



FUEL DISPENSERS SERIES

SUNNY-XE EURO

Model description & Accessories



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1. PRELIMINARY

The purpose of this publication is to assist in the identification of the fuel dispenser range of SUNNY-XE EURO.

The basic information for the SUNNY-XE EURO and descriptions of the various options are included.

This publication is part of a set of documents specifically produced for the SUNNY-XE EURO range. For further technical information, please refer to relevant associated publication.

The content of this publication at the time of its release corresponds to reality. The manufacturer reserves the right to change specifications, or his property without written notice, due to its development and continuous improvement.

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Document TB037-EN revisions

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Revision 00 / 27. 10. 2011	Basic version of the document	Ing. Milan Berka

2. SUNNY-XE EURO INTRODUCTION

2.1. HYDRAULIC SYSTEM TATSUNO

The fuel dispensers SUNNY-XE EURO serve for dispensing of liquid oil products or ethanol mixtures (max E85) into road vehicles on retail and commercial outlets. The dispensers are equipped by the high-quality Japan hydraulic system TATSUNO and by the reliable electronic calculator PDEX or TBELTx (Czech Republic). The fuel dispensers are operated both in the manual mode (i.e. off-line), and in the automatic mode, where the fuel dispenser is linked with the kiosk control system and the data concerning volume, sum and price are transmitted to POS.

2.2. CONSTRUCTION

The fuel dispensers TATSUNO, range SUNNY-XE EURO, have the body parts (guards, doors, covers...) made of steel lacquered sheet 0.8 - 1 mm thick and/or of stainless steel sheet. Standard colour version of the fuel dispensers is white (MM710). Each fuel dispenser is equipped by the **hydraulic unit** (dispensing monoblock + flow meter) of the Japanese company **TATSUNO**. We are speaking about the time-tested type of hydraulic unit accepted globally characterized by high reliability and long total service life. The dispensing unit is equipped by the inlet and outlet filter, air and vapour separator, check valve and rotary pump with operating pressure control. The four-piston flow meter can be setup through a single piston. The main shaft of each flow meter is magnetically coupled with a high-reliable double-channel magnetic measuring **pulsar** of explosion-protected design (Ex). Each fuel dispenser is equipped by the **electronic calculator PDEX or TBELTx** with its own self-checking unit and by the **displays** displaying the dispensed amount, fuel volume in litres and unit price. Displays of the fuel dispensers specified for commercial outlets display only the dispensed fuel volume in litres. The **dispensing hoses** are made of high-quality rubber resistant to fuel in antistatic version. The fuel dispensers are delivered with the automatic stop-nozzle as the standard.

2.3. SUNNY-XE EURO HIGHLIGHTS

Main advantages of the SUNNY-XE EURO are:

- high performance and guaranteed quality
- easy maintenance and service - simple construction
- wide ambient temperature range (-40°C / +50°C)
- the possibility of volume correction to reference temperature 15°C (20°C)
- effective vapour recovery system stage II with monitoring
- pumping operation using proportional solenoid valves +24 VDC with continuous flow control

2.4. CERTIFICATIONS & APPROVALS

Fuel dispensers SUNNY-XE EURO are in compliance with all European standards in the field of metrology and safety.

2.4.1. METROLOGY

The equipment is certified by the Czech Metrologic Institute Brno, notified body No. 1383. The conformity assessment procedures were performed by modules "B" (product type examination) + "D" (quality assurance of the production process) according to the Government Decree No. 464/2005 Coll., which stipulates technical requirements for measuring instruments, and which implements the European Parliament and Council Directive 2004/22/EC.

Was issued the **EC type certificate** (MID certificate) for the fuel dispensers (gasoline, diesel, ethanol and mixtures thereof) **No. TCM 141/11-4863**. The certificate is based on the test report No. 6031-PT-P0086-11. Tests were conducted in accordance with OIML R 117-1, OIML R 118 and OIML D 11.

TATSUNO EUROPE a.s. has obtained the **Certificate of the Management System Quality No. 0119-SJC006-07** from The Czech Metrologic Institute, thus having fulfilled the prerequisite of eligibility for declaration of conformity with a type based on quality assurance of the production process of measuring instruments according to Annex No. 2, module „D” (Art. 6) of the Government Decree No. 464/2005 Coll. The validity of the certificate is checked by audits annually.

2.4.2. SAFETY

The dispensers are certified by the authorized person No. 210 - The Physical Technical Testing Institute Ostrava-Radvanice, as suitable for use in Potentially Explosive Atmospheres Directive 94/9/EC, and marked to be in accordance with European Dispenser Construction Standard EN 13617-1. The dispensers were certified as product by notified body No. 1026.

Was issued the **EC Type Certificate** (ATEX certificate) **No. FTZÚ 11 ATEX 0246**. All parts of the dispenser located in areas with danger of explosion are in conformity with European Directive ATEX 94/9/EC.

Company TATSUNO EUROPE a.s. received from the Physical Technical Testing Institute in Ostrava - Radvanice **Notification of quality assurance No. FTZÚ 02 ATEX Q030** to fuel dispensers and accessories. The validity of this notification is checked by the audits annually.

2.5. BASIC TECHNICAL PARAMETERS

2.5.1. HYDRAULIC UNIT

Pump performance:	- standard flow	40 L/min. (30 ÷ 50 L/min)
	- high flow /H	80 L/min. (70 ÷ 90 L/min)
	- ultra high flow /UH	130 L/min. (120 ÷ 150 L/min)
Accuracy class		0.5
Maximum working pressure:		0.18 MPa (1.8bar); 0.25 MPa (2.5bar) for /H or /UH
Electrical motor for pump:		3-phase, 3x400V; 0.75 kW; 1395 rev/min.
Electromagnetic valve:		+24VDC / max.1A, optionally 230V AC; 50 Hz; 5W

2.5.2. ELECTRONIC COUNTER

Power supply:		230 VAC; +10% -15%; 50 Hz ± 5 Hz
Power output:		max. 300 VA
Displaying unit (display):		
	- volume	from 0.01 to 9999.99 L
	- amount	from 1 to 999999 currency unit
	- unit price	from 1 to 9999 currency unit /L

2.5.3. AMBIENT CONDITIONS

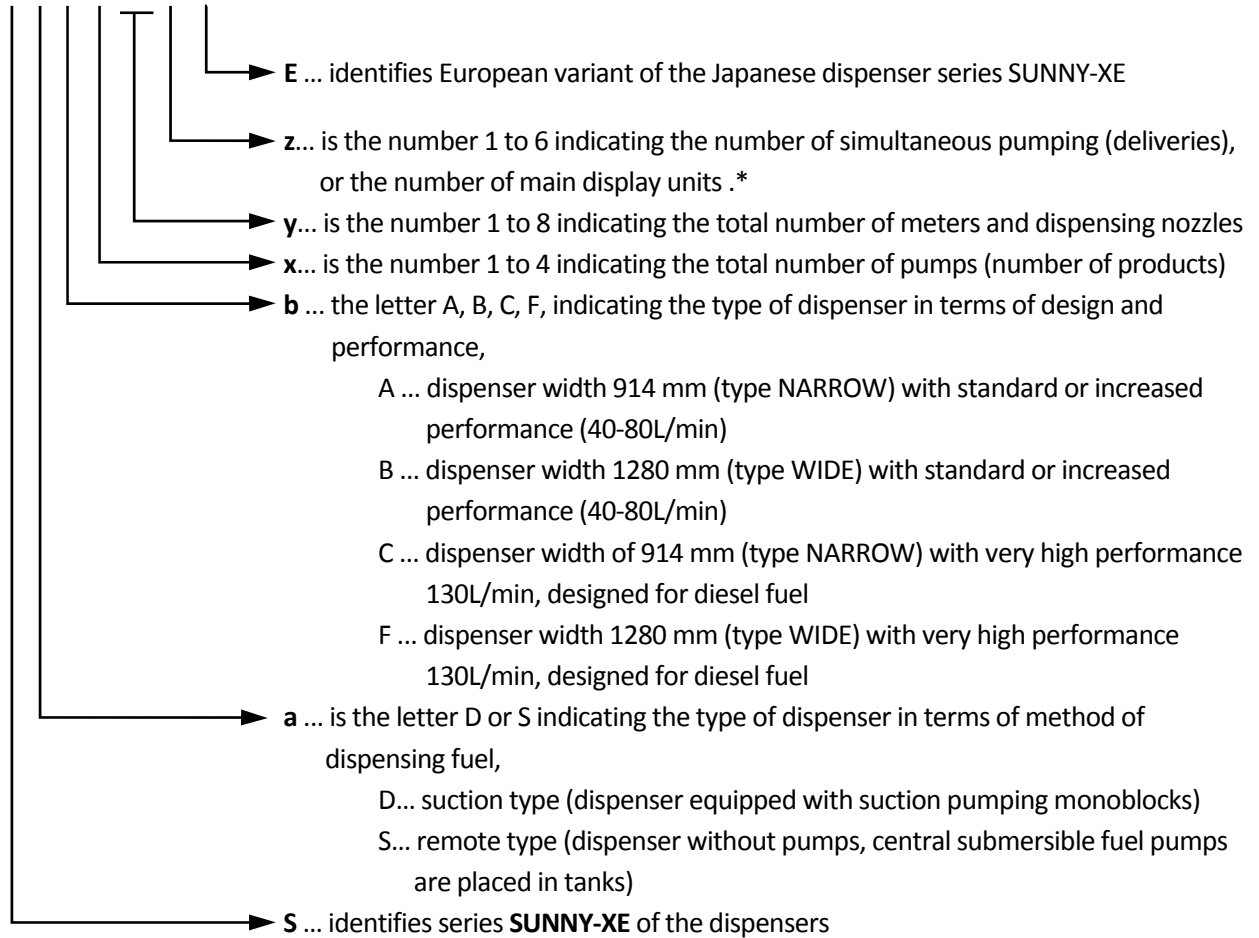
Working temperature range:		from - 20°C to +40°C for standard model
		from - 40°C to +50°C for special model with display heating
Liquid temperature range:		from - 40°C to +50°C
Type of liquid:		gasoline, diesel, biodiesel, ethanol (max. E85)
Dynamic viscosity range:		0.5 - 10 mPa.s (0.5 - 10 cp)
Mechanical class:		M1
Electromagnetic class:		E1
Relative humidity:		from 5% to 95%, non condensing

3. HOW USE THIS DOCUMENT

3.1. MODEL IDENTIFICATION

The following paragraph explains encoding of dispensers SUNNY XE-EURO. The basic shape of the business encoding is:

Sab xyyz.E



After basic code of the dispenser follow appendices - see list of code appendices 3.1.1.

