

JIS

JAPANESE INDUSTRIAL STANDARD

Face-to-Face and End-to-End Dimensions of Valves

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JAPANESE INDUSTRIAL STANDARD

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Face-to-Face and End-to-End
Dimensions of Valves

B 2002-1987

1. Scope

This Japanese Industrial Standard specifies face-to-face and end-to-end dimensions of valves to be used mainly for piping.

2. Definitions

For the purposes of this Standard the following definitions apply. Other terms and definitions shall be in accordance with JIS B 0100.

- (1) face to face and end-to-end dimensions The distance from end face to end face or from one end face to the centre line of valve, namely L or L_1 in Fig. 1, respectively.

Remark: L applies to straight-way type and L_1 to angle type of valves.

In the case where rubber seat, lining of inner side of valve casing, etc. constitute the end face of valve, the distance from end face including rubber, lining, etc. after connecting the valve with piping up to the end face or the distance from one end face to the centre line of valve, namely L or L_1 in Fig. 2.

- (2) flangeless type The type in which the valve casting is put between the pipe flanges and fastened by bolts and the like.

Remark: This means the same as the wafer type of JIS B 0100, but in the regulating valve in this Standard this term shall be used.

Applicable Standards:

JIS B 0100-Glossary of Terms for Valves

JIS B 2001-Nominal Size and Bore for Valves

Corresponding International Standards:

ISO 5752-Metal valves for use in flanged pipe systems - Face-to-face and center-to-face dimensions

IEC 534-3-1-Face-to-face dimensions for flanged, two-way, globe-type control valves

IEC 534-3-2-Face-to-face dimensions for flangeless control valves except wafer butterfly valves

Reference Standards:

JIS B 2202-Screwed Type Steel Pipe Fittings

ISO 7268-Piping components - Definition for nominal pressure

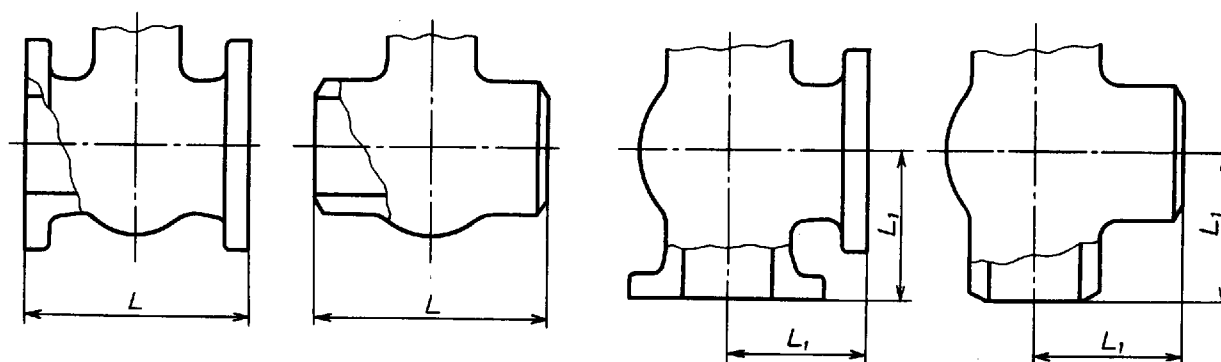
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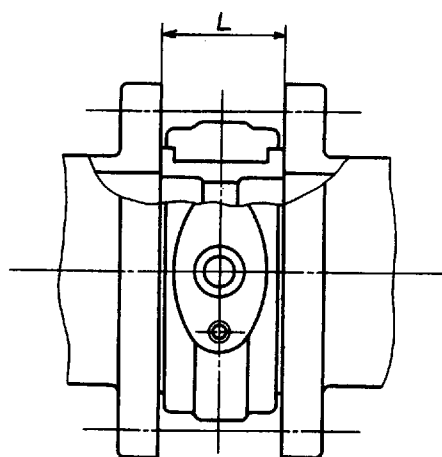
Fig. 1. Face-to-face and End-to-end Dimensions

