PIUSI

Fluid Handling Innovation

DELPHIN PRO DC

Installation, use and maintenance

EN

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1. CONFORMITY

1.1 EC DECLARATION OF CONFORMITY

The undersigned:

PIUSI S.p.A.
Via Pacinotti c.m. z.i. Rangavino
46029 Suzzara - Mantova - Italy

DECLARES

under its own responsibility, that the equipment described below:
Description: AD-Blue® distributor for cars
Model: **DELPHIN PRO DC**
Serial number: refer to the Lot Number indicated on the CE plate affixed to the product.
Year of manufacture: refer to the year of production indicated on the CE plate affixed to the product.

conforms to the legal regulations that transpose the following directives:

· Machinery Directive 2006/42/EC

· Electromagnetic Compatibility Directive 2014/30/EU
The documentation is at the disposal of the relevant authority upon justified request at PIUSI S.p.A. or request via
e-mail: doc_tec@piusi.com

The party authorised to compose the technical file and draw up the declaration is *Otto Varini* in his capacity as legal representative.

Suzzara 20/04/2016

Otto Varini
legal representative

EN

1.2 DECLARATION OF COMPATIBILITY

The undersigned:

PIUSI S.p.A.
Via Pacinotti c.m. z.i. Rangavino
46029 Suzzara - Mantova - Italy

DECLARES

THAT THE PARTS OF DELPHIN PRO DC IN DIRECT CONTACT WITH THE LIQUIDS HANDLED HAVE BEEN TESTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS

ISO22241-1 : 2006 (quality standard)
Diesel engines - NO_x reduction agent AUS 32 - part 1: Quality requirements and have been tested according to the requirements of the following standard
ISO 22241-2: 2006 (quality standard)
Diesel engines - NO_x reduction agent AUS 32 - part 2: Test methods

The AdBlue fluid, both before and after the test, was within the specified AUS32 (AdBlue) limit in compliance with ISO 22241-2-2006 (according to the DIN V 70070 standard).

Suzzara 20/04/2016

Otto Varini
legal representative

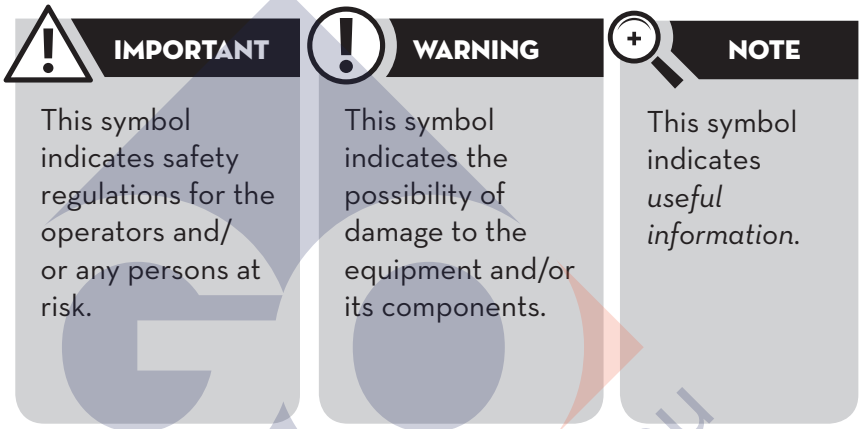
2. GENERAL INFORMATION

IMPORTANT INFORMATION

For operators' safety and to prevent any damage to the distribution system, the instruction manual must be fully read and understood before carrying out any operation on the distribution system.

Symbols used in the manual

The following symbols will be used in the manual to highlight particularly important instructions, warnings and information.



Storage of the manual

This manual must be whole and legible in its entirety. The end user and specialist technicians authorised for installation and maintenance must be able to read it at any time. The batteries are not included in the warranty.

Reproduction rights

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3. SAFETY INSTRUCTIONS

3.1 SAFETY INFORMATION

Electrical supply - preliminary checks for installation

Before installation, ensure that the electrical supply network features an adequate earth line in accordance with the regulations in force.

IMPORTANT

Completely avoid contact between the electrical supply and the liquid to be pumped.

Inspection and maintenance operations

Before carrying out any inspection or maintenance operations, disconnect the power supply by removing the plug from the power socket and the battery.

Prohibitions

IMPORTANT

Supporting or transporting the system using the electrical supply cable is strictly prohibited.
Supporting or transporting the system using the suction tube or using the delivery tube is strictly prohibited.
In the event of suspected contamination of the liquid in the tank, cleanse the tank.
Do not use the Delphin PRO DC before it is restored.

3.2 FIRST AID REGULATIONS

Contact with the product

For problems deriving from the product handled with EYES, SKIN, INHALATION and INGESTION, refer to the DEF SAFETY DATA SHEET.

Persons subjected to electrical discharge

Disconnect the supply, or use a dry insulator for protection when moving the victim far away from any lead. Avoid touching the victim with bare hands until they are far away from any lead. Request the assistance of trained, qualified staff immediately. Never operate switches with wet hands.

NOTE

Refer to the product safety data sheets.

3.3 GENERAL SAFETY REGULATIONS

Basic characteristics of the protective equipment

Wear protective equipment that is:
· suitable for the operations to be carried out
· resistant to the products used for cleaning.

Personal protective equipment to be worn

During the handling and installation stages, wear the following personal protective equipment:


safety shoes


protective gloves


close-fitting clothing


safety goggles


Instruction manual

Protective gloves

Prolonged contact with the product handled may cause skin irritation; always use protective gloves when dispensing.

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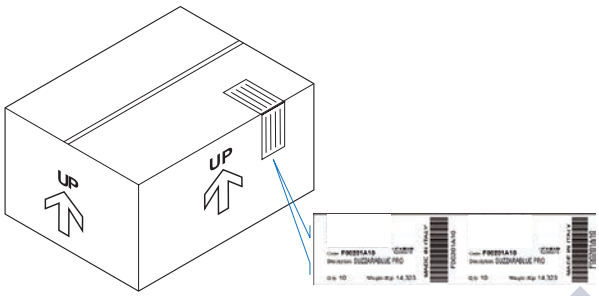
IMPORTANT

Never touch the plug or the socket with wet hands. Do not turn the distribution system on if the supply connection cable, important parts of the equipment – the suction/delivery tube for example – the gun, or the safety devices are damaged. Replace the damaged tube immediately. Before each use, check that the supply connection cable and plug are not damaged. Have the damaged supply connection cable repaired immediately by a specialist electrician.

IMPORTANT

The plug and socket must be connected far from water. Unsuitable extension leads may be dangerous. Outside, use only authorised extension leads for which this use is envisaged with an adequate wire diameter in accordance with the regulations in force. For safety reasons, it is advisable, in principle, to use the equipment only with a residual-current circuit breaker (max. 30 mA).

