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Professional Standard of the People's Republic of China

SY/T 0510-2010
Replace SY/T 0510-1998, SY/T 0518-2002

钢制对焊管件规范

Code for Steel Butt-welding Fittings

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CONTENTS

Foreword

This Standard will replace SY/T 0510-1998 *Steel butt-welding pipe fitting* and SY/T 0518-2002 *Specification for design of steel butt-welding fittings for oil & gas pipeline*.

This Standard will be prepared by revision and integration of SY/T 0510-1998 and SY/T 0518-2002.

Comparison with SY/T 0510-1998 and SY/T 0518-2002, main changes of this Standard are as follows:

— To change the name of standard as *Code for Steel Butt-welding Fittings*;

— To extend the range of dimension, where, 180° long radius elbow, 90° long radius reducing elbow, 90° short radius elbow; there is not changed on the range of dimension of 180° short radius elbow; the dimension of other fittings will be extended from max. DN600mm to DN1200mm;

— Added the specification of R=3D elbow;

— Added the SE contents of loose flange;

— Added the butt-welding pipe socket contents;

— Deleted the O.D. dimension Series II of Category A fitting in original standard;

— Deleted the Category B fitting in original standard, changed the O.D. dimension of Category B fitting as O.D. dimension Series II in current standard;

— Deleted the mass of fitting in original standard;

— Added the annex A, annex B, annex C, annex D and annex E.

In consideration of the symbols σ_b and σ_s referenced in many codes express that tensile strength and yield strength of material, therefore, the symbols σ_b and σ_s still apply to this Standard, do not use R_m and R_{eL} to replace.

This Standard is proposed and under the jurisdiction of Petroleum Engineering Construction Standardization Committee.

Major draft unit of this Standard is China Petroleum Pipeline Bureau.

Participate draft units of this Standard are China Oil Pipeline Machinery Manufacturing Co., Ltd and Hebei Canghai Pipe Fittings Group Co., Ltd.

Major drafters of this Standard are Sun Zhengguo, Hu Chunwei, Chenghui, Wang Yumin, Li Yuzhuo, Meng Qingyun, Guo Lei, Zhao Deqing, Wang Yinze, Wang Cheng and Li Hengdong.

SY/T 0510-1998 and SY/T 0518-2002 replaced by this Standard.

History editions of SY/T 0518-2002 are as follows:

— SY/T 0518-1992.

Code for Steel Butt-welding Fittings

1. Scope

1.1 This Standard specifies the basic requirements of designing, materials, manufacture, inspection, testing, marking and acceptance for elbow, tee joint, four way, reducing joint, pipe cap, loose flange SE as well as butt-welding pipe socket of carbon steel, alloy steel and Austenite stainless steel butt-welding fittings.

1.2 This Standard is applicable to oil, gas running piping system, utility piping system and industrial piping system.

1.3 When there is not specified, all requirements apply to butt-welding fitting, and applies to butt-welding branch pipe socket.

2. Normative References

The articles contained in the following documents have become this standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB 150-1998 Steel Pressure Vessels

GB/T 710 Hot-rolled quality carbon structural steel sheets and strips

GB/T 711 Hot-rolled quality carbon structural steel plates and wide strips

GB 713 Carbon and low alloy steel plates for boilers carbon and alloy steel plates for boilers

GB 912 Hot-rolled sheets and strips of carbon structural steels and high strength low alloy structural steels

GB 3087 Seamless steel tubes for low and medium pressure boiler

GB/T 3274 Hot-rolled Plates and Strips of Carbon Structural Steels and High Strength Low Alloy Structural Steels

GB/T 3280 Cold Rolled Stainless Steel Plate Sheet and Strip

GB 3531 Low alloy steel plates for low temperature pressure vessels

GB/T 4237 Hot rolled stainless steel plate sheet and strip

GB/T 4238 Heat-resisting steel plate sheet and strip

GB 5310 Seamless steel tubes and pipes for high pressure boiler

GB 6479 Seamless steel tubes for high-pressure for chemical fertilizer equipments

GB/T 8163 Seamless steel tubes for liquid service

GB/T 9124 Specification for steel pipe flanges

GB/T 9445 Non-destructive testing - Qualification and certification of personnel

GB/T 9711.1 Petroleum and natural gas industries-Steel pipe for pipelines-Technical delivery conditions-Part 1: Pipes of requirement class A

GB/T 9711.2 Petroleum and natural gas industries-Steel pipe for pipelines-Technical delivery conditions-Part 2: Pipes of requirements class B

GB 9948 Seamless steel tubes for petroleum cracking

GB/T 14976 Stainless steel seamless tubes for fluid transport
GB/T 20878-2007 Stainless and heat-resisting steels—Designation and chemical composition
GB 50028 Code for design of city gas engineering
GB 50236-1998 Code for construction and acceptance of field equipment, industrial pipe welding engineering
GB 50251 Code for design of gas transmission pipeline engineering
GB 50253 Code for design of oil transportation pipeline engineering
GB 50316 Design code for industrial metallic piping
SY/T 0599 Metallic material requirements-Resistance to sulfide stress cracking and stress corrosion cracking for gas surface equipment
CJJ 34 Design code for city heating network
HG 20582-1998 Specification for Stress Calculation of Steel Chemical Vessels
JB/T 4711 Coating and packing for pressure vessels transport
JB 4726 Carbon and low - alloy steel forgings for pressure vessels
JB 4727 Low - alloy steel forgings for low temperature pressure vessels
JB/T 4730.1~JB/T 4730.6 Nondestructive testing of pressure vessels

ASME B36.10M: 2004 Welded and seamless wrought steel pipe
ASME B36.19M: 2004 Stainless steel pipe
ASTM A105/A105M Carbon steel forgings for piping applications
ASTM A350/A350M Standard specification for carbon and low-alloy steel forgings, requiring notch toughness testing for piping components
ASTM A694/A694M Standard Specification for Carbon and Alloy Steel Forgings for Pipe Flanges, Fittings, Valves, and Parts for High-Pressure Transmission Service
MSS SP-75-2004 Specification for high-test, wrought, butt-welding fittings

3. Terms and Definitions

For the purposes of this national standard, the following terms and definitions apply.

3.1 purchaser

The proprietors include agents and other representatives authorized.

3.2 supplier

Manufacturers who design, produce, and offer finished pipe fittings according to this standard and requirements of contract.

3.3 butt-welding fittings

The generic terms for welding connective bends, tee joints, crosses and reducing joints, pipe caps,

turn-up short section of loose flange.

3.4 fittings of the same type

The same type of pipe fittings bends, tee joints and crosses, reducing joints, pipe caps, and butt-welding branch pipe sockets represent a category respectively.

3.5 nominal thickness at bevel ends

The thickness of bevel at the end of pipe fitting marks the allowed pressure of pipe fitting.

3.6 nominal diameter

The nominal diameter of pipe fitting refers to the nominal diameter of steel tube connected with pipe fitting (not including butt-welding branch pipe socket).

3.7 pressure

The pressure refers to gauge pressure except those indicated.

3.8 operating pressure

The maximum pressure which pipe fittings can support under normal operating conditions

3.9 design pressure

Under corresponding design temperature, the pressure which is used to confirm calculating pressure of pipe fitting should not be lower than working pressure.

3.10 design temperature

The lowest temperature and highest temperature (the average temperature along section of metal of pipe fitting) that metal of pipe fitting could reach in normal working conditions.

3.11 calculated thickness

Thickness calculated through formula of every chapter. The thickness other load required should be calculated where necessary.

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