LPG dispenser MID series LPG6000CP single or double delivery with electronic calculator CPTH02

User Manual

LPG6000CP CPTH02 MID US.GB.B05
20 april 2016

CE

petrolmeccanica s.r.l.

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Petrolmeccanica s.r.l.
Via Tolara di Sopra 51
40064 Ozzano Emilia (BO)
Tel. +39 051794611
Fax +39 051797819

The request can be submitted also to the following e-mail: info@petrolmeccanica.it

NOTES

The LPG dispenser series LPG6000CP complies with the following European Directives :

ATEX Directive	**2014/34/EU**
Electromagnetic Compatibility Directive	**2014/30/EU**
MID Directive	**2014/32/EU**

and has the CE marking.

The assessment for the purposes of Directive **2014/34/EU** has been prepared in accordance with EN 14678-1:2013 *LPG equipment and accessories – Construction and performance of LPG equipment for automotive filling stations – Part 1: Dispensers.*For any question regarding the marking and identification of this equipment please read the relevant paragraphs of this manual.

TYPE CERTIFICATIONS
ATEX DIRECTIVE : FTZÚ10ATEX0175X
MID DIRECTIVE : T10107 issued by Nmi

PRODUCTION QUALITY CERTIFICATION
MID : CE-089 MODULE D issued by Nmi
ATEX : FTZÚ 13 ATEX Q 10

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1 SCOPE OF THE MANUAL

This manual is for the use and maintenance of automotive LPG dispenser series "LPG6000CP" equipped with electronic calculator CPTH02, please read it carefully for the correct and safe use,since its first use,to avoid damage to property, people or equipment.This is an essential part of the distributor and shall be kept in a suitable place.If the dispenser is sold,this manual shall be given to the new owner because it contains necessary informations.In case of loss a copy can be required.This manual does not contain all the setup information and maintenance, or a list of spare parts.These documents are available for installers and authorized dealers.

1.1 Manual update

The version B05 is valid for all the dispensers LPG6000CP equipped with electronic calculator CPTH02.The following table explains the modifications of this manual.In the first column a letter identifies the modification's content. C=component , S=software , T=text , O= addition of option.

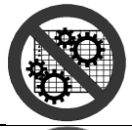
O+C	**Normative reference**	*Pag. 2 updated the relevant UE Directives (mandatory from 20th april 2016)*
	Normative reference	*updated the Reference EN normative, paragraph 2.2 page 7 , paragraph 5.5 page 15.*

2 SAFE USE

2.1 Warnings

	The dispenser can be installed only by trained and skilled staff.This personnel shall have permission to access the properties of the plant, be formed in low-voltage electrical work,be formed in plants of gases and liquids under pressure in areas where a potential risk of explosion,due to the presence of gas and/or vapour, can be considered.Petrolmeccanica organizes training courses for installers,already experts,in order to have more specific knowledge about the equipment.
	Only use original spare parts for this equipment
	 Always use personal protective equipment (PPE) provided in the security plan of the station and in the own working manual.Non-sparking tools are recommended.
	During any installation or repair of the dispenser always use cones or barriers to protect the work area.
	Read the instruction carefully
	Check the efficiency of the ground plant , according to the frequency and manner prescribed by law.
	Check the efficiency of fire extinguishers and fire protection systems in accordance with the frequency and manner prescribed by law.
	Identify the placement of the switches on the electric panel.Switch off to the power before starting any work or repair.Identify the positioning of the emergency shut-down button (ESD) in the dispenser.
	Activate the emergency shut-down button in case of hazards

2.2 Prohibitions

	Repair the equipment when in use
	Remove the safety devices
	Use water to extinguish fires
	Keep the engine running while refueling
	Smoking
	Use of open flames and incandescent hot sources
	Use of mobile phones
	Install in the dispenser or near it unsuitable equipment in designated hazardous areas (see paragraph 9.1).Install in the dispenser cables not in conformity with paragraph 4.1.3 EN14678-1:2013
	Install and commission the dispenser without shear valve or a system to ensure an equivalent level of safety.The valve shall be installed between the pipework and the dispenser's inlet pipe (see paragraph 9.3)

2.3 Cautions

	Follow all the safety instructions of this manual and the safety standards prescribed by the laws.
	LPG is a flammable PRODUCT
	Risk of explosion. Remember that LPG is heavier than air tending to stratify low.LPG that can leak from the dispenser is limited by the safety devices.However ,in case of loss , adopt an action plan to secure the area.
	The product may be harmful if inhaled in large quantities.It does not irritate the skin but can cause burns at short distance because it can be extremely cold when it leaves a component under pressure. In view of the fact that the place of installation is in open air, that the greatest amount of LPG resides in the internal circuit protected by panels,that in the event of very rare serious failures, the safety devices limit the amount of spills , it would not create a concentration that can damage seriously the health.

2.4 List of external controls and safety devices for the operator

	✓ Start / Stop system by means of a start/stop button (see operating instructions in this manual). This dispenser is not suitable for self-service for public facilities, it must be handled by the operator of the station. ✓ ESD button for the emergency shut-down system ✓ Hose break-away valve (it operates in case the vehicle starts moving before the release of the nozzle) The valve protects the people, the distributor, the plant and vehicle from possible damage. The valve can be reconnected by the staff of the station,if properly trained (see paragraph 8.1.1). ✓ Protection panels with lock and key to prevent unauthorized access to hydraulic and electronic components.

3 GENERAL SPECIFICATIONS

This manual applies to the dispenser LPG6000CP series,produced by Petrolmeccanica.Dispensers can be equipped with one or two nozzles. Figure 1 shows a single dispenser sample. The double delivery model can fill two vehicles simultaneously from both sides then is made with two hydraulic circuits.The double model is made only with "ODD" system and works with one degassing unit and two meters.Different configurations are specified in the paragrapgh 3.2 Identification of the product.

Fig. 1 - Sample of a single delivery dispenser

Description	Data
Min/max flow rate	5L/min. 50L/min.
Dispenser accuracy	Class 1
Metering unit	0,01 L
Design pressure	25 bar
Max suggested working P	18 bar
Working temperature(ATEX)	-20 °C + 40 °C
Supply Voltage	230VAC +/- 10% 50÷60 Hz
Amperage	single max 50 VA double ODD max 75 VA
Weight with packaging	Single 130kg. Double ODD 160kg.

NOTES
The flow rates may change, here are some possible reasons:
type of pump installed in the plant, type of vehicle tank, pipe section installed from the pump to the dispenser.

3.1 Intended use

The dispensers LPG6000CP are suitable to be installed in service stations to fill the vehicles homologated for LPG fuel.They calculate and display the number of liters delivered and the amount depending on the current indicated unit price.Not designed for self-service public facilities.

FOR ANY DAMAGE TO PERSONS AND/OR PROPERTY CAUSED BY A DIFFERENT THAN THE INTENDED USE,PETROLMECCANICA IS NOT 'RESPONSIBLE. ANY UNAUTHORIZED MODIFICATION OF PARTS AND COMPONENTS OF THE DISPENSER IS PROHIBITED AND VOID ANY RESPONSIBILITY, CERTIFICATION AND WARRANTY OF THE MANUFACTURER.

3.2 Identification of the product

The models have an extended identification system partially printed on the external plate (see paragraph 4) and partially contained in commercial and sales documents.The extended code has been designed to contain the maximum amount of informations about standard devices and options of the equipment.Some very specific data, such as the colors of the panels and special coating materials are described in commercial documents but will not change this identification number. Below a guide is provided to understand the meaning of the codes.

The first two groups of information that identifies the model, from position 1 upto 10, are also printed on the plate along with other technical data. Therefore, the additional positions mentioned here will be printed in the commercial and sales documents to identify the ordered options.

LPG6000 xxP Hxxxx Dx Sx Kx Cxx Nx Bxx Tx Nxx = Id. Destination NIT =Italy

Tx temperature compensation
x = Ø without / =1 with PT100

Bxx Shear Valve and sight glass
x = Ø no valve / = 1 with valve
x = always Ø ,sight glass is not provided for these models

Nx Type of nozzle
x = 1 OPW OT300 / = 2 ZVA2 / 3 = LPG group …….