4. DISTRIBUTION SYSTEM PACKAGING



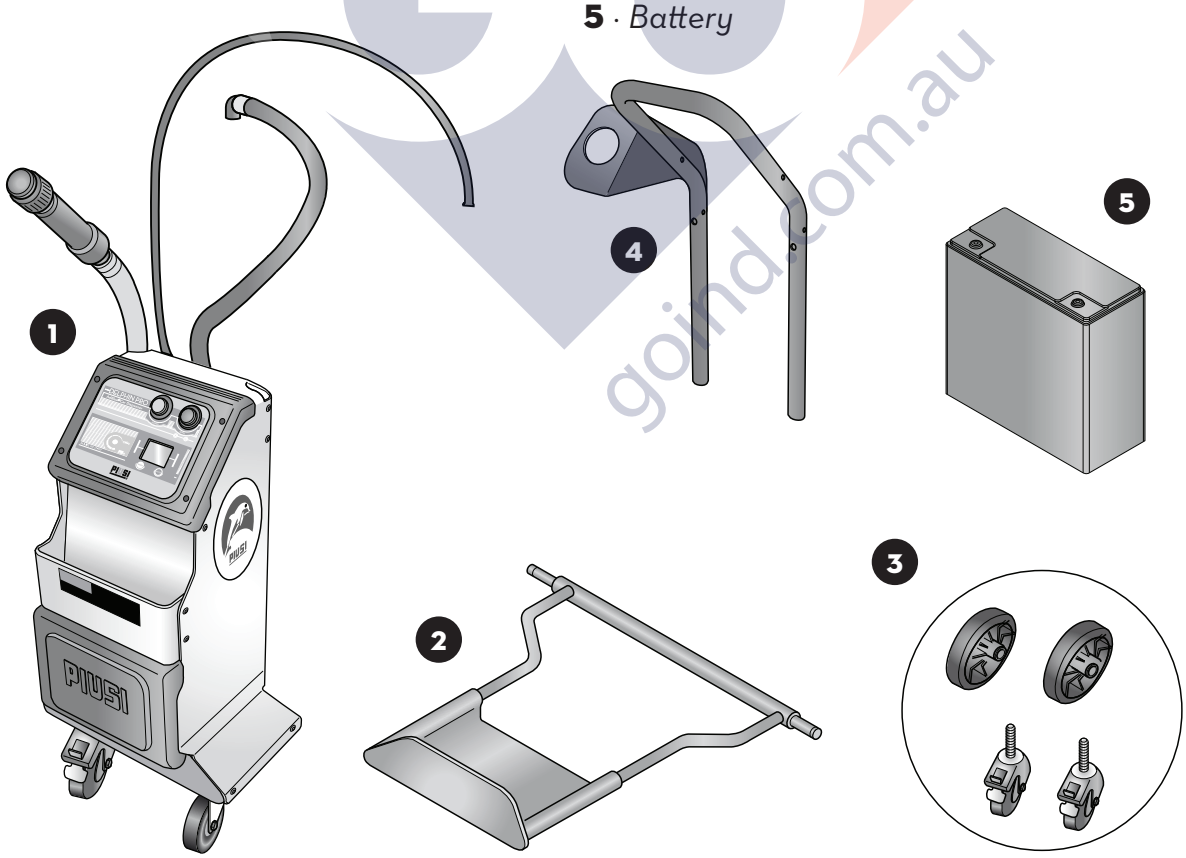
The distribution system is supplied packaged in a cardboard box, to which the following indications are applied:

- ***arrow*** indicating the UPPER side
- ***label*** showing the information for the equipment (model, weight, etc.).

4.1 CONTENTS OF THE PACKAGE / COMPONENTS OF DELPHIN PRO DC

To open the cardboard packaging, use scissors or a cutter, taking care not to damage the distribution system or its components. Open the package and check that it contains the following components:

1 · *Machine unit*
2 · *Drum trolley*
3 · *Wheel kit*
4 · *Handle with bracket*
5 · *Battery*



IMPORTANT

Check that the details on the plate correspond to those desired. In the event of any failure, contact the supplier immediately, indicating the nature of the defects and if in doubt as to the safety of the equipment do not use it.

NOTE

If one or more of the components described below are not contained in the package, contact the manufacturer's technical assistance service.

5. MACHINE AND MANUFACTURER IDENTIFICATION

The distribution system has an identification plate applied directly to the pump bearing the following information:

· model

· lot number / year of manufacture

· technical data

· use and maintenance handbook code.

IMPORTANT

Before installation, always check that the distribution system model is correct and suitable for the supply currently available (Voltage / Frequency).

5.1 POSITION OF THE PLATES

Some stickers and/or plates are applied to the distribution system to indicate the most relevant information to the operator. It is necessary to check that these do not deteriorate or detach over time. The following labels are present:

NOTE

Should this occur, please contact our customer assistance office so that we can send you the spoilt or missing plates/labels for reapplication where originally provided.

safety shoes

close-fitting clothing

protective gloves

protective goggles

Consult the use and maintenance manual

Label for use only with water/urea solutions

CE plate with technical data

6. TECHNICAL SPECIFICATIONS

General dimensions

Width	**800 mm**
Depth	**860 mm**
Height	**1200 mm**

Weight

Delphin Pro DC	**46 kg**

Technical data

Voltage	**100 / 230 V**
Frequency	**50 / 60 Hz**
Power	**100 W (max.)**
Absorption	**7 A**
Operating temperature	**+ 5 °C / + 40 °C**
Flow rate	**min. 3 l/min – max. 9 l/min**

7. INTENDED USE

Envisaged use

The "**DELPHIN PRO DC**" distribution system was designed and produced to distribute the product named AdBlue®, DEF (Diesel Exhaust Fluid) or water.

Conditions of use

The "**DELPHIN PRO DC**" distribution system must be used in observance of the following conditions:

- *max. temperature of product for dispensing: +40 °C*
- *min. temperature of product for dispensing: 0 °C*
- *max. temperature of product for dispensing permitted by the materials: +40 °C*
- *permitted voltage variation: +/- 5%*
- *equivalent continuous sound pressure level in workplaces: 75 dB (A)*
- *ensure that the pump operates within its rated operating range.*

Flammable liquids and explosive atmospheres

IMPORTANT

The "**DELPHIN PRO DC**" system was not designed for the distribution of diesel, petrol, flammable liquids with flash point <55 °C/131 °F, or for operation in environments with a potentially explosive atmosphere. Use in the conditions indicated above is therefore prohibited.

Use not envisaged

IMPORTANT

Use of the system for purposes other than those envisaged and specified in the point "Envisaged use" is strictly prohibited.
Any use other than that for which the system was designed and described in this manual is considered "INAPPROPRIATE USE", for which the manufacturers accepts no responsibility in case of harm to property, persons, animals or the system itself.

8. CHARACTERISTICS OF THE PRODUCT HANDLED

Products permitted

The "**DELPHIN PRO DC**" distribution system was designed and produced to distribute a special liquid comprising a mixture of water and urea, named AdBlue®/DEF, according to the 22241 standard. "**DELPHIN PRO DC**" can also be used with water.

Products not permitted

IMPORTANT

All products not indicated in the "Intended use" and "Characteristics of the product handled" paragraphs are to be considered not permitted and inappropriate and therefore prohibited.
The manufacturer accepts no responsibility for harm to persons or property due to failure to observe this instruction.

9. INSTALLATION

Introduction

The "**DELPHIN PRO DC**" distribution system was designed and configured for use on a trolley to facilitate use and dispensing.

