KOBOLD

Operations Guide for
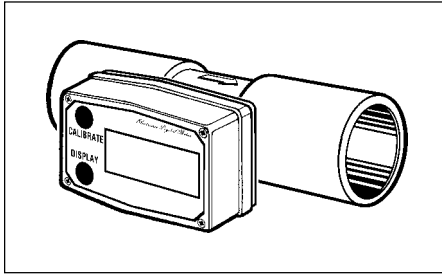# EDM Electronic Water Meters

CE

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E N G L I S H

IMPORTANT NOTICE

Use EDM Series meters with water and other chemicals compatible with wetted components (see Specifications Section). Do not use to meter fuel or chemicals. EDM Series meters measure in gallons or litres. Refer to the Calibration Section for details.

These meters are not legal for trade applications.

EDM Series meters are very sensitive to electric noise if operated within one to two inches of some electric motors or other sources of electronic noise.

INSTALLATION

Install your meter in-line either horizontally or vertically or at the end of the hose adjacent to the nozzle. Installation to metal connections is not recommended. Install as follows:

1. Plan to install turbine with a minimum straight pipe length as follows:
   – Upstream from the turbine, allow a minimum straight pipe length of 10 times the internal diameter of the turbine.
   – Downstream from the turbine, allow a minimum straight pipe length of 5 times the internal diameter of the turbine.

2. For Soc Fittings use only primer and solvents approved for PVC gluing.
   For NPT Fittings wrap all connections with 3 to 4 wraps of PTFE tape. Make sure the tape does not intrude into the flow path.

3. Attach meter with arrow pointed in the direction of flow.

4. For NPT Fittings - Hand tighten the meter at the housing ends. Do no use a wrench or similar tool to tighten. This can damage the housing.

Verify Meter Accuracy

Before using, check the meter's accuracy and verify calibration.

1. Make sure there is no air in the system by starting the flow until it runs steadily. Then, stop the flow using a valve or nozzle.

2. If desired, hold down DISPLAY for 3 seconds to zero the meter's Batch Total. When zeros appear, release the button.

3. Meter an exact known volume into an accurate container. For best results, meter with one continuous full stream.

4. Check the readout. If the amount metered is accurate, field calibration is not necessary. If not, refer to the Calibration Section for further instructions.

Batch and Cumulative Totals

The meter maintains two totals. The Cumulative Total provides continuous measurement and cannot be manually reset. The Batch Total can be reset to measure flow during a single use. The Cumulative Total is labeled with TOTAL 1 LOCKED indicating that this total is locked and cannot be manually zeroed. Batch Total is labeled with TOTAL 2.

When the Cumulative Total reaches a maximum reading of 999,999, it will automatically reset to zero.

Press the DISPLAY button briefly to switch between the batch, cumulative total, and flowrate.

NOTE: Totalization counts total units without differentiating between gallons, litres or field calibrated units.

Flowrate Feature

When this feature is activated, the word FLOWRATE displays to the left on the bottom line.

When FLOWRATE is displayed, the numbers on the middle line reflect the rate of flow, for example, the current gallons per minute (GPM) or litres per minute (LPM).

Display FLOWRATE

To use this feature, press and release DISPLAY until FLOWRATE appears to the left of the bottom line.

Activate the Meter

Turn the meter ON by starting water flow or briefly pressing the DISPLAY button. The meter will display the Batch or Cumulative Total from last use.

Press DISPLAY briefly to display the Batch Total. Hold the DISPLAY button down for 3 seconds to reset the Batch Total to zero.

The meter is programmed to turn off automatically if not used for 4 minutes.

Factory and Field Calibration Curves

All calibration information is visible to the user as words in the upper part of the display, above the numeric digits.

All units are configured with a "factory" calibration curve. Both gallons and litres are available ("GAL" or "LTR" will be displayed). Use the CALIBRATE and DISPLAY buttons to switch between gallons and litres. This curve is NOT user adjustable: the word "PRESET" is displayed to show this. (The factory calibration is stored permanently in the computer's memory.)

The "field" calibration curve may be set by the user, and can be changed or modified at any time using the calibration procedure described below in the Calibration Section. Totals or flowrate derived from the field calibration are visible when the field calibration setting is selected ("CAL B" will be visible on the top line).

Selecting a Different Calibration Setting

You can switch between GAL and LTR modes at will without "corrupting" totalizer contents. For example, the computer can totalize 10.00 gallons. If the user switches to LTR mode, the display will immediately change to "37.85 the same amount in units of litres). GAL / LTR switching also works in FLOWRATE mode.

To select a different calibration setting, first press and hold the CALIBRATE button. Continue to hold it while also pressing and releasing the DISPLAY button. (You may then also release the CALIBRATE button.) The flag indicators in the top line of the display will change to show the newly selected calibration setting. Calibration settings change in this order: GAL, LTR, CAL B, GAL, etc. While fluid is flowing, only the GAL and LTR selections may be made. However, when NO fluid flow is occurring, any setting may be selected.

