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

GB/T 43746.1-2024

**Drilling and foundation equipment - Safety requirements - Part
1: Common requirements**

钻探和基础施工设备 安全要求 第1部分：通用要求

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: This document is part 1 of GB/T 43746 "Safety requirements for drilling and foundation construction equipment": GB/T 43746 has been published as follows: Lower part:

--- Part 1: General requirements;

--- Part 2: Mobile drilling rigs for construction;

--- Part 3: Piles and other foundation construction equipment: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed by the China Machinery Industry Federation: This document is under the jurisdiction of the National Technical Committee for Standardization of Construction Machinery and Equipment (SAC/TC328): This document was drafted by: Beijing Construction Mechanization Research Institute Co., Ltd., Xuzhou Xugong Foundation Engineering Machinery Co., Ltd., Beijing Sany Zhi Manufacturing Technology Co., Ltd., Wenzhou Yongan Heavy Industry Technology Co., Ltd., Sunward Intelligent Equipment Co., Ltd., China Machinery Science and Technology (Beijing) Vehicle Inspection Technology Co., Ltd.: Engineering Research Institute Co., Ltd., China Railway Construction Heavy Industry Group Co., Ltd., Shandong Zhuoli Pile Driver Co., Ltd., Jiangsu Taixin Machinery Technology Co., Ltd: Company, Dalian University of Technology, Shandong University, China Railway Sixth Survey and Design Institute Group Co., Ltd., Shenyang Jianzhu University, Langfang Kaibo Construction Machinery Technology Co., Ltd., Shenyang

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This document belongs to the Class C standard specified in GB/T 15706 "General principles for safety design of machinery - Risk assessment and risk reduction": Drilling and foundation construction equipment belongs to construction machinery and equipment, and is equipment used for drilling holes in the ground or foundation construction in construction projects: GB/T 43746 "Safety requirements for drilling and foundation construction equipment" aims to specify the safety requirements for drilling and foundation construction equipment: Due to the complexity and diversity of the strata, the holes and foundations required are also diverse, so there are also many types of drilling and foundation construction equipment: Type, which mainly includes mobile drilling rigs for construction (torque less than 35kN·m), piles and other foundation construction equipment (including torque Drilling rigs with a capacity of not less than 35 kN·m), underground continuous wall equipment, interchangeable auxiliary equipment (such as impact hammers, pile pullers, vibrating hammers, vibrators, rotary Rotary impact power head, rotary drilling power head, etc.) and jetting, grouting and grouting equipment: GB/T 43746 is intended to consist of three parts:

--- Part 1: General requirements;

--- Part 2: Mobile drilling rigs for construction;

--- Part 3: Piles and other foundation construction equipment: GB/T 43746:1 gives the general safety requirements for all types of drilling and foundation construction equipment mentioned above, and gives the general safety requirements for spraying in Chapter 8: Supplementary safety requirements for injection, grouting and grouting equipment, and in Chapter 9, supplementary safety requirements for interchangeable auxiliary equipment are given; GB/T 43746:2 gives the additional safety requirements for mobile drilling rigs used in construction; GB/T 43746:3 gives the additional safety requirements for pile and other foundation construction: Supplementary safety requirements for underground continuous wall equipment: Supplementary safety requirements for underground continuous wall equipment are expected to be given by other standards other than GB/T 43746: These additional safety requirements supplement or modify the requirements for the specific types of drilling and foundation construction equipment they cover: The general safety requirements in GB/T 43746:1 (except Chapter 8 and Chapter 9) are intended to be consistent with Chapter 8 and Chapter 9 of GB/T 43746:1, GB/T 43746:2, GB/T 43746:3, one or more of the other standards expected to be related to supplementary safety

