Adam Pumps

cabinets, meter, DC and AC pumps, accessories, repair kit

USE AND MAINTENANCE MANUAL

METER TECH FLOW 3C DR
METER TECH FLOW 4C DR

DIGITAL METER DI Flow

DIGITAL FLOW METER DI Flow - IN LINE



TECH FLOW 3C



DI FLOW (DIGITAL METER)



TECH FLOW 4C



DI FLOW (DIGITALFLOW METER)

INDEX

0. INTRODUCTION AND FOREWORD	**2**
0.1 INTRODUCTION	2
0.2 FOREWORD	2
GENERAL INSTRUCTIONS	2
PRECAUTIONS	2
INSTALLATION	2
TECHNICAL INFORMATION	2
DISCARDING AND RECYCLING	2
HARMFUL EMISSION	2
FIRE PREVENTION	2
1. MANUFACTURER IDENTIFICATION DATA	**3**
1.1 MACHINE DESCRIPTION	3
1.2 ALLOWED AND FORBIDDEN USE	3
1.3 TRANSPORT AND UNPACKING	3
2. USE AND STARTING	**3**
2.1 CONNECTION	3
2.2 STARTING	3
2.3 CALIBRATION	3
3. MAINTENANCE AND STORAGE	**3**
3.1 MAINTENANCE	3
3.2 STORAGE	3
3.3 OPERATIONAL PROBLEMS	3
4. SPARE PARTS LIST	**4**

EC COMPLIANCE STATEMENT

ADAM PUMPS SPA
Via della Resistenza, 46/48
41011 Campogalliano (Modena) - Italy
states, taking full responsibility, that the following meter models T.FLOW 3C - T.FLOW 4C - T.FLOW 3C DR comply with the Directive for Safety of Machinery: 2006/42/CEE 91/368/CEE, 93/44/CEE, 93/68/CEE 89/336/CEE 93/68CEE 73/23CEE and the specific EN 60529, EN 60204-1, EN 50081-2, EN 55011C/.A. .

This document has been signed by:
Mr. Bernard Gilson
Via della Resistenza, 46/48
41011 Campogalliano (Modena) - Italy
Phone +39 059 528128
Fax +39 059 528437
who has full legal authority to represent the firm in the European Community.

Dated, 01th of July, 2010.
ADAM PUMPS S.p.A.

This machine has been designed and built for INSTALLATION IN NORMAL WORKING CONDITIONS, according to CEI standards 17-13 / 6.1. This use and maintenance manual and related EC certification of compliance should be considered as part of the machine, if the machine is sold they must be handed down to new owner.



Questions?
Technical difficulties?

Don't worry!

CALL US!

ADAM PUMPS SPA
Via della Reistenza 46/48
41011 Campogalliano
(Modena) ITALY
phone +39.059.528.128
fax +39.059.528.437
info@adampumps.com
www.adampumps.com

0.INTRODUCTION AND FOREWORD

0.1 INTRODUCTION

This flow meter has been designed for measuring the transfer of diesel fuel.
It is not to be used to measure for resale purposes.

0.2 FOREWORD

GENERAL INSTRUCTION
This manual has been made to give the user a general knowledge about the equipment and the necessary maintenance and ope-ration instructions. Carefully read and understand this manual before starting installation, maintenance or repair. Maintenance schedules proposed in this manual are meant to be the minimal required for efficiency, safety and endurance of the equipment in normal operating conditions. Be observant for any type of malfunction or potential safety issue at all times. Disconnect electrical power before removing protective covers as prescribed by the Standard 292/2 Nov. 1992. for maintenance, repair and general lubrication by authorized personnel.

PRECAUTIONS
Improper use or installation of this product can cause serious bodily injury or death!
To ensure safe and efficient operation, it is necessary to read and follow each of these warnings and precautions:
- Do NOT smoke near meter or use meter near an open flame;
- This product should NOT be used for fluid transfer into aircraft;
- This product is NOT suited for use with fluids for human consumption.

INSTALLATION
Meter are furnished for standard horizontal piping, left to right flow, unless otherwise specified. Flow ports can be located in other positions using the following procedure:

1. Remove 4 screws assembles in the body of the meter;
2. Turn the body to desired direction of flow;
3. Install the 4 screws previously removed, making attention to the o-ring.

