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METAL DETECTOR X-FINDER
Technical Specifications
TU U 26.5-3012318215-001:2023

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CONTENTS

1	INTRODUCTORY PART.....	Error! Bookmark not defined.
2	TECHNICAL REQUIREMENTS.....	4
3	SAFETY AND ENVIRONMENTAL PROTECTION REQUIREMENTS, DISPOSAL.....	9
4	ACCEPTANCE RULES.....	13
5	CONTROL METHODS.....	16
6	TRANSPORTATION AND STORAGE.....	17
7	OPERATING INSTRUCTIONS.....	18
8	MANUFACTURER'S WARRANTIES.....	18
	Appendix A List of documents referenced in the technical specifications.....	19

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*SE "TERNOPIL SCIENTIFIC AND PRODUCTION CENTER OF STANDARDIZATION, METROLOGY
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1 SCOPE OF APPLICATION

These technical specifications (hereinafter referred to as TS) apply to the X-Finder metal detector (hereinafter referred to as metal detector, product, goods), which is designed for detecting metal objects in soil (coins, jewelry, artifacts, objects for excavation, tools and others).

The products are intended for sale in online stores, as well as directly for sale to business entities of all forms of ownership and to consumers upon their prior order.

Mandatory quality requirements for products that ensure their safety for human life and health, environmental protection are set forth in Section 3 of these TS.

The requirements of these TS are mandatory.

The list of normative documents (hereinafter referred to as ND) referenced in the TS is provided in Appendix A.

These TS are suitable for certification purposes, confirmation and conformity assessment according to the requirements of current legislation of Ukraine.

The conditional designation of products when ordering and in other documentation must contain the product name according to these TS and the TS designation.

Example of designation:

"X-Finder Metal Detector, TS U 26.5-3012318215-001:2023".

These TS cannot be fully or partially used, reproduced or distributed without permission of the property owner - Individual Entrepreneur Cherniavskyi Maksym Andriiovych, TIN 3012318215. Information about these TS is commercial secret of the owner.

The TS should be checked regularly, but not less than once every five years after the date of their entry into force or the date of the last check, unless there is a need to check them earlier in case of adoption of normative-legislative acts, relevant national standards and other normative documents that regulate other requirements than those established in the TS.

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2 TECHNICAL REQUIREMENTS

2.1 Metal detectors must comply with the requirements of these TS and the manufacturer's design documentation (DD) while observing the requirements of Ukrainian technical regulations, current sanitary norms and rules, regulatory legal acts on labor protection and fire safety.

2.2 Basic parameters and dimensions must comply with those specified in Table 1.

Table 1.

Parameter and dimension name	Standard
Type of search sensor	Double D
Search sensor size, mm	
length	28
width	24
Search sensor operating frequencies, kHz	from 7 to 28. Main 18
Battery capacity, mAh, min	
search sensor	1000
control unit	3000
Type of signal transmission from search sensor to control unit	Wireless, Bluetooth
Signal transmission technology to control unit	Bluetooth, Wi-Fi
Dimensions in assembled state, mm	
length	700
width	300
height	150
Weight, kg, max	1.2

2.3 Indicators (characteristics, properties) of functional purpose

2.3.1 The metal detector must produce a trigger signal when scanning a type 1 detection object at a distance of 50 cm.

Note: type 1 detection object - square plate with thickness of 2 mm and side size of 20 mm made of St3ps grade steel according to DSTU 2651.

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2.3.2 The metal detector must produce a trigger signal when scanning a type 2 detection object at a distance of 150 cm.

Note: type 2 detection object - square plate with thickness of 2 mm and side size of 200 mm made of St3ps grade steel according to DSTU 2651.

2.3.3 The trigger signal must be accompanied by light and/or sound indication.

2.3.4 The metal detector must have a mode or modes that provide:

- selection of different operating frequencies of the search sensor;
- exclusion of any frequency range during scanning.

2.4 Reliability requirements

2.4.1 Reliability of products under operating and storage conditions is characterized by the following indicators:

- operating time to failure - min 1000 hours;
- average service life - min 3 years;
- storage period - min 1 year.

2.4.2 Failure criteria - loss of connection between search sensor and control unit, absence of signals when scanning detection objects, excessively rapid battery discharge (50% of that specified in the passport).

Limit state criterion - impossibility or economic inexpediency of restoring the working condition for performing intended functions of products through repair.

