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

GB/T 13401-2025

Replacing GB/T 13401-2017

Steel butt welding piping fittings - Technical specification

钢制对焊管件 技术规范

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1 Scope

GB/T 13401-2025 is the Chinese national standard on steel butt welding piping fittings - technical specification, in the field of fluid systems and general-purpose components. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 31 October 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2026. Classification: ICS 23.040.60, CCS J15. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the technical requirements for steel butt welding piping fittings, including order details, materials, manufacturing, heat treatment, inspection and testing, weld repair, surface protection, packaging and product quality certification, etc. This document applies to pipe fittings specified in GB/T 12459. Other pipeline fittings may refer to this document for further information.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date,

only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 222 Permissible Tolerances for Chemical Composition of Steel Products

GB/T 223 (all parts) Iron, Steel and Alloy

GB/T 228.1 Metallic Materials - Tensile Testing - Part

3 Terms and Definitions

This document does not have terms or definitions that need to be defined.

4 Order Details

The demand-side shall provide the following information in the order for the procurement of steel butt welding piping fittings (hereinafter referred to as the pipe fittings).

- a) Variety, type or code of the pipe fittings;
- b) Material grade of the pipe fittings (see Chapter 5);
- c) Nominal size and nominal wall thickness (standard or specified; when the outer diameter is selected from GB/T 12459 Series II, it shall be marked "-II");
- d) Structure, seamless or welded (if not specified, the manufacturer may choose either);
- e) Product standard number, GB/T 12459 and GB/T 13401 (including version number);
- g) Any additional requirements (see Appendix A);
- h) Other supplementary provisions.

5 Materials

5.1 The raw materials for manufacturing the pipe fittings should preferably be seamless pipes, straight seam electrofusion welded pipes, and plates, and their commonly used chemical compositions shall conform to the provisions of Table

1. When the raw materials are bars and forgings, their chemical compositions shall conform to the relevant provisions of GB/T 14383. The manufacturer shall conduct chemical composition analysis on all raw materials used, in accordance with the furnace number, using methods conforming to the provisions of GB/T 223 (all parts) or GB/T 4336, GB/T 11170, GB/T 20123, GB/T 20124 or GB/T 20125. The permissible deviations in the chemical composition of the raw materials used shall comply with the provisions of GB/T 222.

5.2 The material grade codes for the pipe fittings represent the following.

- a) CF is an abbreviation for carbon steel fitting; the following figure indicates the minimum tensile strength of the pipe fitting; the suffix letter K indicates that this grade must pass the impact test at 20 C;
- b) AF is an abbreviation for alloy steel fitting; the following figure uses characteristic numbers familiar in the industry; the suffix letter G indicates that this grade has relatively high tensile properties;
- c) LF is an abbreviation for low temperature steel fitting; the following figure indicates the minimum tensile strength of the pipe fitting; the suffix letters K1, K2, K3 and K4 respectively represent minimum operating temperatures of -20 C, -46 C, -104 C and -196 C;
- d) SF is an abbreviation for stainless steel fitting; the following figure uses characteristic numbers familiar in the industry; the suffix letters L and H respectively represent relatively low and high carbon contents; the chemical element symbols in the suffix indicate that their contents are limited.

5.3 Commonly used raw materials for manufacturing pipe fittings are listed in Appendix B. Although this document does not restrict the use of raw materials other than those in Appendix B, the raw materials used shall comply with the requirements of GB/T 20801.2 or relevant specifications, and structural steel pipes shall not be used to manufacture pipe fittings.

5.4 For welded pipe fittings manufactured from plates, the welding materials used shall be selected in accordance with NB/T 47015 or relevant specifications. For stainless steel welded pipe fittings, a chemical composition analysis shall be performed on the weld metal based on the welding material batch number; the chemical composition of the weld metal shall meet the limits specified for the material grade or the limits specified in the welding material specifications, or be between the maximum value specified in one limit and the minimum value specified in another.

5.5 For pipe fittings made of austenitic stainless steel, orders or supplies may be made in accordance with dual-marking material grades, such as SF304/SF304L, SF304/SF304H, SF316/SF316L, SF316/SF316H, SF317/SF317L, SF321/SF321H, SF347/SF347H and SF348/SF348H. In this case, the pipe fittings shall meet the chemical composition and mechanical property requirements of each material grade.

6 Manufacturing

6.1 The pipe fittings may be formed by one or a combination of methods, such as extrusion, push forming, molding, drawing, forging, welding or machining.

6.2 Hollow circular pipe fittings with a nominal size less than or equal to DN100 may be directly machined from bar stock, with their axial direction approximately parallel to the direction of the metal fibers of the material; however, elbows, tees, and crosses shall not be

directly machined from bar stock.

6.3 Welded pipe fittings whose welding process is completed by the manufacturer shall meet the following conditions.

- a) Welding procedure qualification shall be performed in accordance with NB/T 47014 or relevant specifications;
- b) Welding procedure specifications shall be developed in accordance with NB/T 47015 or relevant specifications;
- c) All welding work shall be completed by welders who have passed the relevant examinations and obtained the corresponding welding qualifications, in accordance with the welding procedure specifications;
- d) Heat treatment shall be performed in accordance with the provisions of Chapter 7;