





Istruzioni per l'uso e manutenzione

Instructions for use and maintenance

П

EN

**BULLETIN MO656 ITEN\_01** 



# ENGLISH

### **INDEX**

1	GENERAL WARNINGS	1C
2	GENERAL SAFETY WARNINGS	10
2.1	INDICATIONS OF DANGER FOR THE PERSON (WARNING)	10
2.2	HAZARD STATEMENTS FOR THE PRODUCT (CAUTION)	10
3	PRODUCT DESCRIPTION	1
3.1	INTENDED USE	1
3.1.1	Fluids allowed	1
3.1.2	Fluids not allowed	1
4	OPERATING CONDITIONS AND PERFORMANCE	12
5	ASSEMBLY	12
6	USE AND VERIFICATIONS	13
7	MAINTENANCE	13
8	PROBLEMS AND SOLUTIONS	14
9	DIMENSIONS	14
10	EXPLODED VIEW OF SPARE PARTS	15
11	DEMOLITION AND DISPOSAL	15

## **BULLETIN MO656**



### 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 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.



Manual preservation

This symbol indicates useful information.

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.

All reproduction rights are reserved by Piusi S.p.A.

The text cannot be reprinted without the written permission of Piusi S.p.A. © Piusi S.p.A.

THIS MANUAL IS THE PROPERTY OF Piusi S.p.A. ANY REPRODUCTION, EVEN PARTIAL, IS FORBIDDEN.

### GENERAL SAFETY WARNINGS 2

### 2.1 INDICATIONS OF DANGER FOR THE PERSON (WARNING)

- do not modify or tamper with the product
- do not use the product with pressures higher than those foreseen by the operating conditions
- prevent contact between the treated fluid, skin and eyes.
- do not use the product with flammable liquids
- do not use the product with corrosive liquids
- The operator must use personal protective equipment during use, handling, any maintenance and disposal.
- gloves resistant to chemical and thermal attack
- protective face mask

safety goggles

For specific information, always refer to the fluid MSDS.

### 2.2 HAZARD STATEMENTS FOR THE PRODUCT (CAUTION)

- do not use the product for uses other than those intended
- do not use the product exposing it to atmospheric agents such as rain and ice
- do not use the gun without liquid

10 /20 MO656



### 3 PRODUCT DESCRIPTION

PIUSI EASY OIL is a manual nozzle suitable for dispensing a wide range of oils.



### 3.1 INTENDED USE

The product is suitable for dispensing fluids with the characteristics described below

### 3.1.1 Fluids allowed

Oli lubrificanti e idraulici Viscosità: fino a 1500 cSt Temperatura fluido: O...60°C

### 3.1.2 Fluids not allowed

FLUIDS NON PERMITTED AND RELATED DANGERS - Gasoline

- Inflammable liquids with pm < 55°c

- Water

- Antifreeze

- Food liquids

- roou liquius

- Corrosive chemical products

- Solvents

- Fire - explosion

- Fire - explosion

- Oxidation

- Oxidation

- Contamination of the same

- Corrosion

- injury to persons

- Fire - explosion

- Damage to gasket seals

11 /20



### 4 OPERATING CONDITIONS AND PERFORMANCE

Temperature Relative humidity Flow rate Pmax Ambient temperature
max. 90%
30 I/min
70 bar

### 5 ASSEMBLY

Apply thread sealant to the male threads of the spout.

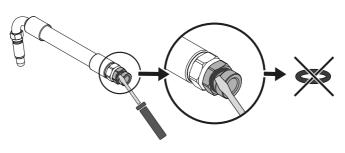
Install the spout. Tighten firmly.

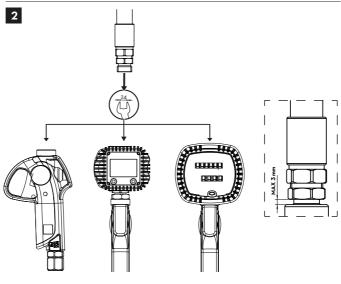
NOTE



To install the spout, remove the gasket from it and proceed with the installation. (see diagram below)







12 /20



### 6 USE AND VERIFICATIONS

### NOTE



Perform the following procedures to allow the pump to begin the cycle. Adjust the amount of air to the pump with pressure regulator.

If the valve leaks at any time, refer to the troubleshooting table.

