

LPG DISPENSER Prima

SERVICE
MANUAL



INFORMATIONS FOR CUSTOMERS

This service manual is designed for all customers and users of liquefied gas propane-butane dispensers series PRIMA

As 2A MÜHENDİSLİK SAN. VE TİC. A.Ş. we recommend to become familiar with the present manual before proceeding to installation and use of this LPG dispenser.

VERY IMPORTANT NOTICE

This service manual and all other associated documents should be kept during the use of the LPG dispenser. In addition all other materials, supplemented during the use should also be kept.

Preserve this Service Manual and other documents for future users.

NOTICE !

2A MÜHENDİSLİK SAN. VE TİC. A.Ş. 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 LPG dispenser properly.

2A MÜHENDİSLİK SAN. VE TİC. A.Ş. shall also be not liable for damages to persons and material due to failure in adherence to safety regulations contained in this manual.

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 LPG dispenser.

Before unpacking, installation or taking the LPG dispenser into service, read this Service manual thoroughly.

The propane-butane liquefied gas dispenser is only to be serviced by personnel, furnished with requisite authorisation according to national regulations.

LPG dispenser is not available for “self service”

NOTICE !

Any repairs and modifications in design are subject to the manufacturer's explicit consent. Only parts approved by the manufacturer may be used.

To prevent electric shock or fire, any operation inside the LPG 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.

In cases, when gas leakage is encountered, immediately switch off the LPG 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.

Taking the LPG 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.

In cases, when irregular operation of the LPG dispenser is encountered, immediately contact the manufacturer. No components of the housing may be removed during operation of the LPG dispenser.

The propane-butane liquefied gas dispenser may not be installed in explosive areas, zone 0, 1, 2 defined in EN 60079-10!

It must be, power feeding cable 3x1,5 mm², NYY dispenser electrical boxes from main electrical boxes.

Due to its constructional features, the LPG dispenser may not be operated without roofing or in closed space and in cases of untight installation or during filling or cleaning of fuel tanks.

The LPG dispenser is designed to deliver propane-butane liquefied gas.

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

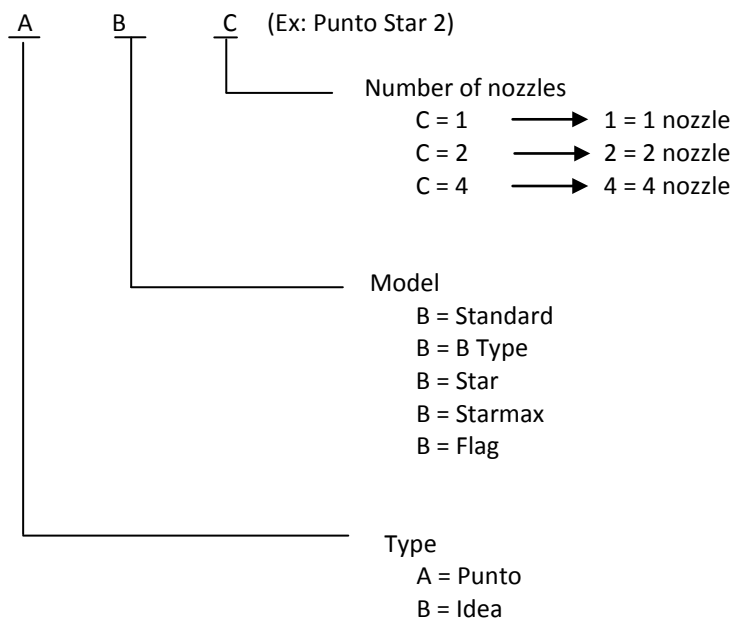


Drw.1 CE Mark

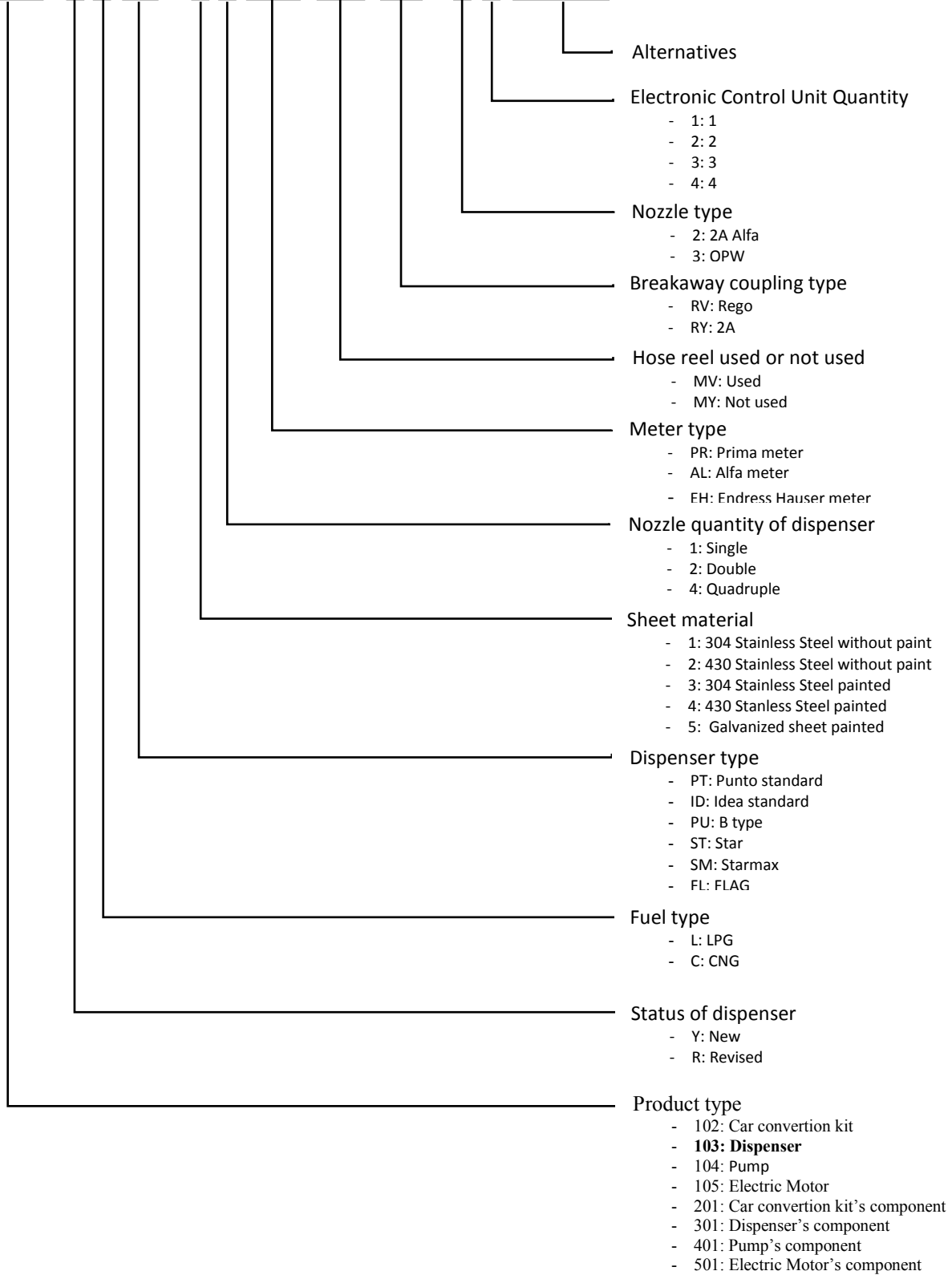
The manufacturer reserves his right to carry out modifications in design, thereby taking into account the product quality not be affected.

2. DENOTATION OF THE LPG DISPENSER

Method of denoting the LPG dispenser

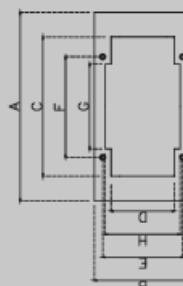
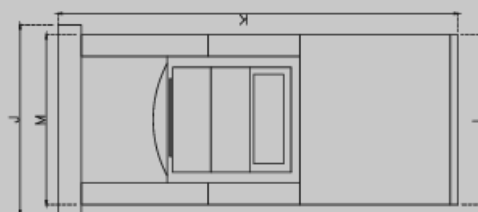


Drw.2 Denotation of LPG dispenser

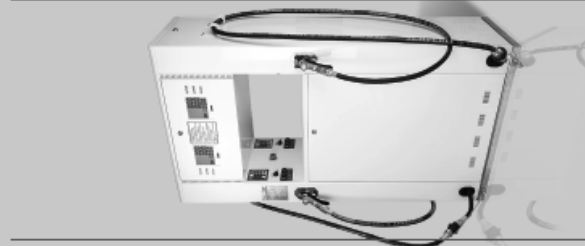
103 YLPT 22EH MVRV 220000**Stock Code's System Of Dispenser (103)**

2A DISPENSER DIMENSIONS

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R
Punto Standard	870	390	610	210	300	420	300	290	870	1860	870	870	390	338	390
Idea Standard	1000	500	810	310	401	550	470	380	1000	1850	1000	1000	500	434	500
B Type	870	390	560	210	300	420	300	290	870	2050	870	870	390	390	490
Star	870	460	490	300	380	450	490	300	970	2050	870	870	600	400	460
Starmax	1100	460	645	310	382	450	645	310	1200	2200	1100	1100	580	400	460



Punto Standard



Idea Standard



B Type



Star



Starmax

1. Designation

The measuring systems series Prima are intended to be used as interruptible stationary measuring systems for continuous and dynamic measurements of quantities of liquefied petroleum gases under pressure and their mixtures (e. g. propane-butane) by the refuelling of motor vehicles. The measuring systems series Prima are the full hose measuring systems with a one transfer point which is a closing valve - nozzle located downstream of the end of hose.

The measuring systems series Prima may be designed in type:

- Punto
- İdea

in models:

- STANDARD
- B TYPE
- STAR
- STARMAX
- FLAG

The types are differences in Punto types are using mechanical meter (Prima meter or Alfa meter) and in İdea types are using mass flow meter (Endress hauser meter)

The models are differences box's design and dimensions.

Models, Standard, B type, Star, Starmax and Flag can be equipped with one, two or four hoses.

Other parameters and configuration of the measuring system are described in chapter 2 and chapter 3 of this descriptive Annex.

All properties of the measuring system, whether mentioned or not, shall not be in conflict with the legislation.

2. Description

The quantity of delivered liquefied gas measured by:

- a mechanical meter is changed to a mechanical movement (rotations). The pulse transmitter converts this rotation movement to the electric pulses sequence.
- a mass flow meter in mass and converts to the electric pulses sequence.

The electric pulses are processed in the calculator and the measurement results (volume passed and price) are indicated on the calculator's displays.

Detailed descriptions and operation of the measuring systems series Prima block and wiring diagrams; drawings and parameters, you can found them in manufacturer's service manual

2.1 Parts of measuring system

2.1.1 Essential parts of measuring system

- volumetric flow meter type Prima of 2A Mühendislik,
- volumetric flow meter type Alfa of Alfa Makina company,
- mass flow meter type LPG mass of Endress Hauser company
- gas separator type 2A-GS4 (using with mechanic meter), 2AGS5 (Using with mass flow meter) of 2A Mühendislik company;
- electromagnetic (solenoid) valve type EMXX of Asco Controls BV. company;
- pulser (shaft encoder) type 01-09 and magnetic encoder type ME14-02 of Eltomatic company
- differential valve type 2A DV4 of 2A Mühendislik company
- calculator type EPS 37 V1 of 2A Mühendislik company
- automatic temperature compensation sensor type 2A ATC of 2A Mühendislik company

- **Gas separator**

The dispenser of type Prima contains two flow meters supplied from the common gas separator (fig. 2, fig. 3) and fitted to the common calculator. Diagrams of the hydraulic connection of dispensers Prima are drawn on fig. 16 and fig.17.

- **Flow meter**

This type of flow meters can be used alternatively:

- volumetric, positive displacement, four-piston meter types:
 - Prima of 2A Mühendislik company, Istanbul (fig. 4,fig.12)."
 - Alfa of 2A Mühendislik company, Istanbul (fig. 4, fig 13)

The flow meter body contains four perpendicular measuring cylinders fitted with squeezed casings. The cylinders heads are closed by covers. The opposite pistons are firmly jointed by oscillating links and sealed by gaskets. The oscillating links transmit the straight line motion of pistons on the crank shaft supported on bearings. The shaft drives the rotary slider, whose slots connect alternately the measuring chambers with the flow meter inlet and outlet. The shaft revolutions are transmitted to the photoelectric pulse transmitter

- Coriolis Mass Flow Measuring System type LPG mass of Endress + Hauser Flowtec AG (fig. 4).

- **Pulse transmitter**

Two channel photo-electric pulse transmitter, type 01-08 of Eltomatic company (Denmark), with 2 x 50 pulses per revolution, pulses phase shift of 90°. This type using with Prima meter.

The other magnetic encoder type ME14-02 Eltomatic company (Denmark) using with Alfa meter (fig.18)

Remark: Pulse transmitter is fitted on volumetric flow meter only.

- **Calculator**

Electronic type EPS-37V1 of 2A Mühendislik company with 8- segments LCD display. The display unit contains:

- 6 – digit indication of volume, with scale division of 0,01 L;
- 6 – digit indication of total price, with scale division of 0,01 and
- 4 – digit indication of unit price with scale division of 0,01.

- **Differential valve**

The piston type differential valve type 2A-DV4, product of 2A Mühendislik company, is used for keeping the medium in the flow meter in permanently liquid state. The pressure of gases supplied from the separator's reverse tube through a stopper, applies from above on the piston, connected to the valve cone. the piston is pressed by the liquid pressure on the flow meter outlet. The pretension of spring, adjusts the opening pressure difference. (fig. 5).

- **Automatic temperature compensation sensor (ATC sensor)**

The sensor using for volume correction of gas according to changing temperature. The type using dallas microchip for calculate the temperature. The sensor is using volumetric meter (Prima meter, Alfa meter) (fig.19). The Sensor does not use with massmeter (Endresshauser).

2.1.2 Conditional parts of measuring system

- serial interface RS 485;
- breaking (breakaway) coupling type A2141A6 of REGO company used for separation of the hose from the dispenser and for immediate closing of both broken ends in case of an extreme pump hose stress (fig. 9).

2.1.3 Non-essential parts:

- filter;
- return valve in liquid phase;
- return valve in gaseous phase;
- ball valve in the pipe for liquid phase;
- two ball valves in the pipe for gaseous phase and in the pipe connection for standard;
- pressure gauge (manometer) of Pakkens company or Wika companies;
- delivery hose ½" of SEL ,Trellaborg, Semperflex, Elaflex companies;
- delivery nozzle type Alfa of 2A, LPG 71X series of LPG group and OT 300 B of OPW Brevetti Nettuno companies;
- junction box type S of AD Vigano (Italy) company

Other non-essential devices may be attached to the measuring system provided, they will not change parameters of the measuring system specified in this Protocol.

2.2 Metrological functions of measuring system

- Volume determination by pulses counting and totalizing. The electronic calculating and indicating device counts the number of pulses received from measuring device or meter and subsequently uses a stored value of pulses to calculate the equivalent volume of the liquid.

- Storing and displaying the measurement results. The electronic calculating and indicating device is provided with an indicating device giving the quantity of liquid measured at metering conditions, unit price and price. The measuring result is indicated as the volume in litres.
- Functions of checking facilities. In case of alarms, the calculating and indicating device is capable of stopping the measurement by the valve.

2.3 Software

The identification of legally relevant software is following:

Table 1: Software version and checksum

Versions	Date of Change	CheckSum (HEX)
V: 6.37	11/10/05	D3E1
V: 6.37.1	02/02/06	AE97
V: 6.38	10/04/07	B107
V: 6.39	05/09/07	F782
V: 6.39.1	22/07/08	90FC
V: 6.39.2	31/08/08	121C
V: 6.39.3	19/01/09	CC41
V: 6.40	12/02/10	78FE
V: 6.41	25/09/11	B52E
V: 6.42	07/07/13	F61C
V: 6.42.1	18/06/18	DC10

Software version and checksum is possible to achieve / can be seen appear in first electricity feed of dispenser or pushing nmb.5 at keypad menu during stand by statement.

2.4 Optional equipment and functions subject to MID requirements

- none

2.5 Calibration and adjustment procedure of legal parameters

- Adjustment device on volumetric meters: Regulation screw is placed in the piston cover and connected to the control punched disk used for stroke limitation of one piston. The disk position is secured by a stud. The regulation is performed in steps of 0,1 %, the total adjustment range is ca. $\square$ 1,5 % (i. e. $\square$ 50 mL).
- Mass meter: calibration and adjustment parameters are inserted in the electronic calculating and indicating device according to manufacturer's documentation. Stored configuration may be changed only when the protective seal has been broken and the

slide switch placed on electronic process board has a connection point with computer. You can change meter factor for calibration with computer.

The setting of parameters of measuring device in the electronic calculating and indicating device type EPS37-V1 of 2A must comply with setting listed in the table below.

2.6 Integrated equipment and functions not subject to MID

- none

3. Technical and metrological data of measuring system

Table 3: Technical and metrological data of measuring system

Type of measuring system	unit	Punto (all models), Idea (all models)
Nominal pipe diameter: inlet/outlet (DN)	mm	25
Maximum flow rate (Q_{max})	L/Min	50 (both types)
Minimum flow rate (Q_{min})	L/Min	5
Minimum measured quantity (MMQ)	L	5
Cyclic volume	L	0,5
Measured liquid	-	liquefied petroleum gases
Liquid density	kg/m ³	500 to 650
Temperature range of liquid	°C	(-10 to 50)
Pressure range of liquid	bar	7 to 25
Accuracy class	-	1
Mechanical class	-	M1
Ambient temperature range	°C	(- 25 to + 55)
Electromagnetic class	-	E1
Scale interval for volume indication (decimal points)	L price	0,01 0,01
Capacity of calculator	L price unit price	9999,99 9999,99 99,99

4. Interfaces and compatibility conditions

- serial interface RS 485
- USB
- Lan

5. Marking and inscriptions

The following data shall be marked on each one flow meter:

- a) manufacturer's name or mark;
- b) type of measuring instrument;
- c) serial number;
- d) number of evaluation certificate (if relevant)

On the electrical calculator shall be inscribed:

- a) manufacturer's name or mark;
- b) type of measuring instrument;
- c) serial number.

The dispenser shall bear the following data:

- a) manufacturer's name or mark;
- b) type of dispenser (*Prima...*);
- c) serial number and year of production;
- d) kind of measured liquid;
- e) cyclic volume (V_c);
- f) flow rates ranges (Q_{max} , Q_{min});
- g) minimum measured quantity (V_{min});
- h) range of liquid pressures (P_{max} , P_{min});
- i) accuracy class (1);
- j) mechanical class (M1);
- k) climatic class (- 25 °C to + 55 °C)
- l) electromagnetic class (E1);
- m) EU-type examination certificate number (SK 07 - 004 MI-005);
- n) CE marking and supplementary metrology marking according to Article 21 and Article 22 of Directive 2014/32/EU (CE marking and supplementary metrology marking followed by with number of a notified body).

Each calculator's display unit shall bear the value of the minimum measured quantity (e.g. „minimum 5 L“).

The values of

- price must be supplemented by price unit (e.g. €, Sk);
- volume must be supplemented by volume unit L;
- unit price must be supplemented by its unit (e.g. €/L, Sk/L).

All the inscriptions on the measuring instrument shall be in the official language; the international abbreviations are admitted. Markings on the measuring system must comply with the requirements of Article 9, Annex 1 to Government ordinance.

5.1 Designation of trademarks on the measuring system

Manufacturer uses following trademark on the measuring system:



6. Security measures of measuring system

Sealing is carried out with lead seals with wire.

- on each one volumetric flow meters (fig. 7a, fig. 7b, fig. 8, fig 9)

- a) upper body with the body of measuring instrument (6) 1 ×
- b) three piston covers with flow meter (3, 4, 5) 3 ×
- c) adjustment device cap with the piston cover and body (2) 1 ×
- d) upper body with pulse transmitter (8) 1 ×
- e) pulse transmitter (7) 1 ×
- f) automatic temperature compensation (9)1 x

- on each one mass flow meter (fig. 7b, fig. 15)

- g) both lids of the housing 2 ×

- on each one calculator (fig. 7b)

- h) both lids of the housing2 x

7. Requirements on production, putting into use and utilization

7.1 Requirements on production

The meters or measuring devices must be provided with sufficient number of straight pipe lengths (upstream and downstream) in line with Evaluation certificates and relevant installation instructions.

7.2 Requirements on putting into use

It is recommended to perform the metrological tests the verification (module F or module D) on complete measuring system, compliance with the technical requirements according to OIML R 117-1: 2007 (E).

The metrological examination should be carried out on complete measuring system at the following two flow rates at minimum:

$$Q_1 = (1 \text{ to } 1,2) Q_{\min}$$

$$Q_2 = (0,8 \text{ to } 1) Q_{\max}$$

It is recommended to carry out the test for minimum measured quantity at maximum possible achieved flowrate. At any of the specified flow rates, nor during the test for minimum measured quantity, the error (of indication) shall not exceed the maximum permissible error applicable for the measuring system.

7.3 Requirements for utilization

The user shall be informed (e.g. in the operating instructions) that the measuring system may only be operated under the nominal operating conditions specified in point 3 of this Descriptive Annex for applications which are subject to a legal measurement control in the respective EU member state.

8. Documentation used for assessment purposes

- EPS-37V1, ATC Compatible Electronic LPG Unit service manual (43 pages);
- Service Manual, service manual of manufacturer (66 pages);
- Evaluation report SK 12-001 ME , of 12.03.2012, issued by SLM
- Manufacturer`s technical documentation stored in service manual

9. Standards and regulations used for assessment purposes

9.1 Used regulations, harmonized standards and normative documents

- Government Ordinance of the Slovak Republic No. 294/2005Coll. relating to the making available on the market of measuring instruments, which implements, in Slovakia, the Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments as later amended (MID);
- OIML R 117, Edition 1995 (E) - Dynamic measuring systems for liquids other than water.

9.2 Further applied standards and documents

- OIML R 118, edition 1995 (E);
- WELMEC 10.5.
- WELMEC 7.2

10. Final provisions

All properties of the measuring system, whether mentioned or not, shall not be in conflict with Directive 2014/32/EU. Construction, technical and metrological parameters of the measuring system must comply with the documentation presented within the process of type certification. In general, in case of differences between descriptions within the manufacturer`s documentation and this certificate the certificate is valid.

11. Prima Dispenser Models



Standard



B Type



Flag

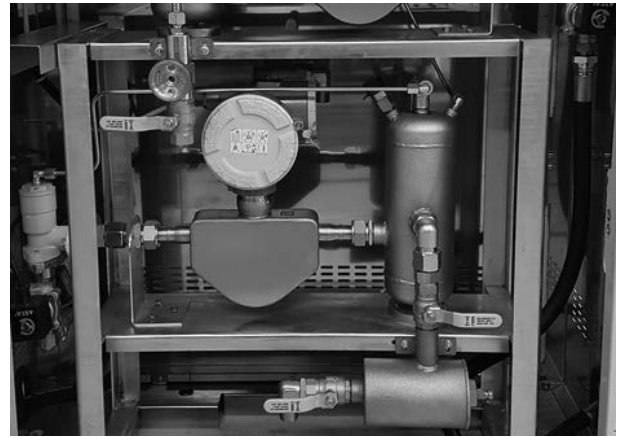
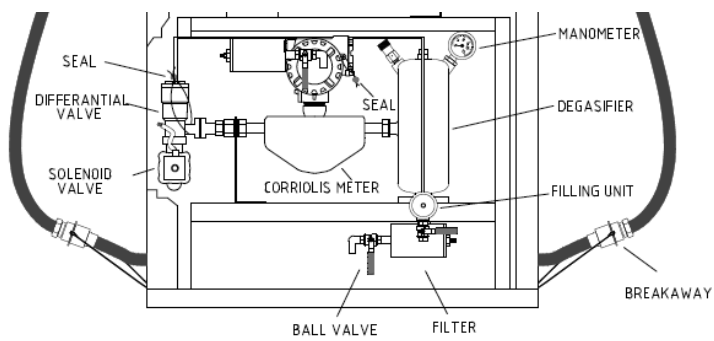


Star

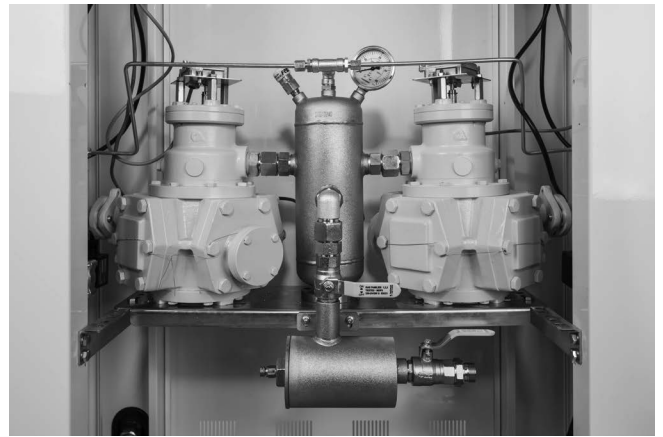
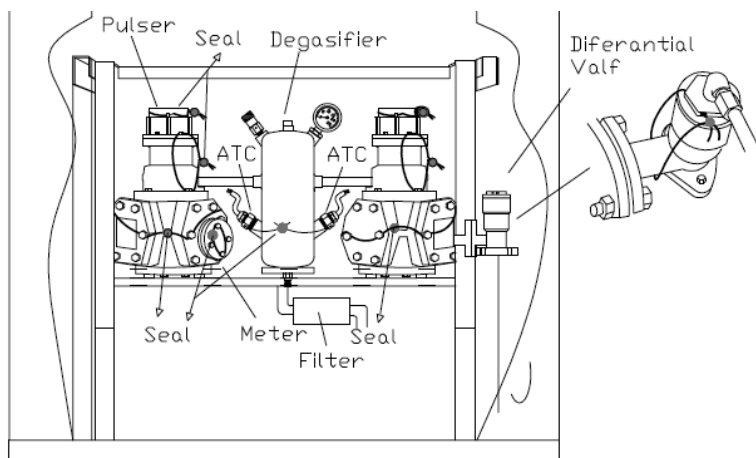


Starmax

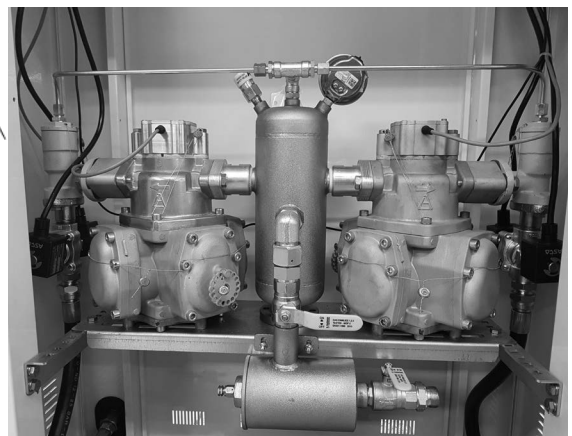
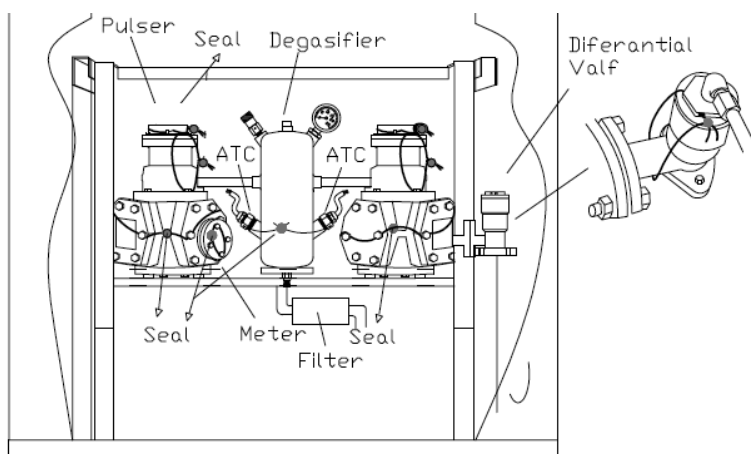
Fig. 1: View of LPG dispensers models



Scheme of hydraulics with Coriolis Meter

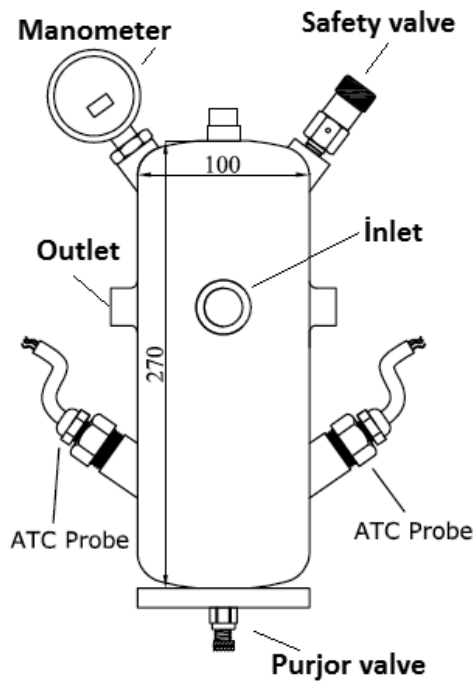


Scheme of hydraulics with Prima Meter

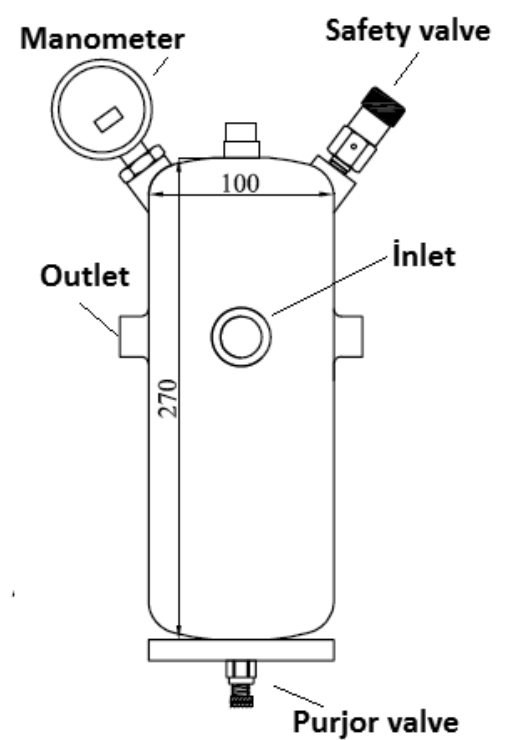


Scheme of hydraulics with Alfa Meter

Fig. 2: Scheme of hydraulics



DGS4 type
Using with Prima and Bravo
meter



DGS5 type
Using with Endress Hauser
meter

Differences between two types is in DGS4 type use with volumetric meters, DGS5 type use with mass flow meter. DGS4 type using with ATC probe.

Fig. 3: Gas separator dimension

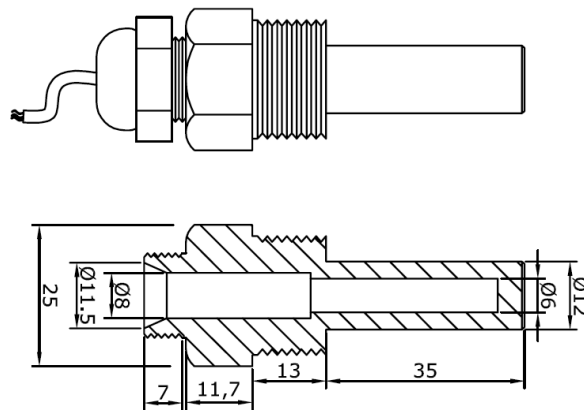
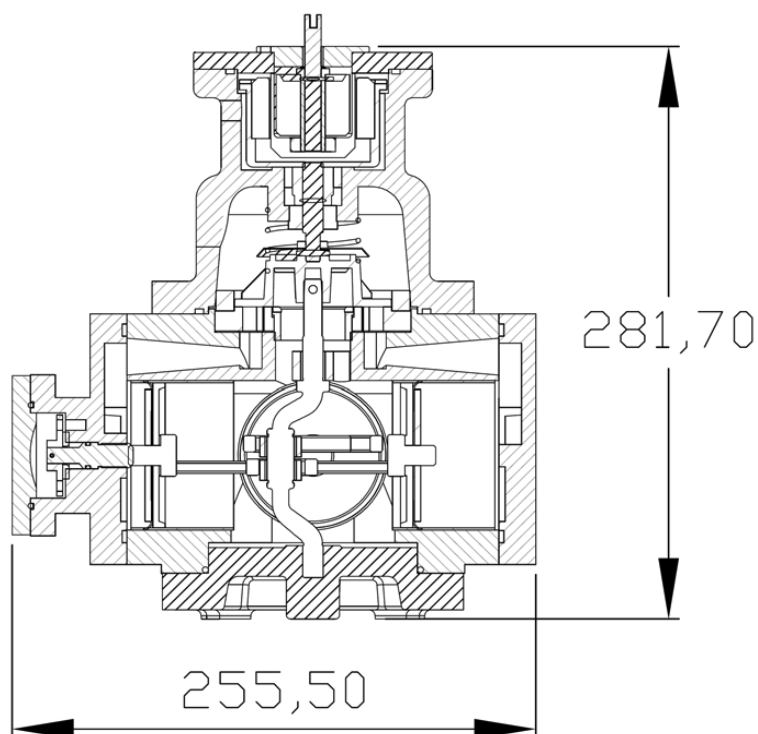
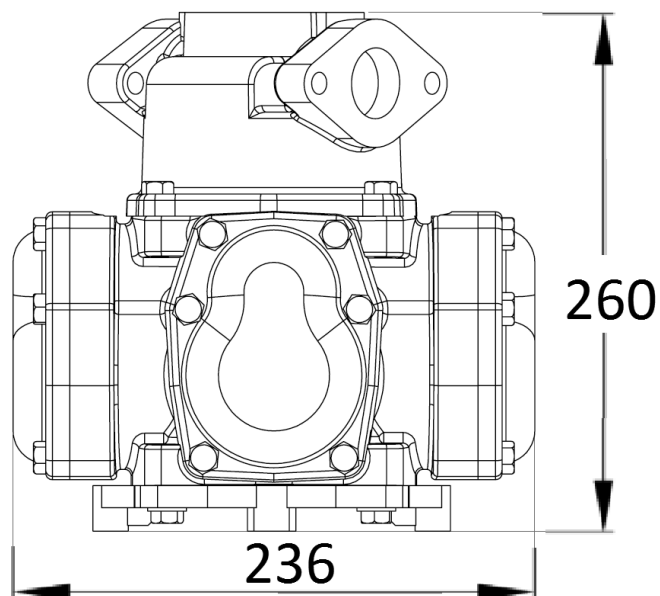
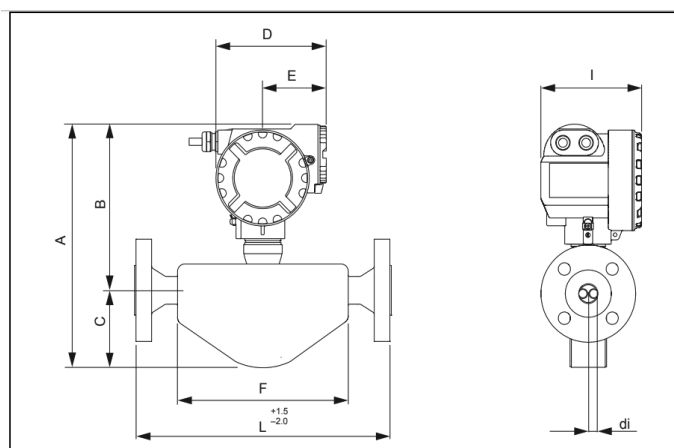


Fig. 19: Automatic temperature compensation (ATC sensor)

**Prima Meter****Alfa Meter**

DN	A	B	C	D	E	F	L	I	2 × di
8	314	221	93	160	92	146	*	139	5.35
15	330	225	105	160	92	189	*	139	8.30
25	338	232	106	160	92	240	*	139	12.00
40	359	238	121	160	92	337	*	139	17.60

