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GB/T 16507.3-2013

Partial replace GB/T 16507-1996, GB/T 9222-2008

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**Water-tube Boilers—Part 3: Structure Design**

**水管锅炉**

**第 3 部分：结构设计**

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## Foreword

GB/T 16507 "water-tube boilers" is divided into following eight parts:

- Part 1: General rules;
- Part 2: Materials;
- Part 3: Physical design;
- Part 4: Strength calculation of pressure parts;
- Part 5: Manufacturing;
- Part 6: Inspection, testing and acceptance;
- Part 7: Safety accessories and instruments;
- Part 8: Installation and operation.

This is Part 3 of GB / T 16507.

This Part is drafted in accordance with the rules given in GB/T 1.1-2009.

This Part partly replaces the content of GB/T 16507-1996 and GB/T 9222-2008. Compared with GB/T 16507-1996, GB/T 9222-2008, the main technical content changes are as follows:

- Added the contents of basic requirements (4.9, 4.10, 4.12 to 4.19);
- Combined the structure requirements related with technology in GB/T 9222-2008 into this part;
- Changed the welding requirements of pipe joint and lifting lug;
- Changed the butt weld distance between pipe and pipeline;
- Added welding requirements of unequal wall drum;
- Added abutting edge deviation requirements for pipe and pipeline;
- Changed the regulations of distance between flange bending start point to center line of welding;
- Added the reinforced pipe joint requirements;
- Added structural type of flat end cover (Type 7 and Type 8);
- Added the requirements for drum;
- Added the requirements for attemperator;
- Added the basic requirements for suspender;
- Added the requirements for furnace wall door opening;
- Added the requirements for steel structural, ladder and platform.

This Part is proposed by and is under the jurisdiction of the National Standardization Technical Committee of Boiler Pressure Vessel (SAC/TC 262).

The responsible drafting organization is Beijing Babcock & Wilcox Co., Ltd.

Units participating in the drafting of this Part include: Dongfang Boiler Co., Ltd. of Dongfang Electric Group, Shanghai Boiler Factory Co., Ltd., Harbin Boiler Factory Co., Ltd., Shanghai Power Equipment Packaged Design and Research Institute, Hangzhou Boiler Group Co., Ltd., Wuxi Huaguang Boiler Co., Ltd and Wuhan Boiler Co., Ltd

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This Part replaces the following historical editions issued:

- GB/T16507-1996, GB/T 9222-2008.

# Water-tube Boilers— Part 3: Structure Design

## 1 Scope

This part of GB/T 16507 specifies the requirements for structure design of water-tube boilers' drums (start-up separators), headers, desuperheaters, tubes, membrane walls, pipes, pipe joints, hangers, openings, door openings, steel structure, handrails and platforms, etc.

This part is applicable for the structure design water-tube boilers specified by 16507.1.

## 2 Normative references

The articles contained in the following documents have become this document when they are quoted herein. For the dated documents so quoted, all the modifications (Including all corrections) or revisions made thereafter shall be applicable to this document.

GB/T 985.1 Recommended joint preparation for gas welding manual metal arc welding gas-shield arc welding and beam welding

GB/T 985.2 Recommended joint preparation for submerged arc welding

GB/T 2900.48 Electrotechnical terminology of boilers

GB 4053 (All parts) Safety requirements for fixed steel ladders and platform

GB/T 16507.1 Water-tube boilers—Part 1: General requirement

GB/T 16507.2 Water-tube boilers—Part 2: Materials

GB/T 16507.4 Water-tube boilers—Part 4: Strength calculation of pressure parts

GB/T 22395 Specification for design of boiler steel structures

JB/T 6734 Calculation methods for strength of boiler fillet weld

JB/T 6735 Calculation methods for strength of boiler suspender

## 3 Terms and Definitions

For the purpose of this document, the following terms and definitions defined in GB/T 2900.48 and GB/T 16507.1 apply.

## 4 Basic Requirements

4.1 The basic principles of boiler design shall comply with the requirements of GB/T 16507.1.

4.2 The calculation load required considering and the load calculation required shall be designed in accordance with the provisions of this part and the specific requirements of GB/T 16507.1 and GB/T 16507.4.

4.3 The wall temperature of components shall be designed to ensure that it does not exceed the allowable temperature of the materials used; consider the temperature difference between the outer wall and inner wall of heating surface tubes, anti-steam oxidation of the inner wall and other factors, and the materials selected shall meet the requirements of GB/T 16507.2.

4.4 The minimum thickness required by the pressure components shall be determined in accordance with the strength calculation formula or stress analysis formulas and provisions of GB/T 16507.4 in the case of design.

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