- Point the gun into a suitable container to hold the dispensed fluid.
- Allow the pump to prime fluid to the control valve.
  - The control valve must not show leaks or dispense fluid.
- Operate the gun lever assembly several times. 3
  - The fluid should flow once the air has been eliminated.

With the lever in the released position, no fluid should come out of the spout. To lock the handle, press the lever, press the stop button and release the lever. To release the latch, press and release the lever.

If fluid leaks, refer to the troubleshooting table.

The drip valve opens automatically during delivery.

### **MAINTENANCE**

# tions

Safety instruc- During maintenance, the use of personal protective equipment (PPE) is compulsory. In any case always bear in mind the following basic recommendations for a good functioning of the product

- Don't hit the control handle if it doesn't work.
- Refer to the troubleshooting guide or return the unit to the nearest authorized service center.
- Do not point the nozzle towards the body.
- Do not exceed the rated pressure of any component installed in the system.
- Check all hoses for signs of wear, leaks, or loose fittings before each use.
- Tighten all joints regularly.
- Disconnect the air supply from the oil pump before attempting any repair or maintenance
- Release the line pressure by squeezing the lever on the control handle
- Failure to do so can result in death or serious injury.

### **Authorised** maintenance personnel ONCE A

WEEK:

All maintenance must be performed by qualified personnel. Tampering can lead to performance degradation, danger to persons and/or property and may result in the warranty being voided.

Check that the pipe joints are not loose, to avoid any leaks.

13 /20

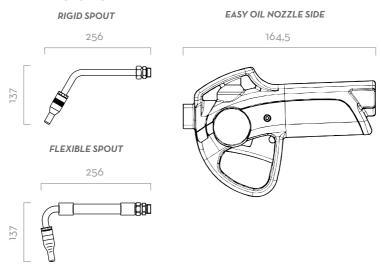


### 8 PROBLEMS AND SOLUTIONS

For any problem, it is good practice to contact the nearest authorized service center in your area.

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
	1. Presence of impurities on the valve gasket	1. Disassemble, clean and inspect the lever
		seat.
Fluid flow does		Check the mating surfaces and replace the
not stop		seals if necessary. Identify and eliminate the
		source of impurities
	2.Valve gasket worn or damaged	2. Replace the valve gasket.
Loss from the	1. Gun not closed	1. Close the gun
spout	2. Damaged gun	2. Replace the gun
	1. Insufficient initial tightening	1. Tighten the leaking connection
Leaks from the	2. Missing or inadequate thread sealant	2. Apply thread sealant * to the male pipe
junction points	· ·	threads.

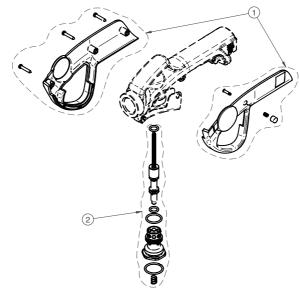
### 9 DIMENSIONS



**14** /20 , MO656



### 10 EXPLODED VIEW OF SPARE PARTS



Position Description

1 EASY OIL HALF-SHELL KIT

2 VALVE + SPRING GROUP

### 11 DEMOLITION AND DISPOSAL

Foreword

Disposing of packing materials

Metal Parts Disposal

Disposal of electric and electronic components

Miscellaneous parts disposal

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:

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

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

These must be disposed of by companies that specialize in the disposal of electronic components, in accordance with the indications of directive 2012/19/EU (see text of directive below).

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

PACKAGING PACKAGE CONTENTS/PRE-INSPECTION KNOWLEDGE K400 LCD DISPLAY (ONLY METER VERSION) USERS BUTTONS

INSTALLATION DAILY USE DISPENSING IN NORMAL MODE PARTIAL RESET (NORMAL MODE) RESETTING THE RESET TOTAL CALIBRATION

CALIBRATION MODE

**DEFINITIONS** 

DISPLAY OF CURRENT CALIBRATION FACTOR AND RESTORING FACTORY FACTOR. IN FIELD CALIBRATION IN-FIELD CALIBRATION PROCEDURE DIRECT MODIFICATION OF K FACTOR METER CONFIGURATION