requirements for underground continuous wall equipment Used in combination: For multi-purpose machines, GB/T 43746 includes all parts of its specific functions and applications (including Chapter 8 of GB/T 43746:1 and Chapter 9) and other standards concerning additional safety requirements for underground continuous wall equipment: For example, a drill that can also be used as a pile driver Machines must comply with the relevant requirements of GB/T 43746:1, GB/T 43746:2 and GB/T 43746:3: Drilling or foundation construction equipment intended to be permanently fixed on the chassis of earth-moving machinery, agricultural machinery or cranes, the whole machine It must comply with the requirements of GB/T 43746: GB/T 43746:1~GB/T 43746:3, including Chapter 8 of GB/T 43746:1 and the expected supplementary provisions on underground continuous wall equipment Drilling and foundation construction equipment within the scope of other standards for safety requirements can be interchangeable with the accessories described in Chapter 9 of GB/T 43746:1: Equipment that is an integral part of the whole machine or can be installed interchangeably: Drilling and foundation construction equipment must meet the following requirements if it is intended to be used in potentially explosive atmospheres or where there is a risk of lightning: Other requirements not included in GB/T 43746: In order to balance the document structure, GB/T 43746:1 sets up Appendix A to Appendix L to provide additional information and text that are helpful for the use of this document: supplementary or additional terms:

--- Appendix A gives a list of drilling and foundation construction equipment to guide the identification of various types of drilling and foundation construction equipment:

--- Appendix B specifies the noise test rules and specifies the effective noise emission of drilling and foundation construction equipment under standardized conditions All information necessary for the determination of characteristics and the noise declaration:

--- Appendix C specifies the whole body and hand-arm vibration test, including working conditions and measurement requirements:

--- Appendix D gives the graphic symbols and signs for the safe use and safe operation of drilling and foundation construction equipment:

--- Appendix E specifies the selection and installation requirements of wire rope clamps for free fall devices, including the number of rope clamps, tightening torque and Disassembled connection requirements:

--- Appendix F specifies the requirements and formulas for calculating the ground pressure ratio of crawler drilling and foundation construction equipment:

1 Scope

GB/T 43746.1-2024 is Part 1 of the Chinese safety standard for drilling and foundation construction equipment: the piling rigs, drilling rigs, diaphragm wall grabs, jet grouting units and ground improvement machines that work on every large Chinese construction site. It is

a type C machinery safety standard, built the way that family is built, and its structure follows the logic of the machinery safety directive: first the significant hazard list, which for this equipment runs to four pages and covers everything from mast collapse and load fall to rotating tool entanglement, high pressure fluid injection and ground collapse; then thirty pages of safety requirements and protective measures answering each of those hazards; then seven pages on the verification of those measures, which says for every requirement how compliance is to be shown, by design check, by measurement or by test; then the information for use, marking, instruction handbook and warnings. Supplementary requirements are added for jetting, grouting and injection equipment and for interchangeable attachments. Two annexes list the equipment covered and give the noise test code. For a manufacturer or an importer of foundation plant in China, this is the governing safety text.

This document specifies the general safety requirements for drilling and foundation construction equipment, including a list of major hazards, safety requirements and/or protective measures, Verification of safety requirements and/or protective measures and information on use, etc: This document covers the use of drilling and foundation construction equipment (see Appendix A) under conditions of intended use and misuse that are reasonably foreseeable by the manufacturer: During its entire service life (transportation/travel, assembly, disassembly, machine in working and non-working state, maintenance, moving on site, storage, Common significant hazards associated with disposal and waste: This document applies to the design, manufacture, and use of drilling and foundation construction equipment: This document does not apply to the design, manufacture, use, etc: of the following machines:

- Tunnel boring machinery, rodless shaft drilling rigs for rock formations;
- Range boring machine;
- Drilling rigs for the oil and gas industry;
- Horizontal directional drilling rig;
- Mining machinery and equipment for open-pit mining;
- All underground mining machinery and equipment used for the extraction of solid minerals and special machinery and equipment for underground mine development;
- Vertical core drilling rig;
- Handheld machine: NOTE: This document does not include specific requirements for offshore applications: This document contains supplementary safety requirements for jetting, grouting and injection equipment (see Chapter 8) and supplementary safety requirements for interchangeable auxiliary equipment: See Chapter 9: This document touches upon but does not cover all safety requirements for underground continuous wall equipment: