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1 DECLARATION OF CONFORMITY

The undersigned: PIUSI S.p.A. Via Pasticceria, 10 - I.C.M. - Z.I. Rangovino 46029 Suzzara - Mantova - Italia

Hereby states under its own responsibility, that the equipment described below: Description - Meter Model: K400 Serial number: refer to Lot Number shown on CE plate affixed to product Year of manufacture: refer to the year of production shown on the CE plate affixed to the product is in conformity with the legal provisions indicated in the directives: Electromagnetic Compatibility Directive 2014/53/EU The documentation is at the disposal of the competent authority following motivated request at Piusi S.p.A. or following request sent to the e-mail address: doc.tec@piusi.com

Suzzara, 20/04/2016 Otto Varini legal representative

2 GENERAL WARNINGS

Warnings To ensure operator safety and to protect the dispensing system from potential damage, workers must be fully acquainted with this instruction manual before attempting to operate the dispensing system.

Symbols used in the manual 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.

Manual reproduction rights 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.

3 SAFETY INSTRUCTIONS

3.1 SAFETY WARNINGS ATTENTION You must avoid any contact between the electrical power supply and the fluid that needs to be FILTERED. Before any checks or maintenance work are carried out, disconnect the power source.

3.2 FIRST AID RULES Disconnect the power source, or use a dry insulator to protect yourself while you move the injured person away from any electrical conductor. Avoid touching the injured person with your bare hands until he is far away from any conductor.

3.3 GENERAL SAFETY RULES Wear protective equipment that is suited to the operations that need to be performed, resistant to cleaning products. Wear the following personal protective equipment during handling and installation: Safety shoes. Close-fitting clothing. Protective gloves. Safety goggles. Instruction manual

3.4 PACKAGING K400 COMES PACKED IN A CARDBOARD BOX WITH A LABEL INDICATING THE FOLLOWING DATA: 1- contents of the package 2- weight of the contents 3- description of the product

3.5 PACKAGE CONTENTS/PRE-INSPECTION To open the packaging, use a pair of scissors or a cutter, being careful not to damage the dispensing system or its components. In the event that one or more of the components described below are missing from inside the package, please contact PIUSI technical support. Check that the data on the plate correspond to the desired specifications. In the event of any anomaly, contact the supplier immediately, indicating the nature of the defects. Do not use equipment which you suspect might not be safe.

4 KNOWLEDGE K400 METER is an electronic digital meter featuring an oval-gear measurement system, designed for easy and precise measurement of oils, diesel, rapeseed and antifreeze. The fluid, by flowing through the appliance, rotates the gears which, during their rotation, transfer "volume units" of fluid: The exact measurement of the dispensed fluid is done by counting the number of rotations made by the gears and consequently the number of transferred "volume units".

5 INSTALLATION The METER features a 1" inch inlet and outlet, threaded and perpendicular, and has been designed to be installed in any position, both as fixed in-line installation and as moving installation on a dispensing nozzle.

6 DAILY USE

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 K400. Occasionally the meter may need to be configured or calibrated. To do so, please refer to the relevant chapters.

7 CALIBRATION

METER is supplied with a factory calibration that ensures precise measuring in most operating conditions. Nevertheless, when operating close to extreme conditions, such as for instance, with fluids close to acceptable range extremes (such as low viscosity antifreeze or high-viscosity oils for gearboxes).

8 MAINTENANCE

The METER meter chamber can be cleaned without removing the instrument from the line or from the dispensing nozzle on which it is fitted.

9 CLEANING

To clean the chamber, proceed as follows (with reference to the spare parts list positions): 1. Loosen the four cover retention screws (pos. 15).

10 MALFUNCTIONS

PROBLEM LCD, NO INDICATION POSSIBLE CAUSE Bad battery contact REMEDIAL ACTION Check battery contacts

11 DEMOLITION AND 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:

12 TECHNICAL DATA

Measurement system Resolution (nominal) 0.005 lit/pulse

Flow Rate (Range) 1 - 30 (Litres/minute)

Operating pressure (Max) 70 (Bar) 145 (psi)

Bursting pressure (Min) 200 (Bar)

Storage temperature (Range) 200 -> 70 (°C)

Storage humidity (Max) 95 (% RH)

Operating temperature (Range) 20 -> 50 (°C)

Flow resistance (at 10 l/min with oil SAE10W at 20°C) 0.35 Bar

Permissible Viscosity (Range) 17 -> 230 cSt

Accuracy (from 1 to 30 l/min) ±0.3 (%)

Reproducibility (Typical) ±0.3 (%)

Screen Liquid crystals LCD. Featuring: - 6-figure partial - 6-figure Reset Total plus x10 / x100 - 6-figure non reset. Total plus x10 / x100

Power Supply Max current: 100 mA

Battery life Max Voltage: 28V

Weight 0.5 Kg (included batteries)

Protection IP65

BULB (pulser) Max Load: 3V

Disposing of RAEE equipment as household wastes is strictly forbidden. Such wastes must be disposed separately.

Any hazardous substances in the electrical and electronic appliances and/or the misuse of such appliances can have potentially serious consequences for the environment and human health.