**Note: Fuel dispensers should be equipped with main displaying units (MASTER) or auxiliary displaying units (SLAVE). Auxiliary displaying units show the same values amount/volume/price like main displaying units.*

Examples:

- **SDB 4882.E** is dispenser of width 1280mm (WIDE), suction type, series SUNNY-XE EURO. Is equipped with 4 pumps, 8 meters, 8 nozzles and 2 main displaying units that show 2 simultaneous deliveries. Nozzles are placed in front of dispenser.
- **SSA 2222.E-S** is dispenser of width 914mm (NARROW), remote type, series SUNNY-XE EURO. Is equipped with inputs and filters for 2 products, 2 meters, 2 nozzles and 2 main displaying units that show 2 simultaneous deliveries. Nozzles are placed on the side of dispenser.

3.1.1. LIST OF CODE APPENDICES













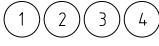

After basic code of the dispenser is possible to add following appendices:

Appendix	Description
-S	Hose output and nozzle boot is placed on the side of dispenser
/1L, /1R	*One-sided version of the dispenser - left (L) and right (R)
/VR, /VR2, /VR3, /VR4	Vapour recovery of one, two, three or four products
/H, /H2, /H3, /H4	High flow of one, two, three or four diesel pumps (70 ÷ 90 L/min)
/UH, /UH2	Ultra high flow of the one or two diesel dispensing hoses (120 ÷ 150 L/min)
/MAS, /MAS2	Main dispenser (MASTER) with output for one or two satellite dispensers (SLAVE)
/SAT	Data line with protocol IFSF-LON, DART or Logitron PUMALAN
/LON, /DART, /LOG	Data line with protocol Kienzle ER4, TATSUNO Party Line or Autotank ATCL
/ER4, /TATPL, /ATCL	Pulse output, nozzle output and signal RELEASE for Tankautomat TA2331
/TA2331	Pulse output and nozzle output for connection to terminal ALX (ALX-308)
/ALX	Data line with protocol IFSF-LON, DART or Logitron PUMALAN

***Note:** In case of one-sided dispenser it is necessary to specify variety right-side (/1R), or left-side (/1L) to prevent product order mismatch.

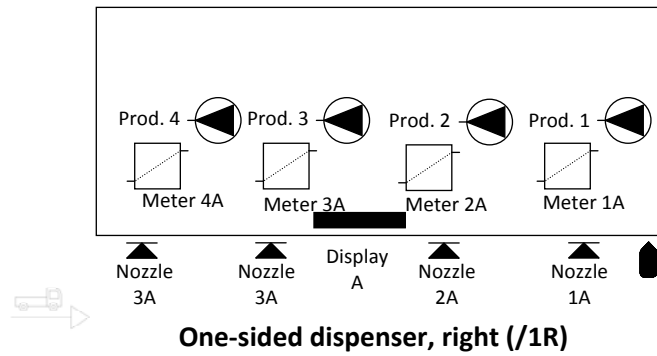
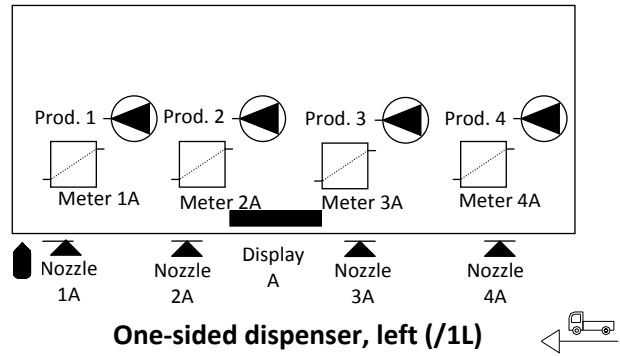
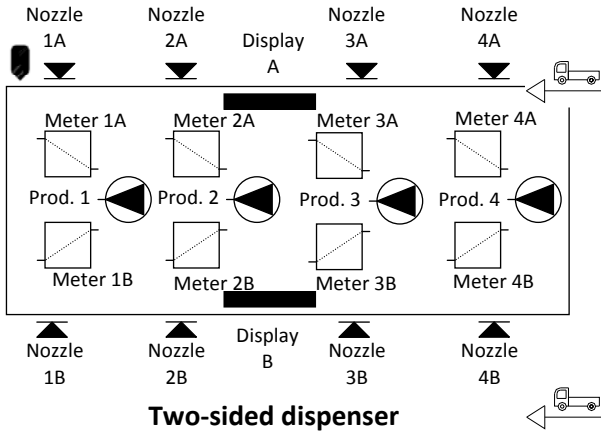
3.1.2. THE SYMBOLS USED IN DOCUMENT

For each type of dispenser SUNNY-XE EURO will be a picture and a simplified hydraulic scheme. In hydraulic schemes will be used the following symbols:

- 
Pump 40L/min, TATSUNO FP-1001-B01 or TATSUNO FP-1022 (MVP-X)
- 
Pump 80L/min, TATSUNO FP-1001-B02 or TATSUNO FP-1022 (MVP-X)
- 
Piston flow meter, TATSUNO FM-1007 or TATSUNO FM-1025 (MVP-X)
- 
Lobe Meter TATSUNO FF-1006 for ultra high flow dispensers
- 
Electromagnetic valve
- 
Dispensing nozzles with pumping performance 40L/min, 80L/min, 130L/min
- 
Dispensing hose output
- 
Inlet
- 
Outlet for satellite dispenser
- 
Main displaying unit (MASTER Display)
- 
Auxiliary displaying unit (SLAVE Display)
- 
Recommended drive arrival direction
- 
Pump and product order
- 
Position of the type label (determinates the position of nozzle 1A and product 1)

3.1.3. DISPENSER MARKING CONVENTION

Below is described marking convention of dispenser products, nozzles, hoses, sides.



4. MODELS

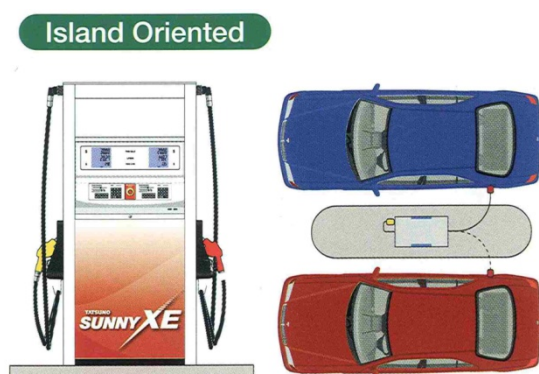
This chapter describes all standard models of fuel dispenser series SUNNY-XE EURO. Every model is described like standard version and accessories.

4.1. DISPENSER MODEL SELECTION

All models of dispensers SUNNY EURO-XE can be divided into several groups:

- a) according the method of pumping
 - **SUCTION type**; equipped with suction pumps
 - **REMOTE type**; without pumps, equipped with filters only
- b) according dispenser dimensions
 - **WIDE type**; width = 1280 mm
 - **NARROW type**; width = 914 mm
- c) according orientation of the nozzles
 - **LANE ORIENTED type**; with nozzles placed of front of dispenser
 - **ISLAND ORIENTED type**; with nozzles placed on the side of dispenser
- d) according to access to the dispenser
 - **TWO-SIDED type**; access from both sides
 - **ONE-SIDED type**; access from one side only

On the pictures A and B are examples of the installation of dispensers at the service station.



Picture A - Fuel dispenser NARROW type, two-sided
ISLAND ORIENTED



Picture B - Fuel dispenser WIDE type, two-sided,
LANE ORIENTED

4.2. WIDE MODELS, LANE ORIENTED

Model	Method of pumping (S-SUCTION, R-REMOTE)	Access to the dispenser (2-two-sided, 1-one-sided*)	Nozzle orientation (L-LANE, I-ISLAND)	Number of pumps (number of products)	Number of meters	Number of nozzles (number of hoses)	No. of main displays (simultaneous deliveries)	Standard performance [L/min]**	High performance (/H) [L/min]***
SDB 2221.E /1L(1R)	S	1	L	2	2	2	1	40	80
SSB 2221.E /1L(1R)	R	1	L	2	2	2	1	40	80
SDB 2442.E	S	2	L	2	4	4	2	40	80
SSB 2442.E	R	2	L	2	4	4	2	40	80
SDB 2222.E /1L(1R)	S	1	L	2	2	2	2	40	80
SSB 2222.E /1L(1R)	R	1	L	2	2	2	2	40	80
SDB 2444.E	S	2	L	2	4	4	4	40	80
SSB 2444.E	R	2	L	2	4	4	4	40	80
SDB 3331.E /1L(1R)	S	1	L	3	3	3	1	40	80
SSB 3331.E /1L(1R)	R	1	L	3	3	3	1	40	80
SDB 3662.E	S	2	L	3	6	6	2	40	80
SSB 3662.E	R	2	L	3	6	6	2	40	80
SDB 3332.E /1L(1R)	S	1	L	3	3	3	2	40	80
SSB 3332.E /1L(1R)	R	1	L	3	3	3	2	40	80
SDB 3664.E	S	2	L	3	6	6	4	40	80
SSB 3664.E	R	2	L	3	6	6	4	40	80
SDB 3333.E /1L(1R)	S	1	L	3	3	3	3	40	80
SSB 3333.E /1L(1R)	R	1	L	3	3	3	3	40	80
SDB 3666.E	S	2	L	3	6	6	6	40	80
SSB 3666.E	R	2	L	3	6	6	6	40	80
SDB 4441.E /1L(1R)	S	1	L	4	4	4	1	40	80
SSB 4441.E /1L(1R)	R	1	L	4	4	4	1	40	80
SDB 4882.E	S	2	L	4	8	8	2	40	80
SSB 4882.E	R	2	L	4	8	8	2	40	80
SDB 4442.E /1L(1R)	S	1	L	4	4	4	2	40	80
SSB 4442.E /1L(1R)	R	1	L	4	4	4	2	40	80
SDB 4884.E	S	2	L	4	8	8	4	40	80
SSB 4884.E	R	2	L	4	8	8	4	40	80
SDB 4443.E /1L(1R)	S	1	L	4	4	4	3	40	80
SSB 4443.E /1L(1R)	R	1	L	4	4	4	3	40	80
SDB 4886.E	S	2	L	4	8	8	6	40	80
SSB 4886.E	R	2	L	4	8	8	6	40	80

* One-sided dispensers are left-sided (/1L), or right-sided (/1P). Orientation affects on product order!