All dimensions in [mm]
 * dependent on respective flange connection

Endress Hauser Meter

Fig. 4: Meters dimension

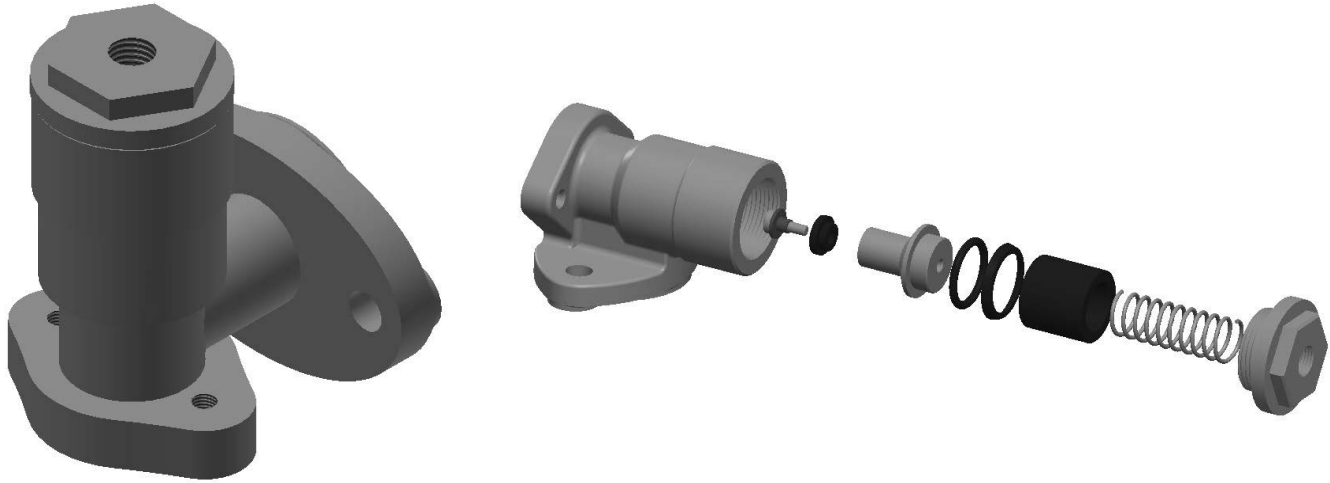


Fig. 5: Differential valve type 2A DV4

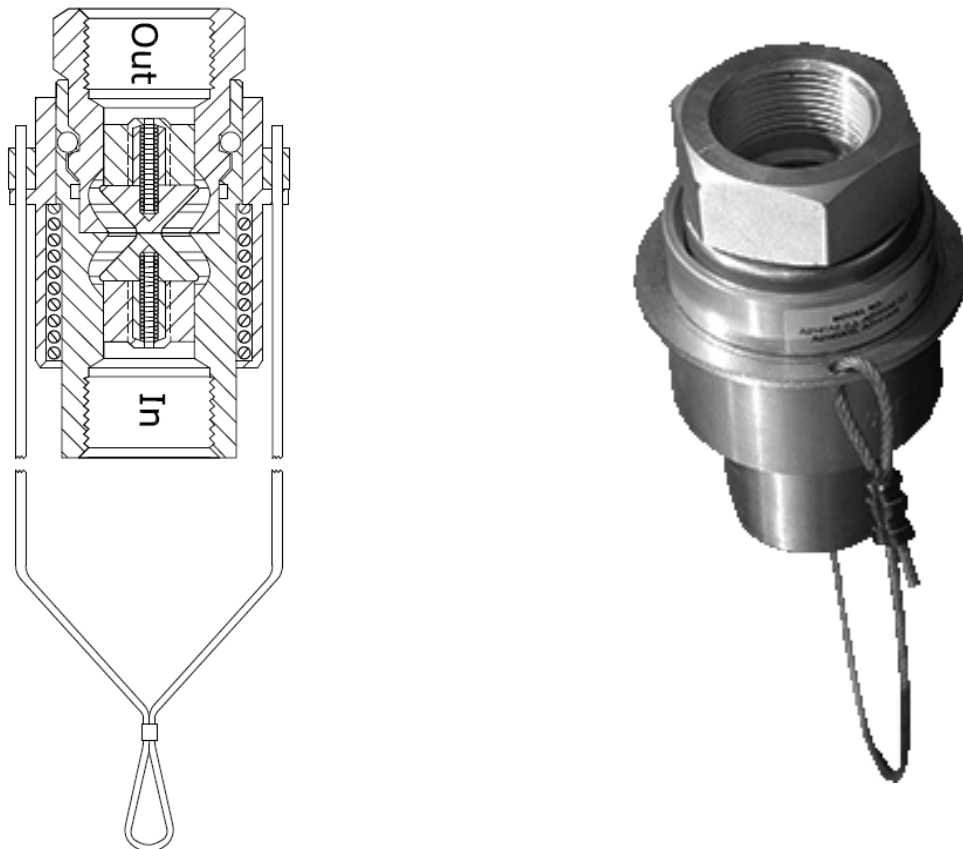
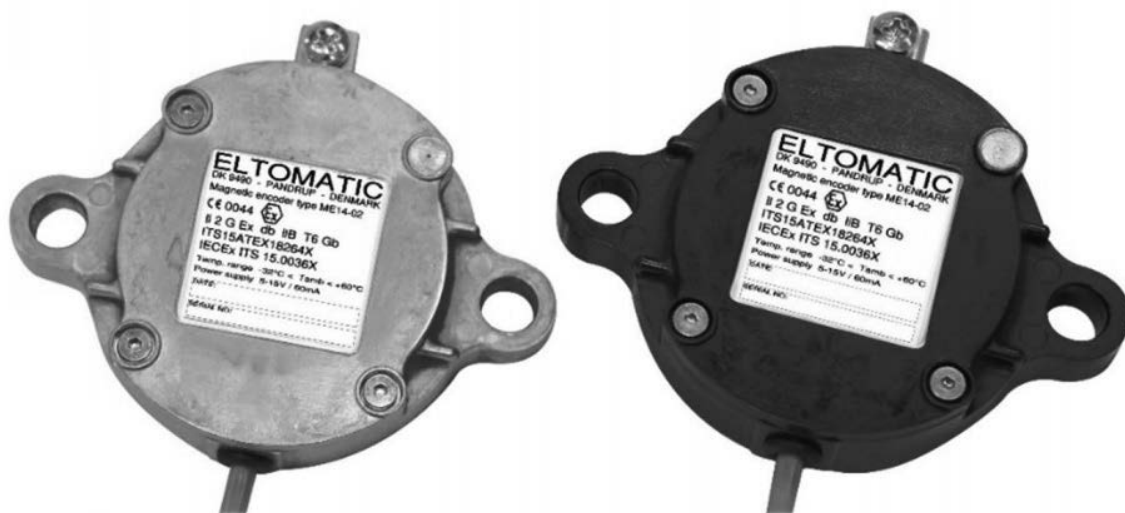
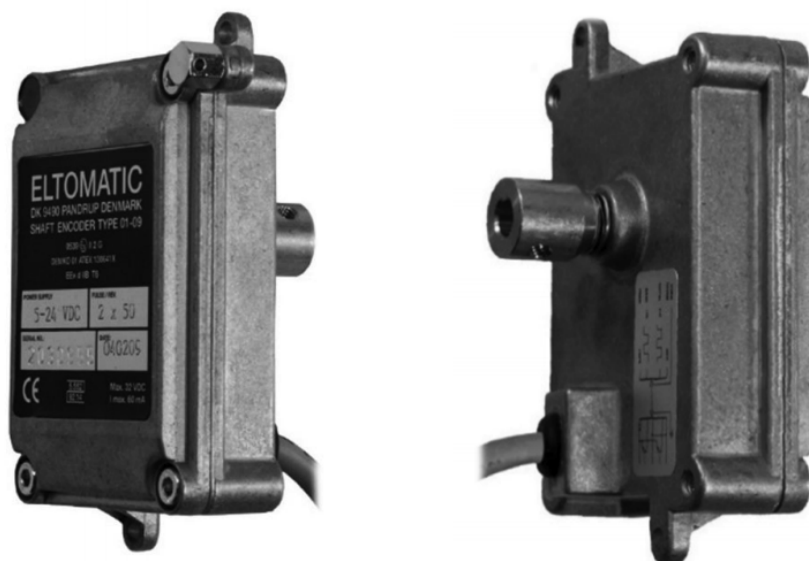


Fig. 6: Break-away coupling



Magnetic Encoder Type ME14-02



Shaft Encoder Type 01-09

Fig. 18: Pulser

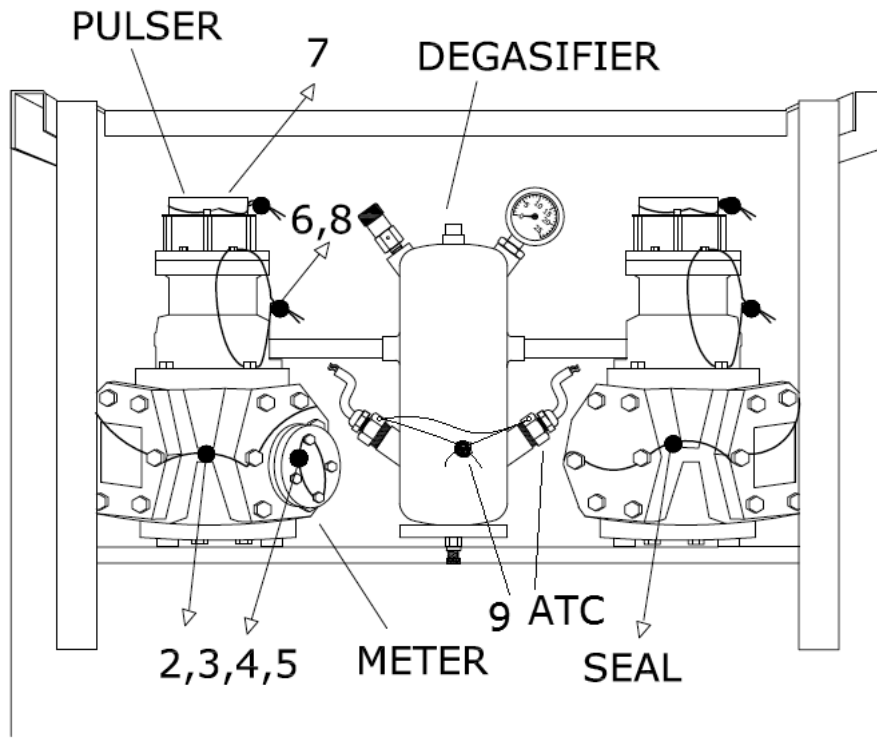


Fig. 7a: Sealing plan with volumetric flow meters

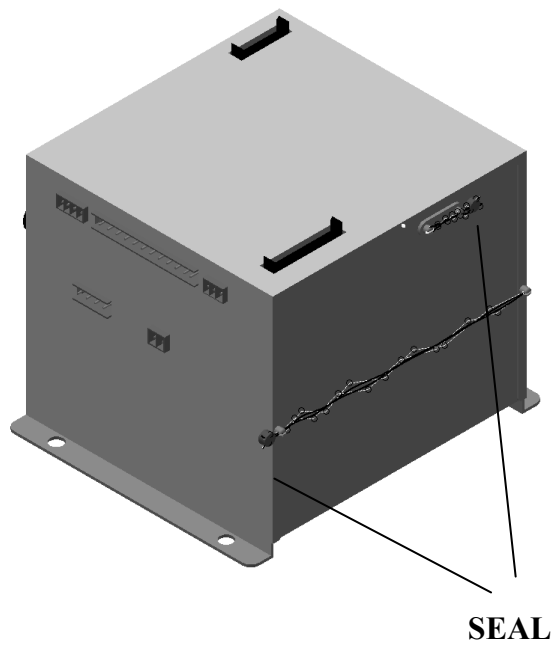


Fig. 7b: Sealing plan of Calculator

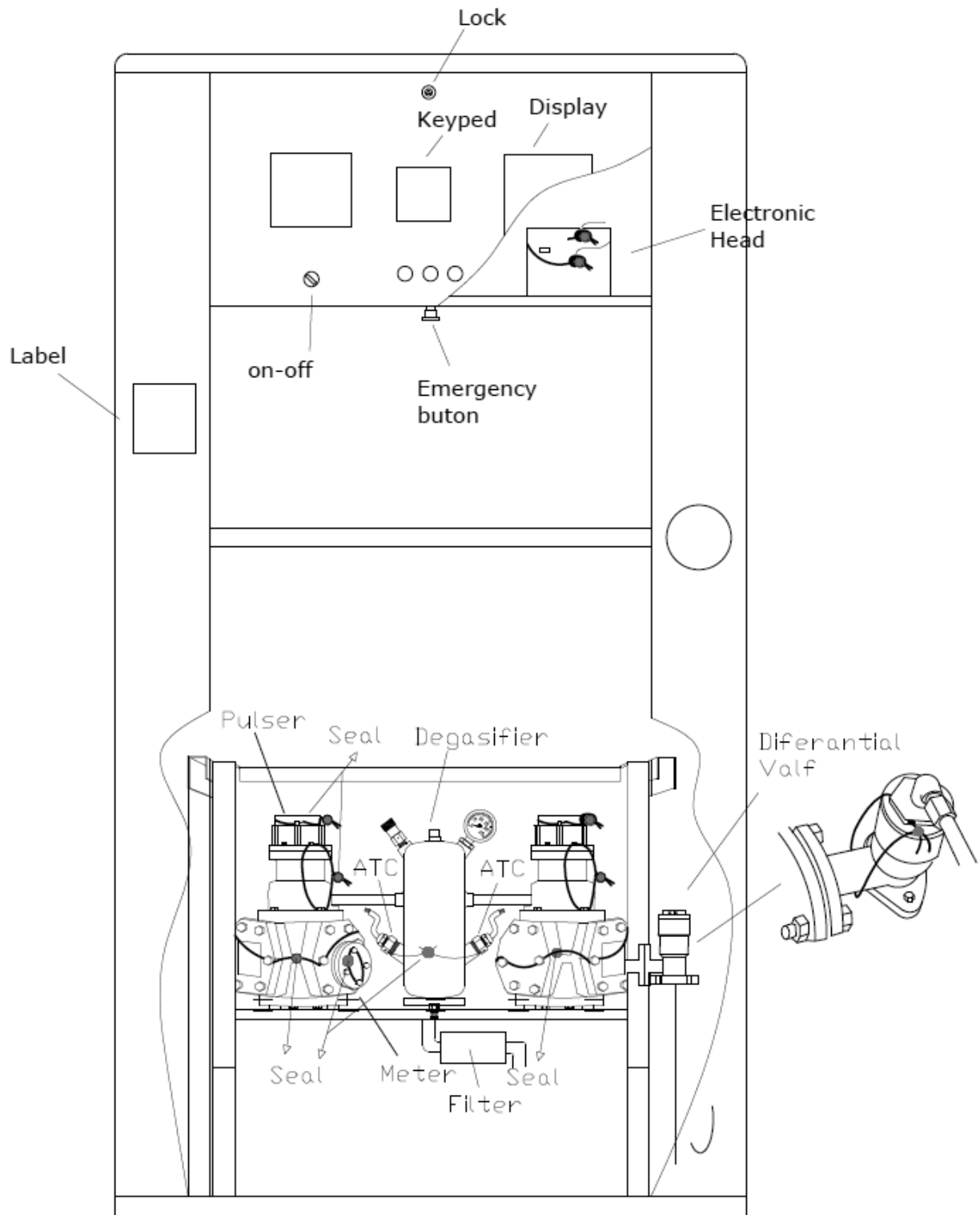


Fig. 8: Sealing plan for LPG dispenser Punto Standard 2 model

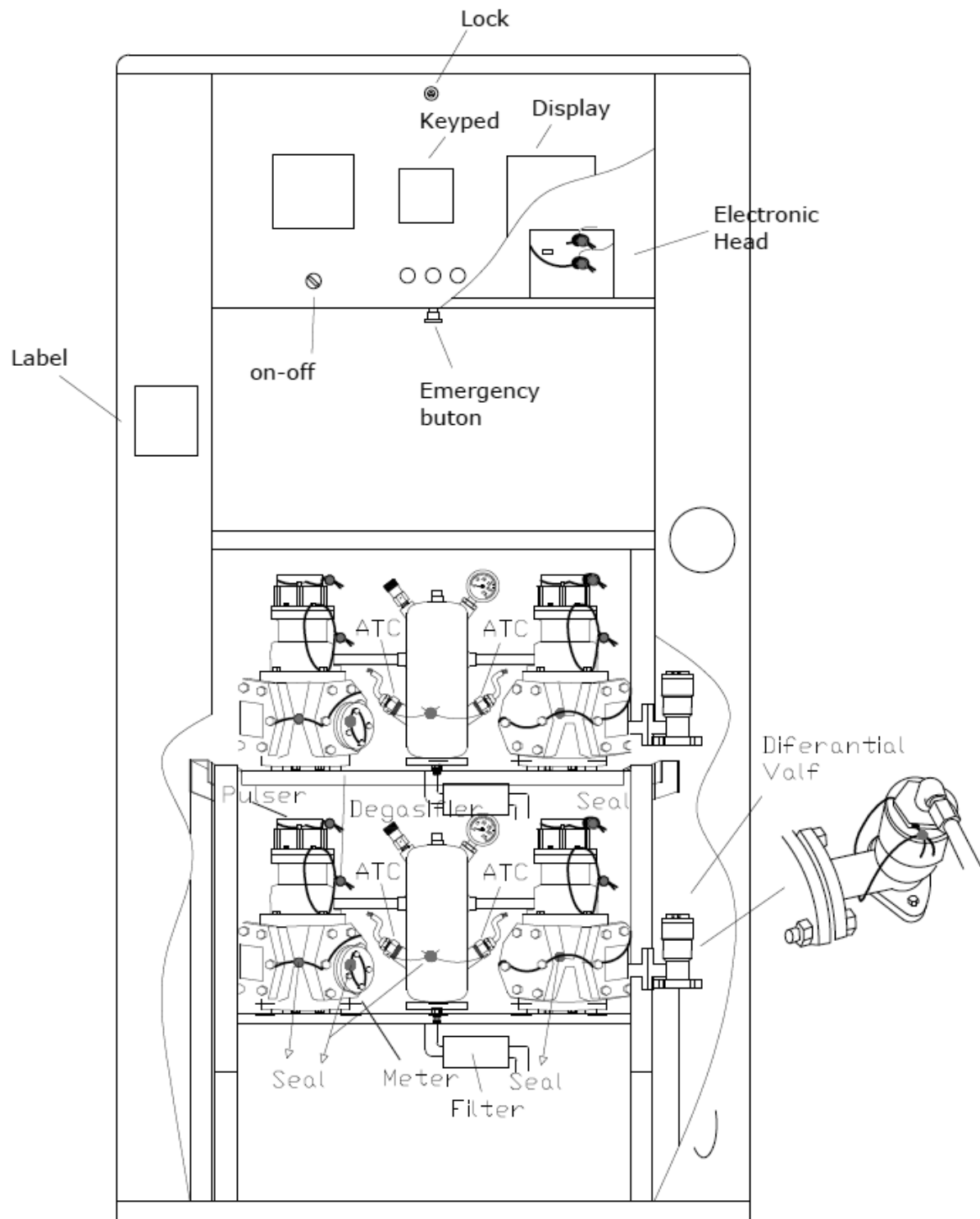


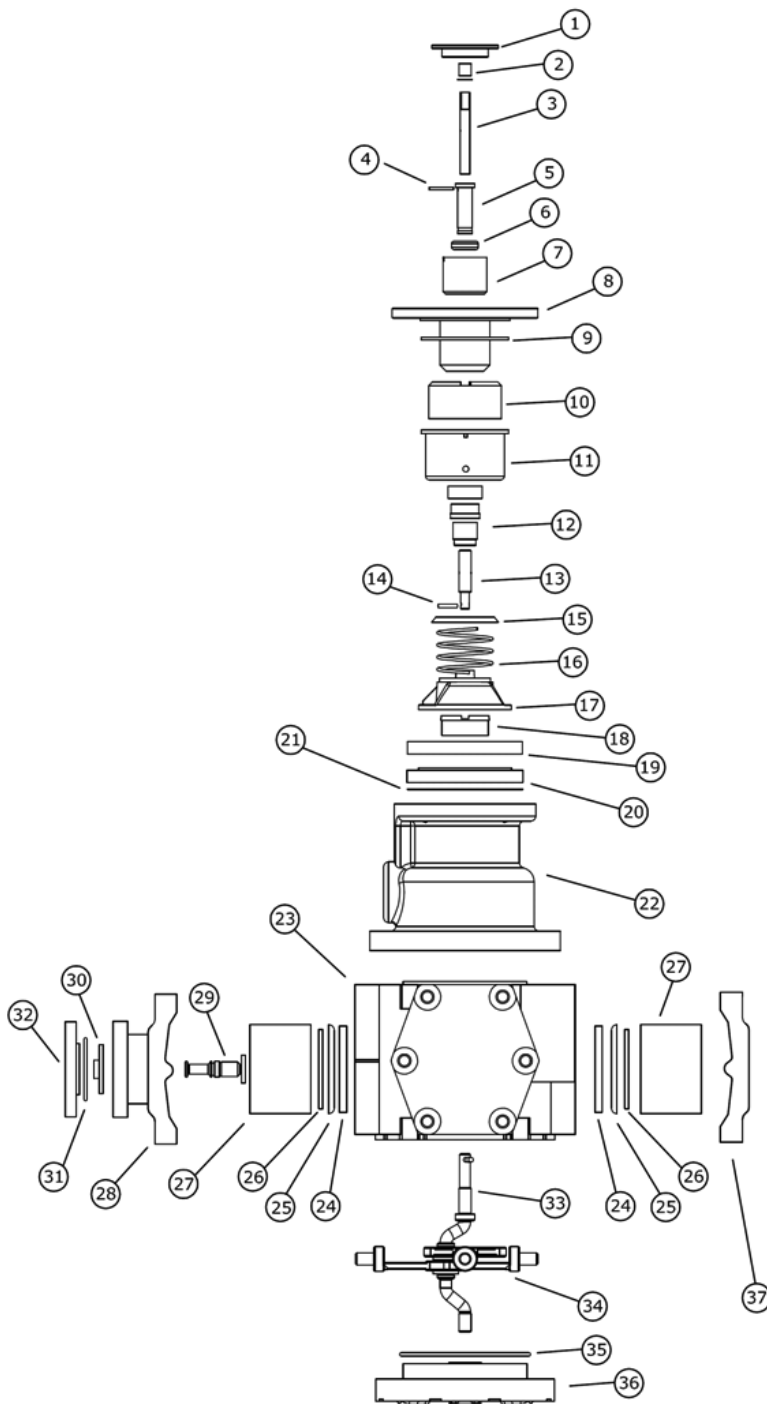
Fig. 9: Components lay-out in the LPG dispenser
Punto standard 4 model



Fig. 10: View on LPG dispenser of 2A
Type Punto, Model Standard



Fig. 11: View in LPG dispenser
Type Punto / Model Standard 4 nozzle



MATERIAL LIST		
No	Component Name	Component Material
1	Cover	Brass
2	Bearing	Brass
3	Shaft	Steel
4	Pin	Steel
5	Shaft	Steel
6	Retaining ring	Steel
7	Magnet	Iron
8	Upper Flange	Iron
9	O-ring	Viton
10	Magnet	Steel
11	Magnetik	Brass
12	Bearing	Brass
13	Shaft	Steel
14	Pin	Steel
15	Slide	Carbon Steel
16	Slide Press Retaining	Steel
17	Splitter	Aluminum
18	Bearing	Steel
19	Slide Holder	Steel
20	Slide	Carbon
21	Teflon Joint	Teflon
22	Upper Body	Iron
23	Under Body	Iron
24	Piston	Aluminum
25	Teflon Joint	Teflon
26	Washer	Aluminum
27	Cilinder	Steel
28	Setting Unit	Iron
29	Set Screw	Steel
30	Setting Nut	Aluminum
31	O-ring	Viton
32	Side Cover	Iron
33	Crank	Iron
34	Connection rod	Iron
35	O-ring	Viton
36	Under Flange	Iron
37	Side Flange	Iron

Fig. 12: Exploded view of flow meter PRIMA

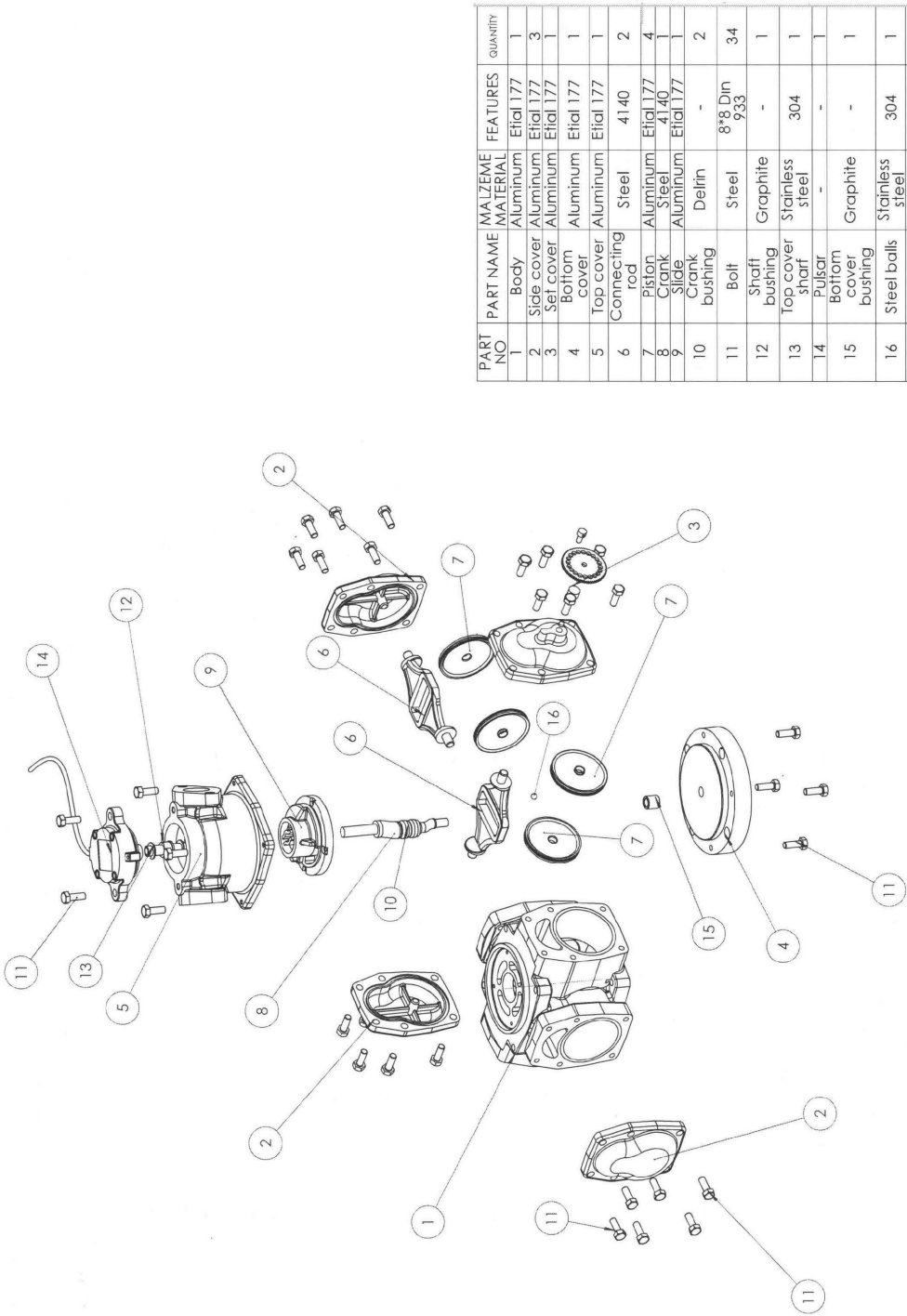


Fig. 13: Exploded view of flow meter ALFA

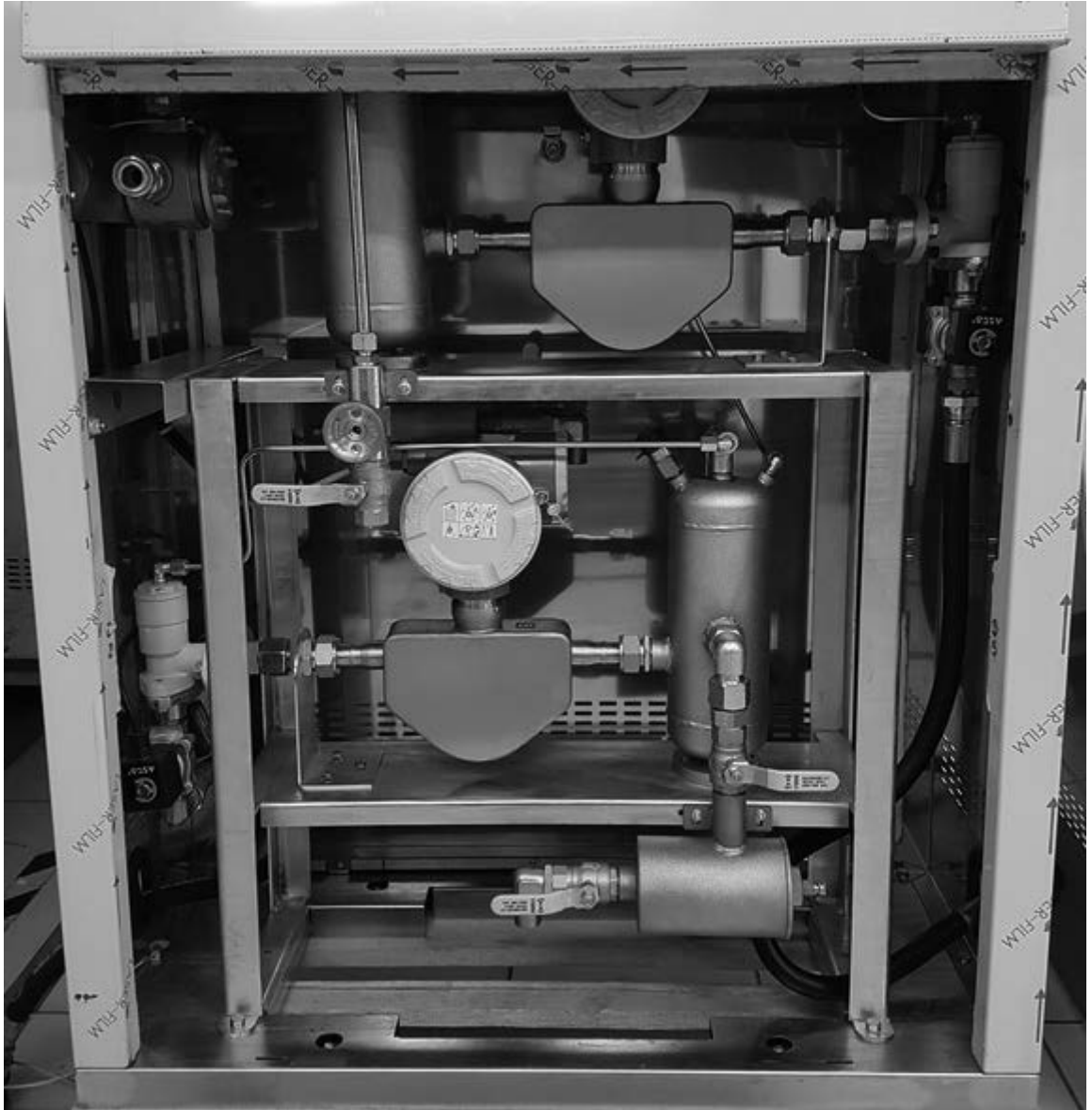


Fig. 14: Inside view on LPG dispenser İdea Type

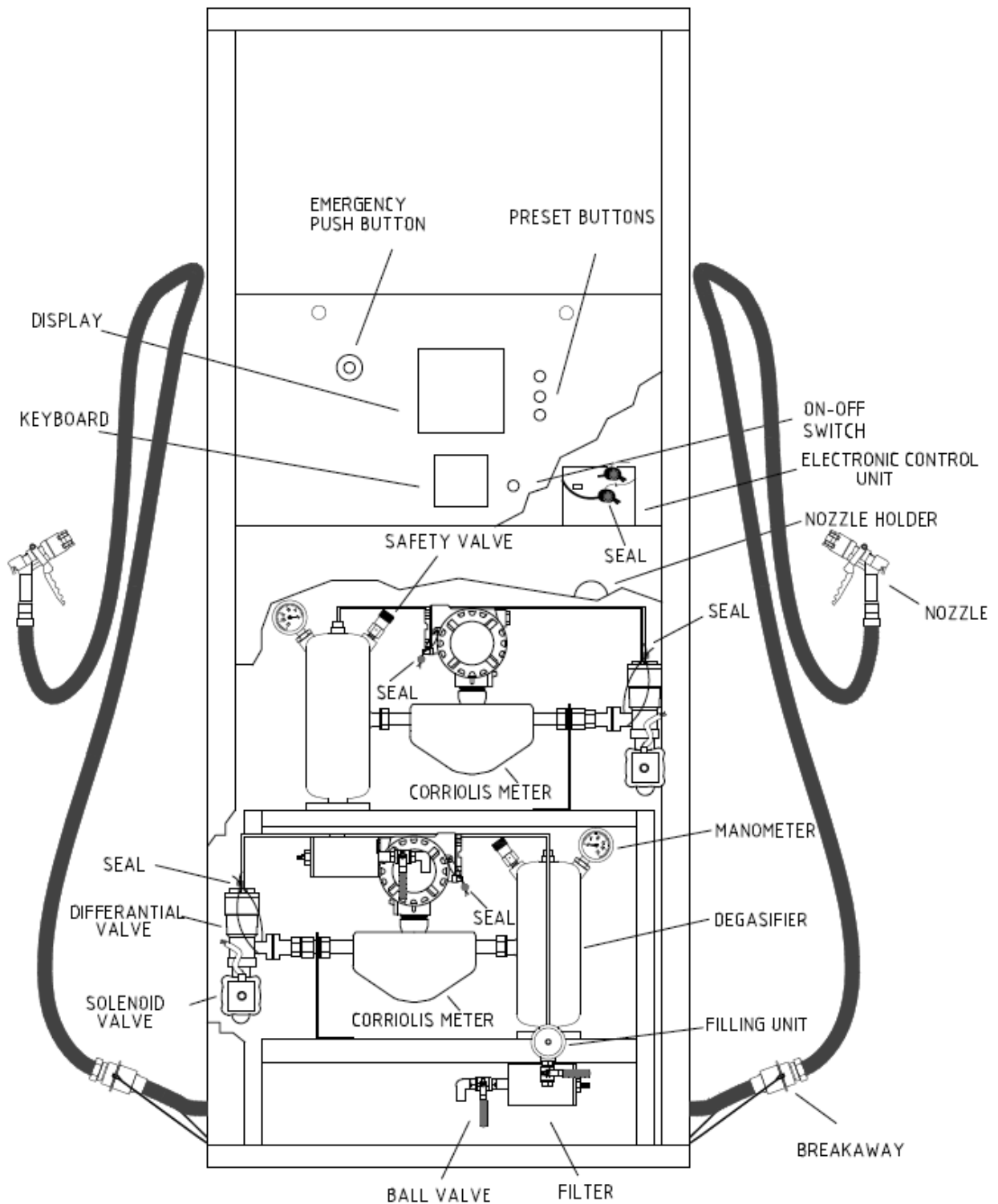


Fig. 15: Sealing plan of dispensers with 2 lines and massflow meter

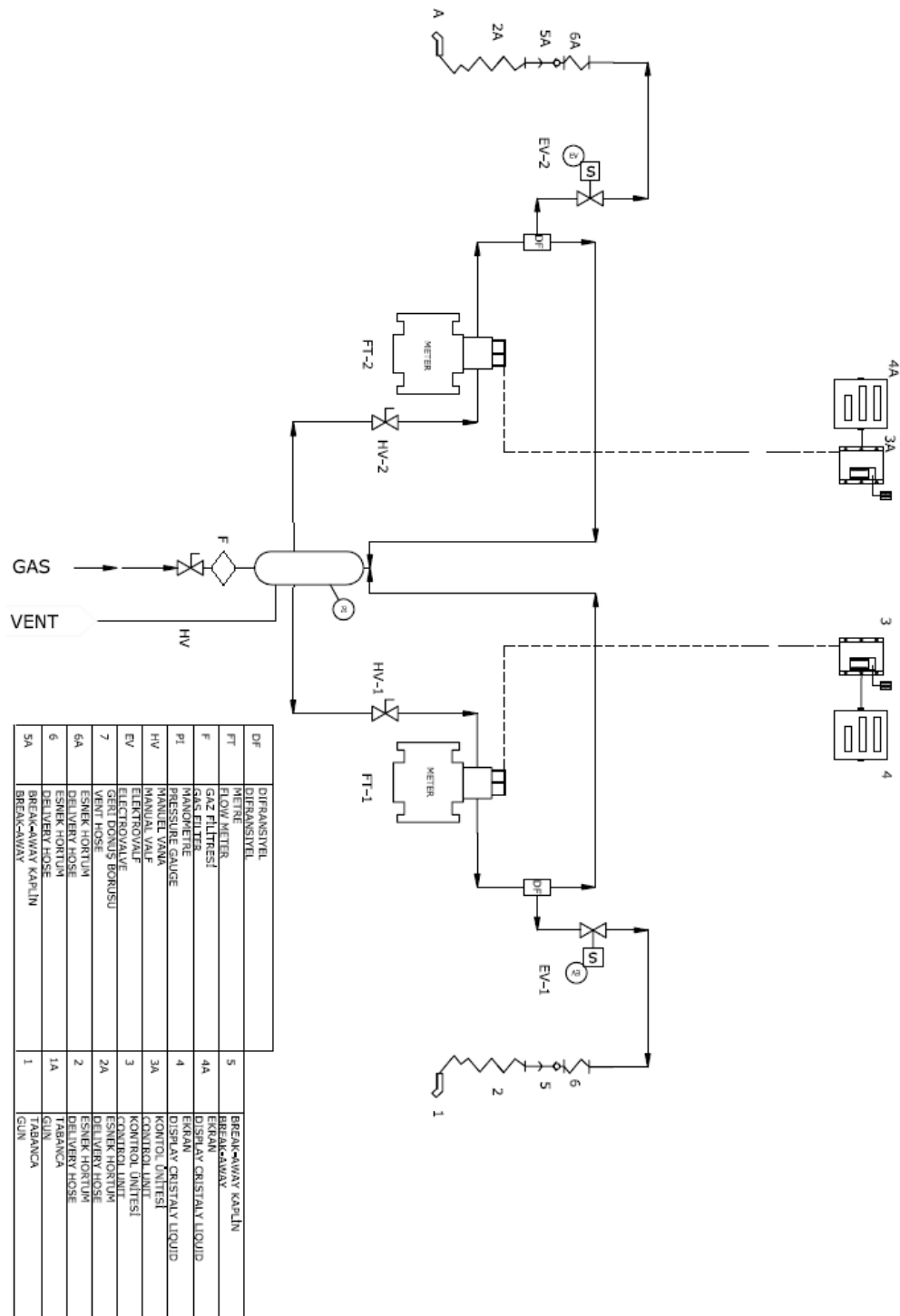


Fig. 16: Scheme of hydraulics for dispensers Punto with 2 lines and volumetric meter

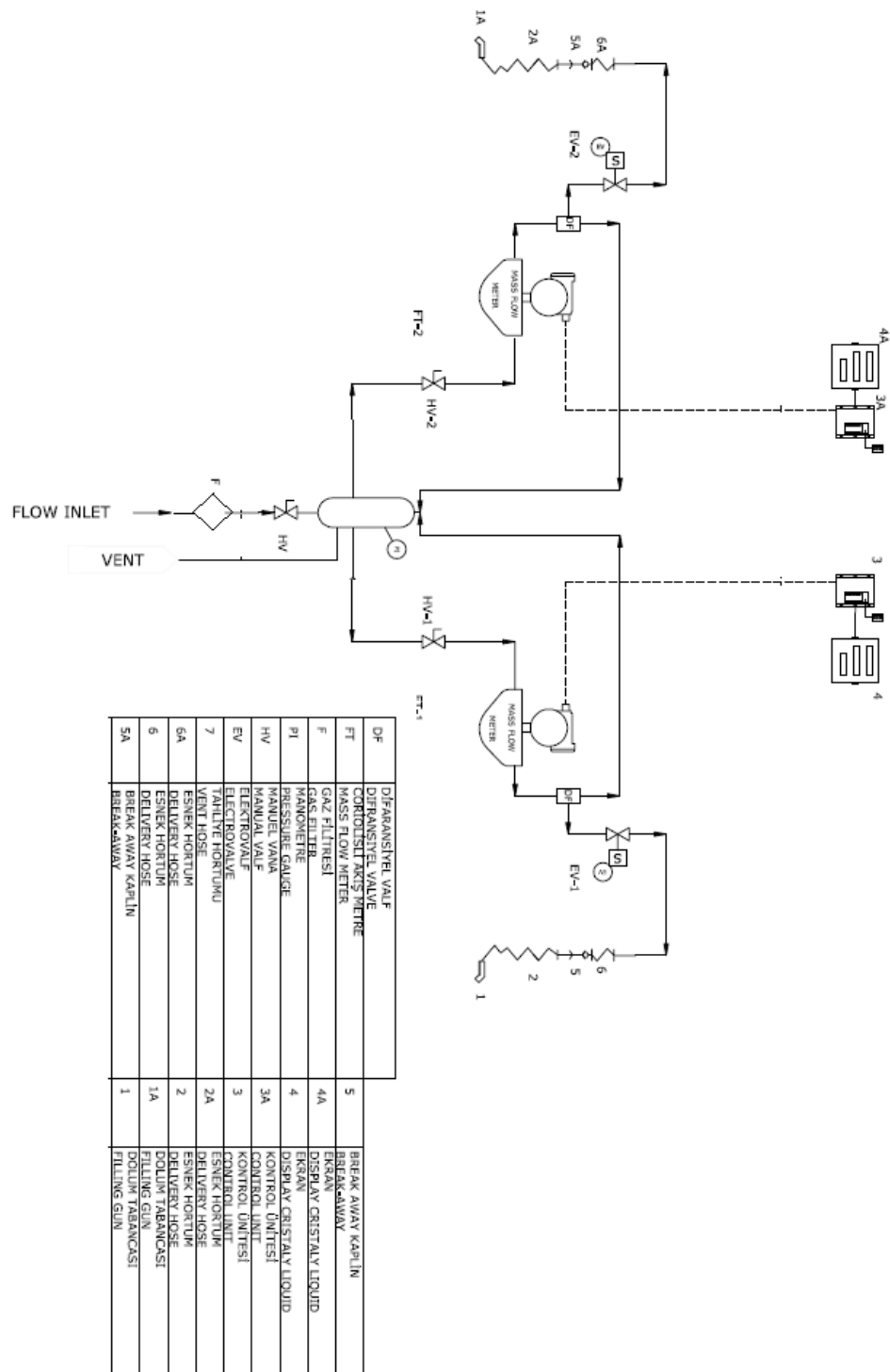


Fig. 17: Scheme of hydraulics for dispensers Idea with 2 lines and massflow meter

12. INSTALLATION AND TAKING THE LPG DISPENSER INTO SERVICE

Installation and taking into service the LPG dispenser shall only be made by Manufacturer's Service or an authorized service.

