

Test Report:	№ 900547
Report date:	23.09.2026
Manufacturer:	Grundfos Pumps (Suzhou) Ltd Китай, No. 72, Qingqiu Street, Suzhou, Jiangsu, 215126, China.
Sample name (trade mark/model/type/article):	Pumps
Standard(s) establishing requirements and/or test methods, amendment details:	TR CU 010/2011 On Safety of Machinery and Equipment, TR CU 020/2011 "Electromagnetic Compatibility of Technical Equipment"
The test results presented in this report apply only to the submitted sample(s). Reproduction or republication of this test report without permission of the testing laboratory is not permitted.	

Test conditions:	
Ambient temperature, °C	20 ± 5
Relative air humidity, %	30 ÷ 80
Atmospheric pressure, kPa	84 ÷ 115

Test results

TR CU 020/2011 "Electromagnetic Compatibility of Technical Equipment"

Measurement of radio disturbance interference (RDI). GOST IEC 61000-6-4-2016.

Unsymmetrical disturbance voltage (0.15-30 MHz range):

Frequency, MHz	Quasi-peak values		Average values	
	Permissible disturbance level, dB μ V, max.	Disturbance level, dB(uV)	Permissible disturbance level, dB μ V, max.	Disturbance level, dB(uV)
0,15	66,0	44	56,0	37
0,16	65,5	41	55,5	35
0,26	61,1	39	51,1	32
0,38	58,2	35	48,2	30
0,50	56,0	28	46,0	28
1,22	56,0	24	46,0	22
2,54	56,0	21	46,0	19
5,00	56,0	19	46,0	15
7,84	60,0	16	50,0	14
16,33	60,0	14	50,0	12
22,15	60,0	11	50,0	9
30,00	60,0	9	50,0	7

Radio disturbance power.

Frequency, MHz	Quasi-peak values		Average values	
	Permissible disturbance level, dB(pW), max.	Disturbance level, dB(pW)	Permissible disturbance level, dB(pW), max.	Disturbance level, dB(pW)
30,0	45,0	24,3	35,0	15,0
108,5	47,3	23,5	37,3	14,4
198,5	51,1	22,8	41,1	13,8
300,0	55,0	22,2	45,0	13,2
433,0	55,0	21,7	-	-
515,7	55,0	21,1	-	-
1000,0	55,0	20,6	-	-

GOST 30804.6.2-2013 Immunity to electrostatic discharge

Type of disturbance	Severity level	Voltage, kV	Number of applications	Required performance	Test result
Contact discharge	2	4	10 positive / 10 negative	B	A
Air discharge	3	8	10 positive / 10 negative	B	A

Immunity to high-energy microsecond surge disturbances.

Type of disturbance	Severity level	Impulse voltage amplitude, kV ±10%	Required performance	Test result
Microsecond surges, line-to-line	2	±1,0	B	A

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

Microsecond

3

$\pm 2,0$

B

A

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

surges, line-to-earth

Immunity to electrical fast transient/burst disturbances.

Type	Severity	Amplitude test exposure, kV	Pulse repetition frequency, kHz	Required performance	Result tests
Pulse disturbance, line-to-line	2 1 5 B A				

Immunity to conducted disturbances induced by radio-frequency fields.

Type	Severity severity level	Range frequency / exposure, MHz	Test level voltage, V (dB/μV)	Required performance	Result tests
Conducted disturbance induced by RF fields (via coupling/decoupling network)	1	From 0.15 to 80 1 (120) A A			

Immunity to dynamic changes of supply voltage

--	--	--	--	--	--

voltage

voltage

voltage

Immunity to radio-frequency electromagnetic field.

Type	Severity severity level	Range frequency / exposure, MHz	Field strength test field, V/m (dB/μV/m)	Required performance	Test result
Radio-frequency electromagnetic field	2	From 80 to 1000 3(130) A A	1000		

IMMUNITY. GOST 30804.6.2-2013

Performance criteria for technical devices during immunity testing.

Criterion A - during and after the disturbance exposure, the equipment shall continue to operate as intended. Degradation of performance is not permitted

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

compared with the performance level specified by the manufacturer for intended use, nor is loss of function permitted.

Criterion B – after termination of the disturbance, the device shall continue to operate as intended. No degradation of performance below the level specified by the manufacturer for intended use, or loss of function, is permitted.

Criterion C - temporary loss of function is permitted provided that the function is self-recovering or can be restored by user control operations.

Immunity to electrostatic discharge.

The test results for compliance with electrostatic discharge immunity requirements according to GOST 30804.6.2-2013, under test conditions according to GOST 30804.4.2-2013 (direct ESD contact and air discharge and indirect ESD contact discharge), are given in Table 4.

Ports of application: enclosure, control buttons, horizontal and vertical coupling planes. Table 4

Type of disturbance	Voltage, kV	Number of applications	Required performance	Result of compliance
Contact discharge	4	10 positive 10 negative	B	Complies
Air discharge	8	10 positive 10 negative	B	Complies

Immunity to electrical fast transient/burst disturbances (EFT/B).

The test results for compliance with electrical fast transient/burst immunity requirements according to GOST 30804.6.2-2013, under test conditions according to GOST 30804.4.4-2013, are given in Table 5.

Ports of application: AC mains power port. Table 5

Type of disturbance	Voltage pulse amplitude kV $\pm 10\%$	Required performance	Compliance result
Electrical fast transient/burst (EFT/B)	$\pm 2,0$	B	Complies

Immunity to conducted disturbances induced by radio-frequency fields in the frequency range from 0.15 to 80 MHz.

The test results for compliance with immunity requirements to conducted disturbances induced by radio-frequency fields according to GOST 30804.6.2-2013, under test conditions according to STB IEC 61000-4-6-2011, are given in Table 6.

Ports of application: AC mains power port. Table 6

Type of disturbance	Frequency range frequency	Level	Required performance criterion	Result of
	exposure, MHz	test voltage, V (dB/uV)	performance	compliance
Conducted disturbances induced by radio-	0,15 - 47, 68 - 80	10(140)	A	Complies

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

frequency electromagnetic fields. AM 80%, 1 kHz	47 - 68	3(130)	A	Complies
--	---------	--------	---	----------

Immunity to radio-frequency electromagnetic field.

The test results for compliance with radio-frequency electromagnetic field immunity requirements in the frequency range from 80 to 1000 MHz according to GOST 30804.6.2-2013, under test conditions according to GOST 30804.4.3-2013, are given in Table 7.

Port of application: enclosure port. Table 7

Type of disturbance	Frequency range of exposure, MHz	Test field strength, V/m (dB/uV/m)	Required performance	Compliance result
Radio-frequency electromagnetic field. AM 80%, 1 kHz	80 -1000*	10(140)	A	Complies
	1400 - 2000	3(130)	A	Complies
	2000 - 2700	1(120)	A	Complies

**Excluding broadcast bands 87-108, 174-230 and 470-790 MHz, where the electric-field strength shall be 3 V/m.*

Immunity to high-energy microsecond surge disturbances.

The test results for compliance with high-energy microsecond surge immunity requirements according to GOST 30804.6.2-2013, under test conditions according to STB IEC 61000-4-5-2006, are given in Table 8.

Ports of application: AC mains power port. Table 8

Type of disturbance	Voltage pulse amplitude kV $\pm 10\%$	Required performance	Compliance result
Surge, line-to-line	$\pm 1,0$	B	Complies
Surge, line-to-earth	$\pm 2,0$	B	Complies

Immunity to dynamic changes of supply voltage.

The test results for compliance with immunity requirements to voltage dips, interruptions and voltage variations according to GOST 30804.6.2-2013, under test conditions according to GOST 30804.4.11-2013, are given in Table 9.

