TATSUNO EUROPE a.s.

# ADBLUE & WSE DISPENSERS

# TATSUNO EUROPE

Quick User Guide

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## INTRODUCTION

This Quick User Guide is intended for the users of TATSUNO EUROPE electronic AdBlue dispensers and windshield washer fluid (WSE) dispensers and owners of service station where dispensers are installed and operated. TATSUNO EUROPE a.s. recommends thorough reading of this manual. The manual must be available to the dispenser attendant during operation and regular maintenance of dispensers.

- Make it available to other owners and users.
- Perform updates of regulations and manuals (www.tatsuno-europe.com)

The contents of the manual at the time of its release corresponds to reality. The manufacturer reserves the right to alter the technical specifications of the device or its properties without a written notice, due to its development and continuous improvement. 

Document revisions

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|---|---|---|
| Revision 00 / 4. 9. 2018 | Basic version of the document | Milan Berka |
| Revision 01 / 13. 2. 2022 | Update of technical data, Error messages, Dispenser settings (PDEX5 counter) | Milan Berka |
| Revision 02 / 31. 5. 2023 | AdBlue dispenser commissioning - see 5.2 | Milan Berka |

## 1. INTRODUCTORY INFORMATION

*Symbols used in this manual:*

***Warning***


***Explosion hazard***

***Attention! Electrical device***

***Smoking forbidden***

***Open flame use forbidden***

***Use of mobile phones forbidden***

*Terms used in this manual requiring special attention:*

**CAUTION** *Failure to meet the requirements stated together with this term may create conditions leading to a personal injury or death or to extensive loss of property.*

**WARNING** *Failure to meet the requirements stated together with this term may lead to a personal injury and/or may cause dispenser damage.*

**NOTICE** *Items stated together with this term draw reader's attention to legal and/or statutory requirements that regulate the assembly and use of dispensers. Failure to meet these requirements may create a dangerous situation and/or result in dispenser damage.*

**NOTE** *Items stated together with this term are to draw reader's attention to assembly procedures, techniques and operating methods etc. that are important to ensure correct assembly and proper operation of dispensers and which, if not observed, may result in damage, failure or poor performance of dispensers.*

## 1.1. PERMITTED USE

TATSUNO EUROPE dispensers, OCEAN and SHARK type series, are designed for stationary or mobile placement for the delivery AdBlue® additive and windshield washer fluid for motor vehicles (WSE) in a given amount from a storage tank to a tank of a motor vehicles.

**CAUTION** *Dispensers are complex devices that must secure a whole range of difficult functions.* ***Therefore, tanks and pipelines must be cleaned and fuel must be checked for cleanliness before commissioning (Filter clogging in a dispenser cannot be considered a reason for warranty repair!). An inspection of wiring and a check of connection correctness must be performed before commissioning to prevent any electric shock injuries and to ensure safety against explosion (washer fluid may be flammable).***

**NOTICE** ***Any modification of the dispenser may invalidate the device certification. Refer to certification documents and manufacturer instruction manuals if any modification of the wiring and/or device is considered.***

Each dispenser is properly tested in the factory in terms of its function, safety, and metrology. The delivery of each dispenser also contains certification documents that must be submitted by the operator on demand.

## 1.2. HEALTH AND SAFETY

### 1.2.1. LIST OF SAFETY FACTORS

- Any odour of ammonia (AdBlue®) or ethanol (WSE) must be immediately reported.
- It is necessary that all work at the fuel station, especially construction and repairs, is performed fill in compliance with this list.
- It is the obligation of the constructor that all his employees comply with all laws, directives, and other regulations.
- The technical liquids (WSE and AdBlue®) may only be stored in tanks and containers compatible with.

**Locations requiring higher carefulness**

- The interior of a tank, pipes, shafts of storage tanks, filling shafts, relief shafts, containers, and dispensers.
- All locations where accumulation of vapours may occur and when these vapours are heavier than air, such as in drainage shafts, low-lying rooms, cellars, trenches, etc.
- The surroundings of tank ventilation, especially during filling.
- Any locations nearby deliveries, truck tanks and other vehicles during deliveries, especially in windless conditions.
- A radius of 1 m around the pipes transporting technical liquids.
- The filters.

### 1.2.2. OBLIGATIONS OF EMPLOYEES

- To ensure optimum prevention of injuries, in addition to general rules for employee protection it is necessary to consider also national legislation about employee protection and actively support all measures improving

safety standards.

- An employee is obliged to observe all company guidelines about accident prevention except for the cases when these guidelines are assessed as illegitimate.
- Employees must not act according to any instruction that violate safety rules.
- Employees may use designed tools only for their original purposes that are defined by the company itself.
- If an employee detects a tool unsuitable in terms of safety, he/she must immediately remove the defect. If the defect removal is not within the employee`s job content or if an employee does not have enough knowledge for its removal, he/she must immediately inform his/her superordinate.

**The same applies also to the following:**

- **Working materials** that are not properly packed or correctly described so that they correspond to safety requirements.
- **Working methods and processes** that are not correctly coordinated or checked so that they correspond to safety requirements.
- **If dangerous procedures are performed by several persons**, permanent flawless communication between them is necessary to prevent hazardous situations. In such a case a person must be appointed and authorized to perform overall supervision.

### 1.2.3. DANGER

Before starting work, the dispenser must be insulated (i.e., completely disconnected from the power supply) and the main switch must be switched off. The submersible pump (if used) and the control signals from the dispenser must also be insulated. This ensures technician safety. As a further precaution, turn off the main power supply in the fuel station booth and place there a clear warning to prevent it from being accidentally switched on. It is not allowed to turn on the dispenser before it is checked and approved by an authorized technician. This authorization is subject to the relevant national legislation. Removed packaging and facing material must be stored in such a way as to prevent damage to parts and personal injury. Covers that can be opened, such as the counter box, should be handled with care. Ensure that the fuse is in the correct position to prevent the lid from falling off on the head of the service technician or another person. For unmanned fuel stations, the Installation and User Manual must be available to all end-users. It should be placed visibly on the notice board and illuminated enough to be readable at night.

**WARNING** ***Only qualified personnel authorized to do so may perform connecting and disconnecting to/from the electrical system. Work in hazardous areas must be ensured by complying with all applicable legal standards.***

### 1.2.4. PERSONAL PROTECTIVE EQUIPMENT

**Protective clothing**

The following clothing must always be worn during dispenser installation and maintenance:

- Protective helmet.
- Protective footwear (conductive).
- Protective leather gloves.
- Anti-static clothing.
- Eye protection.

**Protective equipment for work in a hazardous environment**

The following safety equipment is required to work in a hazardous environment:

- Only spark-free tools are permitted when working on the dispenser.
- Work on bearings is only allowed using standard tools allowed for this type of work.
- It is strictly forbidden to use electric tools.
- Only explosion-protected working lights are permitted.
- It is strictly forbidden to use telecommunication tools in hazardous areas.

**Safety instructions**

The following safety instructions must be observed during installation and maintenance:

- Avoid inhalation of AdBlue® vapours. Take appropriate measures and use an inhaler if necessary.
- Avoid direct contact of the AdBlue® with the skin.
- Wear suitable protective clothing and gloves.
- Avoid spills of AdBlue®.
- Smoking and open fire are forbidden.
- Long hair and ties can be trapped in moving parts. Hair must be reasonably covered.

Device design safety

**DEVICE DESIGN SAFETY IS GUARANTEED BY THE MANUFACTURER**

***The dispenser design meets the requirements of EN 13617-1 and/or EN IEC 60079-0 standards and is designed for operation in environments designated by symbols Ex II 2G IIA T3, or Ex II 3G IIA T3 Gc stated on the type label of the dispenser.***

Operating safety

The operator is responsible for the fuel station operation and is obliged to entrust its operation only to trained employees having relevant authorization. The task of the attendant is, while observing all safety regulations, check the condition of dispensers, reservoirs, machinery operation, gas pressure and keep prescribed operating records in regular intervals.

Attendant's responsibilities

- Keep the operated devices in a safe and proper condition.
- Immediately inform the operator about each failure, defect or abnormality during the device operation and immediately decommission the device in case of danger of delay.
- Immediately inform the operator about circumstances that impede the device operation for the attendant (in case of sudden indisposition).
- Write down the records into the operation logbook about the shift start and finish, inspections performed by the attendant and maintenance work, repairs, inspections, and audits.
- The service station attendant must not perform any repairs of the machinery and modify the settings of safety fittings on his/her own.

A special case is performing service interventions

- **A service worker must not violate the operating safety during repairs and other activities.** He/she must pay special attention to removing the covers of the dispenser not to cause any injury of him nor a casual customer.
- **While handling of electrical components, he/she must ensure safe disconnecting of electrical energy supply.**
- **Only approved components may be used for part replacements.** All parts subject to approval must be always put into condition which is prescribed by technical documentation (airtightness, grounding, electrostatically conductive delivery hoses, etc.).

### 1.2.5. ADBLUE® SPILL

Although AdBlue® is not classified as hazardous, after spilling it forms crystals and causes deformation. After a long time, it causes a slippery surface. Each AdBlue® spill must be immediately reported to a fuel station manager.

**WARNING** ***Avoid inhalation of vapours and contact with the skin and eyes by using protective equipment***

**AdBlue® spill at a fuel station:**

- Cover the spilled media with plenty of sand, soil or other inert absorbent material.
- In case of spillage of large quantities, avoid spreading with sand or soil and avoid leakage into sewerage and water bodies.

**NOTE** ***Do not discharge AdBlue® into surface water or water pipes!***

- Once the surface has dried, move the material to a suitable container for controlled disposal.
- If AdBlue® runs into the sewerage piping, pour a plenty of water into it.
- Observe local legal regulations for waste handling.

**AdBlue® in a dispenser/vehicle:**

- AdBlue® spilled on a dispenser or vehicle must be removed using a soft cloth.

**WARNING** ***Risk of electric shock! Never use a hose or high-pressure spray near the AdBlue® dispenser.***

# 2. TATSUNO EUROPE DISPENSERS

## 2.1. DESCRIPTION OF DISPENSERS

All TATSUNO EUROPE dispensers are equipped with high quality Japanese hydraulics from TATSUNO Corporation (hereinafter referred to as TATSUNO) and a powerful reliable electronic counter of the Czech company TATSUNO EUROPE (hereinafter referred to as TE). All dispensers work in the manual mode – independently, offline – as well as the automated mode, when they are controlled remotely from the kiosk of a fuel station and connected to the cash register (POS) via a data line. All dispensers have body parts (covers, doors, lids, etc.) made of steel painted sheet metal or stainless-steel sheet metal. Supporting parts of dispenser frames are made of steel painted sheet metal of a thickness 0.8 to 2.5 mm, or stainless-steel sheet metal. Each dispenser is equipped with an electronic counter with its own diagnostics and displays showing the delivered amount of money in the currency of the country of installation, the amount of fuel in litres or kilograms and the fuel unit price. Displays of the fuel dispensers specified for private use display only the dispensed fuel volume in litres. The standard colour of TATSUNO EUROPE dispensers is white (RAL9016), silver (RAL 9006) and black (RAL9005).

**NOTICE** ***Standard painted versions of TATSUNO EUROPE dispensers are not intended for use in high humidity, chemical and saltwater areas. For such applications TATSUNO EUROPE supplies options using stainless steel materials.***

**AdBlue® dispensers** have a hydraulic module fitted with a piston flow meter of the Japanese company TATSUNO, type FM1022 or LOBE meter FF-1141. It is an analogy of standard fuel meters in a chemically resistant stainless-steel design (internal stainless-steel parts + outer surface finish). The measuring unit consists of a pulse meter, a 70µm stainless steel particle filter with surface treatment and a solenoid control valve in a stainless-steel design. The pumped medium passes through the filter, the meter, and the control valve, continues into the hose, through the sigh hole (if required) into the delivery nozzle from where it is delivered into the AdBlue® tank in the vehicle. The delivery hoses are made of high quality, chemically resistant rubber in an antistatic design (the same type of a delivery hose as for LPG delivery). AdBlue dispensing modules are supplied as standard with delivery hose reels and automatic AdBlue® stop-nozzles. Depending on the installation site and customer requirements, the interior of the dispenser can be heated so that the temperature inside the module does not drop below 0 °C.

**Windshield washer fluid (WSE) dispensers and modules** are fitted with the same piston flow meter as the AdBlue® module. The measuring unit consists of a pulse meter, a 70µm particle filter and a solenoid control valve. The delivered medium passes through the filter, the meter, and the control valve, continues into the hose, through the sight hole (if required) into the delivery nozzle from where it is delivered into the windshield washer fluid tank of the washer system in the vehicle. Freely suspended spiral delivery hoses are made of high-quality, chemically resistant rubber in an antistatic design and are finished with delivery nozzles in a stainless-steel design.

## 2.2. BASIC TECHNICAL PARAMETERS

***Table 1 - AdBlue® dispensers and modules (AUS32)***

| | | | |
|---|---|---|---|
| Pumping performance | Standard | | LV (passenger cars) * |
| Maximum flow rate $Q_{max}$ [L/min] | 40 | | 10 |
| Minimum flow rate $Q_{min}$ [L/min] | 4 | | 4 |
| Lowest metering MMQ [L] | 2 / 5** | | 2 / 5** |
| Maximum working pressure [MPa] | 0.3 | | |
| Minimum working pressure [MPa] | 0.1 | | |
| Maximum unit price (number of digits) | 9999(4) or 99999(5) *** | | |
| Maximum amount to pay (number of digits) | 999999(6) or 9999999(7) *** | | |
| Maximum volume (number of digits) | 999999(6) or 1999999(6.5) *** | | |
| Scale interval [L] | 0.01 | | |
| Display type | Electronic | | |
| Type of delivered fluid | AdBlue® (32.5% aqueous urea solution according to DIN 70070 and ISO 22241) | | |
| Filtration of mechanical particles | Input filter >70µm | | |
| Fluid temperature range [°C] | 0 to +40 | | |
| Ambient temperature range [°C] | -20 to +40 (standard dispenser version); -20 to +50 (enhanced dispenser version)<br>0 to +40°C (version without heating) | | |
| Accuracy class | 0.5 | | |
| Mechanical class | M1, M2 for counters PDEX5 and TBELTx | | |
| Electromagnetic class | E1, E2 for the counter PDEX5 | | |
| Humidity | Condensing | | |
| Location | Open | | |
| Measured unit | Volume [L] or volume at 15 °C [L] | | |
| Electronic counter | TBELTx | PDEX | PDEX5 |
| Program version (W&M check sum) | 1.01 (8CA4) | 1.03 (20260) | 1.01 (4573), 1.02 (dbd2FFA4) |
| Calculator powering | 230V ± 10%; 50Hz; max. 300VA | | |
| Electro-magnetic valves | Proportional or two-state; + 24VDC / max.1A | | |

**The LV measuring system contains a ZVA AdBlue delivery nozzle that limits the maximum flow to 10 L/min*

***When the Elaflex hose is installed then MMQ = 2L; if the IVGBLUE hose is installed, MMQ = 5L*

**** Data transmission of the entire contents of the display with the number of digits 7/6.5/5 is only possible using the extended communication protocol (8/8/6)*

***Table 2 - WSE (for dispensing windshield washer fluid) dispensers and modules***

| | | | |
|---|---|---|---|
| Maximum flow rate $Q_{max}$ [L/min] | 20 | | |
| Minimum flow rate $Q_{min}$ [L/min] | 2 | | |
| Lowest metering MMQ [L] | 2 | | |
| Maximum working pressure [MPa] | 0.3 | | |
| Minimum working pressure [MPa] | 0.1 | | |
| Maximum unit price (number of digits) | 9999(4) or 99999(5) * | | |
| Maximum amount to pay (number of digits) | 999999(6) or 9999999(7) * | | |
| Maximum volume (number of digits) | 999999(6) or 1999999(6.5) * | | |
| Scale interval [L] | 0.01 | | |
| Display type | Electronic | | |
| Type of delivered fluid | WSE (mixture of water, detergents, and ethanol) | | |
| Filtration of mechanical particles | Input filter >70µm | | |
| Fluid temperature range [°C] | -20 to +50 | | |
| Ambient temperature range [°C] | -20 to +40 (standard dispenser version); -20 to +50 (special dispenser version) | | |
| Accuracy class | 0.5 | | |
| Mechanical class | M1, M2 for counters PDEX5 and TBELTx | | |
| Electromagnetic class | E1, E2 for the counter PDEX5 | | |
| Humidity | Condensing | | |
| Location | Open | | |
| Measured unit | Volume [L] or volume at 15 °C [L] | | |
| Electronic counter | TBELTx | PDEX | PDEX5 |
| Program version (W&M check sum) | 1.01 (8CA4) | 1.03 (20260) | 1.01 (4573), 1.02 (dbd2FFA4) |
| Calculator powering | 230V ± 10%; 50Hz; max. 300VA | | |
| Electro-magnetic valves | Proportional or two-state; + 24VDC / max.1A | | |

** Data transmission of the entire contents of the display with the number of digits 7/6.5/5 is only possible using the extended communication protocol (8/8/6)*

## 2.3. DISPENSER MODEL IDENTIFICATION

The basic design of the OCEAN ADB and SHARK ADB series business branding is:

| 1 | 2 | 3 | 4 | | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| BMP | 4 0 | 1 | 2 | . | O W | D | /AdB |

The basic design of the OCEAN WSE business branding is:

| 1 | 2 | 3 | 4 | | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| BMP | 4 0 | 1 | 2 | . | O W | D | /WSE |

A stand-alone dispenser always starts with a BMP abbreviation followed by a clarification of the dispenser configuration and design.

| Field | Values | Description |
|---|---|---|
| **1** | ----------> | **Device type** |
| | BMP | Dispenser. Standalone dispenser. |
| **2** | ----------> | **Series of dispensers** |
| | 5 | **SHARK.** Simple single-product to two-product dispensers of the SHARK JUNIOR and SHARK ECONOMY series. |
| | 40 | **OCEAN.** Single to five-product dispensers of the OCEAN EURO, OCEAN SMART, OCEAN TOWER series. |
| **3** | 1,.2 | **Number of products.** Number of fuel pumps or number of inputs for pressure dispensers. |
| **4** | 1, 2 to 4 | **Number of delivery hoses.** It corresponds to the number of measuring systems. |
| **5** | ----------> | **Dispenser design.** |
| | S | SHARK JUNIOR dispensers. Single-product, one- to two-hose dispensers with a height of 1400 mm. |
| | SX | SHARK ECONOMY dispensers. Two-product, one- to two-hose dispensers with a height of 1400 mm. |
| | OE* | OCEAN EURO dispensers. Multi-product, one- to ten-hose dispensers with a height of 1900 mm. |
| | OS | OCEAN SMART dispensers. Single-product, one- to four-hose dispensers with a height of 1900 mm. |
| | OW | OCEAN TOWER dispensers. Multi-product, one- to ten-hose dispensers with a height of 1900 mm. |
| **6** | ----------> | **Dispenser orientation** |
| | D | Double-sided dispenser. |
| | L | Single-sided dispenser – left. |
| | R | Single-sided dispenser – right. |
| **7** | ----------> | **Specifying abbreviation** |
| | /AdB | AdBlue® (AUS32 reducing agent) dispenser or module |
| | /WSE | Dispenser or module for WSE (windshield washer fluid dispensing). |
| | /AdB&Die | Dispenser with combined delivery of AdBlue and liquid fuel (diesel). |
| | /NoEx | The dispenser must be positioned out of reach of the fuel dispensers |
| | /NoHeat | The AdBlue dispenser/module is not equipped with heating |
| | -ZV1 | The dispenser where the hose exits from the rear cover and the nozzle is also located on the rear cover |
| | -ZV2 | The dispenser where the hose exits from the rear cover and the nozzle is located on the front of the dispenser |
| | /S3 | Pressure dispenser. The dispenser does not contain a pump. The submersible pump is located in the tank. |
| | /MAS | A dispenser with one output for a satellite stand. If two satellite outlets are in the dispensers, /MAS/MAS is used. |
| | /SAT | A dispenser with a satellite delivery hose. If two satellite hoses are used in the dispenser, /SAT/SAT is used. |
| | -HS; -HR | A spring hose holder (SHARK); hose reel (OCEAN) |
| | -SC | Simultaneous delivery of hoses on a two-hose dispenser. |
| | -NC | Non-simultaneous delivery of hoses on a two-hose dispenser. |
| | -2C | Simultaneous delivery of two delivery hoses on one side of the multi-product dispenser. |
| | -4C | Simultaneous pumping of four delivery hoses on a double-sided multi-product dispenser. |

*/* Note: Serial production of the OCEAN EURO series dispensers was terminated in October 2020.*

### 2.3.1. DISPENSER PARTS MARKING CONVENTIONS

Figure 1 illustrates the TATSUNO EUROPE dispenser marking and sorting system. In dispensers where it is not clear if the left or right side of the dispenser concerns (SHARK ECONOMY), the location of the nameplate which is always closest to product No. 1 and nozzle No. 1 (1A) is decisive. In the case of a double-sided dispenser, the right side of the dispenser is also referred to as side A and the left side is referred to as side B. For a one-sided left or one-sided right dispenser, it is always only side A.