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

Cleaning of pipes

Two pipes are coming from the storage tank to the dispenser. Before installing and starting the LPG 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.

Execution of Foundation

Foundation is to be made according to drw.10 Lay the pipes for the liquefied line and the gaseous phase return line with diameters, as in drw.10 up to the connections of the LPG dispenser, as shown in drw.10

The PRIMA LPG dispenser is mounted on a frame, having four M14 fixing bolt for the four holes, diameter 16 mm in the base of the LPG dispenser, as shown in drw.10 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 the liquefied line and the gaseous phase return line to the foundation frame and the level of the particular frame.

Connection of the LPG dispenser to the suction and return line

Before positioning the LPG dispenser on foundation (drw.5), unlock and remove frontcover of the hydraulic system. Unscrew the palette and place the dispenser on the foundation frame. Using appropriate devices secure the dispenser on the foundation frame by means of 4 M12 nuts.

The connection heights of liquefied and gaseous phases are $\frac{3}{4}$ ", as shown in drw.10. In order to ensure tightness of the entire hydraulic system, all hydraulic connections must be sealed (Loctite 577 for gas sealings is recommended).

Personnel or firm to install the LPG dispenser in the filling station is required to fit globe valves on connecting nuts (stub pipes) of the liquefied and gaseous phases in the installation at the dispenser base.

The switches for operating the LPG dispenser, are placed on the LPG dispenser.

LPG Dispenser Pump Switch:

The switch is operated only manually. The switch has two positions:

1 = On, 0 = Off

In position "on", the pump is activated and delivers pressurized liquid to the dispenser. Using the switch for purposes other than intended in the manual, is prohibited.

Emergency stop button:

The emergency stop button is placed on the side wall of the LPG dispenser at a visible location "within reach".

The emergency stop button switches off the entire energy supply to the Dispenser and LPG pump.

The emergency stop switches to open position and energy cuts off. Pulling the button switches off and energizes.

FIRST OPERATION OF THE LPG DISPENSER

The propane-butane liquefied gas dispenser is to be serviced by personnel with appropriate authorizations only (according to domestic regulations).

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

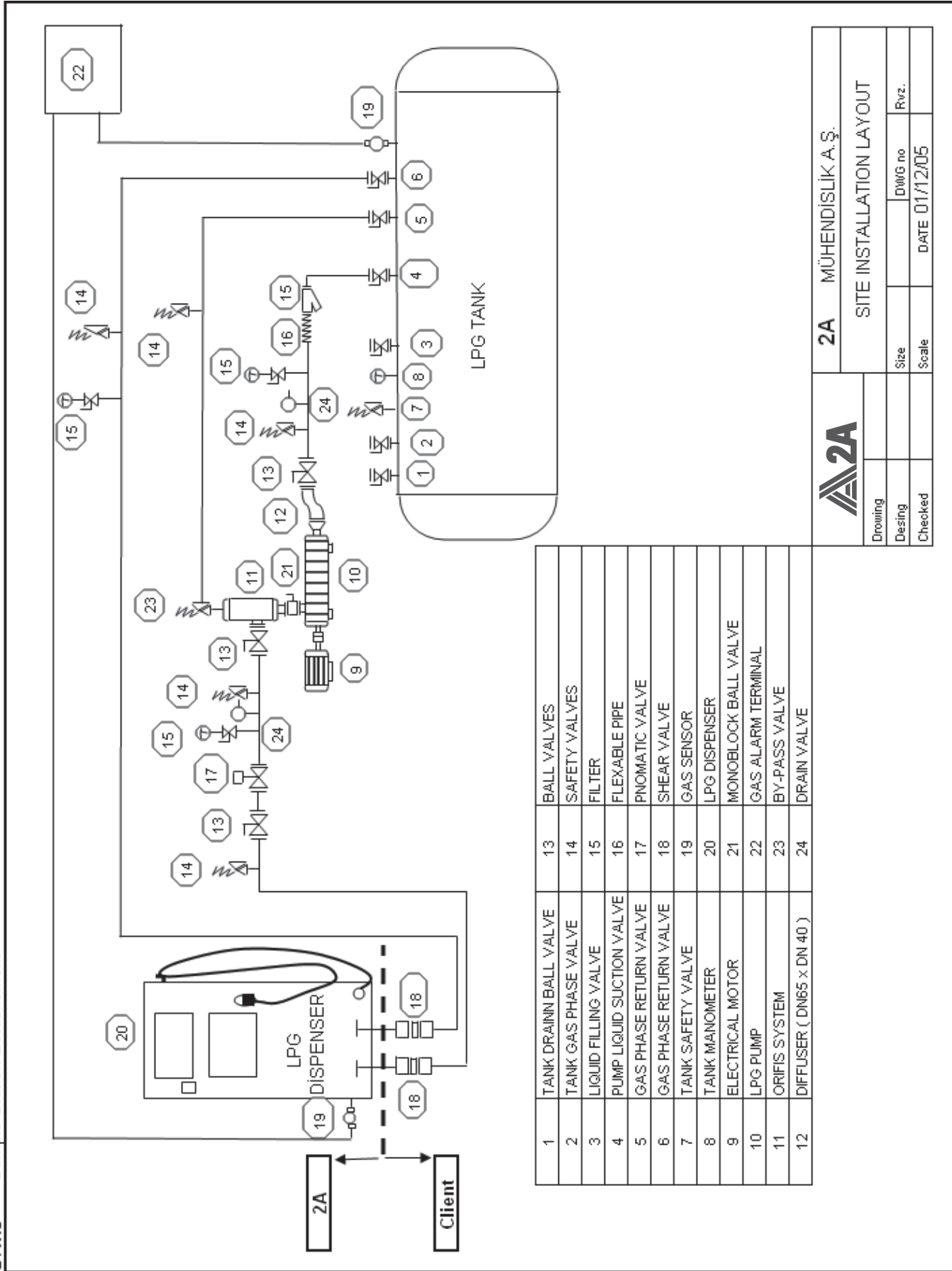
NOTICE

If in the present service manual reference was made to open a valve, this procedure should be made so that 10% of its operating flowrate is not exceeded by carefully and slowly shifting the lever. The valve should be maintained in this position until a consistent pressure is established and then be opened entirely.

LPG gas sensors (must be Ex for zone 2)

In order to detect any gas Leakage of the piping a sensor must be placed next to and 10 cm above the bottom level of the dispenser, a second sensor is also needed and be placed 10 cm above the ground level within the tank area.

Drw.3 Sample Station Establishment



REFUELLING OF CARS

The propane-butane liquefied gas dispenser is to be serviced by personnel with appropriate authorizations only (according to domestic regulations).

Refuelling a car is performed by following operations:

- Connect the dispenser nozzle to the appropriate place of the car to be refuelled (connection to be tight and without leakage),
- Switch on the pump by setting start-stop switch of the dispenser on position 1 (switch on) (Check the manometer to indicate proper pressure of 1.0 to 1.3 MPa during pump operation);
- In case of refuelling a car brimfull (max. 80% of tank capacity), as soon as the check valve in the refuelled tank cuts off the gas flow to the tank, immediately switch off the pump.

NOTICE!

FILLING THE TANK TO ROUND UP SUMS OR DELIVERED VOLUMES AFTER ACTIVATION OF CHECK VALVE IS STRICTLY PROHIBITED.

When refuelling is finished, switch off the pump by setting start-stop switch of the dispenser on position O/Switch off.

Disconnect the dispenser nozzle from the vehicle and hang the nozzle at the hose-hang on the dispenser.

When operation finished:

- close valves of liquefied and gaseous phases on the tank.
- cut off power supply of LPG dispenser.
- check that installation is tight.

Principles of Operation and Maintenance of Break-Off Safety Valves of Repeated Use***¾" Repeated Use Break-Off Valve***

Installation, use and maintenance of the repeated break-off valve is to be in conformity with all relevant codes, rules, legal regulations. Periodical control and maintenance shall be carried out by a qualified person. Before installing, using and maintaining is performed, be sure to read and understand all instructions carefully. The final user of the gas filling station shall be familiarized with present Service Manual.

WARNING !

Contact or inhalation of liquefied propane, butane and their vapours can cause serious injuries or even death! In order to protect human and livestock against LPG effect, it shall be diluted by carrying away outside with an air stream. To prevent any fire or explosion, LPG shall be stored in sufficient distance from open fire or any source of ignition.
LPG is heavier than air and therefore neither evaporating nor dissipating when suddenly released to still air.

Operation

The ¾" breakaway valve is specially designed to ensure safety by breaking off the refuelling procedure. If fitted at the inlet of the delivery hose, it protects against leakage at both ends. At the moment of separation only some cm³ of gas will be liberated.

Installing

Fix release arm of valve in "upstream" position.

Use M12 screw or U-screw with proper washers and nuts 3 mm diameter stainless flexible strand of appr. 450kgs tensile strength.

With appropriate connecting elements the valve shall have possibility to rotate so as to ensure collinearity of the axis and the force axis at the moment of break off.

Between stiff tubing and breakaway valve inlet a short hose shall be used. The hose length of 30-63 cm (depending on installation) shall ensure sufficient flexibility.

Fix the delivery hose with the inlet end of the break off valve.

In order to state proper and reliable operation of the break off valve of repeated use the test of breaking off shall be carried out before installation is filled with gas.

Reconnection

Before reconnection, make sure the whole inner pressure from the inlet and outlet part of the valve set of reuse is abolished. To reconnect simply push the male part into the female until the fixing balls are placed in the proper grooves of the body.

Establish a pressure in the system and in order to detect leakages carry out tightness test on joint using high solution for leakage.

NOTICE

To ensure proper operation of the break off valve, testing every 6 months is recommended (separated and greased). As source of pressure during tests the use of nitrogen or an other inert gas is recommended.

The male part of the valve must be greased at least once a 6 months.

If the valve is out of service for a longer period (e.g. seasonal operation), preserving it by spraying good quality machine oil in aerosol (e.g. WD40) or/and wrapping it against moisture is recommended.

13. 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 fire fighting equipment (powder extinguishers, sandbuckets, etc.) shall be held ready at the working location.

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 the fuel dispenser (according to instruction),
 - Correctly adjusted pump (the adjustment depending on operation conditions),
- And besides the above
- Take care the stepped pump not to form cavitation
 - Do not refuel gas cylinders
 - Do not refuel vehicles with stretched delivery hose (possibility of breaking of the safety valve),
 - Pay special attention to prevent the delivery hose not to get under a wheel of refuelled vehicle,
 - Do not use open fire in the zone of explosive conditions
 - Observe the basic rules of industrial safety and fire fighting codes.

And besides the above

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 the liquefied and gaseous phases in the dispenser. In case of the EUROSTAR dispenser, the filter between separator and meter is degassed by unscrewing the 4 screws M8 to fix the cover by wrench 8 mm and the screw allowing the filter cartridge to be removed by wrench 32 mm. 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.

Greasing of rotary parts

All rotary parts, such as:

- Hinges and locks

Shall be greased every 6 months.

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.

Pipeline of liquefied and gaseous phases

The tightness of nuts, connecting pipes shall be checked every three months.

Moreover, after every disassembly sealing elements shall be replaced.

14. ASSEMBLY (drw 5)

Anchoring the dispenser

Anchor the dispenser through 4 holes on the bottom frame and turn lock (A).

Locking the counter

Close the door of counter and turn lock (B).

Mounting the columns

Place the screws located on columns

(1, 2)

15. DISASSEMBLY (drw 5)

! ATTENTION !

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

Opening the hydraulic housing

Open the lock (A), 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.

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 (B). Now, access into the housing is enabled.

Opening the columns

Remove screws located on columns (1,2). Then access to cable glands, to emergency stop and key is possible.

16. USER MANUAL OF PRIMA

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.

STANDART SPECIFICATION OF DISPENSER

ELECTRONICS

Software Description

EPS 37-V1 software is developed by using "C" and Assembler programming languages. Electronical control unit keeps continuing its working by controlling the software and the external connections. The external connections of the control unit (Pulser, display, keyboard, valves, preset buttons, lans switch, automation and cash register output etc.) are controlled by the sotware. If any of them is taken out and set apart from the control unit, this is recognized by the software and the failure situtation is displayed on the screen. The control unit may work in two different ways. First of all, it starts fuel transaction by authorizing with an automation or an interface. Secondly, it works manually without connected to a control tool.

The software controls the failures of the other helping instruments which are connected to control unit as pulser, ATC probe, Lans switch, display, keyboard; in the standby mode.

The pulser draws 20 mA of current from the system as it is plugged on. If there is no current drawing from this port, it seems the pulser is broken or unplugged. In this case, the unit turns to pulser failure mode.

The keyboard is always scanned by the software and controls the preset sales or if there is any menu entries.

The ATC probe and software communicates every 5 seconds and measures the fuel's temperature. If the ATC probe is unplugged the unit turns to ATC probe failure mode. ATC probes match with every one of the control units. If an unmatched ATC probe is plugged, it goes to ATC matching failure because the serial numbers didn't match by the software. See Menu 16 to do the ATC probe matching.

To changing the software's parameters protected with password and according to OIML R117 -1 chapter 2.20.2.1.3 change to all metrological parameters (ATC on-off, Density value, pulser) have to use password and mechanical switch. See description of menu function chapter 17. 18. 21.

Lans switch is controlled by the software and checked if it is ON(1) position. If the lans switch is ON position, the control unit gets ready for fuel transaction.

Fuel Transaction (Filling)

If the Nozzle Switch(Lans switch) which is always scanned by the software, turns to ON position, the control unit gets ready for fuel transaction(filling). If it is connected to an automation computer or interface unit, an authorization is required. The unit price and the other parameters are reloaded from the permanent memory. If there will be a preset sale, the preset cut-off values are calculated and reloads to the registry. The necessary outputs for the transaction are turned to ON position. The pulser starts turning when fuel transaction starts and the pulser signals sends to the software as interrupt. Every pulse counts and multiplies with pulse factor to find out the Liter value.

The Pulse Factor is calculated as;

Calibration Factor $\Rightarrow$ CF (It stores in E²PROM. The value is between 700 and 1299). Factory value is 1000.

ATC Factor $\Rightarrow$ AF

You have to find and write the equivalent value to the registry on the ASTM54 chart of the stored density value in the E²PROM after measuring the temperature from the ATC probe. It is between 820 and 1085.

Raw Pulse $\Rightarrow$ RPLS
 Calculated Volume $\Rightarrow$ CV

$$CV = \frac{CF \cdot AF \cdot RPLS}{100000000}$$

For example density value is 545, temperature value is 15°C and Raw pulse value is 1000;

$$CV = \frac{1000 \cdot 1000 \cdot 1000}{100000000} = 10.00 \text{ Liters}$$

You find the total amount value by multiplying the unit price with the calculated volume value.

Calculated Volume = CF

Unit Price = UP

Total Amount = AT

AT = CF * UP

For example; CF = 10.00

UP = 1.234

AT = 10.00 * 1.234 = 12.34

The final results are showed on the display by the software using I²C.

The Pulser unit works with 2 channels. These channels follows each other with 90° phase difference. (00-01-11-10-00)

So you can understand if the pulser rotates in the wrong direction and if one of the channels is broken. If the pulser rotates in the wrong direction and if one of the channels is broken, the software turns into Pulser failure mode.

The pulser produces 2*50 pulses for each Liter. 100 pulse value in 1 Liter is analyzed by the the software.

If you press 5 on the keypad when the software is in standby mode, you will see the information about the software on the screen.

2A LPG $\Rightarrow$ MANUFACTURER

EPS 37 $\Rightarrow$ PRODUCT CODE

V1 $\Rightarrow$ MOTHERBOARD VERSION

CS.dC10 $\Rightarrow$ Software Check Sum

6-42-1 $\Rightarrow$ Software Version

21.04.17 $\Rightarrow$ Software Production Date

Check list WELMEC 7.2 L1 description

All data related to the measurement are stored by adding CRC-16 for control purposes. The stored measurement results consist of 2 records. If any of the records are corrupted, the other is valid. If both are corrupted, the record is considered blank. We understand the security of the records from CRC16. 1 record value for 1 measurement is:

- Total liters given (10 Bytes)
- Total Amount (12 Bytes)
- Unit Price (4 Bytes)
- Measurement density (4 Bytes)
- CRC16 (2 Bytes)

Total 32 Bytes

This stored data can be protected without energy for 10 years.

Check list WELMEC 7.2 L2 description:

Stored measurement values stored; heat changes, electromagnetic force, excessive electrical impairments, and so on. The measurement result generates a CRC data. Thus, the software is controlled by the registry to make sure that it has been subjected to a change.

Check list WELMEC 7.2 L3 description:

The stored measurement values stored are stored in the recording register as CRC and write protected. At the time of storing any record, the Write Protection is removed by the software until the end of the recording period.

Check list WELMEC 7.2 L4 description:

The stored recorded measurement values form the CRC16 data algorithm to control the recording accuracy during recording. CRC16 is controlled by the software and the accuracy of the registration is based.

Check list WELMEC 7.2 T1 description:

The transmitted data contains all the necessary information for the receiver unit.

Unit price

Total liter value

Total price value

Check list WELMEC 7.2 T2 description:

Sent data is protected against accidental and accidental changes. To understand this, the CRC is created using all the data before the data is sent. The CRC is added to the data to be sent. The receiving unit generates CRC from incoming data. If the CRC and the generated CRC are equal, the data is processed. If the CRCs are not equal, the data set is corrupted and the data is not processed. It is considered invalid.

Check list WELMEC 7.2 T3 description:

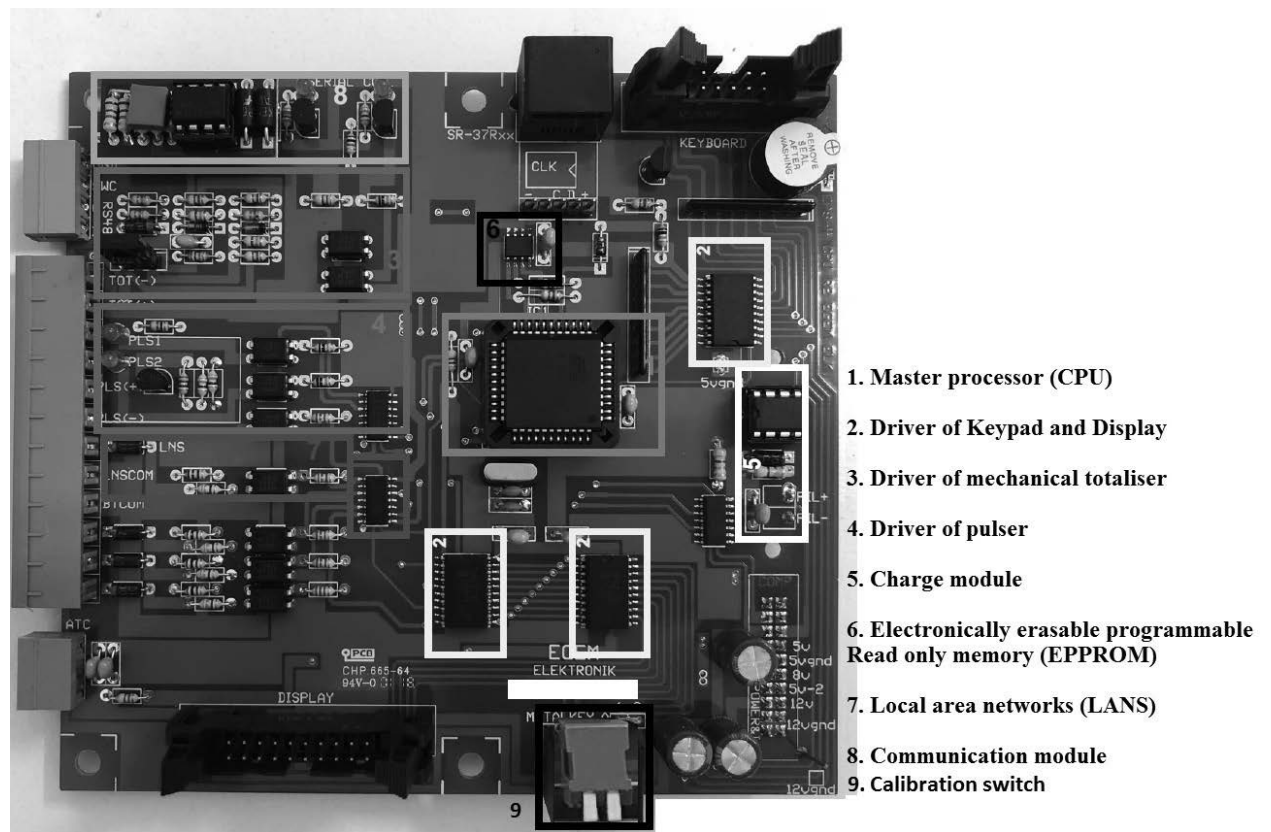
Data sent is protected against deliberate changes. This data is sent via a protocol. Intentional alteration of the data is not possible in this protocol.

Check list WELMEC 7.2 T6 description:

The transmitted data is processed by verifying with CRC. If different values are generated with the CRC calculated by the Receiver Unit, this data is marked as erroneous. Data is requested to be sent again. If the data is incorrect 10 times within 10 seconds, the Dispenser is marked for re-identification by the receiver unit.

Technical specification of calculator;

- LCD screen display
- LED illuminaton
- Non-resettable mechanical total
- 4 different color options programmable with keyboard
- RS-232, RS-485, LAN or USB connection
- Compatible with all protocols
- Possibility of MODBUS communication
- Safety system designed for instantaneous voltage boosts
- Unresetable memory, 72 hours of reading information from display without electricity
- Programable electronic calculator (electronic head)
- Integrated ATC system (Automatic temperature compensation)
- Operating range is between 120 to 280 volt
- 50 – 60 Hz frequency operation



2A Electronic Control Unit (Calculator) Software Version Changing History
EPS-37V1

Versions	Date of Change	Checksum (HEX)
V: 6.37	11/10/05	D3E1
V: 6.37.1	02/02/06	AE97
V: 6.38	10/04/07	B107
V: 6.39	05/09/07	F782
V: 6.39.1	22/07/08	90FC
V: 6.39.2	31/08/08	121C
V: 6.39.3	19/01/09	CC41
V: 6.40	12/02/10	78FE
V: 6.41	25/09/11	B52E
V: 6.42	07/07/13	F61C
V: 6.42.1	12/09/18	DC10

Version 6.36;

- We added the communication protocol of Endress Hauser in our electronic.
- We increased the serial number of electronic. (Old type we had used 4 digits, now we are using 6 digits for serial number of electronic)
- We add the new menu for backlight colors. (You can choice the color of backlight on program)

Version 6.37;

- Wait time of serial number on display is increased
- We added the protocol of printer

Version 6.38;

- When flow rate below of 3 Lt we saw on this play 0.00 for flow. We removed it.
- We added ATC on/off menu in program
- We added the limit of density value (500-650 kg/m3) of gas changing in program

Version 6.39;

- We added new menu in program you can selectable of unit (kg, lt, gallon)

Version 6.40;

- We added print of paper quantity (old type we get 1 result's paper now we can get 2 copies)

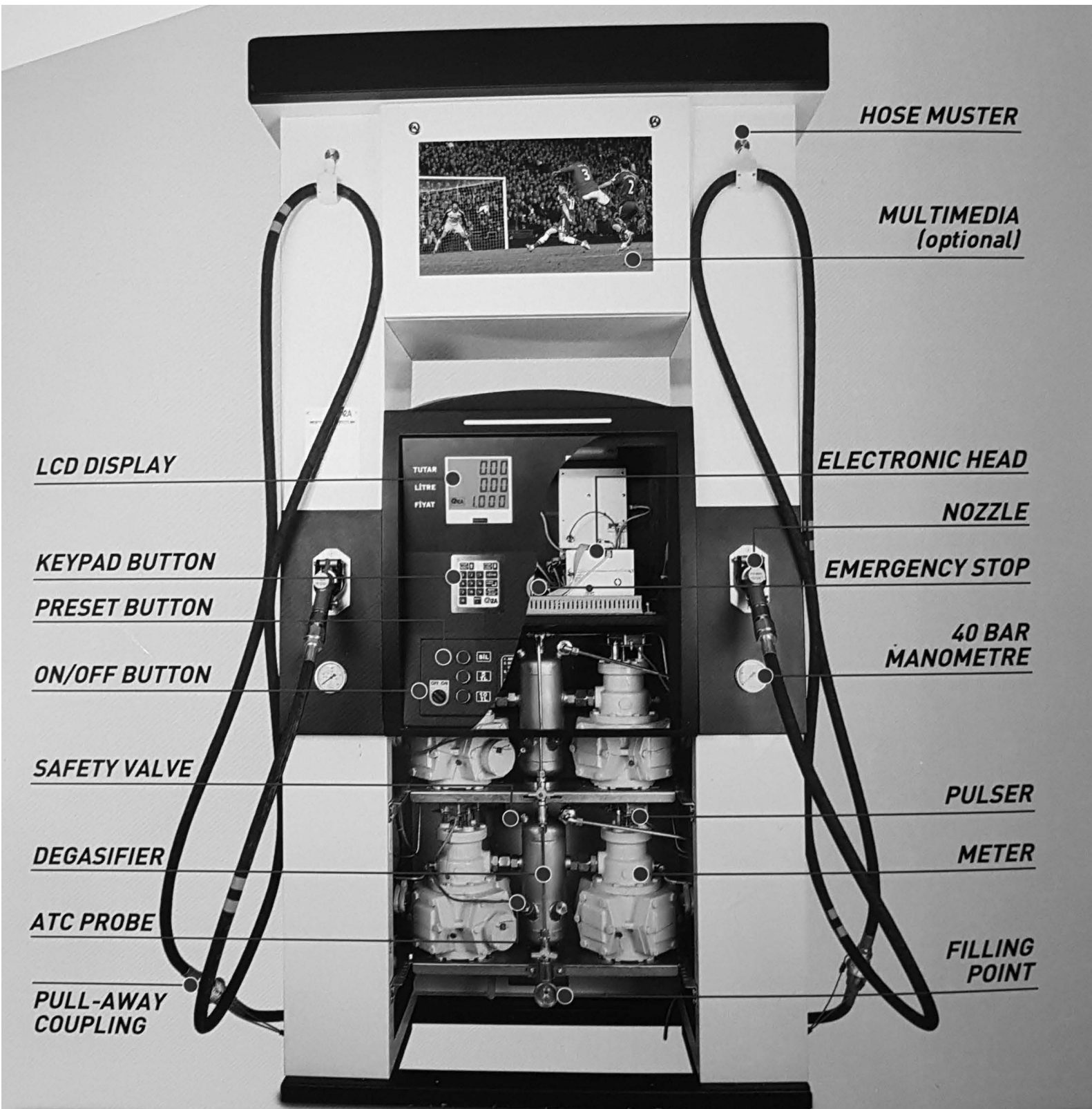
Version 6.41;

- We set communication time of electronic whit mass flow meter. If communication time below 20seconds it gives error code.

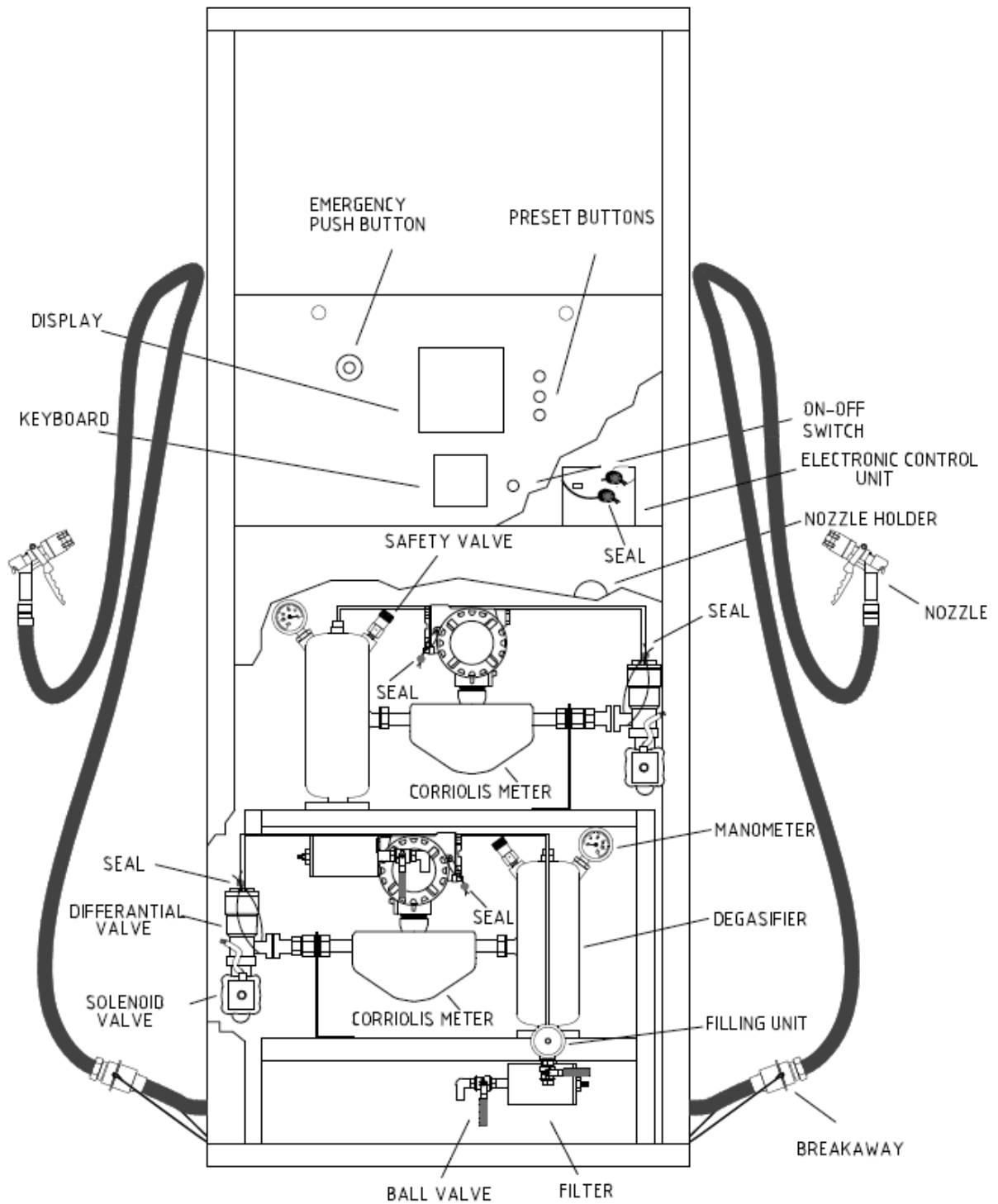
Version 6.42;

- Electro mechanic totalizer's error delay time is increased
- Electronic totalizer showing time on display is increased
- We changed the limit's digits of unit price.

- We added calibration switch to changing metrologic parameters



Dispenser With Prima Meter Components View



Dispenser With Endresshauser Coriolis Meter Components View

HYDRAULICS

The Hydraulic system is designed for a maximum working pressure of 2,400 kPa. from the inlet, LPG flows into the separator block. A vapour release line with a check valve bleeds any vapour back to the tank. Liquid LPG flows through the Prima or coriolis meter then through a reverse flow check valve and a strainer. A high/low flow solenoid valve controls the flow of LPG if the Prima or coriolis meter detects vapour, the solenoid controls the flow of LPG to raise the pressure and condense any vapour. From the solenoid the LPG passes through an isolating valve, through an excess flow valve to the refuelling hose, LPG breakaway and LPG Nozzle.