Staff authorised for installation

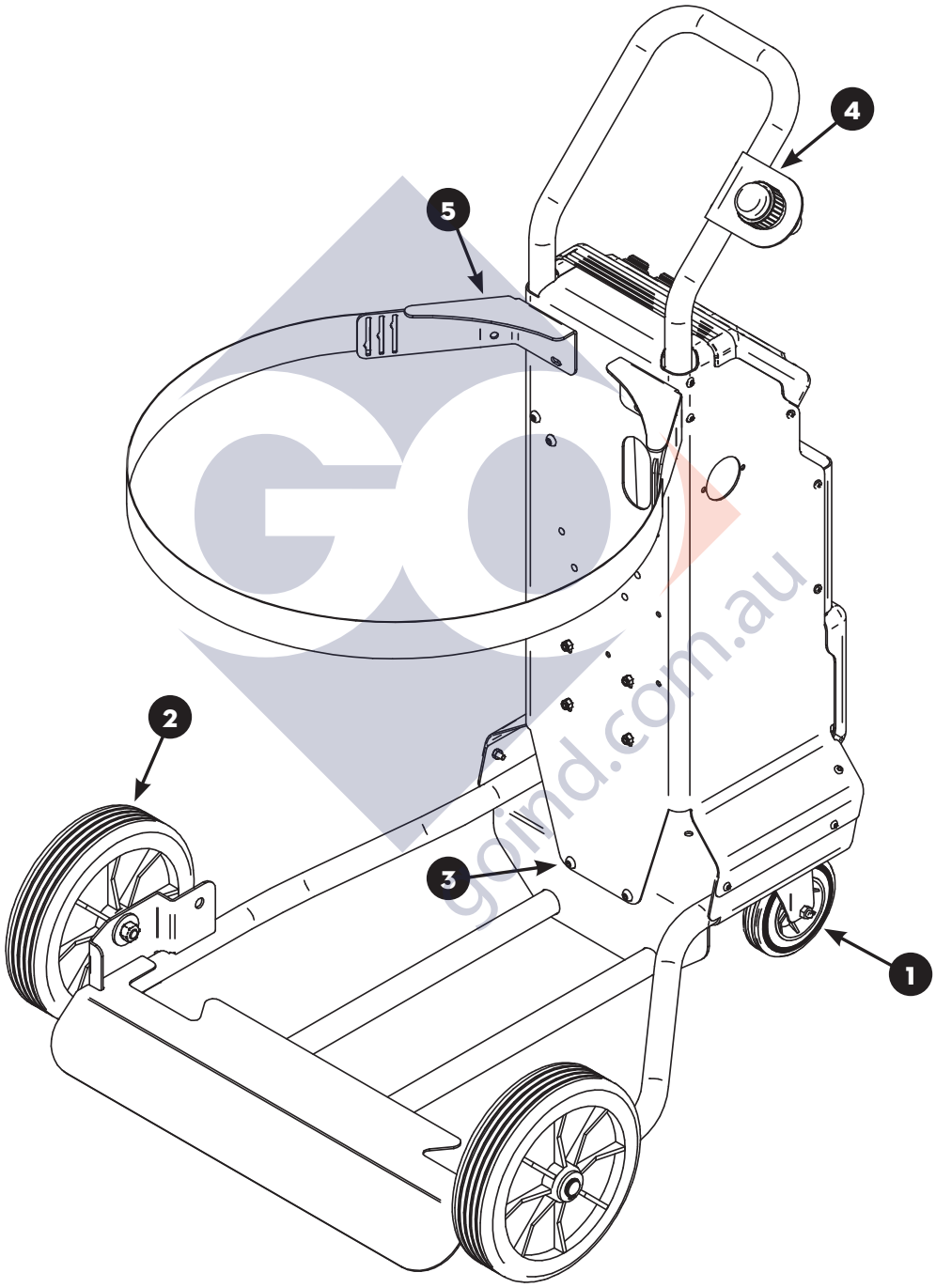
The installation operations must be performed only by competent and authorised staff, who must:
- check whether the accessories necessary for the correct operation of the pump are installed correctly
- use solely the accessories provided with the system.

IMPORTANT

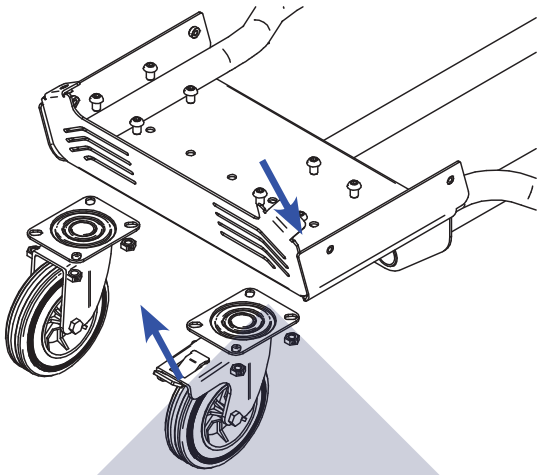
- The use of unsuitable accessories not provided with the system is strictly prohibited. The manufacturer accepts no responsibility for harm to persons, property or the environment due to failure to observe this instruction.
- The "**DELPHIN PRO DC**" distribution system is solely for professional use.
- The "**DELPHIN PRO DC**" distribution system must be installed in an adequately lit location, in compliance with the regulations in force.
- The "**DELPHIN PRO DC**" distribution system was designed for use in a dry environment.
- There must be a stable connection to the battery, made as the final operation before closing the front cover.

10. ASSEMBLY

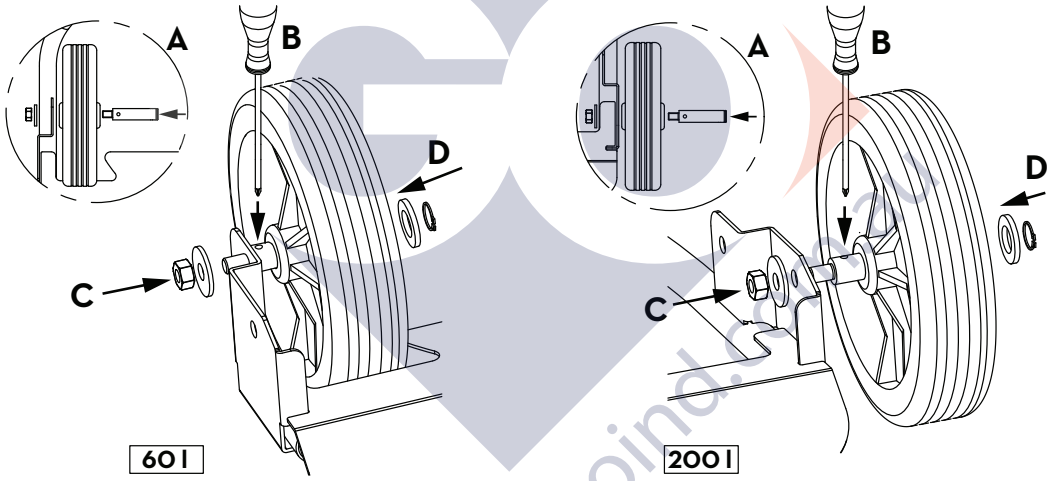
Assemble as in the figure.