Cxx Type of Controls
x = 1 no / = 2 start/stop button / 3 no
x = Ø without ESD button 1 = with ESD button

Kx Type of keyboard
x = Ø no preset / =1 ht-pul no / =2 CPTH / =3 round buttons no / 4 = CPTH4 / 5=CPTH5

Sx Type of Solenoid valve
x = Ø no valve / = 1 one coil / =2 two coils

Dx Number of degassing units
x = 1 one degass. / 2 = not provided

Hxxx number of meters and nozzles / calculator type / nr. display / interface type
x = 1 single / = 2 double / = 3 no / = 4 no
x = 1 = no / = 2 CPTH02 / = 3 CPTH02 with electromechanical totalizer
x = 1 display / = 2 display / = 4 no
x = Ø without interface / =1 no / =2 no / = 3 no / = 4 RS485 CP / =5 RS422 / = 6 Gilbarco TW = 7 no / 8 = RS485 DA / 9 = IFSF-LON

MODEL
xxx (xxx empty – calculator Veeder Root – no longer available)
xCP (x not used – C=parallelepiped model with horizontal barrier P = electronic calculator

SERIES
Basic series with meter type LPG6000xx

PRODUCT IDENTIFICATION SAMPLE IN A STRING OF 34 CHARACTERS

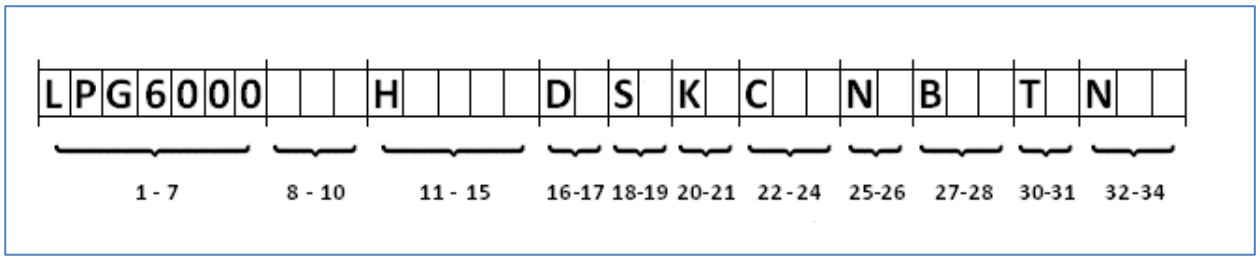


Fig. 2 – product identification

In the text printed on the documents the first 11 identification sections may be separated by spaces :

LPG6000 XXX HXXXX DX SX KX CXX NX BXX TX NXX

Complete string sample of a single delivery dispenser type LPG6000CP :

LPG6000 CP H222Ø D1 S2 K2 C21 N1 BØØ TØ NIT

SEC	IDENT	MEANING
1	LPG6000	LPG dispenser series LPG6000
2	CP	Parallelepiped model with horizontal barrier with electronic calculator,
3	H222Ø	Double delivery,calculator CPTH02 ,two displays,without serial interface
4	D1	one degassing unit
5	S2	Double coils solenoid valve
6	K2	with preset keyboard type CPTH
7	C21	With Start / stop button and ESD button
8	N1	nozzle OPW OT300
9	BØØ	
10	TØ	Without PT100
11	NIT	version Italy

Achievable configurations and combinations , position of nozzles and displays (top view)

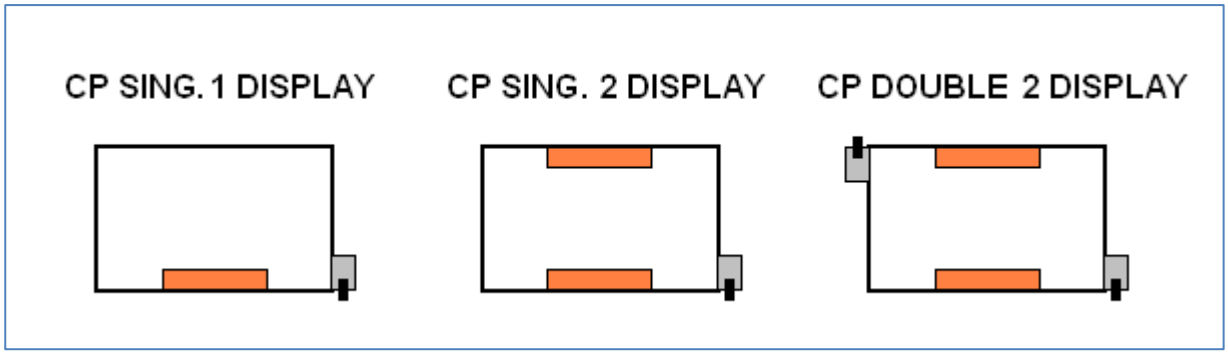


Fig.3 – top view of display and nozzles position

Nozzle boot is positioned in the housing on the outside lateral panels.The second nozzle boot of the double delivery dispenser is positioned on the opposite panel to allow the use of the nozzle in the side where the vehicle is stopped.

3.3 Main components

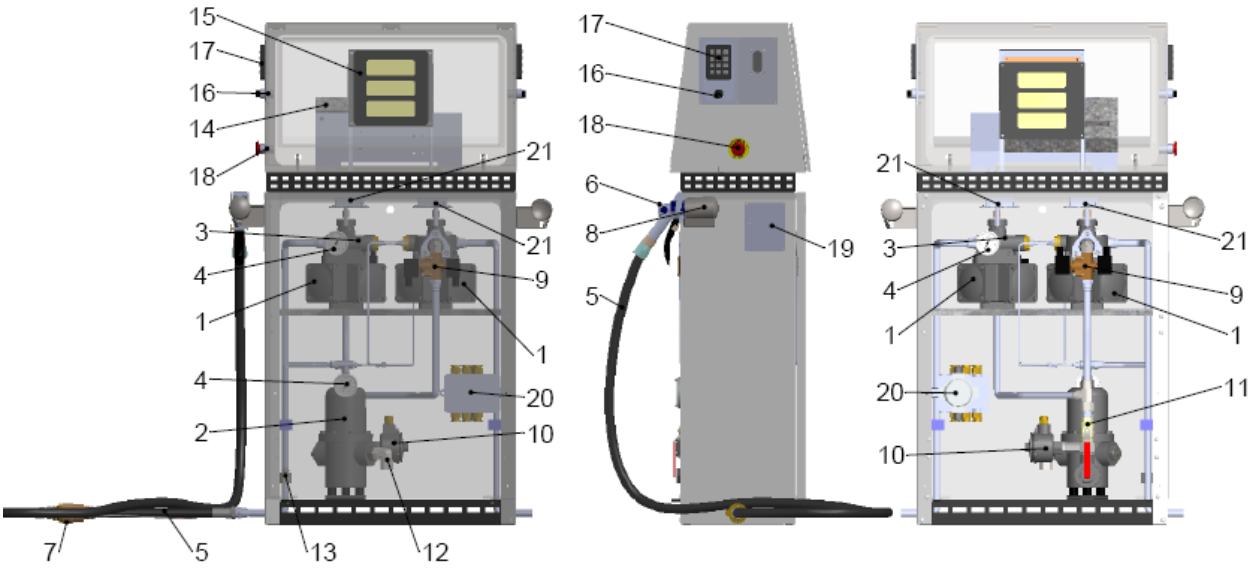


Fig. 4– components of a double delivery dispenser

1	Meter	12	Inlet pipe liquid
2	Degassing unit	13	Vapour return pipe
3	Differential valve	14	CPU box
4	Pressure gauge	15	Back-lit display
5	Rubber filling hose	16	Start / Stop button
6	Filling nozzle	17	Alphanumeric preset keyboard
7	Hose break-away	18	ESD button
8	Nozzle boot	19	Metric plate + ATEX plate
9	Double coils solenoid valve	20	EX box
10	PT100 sensor	21	Pulser
11	Cut-off valve		

Included in the package is given a nipple male / male ¾ " to connect the swivel nut to the pipework. The nipple has a male thread type SAE J514/ISO 8434-2 (dispenser side) while the thread male for pipework connection is type BSI 5200. (gas thread BSPP).

4 MARKING

The model LPG6000CP is provided with MID Certification,marking reserved to the model equipped with electronic calculator CPTH02.The 'following example illustrates the standard plates.

