



LIQUIDYNAMICS™

AUTOMATIC NOZZLE

Owners Manual

This manual covers P/N 100398



This manual contains important warnings and information. READ AND KEEP FOR REFERENCE.

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B GENERAL WARNINGS

Important precautions

Symbols used in the manual



Manual preser- vation

Reproduction rights

To ensure operator safety and to protect the pump from potential damage, workers must be fully acquainted with this instruction manual before performing any operation.

The following symbols will be used throughout the manual to highlight safety information and precautions of particular importance:

ATTENTION

This symbol indicates safe working practices for operators and/or potentially exposed persons.

WARNING

This symbol indicates that there is risk of damage to the equipment and/or its components.

NOTE

This symbol indicates useful information.

This manual should be complete and legible throughout. It should remain available to end users and specialist installation and maintenance technicians for consultation at any time.

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C FIRST AID RULES

Contact with the product

NOTE



In the event of problems developing following EYE/SKIN CONTACT, INHALATION or INGESTION of the treated product, please refer to the SAFETY DATA SHEET of the fluid handled.

Please refer to the safety data sheet for the product

**SMOKING
PROHIBITED**



When operating the dispensing system and in particular during refueling, do not smoke and do not use open flame.

WARNING



Keep the product to be dispensed away from eyes and skin
Keep the product to be dispensed out of reach of children
The nozzle must only be used for the purposes for which it was designed
Using unsuitable component parts and materials could be hazardous
Not checking correct part installation could be hazardous.

D GENERAL SAFETY RULES

Essential protective equipment characteristics

ATTENTION



Wear protective equipment that is:
• suited to the operations that need to be performed;
• resistant to cleaning products.

It is a good practice to consider the instructions manual as an integral part of the purchased product. Always keep the instructions manual nearby the product.

Personal protective equipment that must be worn



Wear the following personal protective equipment during handling and installation:



safety shoes;



close-fitting clothing;



protective gloves;



safety goggles;

Protective gloves



Prolonged contact with the treated product may cause skin irritation; always wear protective gloves during dispensing.

ATTENTION

Do not proceed to dispense if the suction/supply hose, the nozzle or the safety devices are damaged.

E TO KNOW SB32 M

FOREWORD



Dispenser nozzle featuring integrated meter, made of non-conductive plastic and designed for use with water/urea solution (AUS32/DEF). The meter integrated with the SB32 M nozzle uses a turbine measuring system and interfaces with the user by means of the LCD display. SB32 M is also compatible with water and food liquids.

E1 INTENDED USE

SB32 M

WATER/UREA SOLUTION - D.E.F. - AUS 32, ACCORDING TO DIN 70070, WATER, WINDSCREEN

**CONDITIONS
OF USE AND
ENVIRONMENTAL
CONDITIONS**

Refer to the product technical sheets

F PACKAGING

FOREWORD

THE NOZZLES ARE SUPPLIED PACKED IN CARDBOARD BOXES, WITH LABEL SHOWING FOLLOWING DETAILS:

1 - Package contents

2 - Weight

3 - Product description



G TECHNICAL CHARACTERISTICS

Description	Min. flow-rate (l/min)	Max. flow-rate (l/min)	Pressure loss at 35 l/min (bar)	Inlet thread with swivel	External diameter hose-end fitting (mm)	Max. operating pressure (bar)	Weight (kg)
SB32 M	15	45	0,9	1" GAS	20	3,5	0,8

H INSTALLATION

FOREWORD



The automatic nozzles are supplied ready for use.
The nozzle features SWIVEL hose-end fitting (complete with O-ring) useful for connecting to the supply hose.

TO ENSURE PERFECT OPERATION, THE DEVICE MUST BE USED TO DISPENSE FLUIDS WITH CHARACTERISTICS FALLING WITHIN THE FOLLOWING PARAMETERS:

- Qmin : 15 l/min
- Qmax : 45 l/min
- Pmin : 1,5 bar
- Pmax : 3,5 bar

ATTENTION



During installation, use adequate sealants, being careful no residues remain inside the hose.

So as not to negatively affect product operation, couple the hose-end fitting with the hose without using tools such as pliers, etc.