2.5 Requirements for radioelectronic protection and electromagnetic compatibility

2.5.1 Metal detectors must comply with the Technical Regulation on Electromagnetic Compatibility.

2.5.1.1 Interference emission according to DSTU EN 55014-1.

2.5.1.2 Immunity according to DSTU EN 55014-2.

2.5.2 The metal detector must comply with the Technical Regulation on Radio Equipment. Confirmation of essential requirements according to DSTU ETSI EN 300 328.

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2.6 Requirements for resistance to external factors

2.6.1 Climatic design of metal detectors - PHL4 (UHL4) according to DSTU 8216.

2.6.2 Performance group for resistance to mechanical factors - M4 according to DSTU 8216.

2.6.3 Degree of protection according to DSTU EN 60529 - IP 64.

2.7 Ergonomic requirements

2.7.1 The metal detector design must provide the possibility of adjustment without using special tools:

- distance from handle to search sensor in the range from 300 mm to 1300 mm.
- tilt angle of the search sensor.

2.7.2 The metal detector handle must be made of hypoallergenic, wear-resistant, elastic material.

2.8 Design requirements

2.8.1 The following defects are not allowed in the product design:

- play in telescopic connections;
- sharp edges, burrs, dents, cracks, scratches, chips, stains.

2.8.2 Buttons on the control panel must work properly. Sticking and double triggering are not allowed.

2.8.3 Threaded connections must prevent self-unscrewing.

2.9 Requirements for raw materials, materials and component products

2.9.1 Raw materials, materials and components must have accompanying documents from the supplier or manufacturer and mandatory marking in accordance with current legislation of Ukraine.

2.9.2 Goods covered by Ukrainian Technical Regulations must have appropriate marking and be accompanied by a copy of the declaration of conformity.

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2.10 Completeness

2.10.1 The product delivery set must include:

- search sensor;
- rod;
- control unit;
- magnet for starting the search sensor;
- USB Type A - USB Type-C charging cable for control unit;
- USB Type A - contactless input charging cable for sensor;
- passport (operating instructions);
- copy of declaration of conformity;
- consumer packaging.

2.11 Marking

2.11.1 The place and method of applying marking must be specified in the design documentation. Marking must be clear and understandable.

2.11.2 Marking must contain:

- name and location of manufacturer;
- trademark for goods and services of manufacturer (if available);
- manufacturer's contact postal address;
- conditional designation according to these TS;
- serial number;
- date of manufacture;
- conformity mark to Technical Regulations.

Marking is not applied to component products that are supplied to production with manufacturer's marking.

2.11.3 Transport packaging marking must comply with the requirements of DSTU ISO 780, GOST 14192 with application of the handling sign "Fragile".

2.11.4 Product marking is carried out in accordance with the Law of Ukraine "On Ensuring the Functioning of the Ukrainian Language as the State Language". Marking of products intended for export is carried out in the language according to the agreement (contract) between the manufacturer and customer.

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2.11.5 It is allowed to provide other (additional) information, apply graphic symbols and drawings that explain consumer properties and use of products, etc., as well as advertising information that does not contradict the requirements of current legislation of Ukraine. When marking, it is allowed to supplement the product name with additional trade and/or proprietary names in accordance with current legislation of Ukraine.

2.12 Packaging

2.12.1 The metal detector must be packed in corrugated cardboard boxes according to DSTU GOST 9142.

2.12.2 Before packaging, products must be cleaned of contamination. All parts and component products must be secured inside the packaging. The control unit must be packed in additional cardboard packaging.

2.12.3 Other (additional) types of packaging materials and method of their application are specified in the manufacturer's design documentation.

2.12.4 Packaging must ensure preservation of quality, integrity and protection of products from climatic and mechanical impacts during loading-unloading operations, transportation and storage.

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3 SAFETY AND ENVIRONMENTAL PROTECTION REQUIREMENTS, DISPOSAL

3.1 Safety requirements for products

3.1.1 The metal detector must comply with the requirements of the Technical Regulation on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

3.1.2 The impact of electromagnetic fields from metal detectors is assessed according to DSTU EN 62311.

3.1.3 Products must comply with the requirements of DSTU EN 62368-1.

3.2 Occupational safety requirements

3.2.1 In manufacturing products, one should be guided by the requirements of the Law of Ukraine "On Labor Protection", DSTU 3273, current sanitary norms and rules, fire safety, NPAOP 0.00-1.68, PPAOP 0.00-1.71, NPAOP 0.00-7.14, NPAOP 28.0-1.32, NPAOP 28.0-1.33, NPAOP 28.52-1.31 and other regulatory legal acts on labor protection.

