

Accu-Shot™ Electronic Grease Meter

309454 rev.C

For high-pressure grease dispense.

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

Part No. 233807

English - measures in ounces and pounds

Part No. 233933

Metric - measures in grams and kilograms



Important Safety Instructions

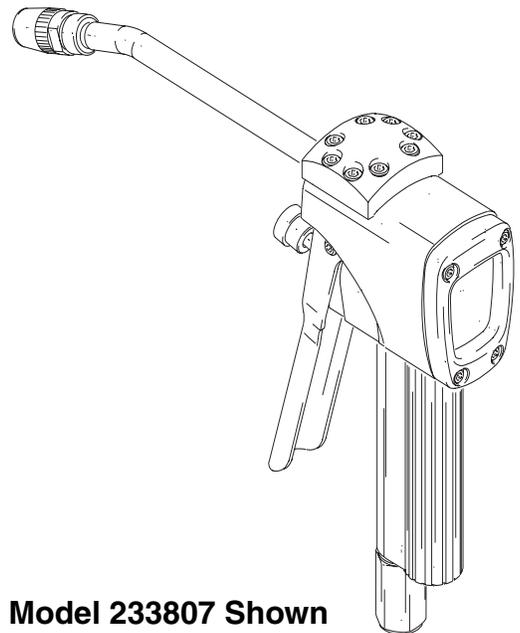
Read all warnings and instructions in this manual.
Save these instructions.

CAUTION

This valve is designed to dispense lubricating grease only. Do not dispense other fluids with this dispense valve.

This dispense valve is designed for use within its limits. See "Technical Specifications" on page 14.

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.



Model 233807 Shown

PROVEN QUALITY. LEADING TECHNOLOGY.

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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. Displayed to show the cumulative amount of grease dispensed. It cannot be reset.

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

WARNING



EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture, malfunction, or start unexpectedly and result in a serious injury.

- This equipment is for professional use only.
- Read all manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain, call your Graco distributor.
- Do not alter or modify equipment. Use only genuine Graco parts and accessories.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. Maximum working air and fluid pressure of this equipment is 5000 psi (34.5 MPa, 345 bar).
- Use fluids and solvents that are compatible with the equipment wetted parts. See the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Route the hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 180°F (82°C) or below -40°F (-40°C).
- Wear hearing protection when operating this equipment.
- Comply with all applicable local, state, and national fire, electrical, and other safety regulations.

WARNING



PRESSURIZED EQUIPMENT HAZARD

Spray from the gun, hose leaks, or ruptured components can splash fluid in the eyes or on the skin and cause serious injury.

- Do not point the spray gun at anyone or at any part of the body.
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** on page 4 when you stop spraying and before cleaning, checking, or repairing equipment.
- Check hoses and couplings daily. Replace worn, damaged, or loose parts immediately.
- Tighten all fluid connections before each use.



FIRE AND EXPLOSION HAZARD

Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- Ground the equipment and the object being dispensed to. Refer to “Grounding” on page 6.
- If there is any static sparking or you feel an electric shock while using this equipment, **stop dispensing immediately. Do not use the equipment until you identify and correct the problem.**
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being dispensed.
- Keep the dispense area free of debris, including solvent, rags, and gasoline.
- Do not smoke in the dispense area.
- Do not turn on or off any light switch in the dispense area while dispensing or while operating if fumes are present.
- Keep a fire extinguisher in the work area.



FLUID INJECTION HAZARD

If high-pressure fluid pierces the skin, the injury might look like “just a cut” but is a serious wound. **Get immediate surgical treatment.**

- Always shut off power and relieve pressure before you service or clean fluid dispenser, remove parts, or repair leaks. See **Pressure Relief Procedure** page 4.
- Keep clear of tip, and never point dispenser at yourself or anyone else.

Overview

The Accu-Shot grease nozzle flow rate depends on the specific operating conditions and can vary considerably according to the resistance of new grease which will vary depending on pipe size and length, working temperature, obstructions, and pump efficiency, etc.