Component	Function
LPG vapour return line	Bleeds vapour back to the LPG tank. A check valve prevents reverse flow. At the flange, a socket is fitted to allow a Master Meter to send LPG back to the tank during calibration
Manual purjor valve	Installed to minimise the discharge of LPG to atmosphere when replacing the filter.
Filter	It makes 10 micron microglass paper with stainless steel mesh. It strainer to remove debris before the separator.
Seperator (Degasifier)	Contains a thermowell to allow temperature readings to be taken during calibration.
Safety relief valve	Open automatically as soon as the pressure rises above the set limit.
Prima Meter, Alfa Meter & Endress hauser Meter	Meters the flow of LPG. Also coriolis meter measures LPG density and temperature and detects vapour.
Check Valve	Prevents reverse flow back through the meter. The valve also has an internal pressure relief valve that prevents excess pressure build up in the outlet lines.
Solenoid Valve	Provides on/off and flow control over the LPG through the dispenser.
Pressure relief Valve	A pressure relief valve is fitted so that if the pressure in the dispenser rises above 2,585kPa [375psi] then vapour is relieved to atmosphere. In normal circumstances the internal relief valve in the check valve will release pressure before this valve opens.
Differential Valve	Adjustable automatic depend on the gas self pressure changing,automatic remove the flowrate variation which cause by pressure fluctuant of pipe,constant differential valve can help the fuel dispenser work stably.
Breakaway (Pullaway) Coupling	Fitted to the hose to allow a vehicle to accidentally drive off with the hose still attached to the vehicle without damaging the LPG dispenser.
Pulser	Is an electro-mechanical device that converts the angular position or motion of a shaft or axle to an analog or digital signal. In our system it fix on Prima meter. It sends the signal for gas volume.

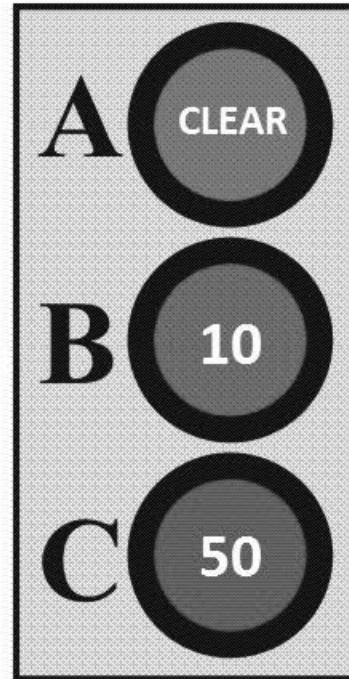
17. Setting of Parameters

The EPS37-V1 electronic calculator unit is provided with an independent external keyboard to adjust the LPG dispenser's parameters. Guiding the use of keys and showing which keys to be used while processing an operation or making a selection. If you want to change the parameter you have to use password. For password please contact with 2A.

MENU FUNCTIONS

- 2 – 00** Unit price changer
- 2 – 01** Button A preset value changer
- 2 – 02** Button B preset value changer
- 2 – 03** Valve-1 to quit interval in Solenoid
- 2 – 04** Valve-2 to quit interval in Solenoid
- 2 – 05** To load factory setting
- 2 – 06** Electronic total
- 2 – 07** Active and Disactive the error code
- 2 – 08** Shift point of the unit price
- 2 – 09** Communication adress
- 2 – 10** Show to last 10 sales (You can see this menu before version 6.42)
- 2 – 11** Change user password
- 2 – 12** Display test (You can see this menu before version 6.42)
- 2 – 13** To starting sale value showing on display
- 2 – 14** Valve-2 run value setting
- 2 – 15** Communication on/off
- 2 – 16** Density of gas change
- 2 – 17** ATC (Automatic temperature compensation) active or disactive
- 2 – 18** Backlight colour type
- 2 – 19** Round up the total price

BASIC KEYPAD AND PROGRAMME BUTTON FUNCTIONS



BUTTON FUNCTIONS

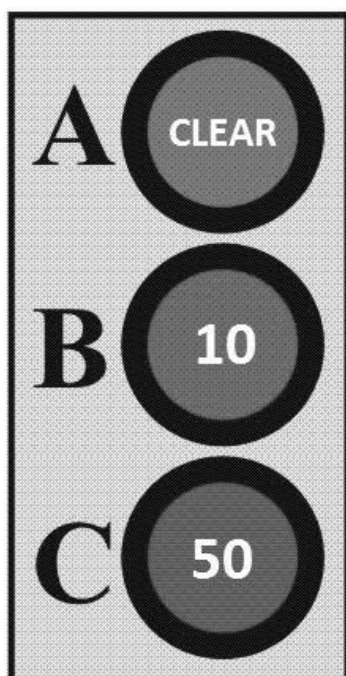
BUTTON	FUNCTION	ALTERNATIVE FUNCTION
	For the money sale programme if counter is in sale position first press this button .	While dispenser MENU position this button for stroll to be go up .
	For the liter sale programme if counter is in sale position first press this button	While dispenser MENU position this button for stroll to be go down .
	While dispenser in MENU position this button for Enter to values .	To enter a value, while dispenser in programmed sale position
	While dispenser in MENU position this button for Enter to values .	To enter a value, while dispenser in programmed sale position

BUTTON FUNCTIONS

BUTTON	FUNCTION	ALTERNATIVE FUNCTION
3	While dispenser in MENU position this button for Enter to values .	To enter a value, while dispenser in programmed sale position
4	While dispenser in MENU position this button for Enter to values .	To see flow rate, while dispenser in programmed sale position.
5	While dispenser in MENU position this button for Enter to values .	To see version no,while dispenser in idle position.
6	While dispenser in MENU position this button for Enter to values .	To see temperature value,while dispenser in idle position.
7	While dispenser in MENU position this button for Enter to values .	To refresh the screen,while dispenser in idle position.
8	While dispenser in MENU position this button for Enter to values .	When dispenser finish sale,it controls the given litre value without ATC(V 6-42)
9	While dispenser in MENU position this button for Enter to values .	To control serialcommunication, while dispenser in idle position.
0	While dispenser in MENU position this button for Enter to values .	To enter a value, while dispenser in programmed sale position
SELECT .	While dispenser in MENU position this button for select to root menu .	While dispenser in programming sale position this button for add to three zero (000).
MENU STOP	This button for Enter and to exit from Menu.	

BUTTON FUNCTIONS

BUTTON	FUNCTION	ALTERNATIVE FUNCTION
	If you Entered wrong worth in MENU position this button for clear.	If you Entered wrong worth in programming sale position this button for clear.
	Approval to Entered worth in MENU position.	



BUTTON A :

If you press this button first time it will enter to money programming sale menu. After this pressing everytime until it increase money programme value.

BUTTON B :

If you press this button first time it will enter to liter programming sale menu. After this pressing everytime value increase to be 10 liter .

BUTTON C :

If you enter wrong money and liter programme value this button has cleare that wrong worth . While dispenser in filling position this button for the **EMERGENCY STOP** .

MENU FUNCTIONS

1-MONEY PROGRAMME SALE

If you want to sale fixed money value, you must do money programme . Given liter value relative for money value to be calculate by Electronic dispenser . To arrive at this liter value to complete and this transaction excitation **9 - 00** message shows on display .

Money programmed transaction doing with two manner .

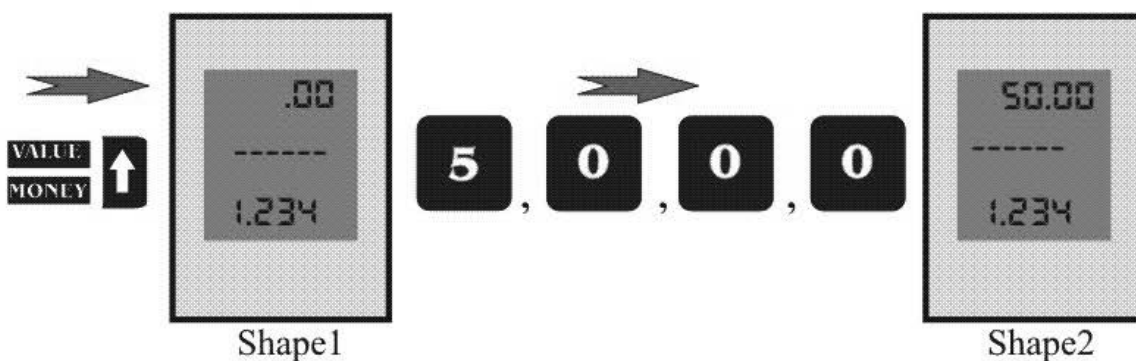
1-1 HELP WITH THE BASIC KEYPAD :

While dispenser in to sale menu, if press  this button it will enter programme sale menu . Use numeric buttons to enter value .

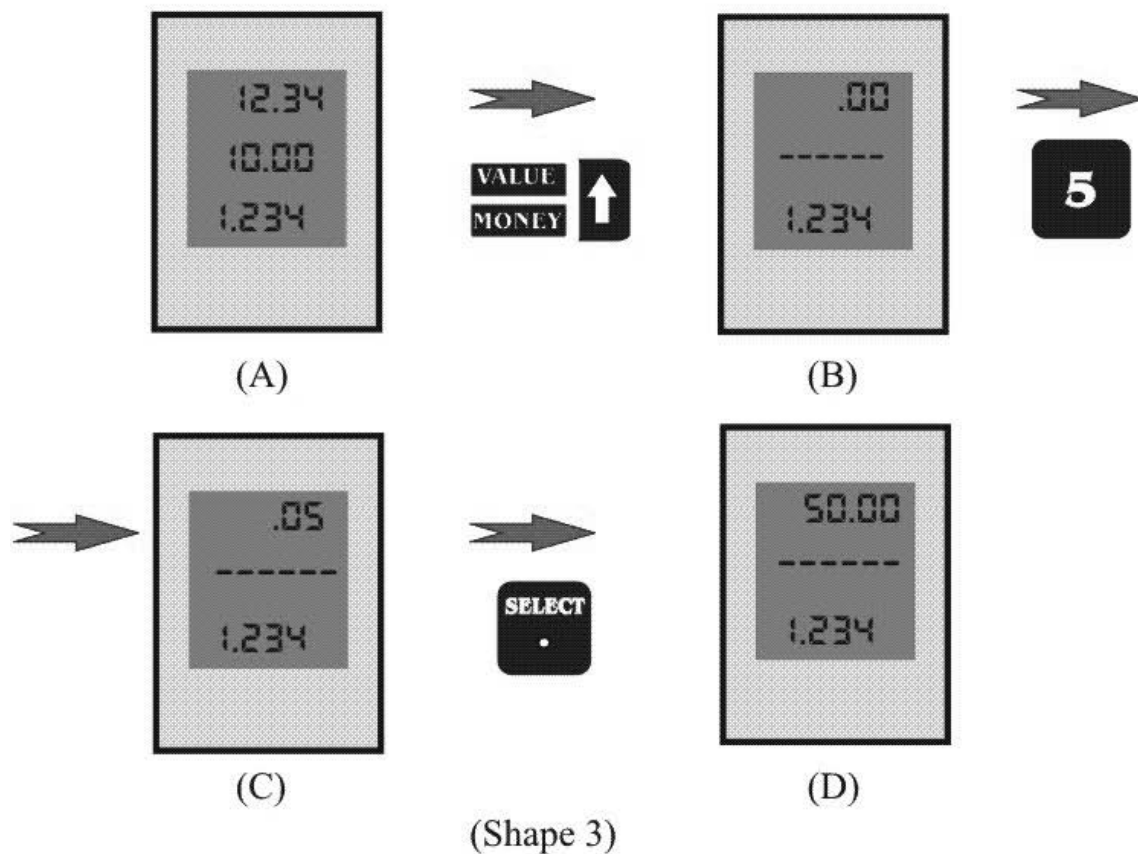
Example , for give five thousand (5 000) liras ; press

 ,  ,  ,  ,  this buttons to arrange for load .

 If Press this button (Shape 1) liter digit section will reset and number zero (0) showing on total digit . Press to arrange numeric buttons for enter value. (Shape 2) .



50.00 liras giving fuel transaction , for unpress three times **0** button ;
 press this **5** than press this **SELECT .** button. It pressed like 3 (three) time
 this **0** button for to be written 3 (Three) zero (Shape 3) .



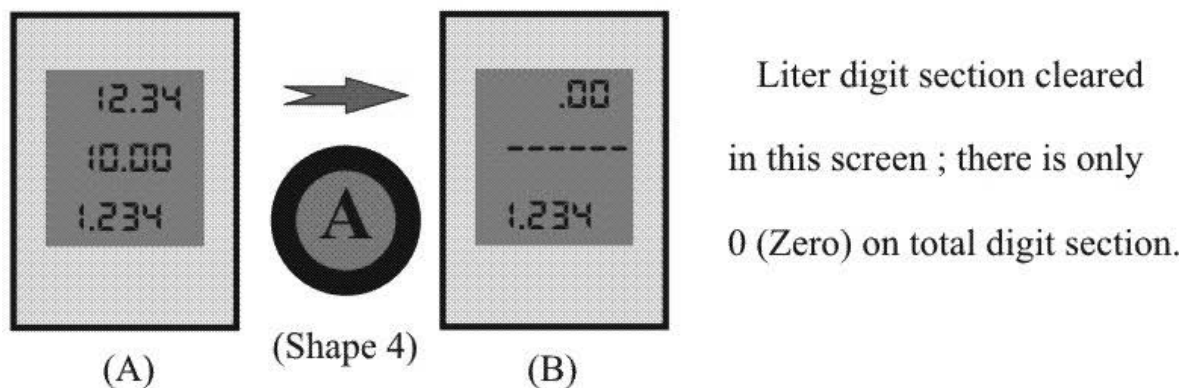
After this transaction hold up the pistol or turn on switch for start to filling

In the money programme menu if entered the wrong value you can clear
 that **CLEAR** with this button and enter the new value .

To exit from this menu press **MENU STOP** button .

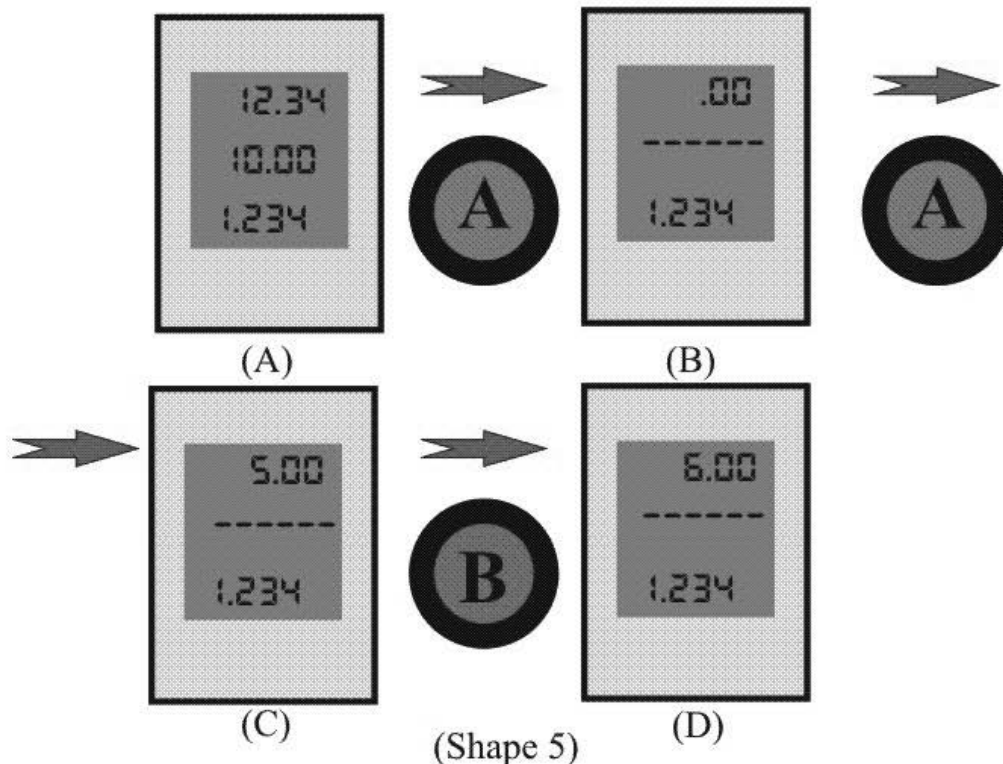
1-2 HELP WITH PROGRAMMING BUTONS :

You can do money programmed sale with 3 (Three) piece helper button on dispenser . These buttons be adjusting until **0 - 9999,99** value . If Button A adjusting 1 00, Button B adjusting 5 00 you can arrive to your request worth easily . To enter for money programmed sale value first press Button A (Shape 4).

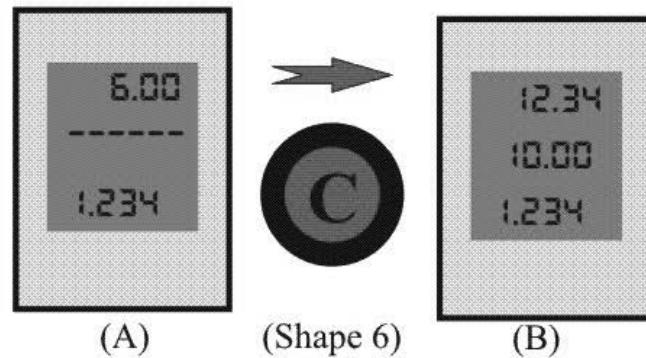


Example ; enter 600 (six hundered) (Shape 5) .

Note : Button A value as 1 00 , Button B value as 5 00.



If money programme sale value is entered wrong, press this  button to exit from this menu (Shape 6) .

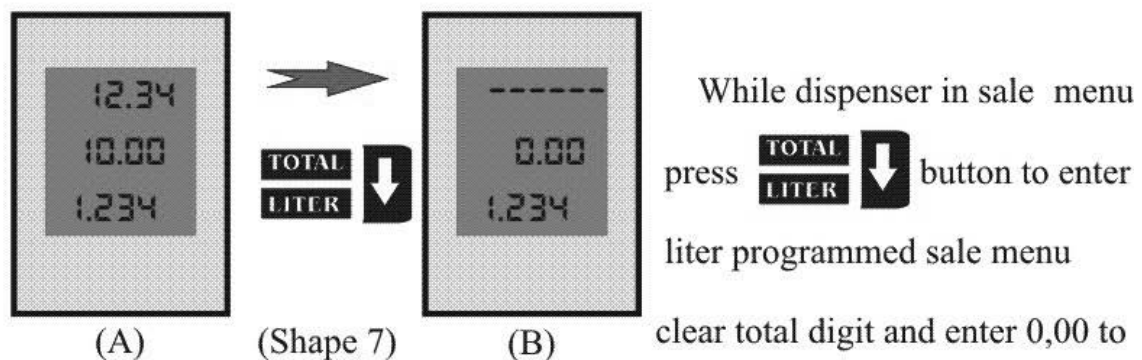


2-LITER PROGRAMME SELL

To sale fixed liter programme must to do liter programme. When filling arrive to setted value, dispenser has give **9 - 00 exitation message** .

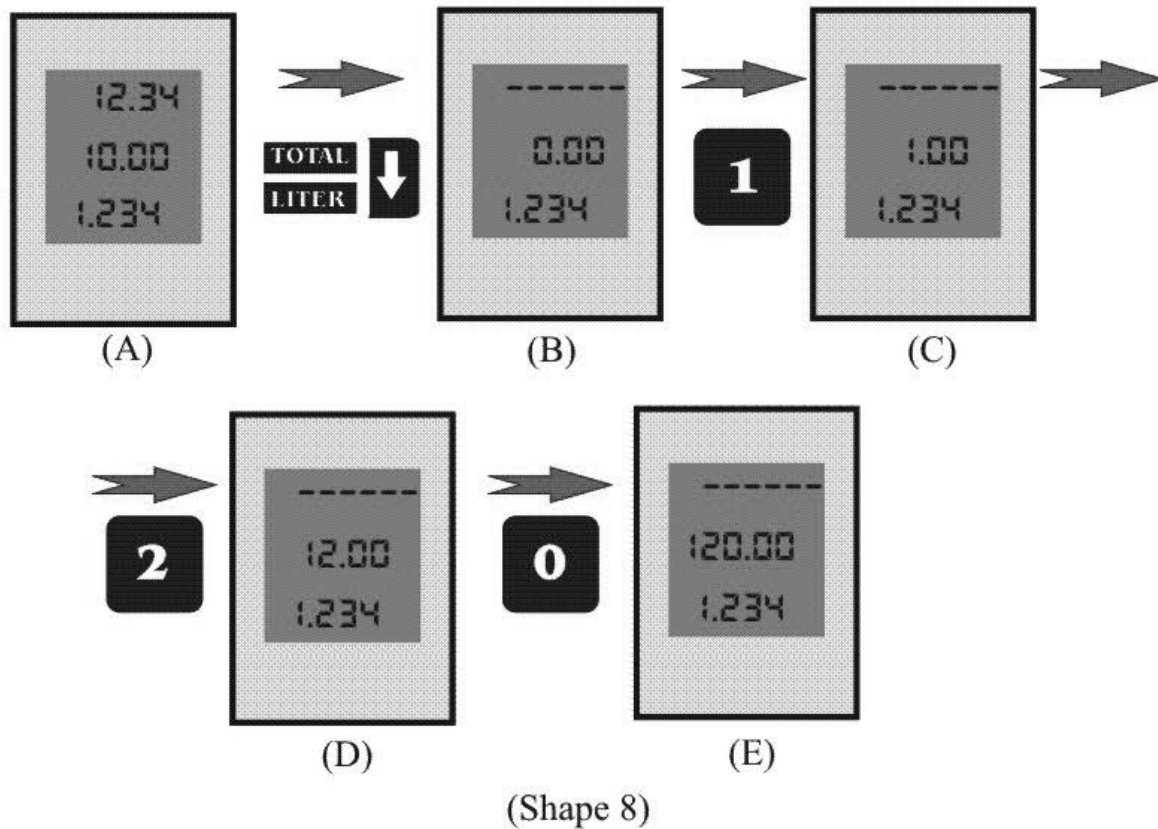
Liter Programmed sale transaction has doing 2 (two) different type.

2-1 WITH BASIC KEYPAD :



Litre unit (Shape 7).

Example ; to sale 120 (One hundred Twenty) Liter look at the (Shape 8) .



After these transaction lift up the pistol or turn on the switch to start filling .

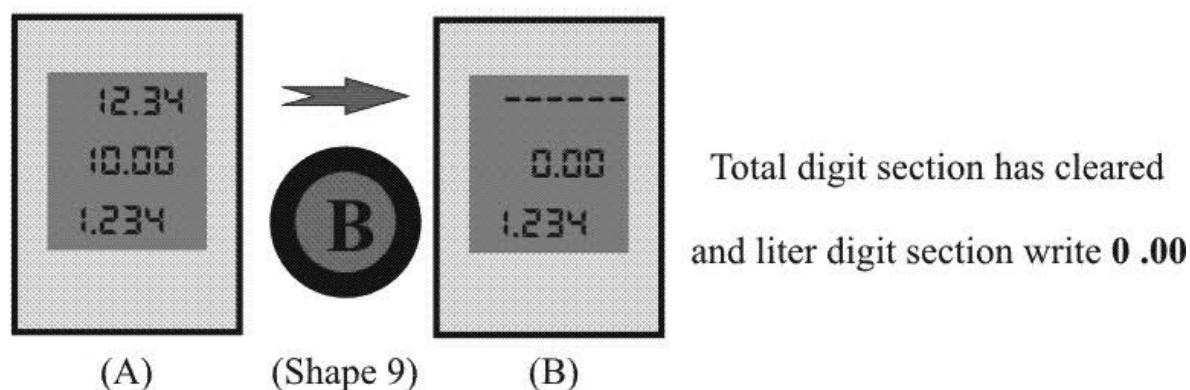
If you enter wrong value in the **Liter programme** position press this

CLEAR button to clear and enter the new value.

To exit from this menu press this **MENU** **STOP** button .

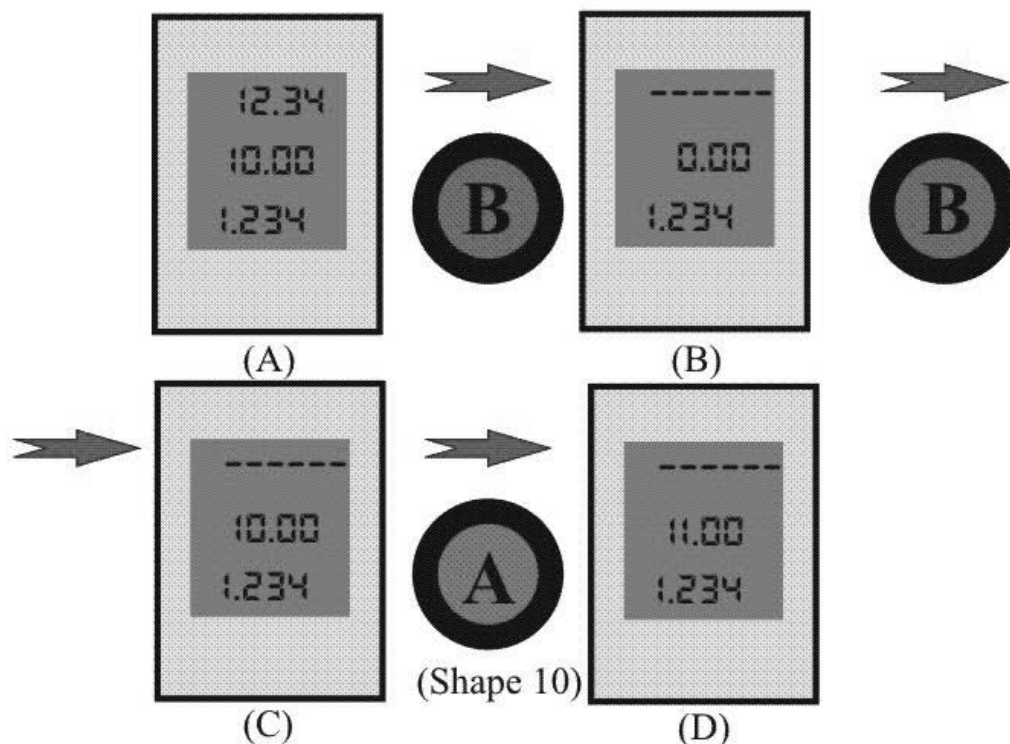
1-2 WITH THE HELP OF PROGRAMMING BUTTONS :

Sale with 3 (Three) buttons on dispenser . These buttons are 10 (Ten) liter Button B , 1 (one) liter Button A setted to standard value **(Factory value)** . Sale for fixed liter programme first press to **Button B** (Shape 9) .

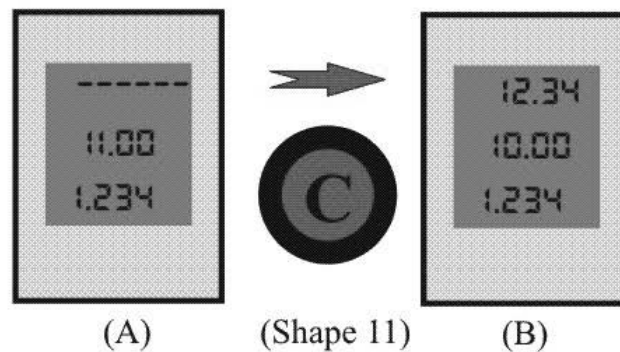


Example ; we entered 11 (Eleven) Lt.worth (Shape 10) .

Note : Button B value as 10 (Ten) lt. , Button A value as 1 (One) lt.



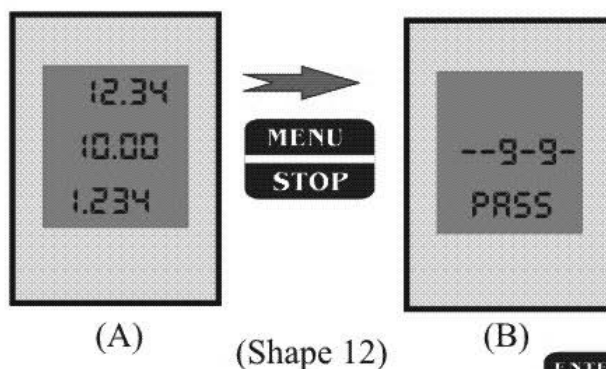
If liter programme sale value entered wrong, press this  button to exit from this menu (Shape 11) .



MAIN MENU FUNCTIONS

ENTER TO MAIN MENU :

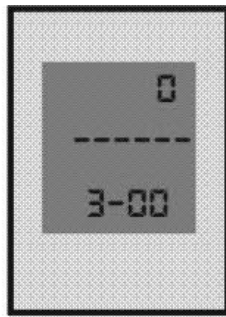
Enter for main menu functions press this  button (Shape 12) .



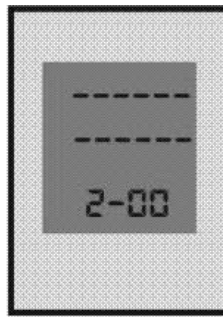
Arrived password entrance like (Shape 12) . Use the numeric buttons to enter 6 (Six digit) password than press button to enter main menu.

Enter 6 six digit password then press  button.

If entered wrong password unit price digit write 3 00 excitation message (Shape 13) . If entered right password arrive to main menu functions (Shape 14) .



(Shape 13)



(Shape 14)

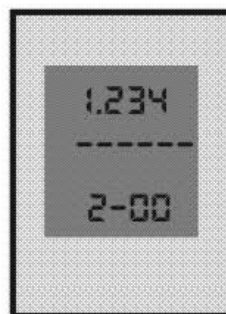
For understand to arrived
main menu screen unit price
digit must write 2 00 .

In here total digit and liter digit write (-----). Main menu function number
write on unit price digit (shape 14).

If you entered wrong password (Shape 13) press this  button
to exit from this menu.

1-) TO CHANGE UNIT PRICE (2 00) :

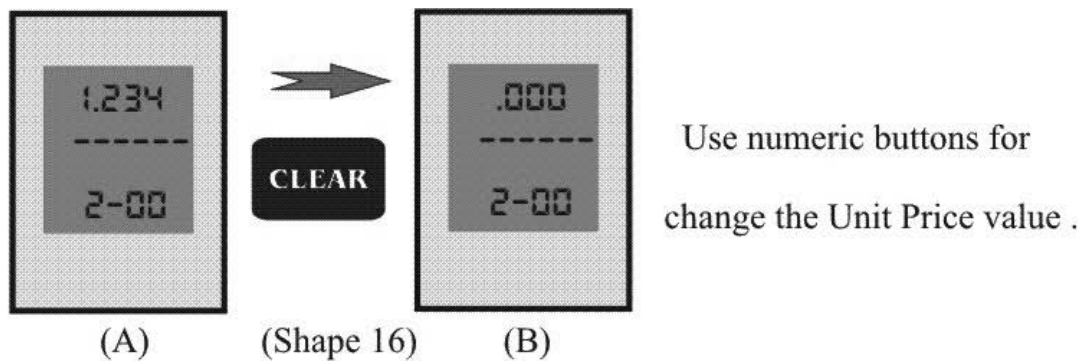
Entered after Main Menu functions , first function is 2 00 Unit Price
change . To enter Unit Price change menu press this  button
(Shape 15) .



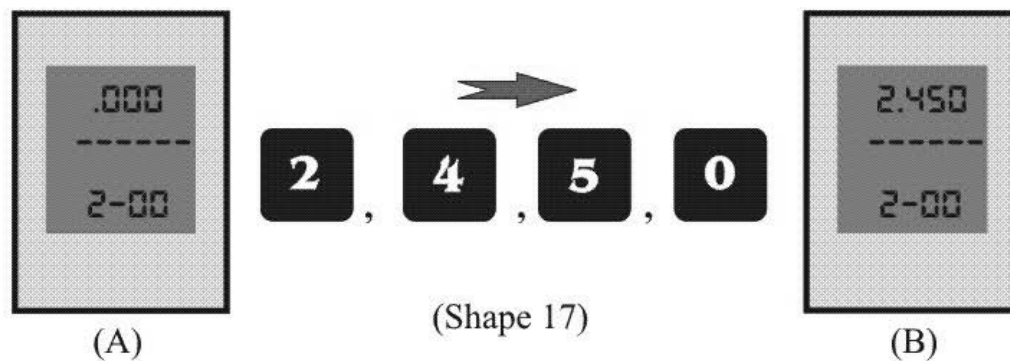
(Shape 15)

In here unit price write on total
digit, liter digit write -----
Menu function number write
on Unit Price Digit .

Press this  button for change to Unit Price (Shape 16) .



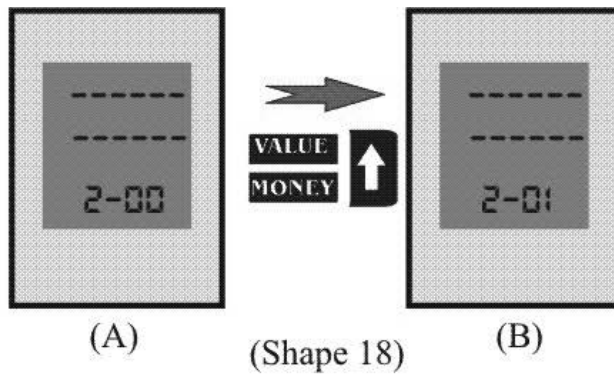
For Example; we change the Unit Price like 2.450 (Shape 17) .



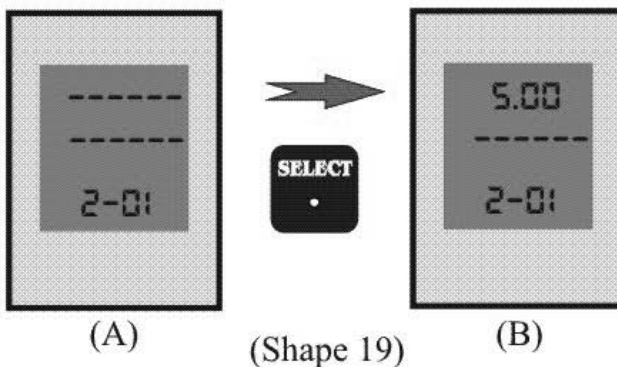
Press this **CLEAR** button for delete to entered worth , press this **ENTER /PRICE** button to approval entered worth . After entered worth if you unpress this **ENTER /PRICE** button it can't save . Press this **SELECT** button to exit from this menu

2-) BUTTON A MONEY PROGRAMME VALUE CHANGE MENU (2 01) :

Entered after the Main Menu functions use **VALUE MONEY** **↑** , **TOTAL LITER** **↓** buttons to come Button A money programme value change menu 2 01 (Shape 18) .



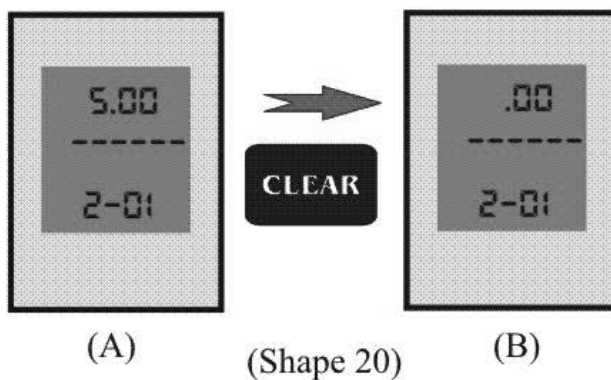
To arrive at menu **2 01**,
press this **SELECT** button to enter
this menu (Shape19)



Entered after this menu
Button A money programme
value write on Total Digit .

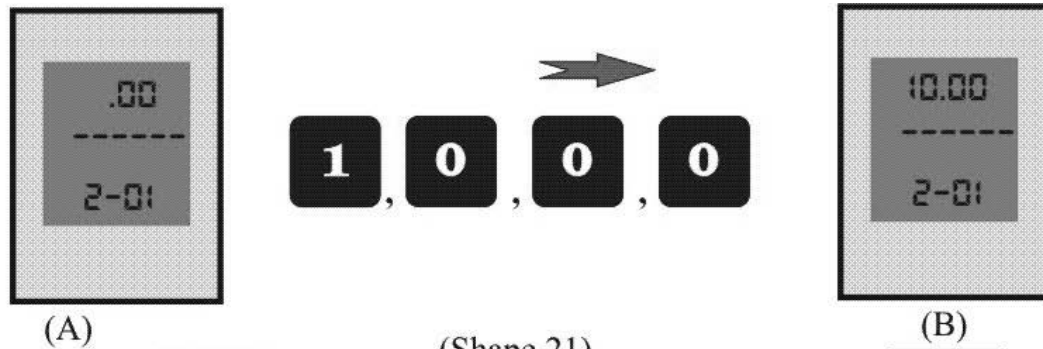
Write (-----) on liter digit section. Write menu code (**2 01**)
on unit price digit section (shape 19) .

Press this **CLEAR** button to enter new worth (Shape 20) .



To erase after button A value,
use the numeric buttons to enter
new value.

For Example; we change Button A money programme value as 10 (ten) lira
(Shape 21) ..