3.2.2 General electrical safety requirements in product manufacturing must comply with the requirements of DSTU 7237, DSTU EN 61140, GOST 12.1.018, PUE, NPAOP 40.1-1.07, NPAOP 40.1-1-21, NPAOP 40.1-1.32.

3.2.3 During loading and unloading operations, safety rules must be observed: NPAOP 0.00-1.75, NPAOP 0.00-1.80.

3.2.4 Manufacturing of products in premises must be conducted with equipped ventilation systems according to DBN V.2.5-67, DSTU B A.3.2-12.

3.2.5 The equivalent noise level and general technological and local vibration levels at workplaces during product manufacturing and operation must not exceed the maximum permissible levels according to DSN 3.3.6.037, DSN 3.3.6.039.

3.2.6 The microclimate of production premises must comply with the requirements of DSN 3.3.6.042.

3.2.7 The dust content and concentration of harmful substances in the air of the working zone must comply with the requirements of the order of the Ministry of Health of Ukraine dated 08 April 2014 No. 248, order of the Ministry of Health of Ukraine dated 14 July 2020 No. 1596, current sanitary norms and rules.

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3.2.8 The illumination of production and domestic premises must comply with the requirements of DBN V.2.5-28.

3.2.9 Workers must be provided with drinking water in accordance with DSanPiN 2.2.4-171. External and internal fire water supply systems must comply with the requirements of DBN V.2.5-64, DBN V.2.5-74.

3.2.10 Only persons who have the necessary qualifications and have undergone training and instruction in occupational safety in accordance with NPAOP 0.00-4.12 and knowledge testing of relevant regulatory acts on fire safety in accordance with NAPB A.01.001, safety engineering, and occupational safety in accordance with the Law of Ukraine "On Labor Protection" are permitted to perform work related to production, installation, technical inspection, and repair. Persons who perform welding work must pass certification in accordance with NPAOP 0.00-1.16.

3.2.11 Only persons who have undergone special training and knowledge testing on fire safety issues in accordance with the requirements of Cabinet of Ministers Resolution No. 444 dated 26.06.2013 are permitted to work in explosion-hazardous and fire-hazardous zones. The frequency of conducting workplace instruction, knowledge testing of workers on occupational safety issues and safe performance of technological operations must comply with the requirements of NPAOP 0.00-4.21.

3.2.12 Persons engaged in work with harmful working conditions must be provided with: special clothing, special footwear, personal protective equipment in accordance with the Law of Ukraine "On Labor Protection", NPAOP 0.00-1.04, NPAOP 0.00-7.17, DSTU 7238, DSTU 7239, DSTU GOST 12.4.041, DSTU EN 166 and other current normative documents. The provision of special clothing, special footwear and personal protective equipment must be carried out in accordance with the standards established by NPAOP 0.00-3.07.

3.2.13 Persons engaged in work with harmful working conditions must undergo preliminary and periodic medical examinations in accordance with Order of the Ministry of Health of Ukraine No. 246 dated 21.05.2007 and the requirements of the Law of Ukraine "On Labor Protection."

3.3 Fire safety requirements

3.3.1 General fire safety requirements for production in accordance with NAPB A.01.001, DBN V.1.2-7, DSTU 8828, DSTU B V.1.1-36. Fire hazard indicators of substances and materials used for manufacturing

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and packaging of products must be determined in accordance with the requirements of DSTU 8829, DSTU EN ISO 4589-1. Products must be fire-safe, fire safety of product design must be ensured by maximum possible use of non-combustible and flame-retardant materials.

3.3.2 In terms of safety and fire safety requirements, products must comply with the requirements of DSTU EN ISO 11148-3, DSTU EN ISO 11148-6, DSTU EN 12717, NAPB A.01.001, DBN V.1.2-7, DSTU 8828, DSTU EN ISO 19353.

3.3.3 Fire safety must be ensured through organizational measures and technical means aimed at preventing fires, ensuring human safety, reducing possible property losses and minimizing negative environmental consequences in case of their occurrence, creating conditions for successful firefighting in accordance with the requirements of NAPB A.01.001, DSTU 8828.