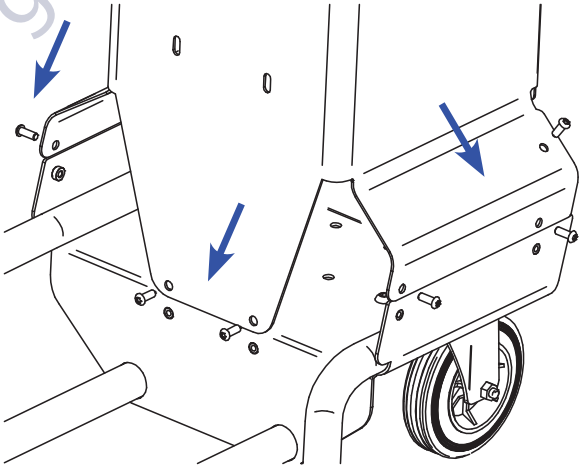
1 Fitting castors on drum trolley



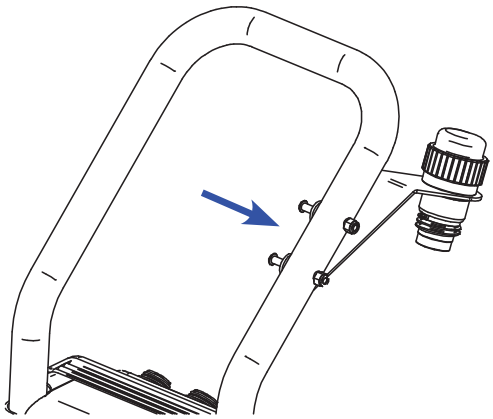
2 Fitting fixed wheels on drum trolley



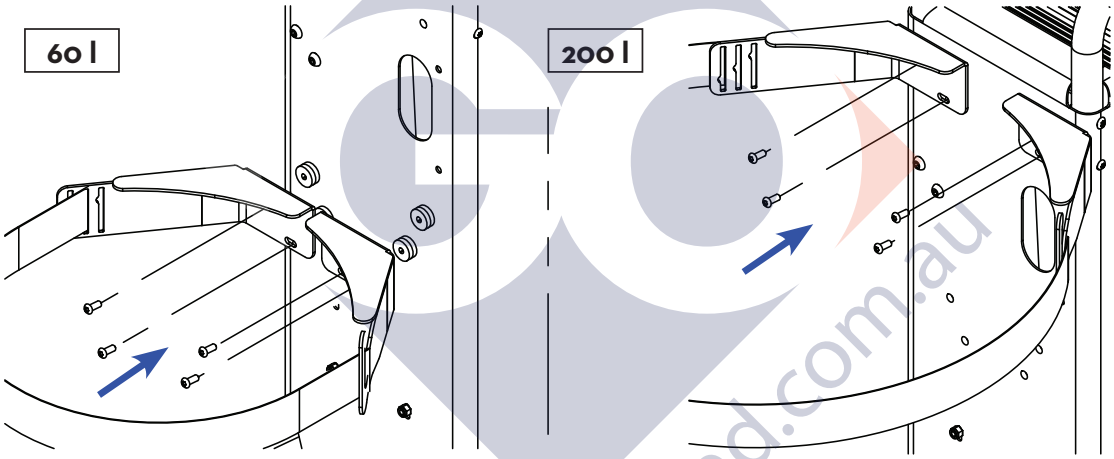
3 Fitting machine unit on trolley



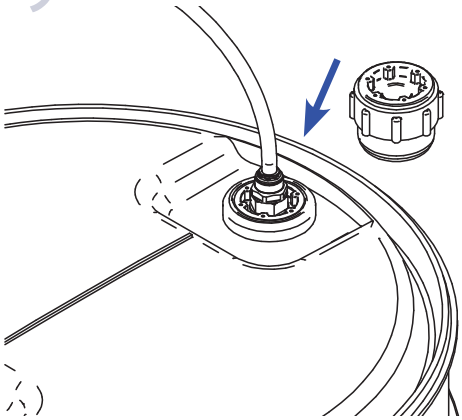
4 Fitting handle and bracket



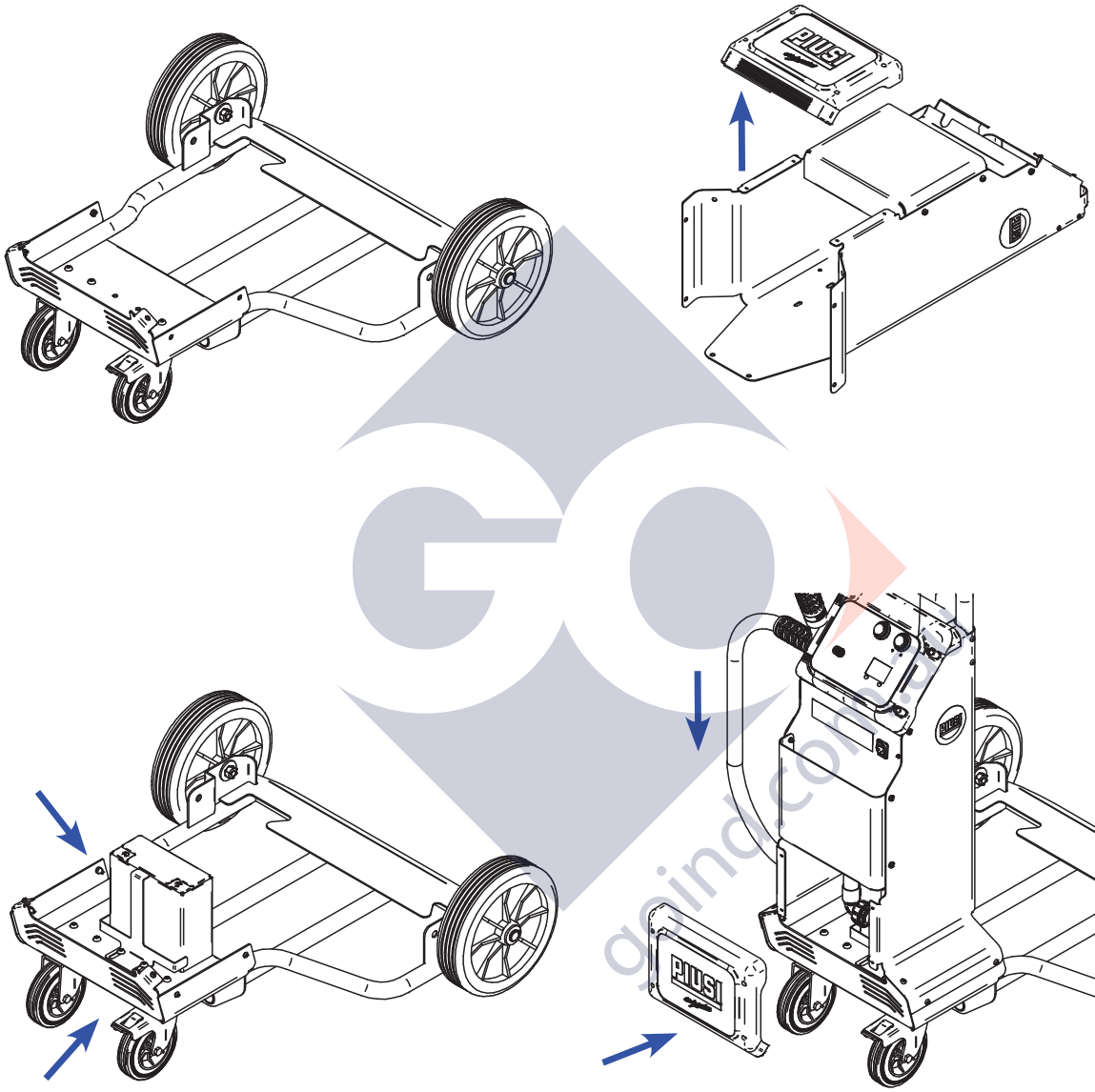
5 Fitting drum holder bracket



6 Connect the pipes to the bin



7 Fitting battery



11. OPERATION AND USE

NOTE

Before using for the first time, charge the battery completely.

WARNING

To eliminate any residues of foreign substance and bodies in the pipes, wash the system before it is first effectively put into operation. To wash, follow the same method as for dispensing, using demineralised or deionised water, performing the last rinse with ADBlue®.

IMPORTANT

Strictly observe the maximum capacity limit indicated on the plate.

11.1 SUPPLY STAGES

1. Attach the connector to the car.
2. Press the POWER button [A].
3. Press the REFILL button [B] for 5 seconds.
4. Wait for the end of dispensing.
5. Detach the connector.
6. Place the connector back in the dedicated housing.
7. Press the POWER button [A] to switch off.

WARNING

- For efficient system operation, allow 20 minutes of stoppage after each 20 minutes of dispensing.
- When the system is not operating, it is recommended to keep the pump switched off using the POWER button.
- For no reason may the data on the plate, the seals or the legalisation stamps be altered or removed.