Assembly will be easier if the swivel hose-end fitting is already fitted on the nozzle.

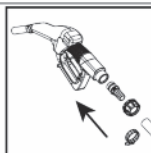
Make sure the hoses and the suction tank are without threading scale or residues which could damage the nozzle and the accessories.

WARNING



Apply adequate sealants on the male threads of the connections and swivels

Do not use Teflon tape



I USE MODALITY

11 MECHANICAL CHARACTERISTICS

FOREWORD



The main feature of these nozzles is that they are easy to use.
Two operating modes are available:

- 1 **ASSISTED MODE**
- 2 **AUTOMATIC MODE**

Dispense by operating the nozzle lever. To interrupt dispensing manually, release the lever.

Use the opening lever lock device for automatic dispensing.

To continue dispensing after automatic stop, the lever must be fully released before proceeding to operate it again.

To interrupt dispensing in manual mode, press the lever again, thereby releasing the device, and then release.

ATTENTION



DO NOT USE THE NOZZLE OUTSIDE THE PARAMETERS INDICATED ON THE "TECHNICAL SPECIFICATIONS" CHART

Dispensing is automatically interrupted thanks to the shut-off device, which operates when the level of the liquid reaches the end of the spout.

12 ELECTRONIC CHARACTERISTICS

ATTENTION



The user can choose between two different operating modes:

1 - Normal Mode

2 - Flow rate Mode

Note



Normal Mode: Mode with display of Partial and Total dispensed quantities

Flow Rate Mode: Mode with display of Flow Rate, as well as Partial dispensed quantity.

The meter features a non-volatile memory for storing the dispensing data, even in the event of a complete power break for long periods. The measurement electronics and the LCD display are fitted in the top part of the meter which remains isolated from the fluid-bath measurement chamber and sealed from the outside by means of a cover.

L MISFILLING (optional)

PREMISE



Refuelling with the nozzle equipped with "magnet switch" is only possible in combination with the "magnet adapter", so misfuelling into tanks is made impossible

OPERATION

The "magnet switch" is a fixed magnetic field within the filler necks of the nozzle. This opens the magnet switch in the spout, so it is only possible to dispense from the tank where the magnet adaptor is installed.

ATTENTION



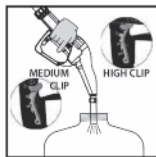
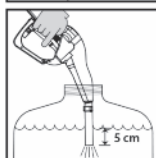
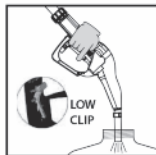
Nozzles equipped with "magnet switch" work only in combination with the "magnet adapter". The "magnet adapter" is an optional to be bought separately.

M PRELIMINARY CHECK

WARNING



Check the correct operation of the lock device, according to the following procedure:



- 1 Take a graduated receptacle with a capacity of 20 litres (5 gal)
- 2 Begin dispensing into the receptacle, setting the lever in the minimum flow position, until the receptacle is full.

- 3 Keeping the lever open, make sure the spout is submerged by about 5 cm (2 inches).

- 4 The nozzle must stop, with a click of the lever.
- 5 Repeat the same operations with the lever in medium-flow and maximum-flow position.
Check the correct operation of the stop device as described above.

- 6 If the nozzle stops during dispensing, check and reduce the flow.
- 7 If the shut-off device does not begin to operate, check the minimum flow rate of the system or replace the nozzle.

N INITIAL START UP

FOREWORD

Only start dispensing after making sure that assembly and installation have been correctly performed.

ATTENTION



It is a good practice to only operate the nozzle lever after making sure the spout has been properly inserted in the mouth of the tank to be filled.

NOTE



When using for the first time and every time the nozzle is used, following the connection of the supply hose, gently operate the lever to enable the air to escape from the circuit, until normal operation is achieved.

ATTENTION



Check the correct operation of the automatic stop device once the tank is full.

THE FAULTY OPERATION OF THIS DEVICE COULD CAUSE THE SPILL OF LIQUIDS THAT ARE HAZARDOUS FOR PEOPLE AND THE ENVIRONMENT.

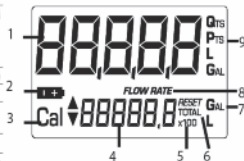
O WHAT IT LOOKS LIKE

FOREWORD



The "LCD" of the METER features two numerical registers and various indications displayed to the user only when the applicable function so requires.

