

# USER ´S MANUAL

Instructions for Operation, Maintenance  
and Installation

Modular Fuel Dispenser with Suction or Pressure  
Pumping System

**V-line 46xx.xxx**

**V-line 47xx.xxx**



CE 1026

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## 1. IMPORTANT NOTICE

This document is a guideline for the user how to proceed when installing, attending and maintaining the dispenser. The information included in the present instructions are mandatory and the manufacturer does not accept any responsibility for any damage due to their non-observance.

The dispenser is complicated equipment providing many important functions.

**Prior to putting into operation tanks and the piping system shall be cleaned and fuel purity shall be checked. Also el. power distribution and correct wiring shall be inspected to prevent injury by el. current and to provide explosion proofness - fuels are flammable liquids of the 1<sup>st</sup> and 2<sup>nd</sup> danger class!**

The manufacturer tests each dispenser considering the function, safety and metrology. Each delivery shall include the instructions for attendance, maintenance and installation, EC declaration of conformity and a service book identifying dispenser components. The dispenser, produced with high precision and care, secures reliable and safe operation. Principal safety regulations protecting the user against injury shall be kept during operation and maintenance and the dispenser shall be prevented from damage. No modifications of the dispenser equipment are allowed without producer's written approval.

**The dispenser has been designed for outdoor installation - class according to OIML D11 - C (outdoor - stationary).**

**The dispenser shall not be installed in an explosion danger zone 0, 1, 2 in compliance with zones specified in the EN 60079-10!**

**Important instructions for installation and operation:**

- a) Study the instructions for attendance, maintenance and installation and other manufacturer's documents included within dispenser accessories before you start to handle the equipment.
- b) Check the dispenser delivery completeness and inform the manufacturer immediately in case of any discrepancies or damage.
- c) The dispenser shall be stored in a dry and protected room before it is installed at the filling station.
- d) Prior to dispenser installation check the completeness of the filling station technology according to the valid design, check the connecting dimensions of the foundation frame including the piping system outlet.
- e) Rinse the process equipment (piping) through the filtration equipment until impurities are removed.
- f) The dispenser requires the connection of the vapour return piping of min. DIN 16 - we recommend DN 25.
- g) Wiring and inspection of the dispenser shall be carried out.
- h) When putting the dispenser into operation, proceed according to the point 7 of the present instructions.
- i) A metrology authority specialist shall perform function test and metrology checking.
- j) Being these conditions fulfilled, after the approval of a state supervision authority and the verification of a metrological office representative, usual operation can be started.
- k) Only qualified and trained staff of a service company can perform service and installation. Service procedures shall be performed in compliance with the operation regulations of the filling station. The manufacturer is not responsible for damages due to the incompetence of the staff.
- l) **The owner can only start dispensing when the filling station inspection is finished and a metrology authority carries out metrological verification of the dispensers.**
- m) **When fuels are pumped, basic hygienical precautions shall be adhered. The owner shall enable the customer to use protective gloves.**

**SAVE FOR FUTHER USE!**

## 2. USE

The liquid fuel dispensers of the V-line 46xx.xxx, V-line 47xx.xxx type series with an electronic counter of dispensed quality and price described in the present instructions have been designed for the dispensing of liquid fuel (petrol and Diesel oil).

They have been designed for the installation at road filling stations and a fleet of vehicles, etc. By means of a communication line the dispensers are connected to the control system of self-service operation or serviced operation.

**The dispensers are equipment with special requirements concerning safety, metrology and ecology.**

The dispensers are equipped to exhaust vapours; thus ecological operation of filling stations is provided, i.e. the prevention of harmful petrol vapours leakage into atmosphere.


The instructions for attendance, maintenance and installation serve the user to gain information on the design, correct attendance, maintenance and safe installation.

## 3. INSTRUCTIONS FOR THE SAFETY OF WORK

Any handling open flame is prohibited during fuel filling and smoking is prohibited even in vehicles interior. Also filling vehicle tanks with running motor and any other activities possibly initiating explosion are prohibited!

### 3.1. Safety of the equipment design

**The manufacturer guarantees safety of the equipment design.**

The dispenser design complies with the EN 13617-1 requirements and it is homologated for the operation in environment specified by  II 2G IIAT3 symbols shown on the dispenser plate.

Considering operation safety in environs with explosion danger the dispensers have been EC - type examination (certification) according to the annex III of the Directive 94/9/EC - ATEX by an authorised body FTZÚ, Pikartská 7, 716 07 Ostrava - Radvanice - Notified body no. 1026.

Considering legal metrology the dispensers have been EC - type examination (certification) according to the annex B of the Directive 2004/22/EC - MID by an authorised body Český metrologický institut, Okružní 31, 638 00 Brno - Notified body no. 1383.

### 3.2. Operation safety

The owner is responsible for the filling station operation and is obliged to follow the course of fuel pumping. In case a customer uses the dispenser incorrectly, the owner shall instruct him about proper use. The owner shall also identify the hazard zone of the filling station by warning symbols (smoking prohibited, open flame prohibited, direction of arrival to dispensers, etc.).

Operation regulations of the filling station shall be accessible for the customer, which enables him to get information on principal obligations.

**Operator's obligation:**

- Keep the equipment in safe and proper condition.
- Follow the operation regulations and attendance instructions of the filling station.
- Report immediately any failure to the owner and put the equipment out of operation in case of delay.
- Keep order permanently.
- The dispenser and storage tank operators are not allowed to repair the equipment and to reset any safety valves.

Performance of service work is a special case. **Servicemen are not allowed to break operation safety during repairs and other activities.** When dispenser covers are removed, they shall be very careful to protect both them and customers against injury.

**El. current supply shall be disconnected when handling el. components. Only approved components shall be used to replace any parts.**

All parts subject to approval shall be always in conditions required by the technical documentation (leakproofness, earthing, electrostatic belts, electrostatically conductive filling hoses, etc.).

### 3.3. Ecological safety

On the basis of the order the dispensers are delivered with active vapour recovery system, stage II. They are set to values valid in the Czech Republic. Final adjustment is carried out after putting the equipment into operation at the filling station. The responsible specialist shall issue a protocol with measured values of volume efficiency. The owner files the protocol together with other documents and presents it when required by inspection authorities.

The inspection of the vapour recovery system efficiency shall be carried out once a year at least and the time interval between inspections shall not be shorter than 6 months.

Inspection of efficiency should be also carried out after any intervention into the vapour return system - e.g. in case of a repair, in case of the exchange of any part of the system (dispensing nozzles, dispensing hoses, vacuum pump, control valve, etc.).

The operator of the filling station shall carry out continuous checking of the vapour recovery system function once per a shift at least and shall record the checking results in the operation book.

On the suspicion of vapour recovery system malfunction, the operator shall call on the relevant authorised authority to carry out the inspection, prospective repairs and adjustment of the system. When the work is completed, the operator shall receive a protocol reporting correct function of the vapour recovery system.

The dispenser with the electronic counter is provided with the monitoring function of vapour exhausting (symbol of two arrows in opposite direction) that is located in the display zone.

The function of the vapour recovery system is checked by dispensing simulation - so called "dry method".

The ADPMPD/T, ADP1/T, ADP2/T electronic counters are provided with a software which enables by means of KL-MANINF manager keyboard the check of vapour recovery function (see the point 10.4. Check of the vapour recovery system) after lifting of the dispensing nozzle from its hanger without the fuel dispensing.

If required, the dispenser can be equipped with a monitoring system, which signals, according to the selected entry, correct function of exhaustion (two arrows in opposite direction are on display) or malfunction of exhaustion (the symbol is crossed out). Interlocking of fuel dispensing from the dispenser can be achieved by means of setting up the entry in the counter in case of vapour exhaustion malfunction.

### 3.4. Hygiene

The dispensers are hygienically harmless for customers and the owner. But protective gloves are advised to be used during maintenance or filling fuel. In case skin comes to contact with fuel or impurities, wash the spot with water and soap as soon as possible. When eyes come to contact, medical treatment is necessary. Do not inhale harmful vapours when filling fuel.

## 4. BASIC DESCRIPTION

### 4.1. Design of dispensers

**Skeleton** - a self-supporting structure consisting of parts with high anticorrosive resistance. The base of the dispenser is made of steel sheet and heat zinc-coated. Internal parts of the skeleton are made of galvanised sheet. Parts of the body with the exception of the door of the hydraulic module and the electronic counter case are made of stainless brushed sheet as a standard.

High resistance acrylurethane enamel is applied on the hydraulic module door and the electronic counter case. The colour shade of the door including the logo can be optional.

The subframe of the dispenser is manufactured and delivered in two modifications depending upon the design of the lower part of the filling station equipment:

- without drip-pan - the drip-pan is a part of the lower equipment
- with drip-pan - the drip-pan is glued into the dispenser base with bonding and sealing cement

Both doors are lockable; being unlocked, swing out and with earth wire disconnected they can be removed and thus the hydraulic part including electric switch box are accessible. Connect the earth wires when the door is fitted back.

A case of the electronic counter or ADAMAT electronics is bolted to the hose module column. The counter case space is closed with lockable covers. The covers are provided with transparent glass. Indicators with integrated large-area display of dispensed volume, total price of dispensed volume and a price for one unit

of dispensed volume are connected from the case interior to the covers or unresettable electromechanical total counters (totalizers) and modules of fuel price per unit are integrated to the indicator. The set of these elements represents all necessary information for the customer.

The covers of the case are hung up on hinges enabling tilting upwards after unlocking and thereby easy access in the case interior. The user's local preselection keyboard is located on the case cover as well.

The dispensers of the V-line 46xx.xxx, V-line H, R 47xx.xxx type series are manufactured in two modifications differing in the design:

- V-line H - high design of the hose module with free hanging dispensing hoses
- V-line R - low design of the hose module with winding gear of hoses

The dispensing nozzles are seated in covers in the „V“ form pressed shape of the column and bearers of the hose module. When the dispenser is out of operation the dispensing nozzles in covers can be locked.

With respect to the application the dispensers of the V-line H, R 46xx.xxx, V-line H, R 47xx.xxx type series are supposed to be installed at the following filling stations:

- V-line H, R 46xx.xxx - for filling stations with the suction system of pumping
- V-line H, R 47xx.xxx - for filling stations with central pressure distribution system

## 4.2. Hydraulic system of the fuel dispenser

The **integrated hydraulic unit** consists of a pumping monoblock with an integrated large-surface filter, a meter with integrated impulse sensor connected with the pumping monoblock through a special joining piece and a driving el. motor of the pump.

**Pumping monoblock** - is an independent unit for one kind of the pumped fuel. An integrated compact structure contains an efficient filter, sliding vane pump, control and non-return valves, safety relief valve with continual control of the operating pressure, cyclone (centrifugal) gas separator and a venting chamber with a float valve. Progressive design provides 100% separation of gaseous components and automatic blocking of filling when excessive amount is identified in the product pumped.

The large-surface filter with an integrated non-return valve and standard filtration efficiency 30 µm; 10, 20 µm for petrol is optional and 30 µm or 60 µm for Diesel oil (winter operation in extreme low temperatures).

The pumped liquid passes through the filter and the non-return valve to the pump and the separator where gases and vapours are separated and pass to the float chamber. Condensed liquid is discharged to the suction part of the pump and gases are exhausted to the vented part of the dispenser base. The liquid is discharged from the non-return valve to the meter, then through an electromagnetic valve into the dispensing hose with a dispensing nozzle at its end. The dispensing nozzle lever controls the rate flow. A tube sight glass can be installed between the dispensing hose and the nozzle for visual checking.

A three-phase asynchronous motor drives the pump by means of an antistatic V-belt.

**Dispensers V-line 47xx.xxx series (pressure design)** differ from suction dispensers because they are not equipped with the pumping monoblock. A safety breaking valve shall be fitted in the connection. The valve prevents fuel leakage in case of the dispenser damage. This valve is not a part of the dispenser, as well as the pump, which is located in the underground tank. The pressure dispensers are equipped with an inlet spherical valve for closing the liquid input in case of repairs.

The pumped liquid is supplied from the central submerged pump located directly in the fuel storage tank through the safety breaking valve, spherical check valve and the filter with filtering property of 30 µm or 10, 20 µm (optional) for petrol and 30 or 60 µm for Diesel oil. Liquid is discharged from the filter through the meter and the electromagnetic valve to the dispensing hose with the dispensing nozzle at its end. The dispensing nozzle lever controls the rate of flow. The tube sight glass can be fitted between the dispensing hose and the nozzle for visual checking.

**Meter** is composed of a four-piston all-aluminium meter and an integrated impulse generator. The original meter ensures metering accuracy within a wide range of flow rates 4 - 170 dm<sup>3</sup>.min<sup>-1</sup> and fuel operating temperatures -20 °C to +50 °C and ambient temperatures -40 °C to +60 °C for nominal pressure up to 0,32 MPa. The new design made of special materials considerably improves the accuracy and reliability. The universal design for both mechanical and electronic calibration is an advantage. A two-channel integrating impulse generator is a part of the meter. The number of impulses is proportional to the swivelling angle of the shaft and the runoff volume of fuel.

The impulser generates 2x 100 impulses per 1 dm<sup>3</sup>. The meter is electronic calibrated by an el. meter processor with the help of the service keyboard.

**Electric motors** - El. motors 0,55 kW, 0,75 kW, 1,1 kW for pumping and 0,37 kW, or 0,18 kW for vapours exhaustion are used in the V-line 46xx.xxx suction dispensers.

El. motors 0,37 kW, or 0,18 kW h for vapour exhaustion are used in the V-line 47xx.xxx suction dispensers.

The number of the pumping monoblocks, meters and el. motors is specified according to the dispenser type.

**Dispensing hoses** - single and coaxial dispensing hoses meet the requirements of the EN 1360. The dispensing hose is located in the hose part of the module, which ensures the safekeeping of the hose when the dispenser is out of operation. In case of fuel filling it enables to pull the hose out in needed length.

Backward safekeeping of the hose into the hose module is enabled by dead weight of the dispensing hose when the nozzle is suspended or by means of a winding gear.

**Dispensing nozzles** - are supplied according to the Client's option. The nozzles are automatic, fitted with a swivelling joint and an effective STOP system used in case of the tank overflowing or in emergency situation. The nozzles can be fitted with safety disconnecting joints according to the Client's option. The dispensing nozzle is hung in the nozzle cover and it is lockable when the dispenser is out of operation.

The dispensers are equipped with two-step **electromagnetic valves ON/OFF**, or **electromagnetic proportional valves as a standard**.

### 4.3. Electronics

The dispenser control shall meet the exacting requirements of simplicity and convenience and depends on the hanging up and lifting of the dispensing nozzle.

**ADPMPD/T, ADP1/T, ADP2/T electronic counter** of an up-to-date design with central processor board equipped with a high efficient microprocessor. The configuration of the counter and its modes of operation are adjusted by more than seventy parameters. The counter is provided with a self-diagnostic system. The counter outlets control the motors, valves, signalling circuits and vapours exhaustion. The electronic counter processes the impulses coming from the impulse sensor and transmits them to the display, which displays the dispensed volume, its price and a price per a volume unit. In case of power failure or voltage drop the data displayed on the LCD remain for 30minutes at least.

Counters ADPMPD/T, ADP1/T, ADP2/T are standardly equipped for electronic meter calibration (**Electronic Calibration of Meters - EC**) and per request by ATC - (**Automatic Temperature Compensation**).

**Electronic Calibration of Meters (EC)** enable to correct measured volume by designed declination in operation range -5,00 % to +5,00 % of recognised meter non accuracy by step of 0,05 %.

**Automatic Temperature Compensation (ATC)** is designed to compensate temperature expandity of dispensed medium based on measured temperature during dispensing. For temperature measuring is used approved certified temperature sensor - **resistance temperature sensor PT 100**, in fuel dispensers V-line 46xx.xxx build in entering angle to pumping monoblock and in fuel dispensers V-line 47xx.xxx build in pipeline after the filter unit.

Calibration tablets for ATC on designed medium (type of fuel) can be integrated into SW of electronic counter by customer request. Setting of calibration EC or ATC is provided by using of service keyboard KL-SERINF and setting of proper calibrating switches DIP on body of electronics counter as per instructions described in manual of electronic counters ADP1/T, ADP2/T or ADPMPD/T.

Providing of calibration is allowed to authorised person, only. The DIP calibration switches must be fixed by plomb after calibration finish.

**Displays: LCD type with BACK LIGHT illumination**

**LCD displays with BACK LIGHT DISPLAY (BLD) illumination** are used especially for their good readability. The duration of data holding on the display after supply voltage failure is 30 minutes at least. Decimal point on BLD display devices is represented automatically in accordance with the setting of parameters.

#### Lighting

LED diodes are used for the illumination of displays at dispensers.

ON / OFF switching of the illumination is automatically carried out with the activation of electronics.

**Totalizer:** non-resettable electronic counter of dispensed volume and its price - 11 digits - or non-resettable electromechanical counter of dispensed volume - 7 digits.

**Electronic counter of ADPMPD/T, ADP1/T, ADP2/T series** operates with a 2-channel impulse generator producing 2x 100 impulses per 1 dm<sup>3</sup>. The HW and SW counters of the ADPMPD/T, ADP1/T, ADP2/T series enable high metering accuracy and the application of the electronic calibration using the 2-channel impulse generator.

**The local electronic preselection system** in IP67 design is integrated into the counter case. The preselection enables the Customer's preselection of the exact volume or the price of the product to be dispensed. The two-stage or proportional electromagnetic valves ensure the closing of flow and exact dispensing of the preselected volume / price and smooth initiation of dispensing.

The fuel dispensers can be equipped with ADAMAT filling automatic equipment. This equipment enables dispensing and payment of the product by means of contactless, magnetic and chip cards including receipt printing. This equipment undertakes simultaneously all functions of the dispenser electronic counter for non-public and public dispensing. The electronics of the filling automatic equipment can be complemented by the ADPMPD/T, ADP1/T, ADP2/T electronic counter with public dispensing.

The fuel dispenser is connected through a communication line to the control system, which controls the operation of the whole filling station (releasing of dispensers, volume preselection, unit price variation, self-diagnosis, etc.). The dispensers can be operated even at the filling stations without any control system - i.e. in serviced operation.

Circuit diagrams for the connection of individual dispenser types to the switchboard of the filling station - see enclosures.

#### **Communication to the control system**

The dispensers are equipped with ADPMPD/T, ADP1/T, ADP2/T electronic counters, which are able to communicate to POS Win control systems. A communication serial interface RS 485 or a communication standard IFSF LON are used for the communication of electronic counters to the superior control system. Communication to different control systems shall be consulted with the manufacturer of the dispensers in advance.

The fuel dispensers connected to the control system can be operated in the mode of volume preselection or the financial sum preselection from the control system (**the dispensers have to be equipped with two-stage or proportional electromagnetic valves**).

**The POSWIN control system (POS Win EURO)** enables the process control and the sale of goods according to stock cards (999 999 items in 99 groups) including storage facilities. Systems are identical with respect to the communication to the dispensers; they communicate on the principle of the bus interface RS 485. This systems combine the basic functions of the filling station, i.e. sale of fuels, sale of dry goods and their filing. POS system is also able to operate even as a multi-cash one, i.e. its individual parts can be interconnected in the communication SW network with two backoffices and three tills. If more than five backoffices or tills are connected, a server has to be included.

#### **4.4. Vapour recovery system**

The V-line H, R 46xx.xxx, V-line H, R 47xx.xxx dispensers are equipped with the vapour recovery system if required by the Client.

Petrol vapours are underpressure exhausted from the mouth of the dispensing nozzle by a vacuum pump. All petrol dispensing points are equipped with the vapour recovery system which consists of the following main items:

- dispensing nozzle with vapour exhaust device
- coaxial hose
- piston vacuum pump ensuring suction underpressure
- distance piece separating liquid and vapours
- piping connecting the hose to the vacuum pump (special flexible piping)
- connecting piping (special flexible piping with a cup nut M 16 x 1,5 for the connection to the exhaust pipeline of petrol vapours into an underground tank)
- electromagnetic proportional control valve

#### **The vapours of all petrol products are exhausted into the tank of the lowest quality petrol!**

The quantity of exhausted vapours is controlled in dependence on the flow rate of the dispensed product by electronics of the counter which on the basis of the flow rate value controls the flow rate of vapours by means of the electromagnetic proportional valve built-in in the vapour recovery system. The vapour recovery system function is indicated by a symbol displayed on the counter display - two arrows illustrating a part of the circle. If required by the Client the vapour recovery system of dispensers can be provided with a sensor of vacuum value, which transmits this information to the electric counter.

In case the vacuum produced does not answer to the required value 15 to 20 kPa, the electronic counter evaluates it as an error and a crossed out symbol of vapour exhaustion is displayed on the display. Setting the parameter in the counter when the vapour exhaust malfunction occurs can ensure the blocking of filling.

**The tension of belt must be checked with the belt drive of the vacuum pump set - the tension is carried out by shifting the vacuum pump vertically.**

**IMPORTANT NOTICE:**

**THE SERVICE OPERATIONS INTO THE EQUIPMENT OF VAPOUR RECOVERY SYSTEM (TO MOUNT AND REPAIR THE EQUIPMENT, ADJUST ITS PARAMETERS AND EFFECTIVITY) CAN BE MADE ONLY BY SERVICEMAN AUTHORISED BY PRODUCER.**

Consistent inspection of all vacuum live joints for leakage is important - in case of untightness it must be remedied.