**MAINTENANCE** CHANGE BATTERY CLEANING MALFUNCTIONS DEMOLITION AND DISPOSAL

TECHNICAL DATA

EXPLODED VIEWS / MAGNET POSITION **DECLARATION OF CONFORMITY** PIUSI S.p.A

Via Pacinotti c.m.- z.i.Rangavir 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 - Electromagnetic Compatibility Directive 2014/30/EU sions indicated in the directives : he 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

The person authorised to compile the technical file and draw up the declaration is Otto Varini as legal representative Motorin

Suzzara, 20/04/2016

### **GENERAL WARNINGS** To ensure operator safety and to protect the dispensing system from

potential damage, workers must be fully acquainted with this instrucon manual before attempting to operate the dispensing system. he following symbols will be used throughout the manual to highlight safety information and precautions of particular importance: ATTÉNTION This symbol indicates safe working practices for operators

Otto Varini

legal representative

and/or potentially exposed persons.
WARNING his symbol indicates that there is risk of damage to the

equipment and/or its components. This symbol indicates useful information.

This manual should be complete and legible throughout. It should remain available to end users and specialist installation and main tenance technicians for consultation at any time. All reproduction rights are reserved by Piusi S.p.A. The text cannot be reprinted without the written permission of Piusi S.p.A. © Piusi S.p.A.

THIS MANUAL IS THE PROPERTY OF Piusi S.p.A. ANY REPRODUCTION, EVEN PARTIAL, IS FORBIDDEN. his manual belongs to Piusi S.p.A., which is the sole proprietor of all rights indicated by applicable laws, including, by way of ex-ample, laws on copyrights. All the rights deriving from such laws are reserved to Piusi S.p.A.: the reproduction, including partial, of this manual, its publication, change, transcription and notification to the public, transmission, including using remote communication media, placing at disposal of the public, distribution, marketing in

any form, translation and/or processing, loan and any other activity reserved by the law to Piusi S.p.A..

# SAFETY INSTRUCTIONS

3.1 SAFETY WARNINGS

FIRE AND

or explode.

MISUSE

**EXPLOSION** 

mable fluids are

work area, such

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, discon

nect the power source. To help prevent fire and explosion:

Use equipment only in will ventilated area.

Keep work area free of debris, including rags and spilled or oper ntainers of solvent and gasoline. **\( \frac{1}{2} \right)** Do not plug or unplug power cords or turn lights on or off when Ground all equipment in the work area.

Stop operation immediately if static sparking occurs or if you feel a shock. Do not use equipment until you identify and correct the problem. Keep a working fire extinguisher in the work area.

Do not operate the unit when fatigued or under the influence of drugs or alcohol. o not leave the work area while equipment is energized or un-Turn off all equipment when equipment is not in use.

may void agency approvals and create safety hazards.

Do not alter or modify equipment. Alterations or modifications

call for help from qualified and trained personnel. Do not oper-

Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. Keep children and animals away from work area.

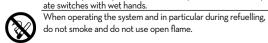
ording to applicable guidelines.

Comply with all applicable safety regulations. TOXIC FLUID Read MSDS's to know the specific hazards of the fluids you are using Store hazardous fluid in approved containers, and dispose of it

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

3.2 FIRST AID RULES Disconnect the power source, or use a dry insulator to protect

Persons who yourself while you move the injured person away from any elechave suffered electric shock trical conductor. Avoid touching the injured person with your bare hands until he is far away from any conductor. Immediately



# ENGLISH (Translated from Italian)

dling and installation

Close-fitting clothing;

rotective gloves;

Safety goggles;

3.5 PACKAGE CONTENTS/PRE-INSPECTION

**KNOWLEDGE K400** 

3.3 GENERAL SAFETY RULES

3.4 PACKAGING

1 - contents of the package

2 - weight of the contents

3 - description of the

FOREWORD

4

**FOREWORD** 

**FUNCTIONING** 

**OPERATIONAL** 

K400 components

Measurement chamber

RESET button

4 - CAL button 5 - Battery housing

FOREWORD

5 INSTALLATION Wear protective equipment that is: suited to the operations that need to be performed; resistant to cleaning products. Vear the following personal protective equipment during han-ATTENTION

K400 COMES PACKED IN A CARDBOARD BOX WITH A

LABEL INDICATING THE FOLLOWING DATA

To open the packaging, use a pair of scissors or a cutter, being careful not

In the event that one or more of the components described

below are missing from inside the package, please contact Piusi inc technical support.