** Nominal standard pumping performance.

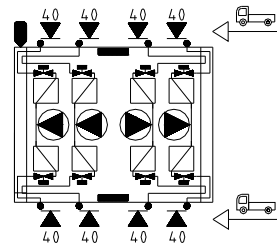
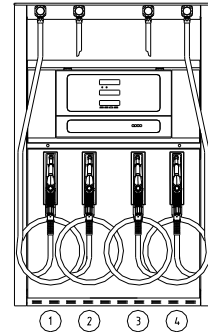
*** increased pumping performance. Appendices /H, /H2, /H3 and /H4 indicate number of pump monoblocks with increased performance.

Notice: Pumping performance strongly depends on real conditions at the service station i.e. on quality and the length of the suction pipe lines, suction height etc.

Model SDB 4882.E

Basic version

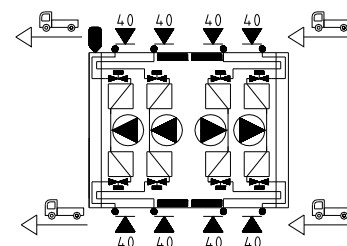
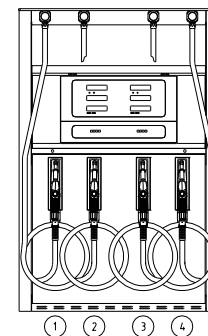
- WIDE, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSB 4882.E)
- two-sided (one-sided models - SDB 4441.E /1L or /1R)
- 4 fuel products / 4 pumping monoblocks
- 8 dispensing hoses DN16 / 8 dispensing nozzles / 8 meters
- 8 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- 2 simultaneous deliveries
- 2 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDB 4884.E

Basic version

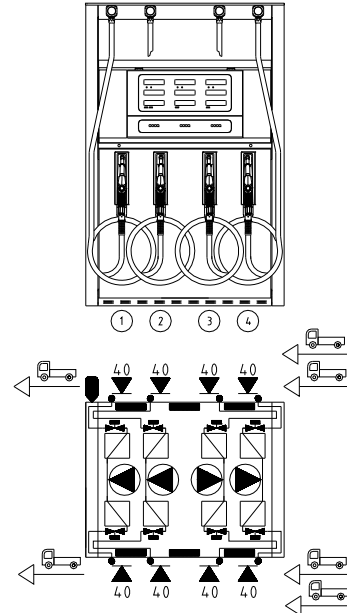
- WIDE, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSB 4884.E)
- two-sided (one-sided models - SDB 4442.E /1L or /1R)
- 4 fuel products / 4 pumping monoblocks
- 8 dispensing hoses DN16 / 8 dispensing nozzles / 8 meters
- 8 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- 4 simultaneous deliveries
- 4 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDB 4886.E

Basic version

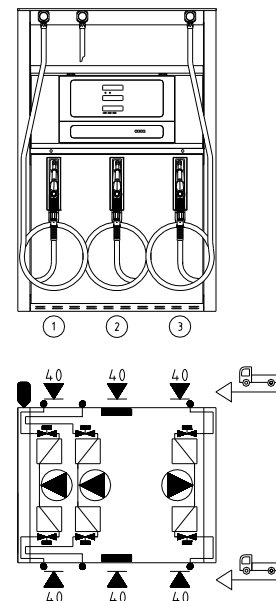
- WIDE, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSB 4886.E)
- two-sided (one-sided models - SDB 4443.E /1L or /1R)
- 4 fuel products / 4 pumping monoblocks
- 8 dispensing hoses DN16 / 8 dispensing nozzles / 8 meters
- 8 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- 6 simultaneous deliveries
- 6 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDB 3662.E

Basic version

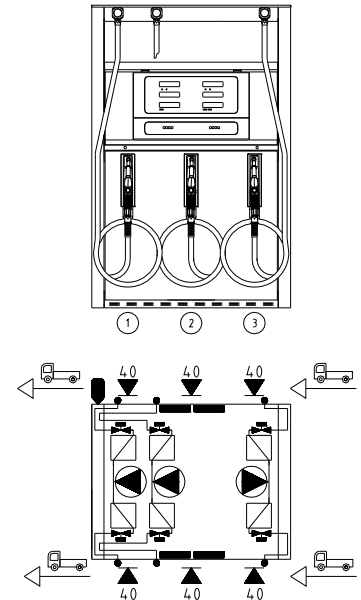
- WIDE, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSB 3662.E)
- two-sided (one-sided models - SDB 3331.E /1L or /1R)
- 3 fuel products / 3 pumping monoblocks
- 6 dispensing hoses DN16 / 6 dispensing nozzles / 6 meters
- 6 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- 2 simultaneous deliveries
- 2 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDB 3664.E

Basic version

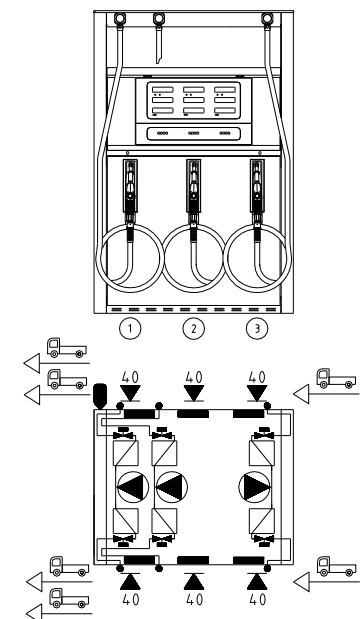
- WIDE, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSB 3664.E)
- two-sided (one-sided models - SDB 3332.E /1L or /1R)
- 3 fuel products /3 pumping monoblocks
- 6 dispensing hoses DN16 / 6 dispensing nozzles / 6 meters
- 6 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- 4 simultaneous deliveries
- 4 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDB 3666.E

Basic version

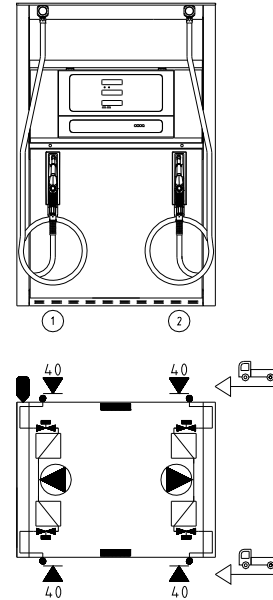
- WIDE, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSB 3666.E)
- two-sided (one-sided models - SDB 3333.E /1L or /1R)
- 3 fuel products / 3 pumping monoblocks
- 6 dispensing hoses DN16 / 6 dispensing nozzles / 6 meters
- 6 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- 6 simultaneous deliveries (all nozzles are independent)
- 6 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDB 2442.E

Basic version

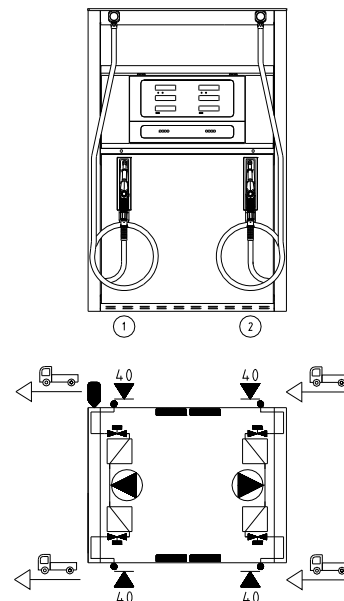
- WIDE, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSB 2442.E)
- two-sided (one-sided models - SDB 2221.E /1L or /1R)
- 2 fuel products / 2 pumping monoblocks
- 4 dispensing hoses DN16 / 4 dispensing nozzles / 4 meters
- 4 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- 2 simultaneous deliveries
- 2 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDB 2444.E

Basic version

- WIDE, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSB 2444.E)
- two-sided (one-sided models - SDB 2222.E /1L or /1R)
- 2 fuel products / 2 pumping monoblocks
- 4 dispensing hoses DN16 / 4 dispensing nozzles / 4 meters
- 4 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- 4 simultaneous deliveries (all nozzles are independent)
- 4 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



4.3. NARROW MODELS, LANE ORIENTED

Model	Method of pumping (S-SUCTION, R-REMOTE)	Access to the dispenser (2-two-sided, 1-one-sided*)	Nozzle orientation (L-LANE, I-ISLAND)	Number of pumps (number of products)	Number of meters	Number of nozzles (number of hoses)	No. of main displays (simultaneous deliveries)	Standard performance [L/min]**	High performance (/H) [L/min]***
SDA 1111.E /1L(1R)	S	1	L	1	1	1	1	40	80
SSA 1111.E /1L(1R)	R	1	L	1	1	1	1	40	80
SDA 1222.E	S	2	L	1	2	2	2	40	80
SSA 1222.E	R	2	L	1	2	2	2	40	80
SDA 2221.E /1L(1R)	S	1	L	2	2	2	1	40	80
SSA 2221.E /1L(1R)	R	1	L	2	2	2	1	40	80
SDA 2442.E	S	2	L	2	4	4	2	40	80
SSA 2442.E	R	2	L	2	4	4	2	40	80
SDA 2222.E /1L(1R)	S	1	L	2	2	2	2	40	80
SSA 2222.E /1L(1R)	R	1	L	2	2	2	2	40	80
SDA 2444.E	S	2	L	2	4	4	4	40	80
SSA 2444.E	R	2	L	2	4	4	4	40	80

* One-sided dispensers are left-sided (/1L), or right-sided (/1P). Orientation affects on product order!