It is not recommended to intervene in the function of the vacuum pump and the valve - their service life is long and there is no need of maintenance.

On the special customer request the fuel dispenser can be equipped with electronic system with automatic check device (proportional control of vapour recovery with self-calibration and self-diagnostic) which meet the requirements EU (certificate TÜV SÜDDEUTSCHLAND according to the Regulation no. 21.BImSchV, Germany).

Diesel oil filling points are not equipped with the vapour exhaust system.

#### 4.5. Signalling of dispenser conditions (SO)

On Client's special requirement the fuel dispenser can be equipped with a red signal light, which gives information to the customer and the operator about the present dispenser condition - the dispenser is blocked or ready for fuel filling.

#### 4.6. SOPA design

On Client's special request the dispenser in service mode can be equipped with magnetic release switch (SOPA design). The operator of the filling station can release the dispenser for single filling operation in this mode. After nozzle lifting the displays are reset and fuel filling is started.

After hanging up the nozzle, the dispensed volume and quantity values are permanently displayed until the dispenser is magnetic released and the dispensing nozzle is lifted off subsequently. The red signal light informs both the operator and the customer about the condition of the dispenser.

#### 4.7. Design with heating of the electronic case

On the special customer's requirement the fuel dispenser can be delivered with heating of electronic case by heater 250 VA. For feeding of the heating is used an individual cable - see the enclosure no.18.

## 5. TECHNICAL DATA

5.1. Basic parameters	
Electronic counter	ADPMPD/T, ADP1/T, ADP2/T
Display	illuminated LCD - BACK LIGHT DISPLAY (BLD)
Connecting flange of the suction piece - suction system (46xx)	DN 40 with inner thread G 1 1/2" for Q = 40, 2 x 40, 80, 130, 150, 170 dm <sup>3</sup> .min <sup>-1</sup>
Connecting piece - pressure system (47xx)	DN 40 with outer thread G 1 1/2" for Q = 40, 2 x 40, 80, 130, 150, 170 dm <sup>3</sup> .min <sup>-1</sup>
Required inner diameter of suction piping - suction system (46xx)	DN 40 for rate of flow Q = 40 dm <sup>3</sup> .min <sup>-1</sup>
	DN 50 for rate of flow Q = 2 x 40 dm <sup>3</sup> .min <sup>-1</sup> Q = 80 dm <sup>3</sup> .min <sup>-1</sup>
	2 x DN 50 for rate of flow Q = 130, 150, 170 dm <sup>3</sup> .min <sup>-1</sup>
Piping inner diameter required - pressure system (47xx)	DN 40 for rate of flow Q = 40, 2x 40, 80 dm <sup>3</sup> .min <sup>-1</sup>
	DN 50 for rate of flow Q = 130, 150, 170 dm <sup>3</sup> .min <sup>-1</sup>
Max. rate of flow Q <sub>max</sub> 1)	40, 80, 130, 150, 170 dm <sup>3</sup> .min <sup>-1</sup>
Min. rate of flow Q <sub>min</sub> 1)	4, 5, 10, 15 dm <sup>3</sup> .min <sup>-1</sup>
Operating rate of flow Q 2)	40 - 160 dm <sup>3</sup> .min <sup>-1</sup> ± 10 %
Accuracy of metering	± 0,25 %
Max. operating pressure p <sub>max</sub>	for Q <sub>max</sub> = 40 - 60 dm <sup>3</sup> .min <sup>-1</sup> 0,25 MPa
	for Q <sub>max</sub> = 70 - 170 dm <sup>3</sup> .min <sup>-1</sup> 0,32 MPa
Min. operating pressure p <sub>min</sub>	for Q <sub>max</sub> = 40 - 60 dm <sup>3</sup> .min <sup>-1</sup> 0,12 MPa
	for Q <sub>max</sub> = 70 - 170 dm <sup>3</sup> .min <sup>-1</sup> 0,19 MPa
Ambient operating temperature	Standard -20 °C to +50 °C; special -40 °C to +60 °C
Medium temperature	-20 °C to +50 °C
Filtering property	30 (10, 20) µm for petrol

			30 µm for Diesel oil (60 µm - for extreme temper. below zero)	
Reach of dispensing hose			3,5 m (V-line H) / 4,5 m (V-line R)	
Max. level of noise			<70 dB	
El. motor power supply			3/PE AC 3x 230/400 V ±15 %, 50 Hz	
Output of pump el. motor	P <sub>3f</sub>		0,55 kW, 0,75 kW, 1,1 kW	
Output of vacuum pump el. motor	P <sub>3f</sub>		0,18 kW; 0,37 kW	
Power supply of electronic case heating	U <sub>nap</sub>	P <sub>nap</sub>	1/N/PE AC 230 V ± 15 %, 50 Hz	input 250 VA
Power supply of electronics	U <sub>nap</sub>	P <sub>nap</sub>	1/N/PE AC 230 V ±15 % 50 Hz	input 85 VA
Basic sensed unit			0,01 dm <sup>3</sup>	
Number of impulses per 1 dm <sup>3</sup>			100	
Permissible deviation of sensed volume			+/-1 impulse, i.e. 0,01 dm <sup>3</sup>	
Volume displayed			6 digits with the setting of digit position	
Price displayed			6 digits with the setting of digit position	
Unit price displayed			4 digits with the setting of digit position	
Total volume counter			electromechanical - 7 digits	
			electronically - 11 digits	
Communication interface			RS 485; IFSF - LON, TCP/IP (Ethernet)	
Average operating period of a repair			t <sub>oo</sub> = min. 25	
Average service life			t <sub>z</sub> = 5 years	
<p>1) Max. rate of flow Q<sub>max</sub> = 40, 80, 130, 150, 170 dm<sup>3</sup>.min<sup>-1</sup> and min. rate of flow Q<sub>min</sub> = 4, 5, 10, 15 dm<sup>3</sup>.min<sup>-1</sup> - extreme values of rate of flow in which can be operate the measuring system of the fuel dispenser - parameters Q<sub>max</sub> and Q<sub>min</sub> are given in a certificate about homologation of the meter type.</p> <p>2) Operating rate of flow 40 to 160 dm<sup>3</sup>.min<sup>-1</sup> ±10 % is depended on the fuel dispenser design (V-line 46xx.xxx, V-line 47xx.xxx), on the inner diameter and length of piping and suction head - see the point no 15. in this instructions. The stated values are valid for the fuel dispensers without the safety disconnection couplings. Using of the safety disconnection couplings reduces the operating rate of flow Q = 40 to 160 dm<sup>3</sup>.min<sup>-1</sup> ± 10 % about c 10 %.</p>				

5.2. Technical parameters - one-sided module Q = 40 dm <sup>3</sup> .min <sup>-1</sup>	V-line 46xx	V-line 47xx
Max. rate of flow Q <sub>max</sub>	40 dm <sup>3</sup> .min <sup>-1</sup>	
Min. rate of flow Q <sub>min</sub>	4 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa Q	40 ± 4 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa with vapour recovery Q	30 ± 3 dm <sup>3</sup> .min <sup>-1</sup>	
Min. measured quantity (MMQ)	2 dm <sup>3</sup>	
Max. suction head	-55 kPa - for petrol -85 kPa - for Diesel oil	-
El. motor	0,55 kW	
The module has been designed to dispense one sort of fuel from one filling point.		

5.3. Technical parameters - two-sided module Q = 40 dm <sup>3</sup> .min <sup>-1</sup>	V-line 46xx	V-line 47xx
Max. rate of flow Q <sub>max</sub>	40 dm <sup>3</sup> .min <sup>-1</sup>	
Min. rate of flow Q <sub>min</sub>	4 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa dispensed from one nozzle Q	40 ± 4 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa dispensed from both nozzles Q	30 ± 3 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa dispensed from one nozzle with vapour recovery Q	30 ± 3 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa dispensed from both nozzles with vapour recovery Q	25 ± 3 dm <sup>3</sup> .min <sup>-1</sup>	
Min. measured quantity (MMQ)	2 dm <sup>3</sup>	
Max. suction head	-55 kPa - for petrol -85 kPa - for Diesel oil	-
El. motor	0,75 kW	
The module has been designed to dispense one sort of fuel from two filling points.		

5.4. Technical parameters - one-sided module Q = 80 dm <sup>3</sup> .min <sup>-1</sup>	V-line 46xx	V-line 47xx
Max. rate of flow Q <sub>max</sub>	80 dm <sup>3</sup> .min <sup>-1</sup>	

Min. rate of flow $Q_{min}$	5 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa Q	80 ± 8 dm <sup>3</sup> .min <sup>-1</sup>	
Min. measured quantity (MMQ)	5 dm <sup>3</sup>	
Max. suction head	-85 kPa - for Diesel oil	-
El. motor	1,1 kW	-
The module has been designed to dispense one sort of fuel from one filling point.		

5.5. Technical parameters - two-sided module $Q = 1x 80 \text{ dm}^3.\text{min}^{-1} + 1x 40 \text{ dm}^3.\text{min}^{-1}$	V-line 46xx	V-line 47xx
Max. rate of flow $Q_{max}$	80 dm <sup>3</sup> .min <sup>-1</sup> / 40 dm <sup>3</sup> .min <sup>-1</sup>	
Min. rate of flow $Q_{min}$	5 dm <sup>3</sup> .min <sup>-1</sup> / 4 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa dispensed from one nozzle Q	80 ± 8 dm <sup>3</sup> .min <sup>-1</sup> / 40 ± 4 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capacity at suction head -45 kPa dispensed from both nozzles Q	50 ± 5 dm <sup>3</sup> .min <sup>-1</sup> / 30 ± 3 dm <sup>3</sup> .min <sup>-1</sup>	
Min. measured quantity (MMQ)	5 dm <sup>3</sup>	
Max. suction head	-85 kPa - for Diesel oil	-
El. motor	1,1 kW	-
The module has been designed to dispense one sort of fuel from two filling points.		

5.6. Technical parameters - one-sided module $Q = 130 \text{ dm}^3.\text{min}^{-1}$	V-line 46xx	V-line 47xx
Max. rate of flow $Q_{max}$	130 dm <sup>3</sup> .min <sup>-1</sup>	
Min. rate of flow $Q_{min}$	10 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capac. at suction head - 45 kPa dispensed from one nozzle - suction system Q	120 ± 12 dm <sup>3</sup> .min <sup>-1</sup>	-
Pumping capacity at suction head - 45 kPa dispensed from one nozzle - connection of submersible pump with min. flow rate 130 dm <sup>3</sup> .min <sup>-1</sup> with min. dynamic operating pressure 0,22 MPa on inlet into the dispenser - pressure system Q	-	110 ± 11 dm <sup>3</sup> .min <sup>-1</sup>
Min. measured quantity (MMQ)	10 dm <sup>3</sup>	
Max. suction head	-85 kPa - for Diesel oil	-
El. motor	2 x 1,1 kW	-
The module has been designed to dispense one sort of fuel from one filling point.		

5.7. Technical parameters - two-sided module $Q = 1x 130 \text{ dm}^3.\text{min}^{-1} + 1x 40 \text{ dm}^3.\text{min}^{-1}$	V-line 46xx	V-line 47xx
Max. rate of flow $Q_{max}$	130 dm <sup>3</sup> .min <sup>-1</sup> / 40 dm <sup>3</sup> .min <sup>-1</sup>	
Min. rate of flow $Q_{min}$	10 dm <sup>3</sup> .min <sup>-1</sup> / 4 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capac. at suction head - 45 kPa dispensed from one nozzle - suction system Q	120 ± 12 dm <sup>3</sup> .min <sup>-1</sup> / 40 ± 4 dm <sup>3</sup> .min <sup>-1</sup>	-
Pumping capacity at suction head - 45 kPa dispensed from one nozzle - connection of submersible pump with min. flow rate 130 dm <sup>3</sup> .min <sup>-1</sup> with min. dynamic operating pressure 0,22 MPa on inlet into the dispenser - pressure system Q	-	110 ± 11 dm <sup>3</sup> .min <sup>-1</sup> / 40 ± 4 dm <sup>3</sup> .min <sup>-1</sup>
Pumping capac. at suction head - 45 kPa dispensed from both nozzles - suction system Q	80 ± 8 dm <sup>3</sup> .min <sup>-1</sup> / 30 ± 3 dm <sup>3</sup> .min <sup>-1</sup>	-
Pumping capacity at suction head - 45 kPa dispensed from both nozzle - connection of submersible pump with min. flow rate 130 dm <sup>3</sup> .min <sup>-1</sup> with min. dynamic operating pressure 0,22 MPa on inlet into the dispenser - pressure system Q	-	70 ± 7 dm <sup>3</sup> .min <sup>-1</sup> / 30 ± 3 dm <sup>3</sup> .min <sup>-1</sup>
Min. measured quantity (MMQ)	10 dm <sup>3</sup> / 2 dm <sup>3</sup>	
Max. suction head	-85 kPa - for Diesel oil	-
The module has been designed to dispense one sort of fuel from two filling points.		

5.8. Technical parameters - one-sided module $Q = 150 \text{ dm}^3.\text{min}^{-1}$	V-line 46xx	V-line 47xx
Max. rate of flow $Q_{max}$	150 dm <sup>3</sup> .min <sup>-1</sup>	
Min. rate of flow $Q_{min}$	10 dm <sup>3</sup> .min <sup>-1</sup>	



Pumping capac. at suction head - 45 kPa dispensed from one nozzle - suction system Q	140 ± 14 dm <sup>3</sup> .min <sup>-1</sup>	-
Pumping capacity at suction head - 45 kPa dispensed from one nozzle - connection of submersible pump with min. flow rate 150 dm <sup>3</sup> .min <sup>-1</sup> with min. dynamic operating pressure 0,22 MPa on inlet into the dispenser - pressure system Q	-	130 ± 13 dm <sup>3</sup> .min <sup>-1</sup>
Min. measured quantity (MMQ)	10 dm <sup>3</sup>	
Max. suction head	-85 kPa - for Diesel oil	-
El. motor	2 x 1,1 kW	-
The module has been designed to dispense one sort of fuel from one filling point.		

5.9. Technical parameters - one-sided module Q = 170 dm <sup>3</sup> .min <sup>-1</sup>	V-line 46xx	V-line 47xx
Max. rate of flow Q <sub>max</sub>	170 dm <sup>3</sup> .min <sup>-1</sup>	
Min. rate of flow Q <sub>min</sub>	15 dm <sup>3</sup> .min <sup>-1</sup>	
Pumping capac. at suction head - 45 kPa dispensed from one nozzle - suction system Q	160 ± 16 dm <sup>3</sup> .min <sup>-1</sup>	-
Pumping capacity at suction head - 45 kPa dispensed from one nozzle - connection of submersible pump with min. flow rate 170 dm <sup>3</sup> .min <sup>-1</sup> with min. dynamic operating pressure 0,22 MPa on inlet into the dispenser - pressure system Q	-	150 ± 15 dm <sup>3</sup> .min <sup>-1</sup>
Min. measured quantity (MMQ)	10 dm <sup>3</sup>	
Max. suction head	-85 kPa - for Diesel oil	-
El. motor	2 x 1,1 kW	-
The module has been designed to dispense one sort of fuel from one filling point.		

## 6. IDENTIFICATION

All manufactured and delivered dispensers are provided with a rating plate, which includes the following data and is located on a visible point of the dispenser body:

1.	Measuring device manufacturer and address	Adast Systems, a.s. CZ - 679 04 ADAMOV
2.	Name of measuring device	Fuel dispenser
3.	The „CE“ marking and supplementary metrology marking	<b>CE M 07 1383</b>
4.	Type	See enclosure 19 and 20
5.	Number of EC - type examination certificate - M	<b>TCM 141/07 - 4505</b>
6.	Accuracy class	0,5
7.	Serial number and year of manufacture	According to dispensers manufacturer files
8.	Liquid temperature range - T <sub>Liq</sub> [°C]	- 20 to + 50
9.	Ambient temperature range - T <sub>Amb</sub> [°C]	Ambient operating temperature - according to version of the fuel dispenser
10.	Mechanical class	M 2
11.	Electromagnetic class	E 2
12.	Liquid	Gasoline or diesel
13.	Minimum measured quantity (MMQ)	Min. measured quantity within guaranteed metering accuracy
14.	Maximum flowrate Q <sub>max</sub> [L/min]	Max. rate of flow within guaranteed metering accuracy
15.	Minimum flowrate Q <sub>min</sub> [L/min]	Min. rate of flow within guaranteed metering accuracy
16.	Maximum pressure p <sub>max</sub> [bar]	Max. pressure specified for the dispenser operation
17.	Minimum pressure p <sub>min</sub> [bar]	Min. pressure specified for the dispenser operation

18.	Number of EC - type examination certificate - Ex	FTZÚ 05 ATEX 0069
19.	 1026	CE marking with the number of the Notified body cooperated in the conformity assessment
20.	 II2G IAT3	Specific marking for the explosion protection including the symbol of the group and category of the device, explosion and temperature categories of dispensed fuels
21.	Standard	EN 13617-1
22.	Electrical parameters	Values of electronics, heating and el. motors feeding

## 7. PUTTING OF THE FUEL DISPENSER INTO OPERATION

After the dispenser installation remove the filter cover and prime the pumping monoblock with relevant fuel. Fit on the cover back and tighten the nuts evenly. Now the dispenser is ready for operation as far as hydraulic conditions are concerned, on presumption that the tank is filled up with fuel.

### 7.1. Putting the dispenser and electronic counter into operation

- Hang up the dispensing nozzle.
- Switch on the feeding of the dispenser in the switchboard of the filling station (feeding the electronics and el. motors).
- After lifting the dispensing nozzle, the counter tests the display (octal test), eights are reset and filling can be carried out.
- Hang up the nozzle.
- In case the dispenser is switched on with the nozzle lifted, it is necessary to hang the nozzle up and lift it again to activate the dispenser (counter resetting).
- Now it is possible to start fuel filling.

### 7.2. Shutdown of the dispenser and electronic counter

- Switch the feeding of the dispenser in the switchboard of the filling station off (feeding the electronics and el. motors).

### 7.3. Restart of the dispenser and electronic counter after power failure and voltage drop

- In case of power failure or voltage alteration beyond acceptable limits the information about the volume and price of the fuel dispensed within the interval from the last lifting of the dispensing nozzle is preserved on the counter display.
- In case power failure has occurred in the very time of fuel filling, it is necessary to hang up the dispensing nozzle (filled volume and price of fuel are preserved on the display) and cash in the sum, which is preserved on the display.
- After el. power supply recovery the electronic counter is ready-to-start and fuel filling can continue by lifting the dispensing nozzle.

## 8. ATTENDANCE

Only simple steps are used to attend the dispenser. It is up to the customer's decision what fuel he is going to fill. The electronic counter is activated by lifting the dispensing nozzle, test of proper function of the counter, automatic switching on of the pump and opening of electromagnetic valves are performed. The customer can fill. There is a condition to insert the dispensing nozzle adapter into a tank socket as deep as possible and control smoothly (squeeze) the dispensing nozzle lever. When the filling is over, the dispensing nozzle is withdrawn from the tank socket and hung up into the nozzle cover where a magnetic switch is located controlled by permanent magnet in the nozzle body. Hanging the dispensing nozzle up will interrupt the control circuit therefore the dispenser is stopped. The data of last filling are preserved on the electronic counter. The filling can continue by new lifting the dispensing nozzle.

If the dispenser is equipped with preselection, the customer can preselect the required quantity or quantity of the preselected sum of money. The customer sets relevant values by the push-button and counter, switching on the pump and filling will be performed again after lifting the dispensing nozzle. The filling is

automatically finished after filling the preselected volume. The customer can stop the filling anytime by releasing the dispensing nozzle lever before the filling of the preselected volume is finished. The dispensing nozzle shall be withdrawn from the tank socket and hung up in the nozzle cover when filling is over.

Preselection keyboard is also equipped with a key with a symbol of a truck, which enables to change the filling rate (it is possible to use only when the fuel dispenser is equipped with the proportional valve) at the Diesel MIN/MAX dispensing point. After lifting the dispensing nozzle, it is possible to preselect rapid filling by pushing the key DIESEL MAX (alternatively 60, 70, 80, 120, 130, 150, 170  $\text{dm}^3 \cdot \text{min}^{-1}$ ) according to the dispenser design. If the key is not depressed, the filling rate is 40  $\text{dm}^3 \cdot \text{min}^{-1}$  or 80  $\text{dm}^3 \cdot \text{min}^{-1}$ .