TECHNICAL INFORMATION
1. 1" BSP/G female inlet and outlet ports
2. Flow Rate recommended: 20 - 120 lpm (5-27 gpm)
3. Accuracy ± 1%
4. Maximum working pressure 3,5 bar (50 psi)
5. Meter fluid at temperatures from -26°C (-15°F) to 66°C(150°F)
6. Weatherproof exterior for long lasting durability
7. Easy to read totalizer registers to:
   999999 litres T.FLOW 3C
   99999999 litres T.FLOW 4C
8. Calibrated at 60 lpm with viscosity of fluid equal to diesel at ambient temperature :
   density = 832,5 kg/m^3
   dynamic viscosity = 2,7 cP (10^{-3} Pa/s)
9. Material of component wet of fluid :
   - POM (Polyoxymethylene)
   - NBR (Nitrile Rubber)
   - PPS (Polysulphide polymer)
   - Aluminium
   - Brass
   - Stainless steel

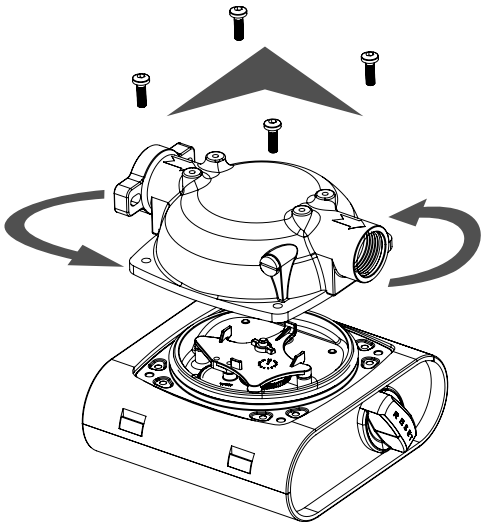
DISCARDING AND RECYCLING
The metallic parts must be separated and sent to appropriate metal recycling mills.
The fuels in the tanks of the installation will be collected and sent to an authorized disposer. All plastic and non-degradable material parts will be separately collected and sent to an authorized disposer or recycler.

HARMFUL EMISSIONS
Both steam emission and noise emission are negligible.

FIRE PREVENTION
In case of fire, never use water, but use extinguishing powders charged with CO_2 only. Extinguishers should be kept near to the meter. Combustion of paints and plastic parts may produce toxic emissions: use the normal precautions in case of fire (always refer to the security supervisor of the place of installation).

NOTICE: ANY MODIFICATION TO THIS METER WITHOUT "ADAM PUMPS" WRITTEN PERMISSION WILL VOID ANY GUARANTEE AND FREE "ADAM PUMPS" FROM ANY RESPONSIBILITY.

INSTALLATION



1. MANUFACTURER IDENTIFICATION DATA

Name and address of the manufacturer:
ADAM PUMPS SPA
Via della Resistenza 46/48
41011 Campogalliano (Modena) - Italy

Machine identification: Mechanical flow meter
Models: T.FLOW 3C - T.FLOW 4C - T.FLOW 3C DR

1.1 PRODUCT DESCRIPTION

The flow meter is a positive displacement meter, which shows the amount of fluid transferred through the meter via a mechanical display. It is able to display both the total amount of units registered, as well as amounts registered over a given interval (resettable). To reset the flow meter, turn the knob on the side of the unit until all zeroes are displayed.

1.2 ALLOWED AND PROHIBED USE

The meter can be use ONLY with the following fluids :

- Diesel fuel
- Kerosene (heating)
- Mineral spirits
- Anti-Freeze
- Very light oils : maximum kinematic viscosity = 300 cSt

It is NOT COMPATIBLE with any other fluid, notably with water, gasoline and hydrochloric acid.

If in doubt about the compatibility of a specific fluid, contact the supplier of fluid to check for any adverse reactions to the wetted materials in the parts list.

1.3 TRANSPORT AND UNPACKING

Due to its lightweight and compact design, the unit can easily be unpacked and transported by hand. Inspect the package and the product for damage. Report immediately any damage remediation.

2. USE AND STARTING

2.1 CONNECTION

When adding the flow meter to a existing system, connect the flow meter inlet to the outlet at of the pump, and connect the delivery hose into the flow meter outlet.

It is necessary, if not already installed in the system, to install a filter or screen of at least 40 mesh prior to the flow meter.

