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GB/T 16507.5-2013

Partial replaces GB/T 16507-1996

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**Water-tube Boilers—**

**Part 5: Fabrication**

**水管锅炉**

**第 5 部分：制造**

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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 5 of GB / T 16507.

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

This Part partly replaces GB/T 16507-1996. Compared with GB / T16507-1996, the main technical content changes are as follows:

- Added "Terms and definitions" (see Clause 3);
- Added "Basic requirements" (see Clause 4);
- Deleted manufacturing parts of shell boiler in previous Clause 7;
- Detailed inspecting requirements for bend pipe;
- Added "Tube bending process test" (see Annex A);
- Added "Additional requirements for membrane-panel welding process assessment" (see Annex B);
- Added "Classification of materials for boiler welding process assessment" (see Annex C);

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

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This Part replaces the following historical editions issued:

—GB/T16507-1996.

# Water-tube Boilers—

## Part 5: Fabrication

### 1 Scope

This part of GB/T 16507 specifies provisions of mark, cold and hot forming, expanded joint, welding and heat treatment.

This part is applicable to the fabrication of water-tube boilers scoped by GB/T 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 2652 Tensile test methods on weld and deposited metal

GB/T 3101.1 Implants for surgery - Hydroxyapatite - Part 1: Ceramic hydroxyapatite

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

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

GB/T 16507.3 Water-tube Boilers—Part 3: Structure design

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

GB/T 16507.6 Water-tube boilers—Part 6: inspection, testing and acceptance

JB/T 3223 Quality management discipline of welding materials

JB/T 9626 Specification for boiler forging

NB/T 47014 Welding procedure qualification of pressure equipment

NB/T 47016 Mechanical property tests of product welded test coupons for pressure equipments

NB/T 47018 Carbon and alloy steel forgings for pressure equipments

TSG G0001 Boiler safety technical supervision administration regulation

### **3 Terms and definitions**

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

#### **3.1 Cold forming**

It is the plastic deformation processing of workpiece material under the recrystallization temperature.

In engineering practice, the plastic deformation under the ambient temperature is generally referred to as cold forming. The plastic deformation processing between cold forming and hot forming called warm forming.

#### **3.2 Hot forming**

It is the plastic deformation processing of workpiece material above the recrystallization temperature.

#### **3.3 Tube forming**

It is the elbow, upsetting, necking and flaring processes of tube.

### **4 Basic requirements**

**4.1** Manufacturing organization shall have the manufacturing license qualification accordance with the provision of GB/T 16507.1. Welding and nondestructive inspectors shall have the corresponding qualifications of special equipment personnel and receive training and management in accordance with relevant provisions. Lifting and transportation personnel shall be in compliance with the qualifications of safe operating.

**4.2** The structure of pressure parts of boilers shall be in compliance with the provisions of GB/T 16507.3. Strength calculation shall be in compliance with the provisions of GB/T 16507.4.

**4.3** Manufacturing process documents and qualified drawings shall be in compliance with production conditions of this organization.

**4.4** The manufacture of pressure parts shall use appropriate process and method. It shall not generate the additional stress and harmful defect which affect safety and using.

**4.5** The equipments, instruments and apparatus involved in the manufacturing of pressure parts of boilers shall be compliance with the specified accuracy and receive regular

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