MID marking

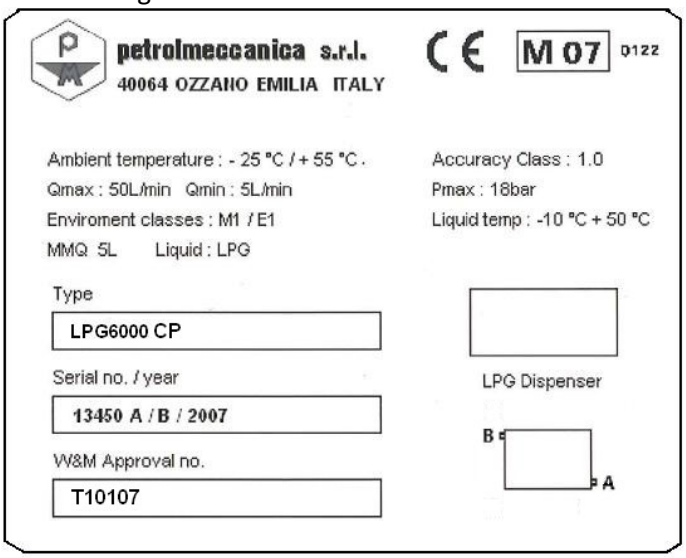


Fig. 5 – Sample of a MID metric plate

LEGENDA

At the top, CE M marking , year , 0122 Ident. number of the Notified Body that issued the Type certificate and envolved in the Quality Production Surveillance . Ambient temperature ,Accuracy class,Qmin and Qmax,Pmax working pressure,Enviroment class ,liquid Temp,Minim. Measured Quantity and type of Liquid. Type of model,serial number and year of production,Type Approval number,Configuration of nozzles and sides.

ATEX marking

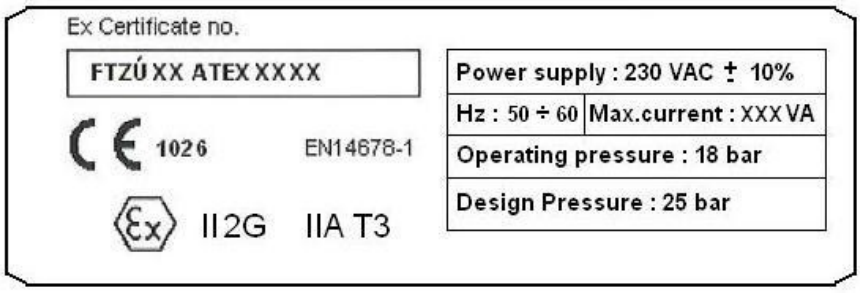


Fig. 6 – Sample of ATEX plate

LEGENDA

FTZÚ XX ATEX XXXX	FTZÚ - Name of the Certification Body that issued the Type Certificate XX year of issue of the Certificate XXXX certificate number
CE	Marking of conformity to the applicable European Directives
1026	Id. number of the Certification Body that carries out the surveillance of the Production Quality
Ex	Equipment suitable to operate in areas with explosion hazard
II	Group II for installation in places other than mines and related plants
2	Suitable for installation in Zone 1 or Zone 2
G	For hazardous atmospheres due to the formation of gas, vapour or mist
IIA	Gas group
T3	Temperature Class

In the right section were added data relating to : voltage and frequency, max input current, operating pressure, design pressure.These informations were not printed on the plates produced in the past.

5 DISPENSER INSTALLATION

As already written in the safety instructions, the dispenser shall be installed and commissioned by experienced personnel. Here is some information that the user needs to know.

5.1 Transport

The dispenser is properly packaged to prevent damage during the transport. Given the mass of the distributor, it needs to be handled with appropriate means to ensure its integrity and the security of operators.Appropriate means are the forklifts, tail lifts,cranes.Before removing the package check its integrity,if any damage is visible , accept it with reservations and then report any damage.

5.2 Packing removal

Dispenser is fixed on wooden pallet by means of bolts and screws. First remove carefully the packaging,cutting the strip.Keep the cartoon until the inspection of integrity is done.Remove the dispenser from the pallet when it has been placed on the installation site.

The package includes the following elements :

- Dispenser on a pallet
- Anchor plate (if requested)
- Shear valve (if requested)
- MM joints for pipework connections
- CE User Manual
- CE Certificate of Conformity
- Warranty

The documentation shall be kept at the service station. The warranty card must be completed by the installer and sent to the owner. A copy should be sent to our technical service via mail, fax or e-mail.

5.3 Access to the internal components

Access to the hydraulic system is possible by opening the lower panels.Turn the lock with universal key and lift the panel up to full release by the centering holes.The access to the electronic calculator is achievable rotating two locks in the frontal upper frame by means of the same universal key.Lift it vertically until it comes out from the centering guides.

5.4 Preparation of the installation

The dispenser shall be installed on a special plate, anchored in concrete and firmly secured to the well pipework. Check before connection the centered position of the pipes (see paragraph 9.2).

	Fill the well under the dispenser of fine sil. sand to prevent.explosive atmosphere that could be created in case of loss.

5.5 Electrical preparation

	Always disconnect the power by means of the main switch before working on the insides of the dispenser. Secure the electric panel board to avoid accidental reactivation by anyone who is in the service area.
	Connect the earthing system to the screw inside the base,properly marked,to prevent accumulation of static electricity on the conductive parts. 
	Connect the safety devices, controls and switches on the electric panel board. To size the performance data verify the paragraph 3.For specific wiring instruction,the installer shall consult the service manual LPG6000CP SM.GB01.B01 and later.
	Observe the instructions about cables' diameter before installation in the connection boxes.,a discrepancy invalidates the EX certification. The nominal diameter of the connecting cables shall not be less than 7 mm and more than 14 mm .. For special requirements, contact the Technical Department Petrolmeccanica.
	Lay down signal cables in separate conduits from the power supply cables in order to avoid electrical interference and inductive effects.

CABLES REQUIRED FOR THE INSTALLATION

SINGLE DELIVERY CONNECTED TO A REMOTE SYSTEM
Supply 230 VAC - ➔ cable 2 x1,5 +G suitable for ZONE 1
Supply motor rele' 230VAC ➔ cable 2 x1,5 +G suitable for ZONE 1
Remote system connection ➔ schielded serial cable 4 x0,25 suitable for ZONE 1
ESD connection ➔ cable 2 x1,5 +G suitable for ZONE 1

DOUBLE DELIVERY CONNECTED TO ONE PUMP AND TO A REMOTE SYSTEM
Supply 230 VAC - ➔ cable 2 x1,5 +G suitable for ZONE 1
Supply motor rele' 230VAC ➔ cable 2 x1,5 +G suitable for ZONE 1
Remote system connection ➔ schielded serial cable 4 x0,25 suitable for ZONE 1
ESD connection ➔ cable 2 x1,5 +G suitable for ZONE 1

NOTES - The cable for connecting the dispenser to the earthing system of the station, as mentioned above, shall always be installed and connected to the screw properly marked on the base.
- The cables used in Zone 1 shall be connected in conformity with EN 60079-14 and shall comply with : HD 21.13 S1 or HD 22.4 S4 or be in conformity with the requirements of paragraph 5.4 of EN 14678-1:2013

5.6 Mechanical installation

- Open the lower panels containing the hydraulics and check the pipes are clean and free from sand.Particles can damage the components.At the end of connection the removed sand shall then repositioned to the level of the floor.You may slightly loosen the bolts that hold the dispenser attached to the anchor plate to avoid mechanical stress to the pipework.
- Connect a suitable shear valve to the liquid pipework see paragraph 9.3.Fix this valve in the concrete well and at the appropriate points in the dispenser. So the top of this valve shall be connected to the female swivel joint through the proper nipple contained in the equipment.Tighten the swivel joint (SAE J514 / ISO 8434-2)
- Use the same procedure for gas phase pipe, on which, however, is not normally installed the shear valve.

	**Remember that it is prohibited by law the use of flexible rubber hoses to connect the dispenser to the pipework.**

- The joints just connected shall be pressure tested prefarably by means of an inert gas, usually nitrogen; take into account that the max. design pressure is 25 bar. Use leak detector or any other suitable means to check that there are no leaks.
- The reconnectable hose break-away requires the preparation of a dimensioned hole on the floor or may be required a plate fixed to the anchor plate.This part prevents wrong positioning of the fixing pin.The steel wire shall be tied to the screw and bolt provided in the equipment.

