

ICS 23.067

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National Standard of the People's Republic of China

GB/T 13401-2005

Replace GB/T 13401-1992

钢板制对焊管件

Steel Plate Butt-welding Pipe Fittings

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Preface

This standard is the amended version of GB/T 13401—1992 “Steel plate butt-welding pipe fittings”.

This standard’s amendments are based on ASME B16.9:2003 “Factory-made wrought steel butt-welding fittings” and the domestic manufacturing situations, with reference of the original standard.

The main differences between this standard and ASME B16.9:2003 are as following:

- Types (of steel plate weld), dimension (DN150~DN1200) and technical requirements are generally consistent to those in ASME B16.9 but in different format;
- Added the dimension of welding ends of common pipe fittings connected to “metric pipes” on the basis of the original standard, that’s the dimension of “II series”;
- The decimal place of “end’s outer diameter” of some specifications are different from those in ASME B16.9, for example: DN300 pipe fitting’s “end’s outer diameter” is “323.8mm” in ASME B16.9 and “323.9m” in this standard;
- Added the pipe fittings’ symbols, codes, materials, manufacturing, heat treatment, inspection, protection, packaging, product quality certification, etc.

The main changes of this standard, comparing to GB/T 13401—1992, are as following:

- Added the description of symbols of pipe fittings;
- Expanded the range of dimension, from the original DN 350~DN1200 to DN150~DN1200;
- Added the materials and manufacturing technical requirements; added the requirements of design verification; and revised the inspection technical details.

Appendixes A and B in this standard are informative appendixes.

This standard is proposed by the China Machinery Industry Federation.

This standard is under centralized management of National Technical Committee of Standardization for Pipeline Accessory.

This standard is drafted by Academy of Machinery Science & Technology, Wuxi Xinfeng Pipe Co., Ltd, Cangzhou Bohai Pipe Fittings Co., Ltd, Jiangyin South Pipe Fittings Co., Ltd, Shanghai Gaoqiao Pipe Fittings Co., Ltd, Jiangyin Land & Sea High-Pressure Pipe Fittings Co., Ltd, Bengbu Pipe Fittings Factory, Changzhou Wujin Power Pipe Fittings Factory, Shaoxing High Strength Fasteners Factory, and Northeast Electric Power Design Institute.

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This standard has regulated symbols and codes, dimension and tolerances, materials, manufacturing, inspections, tests, marking, protection and packaging for DN150~DN1200 (NPS6~NPS48) carbon steel, alloy steel and stainless steel plate butt-welding pipe fittings.

2. Normative References

The following terms are parts of this code as the references. Any future amendment sheets or amendment versions of all references with dates are not applicable to this standard; however, it's encouraged all parties to research the usage of the latest versions of these references in accordance with the agreements in this code. All latest versions of the references without dates are applicable to this standard.

GB/T 150 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 Steel plates for boilers

GB/T 912 Hot-rolled plain carbon and low alloy structural steel sheets and strips

GB/T 985 Basic forms and sizes of weld grooves for gas welding, manual arc welding and gas-Shielded arc welding

GB/T 986 Basic forms and sizes of weld grooves for submerged arc welding

GB/T 1047 Pipework components--Definition and selection of DN(nominal size) (ISO 6708:1995, MOD)

GB/T 3274 Carbon structural and low alloy steel—Rolled plates and strips

GB/T 3280 Cold rolled stainless steel sheets and plates

GB 3531 Low alloy steel plates for low temperature pressure vessels

GB/T 4237 Hot rolled stainless steel sheets and plates

GB/T 4238 Heat-resisting steel sheets and plates

GB 6654 Steel plates for pressure vessels

JB 4708 Welding techniques qualification for steel pressure vessels

JB/T 4709 Welding specification for steel pressure vessels

JB/T 4730.1~4730.6—2005 Nondestructive Testing of Pressure equipments

3. Symbols and Codes

3.1 Symbols

- DN—Nominal Dimension of Pipe Fittings in Metric System; non-measured value (See GB/T 1047);
- NPS—Nominal Dimension of Pipe Fittings in English Size; non-measured value;
- A—Distance from the center of end surface of 90° bend to the other end surface; Distance of 180° bend's center to the center of end surface;
- B—Distance of 40° bend's center to end surface;
- b—Unfitness of Opposite Side's Butt Joint;
- C—Distance of axial lead of beach outlet of three-way pipe to end surface of central body;
- D—Outer groove diameters of bend, equal-diameter three-way pipe and for-way pipe, pipe cap, reducing fittings' larger end;
- D₁—Outer Diameter of Groove of Smaller End of Reducing Fittings;
- E—Total Height of Pipe Cap (welded cap);
- G—Stub End's Stub Outer Diameter;
- H—Distance of Reducing Connector's End Surface to End Surface;
- M—Distances of Central Line of Three-Way or Four-Way Pipe to Branch's End Surface;
- s—Wall Thickness of Steel Pipe;
- t—Regulated Wall Thickness at Welded Larger End of Equal or Reducing Pipe Fittings;
- t₁—Regulated Wall Thickness at Welded Smaller End of Reducing Pipe Fittings.

3.2 Codes

The types and the codes of steel plate butt-welding pipe fittings are listed in Table 1.

Table 1 Pipe Fittings' Types and Codes

Types	Types	Codes
45° Bend	Long Radius	45E(L)
90° Bend	Long Radius	90E(L)
	Short Radius	90E(S)
	Long Radius Reducing	90E(L)R
Reducing Connector (Reducer)	Concentric	R(C)
	Eccentric	R(E)
Three-Way Pipe	Equal Diameter	T(S)
	Different Diameter	T(R)
Four-Way Pipe	Equal Diameter	CR(S)
	Different Diameter	CR(R)
Pipe Groove		C

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