3.3.4 The accepted level of fire safety at the facility must be no less than 0.99999 per year per person, and the acceptable individual fire risk level must be no more than 10^{-5} per year per person.

3.3.5 The probability of fire occurrence from electrical or other individual technological products or equipment during their development and manufacturing must not exceed 10^{-6} per year in accordance with DSTU 8828.

3.3.6 The category of production, storage and auxiliary premises for explosion-fire and fire hazard is determined in accordance with DSTU B V.1.1-36, and the zone class in accordance with NPAOP 40.1-1.32. Determination of categories of buildings and premises for explosion-fire and fire hazard at the design stage must be carried out by the technological process developer in accordance with the requirements of DSTU B V.1.1-36.

3.3.7 For operating enterprises, categories for explosion-fire and fire hazard may be determined by technologists of the enterprises themselves or by enterprises that have appropriate specialists.

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3.3.8 Before the start of operation, facilities (buildings, structures, premises, technological installations) must be equipped with primary fire extinguishing means in accordance with the Standard norms for fire extinguisher provision, approved by Order of the Ministry of Internal Affairs of Ukraine No. 25 dated 15.01.2018.

3.3.9 The territory of enterprises, buildings, structures, premises, technological installations must be equipped with primary fire extinguishing means: fire extinguishers, sand boxes, water barrels, covers made of non-combustible heat-insulating material, fire buckets, shovels, fire tools, which are used for localization and elimination of fires in the initial stage of development.

3.3.10 When selecting primary fire extinguishing means, it is necessary to consider the physical-chemical and fire-hazardous properties of combustible substances and materials, their interaction with fire extinguishing substances, as well as the area of production premises, open areas and installations.

3.3.11 For the placement of primary fire extinguishing means in production, storage, auxiliary premises, buildings and structures, as well as on the enterprise territory, special fire shields (stands) must be installed. Fire shields (stands) must contain those primary fire extinguishing means that can be used in the given premises, structure, installation. Fire shields (stands) and fire extinguishing means must be painted in appropriate colors in accordance with DSTU EN ISO 7010.

3.3.12 To indicate the location of primary fire extinguishing means, directional signs should be installed in accordance with DSTU EN ISO 7010. Signs must be placed in visible locations at a height of 2-2.5 m from floor level both inside and outside premises (when necessary).

3.3.13 Equipment of production and storage premises with automatic fire extinguishing systems and/or automatic fire alarm systems must be determined in accordance with DBN V.2.5-56.

3.4 Environmental protection

3.4.1 Discharge of domestic and industrial wastewater and their treatment is carried out in accordance with the requirements of Cabinet of Ministers Resolution dated 25.03.1999 No. 465.

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3.4.2 The concentration of harmful emissions into the atmosphere that are formed during the production process must not exceed the permissible levels established by Order of the Ministry of Health of Ukraine No. 52 dated 14.01.2020.

3.4.3 Solid domestic and industrial waste generated during the production process is disposed of in accordance with the State Sanitary Rules and Norms for the maintenance of populated area territories, approved by Order of the Ministry of Health of Ukraine No. 145 dated 17.03.2001.

3.4.4 Disposal of defective products - in accordance with the requirements of the Law of Ukraine "On withdrawal from circulation, processing, disposal, destruction or further use of defective and dangerous products", Cabinet of Ministers Resolution dated 24.01.2001 No. 50. Products that have reached their limit state and are not subject to restoration (repair) are subject to disposal. Product disposal involves disassembling them into component materials and their subsequent delivery for secondary processing in the established procedure.

3.4.5 Control of harmful production factors under production conditions must be carried out in accordance with the production control program approved by the manufacturer.

4 ACCEPTANCE RULES

4.1 Products must be accepted by the manufacturer's technical control service in accordance with the requirements of these Technical Specifications and the manufacturer's design documentation and technical documentation, which must provide for the following types of production control:

- incoming control - quality of raw materials, materials and component products, their compliance with normative documents, as well as compliance with technical documentation;
- operational control - equipment operation parameters and manufacturing process parameters and their compliance with technical documentation;
- acceptance control - quantity and quality indicators provided for by the requirements of these Technical Specifications.

The rules for conducting and scope of incoming and operational control are established in the manufacturer's design documentation and technical documentation.

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Incoming control of raw materials and components (3.3) must be conducted according to the list of materials subject to incoming control, approved in the established procedure and in effect at the manufacturer.

