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

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Replacing GB/T 19228.1-2011

Stainless steel press-fitting assemblies - Part 1: Press-fittings

不锈钢卡压式管件组件 第1部分:卡压式管件

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1 Scope

1 The document lays down the classification and designation, structural types and dimensions, technical requirements, tests, inspection and the packaging, transport and storage of stainless steel press-fittings, referred to below as fittings.

1 It applies to the design, manufacture and acceptance of press-fittings of nominal size not greater than DN100 and nominal pressure not greater than PN25 for stainless steel pipework carrying drinking water, piped direct drinking water, drainage, domestic hot water, cold water, sea water, fuel gas, medical gases and similar media.

3 Terms and definitions

3.1 Press jointing is a way of joining pipework in which a socket fitting carrying a special seal is used and the mouth of the pipe is pressed with a dedicated tool so as to seal and secure the joint. According to the form of the end, press jointing is divided into the S type and the D type.

4 Classification and designation

4.1.1 By the way the socket end is joined, fittings fall into two classes: the S type, in which

the socket end of the fitting has an extended straight section, and the D type, in which it has none.

4.1.2 The kinds, forms and codes of the fittings are set in Table 1, which gives the code CAP for the cap, C for the equal coupling, CR for the reducing coupling, T for the equal tee, TR for the reducing tee, 90E-A and 90E-B for the A and B forms of the 90 degree elbow, 45E-A and 45E-B for the A and B forms of the 45 degree elbow, ITC for the female thread adaptor, ETC for the male thread adaptor and KF for the press flange adaptor. Two notes explain that an A-type press fitting has a socket at both ends of the joint while a B-type press fitting has a socket at one end and a spigot, that is a plain pipe end, at the other.

4.2 The basic parameters of the fittings are set in Table 2. The nominal pressure is not greater than PN16 for D-type fittings and not greater than PN25 for S-type fittings, and the design pressure not greater than 1.6 MPa and 2.5 MPa respectively. The table also gives, for each kind of fitting and each end type, the range of nominal sizes covered, but in the extracted text the size ranges are run together and cannot be matched to their rows with confidence, so they are not reproduced here.

4.3.1 The product designation is made up of the product code, the socket end connection type and series, the nominal size or pipe thread size, the material code such as S30408 or S31608, and the number of the document. Three examples are given, of an S-type series I equal coupling of nominal size DN20 in 06Cr19Ni10, of an S-type series II reducing tee in 06Cr17Ni12Mo2, and of a D-type male thread adaptor in 022Cr17Ni12Mo2; in the last two the size and thread designations are damaged in the extracted text.

4.3.2 Fittings that have passed inspection are to be marked with the trademark of the manufacturer, the size of the fitting and the material code.

5 Structural types and dimensions of the fittings

5.1 The structural type of the S-type socket is shown in Figure 1 a) and its basic dimensions are set in Table 3; the structural type of the D-type socket is shown in Figure 1 b) and its basic dimensions are set in Table 4. Figure 1 labels the body and the O-ring rubber seal. Table 3 is illegible in the extracted text and its dimensions are therefore not reported. Table 4 gives, for the nine nominal sizes from DN15 to DN100, the pipe outside diameter, the minimum wall thickness of the fitting, the socket bore, the bore and the outside diameter at the socket end and the socket length, all in millimetres and with their tolerances.

5.2 to 5.10 The structural types of the cap, the equal coupling, the reducing coupling, the equal tee, the reducing tee, the 90 degree elbow, the 45 degree elbow, the female thread adaptor and the male thread adaptor are shown in Figures 2 to 10, one figure for each with an S-type and a D-type part, and the elbows shown in both their A and their B form. Their basic dimensions are set in Tables 5 to 22, an S-type table and a D-type table for each kind, the S-type tables giving the pipe outside diameter and the structural length for the series I

and the series II fittings side by side, and the D-type tables giving a single pipe outside diameter and structural length. The tee tables add the structural height of the branch, the elbow tables give the structural length both for the end with a socket and for the end without, and the thread adaptor tables add the pipe thread size, which is damaged in the extracted text wherever the size includes a fraction of an inch.

5.11 The structural type of the press flange adaptor is shown in Figure 11, with an S-type and a D-type part, and its basic dimensions are set in Tables 23 and 24, which give the pipe outside diameter and the length of the pressed connecting piece for the sizes DN15 to DN100. The dimensions and technical requirements of the flange itself are to comply with GB/T 9124.1 and the related standards, and flanges of another form may be used by agreement between supplier and purchaser.