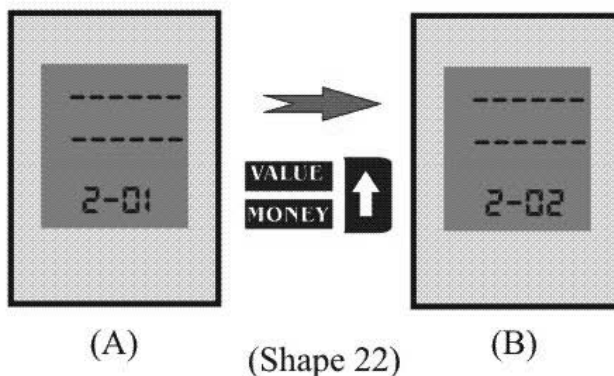


Press this  button to approval entered value Press this  button to delete entered value. Press this  button to save. Press this  button to exit from this menu.

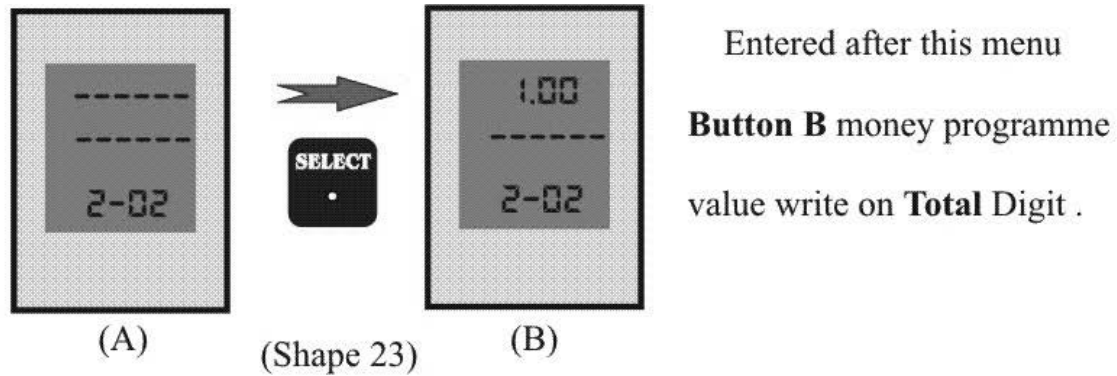
3-) BUTTON B MONEY PROGRAMME WORTH

CHANGE MENU (2 02) :

Entered after the Main Menu functions use these     buttons to arrive Button B money programme value change menu (2 02) (shape 22) .

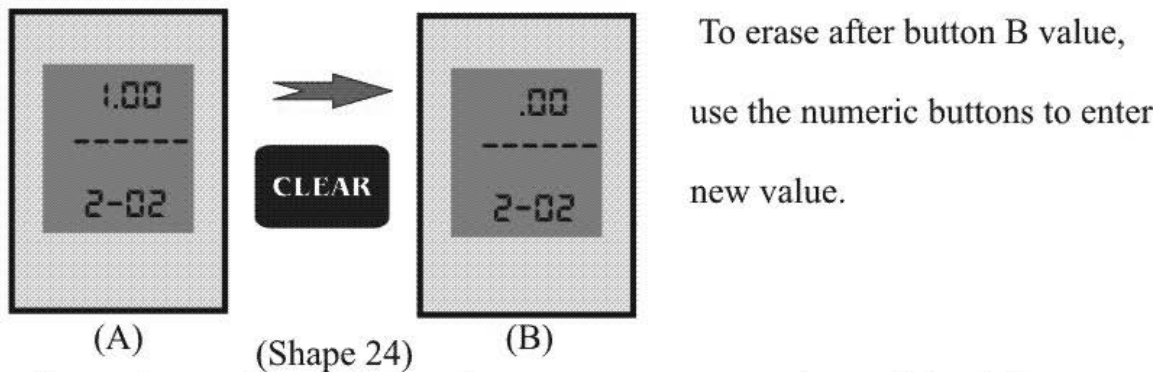


To arrive at menu 2 02 press this  button to enter this menu (Shape 23).

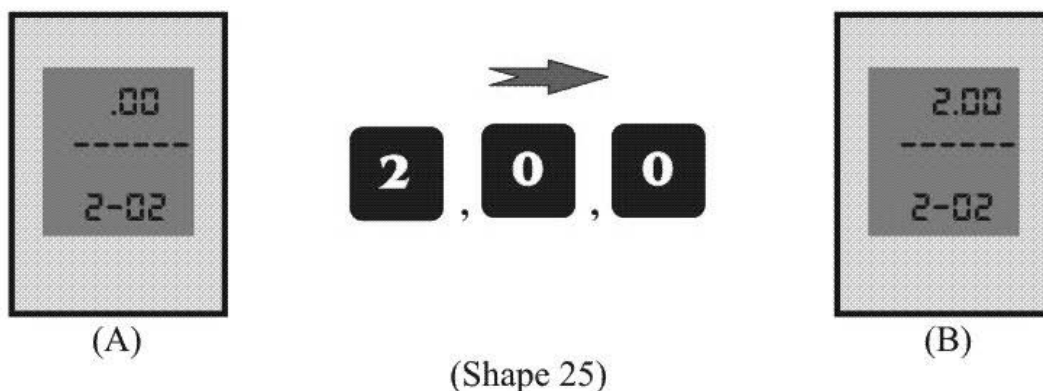


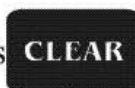
To be written (----) on liter digit section. To be written menu code (**2 02**) on unit price digit section (shape 23) .

Press this **CLEAR** button to enter new value (Shape 24) .



For Example; we change Button A money programme value as 2 (two) lira (Shape 25) ..

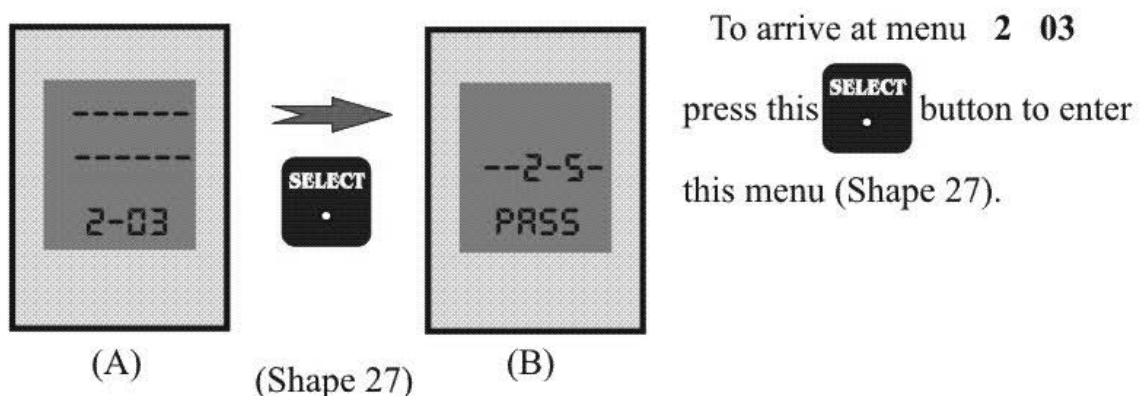
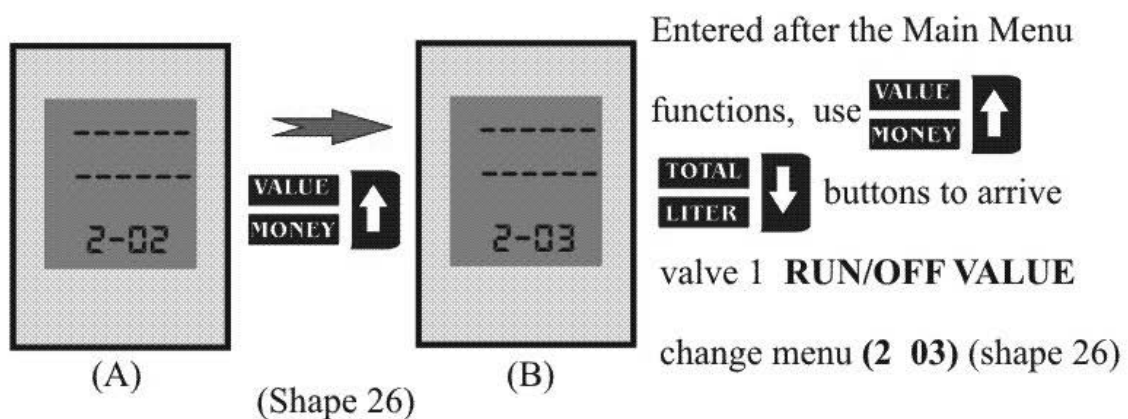


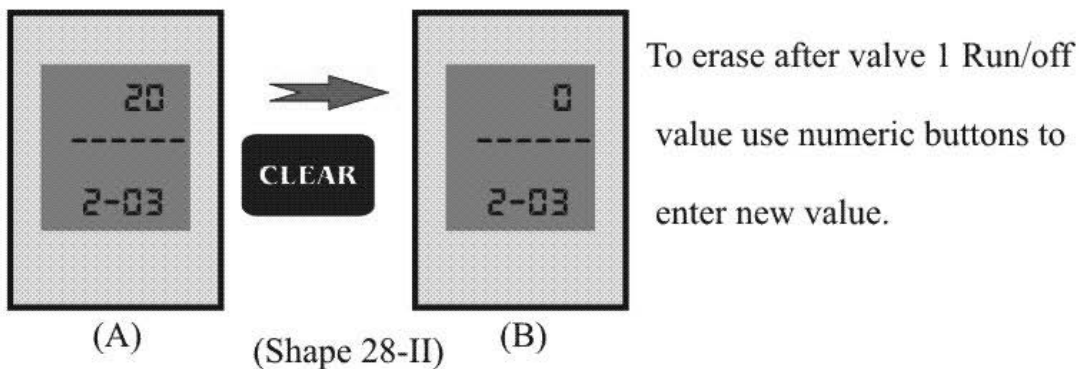
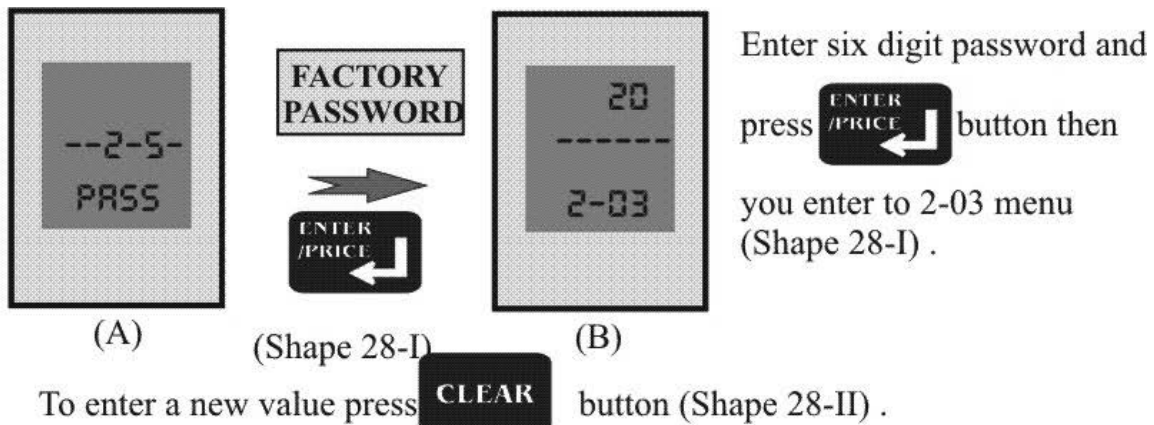
Press this  button to approval entered value Press this  button to delete entered value. Press this  button to save. Press this  button to exit from this menu.

4-) VALVE 1 RUN/OFF VALUE CHANGE MENU (2 03) :

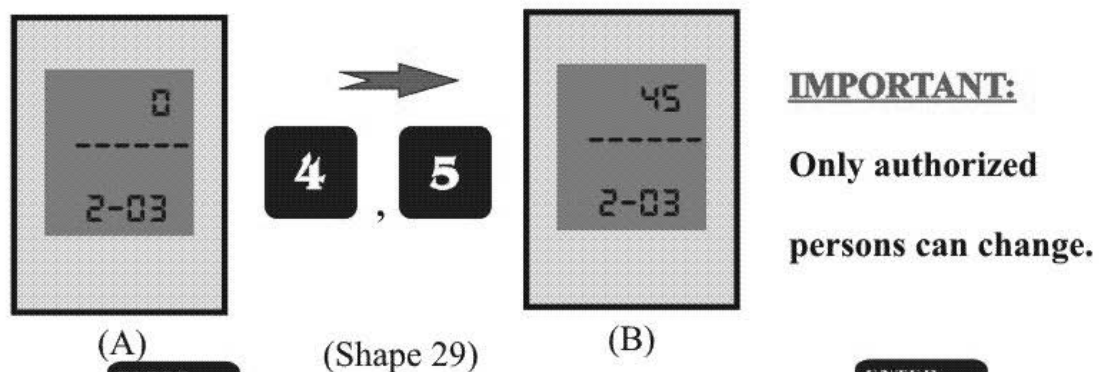
Valve 1 Run/Off value is, to quit valve before the programmed value .

Example ; programmed value like 10 liter , while valve1 Run/Off value is 40 , Valve quit at 9.60 lt.





Example, change valve 1 Run/off value like 45(fortyfive)

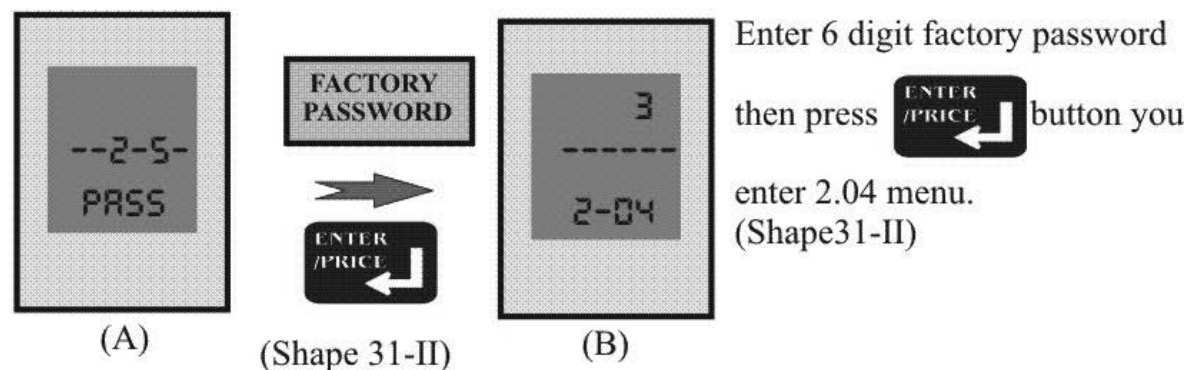
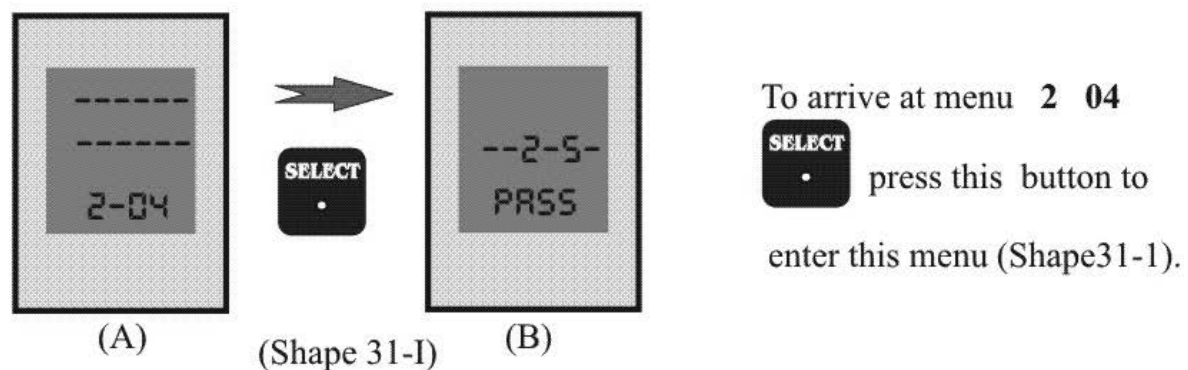
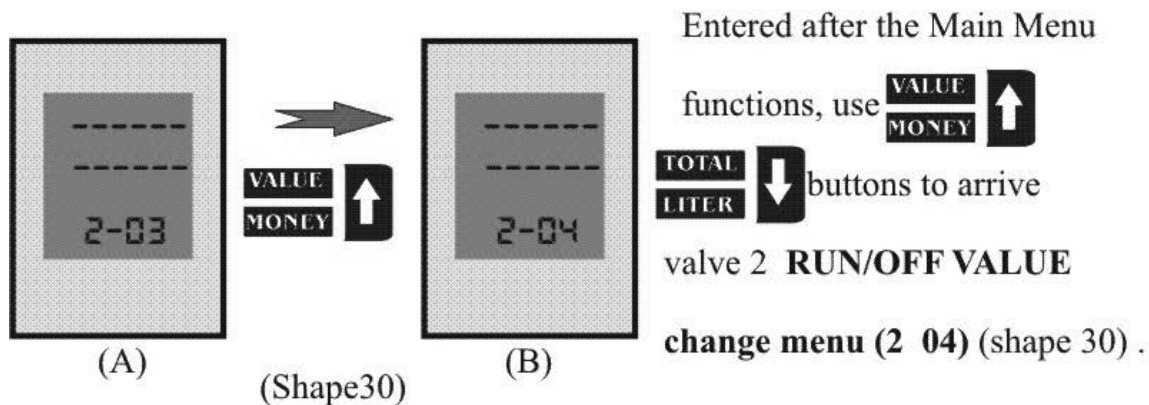


Press this **ENTER /PRICE** button to approval entered value. Press this **ENTER /PRICE** button to delete entered value. Press this **CLEAR** button to save. Press this **SELECT** button to exit from this menu.

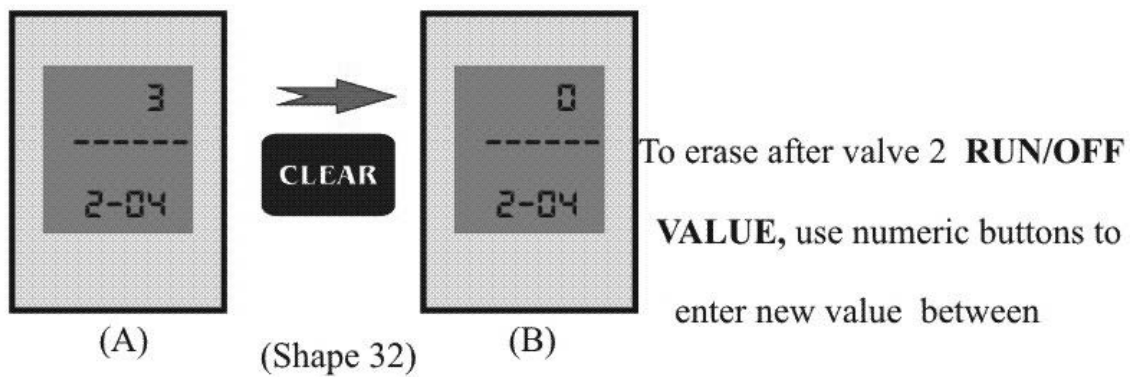
5-) VALVE-2 RUN/OFF VALUE CHANGE (2 04) :

Valve 2 Run/Off value is, to quit valve before the programmed value .

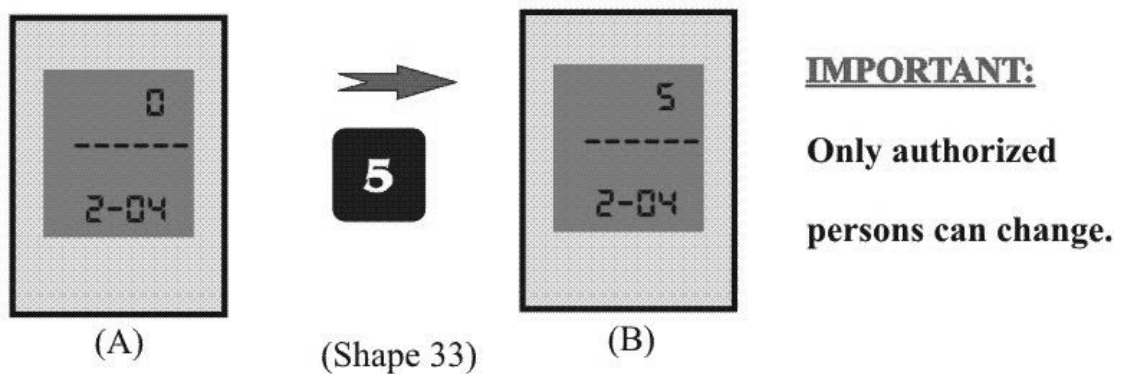
Example ; programmed value like 10 liter , while valve1 Run/Off value is 3 , Valve2 quit at 9.970 lt.



to enter new value press this **CLEAR** button (shape 32) .



Example ; change valve 2 **RUN/OFF** **VALUE** like 45(fortyfive) (Shape 29).

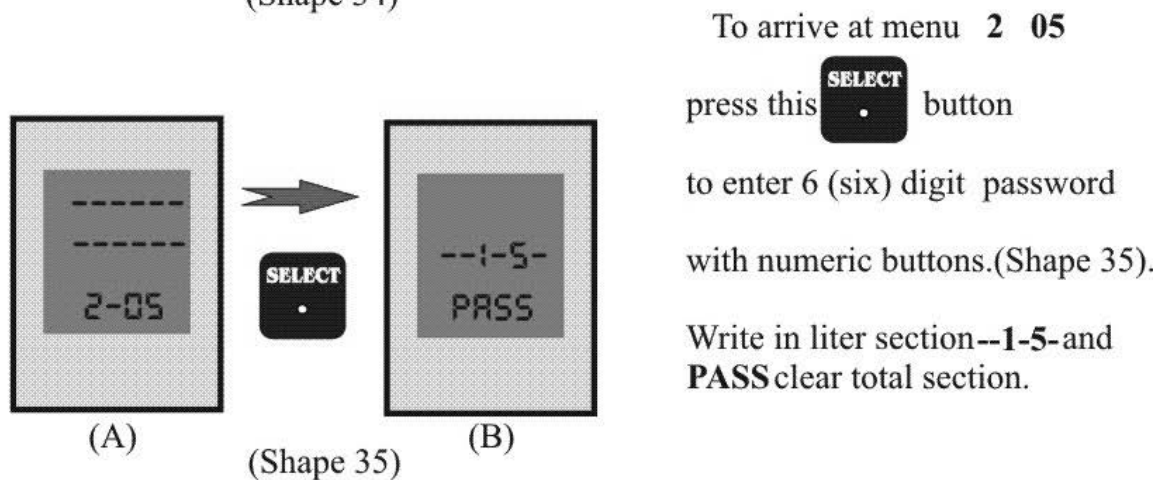
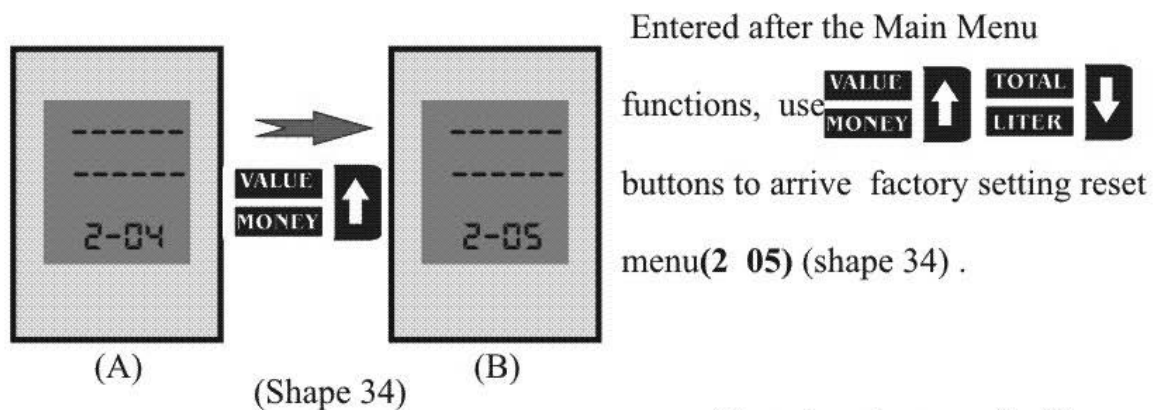


Press this **ENTER /PRICE** button to approval entered value Press this **CLEAR** button to delete entered value. Press this **ENTER /PRICE** button to save. Press this **SELECT** button to exit from this menu.

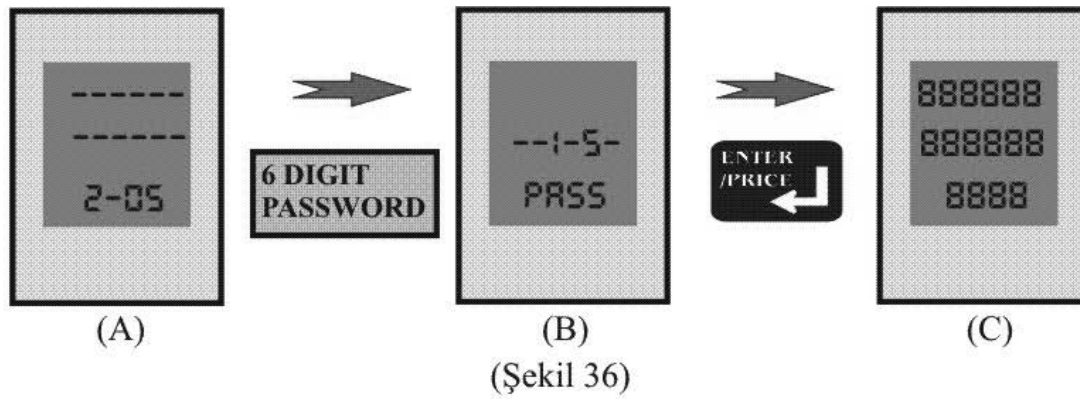
6-) RESET TO FACTORY SETTINGS (2 05) :

At the first operate time or any data are lost about the system, must be reset to factory settings. In this procedure totals and the values isn't lost certainly.

IMPORTANT: Only authorized persons can use this function!



Than press this **ENTER /PRICE** button to approve password. Now factory settings reloaded. (Shape 36)



After pressed this  button all digits will be 888888 for a short period (shape 36-C). Then the screen turns to normal mode.(Shape 36-C)If dont want to reload factory settings press this  button to exit.

Reloaded after factory settings new values are these :

Unit Price : 1234

A Button money program value : 5

B Button money program value : 1

Valve-1 Run/Off value : 20

Valve-2 Run/Off value : 03

Main Total : Unchangeble

Previous sales : non-erased

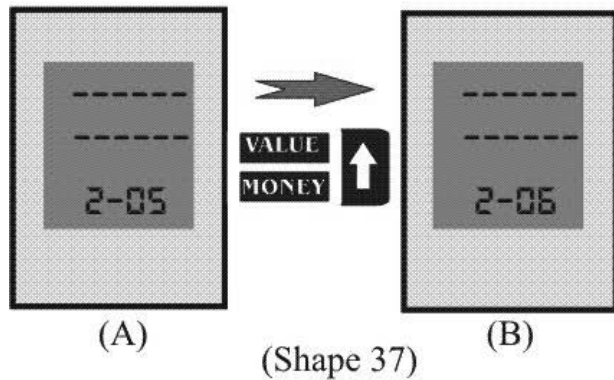
Put a digit to unit price : 5

Counter no :Unchangeble

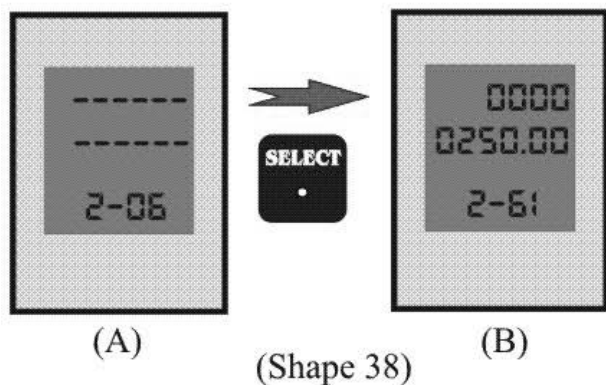
User password :unchangeble

7-) TO SEE AND TO RESET MAIN TOTALS (2 05) :

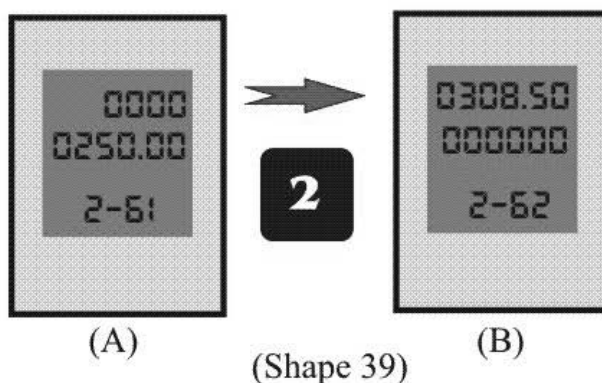
Main total is , to see all liter and money sales section. Needed a private (factory) password to reset main totals. Don't want password to see main totals.



Entered after the Main Menu functions, use **VALUE** **MONEY**  buttons to arrive main total menu (2 06) (shape 37) .



To arrive at menu 2 06 press this **SELECT**  button to enter this menu (Shape 38).



First, main liter total shows on screen, press **2** to see main money total. Press this **1**  button to return main liter total. (Shape 39)



(Shape 40)

Main liter total is shows on liter digit section. (shape 38).

Main liter total isn't fit in to liter digit section, the excess part shows on total digit section (Shape 40)

for example: main liter total is 120 000.00 (onehundredtwenty thousand) shows like (shape 40).



(Shape 41)

Main money total is shows on total digit section. (shape 39-B).

Main money total isn't fit in to total digit section, the excess part shows on liter digit section. (Shape 41) .

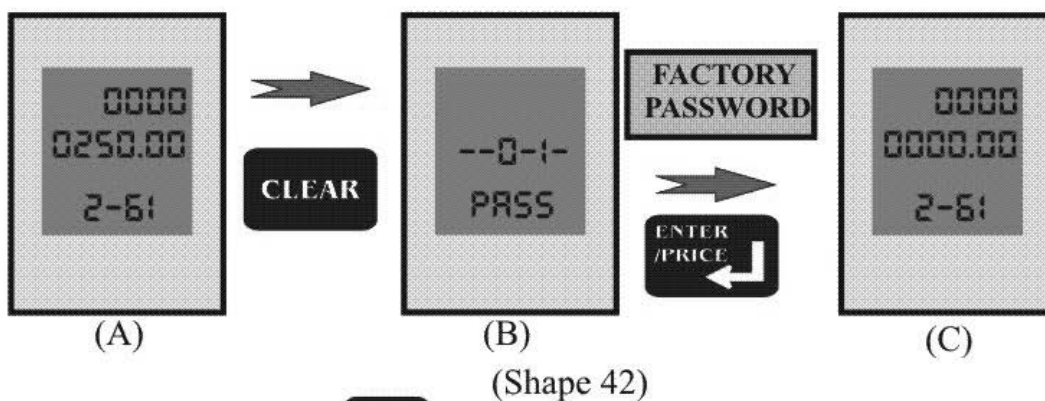
For example: main money total is 15 000 (fifteenthousand)

shows like (shape41).To delete main money and liter totals

press this **CLEAR** button to arrivepassword screen (shape 42-B) , enter

the right password press **ENTER /PRICE** button to delete main totals (shape 42-C) .

If entered wrong password unit price digit write **3 00** excitation message



To exit from this press **SELECT** button.

8-) TO SET FAILURE (2 07) :

In this menu , you can set the failure codes as active(1), or passive (0)for the Motor,Valve,Total etc.on dispenser.

Failure Codes:

9 02 : Pulser's signal cable connection problem *

9 03 : **Pulser not connected** *

9 10 : **Total Not connected**

9 11 : **Total not working**

9 15 : Communication with meter problem **

AtC : ATC communication problem *

noFL : Low Flow

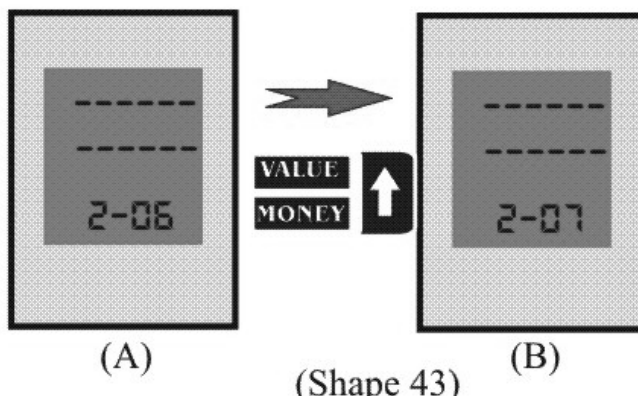
* Note: In Idea type dispenser doesn't use pulser and ATC so you don't see the failure codes of pulser and ATC which are 9 02, 9 03, AtC at dispenser.

** In Punto type dispenser hasn't electronic transmeter in meter so you don't see the 9 15 failure code at dispenser

!!!WARNING:

noFL When low flow failure set as 1 (active) , in filling position flow goes under 3 lt/min(fixed value) value,it writes noFL unit price screen and ends the filling

To set failures as Active (1) or Passive (0) use     buttons to arrive (2-07)menu(Shape 43) .



Then you enter set failure menu (shape 44-C) .

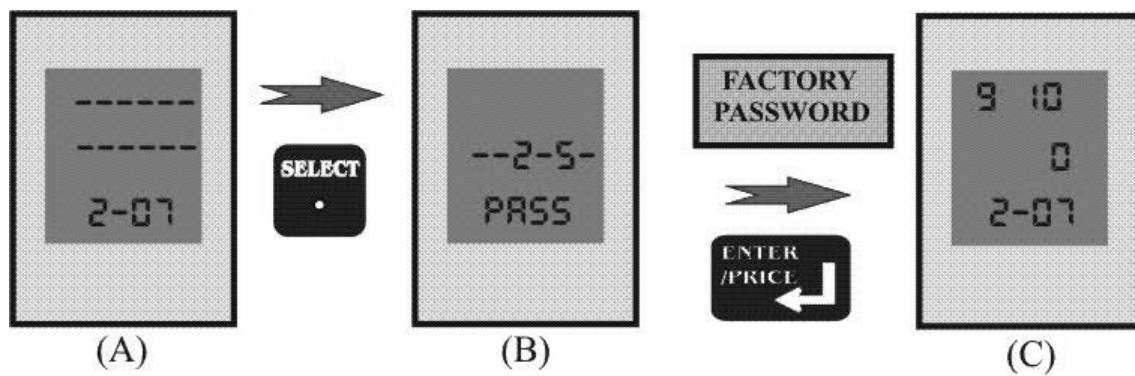
When you reach 2 07 menu press

 button you see password

screen (Shape 44-B) . Enter 6 digit

password and then press 

button.

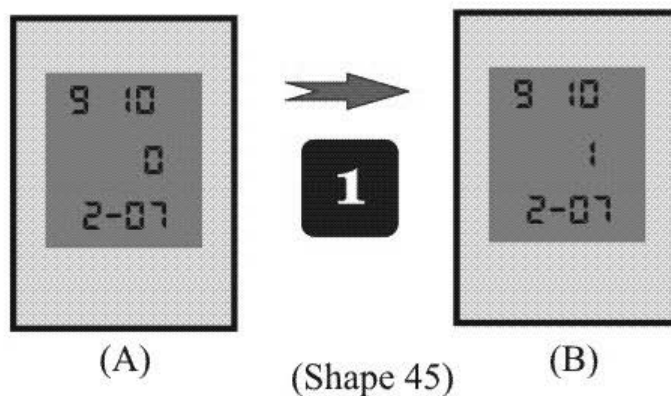


(Shape 44)

When you reach 2 07 menu you see the Shape 44-C screen. . Press

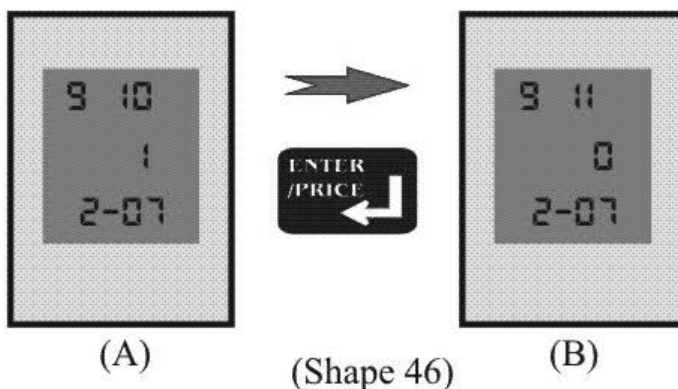
0 button set the failure passive (0), press **1** button set the failure active (1) (shape 45) .

Example ;set the Total not connected (9 10) ,failure as active (1) ;



(Shape 45)

After choosing active (1) or passive (0) press **ENTER /PRICE** button you reach the next failure screen (Shape46) .