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

Ports of application: AC mains power port. Table 9

Type of dynamic mains-voltage variation	Test exposure			Required performance criterion	Result of compliance
	Test voltage as % of Unom	Amplitude of dynamic voltage variation as % of Unom	Duration of dynamic voltage variations, cycles		
Voltage dips	0	100	1	B	Complies
	40	60	10	Complies	Complies
	70	30	25	Complies	Complies
Interruptions voltage	0	100	250	Complies	Complies

*** Voltage changes at zero crossing.**

Immunity to power-frequency magnetic field.

The test results for compliance with power-frequency magnetic field immunity requirements according to GOST 30804.6.2-2013, under test conditions according to STB IEC 61000-4-8-2011, are given in Table 10.

Port of application: enclosure port. Table

10

Type of exposure	Test level	Required performance	Result of compliance
Power-frequency magnetic field (PFMF)	30 A/m, 50 Hz	A	Complies

TR CU 010/2011 "On Safety of Machinery and Equipment" **GOST 12.2.007.0-75**

Clause	Requirements / tests	Conclusion
2	Classes of electrical products according to the method of protection against electric shock	—
2.1	Five protection classes are established: 0, 01, I, II, III.	Complies
3	Safety requirements for the electrical product and its parts	—
3.1	General requirements	—
3.1.1	Availability of noise and vibration protection means	Complies
3.1.2	Products generating electromagnetic fields shall have protective elements (screens, absorbers, etc.)	
3.1.3	Limitation of harmful radiation (thermal, optical, X-ray, etc.) and specification of protective elements in the technical conditions Requirements for means limiting the intensity of radiation and ultrasound	
3.1.4	Availability of design elements protecting against accidental contact with moving, live and heated parts	Complies
3.1.5	Prevention of unintentional switching on and off	Complies
Clause	Requirements / tests	Conclusion

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

3.1.6	The arrangement and connection of product parts shall provide convenient and safe observation of the product during assembly, inspection, testing and maintenance.	Complies
	Where necessary, products shall be equipped with inspection windows, hatches and local lighting facilities	Complies
3.1.7	The product design shall prevent incorrect connection during installation	Complies
	The design of socket outlets and plugs for voltages above 42 V shall differ from that for voltages of 42 V and below.	Complies
3.1.8	Where necessary, products shall be equipped with signaling devices, inscriptions and plates	Complies
	For connection by means of a plug and socket, the power source shall be connected to the socket and the receiver to the plug.	Complies
	Warning signals, inscriptions and plates shall indicate the energized state, presence of voltage, insulation breakdown, operating mode, prohibition of access without appropriate measures, temperature rise of individual parts above permissible values, operation of protective devices, etc.	Complies
	Signs used for warning plates and signaling shall comply with GOST 12.4.026 and be placed on products in locations convenient for viewing	Complies
3.1.9	Availability of a device for lifting, lowering and holding during installation work for products and components weighing more than 20 kg	
	The form, dimensions and load capacity of lifting devices shall comply with GOST 4751-73 or GOST 13716-73. Other lifting devices ensuring safe installation and rigging operations may be used	
3.1.10	Fire safety of the product and its elements shall be ensured in both normal and emergency operating modes	Complies
3.2	Insulation requirements	—
3.2.1	Selection of insulation for the product and its parts is determined by the heat-resistance class, supply voltage level and external climatic factors.	Complies
	The dielectric strength and insulation resistance shall be specified in standards and technical specifications for specific product types	Complies
	For products operating at voltages not exceeding 12 V AC and 36 V DC, it is permissible not to indicate dielectric strength and insulation resistance values in the above documents.	
3.2.2	Insulation of parts accessible to touch shall provide protection against electric shock	Complies
	Coating live parts with lacquer, enamel or similar materials is not sufficient protection against direct contact with such parts or against arc transfer from live parts to other metal parts	Complies
3.3	Protective earthing requirements	—
3.3.1	Availability of an earthing element on equipment except Class II and Class III equipment	Complies
	Products that may be manufactured without an earthing element and not earthed	
3.3.2	Welded or threaded connections for attaching the earthing conductor	Complies
	By agreement with the customer, the earthing conductor may be connected by soldering or crimping using a special tool, fixture or machine.	
3.3.3	Compliance of the earthing terminal with GOST 21130-75	Complies
Clause	Requirements / tests	Conclusion