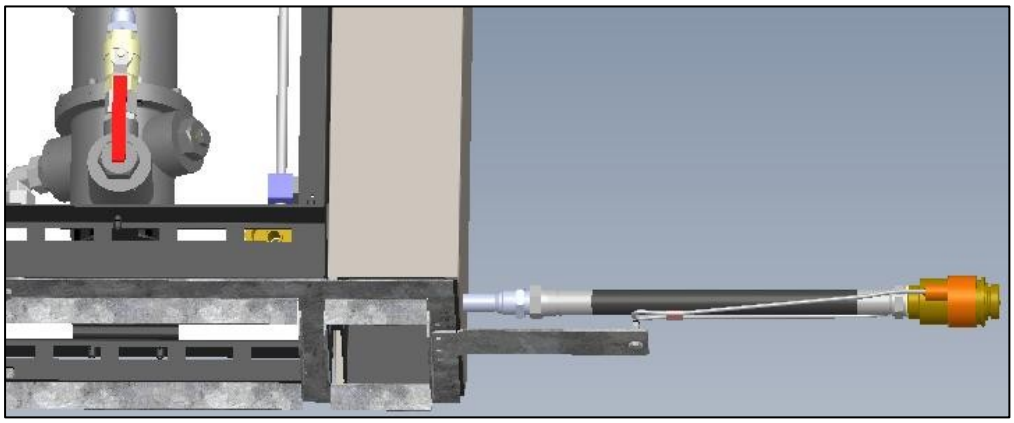


Fig. 7 – New support for hose break-away steel wire (bottom view)

5.7 Electrical installation

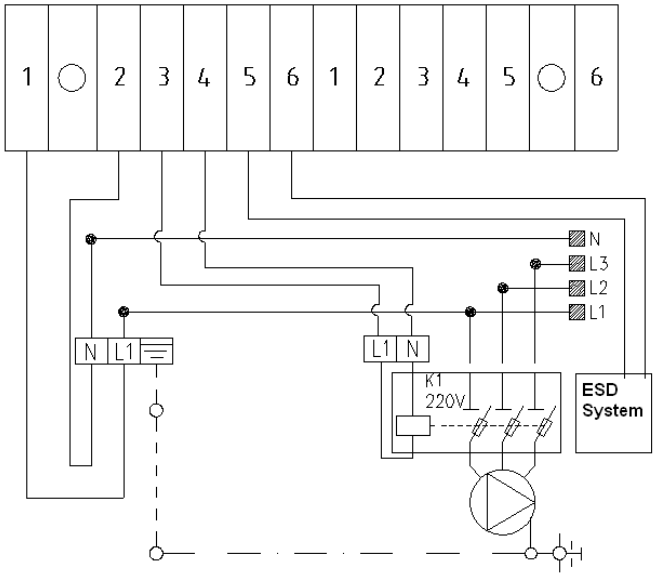
- Open the lower panels. Connect the cable of earthing system at the base of the dispenser, if not already done during installation, see paragraph 5.5
- Open the covers of the electrical EX box.
- Connect the supply cable (IN) and controls cable (OUT)
- Connect the serial cable (if requested)
- Check the cableglands are tight
- Switch on the dispenser
- Take the nozzle and push the start/stop button in ON
- Check the pump motor rotates in the right direction, if not,operate on three phase wiring in panel board inverting the two-phases in the 3phase switch.
- However, the pump is not a part of the dispenser,consult the manufacturer's user pump manual.Normally do not let the pump run dry for a long time.
- Switch off again the power to proceed with installation.
- Close all the covers of the EX boxes and tighten all the allen screws .

	**Never leave empty the unused cableglands in junction boxes, if necessary, ask the original caps to close the threaded holes.**

- Close the lower panels covering the hydraulic parts.

	**Keep the power cables and the data cables in separate conduits**

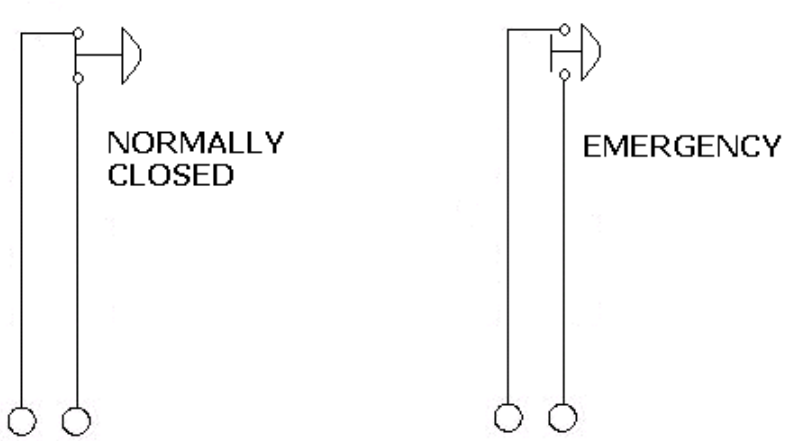
Fig. 8 – Wiring diagram of a single or double ODD dispenser with or without preset



1	Phase 230 VAC	1	
2	Neutral 230 VAC	2	
3	Motor rele' supply 230VAC	3	
4	Motor rele' supply 230VAC	4	
5	NC contact to ESD SYSTEM	5	
6	NC contact to ESD SYSTEM	6	

Fig. 9 – Explanation of the ESD button connection

ESD BUTTON



5.8 Connection to remote systems

The dispenser can be connected to remote systems.

Fig.10– RS485 interface single or double delivery to Host

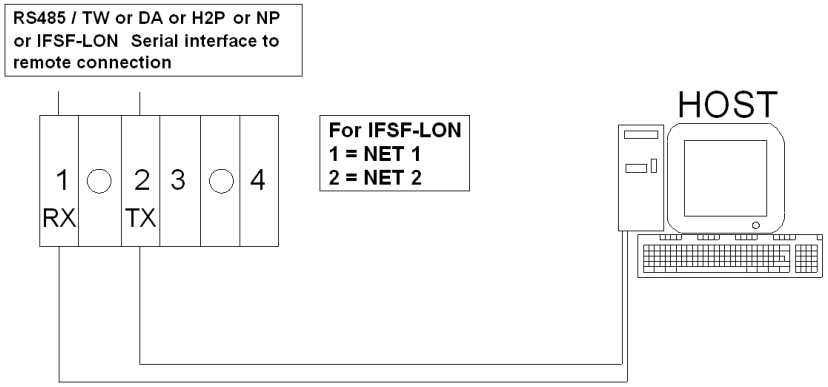
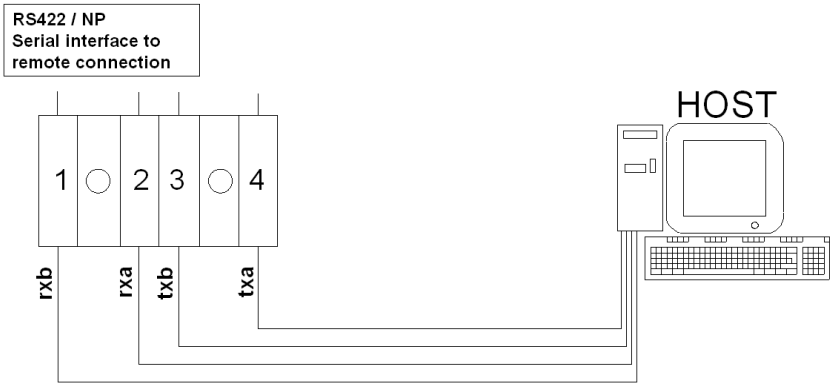


Fig. 11 – RS422 interface single delivery to Host



6 START-UP AND OPERATING INSTRUCTIONS

6.1 Hydraulic start-up

Open all the valves except ball valve between degassing unit and meter.
Open the lower panels
Make sure there are no leaks with leak detector spray or equivalent systems.
Activate the main switch and all the switches of the panel board.
Write the numbers of the electronic totalizer and electromechanical totalizer (if fitted)
Take the nozzle push the start/stop button in ON.The pump pressurises the circuit.
Gradually open the valve between the degassing unit and meter, check for leaks.
The pressure of the gauge fitted on the differential valve increases,if compared to the pressure indicated by the gas phase gauge. It means that the circuit is working properly and the pump performs its function of pressure increase. Push the start/stop button in OFF.

6.2 Keyboards management

The password implemented ex factory protects some functions by means of the keyboard.The default PSW is 1 but it can be changed.To enter the data the dispenser can be equipped with 3 different keyboards :
External multifunction or 4 keys keyboard equipped with preset option and solenoid valves implemented or small keyboard fitted inside,close to the calculator when no preset option is implemented (see Fig. 12 , the left figure shows the external alphanumeric keyboard , the central one shows the 4 keys keyboard,the right figure shows the small internal keyboard. The data entry procedure changes,in the following instruction is explained.