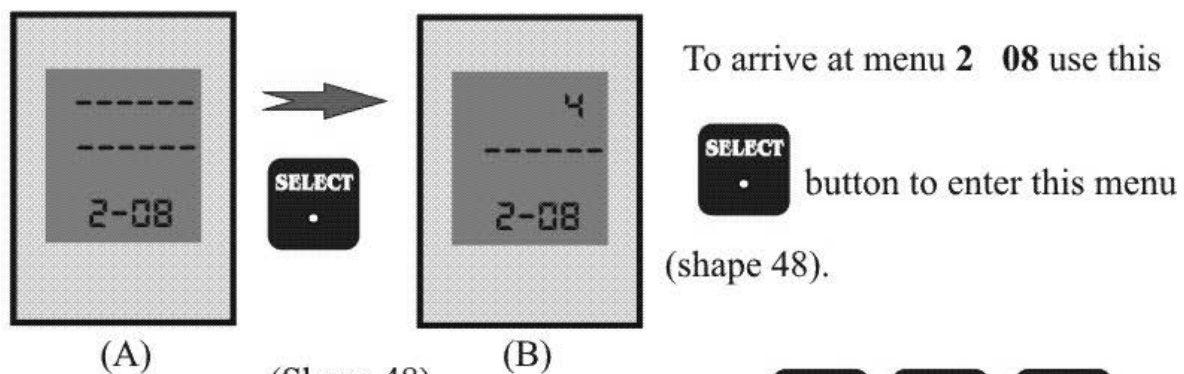
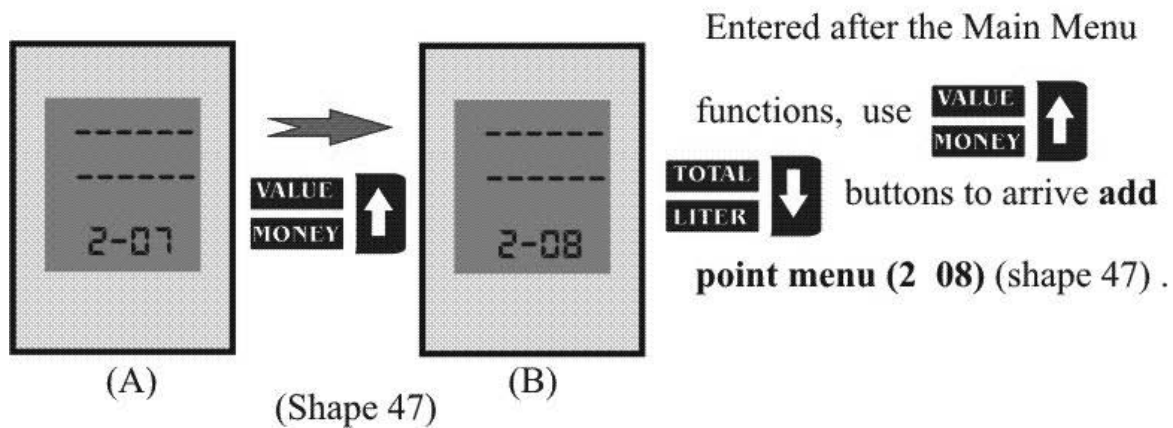


(Shape 46)

Repeat this for all the failure settings. To escape press. **SELECT**

9-) ADD POINT TO UNIT PRICE (2 08) :

This menu to use unit price as a tenth.



There is a 6(six) alternative in this menu. use these **0** **1** **2** ,

3 **4** **5** buttons to form 5 (five) different unit price.

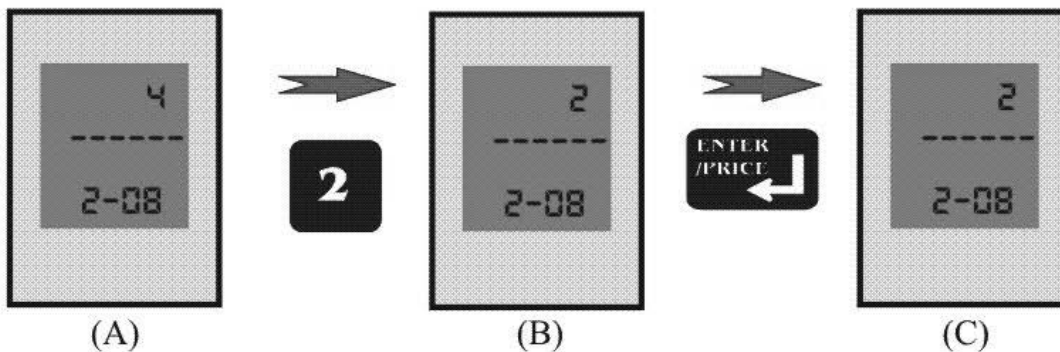
For example; if unit price as **1234** ;

- 0** If press this button unit price section setted like **1234**
total section not a tenth.
- 1** If press this button unit price section setted like **123.4**
total section seperated to one step
- 2** If press this button unit price section setted like **12,34**
total section seperated to twosteps

3 If press this button unit price section setted like 1,234 total section seperated to three steps.

5 If press this button dispenser turns into money and cashregister mode .
Unit price seperate three steps total seperates two steps.
Only choose for **TURPAKsystem automation+cash register+ABU**

After select press this  button to save (shape 49)



(Shape 49)

If did'nt press this  button it can't save.

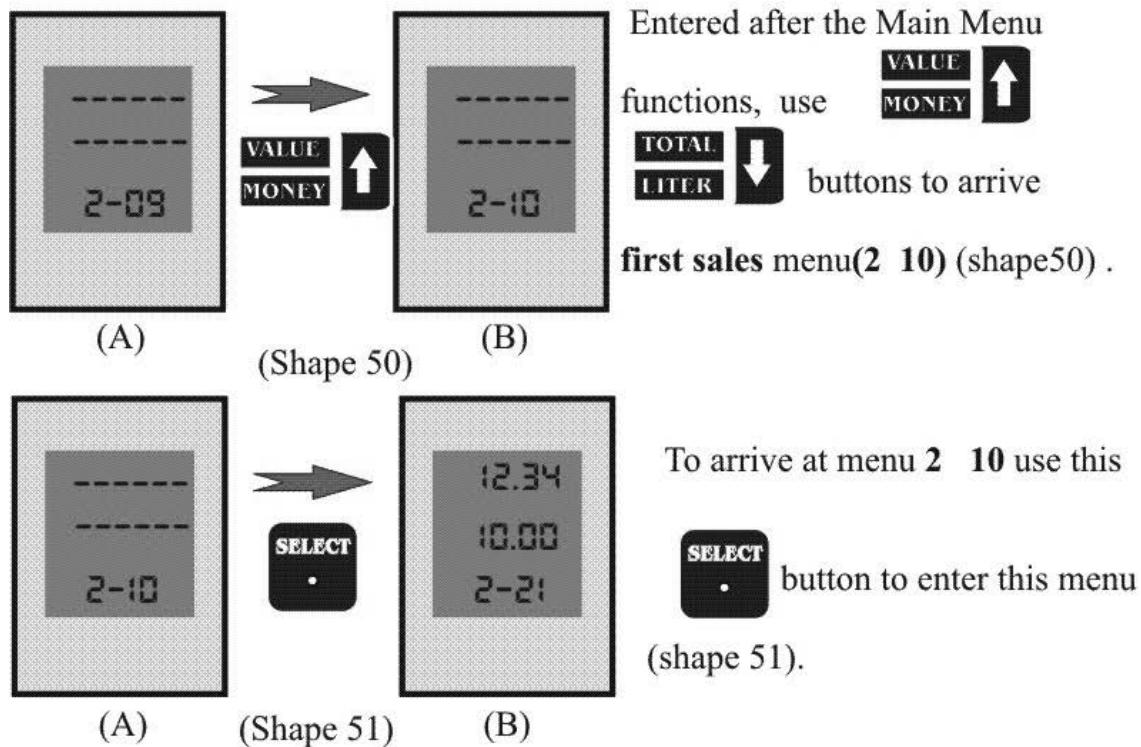
To exit from this menu press  button.

10-) COUNTER NUMBER (2 09) :

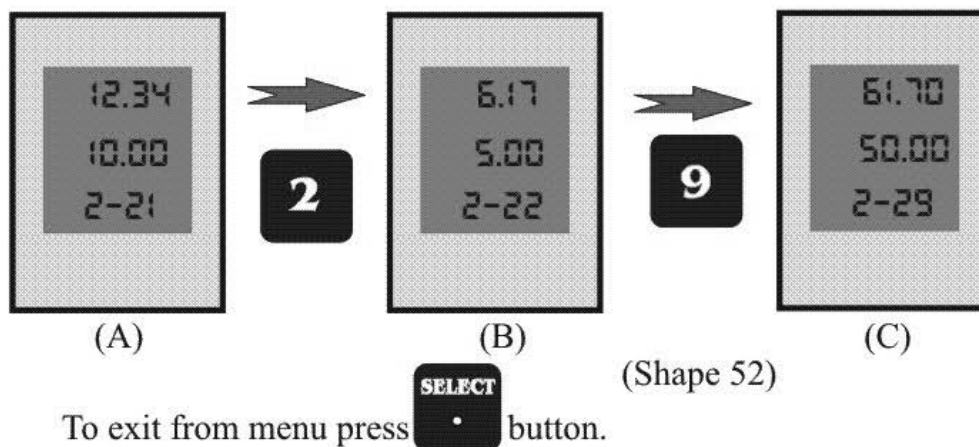
In this section there is a counter number given by the producer. This number cannot be changed by unauthorized person. .

11-) FIRST SALES (2 10) :

You can see the last 9(nine) sales in price and as in Liter.

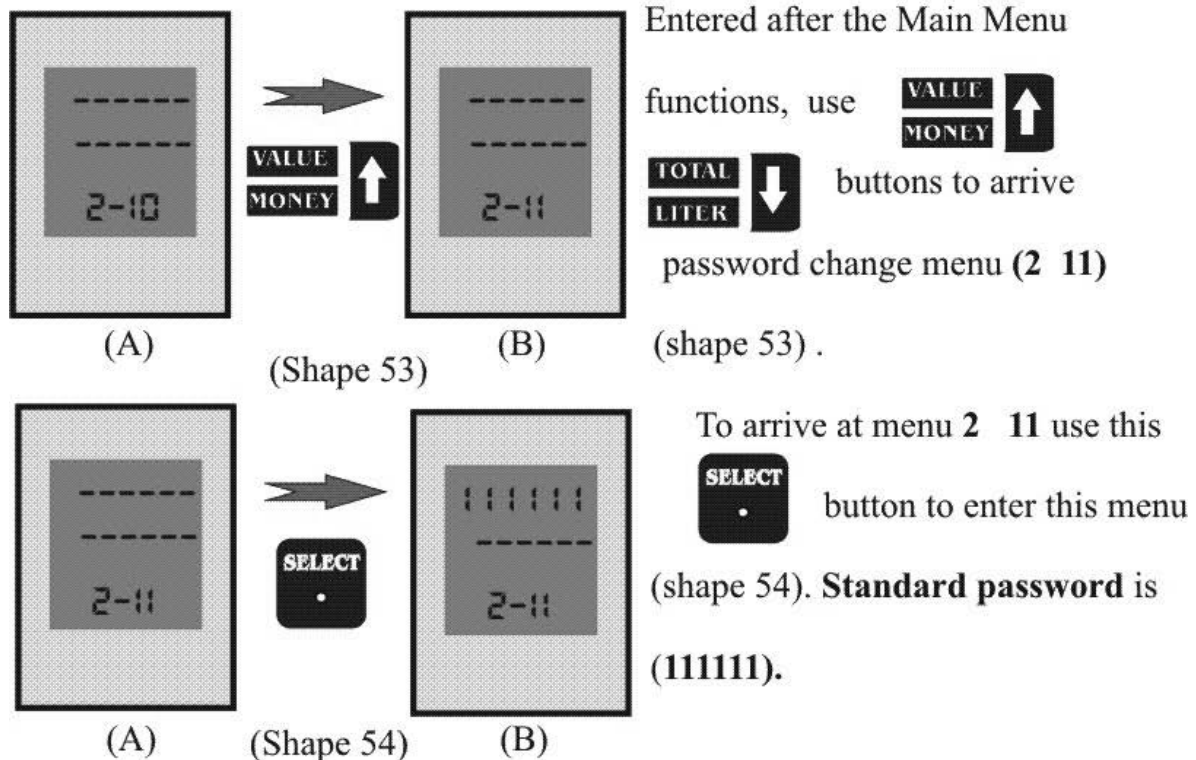


When you enter this menu you see shape 51-B screen. You can see last 9(nine) sales in price and as in liter by using numeric buttons.(1---9) (Shape52).



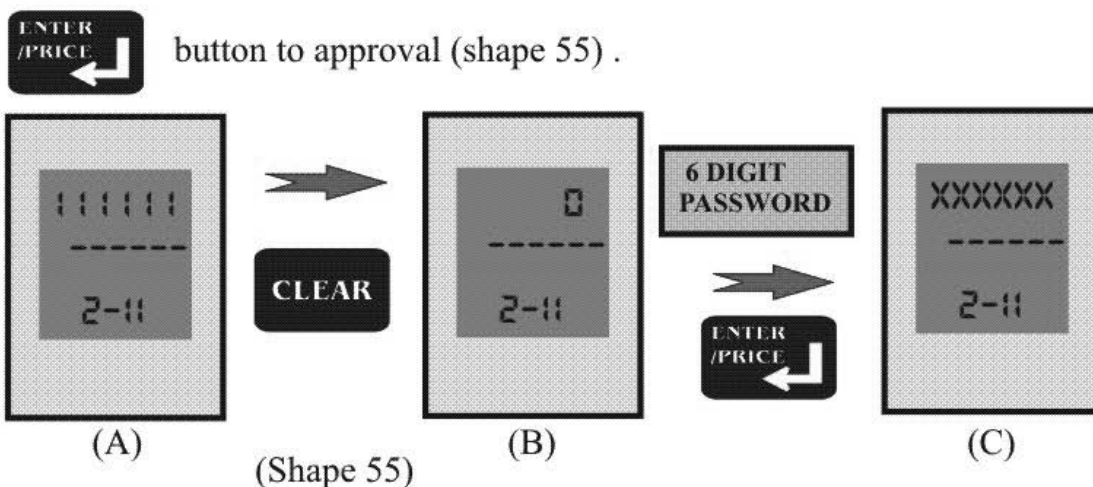
12-) PASSWORD CHANGE (2 11) :

This menu for to change personal password .



Entered after this menu screen shows like (shape 54-B). To change password first press **CLEAR** button(shape 55).

Then use numeric buttons to form new personal password and press

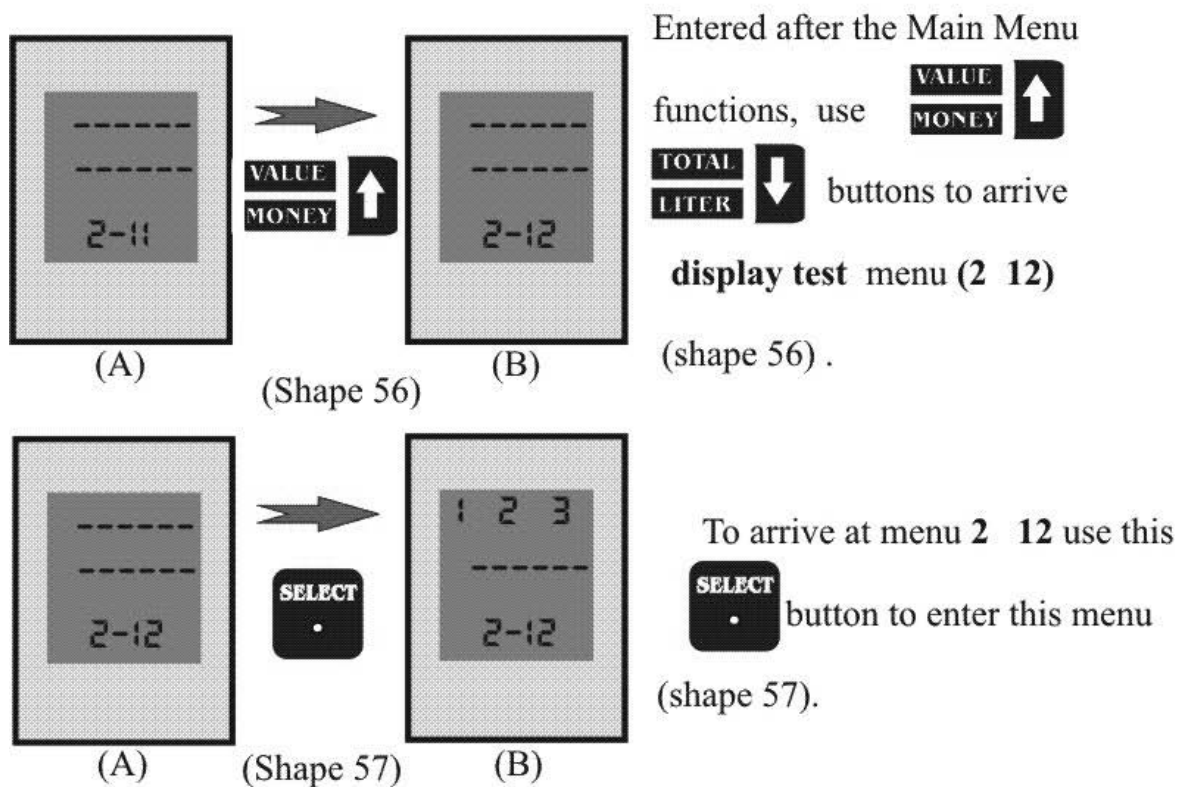


If didn't press  button it can't save.

To exit from this menu press .

13-) DISPLAY TEST (2 12) :

This menu to test displays for any segments problem.



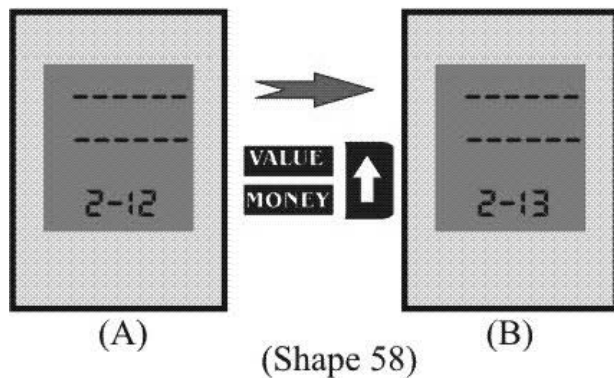
Entered after this menu screen looks like shape 57.

In this menu use    buttons to control the displays on the counter.

To exit from the menu press  button.

14-) FIRST SALE VALUE SET TO BE WRITTEN TO THE SCREEN (2 13) :

In this menu you can set the first sale value for the transaction..(0-90 ml.)

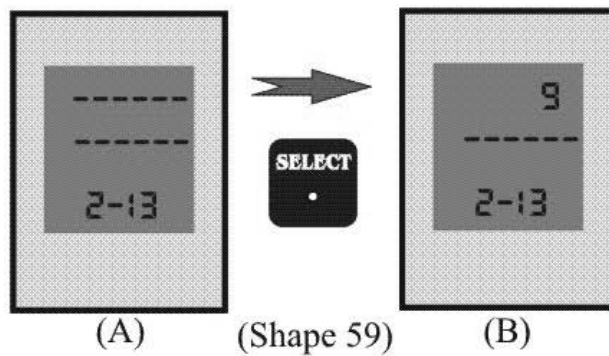


After entering main menu functions

use  

buttons to reach setting first value

2 13 menu (Shape 58) .



When you reach 2 13 menu, press



button to enter. (Shape 59) .

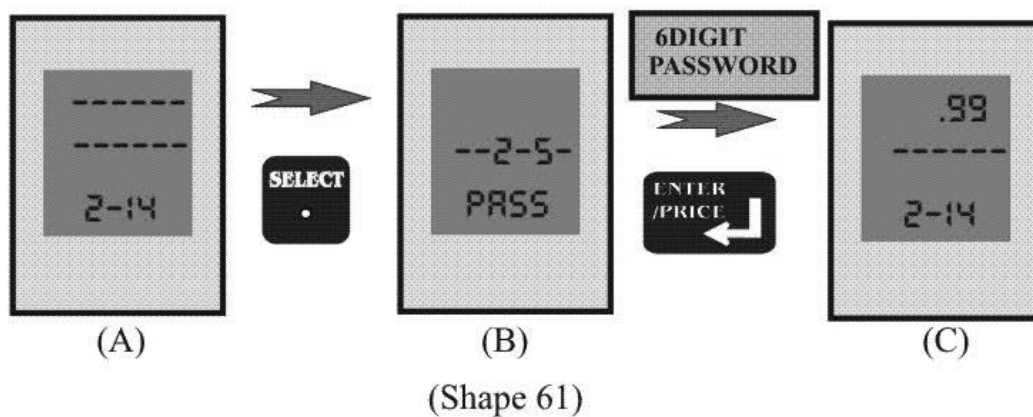
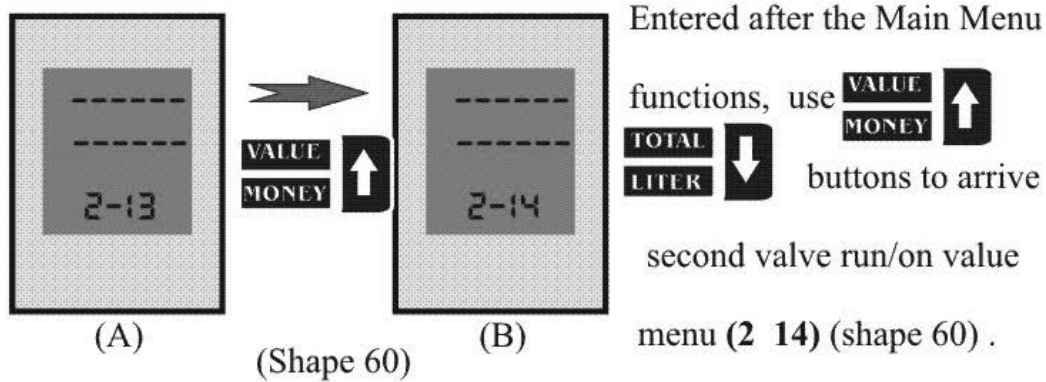
When you enter you see Shape 59-B screen . In this section use

  Buttons to set first value and enter between (0- 9)

To exit from the menu press  button .

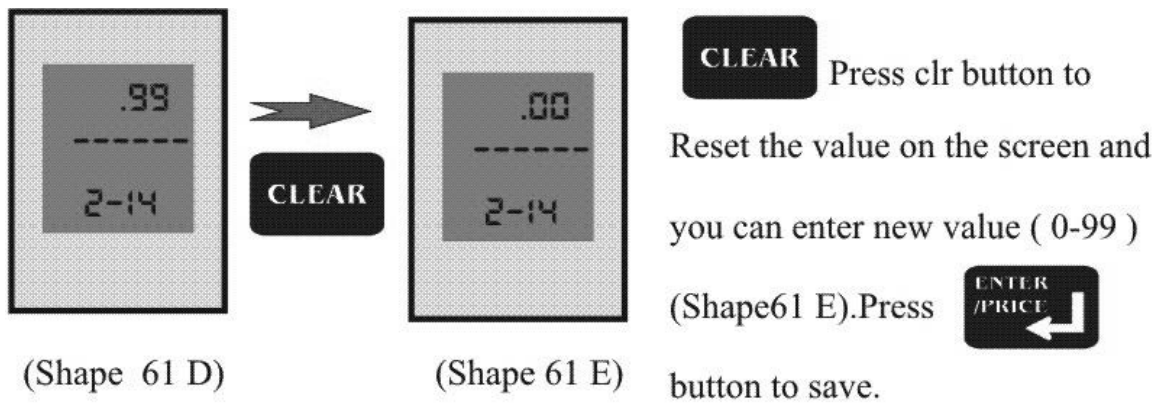
15-) SECOND VALVE RUN/ON VALUE (2 14)

This menu for to set second valve run/on value between (0-99) after first valve.



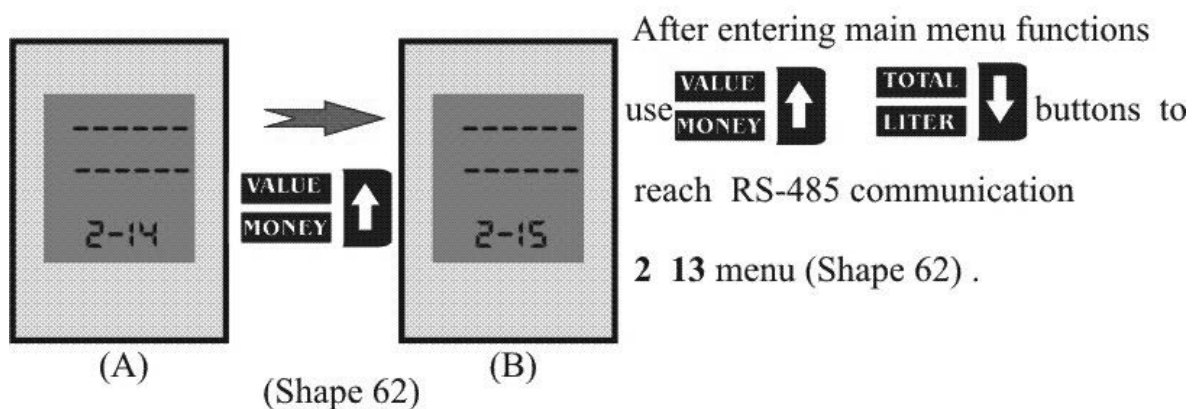
Press **SELECT** **.** button to enter 2 14 menu. (Shape 61 B).

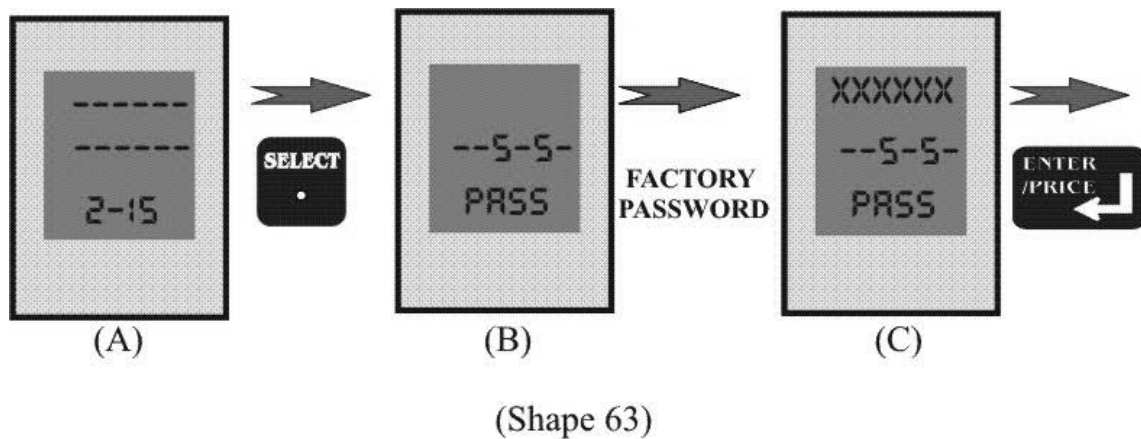
Use numeric buttons to enter password and press **ENTER /PRICE** **←** button to reach (shape 61 C) screen.



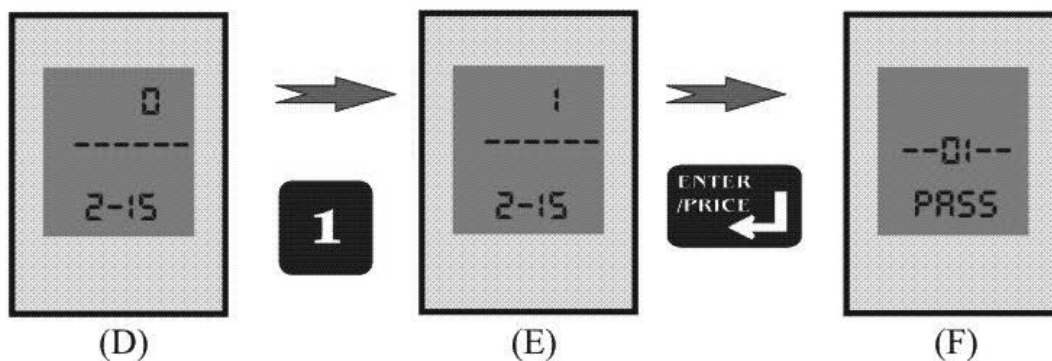
To exit from the menu press **SELECT .** button .

16-) RS-485 COMMUNICATION MENU (2 15)





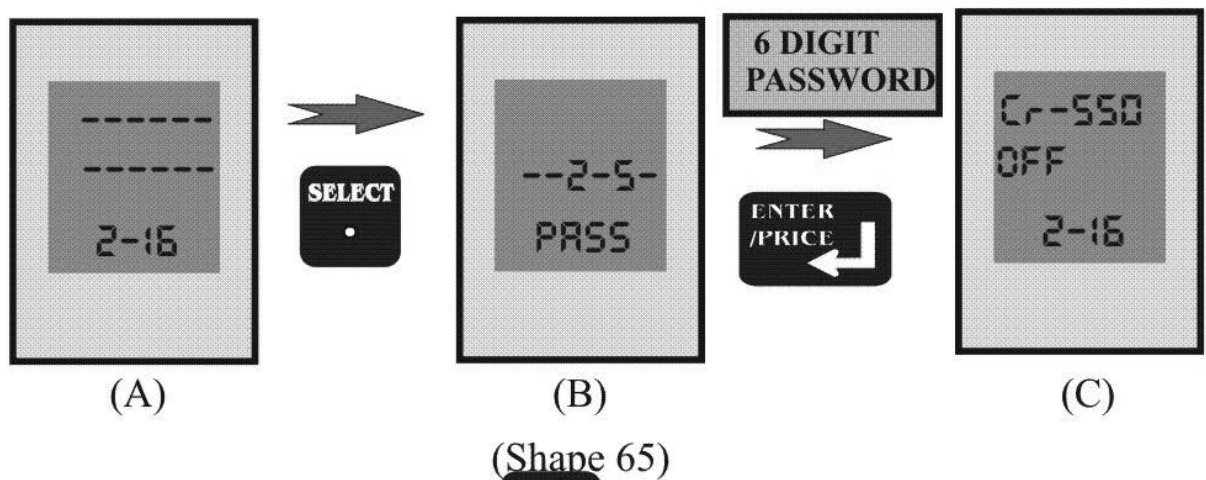
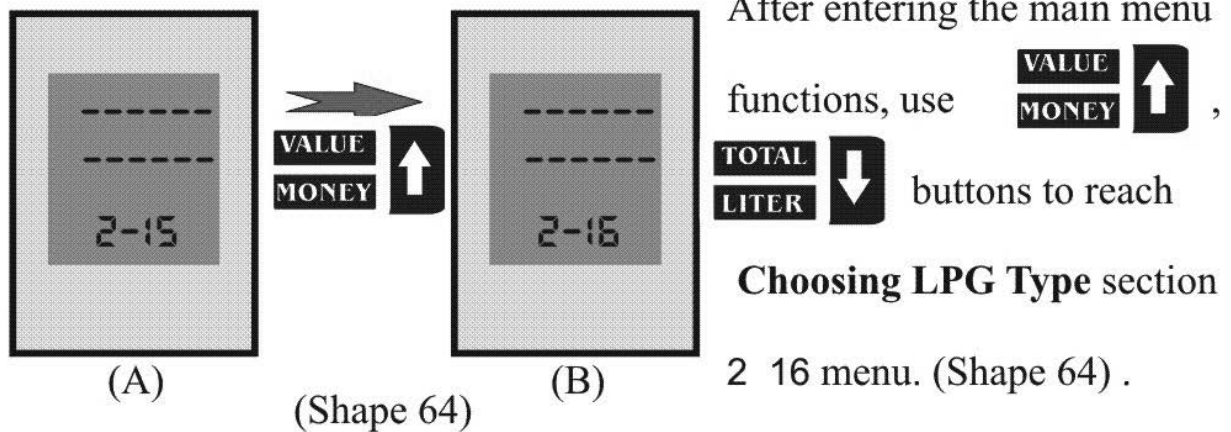
Use **SELECT** button to enter 2 15 menu. Use numeric buttons and press **ENTER /PRICE** button to enter shape 63 D screen.



In shape 63d screen press **1** button and then press **ENTER /PRICE** button to reach password screen. Enter factory password and press **ENTER /PRICE** button. So you make the communication feature active.

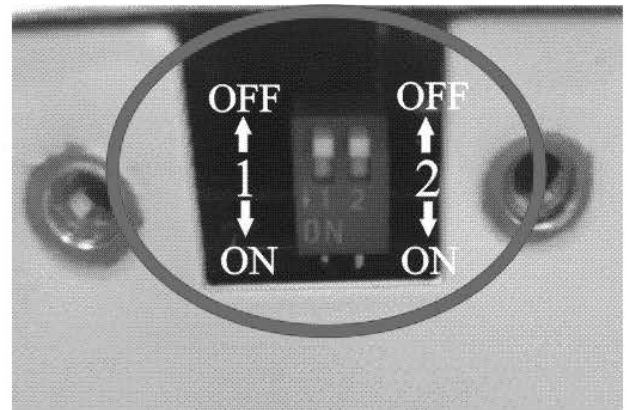
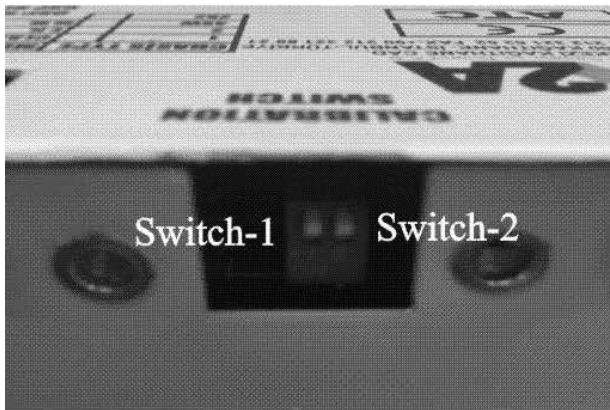
To exit from the menu press **SELECT** button.

17-) CHOSING LPG TYPE(DENSITY) (2 16) :



After reaching 2 16 menu press **SELECT**  button to enter this menu (Shape 65 B).

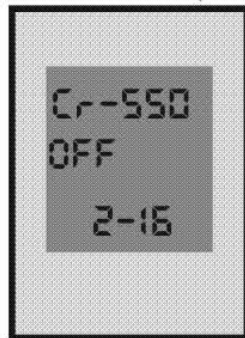
Enter factory password by using the numeric buttons, press **ENTER /PRICE**  button to reach (shape 65 C) screen.



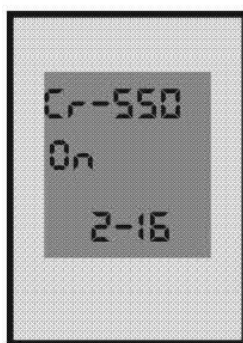
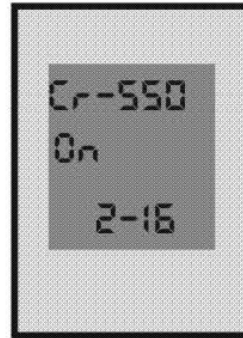
(SHAPE 78)

To save the operations on this menu, turn the Switch-I ON(open) under the sealed cover (Shape78).

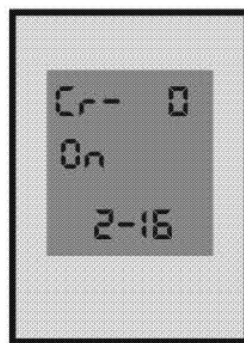
Switch-1 OFF(Closed)



Switch-1 ON(Open)



(Shape 65 D)



(Shape 65 E)

Press **CLEAR** Button to reset the value on the screen to enter new value(between 500-650),(Shape65 E).