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

	It is not permitted to use bolts, screws or studs for earthing that act as fastening parts	Complies
3.3.4	The bolt (screw, stud) for attaching the earthing conductor shall be made of corrosion-resistant metal or coated with a metal protecting it from corrosion, and the contact area shall not have surface paint	Complies
3.3.5	The earthing bolt (screw, stud) shall be placed on the product in a safe and convenient location for connection of the earthing conductor	Complies
	An indelible earthing symbol shall be placed near the point where the earthing conductor is to be connected in accordance with 3.3.2.	Complies
	The dimensions and method of application of the symbol shall comply with GOST 21130-75, and for luminaires with GOST 17677-82	Complies
	A contact area for connection of the earthing conductor shall be provided around the bolt (screw, stud). The area shall be protected against corrosion or made of corrosion-resistant metal and shall have no surface coating	Complies
	Measures shall be taken to prevent loosening of contacts between the earthing conductor and the earthing bolt (screw, stud), such as locknuts and spring washers	Complies
	Diameters of the bolt (screw, stud) and contact area	Complies
3.3.6	Use of washers	Complies
	Washer material shall meet the same requirements as the earthing bolt (screw, stud) material.	Complies
3.3.7	The product shall ensure electrical connection of all accessible non-current-carrying metal parts that may become live with the earthing elements.	Complies
	Earthing resistance max. than 0.1 Ohm	Complies
3.3.8	Availability of an earthing element on enclosures, frames, supports, etc.	Complies
3.3.9	Independent connection of individual product parts to the earthing element	Complies
3.3.10	Earthing of product parts mounted on moving parts	Complies
3.3.11	Position of the metal enclosure earthing element inside or outside the enclosure	Complies
3.3.12	Electrical contact between detachable and earthed parts of the equipment	
3.4	Requirements for controls	—
3.4.1	Controls shall be provided with inscriptions or symbols	Complies
3.4.2	In automatic operating mode, manual controls shall be disabled	
3.4.3	Use of manual controls in an order other than specified shall not create a hazard	Complies
	Products having several controls for the same operation from different stations shall prevent simultaneous control from different stations	
	Emergency stop buttons shall be provided without such interlocking.	Complies
3.4.4	Products with several emergency stop buttons shall use latching buttons	
	Buttons without forced return may be used where they act on power elements that allow voltage to be applied only after removal of the manual interlock	
3.4.5	Controls latched in a set position shall have a position indicator	Complies
3.4.6	Metal shafts of manual drives and similar parts shall be insulated from live parts and have electrical contact with earthed parts	
Clause	Requirements / tests	Conclusion

