

# Digital Grease Meter

## DGM/2

### Congratulations on purchase of this World Class Digital Grease Meter !

- High accuracy digital grease meter to measure exact amount of grease dispensed.
- Oval gear mechanism to offer high precision & low pressure losses.
- Features a non-volatile memory for storing the dispensing data even in the event of a complete power break for long periods.
- Electronic card with microprocessor permits control of the display and calibration of the meter.



### SPECIFICATIONS

Meter	Digital
Meter Mechanism	Oval gear
Grease flow	0.1 to 2.5 kg / minute or 0.20 to 0.55 lbs / minute
Inlet / Outlet Threads	1/8" NPT (F)
Max. Working Pressure	8000 PSI
Unit of measurement	Kg / lbs
Accuracy	+/- 3 %
Resettable Batch Total	9,999 gms / lbs
Cumulative Totalizer	99999.9 kg / lbs
Battery type	2 X 1.5 V Size 1N

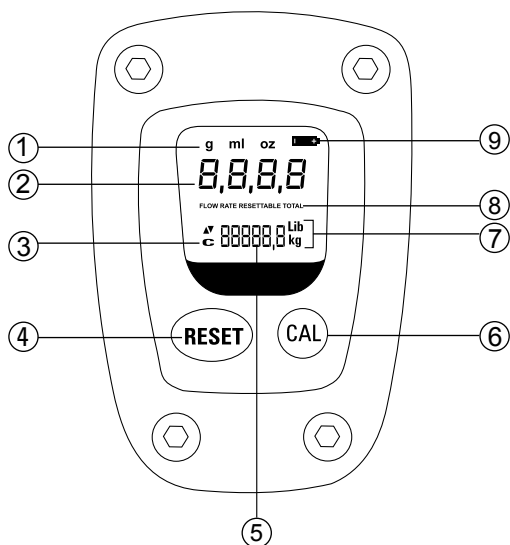
# KNOW YOUR GREASE METER

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- A. LCD
- B. Working of Grease Meter
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## A. LCD (LIQUID CRYSTAL DISPLAY)

1. Unit of measurement for batch total in grams / lbs
2. Batch total - (4 digits with moving comma), indicates quantity dispensed from the moment reset button was last pressed.
3. Calibration mode – indicated by letter c in lower left corner
4. Reset button – used to reset batch total & resettable total to zero.
5. Totals - (6 figures with moving comma) indicate two different totals :
  - “RESETTABLE total”
  - “Total” - general total that cannot be reset.
6. Calibration button – used to enter calibration mode.
7. Unit of measurement for totals – shows total quantity of dispensed grease in kilograms .
8. Name of current total - (either “resettable total” or “total”)
9. Battery charge indicator.



## B. WORKING OF GREASE METER

The meter has a measuring chamber that contains two oval gears which rotate when grease passes through them. They generate electric impulses which are detected and processed by a microprocessor.

The total weight of dispensed grease is calculated by the number of gear rotations.

The measuring chamber is sealed and the magnetic pulses are transmitted to the microprocessor.

The microprocessor transforms the pulses into the weight of

grease after applying a calibration factor and the result is displayed on liquid crystal display (Lcd).



## C. INSTALLATION

The meter features a 1/8 inch inlet and outlet, threaded and perpendicular, for direct in-line installation on the tube or control nozzle for grease delivery.

### DAILY USE

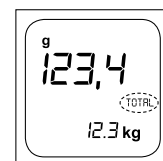
The Meter is delivered ready for use. No commissioning operations are required even after long storage periods. The meter can be used in the following three modes:

#### I. NORMAL DISPENSING MODE

1. When the grease flows through the meter, the batch total and resettable total are displayed at the same time.

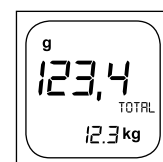


2. Standby mode: A few seconds after dispensing has ended, the word resettable total disappears, and the word total replaces it. This situation is called standby and remains stable until the dispensing starts again.

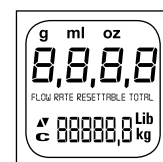


#### II. RESETTING THE BATCH TOTAL

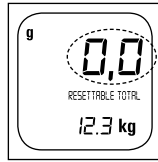
1. In Standby Mode (I.E. When The Display Screen Shows The Word “Total”), Press The Reset Key To Set Batch Total To Zero.