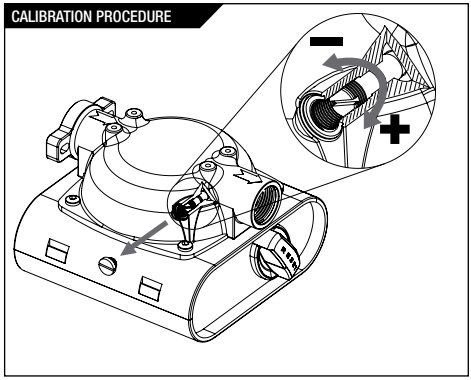
2.2 STARTING

For most accurate measurements, the flow meter and system must always be filled with liquid and purged of air. Meter should be calibrated with the instructions in this manual prior to it's use:

1. Reset meter to zero (turn the reset knob of the unit until all zeroes are displayed) ;
2. Meter is ready to use. DO NOT exceed 3,5 bar pressure.

2.3 CALIBRATION

The meter is supplied with a calibration carried out for liquid diesel at 20 °C. Calibration is required when metering a different fluid, after disassembly, at different temperature or after significant wear. A proving container or a container of KNOWN volume will be needed for the calibration procedure. It is recommended that the container volume be at least 19 liters (5 gallons).



Procedure for calibration

1. Fill container to a know volume;
2. If indicated amount on the flow meter does not match know volume, calibration is required. Insure pump power is off and system pressure relieved, then remove seal screw and turn calibration screw counter clockwise to reduce indicated amount or clockwise to increase the amount. A full turn will change the indicated amount by approximately 2 liters. Re-install seal screw;
3. Repeat step 2 until calibration is acceptable.

3. MAINTENANCE AND STORAGE

3.1 MAINTENANCE

Meter should operate maintenance free. However, certain liquids can dry out while in the meter housing, causing meter to become jammed. If this happens, meter should be thoroughly cleaned by flushing a cleansing solution through the flow meter. If the meter does not function after cleansing, disconnect and contact your local distributor to organize servicing the meter.

3.2 STORAGE

If meter is to be stored for a period of time, clean thoroughly prior to storage. This will help protect meter from damage.