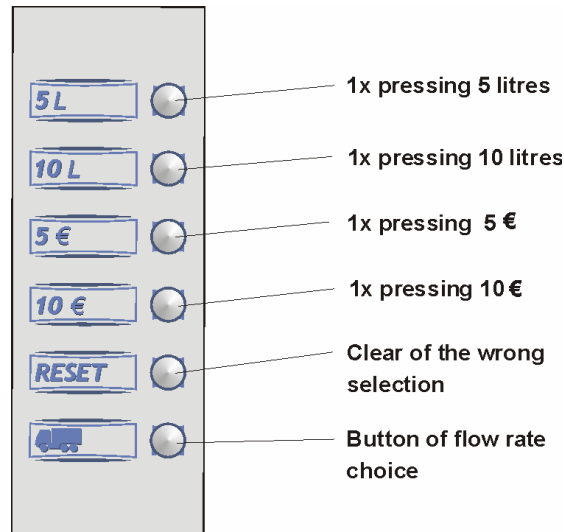
## 9. DISPENSER OPERATION

The dispenser is started by lifting the dispensing nozzle from the cover with simultaneous resetting of the data on the counter displays. The price for 1  $\text{dm}^3$  of fuel is displayed. The el. motor of the pump is also started and filling of fuel can be carried out. The dispensing nozzle controls the rate of filling.

The filling is stopped by closing the valve of the dispensing nozzle (control lever release). Then the nozzle is hung up in the cover, which stops the el. motor of the pump. The filled quantity indication is preserved until the next lifting of the dispensing nozzle is carried out.

### 9.1. Dispensing with preselection

Such filling is only possible with dispensers equipped with local preselection.



### 9.2. Description of the preselection function

The selection of the required value of fuel to be dispensed is carried out with the dispensing nozzle hang up.

- 1.a) Preselect the required quantity to be dispensed according to the price by keys identified 5 € and 10 € in arbitrary sequence up to the amount of money level. **The preselected quantity to be dispensed is displayed on the price display.** In case of invalid option deselect it by the "reset" key.
- 1.b) Preselect the required quantity to be dispensed according to the volume by keys identified 5 litres and 10 litres in arbitrary sequence up to the required volume level. **The preselected volume to be dispensed is displayed on the volume display.** In case of invalid option deselect it by the "reset" key.
2. The display is reset by lifting the dispensing nozzle, the dispenser is started and filling can be carried out up to the preselected price or volume when dispensing is automatically stopped.
3. For rapid filling **DIESEL MAX** (alternatively 60, 70, 80, 120, 130, 150, 170 dm<sup>3</sup>.min<sup>-1</sup>) depress the key with the symbol of the truck (can be used only when the dispenser is equipped with a proportional valve).

**Non-dispensed preselected volume is reset after 20 seconds approximately.**

When the filling is finished, withdraw the dispensing nozzle from the tank socket and hang up to the nozzle cover.

## 10. FUNCTIONS OF KL-MANINF MANAGER AND KL-SERINF SERVICE KEYBOARDS

The KL-MANINF manager keyboard and the KL-SERINF service keyboard are delivered as a design with infrared wireless transmission IR.

### IR KL-MANINF manager keyboard

The keyboard enables the setting of unit prices and the situation display of electronic totalizers.

The manager keyboard is equipped with four keys marked „0“, „+“, „-“ and „R“. The „0“ key is used for the transition to the "setting of unit prices for MAN" and for the termination of any function executed on the manager keyboard.

The „+“ and „-“ keys are used for proper setting of the unit price values or for the transition to the mode of "situation display of electronic totalizers".

The „R“ key is used for check of vapour recovery exhaustion.

**IR KL-SERINF service keyboard**

The keyboard enables the counter setting and the keying of values for electronic calibration of meters and ATC, the situation display of electronic totalizers, setting of unit prices and setting the vapour exhaust recovery.

The service keyboard is fitted with four keys, „0“, „+“, „-“ as a standard and the "S" key as an extra key.

The "S" key is used for the transition to the mode of "the data setting / calibration".

If the "S" key is not used, the service keyboard can be used for all functions controlled by the manager keyboard and the keying is identical with that of the manager keyboard.

**N. B.**

*If the nozzle has been lifted at least once since the last activation of the counter, the transition to the setting of unit prices is not executed in the MAN mode. The transition to the setting is also not executed even in case the nozzle has been either hung up again without fuel dispensing or previous transaction has not been deactivated by means of RLS entry.*

**10.1. Manual setting of unit prices**

Necessary conditions for the transition to the setting of unit prices

- MAN mode of operation
- the nozzle has not been lifted since the last activation of the counter
- transaction executed shall be acknowledged (deactivation by means of RLS entries).

In the MAN mode the unit prices of fuel product are set by means of the KL-MANINF manager keyboard or the KL-SERINF service keyboard.

1. The user can enter the setting mode of unit prices by depressing the „0“ key.
2. In the setting mode of unit prices
  - the number of side for which the unit price is being set ("1" ... A side, "2" ... B side) is displayed on the first line of displays (i.e. on the line of total price)
  - the number of nozzle for which the unit price is being set is displayed on the second line of displays (i.e. the line of total volume)
  - on the third line of displays the digit, the value of which is being set by the user, is flashing (e.g. on the line of unit price)
3. The user
  - raises the numerical value of the digit actually set (i.e. the flashing one), (digit 9 passes into 0), by depressing the "+" key we can list through 0-9 values - i.e. the autorepeat function
  - shifts the digit setting to higher digit positions by means of the "-" key  
shifts the setting from the highest position of the product unit price to the lowest digit position of the product unit price of the next nozzle by means of the "-" key
4. In this way the user can set successively the price values for all nozzles on the A side, then B side (if it exists and the products on this side differ in price).
5. Whenever the user can terminate the setting of the unit price values by depressing the „0“ key.
6. Now the unit price values have been written in non-volatile storage in this way and the counter sets the MAN mode.

**10.2. Setting of unit price values from the control system in AUTO mode**

In AUTO mode the unit price values are set from the control system for all transactions independently on unit price values set for the MAN mode.

The unit price values for the AUTO mode are set for all dispensing points by dynamic statement (command) "permission to dispense" transmitted from the filling station console or by the "price setting" statement. All these statements are a part of the specification of the EASYCALL communication protocol.

**10.3. Display of electronic totalizers**

The ADPMPD/T, ADP1/T, ADP2/T counter is fitted with non-resettable electronic totalizers of volume and price for individual dispensing nozzles.

The totalizers can be displayed on the displays of the side by means of the KL-MANINF manager keyboard or the KL-SERINF service keyboard. The display of the totalizer can be switched by lifting the relevant nozzle.

The sum of the volume (or the sum of the price) is displayed on the displays of the side on the coupled lines of the total price and total volume.

Both displays of the side display an identical sum.

As the first from the left "U" character is displayed on the total price line for the display of the volume sum and "A" character for the display of the price sum.

The second character from the left displays the highest digit position of the relevant sum.

The sixth character from the left displays the lowest digit position of the relevant sum.

The sums are counted and displayed with decimal place count according to the data setting of the counter.

The side number and the nozzle number of the totalizer displayed at this moment are displayed on the unit price line:

e.g.: 1 - 3...A side - nozzle No. 3;  
2 - 1...B side - nozzle No. 1.

#### Display procedure:

1. Both dispensing points shall be free (transitions are not running at any of the both points and terminated transactions shall be acknowledged).
2. Depress the "+" key to display the volume sum. Depress the "-" key to display the price sum.
3. All segments light up and light out on the displays of the sides after depressing the "+" key (or the "-" key) (similarly with the transaction starting to checking if all segments display correctly) and total number of feeding voltage drop-outs is shortly displaced.
4. Then "U" and the volume sum of the relevant nozzle (or "A" and the price sum of the relevant nozzle) are displayed on the displays of sides.
5. It is possible to carry out the transition to the volume totalizer displays of the next dispensing nozzles by repeated depressing the "+" key or by lifting the relevant nozzle (as well as the transition to the price totalizer displays of the next dispensing nozzles by repeated depressing the "-" key or by lifting the relevant nozzle).
6. Terminate the scanning of electronic totalizers by depressing the "0" key and in case the thermal and electronic calibration are activated, transition in the display mode of their setting occurs.
7. The setting of thermal calibration for relevant nozzle is activated by the ATC text. The setting of electronic calibration of the relevant nozzle counter is activated by the EC text.
8. Terminate the scanning by depressing the "0" key and return to the standard mode.

#### 10.4. Check of vapour recovery system function

This function enables to carry out the independent check-up of vapour recovery from the tank without fuel dispensing.

The check-up it is possible to activate by the help of KL-MANINF keyboard.

The necessary conditions for transition into the check of vapour recovery from the tank:

- from last switch of the counter the dispensing nozzle wasn't lifted
- the transactions must be confirmed (unblocking by the help of RLS entry, if the parameter No. 4 value is 1

#### Notice:

*KL-MANINF manager keyboards from the serial number 2110104000001 enable the activation of vapour recovery check.*

1. Switch the power supply of the fuel dispenser off and wait for min. 30 s.
2. Switch the power supply of the fuel dispenser on.
3. With key „R“ on KL-MANINF keyboard choose the function of vapour recovery check The text Vapour Check appears on the display.
4. By dispensing nozzle lifting the vapour recovery system is activated. On the line of unit price the value of the vapour recovery flow rate 20 l/min displays.  
**Notice:** The dispensing nozzle is equipped with automatic valve which closes the vapour recovery system, if the dispensing nozzle is hanged. Therefore it is necessary to knock the nozzle down for releasing of the valve. During the all check it is necessary to keep the nozzle in the down direction for not closing the valve not to stop vapour recovery.
5. Put testing device (it is not a part of the dispenser delivery - can be ordered from the producer - ELAFLEX Co.) on the nozzle up to the suction channel for vapour recovery or if the testing device is not available, a plastic bag filled with air to cover the suction channel, tight it well and by reducing of its volume check the function of vapour recovery.

6. The check of vapour recovery finish by hanging of all the dispensing nozzles and by pressing of the key „R“. Then the counter will be returned to the mode of fuel dispensing.

## 11. MAINTENANCE OF A DISPENSER AND ITS INDIVIDUAL OPERATING UNITS

The user of the dispenser is obliged to operate the device safely, reliably and in economic way. First of all he is obliged to:

- appoint a worker responsible for the operation and technical conditions of the dispenser and its individual components
- ensure inspection, testing, repairs and maintenance by qualified methods
- carry out records and file documents

### ATTENTION!

**All repairs of operating units can only be carried out by a service repair shop and their serviceman with relevant authorisation.**

### 11.1. Pumping monoblock

Prior to the first start after installation it is necessary to prime the pumping monoblock by pumped fuel. It is carried out by dismantling the filter cover, at first two nuts are removed. Then the liquid is filled through the filter. The pump has to be manually rotated several times after priming. Then the chamber is covered and nuts are properly tightened. Basic maintenance consists of the filtering sleeve exchange, regular tightening of the filter cover nuts and fixing of the bolts of the monoblock to the bracket.

After dispensing a million  $\text{dm}^3$  through the dispenser or once per a year at least check the greasing condition of the pump ball bearing. If necessary grease the bearing by LITOL 24 lubricating grease or a grease of similar quality. Checking should be performed after dismantling the pump belt pulley.

Possible defects of the monoblock:

- clogged filter - exchange the filtering sleeve
- faulty venting, air bubbles appear in the sight glass - it is necessary to check the condition of all sealing parts of the monoblock and complete suction piping
- leakage of the seal - possible seizing of the bearing
- irregular running of the dispenser and higher noise - malfunction of vanes

**Filling station operators replace the filtering sleeve. Other defects shall be serviced by a qualified repair shop!**

Unscrew the filter cover nuts and remove the cover for the exchange of the filtering sleeve. Then seize the flap of the check valve and draw the filter sleeve upward together with the integrated check valve. Then remove the filter sleeve from the filter body and insert a new filter sleeve. Carry out the reassembly. Prior to the reassembly check the condition of the O-rings on the insertion with the integrated check valve and in the filter cover. Replace them if necessary. Faulty O-rings can result in level drop or air intake.

### 11.2. Piston flowmeter

The meter unit consists of the proper meter with integrated impulse detector. Only authorised specialists can handle the metering unit because the meter is officially sealed. If the seals are damaged, it is necessary to carry out an official inspection and new official sealing.

The condition of the meter (e.g. liquid leakage) shall be followed continuously and repairs shall be performed in time. The stability of the set accuracy for the calibrated meter is at least one million  $\text{dm}^3$  for measured dispensed fuel without mechanical impurities. It is recommended to check the meter accuracy after the dispensing of such fuel quantity. Even if the seals are not damaged, the meter shall be periodically inspected and calibrated by a metrological office - once per two years at least.

Also the impulse detector should not be repaired - the meter is replaced only. The fixing of these components is sealed by an official authority, when replaced they are sealed again the official authority.

### 11.3. Electromagnetic two-stage valve

It is used for two-stage closing of flow when dispensing the preselected volume. The first stage partially closes the flow to approximately 10% of the flow rate just before the set value is achieved. The second stage closes the flow completely. The operation of the two-level stage closing of the valve shall be followed and prospective defect shall be repaired in time. The closing and the throttling functions are

eliminated in the service mode. The repair is performed by qualified workers. Fixing bolts of the valve shall be regularly checked and retighten to prevent any liquid leakage.

#### 11.4. Sight glass of the dispenser

It is used for visual inspection of the liquid flow. Possible defects of the sight glass: leakage, broken glass and other damages. All these defects shall be repaired by a qualified worker only.

#### 11.5. Dispensing hose

Special dispensing hoses certified according to EN 1360 and R044-001 standards are used for dispensers.

One end of the dispensing hose is threaded for screwing onto the dispensing nozzle, the adapter for connection to dispenser is on the other end. The dispensing hoses are not repaired but replaced.

**ATTENTION!**  
**THERE IS EXPLOSION HAZARD WHEN USING A NON-CERTIFIED HOSE!!!**

#### 11.6. Dispensing nozzle

It is a terminal part of the dispenser by means of which fuels are dispensed. The dispensing nozzle enables:

- service dispensing - the rate of flow can be controlled up to its full stop by means of control lever
- STOP function - the dispensing nozzle stops the flow if the tank is filled up
- safety function - the dispensing nozzle stops the flow in case of unskilled handling or when the nozzle falls out from the fuel tank filler

After both these safety actions the control lever shall be released to get it automatically back to its initial position. The dispensing nozzle is a highly sensitive and complicated closing device. Therefore replacing is recommended instead of repairing at the filling station. The nozzle is unscrewed from the hose adapter while taking care not to lose the screen located in the nozzle. The screen shall be cleaned regularly because the clogged screen may result in substantial reduction of fuel flow.

#### 11.7. V-belt of the pump

A swivelling bracket of the el. motor is used for tightening the pump V-belt. After replacing the fixing bolt the motor can be shifted so that the V-belt has 10 to 12 mm sag if slightly pushed down by hand. Then the bolt is retighten. The V-belt must satisfy the conductivity property according to ISO 1813 and R044-001. **The V-belt of identical dimensions and similar conductivity property shall be used for the replacement of the existing V-belt.** The contact surfaces of V-belt pulleys shall be metal clean to provide earthing.

**ATTENTION!**  
**THERE IS EXPLOSION HAZARD WHEN USING A NON-CONDUCTIVE V-BELT!!!**

#### 11.8. Dismantling of covers

It is carried out in required scope during installation, routine maintenance, minor repairs and modifications of electric or hydraulic parts.

**The original location of covers must be held in remounting!**

##### Covering of hose and hydraulic modules

To make the interior of the hose module accessible for the dismantling of hoses, hydraulic piping, vapour exhaust recovery piping, hangers of hoses, cable bushings, counter case and nozzle covers, it is necessary to remove the rear cover of the hose module by unscrewing eight bolts M8 on the side of this cover. After lifting off and pushing upwards the cover can be dismantled. To make the access easier we recommend to dismount the upper cover of this module by unscrewing bolts M6 accessible from the upper part. To make hydraulic units, filters junction boxes and vacuum pumps accessible, dismantle the doors by unlocking, lifting off and pushing upwards. If the access from the upper part of the hydraulic module is also required, dismount the integrated upper and side cover by unscrewing 7 bolts M8 connecting the cover and the hose module column and the last hydraulic unit console.

Disassembly of covering of dispensers equipped with hose winding device is carried out similarly to the above mentioned procedure.

##### Covering of counter case

Face covers are disassembled by unlocking the cover and lifting it upwards on hinges. The cover lifted is screwed by means of the cover holder in the upper position.

Any handling the electric and electronic parts may only be carried out by a specialist who is responsible for the safety of the equipment. The IP 54 protection may not be affected during the counter case handling. It is necessary to check the gasket prior to remounting the cover. Damaged gasket shall be replaced.

#### **Dismounting of the metering unit**

Dismount the covers, unscrew 4 bolts M8 connecting the meter to the joining piece. Disconnect the flange connection to electromagnetic valve, dismount the bolts of the integrated detector and remove it from the meter. Reverse procedure is used for remounting the meter.

#### **Dismounting of the electromagnetic valve**

Disassemble the covers of hydraulics, disconnect the joining tube by means of a cap nut. Then dismount the fixing bolts of the valve flange. Release the wires of electromagnetic spools in bushings after removing the covers of the hose module. Then disconnect the wires in the counter case and remove the valve after withdrawing the wires from the wire bundle. Reverse procedure is used for mounting the valve.

#### **Dismantling of the vacuum pump set**

After the disassembly of covers of the hose module and the hydraulic module release the cover of the vacuum pump set if an integrated set located on the bearer in the hose module column for V-line H 46xx, 47xx dispensers. Release the cable of the vacuum pump motor in the bushing and disconnect the cable in the counter case. Remove the set. Reverse procedure is used for remounting.

The vacuum pump of V-line R dispensers is located on the supporting bracket in the hydraulic space and is el. motor driven by V-belt. The vacuum pump can be removed when the V-belt is removed and fixing bolts are disassembled.

#### **Dismantling of distribution piping**

Dismantling of pipes is carried out by loosening the G1" cup nuts screwed on the electromagnetic valve thread and on the equal-angle piece in the hose module. Then the tubes can be removed.

#### **ATTENTION!**

**After any service intervention and remounting it is necessary to check visually the tightness of bolted connections and possible fuel leakage shall be eliminated.**

### **11.9. Maintenance instructions for dispenser body parts**

Good appearance of dispensers is a part of the filling station standard. Even if the parts of external covering have either been provided with coats of good quality or made of stainless steel, their maintenance should be carried out regularly. Instructions for use specified by the supplier shall be adhered to.

Higher attention should be paid to these parts in winter season because of unfavourable effect owing to aerosol from chloride agents used for road maintenance. Preservative polishing agents are recommended for the restoration of surfaces stained by fuel liquids.

The maintenance of the dispenser covering is carried out by filling station operators.

#### **Recommended time intervals for the maintenance of dispenser body parts:**

- washing the dispenser with hot water - twice per month at least (according to staining severity and season of the year)
- washing the dispenser with surfactant, proper cleaning of covers from salt residues, dust and grease with subsequent restoration of preservative coating on the body parts - once per month (according to the season of the year)
- washing the dispenser with surfactant and restoration of preservative coating is also recommended after more extensive surface staining by fuels

#### **Recommended time interval for the maintenance of stainless body parts:**

washing of parts by surfactant, thorough cleaning of salt residues, dust and grease followed by the renewal of protective coating on body parts - by special agent for the protection of stainless steel sheet - e.g. ULTRAPUR-d agent (manufactured by MMM - Group, Germany) - once a month.

### **11.10. Electronic counter**

No maintenance of the electronic counter is performed. Any manipulation with the counter and wiring of the dispenser can be only performed by a qualified person.

The electronic counter itself is repaired by replacement at the filling station.

## 12. DISASSEMBLY AND DISPOSAL

Considering the fact that the residues of fuel always are left in hydraulic distributing systems and in hydraulic parts of the dispenser it is necessary to pay **higher attention to the disassembly and disposal**. The dismantling must be carried out on dripping grids where the residues of fuels are safely removed into dripping tanks.

It is forbidden to carry out the disposal by using burners and sparkling device.

Hoses have to be disposed according to special regulations for the disposal of ecologically undesirable materials.

## 13. SUMMARY OF BASIC PRINCIPLES FOR DISPENSER MAINTENANCE

### ATTENTION !

Prior to all maintenance activities relevant to mechanical, hydraulic or electric parts it is always necessary to switch el. current off and carry out reliable provision to prevent its incidental switching on.

Service manipulation is performed in accordance with operating regulations for the filling station.

- replace the filter sleeve of the pump filter in compliance with the mode of operation and ensure proper reassembly of the filter
- keep all operating units of dispenser clean to enable easy identification and rapid repair of unexpected failure
- check systematically all joints and if any leakage is identified, retighten the joint or make it tight
- check and tighten the V-belt by means of a swivelling bracket of the motor if required
- check and if required tighten the bolts fixing the el. motor and the monoblock to the bracket
- check the condition of the dispensing nozzle; either repair or replace the nozzle according to the type and extent of the failure
- check the door lock function, grease it occasionally
- pay attention to the cleanness of the dispenser, especially the glass of the counter
- discharge sediments, water or other contaminants from the tank (containers of fuel) by means of sludge pumps

## 14. TRANSPORT

The customer shall agree to the method of dispenser transport from the manufacturer in the contract. In case Adast Systems, a.s. provides the transport for the customer, the product will be delivered to the agreed destination. The manufacturer possesses the necessary knowledge of handling and transportation methods. In case the customer is responsible for another method of transport, the manufacturer shall ensure professional loading of the product but is not responsible for the transport itself. It is generally accepted that the dispenser shall be shipped properly boxed and always fixed to the frame. The dispenser should be protected against damage (of covering and painting), displacement and rolling over on the means of transport. A special frame with holes for forklift is used for the of the dispenser. All manipulation and transport have to be carried out only in vertical position - the dispenser must not be put on its covering.