6 Technical requirements

6.1.1 The materials commonly used for the fittings are listed in Table 25 by unified numerical code and grade, namely S30408 or 06Cr19Ni10, S30403 or 022Cr19Ni10, S31608 or 06Cr17Ni12Mo2, S31603 or 022Cr17Ni12Mo2 and S11972 or 019Cr19Mo2NbTi. Where the fitting is extruded, the material is to comply with GB/T 19228.2, GB/T 3280 or GB/T 713.7; where it is stamped from strip, with GB/T 4237; where an adaptor is cast in stainless steel, with GB/T 2100; and where another material is used, its performance is to be not lower than the requirements of the document.

6.1.2 The material of the O-ring rubber seal is to comply with GB/T 19228.3 and with Annex A.

6.2 The appearance of the fitting is to be clean and smooth and the weld surface free of cracks, pores, undercut and similar defects. Slight mould marks are allowed on the outer surface, but there is to be no obvious unevenness and no scratch deeper than the negative wall thickness tolerance, and the depth of a longitudinal scratch is not to exceed 10% of the nominal wall thickness.

6.3 The dimensional tolerances of the fittings are to comply with Tables 3 to 24, the thinned sections of elbows and tees are to meet the minimum wall thickness requirement, the internal and external threads of the adaptors are to comply with GB/T 7306.1, the dimensions of the O-ring rubber seals are to comply with Annex A, the dimensions of the thin-wall stainless steel tube to be joined are to comply with Annex B, and the jaw dimensions of the pressing tools for S-type fittings are given in Annex C.

6.4 As to the delivery condition, fittings are to be solution treated after machining and welding, and pickled and passivated after solution treatment, except that fittings whose surface has been bright heat treated need not be pickled and passivated; delivery in another condition is allowed by agreement between supplier and purchaser.

6.5.1 After the intergranular corrosion test of 7.3.1 the fitting is to show no cracking or

flaking, and after the salt spray test of 7.3.2 its surface is to show no rusting.

6.5.2 and 6.5.3 After the hydrostatic test of 7.4 the fitting is to be free of leakage and permanent deformation, and after the air tightness test of 7.5 free of leakage.

6.5.4 For the performance of the assembled joint, the pressure test of 7.6.1 is to leave the assembly free of leakage and permanent deformation; the negative pressure test of 7.6.2 is to leave a loss of vacuum of not more than 5 kPa; the pull-out test of 7.6.3 is to give a pull-out force greater than the minimum pull-out resistance of Table 26, which in kilonewtons requires for the S type and the D type respectively 1.9 and 1.2 at DN10, 3.1 and 1.98 at DN15, 5.4 and 3.46 at DN20, 7.0 and 4.5 at DN25, 10.0 and 6.42 at DN32, 12.7 and 8.12 at DN40, 15.2 and 9.72 at DN50, 38.3 and 24.5 at DN65, 45.3 and 29.0 at DN80 and 54.7 and 35.0 at DN100, with a note that the permanent displacement within the specified range of pull-out force is not to exceed 1.0 mm; the temperature change test of 7.6.4, the water pressure bending deflection test of 7.6.5, the water pressure vibration test of 7.6.6 and the pressure impact test of 7.6.7 are each to leave the joints free of leakage and of any other abnormality, the last two also free of detachment.

6.5.5 and 6.5.6 Fittings used to convey piped direct drinking water and drinking water are to meet the hygiene requirements of GB/T 17219 and the related documents, and fittings used for fuel gas and medical gases are to meet the performance requirements and test methods of the related documents.

6.6 The joining and installation of fittings and pipes are to comply with the related documents.

7 Test methods

7.1 and 7.2 The appearance is examined visually in daylight or artificial light, a five times magnifier being allowed, and the dimensions are measured with a caliper or micrometer of adequate accuracy.

7.3 The intergranular corrosion test is carried out by method E of GB/T 4334-2020, and the salt spray test by the neutral salt spray procedure of GB/T 10125 for a duration of 240 h.

7.4 For the hydrostatic test the ends of the fitting are blanked off, tap water is admitted and the pressure is held for not less than 5 s, the test pressure being not lower than 2.5 MPa for D-type fittings and not lower than 3.75 MPa for S-type fittings; the result is checked against 6.5.2.

7.5 For the air tightness test the fitting is mounted on the test rig and charged with compressed air, the pressure being held for not less than 5 s. For fittings used with gaseous media the test pressure is 1.05 times the design pressure and not lower than 0.6 MPa, and for fittings used with liquid media it is 0.6 MPa; the result is checked against 6.5.3.

7.6.1 For the pressure test the ends of the fitting are press jointed to lengths of 200 mm of