EUROPUMP

Eurostar
Fuel Dispensers
Users Manual

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INDEX **Page No**

1. INFORMATIONS FOR CUSTOMERS

This service manual is designed for all customers and users of fuel dispenser series EUROSTAR. We recommend becoming familiar with the present manual before proceeding to installation and use of this Fuel dispenser.

1.1 Pictograms and Terms Used in the Manual

Caution

Hazardous Area for Explosion

Electrical Warning

No Smoking

Do not fire

No Cellphone usage

	**VERY IMPORTANT NOTICE** EUROPUMP FUEL DISPENSERS ARE ONLY MOUNTED ON OPEN AREAS

1.2 IMPORTANT NOTICES

1. EUROPUMP shall not be liable for any damages or loss due to improper use of this Service Manual. In this manual it is described how to operate the Fuel dispenser properly.
2. EUROPUMP shall also be not liable for damages to persons and material due to failure in adherence to safety regulations contained in this manual.
3. The safety regulations contained herein are to be considered as a supplement of national regulations instead of replacement and therefore should be within the knowledge of personnel, that is servicing the Fuel dispenser.
4. Before unpacking, installation or taking the Fuel dispenser into service, read this Service manual thoroughly.
5. Fuel dispenser is only to be serviced by personnel, furnished with requisite authorization according to national regulations.
6. Any repairs and modifications in design are subject to the manufacturer's explicit consent. Only parts approved by the manufacturer may be used.
7. To prevent electric shock or fire, any operation inside the Fuel dispenser shall not be carried out before switching off power supply by the main power switch, that is placed in the room for the service personnel of the filling station.
8. In cases, when gas leakage is encountered, immediately push emergency stop button, switch off the Fuel dispenser and the main power switch, that is placed in a room on the station. Do not cause pollution to the environment. Contact the manufacturer's Service Department.
9. Taking the Fuel dispenser in service shall be conducted by the manufacturer's service or any other authorized service only. Any failure in adherence to these requirements entails the loss of warranty for the purchased product.
10. In cases, when irregular operation of the Fuel dispenser is encountered, immediately contact the manufacturer.
11. No components of the housing may be removed during operation of the Fuel dispenser.
12. Fuel dispenser may not be installed in explosive areas, Zone 0,1,2 defined in EN 60079-10
13. Due to its constructional features, the Fuel dispenser may not be operated without roofing or in closed space and in cases of untighten installation or during filling or cleaning of fuel tanks. The Fuel dispenser is designed to fuels.
14. The manufacturer reserves the right to alter the technical specifications of the device or its properties without a written notice, because of its development, new regulations and continuous improvements.

15. In order to point out, that the Fuel dispenser is designed, manufactured and described according to directives of the European Parliament, the Fuel dispenser is denoted with CE mark (drawing 1).

CE

Drg.1 CE Mark

16. The manufacturer reserves his right to carry out modifications in design, thereby considering the product quality is not affected.

1.2 Safety Operation

Owner of the filling station is liable for its operation which shall be entrusted to the trained staff only, having relevant authorization. The operator refuels vehicle tanks by Fuel professionally, checks state of the fuel dispenser and the technology in the preset time intervals, checks operation of the whole unit and maintains operating records.

The prohibit of smoking and open fire handing in the area of 10 m must be fixed on a visible place next to the fuel dispenser. The notice of necessary motor switch-off, max. volume of refueling (80%) and braking the vehicle from undesirable motion has also be placed here. From the design point of view the fuel dispensers and all components which might initiate explosion are approved by the state authorized institution which issues the necessary certificates.

For detection of possible gas leaks relevant detectors/sensors should be installed in the dispenser area.

From the hygienic point of view the device is harmless for the operator and the owner. When operating and maintaining the device, it is advisable to protect the hands by gloves.

1.1 First Aid

Poisoning-gaseous Fuel
When refueling, avoid Fuel vapor inhalation - danger of suffocation. The injured person must be taken out of the contaminated area.

EX	**Attention!** Fire and explosion hazard!

Fuel is not poisonous but is suffocating. In case of breathing failure carry out apply artificial breathing immediately. In case of blood circulation failure combine artificial breathing with indirect heart massage. Transfer the affected person the heath facility immediately.

Frostbites-liquid Fuel
Eyes affected by Fuel shall be flushed by plenty of water. Call the doctor.

Burns-fire
When burnt, cool the injury by cold water, do not lubricate, cover by a sterile dressing and call the doctor. Do not remove the dress. If the clothes are burnt - do not run, extinguish by water, blanket, by rolling about ....

2. TECHNICAL SPECIFICATIONS

- **VISUAL SPECS**
  - Frame Material:
    - Electrostatic Painted Galvanize as standard
    - Stainless Steel as optional
  - Dimensions: Different dimensions for various models (See: Overview and Dimensions)
- **HYDRAULIC**
  - Flow Rate:
    - S : $Q_{min.}$ 5 liter/min. and Q_{max} 50 liter/min.
    - M : $Q_{min.}$ 5 liter/min. and Q_{max} 70 liter/min.
    - H : $Q_{min.}$ 10 liter/min. and Q_{max} 120 liter/min.
  - Accuracy class:
    - 0.5 (0.5%)
  - Maximum operating pressure:
    - 0.18 MPa (1.8bar); 0.25 MPa (2.5bar) for /H or /UH
  - Electromotor of the pump:
    - three phases, 3x400V; 0.75 kW; 1395 RPM
  - Solenoid valves:
    - +24VDC / max.1A, or 230V AC; 50 Hz; 5W
- **ELECTRONIC SPECS**
  - Power supply:
    - 230V AC; +10% -15%; 50 Hz ± 5 Hz Performance: max. 300 VA
  - Display:
    - Amount : 6 – 8 Digits
    - Volume : 5 – 6 Digits
    - Unit price : 4 – 6 Digits
  - Communication Ports:
    - RS232
    - RS485
    - Current Loop 2 wire
  - Optional peripherals:
    - ATC Sensor
    - Receipt Printer
    - MicroSD Card Logger
    - GPRS Modem
- **AMBIENT SPECS**
  - Operating temperature:
    - from - 25°C to +55°C standard dispenser model**.**
    - from - 40°C to +55°C special model with heated electronic enclosure.
  - Pumped liquid temperature range:
    - from - 10°C to +50°C
  - Pumped liquid type:
    - petrol, diesel oil, bio diesel, petrol-ethanol mixture (max. E85)
  - Pumped liquid dynamic viscosity range:
    - 0.5 - 10 mPa.s (0.5 - 10 cp)
  - Mechanic environment class:
    - M1
  - Electromagnetic environment class:
    - E1
  - Relative humidity:
    - from 5% to 95%, non -condensing

3. DENOTATION OF THE FUEL DISPENSER

Dispenser marking

EUROSTAR	1	2	3	4	-	5	/	6	7	8

Field	Values	Explanation
1		Type of the dispenser in terms of the delivery method:
	E	• Suction pump built-in.
	D	• No suction pump built-in.
2		Dispenser design:
	E	• Economic
	T	• Tower
	O	• Flag
3	**1 … 5**	Number of Product
4	**1 … 5**	Number of Nozzles
5		Frame Type:
	-M3	• H Type
	-M6	• Flag Type 1
	-MP	• T Type 1
	-M62	• Flag Type 2
	-MP2	• T Type 2
6		Number of Displays:
	2	• 2 Displays
	4	• 4 Displays
7		Flow Rate:
	…	• Standard
	M	• Mid Flow Rate
	H	• High Flow Rate
8		Specifying abbreviation:
	…	• Standard (No Hut)
	E	• With Hut
	M	• Multimedia Hut

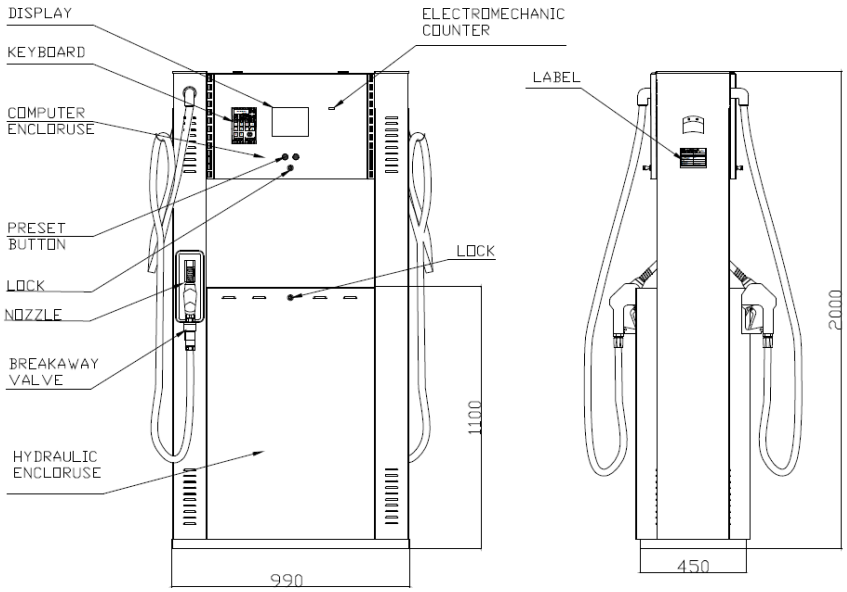
Example:

EUROSTAR EE 24-M3 / 4

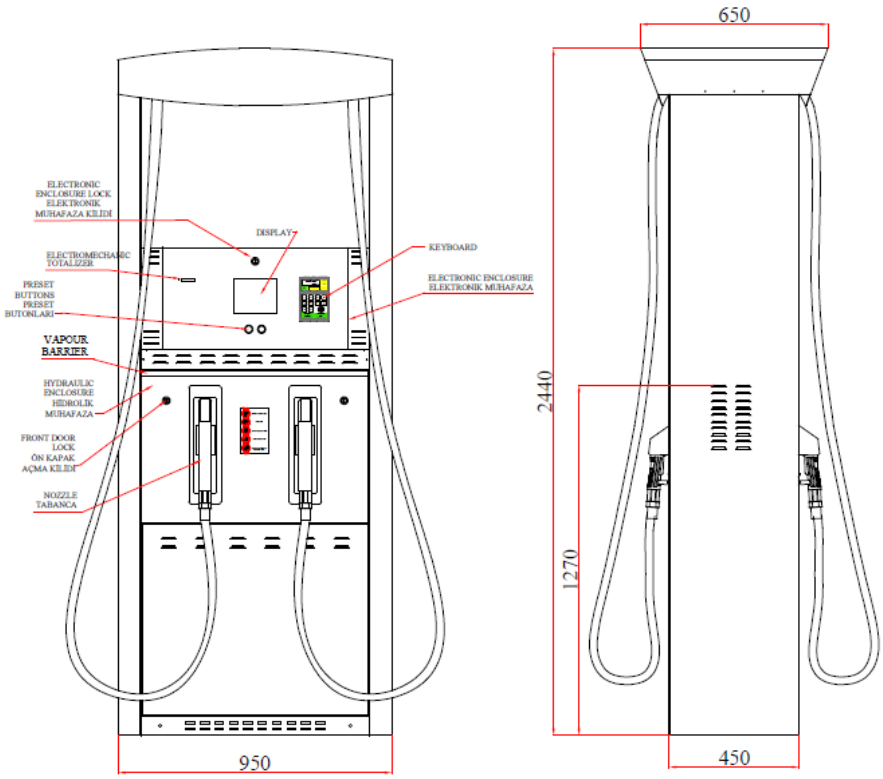
Eurostar H Type, Suction Pump Built-in, Economic, 2 Product, 4 Nozzle, 4 Display, Standard Flow Rate and with No Hut Fuel Dispenser