Field Calibration

Factory calibration settings are custom-programmed into each flowmeter during production, using water at 70°F (21°C). Readings using the standard factory calibration curves may not be accurate in some situations – for example, under extreme temperature conditions.

You can field calibrate the meter if you are using fluids other than water.

For improved accuracy under such conditions, the Kobold flow computer allows for "field" calibration, that is, user entry of custom calibration parameters. A "single point" calibration may yield acceptable accuracy in the middle of the flow range, but 5 or more calibration points may yield a higher level of accuracy, especially at the lower end of the flow range. Up to 15 custom calibration points can be entered.

The use of a uniformly dependable, accurate calibration container is highly recommended for the most accurate results. Due to high flowrate, it is strongly recommended that Field Calibration be completed with a combination of volume and weight using fine resolution scales.

Before Beginning Field Calibration

For the most accurate results, dispense at a flowrate which best simulates your actual operating conditions. Avoid "dribbling" more fluid or repeatedly starting and stopping the flow – these actions will result in less accurate calibrations.

Make sure you meet the meter's minimum flowrate requirements:

EDM Series Meters

1/2 inch meter	1 GPM (3.8 LPM)
3/4 inch meter	2 GPM (7.5 LPM)
1 inch meter	5 GPM (18.8 LPM)
1-1/2 inch meter	10 GPM (37.85 LPM)
2 inch meter	20 GPM (75 LPM)

For best results, the meter should be installed and purged of air before field calibration.

Dispense/Display Field Calibration Procedures

1. Hold down CALIBRATE while pressing and releasing DISPLAY until the field calibration curve appears ("CAL B" message will be displayed). Release both buttons.

2. To calibrate, press and hold the CALIBRATE button. While continuing to hold CALIBRATE, also press and hold the DISPLAY button. Hold both buttons for about 3 seconds until you see a blinking "dd CAL" message. Once the "dd CAL" message appears, release both buttons. You are now in field calibration mode.

3. Once the buttons have been released from Step 2, the display will show the blinking message "run 01". If you want to exit the calibration now before dispensing any fluid, go to Step 11.

4. If you want to continue with the calibration, but have not dispensed any fluid yet, make your final preparations to your pumping system, but don't start pumping yet.

5. Start your pumping system so that fluid flows through the meter. The display will stop blinking and show the "run 01" message. Dispense into a container that allows you to judge the amount of fluid pumped. When you have pumped the desired amount (for example, 10 gallons), stop the fluid flow quickly.

6. Once the flow has stopped, briefly press and release both buttons. At this point the computer display will change to "0000.00" with the left-hand digit blinking.

7. Enter the volume (amount) of fluid that you dispensed (for example, if your 10-gallon container is full, enter "10.0" for gallons or "37.85" for litres). To enter numbers, use the CALIBRATE button to change the value of the digit that is blinking and use the DISPLAY button to shift the "blink" to the next digit.

8. Once the correct number is entered, briefly press and release both buttons. The display will now change to a blinking "run 02" message. You have installed the new cal-curve point. You are ready to end calibration (Step 10) or enter another new calibration point (Step 9).

9. To enter another calibration point, go back and repeat Steps 3 through 8. It is possible to set up to 15 cal-curve points, and the "run ##" message will increment each time you repeat the calibration process (run 01, run 02, run 03, etc., up to run 15).

10. To end calibration, press and hold both buttons for about 3 seconds until you see the "CAL End" message. After you release the buttons the computer will resume normal operations with the new cal point(s) active.

11. If you HAVE NOT dispensed any fluid, you can exit calibration without changing the cal curve. If the message "run 01" is showing and you have not dispensed any fluid, hold both buttons for about 3 seconds until you see a "CAL End" message. After you release the buttons, the computer will resume normal operation and the old curve (if you entered one in the past) is still intact.

MAINTENANCE

Proper handling and care will extend the life and service of the meter.

Turbine Rotor

The meter is virtually maintenance-free. However, it is important the rotor moves freely. Keep the meter clean and free of contaminants.

If the rotor does not turn freely, apply a penetrating lubricant on the rotor, shaft, and bearings. Remove any debris or deposits from the rotor using a soft brush or small probe. Be careful not to damage the turbine rotor or supports.

⚠ !!! CAUTION !!!

Blowing compressed air through the turbine assembly could damage the rotor.

Battery Replacement

The meter is powered by two 3-volt lithium batteries which may be replaced while the meter is installed. When batteries are removed or lose power, the batch and cumulative totals reset to zero but the field and factory calibrations are retained.

If the meter display becomes dim or blank, replace the batteries as follows:

1. Remove the four Phillips-head screws from the face of the meter and lift the faceplate from the turbine.

2. Remove the old batteries and clean any corrosion from the terminals.

3. Install new batteries. Make sure the positive post is in the correct position.

4. When the batteries are replaced, the faceplate will power ON. Check the display to ensure normal functions have resumed before assembling again.

5. Reseat batteries, if necessary, and position the faceplate on the turbine housing. To avoid moisture damage, make sure the O-ring is fully seated. Tighten the four screws on the faceplate.