- 1 Partial register (5 figures with moving comma FROM 0.1 to 99999) indicating the volume dispensed since the reset button was last pressed
- 2 Indication of battery charge
- 3 Indication of calibration mode
- 4 Totals register (6 figures with moving comma FROM 0.1 to 999999), that can indicate two types of Total:
4.1. General Total that cannot be reset (TOTAL)
4.2. Resettable total (Reset TOTAL)
- 5 Indication of total multiplication factor ($\times 10$ / $\times 100$)
- 6 Indication of type of total, (TOTAL / Reset TOTAL);
- 7 Indication of unit of measurement of Totals:
L=Litres Gal=Gallons
- 8 Indication of Flow Rate mode
- 9 Indication of unit of measurement of Partial:
Qt=Quarts Pts=Pints
L=Litres Gal=Gallons



O1 USER BUTTONS

FOREWORD

The METER features two buttons (RESET and CAL) which individually perform two main functions and, together, other secondary functions.

MAIN FUNCTIONS PERFORMED

- for the RESET key, resetting the partial register and Reset Total
- for the CAL key, entering instrument calibration mode

SECONDARY FUNCTIONS

Used together, the two keys permit entering configuration mode where the desired unit of measurement can be set.

LEGEND

CALIBRATE MEANS PERFORMING ACTIONS ON THE METER KEYS. BELOW IS THE LEGEND OF THE SYMBOLS USED TO DESCRIBE THE ACTIONS TO BE PERFORMED

O2 BATTERY HOUSING

NOTE



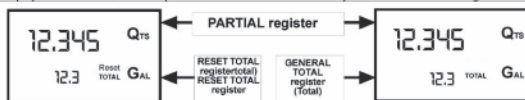
K24 is powered by two 1.5V standard type batteries (size AAA). The battery housing is easily accessible and is closed by a cover with seal. Everything is easily removable by taking off the rubber protection around the nozzle and loosening the screws which secure the cover.

P DAILY USE

FOREWORD

The only operations that need to be done for daily use are partial and/or resettable total register resetting. The user should use only the dispensing system of k24. Occasionally the meter may need to be configured or calibrated. To do so, please refer to the relevant chapters.

Below are the two typical normal operation displays. One display page shows the partial and reset total registers. The other shows the partial and general total. Switchover from resettable total to general total display is automatic and tied to phases and times that are in factory set and cannot be changed.



Note



6 digits are available for Totals, plus two icons x 10 / x100. The increment sequence is the following:
0.0 -> 99999.9 -> 999999 -> 100000 x 10 -> 999999 x 10 -> 100000 x 100 -> 999999 x 100

P1 DISPENSING IN NORMAL MODE

FOREWORD

Normal mode is the standard dispensing. While the count is made, the partial and resettable total are displayed at the same time (reset total).

WARNING



Should one of the keys be accidentally pressed during dispensing, this will have no effect.

stand by

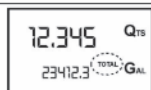
A few seconds after dispensing has ended, on the lower register, the display switches from resettable total to general total: the word reset above the word total disappears, and the reset total is replaced by the general total. This situation is called standby and remains stable until the user operates the k24 again.



P1.1 PARTIAL RESET (NORMAL MODE)

The partial register can be reset by pressing the reset key when the meter is in standby, meaning when the display screen shows the word "TOTAL".

After pressing the reset key, during reset, the display screen first of all shows all the lit-up digits and then all the digits that are not lit up.



At the end of the process, a display page is first of all shown with the reset partial and the reset total



and, after a few moments, the reset total is replaced by the non resettable total.



P1.2 RESETTING THE RESET TOTAL

The reset total resetting operation can only be performed after resetting the partial register. The reset total can in fact be reset by pressing the reset key at length while the display screen shows reset total as on the following display page:

Schematically, the steps to be taken are:

- 1 Wait for the display to show normal standby display page (with total only displayed)
- 2 Press the reset key quickly
- 3 The meter starts to reset the partial
- 4 While the display page showing the reset total is displayed
Press the reset key again for at least 1 second



- 5 The display screen again shows all the segments of the display followed by all the switched-off segments and finally shows the display page where the reset Reset Total is shown.