With its compact dimensions and limited weight, the Accu-Shot can replace ordinary grease nozzles. The amount of grease delivered by the Accu-Shot nozzle is accurately measured and shown directly on the LCD. Correct greasing is guaranteed by the re-settable partial delivery meter. Grease consumption is recorded by calculation and display of the total amount delivered.

Installation

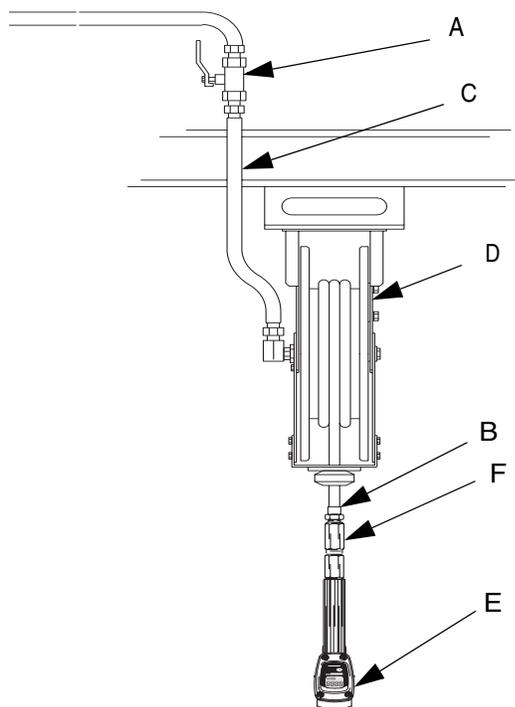
Typical Installation

KEY	DESCRIPTION
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

Caution

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.



Pressure Relief Procedure

! WARNING

Pressurized Equipment Hazard

The equipment stays pressurized until pressure is manually relieved. To reduce the risk of serious injury from pressurized fluid, accidental spray from the dispense valve, or splashing fluid, follow the Pressure Relief Procedure when you:

- Are instructed to relieve pressure
- Check, clean, or service any system equipment
- Install or clean fluid nozzles or filter.

Fig. 1 _____

Installation Procedure

WARNING

If high-pressure fluid pierces the skin, the injury might look like “just a cut” but is a serious wound. Get immediate medical attention

- Always shut off power and relieve pressure before you service or clean fluid dispenser, remove parts, or repair leaks. See **Pressure Relief Procedure**.
- Keep clear of tip, and never point dispenser at yourself or anyone else.

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. Now clear the clog.*

WARNING

Fire and Explosion Hazard



The movement of fluids through the dispensing system generates static electricity. The static electricity can cause volatile fumes to ignite, resulting in explosion and fire. The dispensing system must be grounded. See Grounding on page 6.

CAUTION

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.

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

1. Close the fluid shut-off valve (A) at each dispense station. See 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. 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.
5. Repeat step 4 at all other dispense stations.
6. Relieve the pressure.

WARNING

Pressurized Equipment Hazard



To reduce the risk of serious injury, whenever you are instructed to relieve pressure, always follow the Pressure Relief Procedure on page 4.

CAUTION

Always ensure that the thread of the hose (or swivel) is compatible with the thread of the Accu-Shot dispenser.

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

Note: Make sure you let the sealant cure to the manufacturer's recommendations before the system is pressurized with grease.

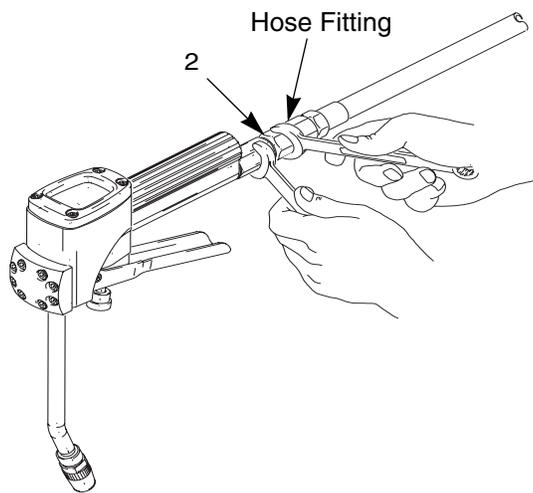


Fig. 2

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

Grounding

Proper grounding is an essential part of maintaining a safe system.