After entering the new value

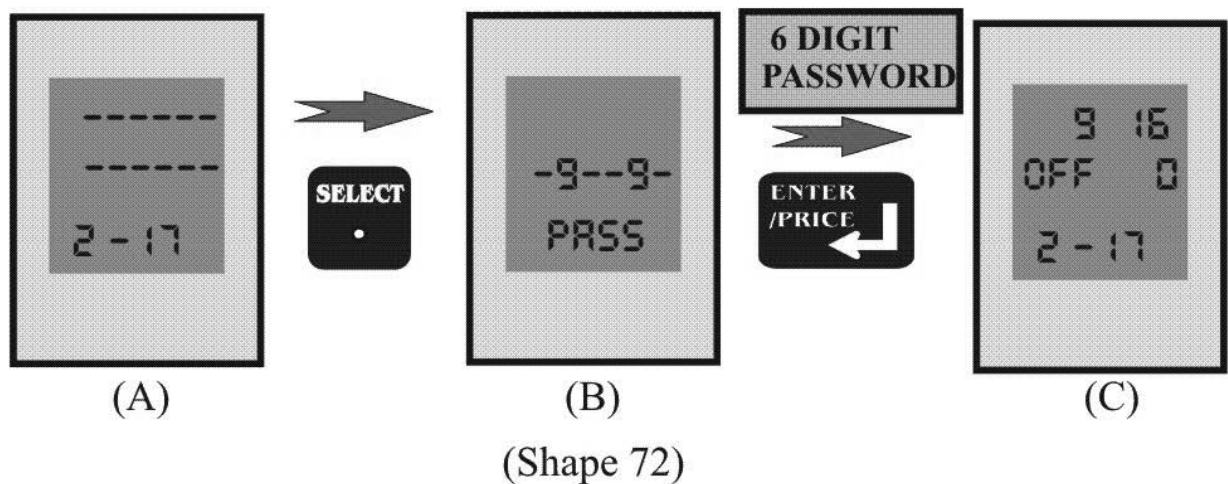
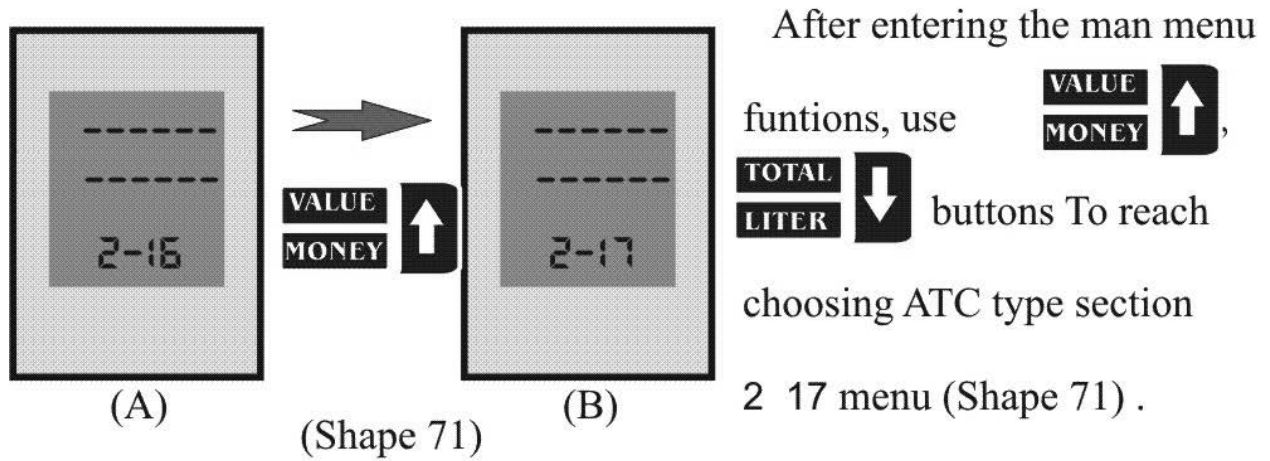
press **ENTER /PRICE** Button to save

To exit from the menu press

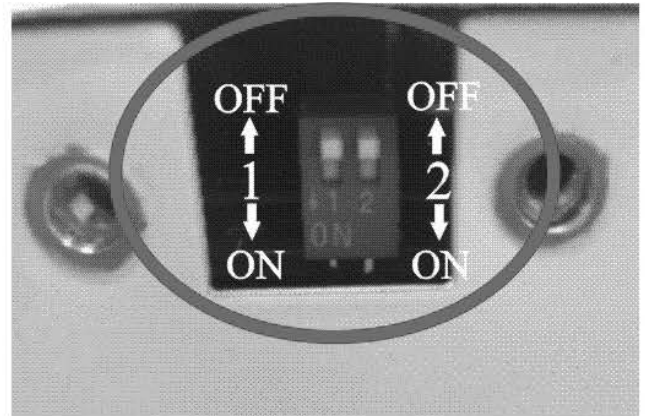
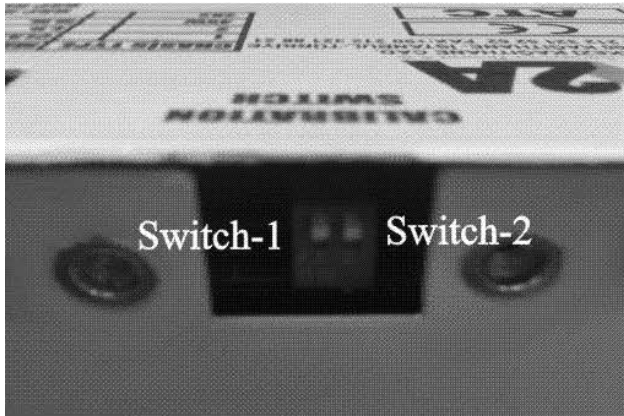


button

18-) TO MAKE ATC ACTIVE OR PASSIVE (2 17) :



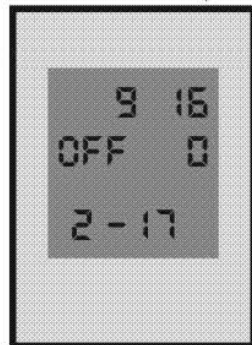
After entering 2 17 section press **SELECT**  button to enter the menu(.Shape 72 B).
Enter factory password by using the numeric buttons, press **ENTER /PRICE** 



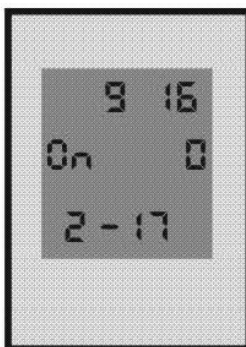
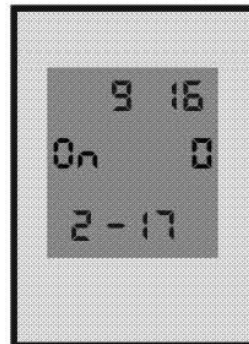
(Shape 79)

To save the operations on this menu, turn the Switch-I ON(open) under the sealed cover (Shape7).

Switch-1 OFF(closed)

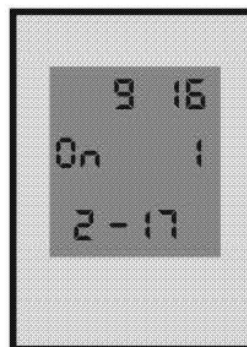


Switch-1 ON(open)



(Shape 72 D)

Button to save.



(Shape 72 E)

When you reach this screen use



Or



buttons

to make ATC passive or active

.(Shape 72 E).

After enter value press

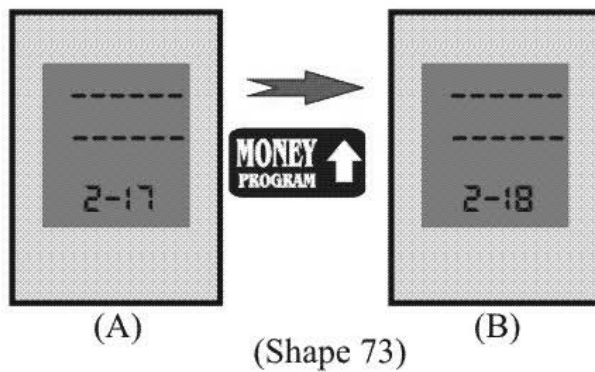


To exit from this menu press

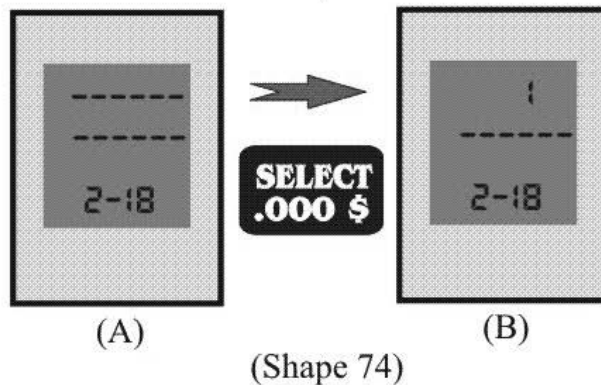


button.

19-) DISPLAY LED BACK-LIGHT COLOR SET (2 18) :



After entering main menu functions, use **VALUE** **MONEY** **↑** **TOTAL** **LITER** **↓** buttons to reach **2 18** menu(Shape73) .



At **2 18** section press **SELECT** **.** button to enter this menu.

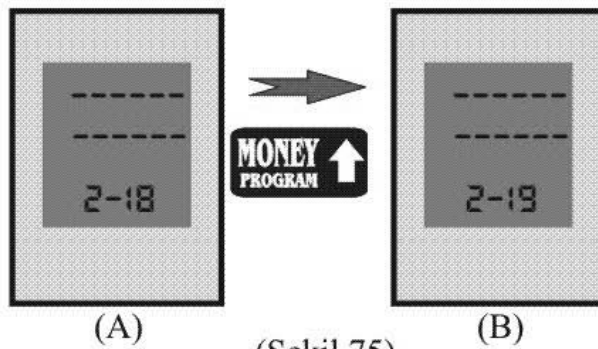
In this menu you have 4(four) options.You can choose 4 different backlight color modes by using numeric buttons.

- 1** Always green.
- 2** Always orange.
- 3** In Standby Orange ,During filling Green
- 4** In Standby Green,During filling Orange.

Press **ENTER /PRICE** **↩** button to save

To exit from the menu press **SELECT** **.** button.

20-) ADDING TO ABOVE LINE DURING SALE AND FINISH SALE(2 19):



(Şekil 75)

After entering main menu functions, use **MONEY PROGRAM** button to reach adding to above line **2 19** menu .

In this menu you have 4 (Four) options. You can select four different modes by using the numeric buttons.

- 0** Adding to above line is Off
- 1** Flow rate control
- 2** Buton control (When you want to add to above line and finish sale press A button)
- 3** Flowrate+Button control

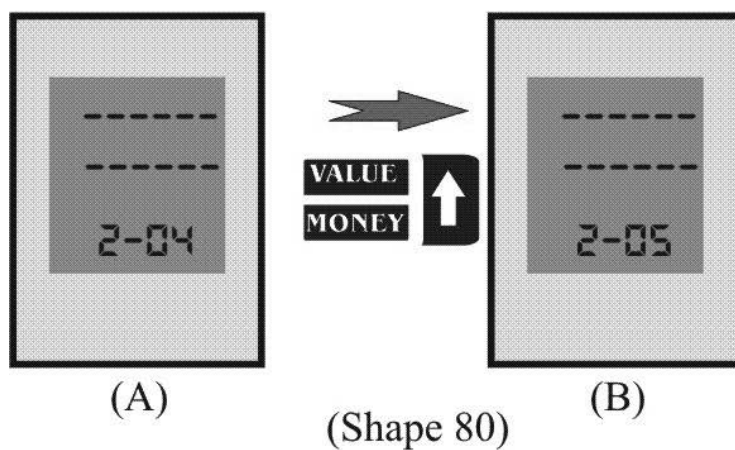
To approve thne new value prss **ENTER /PRICE** button. So it can be saved.If you don't

press **ENTER /PRICE** button it can't be saved. To exit from the menu press **SELECT .** button.

21- PULSER CALIBRATION MENU:

In this section, with the help of the fixed value, you can be able to use different type of pulsers(produces different numbers of pulses in one tour) and to give opportunity for electronic fine tuning on conditions of unable to make mechanical calibration

To make these settings do the following ;

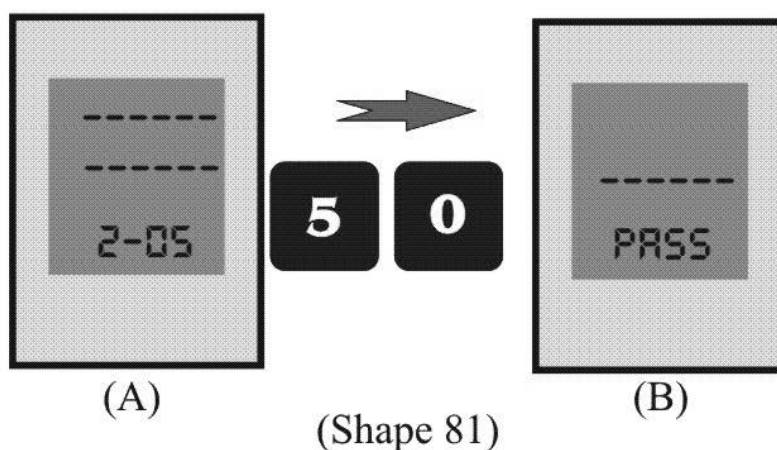


After entering the main menu functions, use **VALUE** **MONEY** , **TOTAL** **LITER**  buttons to enter

Load Factory Settings sections

2 05 menu

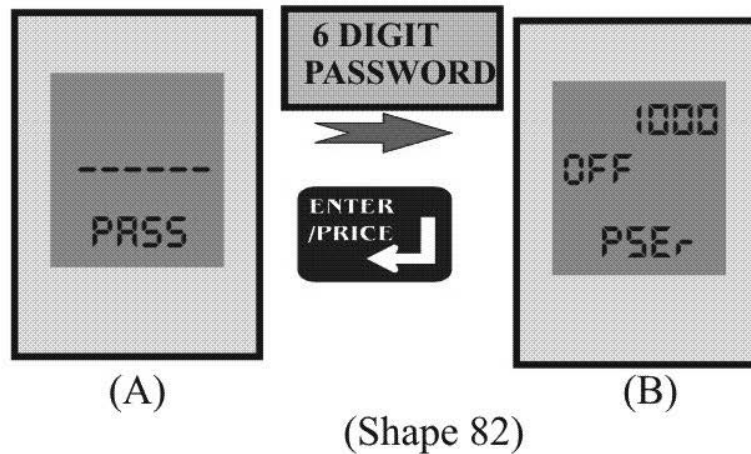
(Shape 80) .



In this section type **50 (Fifty)** by using the numeric buttons (Shape 81) .

When you reach Shape 81-B screen, **enter your password**

, press  button (Shape 82) .

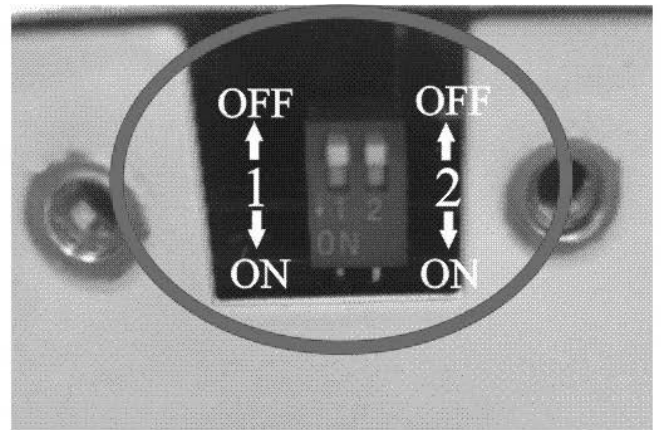
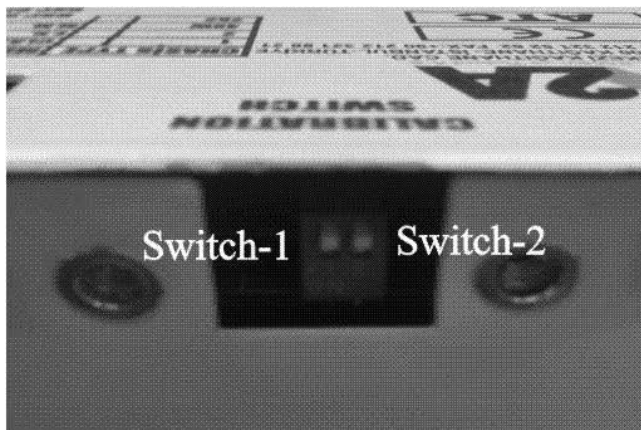


When you enter this section, you will reach Shape 82-B screen. Here, the value on the Total section, after every 50 (Fifty) electronic pulse (it stands for **2 Tours in Standart 25 slot Pulser**) generated by Pulser unit will be written on **Given Liter** section.

For Example ;

For 25 Slot, 50 Pulse generated Pulser standart value 1000

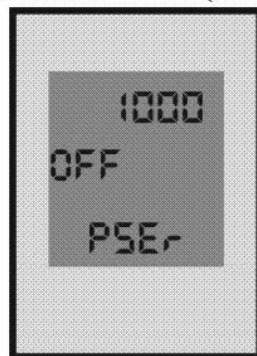
For 50 Slot , 100 Pulse generated Pulser standart value is 500



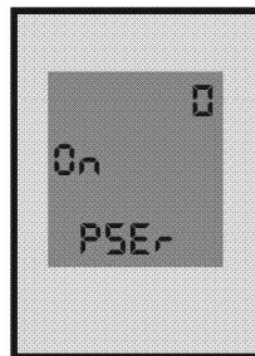
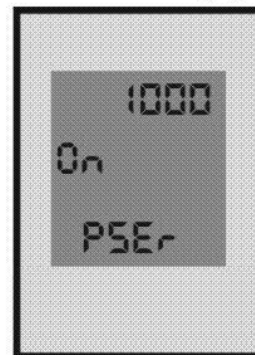
(Shape 83)

To save the operations on this menu, turn the Switch-I ON(open) under the sealed cover (Shape83).

Switch-2 OFF(closed)



Switch-2 ON(open)



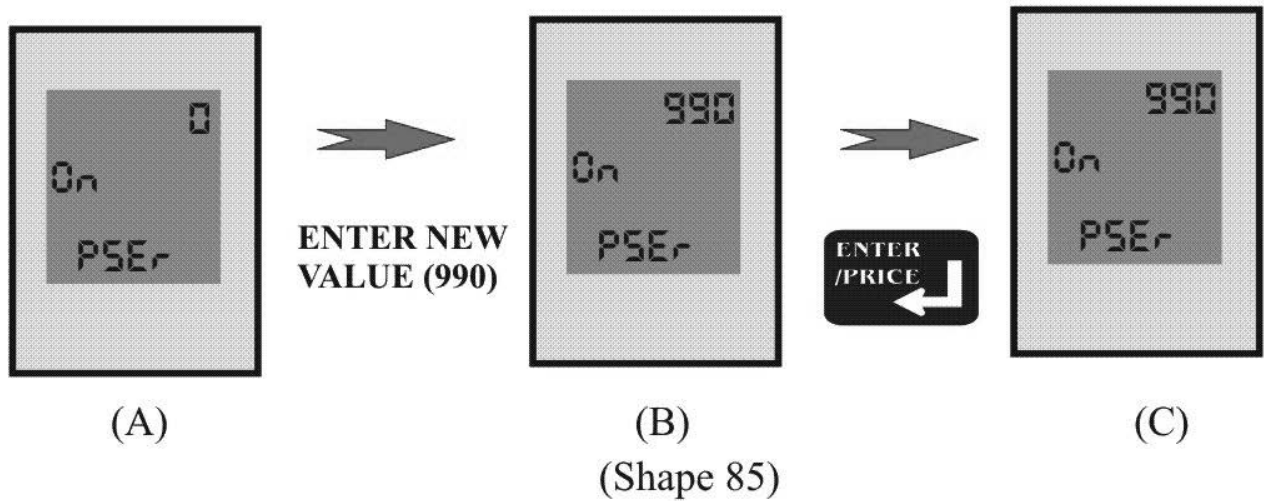
Press

CLEAR

button to enter a new
Value(Shape 84)

(Shape 84)

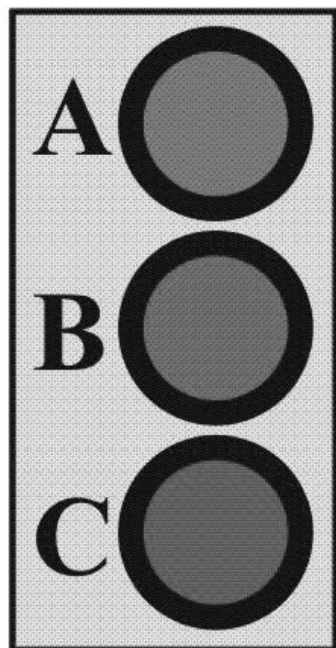
When you reach Shape 84-B screen enter new value by using the numeric buttons. After entering the new value, press  button (Shape 85) .



After entering the new value press  button to save

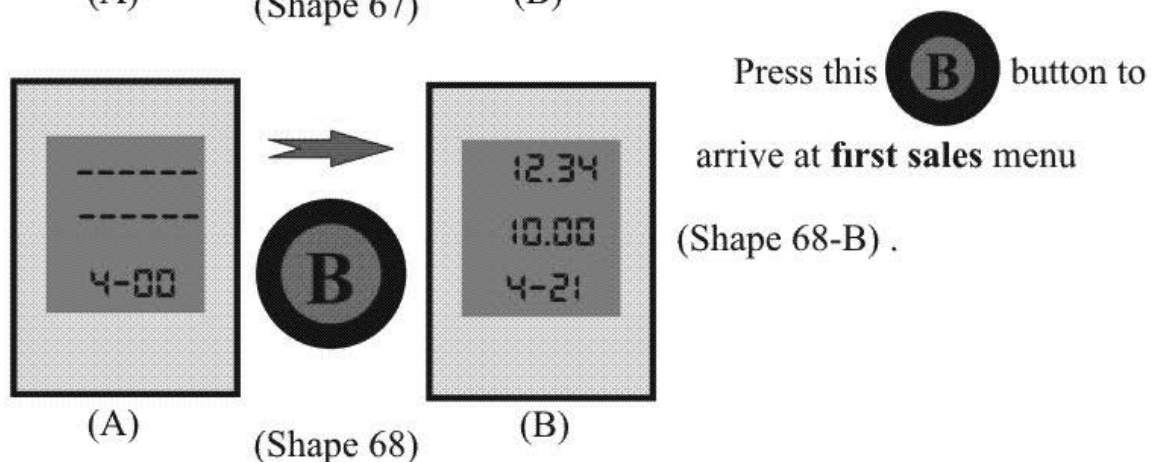
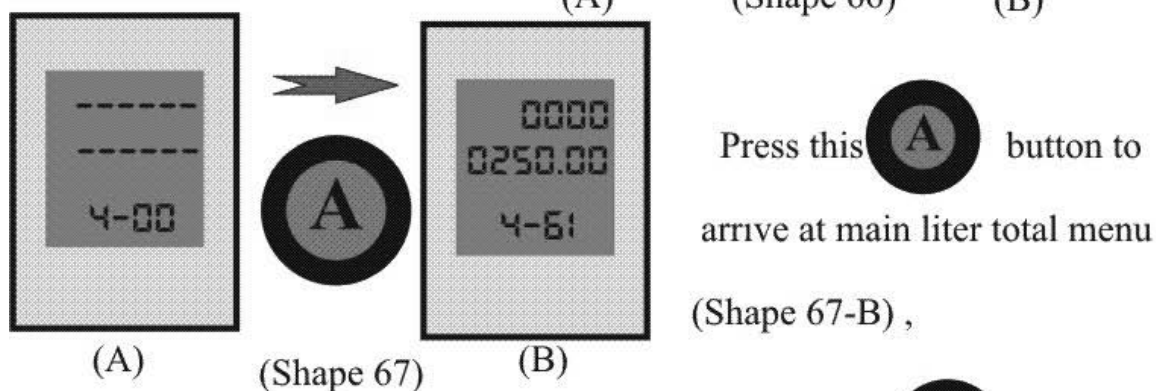
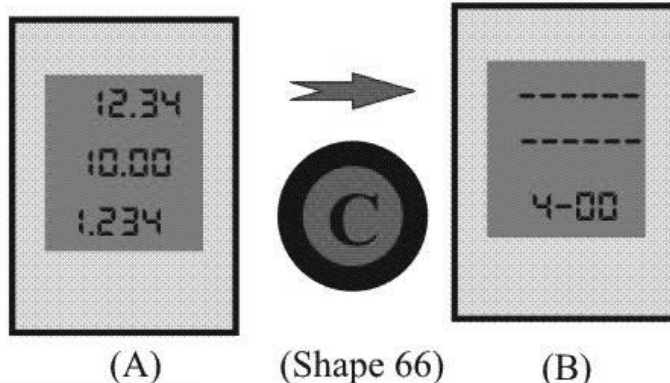
To exit from this menu, press  button.

LOOKING TO FIRST SALES AND MAIN TOTAL WITH PROGRAMME BUTTONS (4 00) :

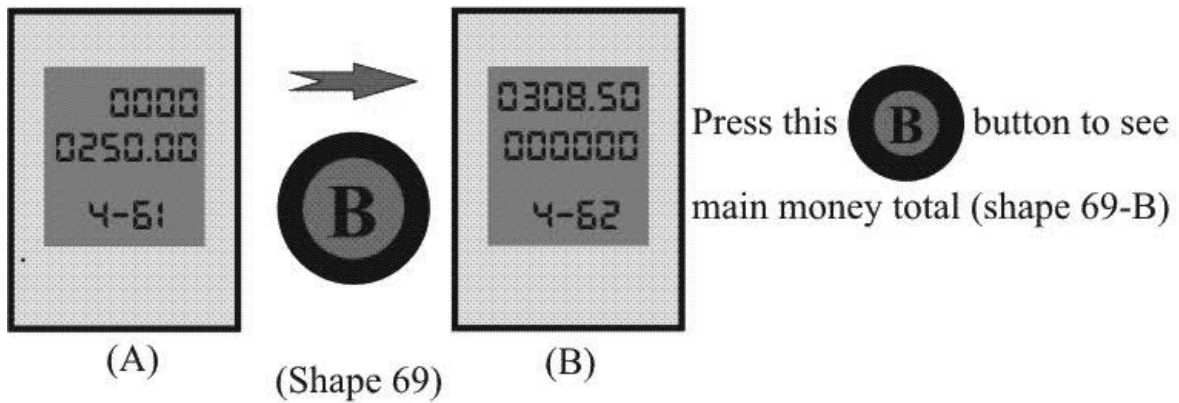


You can see the main total and first sales with 3 (Three) button on dispenser.

Press this  button to enter this menu.
(Shape 66-B)



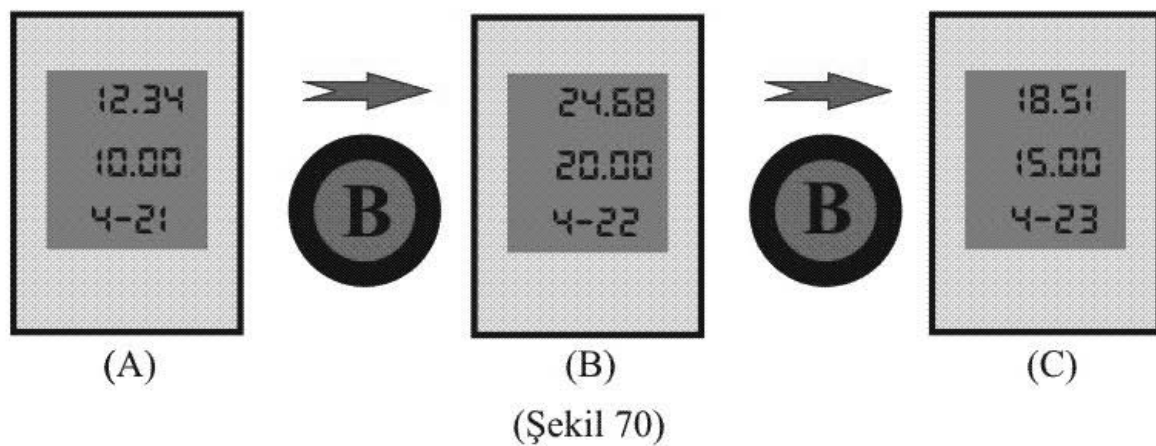
Entered after main total menu, screen looks like (shape 69-A) .



To exit from this menu press  this button.

Entered after the first sales menu, screen shows like (shape 70.)

Press this  button to see **first sales** (shape 70) .



To exit from this menu press  this button.

EMERGENCY STOP FUNCTION:

This function stops dispenser in extraordinary state By pressing

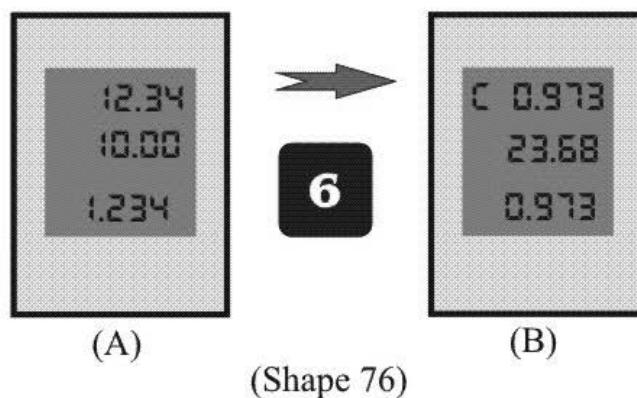


Button you can stop the dispenser immediately After the

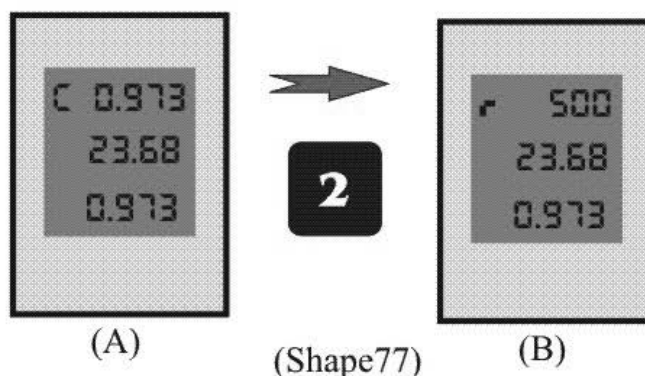
extraordinary state you can put the pistol into its place and continue on working

PULSE MULTIPLIER WITH TEMPERATURE CONTROL AND SEEING THE LPG DENSITY

In idle mode press **6** button you see the shape 76B screen. On the screen you see the litre multiplier value and LPG temperature.



If you press **2** button in shape 71B screen, you will reach shape 77B screen. On this screen you see Lpg density value on the above line.

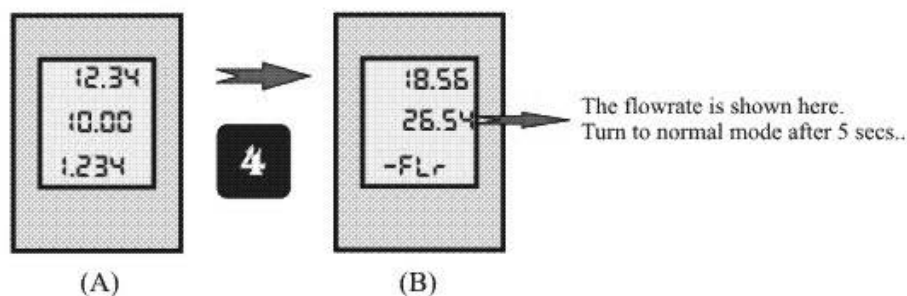


EPS-37V1

DISPENSER KEYBOARD BUTTONS EXTRA FUNCTIONS:

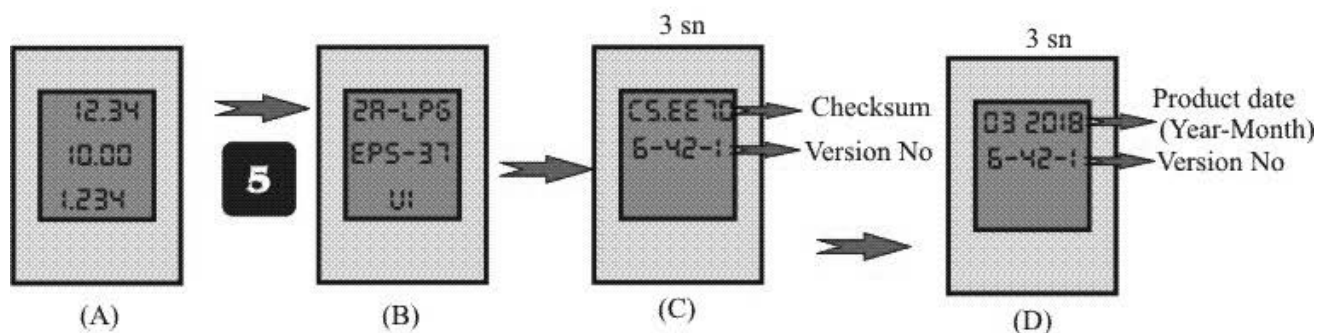
BUTTON NO **4** SEEING THE FLOWRATE :

In sale position press **4** button to see the flowrate.



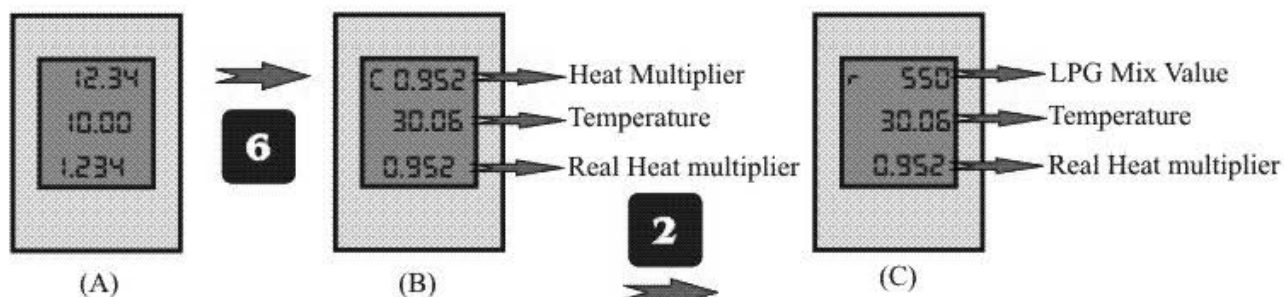
BUTTON NO **5** SEEING THE DISPENSER INFORMATION:

In idle position press **5** button to see the checksum value (3 sec.), production date and the version number (3. Sec). After 6 seconds the dispenser returns to main screen.



BUTTON NO **6** SEEING THE ATC VALUE:

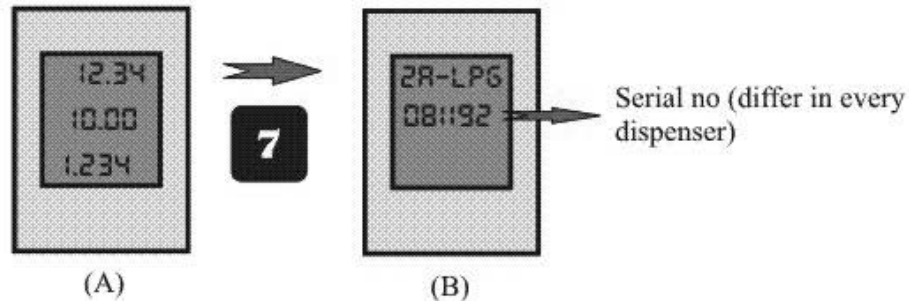
In idle position press **6** button, you see the ATC value on the screen.



To exit from the menu press **MENU** **STOP** button.

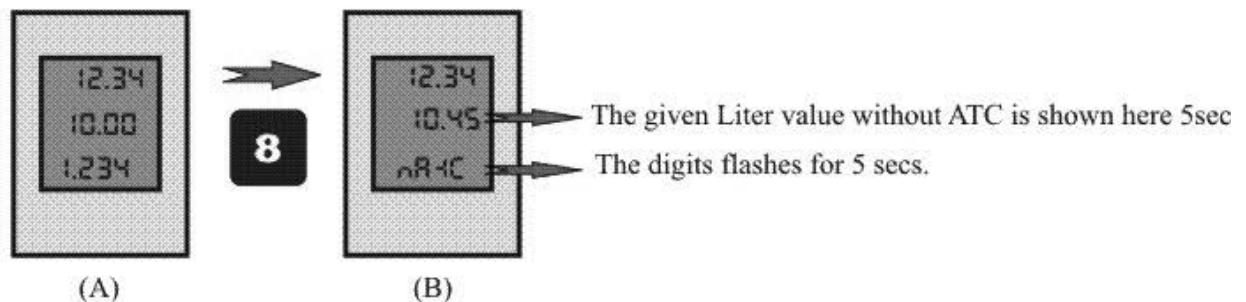
BUTTON NO **7** TO SEE THE DISPENSER SERIAL NUMBER:

In idle position press **7** button to see the dispenser serial number.



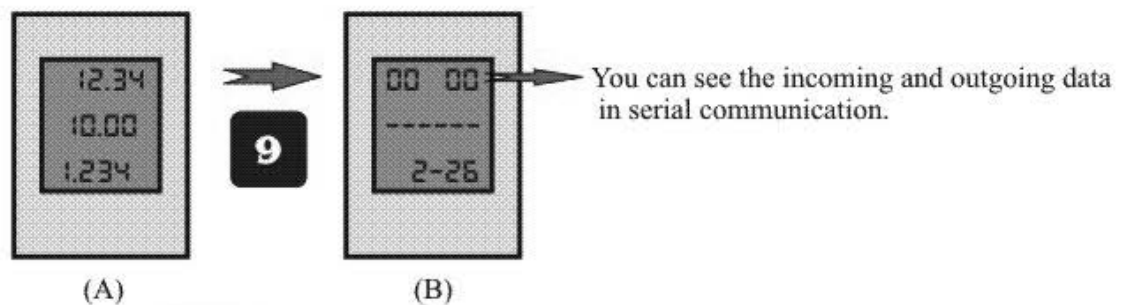
BUTTON NO **8** GIVEN LITER CONTROL WITHOUT ATC:

After the sale, in idle position press **8** button, you can control the given liter value without ATC.