Check that the data on the plate correspond to the desired

specifications. In the event of any anomaly, contact the sup-

METER is an electronic digital meter featuring an oval-gear mea-

surement system, designed for easy and precise measuring of

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". The magnetic coupling, be-

tween the magnets installed in the gears and a magnetic switch

per sealing and ensures transmission of the pulses generated by

In the dispensing mode (Normal Mode), the partial and the total

The METER features a non-volatile memory for storing the dispensing

tals: L=Litres Gal=Gallons

Gal=Gallons

data, even in the event of a complete power break for long periods.

outside the measurement chamber, ensures measurement cham-

gear rotation to the electronic board microprocessor.

amounts are shown in two different registers of the LCD.

not use equipment which you suspect might not be safe.

r immediately, indicating the nature of the defects. Do

to damage the dispensing system or its components.

oils, diesel, rapsoil and antifreeze.

The measurement electronics and the LCD display are fitted in the top part of the meter, isolat-

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

Partial register (5 figures with moving 6 Indication of type of total, (TOTAL / Recomma FROM 0.1 to 99999) indicating set TOTAL);

Totals register (6 figures with moving 9 Indication of unit of measurement of Par-

tial: Qts=Quarts L=Litres

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 measure-

ment mechanism for any cleaning operations. Inside the measurement chamber are the oval gears which, on turning, generate electrical pulses which are processed by the

By applying a suitable <u>calibration factor</u> (meaning a "weight" associated with each pulse), the microprocessor translates the pulses generated by the "fluid volume" rotation expressed in the set

units of measurement, displayed on the partial and total registers of the LCD. All the meters are factory set with a calibration factor called FACTORY K FACTOR equal to 1,000.

For best meter performance - adapting this to the intrinsic characteristics of the fluid to be measured - the instrument can be "cali-

The METER is powered by two standard type 1.5 V batteries (size 1N). The battery housing is closed by a threaded watertight cap

that can be easily removed for quick battery change.

The METER features two buttons (RESET and CAL) which individually

perform two main functions and, together, other secondary functions.

Used together, the two keys permit entering configuration mode where

for the RESET key, resetting the partial register and Reset Total

CALIBRATE MEANS PERFORMING ACTIONS ON THE METER

Long pressure of cal key short pressure of reset key short pressure of reset key

KEYS. BELOW IS THE LEGEND OF THE SYMBOLS USED TO DE-

- for the CAL key, entering instrument calibration mode

the desired unit of measurement can be set.

SCRIBE THE ACTIONS TO BE PERFORMED

ted". It is possible to return to factory calibration at any time.

sor-controlled electronic board.

4.1 LCD DISPLAY (ONLY METER VERSION)

the volume dispensed since the reset

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)

4.2 USERS BUTTONS

FUNCTIONS

PERFORMED

SECONDARY

FUNCTIONS

Indication of total multiplication factor

button was last pressed

Indication of battery charge

Indication of calibration mode

installation and as moving installation on a dispensing nozzle.

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 batery housing can be easily reached.

ENGLISH (Translated from Italian)

The METER features a · inch inlet and outlet, threaded and perpendicular, and has been designed to be installed in any position, both as fixed in-line

Make sure the threaded connections do not interfere with

the inside of the measurement chamber causing the gears

The rubber protection is an integral part of the product. Be sure of its presence and its good conditions 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 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 to-tal 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. PARTIAL register 12.345 12.3 Reset G 12.3 TOTAL

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 - At the end of a Partial reset for a certain time (a few seconds) - During the entire dispensing stage - For a few seconds after the end of dispensing. Once this short time has expired. Meter switches to standby and lower

egister 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 x 10 → 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.

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 K400 again.

12.345 .12.3 Reset GA

12,345 Q: 

12.345

0.000

(23412.3 ™

0.000

0.0

2345.61 Reset GA

23412.3 TOTAL GAL

6.1.1 PARTIAL RESET (NORMAL MODE)

ed from the fluid-bath measurement chamber and sealed from the outside by means of a cover The partial register can be reset by pressing the reset key when the meter is in standby, meaning when the display screen shows

23412.3 (TOTAL) GA 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. Cal \$88888,855 C

At the end of the process, a display page is first of all shown with the reset partial and the reset total 0.000 **Q**15 23412.3 TOTAL GAL

and, after a few moments, the reset total is replaced by the nor resettableTotal.