P2DISPENSING WITH FLOW RATE MODE DISPLAY

It is possible to dispense fluids, displaying at the same time:

- 1 the dispensed partial
- 2 the Flow Rate in [Partial Unit / minute] as shown on the following display page:

Procedure for entering this mode:

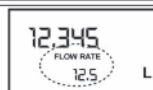
- 1 wait for the Remote Display to go to Standby, meaning the display screen shows Total only
- 2 quickly press the CAL key.
- 3 Start dispensing

The flow rate is updated every 0.7 seconds. Consequently, the display could be relatively unstable at lower flow rates. The higher the flow rate, the more stable the displayed value.

ATTENTION



The flow rate is measured with reference to the unit of measurement of the Partial. For this reason, in case of the unit of measurement of the Partial and Total being different, as in the example shown below, it should be remembered that the indicated flow rate relates to the unit of measurement of the partial. In the example shown, the flow rate is expressed in Qts/min.



The word "Gal" remaining alongside the flow rate refers to the register of the Totals (Reset or NON Reset) which are again displayed when exiting from the flow rate reading mode.

To return to "Normal" mode, press the CAL key again. If one of the two keys RESET or CAL is accidentally pressed during the count, this will have no effect.

ATTENTION



Even though in this mode they are not displayed, both the Reset Total and the General Total (Total) increase. Their value can be checked after dispensing has terminated, returning to "Normal" mode, by quickly pressing CAL.

P2.1 PARTIAL RESET (FLOW RATE MODE)

To reset the Partial Register, finish dispensing and wait for the Remote Display to show a Flow Rate of 0.0 as indicated in the illustration

then quickly press RESET



Q CALIBRATION

Q1 WHY CALIBRATE?

Note



When working in extreme operating or flow conditions, (close to minimum or maximum acceptable range values), it may be a good idea to calibrate in the field, in the real conditions in which the SB32 M has to work.

Q2 DEFINITIONS

CALIBRATION FACTOR OR "K FACTOR" FACTORY K FACTOR

Multiplication factor applied by the system to the electrical pulses received, to transform these into measured fluid units.

Factory-set default factor. It is equal to 1,000. This calibration factor ensures utmost precision in the following operating conditions:

Fluid water/urea solution or liquid food products Temperature: 20°C

Flow rate: 10 - 30 ltr/min

Even after any changes have been made by the user, the factory k factor can be restored by means of a simple procedure.

USER K FACTOR:

Customized calibration factor, meaning modified by calibration.

Q3 KEY

LEGEND

CALIBRATE MEANS PERFORMING ACTIONS ON THE METER KEYS. BELOW IS THE LEGEND OF THE SYMBOLS USED TO DESCRIBE THE ACTIONS TO BE PERFORMED

SHORT PRES-SURE OF CAL KEY		LONG PRES-SURE OF cal KEY		short pressure of reset key		long pressure of reset key	
-----------------------------------	--	----------------------------------	--	------------------------------------	--	-----------------------------------	--

Q4 CALIBRATION MODE

Why calibrate?

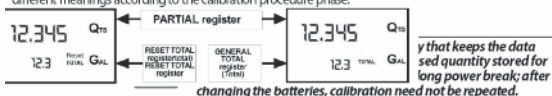
- 1 Display the currently used calibration factor;
- 2 Return to factory calibration (Factory K Factor) after a previous calibration by the user
- 3 Change the calibration factor using one of the two previously indicated procedures

FOREWORD

Two procedures are available for changing the Calibration Factor:

- 1 In-Field Calibration, performed by means of a dispensing operation
- 2 Direct Calibration, performed by directly changing the calibration factor

In calibration mode, the partial and total dispensed quantities indicated on the display screen take on different meanings according to the calibration procedure phase.



Q4.1 DISPLAY OF CURRENT CALIBRATION FACTOR AND RESTORING FACTORY FACTOR.