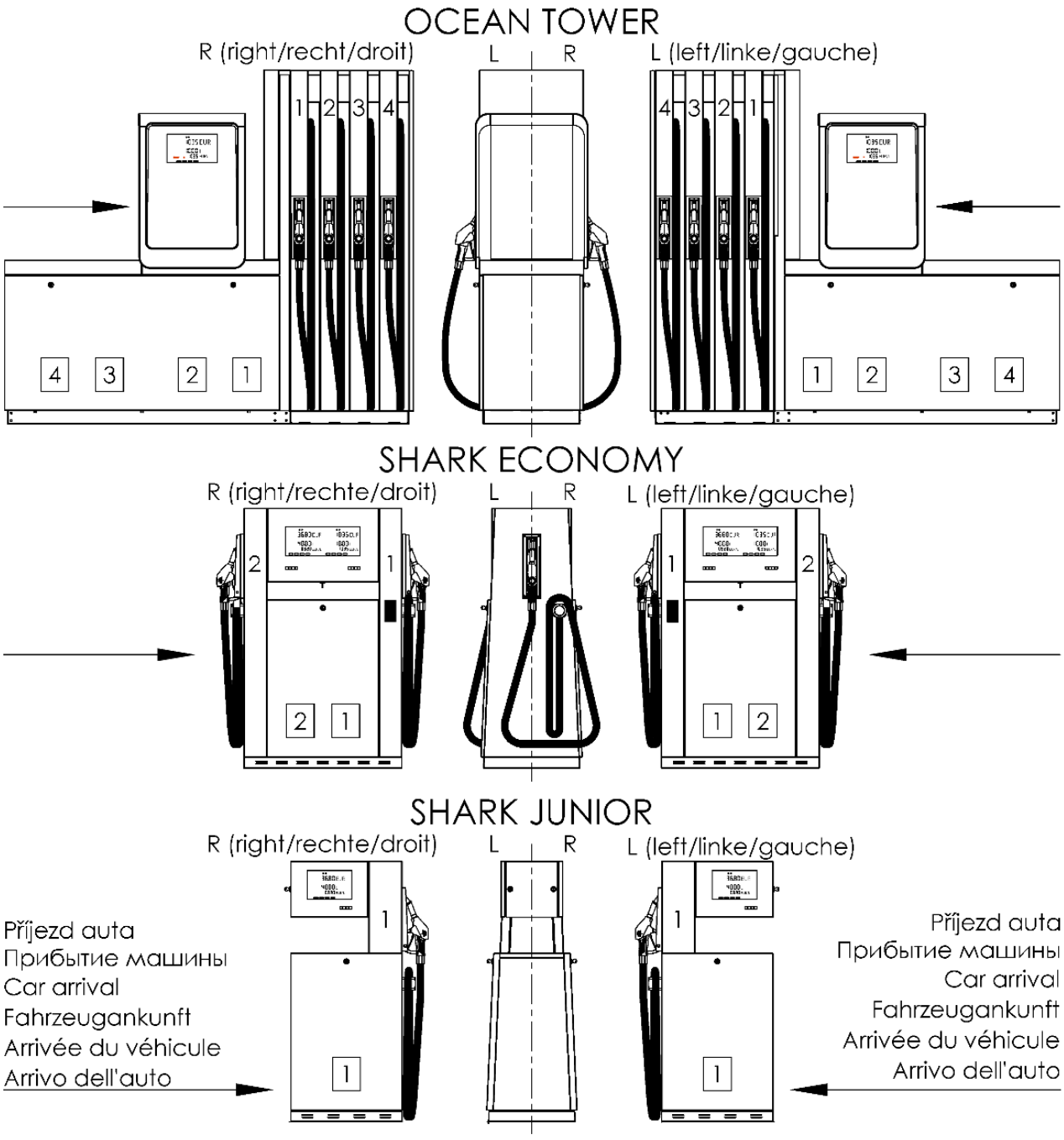
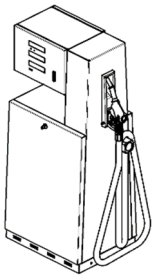



***Figure 1 - Dispenser marking system with the recommended arrival direction***

## 2.4. STANDARD MODELS OF DISPENSERS

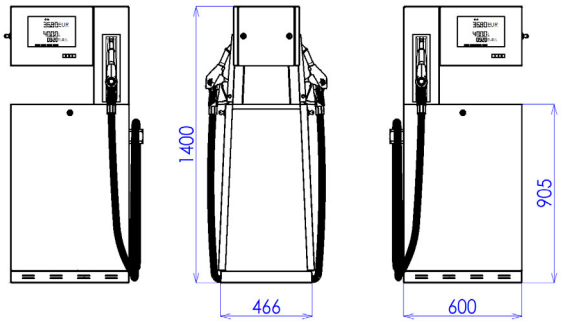
### 2.4.1. SHARK JUNIOR ADBLUE® DISPENSERS

SHARK JUNIOR ADBLUE® dispensers are standardly manufactured in a pressure version, single-sided left (L), single-sided right (R) or double-sided (D) version with one or two delivery hoses for the delivery of AdBlue® reduction agent (32.5% urea solution; AUS32). The hoses are freely hanging or hung by a spring hinge (HS). The maximum pumping performance of the delivery hoses is 40 L/min for trucks or 10 L/min for passenger cars. List of standard SHARK JUNIOR ADBLUE® models:



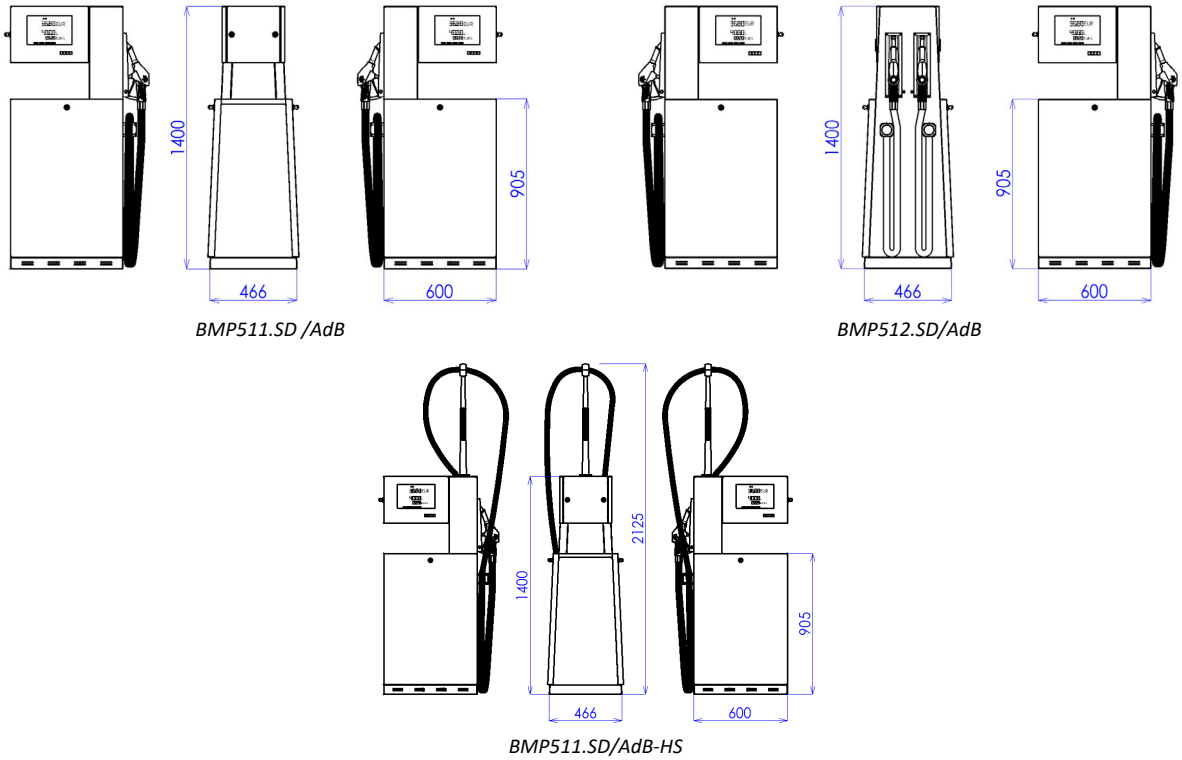
| Dispenser model | **Access to dispenser** *(2-double-sided, 1-single-sided)* | **Number of products** *(number of pumps or inputs)* | **Number of meters** *(number of measuring systems)* | **Number of delivery nozzles** *(number of delivery hoses)* | **Number of displays** | **Pumping performance** *(L/min)* |
|---|---|---|---|---|---|---|
| **BMP511.SL(R) /AdB** | 1 | 1 | 1 | 1 | 1 | 40/10 |
| **BMP511.SL(R) /AdB-ZV2** | 1 | 1 | 1 | 1 | 1 | 40/10 |
| **BMP511.SD /AdB** | 2 | 1 | 1 | 1 | 2 | 40/10 |
| **BMP512.SD /AdB-ZV2** | 2 | 1 | 1 | 1 | 2 | 40/10 |
| **BMP512.SL(R) /AdB** | 2 | 1 | 1 | 1 | 1 | 40/10 |
| **BMP512.SD /AdB** | 2 | 1 | 1 | 1 | 2 | 40/10 |

*Notes: SHARK JUNIOR ADBLUE® dispensers are not standardly equipped with heating. For the installation of dispensers in an environment where the temperature drops below -5 °C, it is necessary to equip the dispenser at the customer's request by heating the hose, nozzle boot and the hydraulic part of the dispenser. For dispensers with heated hoses, it is also recommended to use spring hose hinges (abbreviation "HS") to avoid hose contact with the ground and hence reduce heating efficiency. The maximum pumping performance $Q_{max}$ = 40 L/min is mainly dependent on the submersible pump used in the storage tank and the dispensing hose type. It can be reduced by means of an electromagnetic proportional valve located in the dispenser to the selected lower value. For pumping into passenger cars, it is recommended to use a maximum flow rate in the range of $Q_{max}$ = 5 to 7 L / min. for smoother pumping into a small tank in the vehicle. AdBlue® dispensers marked /NoEx are not designed for installation near fuel dispensers. The dispensers marked /Ex can be installed in zone 2 (according to EN 60079-10-1) generated by other fuel (petrol, diesel) or LPG equipment. Pictures (PNG, DWG) with dimensions of all models can be downloaded here: https://www.tatsuno-europe.com/_en/download/*




*BMP512.SD/AdB-ZV2*

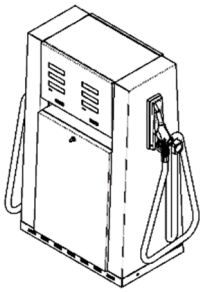
***Figure 2 - Standard SHARK JUNIOR ADBLUE® dispenser models with nozzles positioned at the front (-ZV2)***




***Picture 3 - Standard SHARK JUNIOR ADBLUE® dispenser models with nozzles positioned on the side***

## 2.4.2. SHARK ECONOMY ADBLUE® DISPENSERS

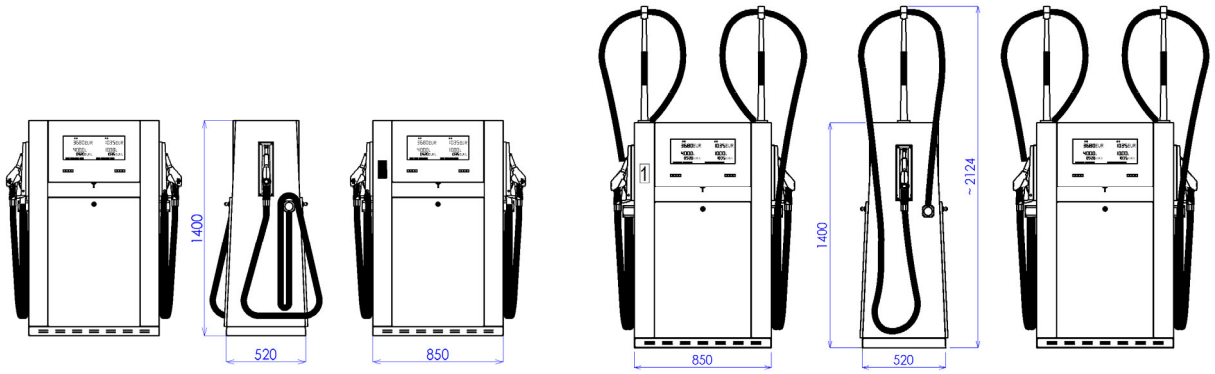
SHARK ECONOMY ADBLUE® dispensers are standardly manufactured in a pressure version, single-sided left (L) or double-sided (D) version with two delivery hoses for the delivery of AdBlue® reduction agent (32.5% urea solution; AUS32). The hoses are freely hanging or hung by a spring hinge (HS). The maximum pumping performance of the delivery hoses is 40 L/min for trucks or 10 L/min for passenger cars. List of standard SHARK ECONOMY ADBLUE® models:



| Dispenser model | **Access to dispenser** *(1-single-sided, 2-double-sided)* | **Number of products** *(number of pumps or inputs)* | **Number of meters** *(number of measuring systems)* | **Number of delivery nozzles** *(number of delivery hoses)* | **Number of displays** | **Pumping performance** *(L/min)* |
|---|---|---|---|---|---|---|
| **BMP512.SXL /AdB** | 1 | 1 | 2 | 2 | 2 | 40/10 |
| **BMP512.SXL /AdB-NC** | 1 | 1 | 1 | 2 | 1 | 40/10 |
| **BMP512.SXD /AdB** | 2 | 1 | 2 | 2 | 4 (2+2) | 40/10 |
| **BMP512.SXD /AdB-NC** | 2 | 1 | 1 | 2 | 2 (1+1) | 40/10 |

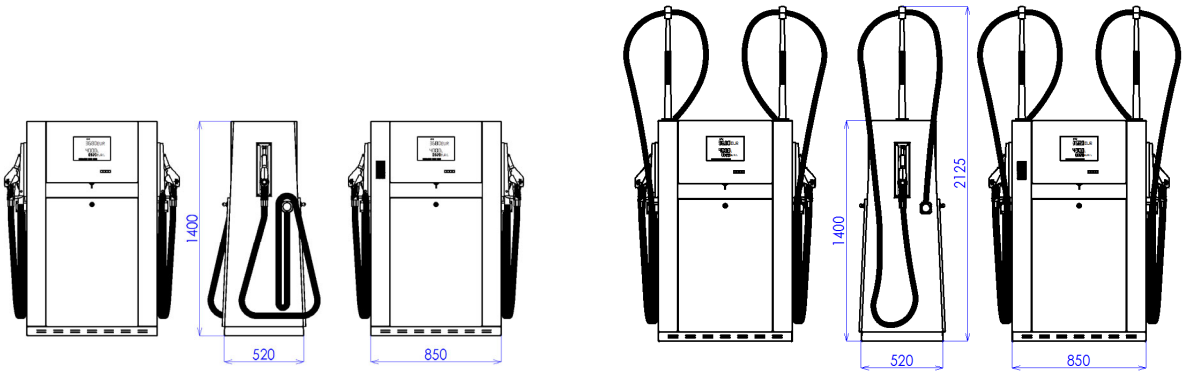
*Note: SHARK ECONOMY ADBLUE® dispensers are not standardly equipped with heating. For the installation of dispensers in an environment where the temperature drops below -5 °C, it is necessary to equip the dispenser at the customer's request by heating the hose, nozzle boot and the hydraulic part of the dispenser. For dispensers with heated hoses, it is also recommended to use spring hose hinges (abbreviation "HS") to avoid hose contact with the ground and hence reduce heating efficiency. The maximum pumping performance $Q_{max}$ = 40 L/min is mainly dependent on the submersible pump used in the storage tank and the dispensing hose type. It can be reduced by means of an electromagnetic proportional valve located in the dispenser to the selected lower value. For pumping into passenger cars, it is recommended to use a maximum flow rate in the range of $Q_{max}$ = 5 to 7 L / min. for smoother pumping into a small tank in the vehicle. AdBlue® dispensers marked /NoEx are not designed for installation near fuel dispensers.*

*The dispensers marked /Ex can be installed in zone 2 (according to EN 60079-10-1) generated by other fuel (petrol, diesel) or LPG equipment. Pictures (PNG, DWG) with dimensions of all models can be downloaded here: https://www.tatsuno-europe.com/_en/download/.*




*BMP512.SXD/AdB* *BMP512.SXD/AdB-HS*

***Figure 4 - Standard SHARK ECONOMY ADBLUE® models (two simultaneous deliveries)***

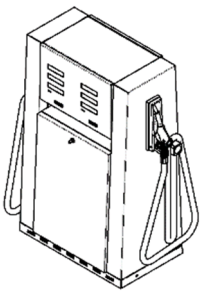



*BMP512.SXD/AdB-NC* *BMP512.SXD/AdB-NC-HS*

***Figure 5 - Standard SHARK ECONOMY ADBLUE® models (non-simultaneous deliveries „-NC“)***

## 2.4.3. COMBINED SHARK ECONOMY DISPENSERS FOR DIESEL AND ADBLUE® DELIVERY

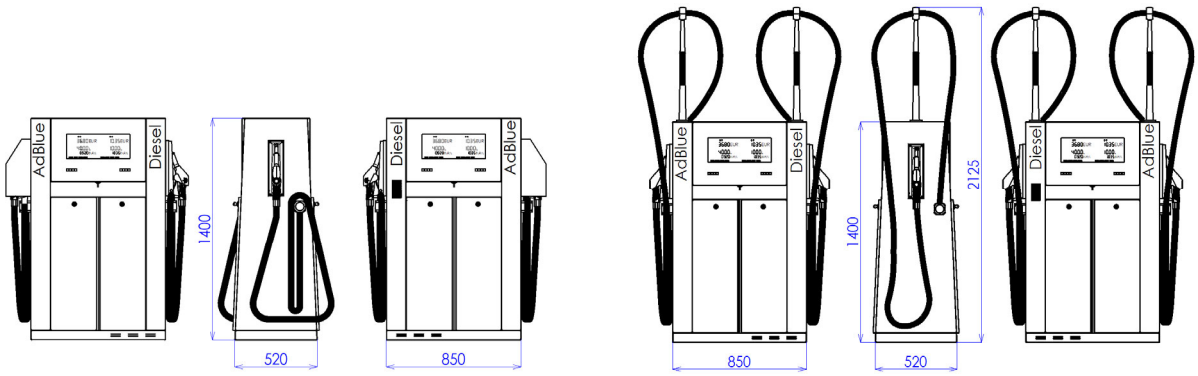
Combined SHARK ECONOMY dispensers serve for the delivery of fuel liquids (diesel, biodiesel…) and AdBlue® reduction agent (32.5% urea solution: AUS32). Dispensers are manufactured in a single-sided left (L) or double-sided (D) design with two delivery hoses free hanging or hung by a spring hinge (HS). Maximum delivery flow rate of the liquid fuel is 40 or 80 L/min, maximum pumping performance of the AdBlue® delivery hoses is 40 L/min for trucks or 10 L/min for passenger cars. The part of dispenser intended for delivery of liquid fuel is performed in suction version with pump, the part of AdBlue® in pressure version (without pump). List of standard COMBINED SHARK ECONOMY models:



| Dispenser model | **Access to dispenser** *(1-single-sided, 2-double-sided)* | **Number of products** *(number of pumps or inputs)* | **Number of meters** *(number of measuring systems)* | **Number of delivery nozzles** *(number of delivery hoses)* | **Number of displays** | **Pumping performance** *(L/min)* |
|---|---|---|---|---|---|---|
| **BMP522.SXL /AdB&Die** | 1 | 2 | 2 | 2 | 2 | 40 + 40/10 |
| **BMP522.SXL /H/AdB&Die** | 1 | 2 | 2 | 2 | 2 | 80 + 40/10 |
| **BMP522.SXD /AdB&Die** | 2 | 2 | 2 | 2 | 4 (2+2) | 40 + 40/10 |
| **BMP522.SXD /H/AdB&Die** | 2 | 2 | 2 | 2 | 4 (2+2) | 80 + 40/10 |

*Notes: COMBINED SHARK ECONOMY dispensers are not standardly equipped with heating. For the installation of dispensers in an environment where the temperature drops below -5 °C, it is necessary to equip the AdBlue® module of dispenser by heating. For dispensers with heated hoses, it is also recommended to use spring hose hinges (abbreviation "HS") to avoid hose contact with the ground and hence reduce heating efficiency. The maximum pumping performance of AdBlue® hose $Q_{max}$ = 40 L/min is mainly dependent on the submersible pump used in the storage tank and the dispensing hose type. It can be reduced by means of an electromagnetic proportional valve located in the dispenser to the selected lower value. For pumping into passenger cars, it is recommended to use a maximum flow rate in the range of $Q_{max}$ = 5 to 7 L / min. for smoother pumping into a small tank in the vehicle.*

*Liquid fuel module can also be produced in a pressure version without pumps (/S3) where the submersible pump is in the storage tank and pushes the fuel into the dispenser via a pressure line. The standard performance ranges from 35 to 50 L/min, increased performance from 70 to 90 L/min. Pictures (PNG, DWG) with dimensions of all models can be downloaded here: https://www.tatsuno-europe.com/_en/download/.*



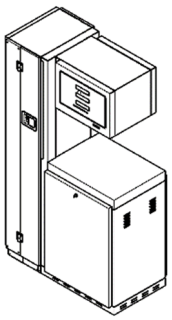

*BMP522.SXD /AdB&Die* *BMP522.SXD/AdB&Die-HS*

***Figure 6 - Standard COMBI SHARK ECONOMY models***

## 2.4.4. OCEAN EURO ADBLUE® DISPENSERS

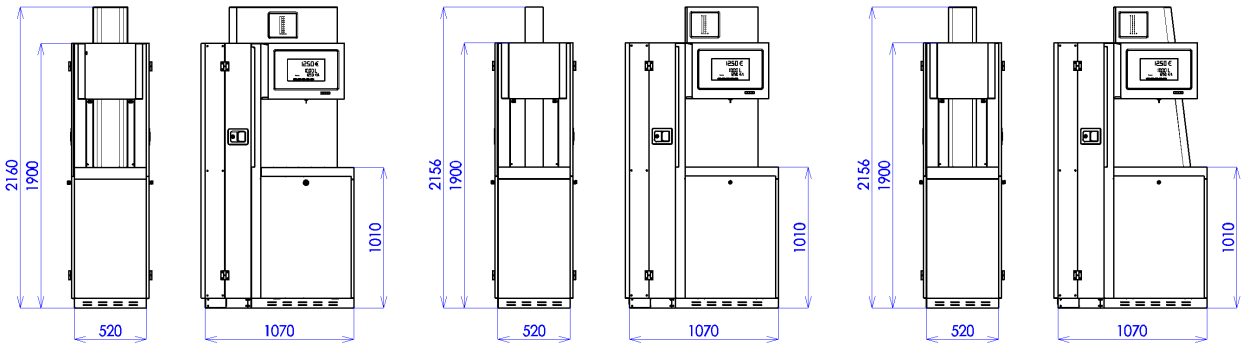
OCEAN EURO ADBLUE® dispensers are standardly manufactured in a pressure version, single-sided left (L), single-sided right (R) or double-sided (D) version with one or two delivery hoses for the delivery of AdBlue® reduction agent (32.5% urea solution; AUS32). The hoses are wound in the dispenser. The maximum pumping performance of the delivery hoses is 40 L/min for trucks or 10 L/min for passenger cars. The design of dispensers can be basic or one of the specific variants CUBE, FIN or WAVE.