To reduce the risk of static sparking, ground all system components according to local and national electrical codes. 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 code.

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.

Grease Dispenser Components

KEY	DESCRIPTION See Fig. 3
A	Accu-Shot grease extension tube
B	Measurement and recording of grease delivered by internal oval gear metering chamber and control electronics
C	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
D	The valve grip contains the electronic power supply battery housing
E	Display
F	Hose connection fitting
G	Dispensing lever control knob

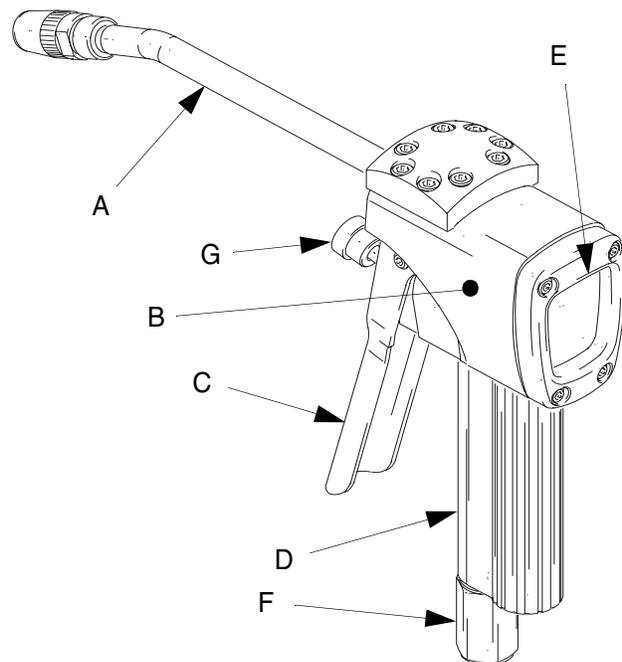


Fig. 3

Operation

Before Dispensing Grease

1. The partial delivery meter (A) must read zero. See Fig. 4. If the meter indicates a value other than zero, press the RESET Button (B).

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

Dispensing Grease

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

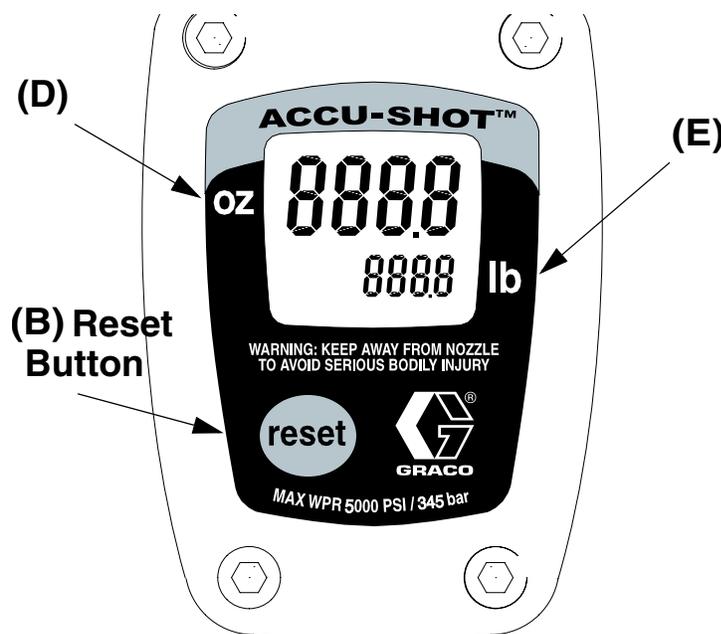
NOTE: During delivery the partial delivery meter (A) will indicate the amount of grease dispensed since the last time the RESET key (B) was pressed [in grams or ounces according to the model (D) and (E)]. The cumulative total delivery meter (C) (**not re-settable**) is also updated during delivery.

NOTE: Model 233933 displays grams and kilograms.
(decimal point is not displayed)

Model 233807 displays ounces and pounds.