WARNING

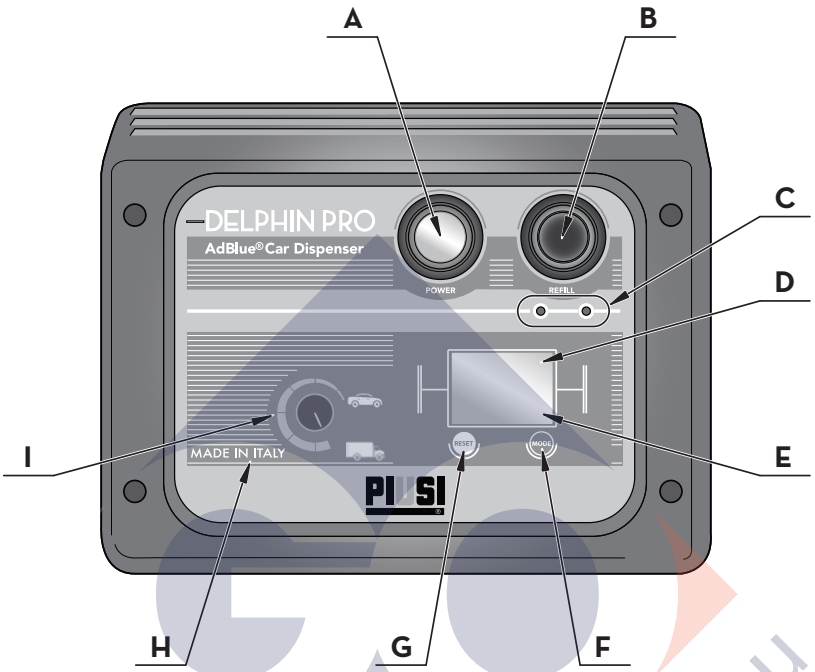
- In the event of tampering or removal, the warranty is immediately invalidated and the manufacturing company will not be held responsible for any damage whether material or economic that may result from it.
- Important: on alternate double flashing of the LEDs, the product must be recharged. Failure to recharge may cause it to be damaged.
- The system features a timer that protects the product from anomalous use. The timer is configured according to the maximum envisaged operating time. To reactivate the product, it must be switched off and back on.
- Should you wish to interrupt dispensing in manual mode, use the REFILL button (not the POWER button).

IMPORTANT

DO NOT USE IF:

- THE CONNECTOR IS NOT ATTACHED TO THE TANK OF THE CAR
- THE CONNECTOR IS NOT ATTACHED TO THE DEDICATED SAFETY CATCH.
- During operation, the engine may be hot: pay attention.
- Should the power supply be interrupted, the switch must be set to off and the gun placed back in its housing.
- FLUID LEAKS MAY CAUSE HARM TO PROPERTY AND PERSONS.
- Do not drag the machine by the cable or by the tube.
- After completing the filling operation, reposition the dispenser in its housing.

11.2 CONTROL PANEL



A · ***POWER*** *button: used to supply power to the system*
B · ***REFILL*** *button: press for at least* ***5 seconds*** *to start dispensing*
C · *Red/green LED*
D · *Quantity of fluid*
E · *Flow rate*
F · *MODE button*
G · *RESET button*
H · *Machine label*
I · *Flow rate regulator*

IMPORTANT

If label Ⓗ is damaged, DO NOT use the machine and replace the label immediately.

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11.2.1 LED INDICATION TABLE

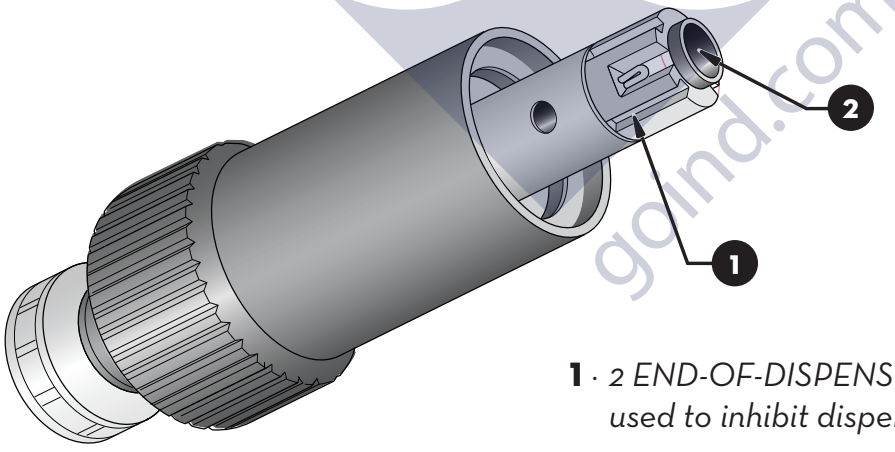
White bulb	Red LED	Green LED	
Off	X	X	System off
On	Off	Off	Standby, awaiting commands
On	Off	Rapid flashing 	Start of activation sequence
On	Off	On	Dispensing
On	Off	Slow flashing 	Dispensing finished Level full
On	Rapid flashing 	Off	Dispensing finished Time finished
On	Slow flashing 	Off	Selected flow rate too high: reduce flow rate
On	Very slow flashing 	Off	Low battery level: recharging recommended
On	Rapid alternate flashing 	Rapid alternate flashing 	Very low battery level: immediate recharging required
On	On	Off	Battery run down

11.3 FLOW RATE REGULATION

LOW FLOW RATE position

HIGH FLOW RATE position

11.4 END-OF-DISPENSING SENSORS



1 · *2 END-OF-DISPENSING sensors: used to inhibit dispensing*

2 · *ANTI-DRIP VALVE: prevents fluid from escaping*

WARNING

The intake and fluid air return must be fitted on the drum (provided by the customer).

11.5 USER BUTTONS - KEY

Introduction

The measurement device features two buttons (RESET and MODE) that perform two main functions individually and other secondary functions in combination.

Main Functions

· For the RESET button, resetting the partial record and resettable total (reset total) record
· For the MODE button, entering instrument calibration mode

Secondary Functions

Used in combination, the two buttons permit access to configuration mode, useful for changes to the unit of measurement and calibration factor.

Key

CALIBRATION MEANS USING THE BUTTONS OF THE METER. THE KEY TO THE SYMBOLS USED TO DESCRIBED THE ACTIONS TO PERFORM IS BELOW.

BRIEF PRESS OF MODE BUTTON 	*LONG PRESS OF MODE BUTTON* 	*BRIEF PRESS OF RESET BUTTON* 	*LONG PRESS OF RESET BUTTON* 

11.6 OPERATING MODES

Operating modes

The user can choose between two different operating modes:
The meter is equipped with a non-volatile memory that stores the archived data regarding the dispensing operations carried out, even in the event of long periods of lack of power supply.

1 - Normal Mode

· mode with display of partial and total quantities dispensed

2 - Flow Rate Mode

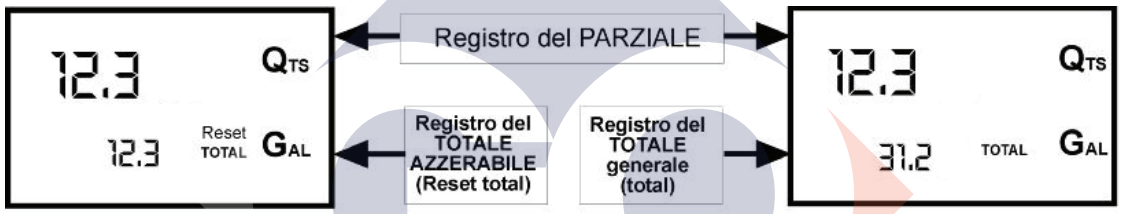
· mode with display of current flow rate, as well as the partial quantity dispensed

11.7 STANDARD USE OF DISPLAY

Introduction

The only operations carried out in everyday use are resetting of the partial and/or reset total records. It may occasionally be necessary to configure or calibrate the meter. To this end, refer to the specific chapters.

The two typical displays for standard operation are shown below. One screen displays the partial record and reset total record. The other displays the partial record and general total. The transition from reset total to general total display is automatic and linked to stages and timings configured in the factory than cannot be modified.