List of standard OCEAN EURO ADBLUE® models:



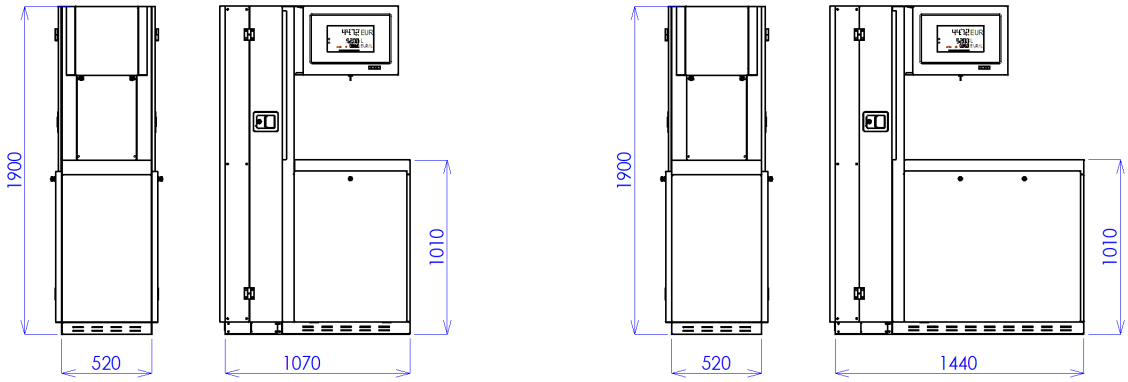
| Dispenser model | **Access to dispenser** *(1-single-sided, 2-double-sided)* | **Number of pressure inputs** | **Number of meters** *(number of measuring systems)* | **Number of delivery hoses** | **Number of main displays** *(number of simultaneous deliveries)* | **Filling performance** *[L/min]* |
|---|---|---|---|---|---|---|
| BMP4011.OEL /AdB | 1 | 1 | 1 | 1 | 1 | 40/10 |
| BMP4011.OER /AdB | 1 | 1 | 1 | 1 | 1 | 40/10 |
| BMP4012.OED /AdB | 2 | 1 | 2 | 2 | 2 | 40/10 |

*Note: OCEAN EURO ADBLUE® dispensers are standardly equipped with heating which keeps the temperature of the hydraulic part at + 10 °C. The dispenser can be supplemented with a pump and a storage tank for 250 L of the medium – see picture on next page. Pictures (PNG, DWG) with dimensions of all models can be downloaded here: https://www.tatsuno-europe.com/_en/download/.*




*WAVE version (BMP4012.OED/AdB/WAVE)* *CUBE version (BMP4012.OED/AdB/CUBE)* *FIN version (BMP4012.OED/AdB/FIN)*

***Figure 7 - Design variants of OCEAN EURO ADBLUE® dispensers***

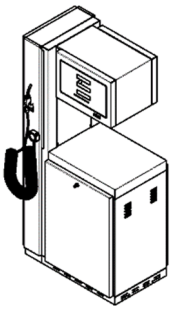



*BMP4012.OED/AdB* *BMP4012.OED/AdB/T250*

***Figure 8 - Overview of standard OCEAN EURO ADBLUE® dispenser and model with 250L storage tank and pump***

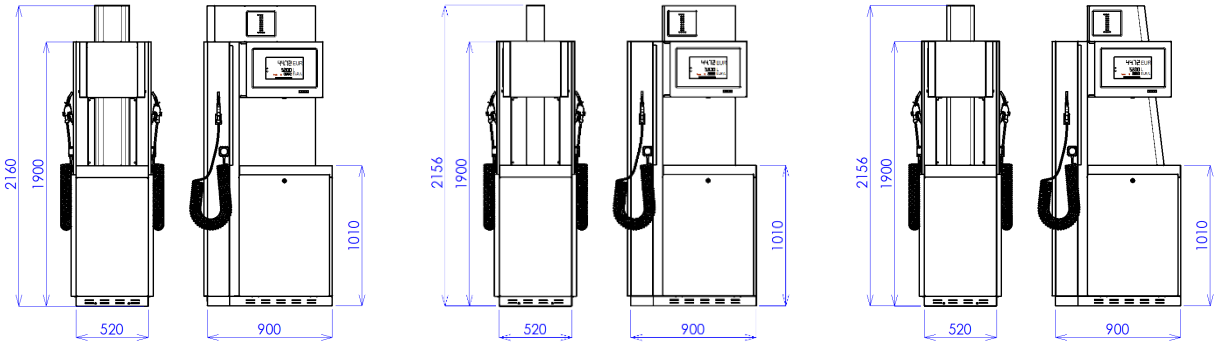
## 2.4.5. OCEAN EURO WSE DISPENSERS

OCEAN EURO WSE dispensers are standardly manufactured in a pressure version, single-sided left (L), single-sided right (R) or double-sided (D) version with one or two spiral delivery hoses for the delivery of windshield washer fluid (WSE - water + detergent + ethanol). Maximum pumping performance of delivery hoses is 20 L/min. The design of dispensers can be basic or one of the specific variants CUBE, FIN or WAVE. List of standard OCEAN EURO WSE models:



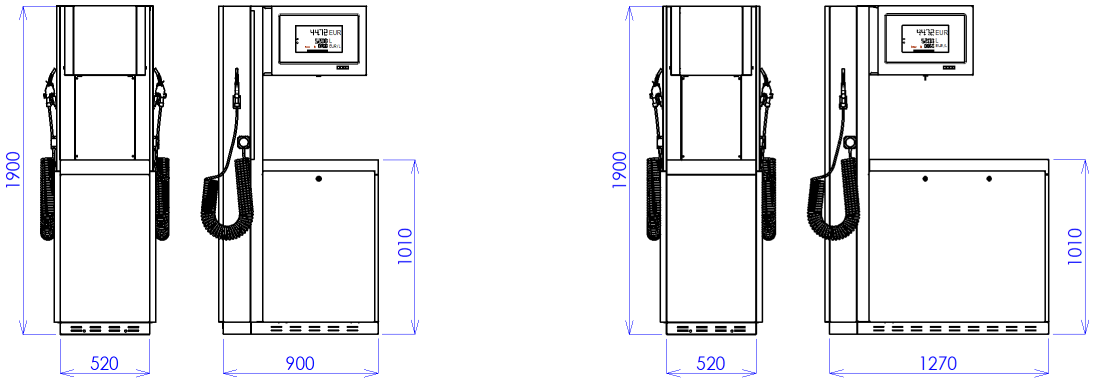
| Dispenser model | **Access to dispenser** *(1-single-sided, 2-double-sided)* | **Number of pressure inputs** | **Number of meters** *(number of measuring systems)* | **Number of delivery hoses** | **Number of main displays** *(number of simultaneous deliveries)* | **Filling performance** *[L/min]* |
|---|---|---|---|---|---|---|
| BMP4011.OEL /WSE | 1 | 1 | 1 | 1 | 1 | 20 |
| BMP4011.OER /WSE | 1 | 1 | 1 | 1 | 1 | 20 |
| BMP4012.OED /WSE | 2 | 1 | 2 | 2 | 2 | 20 |

*Note: The standard OCEAN EURO WSE dispenser can be supplemented with a pump and a 250L storage tank, see picture below. Pictures (PNG, DWG) with dimensions of all models can be downloaded here: https://www.tatsuno-europe.com/_en/download/.*




*WAVE version (BMP4012.OED/WSE/WAVE)* *CUBE version (BMP4012.OED/WSE/CUBE)* *FIN version (BMP4012.OED/WSE/FIN)*

***Figure 9 - Design variants of OCEAN EURO WSE dispensers***




*BMP4012.OED/WSE* *BMP4012.OED/AdB/T250*

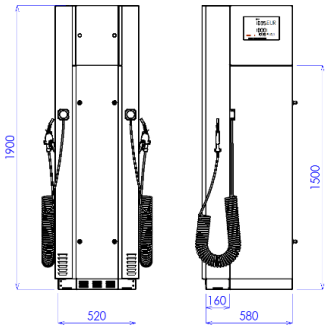
***Figure 10 - Overview of standard OCEAN EURO WSE dispenser and model with 250L storage tank and pump***

## 2.4.6. OCEAN SMART WSE DISPENSERS

OCEAN SMART WSE dispensers are standardly manufactured in a pressure version, single-sided left (L), single-sided right (R) or double-sided (D) version with one or two spiral delivery hoses for the delivery of windshield washer fluid (WSE - water + detergent + ethanol). Maximum pumping performance of delivery hoses is 20 L/min. List of standard OCEAN SMART WSE models:

| Model of dispenser | **Access to dispenser** *(1-single-sided, 2-double-sided)* | **Number of pressure inputs** | **Number of meters** *(number of measuring systems)* | **Number of delivery hoses** | **Number of main displays** *(number of simultaneous deliveries)* | **Filling performance** *[L/min]* |
|---|---|---|---|---|---|---|
| BMP4011.OSL(R) /WSE | 1 | 1 | 1 | 1 | 1 | 20 |
| BMP4012.OSD /WSE | 2 | 1 | 2 | 2 | 2 | 20 |

*Note: Pictures (PNG, DWG) with dimensions of all models can be downloaded here: [https://www.tatsuno-europe.com/_en/download/](https://www.tatsuno-europe.com/_en/download/)*

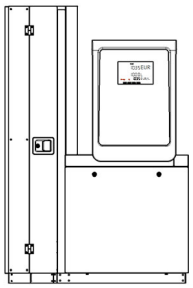



***Picture 11 - Standard model of OCEAN SMART WSE dispenser, type BMP4012.OED/WSE***

## 2.4.7. OCEAN TOWER ADBLUE® DISPENSERS

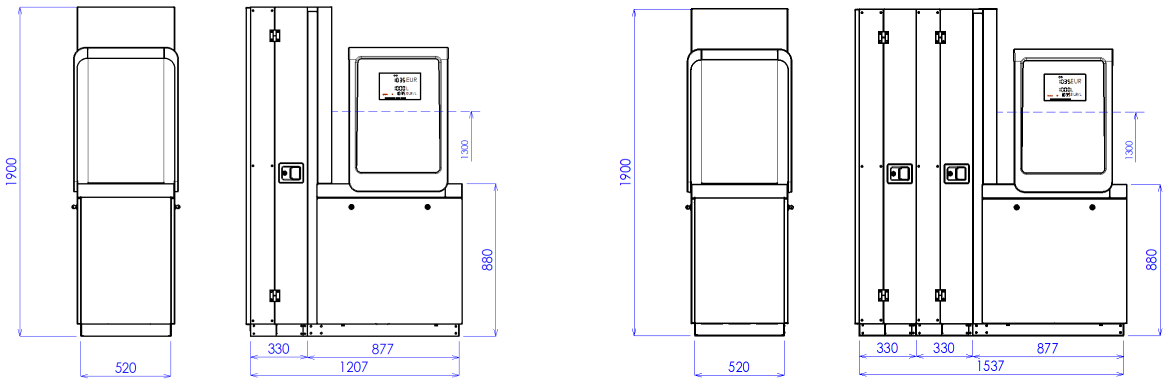
OCEAN TOWER ADBLUE® dispensers are standardly produced in a remote (pressure) version, i.e. without pump, in one-sided left (L), one-sided right (R) or double-sided (D) version with one or two dispensing hoses for dispensing AdBlue® reducing agent (32.5% urea solution; AUS32 ). The hoses are wound in a dispenser. The maximum filling capacity is 40 L/min for trucks or 10L/min for personal cars.

List of standard OCEAN TOWER ADBLUE® models:



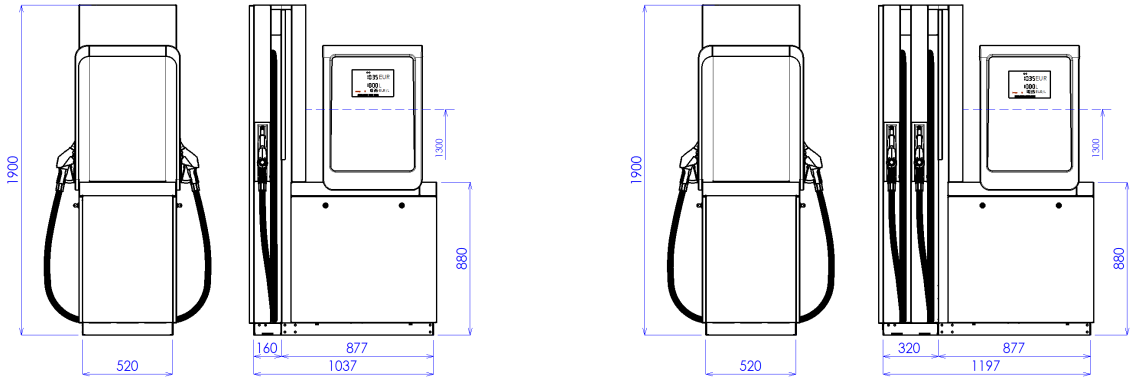
| Model of dispenser | **Access to dispenser** *(1-single-sided, 2-double-sided)* | **Number of pressure inputs** | **Number of meters** *(number of measuring systems)* | **Number of filling hoses** | **Number of main displays** *(number of simultaneous deliveries)* | **Filling performance** *[kg/min]* |
|---|---|---|---|---|---|---|
| BMP4011.OWL(R) /AdB | 1 | 1 | 1 | 1 | 1 | 40/10 |
| BMP4012.OWD /AdB | 2 | 1 | 2 | 2 | 2 | 40/10 |
| BMP4022.OWL(R) /AdB | 1 | 2 | 2 | 2 | 1 | 40/10 |
| BMP4024.OWD /AdB | 2 | 2 | 4 | 4 | 2 | 40/10 |

*Notes: OCEAN TOWER ADBLUE® dispensers are equipped as standard with heating, which keeps the temperature of the hydraulic part at +10°C, see Figure 12. Dispensers without heating are designed for areas where the ambient temperature does not fall below -5 ° C all year round, see Figure 13. The dispenser can be supplemented with a pump and a storage tank for 250 L of medium. OCEAN TOWER ADBLUE® marked /Ex dispensers can be installed in zone 2 (according to EN 60079-10-1) generated by other fuel or LPG equipment*



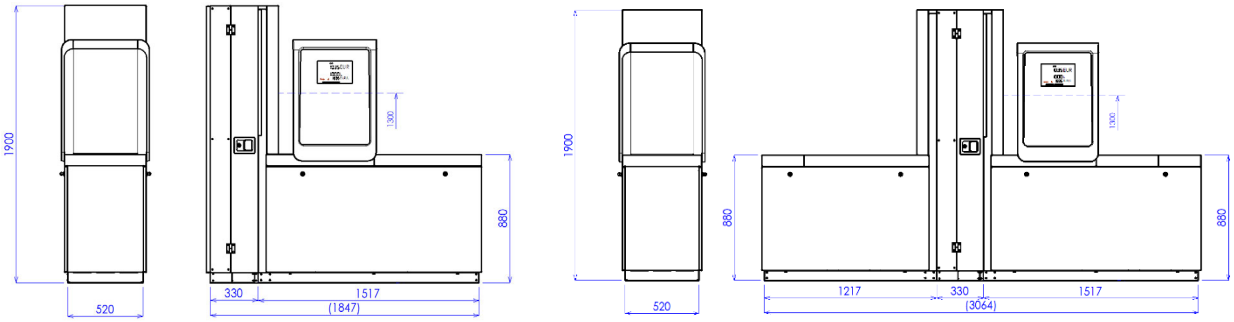

*BMP4012.OWD/AdB* *BMP4024.OWD/AdB*

***Figure 12 – OCEAN TOWER ADBLUE® standard model with internal heating***



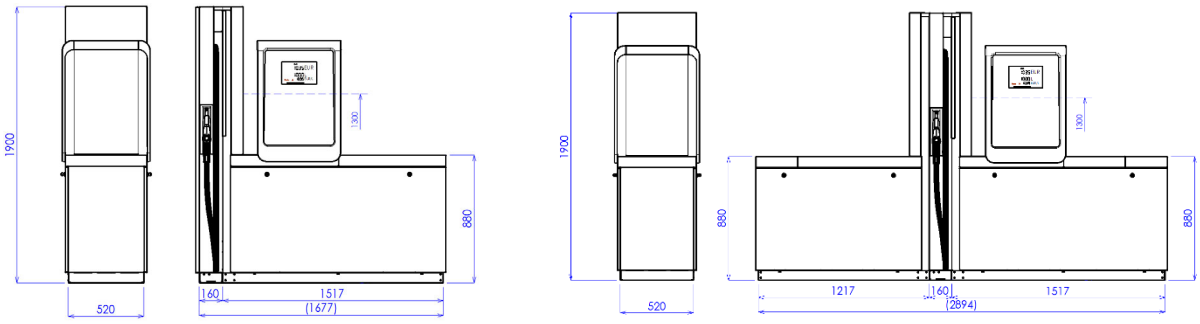

*BMP4024.OWD/AdB/NoHeat* *BMP4024.OWD/AdB/NoHeat*

***Figure 13 - OCEAN TOWER ADBLUE® dispenser model without internal heating***




*BMP4012.OWD/AdB/T250* *BMP4024.OWD/AdB/T500*

***Picture 14 - OCEAN TOWER ADBLUE® dispenser model with internal heating and storage tank 250L or 500L***

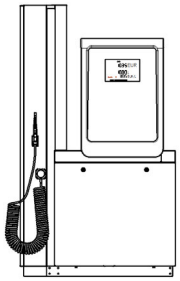



*BMP4012.OWD/AdB/T250/NoHeat* *BMP4024.OWD/AdB/T500/NoHeat*

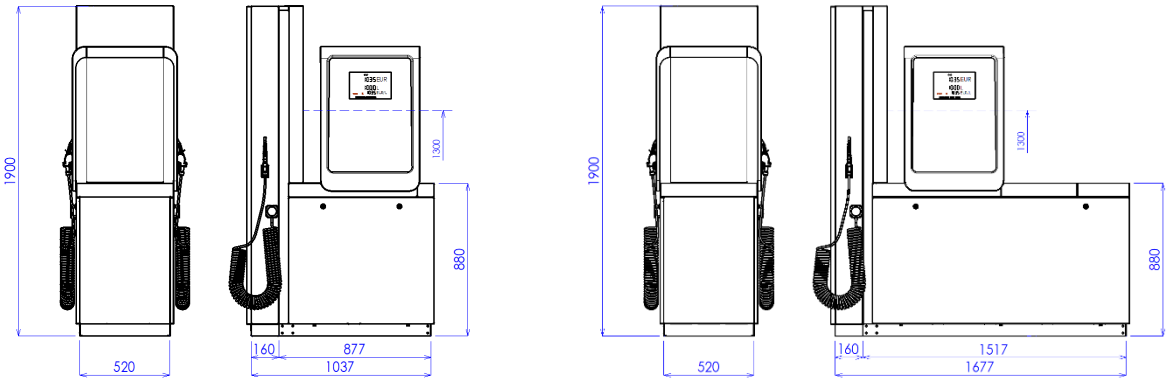
***Picture 15 - OCEAN TOWER ADBLUE® dispenser model without internal heating and storage tank 250L or 500L***

## 2.4.8. OCEAN TOWER WSE DISPENSERS

OCEAN TOWER WSE dispensers are standardly produced in a remote (pressure) version, i.e. without pump, in one-sided left (L), one-sided right (R) or double-sided (D) version with one or two spiral dispensing hoses for dispensing windscreen washer liquid (abbreviation WSE - water + detergent/soap + ethanol). The maximum filling capacity of the dispensing hoses is 20 L/min. List of standard OCEAN TOWER WSE stand models:

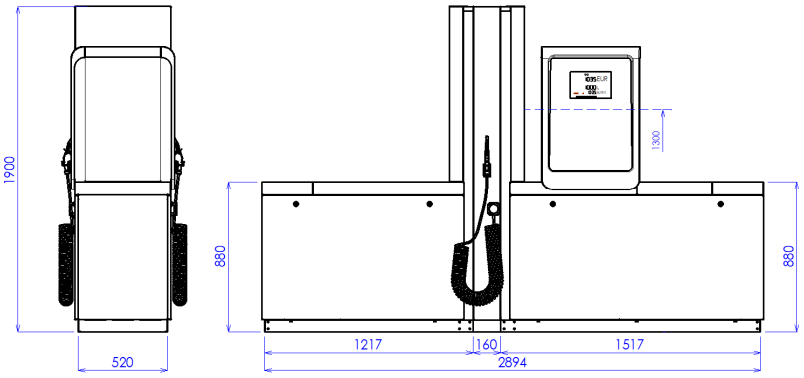
|  Model of dispenser | **Access to dispenser** *(1-single-sided, 2-double-sided)* | **Number of pressure inputs** | **Number of meters** *(number of measuring systems)* | **Number of filling hoses** | **Number of main displays** *(number of simultaneous deliveries)* | **Filling performance** *[kg/min]* |
|---|---|---|---|---|---|---|
| BMP4011.OWL(R) /WSE | 1 | 1 | 1 | 1 | 1 | 20 |
| BMP4012.OED /WSE | 2 | 1 | 2 | 2 | 2 | 20 |

*Note: The standard OCEAN TOWER WSE dispenser can be equipped with a suction pump and storage 250L storage tank. Pictures (PNG, DWG) with dimensions of all models can be downloaded here: https://www.tatsuno-europe.com/_en/download/.*




*BMP4012.OWD/WSE* *BMP4012.OWD/AdB/T250*

***Figure 16 - OCEAN TOWER WSE standard model and model with suction pump and storage tank 250L***




*BMP4024.OWD/AdB/T500*

***Picture 17 – OCEAN TOWER WSE special model of dispenser with suction pump and storage tanks for 500L of media***

## 2.5. TERMINOLOGY OF BASIC PARTS OF THE DISPENSER

### 2.5.1. REDUCTION AGENT AUS 32 (ADBLUE®) DISPENSER/MODULE

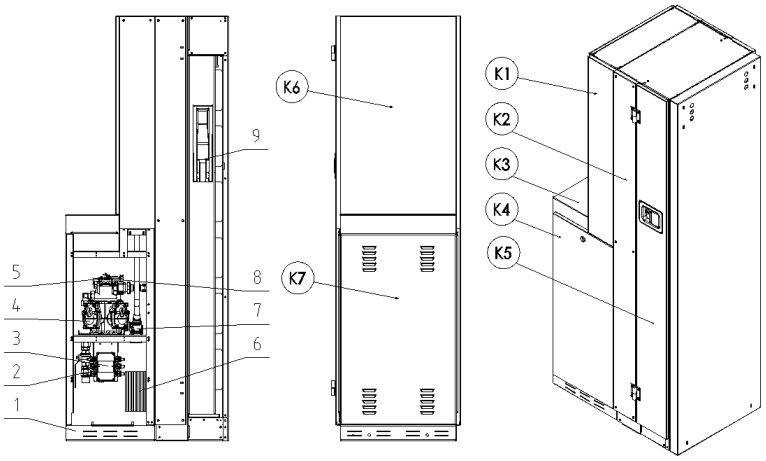



*Figure 18 - Basic parts of the AdBlue® dispensing module and its cover*

| Position | Device | Position | Device | Position | Device |
|---|---|---|---|---|---|
| **1** | Dispensing module foundation | **7** | Electro-magnetic valve | **K3** | Hydraulics roof |
| **2** | Input ball valve | **8** | Filter | **K4** | Module hydraulics door |
| **3** | Heating distribution box | **9** | Nozzle cover | **K5** | AdBlue® hose door |
| **4** | AdBlue® piston meter | **-** | - | **K6** | Column lid rear combi |
| **5** | Pulser – pulse generator | **K1** | Column lid | **K7** | Front column combi |
| **6** | Heating element (ATEX) | **K2** | AdBlue® cover, front | **-** | - |

