

OPERATING MANUAL

**High-speed pumping and dispensing unit for diesel  
fuel  
vortex gas separator.**

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**EAC**

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# 1 DESCRIPTION AND PRODUCT OPERATION

## 1.1 Purpose of the product

The high-speed diesel fuel transfer and dispensing unit is designed for the transfer (filling/unloading) and departmental dispensing of fuel to vehicles using fuel cards. The unit is equipped with everything necessary for refueling using fuel cards, with fuel dosing and data transfer to 1C, in accounting systems and GPS monitoring.

The high-speed pumping and dispensing unit for diesel fuel can be use as a filling station pump to dispense fuel according to limits.

Potential explosive zones for the use of the high-speed pumping unit, categories and groups of explosive mixtures of gases and vapors with air - in accordance with the requirements of the Electrical Installation Rules (EIR) and other regulatory and technical documents that determine the applicability of electrical equipment in explosive environments.

The high-speed pumping and dispensing unit for diesel fuel is related to restored and repaired products.

## 1.2 Technical specifications

1.2.1 The main parameters of the high-speed pumping unit are indicated in table 1.

1.2.2 Terms of Use:

- ambient air temperature, °C ..... from minus 40 to plus 50;
- relative humidity, % ..... from 30 to 100 at 25°C.

1.2.3 Temperature of dispensed fuel:

– for diesel fuel..... from minus 40 (or the cloud point or crystallization point of the fuel) to plus 50°C.

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Table 1

Parameter	Meaning
Overall dimensions: D×W×H, cm	70x140x155
Weight, kg	400
Nutrition, B	220/380
Fuel type	diesel
Accuracy class, %	0.25
Filling speed, liters per minute	up to 300
Pressure, meter	up to 12
Inlet and outlet connection diameter, mm	50
Type of filter to be installed	reusable fuel filter

#### 1.2.4 Reliability indicators:

- mean time between failures of the module is not less than 7000 hours;
- average time to restore functionality is 4 hours;
- the total average service life of the module is at least 12 years.
- The criteria for the limit state are determined by the limit state of the volume

meter and the module pump.

### 1.3 Compound products

1.3.1 High-speed pumping and dispensing unit for diesel fuel postcomes assembled.

1.3.2 The basic delivery set of the high-speed pumping unit is given in Table

2.

Table 2

Item No.	Name	Quantity
1	High-speed diesel fuel pumping and dispensing unit:	
1.1	Centrifugal pump	1 pc.
1.2	Ex-air Separator, DN50	1 pc.
1.3	PPO-40 counter	1 pc.
1.4	Coarse filter DN50	1 pc.
1.5	Viton 2B 21-50 (220) solenoid valve	1 pc.
1.6	USS-B-25	1 pc.
1.7	Fuel module EFL 5.0	1 pc.

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1.8	Grounding and control device UZA-2MK	1 pc.
1.9	Expansion tank to the gas separator	1 pc.
2	Operating documentation:	
2.1	Passport 45.00.00.001.PS	1 copy
2.2	User manual	1 copy

#### 1.4 Design and operation

The high-speed pumping and dispensing unit for diesel fuel can be produced in two versions:

- on a supporting frame;
- in a closed form (house).

The design of the high-speed pumping and dispensing unit for diesel fuel is protected from external climatic influences.

The general appearance of the high-speed pumping unit is shown in Figure 1.