4. OVERALL VIEW OF FUEL DISPENSERS

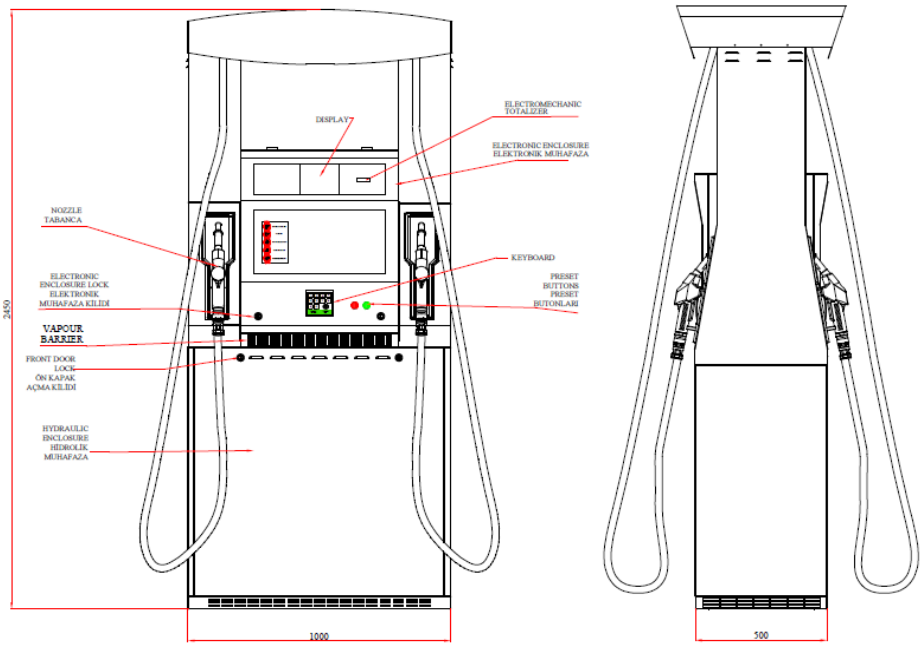
- Eurostar EE xx-M3 and DE xx-M3



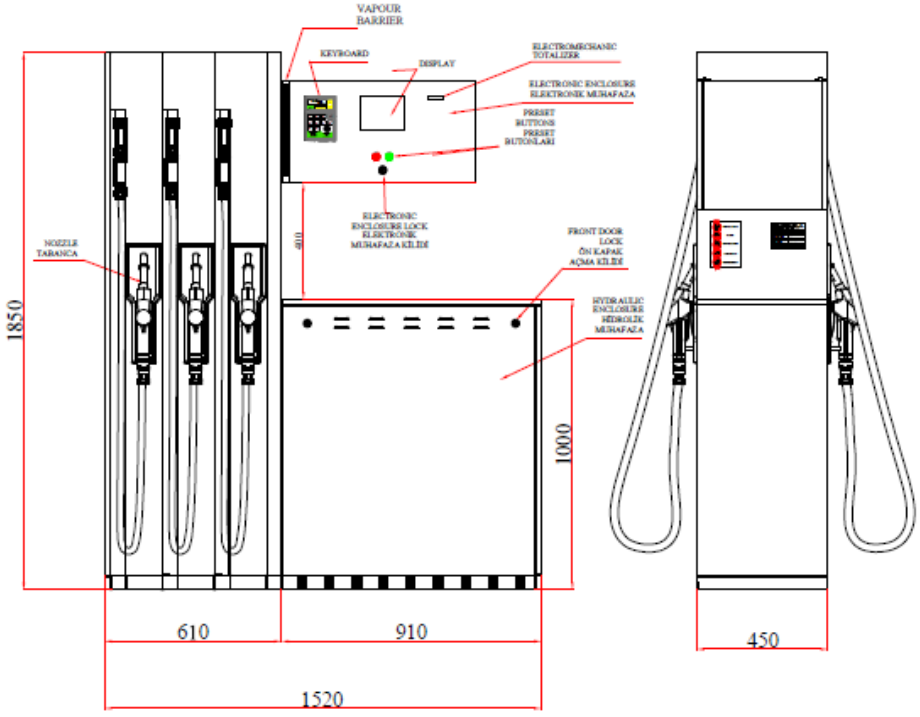
- Eurostar ET xx-MP and DT xx-MP



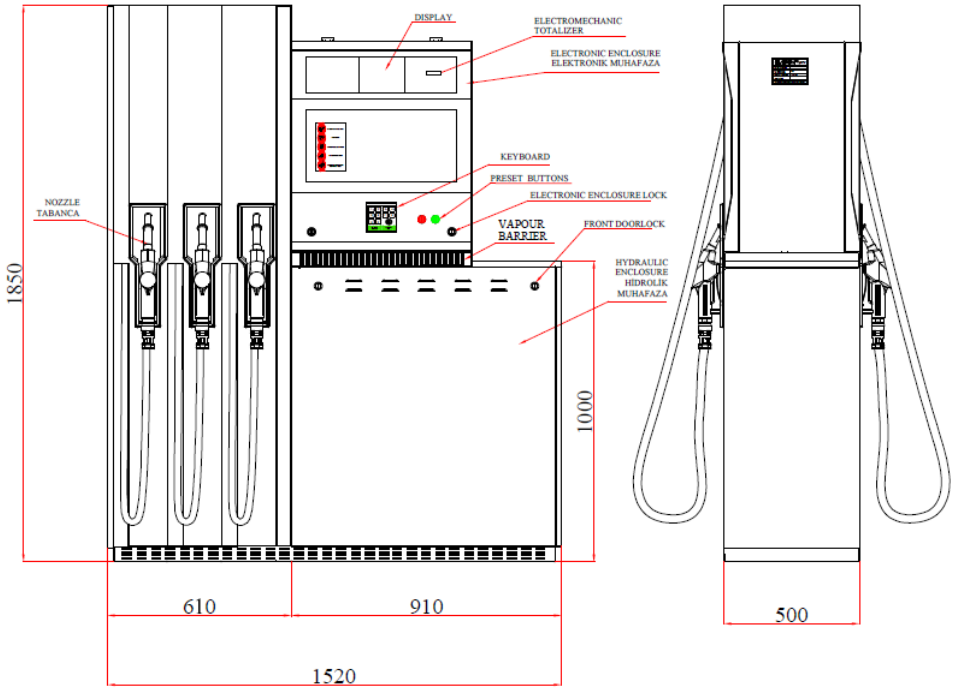
- Eurostar ET xx-MP2 and DT xx-MP2



- Eurostar EO xx-M6 and DO xx-M6

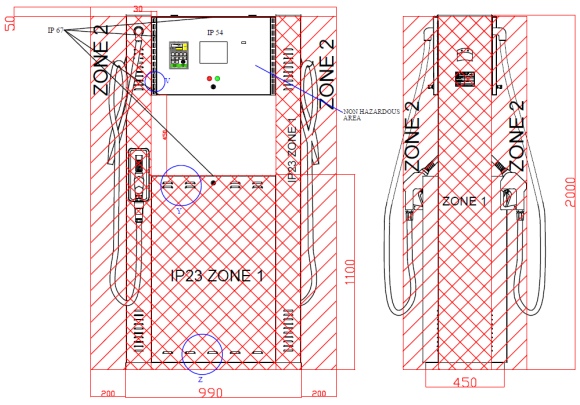


- Eurostar EO xx-M62 and DE xx-M62

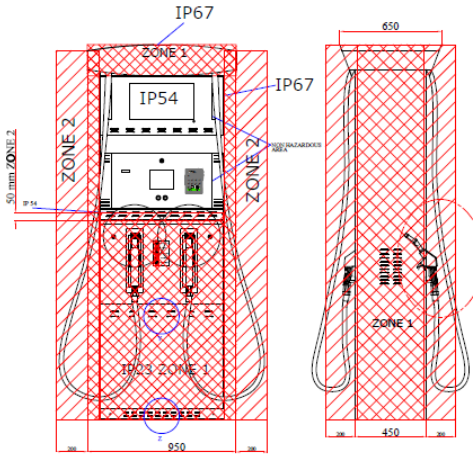


5. CLASSIFICATION OF HAZARDOUS AREAS

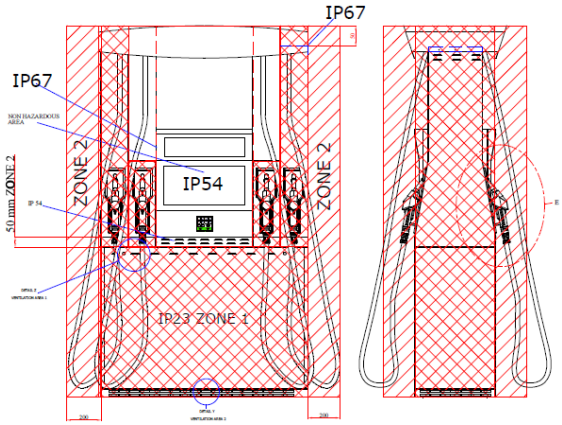
Zones for Europump Dispensers according to EN 13617-1 are shown below:



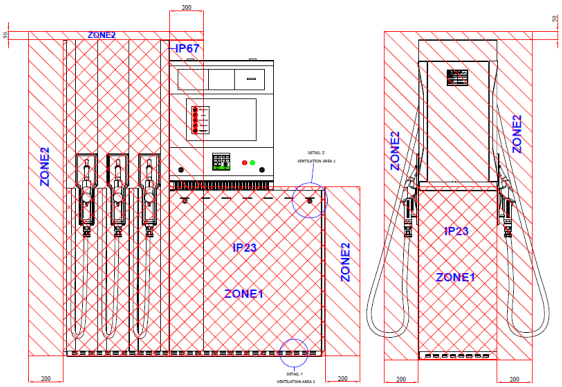
EE xx-M3 and DE xx-M3



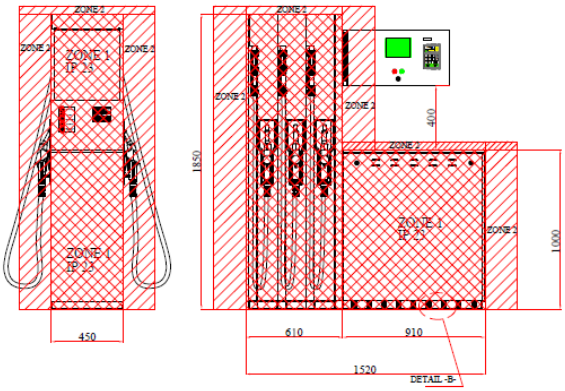
ET xx-MP and DT xx-MP



ET xx-MP2 and DT xx-MP2



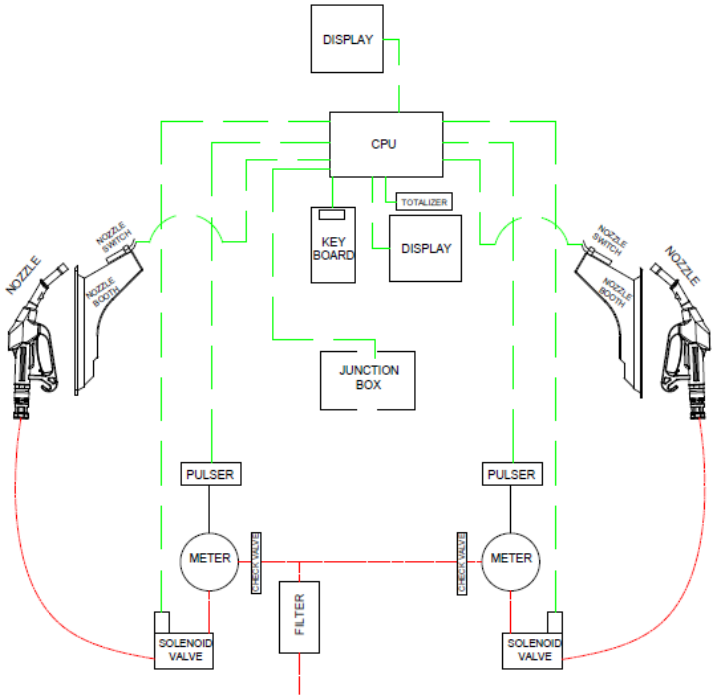
EO xx-M62 and DE xx-M62



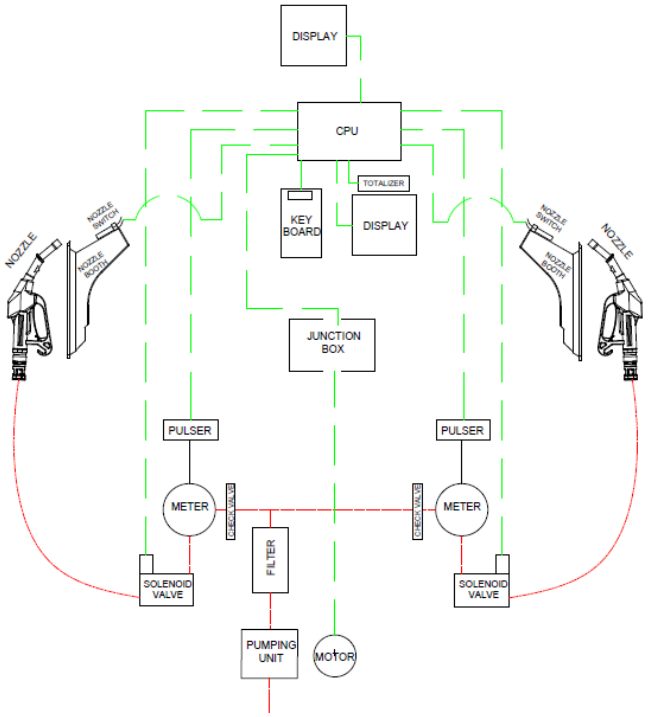
EO xx-M6 and DO xx-M6

6. FLOW DIAGRAMS

6.1 No Suction Pump Built-in



6.2 Suction Pump Built-in



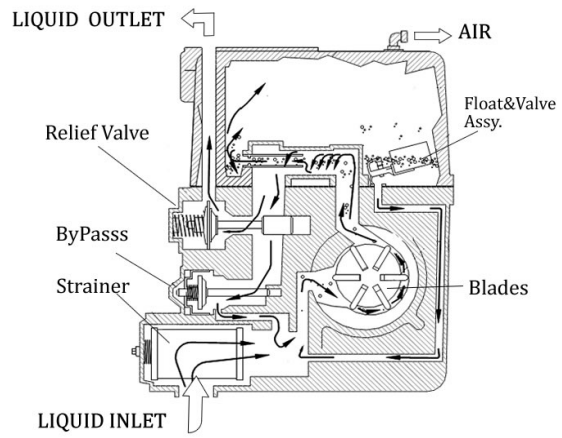
MAIN UNITS OF FUEL DISPENSER

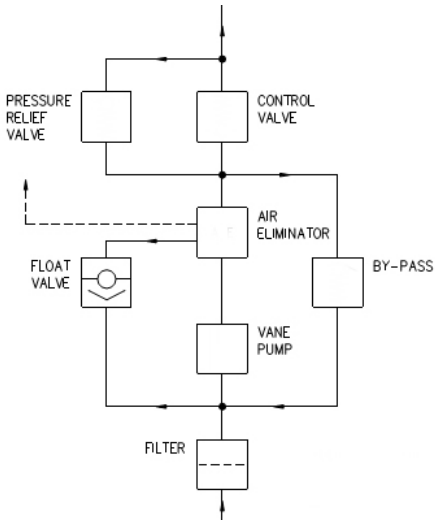
A) Pumping Unit

Petroleum pumping unit which uses a rotary vane pump with carbon blades that produces very good suction even when the pump is dry in the beginning of fuel delivery process to vehicles. Bypass valve, air elimination, outlet control valve and strainer are built-in in the unit.