6.1.2 RESETTING THE RESET TOTAL ter resetting the partial register. The reset total can in fact be reset by pressing the reset key at length while the display 23412.3 Reset GA screen shows reset total as on the following display page:

Schematically, the steps to be taken are: 12.345 Wait for the display to show normal standby display page (with total only displayed) Press the reset key quickly The meter starts to reset the partial 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 dis play followed by all the switched-off segments and finally 0.000 shows the display page where the reset Reset Total is shown.

CALIBRATION

METER is supplied with a factory calibration that ensures precise neasuring in most operating conditions. Nevertheless, when operating close to extreme conditions, such as for instance: with fluids close to acceptable range extremes (such as lowviscosity antifreeze or high-viscosity oils for gearboxes ) In extreme flow rate conditions (close to minimum or maximum acceptable values)on-the-spot calibration may be required to suit the real conditions in which the meter is required to operate. When operating close to extreme use or flow rate conditions (close to minimum or maximum acceptable values), an on-the-spot calibration may be required to suit the real conditions in which the K400 is required to operate.

### ENGLISH (Translated from Italian)

71 DEFINITIONS

CALIBRATION Multiplication factor applied by the system to the electrical pulses re-**FACTOR OR** ceived, to transform these into measured fluid units. "K FACTOR" FACTORY K

Factory-set default factor, It is equal to 1,000. This calibration factor ensures utmost precision in the follo cision in the following operating conditions: motor oil type 10W30 Temperature: 20°C Flow rate: 1-30 ltr/min

Even after any changes have been made by the user, the factory  $\boldsymbol{k}$  factor can be restored by means of a simple procedure. USER K FACTOR: Customized calibration factor, meaning modified by calibration.

7.2 CALIBRATION MODE

Display the currently used calibration factor: Return to factory calibration (Factory K Factor) after a previ ous calibration by the user Change the calibration factor using one of the two previously indicated procedures Two procedures are available for changing the Calibration Factor:

In-Field Calibration, performed by means of a dispensing operation Direct Calibration, performed by directly changing the calibration factor n calibration mode, the partial and total dispensed quantities indicated on the display screen take on different meanings according to the calibration procedure phase. In calibration mode, the K400 cannot be used for normal dispensing operations. In "Calibration" mode, the totals are not increased The K400 features a non-volatile memory that keeps the data concerning calibration and total dispensed quantity stored for an indefinite time, even in the case of a long power

### 7.2.1 DISPLAY OF CURRENT CALIBRATION FACTOR AND RESTORING FACTORY FACTOR.

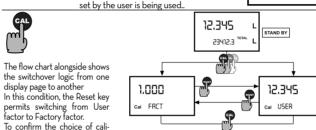
repeated.



By pressing the CAL key while the appliance is in Standby, the display page appears showing the current calibration factor used. If no cali 1.000 bration has ever been performed, or the factory setting has been restored after previous calibra-Cal FRET tions, the following display page will appear: The word "Fact" abbreviation for "factory" shows

break; after changing the batteries, calibration need not be

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 0.998showing the currently used calibration facto (in our example 0,998). 



ration factor, quickly press 88888 CAL while "User" or "Fact" are After the restart cycle, the factor that has just been con-



**ATTENTION** 

deleted from the memory

### 7.2.2 IN FIELD CALIBRATION FOREWORD

7.2.2.1

This procedure calls for the fluid to be dispensed into a graduated sample container in real operating conditions (flow rate, viscosity,

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 containe 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.

# IN-FIELD CALIBRATION PROCEDURE

	NONE Meter in Standby	12.345 1345 TOTA	L
CALAL 1	LONG CAL key keying The Meter 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	1,000	L L
RESET SET LET	LONG RESET key keying The Meter shows "CAL" and the partial at zero. The Meter is ready to perform in-field calibration.	O.OOO Cal FIELD	L
4	DISPENSING INTO SAMPLE CONTAINER Without pressing any key, start dispensing into the sample container	9.800	L

ndicated value

SHORT RESET key keying
The Meter is informed that the calibration dispensing operati

Make sure dispensing is correctly finished before performi

this operation. To calibrate the Meter, the value indicated by the

nartial totaliser (example 9.800) must be forced to the real value narked 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.