In case of the unlawful disposal of said wastes, fines will be applicable as defined by the laws in force.

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

Persons who have suffered electric shock

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

SMOKING PROHIBITED

PIUSI S.p.A. This document has been drawn up with the greatest attention to accuracy and reliability of all data herein contained. Nevertheless, PIUSI S.p.A. denies liability for any possible mistake or omission.

PIUSI S.p.A. non si assume responsabilità per eventuali errori ed omissioni.

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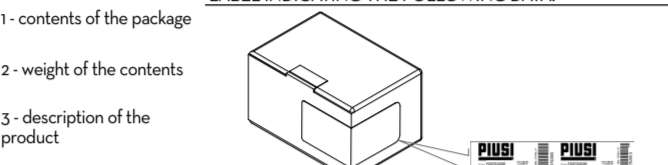
07/2019

3.3 GENERAL SAFETY RULES

Essential protective equipment characteristics Wear the following personal protective equipment during handling and installation: Safety shoes. Close-fitting clothing. Protective gloves. Safety goggles. Instruction manual

3.4 PACKAGING

K400 COMES PACKED IN A CARDBOARD BOX WITH A LABEL INDICATING THE FOLLOWING DATA:



3.5 PACKAGE CONTENTS/PRE-INSPECTION

To open the packaging, use a pair of scissors or a cutter, being careful not to damage the dispensing system or its components.

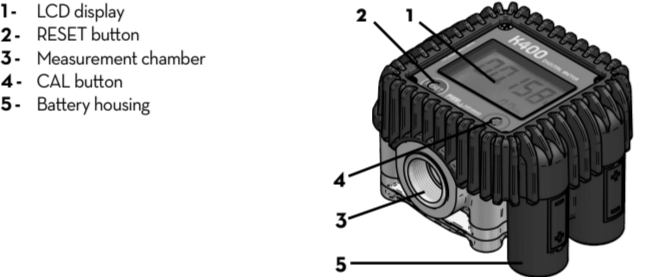
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4 KNOWLEDGE K400

METER is an electronic digital meter featuring an oval-gear measurement system, designed for easy and precise measurement of oils, diesel, rapeseed and antifreeze. The fluid, by flowing through the appliance, rotates the gears which, during their rotation, transfer "volume units" of fluid: The exact measurement of the dispensed fluid is done by counting the number of rotations made by the gears and consequently the number of transferred "volume units".

OPERATIONAL MODE The METER features a non-volatile memory for storing the dispensing data, even in the event of a complete power break for long periods.

K400 components



4.1 LCD DISPLAY (ONLY METER VERSION)

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 6 comma FROM 01 to 99999) indicating the volume dispensed since the reset button was last pressed.

2. Indication of battery charge 3. Indication of calibration mode 2. Registers (6 figures with moving 6 comma FROM 01 to 999999) that can indicate two types of data: 4.1. General Total that cannot be reset (TOTAL) 4.2. Resettable total (Reset TOTAL)

5. Indication of total multiplication factor (x10 / x100) 7. Indication of unit of measurement of Totals: L=Litres Gal=Gallons 9. Indication of unit of measurement of Partial: Qts=Quarts Pts=Pints Gal=Gallons L=Litres

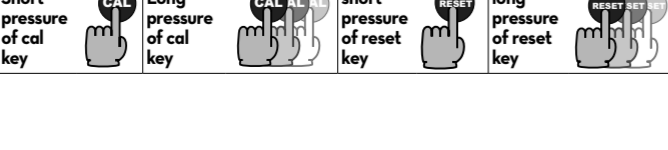
Measurement Chamber The measurement chamber is located in the lower part of the instrument. It features a threaded inlet and outlet. The cover on the bottom part provides access to the measurement mechanism for any cleaning operations. Inside the measurement chamber are the oval gears which, on turning, generate electrical pulses which are processed by the microprocessor-controlled electronic board.

Battery Housing The METER is powered by two standard type 1.5 V batteries (size AA). The battery housing is closed by a threaded watertight cap that can be easily removed for quick battery change.

4.2 USERS BUTTONS

The METER features two buttons (RESET and CAL) which individually perform two main functions and, together, other secondary functions. MAIN FUNCTIONS: - for the RESET key, resetting the partial register and Reset Total - for the CAL key, entering instrument calibration mode

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



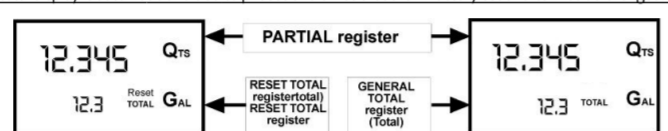
5 INSTALLATION

FOREWORD The METER features a 1" inch inlet and outlet, threaded and perpendicular, and has been designed to be installed in any position, both as fixed in-line installation and as moving installation on a dispensing nozzle. ATTENTION Make sure the threaded connections do not interfere with the inside of the measurement chamber causing the gears to seize. METER does not have a fixed direction of flow and both inlets can be used as inlet and outlet. Make sure a filter with adequate filtering capacity is always fitted either at meter inlet or at the entrance of the line on which the meter is fitted. If solid particles enter the measurement chamber, the gears could seize. For installations on system, position K400 so that the battery housing can be easily reached. The rubber protection is an integral part of the product. Be sure of its presence and its good conditions.