NOTE

6 digits are available for the totals, plus two x 10/x100 icons. The sequence of increments is as follows: 0.0 -> 99999.9 -> 999999 -> 100000 · 10 -> 999999 · 10 -> 100000 · 100 -> 999999 · 100

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11.7.1 DISPENSING IN STANDARD - NORMAL MODE

Introduction

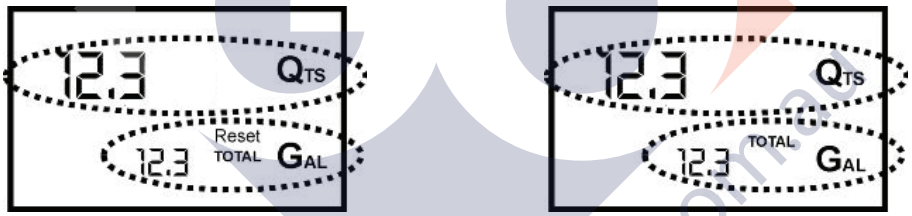
Normal mode is standard dispensing mode. During the count, the "partial dispensed" and "reset total" are displayed simultaneously.

WARNING

Pressing the buttons accidentally when dispensing has no effect.

Standby

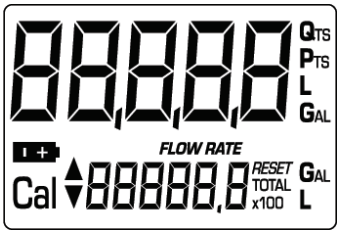
A few seconds from the end of dispensing, the lower record changes from displaying "reset total" to "general total":
The word 'reset' above the word 'total' disappears, and the "reset total" is replaced by the "general total".
This condition is termed rest (or STANDBY) and remains until the user carries out other operations.



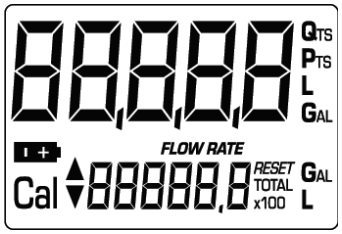
11.7.2 PARTIAL RESET

The Partial Record can be reset by pressing the RESET button when the meter is in Standby, i.e. when the display shows the word 'TOTAL'.

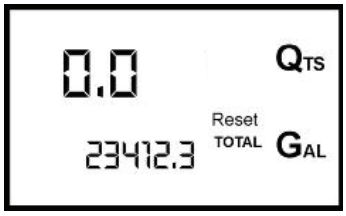
After pressing the RESET button, during the reset stage, the display shows in succession first all the digits on, then all the digits off.



At the end of the process, a screen showing the reset Partial quantity and Reset Total is displayed



and after a few moments, the Reset Total is replaced by the NON-resettable "Total".



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11.7.3 RESETTING THE RESET TOTAL (RESETTABLE TOTAL)

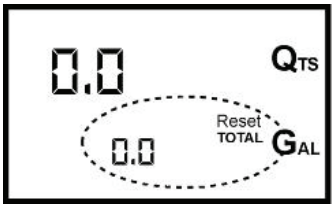
The Reset Total can only be reset following a Partial record reset. The Reset Total can be reset by holding down the RESET button while the display shows RESET TOTAL as in the following screen:

Essentially, the steps to follow are:

1 Wait for the display to return to the standard standby screen (with only the Total displayed)
2 Press the RESET button briefly
3 The meter begins its stages of Partial resetting
4 While the screen indicating Reset Total is displayed

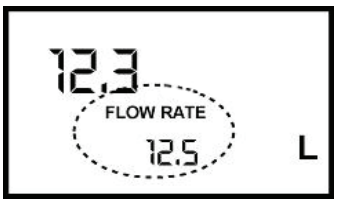
Press the RESET button again for at least 1 second

5 The display show all of its segments again followed by the stage with all segments off before reaching the screen displaying the reset Reset Total.



11.7.4 DISPENSING WITH CURRENT FLOW RATE DISPLAY (FLOW RATE MODE)

Dispensing can be carried out displaying simultaneously:
1 the partial quantity dispensed
2 the current Flow Rate in [Partial unit/minute] as indicated in the screen TO THE SIDE

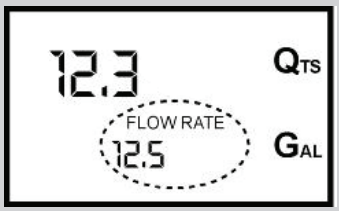


Procedure for entering this mode:
1 wait for the Meter to go to Standby, i.e. display only the Total
2 press the MODE button briefly
3 start dispensing

The current flow rate is updated every 0.7 seconds. The display may therefore be relatively unstable at low flow rates. The higher the flow rate, the greater the stability of the value detected.

IMPORTANT

The flow rate is measured with reference to the Partial unit of measurement. Consequently, should the Partial and Total units of measurement be different, as in the example below, it must be remembered that the flow rate indicated relates to the unit of measurement of the partial value. In the example given, the flow rate is expressed in Qts/min.
The text "Gal" to the side of the flow rate refers to the record of Totals (Resettable or NON-Resettable) which are shown again upon exiting the flow rate reading mode.



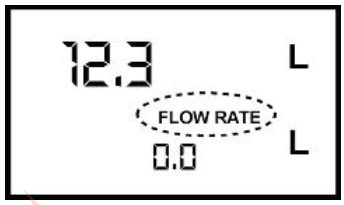
To return to "Normal" mode, press the MODE button again. Accidentally pressing either the RESET or MODE button during the count has no effect.

IMPORTANT

Even if they are not shown in this mode, both the resettable total (Reset Total) and general total (Total) are increased. Their value can be checked after the end of dispensing, by returning to "Normal" mode, pressing the MODE button briefly.

11.7.5 PARTIAL RESET (FLOW RATE)

To reset the Partial Record, stop dispensing, wait for the Meter to indicate a Flow Rate of 0.0 as shown in the figure



and then press the RESET button briefly.

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11.8 CALIBRATION

When operating close to the extreme conditions of use or flow rate (close to the minimum or maximum values of the permitted range), it may become appropriate to perform a field calibration, in the real conditions in which the measurement device has to operate.

11.8.1 DEFINITIONS

Calibration factor or "K FACTOR" Multiplication factor that the system applies to the electrical impulses received, to transform them in units of fluid measured.

Factory K FACTOR Calibration factor set by default in the factory. It is equal to 1.000. This calibration factor guarantees maximum precision in the following conditions of use:

Fluid: ***water/urea solutions or liquid food***
Temperature: ***20 °C***
Flow rate: ***10-30 litres/min***

Even after any changes by the user, a simple procedure allows the factory calibration factor to be restored.

User K FACTOR Custom calibration factor set by the user, that is, modified through calibration.

11.8.2 CALIBRATION METHODS

Why calibrate

1. To display the calibration factor currently in use
2. To return to the factory calibration (k) factor after prior calibration with user k factor
3. To Change the calibration factor through one of the two procedures indicated previously

Introduction

A quick and accurate electronic calibration can be made by adjusting the k factor.
There are 2 calibration methods:

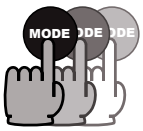
1. Field calibration, performed through dispensing
2. Direct calibration, performed through a direct change to the **K FACTOR**

In calibration mode the partial dispensed and cumulative indications on the display assume different meanings depending on the stage in the calibration procedure. During calibration, the Meter cannot carry out standard dispensing operations. In calibration mode the totals are not increased.

IMPORTANT

The measurement device is equipped with a non-volatile memory. This stores calibration and dispensing data even after battery replacement or long periods of inactivity.