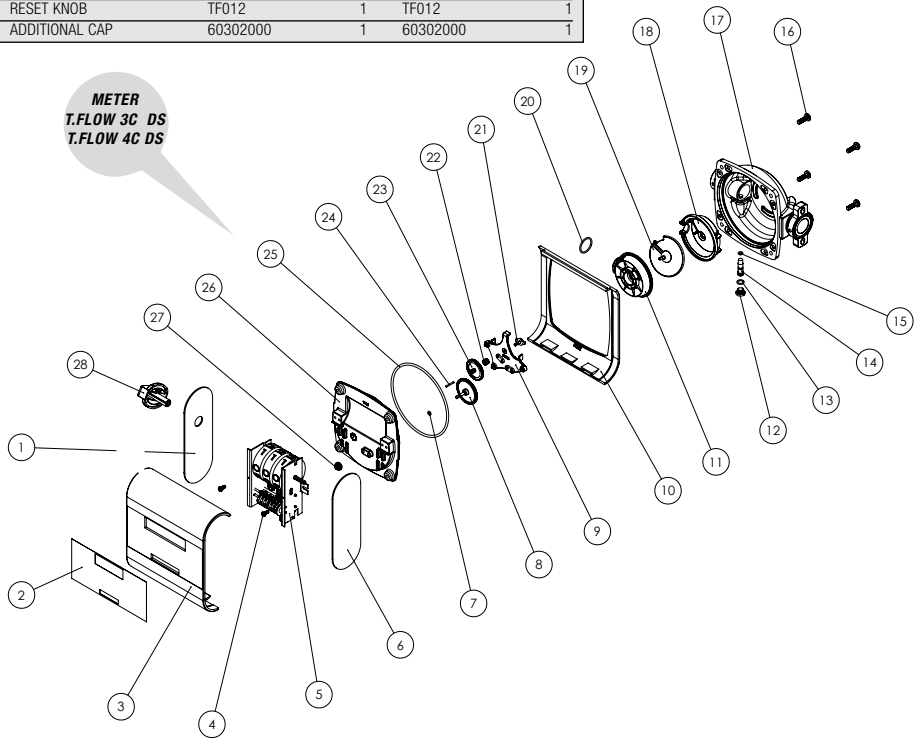
3.3 OPERATIONAL PROBLEMS

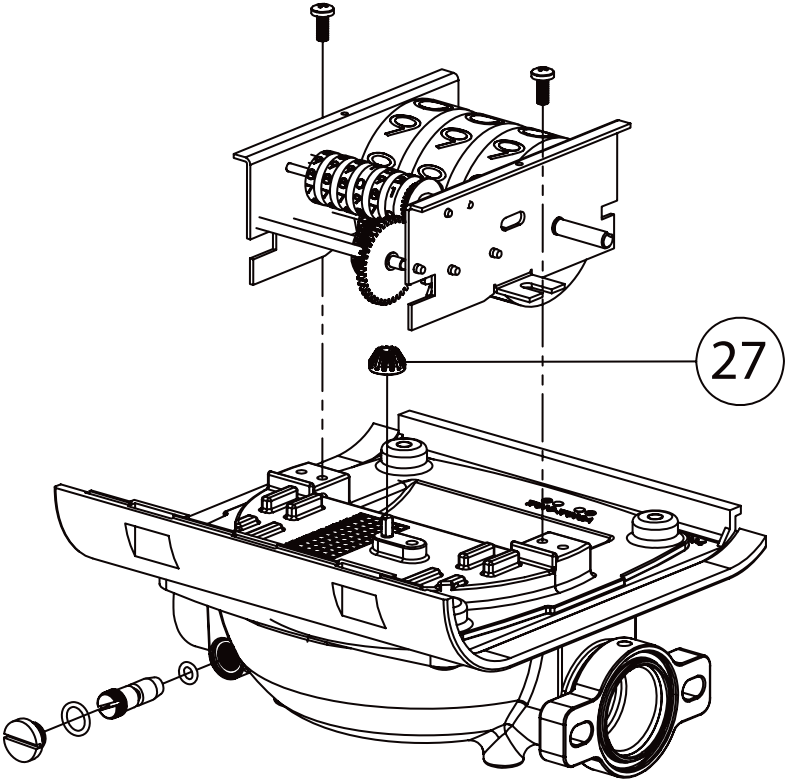
PROBLEM	POSSIBLE CAUSE	SOLUTION
The meter does not read	1.The register is blocked	Open the top cover and thoroughly clean the register with no-acid detergent solution
	2.Impurities in the measuring chamber	Disassemble the meter and thoroughly clean the measuring chamber
	3. The revolving disk is blocked	Disassemble the body meter and unblock the revolving disk
The meter does not reset	1.The reset knob isn't properly connected	Control that the reset knob is properly connected
	2.The register is broken	Return to place of purchase
The meter leakage	1.Gasket leakage	Substitute the gasket with original component
	2.Gasket not properly connected	Disassemble the meter and control that the gasket is properly installed

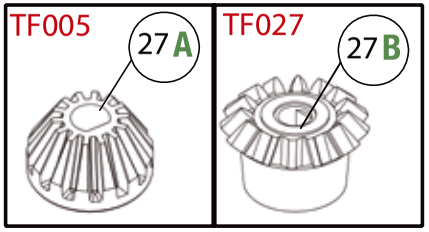
4. SPARE PART LIST

METER TECH FLOW

POS.	DESCRIPTION	3C DOUBLE RESET	QTY	4C DOUBLE RESET	QTY
1	SIDE COVER WITH HOLE	TF015	2	TF015	1
2	FACE PLATE	MA999	1	MA998	1
3	TOP COVER	TF003	1	TF003	1
4	SCREW M4 x 10	80901439100	2	80901439100	2
5	REGISTER	TF023	1	TF024	1
6	SIDE COVER WITHOUT HOLE	-	-	-	-
7	O-RING 2015 NBR	11010040200	1	11010040200	1
8	GEAR Ø45	TF007	1	TF007	1
9	GEAR SUPPORT	TF009	1	TF009	1
10	BOTTOM COVER	TF014	1	TF014	1
11	UPPER MEASURING CHAMBER	TF003	1	TF003	1
12	CALIBRATION CAP 1/8"	TF018	1	TF018	1
13	O-RING 108 NBR	11010100200	1	11010100200	1
14	CALIBRATION SCREW 1/8"	TF019	1	TF019	1
15	O-RING 2018 NBR	11010050200	1	11010050200	1
16	SCREW M6 x 20	VT001	4	VT001	4
17	BODY HOUSING	TF011	1	TF011	1
18	LOWER MEASURING CHAMBER	TF002	1	TF002	1
19	REVOLVING DISK	TF001	1	TF001	1
20	O-RING Ø24 x 2 NBR	OR001	1	OR001	1
21	PIN WITH LEVEL	TF008	1	TF008	1
22	SPUR GEAR	TF004	1	TF004	1
23	GEAR Ø36	TF006	1	TF006	1
24	ROLLER Ø2 x 17,8	60518000000	1	60518000000	1
25	O-RING 4500 NBR	OR002	1	OR002	1
26	COVER METER	TF010A	1	TF010A	1
27	BEVEL GEAR	TF027	1	TF005	1
28	RESET KNOB	TF012	1	TF012	1
*	ADDITIONAL CAP	60302000	1	60302000	1