** Nominal standard pumping performance.

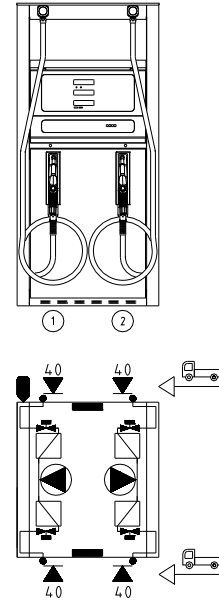
*** increased pumping performance. Appendices /H and /H2 indicate number of pump monoblocks with increased performance.

Notice: Pumping performance strongly depends on real conditions at the service station i.e. on quality and the length of the suction pipe lines, suction height etc.

Model SDA 2442.E

Basic version

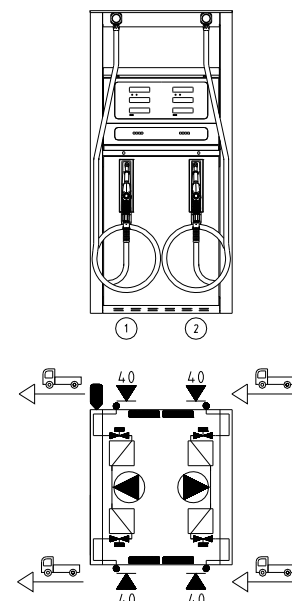
- *NARROW, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 2442.E)*
- *two-sided (one-sided models - SDA 2221.E /1L or /1R)*
- *2 fuel products / 2 pumping monoblocks*
- *4 dispensing hoses DN16 / 4 dispensing nozzles / 4 meters*
- *4 electromagnetic proportional valves*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *2 simultaneous deliveries*
- *2 main displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 2444.E

Basic version

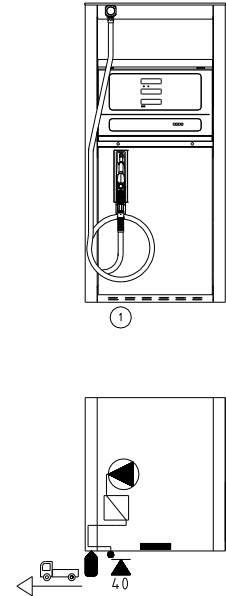
- *NARROW, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 2444.E)*
- *two-sided (one-sided models - SDA 2222.E /1L or /1R)*
- *2 fuel products / 2 pumping monoblocks*
- *4 dispensing hoses DN16 / 4 dispensing nozzles / 4 meters*
- *4 electromagnetic proportional valves*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *4 simultaneous deliveries (all nozzles are independent)*
- *4 main displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 2222.E

Basic version

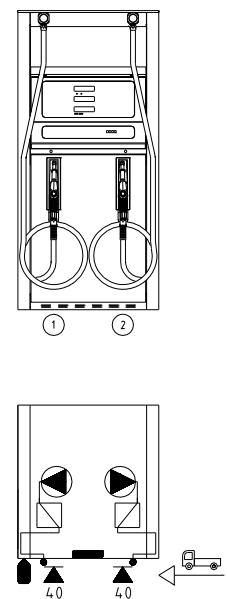
- *NARROW, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 2222.E)*
- *two-sided*
- *2 fuel products / 2 pumping monoblocks*
- *2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *2 simultaneous deliveries*
- *2 main displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 2221.E /1L

Basic version

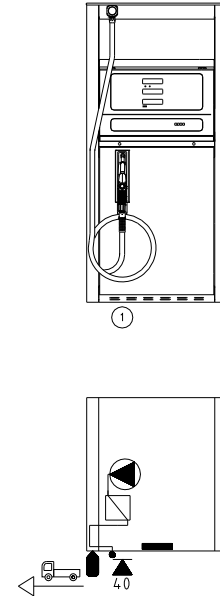
- *NARROW, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 2221.E/1L)*
- *one-sided, left-sided (right-sided model SDA 2221.E /1R)*
- *2 fuel products / 2 pumping monoblocks*
- *2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *one delivery site*
- *one main displaying unit - LCD display with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 1111.E /1L

Basic version

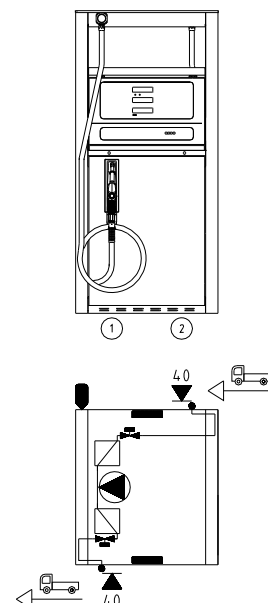
- *NARROW, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 1111.E/1L)*
- *one-sided, left-sided (right-sided model SDA 1111.E /1R)*
- *1 fuel product / 1 pumping monoblock*
- *1 dispensing hoses DN16 / 1 dispensing nozzles / 1 meter*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *one delivery site*
- *one main displaying unit - LCD display with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 1222.E

Basic version

- *NARROW, LANE ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 1222.E)*
- *two-sided*
- *1 fuel product / 1 pumping monoblock*
- *2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters*
- *2 electromagnetic proportional valves*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *2 simultaneous deliveries*
- *2 main displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



4.4. NARROW MODELS, ISLAND ORIENTED

Model	Method of pumping (S-SUCTION, R-REMOTE)	Access to the dispenser (2-two-sided, 1-one-sided*)	Nozzle orientation (L-LANE, I-ISLAND)	Number of pumps (number of products)	Number of meters	Number of nozzles (number of hoses)	No. of main displays (simultaneous deliveries)	Standard performance [L/min]**	High performance (/H) [L/min]***
SDA 1111.E-S /1L(1R)	S	1	I	1	1	1	1	40	80
SSA 1111.E-S /1L(1R)	R	1	I	1	1	1	1	40	80
SDA 1111.E-S	S	2	I	1	1	1	1	40	80
SSA 1111.E-S	R	2	I	1	1	1	1	40	80
SDA 1221.E-S /1L(1R)	S	1	I	1	2	2	1	40	80
SSA 1221.E-S /1L(1R)	R	1	I	1	2	2	1	40	80
SDA 1222.E-S /1L(1R)	S	1	I	1	2	2	2	40	80
SSA 1222.E-S /1L(1R)	R	1	I	1	2	2	2	40	80
SDA 1222.E-S	S	2	I	1	2	2	2	40	80
SSA 1222.E-S	R	2	I	1	2	2	2	40	80
SDA 2221.E-S /1L(1R)	S	1	I	2	2	2	1	40	80
SSA 2221.E-S /1L(1R)	R	1	I	2	2	2	1	40	80
SDA 2222.E-S /1L(1R)	S	1	I	2	2	2	2	40	80
SSA 2222.E-S /1L(1R)	R	1	I	2	2	2	2	40	80
SDA 2222.E-S	S	2	I	2	2	2	2	40	80
SSA 2222.E-S	R	2	I	2	2	2	2	40	80

* One-sided dispensers are left-sided (/1L), or right-sided (/1P). Orientation affects on product order!

** Nominal standard pumping performance.

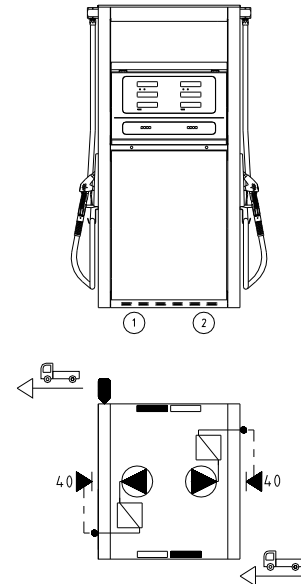
*** increased pumping performance. Appendices /H and /H2 indicate number of pump monoblocks with increased performance.

Notice: Pumping performance strongly depends on real conditions at the service station i.e. on quality and the length of the suction pipe lines, suction height etc.

