

ICS 73.100.30

CCS D92



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

GB 21009-2007

Replacing JB 8912-1999

Mine blast-hole drills - Safety requirements

矿用炮孔钻机 安全要求

Issued on: July 19, 2007

Implemented on: January 1, 2008

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

1 Scope
1.00 Trial).**
2 Normative References
3 Terms and Definitions...
4 List of Dangers...
5 Safety Requirements and/or Measures and Judgments...
5.2 Safety requirements for operating positions
5.3 Control system
5.4 Control device
5.7 Protection of moving parts
5.8 Electrical equipment
5.16 Drilling rig, drill pipe and working platform
5.17 Special requirements for remote control (including remote) drill

1 Scope

GB 21009-2007 is the Chinese national standard on mine blast-hole drills - safety requirements, in the field of mining and minerals. 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 19 July 2007 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 January 2008. Classification: ICS 73.100.30, CCS D92. 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 is a restriction on mining blast-hole drills in terms of physical performance and intended use. The safety requirements specified in this Standard apply to the dangers generated at all stages of the machine's life cycle. This Standard applies to rock drills, wire rope impact drills, down-the-hole drills, rotary drills and rotary drilling rig (hereinafter referred to as drills) used for drilling blast-holes in open-pit and underground mines and tunnels.

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Notes and Explanations

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2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies. GB 2894 Safety signs (GB 2894-1996, neq ISO 3864)

GB/T 3766 Hydraulic Fluid Power - General Rules Relating to Systems (GB/T 3766-2001, eqv ISO 4413:1998)

GB 3836.1 Electrical apparatus for explosive gas atmospheres - Part 1: General requirements (GB 3836.1-2000, eqv IEC 60079-0:1998)

GB 3836.2 Electrical apparatus for explosive gas atmospheres - Part 2: Flameproof enclosure "d" (GB 3836.2-2000, eqv IEC 60079-1:1990)

GB 3836.3 Electrical apparatus for explosive gas atmospheres - Part 3: Increased safety "e" (GB 3836.3-2000, eqv IEC 60079-7:1990)

GB 3836.4 Electrical apparatus for explosive gas atmospheres - Part 4: Intrinsic safety "i" (GB 3836.4-2000, eqv IEC 60079-11:1999)

GB 3836.5 Electrical apparatus for explosive gas atmosphere - Part 5: Pressurized enclosures "p" (GB 3836.5-2004,

IEC 60079-2:2001, MOD) reconnection will endanger people around, they shall be able to lock. After the drill cuts off the energy, it shall be able to safely release the energy left or stored in the circuit so that people around it are not in danger. Some circuits can remain connected to the energy in order to clamp workpieces, save information, and internal lighting. In this case, special measures shall be taken to protect the safety of the operator.

5.2 Safety requirements for operating positions

5.2.1 The operation of the drill shall be carried out in a state where the surrounding environment is not dangerous to personnel. The position and standing space required by the operator shall meet the requirements of GB/T 8420 and JB/T 3683.

5.2.2 For drill used for underground or tunnel operations, protective measures shall be taken as needed to prevent the danger caused by splashing objects.

5.2.3 The driving and operating positions of the drill shall have good visibility to ensure that there is no danger to personnel.

5.2.4 The drill can be equipped with an operator's cab as needed. The operator's cab shall meet the following requirements:

- a) The operator's cab shall be equipped with air conditioning or safe heating and cooling devices according to the working conditions to ensure that the temperature in the operator's cab is within the range of 15°C-31°C;
- b) An air purification device shall be equipped; and the dust concentration in the air in the operator's cab shall meet the requirements of

5.13.1 in this Standard;

- c) When the drill is operating with the doors and windows closed and the air conditioning and purification devices turned on, the noise in the operator's cab shall not exceed 85dB (A), and the noise shall be tested in accordance with the provisions of GB/T 13325;

d) Necessary vibration reduction measures shall be taken, and the weighted root mean square acceleration correction value at the seat cushion shall not exceed 1.25m/s². The vibration test shall be carried out in accordance with the method of GB/T 8419;

e) The direction of the door opening shall enable the operator to quickly leave the operator's cab in case of danger;

f) The decorative materials in the operator's cab shall meet the fire protection requirements of

5.12.1 in this Standard;

g) The illumination in the operator's cab shall meet the requirements of

5.11.3 in this Standard;

5.3 Control system

5.3.1 The safety part of the drill control system shall meet the requirements of GB/T 16855.1.

5.3.2 The main transmission system of the drill shall be manually started through the starting device. If the drill has multiple devices for starting, these devices shall be linked to each other so that one of them can be used to complete the start. For pneumatically driven drill, a shut-off valve shall be set on the main circuit to connect or disconnect the power unit and the main machine, and to release the system pressure.

5.3.3 The drill shall have a normal shutdown command device to enable it to stop safely during operation. The drill shall be equipped with a total stop switch; and each operating position for operation and driving shall have an emergency stop device to prevent dangers caused by emergencies.

5.3.4 The interruption of power supply or the re-supply after interruption shall not lead to the occurrence of danger and shall meet the following requirements:

- a) The drill can only be restarted by human command;
- b) If the shutdown command has been issued, the drill must be shut down;
- c) Equipment parts or tools are not allowed to fall or pop out;
- d) Protective devices and protective measures shall be ensured effective. Power supply failure or hydraulic and pneumatic pressure deviation from the set value is not allowed to cause dangerous actions and emergency shutdown system failure.

5.3.5 Failure of the control circuit or logical failure of the control circuit is not allowed to cause danger.

5.4 Control device

5.4.1 The operation of the control device shall be safe, flexible and comfortable; and its design configuration and marking shall meet the requirements of

GB/T 15706.2. The main control device shall be arranged in the comfortable area of operation, and the auxiliary control device can be arranged in the reach of operation or other positions outside the danger zone. If the drill has multiple operating positions, a selection switch shall be configured so that the operator can purposefully select a favorable operating position.

5.4.2 The drill shall have corresponding emergency stop and safety devices; and the emergency

5.6.5 When the drill is operating, traveling and stopping on a slope exceeding the maximum allowable slope, a traction winch shall be equipped to prevent the drill from slipping on the slope.

5.7 Protection of moving parts

5.7.1 The design, manufacture and installation of the moving parts of the drill shall avoid the