### 2.5.2. WINDSHIELD WASHER FLUID (WSE) DISPENSER/MODULE

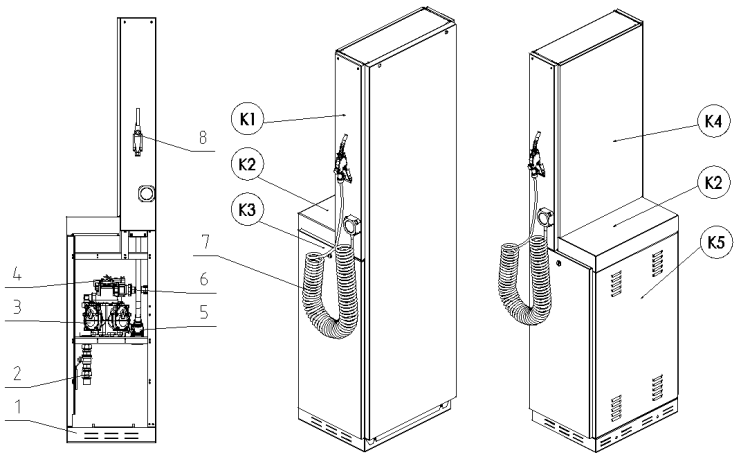



*Figure 19 - Basic parts of the WSE dispensing module and its cover*

| Position | Device | Position | Device | Position | Device |
|---|---|---|---|---|---|
| **1** | Dispensing module foundation | **6** | Filter | **K1** | Column lid |
| **2** | Input ball valve | **7** | Spiral delivery hose | **K2** | Hydraulics roof |
| **3** | AdBlue® piston meter | **8** | Delivery nozzles | **K3** | Module hydraulics door |
| **4** | Pulser – pulse generator | **-** | - | **K4** | Column lid rear combi |
| **5** | Electro-magnetic valve | **-** | - | **K5** | Front column combi |

## 2.6. NAMEPLATES

Each dispenser is equipped with one type label, see Figure 20 and Figure 21. If the number of dispensing hoses is higher than two, then the dispenser is supplemented by a so-called orientation label, see Figure 23 where it is schematically indicated which type of liquid is pumped and which hose. All data on the dispenser in terms of metrology and safety according to WELMEC 10.5 and European standards for equipment located in potentially explosive areas (EN IEC 60079-0 a EN ISO 80079-36) is contained in the nameplate. At the same time, the orientation label serves to metrology inspection for sticking the safety metrology labels stating the execution of measuring system verification.

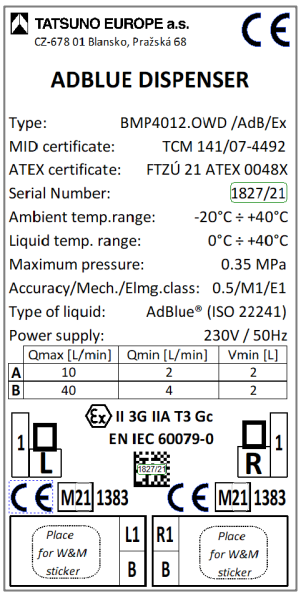



*Figure 20 – Type label of the two-nozzles AdBlue dispenser*

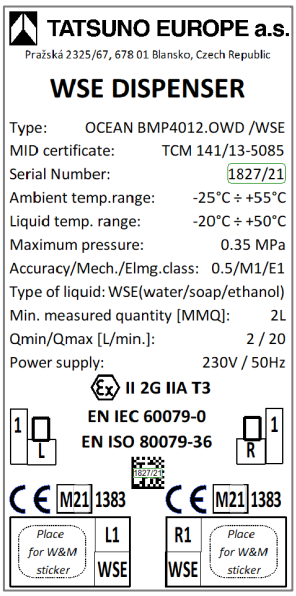



*Figure 21 - Type label of the two- nozzles WSE dispenser*

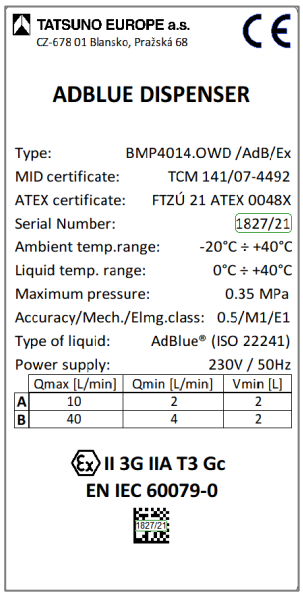



*Figure 22 - Type label of the four- nozzles AdBlue dispenser*

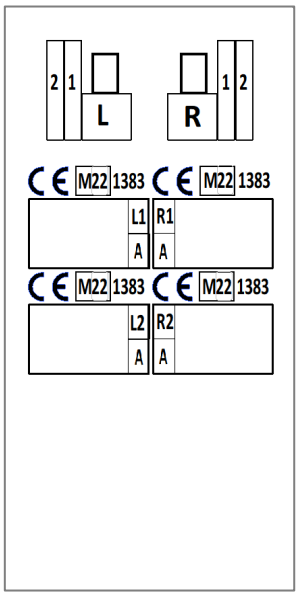



*Figure 23 – Orientation label of four-nozzles AdBlue dispenser*

***Table 3 - Label information on the dispenser and module***

| | |
|---|---|
| TATSUNO EUROPE a.s. | Name and address of dispenser manufacturer |
| CE 1383 | Dispenser labelling means that it is designed, manufactured and labelled in accordance with European Commission directives. The dispenser is subject to a type examination certification in accordance with Directive 2014/32/EU - MID which was carried out by a notified body No. 1383 - ČMI Brno |
| CE 1026 | Dispenser labelling means that it is designed, manufactured and labelled in accordance with European Commission directives. The dispenser is subject to the type-examination certification in accordance with Directive 2014/34/EU - ATEX which has been carried out by a notified body No. 1026 - FTZÚ Ostrava Radvanice |
| LIQUID FUEL DISPENSER | Device identification |
| Type of | Marking of the dispenser type (see section 2.3) |
| MID certificate | Number of the metrology EU certificate approving the meter type – ČMI |
| ATEX certificate | Number of the EU certificate of type examination (ATEX certificate) – FTZÚ |
| Serial number | Serial number of the dispenser (seq. number / year of production) |
| Fluid/medium temperature range | Range of delivered liquid, medium or gas temperature for which the dispenser was designed and approved |
| Ambient temperature range | Range of ambient temperature for which the dispenser was designed and approved |
| Pressure min/max | Minimum and maximum working pressure |
| Accuracy class/mech/elm. | Accuracy class / Mechanical class / Electromagnetic class |
| AdBlue, WSE... | Type of liquid, medium or gas for which the dispenser was designed and approved |
| $Q_{max}$ | Maximum pumping / filling flow rate in L/min or kg/min |
| $Q_{min}$ | Minimum pumping / filling flow rate in L/min or kg/min |
| MMQ | Minimum consumption in L or kg |
| Ex II 2G IIA T3 | Identification of the protection of a non-explosive electrical device:<br>**II 2** – device for environment with an explosion hazard other than subsurface mines, probability of explosive atmosphere occurrence – zone 1<br>**G** – explosive atmosphere is formed by gases, vapours or mists<br>**IIA** – gas group – the least dangerous<br>**T3** – maximum temperature of an electrical device that could cause ignition of the ambient atmosphere (200°C) |
| EN IEC 60079-0; EN ISO 80079-36 | Number of the European standard under which the dispenser was approved |
| motor power supply | 3x400/230V; 2A; 50Hz; 0,75kW |

# 3. INSTALLATION

## 3.1. INSTRUCTIONS FOR OCCUPATIONAL SAFETY


**CAUTION**

- *The installation of this appliance must be carried out by qualified personnel according to the relevant standards, rules and regulations and local restrictions and according to these instructions.*
- *It is forbidden to smoke or use open fire in the immediate vicinity of the dispenser.*
- *Always follow the measures for handling of gasoline, diesel, LPG, AdBlue®, WSE and CNG*
- *Observe all leaks in the dispenser. If any leakage of fuel, media or gas occurs due to any untightens, disconnect the supply voltage, and contact a service organization.*
- *The electrical installation must be carried out by qualified specialists.*
- *Ensure that a properly functioning fire extinguisher is available.*
- *When handling of the appliance, use suitable protective equipment.*

## 3.2. RECEIPT, TRANSPORT, UNPACKING

The customer shall contractually ensure the method of dispenser shipping. If the transport is ensured by TATSUNO EUROPE, a.s., it shall transport the product to an agreed place. The manufacturer has sufficient knowledge about the method of handling and transport. If the transport is ensured by the customer in another way, the manufacturer shall ensure professional loading. However, the manufacturer is not responsible for the method of transport. It is generally stated that the dispenser must be transported properly packed, always attached to the frame. The dispenser must be secured on the means of transport against damage (covers, paint), shifting and overturning. All handling and transport shall be totally performed in a vertical position. The dispenser must not be laid on covers.

**WARNING** *Only forklift trucks may be used during handling. In case of use of other handling equipment TATSUNO EUROPE, a.s. is not responsible for damage suffered.*

Packaging of dispensers is performed differently, according to the destination.

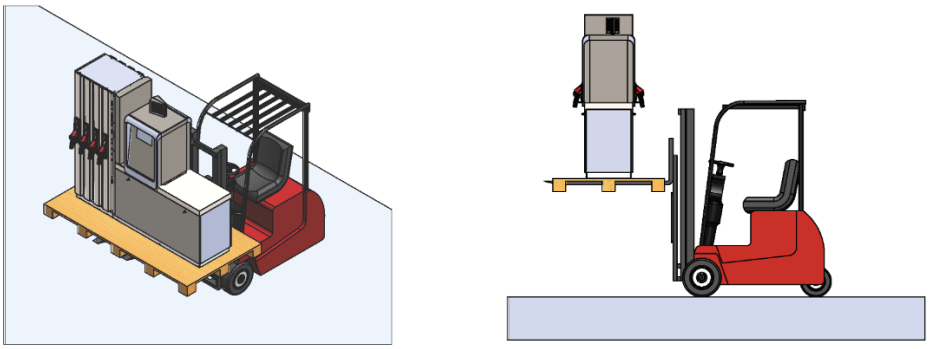
**NOTICE**

- *In case of packing the dispenser into a bubble wrap the maximum storage period under shelter is 3 months, 1 month in case of outdoor storage.*
- *In case of packing the dispenser into cardboard packaging the maximum storage period under shelter is 6 months.*

### 3.2.1. DISPENSER HANDLING

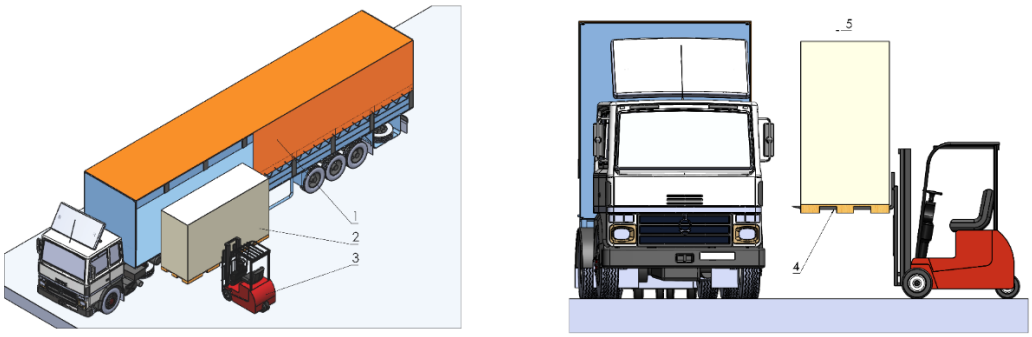
The following rules must be observed when loading, unloading and setting up the dispenser.

- Use a forklift to handle the fuel dispenser firmly attached to the wooden pallet. Follow the safety rules described by the forklift manufacturer.



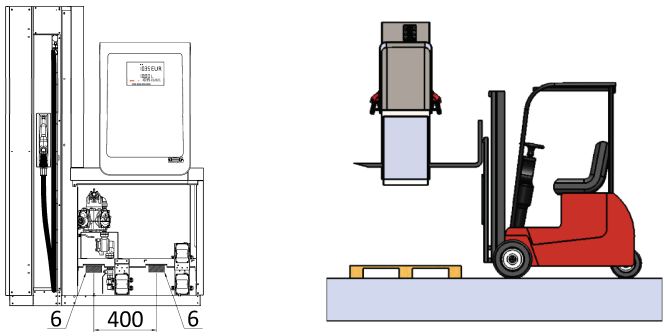
***Picture 24 – Using of a forklift during loading and unloading***

- When unloading and loading the fuel dispenser from or into the transport vehicle, use the direction from the side of the vehicle. Loading from the rear of the vehicle is dangerous and can damage the vehicle, the stand and injure people (see figure below).




***Picture 25 – Permitted direction of loading and unloading of the dispenser***
*(1-transport vehicle, 2-dispenser on a pallet, 3-forklift, 4-wooden pallet, 5-permitted direction of loading and unloading)*

- When installing the dispenser on the site, first remove the dispenser covers (doors) and loosen the anchor bolts between the wooden pallet and the dispenser. Then pick up the dispenser from a wooden pallet and place it on the prepared base frame on the site. Use the holes in the dispenser for the 100 x 40 mm load forks to lift – see Picture 66, position 6).




***Picture 26 – Lifting the dispenser from the wooden transport pallet***
*(Position 6 - Transport holes for carrying fork 100 mm x 40 mm)*

## 3.3. DISPENSER LOCATION

### 3.3.1. IN GENERAL

The manufacturer recommends placing dispensers on safety islands of fuel stations in such a way that the direction of arrival

of the vehicles to the dispenser corresponds to the orientation of the arrow, see Figure 1. The same figure shows the numbering of the dispenser products. The space for dispenser installation must be structurally secured so that the possibility of dispenser damage by an incoming car and following medium leakage into atmosphere is avoided as best as possible. Therefore, it is suggested to:

- Secure the access to the refilling position in straight direction
- Install the dispenser onto an elevated refuge with the following parameters
  - refuge elevation above the surrounding road at least 150 mm
  - refuge width at least 1,500 mm / refuge length at least 4,000 mm
- In case of dispenser installation directly onto the surface without a refuge it is necessary to secure the dispenser against collision with a vehicle by using a tube guard with the following parameters:
  - guard width at least 1,500 mm (refuge width) / length 2,000 mm
  - height of the upper edge of the tube above the road at least 450 mm

If there is any fixed obstacle (column, wall, etc.) nearby the dispenser, the minimum separation distance (approx. 1 meter) of the dispenser from such obstacles must be observed due to safe operation and maintenance. Example of the dispenser location at the fuel station – see Figure 27.

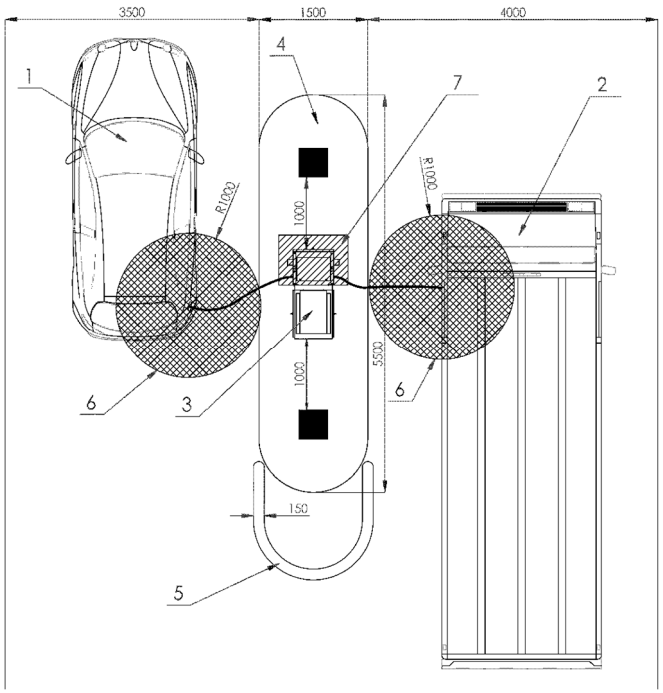



***Figure 27 – Example of the WSE dispenser location at the fuel station***
*(1-refilling position for passenger cars, 2- refilling position for trucks and buses, 3-WSE dispenser, 4-dispenser refuge, 5-tube guard, 6-projection of the dangerous zone border (zone 1) of the filling end piece during delivery, 7- projection of the dangerous zone border (zone 2) of the WSE dispenser)*

### 3.3.2. INSTALLATION OF THE DISPENSERS IN TERMS OF EXTERNAL INFLUENCES (DANGER ZONES)

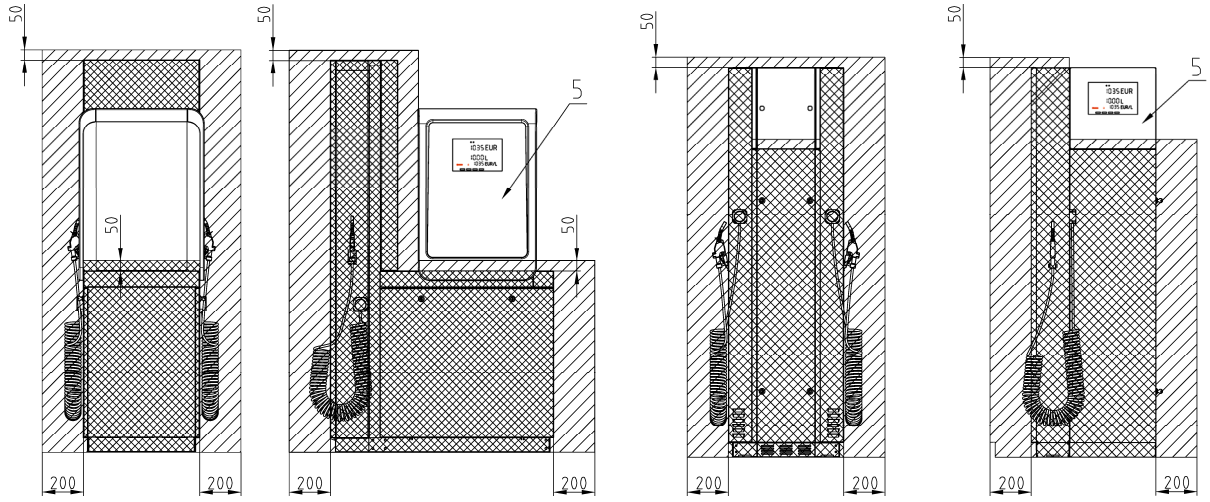
WSE dispensers can create dangerous areas at the installation site - zones where under certain conditions (high surface temperature, flame, electric spark… etc.) the liquid or vapor could ignite or explode.

Before installing the dispenser at the filling station, the following must be taken into account in particular:

- what danger zones the dispenser creates with its operation
- what danger zones are created by the surrounding equipment (adjacent dispenser, storage tank, etc …)

Hazardous areas (zones, areas with a risk of explosion) are determined according to EN 60079-10. Drawings of the

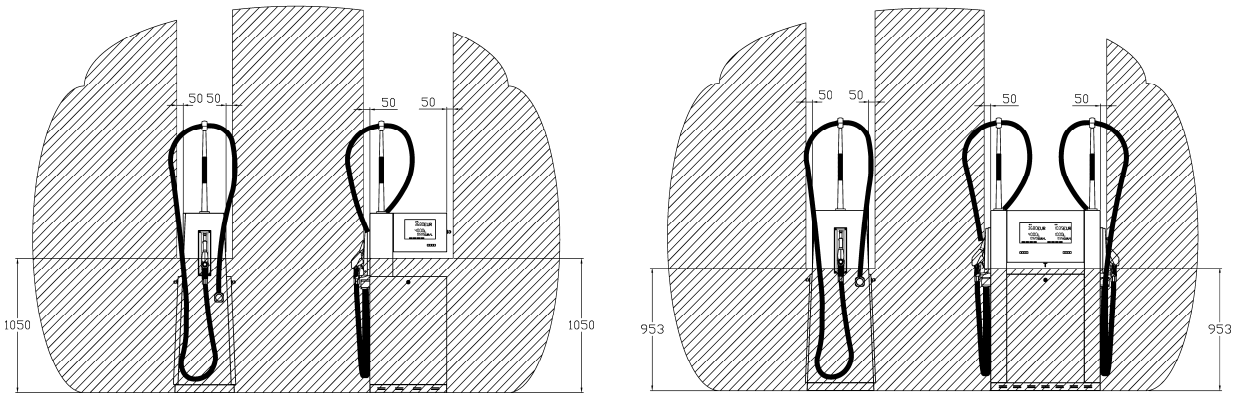
zones created by the dispenser are part of the mandatory documentation of the dispenser manufacturer, see documents *IN041-ML Installation plans I* and *IN043 ML Installation plans II*. The drawing of the zones must define the spatial distribution of the hazardous areas inside and outside the dispenser - see the example in the figure below, where hazardous zone 2 (simply hatched) occurs up to a distance of 20 cm vertically and 5 cm horizontally from the contour of the dispenser. Inside the dispenser, in addition to the meter housing, there is zone 1 or zone 0 (inside the vapour recovery pipes). All electrical and non-electrical equipment located in these zones must be designed and approved for this hazardous environment (ATEX certificate, documentation archiving…).