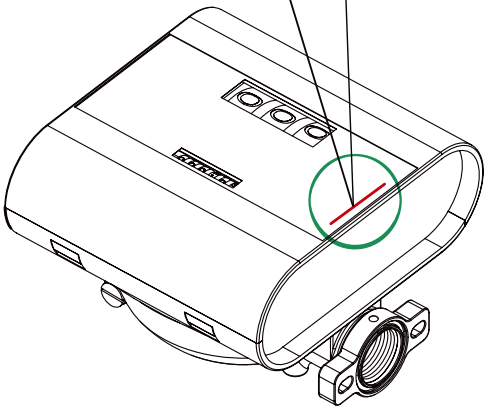






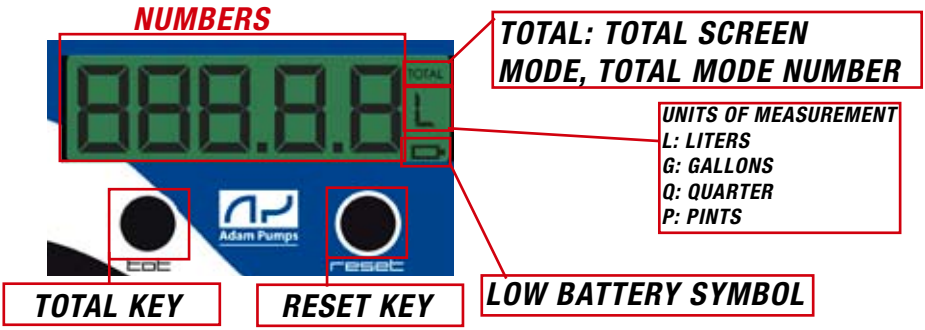
MAXXX-1
ingranaggio - gear **27B**

MAXXX-0
ingranaggio - gear **27A**



5. DI FLOW DIGITAL METER; DI FLOW IN-LINE DIGITAL FLOW METER

5.0 DISPLAY AND BUTTONS



The device turns on automatically when the product flow begins or by pressing the Reset button. The display will turn off automatically if no operation is performed or no signal is detected for 30 consecutive seconds.
There are three primary screens: the Normal Mode screen that contains the instant partial number, the Total Mode screen that contains the total number and Total Mode Number screen that contains the number of times the counter has completed a full cycle equal to 99999 ; there is a secondary screen Calibration Mode necessary to set the calibration parameters of the counter. Switching on the device could find itself in one of the 3 modes, press the Total button to loop between the 3 modes.

NORMAL MODE

fig. 1



Press the RESET button to zero the display and start a new transaction. If quantity is above 999,99, the decimal points moves one position and display shows 1000,0. Decimal will disappear for quantities above 9999

TOTAL MODE

fig. 2



Could be identified with the symbol TOTAL in corner top right and a number ranging between 0 and 256 on the display left side.
This number indicates the number of times the totalizer has reached 99999. This screen cannot be reset unless units of measure are modified (paragraph 5.2)

TOTAL MODE NUMBER

fig. 3



Could be identified with the symbol TOTAL in corner top right. This screen shows all volumes transferred by the device. Once 99999 is reached, system starts from 0 and increments the TOTAL MODE NUMBER. This screen cannot be reset unless units of measure are modified (paragraph 5.2)

NB: To know the total volume transferred, it is necessary to visualize the number on screen TOTAL MODE NUMBER and insert it in front of the number appearing on TOTAL MODE.

Ex: TOTAL MODE NUMBER: 4 TOTAL MODE : 65234 => Total volume = 465234

5.1 PRELIMINARY OPERATIONS

The meter should be set on first operation to choose the unit of measure to be used. Choice is between METRIC SYSTEM (Litres) or IMPERIAL SYSTEM (Gallons, Pints , Quarts) and proceed afterwards on calibration (Paragraph 5.4). The meter is factory settings in Litres; in case a change of units is needed refer to Paragraph 5.2. .
For everything related to: technical information, allowed and prohibited use, recycling and disposal, transport and unpacking, installation and operation, maintenance and storage, operational problems, if not specifically defined refer to what is written in previous chapters.

