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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 37703-2019

General specifications for ground robots for search and rescue in ruins

地面废墟搜救机器人通用技术条件

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. Please note that some of the contents of this document may involve patents. The issuing organization of this document is not responsible for identifying these patents. This standard is proposed and managed by the National Specialized Robot Standardization Working Group (SAC/SWG13). This standard was drafted. Shenyang Institute of Automation, Chinese Academy of Sciences, China Earthquake Emergency Search and Rescue Center, China Machine Productivity Promotion Center, Chongqing Dexin Robot Testing Center Co., Ltd., Shenyang Xinsong Robot Automation Co., Ltd., Beijing University of Posts and Telecommunications, Fujian Special Equipment Inspection Institute, The Chinese University of Hong Kong (Shenzhen), Shanghai University, Shenyang Fire Research Institute, Emergency Management Department, Shenzhen City Public Safety Technology Technology Research Institute Co., Ltd., China Guangdong Nuclear Research Institute Co., Ltd., China Academy of Safety Science and Technology, Shanghai Special Equipment Supervision and Inspection Technology Research Institute, Nanjing Special Equipment Safety Supervision and Inspection Institute, Shanghai Heshi Intelligent Technology Co., Ltd., China University of Mining and Technology, Beijing Jianheng Certification Center Co., Ltd., Southeast University, Hengsheng Technology Co., Ltd. The main drafters of this standard. Li Bin, Hu Weijian, Zhang Guowei, Zhang Ping, Peng Peng, Zou Fengshan, Zhang Shaobiao, Hu Sufeng, Zeng Qinda, Zhang Yanheng, Ding Ning, Zhang Yanan, Xu Fang, Wu Yu, Shi Congling, Zheng Yufeng, Zhou Qianfei, Chen Qingcheng, Lu Qiuhong, Li Yunwang, Yu Hui, Wang Hong, Shang Hong, Liu Chun, Tian Jiaxing, Geng Shichao, Liu Tong, Fan Jichun, Che Honglei, Zhang Jun, Zou Weitie. General technical conditions for ground ruins search and rescue robots

1 Scope

China's national general specification for the ground robots used to search collapsed buildings. It specifies the terms and definitions, the classification and model numbering, and the technical requirements. After an earthquake or a building collapse, the people most likely to survive are those found in the first hours, and the space they are trapped in is usually too small, too unstable and too dangerous for a rescuer to enter. A search robot goes in instead: small enough to pass through voids, tracked or articulated to climb rubble,

carrying a camera, a light, a microphone and a speaker so that a trapped person can be seen and spoken to, and tethered or radio-linked back to the team. The requirements that decide whether one is useful are mobility over broken concrete, the ability to right itself after a fall, endurance measured in hours, and a communication link that works through several metres of reinforced rubble - which is the constraint that most designs founder on.

This standard specifies the terms and definitions, classification and model codes, technical requirements, test methods, and inspection rules for ground ruins search and rescue robots. Then, signs, instructions for use, packaging, transportation, storage, etc. This standard applies to ground ruins search and rescue robots that can move on the ground, enter the ruins of buildings, and perform emergency rescue missions. system. This standard does not apply to flight search and rescue robot systems. This standard does not apply to ground ruins search and rescue robots used in special environments such as explosive, nuclear radiation and high temperature.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 191 packaging storage and transportation icon

GB/T 2423.7-2018 Environmental test Part 2. Test method Test Ec. Impact from rough operation (mainly used for Equipment type sample)

GB 2894 safety signs and guidelines for their use

GB/T 4025-2010 Basic and safety rules for human-machine interface markings and coding rules for operating devices

GB/T 4208-2017 enclosure protection grade (IP code)

GB 5226.1-2008 Mechanical electrical safety machinery and electrical equipment - Part 1. General technical conditions

GB/T 7251.8-2005 Low-voltage switchgear and control equipment - General technical requirements for intelligent complete sets

GB/T 9969 General guidelines for the use of industrial products

GB/T 11533 standard logarithmic visual acuity chart

GB/T 12643-2013 Robot and Robot Equipment Vocabulary General technical conditions for

GB/T 13384 mechanical and electrical product packaging

GB/T 16754-2008 Mechanical safety emergency stop design principle

GB/T 36239-2018 special robot terminology

3 Terms and definitions

The following terms and definitions as defined in GB/T 12643-2013 and GB/T 36239-2018 apply to this document. In order to facilitate For the purposes of the following, some terms and definitions in GB/T 12643-2013 and GB/T 36239-2018 are repeatedly listed.

3.1 Ruin ruins The structure of the building is destroyed or collapsed due to the external force, and a structure that is temporarily stable or unstable is formed.