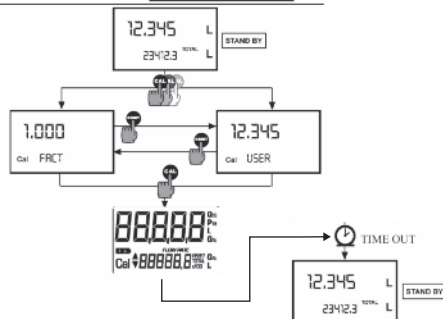
By pressing the CAL key while the appliance is in Standby, the display page appears showing the current calibration factor used. If no calibration has ever been performed, or the factory setting has been restored after previous calibrations, the following display page will appear: The word "Fact" abbreviation for "factory" shows that the factory calibration factor is being used.



If, on the other hand, calibrations have been made by the user, the display page will appear showing the currently used calibration factor (in our example 0.998). The word "user" indicates a calibration factor set by the user is being used.



The flow chart alongside shows the switchover logic from one display page to another. In this condition, the Reset key permits switching from User factor to Factory factor. To confirm the choice of calibration factor, quickly press CAL while "User" or "Fact" are displayed. After the restart cycle, the K24 uses the calibration factor that has just been confirmed.



ATTENTION



When the Factory Factor is confirmed, the old User factor is deleted from the memory

Q4.2 IN FIELD CALIBRATION

FOREWORD

This procedure calls for the fluid to be dispensed into a graduated sample container in real operating conditions (flow rate, viscosity, etc.) requiring maximum precision.










ATTENTION




For correct K24 calibration, it is most important to:

- 1 When the Factory Factor is confirmed, the old User factor is deleted from the memory
- 2 use a precise Sample Container with a capacity of not less than 5 litres, featuring an accurate graduated indicator.
- 3 ensure calibration dispensing is done at a constant flow rate equivalent to that of normal use, until the container is full;
- 4 Not reduce the flow rate to reach the graduated area of the container during the final dispensing stage (the correct method during the final stages of sample container filling consists in making short top-ups at normal operation flow rate);
- 5 after dispensing, wait a few minutes to make sure any air bubbles are eliminated from the sample container; only read the Real value at the end of this stage, during which the level in the container could drop.
- 6 Carefully follow the procedure indicated below.

Q4.2.1 IN-FIELD CALIBRATION PROCEDURE

ACTION	DISPLAY
1 	<p>NONE NEXT in Standby</p> <div data-bbox="684 112 808 186"> <div>12.345 L</div> <div>1345 TOTAL L</div> </div>
2 	<p>LONG CAL key keying The NEXT enters calibration mode, shows <<CAL>> and displays the calibration factor in use instead of partial. The words "Fact" and "USER" indicate which of the two factors (factory or user) is currently in use. Important: This factor is that which the instrument also uses for field calibration measurement operations</p> <div data-bbox="684 186 808 284"> <div>1.000 L</div> <div>Cal FACT (USER) L</div> </div>
3 	<p>LONG RESET key keying The NEXT shows "CAL" and the partial at zero. The NEXT is ready to perform in-field calibration.</p> <div data-bbox="684 284 808 370"> <div>0.000 L</div> <div>Cal FIELD</div> </div>
4 	<p>DISPENSING INTO SAMPLE CONTAINER Without pressing any key, start dispensing into the sample container</p> <div data-bbox="684 370 808 641"> <div>9.800 L</div> <div>Cal FIELD</div> </div> <p>Dispensing can be interrupted and started again at will. Continue dispensing until the level of the fluid in the sample container has reached the graduated area. There is no need to reach a preset quantity.</p> <div data-bbox="429 523 637 634"> <div> <div>9.800 L</div> <div>Cal 0.0000 L</div> </div> <div> <div>9.86</div> </div> <div>Indicated value Real value</div> </div>
5 	<p>SHORT RESET key keying The NEXT is informed that the calibration dispensing operation is finished. Make sure dispensing is correctly finished before performing this operation. To calibrate the NEXT, the value indicated by the partial totaliser (example 9.800) must be forced to the real value marked on the graduated sample container. In the bottom left part of the display an arrow appears (upwards and downwards) that shows the direction (increase or decrease) of the value change displayed when the following operations 6 or 7 are performed.</p> <div data-bbox="684 641 808 765"> <div>9.800 L</div> <div>Cal ▲ FIELD</div> </div>
6 	<p>SHORT RESET key keying The arrow changes direction. The operation can be repeated to alternate the direction of the arrow.</p> <div data-bbox="684 765 808 851"> <div>9.800 L</div> <div>Cal ▼ FIELD</div> </div>
7 	<p>SHORT/LONG CAL key keying The indicated value changes in the direction indicated by the arrow - one unit for every short CAL key keying - continually if the CAL key is kept pressed. The speed increase rises by keeping the key pressed. If the desired value is exceeded, repeat the operations from point (5).</p> <div data-bbox="684 851 808 962"> <div>9.860 L</div> <div>Cal ▲ FIELD</div> </div>
8  	<p>LONG RESET key keying The NEXT is informed that the calibration procedure is finished. Before performing this operation, make sure the INDICATED value is the same as the REAL value.</p> <div data-bbox="684 962 808 1169"> <div>----- L</div> <div>Cal END</div> </div> <div data-bbox="429 1016 637 1102"> <div> <div>9.860 L</div> <div>Cal FACT</div> </div> <div> <div>9.86</div> </div> <div>Indicated value Real value</div> </div> <p>The NEXT calculates the new USER K FACTOR; this calculation could require a few seconds, depending on the correction to be made ATTENTION: If this operation is performed after action (5), without changing the indicated value, the USER K FACTOR would be the same as the FACTORY K FACTOR, thus it is ignored.</p>