They ? Cal FIELD Dispensing can be interrupted and started again at will. Continu dispensing until the level of the fluid in the sample container ha reached the graduated area. There is no need to reach a prese

9.800

4 **ATTENTION** 

The Reset Total and Total registers will be automati-

### ENGLISH (Translated from Italian)

MAINTENANCE

9.1 CHANGE BATTERY

The METER has been designed to require a minimum amount of maintenance. The only maintenance jobs required are: Battery change - necessary when the batteries have run down Cleaning the measurement chamber. This may be necessary due to the particular nature of the dispensed fluids or due to the presence of solid particles following bad filtering Use 2x1.5 V alkaline batteries size AAA

REPLACEMENT

**FOREWORD** 

K400 should be installed in a position allowing the bat teries to be replaced without removing it from the sys-K400 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, K400 continues to operate correctly, but the fixed icon warns the user that



es, with reference

to the exploded

**FOREWORD** 

ATTENTION

CLEANING

second battery alarm level will be reached which will prevent operation. In this condition the battery icon starts to flash and is the nly one to remain visible on the LĆD. Press RESET to update all the totals Loosen the 4 fixing screws of the lower cover

f K400 operation continues without changing the batteries, the

Place the new batteries in the same position of the old ones proceed as follows being sure that the positive pole is positioned as shown on the rubber protection (pos. 7) Close the cover again, by positioning the rubber protec tion as a gasket

K400 will switch on automatically and normal operation

Remove the old batteries

cated before the batteries were changed. After changing the batteries, the meter does not need calibrating again. ATTENTION Do not discard the old batteries in the environment. Refer to local disposal regulations.

can be resumed

The METER will display the same Reset Total, the same Total and the same Partial indi-

23412.3 GAL it is ADVISABLE to change the batteries.

9.2 CLEANING

The METER measurement chamber can be cleaned without removing the instrument from the line or from the dispensing nozzle on which it is fitted. rays make sure the liquid has been drained from the

Be careful not to damage the body or the gears

reassemble the instrument, perform the operations in the

meter before cleaning. o clean the chamber, proceed as follows (with reference to the spare parts list positions) Loosen the four cover retention screws (pos. 15) emove the cover (pos. 14) and the seal (pos. 13) Remove the oval gears.

Clean where necessary. For this operation, use a brush or pointed object such as a small screwdriver.

opposite sequence **ATTENTION** Close the fixing screws on the cover with the tightening couple Only one of the two gears features magnets. This must

be fitted in the position marked "MAGNET" (see drawing). Once the gear has been fitted, the magnets must be visible before closing the cover. The gears with magnets are to be placed with the magnets on the bottom (see drawing) Fit the second gear (without magnets) with axis greater pared to the first gear, and with the holes

risible from the cover side Make sure the gears are turning freely before closing the

10 MALFUNCTIONS		
PROBLEM	POSSIBLE CAUSE	REMEDIAL ACTION
LCD: NO INDICATION	Bad battery contact	Check battery contacts
NOT ENOUGH MEA-	Wrong K FACTOR	With reference to paragraph H, check the K FACTOR
SUREMENT PRECISION	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	Gears blocked	Clean the measurement chamber
THE METER DOES NOT COUNT, BUT THE	Incorrect installation of gears after cleaning	Repeat the reassembly procedure
FLOW RATE IS COR- RECT	Possible electronic card problems	Contact your dealer

industrial waste and, in particular:

signed to scrap metal collectors.

2012/19/EU (see text of directive below).

authorities.

industrial waste.

ered to companies for normal recycling of cellulose.

Information on the product and/or packaging not be disposed of togeth

regarding product must not be disposed of together with normal household waste.

It is the responsibility of the

environment for as other electric or electronic equipment by means of the specific refuse

Such wastes must be disposed of separately.

defined by the laws in force.

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

The packaging consists of biodegradable cardboard which can be deliv

Metal parts, whether paint-finished or in stainless steel, can be con-

These must be disposed of by companies that specialize in the disposa

European Directive 2012/19/EU requires that all equipment marked with

er with non-differentiated urban waste. The symbol indicates that this

It is the responsibility of the owner to dispose of these products as well

collection structures indicated by the government or the local governing

Disposing of RAEE equipment as household wastes is strictly forbidden.