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

3.4.7	Surface temperature of controls shall not exceed 40°C For equipment in which the internal temperature is equal to or below 100°C, the surface temperature shall not exceed 35°C. If these temperatures cannot be achieved for technical reasons, measures shall be provided to protect personnel from overheating	Complies
3.4.8	The stop control shall be red The start (switch-on) control shall be achromatic (black, grey or white). It may also be green A control used alternately to stop or start the product shall be achromatic only. The handles of circuit breakers may be yellow-brown. A control intended to prevent an emergency shall be yellow. A control used for operations other than those listed above shall be achromatic or blue.	Complies Complies Complies
3.4.9	Increased size of emergency stop button	Complies
3.4.10-3.4.12	Operating zones for installation of controls	Complies
3.4.13-3.4.14	Mounting height of measuring instruments	Complies
3.4.10 – 3.4.15	The dimensions specified in 3.4.10-3.4.14 may be adopted differently depending on the purpose of the product and its operating conditions	
3.4.15	Button operating force shall not exceed the values specified in Table 2	Complies
3.5	Interlocking requirements	—
3.5.1	Interlocking shall prevent false actuation.	
3.5.2	Interlocking of products intended for installation in rooms without interlocked entrances and having holding electromagnets or charged springs shall prevent hazards caused by movement of product parts due to accidental removal or application of voltage in the control circuit	
3.5.3	By agreement with the customer, other measures ensuring safe maintenance may be used instead of interlocks whose design significantly complicates maintenance of electrical products	
3.6	Enclosure requirements	—
3.6.1	Enclosures shall be connected with the main parts of products as a single structure, cover the hazardous zone and be removable only with a tool	Complies
3.6.2	Where necessary, enclosures shall have handles, brackets and other devices for convenient and safe holding during removal or installation	Complies
3.6.3	Opening and closing enclosure doors and hatches shall prevent their contact with moving parts or live parts of the product	Complies
3.6.4	The degree of protection against contact with live and moving parts by means of enclosures shall comply with GOST 14254 and be specified in the technical conditions for specific product types	Complies
3.6.5	Enclosures in normal and emergency operating modes shall retain the protective properties corresponding to their marking or specified in the product documentation	Complies
3.6.6	Enclosures of products containing contact connections should not be made of thermoplastic materials	Complies
3.7	Requirements for terminals and entry devices	—
3.7.1	Lead-in of wires into enclosures through insulating parts	Complies
Clause	Requirements / tests	Conclusion
3.7.2	The design and material of entry devices shall prevent the possibility of accidental contact with live parts, as well as short-circuiting of conductors to the	Complies

This report applies only to the sample subjected to testing

	enclosure or to each other	
3.7.3	Sufficient space shall be provided inside the entry device for cable entry and preparation	Complies
3.7.4	Screw contact connections shall not be a source of ignition under poor-contact conditions	Complies
3.8	Requirements for warning signaling	—
3.8.1	Signaling shall be visual or audible.	Complies
	Visual signaling may be provided by steady or flashing lights	Complies
3.8.2	Use of colors	Complies
3.8.3	Signal lamps and other light-signaling devices shall have signs or inscriptions indicating the meaning of signals	Complies
3.9	Marking and distinctive coloring requirements	—
3.9.1	Plug connectors shall be marked so that mating parts can be identified. Mating parts of the same connector shall have identical marking	Complies
	Marking shall be applied to the bodies of mating connector parts in a visible location. Marking may be omitted if this type of connector in the product is the only one	Complies
3.9.2	Product terminals shall be marked. Hanging marking tags are not allowed	Complies
3.9.3	Conductors shall be marked at both ends in accordance with normative technical documentation	Complies
3.9.4	Conductor marking shall remain on the marked conductor when it is disconnected from the terminal	Complies
3.9.5	Color of conductor insulation according to functional purpose	Complies

GOST 12.2.003		
Clause	Requirements / tests	Conclusion
2	GENERAL SAFETY REQUIREMENTS	—
2.1.	Requirements for the design and its individual parts	—
2.1.1.	Materials used in the construction of production equipment shall not have hazardous or harmful effects on the human body under all specified operating modes and intended operating conditions, nor create fire or explosion hazardous situations.	Complies
2.1.2.	The design of production equipment shall prevent, in all intended operating modes, loads on parts and assemblies that may cause failure presenting a hazard to personnel.	Complies
2.1.3.	The design of production equipment and its individual parts shall prevent their falling, overturning and unintended displacement under all intended operating and installation conditions	Complies
2.1.4.	The design of production equipment shall prevent falling or ejection of objects (tools, blanks, processed parts, chips, etc.) hazardous to personnel, as well as ejection of lubricating, cooling and other working fluids.	Complies
2.1.5	Moving parts of production equipment that may be a source of injury shall be guarded or positioned to prevent contact by personnel, or other means (e.g. two-hand control) shall be used to prevent injury	Complies
GOST 12.2.003		
Clause	Requirements / tests	Conclusion
2.1.6.	The design of clamping, gripping, lifting and loading devices or their drives shall prevent hazards in the event of complete or partial unintended	