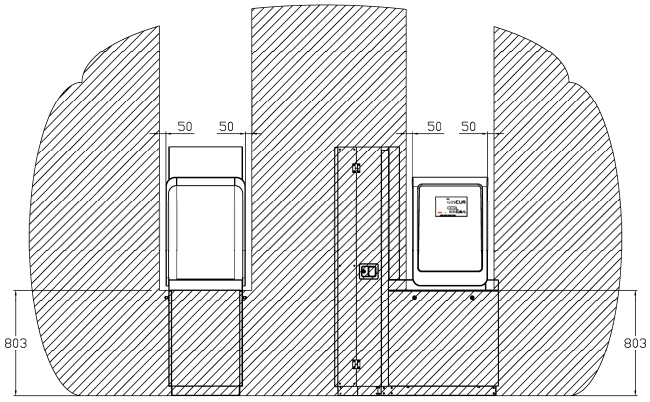

***Picture 28 – The danger zones drawings of the OCEAN TOWER WSE and OCEAN SMART WSE dispensers***
*(5 - non-explosive area)*

**CAUTION** *TATSUNO EUROPE liquid or gaseous fuel dispensers must not be located in the danger zone. The electronic counters used in these dispensers are separated from other areas by a type 1 partition according to EN 13617-1, they are in an uncovered design (IP54 / IP55) and must therefore be located in a non-explosive area.*

**NOTICE** *In the case of AdBlue® dispensers, the dispenser itself does not generate any danger zone (AdBlue is not a flammable or explosive medium). To install the AdBlue near the fuel dispenser or other equipment that generates the zone, it is necessary to take into account which parts of the dispenser can be installed "immersed" in the danger zone and which cannot - see the Figures below.*

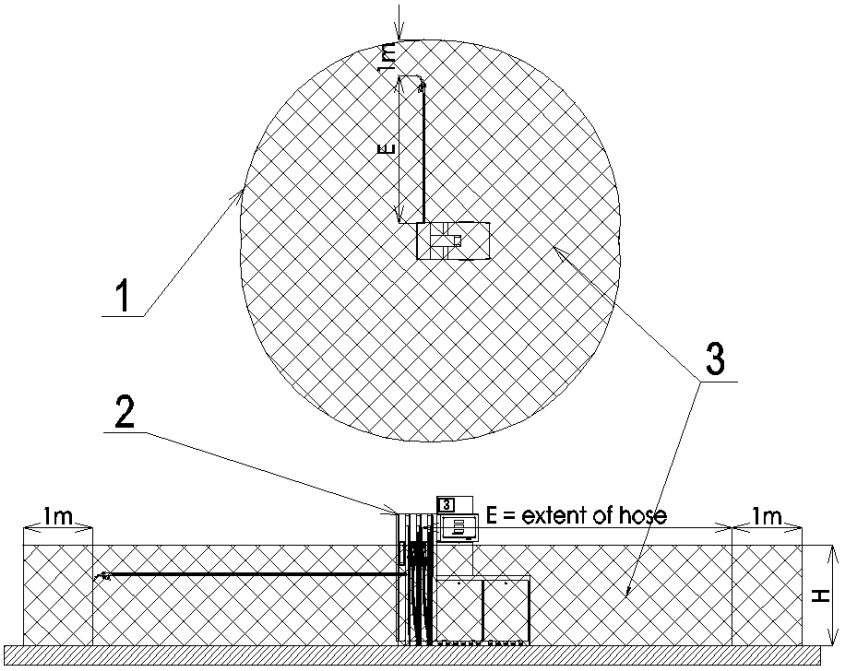



***Picture 29 – Example of possible placement of the SHARK JUNIOR ADB and SHARK ECONOMY ADB AdBlue® dispensers in zone 2***




***Picture 30 – Example of possible placement of the OCEAN TOWER ADB AdBlue® dispenser in zone 2***

**CAUTION** *AdBlue dispensers with additional marking /NoEx has not ATEX certification and must not be at the service station installed in hazardous zones 1 and 2. The following zone diagram (see Picture 31) is recommended for installation of dispensers without ATEX certification on petrol station equipped with fuel dispensers. The diagram is for guidance only, all local and national restrictions must be observed.*




***Picture 31 - Spatial restrictions for AdBlue dispensers without ATEX certification***

*Legend: 1- Top view (without scale), 2- Front view (no scale), 3 Prohibited area (dispensers without ATEX certification must not be installed in this area), E- Fuel dispenser hose reach, H-Height of dangerous zone.*

### 3.3.3. ORIENTATION OF A SINGLE-SIDED DISPENSER

Single-sided dispenser stands are labelled "L" and "R" ("L" left/left-sided and "R" right/right-sided) after the dispenser type designation, e.g., BMP4011.OW**L**/AdB**,** see section 2.3. Dispenser orientation is determined by a view of the dispenser from the vehicle arrival direction, see Figure 1.

### 3.3.4. DISPENSER DISTANCE FROM A TANK–FUEL TANK

The manufacturer recommends that the maximum distance of dispensers from storage tanks should be **50 meters** and the suction height up to **5.5 meters**. Under other conditions, the suction capacity of dispensers equipped with pumps may be impaired, resulting in a reduction in pumping performance (rated flow) or an increase in the noise level of the dispenser. All

technological requirements for the fuel station must be solved in a professionally designed and approved fuel station project consulted with the dispenser manufacturer.

### 3.3.5. SATELLITE TO THE DISPENSER

All dispensers of the OCEAN series can be equipped with a so-called satellite. This is an additional delivery point – a column with a delivery hose and a delivery nozzle which is placed on the other side of the safety island. In particular, the satellite can be used to fill trucks where it is possible to fill with delivery hoses of the main dispenser and satellite into both side tanks of the truck at the same time. The satellite column has no control electronics and hydraulics and is completely dependent on the main dispenser. The satellite image, foundation plan and foundation frame are shown in documents *IN041-ML Installation plans I* and *IN043 ML Installation plans II*.

## 3.4. MECHANICAL ATTACHMENT OF THE DISPENSER

Dispensers are attached to special foundation frames by using anchor bolt supplied with the dispenser. The foundation frame of the dispenser is not a past of dispenser standard equipment but may be ordered separately. The foundation frame is concreted into the safety island, then the front and rear covers of the dispenser are removed, the dispenser is placed onto the foundation frame and attached by anchor bolts.

**CAUTION** ***Where required by local regulations, for the sake of safety and environmental protection, a drip tray is installed under the dispenser. It prevents the leakage of fuel or technical liquid into soil due to possible leakage of the hydraulic system. The leaked liquid appears at a defined location outside the dispenser where the operator quickly identifies it and ensures a repair of the leakage of the hydraulic system.***

Then the dispenser is connected to the suction pipeline with a bellows (suction piece) that is included in the dispenser delivery. *IN041-ML Installation plans I* shows the foundation frames and foundation plans of all types of dispensers with the indicated position of the inlet pipeline.

## 3.5. ELECTRICAL CONNECTION OF THE DISPENSER

For electrical connection of TATSUNO EUROPE dispensers, it is necessary to perform protection against touch voltage according to an international standard HD 60364-4-41:2017, and applicable electrical cables must be then routed to each dispenser. It is necessary that all dispensers at the fuel station are interconnected by a grounding wire and connected to the grounding system. As a grounding wire you can use a yellow-green cable with a section of at least **4 mm²** or a special grounding strap. The grounding wire must be connected to a central grounding terminal of the dispenser located on the foundation (bolt M10) marked with a mark for grounding.

**CAUTION** ***Only cables complying with the requirements of European standard EN 13617-1:2012 may be used as supply cables. The essential properties of these cables include resistance to oils, gasoline, and gasoline vapour (according to HD21 13S1).*** *Examples of electrical wiring are given in IN041-ML Installation plans I.*

**NOTE** *For easy installation (cable termination in a distribution box), it is necessary that the ends of all cables entering the dispenser are of a sufficient length – each end at least **3 m** above ground.*

In terms of used voltage and function the cables may be divided into power (supply) and signal cables.

***Power cables:***

- supply of pump and vacuum pump electric motors located in the dispenser
- supply of counters, switching circuits and heating
- switching of pumps located outside the dispenser (pressure version of the dispenser/module)

***Signal cables:***

- communication line
- additional service and safety lines (STOP signal, pulse outputs, motor blocking, level gauges, etc.)

***Table 4 – Cable characteristics***

| Cable type | Function | Number of wires | $D_{Anom}$ [mm] |
|---|---|---|---|
| H05VV5-F 4x1.5 | motor power supply | 4 | 8.2 – 10.2 |
| H05VV5-F 7x1.0 | pump switching | 7 | 9.5 – 11.8 |
| H05VV5-F 3x1.5 | counter power supply, module pump switching, security line | 3 | 7.4 – 9.4 |
| H05VV5-F 5x1.5 | power supply for the counter with heating | 5 | 9.1 – 11.4 |
| H05VVC4V5-K 5x0.5 | data line | 5 | 10.1 |

*Legend: $D_{Anom}$ - cable outer diameter*

**NOTICE** *Cable bushings M20 x 1.5 and M25 x 1.5 in an explosion-proof design with protection Ex II 2G Ex e II and IP65 are used in the dispenser distribution boxes. These bushings have a cable diameter range ($D_{anom}$) of* ***7.0 mm to 13.0 mm (M20) and 11.0 mm to 17.0 mm (M25)****.* ***It is forbidden to use cables that have a diameter outside of the permitted bushing range!***

**NOTICE** *Pulse overvoltage may occur in any line due to the strike of lightning up to the distance of several kilometres or due to any industrial activity. The size of pulses formed by lightning induction is sufficient to a total damage of electrical equipment. For these reasons the overvoltage protection is used which diverts energy of the overvoltage pulse to the grounding wire, thus protecting the device. The dispenser manufacturer* ***recommends*** *protecting the main switchboard (or the secondary switchboard) supplying the dispensers, electronic devices (computer, payment terminal, etc.) and data lines by overvoltage protection and lightning arresters.* ***The manufacturer is not responsible for damage caused by insufficient protection of cable connections!***

**NOTICE** *For trouble-free operation of dispensers,* ***it is necessary to consistently separate signal cables from power supply cables.*** *When power cables are in the vicinity of signal cables, the interference and undesirable parasitic phenomena occur that can cause problems with controlling the dispensers or even destruction of electronic devices placed in dispensers and in the booth. Therefore, any intersection or joint routing (in one harness) of signal and power cables must be avoided. This can be solved so that power and signal cables have their own "channels" (storage, metal pipes).* ***The manufacturer is not responsible for damage caused by improperly performed cable connections!***

# 4. DISPENSER SETTING AND BASIC FUNCTIONS

Dispenser setting is performed by the set of setting parameters via which it is possible to control functional parameters of the dispenser, totally change the mode and behaviour of the dispenser in different situations. Depending on the type of an electronic counter installed the parameter values can be viewed and changed using the remote IR (infrared) controller, the service keypad, or the pre-set keypad buttons located on the dispenser.

## 4.1. PDEX5 COUNTER

The PDEX5 electronic counter is set using the remote controller. The yellow service remote controller PDERT-5S is intended for service engineers authorized by the dispenser manufacturer. This remote controller allows to perform complete settings of all dispenser parameters. The silver remote controller PDERT-5O is intended for fuel station managers and this remote controller allows them to perform:

- reading non-resettable electronic litre totalizers of all delivery hoses
- reading and resetting daily electronic litre and financial totalizers of all hoses
- setting of unit prices of products (in manual operation)
- reading and setting of operating parameters of the dispenser

The setting mode may be called up at the dispenser by a below stated procedure only in the condition when the dispenser is at rest - i.e., in the condition of “finished delivery”, all nozzles hung, all sales finished. There are two access modes:

- The ***operator mode*** (attendant mode) is designed for the operators of the service station. It only allows you to read the values of the electronic totalizers and values of the basic parameters of the dispensers. It does not allow you to reset or change the parameter values.

- The ***manager mode*** is designed for the manager of the fuel station. It allows you to read the values of the electronic totalizers and set the basic operating parameters of the dispenser. The access to the Manager mode is protected by password.

### 4.1.1. DESCRIPTION OF PDERT-5O REMOTE CONTROLLER

The keyboard of the PDERT-5O remote manager`s controller is described on Figure 33. While using the remote controller it is necessary to move the remote controller closer to the distance of approx. 1 meter from the centre of the dispenser display. In the electronic counter, the dispensing hoses (L1...L5, R1…R5) and the products (P1…P5) are marked with the numbers 1, 2, 3… .9, 10, see Figure 32. The manager mode is started by pressing the <**M**> button, the operator mode by the <**A**> button. The set and read values are displayed on the display. During the reading of the electronic totalizers, the convention of marking the parts of the dispenser applies which is described in Figure 32.

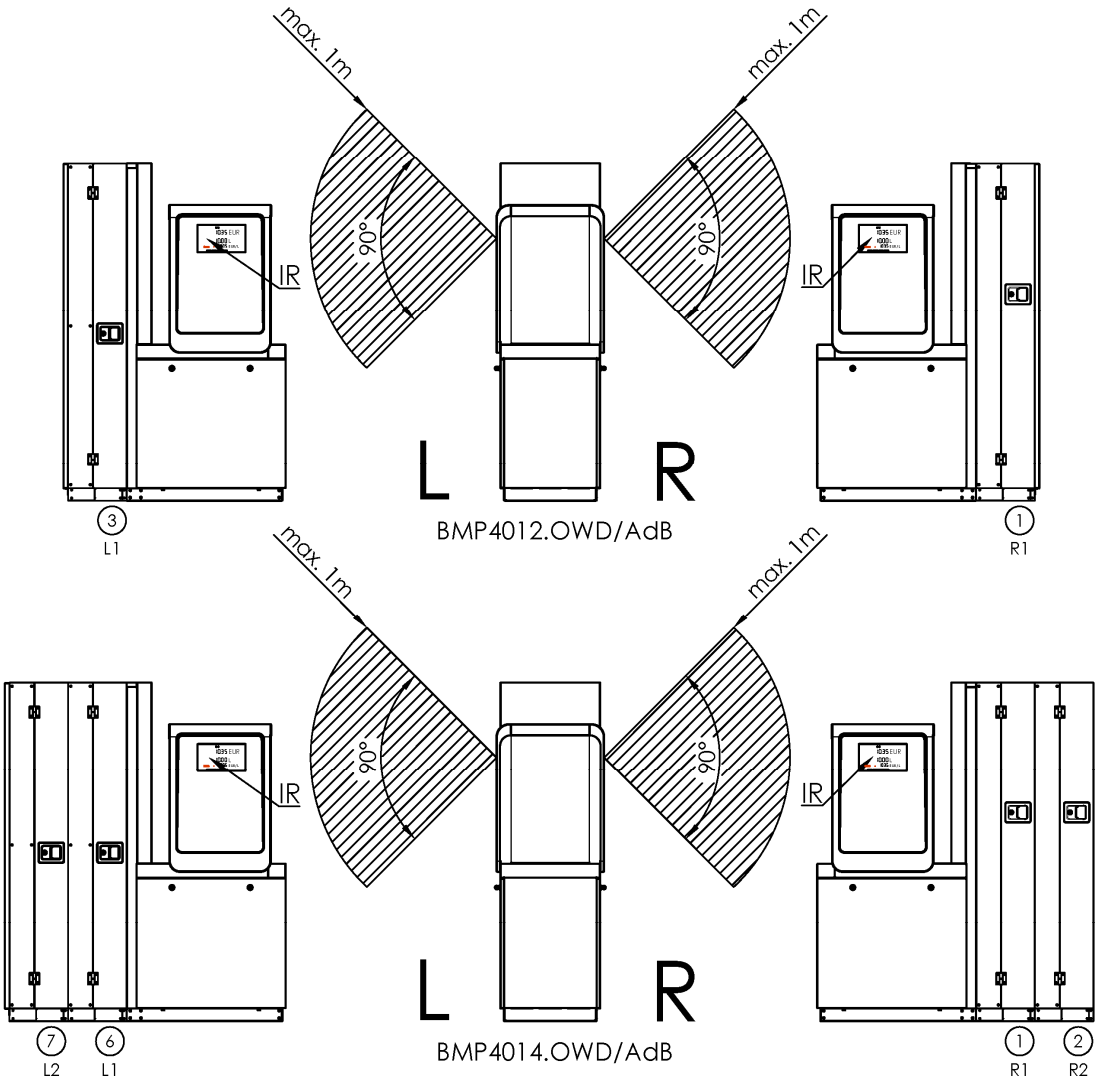



***Figure 32 – Range of operation of the remote controller and marking of hoses and products in electronic counter***
*(IR - position of infrared receiver on the display; ①, ②, ③ … - nozzle position in calculator)*

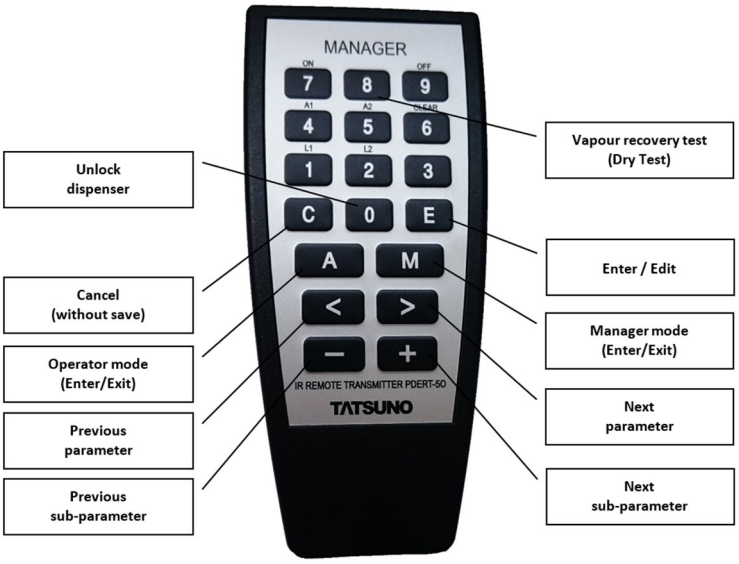



***Figure 33 – Description of keys of the PDERT-5O remote controller***

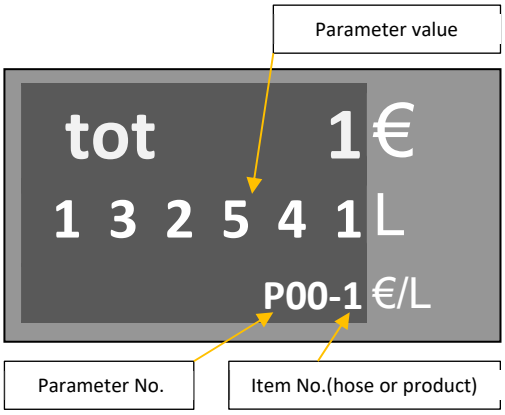
In addition to setting and reading parameter values of the electronic counter of the dispenser, the remote controller can also be used for the following operating functions:

- **Pre-selection of the delivered amount/volume.** Keys <0>, <1>, …. <9> can be used just like the pre-set keypad to set the volume/amount pre-selection on the dispenser.
- **Unlocking the dispenser after delivery.** If the dispenser is in the manual mode with the blocking after delivery, you can unlock the dispenser with the <0> key, or only one side with the <C> key.
- **Unlocking the dispenser after an error.** When the dispenser is in the manual mode and an error occurs on the dispenser, the error status can be cancelled by pressing the <0> key or by lifting and hanging the nozzle.

### 4.1.2. DISPLAYING DATA IN THE SETTING MODE

All data is displayed on the dispenser display in setting modes. While controlling using the remote controller the data is displayed on the display of that side where the setting mode was called up from by the remote controller. Individual parameters are shown as follows on the display:

No. of parameter: P00
Item No.: 1 (dispensing hose order)
Parameter value: 1132541 (volume in centilitres)



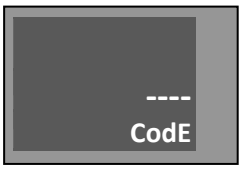

### 4.1.3. OPERATOR MODE

The operator mode of the PDEX5 counter is started by pointing the manager`s remote controller on the dispenser display from the distance of approx. 1 m from the dispenser display centre and by pressing the <**A**> button. **All delivery nozzles on the dispenser must be hung in advance and the sale on the dispenser must be finished (paid).** After calling up the Attendant mode the value of the first parameter is displayed. Parameters and their items may be switched by using the <>> and <+> keys (see Figure 33). The operator mode allows to view **but not change** the values of all parameters listed below, see table below.

| Parameter | Description |
|---|---|
| P00 | Non-resettable quantity totalizers - volume or weight |
| P01 | Daily quantity totalizers - volume or weight |
| P02 | Daily amount totalizers – in currency unit |

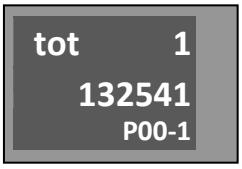
Individual parameters will be described further. The operator mode is finished by pressing **<M>** or **<A>** keys. The mode is finished automatically if no remote controller button is pressed for 60 seconds.

### 4.1.4. MANAGER MODE



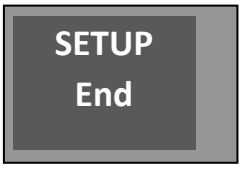

The manager mode is started by pointing the manager`s remote controller at the dispenser display from the distance of approx. 1 m from the dispenser display centre and by pressing the <**M**> button. **All delivery nozzles on the dispenser must be hung in advance and the sale on the dispenser must be finished (paid).** After calling up the manager mode the dispenser display shows a prompt for entering the 4-digit access password: Due to keeping the password confidential the digits entered are shown as dashes. The following default access password is set in the factory: "1111". ***Example:*** *Gradually press* ***<M>*** *and* ***<1111>*** *and* ***<E>*** *keys.*

**NOTE** If the fuel station manager forgets the valid access password, then he/she must contact the authorized service staff who can set a new one.