4.1 To verify compliance with the requirements of these Technical Specifications, products should be subjected to the following tests:

- acceptance tests;
- periodic tests;
- type tests;
- certification tests (if necessary);
- assessment and conformity confirmation.

4.2.1 Each product must be subjected to acceptance tests with verification of requirements 2.3.1 - 2.3.4, 2.8.1 - 2.8.2, completeness (2.10), marking (2.11), packaging (2.12).

Products are presented for acceptance tests in a finally assembled form, complete and adjusted in accordance with the requirements of design documentation and technical documentation.

Test results are reflected in a quality document (quality certificate, supplier's declaration).

In case of non-compliance with at least one requirement, the tested product is considered to have failed the test. The product is returned to production, the cause and defects that caused the non-compliance are eliminated, and it is again presented for acceptance tests for the points of non-compliance and for points where tests were not conducted. Products that fail repeated acceptance tests are finally rejected. The question of the possibility of using assembly units in production is decided by the manufacturer.

4.3 Periodic tests are conducted with a frequency of at least once every three years with verification of requirements 2.4 - 2.7, 3.1.1 - 3.1.3 on products that have passed acceptance tests. The number of products for testing is established in accordance with test methods.

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4.4 Type tests of products are conducted by the manufacturer when making changes to their design - materials, manufacturing technology, that affect the main functional parameters and technical characteristics of the products. The type test program indicating the number of products to be tested must be approved in the procedure established at the manufacturer. Test results are considered positive if all controlled product indicators comply with the established requirements.

4.5 The results of acceptance, periodic and type tests must be documented by protocol and/or act in the established procedure.

4.6 Reliability tests (2.4) are conducted in the form of a control study of statistical data obtained during supervised operation of 5 products.

4.7 Certification tests are conducted according to the certification body's program.

4.8 The procedure for confirmation and assessment of compliance with Technical Regulation requirements is conducted in accordance with the corresponding list of national standards approved by the executive authority in the field of standardization, taking into account the requirements of Conformity Assessment Modules used for developing conformity assessment procedures and rules for using conformity assessment modules.

4.9 The indicators of section 3 (except 3.1.1 - 3.1.3) are controlled during the process of production preparation and development, according to the procedure established by state supervision authorities.

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5 CONTROL METHODS

5.1 Test equipment, including control and measuring devices installed on it, and measuring instruments used during testing must ensure test conditions regulated by technical documents for specific products and have appropriate metrological confirmation.

5.2 Tests are conducted under the following climatic conditions:

- air temperature from 15 to 35 °C;
- relative air humidity from 45 to 80%;
- atmospheric pressure from 84 to 106 kPa (from 630 to 800 mm Hg)

5.3 Control of external appearance and execution, manufacturing quality, component quality, design requirements (2.1, 2.8) is carried out visually and by comparison with design documentation and technical documentation.

5.4 Geometric and connecting dimensions, parameters, mass and their limit deviations (2.2) are checked with appropriate measuring instruments that ensure the corresponding measurement accuracy.

5.5 Performance testing (2.3) is conducted according to the following methodology. The metal detector is turned on and detection objects of type 1 and type 2 are alternately introduced into the sensor detection zone. For detection object type 1, the activation signal must appear at a distance of at least 50 cm, for detection object type 2 at a distance of at least 150 cm. The signal must be stable, clear and distinct. The test is repeated 3 times on each detection object.

5.6 Product reliability testing (2.4) is conducted by collecting and processing statistical data sent to the manufacturer by consumers who operate the products.

5.7 Electromagnetic compatibility (2.5.1) is verified according to DSTU EN 55014-1 and DSTU EN 55014-2.

5.8 Product testing for resistance to external influences (2.6) is conducted using methods according to DSTU 8280, GOST 30630.0.0, GOST 30630.1.1, GOST 30630.1.2.

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5.9 Compliance of raw materials, materials and components with established requirements (2.9) is verified by conducting tests and measurements according to current normative documents for them or by analyzing quality documents (including test protocols, certificates, declarations, etc.) received from the supplier or manufacturer.

5.10 Verification of quality and completeness (2.10), marking (2.11) and packaging (2.12) is carried out visually and by comparison with design documentation and technical documentation.

5.11 Verification of compliance of production conditions with safety and environmental protection requirements (section 4, except 4.19-4.20) is conducted by state supervision authorities in relevant areas of activity according to current normative documents.