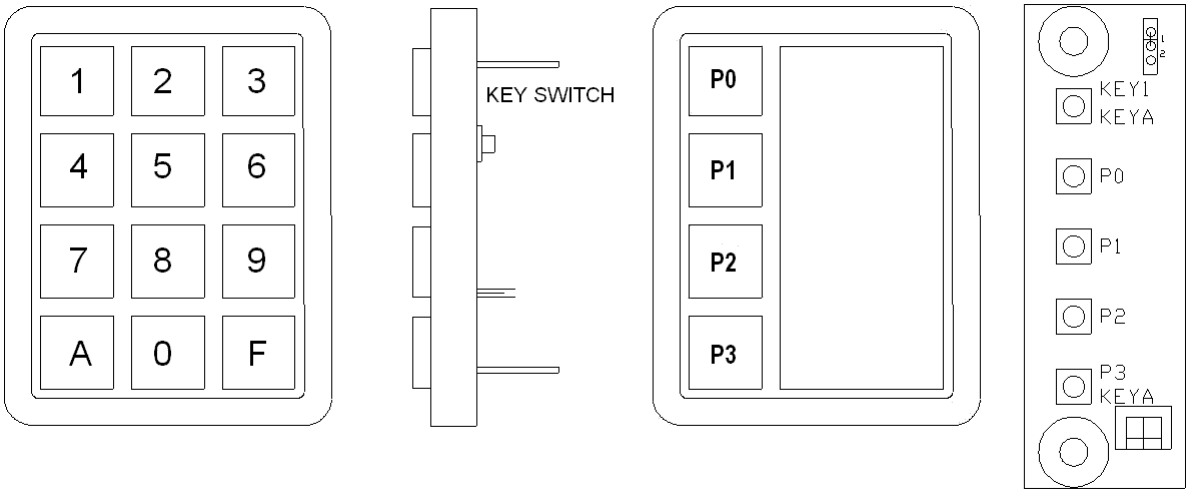


Fig. - 12 External alphanumeric keyboard (12 keys or 5 keys) and small internal keyboard (5 keys)

The small internal keyboard (5keys) can be installed inside of the electronic box,close to the CPU , to program the parameters,read the data and change the prices.This small keyboard is available for dispensers without preset option and replace the external keyboards 12 or 4 keys that can be used for multifunction purpose.

6.3 Price change

If connected to a remote system, the price update is performed from the remote system.In the stand alone configuration the price change be performed by means of the keyboard.
A - Press the KEY SWITCH or KEY1,the code E107 will appear on the display , keep it pressed and contemporaneously press the key nr. 4 or P1.Release them only when dashes appear on the amount price unit row and request of password on the unit price row.Digit the default password 1 in the following way :
B - 1+4+A with 12 keys keyboard or P0+P1+P3
Appears PASS1 = OK if appears NO PASS it means some wrong procedure has been selected and the program automatically escape from the price change program.Repeat the procedure from the start to re-enter in the price change function.
After PASS1 OK , the old unit price appears on the volume row
C - Press the key nr. 1 or P0 to set the first digit from left
Press the key nr. 4 or P1 to scroll up the number series.Press nr. 7 or P2 to scroll down
D - when you reach the right number press the key nr. 1 or P0 to confirm it passing to the following digit.The unit price shall be selected in conformity with position of programmed comma (no more 4 digits).
E - Repeat procedure D) to set following digits until the last one.press the key “A” or P3 to confirm the new unit price.The display shows the new price and the last data filling.

The calculator is normally programmed for Euro Currency,that means it shall have 3 decimals in the unit price and 2 decimals in the total amount.The following different configurations shall be specified in the dispenser’s order to customize it :
Language,local currency,LPG unit price.This information also shall be available to fit the suitable stickers in the panels.In any case the position of decimals doesn’t change the total digits (max 4).

6.4 Electronic Totalizer reading

To read the electronic totals,proceed as follows :
A – press the KEY8 or K1 and P2,PASS will appear on unit price row and four dashes on the amount row,digit the default PASS 1+4+A or P0+P1+P3.On the amount row will appear the TOTAL VOLUME (most significant digit) and the rest appears on the volume row.On the price unit appears the current type of visualization.
B – press A or P3 to see the TOTAL AMOUNT then A or P3 to see the TOTAL VOLUME without compensation (if compensation is activated)
C – to escape press A or P3

NOTE : where fitted the Alphanumeric keyboard an additional function is available : the partial erasable totalizers (useful for turnover management)To see these totals proceed as follows :
A – press KEY 2 then PASS 1
B – press A the three available totalizers
C – to delete the partial totals press KEY 1 and 3 contemporaneuosly
D – press PASS 1+4+A . The display shows the message CLRPAR
E – enter 1+4+A to erase the totals
The calculator is again available for the filling operations.Not erasable totalizers always remain in the memory and they cannot be erased.

6.5 Electromechanical Totalizers

On demand,electromechanical totalizers can be ordered,they are installed inside of the upper case,close to the calculator and they are properly sealed.

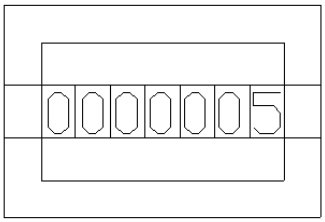


Fig. 13 – Electromechanical totalizer

6.6 Meter setting

⚠	The meter is calibrated ex factory before to be placed into the market. A deposited plan indicates where the seals are placed. The customer shall request a re-calibration on site in accordance with the local laws. This operation must be performed by authorized and experienced personnel. The staff will issue a document noting the liters returned to the storage tank and writing in the module the totals showed by totalizers before and after the tests.Then any metric seals removed shall be restored with authorized clamp seal.National Metrology Laws shall be applied in each country.

The meter installed in this dispenser (type LPG6000WA) has not any mechanical adjusting register.All the setting is made by means of the electronic calculator.Only authorized and trained personnel can do that.The setting instructions are explained in the installation and maintenance manual.Petrolmeccanica organizes training courses to form and authorize the service personnel

6.7 Filling operation instruction

When all the testing and commissioning procedures provided in this manual and by law have been made, the dispenser may sell LPG to the public.

Take the nozze from the boot and connect the vehicle adapter
To activate the preset function,select an amount or a volume by means of the keyboard to stop the flow at exactly the requested value.
Activate the START / STOP button (position ON) to reset the display and start the pump
Where an value has not been preselected, the full is reached when the the multi-valve fitted on the vehicle closes the supply. If a value has been selected , the dispenser stops automatically, not necessarily when the tank is full.
To end the filling operations activate the START / STOP button (position OFF)
Replace the nozze in the boot

7 FAILURES AND REMEDIES

7.1 Electronic calculator error codes

The calculator is equipped with self-diagnostic system,it performs several types of tests to detect possible failures.Errors are classified in the following system :

The error code is done of 4 digits with following meaning :

First digit	E = error
Second digit	where the error has been detected 1=CPU - 2=display A - 3=display B 6=interface error
Third and fourth digits	Type of error identified (see the complete table)

CPU main errors meaning

E100 = watch dog error , call the service
E101 = Ram Error, call the service
E102 = wrong unit price programmed (re-program the unit price , if the error persists change the CPU board)
E103 = EEPROM error : electronic totalizer error , call the Service.
E104 = calculation error during the calculation of the delivery amount (replace the CPU board)
E106 = wrong parameters (enter the parameters modification procedure setting the wrong parameterts)
E107 = programming key in ON (it disappears after some seconds from its release)
E108 = PG key error (the PG key remains in ON position) This keyswitch is back to the programming keyboard and normally this contact returns in off when it's released.Verify this contact key and replace the programming keyboard if this switch is broken)
E112 = Temperature error sensor CPU (sensor communication not present , replace the CPU board)
E127 = PT100 error , check the wire,the parameter setting or replace the sensor.
E128 = Error temperature sensor , calibration coefficient out of range (replace the temperature probe)

Display main errors meaning

E201 = Error Display 1: display board 1 disconnected/damage or display 1 address wrong(verify the flat cable connection and/or the correct position of the jumper on the display board)
E301 = Error Display 2: display board 2 disconnected/damage or display 2 address wrong (verify the flat cable connection and/or the correct position of the jumper on the display board)

Interfacing device main errors meaning

E601 = electromechanical totalizer not present or defective.Check the wire or the right progammation of the parameters.
E602 = Meter calibration error: error in meter electronic calibration (carry out meter calibration)
E603 = Pulses error: Pulser absent/pulser damage (verify the presence of the pulser or replace it if found damaged) .
E605 = power supply error , error in low voltage supply of the pulser.Verify pulser connection.Change pulser or CPU.
E610 = Pulses generator error , error in the channels , the max programmed errors reached. Verify..... see above

Power status

When OFF is showed on the display, it means that electronic device is not electrically supplied or in another case that something is damaged (fuses , main switch on the panel board)

Remote connection to the forecourt system

CLOS appears when the remote controller is not recognized and the back-lit of LED illumination remains OFF.