After entering the valid access password, the display shows the value of the first parameter P00-1. Now it is possible to browse parameters by using the **<>>** key or by entering the **number of searched parameter** and confirm with the **<E>** key to go directly to the desired parameter. The Manager mode allows to view and change the values of parameters listed below, see table below.

| Parameter | Description | Parameter | Description |
|---|---|---|---|
| P00 | Non-resettable quantity totalizers - volume or weight | P15 | Daily totalizers reset (P01 and P02) |
| P01 | Daily quantity totalizers - volume or weight | P16-P19 | not used |
| P02 | Daily amount totalizers – in currency unit | P20 | Error message codes history |
| P03 | Unit price (manual/standalone mode) | P21 | Error message codes statistics of filling point A |
| P04 | Date and Time | P22 | Error message codes statistics of filling point B |
| P05 | Program version + checksums | P23 | Error message codes statistics of filling point C |
| P06 | Modbus interface activation (licence status) | P24 | Error message codes statistics of filling point D |
| P07 | not used | P25 | Last fuelling history of filing point A |
| P08 | Manager mode access password | P26 | Last fuelling history of filing point B |
| P09 | not used | P27 | Last fuelling history of filing point C |
| P10 | Serial numbers of peripheral units (processor, displays, …) | P28 | Last fuelling history of filing point D |
| P11 | not used | P29 | Maintenance history |
| P12 | Dispenser control mode | P30 | Correction factors history |
| P13 | Export of parameters | P31 | Number of events |
| P14 | Current product temperature | P32 | Control mode changes history |




The manager mode is finished by pressing **<R>** or **<A>** keys. The mode is also finished automatically if no remote controller button is pressed for 60 seconds. When leaving the setting mode, the message **SETUP End** appears on the display, and then the last fuelling transaction is displayed (the last state of the display before entering the manager mode).

### 4.1.5. NON-RESETTABLE VOLUME TOTALIZERS (P00)

Non-resettable electronic totalizers for all dispensing hoses (nozzles) are saved in the memory of the electronic counter. These totalizers state what total volume was delivered by individual delivery hoses. **These totalizers cannot be modified in any way**.

| Parameter | Meaning |
|---|---|
| P00-1 | quantity of the fuel delivered by hose 1 in centilitres (x 0.01L) |
| P00-2 | quantity of the fuel delivered by hose 2 in centilitres (x 0.01L) |
| … | … |
| P00-10 | quantity of the fuel delivered by hose 10 in centilitres (x 0.01L) |

**NOTE** *Number of totalizers of delivery hoses shown in the P00 parameter is conditioned by the configuration of the dispenser. The identification system of delivery hoses and products is described in Figure 32.*

### 4.1.6. DAILY QUANTITY TOTALIZERS (P01)

Electronic daily quantity totalizers for all dispensing hoses are stored in the electronic counter's memory. They indicate how much fuel has been delivered by the individual dispensing hoses after the last reset (e.g., after the start of the shift). **These totalizers can be reset at any time using parameter P15** (see description below).

| Parameter | Meaning |
|---|---|
| P01-1 | quantity of the fuel delivered by hose 1 in centilitres (x 0.01L) |
| P01-2 | quantity of the fuel delivered by hose 2 in centilitres (x 0.01L) |
| … | … |
| P01-10 | quantity of the fuel delivered by hose 10 in centilitres (x 0.01L) |

### 4.1.7. DAILY AMOUNT TOTALIZERS (P02)

Electronic daily amount totalizers for all dispensing hoses are stored in the electronic counter's memory. They indicate total amount of the fuel that has been delivered by the individual dispensing hoses after the last reset (e.g., after the start of the shift). **These totalizers can be reset at any time using parameter P15** (see description below).

| Parameter | Meaning |
|---|---|
| P02-1 | amount of the fuel delivered by hose 1 in currency unit (x 0.01€) |
| P02-2 | amount of the fuel delivered by hose 2 in currency unit (x 0.01€) |
| … | … |
| P02-10 | Amount of the fuel delivered by hose 10 in currency unit (x 0.01€) |

### 4.1.8. FUEL PRODUCT UNIT PRICES (P03)

This feature allows you to view and set current unit prices (i.e., one litre of fuel) of all fuel products. These fuel unit prices are set on the display at the first lift of the delivery nozzle and reset of the display if the dispenser works in the **manual mode**. Setting is made by pressing the **<E>** key and entering the price in the **<PPPP>** format and confirming by the **<E>** key. The decimal point is not entered. E.g., unit price 1.03 €/L is entered as number 0103, etc.

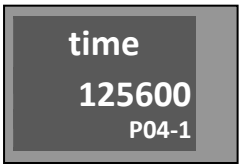
| Parameter | Meaning | Factory setting |
|---|---|---|
| P03-1 | fuel product unit price 1 | 0,00 €/L |
| P03-2 | fuel product unit price 2 | 0,00 €/L |
| P03-3 | fuel product unit price 3 | 0,00 €/L |
| P03-4 | fuel product unit price 4 | 0,00 €/L |
| P03-5 | fuel product unit price 5 | 0,00 €/L |

**NOTE** *Number of fuel products shown in the P03 parameter is conditioned by the configuration of the dispenser. The identification system of delivery hoses and products is described in Figure 32. if you change the unit price, such change will be reflected after a subsequent lift of the delivery nozzle.*

**NOTICE** *Values set in the P03 parameter are valid **in the dispenser manual mode only.** If the dispenser is connected to the central control system of the fuel station, then the fuel unit price is set directly by the control system before each delivery. In such case the values of the P03 parameter are non-functional.*

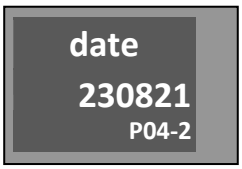
**NOTICE** The dispenser does **not enable deliveries with a zero value of the unit price.** *In such case, after lifting the delivery nozzle the dispenser display shows the error message E30 and the delivery does not start.*

### 4.1.9. CURRENT TIME AND DATE (P04)




This function allows to view and set the current time and date. The setting is made by pressing the **<E>** key by entering the time/date in the correct format and confirming with the **<E>** key.

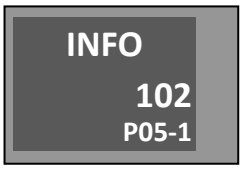
| Parameter | Meaning | Factory setting |
|---|---|---|
| P04-1 | Time setting, format HHMMSS (i.e., 125600 = 12:56:00) | 0:00:00 |
| P04-2 | Date setting, format DDMMYY (i.e., 230821 = 23. 08. 2021) | 1.1.2001 |




**NOTE** *The time/date information is used by parameters P20 to P34 to record the exact moment of the fault, end of delivery, change of dispenser control mode…, etc. The date/time data has only an informative function, it does not affect the process of fuel delivery.*

**NOTICE** *The internal clock is reset at least 5 days after the power supply off. Time and date values will switch to factory setting and must be set again!*

### 4.1.10. DISPLAYING THE PROGRAM VERSION AND CHECK SUMS (P05)




This function shows the number of the program version of the dispenser counter and different check sums. These values are intended for metrology authorities and authorized service engineers. The meaning of the individual parameters is described in the table below.

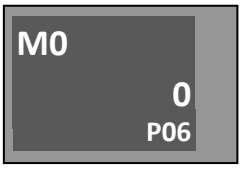
| Parameter | Meaning |
|---|---|
| P05-1 | Version of the metrologically relevant part of the program. It is specified in the type certificate (e.g., 102 = version V1.02) |
| P05-2 | CRC (check sum) of metrologically relevant part of the program. It is specified in the type certificate (e.g., dbd2 FFA4) |
| P05-3 | Version and release of the whole program (e.g., 1.02 release 14) |
| P05-4 | CRC (check sum) of the whole program (e.g., 27E6 622d) |
| P05-5 | CRC (check sum) of the temperature sensors unit PDEINP1 program (for temp. sensors 1 to 4). If not present „ - - - - “ is displayed |
| P05-6 | CRC (check sum) of the temperature sensors unit PDEINP1 program (for temp. sensors 5 to 8). If not present „ - - - - “ is displayed |
| P05-7 | Date and time the program compilation. The first line shows the time (hhmmss) and the second the date (DDMMYY). |
| P05-8 | CRC of the program of the pressure sensors unit PDEDPS with address 1. If not present, "- - - -" is displayed |
| P05-9 | CRC of the program of the pressure sensors unit PDEDPS with address 2. If not present, "- - - -" is displayed |
| P05-10 | CRC of the program of the pressure sensors unit PDEDPS with address 3. If not present, "- - - -" is displayed |
| P05-11 | CRC of the program of the pressure sensors unit PDEDPS with address 4. If not present, "- - - -" is displayed |

**NOTE** *Metrologically relevant data P05-1 and P05-2 also appear on the display for a while after the power on.*

**NOTE** *The calculated CRC (cyclic redundancy sum) values from sub-parameters 1 and 3 are checked after switching on. If the calculated checksum is different from the stored correct sum, the dispenser is blocked and error message E13 is displayed. Higher cyclic checksum orders are displayed on the amount line, lower orders on the quantity line. The CRC of the peripheral unit programs (PDEINP and PDEDPS) is checked before each delivery is enabled. If the calculated value of the peripheral unit checksum does not match the correct value, delivery (fuelling, pumping) is not started and the corresponding error message is displayed.*

### 4.1.11. MODBUS INTERFACE ACTIVATION (P06)

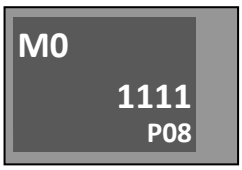
The modbus interface (diagnostic data line) allows service organizations to remotely diagnose dispensers. Parameter P06 allows to activate the Modbus interface by entering a valid key (eight-digit code).




| Parameter | Meaning | Factory setting |
|---|---|---|
| P06=0 | The Modbus license is not valid. Modbus interface is not active | 0 |
| P06=1 | The Modbus license is valid. Modbus interface is active | |

### 4.1.12. MANAGER MODE ACCESS PASSWORD (P08)

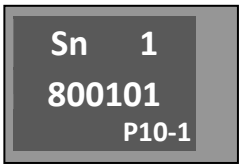
This function allows to view and change the password to the manager mode. The setting is made by pressing the **<E>** key by entering a new password in **<PPPP>** format and confirming **<E>**.




| Parameter | Meaning | Factory setting |
|---|---|---|
| P08 = 1 to 9999 | Manager mode access password | 1111 |

### 4.1.13. SERIAL NUMBERS OF THE PERIPHERAL UNITS (P10)

The parameter is used to display the serial numbers of the connected peripheral units. The actual serial numbers of the peripheral units are compared with the numbers stored in the processor unit memory. If a mismatch is detected, an error message is displayed and fuel delivery is not allowed. The list of periphearal units is below.

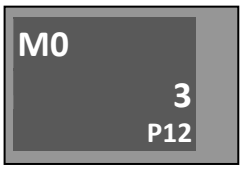



*Example: Parameter P10-1, serial number of the main processor unit SN: 18-00101 (see picture)*

| Parameter | Peripheral unit | Error message in case of detected mismatch |
|---|---|---|
| P10-1 | Main processor unit | |
| P10-2 | Main temperature sensors unit PDEINP1 (for temp. sensors 1 to 4) | E83-1 |
| P10-3 | Auxiliar temperature sensors unit PDEINP2 (for temp. sensors 5 to 8) | E83-2 |
| P10-4 | Mass meter A | E84-1 |
| P10-5 | Mass meter B | E84-2 |
| P10-6 | Main displaying unit (Master) of filling point A | E80-1 |
| P10-7 | Auxiliar displaying unit (Slave) of filling point A | E80-2 |
| P10-8 | Main electromechanical totalizers unit (Master) of filling point A | E82-1 |
| P10-9 | Auxiliar electromechanical totalizers unit (Slave) of filling point A | E82-2 |
| P10-10 | Main displaying unit (Master) of filling point B | E80-1 |
| P10-11 | Auxiliar displaying unit (Slave) of filling point B | E80-2 |
| P10-12 | Main electromechanical totalizers unit (Master) of filling point B | E82-1 |
| P10-13 | Auxiliar electromechanical totalizers unit (Slave) of filling point B | E82-2 |
| P10-14 | Main displaying unit (Master) of filling point C | E80-1 |
| P10-15 | Auxiliar displaying unit (Slave) of filling point C | E80-2 |
| P10-16 | Main electromechanical totalizers unit (Master) of filling point C | E82-1 |
| P10-17 | Auxiliar electromechanical totalizers unit (Slave) of filling point C | E82-2 |
| P10-18 | Main displaying unit (Master) of filling point D | E80-1 |
| P10-19 | Auxiliar displaying unit (Slave) of filling point D | E80-2 |
| P10-20 | Main electromechanical totalizers unit (Master) of filling point D | E82-1 |
| P10-21 | Auxiliar electromechanical totalizers unit (Slave) of filling point D | E82-2 |
| P10-22 | Pressure sensors unit PDEDPS with address 1 | E85 |
| P10-23 | Pressure sensors unit PDEDPS with address 2 | E85 |
| P10-24 | Pressure sensors unit PDEDPS with address 3 | E85 |
| P10-25 | Pressure sensors unit PDEDPS with address 4 | E85 |

### 4.1.14. DISPENSER CONTROL MODE (P12)

The parameter defines how the dispenser is controlled.

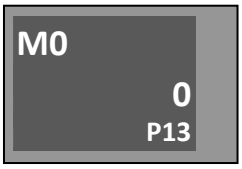



| Parameter | Meaning | Factory setting |
|---|---|---|
| 12 = 0 | Automatic mode with remote control<br>The dispenser is remotely controlled by a control computer/controller via a data line. It starts fuel delivery only when an authorization command from the the control system (POS) is received. The authorization command includes the unit price of fuel for each refuelling, preset maximum price or quantity, and the product number. Fuel delivery will not start at zero fuel price, zero preset amount/volume or if the product number does not match. In the event of a communication failure, the dispenser locks up with error E18. Error E18 always occurs if no communication is detected for more than 3 seconds. After communication is established, the error disappears automatically. | 0 |
| 12 = 3 | Manual mode | |

| Parameter | Meaning | Factory setting |
|---|---|---|
| | The dispenser is completely independent, not remote controlled. The data line is blocked. Unit fuel prices are controlled by parameter P03. If a special manual mode with locking after delivery or a mode with RELEASE signal control is not set, pumping will start immediately after the dispensing nozzle is picked up and the display is reset. Switching from automatic to manual mode can be blocked by switch SW1-2. | |

### 4.1.15. EXPORT OF PARAMETERS (P13)

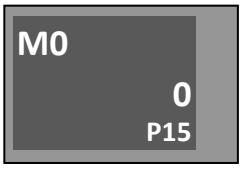
To export the counter parameters from the memory to the memory card (SD card), press the **<E>** key, enter **<1>** and confirm with the **<E>** key. Before running the test, make sure that an SD card is inserted in the processor board. If the parameter export was successful, the message "done" will appear on the display. The file containing the parameters is saved on the card in the \CONFIG\EXPORT directory. When the data export is complete, the value of the parameter goes to the value 0.




| Parameter | Meaning | Factory setting |
|---|---|---|
| P13=0 | Idle status | 0 |
| P13=1 | Export of parameters | |

### 4.1.16. DAILY TOTALIZERS RESET (P15)

The parameter is used to reset all daily totalizers of dispensing hoses. After setting the parameter value to **<1>** and confirming (**<E> + <1> + <E>**), all totalizers that are part of parameters P01 and P02 will be reset to 0. The message "done" appears and the parameter value goes to 0.

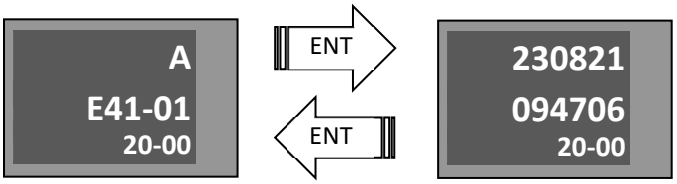



| Parameter | Meaning | Factory setting |
|---|---|---|
| P15=0 | Idle status | 0 |
| P15=1 | Daily totalizers P01 and P02 reset to 0 | |

### 4.1.17. ERROR MESSAGE CODES HISTORY (P20)

The function is used to display the history of the last 100 error message codes that have occurred and displayed on the dispenser. The table of error messages codes is given in chapter 6.2.1. After switching to parameter P20, the display shows the code of the last error message and the designation for the filling point where the error occurred A, B, C or D (e.g., E41-01 pulse generator connection error at input PUL1 for filling point A). After pressing the **<E>** key, the date and time of the fault will be displayed. After pressing the **<+>** key, the code of the penultimate error message code, etc. appears on the display.

| Parameter | Meaning |
|---|---|
| (P)20-00 | code of the last error |
| (P)20-01 | code of the penultimate error |
| … | … |
| (P)20-98 | 99th error code in the sequence |
| (P)20-99 | 100th error code in the sequence |

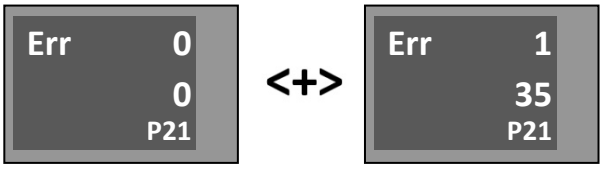



**NOTE** *If two identical error message code occur in a row, then only the last one is displayed.*

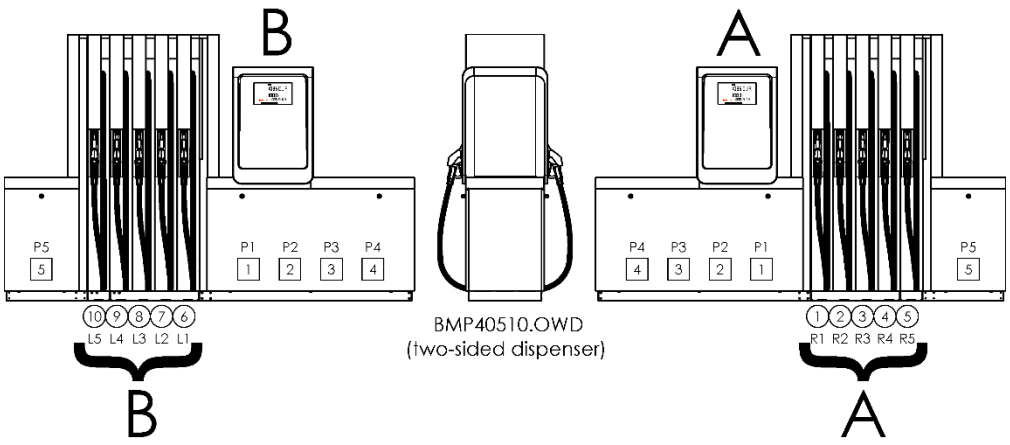
### 4.1.18. ERROR MESSAGE CODE STATISTICS OF FILLING POINT (P21, P22, P23, P24)

The parameter is used to display the cumulative numbers of individual error messages for a given filling point. The first line of the display shows the error message code and the second line the frequency of the error. After switching to parameter P21 (error message code statistics for filling point A), the display shows the fault frequency for error message code E0. After pressing the **<+>** key, the frequency of the error message code E1… etc… appears on the display. The table of error message codes is given in chapter 6.2.1.

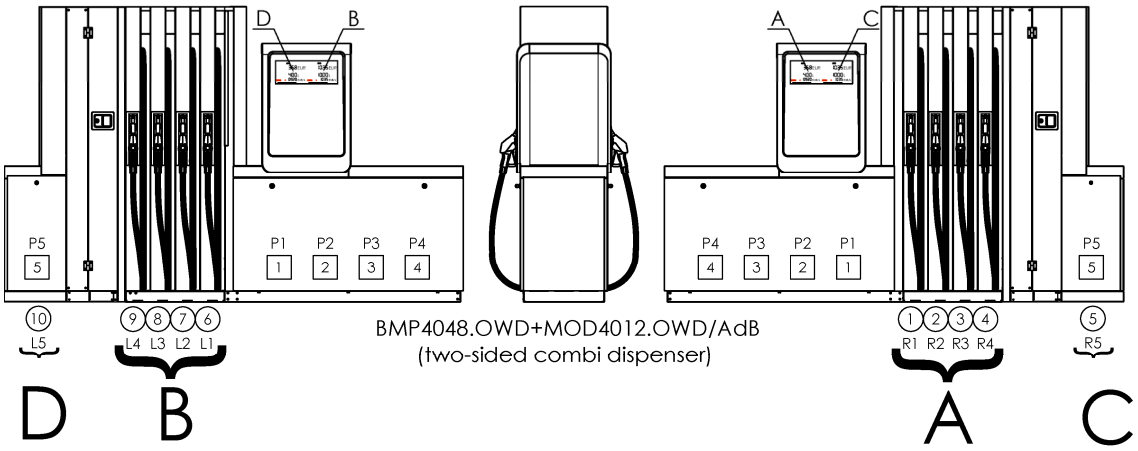
| Parameter | Meaning |
|---|---|
| P21 | Error message code statistics of filling point A |
| P22 | Error message code statistics of filling point B |
| P23 | Error message code statistics of filling point C |
| P24 | Error message code statistics of filling point D |



**NOTE** ***A filling point (dispensing site, dispensing point)*** *is defined as a place where one independent fuel dispensing (one pumping) can be performed. By default, a double-sided dispenser has two filling points - A and B (see Figure 34), a single-sided dispenser has one filling point - A. However, there are variants of dispensers, especially combined dispensers, where two simultaneous pumping can be performed on one side of the dispenser diesel + AdBlue). The double-sided dispenser then has four filling points A, B, C and D (see Figure 35) and the single-sided dispenser has two filling points A and B. Each filling point must have one main display and can serve one to five dispensing hoses.*



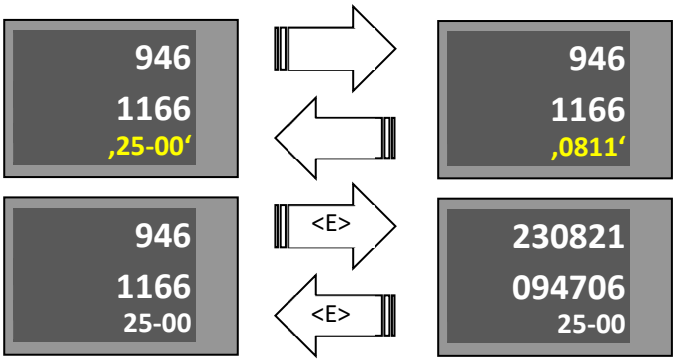

***Picture 34 – Example of a standard dispenser with two filling points A and B***
*(two simultaneous deliveries, two main displays; ①, ②, ③ … - nozzle position in electronic counter)*




***Picture 35 – Example of a combined dispenser with four filling points A, B, C and D***
*(four simultaneous deliveries, four main displays; ①, ②, ③ … - nozzle position in electronic counter)*

## 4.1.19. LAST FUELLING HISTORY (P25, P26, P27, P28)

The parameter is used to display the last 100 fuellings (deliveries) for a given filling point. After switching to parameter P25 (last fuelling history at filling point A), the display shows the last fuelling transaction. The transaction price with the parameter number flashes on the unite price display. After pressing the **<+>** key, the penultimate fuelling..., etc. appears. After pressing the **<E>** key, the date and time of the end of the saved fuelling will appear on the display.