Operation Principle:

The product is drawn from the underground storage tank through the strainer. The rotary vane pumping unit pressurizes the fluid. Any air present forced out the air tube along with a small amount of liquid into the atmospheric chamber. Product collected in the atmospheric chamber is returned to the pump intake across the non-return float when the liquid level in the chamber lifts the float and valve assembly from its seat. Any air is vented to the atmosphere through the vent tube. Then air separator opens the control valve and liquid flows into the meter. A built-in relief valve in control valve which relieves excess pressure caused by hot weather expansion valve.





B) Flow Meter

Flow meter is a measurement transducer which is designed for measurement of volume of liquids as component of fuel dispensers for the refueling of motor vehicles, which are a legal measuring device in the sense of the Directive of the European Parliament and of the Council no.2004/22/EC of measuring instruments, as amended. Equipment is compliance with OIML R117-1 Dynamic measuring systems for liquids Other than water and meets its requirements of accuracy class 0.5.

The measurement transducer consists of a positive displacement measuring sensor with four pistons and cyclic volume 0.5 liter. Measurement transducer can be equipped with a mechanical adjusting device to adjustments of calibration. The adjustment can be done by varying of the strokes of one pair of pistons by an adjustment screw. The regulation is non-continual with step approximately 0.06%. Maximum range of adjustment is about ±2.5%. This adjustment wheel is protected by pin and a seal. Electronically calibrated versions do not include calibration wheel and calibration of meter can be done by electronic units which are according to Welmec Guide 7.2 (MID requirements)

Operation Principle:
Liquid which is sent from the suction pump enters the cylinders via sliding valve and pressing piston at inward. Then side piston is pushed outward and Liquid in the cylinder, is sent to other cylinder via sliding valve open side to outlet of the meter.

Outlet of meter can be connected to a solenoid valve and nozzle to fill the automobiles. When all four pistons reciprocate, the connecting rods drive crankshaft so this movement can be counted by a shaft encoder unit to translate mechanical movement into pulse signals.

C) Pulsar (Shaft Encoder)

Monitors flow meter and translate mechanical movement into pulse signals to Electronic Calculator.

D) Solenoid Valve

Controls flows based on rules of CPU Unit of Dispenser.

D) Electronic Calculator (CPU)

This is an embedded device that controls all operations dispenser and keeps data of filling operations. It also communicates with forecourt automation systems.

7. TRANSPORTATION

7.1 Loading and transportation

Means of transportation is determined in the contract by the customer.
Handling should be made by forklift truck. Driving the forks under the transportation palette, the Fuel dispenser should be tightly secured against slippage by belts. Secure the Fuel dispenser on mean of transportation against overturning and shocks, which can damage the counter and the glass elements during transportation.
Follow closely instructions on package during transportation.
The Fuel dispenser should be transported only with covered means and in erect position.

7.2 Unloading

Immediately upon arrival at destination, check the Fuel dispenser for any damages from transportation, for which the carrier is liable.
Unloading shall be made by driving the forklift's forks under the palette, thereby securing tightly the Fuel dispenser against slippage by belts. Then the Fuel dispenser should be lifted off the mean of transportation.
In order to avoid any mechanical damage to the dispenser, care should be taken during unpacking.

7.3 Storage of the Fuel dispenser

Always store the Fuel dispenser in dry and breezy places.
During storage, always keep the liquefied and gaseous phases, placed inside the bottom part, closed.

IMPORTANT NOTICE

Before completely assembling the Fuel dispenser, remove protection layer, if provided, on the housing. Any failure to do so may cause difficulty removing the layer and give damage to the surface.

8. INSTALLATION AND TAKING FUEL DISPENSER INTO SERVICE

Installation and taking into service the Fuel dispenser shall only be made by manufacturer's technical service or an authorized technical service.

Due to the construction of the Fuel dispenser, it may not operate in area without roofing or in closed space and in cases of uptight installation or during filling or cleaning of fuel tanks.

RECOMMENDATIONS

1. The pulse overvoltage can take place in any line due to lightning - up to the distance of several kilometers – or due to industrial activities. The pulses arisen by lightning induction are quite enough for full destruction of the electronic unit. For this purpose, the advanced countries usually apply the overvoltage protection, leading the overvoltage pulse power away into the earthing conductor, thus protecting the unit in question. Therefore, the manufacturer of fuel dispensers recommends protecting the main (and/or the secondary) switchboard, feeding the fuel dispenser, electronic unit (computer, POS, etc.) and the data lines by overvoltage protection and lightning arresters.

2. In order to provide trouble-free operation of fuel dispensers it is necessary to secure the stabilized dispenser feeding by the standby source - UPS. Power supply dropouts, heavy disturbances or drop of voltage in peak hours (particularly during winter season) are very frequent phenomena in our power supply network. All phenomena as above can be eliminated by utilization of a correct standby source (UPS). There are two models of standby source available and suitable for the fuel dispenser in our market:

   - UPS of line interactive type
   - UPS of on-line type;

   UPS of the line-interactive type is enough for stabilization in the filling stations connected to a very stable power supply network (without any voltage drop and without any disturbances).
   In other cases, the ON-LINE type UPS must be applied. Disturbances, drops of voltage or failures can result in frequent blocking of the dispensers, problems in computer/dispenser communication, failures of calculator (data loss), etc.

3. For trouble-free operation of the fuel dispensers the signal cables must be separated thoroughly from the power supply cables. Parallel connection of power and signal cables without any separation results in disturbances and undesirable parasite phenomena which may cause problems with fuel dispenser control and/or even full damage of electronic units inside the dispensers and in the kiosk. Therefore, any crossing or parallel laying (in a single bundle) of the signal and power cables must be prevented reliably. Separate "channels" (metal tubes, troughs) for power and signal cables represent a suitable solution. The manufacturer is not liable for the damages caused due to unsuitably designed cable connection.

8.1 Cleaning of pipes

Two pipes are coming from the storage tank to the dispenser. Before installing and starting the Fuel dispenser, clean pipes to avoid debris of sand grain and metal chips inside the pipes. Cleaning is to be done until all impurities are removed.

Driving Fuel out of the fuel dispenser and piping (e.g. during disassembly) is carried out by nitrogen or inert gas. Driving Fuel out by air or oxygen is prohibited!

8.2 Execution of Foundation

EUROSTAR Fuel dispenser is mounted on a frame, having four M14 fixing bolt for the four holes, diameter 16 mm in the base of the Fuel dispenser. Place the frame on the well, level and anchor in concrete foundation. Care should be taken when performing these works. Having performed these works, check once again positions of lines to the foundation frame and the level of the frame.

A drip tray can be installed under the dispenser for safety and environmental protection, It prevents the leakage of fuel or technical liquid into soil due to possible leakage of the hydraulic system.

8.3 Instructions for suction pump:

If your dispenser is suction pump built-in; after foundation of dispenser check the rotation direction of the motor which is used for suction pump. Only after that should you mount the V-belt.

It is also advised to run the pump at 1.0 bar pressure at first then increase it to 1.8 – 2.0 only after sure no air inside pumping unit.

⚠	**Never use a pump with leakage.**

8.4 Instructions for Vapor recovery:

Vapor Recovery pipes should be installed using a non-return or check valve before the shear valve. The break point of VR shear valve should be arranged level according to top face of the island. aspirated gas volume is expelled via the outlet sides of the flame arrester.

8.5 Instruction for usage with above ground tanks:

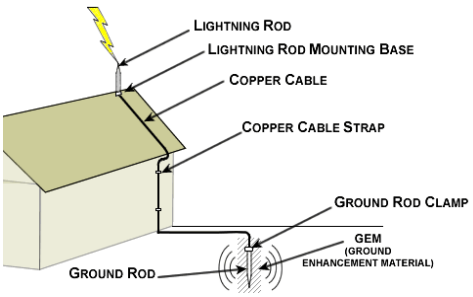
If the dispenser is connected to an aboveground storage tank, it is advised to include a pressure relief (check) valve in the suction pipeline which prevents the product from escaping from the tank because of gravity during any malfunction. This valve will also serve to release overpressure in the suction pipeline back into tank.

8.6 Instructions for piping to dispenser:

It is advised to prepare simple and straight piping system like a separate pipeline runs from each pump in the dispenser to a relevant fuel tank. It is not recommended backbone piping system where several dispensers (pumps) are connected to one supply pipeline, because of possible instability of fuel suction from storage tanks

8.7 Lightning Protection

Lightning is the visible discharge of static electricity within a cloud, between clouds, or between tile earth and a cloud. Lightning is a major threat to Fuel Gas Stations and systems in it - not only in rare direct strikes, but also nearby strikes radiating energy to the station. A lightning protection system does not prevent lightning from striking; it provides a means for controlling it and preventing damage by providing a low resistance path for the discharge of lightning energy.