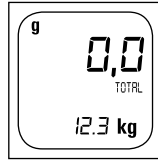
2. During Reset, The Display Screen First Of All Shows All The Switched-On Segments Followed By All The Switched-Off Segments.



- At The End Of The Process, The Display First Shows The Reset Batch Total And Resettable Total.

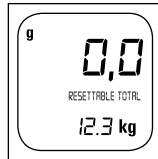


- After A Few Moments, The Meter Comes Back To Standby Mode.

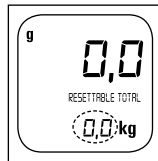


### III. RESETTING THE RESETTABLE TOTAL

- In standby mode, press the reset key quickly.
- The meter starts to reset the batch total.
- With the display showing the resettable total, press reset for at least 2 seconds.



- The meter again displays all the switched-on segments followed by all the switched-off segments. The display shows new resettable total.



## D. CALIBRATION

The meter is calibrated at factory under following standard conditions :-

Grease	= NLGI Grade 2/3
Temperature	= 68°F (20°C)
Flow rate	= 0.10 - 2.5 Kg / minute or 0.2 - 0.55 lbs / minute

**Under actual operating conditions, the meter needs a field calibration to give accurate reading.**

Two procedures are available for changing the Calibration Factor:

- Field calibration
- Direct calibration

#### Note

In calibration mode, the meter cannot be used to dispense grease & the totals are not increased.

#### How to enter calibration mode

In standby mode, press cal key for more than 2 seconds. The display shows "c" & the current calibration factor (fact / user) as given below :-

If no change has been made in the factory calibration factor or this factor has been restored, the meter displays the word "fact". It means that the factory calibration factor (equal to 1 but indicated as 1,000) is being used.

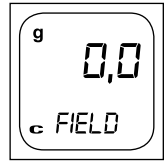


If calibrations have been made by the user, the meter will display the word "user". It means that the meter is using a modified user calibration factor (in our example 1.008).

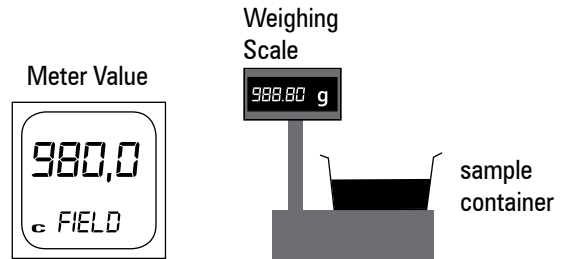


#### Field Calibration

- Enter the calibration mode & press reset key for more than 2 seconds. The meter displays "field" and the batch total at zero.



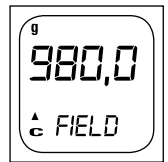
- Take a sample container of capacity not less than 5 kg. Start dispensing into it by pressing the trigger. Continue dispensing until the grease reaches a desired area of the container.



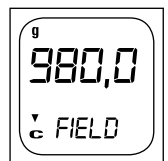
#### Note

- Use a precision balance with least count 0.01 gms .
- Completely remove air from the system before calibrating.
- Do not dispense more than 999.9 gms in order to keep a least count of 0.1 gms.
- Do not adjust the trigger to reach a preset quantity. Use small top-ups in the final stages of dispensing.

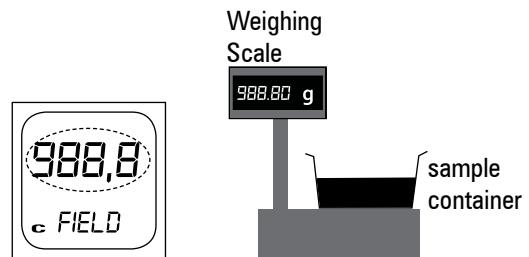
- Press reset key once to inform the meter that the sample dispensing is finished.



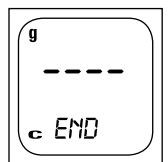
- For calibration, meter value must be forced to match the container value. Press reset key to change the direction of increase / decrease (indicated by up/down arrow).



- Press cal key to change the meter value in the direction indicated by the arrow. Keep the cal key pressed to continuously change the reading.



- Make sure that the meter value has matched the container value. Press reset key for more than 2 seconds. It informs the meter that the calibration procedure is finished.



- The meter displays the user calibration factor for a few seconds.