Model SDA 2222.E-S

Basic version

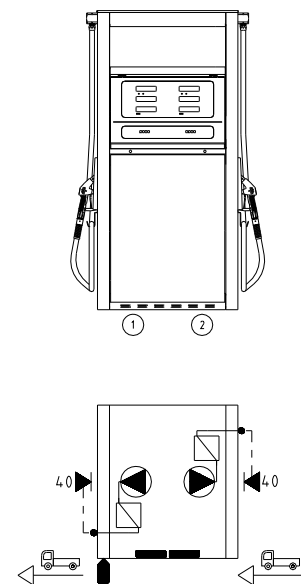
- *NARROW, ISLAND ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 2222.E-S)*
- *two-sided (one-sided models - SDA 2221.E-S /1L or /1R)*
- *2 fuel products / 2 pumping monoblocks*
- *2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *2 simultaneous deliveries*
- *2 main and 2 auxiliary displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 2222.E-S /1L

Basic version

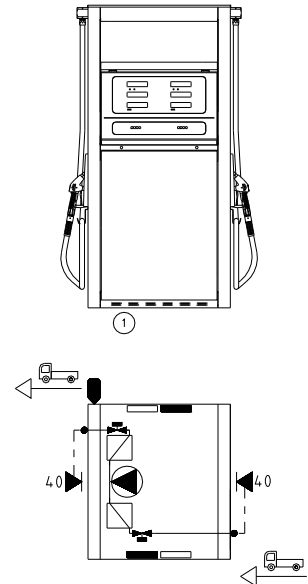
- *NARROW, ISLAND ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 2222.E-S /1L)*
- *one-sided, left-sided (right-sided model SDA 2222.E-S /1R)*
- *2 fuel products / 2 pumping monoblocks*
- *2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *2 simultaneous deliveries*
- *2 main displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 1222.E-S

Basic version

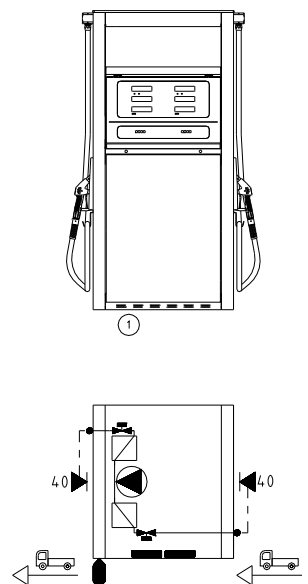
- *NARROW, ISLAND ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 1222.E-S)*
- *two-sided (one-sided models - SDA 1222.E-S /1L or /1R)*
- *1 fuel product / 1 pumping monoblock*
- *2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters*
- *2 electromagnetic proportional valves*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *2 simultaneous deliveries*
- *2 main and 2 auxiliary displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 1222.E-S /1L

Basic version

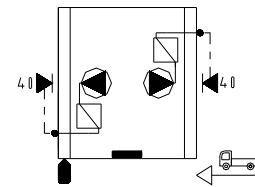
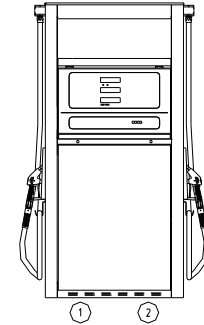
- *NARROW, ISLAND ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 1222.E-S /1L)*
- *one-sided, left-sided (right-sided model SDA 1222.E-S /1R)*
- *1 fuel product / 1 pumping monoblock*
- *2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters*
- *2 electromagnetic proportional valves*
- *pumping performance 40L/min*
- *dispensing hose length 4.2m*
- *2 simultaneous deliveries*
- *2 main displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDA 2221.E-S /1L

Basic version

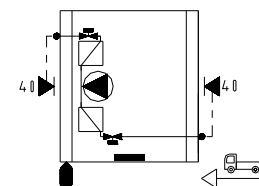
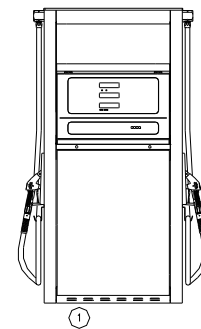
- NARROW, ISLAND ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 2221.E-S /1L)
- one-sided, left-sided (right-sided model SDA 2221.E-S /1R)
- 2 fuel products / 2 pumping monoblocks
- 2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters
- pumping performance 40L/min
- dispensing hose length 4.2m
- one delivery site
- one main displaying unit - LCD display with backlight
- painted sheet metal covers
- white colour



Model SDA 1221.E-S /1L

Basic version

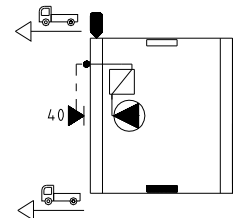
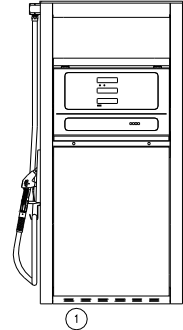
- NARROW, ISLAND ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 1221.E-S /1L)
- one-sided, left-sided (right-sided model SDA 1221.E-S /1R)
- 1 fuel product / 1 pumping monoblock
- 2 dispensing hoses DN16 / 2 dispensing nozzles / 2 meters
- 2 electromagnetic proportional valves
- pumping performance 40L/min
- dispensing hose length 4.2m
- one delivery site
- one main displaying unit - LCD display with backlight
- painted sheet metal covers
- white colour



Model SDA 1111.E-S

Basic version

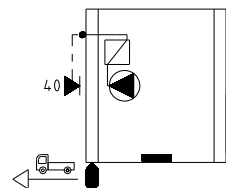
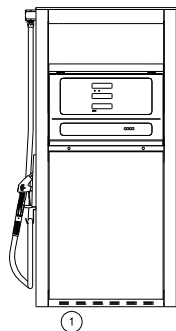
- NARROW, ISLAND ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 1111.E-S)
- two-sided (one-sided models - SDA 1111.E-S /1L or /1R)
- 1 fuel product / 1 pumping monoblock
- 1 dispensing hoses DN16 / 1 dispensing nozzle / 1 meter
- pumping performance 40L/min
- dispensing hose length 4.2m
- one delivery site
- 1 main and 1 auxiliary display unit - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDA 1111.E-S /1L

Basic version

- NARROW, ISLAND ORIENTED, SUCTION type dispenser (REMOTE type model - SSA 1111.E-S /1L)
- one-sided, left-sided (right-sided model SDA 1111.E-S /1R)
- 1 fuel product / 1 pumping monoblock
- 1 dispensing hoses DN16 / 1 dispensing nozzles / 1 meter
- pumping performance 40L/min
- dispensing hose length 4.2m
- one delivery site
- 1 main and 1 auxiliary display unit - LCD displays with backlight
- painted sheet metal covers
- white colour



4.5. HIGH FLOW MODELS

Model	Method of pumping (S-SUCTION, R-REMOTE)	Access to the dispenser (2-two-sided, 1-one-sided*)	Nozzle orientation (L-LANE, I-ISLAND)	Number of pumps (number of products)	Number of meters	Number of nozzles (number of hoses)	No. of main displays (simultaneous deliveries)	Performance [L/min]**
SDF 4222.E-S /UH2/1L	S	1	I	4	4	4	2	130
SSF 4222.E-S /UH2/1L	R	1	I	4	4	4	2	130
SDF 4222.E-S /UH2	S	2	I	4	4	4	2	130
SSF 4222.E-S /UH2	R	2	I	4	4	4	2	130
SDF 4222.E /UH2	S	2	L	4	4	4	2	130
SSF 4222.E /UH2	R	2	L	4	4	4	2	130
SDC 2222.E-S /UH/H/1L	S	1	I	2	2	2	2	130+80
SSC 2222.E-S /UH/H/1L	R	1	I	2	2	2	2	130+80
SDC 2222.E-S /UH/H	S	2	I	2	2	2	2	130+80
SSC 2222.E-S /UH/H	R	2	I	2	2	2	2	130+80
SDC 2222.E /UH2	S	2	L	2	2	2	2	130
SSC 2222.E /UH2	R	2	L	2	2	2	2	130
SDC 2111.E-S /UH/1L	S	1	I	2	1	1	2	130
SSC 2111.E-S /UH/1L	R	1	I	2	1	1	2	130
SDC 2111.E-S /UH	S	2	I	2	1	1	1	130
SSC 2111.E-S /UH	R	2	I	2	1	1	1	130
SDC 2111.E /UH/1L(1R)	S	1	L	2	1	1	1	130
SSC 2111.E /UH/1L(1R)	R	1	L	2	1	1	1	130

* One-sided dispensers are left-sided (/1L), or right-sided (/1P). Orientation affects on product order!

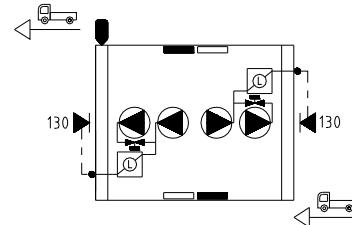
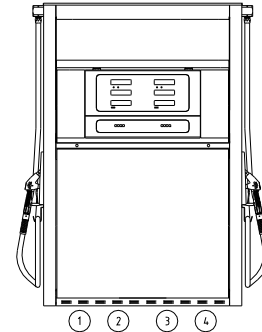
** Nominal pumping performance. Appendices /UH and /UH2 indicate number of hoses/nozzles with high flow performance

Notice: Pumping performance strongly depends on real conditions at the service station i.e. on quality and the length of the suction pipe lines, suction height etc.

Model SDF 4222.E-S /UH2

Basic version

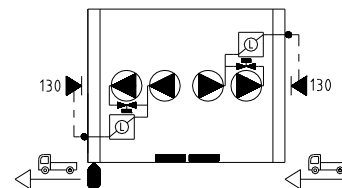
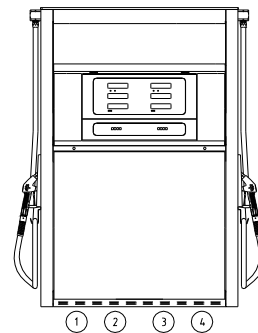
- WIDE, ISLAND ORIENTED, SUCTION type diesel dispenser (REMOTE type model - SSF 4222.E-S/UH2)
- two-sided (one-sided models - SDF 4221.E-S /UH2/1L or /1R)
- 4 pumping monoblocks
- 2 dispensing hoses DN25 / 2 dispensing nozzles / 2 LOBE meters
- 2 electromagnetic proportional valves
- pumping performance 130 L/min
- dispensing hose length 4.2m
- 2 simultaneous deliveries
- 2 main and 2 auxiliary displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDF 4222.E-S /UH2/1L

Basic version

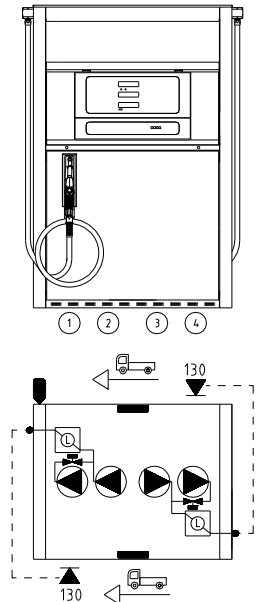
- WIDE, ISLAND ORIENTED, SUCTION type diesel dispenser (REMOTE type model - SSF 4222.E-S /UH2/1L)
- one-sided, left-sided
- 4 pumping monoblocks
- 2 dispensing hoses DN25 / 2 dispensing nozzles / 2 LOBE meters
- 2 electromagnetic proportional valves
- pumping performance 130 L/min
- dispensing hose length 4.2m
- 2 simultaneous deliveries
- 2 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDF 4222.E /UH2