Sample station protection diagram based on station building

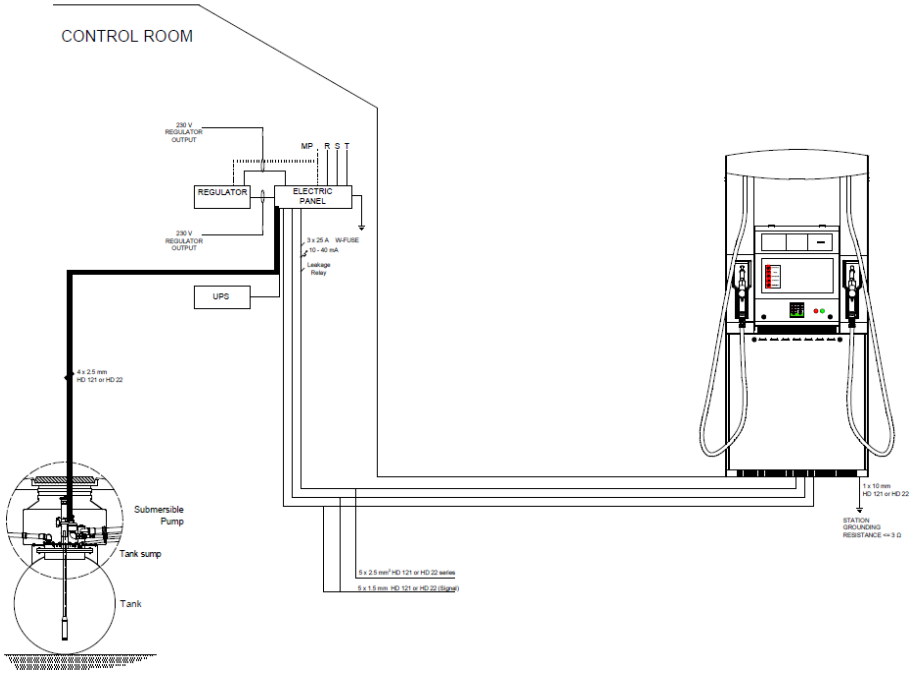
⚠ **Lightning protection systems should be designed by skilled electric engineers as it requires sensitive calculations and experience.**
Lightning protection is responsibility of station constructors.

8.8 Instructions for cables:

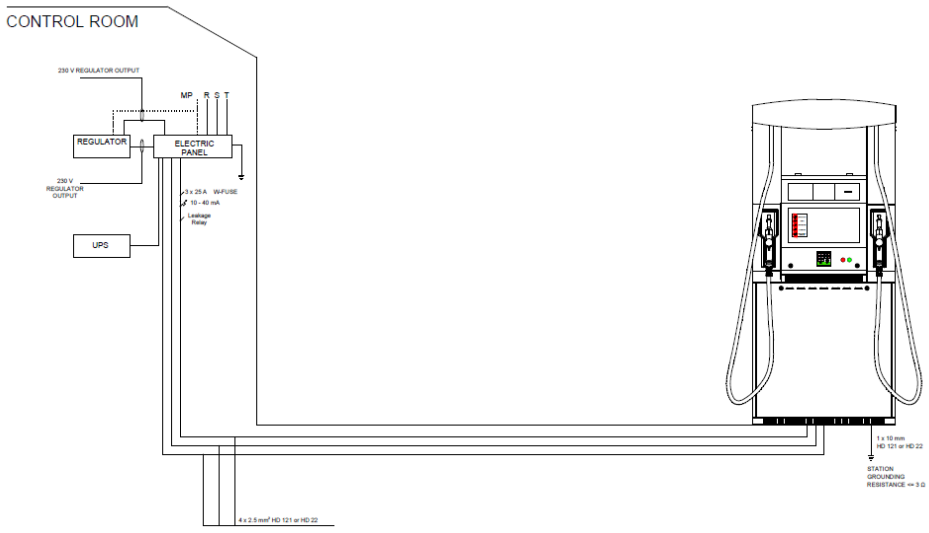
Use cables which are resistant to common chemicals, oils and with enough thermal and mechanical resistance.
Cable glands M20 x 1.5 and M25 x 1.5 in an explosion-proof design with protection Ex II 2G Ex e II and IP65 should be used in the dispenser junction boxes.
All dispensers should be interconnected by a grounding wire and connected to the grounding system. For a grounding wire you can use a yellow-green cable (At least section 4 mm2). Dispenser foundation has a mark for grounding cable connection.

Due construction of hydraulic system, dispenser will have different electrical connection schemes which can be found below:

Suction Type Hydraulic System



Dispenser Type Hydraulic System



8.9 First Operation of Dispenser

The fuel dispenser is to be serviced by authorized technician only.

Initial state: All valves of the installation and of the tanks in the filling station are closed.

1. Switch on power supply of fuel dispenser
2. Pick up the pump nozzle respectively from one of kind of Grade.
3. Check that the pump turning in proper direction (marked on the pump housing). In case of faulty functioning of the pump proceed in the following way:
   - Cut the fuel dispenser off power supply
   - Shift two of three phases of the motor supply
   - Switch the fuel dispenser power supply on again
   - Restart the motor by taking up the pump nozzle.

   If all operate correctly the pump shall start up and be ready for operation.
4. Clean filters of the suction system and the valve.

9. MAINTENANCE

- Take care of cleanness of the fuel dispenser by cleaning with a wet rag soaked with an agent, that is appropriate to that purpose.
- Non-metallic surfaces of the fuel dispenser shall be cleaned with wet rag to avoid accumulation of electric charges.
- Before getting started the activities, all necessary firefighting equipment (powder extinguishers, sand buckets, etc.) shall be held ready at the working location.

9.1 Remarks relating operation

Proper and error free operation of the fuel dispenser depends on:

- Proper connection and execution of the gas and electric installations,
- Proper servicing of fuel dispenser (according to instruction),
- Correctly adjusted pump (the adjustment depending on operation conditions),
- Do not refuel vehicles with stretched delivery hose
- Pay special attention to prevent the delivery hose not to get under a wheel of refueled vehicle,
- Do not use open fire in the zone of explosive conditions
- Observe the basic rules of industrial safety and firefighting codes.

9.2 Filters

In case the of decrease in flow rate and pressure, check filters and if contaminated, replace with new ones. Replacing of filters is started from protection of the dispenser by closing fuel in the dispenser. Having replaced the filter cartridge and accurately fixed cover (of housing), slightly fill installation, observing the tightness of the entire system. In case of leakage, stop the work and eliminate the leakage. When remounting the covers, it is recommended to slightly press the screws and gaskets.
If at the end of all these works the flowrate values of the discharge valve do not conform to technical data, contact the manufacturer.

9.3 Greasing of rotary parts

All rotary parts, such as Hinges and locks shall be greased every 6 months.

9.4 Checking of hydraulic connections and electrical devices

Check tightness of electrical devices and connection elements (hydraulic connections, valves, etc.), since the fuel dispenser is exposed to vibrations during operation.

9.5 Warranty and Complaints

The contractual warranty is determined - the manufacturer warrants for the supplied unit is 1 year or 1 million liters of dispensed medium as a standard. The warranty does not cover the consumables (e.g. The tubular discharge lamps). When raising possible claims, the following data must be specified:

- Serial number and name - see the rating plate
- Precise description of fault and the circumstances under which the fault occurred.

The claim will not be acknowledged provided that damaged seals or non-permitted intervention into the unit were established. Defects and drawbacks following from incorrect operation, inspection and maintenance of the fuel dispenser or its functional assemblies are out of scope of the warranty (e.g. the problems caused by presence of water and impurities in the tank and the hydraulic system). Check for presence of water and impurities and possible cleaning is necessary in the course of operation.

10. DISASSEMBLY

! ATTENTION !

- **Before opening the housing switch off power supply.**
- **Proceed according to this Service Manual.**

10.1 Opening the hydraulic housing

Open the lock located on the upper part of the housing turning it anticlockwise by 90° (for both sides of the dispenser separately).
Lift the housing and take out (appr. 15 cm) the gudgeons of the housing (located on top), then release the housing from the grips in the bottom lifting the housing and remove it.
Now, access to the hydraulic housing is possible and hydraulic connections as well as periodical controls can be carried out.

10.2 Opening of Counter Enclosure

Before any activities are made inside the counter the power master switch (motors, lighting, counter, etc.), which is situated in the room of filling station personnel, shall be switched off.
Open the counter cover turning lock. Now, access into the housing is enabled.

10.3 Opening the columns

Remove screws located on columns. Then access to cable glands, to emergency stop and key is possible.

11. ELECTRONIC CALCULATOR

Before any activities are made inside the counter the power master switch (motors, lighting, counter etc.), which is situated in the room of filling station personnel, shall be switched off.

The counter should indicate zero!

Delivery Total Field

Liter Field

Unit Price Field

VIEW OF DISPLAY

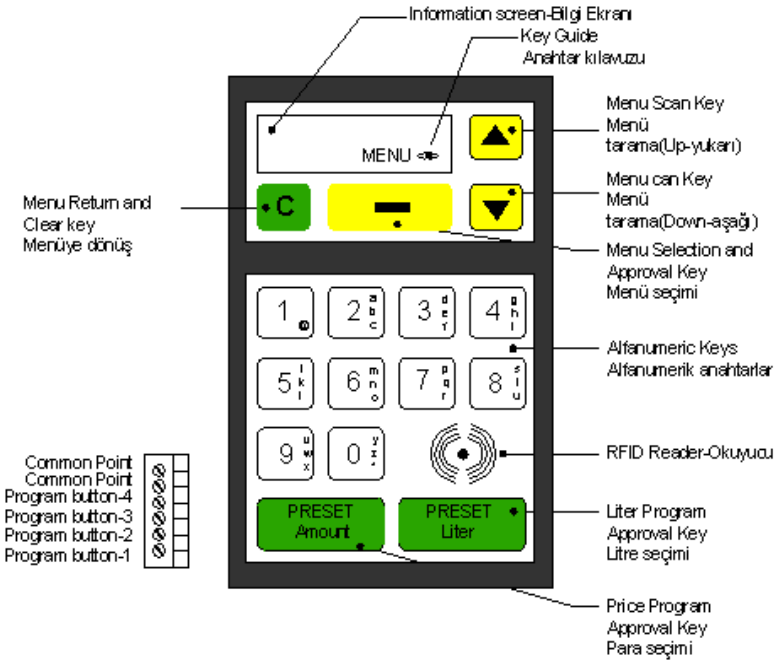
! ATTENTION !