9	 NO OPERATION At the end of the calculation, the new USER K FACTOR is shown for a few seconds, after which the restart cycle is repeated to finally achieve standby condition. IMPORTANT: From now on, the indicated factor will become the calibration factor used by the NEXT and will continue to remain such even after a battery change	<div>1.075 L</div> <div>Cal 810</div>
10	NO OPERATION The NEXT stores the new work calibration factor and is ready to begin dispensing, using the USER K FACTOR that has just been calculated.	<div>0.000 L</div> <div>Cal 13456 TOTAL L</div>

Q4.3 DIRECT MODIFICATION OF K FACTOR

If normal NEXT operation shows a mean percentage error, this can be corrected by applying to the currently used calibration factor a correction of the same percentage. In this case, the percentage correction of the USER K FACTOR must be calculated by the operator in the following way

$$\text{New cal. Factor} = \text{Old Cal Factor} * \left(\frac{100 - E\%}{100} \right)$$







Example:



Error percentage found: E% = 0.9 %

CURRENT calibration factor: 1.000

New USER K FACTOR: $1.000 * [(100 - (-0.9))/100] = 1.000 * [(100 + 0.9)/100] = 1.009$

If the NEXT indicates less than the real dispensed value (negative error) the new calibration factor must be higher than the old one as shown in the example. The opposite applies if the NEXT shows more than the real dispensed value (positive error).

ACTION		DISPLAY
1	NONE METER in Standby.	<div>12.345 Qm</div> <div>1234.5 TOTAL Gm</div>
2	 LONG CAL KEY KEYING NEXT enters calibration mode, shows "CAL" and displays the calibration factor being used instead of the partial. The words "Fact" and "User" indicate which of the two factors (factory or user) is currently being used.	<div>1.000</div> <div>Cal FRCT (USER)</div>
3	 LONG RESET KEY KEYING The NEXT shows "CAL" and the zero partial total. NEXT is ready to perform in-field calibration by dispensing – see previous paragraph.	<div>12.345 Qm</div> <div>Cal FIELD</div>
4	 LONG RESET KEY KEYING We now go on to Direct change of the calibration factor: the word "Direct" appears together with the Currently Used calibration factor. In the bottom left part of the display, an arrow appears (upwards or downwards) defining the direction (increase or decrease) of change of the displayed value when subsequent operations 5 or 6 are performed.	<div>1.000 Qm</div> <div>Cal * DIRECT</div>
5	 SHORT RESET KEY KEYING Changes the direction of the arrow. The operation can be repeated to alternate the direction of the arrow.	<div>1.000</div> <div>Cal v DIRECT</div>
6	 SHORT/LONG CAL KEY KEYING The indicated value changes in the direction indicated by the arrow – one unit for every short CAL key keying – continually if the CAL key is kept pressed. The speed increase rises by keeping the key pressed. If the desired value is exceeded, repeat the operations from point (5).	<div>1.003 Qm</div> <div>Cal * DIRECT</div>
7	 LONG RESET KEY KEYING The NEXT is informed that the calibration procedure is finished. Before performing this operation, make sure the <u>INDICATED value is that required.</u>	<div>----- Qm</div> <div>Cal * DIRECT</div>