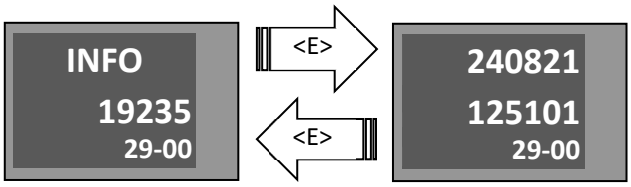

| Parameter | Meaning |
|---|---|
| (P)25 | Last fuelling history at filling point A |
| (P)26 | Last fuelling history at filling point B |
| (P)27 | Last fuelling history at filling point C |
| (P)28 | Last fuelling history at filling point D |

*Example: Last fuelling at filling point A had a value of 11.66 L, 9.46 €, 0.811 €/L and was terminated 23.8.2021 at 9:47:06*

### 4.1.20. MAINTENANCE HISTORY (P29)

The parameter allows you to display the identification codes of the last 50 service remote controllers that entered into service mode of the counter. After switching to parameter P29, the code of the last service remote controller (e.g., 19235) appears on the quantity display line. After pressing the **<+>** key, the penultimate remote controller code will appear. After pressing the **<E>** key, the date and time of entering the service controller into the setting mode of the dispenser counter will appear on the display (e.g., 24.8.2021 at 12:51:01).

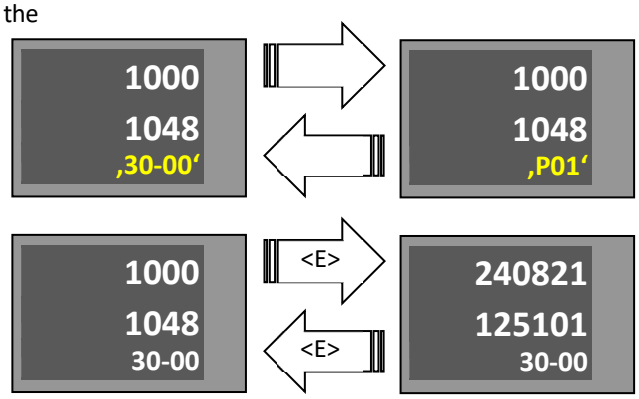
| Parameter | Meaning |
|---|---|
| P(29)-00 | Code of the last remote controller |
| P(29)-01 | Code of penultimate service controller |
| … | … |
| P(29)-49 | Code of the 50th service controller in the sequence |




**NOTE** ***The yellow service remote controllers PDERT-5S*** *are used by authorized service personnel of TATSUNO EUROPE dispensers. The service controllers each have their own internal identification code, which is written into the memory of the dispenser counter when entering the service mode. Using parameter P29, it is therefore possible to find out who entered the service mode of the counter and when, i.e., to identify the service technician and the time of the service intervention.*

### 4.1.21. CORRECTION FACTOR CHANGES HISTORY (P30)

The parameter allows you to display the last 50 records of changes in the setting of correction factors of measuring devices (meters, pulse generators). After switching to parameter P30, the last record of the correction factor change appears on the display - the original correction factor appears on the amount display line, the new changed correction factor appears on the quantity display line, the measuring device number (P01, P02, … P10) appears on the unit price display line and flashes with the parameter number and the sequence number of the correction factor change record. After pressing the **<+>** key, the penultimate record of the change of the correction factor…, etc. appears. After pressing the **<E>** key, the date and time of the correction factor change will appear on the display.




| Parameter | Meaning |
|---|---|
| (P)30-00 | Last record of the correction factor changes |
| (P)30-01 | Penultimate record of the correction factor changes |
| … | … |
| P(30)-49 | 50th record of the correction factor changes |

***Example:*** *Last record (00) of the change of the correction factor of the measuring device P01, the original correction factor = 1,000, the new correction factor = 1,048, the date and time of the change of the correction factor = 24.8.2021 at 12:51:01)*

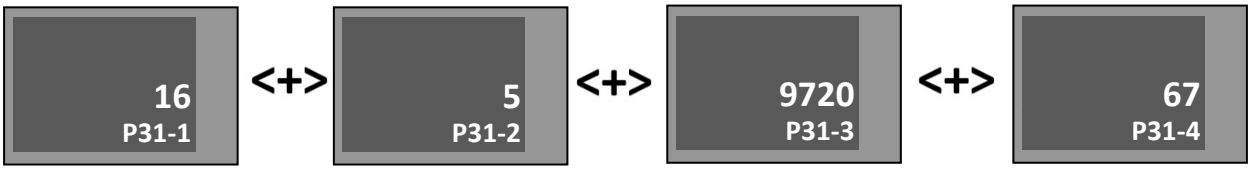
**NOTE** ***The correction factor*** *(of meter, pulse generator …) is used in the metrological setting of the measuring device. Authorized service or legal metrology personnel will adjust it so that the measuring equipment complies with local regulations in terms of accuracy (MID guidelines, ….). The change of the correction factor is preceded by a removal of the metrological seal or sticker. After setting the factor, a new seal must be installed in the presence of a metrologist. Parameter P30 is used to check station owners and metrology officers.*

### 4.1.22. NUMBER OF EVENTS (P31)

The parameter is used to display the cumulative numbers of some important events, such as the number of correction factor changes, the number of peripheral unit serial numbers stored (i.e., the number of configuration saves), the number of counter

starts (i.e., the number of power off), the number of service mode entries. After switching to parameter P31, the display shows the number of changes in the correction factors. After pressing the **<+>** key, the frequency of serial numbers..., etc. will appear on the display.

| Parameter | Meaning |
|---|---|
| P31-1 | Cumulative number of performed manual and automatic changes of the correction factor |
| P31-2 | Cumulative number of peripheral unit serial number stores (= number of counter configuration stores) |
| P31-3 | Cumulative number of power on counters (= number of power outages) |
| P31-4 | Cumulative number of entries in configuration mode at the service level. |

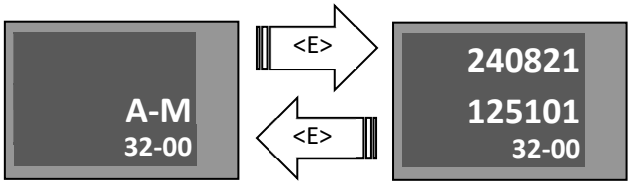



**NOTE** ***The serial numbers*** *of the peripheral units are stored during the installation and recovery of the new electronic counter of the dispenser, or after the replacement of some of its important parts (display, temperature sensor unit….). Entry into the service mode and removal of the metrological seal is necessary for storage.*

### 4.1.23. CONTROL MODE CHANGES HISTORY (P32)

The parameter allows to display the last 20 records about the change of the dispenser control mode, i.e., the change from manual to automatic mode and vice versa (see parameter P12). After switching to parameter P32, the last record of the change of the operating mode appears on the display - the amount display shows M-A (change from manual to automatic mode) or A-M (change from automatic to manual mode). After pressing the **<+>** key, the penultimate record of the change appears. After pressing the **<E>** key, the date and time of the mode change will appear on the display.

| Parameter | Meaning |
|---|---|
| (P)33-00 | Last change of the control mode |
| (P)33-01 | Penultimate change of the control mode |
| … | … |
| P(33)-19 | 20th change of the control mode in the sequence |




*Example: According to the last record (00), the change from automatic to manual mode (A-M) took place on 24.8.2021 at 12:51:01.*

**NOTE** *Monitoring of the change from automatic to manual mode is important. When fuel is fuelled in manual mode, POS-independent unit fuel prices are used and fuel dispensing data is not transmitted to the cash register. The transition from automatic to manual mode can be disabled by toggling switch SW1-2, which is protected by a seal.*

## 5. OPERATION

### 5.1. INSTRUCTIONS FOR SAFE OPERATION

Dispensers are complex devices that have to secure a whole range of difficult functions. Therefore, cleaning of the storage tanks, piping systems and inspection of the pumped medium cleanliness must be carried out before commissioning. An inspection of wiring and a check of connection correctness must be performed before commissioning in order to prevent any electric shock injuries and to ensure safety against explosion.

**Smoking forbidden**

**Open flame use forbidden**

**Use of mobile phones forbidden**

**NOTICE** *AdBlue® dispensers/modules must be pressurized at 0.35 MPa before commissioning the AdBlue® dispenser together with the piping system in order to perform a pressure test.*

**WARNING** *Dispensers are hygienically harmless for the customer and operator. It is advisable to protect your hands, for example, with eco-friendly gloves during normal maintenance and during deliveries. In case of skin contact, wash the affected area as soon as possible with soap and water. In case of eye contact, etc., seek medical attention. During deliveries, avoid inhalation of vapours of the pumped medium.*

**CAUTION**

- ***Technical and technological tools must meet approved requirements which consist of instructions for safe operation and maintenance and instructions for solving any emergency situation. Snow extinguishers must be available in the vicinity of AdBlue® dispensers in accordance with the safety guidelines.***
- ***Sale and delivery of AdBlue® must comply with prescribed rules; in case of danger, stop the operation of the dispenser immediately.***
- ***It is necessary to keep the dates of regular inspections and checks of the entire AdBlue® dispenser; persons without appropriate competencies, skills and qualifications must not handle the installed technology.***
- ***Regular maintenance and service must be carried out by a solely authorized service company.***
- ***The operator is responsible for keeping the AdBlue® dispenser in its original and safe condition; any defect or unusual phenomenon must be immediately reported to a service company; in case of danger or delayed intervention the dispenser must be shut down.***

**CAUTION**

- ***The attendant must not perform any repairs of the device and change setting of safety fittings. Regular maintenance and service may only be performed by an authorized service company.***
- ***The attendant must keep the device in proper and safe order, immediately inform the service organization about the defect of abnormality during operation and immediately decommission the device in case of danger of default.***

## 5.2. DISPENSER COMMISSIONING

ON/OFF switching of fuel dispensers is carried out in the main switchboard of the fuel station where the power supply of the dispensers is provided. Each dispenser has two power points in the main switchboard:

- The power supply of pump electric motors and suction vacuum pumps if included in the dispenser
- Power supply of the dispenser electronic counter, switching and heating circuits

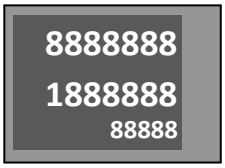
Both power points are secured by the circuit breakers that enable the dispenser to be switched on/off.

**RECOMMENDATION** ***We recommend that you turn on the dispenser as follows:***

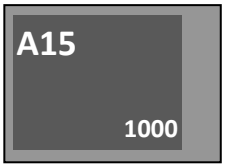
- ***Turn on the backup UPS located in the kiosk (the green LED on the UPS turns on)***
- ***Switching on the 230 V circuit breaker for stabilized power supply of the dispenser counter (all segments of the display are automatically tested and the last delivered values are displayed)***
- ***Switching on the 3x400 V the power supply circuit breaker for electric motors of pumps (if installed).***

**The following processes occur when the power of the PDEX5 counter is turned on**:

- **test of display units** (displays). The backlight of the displays lights up and then all display segments are displayed (eights)) for approx. 1 second




- **time delay** when the counter is switched on. Time required to start the multimedia display. During the time delay, the displays show the filling point to which the display is connected A, B, C or D and the time in seconds remaining until the electronic dispenser counter is activated. The length of the time delay (15) can be set by the counter parameter, by default it is without delay. The positions of switches SW1-1, SW1-2, SW1-3 and SW1-4 are displayed on the unit price line (1=ON; 0=OFF). If switch SW1-1 is in position 1, then the selected metrological parameters cannot be set on the counter.

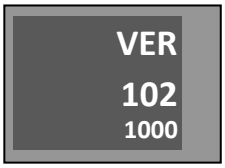


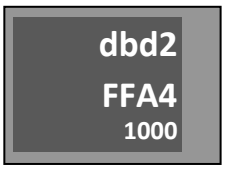

- **processor unit test.** Ten-second test in which all functions and memory of the processor unit are checked. During the test, the side of the counter to which the display is connected (A, B, C or D) is displayed, and:

  - version of the metrologically relevant part of the program (VER 1.02),

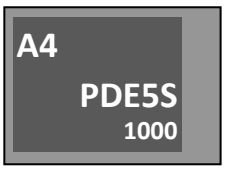
  - checksum of the metrologically relevant part of the program (dbd2 2FA4).

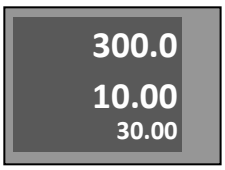
  - processor board type PDE5S or PDE5L




- **setting the counter status** before switching it off. The information that would appear on the display before the counter was last turned off is displayed. If the counter was operating in manual mode, then it is possible to start pumping immediately after picking up the gun. If the counter was operating in automatic mode, it waits for communication with the control computer to be established and, if necessary, for the transaction to be terminated (payment), if it was not terminated regularly before switching off.




**Now the dispenser is ready for fuel delivery.**

**CAUTION-ADBLUE**

All AdBlue® dispensers are tested and metrological verified during production. The test medium for these tests is water, which even after draining the dispenser partially adheres to the hydraulic system (pipes, meter, valve…) and can spoil the first AdBlue® deliveries to vehicles. **After installing the dispenser, it is therefore necessary to flush the hydraulic system of the dispenser with at least 10 to 20 L of AdBlue and then discard this initial dose - e.g., by diluting it with water and pouring it into the sewer system.**

## 5.3. DISPENSER OPERATION

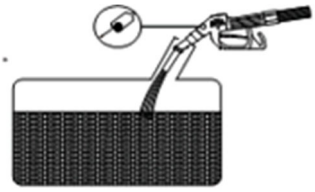
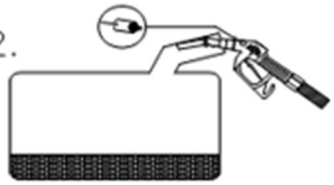
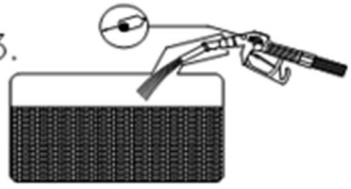
**NOTICE** ***The operator is responsible for the operation of the fuel station*** *and it is his duty to monitor the delivery of fuel and, in the event that the customer performs unauthorized operations at the self-service dispensers, he must instruct the customer about proper handling. The operator is also obliged to mark the risk area of the fuel station with warning symbols (smoking ban, ban on open fire, direction of arrival to the dispenser, etc.). The fuel station operating instructions must be freely accessible to the customer for any information on basic obligations.*

### 5.3.1. TECHNICAL LIQUIDS (WSE, ADBLUE®) DELIVERY

Starting the dispenser is carried out by lifting the delivery nozzle from the nozzle cover which simultaneously automatically resets the electronic counter data. Then the pump electric motor is started and the liquid can be delivered. The delivering speed is controlled by the delivery nozzle. Ending the delivery is performed by closing the delivery nozzle (by releasing the control lever) and its subsequent hanging in the nozzle cover which shuts down the pump electric motor. The quantity delivered remains unchanged until the delivery nozzle is lifted again or until the payment.

**Liquid delivery.** The fluid measured by the meter is delivered into the delivery hose and the delivery nozzle bolted to the end of the hose. Self-service fuel stations use delivery stop-nozzles with a safety shutter. Using the control lever, the flow rate can be controlled until it stops. In the basic version, the delivery nozzle is supplied with a lever lock. At customer's request, a delivery nozzle is provided without a lock where the lever must still be pressed during delivery. When releasing the lever or dropping the delivery stop-nozzle out of the tank opening, the liquid flow stops. The stop function occurs when the tank is full after the sensor has detected the fluid level, the flow stops even when the control lever is depressed. The safety function works, for example, when the delivery nozzle is not properly handled, i.e., the discharge attachment is higher than 15 degrees from the horizontal plane upwards, the flow stops even when the control lever is depressed. After the stop function and the safety function it is necessary to release the control lever to automatically return to the basic position.

***Table 5 - Delivery nozzle positions during delivery***

| | |
|---|---|
| 1.  | **Correct position of the delivery nozzle during delivery**<br>The delivery nozzle is almost vertical, the ball does not prevent the passage of air and the liquid flows. |
| 2.  | **Incorrect delivery nozzle position**<br>The delivery nozzle is diverted from the horizontal position, the ball prevents the passage of air and the liquid does not run |
| 3.  | In various designs of liquid tank inlet ports, it is necessary to find the optimal position of the delivery nozzle when the liquid still flows. Flow shut-off may also occur when the fuel flow from the delivery nozzle hits the wall of the tank neck. In that case, it is also necessary to find the optimal position. |

### 5.3.2. ELECTROMECHANICAL TOTALIZERS

On demand, TATSUNO EUROPE dispensers are equipped with electromechanical totalizers for monitoring the total amount of fuel flown through each delivery hose. Totalizers are located on the dispenser display. Each delivery hose or nozzle has one seven-digit electromechanical totalizer that shows the **number of complete litres (kilograms for CNG) delivered through the appropriate delivery hose.** For multiple product dispensers, the electromechanical totalizers on the display are ordered from top to bottom or from left to right and are marked with delivery hose numbers.

**NOTE** *On display A, the electromechanical totalizers are numbered 1, 2, 3, 4. The numbers of the totalizers correspond to the delivery hoses 1A, 2A, 3A and 4A. On the display B, the electromechanical totalizers are also numbered 1, 2, 3, 4. The numbers of totalizers correspond to the delivery hoses 1B, 2B, 3B and 4B.*

### 5.3.3. DISPENSER OPERATING MODES

There are two basic dispenser operating modes:

1) manual mode
2) automatic (remote) mode

The **manual mode** is a status when the dispenser works independently of any remote control.
Delivery progress: The customer arrives at the dispensers and takes the delivery nozzle of the product he/she wants to deliver. The display will reset (approx. 1.5 seconds) and then the pump motor switches on and the dispenser is ready for delivery. Once the fuel has been delivered, the customer hangs up the delivery nozzle and pays for the delivered liquid to the operator. The

dispenser is immediately ready for next delivery. Since the dispenser is not controlled in any way in the manual mode, it is necessary to manually set the fuel unit price on the dispenser – see sections 4.1.8. The number of delivered litres per shift is determined by the difference between the electronic (or electromechanical) totalizers at the start and end of the shift.

The **automatic mode** is a status when the dispenser is remotely controlled by a control device (program in PC, control device, station controller, etc.). The automatic mode allows remotely control deliveries from the fuel station booth. The booth contains a control device by which the fuel station attendant releases the dispenser for delivery and collects information about the delivered liquid amount and price after the delivery is finished.
Delivery progress: The customer arrives at the dispensers and takes the delivery nozzle of the product he/she wants to deliver. The dispenser will require authorization from the control unit in the booth. The control unit sends a fuel unit price, a maximum amount/volume of delivery, and allows delivery. The display of the dispenser will reset (*approx. 2 seconds after removing the nozzle) and the pump motor switches on. Once the fuel has been delivered, the customer hangs the nozzle and pays the required amount to the booth where he receives the tax receipt (receipt) for the delivered liquid. The dispenser is immediately ready for next delivery. Since the dispenser is remotely controlled in the automatic mode, it is not necessary to manually set the fuel unit price on the dispenser. The correct unit price is automatically set by the control computer to all dispensers at the fuel station.

**NOTE** *Immediately after the delivery is enabled, the dispenser display is reset. The time after removal of the nozzle after resetting the display and starting the pump may vary significantly depending on the control system used and the fuel station configuration from 2 to 5 seconds*

**Switch from the automatic to the manual mode.** By default, the dispensers are connected and set as it is expected they should work at the service station, i.e., if the fuel station is equipped with a control system, the dispensers will be set to the automatic mode; if the service station is without the control system, the dispensers are set to the manual mode by default.
In case you have to switch the dispensers from automatic to manual mode - e.g., because of a crash in the control system, you have to change the value of parameter M0-P12 (P12) from value 0 to value 3 using the IR remote control and to check the setting of unit prices in parameter M0-P03 (P03) – see chapters 4.1.8.

**NOTICE** *The switch from the automatic to manual mode must be discussed with the service engineer in advance!*

### 5.3.4. PRESET KEYPAD

TATSUNO EUROPE dispensers may be equipped with a so-called preselection keypad enabling preset the delivered amount or quantity (volume or weight) by the customer directly on the dispenser. The customer may decide before he/she starts the delivery what volume or for what sum of money he/she wants to refill the storage tank. The pre-selected value may be cancelled by pressing the <**Cancel**> button at the moment when the delivery has not started yet. It is then possible to set another pre-selected value or deliver in a classic way without using the pre-selection.The dispensers can be equipped with the following two types of preselection keypads (see pictures below):

- 4-key preset keypad with 3 fixed amount or volume values (3 values of the buttons can be freely set using the service parameters of the counter)
- 12-key preset keypad that allows to enter any value for a preset amount or volume


*Picture 36 – 4buttons preset keypad*


*Picture 37 – 12buttons preset keypad*

**NOTE** *In case the pre-selection keyboards are used, it is necessary that the dispensers ate equipped with throttle valves (slow down) that ensure safe deceleration of fuel flow rate before the target preset value.*

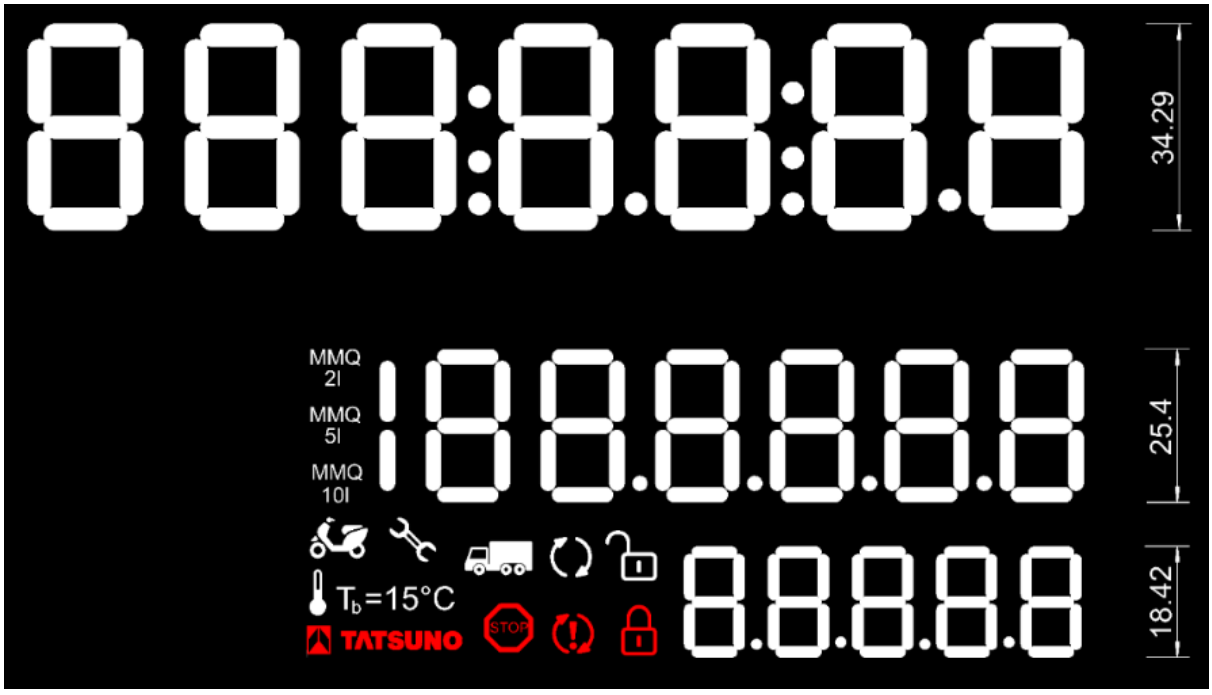
**a) Example of entering the pre-selection in Euros**

- The customer arrives to the dispenser and wants to deliver technical liquid for €10.
- a) Press the **<5€> key twice** on the 4-key preset keypad
  b) Press the **<1> <0> keys** on the 12-key preset keypad
- He/she selects the product he/she wants to deliver, lifts the delivery nozzle from the dispenser and puts it in the car tank.
- The dispenser delivers exactly the amount he/she has chosen and then stops automatically.
- The customer hangs the delivery nozzle back into the dispenser and goes to pay the sum.