7.2 List of failures and solutions

Defects	Solutions
When you start the filling , the pump is pessurized but the dispenser does not work.	*Open the lower panels,start the filling,check the pressure on the differential valve gauge.If the pressure is the same of the vapour return pressure gauge* • *Check if some valve is closed* • *If valves are open Call the Service*
Pushing the START button the display correctly reset but the pump doesn't run.	*Check the 3phase pump switch is turned on.If the switch is turned on,check the rotation of the motor.If the motor doesn't run :* • *Call the service* If the motor makes noise but the pump does not run, the pump is blocked. The thermic protection should break automatically the 3phase to save the motor. • *Call the service*
Pushing the Start button the display doesn't reset.	*Check if display shows some error code (see paragraph 7.1).Try to restart turning off/on the calculator. If no failures,if this defect persists and if the display shows regurarly the last filling data* • *Call the service, the reset system has a mechanical or electronic defect.*
OFF in the display remains even if the switches on the panel are turned on	Possible failure to the fuses or to the CPU • *Call the service*
Presetting the amount by means of the keyboard does not appear on the display the pre-determined amount	*Faulty keyboard* • *Call the service*
The dispenser does not stop to the predetermined amount.	*Defective solenoid valve or error in the programming parameters* • *Call the service*
In general, all the error codes that appear on computer	Read the paragraph 7.1 and • call the service

8 SERVICE

The possible maintenance operations are as follows :

- Basic maintenance that can be performed by personnel of the station properly trained
- Periodical maintenance.Itshall be performed by authorized and experienced personnel ,i.e. periodic inspections, cleaning and replacement of consumption components.
- Special maintenence , replacement of components

8.1 Basic maintenance

8.1.1 Hose break-away valve replacement

The break-away valve is activated when a vehicle moves with the nozzle still connected.The valve prevents damage to persons or property and it has a very important function.It's equipped with rubber protection to ensure that the vehicle will not damage the components when leaves the area. Before reconnecting do a visual check on the surfaces of the valve.If found visible damage do not try to reconnect it and call the Service.ARK19 valve can be easily reconnected if the hose is pressurised.

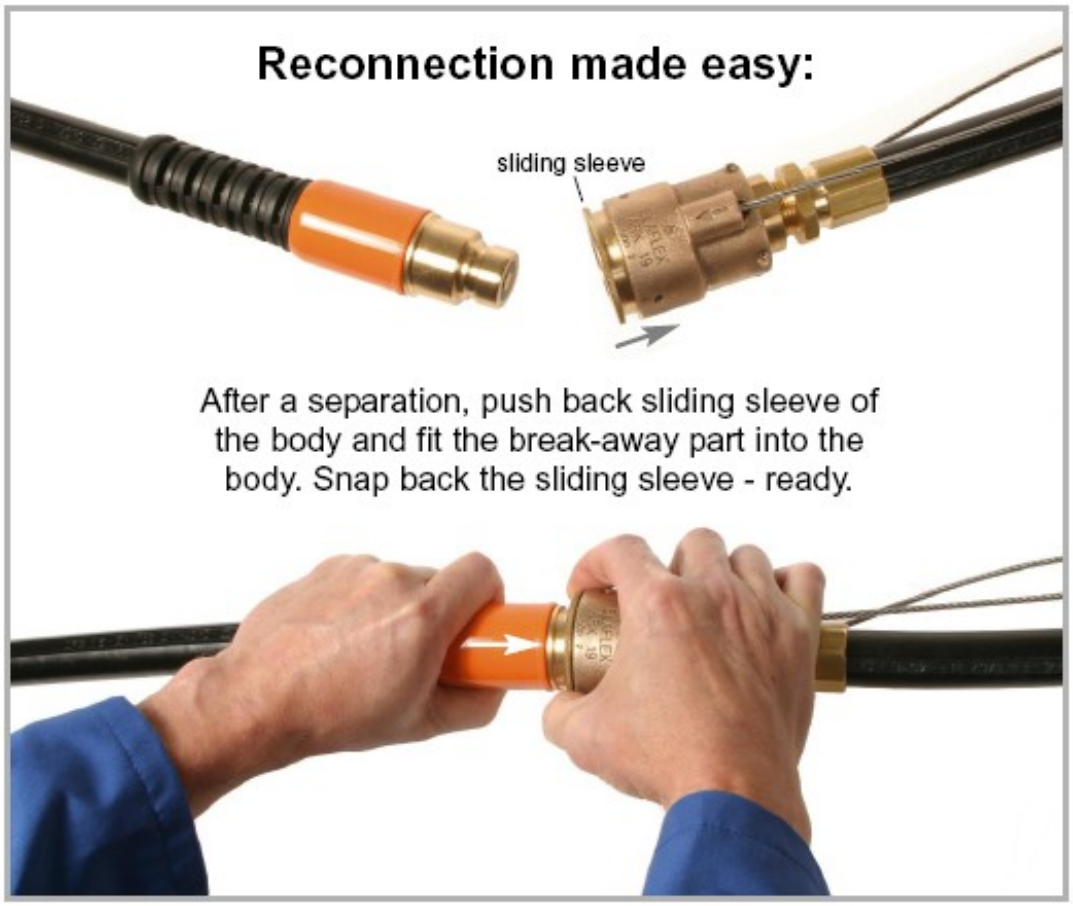


Fig. 14 - ARK 19 reconnectable hose break-away valve

8.1.2 Panels cleaning

To safely clean the panels , use a damp cloth to prevent the accumulation of electrostatic charges. Metal surfaces are connected to the ground so does not accumulate static electricity, but this precaution is useful and recommended.

8.1.3 Check for leaks

In daily use,always check noise or smell suggesting the presence of a leak. If the leak is small,open the lower panels and insulate the dispenser by means of the proper valves before calling the Service.If the losses are significant secure the facility through the emergency button and call the Service.

8.2 Periodical maintenance

Most of the following operations shall be intended as a guide for the user.They are not binding and does not replace the controls required by law.The suggested frequency depends on the use of the equipment.The quality of the gas may require more frequent inspections,expecially those relating to the parts immerged in the LPG.

PART	OPERATION	FREQUENCY
Filter	Cleaning or replacement	6 months or 500.000 liters
*Meter	Measures check	6 months or 500.000 liters
Internal gaskets	Leak test	6 months or 500.000 liters
Check-valves	Operation check	6 months or 500.000 liters
Solenoid valves	Preset operation check	6 months or 500.000 liters
Filling Nozzle	Control coupling and seal	3 months or 300.000 liters
Filling rubber hose	Leak and integrity check	6 months or 500.000 liters
Panels	Check of paint and spots	6 months or 500.000 liters
Locks	Cleaning with compressed air	6 months or 500.000 liters
Electric plant	Check Voltages,power, EX boxes integrity and cables, earthing system and connections.	6 months or 500.000 liters
Reset system	Swicthes check	6 months or 500.000 liters

* Control of measures – it shall be performed by authorized personnel , equipped with a MASTER METER homologated for this use by the National Authorities.To adjust the meter the CPU seals shall be removed and then replaced.This operation shall be in conformity with the National Laws.