8. The meter stores the user calibration factor & comes back to standby mode. It is now ready for use.



### Direct Calibration

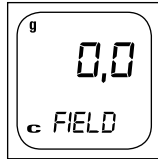
If normal Meter operation shows a mean percentage error (E %), directly correct the User Calibration Factor in the following way:

$$\text{Correct User Calibration Factor} = \text{Old CAL Factor} \times \left( \frac{100 - E\%}{100} \right)$$

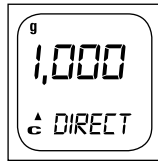
$$\begin{aligned} \text{New User Calibration Factor} &= 1,000 \times [ (100 - (-0,9)) / 100 ] \\ &= 1,000 \times [ (100 + 0,9) / 100 ] \\ &= 1.009 \end{aligned}$$

- If Meter indicates less than the real dispensed value (negative error) the new calibration factor must be higher than the old one.
- If Meter shows more than the real dispensed value (positive error), the new calibration factor must be lower than the old one.

1. Enter the calibration mode & press reset key for more than 2 seconds. The meter displays "field" and the batch total at zero.



2. Press reset key for more than 2 seconds. The meter displays "direct" together with the current calibration factor. The lower left corner of the display shows an arrow (up or down) that indicates the direction in which the factor will change (increase or decrease).



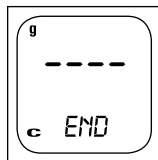
3. The user can press reset key to alternate the direction of the arrow.



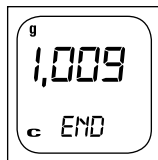
4. Press cal key to change the meter value in the direction indicated by the arrow. Keep the cal key pressed to continuously change the reading. If the desired value is exceeded, repeat the operation from step 3.



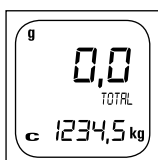
5. Make sure that the meter value is as required. Press reset key for more than 2 seconds. It informs the meter that the calibration procedure is finished.



6. The meter displays the new calibration factor for a few seconds.



7. The meter stores the new calibration factor & comes back to standby mode. It is now ready for use.



## E. MAINTENANCE

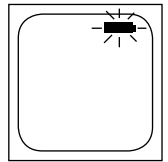
The Meter has been designed to require a minimum amount of maintenance. The only maintenance jobs required are :

- Replacing the batteries
  - Cleaning the measuring chamber
1. Press reset to update all the totals.
  2. Unscrew the battery plug with tapered spring (4).
  3. Remove the old batteries.
  4. Place the new batteries in the same position as the old ones, making sure the positive pole is positioned as indicated alongside.
  5. Retighten the battery plug, making sure the tapered spring is correctly positioned.
  6. The meter will switch on automatically and normal operation can be resumed. No new calibration is needed.

### Note

The meter features two low-battery alarm levels:

- When the battery charge falls below the first level, a fixed battery symbol appears on upper right corner of LCD. The meter keeps on operating correctly, but the battery icon warns the user to change the batteries.
- On ignoring the first alarm, the second battery alarm will flash on LCD and stays alone on the display. The meter will not operate until the user replaces the batteries.



### Cleaning the measuring chamber

Refer to the exploded view (See Page No. 5)

1. Remove the meter from grease control nozzle or the tube used for grease delivery.
2. Remove the eight allen bolts anticlockwise with allen key (size 4) in a diagonal sequence as shown in the picture.



3. Refer to the Meter Internals Separate the lower cover (1) from grease meter body (6).



Grease Meter Body

4. Carefully remove the gasket (3).



Gasket

5. Take out the oval gears (2).

Gear with Magnets

Gear without Magnets



6. Clean the measuring chamber with a brush or pointed object such as a small screwdriver.

Measuring Chamber



7. To reassemble the meter, follow the above steps in reverse order, paying attention to:

- Install the oval gears at right angle to each other as shown in the image. Also, ensure that the gears are moving freely before closing the lower cover (1).



- Protect & install the magnetic gear properly.
- Tighten the allen bolts of the lower cover diagonally at a torque of 10 Nm. Do not over tighten.