**b) Example of entering pre-selection in litres**

- The customer arrives to the dispenser and wants to refill 20 litres of technical liquid.
- a) Press the **<10L> key twice** on the 4-key preset keypad
  b) Press the **<2> <0> <#> keys** on the 12-key preset keypad
- He/she selects the product he/she wants to deliver, lifts the delivery nozzle from the dispenser and puts it in the car tank.
- The dispenser delivers exactly the volume he/she has chosen and then stops automatically.
- The customer hangs the delivery nozzle back into the dispenser and goes to pay the volume.

## 5.3.5. DESCRIPTION OF THE PDEDIL V6 DISPLAY



The LCD display consists of the following parts:

| Display segment | Function | Note |
|---|---|---|
|  | Amount delivered | - for P12=0 it can display the value from € 0 to 99999.9<br>- for P12=1 it can display the value from € 0 to 999999.9 |
|  | Volume delivered | - for P12=0 it can display the value from 0 to 9999.99 L<br>- for P12=1 it can display the value from 0 to 99999.99 L |
|  | Delivered liquid unit price | - for P12=0 it can display the value from 0 to 99.99 €/L<br>- for P12=1 it can display the value from 0 to 999.99 €/L |
|  | Minimum Measured Quantity | - the display is set by parameter P91 for each delivery hose |
|  | Dispenser status indication - released for delivery / blocked | - it appears automatically when the dispenser status changes |
|  | Signalling of forced termination of delivery | - it appears after the STOP command has been received from the booth, after the preset number / preset amount has been reached or after the allowed time without delivery has been exceeded |
|  | Fault signalling or maintenance required. | - it will be displayed at each fault indication together with the fault code (see 6.2.1) |

### 5.3.6. DISPENSER OPERATION TERMINATION

**RECOMMENDATION The manufacturer recommends disabling the dispenser in the following order:**

- **Switch off the 3x400 V the power supply circuit breaker for electric motors of pumps and vacuum pumps.**
- **Switch off the 230 V circuit breaker for stabilized power supply of the electronic counter of the dispenser.**
- **Switch off the backup UPS located in the booth by a switch located at the rear panel (the green LED on the UPS turns off).**

After switching off the power supply of the electronics in the fuel station switchboard, the "OFF" message is displayed on the unit price display and the display illumination switches off. The last data is shows on the display for at least 15 minutes after the power supply disconnection. After elapsing this period and "erasing" the display the display status is saved into the counter memory and will be shown after the power supply is connected again – see the previous section.


**Now the dispenser is out of order.**

## 6. MAINTENANCE AND SERVICE

### 6.1. MAIN PRINCIPLES OF DISPENSER MAINTENANCE

- keep all functional units of the dispenser clean so that any potential unexpected defect may be easily identified and quickly removed
- continuously check all connections if the leakage of the fuel occurs, tighten and reinforce joints
- check and, if necessary, tighten the screws that secure the electric motor to the bracket
- inspect the condition of the delivery nozzle and decide on repair or replacement of the delivery nozzle, if necessary, according to the type and size of the defect
- regularly check the condition of the delivery hoses. In case of mechanical damage to the delivery hose, ensure its immediate replacement.

- check the function of the door locks and the mechanism for hanging the delivery nozzle
- care for external cleanliness of the dispenser, pay special attention to counter display window cleanliness
- regularly carry out sludge, water and other impurities removal by using a sludge pump from tanks (fuel tanks)

**CAUTION** ***It is necessary to always switch off electricity and take reliable measures against its reconnection before performing all maintenance work at mechanical, hydraulic or electrical parts.***

**CAUTION** ***Do not remove the dispenser covers during operation!***

**CAUTION** ***Do not open the distribution box lid if the dispenser is live!***

**THE OPERATOR OF THE DISPENSER IS OBLIGED TO:**

- Appoint an employee responsible for the operation and technical condition of the dispenser.
- Ensure inspections, testing, repairs, and maintenance in a professional way.
- Register documents and keep records on operation.

### 6.1.1. MAINTENANCE OF DISPENSER COVERS

Covers of the dispenser ("body parts") made of painted steel or stainless steel require regular maintenance. Pay special attention to the maintenance of such parts particularly in winter season when, due to the activity of aerosols from chloride agents created from salts used for road maintenance, the paint of unprotected body parts may be permanently damaged, or inter-crystal corrosion may appear in case of stainless-steel covers.

**Recommended maintenance of painted covers:**

⚠ Wash them with warm water at least twice per month (according to the level of fouling)

⚠ At least once a month or after each higher surface fouling with fuels – wash them with detergent, thoroughly clean the covers from salt residues, dust, and grease (according to the level of fouling) + restore the protective coating on design parts (car cosmetics).

**WARNING** ***It is forbidden to clean the painted parts of the dispenser with chlorine-based products!!! Chlorine-containing products (disinfectants such as SAVO) cause corrosion of metal parts of the dispenser.***

**Recommended maintenance of stainless covers:**

⚠ Wash them with warm water at least twice per month (according to the level of fouling)

⚠ At least once a month or after each higher surface fouling with fuels – wash them with warm water, thoroughly clean the covers from salt residues, dust, and grease (according to the level of fouling) + restore the protective coating on design parts by using a special agent for stainless sheet metal.

**RECOMMENDATION** *We recommend the following protective agents and detergents for stainless sheet metal:* ***ULTRAPUR – d*** *(producer: MMM-Group, Germany);* ***NEOBLANK spray*** *(producer: Chemische Fabrik GmbH, Hamburg, Germany);* ***ANTOX Surface Care 800 S*** *(producer: Chemetall AG, Switzerland)*

**WARNING** ***Do not wash stainless steel covers with detergent and chlorine-based products!!!***

## 6.2. TROUBLESHOOTING AND SOLVING DISPENSER DEFECTS

When you encounter a problem, first read the **"What to do if ..." table** (see Table 6) where the most frequently asked questions of the dispenser users about the problems encountered at the fuel station are described. In the event of a dispenser defect, the electronic counter that controls the dispenser displays a fault message in the form of a numeric code. The fault codes for the individual types of electronic counters are listed in the chapter 6.2.1.

***Table 6 - What to do if ...***

| |
|---|
| The dispenser does not respond to the removal of the delivery nozzle and there is no fault message on the display |
| This means that the dispenser is without the power supply, or the delivery nozzle on the dispenser is poorly hinged, or that the dispenser is blocked by the control system.<br>➢ Check proper hanging of all delivery nozzles<br>➢ Check whether pumping made on the dispenser is paid at the cash desk<br>➢ If the dispenser is in manual mode, try unlocking the dispenser with the IR remote controller (press "0")<br>➢ Turn the power supply of dispenser counter off and on.<br>➢ Check the power supply of dispenser, i.e., when the power is turned on the display must pass the test<br>➢ Check the position of the circuit-breaker for the single-phase power supply 230V of the dispenser in the main switchboard of the fuel station<br>➢ If the dispenser is connected to the control computer, the dispenser blocking may be coupled to a control system that does not release the dispenser for pumping or blocks the dispenser. Turn the power dispenser off and on and change the dispenser mode from automatic to manual. If the stand is in a manual mode, there is a fault on the control computer side. |
| When the delivery nozzle is lifted, the display is reset but the pump does not start |
| This means that the dispenser electric motor has not been started. The cause may be the power supply circuit breaker that is located in the main switchboard or the electrical motor protection disconnected inside the dispenser.<br>➢ Check the position of the circuit breaker of three-phase supply of the dispenser motors in the main switchboard of the fuel station |
| An error message "**E18**" will appear on the display of the dispenser |
| This is a dispenser fault message that indicates that communication between the dispenser and the control unit (computer, station controller, control console, etc.) has been lost.<br>➢ check the correct operation of the control unit (turning on the counter, turning on the data converter)<br>➢ check the data cable connection |
| At the beginning of the delivery, the customer removes the delivery nozzle and does not deliver (e.g., because of opening the liquid tank of the car). After a while the pump turns off. The display shows **"STOP"**. |
| This is a dispenser report that states that the delivery has been terminated due to interrupting the delivery for longer than 60 seconds. Hang the delivery nozzle and re-deliver. |
| During delivery the delivery is interrupted (e.g., changing the canisters), the pump switches off after a while. The display shows **"STOP"**. |
| This is a dispenser report that states that the delivery has been terminated due to interrupting the delivery for longer than 60 seconds. Hang the delivery nozzle and re-deliver. |
| After picking up the delivery nozzle an error message **"E30"** appears on the display of the dispenser. |
| This is a fuel dispenser failure report that states that the fuel unit price is zero.<br>➢ If the dispenser is operating in a manual mode without the remote control, then the unit price is incorrectly set. Set the fuel unit price, see chapter 4.1.8 and **Chyba! Nenalezen zdroj odkazů.**.<br>➢ If the dispenser is controlled remotely, then check the fuel unit price settings in the station controller (computer, controller). Before each delivery, the fuel price is automatically sent to the dispenser. |

### 6.2.1. ERROR MESSAGES OF THE DISPENSER

In every defect of the dispenser equipped with the PDEX5, PDEX, TBELTM or TBELTX counter, delivery is interrupted and the display shows an error message ("E" + error code). Depending on the message type, either the whole dispenser is blocked (fatal error), or only the part where the fault appeared is blocked. Important error messages are saved in the counter memory, where they can be shown using parameter Error message code history and Error message code statistics.

***Table 7 - Error message types***

| Message type | Method of dispenser blocking | Method of dispenser unblocking |
|---|---|---|
| **LOCK (operational blocking)** | Only part of the dispenser is blocked | Hanging the dispensing nozzle clears the message from the display |
| **ALERT (alert message)** | Only the faulty part of the dispenser is blocked and the error message code is saved in the history and statistics | Removing the cause of the error clears the message from the display |
| **NFAT (non-fatal error)** | Only the faulty part of the dispenser is blocked and the error message code is saved in the history and statistics | Hanging and lifting the dispensing nozzle clears the message from the display Possible to unblock the dispenser and clear the error by a remote controller or unblocking the dispenser over the data line. |
| **FATAL (fatal error)** | Blocks entire dispenser and the error message is saved in the history and statistics | The cause of the error must be removed and the dispenser counter power source must be switched off/on. |

*Table 8 – Error message codes of the dispenser equipped with the PDEX5, PDEX, TBELTM or TBELTX counter*

| Code of message | Type of message | Cause of error message | Removing error message |
|---|---|---|---|
| **OFF** | FATAL | **Power failure**<br>Power failure longer than 3-5 periods, t > 100ms | It is necessary to turn off the counter power source for approx. 10 seconds and then turn the source back on. |
| **STOP** | LOCK | **Maximum time to interrupt delivery exceeded** | Hang up the nozzle. |
| **E1** | NFAT | **Display failure.** | Turn the power supply of the dispenser off and on.<br>If the fault persists, call an authorized service centre. |
| **E2** | FATAL | **Display failure.** | |
| **E5** | ALERT | **Display failure** | |
| **E6** | NFAT | **Electromechanical totalizer failure** | |
| **E7** | NFAT | **Leakage in the hydraulic system** | |
| **E8** | ALERT | **Low fuel level in the storage tank** | After refuelling the storage tank, the error disappears. |
| **E9** | FATAL | **Repeated leakage of the hydraulic system** | Turn the power supply of the dispenser off and on.<br>If the fault persists, call an authorized service centre. |
| **E13** | FATAL | **Program error, metrological or program checksum error** | |
| **E15** | NFAT | **Maximum product flow exceeded** | |
| **E16** | ALERT | **Credit unit error** | |
| **E17** | NFAT | **Data line error** | |
| **E18** | ALERT | **Data line error** | Controlling computer is not connected, or communication cable not connected correctly. |
| **E20** | NFAT | **Power failure during delivery** | Check the dispenser power supply (power source). |
| **E21** | NFAT | **Incorrect position of switches SW1-1 and/or SW1-4** | Check the position of the switches on the processor unit. Switch SW1-1 must be in the ON position and switch SW1-4 in the OFF position. If the fault persists, call an authorized service centre. |
| **E22** | FATAL | **Data initialization.** | Turn the power supply of the dispenser off and on.<br>If the fault persists, call an authorized service centre. |
| **E23** | NFAT | **Corrupted values in the FRAM memory** | |
| **E24** | FATAL | **Corrupted values in FRAM memory** | |
| **E25** | FATAL | **Damaged values of electronic totalizers in FRAM memory** | |
| **E26** | ALERT | **TOTAL STOP button pressed** | Unlock the TOTAL STOP button, turn the dispenser power off and on again. |
| **E27** | FATAL | **Blocking the dispenser by the manufacturer** | Call an authorized service centre. |
| **E28** | NFAT | **Unauthorized service remote controller** | The service remote controller identification number is out of allowed range. Use a permitted remote controller. |
| **E29** | NFAT | **Wrong password** | Enter the correct manager or service password. |
| **E30** | LOCK | **Product unit price is zero** | If the dispenser is operating in automatic mode, set a non-zero unit price at the POS. If the dispenser operates in manual mode, set the non-zero fuel price in parameter P03 |
| **E31-40** | NFAT | **Pulse generator channel error** | Raise and hang up the delivery nozzle several times.<br>Turn the power supply of the dispenser off and on.<br>If the fault persists, call an authorized service centre. |
| **E41-50** | NFAT | **Connection error or internal pulse generator error** | |
| **E51** | NFAT | **Pump aeration** | Check the intake manifold and the fuel level in the storage tank. Turn the stand power off and on.<br>If the fault persists, call an authorized service centre. |
| **E52** | NFAT | **Pump aeration - repeatedly** | |
| **E53** | NFAT | **The dispenser door (cover) was opened** | Close all dispenser doors and covers and clear errors by entering manager or service level setup mode by the remote controller. |
| **E80** | NFAT | **The display serial number does not match** | Turn the power supply of the dispenser off and on.<br>If the fault persists, call an authorized service centre |
| **E81** | NFAT | **The serial number of the auxiliar display does not match.** | |
| **E82** | NFAT | **The serial number of the totalizer unit does not match.** | |
| **E83** | NFAT | **The serial number of the PDEINP unit does not match.** | |
| **E84** | NFAT | **The serial number of the mass meter does not match** | |
| **E87** | NFAT | **Electromechanical totalizer coil failure** | |

## 6.3. SERVICE OF DISPENSERS

- service work is carried out in accordance with the operating rules at the servicel station
- before starting the service, the dispenser must be shut down, marked visibly with the "OUT OF SERVICE" sign and the driveway must be marked with the "NO ENTRY" sign
- the dispenser must be disconnected from the power supply (switch off by the main switch on the switchboard)
- the valves on the supply line must be fully closed
- during service work, vehicles must be prevented from passing within 5 meters around
- a fire extinguisher must be available to workers
- service work may only be performed by an authorized service agent

### 6.3.1. WARRANTY AND COMPLAINTS

The contractual warranty is determined – by default, the manufacturer provides warranty for provided devices for 2 years or 1 million litres of delivered fuels. This warranty does not cover consumables. In case of any complaints the following information must be specified:

- Serial number and type – see the type label
- Exact description of the defect and circumstances of its occurrence

The complaint shall be invalid if the safety seals are broken or the device has been tampered with. Defects and deficiencies caused by incorrect or unauthorized use or maintenance are not covered by the warranty (e.g., problems caused due to the water content and impurities in the tank and hydraulic system). During operation, it is necessary to regularly check water and impurities presence and perform cleaning if necessary.

### 6.3.2. ACCESSORIES

- Installation and User Manual
- Certificate on product quality and completeness
- EU Declaration of conformity
- Data sheet of the dispenser
- Logbook of all meters installed in the dispenser
- IR controller for counter operation and setting (may be ordered)
- Foundation frame (may be ordered)

**Spare parts catalogue**

This document is intended for service companies and service engineers only.

## 6.3.3. EU DECLARATION OF CONFORMITY FOR ADBLUE DISPENSERS

# EU DECLARATION OF CONFORMITY

1. Product model: BMP 4011.OWL /AdB

   Serial number: 12345/22

2. Name and address of the manufacturer: TATSUNO EUROPE a.s., Pražská 2325/68, Blansko, 678 01, Czech Republic, Reg.No.: 26221454, Tax Reg.No.: CZ26221454, www.tatsuno-europe.com

3. This declaration of conformity is issued under the sole responsibility of the manufacturer

4. Object of the declaration: **Electronic AdBlue® dispenser type series SHARK BMP5xx.Sxx/Adb or OCEAN BMP40xx.Oxx/AdB**

   Purpose and scope of product use: The equipment serves for dispensing of AdBlue® liquid (32.5% solution of urea, water and other admixtures in acc. ISO 22241 and DIN 70070)

5. The object of the declaration described above is in conformity with relevant Union harmonisation legislation:
   Directive 2014/34/EU (ATEX), issued 26.2.2014
   Directive 2014/30/EU (EMC), issued 26.2.2014
   Directive 2014/32/EU (MID), issued 26.2.2014

6. References to relevant harmonised standards used or references to other technical specifications in relation to which conformity is declared:
   EN IEC 60079-0:2018 (ed5) Explosive amospheres - Part 0: Equipment - General requirements
   Protection type: Ex **II 3G IIA T3 Gc**
   OIML R117-1:2019 - Dynamic measuring systems for liquids other than water

7. Notified body:

| Name, number and address | Performed: | Issued certificate: |
|---|---|---|
| Physical-Technical Testing Institute, s.p. NB 1026, Pikartská 1337/7, 716 07 Ostrava-Radvanice, Czech Republic | EU Type Examination Certificate in acc. Module B of Directive 2014/34/EU | FTZÚ 21 ATEX 0048X |
| Czech Metrology Institute, NB 1383, Okružní 31, 638 00 Brno, Czech Republic | EU Type Examination Certificate in acc. Module B of directive 2014/32/EU | TCM 141/07-4492 |
| | Certificate Of Quality System in acc. Module D of Directive 2014/32/EU | 0119-SJ-A006-07 |

8. Additional information

Signed for on behalf of: Milan Berka, QMS manager
Place and date of issue: Blansko, 23.01.2022

*Form Version: 09/2021* *Document No.: DC 12345/22*

## 6.3.4. EU DECLARATION OF CONFORMITY FOR WSE DISPENSERS

# EU DECLARATION OF CONFORMITY

1. Product model: BMP 4011.OWL /WSE

   Serial number: 12345/22

2. Name and address of the manufacturer: TATSUNO EUROPE a.s., Pražská 2325/68, Blansko, 678 01, Czech Republic, Reg.No.: 26221454, Tax Reg.No.: CZ26221454, www.tatsuno-europe.com

3. This declaration of conformity is issued under the sole responsibility of the manufacturer

4. Object of the declaration: **Electronic dispenser of windshield washer fluid type series OCEAN BMP40xx.Oxx/WSE**

   Purpose and scope of product use: The equipment serves for dispensing windshield washer fluid (WSE) - solution of water, detergents, ethanol and other admixtures. Maximum content of ethanol in the agent is limited to 85%

5. The object of the declaration described above is in conformity with relevant Union harmonisation legislation:
   Directive 2014/34/EU (ATEX), issued 26.2.2014
   Directive 2014/30/EU (EMC), issued 26.2.2014
   Directive 2014/32/EU (MID), issued 26.2.2014

6. References to relevant harmonised standards used or references to other technical specifications in relation to which conformity is declared:
   EN 13617-1:2012 - Petrol filling stations - Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units
   Protection type: Ex II 2G IIA T3
   OIML R117-1:2019 - Dynamic measuring systems for liquids other than water

7. Notified body:

| Name, number and address | Performed: | Issued certificate: |
|---|---|---|
| Physical-Technical Testing Institute, s.p. NB 1026, Pikartská 1337/7, 716 07 Ostrava-Radvanice, Czech Republic | Documentation receipt acknowledge-ment in acc. article 13(1), point (b)(ii) of Directive 2014/34/EU | A565-18 |
| | Quality Assurance Notification in acc. Article 21 and Annex IV and VII of Directive 2014/34/EU | FTZÚ 02 ATEX Q030 |
| Czech Metrology Institute, NB 1383, Okružní 31, 638 00 Brno, Czech Republic | EU Type Examination Certificate in acc. Module B of directive 2014/32/EU | TCM 141/13-5085 |
| | Certificate Of Quality System in acc. Module D of Directive 2014/32/EU | 0119-SJ-A006-07 |

8. Additional information

   Signed for on behalf of: Milan Berka, QMS manager
   Place and date of issue: Blansko, 21.01.2022

*Form Version: 06/2020* *Document No.: DC 12345/22*

**NOTES:**