This report applies only to the sample subjected to testing

	loss of power and prevent unintended changes in the state of these devices when power is restored.	Complies
2.1.7	Design elements of production equipment shall not have sharp corners, edges, burrs or uneven surfaces that present an injury hazard to personnel, unless their presence is not determined by the functional purpose of these elements.	Complies
2.1.8.	Parts of production equipment (including hydraulic, steam and pneumatic system pipelines, safety valves, cables, etc.) whose mechanical damage may create a hazard shall be protected by guards or positioned to prevent accidental damage by personnel or technical maintenance equipment.	Complies
2.1.9.	The design of production equipment shall prevent spontaneous loosening or disconnection of assembly and part fasteners, and prevent moving parts from moving beyond design limits where this may create a hazardous situation	Complies
2.1.10.	Production equipment shall be fire- and explosion-safe under the intended operating conditions.	Complies
2.1.11	The design of production equipment powered by electrical energy shall include devices/means for ensuring electrical safety.	Complies
2.1.11.1	Production equipment shall be designed to prevent accumulation of static electricity charges in quantities hazardous to personnel and to eliminate the possibility of fire and explosion.	Complies
2.1.13	Production equipment that is a source of noise, ultrasound and vibration shall be designed so that noise, ultrasound and vibration under intended operating conditions and modes do not exceed permissible levels established by standards.	Complies
2.1.14	Production equipment whose operation is accompanied by the release of harmful substances (including fire/explosion hazardous substances) and/or harmful microorganisms shall include built-in devices for their removal or allow connection to the production equipment of removal devices not included in the design.	Complies
2.1.15.	Production equipment shall be designed so that personnel exposure to harmful radiation is eliminated or limited to safe levels. When laser devices are used, it is necessary to:	—
	prevent unintended radiation;	
	shield laser devices so as to eliminate hazards to personnel health.	
2.1.16	The design of production equipment and/or its placement shall prevent contact of its combustible parts with fire/explosion hazardous substances where such contact may cause fire or explosion, and shall prevent personnel contact with hot or excessively cold parts or presence near such parts where this may cause injury, overheating or overcooling of personnel	
GOST 12.2.003		
Clause	Requirements / tests	Conclusion
2.1.17	The design of production equipment shall eliminate hazards caused by splashing of hot processed and/or operating materials and substances.	Complies