8.3 Special maintenance

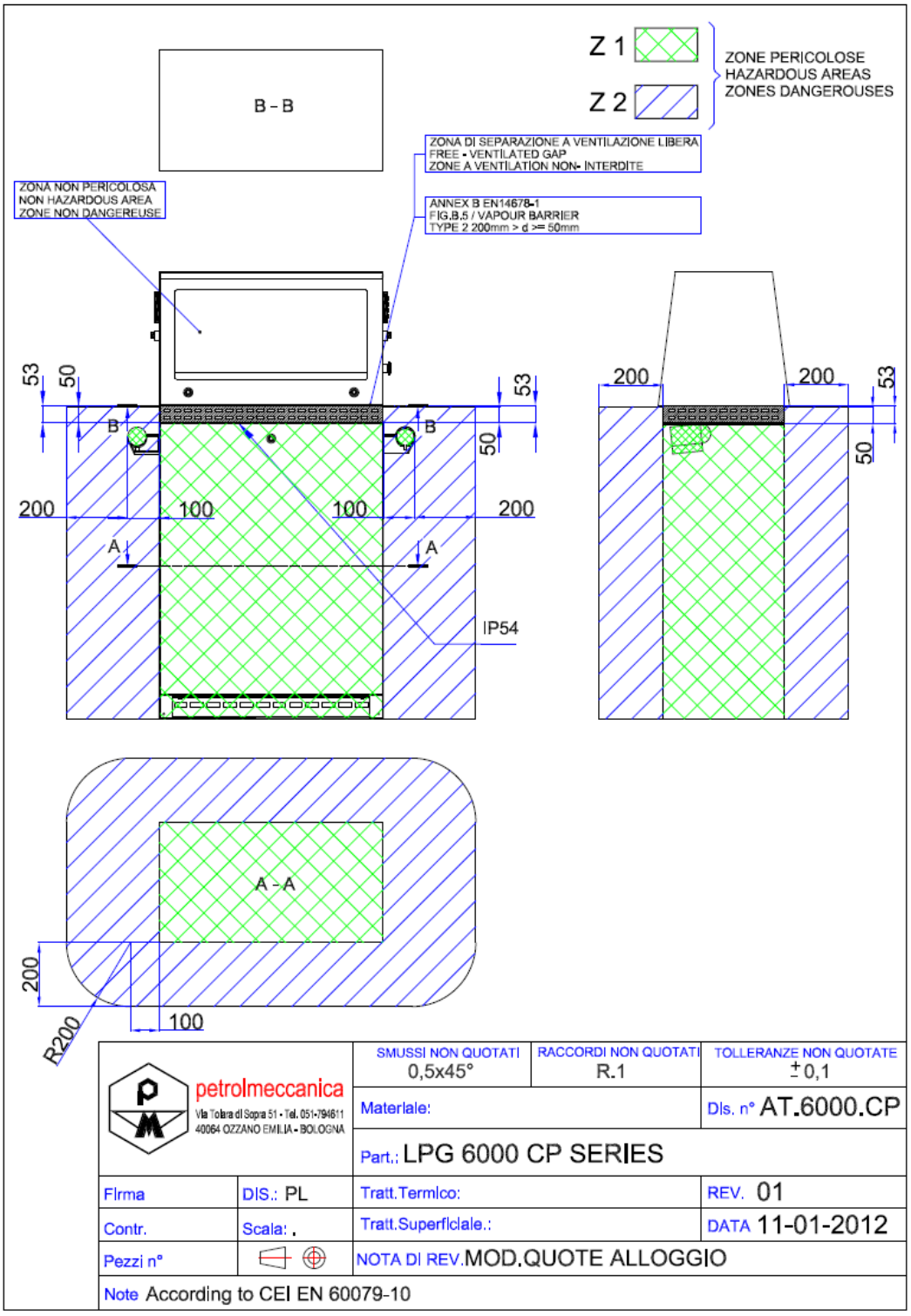
Special maintenance means the replacement of defective hydraulic,electrical or electronics components. The equipment is designed for a long life, especially those parts which shall ensure safety and accuracy. The duration of the components depends on the proper use of equipment within the design specified conditions.External agents can shorten the life of components, such as unfavorable environment, quality of electric and gas supply, so these conditions must be monitored and not underestimated.The improvements over the years were also made to increase the life of the dispenser in the most unfavorable conditions, such as rust resistance of some components, special fuses to protect the electronic circuit in the event of electric peaks,improved tolerance of the electronic components where the voltage supply may not be stable.
However, with respect to other external factors that may affect the functionality of the equipment,not depending on the producer, such as hydraulic and electrical construction and related equipment, it is advisable to entrust the installation and maintenance of specialized companies and experts. Petrolmeccanica organizes training courses for installation and service companies, providing all the necessary technical documentation.
The use of original components is not only a guarantee of operation for the user, but is also a requirement to maintain the designed level of security and the certifications' validity. A damaged component can be replaced with a new one, repaired or replaced with a component reconditionned in laboratory, provided by the manufacturer or by an authorized company. Do not make unauthorized changes to the components or equipment.

	Some special maintenance operations require the replacement of mechanical parts or vessels under pressure.All the lower panels shall be open,the dispenser shall be not energized,barriers or other means to limit the access to this area shall be adopted (min. 4 meters all around the dispenser).The best safe practice suggests to remove LPG by means of some kind of inert gas (i.e. nitrogen) or at least a compressor connected to the gas phase,transferring the liquid back to the storage tank.Use the cut-off manual valves to isolate the parts that shall not be removed immediately.Refer to the instructions in the service manual. There you will find info on how to purge the gas, how to remove the components, on how long to wait before you do and how to transport them safely.

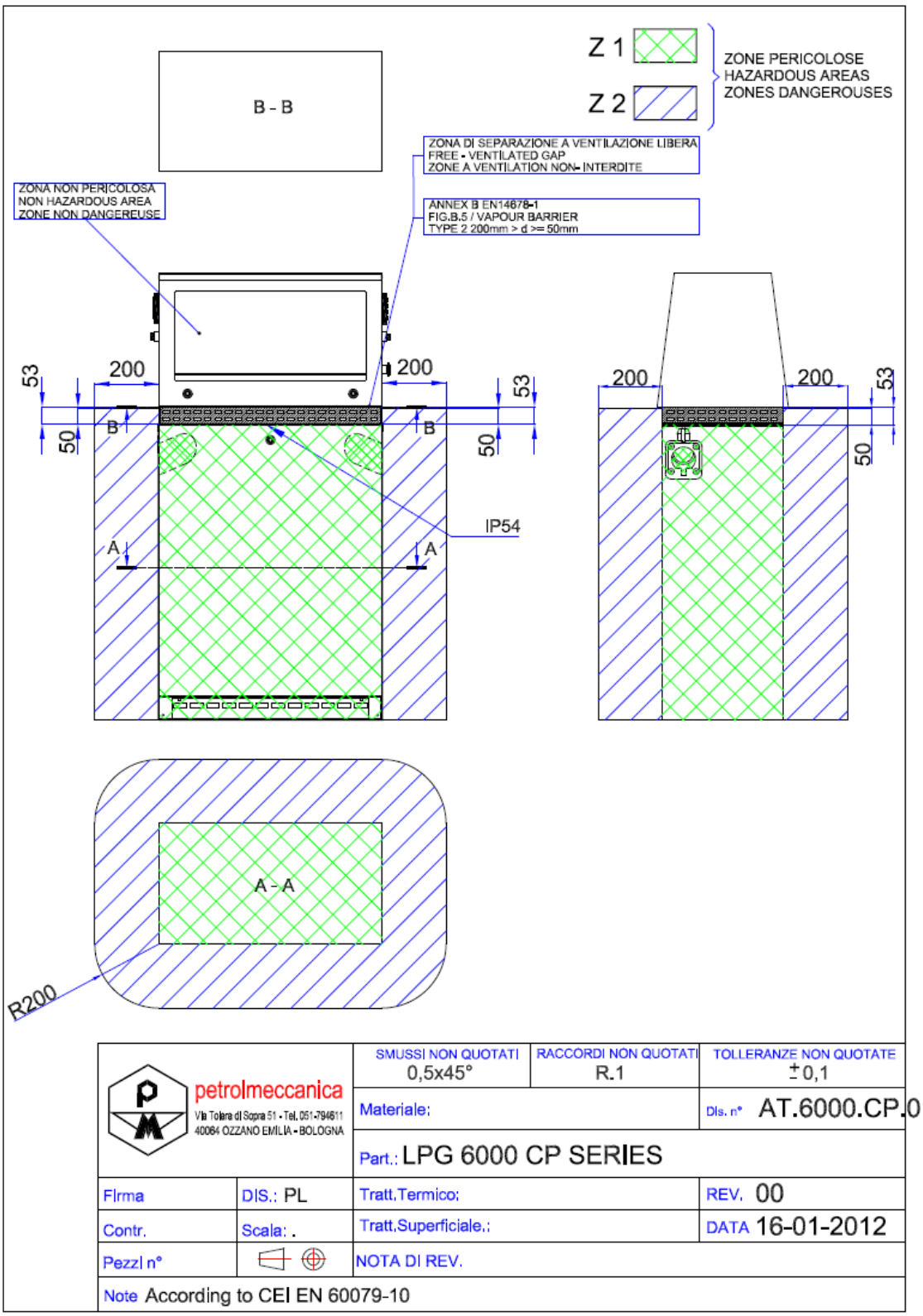
For any questions please contact our technical aftersales service service@petrolmeccanica.it