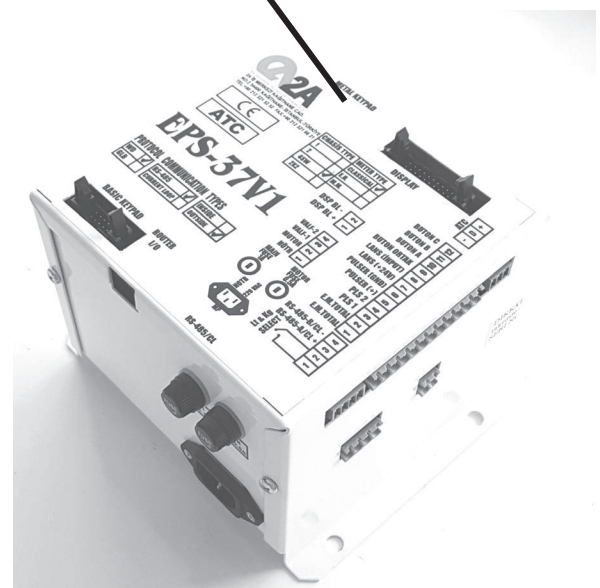
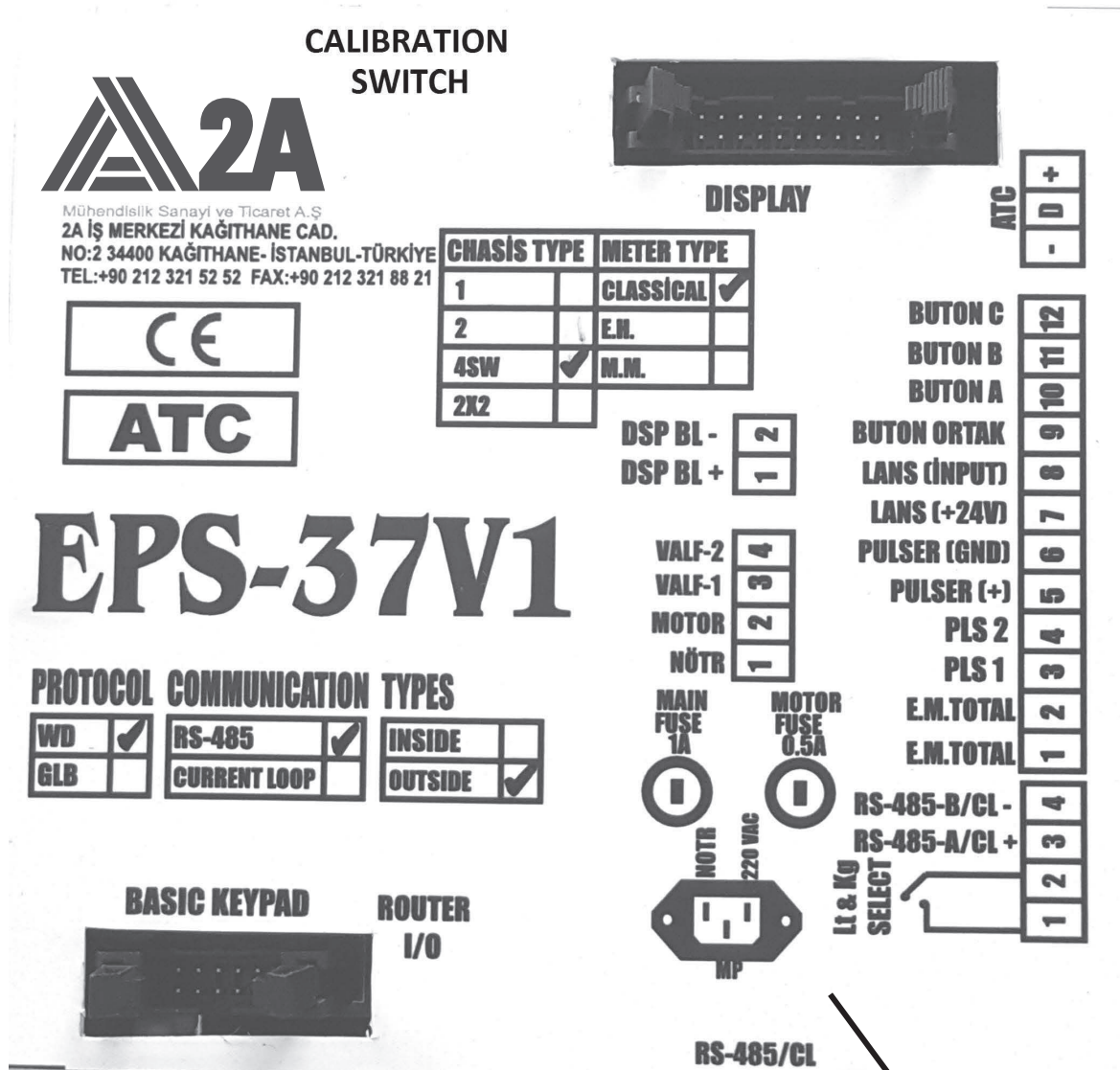


BUTTON NO **9** SERIAL COMMUNICATION CONTROL:

In idle position press **9** button to make serial communication data control.



To exit from the menu press **MENU** **STOP** button.



Electronic Control Unit Connecting Scheme

EPS - 37-V1 TECHNICAL FEATURES

Working environment :

Dependent moisture : % 5 - % 95

Heat : -25 C - +70 C

Voltage : 150 Vac -250 Vac

Frequency : 47 - 53 Hz.

Current ampere : 100 - 150 mA

Displays : 8-6-6 1 Inch LCD

6-6-4 1 Inch LCD

6-6-4 Block DSP 1 Inch LCD

Keep the last sales in memory in electricity cut-offs

Motor outputs : 220 Vac 50 Hz., 1A

Valve outputs : 220 Vac 50 Hz., 1 A

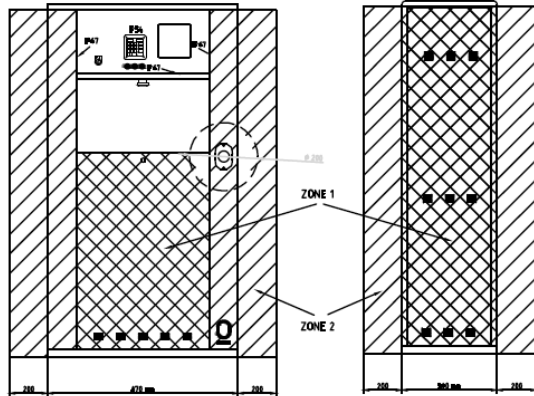
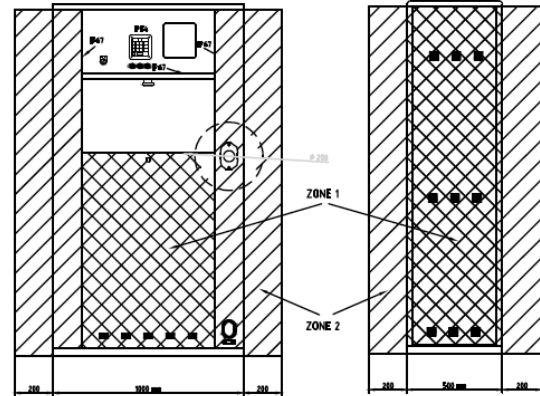
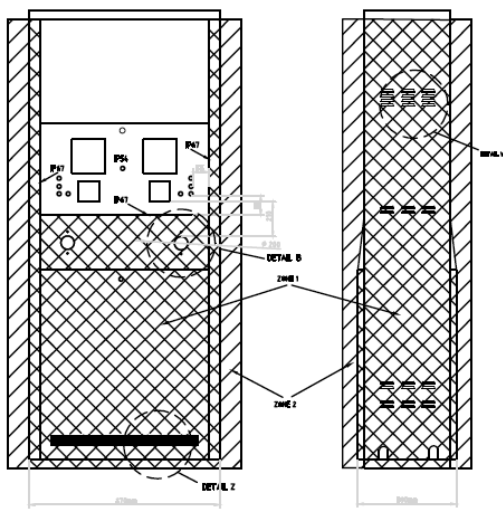
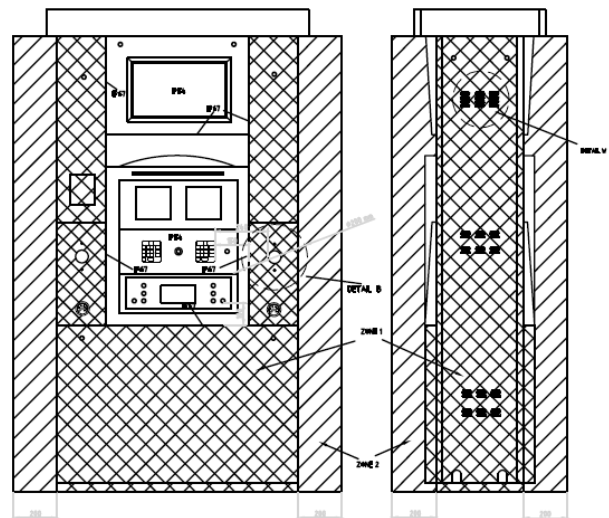
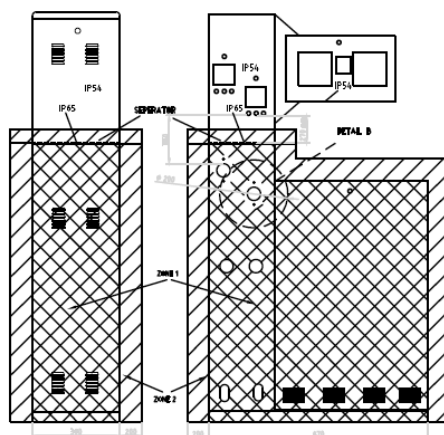
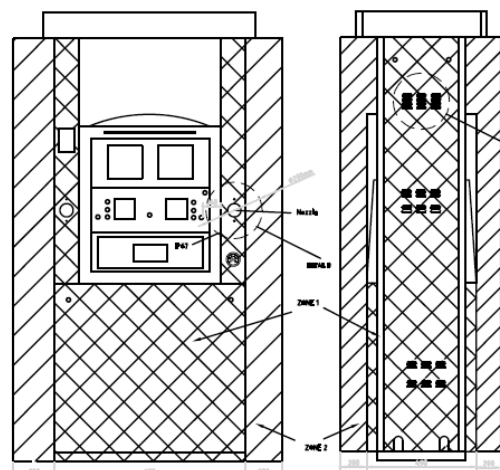
Pulser : 12 Vdc , 25mA Dual read section

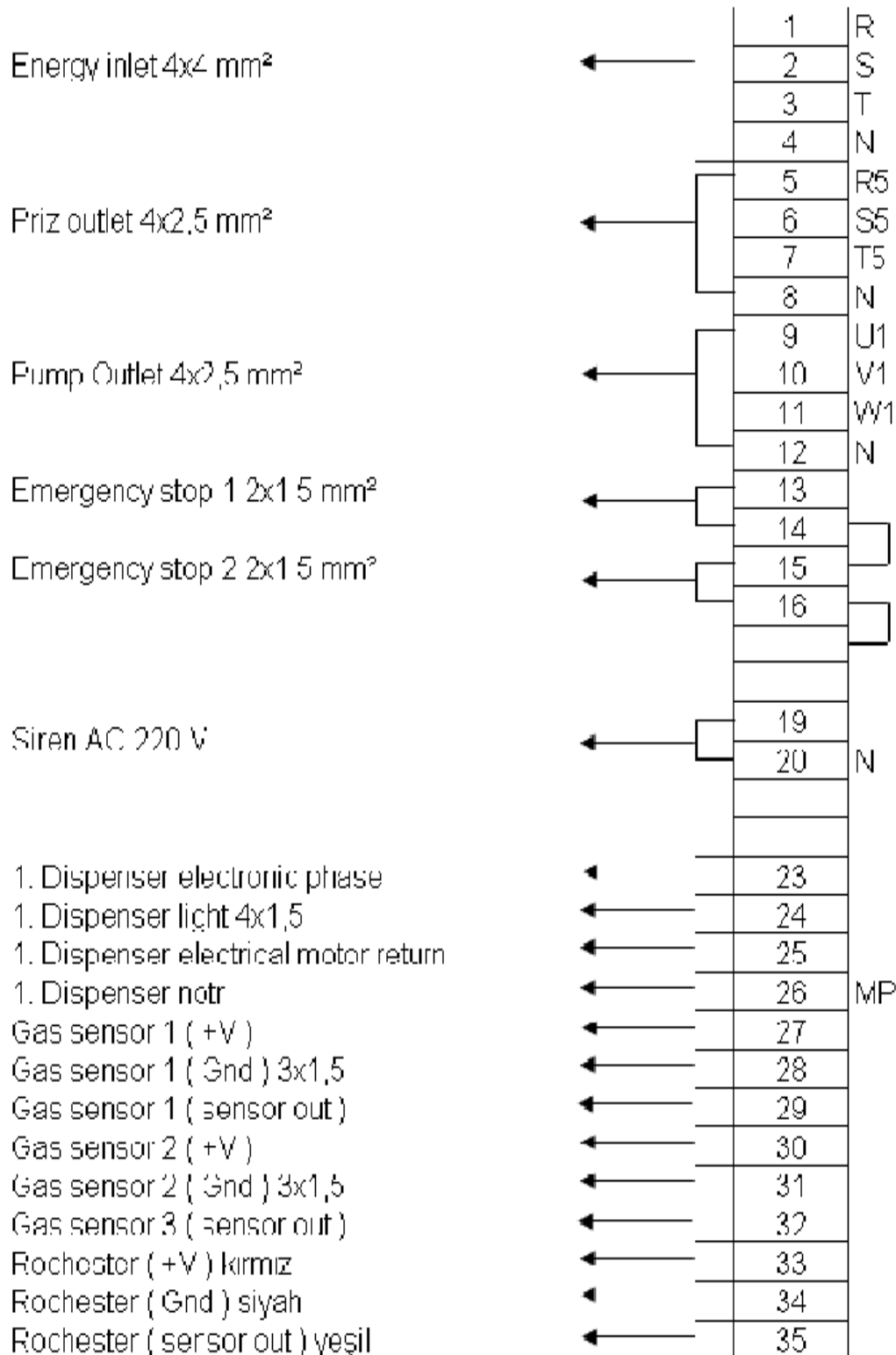
10 BREAKDOWN REPAIRS

Any repair shall be made by trained persons provided with proper competence.

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

Always cut off power supply by switching power master switch off

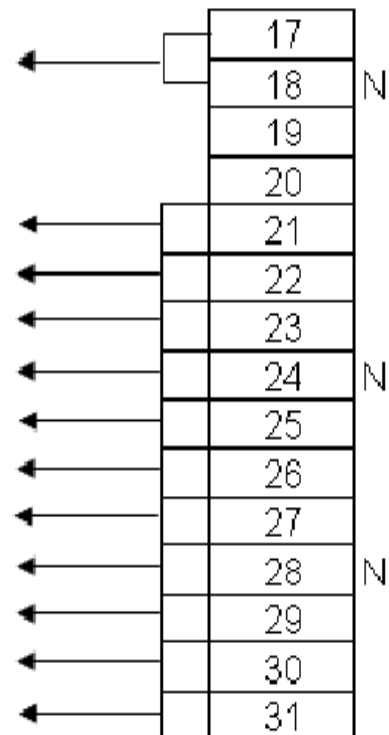
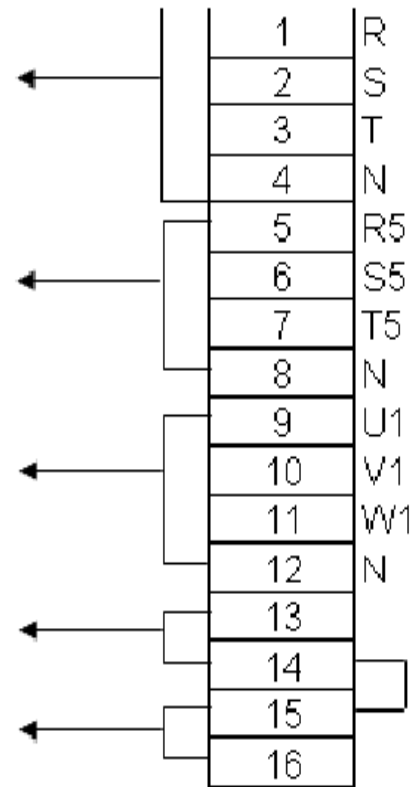
Drw. 6 Classification of hazardous areasPunto Standard TypeIdea Standard TypeB TypeStar Max TypeFlag TypeStar Type

Drw. 7 Connection Diagram**Drw. 7/1 Connection diagram of the dispenser with the switchboard at the filling station**

Drw. 7/2 Junction box connection diagram of the dispenserEnergy inlet 4x4 mm²Priz outlet 4x2,5 mm²Pump Outlet 4x2,5 mm²Emergency stop 1 2x1,5 mm²Emergency stop 2 2x1,5 mm²

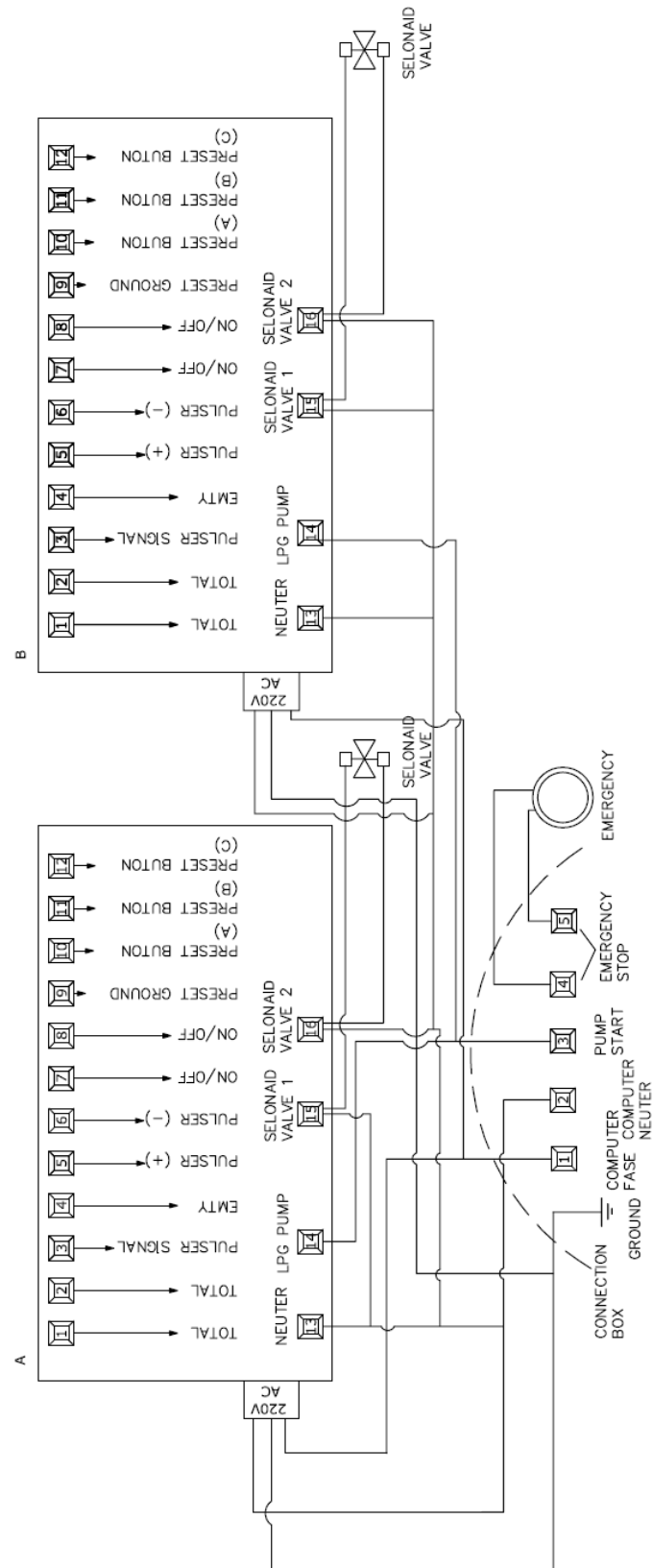
Siren AC 220 V

- 1. Dispenser electronic phase
- 1. Dispenser light 4x1,5
- 1. Dispenser electrical motor return
- 1. Dispenser notr
- 1. Dispenser electronic phase
- 1. Dispenser light 4x1,5
- 1. Dispenser electrical motor return
- 1. Dispenser notr
- Rochester (+V) kırmızı
- Rochester (Gnd) siyah
- Rochester (sensor out) yeşil



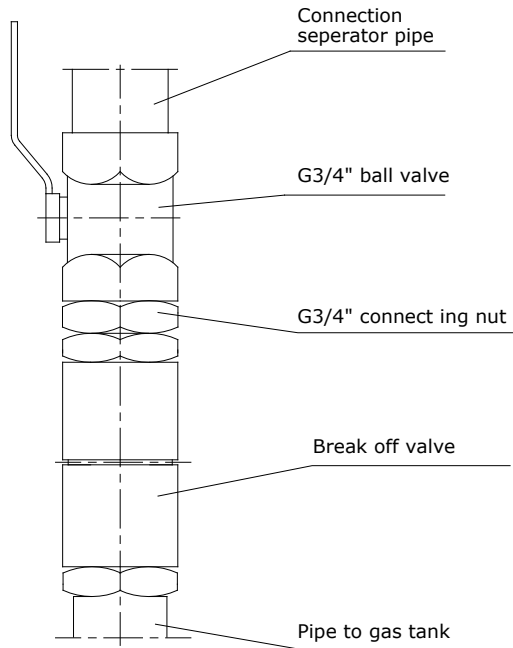
Drw. 7/3

TWO NOZZLE DISPENSER ELECTRICAL WIRING DIAGRAM

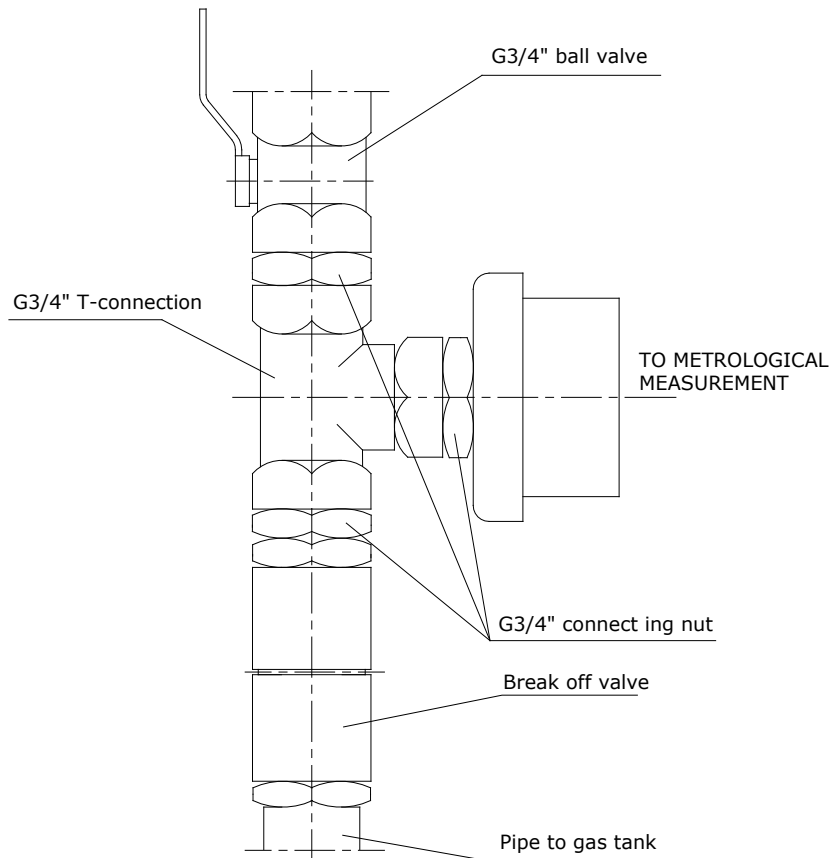


Drw. 8 Hydraulic system connections of the LPG dispenser at the filling station

- Connection of the liquefied phase in a LPG dispenser



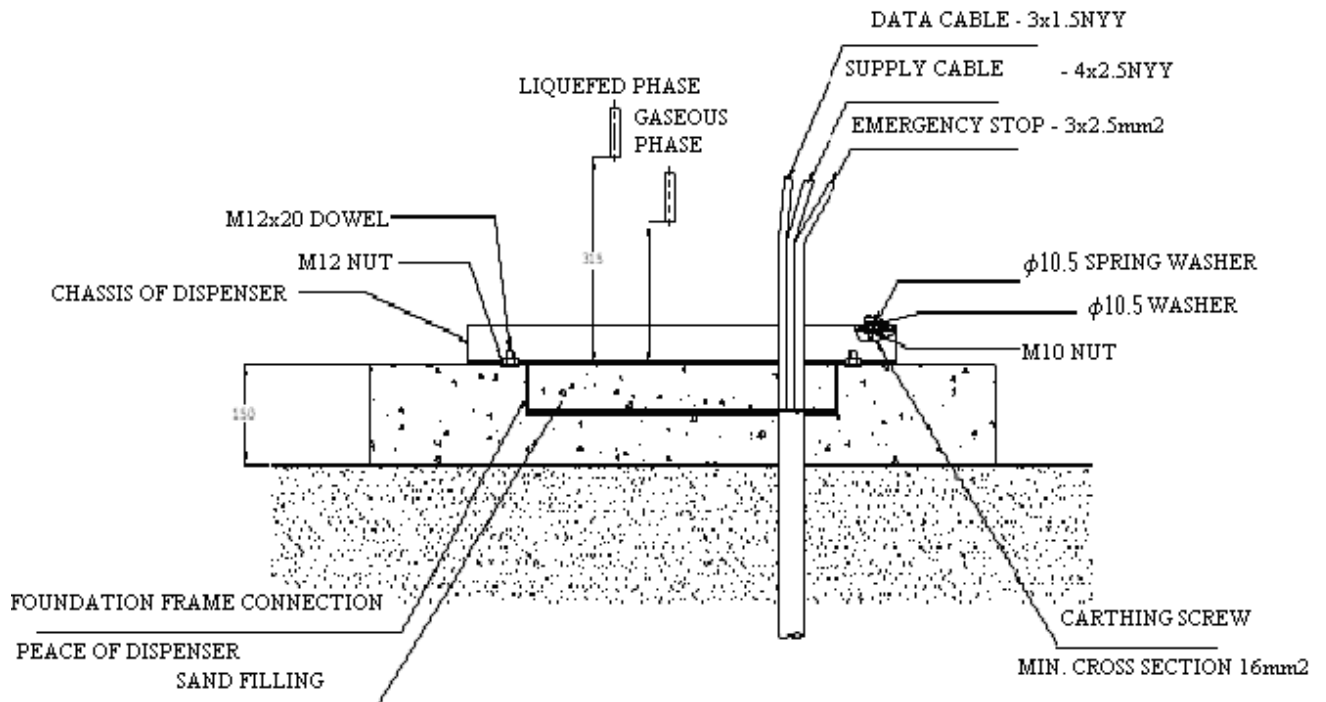
- Connection of the gaseous phase in a LPG dispenser

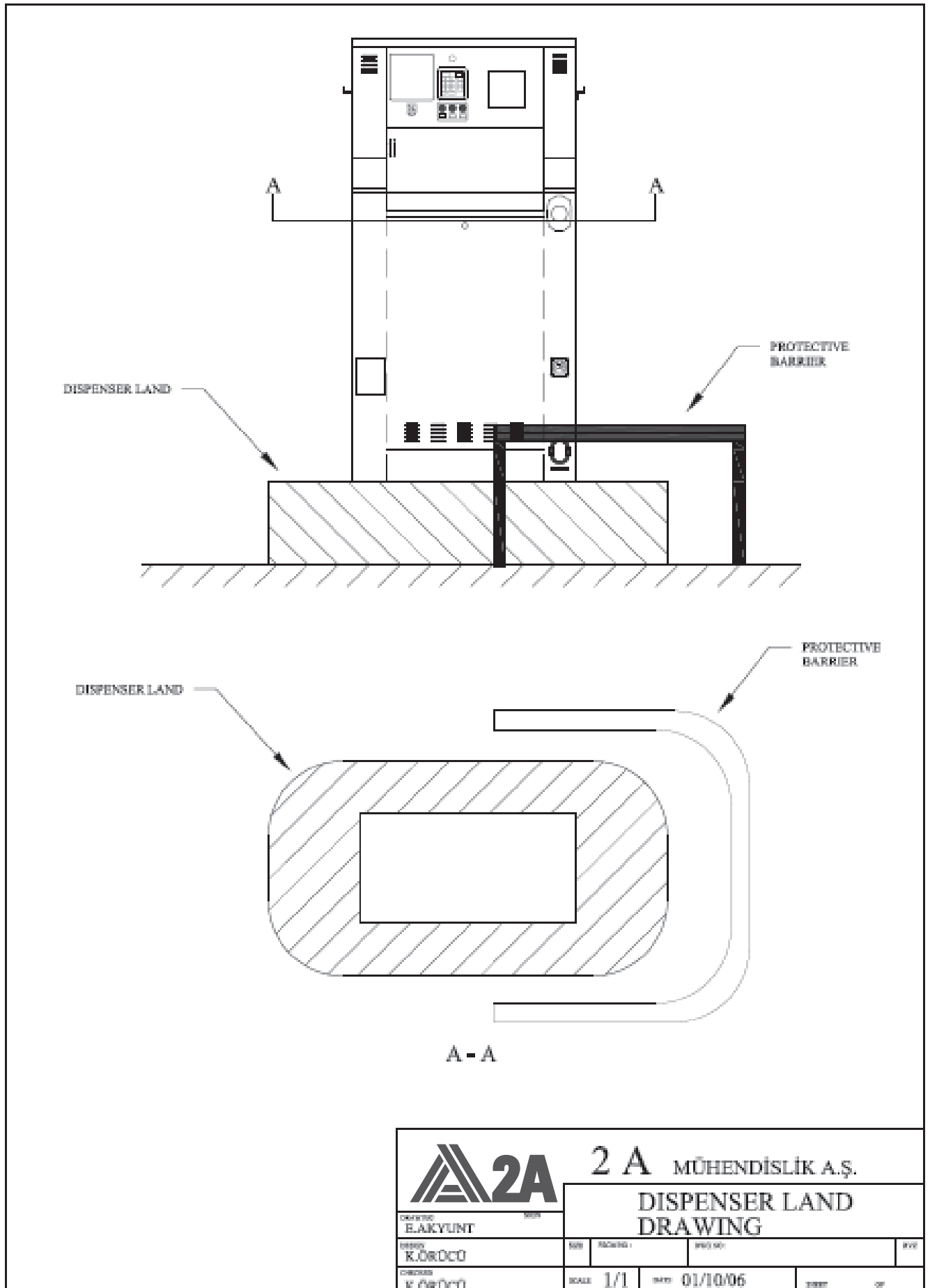


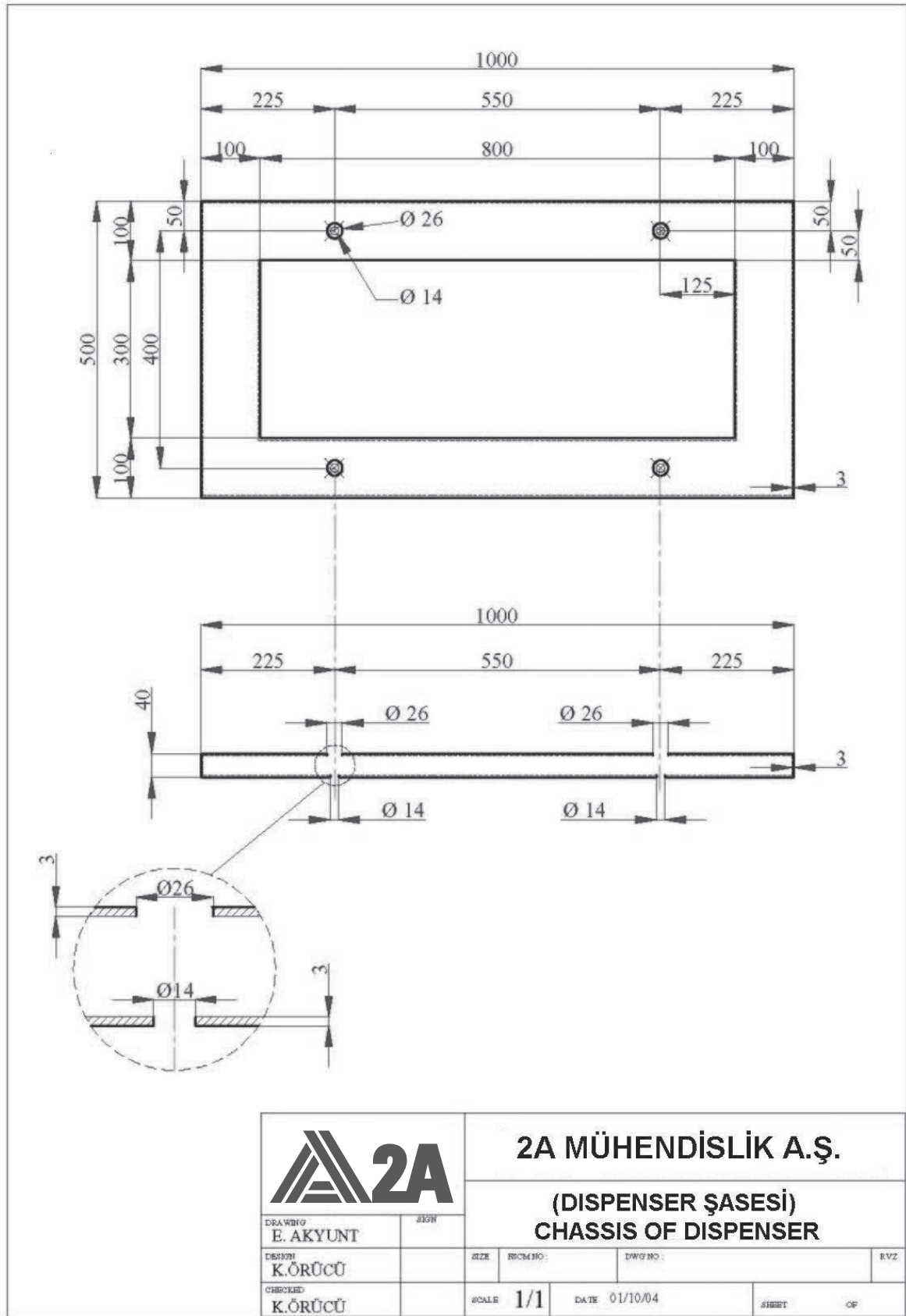
Drw. 10 Foundation of the PRIMA LPG dispenser

Notice

1. Connections of gaseous and liquefied phases are to be made very carefully according to the present service manual
2. Electric connection is to be made very carefully according to the present service manual
3. Connect the protection earthing of the dispenser to the M10x20 screw in the base.
4. Foundation frame is not included in the dispenser equipment
5. After hydraulic system and electrical connection to the dispenser are made, the hole in the distributor base is to be filled up with sand/as in the drawing below/.







PRIMA LPG DISPENSER PERIODIC MAINTENANCE AND CONTROL TABLE

No	Work To Be Done	Control Period					Responsible Person	Scope of the Work
		Daily	Weekly	Monthly	3 Months	Annual		
1	Daily maintenance	X					Pompaci	Cleaning the dirt of the dispenser.
2	Break away coupling maintenance			X			Technical Staff	Couplings are seperated, and the male one is greased.
3	Nozzle Maintenance		X				Technical Staff	Nozzle should be checked for any leakages, and the working parts are greased.
4	Hose Maintenance	X					Station Manager	Hose should be checked for any leakages and torns.
5	Gas Detector		X				Station Manager	Sensor should be checked by releasing a small amout of LPG
6	Emergency stop button		X				Station Manager	System should be checked to see if it is working.
7	Warning labels			X			Station Manager	Warning labes should be readable.
8	Grounding cable		X				Station Manager	Grounding cable should be checked to see if it is in good order.
9	Phnomatic valves		X				Station Manager	Emergency stop button should be used to see if the pnomatic valves are being closed.
10	Mechanical total	X					Station Manager	Mechanical total on the display should be checked.
11	Fire fighting equipment					X	Station Manager	Extinguishers should be refilled.
12	Periodic Maintenance				X		Authorized Service	Statements on the maintenance agreement should be fulfilled.
13	Filter Clearing			X			Authorized Service	Filter should be cleaned as stated in the service manuel.
14	Filter Change				X		Authorized Service	Filter should be changed as stated in the service manuel.
15	Calibration Control				X		Authorized Service	Brodimeter should be checked to see if it is working accurately.
16	Brodimeter Sealing					X	Ofical Authorities	Calibration should be made and the brodimeter should be sealed.
17								
18								



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