8	NO OPERATION At the end of the calculation, the new USER K FACTOR is shown for a few seconds, after which the restart cycle is repeated to finally achieve standby condition. IMPORTANT: From now on, the indicated factor will become the calibration factor used by the NEXT and will continue to remain such even after a battery change	
9	NO OPERATION The NEXT stores the new work calibration factor and is ready to begin dispensing, using the USER K FACTOR that has just been changed.	

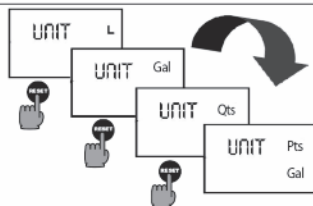
R METER CONFIGURATION

The METER feature a menu with which the user can select the main measurement unit, Quarts (Qts), Pints (Pts), Litres (Lit), Gallons (Gal); The combination of the unit of measurement of the Partial register and that of the Totals is predefined according to the following table:

Combination no.	Unit of Measurement Partial Register	Unit of Measurement Totals Register
1	Litres (L)	Litres (L)
2	Gallons (Gal)	Gallons (Gal)
3	Quarts (Qts)	Gallons (Gal)
4	Pints (Pts)	Gallons (Gal)

To choose between the 4 available combinations:

- 1 Wait for the METER to go to Standby
 then press the CAL and RESET keys together. Keep these pressed until the word "UNIT" appears on the screen together with the unit of measurement set at that time (in this example Litres / Litres)

- 2 Every short press of the RESET key, the various combinations of the units of measurements are scrolled as shown below:
- 3
- 4 By pressing the CAL key at length, the new settings will be stored, the METER will pass through the start cycle and will then be ready to dispense in the set units.



ATTENTION



The Reset Total and Total registers will be automatically changed to the new unit of measurement.
NO new calibration is required after changing the Unit of Measurement.

S MAINTENANCE

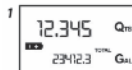
BATTERY REPLACEMENT AVVERTENZA

Use 2x1.5 V alkaline batteries size AAA

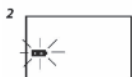


K24 should be installed in a position allowing the batteries to be replaced without removing it from the system.

K24 features two low-battery alarm levels:



When the battery charge falls below the first level on the LCD, the fixed battery symbol appears. In this condition, K24 continues to operate correctly, but the fixed icon warns the user that it is ADVISABLE to change the batteries.



If K24 operation continues without changing the batteries, the second battery alarm level will be reached which will prevent operation. In this condition the battery icon starts to flash and is the only one to remain visible on the LCD.

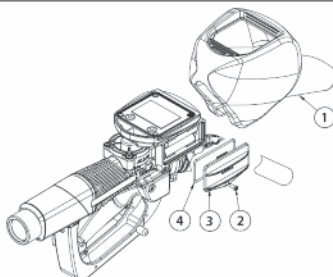
o change the batteries, with reference to the exploded diagram positions, proceed as follows

- 1 REMOVE THE COVER (1)
- 2 LOOSEN THE SCREW (2)
- 3 REMOVE THE COVER (3) RIGHT SIDE
- 4 CHANGE THE BATTERIES
- 5 FIT EVERYTHING BACK ON AGAIN BEING CAREFUL TO POSITION THE SEAL (4) AROUND THE COVER HOUSING.

ATTENTION



DO NOT OVER-TIGHTEN THE SCREW



The K24 will display the same Reset Total, the same Total and the same Partial indicated before the batteries were changed. After changing the batteries, the meter does not need calibrating again.

CLEANING

Only one operation is necessary to clean the K24. After removing K24 from the plant where it was built in, any residual elements can be removed by washing or mechanically-handling. If this operation does not restore a smooth rotation of the turbine, it will have to be replaced.

ATTENTION



Do not discard the old batteries in the environment. Refer to local disposal regulations.