Basic version

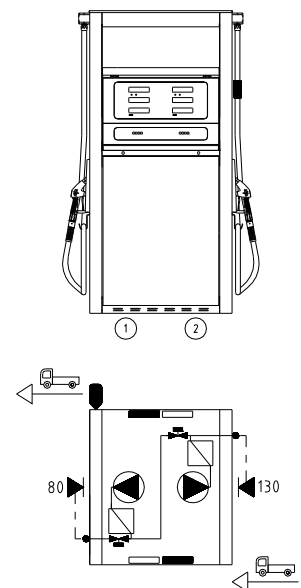
- WIDE, LANE ORIENTED, SUCTION type diesel dispenser (REMOTE type model - SSF 4222.E /UH2)
- two-sided (one-sided models - SDF 4222.E /UH2/1L or /1R)
- 4 pumping monoblocks
- 2 dispensing hoses DN25 / 2 dispensing nozzles / 2 LOBE meters
- 2 electromagnetic proportional valves
- pumping performance 130 L/min
- dispensing hose length 4.2m
- 2 simultaneous deliveries
- 2 main displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDC 2222.E-S /UH/H

Basic version

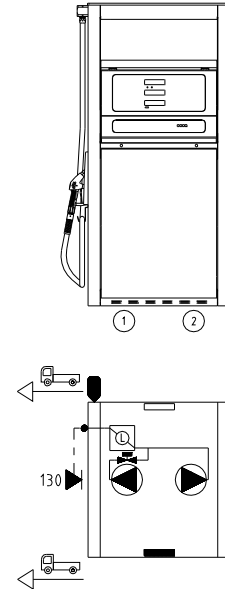
- NARROW, ISLAND ORIENTED, SUCTION type diesel dispenser (REMOTE type model - SSC 2222.E-S /UH/H)
- two-sided (one-sided models - SDC 2221.E-S /UH/H/1L or /1R)
- 2 pumping monoblocks
- 2 dispensing hoses DN25 a DN21 / 2 dispensing nozzles / 2 meters
- 2 electromagnetic proportional valves
- pumping performance 130 L/min + 80 L/min
- dispensing hose length 4.2m
- 2 simultaneous deliveries
- 2 main and 2 auxiliary displaying units - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDC 2111.E-S /UH

Basic version

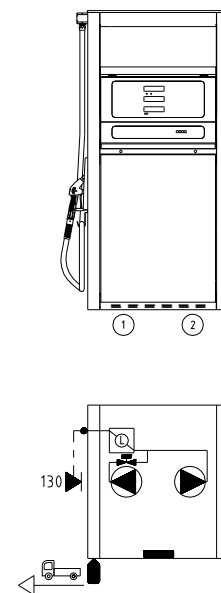
- NARROW, ISLAND ORIENTED, SUCTION type diesel dispenser (REMOTE type model - SSC 2111.E-S /UH)
- two-sided (one-sided models - SDC 2111.E-S /UH/1L or /1R)
- 2 pumping monoblocks
- 1 dispensing hoses DN25 / 1 dispensing nozzles / 1 LOBE meter
- 1 electromagnetic proportional valve
- pumping performance 130 L/min
- dispensing hose length 4.2m
- one delivery site
- 1 main and 1 auxiliary display unit - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDC 2111.E-S /UH/1L

Basic version

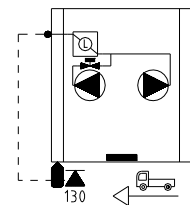
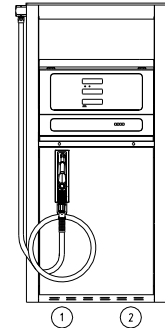
- NARROW, ISLAND ORIENTED, SUCTION type diesel dispenser (REMOTE type model - SSC 2111.E-S /UH/1L)
- one-sided, left-sided (right-sided model - SDC 2111.E-S /UH/1R)
- 2 pumping monoblocks
- 1 dispensing hoses DN25 / 1 dispensing nozzles / 1 LOBE meter
- 1 electromagnetic proportional valve
- pumping performance 130 L/min
- dispensing hose length 4.2m
- one delivery site
- 1 main displaying unit - LCD displays with backlight
- painted sheet metal covers
- white colour



Model SDC 2111.E /UH/1L

Basic version

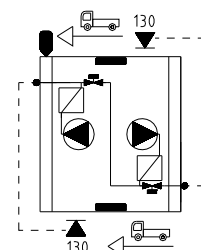
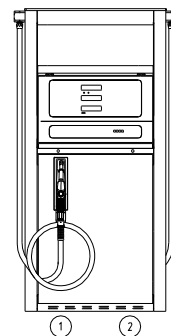
- *NARROW, LANE ORIENTED, SUCTION type diesel dispenser (REMOTE type model - SSC 2111.E /UH/1L)*
- *one-sided, left-sided (right-sided model - SDC 2111.E /UH/1R)*
- *2 pumping monoblocks*
- *1 dispensing hoses DN25 / 1 dispensing nozzles / 1 LOBE meter*
- *1 electromagnetic proportional valve*
- *pumping performance 130 L/min*
- *dispensing hose length 4.2m*
- *one delivery site*
- *1 main displaying unit- LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



Model SDC 2222.E /UH2

Basic version

- *NARROW, LANE ORIENTED, SUCTION type diesel dispenser (REMOTE type model - SSC 2222.E /UH)*
- *two-sided*
- *2 pumping monoblocks*
- *2 dispensing hoses DN25 / 2 dispensing nozzles / 2 meters*
- *2 electromagnetic proportional valves*
- *pumping performance 130 L/min*
- *dispensing hose length 4.2m*
- *2 simultaneous deliveries*
- *2 main displaying units - LCD displays with backlight*
- *painted sheet metal covers*
- *white colour*



5. STANDARD VERSION & ACCESORIES

This chapter describes the standard version of the dispenser SUNNY-XE EURO and optional equipment and accessories.

5.1. STANDARD VERSION

All the SUNNY-XE EURO dispenser models are available both in the suction (dispenser contains suction pumps and meters), as well as in the remote version (dispenser contains only meters and filters). Dispenser in the remote version is connected to tanks where are installed central submersible pumps.

All models can be equipped with vapour recovery system stage II, temperature volume compensation or payment terminal.

All models are "EU ready", i.e. they can be installed immediately in all countries of the European Union.

5.1.1. DISPENSER CONSTRUCTION, FRAMES AND COVERS

- Frame of steel, black, RAL 9005, lacquered via powder technology.
- Internal brackets from galvanized steel.
- Covers of painted steel, standard white, RAL 9016.
- Head of electronics, IP54 protection, resistant against water and dust.
- Hydraulic module, IP23 protection, resistant to dripping water.

5.1.2. DISPENSING HOSE

- Complete hose or hose tube ZVA ELAFLEX with black covers.
- Hose DN16, for standard delivery performance 40 L/min., length 4.20 m.
- Hose DN21, for high delivery performance 80 L/min., length 4.10 m.
- Hose DN25, for ultra high delivery performance 130 L/min., length 4.20 m.
- Coaxial hose DN21/8 for vapour recovered fuel, length 4.10 m.
- Free-hanging dispensing hose.

5.1.3. DISPENSING NOZZLE

- Automatic dispensing nozzle ZVA Slimline 2 and ZVA 25, ELAFLEX.
- Nozzle ZVA2 3M, standard delivery performance 40 L/min (red, green or black).
- Nozzle ZVA2 H 3M.1, high delivery performance 80 L/min (black).
- Nozzle ZVA 25 3M.1, ultra high delivery performance 130 L/min (black).
- Nozzle ZVA2 GRVP 3M, for vapour recovery stage II with vapour flow control valve (red, green).



5.1.4. NOZZLE BOOT

- TATSUNO plastic nozzle boot, explosion proof.
- Non-flammable, resistant to impact (7J), antistatic (R <math><1G\Omega</math>), certificate No. FTZÚ11E0023.

5.1.5. PUMPING UNIT

6. Pumping monoblock TATSUNO FP-1001

Internal gear pump with integrated air separator, check valve, overflow prevention valve and inlet&outlet strainer. The pump operation speed is enabling the dispenser to deliver standard flow 40 ÷ 50 L/min - version FP1001-B01, or high flow 80 ÷ 90 L/min - version FP1001-B02 (pump with higher volume and pulley).

Body of the pumping monoblock is the same in both versions. For very high performance pumping 130 ÷ 150L/min is used coupling of two pumping monoblocks FP1001-B02. For pumping diesel and biodiesel air separation sensor VRS1.G is used. This sensor ensures delivery interruption as a result of low levels of fuel in the fuel tank.



Check valve is designed to hold liquid in the pump between the pump stops. The build-in check valve can protect the pump from leakage of liquid by keeping the pipe negative pressure between the pump and underground tank. Overflow valve prevents the liquid from overflow through the air/vent, when the liquid level in the float room rises abnormally. The Inlet strainer (150µm) protects the pump from dust and foreign particle in liquid. The outlet strainer (200µm) is highly effect for increasing clean gasoline delivery.

- Pumping monoblock **TATSUNO FP-1022**.

New type of pumping monoblock is equipped with the proven rotary gear pump, air separator with integrated electronic sensor, check valve and inlet and outlet filter (110µm / 61µm). This type of monoblock is used for both pumping performances - standard 40 ÷ 50 L/min, as well as high 80 ÷ 90 L/min. Pump can be set only by number of revolution, i.e. the various pulleys on the shaft of the driving motor. Pumping monoblock FP-1022 is part of the hydraulic MVP-X, consisting of one pumping monoblock and two piston meters FM-1025 (see picture).



- To drive all of the above pumping units used the same type of electric motor. Also for connection to the suction pipe using the same flexible connection pieces fitted with oval flanges.