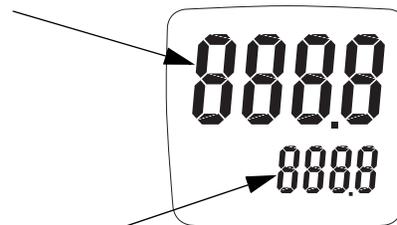
After Dispensing Grease

1. Tighten the dispense lever safety lock.



Model 233807 Shown

(A) Partial delivery total zero-settable



(C) Cumulative total (not zero-settable)

Fig. 4 _____

Troubleshooting Chart

Problem	Cause	Solution
LCD fades or disappears.	Batteries are low.	Replace. See Battery Replacement Procedure.
Display does not activate.	Batteries are defective or dead.	Replace. See Battery Replacement Procedure.
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 9.

Service

Battery Replacement


WARNING

Pressurized Equipment Hazard

To reduce the risk of serious injury, including splashing in the eyes or on the skin or injury from moving parts, follow the “Before Dispensing Grease” on page 7 before checking or servicing the equipment and whenever you are instructed to relieve the pressure.

CAUTION

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). See Fig. 5.
3. Remove the old batteries (28).
4. Insert the new batteries (28) with polarity as shown.
5. Replace the battery cap (34). Ensure that the gasket (32) and tapered spring (31) are correctly positioned.

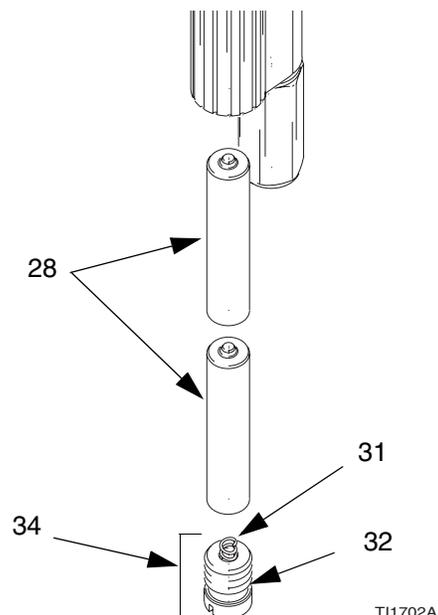


Fig. 5

TI1702A

Cleaning the metering chamber

WARNING

Pressurized Equipment Hazard

 To reduce the risk of serious injury, including splashing in the eyes or on the skin or injury from moving parts, follow the "Pressure Relief Procedure" on page 4 before checking or servicing the equipment and whenever you are instructed to relieve the pressure.

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. Unscrew the eight cover fastening screws (1) and slide out the washers (2). See Fig. 6.
2. Remove the cover (3) and o-ring (7).
3. Remove the two oval gears (5).
4. Clean gears and internal fluid section. Use a brush or a pointed object for this operation. Be careful not to damage the body or the gears.
5. Replace the two oval gears (5)

CAUTION

Only one of the gears has magnets. It must be re-installed with magnets facing the Accu-Shot body as shown in Fig. 6. Fit the second gear (without magnets) with its largest axis at right angles to the first gear. Torque to 10 Nm (7.38 ft.- lbs).

6. Replace the o-ring (7) and cover (3).
7. Replace the washers (2) and cover fastening screws (1). Torque to 10 Nm (7.38 ft.- lbs).

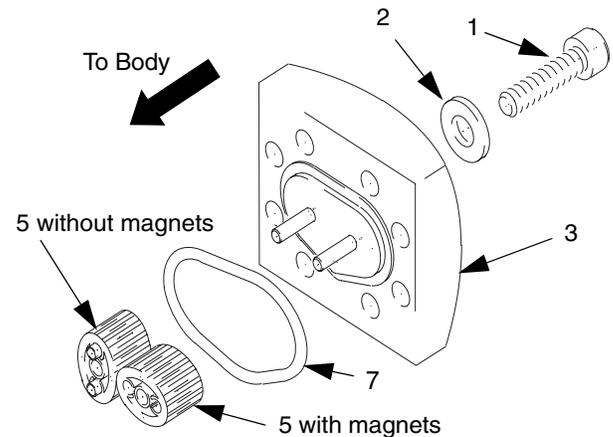


Fig. 6

6. Using a small screwdriver, 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, 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.