ATTENTION:
1. Modifying the unit of measure implies loosing some data in memory (calibration and totals), for this reason it is recommended to set unit of measure only on first use.
2. When changing unit of measure, it is also mandatory to redo the calibration.
3. Because of timed steps changing automatically, carefully read all the instruction sequence before starting the calibration procedure

5.2 MODIFYING UNIT SYSTEM (litre => Gallons, Pints, Quarts)

1. Press Total button till Total Mode is reached(fig. Z)
2. Press RESET button for 10 seconds. “0” will appear on display’s left side and unit of measure symbol on the right side.
3. Press again RESET button to confirm and go to phase 1.
4. Transfer a very small quantity of liquid to reach minimum 1 pulse on the display.
5. Press RESET button to go to next step (phase 2). ATTENTIONE: temporized phase.
6. Press TOTAL button to get a similar screen as step 2 until you get the unit desired. L = Litres, G = Gallons, P = Pints; Q = Quarts.
7. Confirm by pressing RESET button.
8. Proceed with calibration using procedure explained here under (Paragraph 5.4).

5.3 SELECTION OF IMPERIAL UNIT OF MEASURE

(litre, Gallons, Pints, Quarts)
If the device has been set on imperial units, i twill be possible at any moment to change the units between gallons, pints and quarts:
1. Go to screen TOTAL MODE pressing TOTAL button;
2. Press the TOTAL button till the unit changes to next one following sequence G,Q,P.

5.4 BATTERY CHANGE

The unit has a symbol showing a low battery. In case the symbol appears, you’ll need soon to change the batteries using the illustrated procedure. It is recommended to change batteries starting from switched off display to avoid any data corruption.

CALIBRATION

The calibration procedure is necessary: before the first operation, when metering a different fluid, after significant wear or use in different temperatures. For the procedure you will need a measuring gauge, preferably with centesimal scale; it is recommended that the container volume be at least 20 litres (5 gallons).

CAUTION: Because of timed steps changing automatically, carefully read all the instruction sequence before starting the calibration procedure

Enter in the Total Mode screen and press the reset button for 10 seconds to enter into the calibration procedure (the first number on the left indicates the procedure step number):

0. Setting the unit (only at first calibration): press the Total button to proceed within the loop of units of measure; press the Reset button to proceed to the next step.

0.



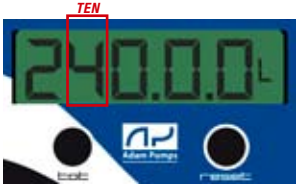
1. Reading the number of pulses: delivering a quantity of liquid inside the graduated container up to maximum of 59.99, the display shows the number of pulses generated during that time in proportion of the quantity of liquid measured by the device; press the Reset button to proceed to the next step.

1.



2. Insert “tens” delivered: enter the number of tens actually delivered, press the Total button to increase by one ten, and press the Reset button to decrease by one ten, do not give any input for 5 seconds to proceed to the next step.

2.



3. Insert “units” delivered: enter the number of units actually delivered, press the Total button to increase by one unit, and press the Reset button decrease by one unit, do not give any input for 5 seconds to move to the next step.

3.



4. Insert “tenths” delivered: enter the number of tenths actually delivered, press the Total button to increase by one tenth, and press the Reset button decrease by one tenth, do not give any input for 5 seconds to move to the next step.

4.



5. Insert “hundredth” delivered: enter the number of hundredths actually delivered, press the Total button to increase by one hundredth, and press the Reset button decrease by one hundredth, do not give any input for 5 seconds to move to the next step.

5.