1. **Before the housing is opened switch off the power supply**
2. **Proceed according to this service manual**

11.1 Setting of Parameters

The electronic calculator is provided with an independent external keyboard to adjust the fuel dispenser's parameters

Key guide



Guiding the use of keys and showing which keys to be used while processing an operation or selecting.

Meanings

< > : *Menu scan and menu return key are active.*
<N> : *Menu scan, menu return, and numeric key are active.*
<1> : *Menu scan, menu return, and 0-1 keys are active.*
<4> : *Menu scan, menu return, and 0-4 keys are active.*
<A> : *Menu scan, menu return, and alphanumeric keys are active.*
N : *Numeric keys and clear key are active.*

Menu selection and approval key
Used to approve selected operation by means of menu scanning keys. Facilitates operations to be done by changing the designation of this key on the screen according to operations in the menu in which is operated.

Menu return and clear key
Used to return to the menu and menu subfunctions and to clear digits or characters entered while entering data. Each time when pressed, returns to the next higher menu or function level.

Menu arrow keys
Used to scan menus and subfunctions.

Programming approval keys
Used to approve entered price and liter program.

Note: If while any menu is selected no operation is made within two minutes, the system automatically returns to default logo screen.

11.2 DESCRIPTION OF PROGRAMMABLE FUNCTIONS AND MENUS

Pump menus are subdivided in three categories.

1– **PUMP ATTENDANT MENU,** this menu is used by the station personnel for basic pump procedures.
2– **ADMINISTRATOR MENU** includes procedures that can be done only by using the password of a station manager.
3– **SERVICE MENU** includes procedures, that can be done only by using password and PIN code of an authorized personnel.

PUMP ATTENDANT	PRINTER	Receipt writer functions (active, if writer selected)
	TOTAL AMOUNT	12-digit non-resettable money total
	TOTAL VOLUME	12-digit non-resettable liter total
	TOTAL SALES	12-digit non-resettable sales total
	PREVIOUS SALES-n	Display previous sales.
	FLOW RATE	Flowrate indicator (lt/min)
	HEAT INDICATOR	ATC temperature display (active, if ATC selected)
	INFORMATION	General information
	ERROR CODES	Error codes, explanations and formation numbers

ADMINISTRATOR	SHIFT TOTALS	Resettable shift totals
	PRICE UNITS	Unit price change operations
	PREVIOUS PRICES	Previous unit prices
	DATE / TIME SETUP	Date-time settings.
	PRESET SETUP	Pre-set filing.
	CHANGE PASSWORD	User menu password change.

SERVICE MENU	PROTOCOLS	Serial communication protocol selections.
	PUMP NUMBER	Pump number for serial communication.
	PRODUCT DEFINITION	Product types definition (for ATC)
	DENSITY	Product density definition (for ATC)
	VALVE SETTINGS	Valve reduction and cut settings
	PUMP LIMITS	General pump limit settings
	DECIMAL POINTS	Sales screen decimal point select
	W&M CALIBRATION	Automatic flowmeter calibration
	PULSE OUTPUTS	Settings for pulse output
	C-LOOP BAUD SPEED	Current-Loop serial port speed settings
	RS232 BAUD SPEED	RS232 serial port speed settings
	PERIPHERALS	Peripheral units select
	DISPLAY TYPE	Sales screen type definitions
	PRICE/AMO RATIO	Unit price and sales price ratio select
	SERVICE REPORT	Service menu procedures report
	ERROR CODE	Report of errors occurred
	W&M EVENT REPORT	W&M calibration procedures report
	REGINONAL CODE	Country selection
	EXPULSE COUNT	Valve leakage pulses
	PUMP IDENDITY	Firm/Dispenser definition entry
	NEXT INVOICE NO	Next receipt no (active, if printer selected)
	TEMPLATES	Pump setting templates
	DIAGNOSTICS	System and peripheral unit test procedures

EMERGENCY STOP

Used for emergency stop while filling, if appropriate.
For operation logo screen should be visible. (If you are inside the menu, return to logo screen by menu return key)
Select nozzle number. of nozzle you want to stop, using the menu scan keys. You may exit operation by menu return key.
On display the no. of nozzle to be stopped visible.
Pressing the approval key, you can stop nozzle you selected.

PASSWORDS

Electronic calculator requires entering passwords to access different level of menu functions. Main procedures are explained below:

Pump Attendant Menu:

- No need password to access this level only pressing Enter key will be enough.

Administrator menu:

- For operation logo screen should be visible.
- Enter the 4-digit password pressing the numeric keys. By default, password is “0000”. This password may also be changed through administrator or service menu later. You may clear entered digits backwards in case of need.
- Approve password pressing approval the key.
- You may exit menu by menu return key.

Service menu:

- For operation logo screen should be visible.
- Enter the 6-digit by pressing numeric keys. Using clear key, you may clear entered digits backwards, if need be.
- Approve entered password by pressing approval key.
- If entered 6-digit service password is correct, PIN-code will be prompted. Entering PIN-code, when approved service menu will be activated,
- You may exit the menu using menu return key.

SALES PROGRAMMING

Used for programming pump sales amounts (money and liter) prior to transaction. Preset programming procedures are done using keypad and preset buttons. Preset programming operations are carried out by using keypad or preset buttons. Inside the administrator menu preset changes for preset buttons and keypad can be carried out.
In order to cancel entered program, carry out following procedure by entering “0”.
For the operation the logo screen should appear.
Enter required amount to be programmed using numeric keys. By means of clear key you may clear backwards entered digits.
If in your presetting zeros are defined, these will be appended to the entered amount.
For Liter press “Amount”, for money press “Volume” key.
If several filling points provided, nozzle number. will be prompted.
Entering the nozzle number., programmed amount will appear on the screen.

Programming with Preset Button:

For every sales point, depending on pump construction settings 1-4 units of preset buttons are available. Every time the button is pressed, the nozzle being in place, the previously defined button-1 amount will be doubled up and be visible on the sales screen. In order to cancel the program, keep button pressed for 2-3 seconds, preset will be reset to zero and the last sales screen will appear.

Notes:

1- For multiple product single sales point pumps, the given preset amount will be applicable to the product, of which the nozzle has been taken up first.
2- The entered preset amount is invalid, if it is outside the sales screen limits.

3- The preset operation will be cancelled after expiry of time, defined in the presetting (if no sale was made within that time)
4- For preset operations, valve settings in the service menu must be adjusted.
5- The preset buttons can effect changes depending on the number of filling points. If only one filling point provided, 4 buttons for the same filling point programmable, if simultaneously 4 filling points provided, for each filling point one button will be valid.

11.2 PUMP ATTENDANT MENU

PRINTER MENU:
If a receipt printer is connected to system and active. Pump salesman can print out shift report or last sale receipt from this menu.

PRICE, LITER AND SALES TOTALS:

Undeletable price, liter and sales totals are accumulated totals of the sales.
If inside the menu, using scan keys; if in the logo screen, initially using approval key and then by means of menu scan keys, you may select out from “PRICE TOTALS”,” LITER TOTALS” or “SALES TOTALS” whichever you wish to view.
Pressing the approval key, you may view totals you selected.
If several filling points provided, by means of menu scan keys you may view the totals of other nozzles. The digit “(1)” on the top left corner of the screen indicates the nozzle number.
By means of menu return key you may exit the menu.

PREVIOUS SALES
Indicates the money total of the last transaction.

If inside the menu using scan keys, if inside the logo screen using initially the approval key afterwards menu scan keys, select “PREVIOUS SALES” menu.
Pressing the approval key, you may view previous transaction amounts.
If several filling points provided, you may view sales of other nozzles using the menu scan keys.
By means of menu return key you may exit the menu.

FLOWRATE
Indicates the amount of last sale.

If inside the menu using scan keys, if inside the logo screen using initially the approval key afterwards menu scan keys, select “FLOWRATE INDICATOR” menu.
Pressing the approval key, you may view flowrate of the pump.
If several filling points provided, you may view flowrates of other nozzles using menu scan keys. The digit “1” in the top left corner of the screen indicates the nozzle number.
By means of menu return key you may exit the menu.

TEMPERATURE INDICATOR
If ATC feature is active, sensor temperatures and CTE (thermal expansion coefficient) values are indicated (if this feature is not selected from peripherals menu, not visible inside the menu).

If inside the menu using scan keys, if inside the logo screen using initially the approval key then afterwards menu scan keys, select “TEMPERATURE INDICATOR” menu.
Pressing the approval key, you may view sensor temperatures.
By means of menu return key you may exit the menu.

INFORMATION
Indicates meanings and no. of occurrence of error messages appearing on sales screen unit price display.