7. Clean all the valve components, removing all 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.

8. 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 chamfer 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 20-22 Nm., (14.75 - 16.23 ft.- lbs)

9. 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 screws (21) to .45-.68 Nm (4-6 in. lbs.).

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

CAUTION

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

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

11. Fit the plate gasket (26), the plate (25) and the housing (24) along with the screws (23).

12. 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 overall dimensions drawing on page 14, tighten the nut (40). See Fig. 7.

13. Insert the batteries (28) into the battery compartment on the handle (29) following the "Battery Replacement" procedure described on page 8 and the diagram in Fig. 5.

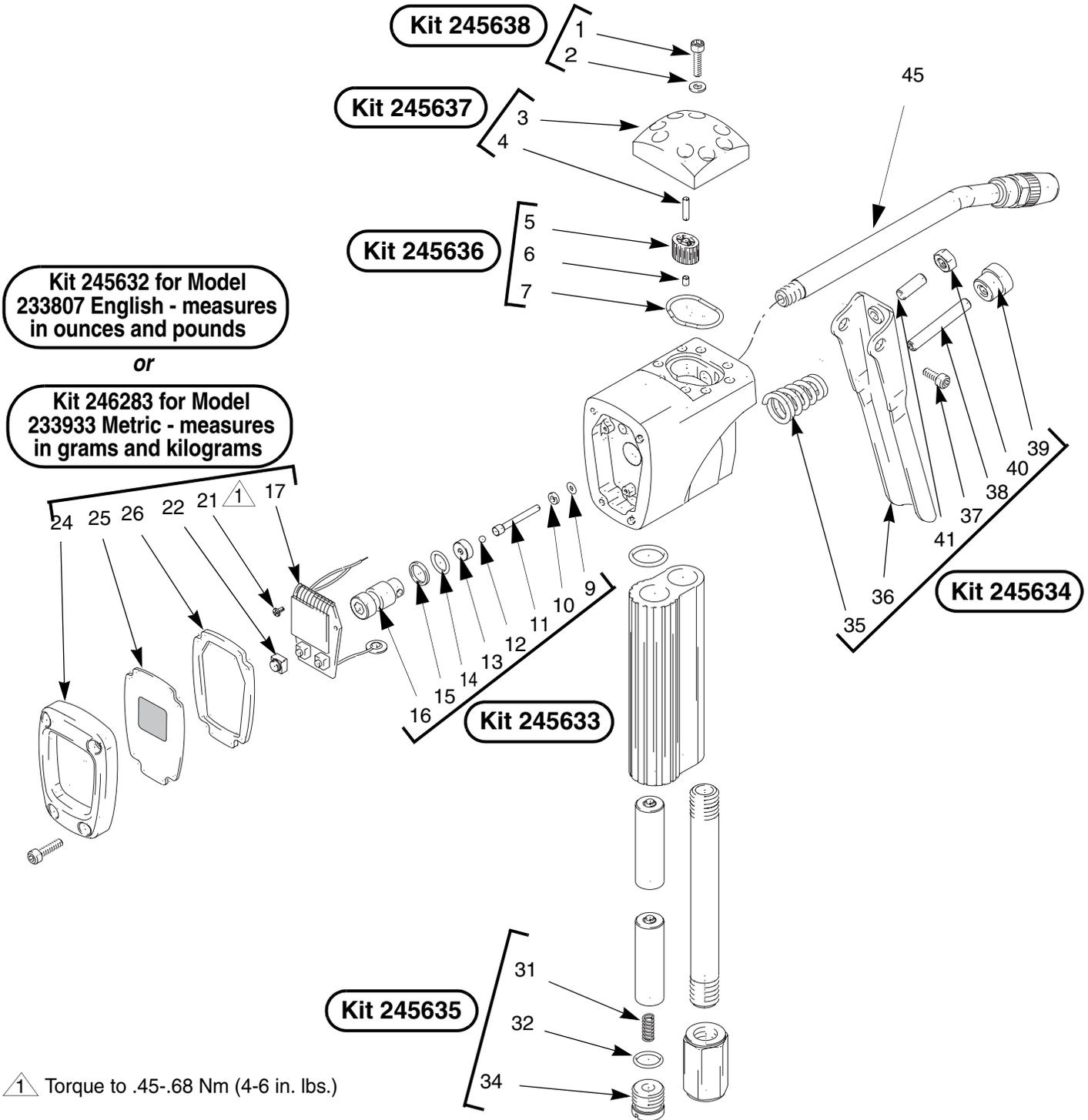
14. Tighten the battery cap (34) complete with o-ring (32) and spring (31).