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

2.1.18	Production equipment shall be equipped with local lighting where its absence may cause eye strain or other types of hazard.	
2.1.19	The design of production equipment shall prevent errors during installation that may create a hazard.	Complies
2.1.19.1	Pipelines, hoses, wires, cables and other connecting parts and assemblies shall be marked in accordance with installation diagrams.	Complies
2.2.	Requirements for workplaces	—
2.2.1	The workplace design, dimensions and relative arrangement of elements (controls, display devices, auxiliary equipment, etc.) shall ensure safety during intended use, technical maintenance, repair and cleaning, and shall meet ergonomic requirements.	Complies
2.2.2	Workplace dimensions and arrangement of its elements shall allow work operations in comfortable working postures and shall not hinder worker movement.	Complies
2.2.3.	When designing the workplace, the possibility of performing work operations while seated or alternating between sitting and standing shall be provided if the operations do not require constant movement of the worker.	Complies
2.3.	Requirements for the control system	—
2.3.1.	The control system shall ensure reliable and safe operation in all intended operating modes of production equipment and under all external influences specified by the operating conditions.	Complies
2.3.2	The production equipment control system shall include emergency braking and emergency stop/shutdown means if their use can reduce or prevent a hazard.	Complies
2.3.3	Depending on the complexity of control and monitoring of the production equipment operating mode, the control system shall include means for automatic normalization of operation or automatic stop if a mode disturbance may become the cause of a hazardous situation.	Complies
	The control system shall include signaling means and other information means warning of malfunctions of production equipment leading to hazardous situations.	Complies
	The design and location of means warning of the occurrence of hazardous situations shall ensure unambiguous, reliable and rapid perception of information.	Complies
2.3.4	The control system of the technological complex shall prevent hazards resulting from joint operation of all units of production equipment included in the technological complex, as well as in the event of failure of any unit.	Complies
GOST 12.2.003		
Clause	Requirements / tests	Conclusion
2.3.5.	The control system of an individual unit of production equipment included in a technological complex shall have devices enabling, where necessary (for example until maintenance is completed), the start of the technological complex to be blocked and its operation to be stopped.	Complies
2.3.6	The central control panel of the technological complex shall be equipped with signaling, mnemonic diagram or other means of displaying information on abnormal operation of all production equipment units forming the technological complex,	

This report applies only to the sample subjected to testing

	means for emergency stop/shutdown of the entire technological complex and individual units, if emergency stop of individual units does not aggravate the emergency situation.	Complies
2.3.7.	The central control panel shall be located or equipped so that the operator can verify that no persons are in the hazardous zones of the technological complex, or the control system shall be designed so that the presence of persons in the hazardous zone prevents operation of the technological complex, and each start shall be preceded by a warning signal of sufficient duration to allow a person in the hazardous zone to leave it or prevent operation of the technological complex.	Complies
2.3.8.	Command devices of the control system (hereinafter referred to as controls) shall be:	—
	1) easily accessible and clearly distinguishable, and where necessary marked with inscriptions, symbols or other means	Complies
	2) designed and arranged to prevent unintended movement and ensure reliable, confident and unambiguous operation, including when personnel use personal protective equipment;	Complies
	3) arranged taking into account the required operating forces, sequence and frequency of use, as well as the significance of functions;	Complies
	4) designed so that their shape, dimensions and contact surfaces correspond to the method of gripping (fingers, hand) or pressing (finger, palm or foot);	Complies
	5) located outside the hazardous zone, except for controls whose functional purpose (for example, robot motion controls during adjustment) requires the worker to be in the hazardous zone; in this case, additional safety measures shall be taken (for example, reducing the speed of moving parts of the robot).	Complies
2.3.9.	Starting production equipment, as well as restarting after any stop regardless of cause, shall be possible only by actuating the start control.	Complies
	This requirement does not apply to restart of production equipment operating in automatic mode if restart after stop is provided by this mode.	
	If the control system has several controls starting the production equipment or its individual parts and an incorrect sequence of their use may create hazardous situations, the control system shall include devices preventing such situations.	
GOST 12.2.003		
Clause	Requirements / tests	Conclusion
2.3.10	After activation, the emergency stop control shall remain in the stop position until returned by personnel to its initial position; returning it to the initial position shall not start the production equipment.	Complies
	The emergency stop control shall be red, and shall differ in shape and size from other controls.	Complies