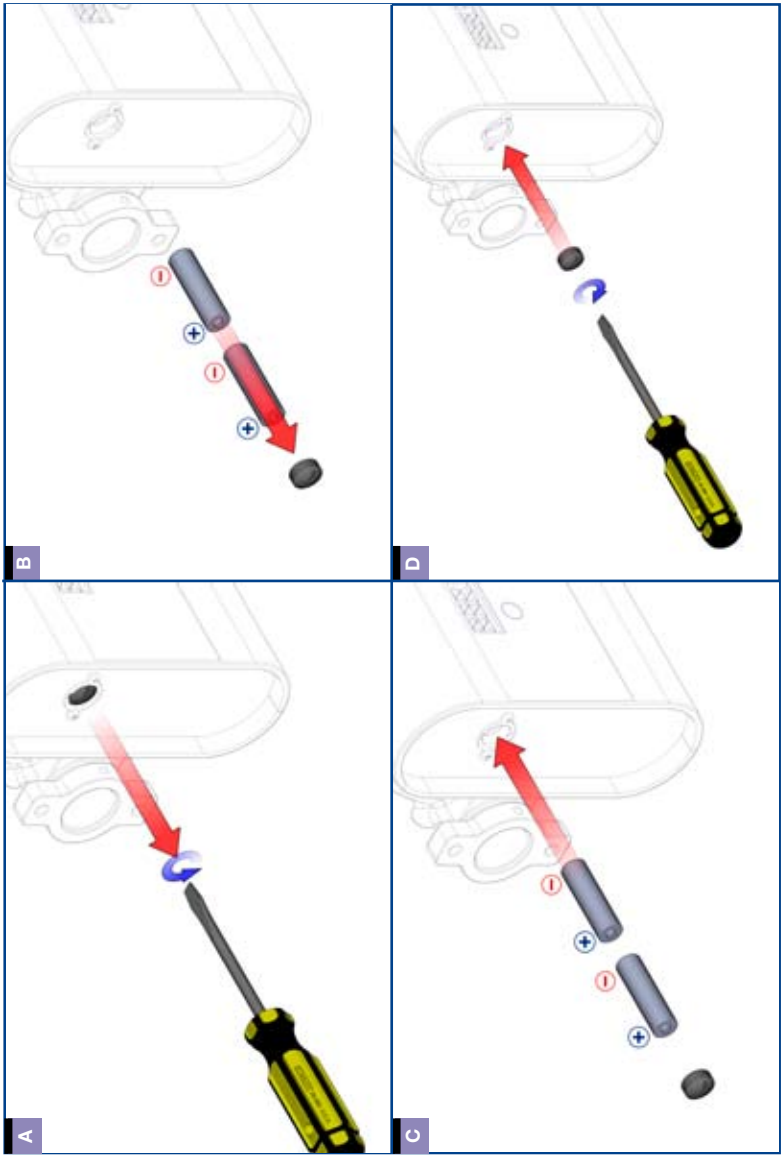


5.5 TECHNICAL DATA

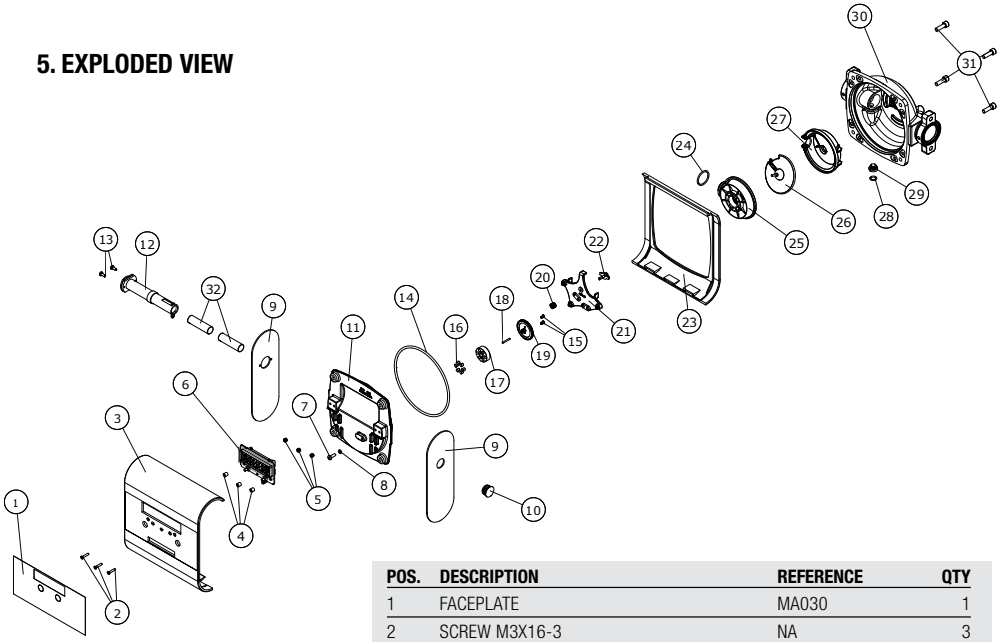
Storage Temperature	-10 / +60 (°C)
Operating Temperature	0 / +50 (°C)
Storage maximum humidity	95 % RU
Display	LCD
Power supply	Standard Battery AA 1.5V (2x)

