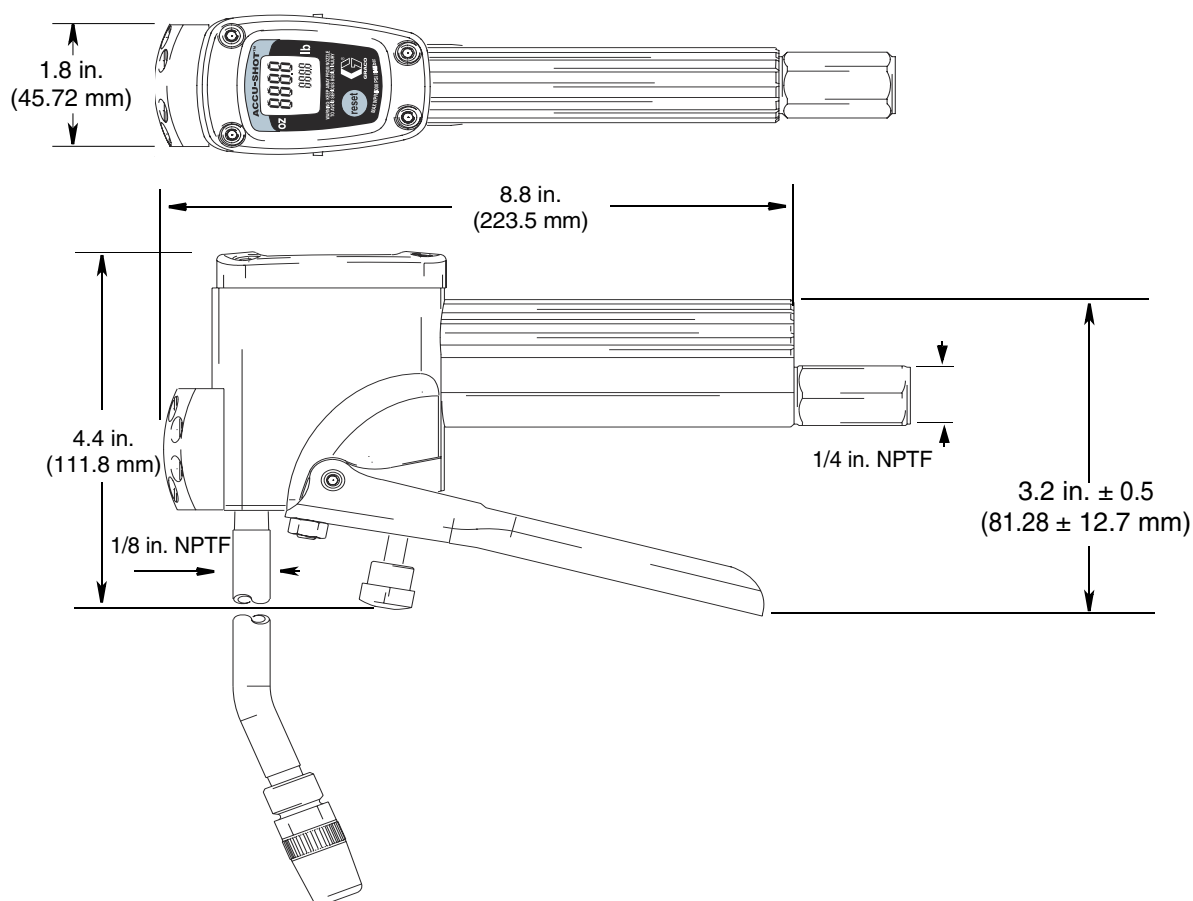
**Kit No. 246283, Electronic, Metric Repl. Kit**

Ref.	Description	Qty.
17	ELECTRONICS	1
21	SCREW	3
22	SPACER, key	1
24	HOUSING	1
25	PLATE, lcd	1
26	GASKET, plate	1

# Technical Data

Accu-Shot™ Electronic Grease Meter		
	US	Metric
Maximum fluid working pressure	5000 psi	34.5 MPa, 345 bar
Storage temperature (range)	-4 to 158°F	-20 to 70°C
Storage humidity (maximum)	95 (%RH)	
Operating Temperature (maximum)	140°F	60°C
Metering system	Oval Gears	
Accuracy	± 3% with grease consistency (grade NLGI) 2/3	
Repeatability (typical)	± 1% with grease consistency (grade NLGI) 2/3	
Display	Liquid Crystal Display (LCD) with: Zero - settable total, 4 digits, cumulative total, 4 digits	
Power Supply	Standard alkaline batteries 2 x 1.5 Volt Size AA	
Battery Duration	18 - 24 months (depends on usage)	
Weight	2.2 lbs	1.0 kg
Dimensions	See below	

## Dimensions



# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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

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

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

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

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

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

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# Graco Information

For the latest information about Graco products, visit [www.graco.com](http://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](http://www.graco.com/patents).*

Original instructions. This manual contains English. MM 309454

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