Any hazardous substances in the electrical and electronic appliances

and/or the misuse of such appliances can have potentially serious conse-

quences for the environment and human health.

In case of the unlawful disposal of said wastes, fines will be applicable as

Other components, such as pipes, rubber gaskets, plastic parts an

wires, must be disposed of by companies specialising in the disposal of

# DEMOLITION AND DISPOSAL

within the

parts disposal

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) he combination of the unit of measurement of the Partial register and that of the To-

ENGLISH (Translated from Italian)

9.800

Cal ▼ FIELD

9.860

Cal ▲ FIELD

Cal END

1.015

0.000

Cal 13456 TOT

12.345

13456

1.000

FIELD

1.000

1.000

Cal ▼ DIRECT

1.003

----

Cal END

1.003

Cal END

0.000

1345E TOTAL

1.000

SHORT/LONG CAL key keying
The indicated value changes in the direction indicated by the

LONG RESET key keying

Materia informed that the calibration procedure is finishe

Before performing this operation, make sure the INDICATED value is the same as the REAL value.

9.86

Indicated value Real value
The Meter 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),

At the end of the calculation, the new USER K FACTOR is shown

or a few seconds, after which the restart cycle is repeated

calibration factor used by the Meter and will continue to remo such even after a battery change

The Meter stores the new work calibration factor and is

ready to begin dispensing, using the USER K FACTOR tha has just been calculated..

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 USER K 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 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

The Meter shows "CAL" and the zero partial total. Meter is ready to perform in-field calibration by dispensing -

We now go on to Direct change of the calibration factor: the word Direct" appears together with the Currently Used calibration

Changes the direction of the arrow. The operation can be repeated to alternate the direction of the arrow.

The indicated value changes in the direction indicated by the arm one unit for every short CAL key keying

continually if the CAL key is kept pressed. The speed increses by keeping the key pressed. If the desired value is exceed peat the operations from point (5).

he Meter is informed that the calibration procedure is finished

ore performing this operation, make sure the INDICATED

At the end of the calculation, the new USER K FACTOR is show for a few seconds, after which the restart cycle is repeated t

tinally achieve standby condition.

IMPORTANT: From now on, the indicated factor will become the

calibration factor used by the Meter and will continue to remo

The Meter stores the new work calibration factor and is ready to

begin dispensing, using the USER K FACTOR that has just bee changed.

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

7.2.3 DIRECT MODIFICATION OF K FACTOR

New cal. Factor = Old Cal Factor \*

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

METER in Standby.

LONG CAL KEY KEYING

ser) is currently being used.

LONG RESET KEY KEYING

LONG RESET KEY KEYING

SHORT RESET KEY KEYING

SHORT/LONG CAL KEY KEYING

LONG RESET KEY KEYING

such even after a battery change

NO OPERATION

NO OPERATION

ut changing the indicated value, the UDER NIBOLINE same as the FACTORY K FACTOR, thus it is ignored.

one unit for every short CAL key keying

9.860

Cal \* FRCT

NO OPERATION

NO OPERATION

**EXAMPLE** 

Error percentage found: E% - 0.9 %

CURRENT calibration factor: 1.000

continually if the CAL key is kept p

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)

o choose between the 4 available combinations

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 ) Every short press of the RESET key, the various combinations of the units of measurements are scrolled as shown below:

UNIT UNIT UNIT Qts UNIT Pts



By pressing the CAL key at length, the new settings will be stored, the METER will pass through the start cycle and will hen be ready to dispense in the set units.

cally changed to the new unit of measurement.

NO new calibration is required after changing the Unit of

12 TECHNICAL DATA

Measurement system	Oval gears
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)	-20 · + 70 (°C)
Storage humidity (Max)	95 (% RU)
Operating temperature (Range)	-10 · + 50 (°C)
Flow resistance (at 151/min with oil SAE10W at 20°C	0.35 bar
Permissible Viscosity (Range)	5 · 5000 mPas
Accuracy (from 1 to 30 l/min)	±/-0,5% of the value indicated after calibration
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
Weight	0.5 Kg (included batteries)
Protection	IP65
BULB (pulser)	Max current: 100 mA

Max Voltage: 28V

MADE Uso manutenzione e calibrazione

TALY Use, maintenance and calibration EN

BULLETIN MO253E ITEN\_OO

**METER** 

Fluid Handling

piusi.com