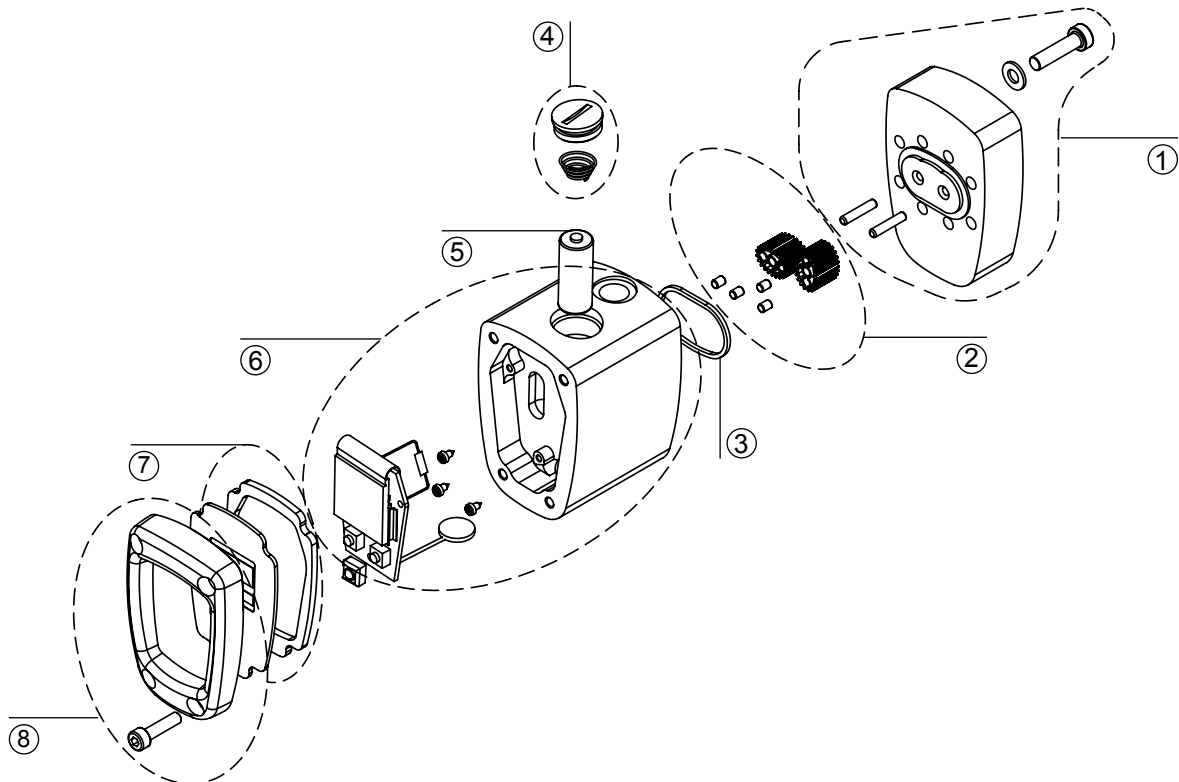
**! WARNING**

- Before opening the measuring chamber, make sure the supply line is not pressurized.
- It is important that grease flowing into the meter is clean. Make sure that grease pump has a filter at its inlet.

**WETTED COMPONENTS**

Aluminum, stainless steel, nitrile rubber, POM

**F. EXPLODED VIEW FOR DIGITAL GREASE METER**



REFERENCE NUMBER	DESCRIPTION	QUANTITY
1	Lower Cover	1
2	Oval Gears	1
3	Gasket	1
4	Battery Plug ith Tapered Spring	1
5	Battery	2
6	Grease Meter Body	1
7	LCD Plate	1
8	Frame Cover with Allen Bolts Size 3	4

## G. TROUBLESHOOTING


PROBLEM	POSSIBLE CAUSE	SOLUTION
No indications on lcd	Low / discharged battery	Replace the batteries
Inaccurate measurement	<ol style="list-style-type: none"> <li>Meter loses calibration</li> <li>Pump sucks in grease and air</li> </ol>	<ol style="list-style-type: none"> <li>Recalibrate as given in calibration (See Page No. 3)</li> <li>Rectify the pump leakage</li> </ol>
Reduced or zero flow rate	Oval gears blocked	Clean the measuring chamber. See maintenance (See Page No. 4)
Meter does not count, but the flow rate is correct	<ol style="list-style-type: none"> <li>Incorrect installation of oval gears (2) after cleaning</li> <li>Possible electronic board problems</li> </ol>	<ol style="list-style-type: none"> <li>Reassemble the meter. See maintenance (See Page No. 4)</li> <li>Contact your dealer</li> </ol>
Indication err xx yy, after reset + cal pressing	Problem of memorization of dates	<ol style="list-style-type: none"> <li>Deliver/meter a small quantity</li> <li>Wait for 2 seconds &amp; press reset</li> <li>Press reset + cal together</li> <li>Should the same error be displayed, contact your supplier</li> </ol>



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