11.8.3 DISPLAYING AND RESTORING THE K FACTOR



Holding down the MODE button with the Meter in standby accesses the screen that shows the calibration factor currently in use. If it is being used with the "factory k factor", the screen represented in the diagram will be shown, with the text "fact".

If a "user k factor" has been set instead, the calibration factor set by the user (in our example 0.998) will be displayed. The word "user" highlights the fact that the calibration factor set by the user is being used.

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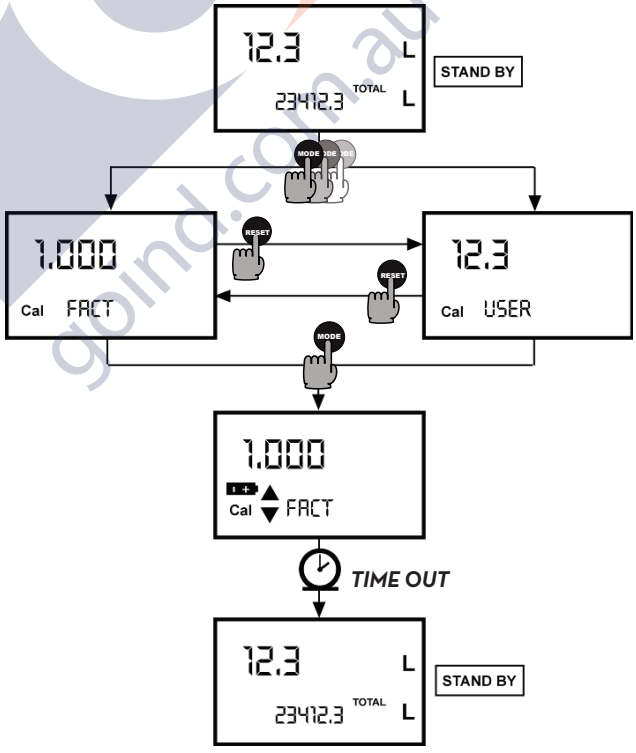
The diagram shown TO THE SIDE illustrates the logic of transition between the various screens. In this condition, the reset button allows switching from the user to the factory factor. To confirm the calibration factor chosen, press cal briefly while "user" or "fact" is displayed. After the restart cycle, the meter will use the calibration factor that has just been confirmed.



IMPORTANT

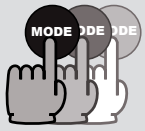
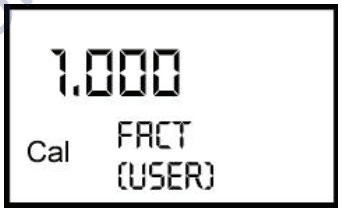
When the Factory Factor is confirmed, the old User factor is deleted from the memory.

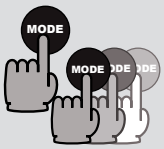
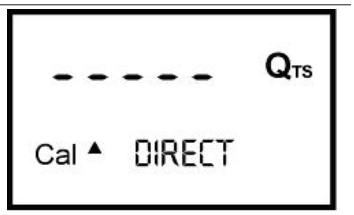
11.8.4 DIRECTLY CHANGING THE K FACTOR

If standard use of the measurement device shows an average percentage error, this can be corrected by applying a correction of the same percentage to the calibration factor currently in use. In this case the percentage correction of the USER K FACTOR must be calculated by the operator as follows:

New calibration factor = Old calibration factor * (100 - E% / 100)

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 meter indicates less than the real value dispensed (negative error), the new calibration factor must be higher than the old one as shown in the example. The opposite condition occurs if the meter indicates more than the real value dispensed (positive error).

ACTION		*DISPLAY*
1	**NONE** Meter in standard mode, not counting.	
2 	LONG PRESS OF MODE BUTTON Meter enters calibration mode, and the calibration factor in use is displayed in place of the partial. The texts “Fact” or “USER” indicate which of the two factors (operating or factory) is currently in use.	
3 	LONG PRESS OF RESET BUTTON The Meter shows the “MODE” indication and the partial total at zero. Meter is ready to perform field calibration through dispensing.	

4 	LONG PRESS OF RESET BUTTON Change to Direct calibration factor changing: the word "Direct" and the calibration factor Currently in Use appear. An arrow (pointing up or down) defining the direction (increase or decrease) of variation of the value displayed when the following actions 5 or 6 are performed appears in the bottom left of the display.	
5 	BRIEF PRESS OF RESET BUTTON The arrow changes direction. The action can be repeated to alternate the direction of the arrow.	
6 	BRIEF/LONG PRESS OF MODE BUTTON The value indicated changes in the direction defined by the arrow · one unit for each BRIEF PRESS of the MODE button · continuously if the MODE button is held down. The increase speed accelerates as the button is held down. If the desired value is exceeded, repeated the actions from point (5).	
7 	LONG PRESS OF RESET BUTTON The Meter is informed that the calibration procedure has finished. Before carrying out this operation, make sure that the value indicated is that desired.	

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8	NO ACTION At the end of the calculation, the new USER K FACTOR is shown for a few seconds, after which the restart cycle is repeated, finally reaching standby condition. **IMPORTANT** From this moment, the factor indicated will be the calibration factor used by the Meter and will be retained even if the batteries are replaced.	
9	NO ACTION The Meter stores the new operating calibration factor and is ready for dispensing, using the USER K FACTOR just calculated.	

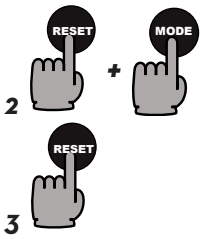
11.9 METER CONFIGURATION

Some models feature a menu that the user can use to select the main unit of measurement, quarters (qts), pints (pts), litres (lit), gallons (gal). The combination of units of measurement for the partial and total records is predefined in accordance with the following table:

No. Combination	Partial Record Unit of Measurement	Total Record Unit of Measurement
1	Litres (Lit)	Litres (Lit)
2	Gallons (Gal)	Gallons (Gal)
3	Quarters (Qts)	Gallons (Gal)
4	Pints (Pts)	Gallons (Gal)

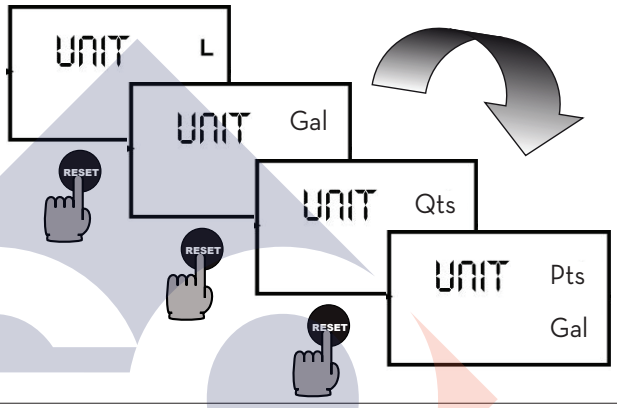
To choose from one of the 4 combinations offered:

1 Wait for the Meter to go to standby mode.



Press the MODE and RESET buttons simultaneously and hold them down until the word “unit” and the units of measurement set in that moment (in this example litres/litres) appear.

Press the reset button to choose the desired combination of units of measurement, from those illustrated below.