SPECIFICATIONS

Inlet and Outlet:

EDM-8501S	1/2" Schedule 40, Soc
EDM-8502S	3/4" Schedule 40, Soc
EDM-8503S	1" Schedule 40, Soc
EDM-8504S	1-1/2" Schedule 40, Soc
EDM-8505S	2" Schedule 40, Soc
EDM-8501N	1/2" NPT
EDM-8502N	3/4" NPT
EDM-8503N	1" NPT
EDM-8504N	1-1/2" NPT
EDM-8505N	2" NPT

Design Type: Turbine

Wetted Components:
Housing: PVC
Journal Bearings: Ceramic
Shaft: Tungsten Carbide
Rotor and Supports: PVDF
Retaining Washer: Stainless Steel

Fitting Types: Slip - Schedule 40 Soc or NPT

Max. Working Pressure: 150 PSIG @ 73°F

U.S. Measurement

Unit of Measure: Gallon

Flow Range:

1/2 inch	1 - 10 GPM
3/4 inch	2 - 20 GPM
1 inch	5 - 50 GPM
1-1/2 inch	10 - 100 GPM
2 inch	20 - 200 GPM

Accuracy: ± 3.0% (Accuracy can be improved with field calibration)

Operating Temperature:* +32° to +140° F

Storage Temperature: –40° to +158° F

Product Weight:

1/2 inch	.31 lbs.
3/4 inch	.38 lbs.
1 inch	.51 lbs.
1-1/2 inch	.81 lbs.
2 inch	1.14 lbs.

* Do not allow fluid to freeze inside meter.

Dimensions - inches (W x H x L):

1/2 inch	2 x 2.5 x 4.3
3/4 inch	2 x 2.7 x 5.3
1 inch	2 x 3 x 6
1-1/2 inch	2.3 x 3.6 x 7
2 inch	2.8 x 4.1 x 7.5

Metric Measurement

Unit of Measure: Litre

Flow Range:

1/2 inch	3.8 - 38 LPM
3/4 inch	7.6 - 76 LPM
1 inch	19 - 190 LPM
1-1/2 inch	38 - 380 LPM
2 inch	76 - 760 LPM

Accuracy: ± 3.0% (Accuracy can be improved with field calibration)

Operating Temperature: * 0° to +60° C

Storage Temperature: –40° to +70° C

Product Weight:

1/2 inch	.141 kg
3/4 inch	.173 kg
1 inch	.232 kg
1-1/2 inch	.368 kg
2 inch	.518 kg

Dimensions - cm (W x H x L):

1/2 inch	5.1 x 6.4 x 10.9
3/4 inch	5.1 x 6.9 x 13.5
1 inch	5.1 x 7.6 x 15.2
1-1/2 inch	5.8 x 9.1 x 17.8
2 inch	7.1 x 10.4 x 19.1

* Do not allow fluid to freeze inside meter.

PARTS

The following replacement parts and accessories are available for the EDM Series meters:
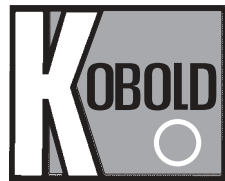
Part No.	Description
113520-1	Battery Replacement Kit
901002-52	O-Ring
125508-01	1/2 inch, Soc Turbine Assy Kit
125508-02	1/2 inch NPT, PVC Turbine Assy Kit
125510-01	3/4 inch, Soc Turbine Assy Kit
125510-02	3/4 inch NPT, PVC Turbine Assy Kit
125512-01	1 inch, Soc Turbine Assy Kit
125512-02	1 inch NPT, PVC Turbine Assy Kit
125514-01	1-1/2 inch, Soc Turbine Assy Kit
125514-02	1-1/2 inch NPT, PVC Turbine Assy Kit
125516-01	2 inch, Soc Turbine Assy Kit
125516-02	2 inch NPT, PVC Turbine Assy Kit

Computer Kits:

12550902	1/2 inch, Computer Assy Kit
12551102	3/4 inch, Computer Assy Kit
12551302	1 inch, Computer Assy Kit
12551502	1-1/2 inch, Computer Assy Kit
12551702	2 inch, Computer Assy Kit

SERVICE

For warranty consideration, contact your local distributor. If you need further assistance, contact the Kobold Customer Service Department:

412-788-2830

You will need to:

- Provide information from the decal on your meter.

- Receive a Return Authorization number.

- Flush any fluid from the meter before shipping to the factory.

- If possible leave customer installed fittings or ample length of bare pipe for reinstallation.

⚠ !!! CAUTION !!!

Do not return the meter without specific authority from the Kobold Customer Service Department. Due to strict regulations governing transportation, handling, and disposal of hazardous or flammable liquids, Kobold will not accept meters for rework unless they are completely free of liquid residue.

WEEE DIRECTIVE

The Waste Electrical and Electronic Equipment (WEEE) directive (2002/96/EC) was approved by the European Parliament and the Council of the European Union in 2003. This symbol indicates that this product contains electrical and electronic equipment that may include batteries, printed circuit boards, liquid crystal displays or other components that may be subject to local disposal regulations at your location. Please understand those regulations and dispose of this product in a responsible manner.