### ATTENTION!

Only forklifts are allowed to be used for manipulation. If other handling devices are used, Adast Systems, a.s. does not guarantee any prospective damage!

### 14.1. Transport of V-line 46xx.xxx, 47xx.xxx fuel dispenser and its putting on the base frame

1. The dispenser is fixed to transport supports, item 1 and 2. The supports are bolted to wooden beams (item 3) ensuring the dispenser stability during transport.
2. Dispenser unpacking, transport beams removal
  - Remove external packing.
  - Push the fork of the high forklift into rectangular holes in the transporting supports, item 1 and 2, lift the dispenser up, remove the bolt connection, item 4, connecting the transport supports and the wooden beams.
  - Put the dispenser on the base frame in the filling station.
3. Procedure for handling the dispenser, disassembly of transport supports and fastening the dispenser to the base frame:
  - Disassemble doors from both sides of the dispenser and remove the bolt connection between the dispenser and the transport support. Remove this bolt connection through the hole for hose guideway in the hose module.
  - Remove the support of the transport frame, item 1 and 2 by steps (see Fig. 1) by tilting the dispenser.
  - The dispenser tilting is performed by forcing to the upper part of the dispenser next to the nozzle hangers and corners of the hydraulic module.
  - Tilting shall allow handling the support, item 1, but not more than 5 mm (see Fig. 2).
  - Tilt the support, item 1, by 90° and lower the dispenser on it (see Fig. 3).
  - Release the support, item 2, by direct forcing to opposite side of the dispenser and then tilt the item 2 by 90° in the same way as for the item 1 and lower the dispenser on it (see Fig. 4).
  - Release the tilted support, item 1, in the same way and after the same procedure for item 2 lower the dispenser on the base frame to the final position (see Fig. 5 and 6).
  - Fasten the dispenser to the base frame by means of bolts.

Transport of V-line 46xx.xxx, 47xx.xxx dispensers

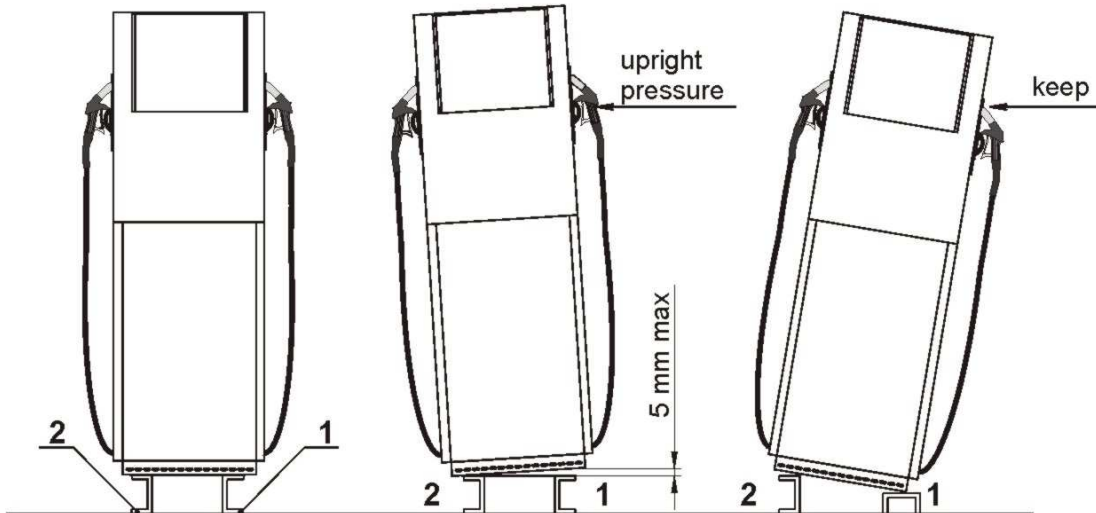
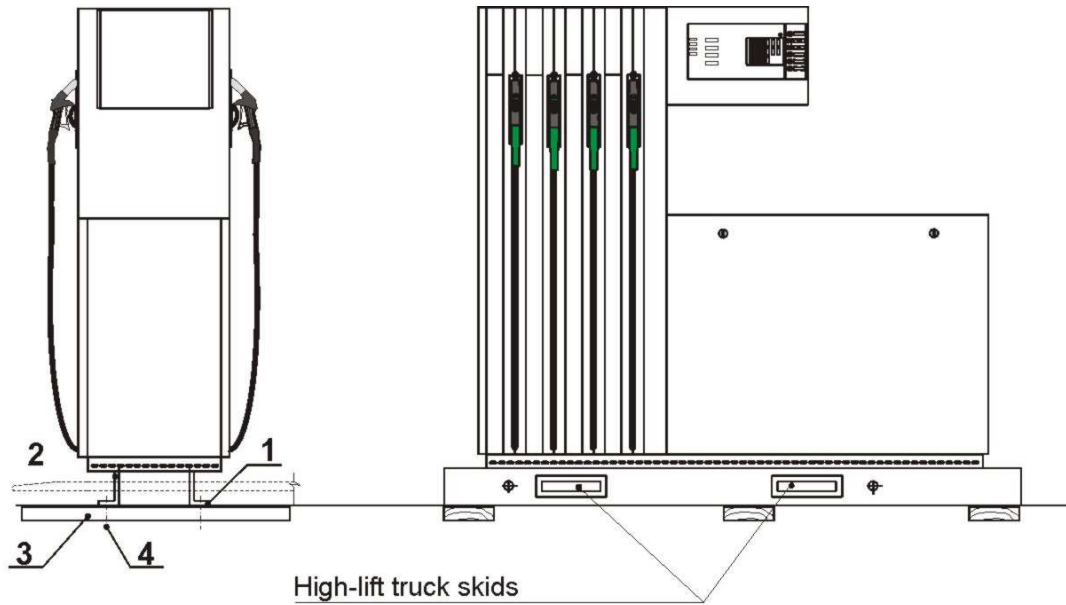


fig. no. 1

fig. no. 2

fig. no. 3

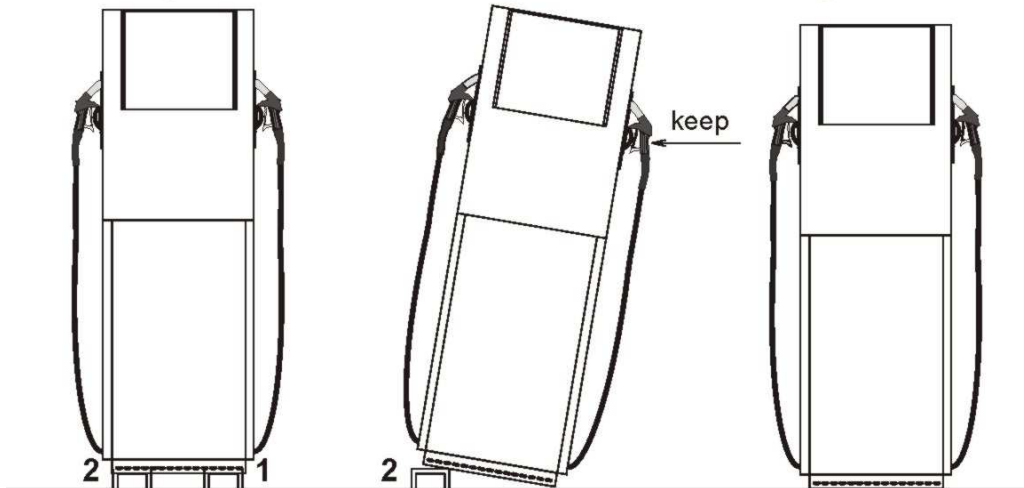


fig. no. 4

fig. no. 5

fig. no. 6

## 15. DISPENSER INSTALLATION

**ATTENTION!**

**THE DISPENSER INSTALLATION CAN BE CARRY OUT ONLY BY THE ORGANISATION AUTHORISED BY MANUFACTURER.**

Read carefully the article 1. **IMPORTANT NOTICE.**

The dispenser can be joined only to process equipment (tanks, piping) of perfect tightness and cleanness. The supplier of the process equipment is responsible for its tightness and cleanness.

Prior to the installation the organisation shall perform the inspection of used power and communication cables.

When the dispenser is installed, they shall check the tightness, function of hydraulic equipment of the dispenser, supply piping and fittings. They also check power and communication cables including their lines and fixing.

Prior to official metrological testing the dispenser (every dispensing nozzle) has to operate for min. 5 minutes in max. flow rate.

**The process and service equipment of filling stations can be operated only when they have been built up according to the approved design and on the basis of positive result of licence regime.**

### 15.1. Hydraulic part

A steel foundation frame will be seated and set in concrete on the shaft in horizontal level (with respect to the final level of the island - e.g. with a paving). The supply line from the fuel storage tank (underground or overground) with G 1 1/2" thread for flanges with inner thread flanges (part of the dispenser delivery) is outgoing from the shaft. The threads should be sealed (caulking or Teflon tape) and pressure tested.

The vapour exhaust recovery will be connected to the T or L pieces (part of the dispenser delivery) by means of M 16 x 1,5 cap nuts of the connecting piping (special hose). The T or L piece is screwed through a reducer on the draw-off pipe DN 25 with external thread G 1" and sealed similarly to suction flanges.

**Leakage is difficult to identify after the dispenser seating!**

The dispenser is connected to the frame. A gasket shall be inserted between the coupling flanges of the lower process equipment and the joining pieces of the dispenser and the joints shall be carefully fixed and tightened. The same procedure is used to connect the vapour exhaust recovery.

**V-line 47xx H, R dispensers intended for pressure distribution system of fuels have to be connected to the piping system of the filling station through the safety breaking valve ensuring the closing of fuel supply to the dispenser in case of any damage. The valve shall be properly fixed to the solid part of the shaft under the dispenser.**

Two versions of the drip-pan located under the dispenser can be used on the basis of the approved design:

- either the drip-pan is a part of the dispenser - it shall be specified in the dispenser order
- or the drip-pan is a part of the lower process equipment

#### 15.1.1. Installation on the filling station with underground tanks

At fuel dispenser installation on the filling station with uderground tanks it is necessary to comply the parameters given in the tables 1 and 2 - Operating flow rate of the fuel dispenser in relation on the fuel storage tanks parameters.

Installation scheme of the fuel dispenser - see the fig. 1

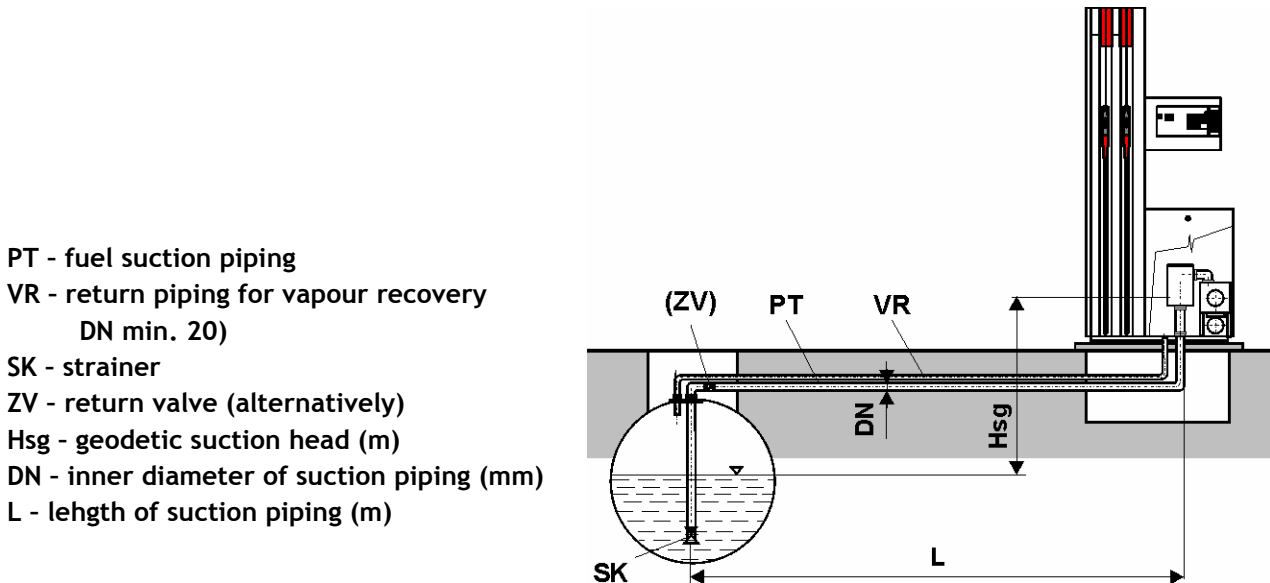
Table 1 - Operating flow rate of the fuel dispenser in relation on the fuel storage tanks parameters for hydraulic unit with  $Q_{max} = 40 \text{ dm}^3 \cdot \text{min}^{-1}$ .

Geodetic suction head $H_{sg \text{ max}} [ \text{ m } ]$	Inner diameter of suction piping $DN_{\text{min}} [ \text{ mm } ]$	Length of suction piping $L [ \text{ m } ]$	Operating flow rate of the fuel dispenser without vapour recovery $Q [ \text{ dm}^3 \cdot \text{min}^{-1} ] \pm 10 \%$	Supposed loss in pressure in suction piping $[ \text{ kPa } ]$
			Petrol	
			Diesel oil	
3	40	10	40	13
			40	
		20	40	14
			40	
		25	35	15
			40	
		30	35	16
			40	
		35	30	17
			35	
		40	25	18
			35	
45	20	19		
	30			
-	50	Greater than 35	Pressure system - submersible pump in the tank	

Table 2 - Operating flow rate of the fuel dispenser in relation on the fuel storage tanks parameters for hydraulic unit with  $Q_{max} = 80 \text{ dm}^3 \cdot \text{min}^{-1}$ ,  $Q_{max} = 130 \text{ dm}^3 \cdot \text{min}^{-1}$ ,  $Q_{max} = 150 \text{ dm}^3 \cdot \text{min}^{-1}$  and  $Q_{max} = 170 \text{ dm}^3 \cdot \text{min}^{-1}$

Geodetic suction head $H_{sg \text{ max}} [ \text{ m } ]$	Inner diameter of suction piping $DN_{\text{min}} [ \text{ mm } ]$	Length of suction piping $L [ \text{ m } ]$	Operating flow rate of the fuel dispenser without vapour recovery $Q [ \text{ dm}^3 \cdot \text{min}^{-1} ] \pm 10 \%$	Supposed loss in pressure in suction piping $[ \text{ kPa } ]$
			Petrol	
			Diesel oil	
3	50	10	80	14
		20	80	15
		25	80	16
		30	75	17
		35	75	18
		40	70	19
		45	65	20
-	50	Greater than 45	Pressure system - submersible pump in the tank	

Fig. 1 - Fuel dispenser connection to the underground tanks



#### 15.1.2. Installation at the filling station with overground (aboveground) tanks

A safety relief check valve (PZV), opening at vacuum pressure  $H_s = -0,03$  MPa max. induced by dispenser pump, shall be installed in the suction piping (PT) connecting the dispenser and the storage tank. The check valve (PZV) is usually connected to the suction fitting located on the tank cover. The check valve prevents permanent supply of stored fuels into the pumping monoblock when the dispenser is out of operation.

The pumping monoblock of dispensers (P 641 type) is designed with air separator permanently open to the deaerating chamber formed by the space in the monoblock body and the space of the monoblock cover. There is a hole in the upper wall of the cover with integrated DN 6 adapter for connecting the air outlet pipe (OT).

To eliminate the overfilling of the deaeration chamber of the pumping monoblock and discharging of fuel into the interior of the dispenser and consequently into its close area in case of the leakage or blocking of the check valve flap when the dispenser is out of operation, it is necessary to connect the separator outlet of the pumping monoblock to the storage tank. This connection shall be carried out by means of a tube (OT) min. 8 x 1 (DN 6) connected to the tube adapter DN 6. The tube adapter with the gasket is screwed into the opening M 12 x 1,5 in the upper wall of the monoblock. The tube outlet mouths in the tank above the level of the stored fuel. The connection shall be carried out by means of the tube adapter DN 6 screwed into the tank cover (tapped hole M 12 x 1,5 in the tank cover shall be made).

Closing the outlet opening of the pumping monoblock separator is not allowed. Accumulation of separated air or fuel vapours and their sequential compression in this closed space of the pumping monoblock or a change in the fuel volume owing to the ambient temperature increase can induce excessive pressure in the hydraulic system. Thus blockage of the fuel dispensing or another defect could occur.

A stop-valve (UV) of relevant nominal inside diameter shall be installed in the suction piping as close to the dispenser as possible (e.g. in the shaft close to the dispenser).

Piping from air separator (OT - min. DN 6 - 8 x 1) install in the tank area above the level of storage fuel.

Scheme of the fuel dispenser installation - see fig. 2 and 3.

Fig. 2 - Fuel dispenser connection to the overground tank

- PT - fuel suction piping
- VR - return piping for vapour recovery  
DN min. 20)
- OT - piping from air separator (min. DN 6)
- PZV - return valve (alternatively)
- UV - stop-valve
- DN - inner diameter of suction piping (mm)
- L - length of suction piping (m)

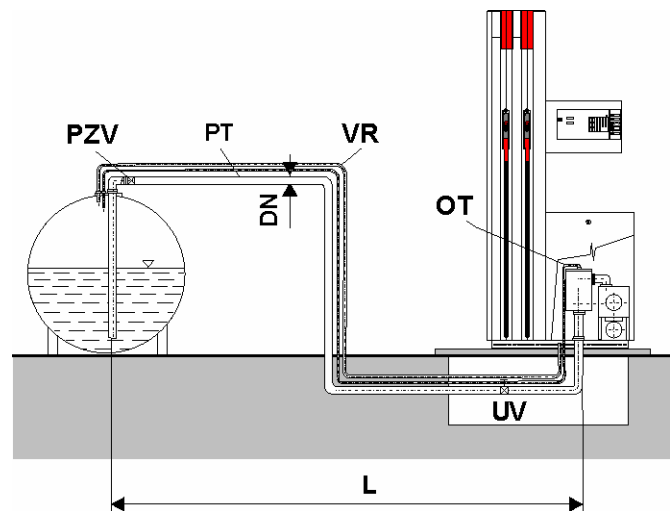
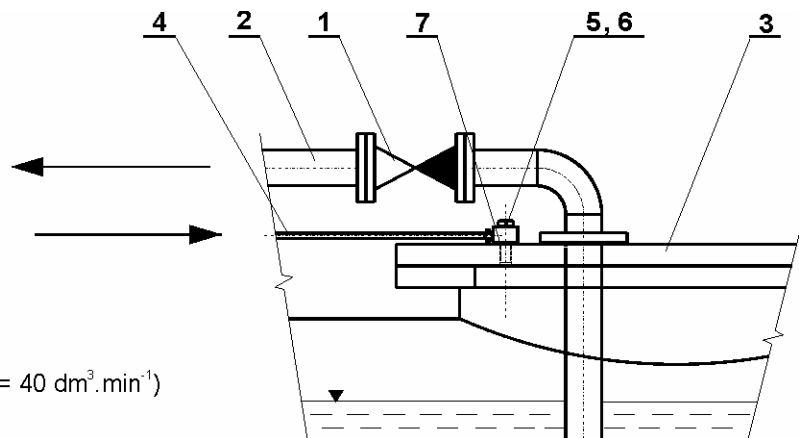


Fig. 3 - Example of the suction piping design for the connection of the fuel dispenser to the overground tank



**Legend:**

- 1. Non-return hypertensive straight valve (DN according to the suction piping)
- 2. Suction piping from the tank DN 40 (Q = 40 dm<sup>3</sup>.min<sup>-1</sup>) or DN 50 (Q = 80 - 130 dm<sup>3</sup>.min<sup>-1</sup>)
- 3. Tank cover
- 4. Tube Ø 8 x 1 (DN 6) for air exhaustion from pumping monoblock
- 5. Angular tube adapter DN 6 - nomenclature 1580700006
- 6. Sealing ring 14 x 18 - nomenclature 1383171814
- 7. Sealing ring 12 x 16 - nomenclature 1383171612

**Notice: Producer can supply the pcs. 5, 6, 7 as the extra packing to the fuel dispenser delivery with listed nomenclature numbers.**

**15.2. Wiring**

Earthing conductor shall be connected to the shaft under every dispenser.

Leads to the dispenser must be sealed to prevent its interior from the penetration of combustible liquids or vapours. Only cable terminals resistant to combustion liquid effect can be used in the shafts under dispensers. The cable bushings can always be used for one cable only.

**ATTENTION!**  
**Emergency switching off:** It shall be enabled to switch off the filling equipment from one point, which is accessible anytime. The electric equipment situated in the explosion hazard area can be switched off by means of the emergency breaker located outside the explosion hazard area. The switch for normal operation can be also used as emergency breaker.