5.12 It is permitted to use standard methodologies, methods and instruments that satisfy the requirements of these Technical Specifications in their metrological and technical characteristics and have appropriate metrological confirmation according to current legislation of Ukraine.

6 TRANSPORTATION AND STORAGE

6.1 Products in manufacturer's packaging are transported by any type of transport over any distance under conditions according to cargo transportation rules in effect for that type of transport. Products must be transported in covered transport vehicles.

6.2 Placement and securing of transport containers with packaged products in transport vehicles must ensure their stable position and prevent movement during transportation. During transportation, protection of transport containers with packaged products from direct exposure to atmospheric precipitation, solar radiation, contamination and moisture must be ensured.

6.3 Metal detectors are stored in closed warehouse premises at temperatures from minus 40 to 50°C at a distance of at least 1 m from heat sources, water supply and sewage pipes, in the absence of exposure to aggressive environments (acidic, alkaline, etc.) and their vapors, flammable and combustible liquids, other harmful substances that can contribute to corrosion processes and

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lead to product destruction, and must be protected from moisture and mechanical damage.

7 OPERATING INSTRUCTIONS

7.1 Operating requirements are established in the manufacturer's operational documentation.

7.2 Safety requirements when finding potentially dangerous objects - bombs, mines, shells - must be brought to the attention of consumers.

8 MANUFACTURER'S WARRANTIES

8.1 The manufacturer guarantees compliance of products with the requirements of these Technical Specifications when following the rules and conditions of storage, transportation, installation, operation (maintenance).

8.2 Warranty period of operation - not less than 12 months from the date of shipment from the manufacturer.

8.3 Warranty storage period - not less than 12 months.

8.4 Elimination of defects or replacement of faulty elements (components) during the warranty period is carried out by the manufacturer.

8.5 In case of non-compliance with operating conditions, changes to parameters established by these Technical Specifications, unauthorized design changes, unauthorized disassembly, use of products not for their intended purpose, presence of mechanical damage, claims under warranty obligations are not accepted by the manufacturer. The warranty on products does not apply in case of product damage due to force majeure circumstances (fire, flood, earthquakes, lightning strikes and other natural disasters).

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Appendix A
(normative)
List of documents referenced in the technical specifications

Table A.1

ND designation	ND name	TS clause number where the ND is referenced
1	2	3
Law of Ukraine	On Labor Protection	3.2.1 3.2.10 3.2.12 3.2.13
Law of Ukraine	On Ensuring the Functioning of the Ukrainian Language as the State Language	2.11.4
DSTU 2651:2005 (GOST 380-2005)	Standard Quality Carbon Steel. Grades	2.3.1, 2.3.2
DSTU 2373-95	Safety of Industrial Enterprises	3.2.1
DSTU 7237:2011	Occupational Safety Standards System. Electrical Safety. General Requirements and Nomenclature of Protection Types	3.2.2
DSTU 7238:2011	Occupational Safety Standards System. Collective Protection Means for Workers. General Requirements and Classification	3.2.12
DSTU 7239:2011	Occupational Safety Standards System. Personal Protective Equipment. General Requirements and Classification	3.2.12
DSTU 8216:2015	Electronic Equipment Products. Classification by Application Conditions and Requirements for Resistance to External Influencing Factors	2.6.1, 2.6.2
DSTU 8280:2015	Electrical Products. Test Methods for Resistance to External Climatic Factors	5.8
DSTU 8828:2019	Fire Safety. General Provisions	3.3.1 3.3.2 3.3.3, 3.3.5
DSTU 8829:209	Fire and Explosion Hazard of Substances and Materials. Nomenclature of Indicators and Methods for Their Determination. Classification	3.3.1
DSTU B A.3.2-12:2009	Occupational Safety Standards System. Ventilation Systems. General Requirements	3.2.4