Store the new combination by holding down the MODE button. The measurement device will pass through the activation cycle and will be ready to dispense in the units set

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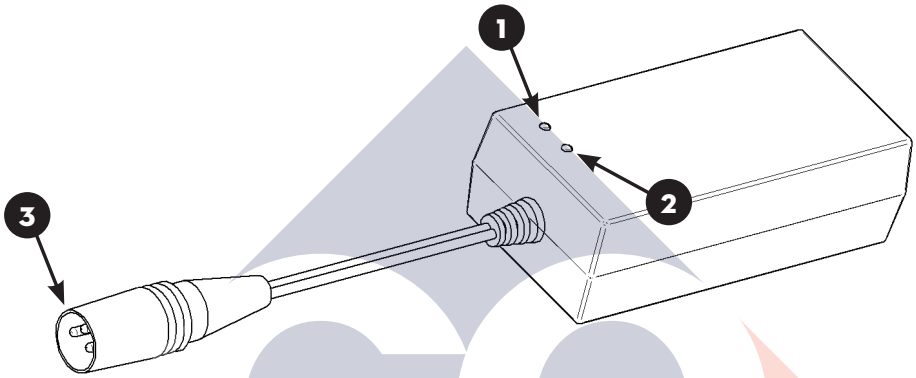
IMPORTANT

The Resettable Total and Total records are automatically converted into the new units of measurement. Changing the Unit of Measurement does NOT make performing a new calibration necessary.
Changing the Unit of Measurement does NOT make performing a new calibration necessary.

11.10 BATTERY CHARGER

11.10.1 STAGES OF CHARGING

1 Connect the battery charger to the **Delphin Pro DC** with the dedicated connector ❸.



2 Connect the battery charger to the wall socket. The power light will switch on (Led ❶ GREEN).

3 The battery charger will automatically begin charging.

4 Check the progress of charging using the LED ❶:
- LED ❶ RED: Charging in progress.
- LED ❶ GREEN: Charging completed, start of trickle charging.

5 After charging, first detach the battery charger from the **Delphin Pro DC** by disconnecting the connector and then disconnect from the wall socket.

11.10.2 OPERATION AND USE

NOTE

- For greater battery life, avoid deep discharge and charge at the end of the working day. If the **Delphin Pro DC** is not used for an extended period, perform a recharge cycle at least once a month.
- The device is protected from momentary short circuits. Extended short circuits (longer than a minute) may irreversibly damage the battery charger.

WARNING

- Do not connect the battery charger to devices other than the **Delphin Pro DC**.
- Do not charge the **Delphin Pro DC** in environments exposed to the rain.
- Check the cables before use, checking that there are no breaks in the sheath, either on the recharging cable or the supply cable.
- Always ensure adequate ventilation when charging and do not cover the battery charger.
- The connection to the supply network must be made in observance of the national regulations on electrical systems.
- If LED ❷ switches on, check that the battery connection (polarity) is correct; no recharging process can take place with LED ❷ on.

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11.10.3 TECHNICAL SPECIFICATIONS

Rated voltage	**100-240 V / 50-60 Hz**
Charging voltage	**14.8 V**
Trickle charging voltage	**DC 13.8 V**
Charging current	**4 A**
Battery types	**Lead-Acid (GEL, AGM)**
Operating temperature	**0 °C / + 40 °C**
Operating humidity	**5% / 90%**

12. LONG PERIODS OF SYSTEM INACTIVITY

Operations to carry out

If inactivity of the system for 30 days or longer is envisaged, it must be emptied to prevent the product from crystallising inside the system, followed by the washing cycle plus a complete battery charge.

13. WASHING THE SYSTEM

Introduction The distribution system must be washed to remove crystallisations of the product that could cause damage to the system.

IMPORTANT

- Carry out the washing operations, making sure to wear all the personal protective equipment (PPE).
- To wash the system, use only demineralised water.

Disposal Dispose of the liquid from washing in accordance with the regulations in force in the country where it is used.

IMPORTANT

Following the same dispensing methods described previously, wash the distribution system, taking demineralised water from a clean container and collecting the resulting mixture in a different container, suitable for disposal.

14. MAINTENANCE

Safety information

The distribution system was designed and produced to require minimal maintenance.
Before carrying out any kind of maintenance, the distribution system must be disconnected from all sources of electrical and hydraulic supply including the battery.
During maintenance, using the personal protective equipment (PPE) is mandatory.
In any case, bear the following minimum recommendations for efficient pump operation in mind.

Staff authorised for maintenance operations

Maintenance operations must be performed solely by specialist staff.
Any tampering may impair the performance and endanger persons and/or property, as well as invalidate the warranty.

Operations to carry out

Where there is risk of freezing, empty the circuit and the pump, taking care to place it in a location with temperature no lower than 0 °C / 32 °F.
Check that the labels and plates on the distribution system do not deteriorate or detach over time.

ONCE A WEEK:

- check that the joints of the pipes have not loosened, to avoid any leaks;

ONCE A MONTH:

- check the body of the pump and keep it clean from any impurities;
- check that the electrical supply cables are in good condition.

15. TROUBLESHOOTING

Problem	Possible cause	Corrective action
The motor doesn't turn	Lack of power	Check the electrical connections and the safety systems.
	Rotor blocked	Check for any damage or obstruction to the rotary components.
	Motor problems	Contact the Support Service.
Flow rate low or zero	Low suction tank level	Refill the tank.
	Bypass valve blocked	Contact the Support Service.
	Air entering the pump or suction tube	Check the seal of the connections.
	Tightening of suction tube	Use a tube suitable for working under vacuum.
	Low rotation speed	Check the voltage to the pump; adjust the voltage or/ and use cables with a greater diameter.
	Freezing of pump or motor	Unfreeze the pump and check the damage. Starting a frozen pump can cause damage to the motor or the pump.
	Leak in the pump supply tube	Check the seal of the tube attachments; inspect the tube for possible damage.
	Priming failure	Refill the suction tube with demineralised water. Set the knob to TRUCK position until priming occurs.
High pump noise levels	Presence of cavitation	Reduce the suction vacuum.
	Irregular bypass operation	Dispense until the air in the bypass system is bled.
	Air present in the fluid to be pumped	Check suction connections.
Leaks from body of pump	Pump damage	Contact the Support Service.
Pump doesn't prime fluid	The suction circuit is obstructed	Remove obstruction from the suction circuit.
	Suction chambers are dry	Add fluid from the pump delivery side.
	Pump chambers dirty or obstructed	Remove the obstructions from the suction and supply valves.
Display doesn't operate	Lack of power	Contact the manufacturer. Check battery fuse.
Inadequate measurement accuracy	Incorrect K FACTOR	Change the K FACTOR.
	The meter operates below the minimum acceptable flow rate	Increase the flow rate.
Meter doesn't count but the flow rate is regular	Possible problems with electronic circuit board	Contact your dealer.
Battery doesn't charge	Incorrect polarity	Check whether the battery connection (polarity) is correct.

16. SCRAPPING AND DISPOSAL

Introduction

If the system is scrapped, its components must be consigned to companies specialised in the disposal and recycling of industrial waste and, in particular:

Disposal of the packaging

The packaging is made of biodegradable cardboard that can be handed over to companies for the normal recycling of cellulose.

Disposal of metal parts

The metal parts, both painted and stainless steel, can normally be recycled by companies specialised in the metal scrapping sector.

Disposal of electrical and electronic components

These must of necessity be disposed of by companies specialised in the disposal of electronic components, in compliance with the indications of the directive**2012/19/EU** (see directive text below).

Environmental information for customer resident in the European Union

European Directive **2012/19/EU** requires equipment marked with this symbol on the product and/or packaging not to be disposed of together with mixed municipal waste. The symbol indicates that this product must not be disposed of together with normal domestic waste. It is the responsibility of the owner to dispose of both these products and other electrical and electronic equipment through the specific collection facilities indicated by the government or local public authorities.
The disposal of Waste Electrical and Electronic Equipment (WEEE) as domestic waste is strictly prohibited. This type of waste must be disposed of separately.
Any dangerous substances that may be present in the electrical and electronic equipment and/or incorrect use of such equipment may potentially have serious consequences for the environment and human health.
In the case of unlawful disposal of such waste, the sanctions envisaged by the regulations in force may be applied.

Battery disposal

Separate the battery from the rest of the system in accordance with the regulations in force.

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