If inside the menu using scan keys, if inside the logo screen using initially the approval key afterwards menu scan keys, select “INFORMATION” menu.
Enter subfunctions pressing approval key.
Select required information using menu keys.
Indicates pump configuration setting and selected sales screen type.
Indicates Program version and date of installation.
Shows current date and hour.
Indicates mains voltage.
Indicates program CRC value.
Indicates pump operation condition.
Indicates operation intensity of the microprocessor.
Indicates passwords and PIN-codes related definitions.
By means of menu return key you may exit the menu.

ERROR CODES
Indicates meanings and no. of occurrence of error messages appearing on sales screen unit price display.

If inside the menu, using scan keys, if inside the logo screen using initially the approval key afterwards menu scan keys, select “ERROR MESSAGES” menu.
Pressing approval key, view error messages.
Using the menu scan keys, select error message you require.
By means of menu return key you may exit the menu.

11.4 ADMINISTRATOR MENU

SHIFT TOTALS
Erasable price totals of nozzles.

If inside the menu, using scan keys, if inside logo screen, first using administrator password, afterwards using approval key and menu scan key, select “SHIFT TOTALS" menu.
Pressing the approval key, you may view shift totals.
If several filling points provided, you may view shift totals of other nozzles by means of menu scan keys. The digit “[1]:” on the top left corner of the screen indicates the nozzle number.
Using menu return key, you may exit menu.

PRICE UNITS
If inside menu using scan keys, if inside logo screen, first using approval key and then menu scan keys select “UNIT PRICES” menu.
Pressing the approval key, you may view and change unit prices you wish to change.
If several filling points provided, you may change unit prices of other nozzles using menu scan keys. The digit “[1]:” on the top left corner of the screen indicates the nozzle number.
Using numeric keys, you may change prices. Approve prices changes pressing the approval key.
Using menu return key, you may exit menu, or you may backwards delete starting from the last digit entered.

Note: Unit prices you changed, are visible on the screen when nozzle is activated.

PREVIOUS PRICES
From this menu you can trace previous prices with changed date and hour.

If inside the menu using scan keys, or if inside the logo screen first using approval key and then using menu scan keys select “PREVIOUS PRICES” menu.
Pressing the approval key, you may view previous prices.
If several filling points are provided, by means of menu scan keys you may view prices of other nozzles. The digit “[19]” on the top left corner of the screen indicates the nozzle number. On the left bottom corner of the screen date and time of change can be seen.
Using menu return key, you may exit the menu.

TIME-DATE SETUP
If inside the menu using scan keys, if inside the logo screen, first using approval key and then menu scan key select "DATE/TIME" menu.
Pressing the approval key, you may view and change date and time settings.
Using numeric keys, you may enter date and hour settings. Pressing the approval key toggles to the next selection.
Using the menu scan keys you may select setting needed.
By means of menu scan key you may exit the menu or delete backwards starting from the last digit entered.

PRESET SETUP
Definitions for sales programming (preset) are made.

If inside the menu using scan keys, if inside the logo screen first entering the administrator password, afterwards using approval key and menu scan key select "PRESETTINGS".
Pressing the approval key, you may enter subfunctions and by means of menu scan keys view and change the entered values.

- Preset button value no.1,
- Preset button value no.2,
- Preset button value no.3,
- Preset button value no.4,

If no transaction has been made within the minute after programming, made by means of keyboard, the program will be cancelled.
Using the numeric keys, you may enter settings.
You may exit the menu by means of menu return key or delete backwards starting from the last entered digit.

PASSWORD CHANGE
If inside the menu using scan keys, if inside the logo screen first entering the administrator password, then using approval key and menu scan keys select "PASSWORD CHANGE" menu.
Pressing the approval key, you may change administrator password.
Using the numeric keys, you may enter the 4-digit administrator password and activate by means of approval key.
Using the menu return key, you may exit the menu or delete backwards starting from last entered digit.

11.5 SERVICE MENU

PROTOCOLS
For serial communication protocol selection is made.

Order of key entry:
If inside the menu using scan keys, or if inside the logo screen first using approval key and the using menu scan keys select "PROTOCOLS" menu.
Pressing the approval key, you may view selected protocol.
By means of menu scan keys you may select other protocols and pressing the approval key activate selected protocol.
Pressing approval key approve selection.
Using menu return key, you may exit the menu.

<u>Protocols:</u>

Standalone	:	Operates independent from pump serial communication.
C4-dart	:	Extended DART protocol.
WYN-DART	:	Default DART protocol.

Note:
Detailed information about dart protocols is set forth in "SERIAL COMMUNICATION and DART PROTOCOL" documentation.

PUMP NUMBER
For serial communication pump number selection is made.

If inside the menu using scan keys, or if inside the logo screen first using approval key and the using menu scan keys select “PUMP NUMBER” menu.
Pressing the approval key, you may view and change selected protocol.
Using the two-digit numeric keys (0-99) you may enter pump number and activate by approval key.
By means of menu scan key you may exit menu or delete backwards starting from the last entered digit.

PRODUCT TYPE
For every nozzle a product density definition is made, which is needed for ATC function.

If inside the menu using scan keys, if inside the logo screen first entering the service password and PIN-code, then using approval key and menu return key select “PRODUCT DEFINITION” menu.
Pressing the approval key, you may view and change previously defined product types.
If several filling points are provided, you may change product types of other nozzles. The digit “[1]:” on the top left corner of the screen indicates the nozzle number.
Using numeric keys 1-9 you may change product type. Approve selection by pressing approval key.
By means of menu return key you may exit the menu.

PRODUCT DENSITY
For every nozzle a product density definition is made, which is needed for ATC function.

If inside the menu using scan keys, if inside the logo screen first entering the service password and PIN-code, then using approval key and menu return key select “DENSITY” menu.
Pressing the approval key, you may view and change previously defined density values.
If several filling points are provided, you may change density values of other nozzles. The digit “[1]:” on the top left corner of the screen indicates the nozzle number.
Using numeric keys, you may change density values. Approve selection by pressing approval key.
By means of menu return key you may exit the menu or delete backwards last entered digits.

VALVE SETUP
For preset function valve definitions are made.

If inside the menu using scan keys, if inside the logo screen first entering the service password and PIN-code, then using approval key and menu return key, select “DENSITY” menu.
Pressing the approval key, you may enter subfunctions, using the menu scan keys you may view and change entered values.
For previously programmed sales (preset) value, reduction value prior to preset termination (in mm).
(if entered zero, automatically adjusts cut value)
Using numeric keys, you may change settings. Pressing approval key approve selected change.
You may exit menu by means of menu return key or delete backwards starting from the last entered digit.

PUMP LIMITS
General pump definitions.

If inside the menu using scan keys, if inside logo screen first enter service password and PIN-code, then using approval key and menu scan keys select “PUMP LIMITS” menu.
Pressing the approval key, you may enter subfunctions, using menu scan keys you may view and change entered values.

- Test screen duration when nozzle lifted. (sec)
- Stand-by time when nozzle put back. (sec)
- If within entered value (sec) after lifting nozzle no transaction is made, the engine stops.
- Last digit of Liter screen (ml x 10). After entered value screen activated.
- At flowrates higher than entered values in liters, shut-off of nozzle is retarded.

- If for Fuel pumps transaction is made under the entered flowrate value in liters, after the Fuel Off-Time the engine stops.
- For Fuel Offset value lapse of time in seconds.
- Limit value of price field. If entered zero, limitless. (after 99999999, starting from zero)
- Liter field limit value. If entered zero, limitless. (after 9999.99 starting from zero)
- Serial communication DART protocol lapse time

Using numeric keys, you may change pump limits. Approve selected change by pressing approval key.
By means of menu return key you may exit the menu or delete backwards starting from the last entered digit.

DECIMAL POINTS
Decimal point locations of price, liter and unit price fields of sales screen are defined.

If inside the menu using scan keys, if inside logo menu first entering service password and PIN-code, then using approval key and menu scan keys, select “DECIMAL POINTS” menu.
Pressing the approval key, you may enter subfunctions, using menu scan keys you may view and change entered values.

- Unit price decimal point definition.
- Liter decimal point definition.
- Price decimal point definition.

Using numeric keys, you may change decimal point definitions.
Approve changes pressing the approval key.
By means of menu return key you may exit the menu or delete backwards starting from the last entered digit.

W&M CALIBRATION
Automatic flowmeter calibration carried out.

If inside the menu using scan keys, if inside logo menu first entering service password and PIN-code, then using approval key and menu scan keys, select “W&M CALIBRATION” menu.
Pressing the approval key, you may enter sub-functions.
If several filling points provided, select using menu scan keys flowmeter to be calibrated. The digit “[1]:” on the top left corner of the screen indicates the nozzle number.
By means of menu return key you may exit menu.

PULSE OUTPUTS
If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “PULSE RATIOS” menu.
By means of menu scan key you may exit the menu.

C-LOOP BAUD RATE
For Current-Loop serial communication unit, baud speed is defined.

If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “C-LOOP BAUD SPEED” menu.
Pressing approval key, you may enter subfunctions, using menu scan keys you may view and change selected values.
Having selected BAUD speed value to be changed press approval key.
By means of menu scan key you may exit the menu.

RS232 BAUD RATE
For RS232 serial communication unit baud speed is defined.
If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “RS232 BAUD SPEED” menu.
Pressing approval key, you may enter subfunctions, using menu scan keys you may view and change selected values.
Having selected BAUD speed value to be changed press approval key.
By means of menu scan key you may exit the menu.