6.1.1. MEASURING DEVICE

- Four pistons flowmeter **TATSUNO FM-1007** with integrated measuring transducer (pulser) **TATSUNO EK-1045** (100 pulses per litre).

High precision meter has possibility of mechanical calibration in increments of 0.04%. It has an integrated optoelectronic converter EK-1045 (two-channel, 100 pulses per litre). One revolution of the meter shaft is equivalent to volume of 0.5 L.

Technical parameters:

Cylinder capacity	0.5 L/revolution
Maximum flow	90 L/min.
Minimum flow	2 L/min.



Accuracy	± 0.25 %
Maximum working pressure	0.4 MPa
Maximum adjusting limits	± 1.2 %

- Four pistons flowmeter **TATSUNO FM-1022** with integrated measuring transducer (pulser) **TATSUNO ZE-1945** (100 pulses per litre).

New type of high precision meter has possibility of mechanical calibration in increments of 0.04%. It has an integrated electro-magnetic converter ZE-1945 (two-channel, 100 pulses per litre). One revolution of the meter shaft is equivalent to volume of 0.5 L. Flowmeter FM 1025 is part of the hydraulic MVP-X (see pumping monoblock FP-1022).

Technical parameters:

Cylinder capacity	0.5 L/revolution
Maximum flow	90 L/min.
Minimum flow	2 L/min.
Accuracy	± 0.25 %
Maximum working pressure	0.59 MPa
Maximum adjusting limits	± 1.2 %

6.1.2. MOTOR

- Three-phase 230/400 VAC - 50 Hz, 0.75 kW, explosion-proof.
- The same motor for all models of fuel dispensers.

6.1.3. VALVES

- Two-sided dispensers are as standard equipped with electromagnetic proportional valves +24VDC that enable continuous control and accurate delivery to preselected amount or volume.

6.1.4. ELECTRONIC COUNTER

- **TATSUNO, type PDEX**
Modular multi-purpose electronic counter meets all European requirements for safety and metrology. It is located in the dispenser head. It consists of a base processor and units for controlling peripherals such as various types of LCD displays, switching control unit for contactors of electric pump motors, the controlling unit of electromagnetic solenoid valves, electromechanical totalizers, volume correction unit, audio unit, electronic vapour recovery, etc. With station controller (POS) counter communicates via data line. Calculator PDEX offers many worldwide communication protocols. Counter can be set directly via data line, as well as by IR remote controller. Counter PDEX is very variable. Is it possible to handle any configuration of dispenser - from configuration 1 hose / 1 product / 1 display up to configuration 10 hoses / 5 fuel products / 4 displays.

- TATSUNO, type **TBELTX**

Single Board electronic counter in the performance all-in-one meets all European requirements for safety and metrology. It is located in the head of dispenser. It consists of only one base unit, which integrates all the basic blocks, such as CPU, display, electromechanical totalizers, motor contactor switches, valve outputs etc. Counter is available in two basic variants: TBELT2 - counter for 2 hose, 2 fuel products, 1 display and TBELT4 - counter for 4 hose, 4 fuel products, 1 display. With station controller (POS) counter communicates via data line. Calculator TBELTX offers many worldwide communication protocols. Counter can be set directly via data line, as well as by four-button keypad.

6.1.5. DISPLAYING UNIT

- LCD, LED back lighted, high contrast.
- 7-segment digits in configuration - amount/volume/price = 6/6/6.



5.2. ACCESSORIES

6.2.1. STAINLESS STEEL COVERS

- Computer head
- Columns
- Hydraulic doors.

6.2.2. PRODUCT NAME LABELS

- Painted metal sheet with resistive foil.
- Various colours.

6.3.1. DISPENSER COLOURS MADE TO ORDER

- According to RAL colour code.
- Standard colour - white RAL 9016.

6.3.2. VAPOUR RECOVERY SYSTEM STAGE II

Vapour recovery system is used to reduce emissions of hydrocarbon vapours that would otherwise escape into the atmosphere during pumping to motor vehicles. The second stage requires the installation of vapour recovery equipment to the dispensers. Currently, the most commonly used variants of the following vapour extraction of stage II:

- (1) The variant with hydraulically controlled proportional valve GRVP inside dispensing nozzle
- (2) The variant with electronically controlled electromagnetic proportional valve
- (3) The variant with electronically controlled electromagnetic proportional valve and automatic monitoring system VAPORIX (FAFNIR)

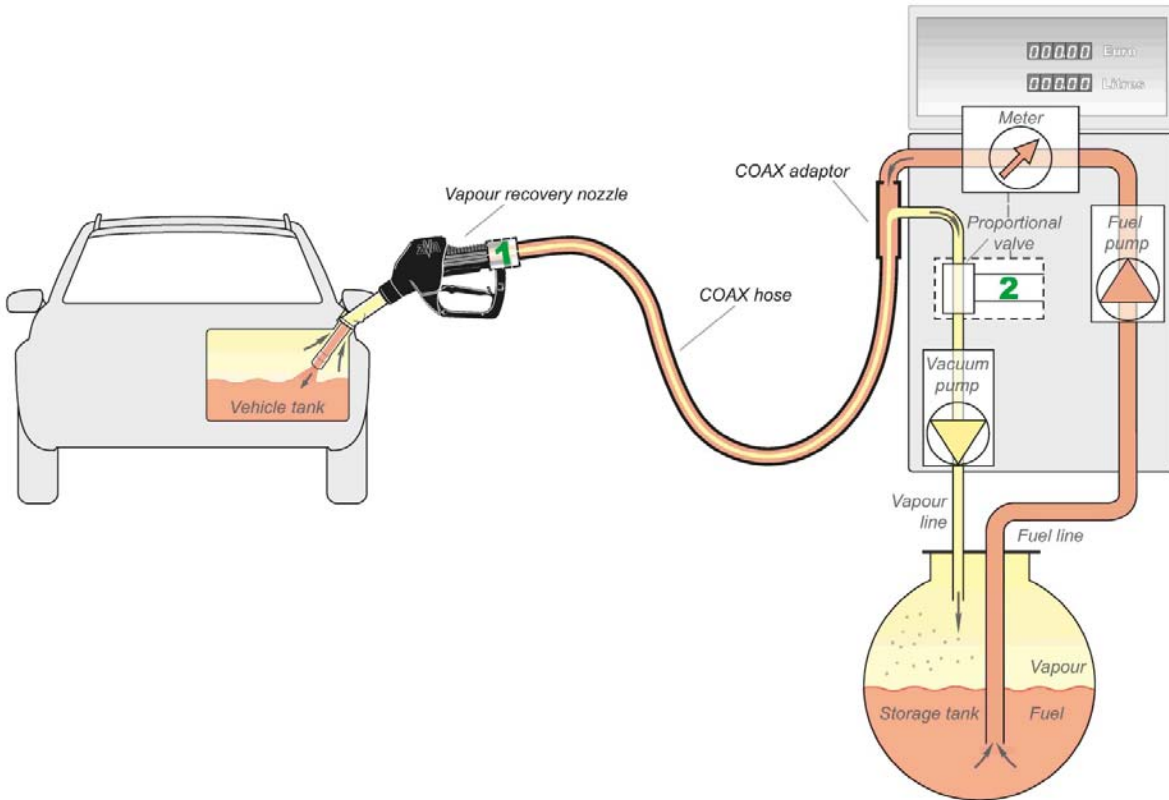


Fig. 3 - Variations of vapour recovery system of stage II (1-GRVP, 2-valve)

(1) In case of using **hydraulically controlled proportional valve GRVP** (see Fig. 3 - Option 1), vapor recovery system includes a vacuum pump DÜRR TECHNIC, coaxial hose, ZAF adapter that separates the vapours from the fuel and nozzle type ZVA2 GRVP3M. Dispensing nozzle is equipped with GRVP valve (see picture), which regulates the amount of exhaust vapours by the volume of fuel passing through the nozzle. This variant of vapor recovery system is the most widely used because it is the simplest and the most cheaper.



(2) Vapor recovery system with **electronically controlled proportional valve** (see Fig. 3 - Option 2) includes a vacuum pump DÜRR TECHNIC, electromagnetic proportional valve and controlling electronic, coaxial hose, ZAF adapter that separates the vapours from the fuel and nozzle type ZVA2 GRV 3M. Dispensing nozzle is equipped with GRV valve with function ON/OFF (see picture). Proportional valve during pumping regulates the amount of exhaust vapours by the volume of delivered fuel. GRV valve in the dispensing nozzle ensures that the vapor recovery takes place only on the nozzle, which is pumped. This variant of vapor recovery system is very accurate, because the proportional valve can be calibrated to efficiency of 95% to 105% (efficiency is the ratio of the volume of vapor exhausted to volume of delivered fuel).



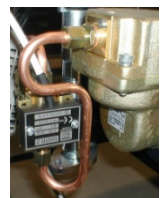
- (3) Vapor recovery system **with electronically controlled proportional valve and an automatic monitoring system VAPORIX** works well as a variant (2) with the difference that in the return vapour pipe is installed sensor measuring the volume of vapors. The sensor is connected to control unit which evaluates the ratio of the volume of vapors and fuel. In case of deviation from the efficiency of vapour recovery of 100% then starts to regulate the vapour flow. In case of deviation from the efficiency of the interval <85%,115%> for five consecutive deliveries then system starts to signal the failure and after 72 hours of the failure to block fuel delivery.



- Vapour recovery stage II is **mandatory** in the EU for all fuel products, except diesel fuel and biodiesel.

6.3.3. VAPOUR FLOW SENSOR VRS1

- Vapour recovery systems (1) and (2) can be supplemented by vapour flow sensor type VRS1 (see figure).
- Explosion proof - ATEX.
- The possibility of blocking the pump in case of vapour recovery system failure.



6.3.4. VAPOUR RECOVERY SIGNALLING

- Visual inspection of the proper operation of vapour recovery system during pumping.
- Two variants of signal: green LED on the display, or dedicated segments of the display screen unit.
- The need of vapour flow sensor VRS1 installation.