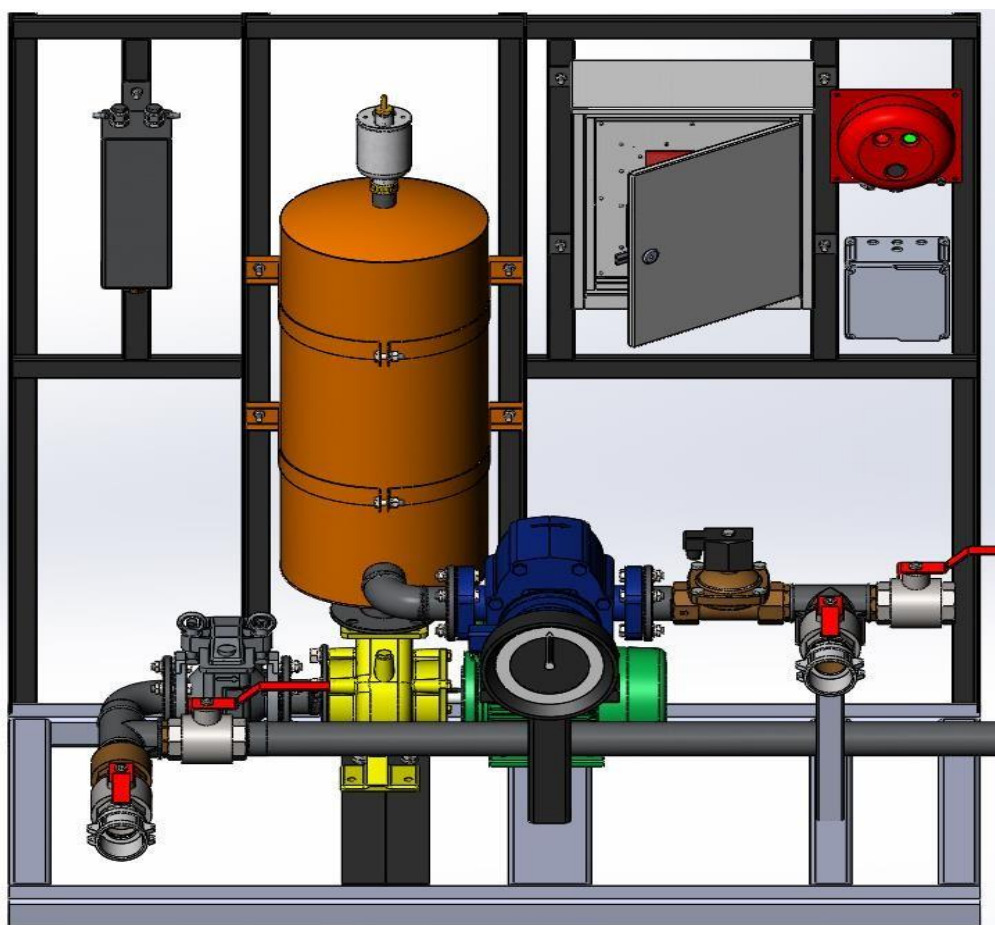


Fig. 1

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This set of equipment allows to produce three variants

Fuel pumping with the ability to set the volume of fuel spilled, as well as the ability to separate foam and air from the fuel before the meter:

1. Receiving fuel from a fuel tanker into a container.
2. Dispensing fuel from a tank to a mobile refuelling truck.
3. Transferring fuel from a tanker to a tanker. The operating principle of a high-speed pumping unit for receiving fuel from

The procedure for transferring diesel fuel from an oil tanker to a tank is as follows: before you begin pumping diesel fuel into a tank, you must ground the fuel tanker using the grounding and control device UZA-2MK.

Then connect the oil tanker to the fuel pumping unit using a camlock, open the inlet and outlet ball valves on the unit and set the EFL 5.0 module the required value for pumping diesel fuel.

Fuel through a check valve, coarse filter with a pump

The gas is fed to the PPO-40 meter by the gas separator, and then pumped into the tank by the USS-B-25.

When pumping fuel from one tanker to another

Both fuel tankers must be grounded.

A fuel dispensing control and monitoring unit with data transmission to metering and monitoring systems can be used as an option. In addition to the standard display and buttons, this unit includes a keypad for entering fuel dosages and a plastic card reader for identification.

recipient of fuel cards and a satellite monitoring device for recording fuel dispensing.

### 1.5 Verification

During operation, but at least once a year, the high-speed diesel fuel pumping and dispensing unit must be calibrated. Upon leaving the manufacturer's plant, the unit is adjusted and calibrated. During the next calibration, based on the results of filling the reference measuring tank,

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in accordance with the verification methodology, a conclusion is made about the necessity

adjusting the meter readings so that the value of the basic relative error of the pumping unit does not exceed  $\pm 0.25\%$ .

In case the main relative error of the pumping unit goes beyond the limits specified above, it is necessary to calibrate (adjust) the pumping unit.