5.6 BATTERIES REPLACEMENTS

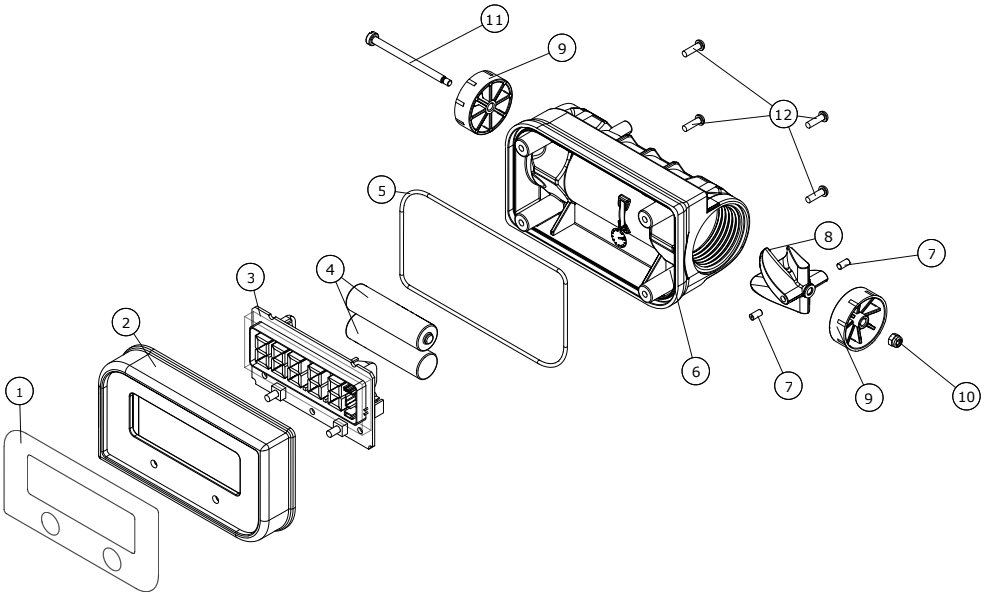
The unit has a symbol showing a low battery. In case the symbol appears, you'll need soon to change the batteries using the illustrated procedure. It is recommended to change batteries starting from switched off display to avoid any data corruption.



5. EXPLODED VIEW



POS.	DESCRIPTION	REFERENCE	QTY
1	FACEPLATE	MA030	1
2	SCREW M3X16-3	NA	3
3	COVER UPPER SIDE	TF013	1
4	PLASTIC BUSH D6XD3XL6	NA	3
5	HEXAGONAL SELF BLOCKING NUT M3	82001000000	3
6	CIRCUIT BOARD	TF032	1
7	SCREW T.C.C. Ø4.2X13 ISO 7049	13101012	1
8	O-RING 2015 NBR	11010040200	1
9	COVER RIGHT/LEFT SIDE	TF015_TF016	2
10	RESET CAP	60302000	1
11	FLANGE	TF010B	1
12	BATTERY HOLDER	TF034	1
13	SELF BLOCKING CROSS SCREW TC 3.5X9.5 ISO 7049	13101006	2
14	O-RING 4500 NBR	OR002	1
15	SELF BLOCKING SCREW D=2.9 L=6.5	VT006	2
16	MAGNET Ø5 L=4 MM	TF030	6
17	MAGNET HOLDER	TF031	1
18	CEMENTED PIN 2X17.8	6051800000	1
19	DOUBLE GEAR Ø36	TF006	1
20	CILINDRIC GEAR	TF004	1
21	GEAR HOLDER	TF009	1
22	PIN WITH LEVER	TF008	1
23	COVER LOWER SIDE	TF014	1
24	O-RING Ø24 X 2 NBR	OR001	1
25	UPPER HALF-CHAMBER	TF003	1
26	SWASH PLATE	TF001	1
27	LOWER HALF-CHAMBER	TF002	1
28	O-RING 108 NBR	11010100200	1
29	CALIBRATION CAP 1/8"	TF018	1
30	METER HOUSING	TF011	1
31	SCREW TCCE M6X20 DIN 7500 E	VT001	1
32	BATTERY "AA"	TF033	2



DIGITAL FLOW METER: DI - FLOW IN LINE

POS.	DESCRIPTION	REFERENCE	QTY
1	FACEPLATE	MA990	1
2	FRONT COVER	TF035	1
3	ELECTRONIC CARD	TF041	1
4	BATTERY AA	TF033	2
5	O-RING 2400 NBR 70	OR018	1
6	FLOW METER BODY	TF036	1
7	MAGNET Ø3X6	TF040	2
8	TURBINE	TF037	1
9	SUPPORT TURBINE	TF038	2
10	NUT M3 INOX UNI 7473	VT009	1
11	THREADED SHAFT	TF039	1
12	SCREW TC 3X10 BN13577 WN1412	VT010	4

COD. UM001 • ECN 10209 • 06/2012 • REV 5