15. Press the RESET button to re-activate the Accu-Shot and check that the LCD comes on.

Parts

Model 233807 Accu-Shot Grease Dispenser (English - measures in ounces and pounds)

Model 233933 Accu-Shot Grease Dispenser (Metric - measures in grams and kilograms)



Parts List

Individual replacement parts for the Accu-Shot are not available with the exception of part no. 200389. When ordering replacement parts order kits from those listed below. Replacement parts not listed in any of the kits are not available.

CAUTION

Maintenance must be performed by authorized personnel who have read and understood this manual. When replacing damaged parts always use original spare parts to guarantee perfect operation.

Individual Parts

Ref. No.	Part No.	Description	Qty.
45	200389	ADAPTER, hydraulic	1

Kit No. 245635 Battery Repair Plug Kit

Item No.	Description	Qty.
31	SPRING, battery cap	1
32	O-ring, 2043 Ø 10.82X1.78	1
34	CAP, battery	1

Kit No. 245632, Electronic, English Repl. Kit

Item No.	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. 245636, Oval Gear Repair Kit

Item No.	Description	Qty.
5	GEAR, oval, 13.9X9.98X10	2
6	MAGNET, Ø 3X4	2
7	O-RING, 2100 025. 12X1.78	1

Kit No. 245633, Valve Kit

Item No.	Description	Qty.
9	RING, retaining BU 5X9 X 3X1.4 PTFE	1
10	O-RING, 2012 Ø 2.9X1.78 90SH	1
11	PINS, valve	1
12	BALL, Ø 1/8"	1
13	SEAT, valve	1
14	O-RING, 2037 Ø 9.25X1.78 90SH	1
15	RING, retaining BG 12.5X9.9X1.4 PTFE	1
16	PLUG, valve	1

Kit No. 245637, Cover Repair Kit

Item No.	Description	Qty.
3	COVER, machined	1
4	PINS, oval gear (pins are pressed into Item No. 3)	2

Kit No. 245638, Cover Screws Repair Kit

Item No.	Description	Qty.
1	SCREW, UNI 5931 TCEI M5X20 8.8ZN	8
2	WASHER, 10X5X1 ZN	8

Kit No. 245634, Trigger Kit

Item No.	Description	Qty.
35	LEVER, spring	1
36	LEVER	1
37	SCREW, UNI 5931 M4X10 stainless steel	2
38	SCREW, UNI 5923 M6X40	1
39	KNOB, M6X Ø 17X15 female	1
40	NUT, UNI 5588 M6 ZN	1
41	SCREW, set screw UNI 5923 M6X16	1