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DSTU B V. 1.1-36:2016	Determination of categories of premises, buildings and external installations by explosion-fire and fire hazard	3.3.1, 3.3.6
DSTU EN 166:2017 (EN 166:2001, IDT)	DSTU EN 166:2017 Personal eye protection equipment. Technical specifications	3.2.12
DSTU EN 12717:2014 (EN 12717:2001+A1:2009, IDT)	Machine safety. Drilling machines	3.3.2
DSTU EN 55014-1:2019 (EN 55014-1:2017, IDT; CISPR 14-1:2016, IDT)	Electromagnetic compatibility. Requirements for household electrical appliances, electric tools and similar apparatus. Part 1. Emission of interference	2.5.1.1, 5.7
DSTU EN 55014-2:2017 (EN 55014-2:2015, IDT; CISPR 14-2:2015, IDT)	Electromagnetic compatibility. Requirements for household electrical appliances, electric tools and similar products. Part 2. Immunity to interference	2.5.1.2, 5.7
DSTU EN 60529:2018 (EN 60529:1991; A1:2000; A2:2013; AS: 1993; AS:2016, IDT; IEC 60529: 1989; A1:1999; A2:2013; Cor 2:2015, IDT)	Degrees of protection provided by enclosures (IP Code)	2.6.3
DSTU EN 61 140:2019 (EN 61140:2016, IDT; IEC 61140:2016, IDT)	Protection against electric shock. General aspects for installation and equipment	3.2.2
DSTU EN 62311:2014 (EN 62311:2008, IDT)	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)	3.1.2
DSTU EN ISO 4589-1:2018 (EN ISO 4589-1:2017, IDT; ISO 4589-1:2017, IDT)	Plastics. Determination of burning behavior by oxygen index. Part 1. General requirements	3.3.1

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Continuation of Table A.1

ACTYENISO 7010:2019 (EN ISO 7010:2012; A1:2014; A2:2014; A3:2014; A4:2014; A5:2015; A6:2016; A7:2017, IDT; ISO 7010: 2011; Amd 1:2012; Amd 2:2012; Amd 3:2012; Amd 4:2013; Amd 5:2014; Amd 6:2014; Amd 7 :2016, IDT)	Graphical symbols. Safety colors and signs. Registered safety signs	3.3.11, 3.3.12
DSTU EN ISO 11148-3:2014 (EN ISO 11148-3:2012, IDT)	Hand-held non-electric powered tools. Safety requirements. Part 3. Tools for drilling and threading	3.3.2
DSTU EN ISO 11 48-6:2014 (EN ISO 11148-6:2012, IDT)	Hand-held non-electric powered tools. Safety requirements. Part 6. Powered tools for threaded fasteners	3.3.2
DSTU EN ISO 19353:2019 (EN ISO 19353:2019, IDT; ISO 19353:2019, IDT)	Safety of machinery. Fire prevention and fire protection	3.3.2
DSTU ISO 780-2001 (ISO 780:1997, IDT)	Packaging. Graphical marking for handling of goods	2.11.3
DSTU ETSI EN 300 328:2017 (ETSI EN 300 328:2016, IDT)	Radio access systems in the 2.4 GHz frequency band. Technical requirements and test methods	2.5.2
DSTU GOST 12.4.041:2006 (GOST 12.4.041:2001, IDT)	Occupational safety standards system. Individual respiratory protection filtering devices. General technical requirements	3.2.12
DSTU GOST 9142:2019 (GOST 9142-2014, IDT)	Corrugated cardboard boxes. General technical specifications	2.12.1
GOST 12.1.018-93	Occupational safety standards system. Fire and explosion safety of static electricity. General requirements	3.2.2
GOST 14192-96	Cargo marking	2.11.3
GOST 30630.0.0-99	Test methods for resistance to external influencing factors of machines, instruments and other technical products. General requirements	5.8

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Continuation of Table A.1

GOST 30630.1.1-99	Test methods for resistance to mechanical external influencing factors of machines, instruments and other technical products. Determination of dynamic characteristics of structures	5.8
GOST 30630.1.2-99	Test methods for resistance to mechanical external influencing factors of machines, instruments and other technical products. Tests for vibration exposure	5.8
Order of the Ministry of Health of Ukraine dated 14.01.2020 No. 52	Hygienic regulations for permissible content of chemical and biological substances in atmospheric air of populated areas	3.4.2
Order of the Ministry of Health of Ukraine dated 17.03.2011 No. 145	State sanitary norms and rules for maintenance of populated area territories	3.4.3
Order of the Ministry of Health of Ukraine dated 21.05.2007 No. 246	On approval of the Procedure for conducting medical examinations of workers of certain categories	3.2.13
Order of the Ministry of Health of Ukraine dated 08.04.2014 No. 248	On approval of State sanitary norms and rules "Hygienic classification of work according to indicators of harmfulness and danger of occupational environment factors, severity and intensity of the work process"	3.2.7
Order of the Ministry of Health of Ukraine dated 14.07.2020 No. 1596	On approval of hygienic regulations for permissible content of chemical and biological substances in workplace air	3.2.7
Order of the Ministry of Internal Affairs of Ukraine No. 25 dated 15.01.2018 No. 25	On approval of Rules for operation and standard norms for fire extinguisher provision	3.3.8
NAPB A.01.001-2014	Fire safety rules in Ukraine	3.2.10 3.3.1 3.3.2, 3.3.3
NPAOP 0.00-1.04-07	Rules for selection and application of individual respiratory protection equipment	3.2.12
NPAOP 0.00-1.16-96	Rules for certification of welders	3.2.10
NPAOP 0.00-1.68-13	Occupational safety rules for cold metal processing	3.2.1
NPAOP 0.00-1.71-13	Occupational safety rules when working with tools and devices	3.2.1