El. motors are equipped with integrated thermal protection which switches off the motor in case of its overload. Any motor can be put into operation by the RESET key on the electronic counter after its cooling down and the remedy of the overload.

Supply conductors are connected to the junction box located in the dispenser.

The communication line cable is connected to the junction box for the communication line.

There are two wiring systems of the filling station: either the communication line is connected to the dispenser (i.e. self-service operation with the control system) or not (i.e. service operation).

**The dispenser in self-service operation** with the control system is connected through the communication line to the control system which controls operation of complete filling station (i.e. dispenser release, preselection of volume and price, unit price alteration, selfdiagnostics, etc.).

## 16. PACKING AND STORAGE

### 16.1. Packing

The packing of dispensers differs in dependence on the point of destination. Dispensers for home market are packed up in bubble wrap, while cardboard wrapping is mostly used for abroad. On preliminary agreement of the customer the dispensers delivered abroad can be also packed up in bubble wrap or other similar packing.

### 16.2. Storage

**Max. storage time under the shelter is 3 months and 1 month for outdoor storage with bubble wrapping. Max. storage time under the shelter is 6 months with cardboard packing.**

## 17. GUARANTEE AND CLAIMING

Reliable operation and service life of the dispenser depends on correct attendance and maintenance. Therefore it is necessary that every employee maintaining or attending the dispenser is acquainted with all principles of correct attendance and maintenance and related regulations for combustibles handling.

**Smoking, handling open fire, tanking vehicles with engine running, etc. are particularly forbidden!**

Defects and shortcomings owing to incorrect or careless attendance and maintenance of the dispenser and its individual functional parts are not included in the guarantee. Therefore any complaint within this matter would be acknowledged.

The disposal of sludge, water or other impurities from tanks (fuel storage tanks) shall be ensured entirely. It is carried out by means of decantation equipment which shall be a part of the filling station equipment. If the manufacturer carrying out guarantee repairs identifies excessive quantity of impurities in the hydraulic system, the complaint will not be accepted and expenses will be charged to the user.

**Claims will not be acknowledged due to the following reasons:**

- Use of unsuitable fluid (non-standard liquid fuels, substances containing water, diluting agents, etc.).
- **Shortcomings owing to incorrect design or imperfect assembly of "the lower process equipment", i.e. tank location, length and diameter of piping, type and characteristics of fittings, overrun of suction head values etc. - fuel dispenser installation on the filling station must answer the given criteria from point no 15. hereof instructions.**
- **The recommended highest operation suction head is - 45 kPa and max. length of suction piping for individual fluids:**  
   for petrol .....35 m  
   for Diesel oil .....45 m
- Leakage in the hydraulic system of the storage results in permanent air intake into the pumping monoblock - air separator is in permanent function - dispensing discontinuance occurs.
- **Consequence: increased wear of pumps**
- Faulty check valves in the suction line can cause its systematic discharging ("level drop")  
**Consequence: irregular and unreliable run, considerable stressing of pumps, increased wear of the pump vanes in "idle running", reduction of pump service life.**
- Defects owing to impurities in fluid can result in the seizing of the rotor, destruction of vanes or their excessive wear as well as excessive wear of rotor, stator and bearings of the gland, etc. With meters the impurities can result in function locking, excessive wear of slide valve gear, cylinders and packing.
- Defects owing to faulty high-power wiring at the filling station, e.g.:
  - incorrect installation of the switchboard
  - incorrect earthing system
  - incorrect cable distribution systems - power cables together with communication cables

- Defects from faulty low power wiring at the filling station, faulty wiring of communication cables especially as far as interference is concerned
  - missing UPS (ON LINE) - mains supply
  - standardised voltage values: U nominal  $\pm 15\%$  with frequency 50 Hz

The guarantee does not cover consumable supplies: filter bushings, V-belts, etc.

The guarantee and claiming are specified in the contract.

**The guarantee claims can only be asserted at the purchaser of the fuel dispenser.**

**Claiming faulty function of the dispenser specify the following data:**

- Serial number of the dispenser, its name, as specified on the rating plate of the dispenser.
- Precise description of the defect or failure.
- Description of circumstances when the defect occurred.
- If a complaint is claimed within the guarantee period, the seals may not be broken without previous consent.

If the seals have been broken or some not permitted unqualified handling the dispenser found out, the complaint will not be admitted.

For dispensers with control system or with control system and local preselection the complaint concerning the control system, electronics and software of dispensers cannot be acknowledged because of non-observance of wiring conditions and operation of the permanent feeding source UPS (UPS - Uninterruptible Power Supply).

## 18. SPARE PARTS CATALOGUE

Spare parts catalogues of the dispenser are supplied to service organisations. The user can request the spare part catalogues from the manufacturer.

## 19. ACCESSORIES

Parts of the dispenser delivery:

- Transporting and manipulation supports
- **Set for hydraulic system connection to V-line 46xx.xxx dispensers (see Enclosure No. 9):**
  - connecting pieces (suction corrugated pipe) are either screwed to the filter of the monoblock or enclosed extra
  - threaded flanges for the supply piping
  - O-rings for connecting pieces
  - cover of the inlet opening - in case of drip-pan installation
- **Set for hydraulic system connection to V-line 47xx.xxx dispensers (see Enclosure No. 10):**
  - connecting pieces
  - packing
- **Set of parts for the connection of vapour exhaust recovery (see Enclosure No. 9)**
- **Electrical set (see Enclosure No. 12 - 17)**
  - plug ATEX
- **Set for the dispenser connection to the base frame - by M 12x70 bolts and special washers (see Enclosure No. 9)**
- **KL-MANINF infrared manager keyboard** - for the selection of unit prices and display of electronic totalizers for dispensers not connected to the control system of the filling station (service operation of the filling station) - optional

## 20. DOCUMENTATION DELIVERED

- User's Manual
- EC Declaration of Conformity
- Service manual

## 21. ENCLOSURES

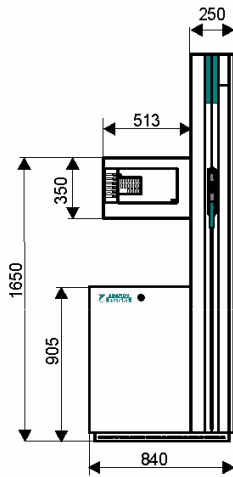
Encl. No.	1	Main dimensions of dispensers V-line major H 46xx.xxx, 47xx.xxx series	
Encl. No.	2	Main dimensions of dispensers V-line major R 46xx.xxx, 47xx.xxx series	
Encl. No.	3	Dispensing nozzle positions during fuel dispensing	
Encl. No.	4	Minimum distances between side wall of the fuel dispenser and steady barrier at the location on the filling station Detail of the fuel dispenser location on the filling station island	
Encl. No.	5	Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers with drip-pan	
Encl. No.	6	Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers with drip-pan	
Encl. No.	7	Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers without drip-pan	
Encl. No.	8	Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers without drip-pan	
Encl. No.	9	Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers Connection of modules V-line 46xx, Connection of output to satellite Connection of vapour recovery Detail of the dispenser connection to the base frame	
Encl. No.	10	Connection of the dispenser module V-line 47xx.xxx	
Encl. No.	11	Conditions of connection and operation of UPS for feeding the control system and electronic parts of V-line dispensers	
Encl. No.	12	Connection of dispenser V-line 46xx.xxx to the filling station switchboard	
Encl. No.	13	Connection of dispenser V-line 46xx.xxx with satellite to the filling station switchboard	
Encl. No.	14	Connection of dispenser V-line 47xx.xxx with vapour recovery system to the filling station switchboard	
Encl. No.	15	Connection of dispenser V-line 47xx.xxx without vapour recovery system to the filling station switchboard	
Encl. No.	16	Connection of dispenser V-line 47xx.xxx with satellite and vapour recovery system to the filling station switchboard	
Encl. No.	17	Connection of dispenser V-line 47xx.xxx with satellite without vapour recovery system to the filling station switchboard	
Encl. No.	18	Connection of the fuel dispenser heating to the filling station switchboard (valid only for the fuel dispenser with electronic case heating)	
Encl. No.	19	The model marking on the dispenser V-line 46xx.xxx, 47xx.xxx rating plate	
Encl. No.	20	The model marking on the dispenser V-line 46xx.xxx/CA, 47xx.xxx/CA rating plate	
Encl. No.	21	EC DECLARATION OF CONFORMITY - FUEL DISPENSER TYPE SERIES line 46xx.xxx, V-line 47xx.xxx	V-

Adast Systems, a.s., Mírová 2, 679 04 ADAMOV, Czech Republic

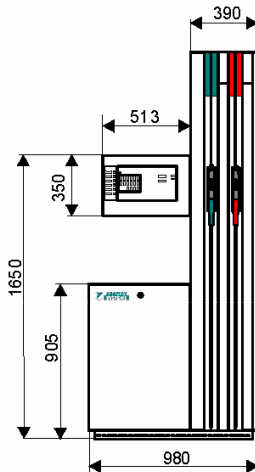
**Regarding continuous development the producer stipulates the right to pursue technical changes!**

### Main dimensions of dispensers V-line H 46xx.xxx, 47xx.xxx series

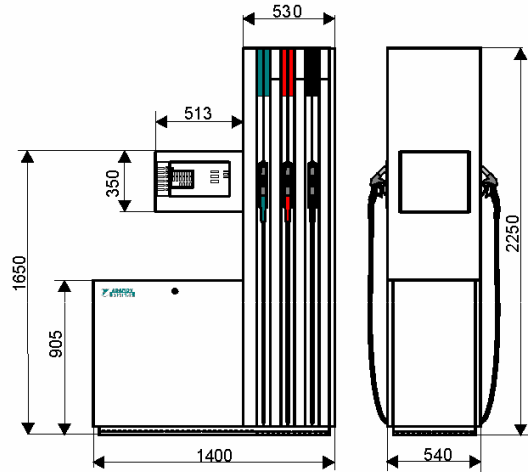
**V-line H 4601.xxx**  
**V-line H 4701.xxx**



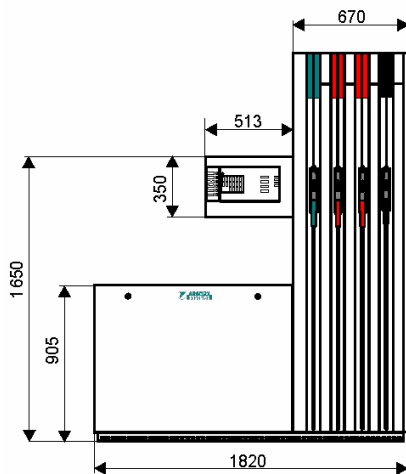
**V-line H 4602.xxx**  
**V-line H 4702.xxx**



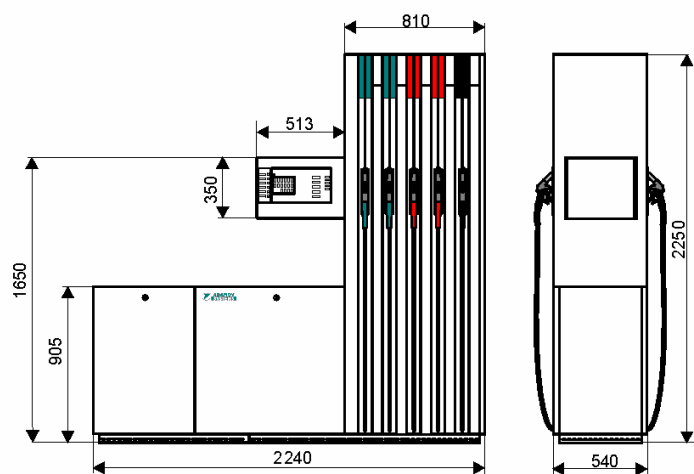
**V-line H 4603.xxx**  
**V-line H 4703.xxx**



**V-line H 4604.xxx**  
**V-line H 4704.xxx**

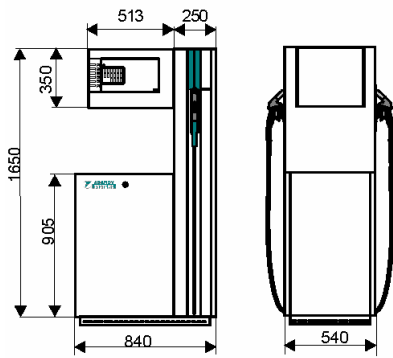


**V-line H 4605.xxx**  
**V-line H 4705.xxx**

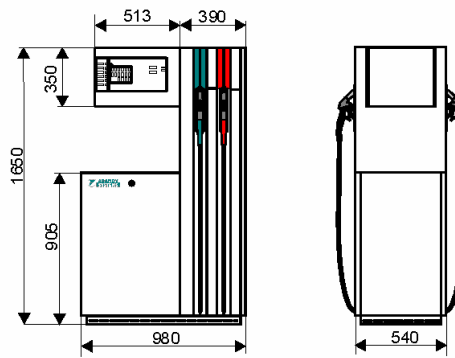


### Main dimensions of dispensers V-line R 46xx.xxx, 47xx.xxx series

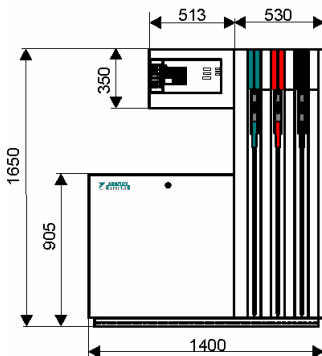
V-line R 4601.xxx  
V-line R 4701.xxx



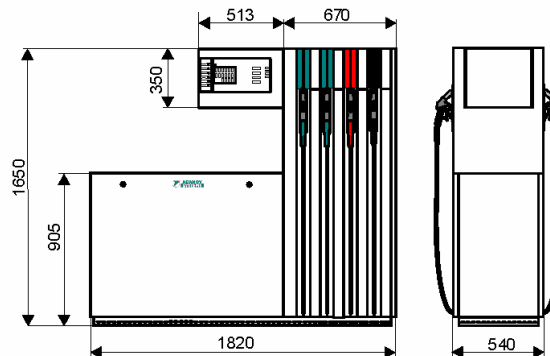
V-line R 4602.xxx  
V-line R 4702.xxx



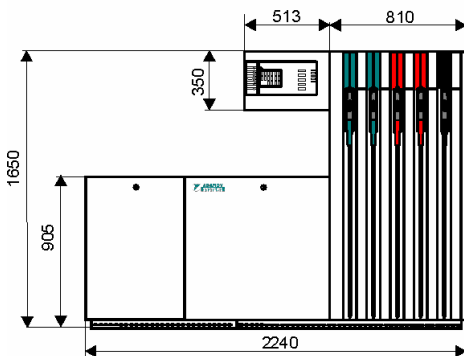
V-line R 4603.xxx  
V-line R 4703.xxx



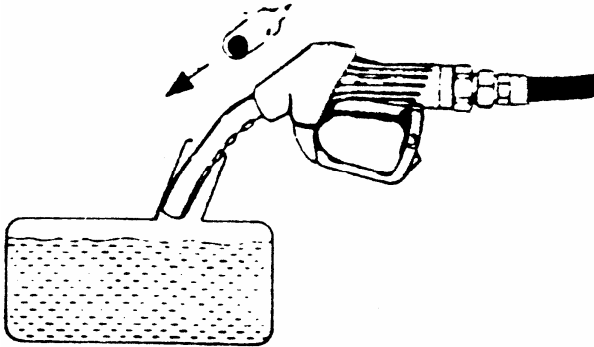
V-line R 4604.xxx  
V-line R 4704.xxx



V-line R 4605.xxx  
V-line R 4705.xxx

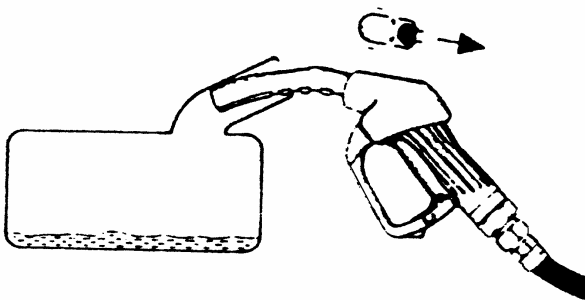


## Dispensing nozzle positions during fuel dispensing



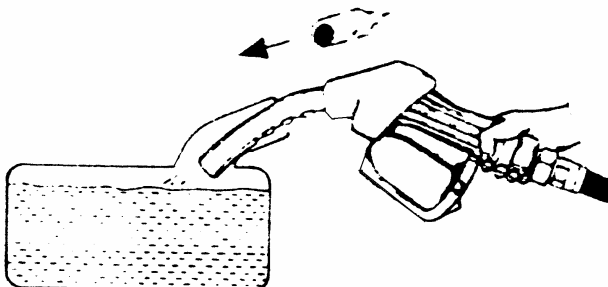
1. Correct position of dispensing nozzle during filling

The dispensing nozzle is almost in the horizontal position, the ball does not prevent from air passing, the fuel flows through



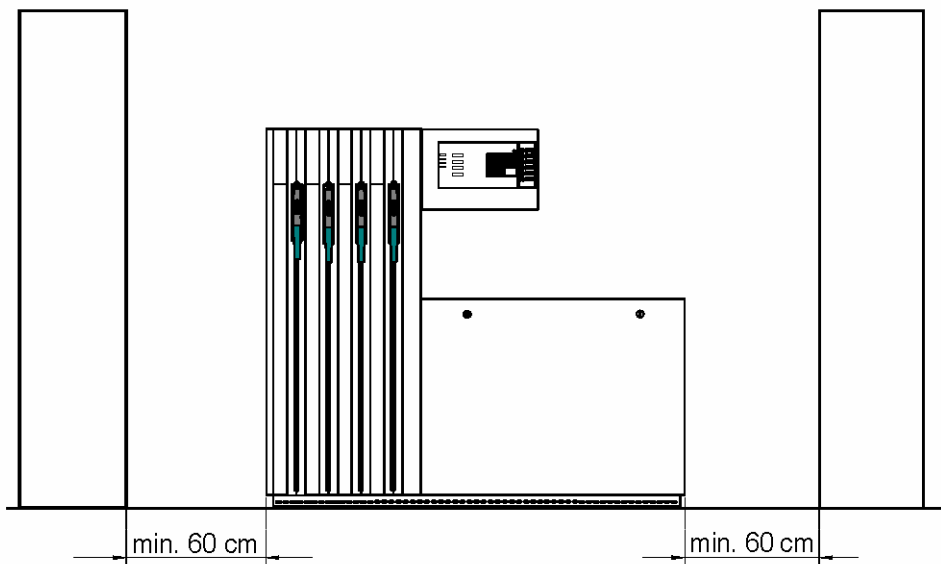
2. Incorrect position of dispensing nozzle during filling

The dispensing nozzle is diverted from the horizontal plane (drawn position). The ball prevents from air passing - the fuel does not flow through.

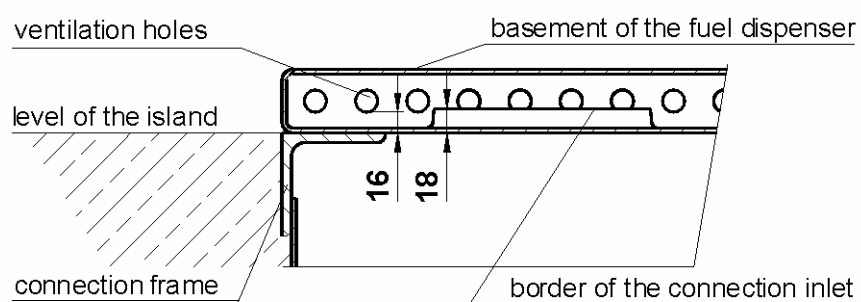


3. Due to different executions of inlet fuel tank sockets, it is necessary to find an optimum position of the dispensing nozzle, when the fuel still flows through. The flow can be broken when the fuel flow from the dispensing nozzle strikes to the tank filler wall. In such case an optimum position must be found, too.

**Minimum distance between the fuel dispenser and steady barrier at the location on the filling station**



**Detail of the fuel dispenser location on the filling station island**



High of the island must not overreach the edge level of the connection frame.

## Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers with drip-pan

**V-line 4601.010**

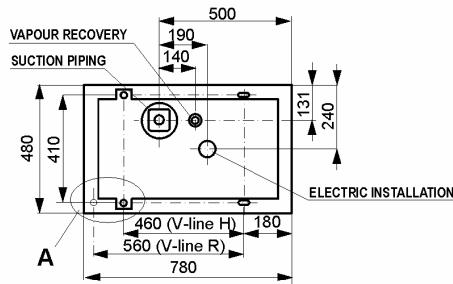
**V-line 4701.010**

1 product  
1 nozzle  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V-line 4601.020**

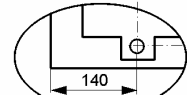
**V-line 4701.020**

1 product  
2 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

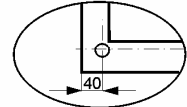


**DETAIL A**

**V - line H**



**V - line R**



**V-line 4602.020**

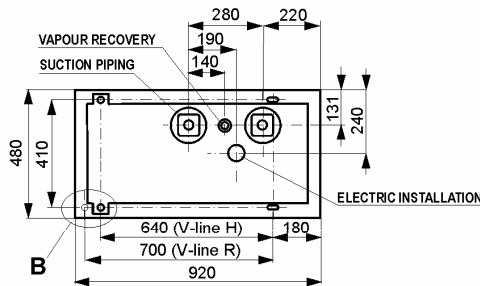
**V-line 4702.020**

2 products  
2 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V-line 4602.040**

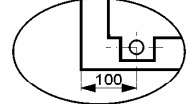
**V-line 4702.040**

2 products  
4 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

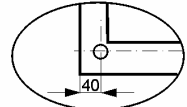


**DETAIL B**

**V - line H**



**V - line R**



**V-line 4603.030**

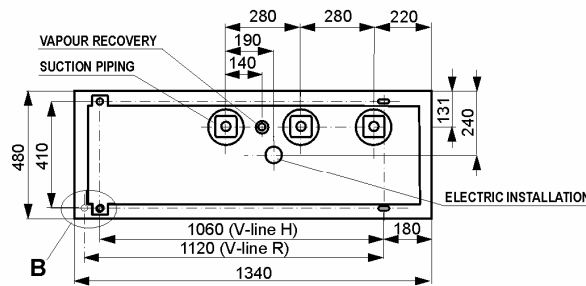
**V-line 4703.030**

3 products  
3 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V-line 4603.060**

**V-line 4703.060**

3 products  
6 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$



**V-line 4604.040**

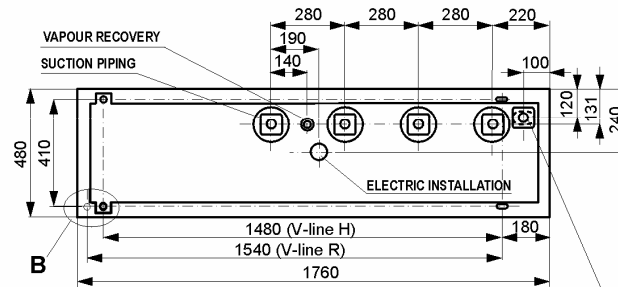
**V-line 4704.040**

4 products  
4 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V-line 4604.080**

**V-line 4704.080**

4 products  
8 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$



INLET ONLY IN THE CASE OF CONNECTION WITH SATELLITE

**V-line 4605.050**

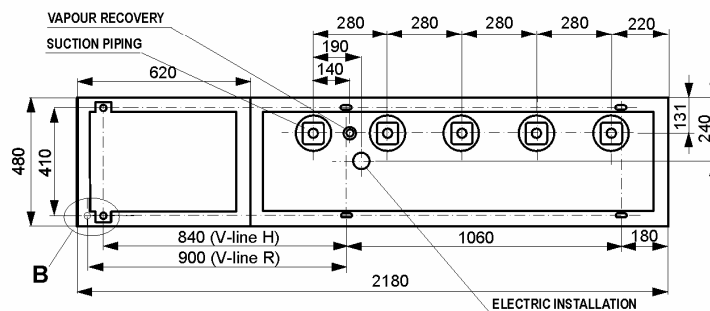
**V-line 4705.050**

5 products  
5 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V-line 4605.0100**

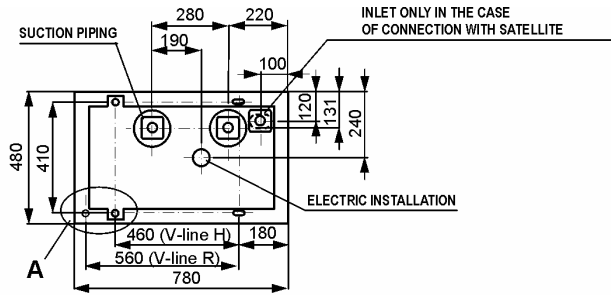
**V-line 4705.0100**

5 products  
10 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$



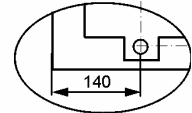
## Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers with drip-pan

**V-line 4601.100/130**  
**V-line 4701.100/130**  
 1 product  
 1 nozzle  
 one-sided output  
 $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$

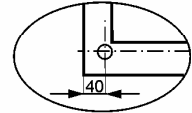


DETAIL A

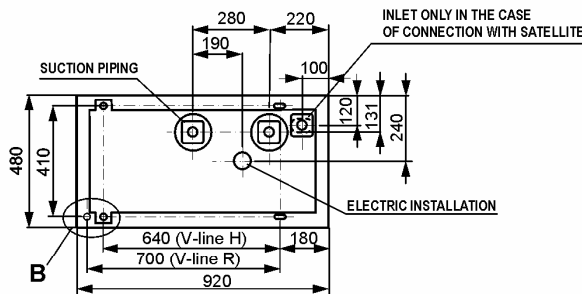
V - line H



V - line R

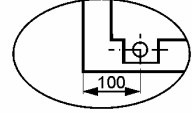


**V-line 4602.110/130**  
**V-line 4702.110/130**  
 1 product  
 2 nozzles  
 one-sided output  
 $1 \times Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 $1 \times Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$

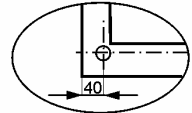


DETAIL B

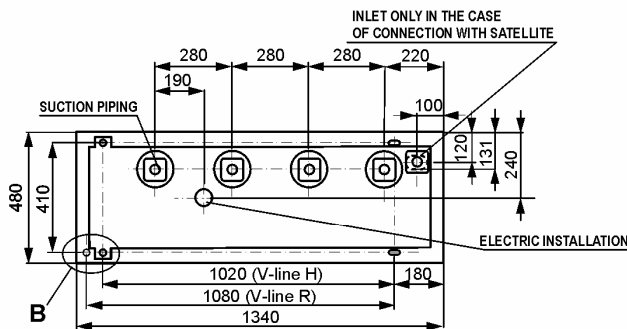
V - line H



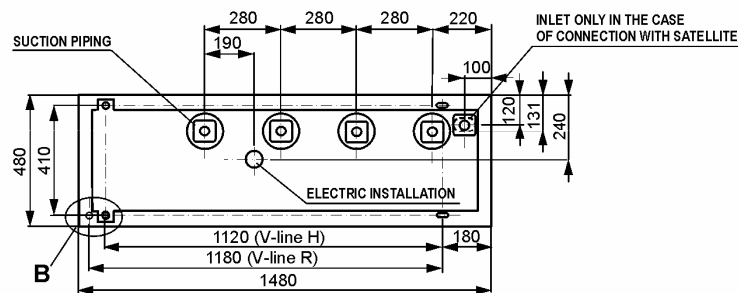
V - line R



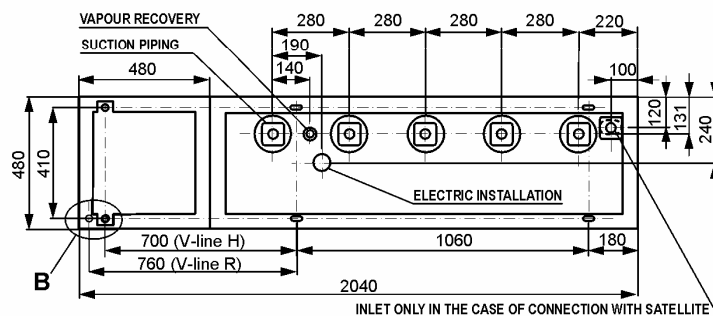
**V-line 4601.200/130**  
**V-line 4701.200/130**  
 1 product  
 2 nozzles  
 double-sided output  
 $2 \times Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$



**V-line 4602.220/130**  
**V-line 4702.220/130**  
 1 product  
 4 nozzles  
 double-sided output  
 $2 \times Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 $2 \times Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$



**V-line 4604.130/130**  
**V-line 4704.130/130**  
 4 products  
 4 nozzles  
 one-sided output  
 $3 \times Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 $1 \times Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$



**V-line 4604.260/130**  
**V-line 4704.260/130**  
 4 products  
 8 nozzles  
 double-sided output  
 $6 \times Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 $2 \times Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$

## Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers without drip-pan

**V- line 4601.010**

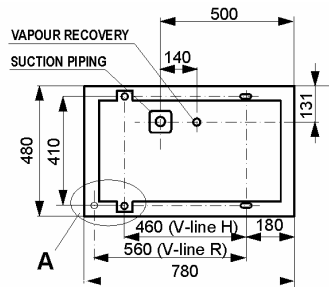
**V- line 4701.010**

1 product  
1 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V- line 4601.020**

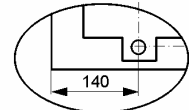
**V- line 4701.020**

1 product  
2 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

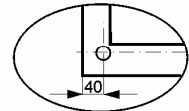


**DETAIL A**

**V - line H**



**V - line R**



**V- line 4602.020**

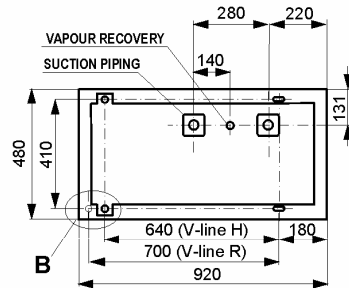
**V- line 4702.020**

2 products  
2 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V- line 4602.040**

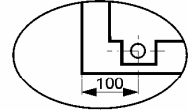
**V- line 4702.040**

2 products  
4 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

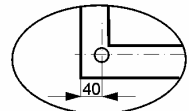


**DETAIL B**

**V - line H**



**V - line R**



**V- line 4603.030**

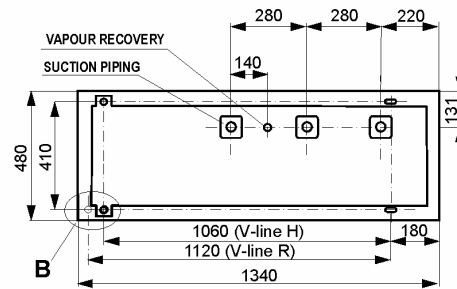
**V- line 4703.030**

3 products  
3 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V- line 4603.060**

**V- line 4703.060**

3 products  
6 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$



**V- line 4604.040**

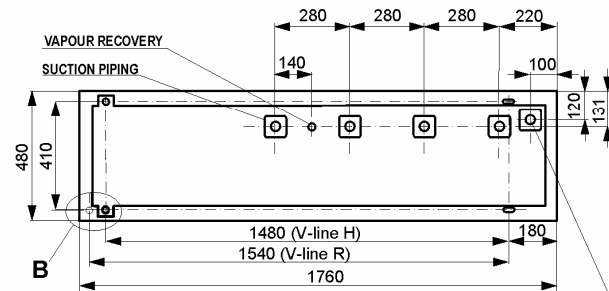
**V- line 4704.040**

4 products  
4 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V- line 4604.080**

**V- line 4704.080**

4 products  
8 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$



CONNECTION WITH SATELLITE

**V- line 4605.050**

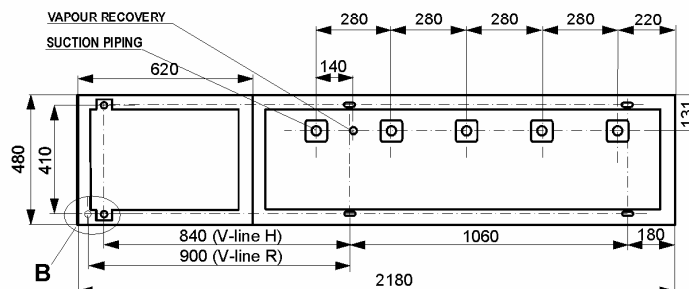
**V- line 4705.050**

5 products  
5 nozzles  
one-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

**V- line 4605.0100**

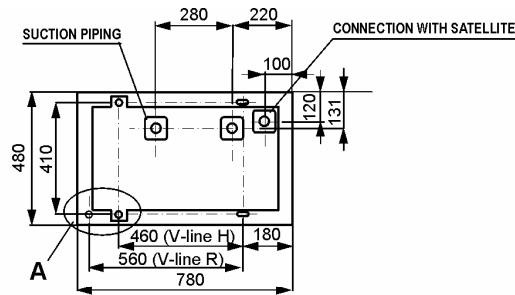
**V- line 4705.0100**

5 products  
10 nozzles  
double-sided output  
 $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$



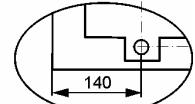
## Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx dispensers without drip-pan

**V- line 4601.100/130**  
**V- line 4701.100/130**  
 1 product  
 1 nozzle  
 one-sided output  
 $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$

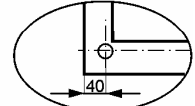


**DETAIL A**

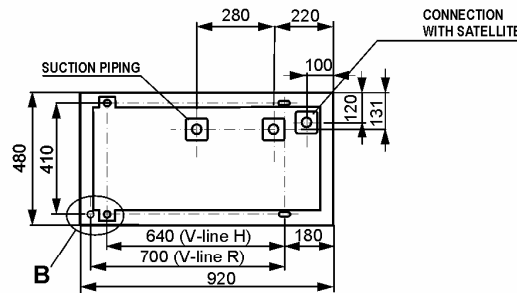
**V - line H**



**V - line R**

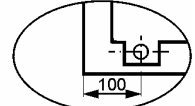


**V- line 4602.110/130**  
**V- line 4702.110/130**  
 1 product  
 2 nozzles  
 one-sided output  
 1 x  $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 1 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$

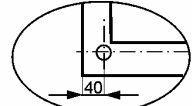


**DETAIL B**

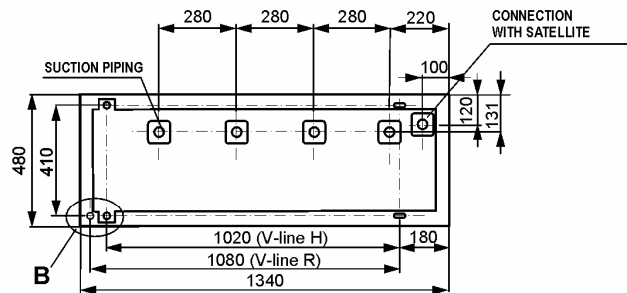
**V - line H**



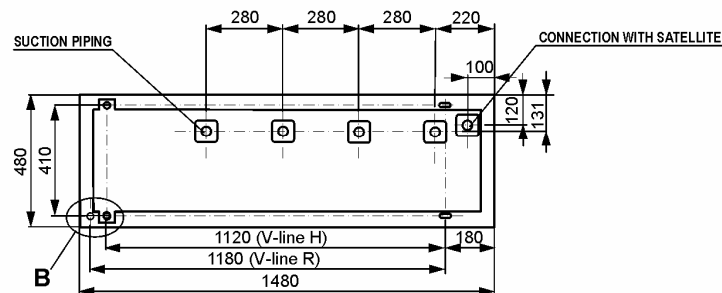
**V - line R**



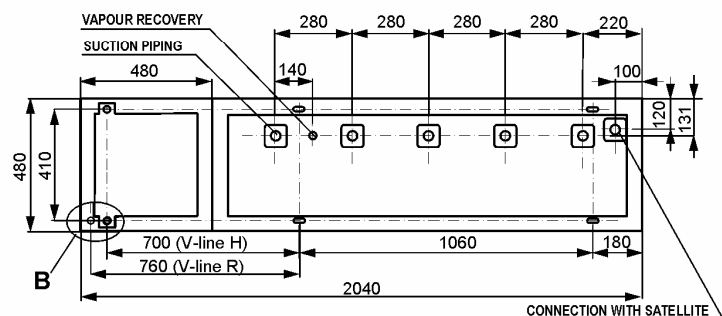
**V- line 4601.200/130**  
**V- line 4701.200/130**  
 1 product  
 2 nozzles  
 double-sided output  
 2 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$



**V- line 4602.220/130**  
**V- line 4702.220/130**  
 1 product  
 4 nozzles  
 double-sided output  
 2 x  $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 2 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$



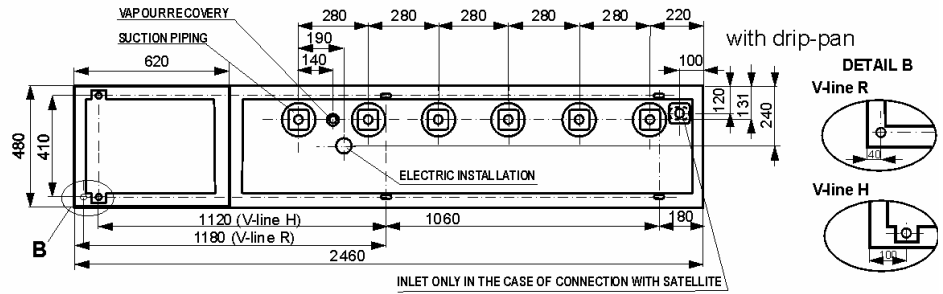
**V- line 4604.130/130**  
**V- line 4704.130/130**  
 4 products  
 4 nozzles  
 one-sided output  
 3 x  $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 1 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$



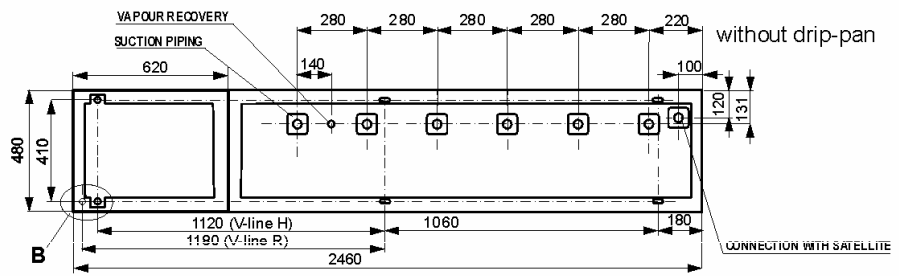
**V- line 4604.260/130**  
**V- line 4704.260/130**  
 4 products  
 8 nozzles  
 double-sided output  
 6 x  $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 2 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$

## Installation dimensions of V-line H and V-line R 46xx.xxx, 47xx.xxx fuel dispensers

- V-line 4605.140/130**  
**V-line 4705.140/130**  
 5 products  
 5 nozzles  
 one-sided output  
 4 x  $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 1 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$
- V-line 4605.280/130**  
**V-line 4705.280/130**  
 5 products  
 10 nozzles  
 double-sided output  
 8 x  $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 2 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$

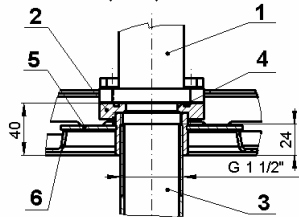


- V-line 4605.140/130**  
**V-line 4705.140/130**  
 5 products  
 5 nozzles  
 one-sided output  
 4 x  $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 1 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$
- V-line 4605.280/130**  
**V-line 4705.280/130**  
 5 products  
 10 nozzles  
 double-sided output  
 8 x  $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$   
 2 x  $Q = 130 \text{ dm}^3 \cdot \text{min}^{-1}$



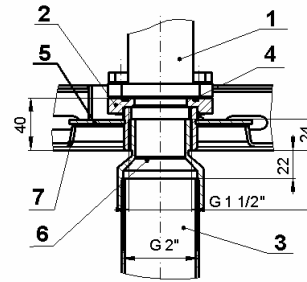
### Connection of module V-line 46xx $Q = 40 \text{ dm}^3 \cdot \text{min}^{-1}$

#### Connection of satellite outlet $Q = 40, 80, 130 \text{ dm}^3 \cdot \text{min}^{-1}$



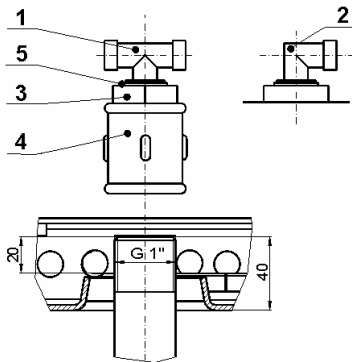
1. Suction connecting flexible piece (corrugated pipe) DN 40
2. Connecting flange
3. Suction tube DN 40 (it is not a part of the fuel dispenser)
4. "O" sealing ring
5. Inlet cover - modification in case of drip-pan assembly
6. Drip-pan - optional acc. to the filling station design

### Connection of module V-line 46xx $Q = 2 \times 40, 80, 130, 150, 170 \text{ dm}^3 \cdot \text{min}^{-1}$



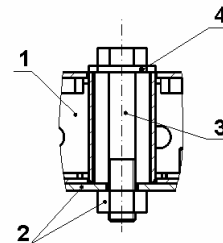
1. Suction connecting flexible piece DN 40
2. Connecting flange
3. Suction tube DN 50 (it is not a part of the fuel dispenser)
4. "O" sealing ring
5. Inlet cover - modification in case of drip-pan assembly
6. Adapter M4 acc. to EN 10242
7. Drip-pan - optional acc. to the filling station design

### Connection of vapour recovery



- 1 - Socket (T) of tube connection DN 8
- 2 - Angular socket (L) DN 8
- 3 - Reducer - mark N4, G 1" / 3/8"
- 4 - Socket with inner thread G 1"
- 5 - Sealing ring 17 x 24

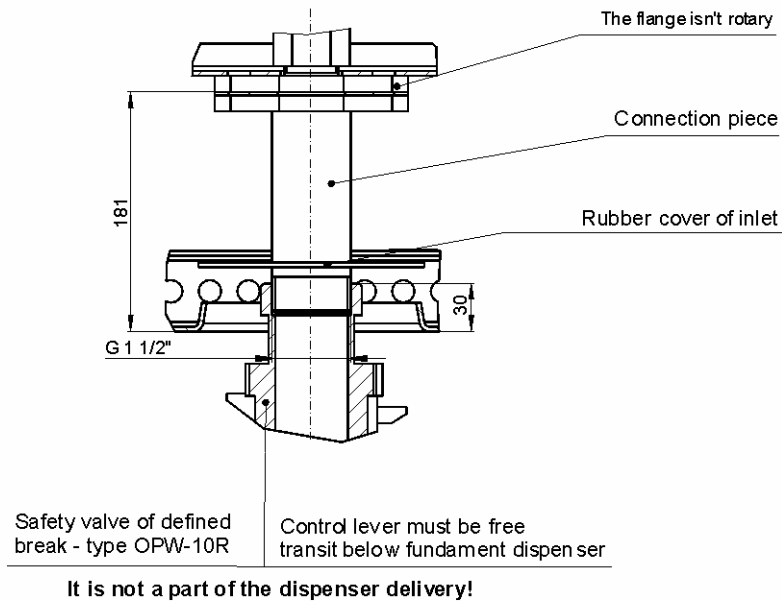
### Detail of the fuel dispenser connection to the basic frame



1. Dispenser base
2. Connecting frame with welded nuts M12 - part of lower process equipment of the filling station
3. Connecting nut M 12x70
4. Washer

### Connection of the dispenser module V-line 47xx.xxx

Q = 40 dm<sup>3</sup>.min<sup>-1</sup>; Q = 80 dm<sup>3</sup>.min<sup>-1</sup>;  
 Q = 2x 40 dm<sup>3</sup>.min<sup>-1</sup>; Q = 130 dm<sup>3</sup>.min<sup>-1</sup>;  
 Q = 150 dm<sup>3</sup>.min<sup>-1</sup>; Q = 170 dm<sup>3</sup>.min<sup>-1</sup>



### Connection of pressure modules of the fuel dispensers V-line 47xx.xxx

Connection of the V-line 47xx.xxx dispensers requires the automatic closure of the dispenser intake in the case of a failure. Use of the valve type OPW -10R is recommended.

