

ICS 27.120.20

CCS F 69



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

GB/T 16702.7-2025

Replacing GB/T 16702-2019

**Design specification for mechanical components in nuclear
island of pressurized water reactor nuclear power plants - Part
7: Supports**

压水堆核电站核岛机械设备设计规范 第7部分：设备支承

Issued on: February 28, 2025

Implemented on: February 28, 2025

**Issued by: State Administration for Market Regulation;
Standardization Administration of China**

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	2
4 General Requirements	2
4.1 General	2
4.2 Applicable Boundaries	3
4.3 Classification of supports	9
4.4 Types of supports and connections	10
4.5 File	18
4.6 Identification	20
5 Materials	22
5.1 Overview	22
5.2 Principles of material selection	22
5.3 Supplementary Provisions	23
6 Design	24
6.2 Design rules for S1 grade supports	31
6.3 Design of S2-level supports	40
7 Manufacturing and Inspection	43
7.1 General requirements	43
7.2 Manufacturing documents and manufacturing requirements	43
7.3 Manufacturing process	43
7.4 Product weld	45
7.5 Nondestructive testing of welds	47
8 Standard supports and standard support components	50
8.1 General	50
8.2 Materials	51
8.3 Prototype verification of standard support parts	51
8.4 Mechanical property tests and non-destructive testing during identification	51
8.5 Use of standard supports	53

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 7 of GB/T 16702 "Design Specification for Mechanical Equipment of Pressurized Water Reactor Nuclear Island". GB/T 16702 has been published as follows: Lower part.

2. Class 1 equipment;

3. Level 2 equipment;

4. Level 3 equipment;

5. Small equipment;

6. Reactor internals;

7. Equipment support;

8. Low-pressure or atmospheric pressure storage tanks. This document replaces Chapter

10 Equipment Support of GB/T 16702-2019 "Design Specifications for Mechanical Equipment of Nuclear Island of Pressurized Water Reactor Nuclear Power Plant".

Compared with Chapter 10 in GB/T 16702-2019, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

--- Added general requirements for support documents (see 4.5.1);

--- Added performance requirements for plates in the thickness direction (see 5.3.1);

--- Deleted the description of abnormal conditions (see 10.3.1.2.1, 10.3.1.3.2.1, 10.3.1.3.2.2 of the 2019 edition);

--- Changed the analysis method requirements for S2 grade and standard supports of plate or shell type supports (see Table 2 of 6.1.8.4, 2019 edition) Table 84).

1 Scope

GB/T 16702.7-2025 is the Chinese national standard on design specification for mechanical components in nuclear island of pressurized water reactor nuclear power plants - part 7: supports, in the field of energy and heat transfer engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 28 February 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 28 February 2025. Classification: ICS 27.120.20, CCS F 69. 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 document specifies the requirements for materials, design, manufacturing, inspection and standard support parts of equipment supports in the nuclear island machinery of pressurized water reactor nuclear power plants. This document applies to equipment supports and their components specified in GB/T 16702.1-2025.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 3098 Mechanical properties of fasteners

GB/T 5313 Thickness properties of steel plates

GB/T 16702.1-2025 Specification for design of mechanical equipment of nuclear island of pressurized water reactor nuclear power plant Part

3 Level 2 equipment

GB/T 16702.4-2025 Specification for design of mechanical equipment for nuclear island of pressurized water reactor nuclear power plant Part

4 Level 3 equipment

GB/T 16702.5 Design specification for mechanical equipment of nuclear island of pressurized water reactor nuclear power plant Part

5 Small equipment

GB/T 19804 General dimensional tolerances and geometric tolerances for welded structures NB/T.20001 Specification for the manufacture of mechanical equipment for nuclear island of pressurized water reactor nuclear power plant NB/T.20002 (all parts) Specification for welding of mechanical equipment in nuclear island of pressurized water reactor nuclear power plant NB/T.20002.6 Specification for welding of mechanical equipment in nuclear island of pressurized water reactor nuclear power plant Part

6.Product welding NB/T.20003 (all parts) Nondestructive testing of mechanical equipment in nuclear island of nuclear power plant NB/T.20003.2-2021 Nondestructive testing of mechanical equipment in nuclear island of nuclear power plant Part

2.Ultrasonic testing NB/T.20003.3 Nondestructive testing of mechanical equipment in

nuclear island of nuclear power plant Part

3.Radiographic testing NB/T.20003.4 Nondestructive testing of mechanical equipment in nuclear island of nuclear power plant Part

4.Penetrant testing NB/T.20003.5 Nondestructive testing of mechanical equipment in nuclear island of nuclear power plant Part

5.Magnetic particle testing NB/T.20003.7 Nondestructive testing of mechanical equipment in nuclear island of nuclear power plant Part

7.Visual inspection NB/T.20005.7 Carbon steel and low alloy steel for pressurized water reactor nuclear power plants Part

7.Steel plates for level 1, 2 and 3 equipment NB/T.20005.8 Carbon steel and low alloy steel for pressurized water reactor nuclear power plants Part

8.Steel plates, steel sections and steel bars for S1 and S2 grade support parts NB/T.20005.9 Carbon steel and low alloy steel for pressurized water reactor nuclear power plants Part

9.Seamless steel tubes for level 2 and 3 equipment NB/T.20005.11 Carbon steel and low alloy steel for pressurized water reactor nuclear power plants Part

11.Seamless steel tubes for grade S1 and S2 supports NB/T.20006.16 Alloy steel for pressurized water reactor nuclear power plants Part

16.Manganese-nickel-molybdenum steel thick plates for pressurizer support components NB/T.20007.1 Stainless steel for pressurized water reactor nuclear power plants Part

1.Grade 1, 2, 3 austenitic stainless steel forgings NB/T.20007.5 Stainless steel for pressurized water reactor nuclear power plants Part

5.Austenitic stainless steel plates for level 1, 2 and 3 equipment NB/T.20007.7 Stainless steel for pressurized water reactor nuclear power plants Part