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

2.3.11	If the control system includes an operating mode selector, each selector position shall correspond to only one mode (e.g. adjustment, control, etc.) and be securely fixed in each position where absence of fixation may create a hazardous situation.	Complies
	If increased protection of personnel is required in certain operating modes, the selector in such positions shall:	—
	disable automatic control;	Complies
	allow movement of structural elements only under continuous application of force by the worker to the motion control;	Complies
	stop associated equipment if its operation may create an additional hazard;	Complies
	prevent operation of parts of production equipment not involved in the selected mode;	Complies
	reduce the speed of moving parts of production equipment involved in the selected mode.	Complies
2.3.12	Complete or partial interruption of power supply and subsequent restoration, as well as damage to the power supply control circuit, shall not lead to hazardous situations, including:	Complies
	unintended start upon restoration;	Complies
	failure to execute an already issued stop command;	Complies
	falling or ejection of moving parts of production equipment and objects fixed on it (e.g. workpieces, tools, etc.);	Complies
	reduction in the effectiveness of protective devices.	Complies
2.4	Requirements for protective means incorporated in the design and signalling devices	—
2.4.1	The design of protective means shall make it possible to check that they perform their intended function before and/or during operation of the production equipment.	Complies
2.4.2	Protective means shall perform their function continuously during operation of the production equipment or when a hazardous situation occurs.	Complies
2.4.3	The action of protective means shall not cease before the end of the corresponding hazardous or harmful production factor.	Complies
2.4.4	Failure of one protective means or its element shall not lead to cessation of normal operation of other protective means.	Complies
2.4.5	Production equipment that includes protective means requiring activation before operation and/or deactivation after operation shall have devices ensuring such sequence.	Complies
2.4.6.	The design and location of protective means shall not limit the technological capabilities of production equipment and shall ensure ease of operation and maintenance.	Complies
GOST 12.2.003		
Clause	Requirements / tests	Conclusion
	If the design of protective means cannot provide all technological capabilities of the production equipment, priority shall be given to protection of personnel.	Complies

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

2.4.7	The shape, dimensions, strength and rigidity of the protective guard and its position relative to the guarded parts of production equipment shall prevent impact on personnel from guarded parts and possible ejections (e.g. tools, processed parts).	Complies
2.4.8	The design of the protective guard shall:	—
	1) prevent spontaneous movement from the position providing protection of personnel;	Complies
	2) allow movement from the position providing protection of personnel only with a tool, or block operation of production equipment if the protective guard is in a position that does not ensure performance of its protective functions;	Complies
	3) allow personnel to perform intended actions, including observation of the operation of guarded parts of production equipment, where necessary;	Complies
	4) not create additional hazardous situations;	Complies
	5) not reduce labour productivity.	Complies
2.4.9	Signal devices warning of danger shall be designed and located so that their signals are clearly distinguishable and audible in the production environment to all persons exposed to danger.	Complies
2.4.10	Hazardous parts of production equipment shall be painted in signal colors and marked with the corresponding safety sign in accordance with applicable standards.	Complies
2.5	Design requirements contributing to safety during installation, transportation, storage and repair	—
2.5.1	Where lifting equipment must be used during installation, transportation, storage and repair, locations for attaching lifting equipment shall be marked on the production equipment and its individual parts, as well as the lifted mass.	Complies
2.5.2	The attachment points for lifting means shall be selected taking into account the center of gravity of the equipment (or its parts) so as to prevent damage during lifting and movement and to provide convenient and safe access to them.	Complies
2.5.3	The design of production equipment and its parts shall ensure the possibility of securely fastening them on a vehicle or in packaging.	Complies
2.5.4.	Assemblies of production equipment that may move unintentionally during loading/unloading, transportation and storage shall have devices for fixing them in a defined position.	Complies
2.5.5.	Production equipment and parts intended to be moved manually shall be equipped with devices (such as handles) for movement or have a shape convenient for hand grip.	

Complies with the requirements (test passed)	Complies
Requirements (tests) are not applicable to tested object	Not applicable

Conclusion:

The samples submitted for testing comply with the requirements of TR CU 010/2011 On Safety

This report applies only to the sample subjected to testing

№ 900547 dated 23.09.2026

of Machinery and Equipment and TR CU 020/2011 "Electromagnetic Compatibility of Technical Equipment".

A handwritten signature in black ink, appearing to read "A. A. Ivanov".