9.1 Hazardous areas

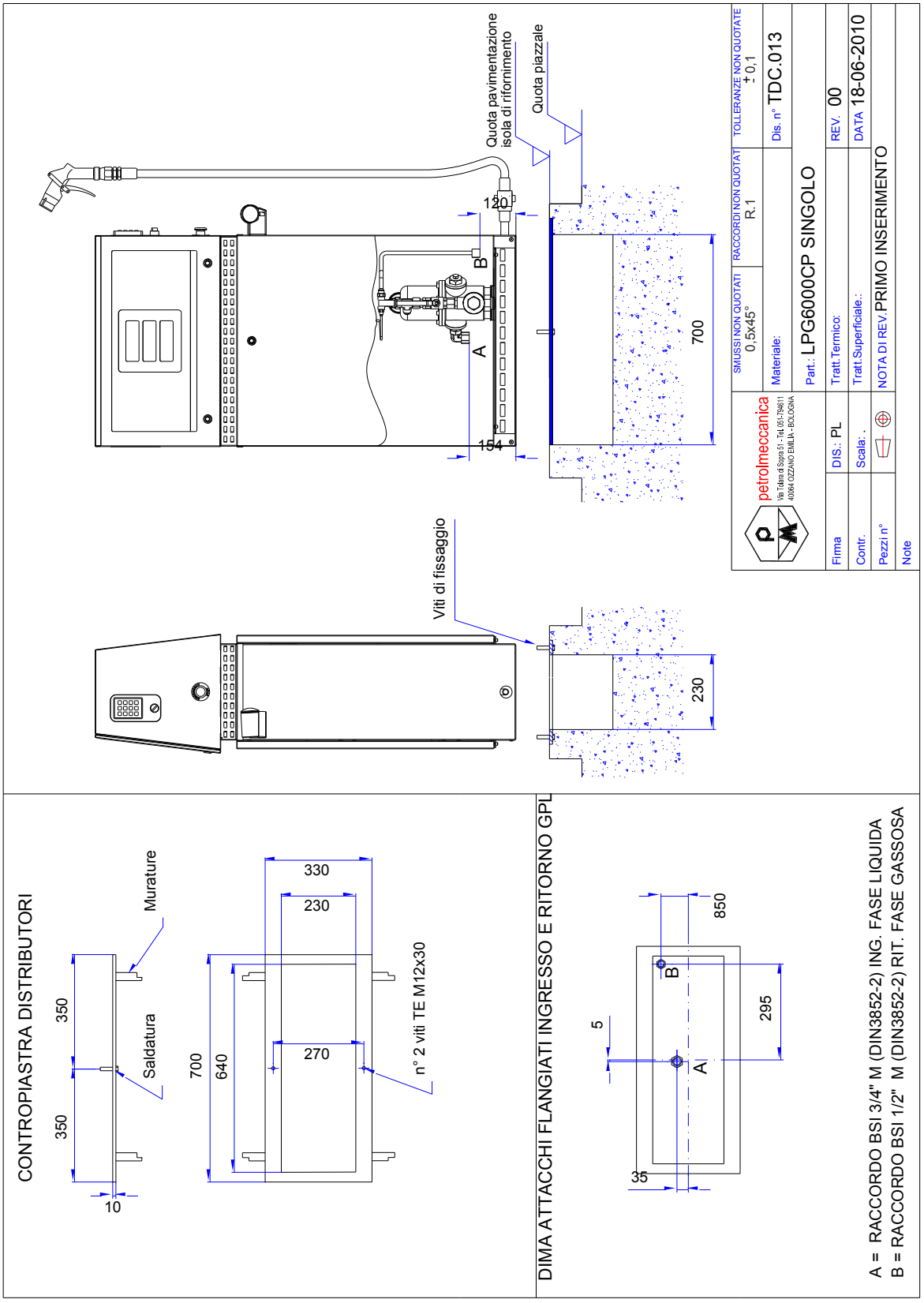
As regards the definition of hazardous areas, the dispenser is designed according to EN 14678-1 SAMPLE WITH EXTERNAL NOZZLE BOOT.



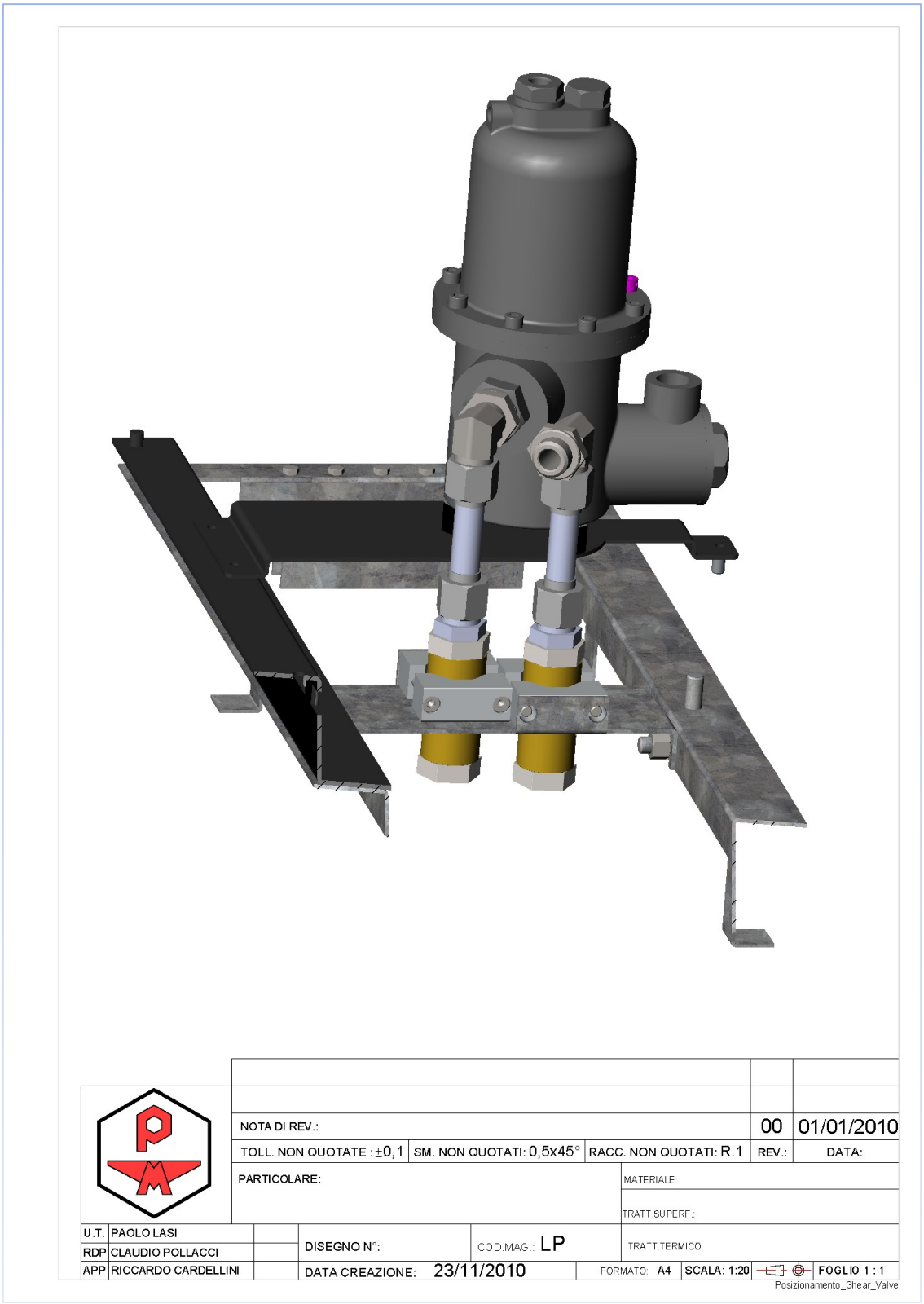
SAMPLE WITH STANDARD NOZZLE BOOT FITTED INSIDE OF THE FRAME



9.2 Dimensions and foundations



9.3 Shear valve installation



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