## 1.6 Marking and sealing

1.6.1 At each high-speed pumping and dispensing unit of diesel fuel, a plate must be securely attached in a visible place, made in accordance with GOST 12969-67, GOST 12971-67 and containing:

- name and (or) trademark of the manufacturer;
- equipment designation;
- serial number;
- supply voltage;
- year of manufacture;
- designation of technical conditions;
- explosion protection marking;
- conformity mark;
- technical control stamp.

1.6.2 The following must be applied to the reading device:

- unit of fuel measurement;
- basic error.

1.6.3 Marking of transport containers contains handling signs "Caution", "Top", "Center of gravity", main, additional and informational inscriptions.

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## 1.7 Package

1.7.1 Preservation of the high-speed pumping unit - for products of group II-1.

1.7.2 Each high-speed pumping unit is packaged in containers according to the manufacturer's approved drawings. Units intended for hard-to-reach areas are packaged in containers.

1.7.3 It is permissible to pack the high-speed pumping unit in returnable and other containers according to the manufacturer's drawings.

1.7.4 Packaging must prevent movement.

module inside the packaging and ensure the transportation of the unit without damage by all modes of transport in accordance with the rules in force for the specific mode of transport.

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- this RE.

## 2.2 Preparing the high-speed pumping unit for use

2.2.1 When preparing a high-speed pumping unit for use, safety requirements in force at the facility must be followed.

2.2.2 Unpack the unit. Conduct a visual inspection. High-speed unit  
The pumping and dispensing of diesel fuel must not have any mechanical damage.

2.2.3 Check the completeness for compliance with clause 1.3.2.

2.2.4 The following pipelines are connected to the high-speed pumping unit:

- for fuel;
- for power cables.

2.2.5 Before installation, the pipeline must be thoroughly flushed and pressure tested. It is recommended to fill the pipeline with fuel before connecting it to the monoblock.

2.2.6 Installation of electrical equipment for the high-speed pumping unit carry out in accordance with the electrical connection diagrams.

2.2.7 A common grounding circuit is required for electrical equipment, Protection against static electricity, direct lightning strikes, and secondary lightning effects. Each part of the electrical installation that requires grounding is connected to the grounding network via a separate conductor.

**ATTENTION!DO NOT TURN ON THE DIESEL FUEL TRANSFER AND DISPENSING UNIT WITHOUT GROUNDING!**

2.2.9 To carry out a test run, it is necessary to pump at least 200 liters of fuel through the unit and ensure that the high-speed pumping unit, volume meter, and dispensing valve are working properly. You should check the places connections and seals.

After a test run and de-preservation, it is necessary to remove the inlet filter of the unit, wash it and blow it out with compressed air.

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4 - parameter number -

6 - parameter number +

7 - parameter value - 9 -

parameter value +

0 - set default value

\* - exit to the main menu

When switching between groups of parameters, it will be displayed

"PAR X", where X is the group type.

## 2.7 Description of parameters

## 2.8 Group A parameters

Параметр	Описание	Значение по умолчанию
A 1	количество импульсов на 40 литров	4000
A 2	Параметр для перелива счетчика 1 ед=10мл . Устанавливается как конечный недолив	0
A 3	Параметр для недолива счетчика 1 ед=10мл . Устанавливается при начальной установке дозы как начальное отрицательное смещение	0
A 4	1ЕД=10МЛ Задается смещение выключения основного потока, и переключения на малый	50
A 5	Количество литров, которые можно раздать в режиме «полный бак» 1 ед=1л	10000
A 6	Максимальное значение ДУТа при тарировке. При достижении этого значения – тарировка останавливается.	4095
A 7	Величина емкости забора топлива 1 ед=1л	190

