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GB

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

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GB/T 12459-2005

Replace GB/T 12459-1990

Steel Butt-Welding Seamless Pipe Fittings

钢制对焊无缝管件

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Foreword

This standard is a revision of GB/T 12459- 1990 "Steel Butt-welding Seamless Pipe Fittings".

This standard adopts ASME B 169: 2001 "Factory-Made Wrought Butt-welding Fittings" and is formulated in combination of the manufacturing condition in China by reference to the former standard.

There are main differences between the standard and ASME B169:2001:

——Model (seamless), dimension (DN 800 and lower level) and technical requirements in this standard are of substantial agreement with ASME B 16.9, and the preparation format is deferent.

——The dimension of pipe fittings welding end connected with metric pipe commonly used in China, i.e. dimension of "series II" products;

——The decimal place of the "groove external diameter" in some specification are slightly different from the one of ASME B 16.9, e.g. the "groove external diameter" of DN20 pipe fittings, in ASME B 169, is 26.7 mm; and 26.9 mm in this standard.

——The following technical data are added: symbol and code number of pipe fittings, material, manufacturing and heat treatment, inspection, protection and package of product quality certificate, etc.

There are main differences between the standard and GB/T 12459-1990:

——Add the explanation for symbols of pipe fittings;

——Add the dimension of lap joint stub end for flange connection according the requirement of ASME B 16.9;

——Expend the dimensional range from DN 15~DN 500 to DN 15 ~ DN 800, among them, the dimension range of long radius elbow, tee joint, cross joint, pipe cap and reducing joint is expanded from DN 15 ~DN 500 to DN 15 ~ DN 800; and the one of other pipe fittings is expanded from DN 15 ~ DN 500 to DN 15 ~ DN 600.

——Add the requirements in material and manufacturing process; supplement the requirements in design verification and revise the technical content like inspection.

Appendix A and Appendix B of this standard are informative.

This code is brought forwards by China Machinery Industry Federation.

This national standard is under the jurisdiction of National Technical Committee 236 on Sliding Bearing of Standardization Administration of China.

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Steel Butt-Welding Seamless Pipe Fittings

1 Scope

This standard specifies the requirements in symbol and code number, dimension and tolerance, material, manufacturing, inspection, test, marking, protection and package of carbon steel, alloy steel and stainless steel butt welding of DN 15 ~ DN 800 (NPS 1/2 ~ NPS 24).

2 Normative Reference

The following documents contain provisions which, through reference in this text, constitute provisions of this code. For dated reference, subsequent amendments (excluding correction) to, or revisions of, any of these publications do not apply. However, all parties coming to an agreement according to this standard are encouraged to study whether the latest edition of these documents is applicable. For undated references, the latest edition of the referenced document applies.

GB 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 sheets and wide strips

GB/T 713 Steel plates for boilers

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

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

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

GB 3531 Low alloy steel plates for low temperature pressure vessels

GB/T 4237 Hot rolled stainless steel plate

GB/T 4238 Heat-resisting steel sheets and plates

GB 5310 Seamless steel tubes and pipes for high pressure boiler

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

GB 6654 Steel plates for pressure vessels

GB/T 8163 Seamless Steel Tubes for Liquid Service (neq ISO 559: 1991)

GB/T 9118.1-2000 Loose hubbed steel pipe flanges with welding neck collar with raised face

GB/T 9118.2-2000 Loose hubbed steel pipe flanges with welding neck collar with ring-joint face

GB/T 9124-2000 Specification for steel pipe flanges

GB/T 9948 Seamless steel tubes for petroleum cracking

GB/T 14976 Stainless Steel Seamless Tubes for Fluid Transport (ASTM A 269: 2000 NEQ)

JB 4730 Nondestructive Testing of Pressure Vessels
 ASME B 16.5 Flanges and flanged fittings
 ASME B 16.9: 2001 Factory-Made Wrought Butt welding Fittings
 ASME B 36.10M: 1996 Welded and Seamless Wrought Steel Pipe
 ASME B 36.19 M: 1985 (R 1994) Stainless steel tubes

3 Symbol and Code Number

3.1 Symbols

DN—Nominal dimension of metric pipe fittings; non-measured value (see GB/T 1047);

NPs—Nominal dimension of British pipe fittings, non-measured value;

A—Distance of a end face center to the other end face of 90° elbow; distance of 180° elbow center to end face center;

B—Distance from 45° elbow center to end face;

C—Distance from branch outlet axial line of tee joint and cross joint to central body end face;

D—Groove external diameter of elbow, straight tee and cross joint, and pipe cap; groove external diameter of reducing fittings large end;

D₁—Groove external diameter of reducing fittings smaller end;

E—Total height of pipe cap (pipe seal head);

F—Length of lap joint stub end;

G—External diameter of lap joint;

H—Distance from a end face to the other end face of a reducing joint;

K—Distance of from a end face to the top of a 180° elbow;

M—Distance from main body center line to branch pipe end face of tee joint and cross joint;

O—Distance from a end face to the other end face of a 180° elbow;

R—Radius of rounded angle;

t—Required wall thickness of large end welding end of same-diameter or reducing fittings;

t₁—Required wall thickness of smaller end welding end of reducing fittings;

T—Thickness of lap joint.

3.2 Code Number

The type and code number of butt welding seamless pipe fittings are detailed in Table 1.

Table 1: type and code number of pipe fittings

Type	Model	Code number
45°elbow	Long radius	45E (L)
90°elbow	Long radius	90E (L)
	Short radius	90E (S)
	Long radius reducing	90E (L) R
180°elbow	Long radius	180E (L)

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