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

GB/T 34651-2017

**Full face tunnel boring machines - Earth pressure balance
shield machines**

全断面隧道掘进机 土压平衡盾构机

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 11 Piping

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard is proposed by the China Machinery Industry Federation. This standard by the National Building Machinery and Equipment Standardization Technical Committee (SAC/TC328) centralized. This standard was drafted unit. China Railway Engineering Equipment Group Co., Ltd., China Railway Tunnel Group Co., Ltd., China Railway First Bureau Group City Rail Transit Engineering Co., Ltd., Shijiazhuang Railway University, China Communications Equipment Co., Ltd. and Tianhe, Shanghai Tunnel Engineering Co., Ltd. Machinery Manufacturing Branch, Beijing Institute of Construction Machinery, China Railway Construction Heavy Industry Group Co., Ltd., North Heavy Industries Group Co., Ltd., China Water Resources and Hydropower Three Engineering Co., Ltd. The main drafters of this standard. Li Jianbin, Li Guang, Kang Bao Sheng, Wang Jiangka, Guo Jingbo, Gao Guanghui, Huang Jian, Li Jing, Cheng Yongliang, Wang Jiangang, Wang Pengyu, Zhao Zhenwei, Jia Lianhui, Zhang Hongda, Dang Xifeng, Yang Shaopu, Xiao Jun, Shen Jianhua, Liu Shuang, Ma Chengbiao, Tao Lei, Huang Jimin. Full face tunnel boring machine earth pressure balance shield machine

1 Scope

China's national standard for earth pressure balance shield machines. It specifies the requirements for this type within the full face tunnel boring machine series. The earth pressure balance machine is the one that made tunnelling in soft ground under cities routine. Its principle is elegant: the excavated soil is not removed freely but held in the cutterhead chamber as a plastic paste, and the pressure of that paste is regulated to balance the earth and groundwater pressure at the face. The screw conveyor at the bottom lets material out at exactly the rate the cutterhead lets it in, so the face never moves. Getting that balance right is what keeps the ground above from settling, and settlement is the thing that damages the buildings a tunnel passes beneath. It also means the machine is conditioning the ground continuously, injecting foams and polymers to turn whatever it meets into a paste with the right consistency - which is as much of the operator's job as advancing the machine.

This standard specifies the earth pressure balance shield machine terms and definitions, the basic parameters and models, technical requirements, test methods, inspection rules, with Line documents, logos, packaging and shipping. This standard applies to circular section earth pressure balance shield machine.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 150 (all parts) pressure vessels

GB/T 191 Packaging - Pictorial signs

GB/T 3766 hydraulic drive systems and components of the general rules and safety requirements

GB 5226.1 Safety of machinery - Electrical machinery and electrical equipment - Part 1. General specifications

GB 5226.3 Safety of Machinery - Mechanical Electrical Equipment Part 11. Voltage above 1000Va.c. Or 1500Vd.c. But not to exceed 36kV high-voltage equipment technical conditions

GB/T 6388 transport packaging shipping symbols

GB/T 7932 pneumatic system of general technical conditions GB/T 10595 belt conveyor
GB/T 13306 signs

GB/T 13384 mechanical and electrical product packaging General technical conditions

GB/T 14039 hydraulic transmission fluid solid particles pollution level code

GB/T 17301 earthmoving machinery operation and maintenance space angular dull

GB/T 20082 hydraulic transmission fluid pollution using optical microscopy method of particle contamination

GB/T 34650 full face tunnel boring machine shield machine safety requirements

GB/T 34354 full face tunnel boring machine terminology and commercial specifications

3 Terms and definitions

GB/T 34354 defined and the following terms and definitions apply to this document. For ease of use, the following list is repeated GB/T 34354 some of the terms and definitions.

11 Piping

JB/T 10205 hydraulic cylinder

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