A 8		
A 9		
A 10	Пароль	

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## 2.9 Parameters group B

Параметр	Описание	Значение по умолчанию
B 1	Тип счетного датчика 0-USS 1-GERKON 2-DO10 3-EX	0
B 2	Время ожидания импульсов , сек	5
B 3	Величина одного выходного импульса 0- 1L 1- 0.1L 2-0.01L	1
B 4	Длительность выходного импульса *0.2ms	20
B 5	Адрес LLS RFID	1
B 6	Адрес LLS тотального счетчика	2
B 7	Адрес LLS величина успешно произведенной раздачи	3
B 8	Адрес LLS ДУТа «А» . Используется при тарировке.	0
B 9	Адрес LLS ДУТа «В» . Используется при тарировке.	1
B 10	Адрес LLS ДУТа «С» . Используется при тарировке.	2
B 11	Адрес LLS ДУТа «D» . Используется при тарировке.	3
B 12	Время между двумя проливами при тарировке , сек	50
B 13	Величина порции при тарировке. 1 ед=1л	10
B 14	Номер ДУТа, по которому происходит контроль конца бака. 0-без контроля по показаниям ДУТов 1- ДУТ «А» 2- ДУТ «В» 3- ДУТ «С» 4- ДУТ «D» 5-Все ДУТы. Остановка тарировки будет происходить, если хотя бы один ДУТ превысит заданное значение.	0
B 15	Время ожидания последних импульсов счетчика, сек. Этот параметр нужен в случаях возможных ложных импульсов счетчика, когда раздача топлива уже завершена. Значение 0 – счетчик всегда будет активным .	0

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## 2.10 Group C parameters

Параметр	Описание
C 1	1-Режим добавления карт
C 2	1-Режим установки мастер карты
C 3	1-Режим удаления карт
C 4	1-удаление всех карт. Параметр A10 должен быть установлен пароль от случайного нажатия - 6755
C 5	1-Отправка текста тарифовки ДУТа «А» по каналу ETR RS485
C 6	1-Отправка текста тарифовки ДУТа «В» по каналу ETR RS485
C 7	1-Отправка текста тарифовки ДУТа «С» по каналу ETR RS485
C 8	1-Отправка текста тарифовки ДУТа «D» по каналу ETR RS485
C 9	
C 10	
C 11	
C 12	
C 13	
C 14	
C 15	
C 16	Запуск обновления программы терминала. Параметр A10 должен быть установлен пароль от случайного нажатия - 8934
C 17	1-режим тарифовки 0 - стандартный режим
C 18	1-Разрешение раздачи если карта находится в базе. Автономный режим – Раздача топлива разрешается, если есть разрешение либо от трекера, либо от карты, которая находится в базе прибора. 0- карта не влияет на разрешение раздачи топлива.
C 19	

2.10.1 Parameters C 1-16 are not remembered; they are used to launch actions. The default is 0, meaning inactive. When an action is launched, it can be set to 1 for a short time, meaning active.

2.10.2 Parameters C 17-32 are the parameters that are remembered.

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### 3 REQUIREMENTS SECURITY

The high-speed pumping and dispensing unit for diesel fuel must comply with the requirements of GOST 12.2.003-91, GOST 12.2.007.0-75, TR CU 020/2011, TR CU 012/2011 and the "Rules for the Installation of Electrical Installations" (PUE), "Rules for the Technical Operation of Electrical Installations of Consumers" (PTE).

#### 3.1 Explosion safety requirements

3.1.1 Electrical equipment required to perform all functions of the high-speed pumping and dispensing unit for explosion-proof diesel fuel of group II design for possible explosive zones, categories and groups of explosive mixtures of gases and vapors with air - in accordance with GOST 30852.9-2002, GOST IEC 60079-10-1-2011, the requirements of the "Electrical Installation Rules" (EIR) and other regulatory and technical documents determining the applicability of electrical equipment in explosive environments.

3.1.2 Selection, placement of electrical equipment and grounding devices in accordance with the requirements of GOST 30852.9-2002, GOST IEC 60079-10-1-2011, imposed on explosion-proof electrical equipment.

#### 3.2 Ensuring safety during installation

3.2.1 Only persons who are allowed to install the high-speed pumping unit must be those who have read this RE. During installation, the following requirements must be observed:

- "Electrical Installation Rules" (EIR);
- "Rules for the technical operation of electrical installations of consumers" (PTEEP).

**ATTENTION!** It is prohibited to carry out any installation work when the power supply is on!

3.2.2 The high-speed diesel fuel pumping and dispensing unit must be grounded by connecting the grounding conductor to the grounding bolt.

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### 3.3 Ensuring safety during operation

Safety of the high-speed pumping unit during operation provided by:

- compliance with the requirements of this RE, the "Rules for the Installation of Electrical Installations" (PUE), "Rules for the Technical Operation of Electrical Installations" consumers" (PTEEP) and other documents in force in this branch of industry;
- implementation of reliable protective grounding of the device, compliant with the requirements of the Electrical Installation Code;
- compliance with the requirements for resistance and electrical strength of insulation of current-carrying parts;
- reliability of detachable connections;
- regular daily external examinations;
- periodic checks of the technical condition and serviceability of electrical communication lines and connectors, availability and serviceability protective grounding;
- checks of the presence and serviceability of seals.

### 3.4 Ensuring safety during repairs

3.4.1 During repairs, the requirements of the "Rules for the Installation of Electrical Installations" (PUE), "Rules for the Technical Operation of Electrical Installations of Consumers" (PTEEP) and other documents in force in this industry sector must be met.

3.4.2 Persons with at least Group III approval for electrical installations up to 1000 V and familiar with this manual are allowed to work with the module.

3.4.3 Dismantling of the unit is permitted only after disconnecting the power supply voltage of the EFL 5.0 module.

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## 5 CURRENT REPAIR

### 5.1 General instructions

5.1.1 Routine repairs of the module must be entrusted to qualified personnel.

5.1.2 After repair operations that do not affect explosion protection electrical equipment, explosion protection marking does not need to be changed in accordance with GOST 30852.18-2002.

5.1.3 Pump repair:

- Replacement of pump blades.
- Replacing the pump sealing cuff.

5.1.4 After eliminating faults and damage, adjustments are made (adjustment) of the volume meter.

5.1.5 The correctness of the adjustment (alignment) is determined using standard measuring devices of the 2nd category GOST 8.400-2013.

### 5.2 Security measures

5.2.1 When carrying out repair work, it is necessary to comply with the safety requirements set out in this manual.

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## List of referenced documents

Designation of ND	Name of the regulatory document
GOST 8.400-2013	State Standard Measurement System. Metal Standard Measuring Tanks.
GOST 9.014-78	ESZKS. Temporary anti-corrosion protection of products. General requirements
GOST 12.2.003-91	Occupational Safety Standards. Industrial Equipment. General Requirements
GOST 12.2.020-76	SSBT. Explosion-proof electrical equipment. Terms and opredivisions. Classification. Marking
GOST 12.2.007.0-75	Occupational Safety Standards. Electrical Products. General Requirements
GOST 12.3.009-76	Occupational Safety Standards. Loading and Unloading Operations. General Requirements
GOST 2991-85	Non-collapsible wooden boxes for cargo weighing up to 500 kg. General technical specifications
GOST 12082-82	Plank lathing for loads weighing up to 500 kg. General technicallyski conditions
GOST 12969-67	Machine and Instrument Plates. Technical Requirements
GOST 12971-67	Rectangular plates for machines and devices. Dimensions
GOST 14192-96	Cargo marking
GOST 15150-69	Machines, devices, and other technical products. Designs for various climatic regions. Categories, conditions. operation, storage and transportation in terms of exposure to climatic factors of the external environment
GOST 15846-2002	Products shipped to the Far North regions and equatedareas adjacent to them. Packaging, labeling, transportation and storage
GOST 30852.9-2002	Explosion-proof electrical equipment. Part 10. Classificationtion of explosive zones
GOST 30852.13-2002	Explosion-proof electrical equipment. Part 14. Elektroustnew buildings in hazardous areas (except underground workings)
GOST 30852.18-2002	Explosion-proof electrical equipment. Part 19. Repair and testing of electrical equipment used in explosive areas gas environments (except for underground workings or applications, related to the processing and production of explosives)
GOST IEC 60079-10-1-2011	Explosive atmospheres. Part 10-1. Zone classification. Explosionhazardous gas environments
Electrical Installation	Electrical Installation Rules
PTEEP	Rules for the technical operation of electrical installations consumers
TR CU 020/2011	Electromagnetic compatibility of technical equipment
TR CU 012/2011	"On the safety of equipment for work in explosive environments"

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