

JIS

JAPANESE INDUSTRIAL STANDARD

**Crosslinked polyethylene
(XPE) pipe clamp type fittings**

JIS B 2354—1991

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Crosslinked polyethylene (XPE)
pipe clamp type fittings

B 2354-1991

1. Scope

This Japanese Industrial standard specifies fittings for use in the connection of crosslinked polyethylene pipes (hereafter referred to as pipes) specified in JIS K 6769, hereafter referred to as fittings.

Remarks 1. The following standards are cited in this Standard.

JIS B 0202-Parallel pipe threads

JIS B 0203-Taper pipe threads

JIS B 1002-Dimensions of width across flats

JIS K 6769-Crosslinked polyethylene (XPE) pipes

2. Those units and numerical values shown in braces { } in this Standard are based on the traditional metric system of units and are shown for reference.

2. Classification

Fittings shall be classified as in Table 1 according to the kind of pipe, kind by shape, and kind by construction. However, fittings of other kinds and constructions than shown in Table 1 may be used by agreement between the parties concerned if they meet the requirements of 3.

Table 1. Kinds of pipes, kinds by shapes, and kinds by constructions

Kind of pipe ⁽¹⁾	Kind by shape ⁽²⁾	Kind by construction
PN 10	Adaptor	Mechanical incore type
	Socket	Mechanical sleeve type
PN 15	Faucet elbow	Flange type

Notes (1) Pipes shall be classified into PN 10 and PN 15 by working pressures.

(2) For the kinds of fittings by shapes, refer to Informative reference Fig. 1.

3. Performance

The performance of fittings shall be tested according to 5., and shall meet the requirements of Table 2.

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Table 2. Performance

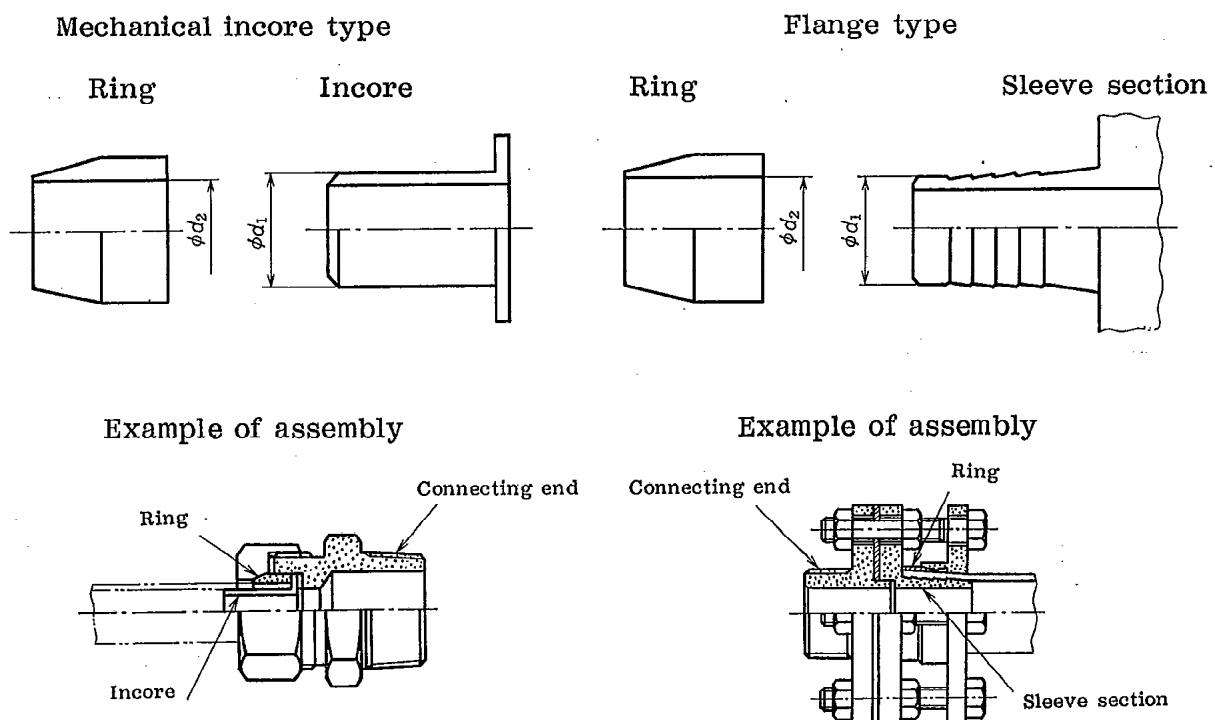
Test item	Performance	Temperature at test	Applicable provision
Low water pressure test	No leakage or other defects	$20 \pm 15^{\circ}\text{C}$	5.1
High water pressure test	No leakage or other defects	$20 \pm 15^{\circ}\text{C}$	5.2
Hot internal pressure test	In the condition of being connected with pipe, no leakage or other defects	$95 \pm 2^{\circ}\text{C}$	5.3
Pull-out test	No slipping out or other defects	$20 \pm 15^{\circ}\text{C}$	5.4

4. Appearance and shapes and dimensions

4.1 In their appearance, fittings shall be free from cuts, longitudinal streaks, cracks, and other defects harmful to their use.

4.2 The shapes and dimensions of fittings shall be as shown in Table 3 and Table 4.

Table 3. Shapes and dimensions of mechanical incore type and flange type



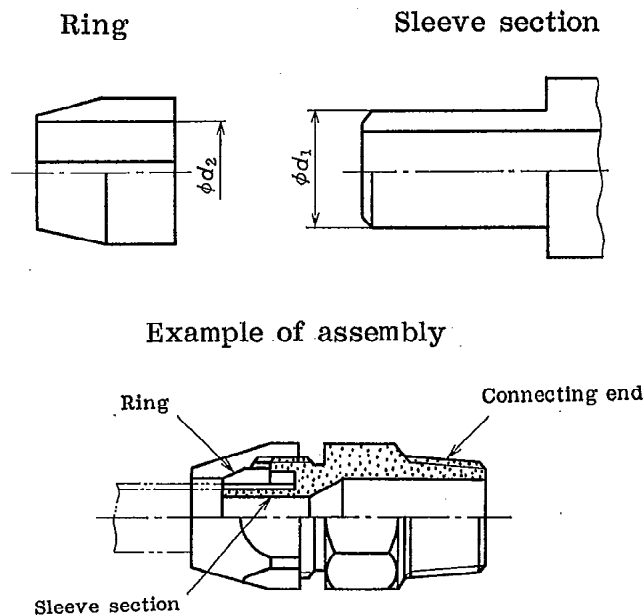
Unit: mm

Nominal diameter	PN 10				PN 15				Nominal thread size of connecting end
	d_1		d_2		d_1		d_2		
	Dimension	Permissible deviation	Dimension	Permissible deviation	Dimension	Permissible deviation	Dimension	Permissible deviation	
5	4.55	$\begin{matrix} 0 \\ -0.10 \end{matrix}$	8.15	$\begin{matrix} +0.10 \\ 0 \end{matrix}$	4.55	$\begin{matrix} 0 \\ -0.10 \end{matrix}$	8.15	$\begin{matrix} +0.10 \\ 0 \end{matrix}$	$\frac{1}{8}, \frac{1}{4}, \frac{3}{8}$
7	6.55		10.15		6.55		10.15		
8	7.35		11.15		7.35		11.15		
10	9.55		13.15		9.55		13.15		
13	12.55		17.15		12.55		17.15		
15	14.85		20.15		14.85		20.15		
16	17.05		21.65		15.95		21.65		$\frac{1}{2}, \frac{3}{4}$
20	21.60	$\begin{matrix} 0 \\ -0.20 \end{matrix}$	27.15	$\begin{matrix} +0.20 \\ 0 \end{matrix}$	20.20	$\begin{matrix} 0 \\ -0.20 \end{matrix}$	27.15	$\begin{matrix} +0.10 \\ 0 \end{matrix}$	1
25	26.55		34.20		25.65		34.20		$\frac{1\frac{1}{4}}, 1\frac{1}{2}$
30	34.60		42.20		31.70		42.20		
40	39.55		48.25		36.35		48.25		
50	49.80		60.30		45.60		60.30		2

- Remarks 1. Screw threads shall be as specified in JIS B 0202 or JIS B 0203.
2. The dimensions of width across flats shall be as specified in Attached Table 1 of JIS B 1002.
3. The shapes are shown as examples.

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Table 4. Shape and dimensions of mechanical sleeve type



Unit: mm

Nominal diameter	PN 10				PN 15				Nominal thread size of connecting end	
	d_1		d_2		d_1		d_2			
	Dimension	Permissible deviation	Dimension	Permissible deviation	Dimension	Permissible deviation	Dimension	Permissible deviation		
5	4.75	± 0.10	8.00	± 0.10	4.75	± 0.10	8.00	± 0.10	$1/8, 1/4, 3/8$	
7	6.75		10.00		6.75		10.00			
8	7.75		11.00		7.75		11.00			
10	9.75		13.00		9.75		13.00			
13	12.70		17.00		12.70		17.00			
15	15.00		20.00		15.00		20.00			
16	17.10		21.50		16.00		21.50		$1/2, 3/4$	
20	21.60		27.00		20.20		27.00			
25	27.55		34.00		25.65		34.00			1
30	34.60		42.00		31.70		42.00			$1 1/4, 1 1/2$
40	39.55	48.00	36.35	48.00						
50	49.80	60.00	45.60	60.00	2					

Remarks 1. Screw threads shall be as specified in JIS B 0202 or JIS B 0203.

2. The dimensions of width across flats shall be as specified in Attached Table 1 of JIS B 1002.

3. The shapes are shown as examples.

5. Test methods

5.1 Low water pressure test Connect a pipe 250 mm or longer in length to the fitting, then apply to the inside a pressure of 0.0196 MPa {0.2 kgf/cm²} by water at room temperature, leave it standing for 2 min. and examine for the occurrence of leakage and other defects.

5.2 High water pressure test Connect a pipe 250 mm or longer in length to the fitting, then apply to the inside a pressure of 2.45 MPa {25.0 kgf/cm²} by water at room temperature, leave it standing for 2 min. and examine for the occurrence of leakage and other defects.

5.3 Hot internal pressure test Fill a specimen similar to that used in the water pressure tests with warm water, air, or nitrogen, and after conditioning the specimen at $95 \pm 2^\circ\text{C}$ for one hour or longer, apply the pressure of Table 5, keep the same condition for one hour, and examine for the occurrence of leakage and other defects. The test temperature shall be $95 \pm 2^\circ\text{C}$.

Table 5. Test pressure

Unit: MPa {kgf/cm²}

Nominal diameter	PN 10	PN 15
5	1.99 {20.3}	
7	1.54 {15.7}	
8	1.38 {14.1}	
10	1.14 {11.6}	
13	1.20 {12.2}	
15	1.18 {12.0}	
16	0.92 {9.4}	1.20 {12.2}
20	0.89 {9.1}	1.19 {12.1}
25	0.86 {8.8}	1.17 {11.9}
30	0.79 {8.1}	
40	0.80 {8.2}	
50	0.77 {7.9}	1.16 {11.8}

5.4 Pull-out test Connect a pipe 300 mm or longer in length to the fitting, then apply the axial load of Table 6 at room temperature, keep the same condition for one hour, and examine for the occurrence of slipping out or other defects.

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Table 6. Axial load

Unit: N {kgf}

Nominal diameter		5	7	8	10	13	15	16	20	25	30	40	50
Axial load	PN 10	270	350	390	480	850	1 100	1 100	1 600	2 500	3 600	4 800	7 400
		{28}	{36}	{40}	{49}	{86}	{120}	{120}	{170}	{260}	{370}	{490}	{750}
	PN 15	270	350	390	480	850	1 100	1 300	2 100	3 400	5 100	6 600	10 000
		{28}	{36}	{40}	{49}	{86}	{120}	{140}	{220}	{350}	{520}	{670}	{1 000}

6. Inspection

The inspection of fittings shall be classified into the type inspection⁽³⁾ and delivery inspection⁽⁴⁾, and tests shall be performed for the undermentioned items and the results shall meet the requirements of 3. and 4.

The sampling inspection method in the delivery inspection shall be decided by agreement between the parties concerned.

Notes ⁽³⁾ An inspection for judging whether the quality of the product satisfies all the design characteristics.

⁽⁴⁾ At the time of delivery of products produced by the same design and the same production method as the product already accepted in the type inspection, an inspection for judging whether the products satisfy the characteristics recognized as necessary.

(1) Type inspection

- (a) Appearance, shape, and dimensions inspection.
- (b) Low water pressure inspection.
- (c) High water pressure inspection.
- (d) Hot internal pressure inspection.
- (e) Pull-out inspection.

(2) Delivery inspection

- (a) Appearance, shape, and dimensions inspection.
- (b) High water pressure inspection.
- (c) Hot internal pressure inspection.

7. Method of designating products

Fittings shall be designated by the number or title of the standard, kind of pipe, kind by shape, kind by construction, and nominal diameter.

Example 1. JIS B 2354 PN 10 adaptor flange type 20

Example 2. Crosslinked polyethylene pipe clamp type fitting
PN 15 Socket mechanical incore type 25

8. Marking

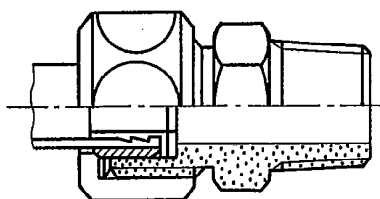
The following items of information shall be marked on the outer surface of fittings by a reliable method to prevent fading.

- (1) Kind of pipe or its abbreviation.
- (2) Nominal diameter.
- (3) Manufacturer's name or its abbreviation.

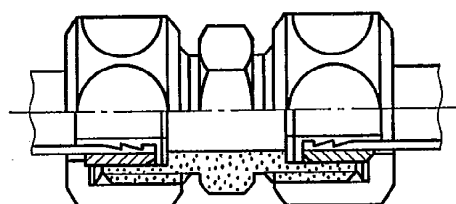
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Informative reference Fig. 1. Kinds of fittings by shapes

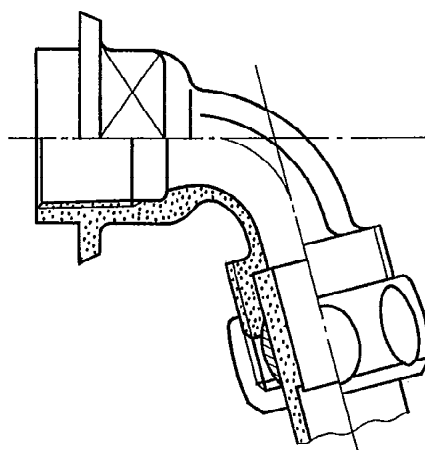
Adaptor



Socket



Faucet elbow



Remarks: The shapes are shown as examples.

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Edition 1

Japanese Text

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