6 DAILY USE

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 K400. 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 a factory set and cannot be changed.



The Partial register positioned in the top part of the display indicates the quantity dispensed since the RESET key was last pressed. The RESET Total register, positioned in the lower part of the display, indicates the quantity dispensed since the last RESET total resetting. The RESET Total cannot be reset until the Partial has been reset, while vice versa, the Partial can always be reset without resetting the RESET Total. The unit of measurement of the two Totals can be the same as the Partial or else different according to the factory or user settings. The General TOTAL register (Total) can never be reset by the user. It continues to rise for the entire operating life of the meter. The register of the two Totals (Reset Total and Total) share the same area and digits of the display. For this reason, the two totals will never be visible at the same time, but will always be displayed alternately. The General Total (Total) is shown during Meter Standby. The Reset Total is shown: - At the end of a Partial reset for a certain time (a few seconds) which, during their rotation, transfer "volume units" of fluid: - For a few seconds after the end of dispensing. Once this short time has expired, Meter switches to standby and lower register display switches to General Total.

6 digits are available for Totals, plus two icons x 10 / x100. The increment sequence is the following: 0.0 - 99999.9 - 999999 - 100000.0 -> 999999 x 10 -> 100000 x 100 -> 999999 x 100

6.1 DISPENSING IN NORMAL MODE

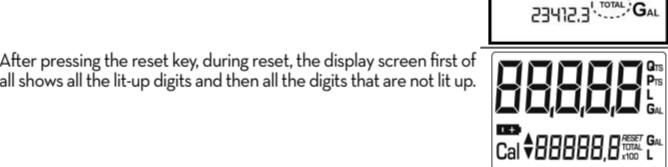
Normal mode is the standard dispensing. While the count is made, the partial and resettable total are displayed at the same time (reset total). Should one of the keys be accidentally pressed during dispensing, this will have no effect.

ATTENTION When the Factor Key is confirmed, the old User factor is deleted from the memory.

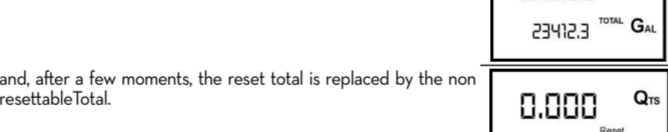


6.1.1 PARTIAL RESET (NORMAL MODE)

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.

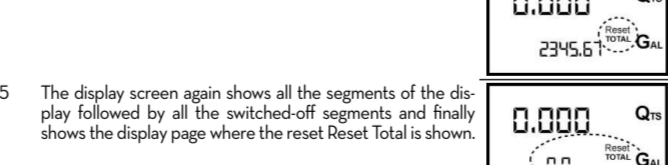


and, after a few moments, the reset total is replaced by the non resettable total.

6.1.2 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



7 CALIBRATION

METER is supplied with a factory calibration that ensures precise measuring in most operating conditions. Nevertheless, when operating close to extreme conditions, such as for instance, with fluids close to acceptable range extremes (such as low viscosity antifreeze or high-viscosity oils for gearboxes).

7.1 DEFINITIONS

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

7.2 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.

7.2.1 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 being used. If no calibration has ever been performed or, the factory setting has been restored after previous calibration, the following display page will appear: The word "Fact" abbreviation for "factory" shows that the factory calibration factor is being used.

ATTENTION When the Factor Key is confirmed, the old User factor is deleted from the memory.

7.2.2 DIRECT MODIFICATION OF K FACTOR

If normal Meter 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:

New cal. Factor = Old Cal Factor \* (100 - %E) / 100

EXAMPLE Error percentage found: 5% - 0.9% CURRENT calibration factor: 1.000 New USER FACTOR: 1.000 \* (100 - (-0.9) / 100) = 1.000 \* (100 + 0.9) / 100 = 1.009

If the Meter 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 Meter shows more than the real dispensed value (positive error).

7.2.2.1 IN-FIELD CALIBRATION PROCEDURE

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. For correct K400 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.

7.2.2.2 SHORT RESET KEY KEYING

The Meter is informed that the calibration procedure is finished. Before performing this operation, make sure the INDICATED value is the same as the REAL value.



LONG CAL KEY KEYING The Meter 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. IMPORTANT: From now on, the indicated factor will become the calibration factor used by the Meter and will continue to remain such even after a battery change.

LONG RESET KEY KEYING The Meter shows "CAL" and the zero partial total. Meter is ready to perform in-field calibration by dispensing - see previous paragraph.

SHORT RESET KEY KEYING When you 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.

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.

NO OPERATION The Meter stores the new work calibration factor and is ready to begin dispensing, using the USER K FACTOR that has just been changed.

SHORT/LONG CAL KEY KEYING The indicated value changes in the direction indicated by the arrow one unit for every short CAL key keying.

LONG RESET KEY KEYING The Meter is informed that the calibration procedure is finished. Before performing this operation, make sure the INDICATED value is the same as the REAL value.

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