Do not use compressed air onto the turbine in order to avoid its damage because of an excessive rotation
PERIODICALLY CHECK THE CORRECT OPERATION OF THE AUTOMATIC STOP DEVICE

IF FITTED, IT IS BEST TO PERIODICALLY CHECK THE FILTER AND CLEAN IT EVERY 1000 LITRES OF TRANSFER.

PERIODICALLY CHECK THE TIGHTNESS OF THE CONNECTIONS

T MALFUNCTIONS

T1 MECHANICAL MALFUNCTIONS

FOREWORD

THE POSSIBLE CAUSES OF MALFUNCTION ARE MAINLY ATTRIBUTABLE TO THREE FACTORS:

- 1 NOZZLE DIRTY IN INNER HOLE OF LIP AT END OF SPOUT
- 2 OPERATING PRESSURE OF LIQUID TO BE DISPENSED BELOW 0.5 bar OR ABOVE 3.5 bar
- 3 FLOW RATE TOO LOW OR TOO HIGH

NOTE



CORRECT AND REGULAR MAINTENANCE OF THE NOZZLE AND OF THE SYSTEM TO WHICH IT IS CONNECTED PREVENTS MALFUNCTIONS AND POSSIBLE ACCIDENTAL SPILLS OF HAZARDOUS LIQUIDS.

T2 ELECTRONIC MALFUNCTIONS

Problem	Possible cause	Remedial Action
LCD: no indication	Bad battery contact	Check battery contacts
Not enough measurement precision	Wrong K FACTOR	With reference to paragraph H, check the K FACTOR
	The meter works below minimum acceptable flow rate.	Increase the flow rate until an acceptable flow rate range has been achieved
Reduced or zero flow rate	TURBINE blocked	Clean the TURBINE
The meter does not count, but the flow rate is correct	Incorrect installation of gears after cleaning	Repeat the reassembly procedure
	Possible electronic card problems	Contact your dealer

U TECHNICAL DATA

Measurement system	TURBINE	
Resolution (nominal)	Hi Flow	0.010 lit/pulse
	Low Flow	0.005 lit/pulse
Flow Rate (Range)	5 ÷ 30 (Litres/minute) FOR AUS32	
Operating pressure (Max)	3.5 (Bar)	
Storage temperature (Range)	-20 ÷ +70 (°C)	
Storage humidity (Max)	95 (% RH)	
Operating temperature (Range)	-10 ÷ +50 (°C)	
Flow resistance	0.90 Bar at 100 lit/min.	
Viscosity (Range)	2 ÷ 5.35 cSt	
Accuracy	±1% after calibration within 10÷90 (litres/min) 2,65÷23,8 (gallons/min) range	
Reproducibility (Typical)	±0.3 (%)	
Screen	Liquid crystals LCD. Featuring: - 5-figure partial - 6-figure Reset Total plus x10 / x100 - 6-figure non reset Total plus x10 / x100	
Power Supply	2x1.5 V alkaline batteries size AAA	
Battery life	18 ÷ 36 months	
Protection	IP65	

V DISPOSAL

Foreword

If the system needs to be disposed, the parts which make it up must be delivered to companies that specialize in the recycling and disposal of industrial waste and, in particular:

Disposing of packing materials

The packaging consists of biodegradable cardboard which can be delivered to companies for normal recycling of cellulose.

Metal Parts Disposal

Metal parts, whether paint-finished or in stainless steel, can be consigned to scrap metal collectors.

Disposal of electric and electronic components

These must be disposed of by companies that specialize in the disposal of electronic components, in accordance with the indications of directive 2002/96/CE (see text of directive below).



European Directive 2002/96/EC requires that all equipment marked with this symbol on the product and/or packaging not be disposed of together with non-differentiated urban waste. The symbol indicates that this product must not be disposed of together with normal household waste. It is the responsibility of the owner to dispose of these products as well as other electric or electronic equipment by means of the specific refuse collection structures indicated by the government or the local governing authorities.

Miscellaneous parts disposal

Other components, such as pipes, rubber gaskets, plastic parts and wires, must be disposed of by companies specialising in the disposal of industrial waste.



LIQUIDYNAMICS™

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