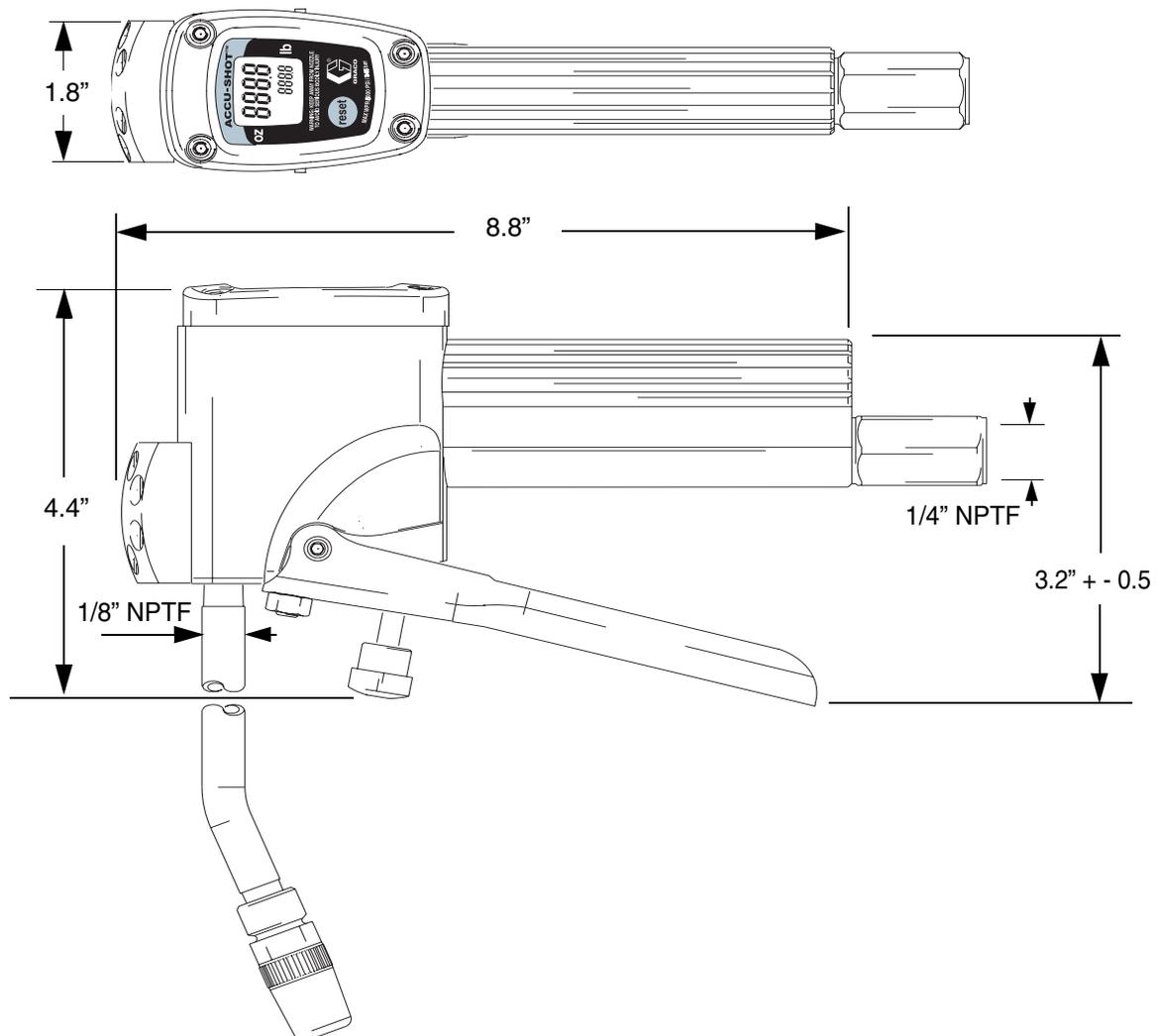
Kit No. 246283, Electronic, Metric Repl. Kit

Item No.	Description	Qty.
17	ELECTRONICS	1
21	SCREW	3
22	SPACER, key	1
24	HOUSING	1
25	PLATE, LCD	1
26	GASKET, plate	1

Technical Specifications

Maximum Working Pressure	5000 psi / 345 bar
Storage Temperature (range)	(-4 +158°F) (-20 + 70°C)
Storage Humidity (Maximum)	95 (%RU)
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 NLG) 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 lb / 1.0 kg

Dimensions



Graco Warranty

Graco warrants all equipment 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 or two thousand hours of operation from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. However, any deficiency in the barrel, handle, trigger, hook, internal power supply, and alternator (excluding turbine bearings) will be repaired or replaced for thirty-six months or six thousand hours of operation from the date of sale. 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.

FOR GRACO CANADA CUSTOMERS

The parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Phone Numbers

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:

1-800-533-9655 Toll Free

612-623-6928

612-378-3590 Fax

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.

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