PERIPHERALS
Selection of active / passive peripheral units

If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “PERIPHERAL UNITS” menu.

Pressing approval key, you may enter subfunctions, using menu scan keys you may view and change selected values.
Pressing key 1 you may activate, pressing 0 deactivate selected unit.
Approve performed operation by pressing approval key.
By means of menu scan key you may exit the menu.

DISPLAY TYPE
Sales screen type selection.

If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “SALES SCREEN TYPE” menu.
Pressing approval key, you may enter subfunctions, using menu scan keys you may view and change selected screen type.
Approve performed operation by pressing approval key.
By means of menu scan key you may exit the menu.

PRICE/AMO RATIO
For calculations unit price/total ratios are defined.

If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “UNIT/PRICE RATIO” menu.
Pressing approval key, you may enter subfunctions, using menu scan keys you may view and change selected ratio.
Approve performed operation by pressing approval key.
By means of menu scan key you may exit the menu.

SERVICE LOG
Up to 250 operations of entering service menu by date, hour and PIN-code may be traced backwards.
If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “SERVICE REPORT” menu.
Pressing approval key enter to reports.
By means of menu scan keys you may trace records onwards and backwards. In the top line of the screen you may see date and hour, in the bottom-line PIN-code.

ERROR LOG
Up to 250 operations of error codes occurred by date, hour and PIN-code may be traced backwards.

If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “ERROR CODE” menu.
Pressing approval key enter to reports.
By means of menu scan keys you may trace records onwards. In the top line of the screen you may see date and hour, in the bottom-line nozzle number.
By means of menu scan key you may exit the menu.

W&M EVENT LOG
W&M calibration operations may be traced 250 changes backwards by date, hour and calibration value.

If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “W&M REPORT” menu.
Pressing approval key enter to reports.

By means of menu scan keys you may trace records onwards and backwards. In the top line of the screen you may see date and hour, in the bottom-line nozzle number.
By means of menu scan key you may exit the menu.

REGINOAL CODE
If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “COUNTRY CODE” menu.

Pressing approval key, you may enter subfunctions, using menu scan keys you may view and change selected country code values.
Approve performed operation by pressing approval key.
By means of menu scan key you may exit the menu.

EXPULSE COUNT
Shows leakage quantities while nozzle is closed.

PUMP IDENTITY
Pump identity definition number is used for printer operations, in order to specify unique pump id.
Pressing approval key, you may view and change previously defined value.
Using numeric keys, you may change firm definition values. Pressing approval key you may approve performed changes. By means of menu return key you may exit menu or delete backwards starting from the last entered digit.

NEXT INVOICE NO
Definition is used for printer operations to specify next receipt no.

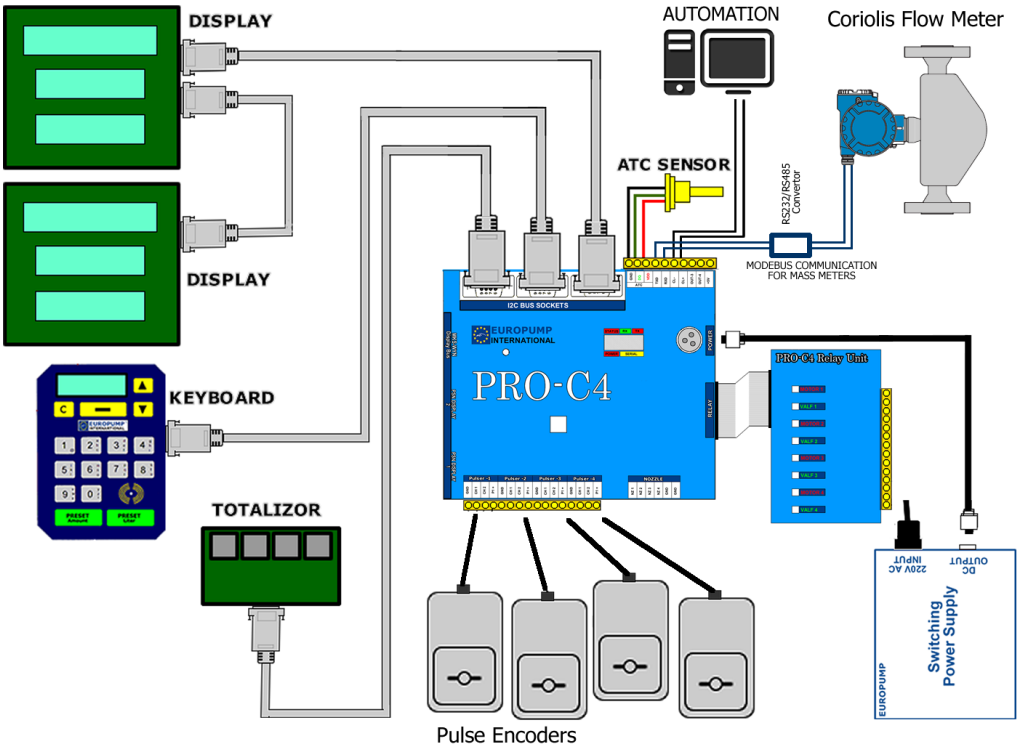
TEMPLATES
Template definitions depending on pump type.

If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “TEMPLATES” menu.
Pressing approval key, you may view subfunctions, using menu scan keys you may view and change selected template.
Approve performed operation by pressing approval key.
By means of menu scan key you may exit the menu.

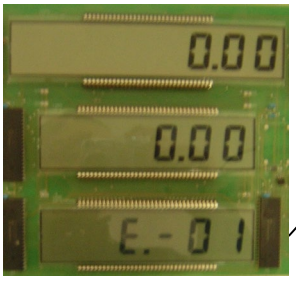
DIAGNOSTICS
If inside the menu using scan keys, if inside the logo screen first enter service password and PIN-code, then using approval key and menu scan key select “SYSTEM CONTROL” menu.
Pressing approval key, you may enter subfunctions, using menu scan keys you may select unit to be tested.
Approve performed operation by pressing approval key.
By means of menu scan key you may exit the menu.

11.6. ELECTRONIC CALCULTOR CONNECTION

S4 PRO-C



11.4. DESCRIPTION OF DISPLAYED ERRORS



ERROR number

Message on error occurrence, is showed with an code starts with “E”

Item	Error No.	Error Description	Procedure in case of error occurrence
1	E-01	No electricity / Supply error	Check 220 Vac input voltage at supply unit. If no 220 Vac present, check fuse inside the dispenser. If on fuse no defect present, check respective fuses and mains at panel to supply dispenser. Eliminate defects encountered and operate the system. Check at panel cables to supply the dispenser. If in supply unit 220 Vac input voltage present, but 12 Vac output voltage not present means, a defect has occurred in supply unit. Eliminate the fault by replacing the supply unit. If 12 Vac output voltage in supply unit present means, a calculator fault has occurred. Eliminate the fault by replacing the calculator.
2	E-02	Supply protection fuse	A fault in calculator may be present. Eliminate fault by replacing the calculator (fuse F1 in calculator defect)
3	E-17	No pulsar current	Check voltage at ends P1 and GND of the calculator’s pulsar input socket. If at these ends 5 Vdc voltage present, pulsar is defective. Eliminate defect by replacing the pulsar. If no 5 Vdc voltage present means, calculator is defective. Eliminate defect by replacing calculator.
4	E-18	Pulsar channel–A error	Check with oscilloscope in channel A of pulsar for square wave signals. If in channel A no square wave signal present, then pulsar is defective. Eliminate defect by replacing pulsar. If in channel A of pulsar square wave signal present, then calculator might be defective. Eliminate defect by replacing calculator.
5	E-19	Pulsar channel–B error	Check with oscilloscope in channel B of pulsar for square wave signals. If in channel A no square wave signal present, then pulsar is defective. Eliminate defect by replacing pulsar. If in channel B of pulsar square wave signal present, then calculator might be defective. Eliminate defect by replacing calculator.
9	E-26	Electromechanical totalizer error	Check electromechanical total connection. If there is no fault in connection, change electromechanical total.
10	E-29	Nozzle open (electricity cut off)	Place nozzle in boot. If error persists, check switch and if defective replace. If no defect on switch observed, check cables enabling communication between calculator and switch. If cables not found to be defective, replace calculator.
11	E-31	Unit price not entered	Entering the unit price, error can be eliminated.
12	E-36	Liter field beyond limit	If in system liter total limitation is set for each sale, the dispenser cannot sell more than the set amount for every sale. If required, limitation can be cancelled by entering max. amount. value 0 (zero) from service menu.

13	E-37	Money field beyond limit	If in system sales amount limitation is set for each sale, the dispenser cannot sell more than the set liters for every sale. If required, limitation can be cancelled by entering max. vol. value 0 (zero) from service menu.
14	E-39	Solenoid valve leakage	Error occurs, when in preset delivery mode, product delivery exceeds preset value. Check solenoid valves.
15	E-42	Service menu/W&M active	Temporary error code. Occurs when lifting nozzle while in service menu or W&M switch is active. Insert nozzle back into boot, leave service menu, then lift nozzle.
16	E-43	WATCHDOG time expiry	Error in case of product delivery under value entered into calculator. Eliminated by inserting nozzle back into nozzle boot.

12. CONTACT US:

Please do not hesitate to contact us for your all kind of technical and sales support from our website www.europump.com or following worldwide offices :

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