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Continuation of Table A.1

NPAOP 0.00-1.75-15	Occupational safety rules during loading and unloading operations	3.2.3
NPAOP 0.00-1.80-18	Occupational safety rules during operation of lifting cranes, lifting devices and related equipment	3.2.3
NPAOP 0.00-3.07-09	Standards for free provision of special clothing, special footwear and other personal protective equipment to workers of general professions in various industries	3.2.12
NPAOP 0.00-4.12-05	Standard regulations on the procedure for conducting training and knowledge testing on occupational safety issues	3.2.10
NPAOP 0.00-4.21-04	Standard regulations on occupational safety service	3.2.11
NPAOP 0.00-7.14-17	Safety and health protection requirements when using production equipment by workers	3.2.1
NPAOP 0.00-7.17-18	Minimum safety and health requirements for the use of personal protective equipment by workers at the workplace	3.2.12
NPAOP 28.0-1.32-13	Occupational safety rules during painting work	3.2.1
NPAOP 28.0-1.33-13	Occupational safety rules during forge-press work	3.2.1
NPAOP 28.52-1.31-13	Occupational safety rules during metal welding	3.2.1
NPAOP 40.1-1.07-01	Rules for operation of electrical protective equipment	3.2.2
NPAOP 40.1-1.21-98	Rules for safe operation of consumer electrical installations	3.2.2
NPAOP 40.1-1.32-01	Electrical installation regulations. Electrical equipment of special installations	3.2.2, 3.3.6
DBN V. 1.2-7:2021	Basic requirements for buildings and structures. Fire safety	3.3.1, 3.3.2
DBN V.2.5-28:2018	Natural and artificial lighting	3.2.8

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Continuation of Table A.1

DBN V.2.5-56:2014	Fire protection systems	3.3.13
DBN V.2.5-64:2012	Internal water supply and sewerage. Part 1. Design. Part 2. Construction. With Amendment No. 1	3.2.9
DBN 3.2.5-67:2013	Heating, ventilation and air conditioning	3.2.4
DBN V.2.5-74:2011	Water supply. External networks and structures. Basic design provisions. With Amendment No. 1	3.2.9
DSanPiN 2.2.4-171-10	Hygienic requirements for drinking water intended for human consumption	3.2.9
DSN 3.3.6.037-99	Sanitary norms for industrial noise, ultrasound and infrasound	3.2.5
DSP 1.1.6.019-99	State sanitary norms for industrial general and local vibration	3.2.5
DSN 3.3.6.042-99	Sanitary norms for microclimate of industrial premises	3.2.6
Cabinet of Ministers Resolution dated 24.01.2001 No. 50 "On approval of general requirements for processing, disposal, destruction or further use of defective and dangerous products withdrawn from circulation"		3.4.4
Cabinet of Ministers Resolution dated 26.06.2013 No. 444 "On approval of the Procedure for training the population in actions during emergency situations"		3.2.1 l
Cabinet of Ministers Resolution dated 25.03.1999 No. 465 "On approval of Rules for protection of surface waters from pollution by return waters"		3.4.1
Cabinet of Ministers Resolution dated December 16, 2015 No. 1077 "On approval of the Technical Regulation on electromagnetic compatibility of equipment"		2.5.1
PUE:2017 Rules for electrical installation arrangement		3.2.2

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Acknowledges the authenticity of the signature of translator Dmytriieva Hanna Vitaliivna, who translated this Document from Ukrainian into English.

