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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 17957-2021

**Rock drilling machines and pneumatic tools - Safety
requirements**

凿岩机械与气动工具 安全要求

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1 Scope

GB 17957-2021 is the Chinese national standard on rock drilling machines and pneumatic tools - safety requirements, in the field of environment and health protection, safety. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 30 April 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2022.

Classification: ICS 13.110, CCS J84. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the general safety requirements for rock drilling machines and pneumatic tools during design, manufacture, use, maintenance. This standard applies to rock drilling machines powered by pneumatic, electric, hydraulic or internal combustion, tools and machines driven by compressed air, non- electrically driven power tools and auxiliary equipment (hereinafter referred to as products or machines).

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB 2894 Safety signs and guideline for the use

GB/T 3766 Hydraulic fluid power - General rules and safety requirements for systems and their components

GB 4351.1 Portable fire extinguishers - Part 1: Performance and construction

GB/T 5226.1-2019 Electrical safety of machinery - Electrical equipment of machines - Part 1: General requirements

GB/T 5898 Hand-held non-electric power tools - Noise measurement code - Engineering method (grade 2)

GB/T 6247 (all parts) Rock drilling machines and portable power tools - Terminology

GB/T 7932 Pneumatic fluid power - General rules and safety requirements for systems and their components

GB/T 8196 Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards If the pressure may cause danger, the residual pressure in the pressure system shall be released. Any component or element that can change the direction of hydraulic oil injection can be used as an effective protective device. Rigid pipes and hoses shall be able to withstand the usage pressure. The hose shall be clearly marked with its rated working pressure and shall comply with the relevant requirements of GB/T 3766 and GB/T 7932.

4.1.12 Pipe joints Various pipe joints, including the air intake (oil, water) joints and threaded joints of the machine itself, shall adopt reliable anti-loosening and anti-leakage (oil, water) structures; it shall ensure sufficient strength. The joints used to connect impact machines shall also ensure that they have the characteristics of impact resistance and vibration resistance.

4.1.13 Valves The valves shall be well sealed, open flexibly; there shall be no leakage (oil, water) after closing.

4.1.14 Risk of slipping, tripping or falling For mechanical parts where people often walk or stand, their design and manufacture shall prevent people from slipping, tripping, falling, or falling from these parts. If necessary, these parts shall be equipped with handrails that are relatively fixed to the user and maintain their stability.

4.1.15 Protection of moving parts

4.1.15.1 General The design, manufacture, layout of moving parts of rock drilling machines

and pneumatic tools shall be able to avoid the hazards described in GB/T 15706.

4.1.15.2 Transmission parts All rotating or reciprocating parts, except the drill rod propulsion mechanism and the travel mechanism, as well as the portable power tools mentioned in the specific safety requirements, shall be equipped with protective devices to avoid contact. The protective devices shall comply with the requirements of

GB/T 8196. The protective devices shall be firmly manufactured and reliably fixed. For transmission parts that are not often approached, fixed protective devices shall be installed. Fixed protective devices shall be fixed by welding or by using necessary tools or keys to open or move them.

4.1.15.3 Moving parts during operation The design, manufacture, installation of rock drilling machines and pneumatic tools shall minimize manual operation in danger zones. The product information shall remind users to set up warning signs in the restricted areas during the operation of rock drilling machines and pneumatic tools. For handheld or outrigger-type rock drills, the product information shall remind users to always pay attention to the safety hazards caused by the drill clamp not being locked or the drill rod being broken.

4.1.16 Noise The noise shall not exceed the provisions of GB 19872.

4.1.17 Fire prevention

4.1.17.1 Flame retardant The manufacturing materials of rock drilling machines and pneumatic tools shall be as fire resistant as possible. The decorative materials in the cab shall be flame retardant materials. The maximum value shall not exceed 250 mm/min, when the material flame spread linear velocity test is carried out according to GB/T 20953.

4.1.17.2 Flame retardant For machines driven by the driver, the inner walls, interior decoration and insulation layer of the cab and other parts of the machine using insulating materials shall be made of flame retardant materials. When tested according to

GB/T 20953, the burning rate shall not exceed 200 mm/min.

4.1.17.3 Fire extinguisher Machines with a working mass greater than 1500 kg shall have at least one space for storing fire extinguishers, which shall be easily accessible to the driver or operator. A passage shall be set up to allow the driver or operator to escape from the machine safely.

4.1.18 Dust and exhaust gas

4.1.18.1 Dust removal or dust prevention measures Dry-type rock drilling machines shall have dust removal or dust prevention measures.

4.1.18.2 Emissions from machinery Emissions from machinery and equipment shall comply with the relevant requirements of

GB/T 15706. - The laser devices installed on machinery shall be protected, so that their effective radiation or the radiation and secondary radiation generated by reflection or scattering will not harm human health; - The optical devices used on the machinery to observe and adjust the laser devices shall not cause the risk of laser rays causing health hazards.

4.1.20 Safety requirements for special safety equipment used in products Special equipment, such as pressure vessels, used in products shall be purchased from manufacturers with special equipment manufacturing licenses and certificates of qualified inspection by manufacturers.

4.2 General safety requirements for non-portable machines

4.2.1 Instructions for use Graphic symbols or signs shall be used to remind operators to read the operating instructions before starting work; sufficient information to remind operators to use safety shall be stated in the product usage information.

4.2.2 Pipeline layout During the design stage of the product, the layout of various gas, hydraulic, water pressure pipelines shall minimize the risk of causing safety hazards.

4.2.3 Control system The safety design of the control system shall comply with the provisions of GB/T 16855.1.

4.2.4 Drill rod connection and removal mechanism The drill rod connection and removal mechanism shall be safe and reliable. If the drill rod is connected and removed manually, targeted safety operation requirements shall be put forward in the instructions.

4.2.5 Signage The operating mechanism of non-portable machines shall be equipped with signs indicating actions. Signage shall not use graphic symbols and signs that may cause the operator to misunderstand.

4.2.6 Field of view The driving, shifting, working position of non-portable machines shall have good visibility; it shall ensure that the driver or operator will not bring danger to himself or other people when operating the equipment. If necessary, optical auxiliary devices shall be installed or other measures shall be taken.

4.2.7 Materials The materials selected for non-portable machines shall be harmless to the safety and health of exposed personnel; they shall be suitable for the predetermined ambient temperature. The manufacturer shall indicate the design operating temperature range of the equipment in the operating manual.

4.2.8 Hoses and cables The layout of hoses and cables shall avoid being blocked by rocks and other objects when the non-portable machine is driving or shifting. The manufacturer shall remind the user in the operating manual to prevent the hoses and cables from being blocked when the non-portable machine is driving or shifting, so as to avoid the risk of pulling off and injuring people.