6.3.5. TEMPERATURE VOLUME CORRECTION (ATC)

- Automatic temperature compensation of the fuel volume to 15 ° C.

Temperature compensation is only possible when is using a calculator PDEX. Counter TBELTX it does not support.

- This accessory includes an additional electronic unit and calibrated explosion-proof temperature sensor. Additional electronic unit is placed in dispenser head and continuously measures the temperature of the fuel via connected Pt100 temperature sensors that are installed in the fuel pipes before the flow meters. The temperature of the fuel is measured every second and sent to an electronic counter PDEX, which performs the calculation of volume and temperature corrected volume shows on the display.
- Reference temperature of the liquid is 15°C (temperature at which there is no correction by volume).

- Temperature volume compensation (ATC) is proportional to the specific fuel type and density. Type the liquid and its specific density at 15°C are set as parameters to the electronic counter. The table below shows how is changed the volume of fuel during refuelling of 100 litters. Values are relative to a reference temperature of 15°C.

Liquid	ρ_0 [kg/m ³]	T = -20°C	T = -10°C	T = 0°C	T = +15°C	T = +30°C	T = +50°C
PETROL	716	-4.44	-3.19	-1.92	0	+1.94	+4.57
GASOLINE 91	737	-4.26	-3.05	-1.84	0	+1.86	+4.37
EKOPAL	742	-4.21	-3.02	-1.82	0	+1.84	+4.32
GASOLINE 95	749	-4.15	-2.98	-1.79	0	+1.81	+4.26
SUPER 95	750	-4.15	-2.97	-1.79	0	+1.81	+4.25
GASOLINE 98	752	-4.13	-2.96	-1.78	0	+1.80	+4.23
KEROSENE	799	-3.23	-2.31	-1.39	0	+1.40	+3.29
AIRPLANE KEROSENE	801	-3.21	-2.30	-1.38	0	+1.40	+3.27
BIODIESEL	831	-2.98	-2.14	-1.29	0	+1.30	+3.04
DIESEL	837	-2.94	-2.11	-1.27	0	+1.28	+3.00
LIGHT HEATING OIL	846	-2.90	-2.08	-1.25	0	+1.26	+2.95

Table 1 - Volume change in litres depending on the temperature [°C] for delivery 100L

- From Table 1 follows: If a customer takes 100L of gasoline 95 on dispenser, which is not equipped with a temperature correction, then when the fuel temperature is -20°C, then real volume (recalculated to 15°C) of the fuel delivery is about 4.15L higher. In the case when the fuel temperature is +50°C then real volume (recalculated to 15°C) of the fuel delivery is about 4.26 L lower.

6.3.6. ELECTROMECHANICAL VOLUME TOTALIZERS

- Totalizers controlled directly by an electronic counter placed in dispenser head.
- Seven digits, easy to read, not resettable.
- Totalizer indicates the total volume of fuel which has passed through dispensing hose (one totalizer per hose). Displayed data are in whole litres.
- Totalizer is protected against misuse by lead seal. After totalizer disconnection the fuel delivery is locked.

6.3.7. PRESELECTION KEYBOARD

- 4-buttons keyboard enables delivery on preselected volume/amount.
- Possibility to set value of the preselecting button - 5 Euro, 10 Euro, 1L, 10L, ...
- The keyboard is placed on dispenser display panel (see Fig.4).
- Possibility of fuelling to the whole amount (Euro), by pressing any button during the delivery.

6.3.8. BUTTON MAX/MIN

- Button of high/standard flow selection (80/40 L.min⁻¹).
- The button is placed on dispenser display panel.

6.3.9. GRAPHIC DISPLAY

- Graphic proportional LCD display, LED back lighted, high contrast (see Fig.4).
- 75-segments digits in configuration - amount/volume/price = 6/6/6.
- Large digits height - 30 mm.
- Two modes - pumping & text.
- In the text mode, it is possible to display customer text messages (advertising, warnings, date, time, etc.).



Fig. 4 - Mask of the display unit with graphic display, electromechanical totalizers and preselecting keyboards

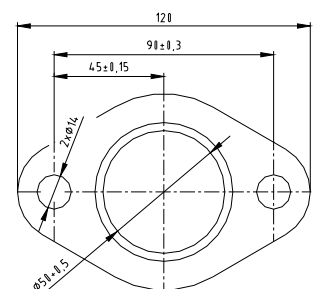
6.3.10. HOSE & NOZZLE ACCESSORIES

- Optional dispensing hose length.
- Hoses ZVA SLIMLINE LT for temperatures below -20°C.
- Safety Break between nozzle and hose (see picture).
- DRIP STOP device for ZVA2 nozzle that prevents from drips.
- Colour nozzle covers for distinguishing of type of fuel - red, black, blue, and yellow, green (see picture).
- Sight glass between nozzle and hose.
- Nozzle with system LEVER ASSIST type ZVA2...LA that enables 90% easier opening of the nozzle.
- Colour covers with product name on dispensing nozzle ZVA2.
- Nozzle boot key lock.
-



6.3.11. CONNECTING PIECE FOR SUCTION TYPE DISPENSER

- Dispenser in suction version is connected to the fuel pipeline that is leading from the fuel tank through the connecting piece (flexible coupling) with flange.
- Standard length 0.27 m.
- Standard coupling oval flange PN6 (see drawing).
- Other lengths and flange shapes on customer request.



6.3.12. SHUT OFF VALVE FOR REMOTE TYPE DISPENSER

- Dispenser in the remote type version does not contain suction pumps, but only the meters and filters. The central submersible pump located in the fuel tank pressure fuel through the pipes into the dispenser. To ensure the safety according to EN 13617-1:2009 is necessary to connect the pressure pipeline over the emergency shut off valve. Emergency Shut Off Valve must be tightly fasted to the base of the dispenser so that the dispenser torn off will cause the closing of the fuel pipe.



6.3.13. GROUND FRAME

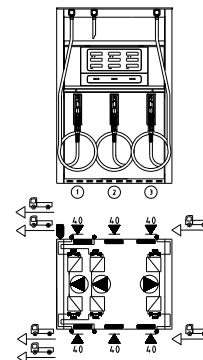
- A frame that can be fixed in the concrete island foundation at the time of building to help positioning of all piping, cabling, etc. required by the dispenser.
- Later, the dispenser can be easily bolted onto it without the need for any other attachments.

6.3.14. SINGLE-PHASE POWER SUPPLY

- Standard dispenser is designed for three-phase power supply 3 x 400V / 50 Hz. It can be provided for single-phase power supply 230V /50Hz.

6.3.15. SIMULTANEOUS DELIVERIES 2/4 & 3/6

- For some models of dispensers it is possible to provide the 2 or 3 simultaneous pumping for the one-sided model and 4 or 6 simultaneous pumping for two-sided model of the dispenser.
- An example is two-sided model, three product, six hose dispenser SUNNY-XE EURO model SBD 3666.E (see picture), which can be pumped at one moment from all six dispensing hoses/nozzles. The dispenser is equipped with six independent main displays and six preselecting keyboards.



6.3.16. REMOTE TRANSMITTER

- IR remote transmitter PDERT serves for dispenser mode settings, reading of electronic daily totals, error message statistics, transactions history, the unit price setting in case of standalone mode etc.
- Allows dispenser control in the manual (stand alone) mode, where you can use it to unblock the dispenser after payment. It can also be used for preselecting of the amount/volume on dispenser instead of preselecting keyboard.



6.3.17. DATA COMMUNICATION INTERFACE

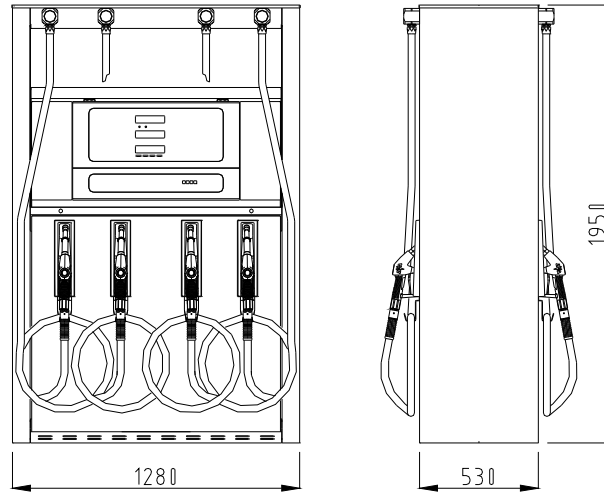
- The dispensers OCEAN as standard communicate with the station control computer (controller or POS) via a data line RS485 through its own communication protocol - PDE.
- For data communication with other type of protocol must be added data interface unit PDEPRC.
- The PDEPRC currently serve all of the most common data protocols.

6.3.18. PAYMENT TERMINAL

- Payment terminal is built into bottom fibreglass cover.
- Possibility of installation of any terminal on request.

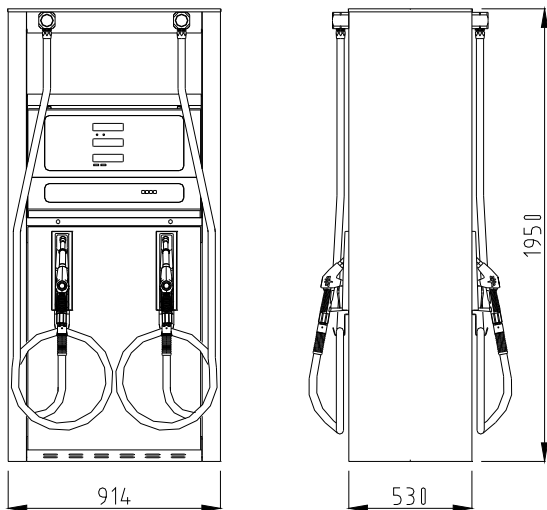
6. DIMENSIONS

6.1. WIDE MODELS



6.2. NARROW MODELS

a) LANE ORIENTED models



b) ISLAND ORIENTED models