To assure a perfect attachment to the dispenser island and the free motion of the valve lever below the dispenser foundation, the valve installation has to follow the indication of the figure.

When installing, the attaching inter-axial distances have to be kept.

The non-observance of these distances can result in the breakage (non-reversible destruction) of the breaking-off valve.

## Conditions of wiring and operation of UPS for feeding a control system and electronic part of V-line dispensers

1. All the cooperating electronic circuits of the control system and dispensers must be connected to the UPS and for this point of view they are considered as a closed electronic unit.
2. The control system and electronic instruments of dispensers connected to it as a closed electronic unit must be connected only to one source of UPS.
3. The feeding of perhaps even a part of the system from another source is not permitted.
4. A parallel cooperation of more UPS on one system is not permitted.
5. "Live" conductors of control system supply circuits and dispenser electronic equipment must be galvanic-separated from the mains and even from protective conductors - a system of "swimming zero" is created.
6. To comply with the requirement under item 5, the proper UPS must have galvanic-separated input and output circuits.
7. For feeding of electronic system of the filling station, the UPS of ON LINE type must be used exclusively.
8. For the correct function of UPS, the size of permanently installed load representing max. 60 % of nominal UPS output, must be provided.
9. To the stabilized voltage circuits, no other consumers that are not a part of prescribed technology, can be connected.
10. Therefore the sockets of stabilized voltage must be marked by the description e.g. "Control system feeding".
11. The protection of input circuits of UPS must be dimensioned so that UPS feed outage and total battery discharge did not occur under standard equipment function.

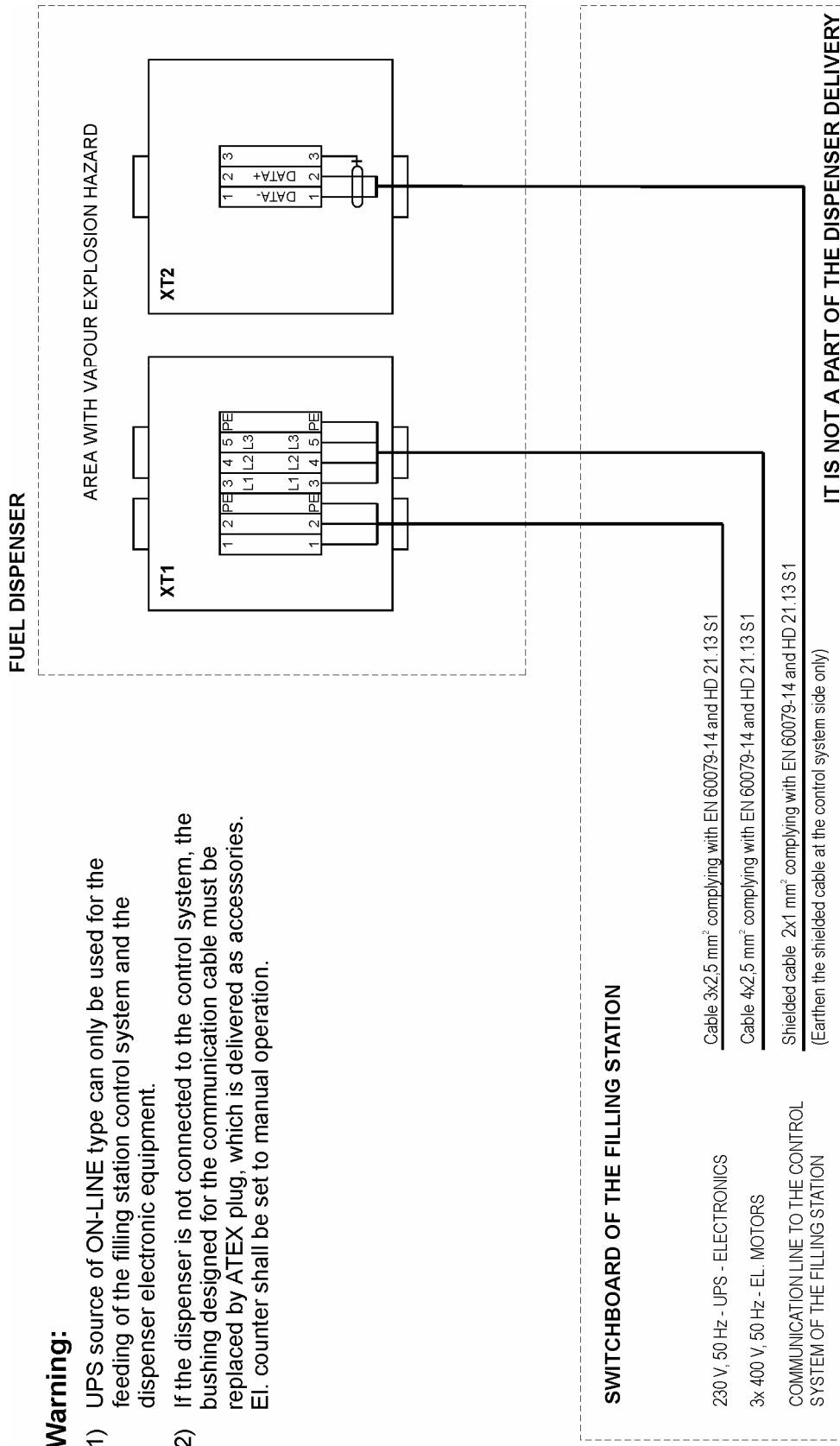
## Operating conditions of the V-line 47xx.xxx fuel dispensers (pressure design)

The pressure system of the distribution should be designed with a submerged pump built-in directly into the storage tank under the substance level. The tank should be equipped with a detector of the lowest substance level switching the el. circuit of the pump motor being the min. level attained.

The location of the pump under the lowest fluid level in the storage tank and the min. level control switch shall prevent the access of air or gas into the pump.

P12 = 0 parameter shall be preselected in the electronic counter for the pressure system of submerged pumps operation in the storage tank in case of V-line 47xx.xxx dispensers operation. At first the electronic counter starts up the submerged pump in this mode of operation (the fluid in entire hydraulic system is under pressure) then the counter tests the displays and closes the el. magnetic valve - and the dispensing is started.

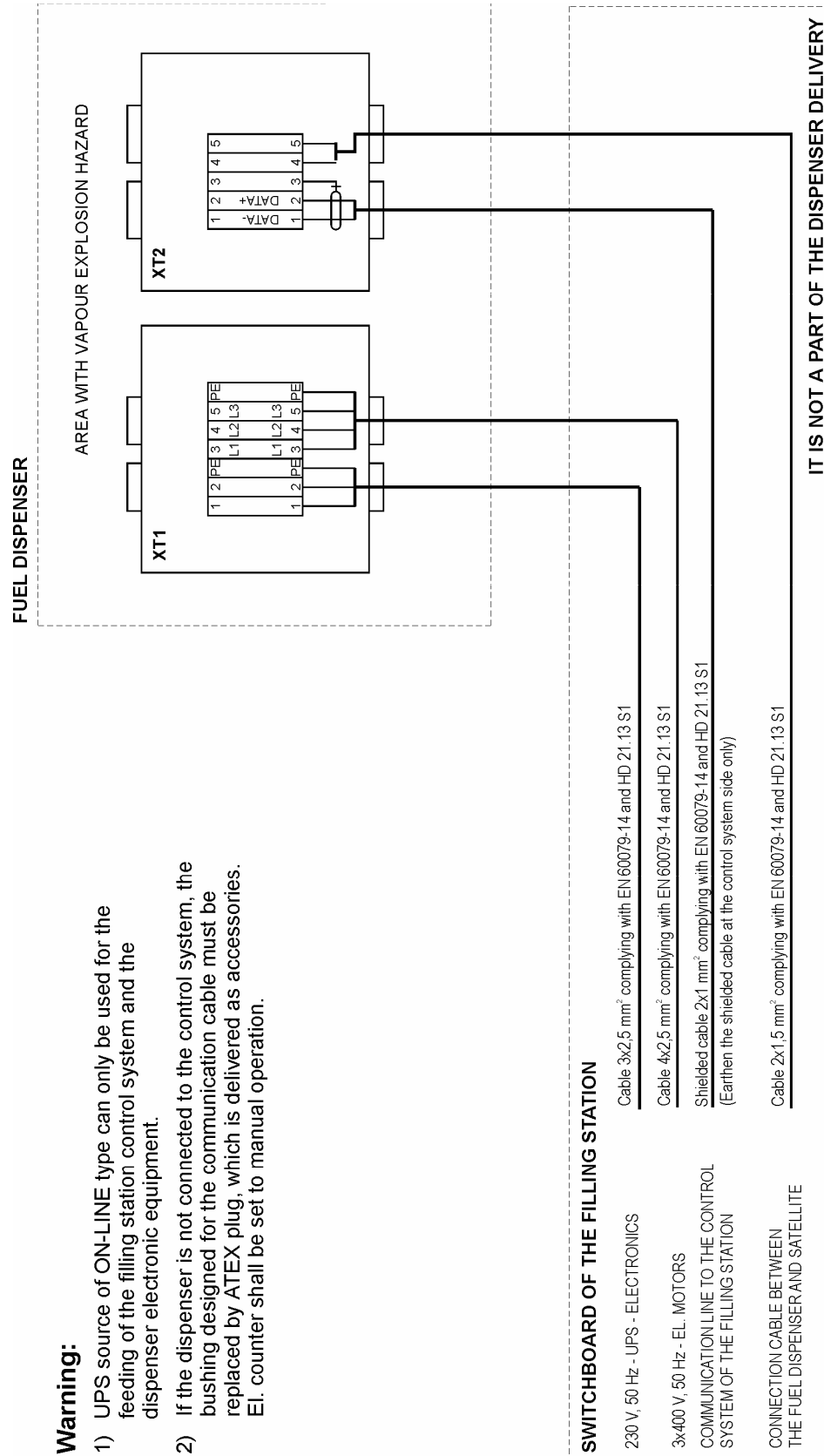
## Connection of dispenser V-line 46xx.xxx to the filling station switchboard



**Warning:**

- 1) UPS source of ON-LINE type can only be used for the feeding of the filling station control system and the dispenser electronic equipment.
- 2) If the dispenser is not connected to the control system, the bushing designed for the communication cable must be replaced by ATEX plug, which is delivered as accessories. EI. counter shall be set to manual operation.

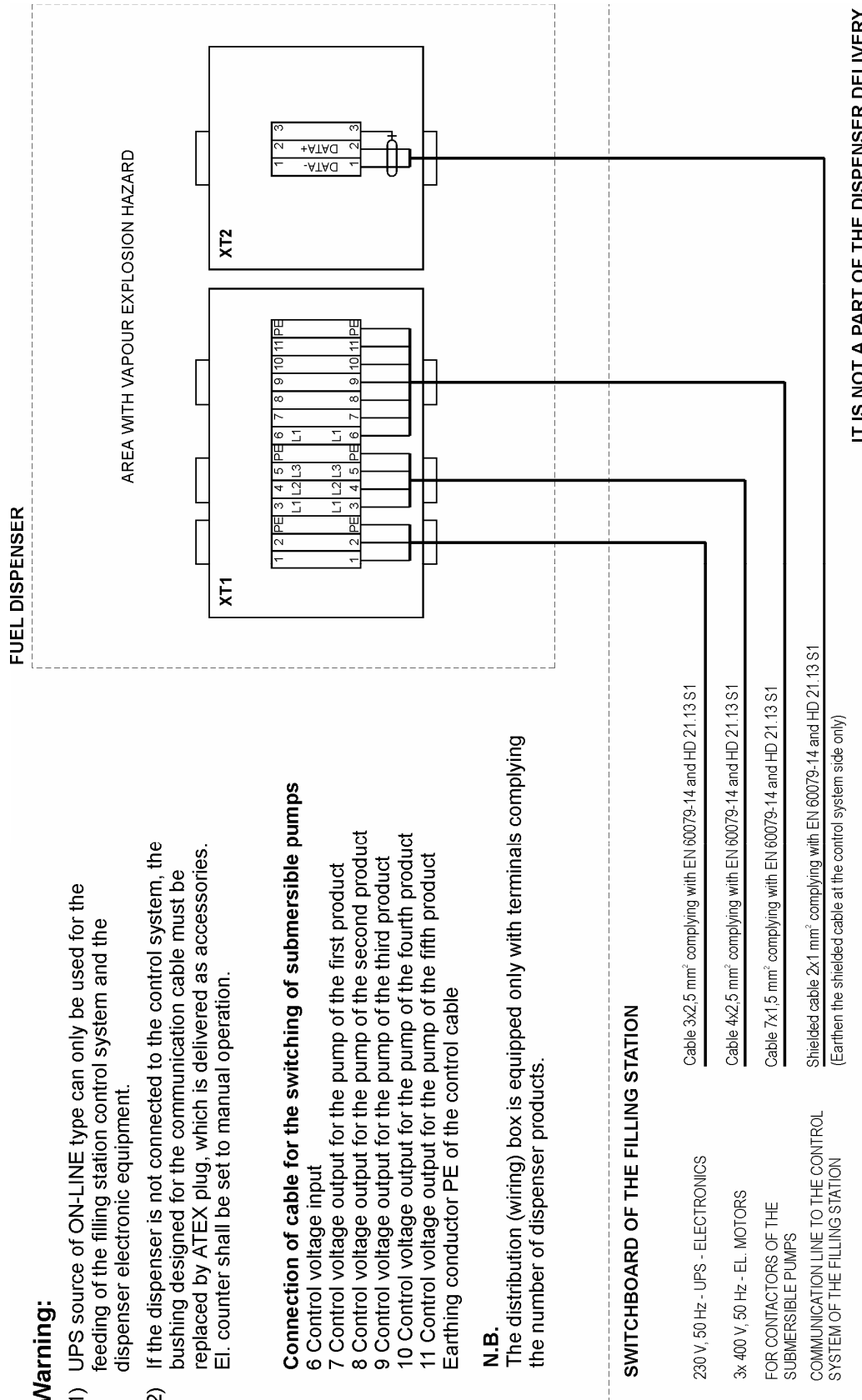
## Connection of dispenser V-line 46xx.xxx with satellite to the filling station switchboard



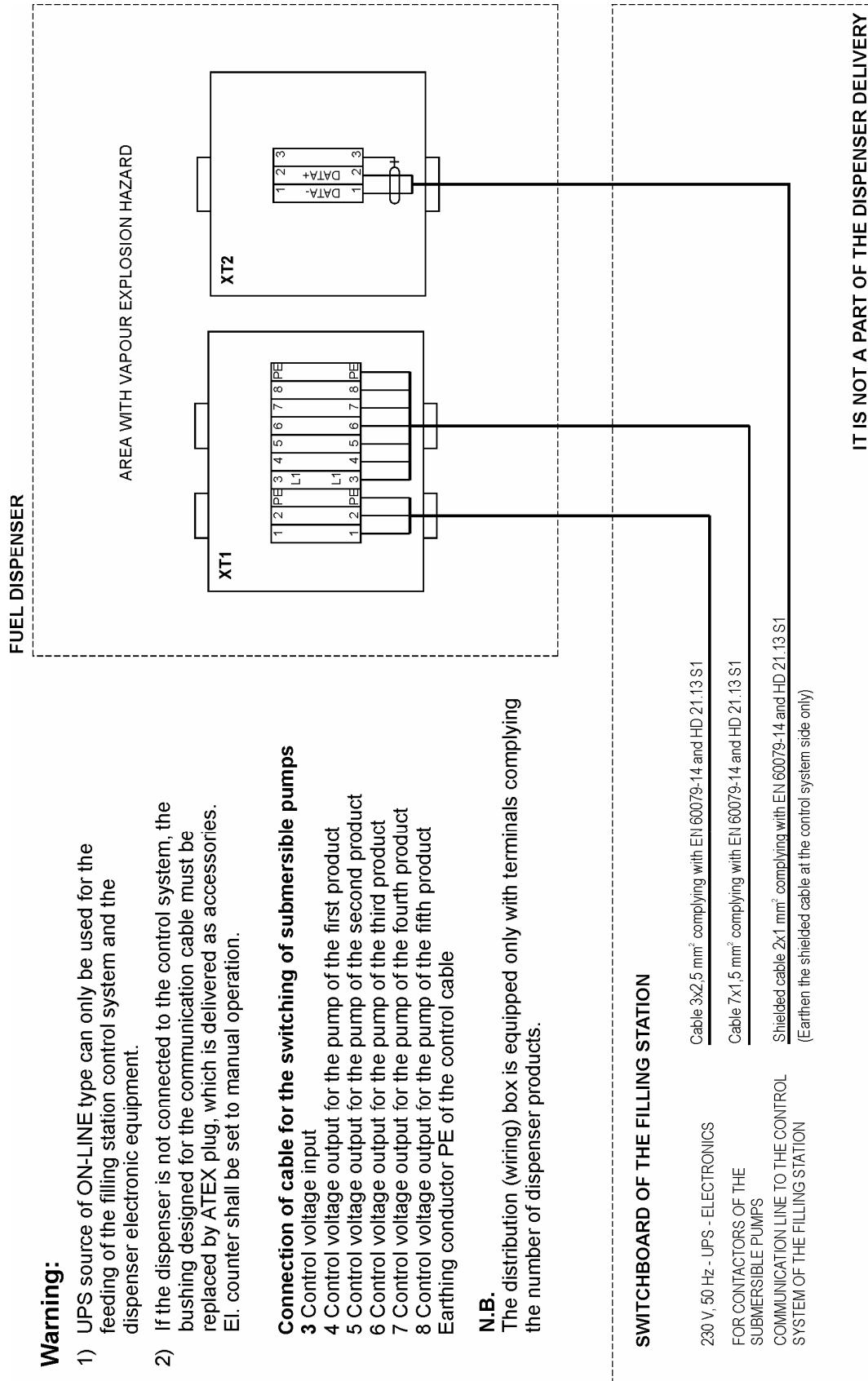
**Warning:**

- 1) UPS source of ON-LINE type can only be used for the feeding of the filling station control system and the dispenser electronic equipment.
- 2) If the dispenser is not connected to the control system, the bushing designed for the communication cable must be replaced by ATEX plug, which is delivered as accessories. E.I. counter shall be set to manual operation.

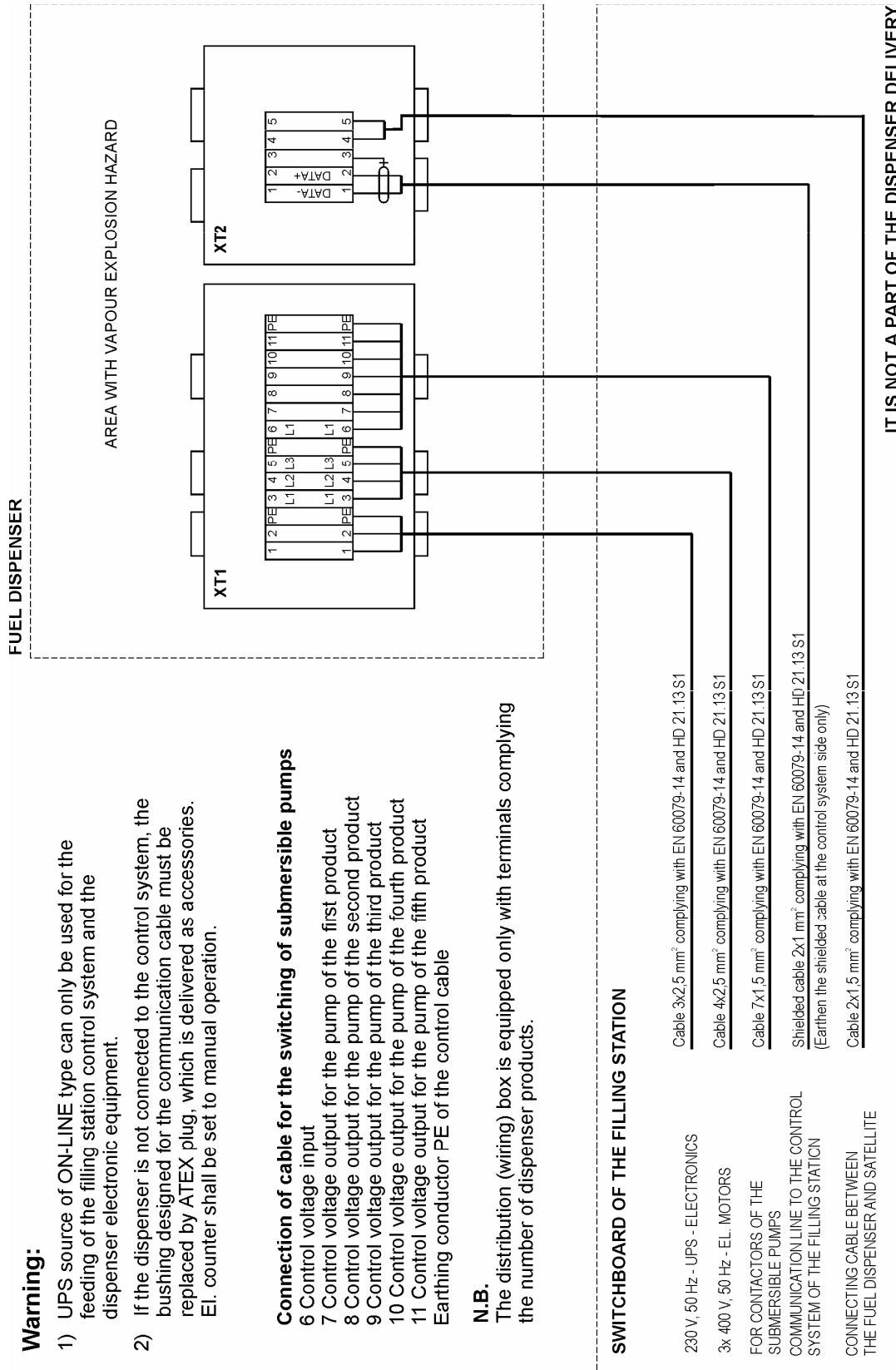
## Connection of dispenser V-line 47xx.xxx with vapour recovery system to the filling station switchboard



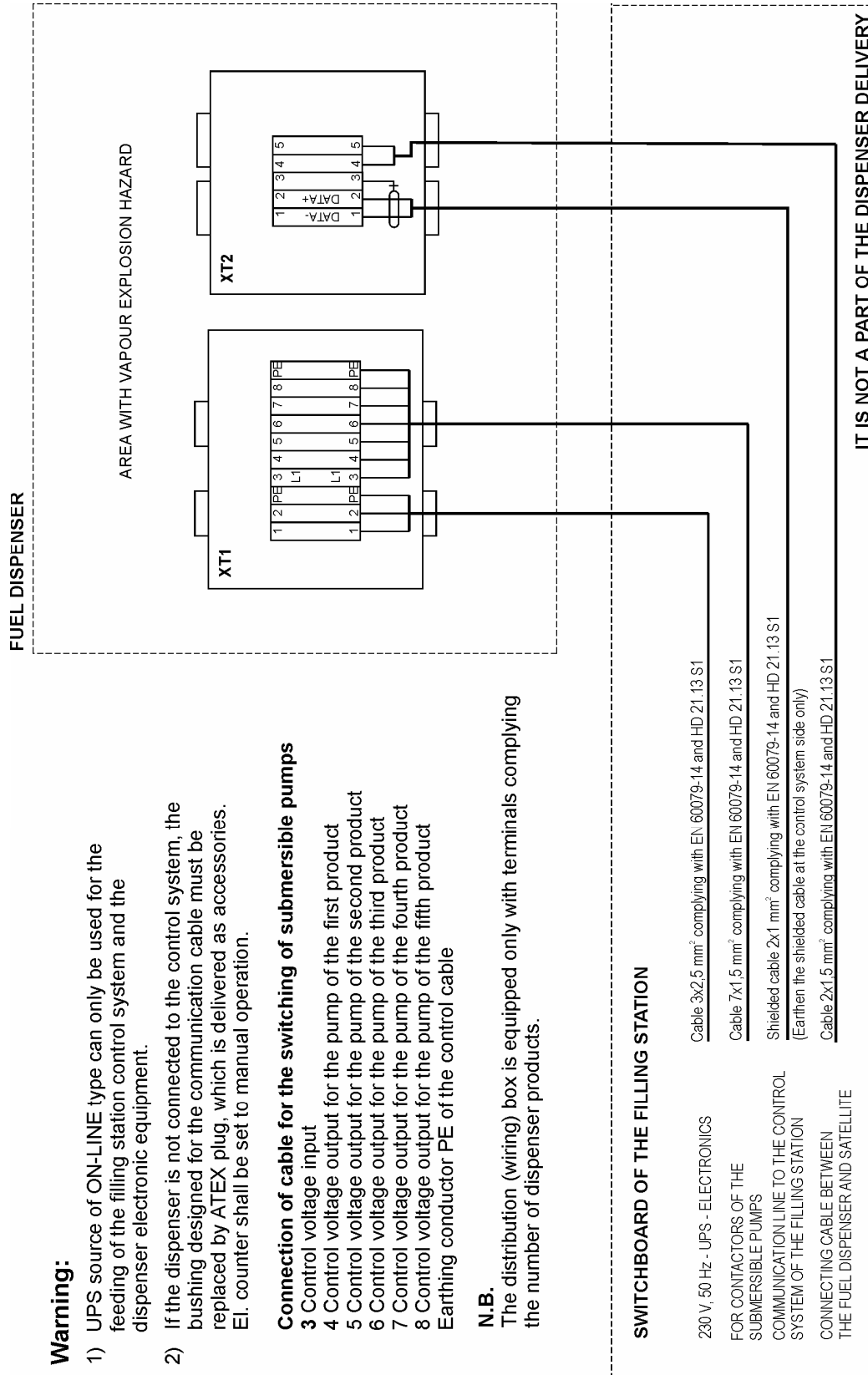
## Connection of dispenser V-line 47xx.xxx without vapour recovery system to the filling station switchboard



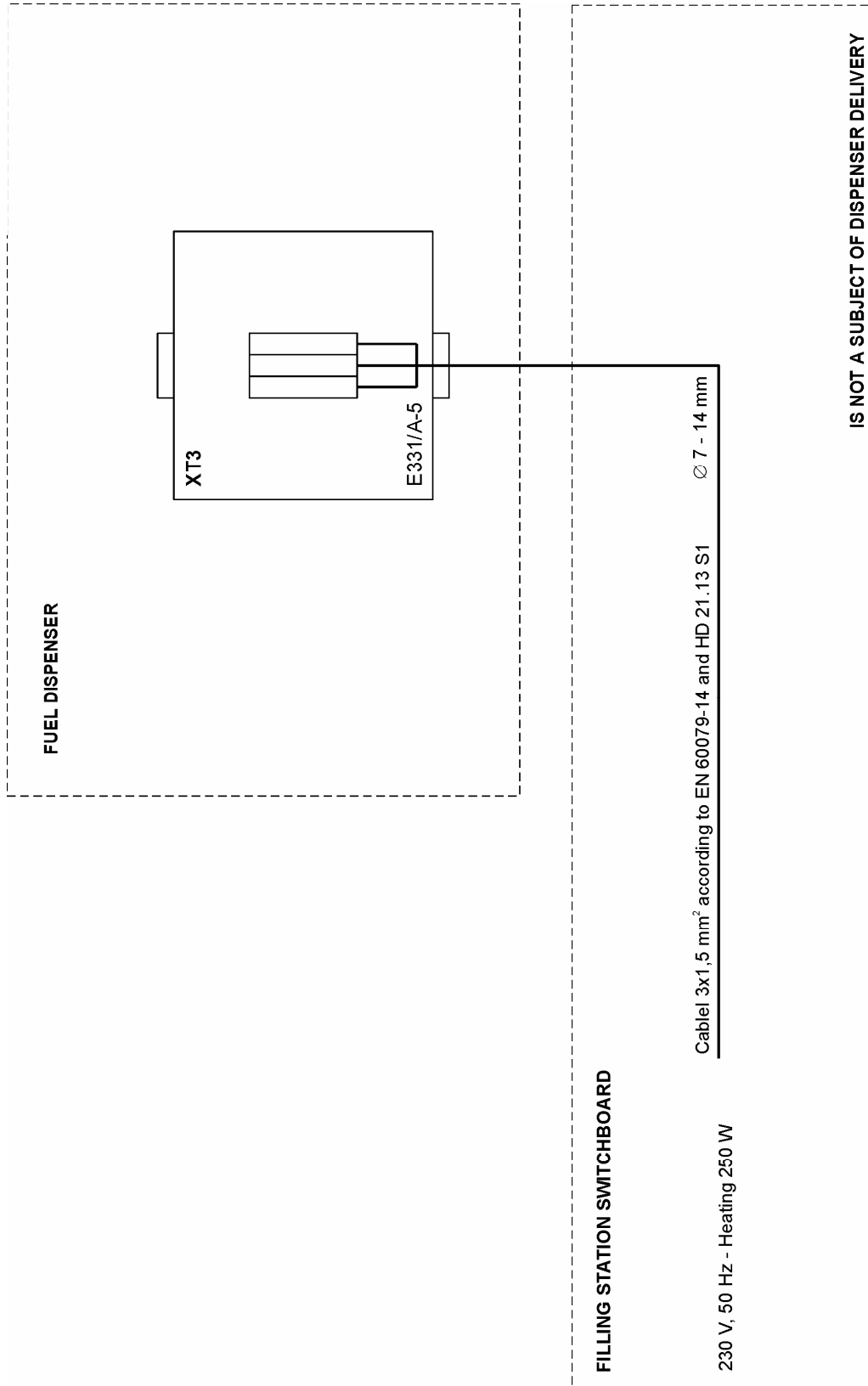
## Connection of dispenser V-line 47xx.xxx with satellite and vapour recovery system to the filling station switchboard



## Connection of dispenser V-line 47xx.xxx with satellite without vapour recovery system to the filling station switchboard

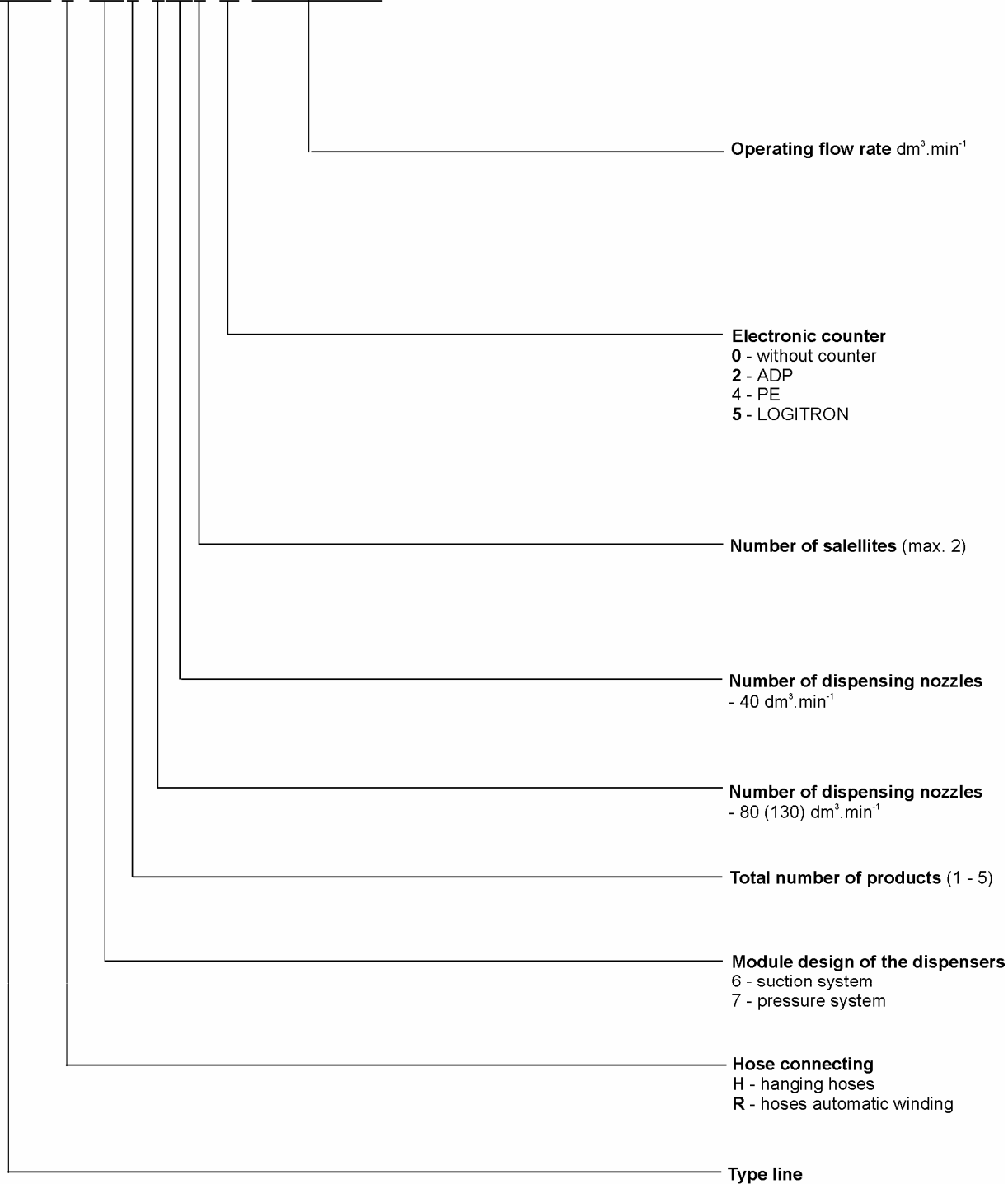


**Connection of the fuel dispenser heating  
to the filling station switchboard (valid only  
for the fuel dispenser with electronic case heating)**



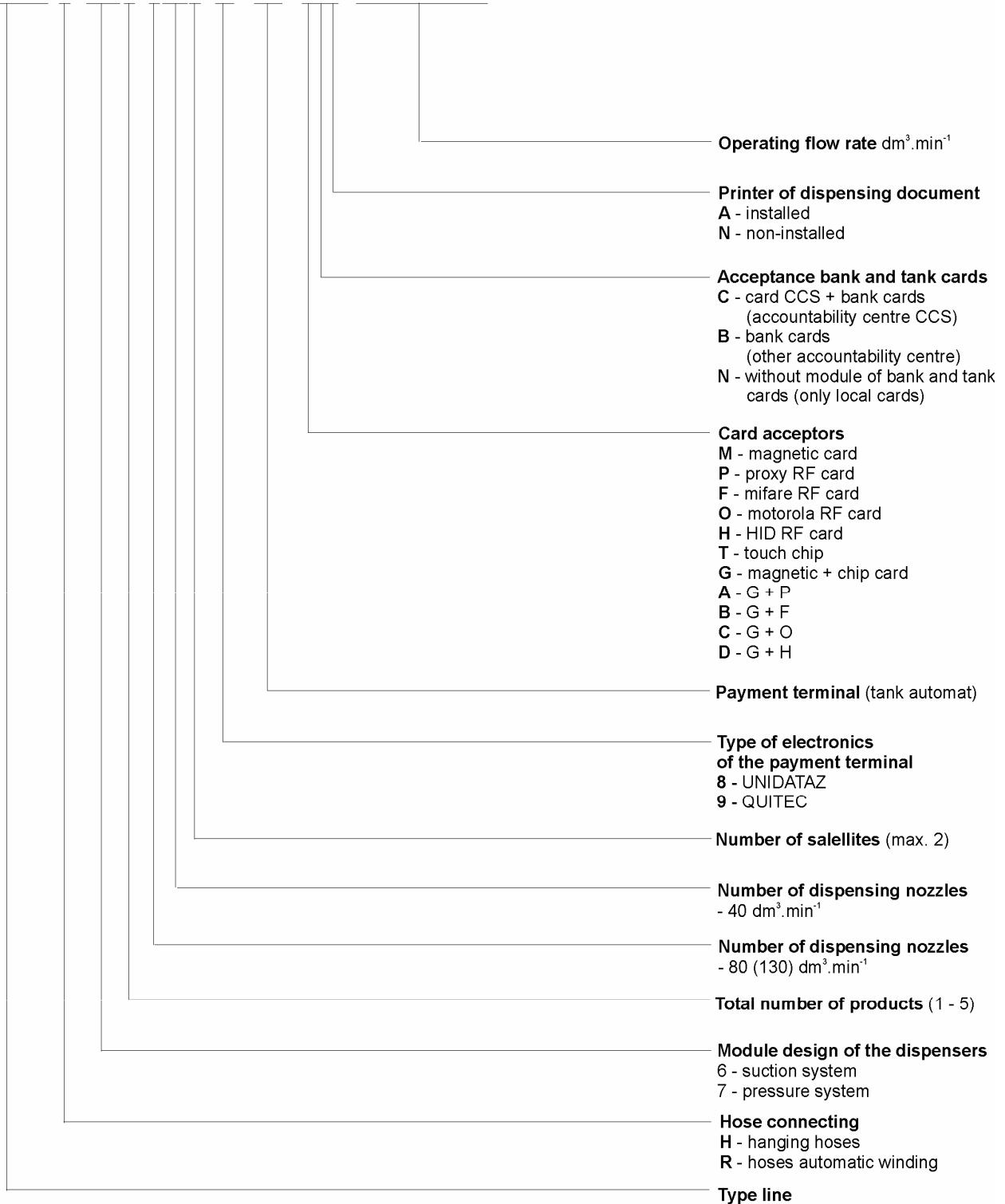
## The model marking on the dispenser V-line 46xx.xxx, 47xx.xxx rating plate

**V - line x 4xxx. xxxx / x / xx / xx / xxx**



## The model marking on the dispenser V-line 46xx.xxx/CA, 47xx.xxx/CA rating plate

**V - line x 4xxx. xxxx / x / CA / xxx / xx / xx / xxx**





Manufacturer: ADAMOV – SYSTEMS, a.s.

Address: Mírová 2, 679 04 Adamov  
Czech Republic

Name of product: **FUEL DISPENSER TYPE SERIES V-line 46xx.xxx, V-line 47xx.xxx**

Description of product: Fuel dispensers, type series V-line 46xx.xxx, V-line 47xx.xxx are intended for dispensing of liquid oil product – gasoline, diesel oil and jet fuel.

We declare on our exclusive responsibility that the product is, subjected to the conditions of correct installation, standard and given application and maintenance, safe for the specified purpose, measures have been taken to ensure compliance with requirements of Directives of the European parliament and the Council:

<b>CE 1026</b>	<b>CE M 07 1383</b>
Directive 94/9/EC of the European parliament and the Council Directive 98/37/EC of the European parliament and the Council Directive 73/23/EEC of the Council	Directive 2004/22/EC of the European parliament and the Council Directive 89/336/EEC of the Council

Compliance assessment was made in cooperation with Notified body:

<b>CE 1026</b>	<b>CE M 07 1383</b>
Physical Technical Testing Institute Pikartská 7, 716 07 Ostrava – Radvanice Notified body No. 1026	Český metrologický institut Okružní 31, 638 00 Brno Notified body No. 1383
EC-Type Examination Certificate: FTZÚ 05 ATEX 0069	EC-Type Examination Certificate: TCM 141/07 - 4505

The product is in conformity with following standards conformable with provisions of 94/9/EC, 98/37/EC, 89/336/EEC, 73/23/EEC, 2004/22/EC Directives:

Directive 94/9/EC, 98/37/EC	Directive 89/336/EEC, 73/23/EEC	Directive 2004/22/EC
EN 13617-1	EN 55011 OIML R 117 Edition 1995 (E) EN 55022 OIML R 118 Edition 1995 (E) EN 61326-1 OIML D 11 Edition 2004 (E) EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-11 EN 61010-1	OIML R 118 Edition 1995 (E) OIML R 117 Edition 1995 (E) OIML D 11 Edition 2004 (E)

Name and signature of the authorised representative of the manufacturer:

Name: Ing. Jiří Štoudek  
Position: Supervisor of Conformity  
assessment station

Ing. David Kotajný  
Managing Director

Signature:

Date: 23 March 2007