Straight-way Type

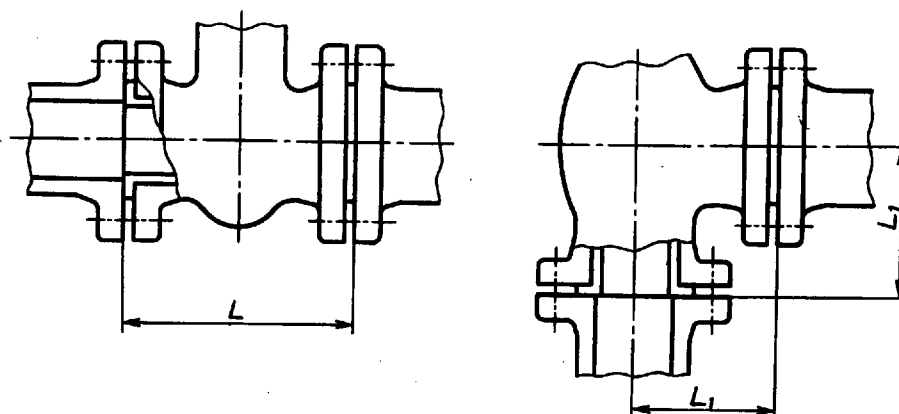
Angle Type

Fig. 2. Face-to-face and End-to-end Dimensions
(where rubber seat and the like constitute the end face)

Where rubber seat constitutes end face



Where lining constitutes end face



3. Uses of Valves

Uses of the valves of which face-to-face and end-to-end dimensions are specified in this Standard shall be as follows:

Further, the valves for general mechanical equipment may be used for ships and outdoor waterworks. However, in the case of applying for outdoor waterworks, the nominal diameter 75 shall be substituted for 80.

- (1) For General Mechanical Equipment To be used for general mechanical equipment.
- (2) For Ships To be used for ships
- (3) For Outdoor Waterworks To be used for outdoor waterworks.

4. Types of Valves

The valves of which face-to-face and end-to-end dimensions are specified in this Standard shall be classified as follows:

- (1) Gate Valve
- (2) Globe Valve (including lift check valve and screw-down stop check valve.)
- (3) Angle Valve (including angle type lift check valve and angle type screw-down stop check valve.)
- (4) Swing Check Valve
- (5) Ball Valve
- (6) Lubricated Plug Valve
- (7) Butterfly Valve (including butterfly check valve.)
- (8) Regulating Valve

Remark: The face-to-face and end-to-end dimensions of diaphragm valves are shown in Reference 1.

5. Nominal Pressure

The nominal pressures of valves of which face-to-face and end-to-end dimensions are specified in this Standard shall be as follows:

- (1) Where Nominal Pressure Symbol K Is Used (hereinafter referred to as K nominal pressure.)

2 K, 4.5 K⁽¹⁾, 5 K, 7.5 K⁽¹⁾, 10 K, 16 K, 20 K, 30 K, 40 K, 63 K, and 100 K⁽²⁾.

(2) Where Nominal Pressure Symbol PN Is Used (hereinafter referred to as PN nominal pressure)

Isomorphic⁽³⁾, PN1, PN1.6, PN2.5, PN4, PN6, PN10, PN16, PN20, PN25, PN40, PN50 or PN100.

Notes (1) To be used only for outdoor waterworks.

(2) To be used only for butt-welding type.

(3) The maximum permissible pressure that varies at 20°C dependent upon the nominal diameter. In the case of grey cast iron, it shall be as follows.

Reference: PN nominal pressure shall be the nominal pressure in accordance with ISO 7268.

Unit: MPa

Nominal diameter	40 to 150	200 to 300	350 to 500	600 to 700	800	900 to 1000
Maximum permissible pressure	1	0.6	0.4	0.25	0.16	0.1

6. Connection Ends

The connection ends of which face-to-face and end-to-end dimensions are specified in this Standard shall be as follows:

(1) Flange End

Reference: For nominal pressure K, excluding 4.5 K and 7.5 K, the flange of JIS B 2210, and for nominal pressure PN, the flange of ISO/DIS 7005 (Metallic flanges) shall, as a rule, be used.

(2) Butt-welding Type

(3) Wafer Type (Flangeless Type)

7. Nominal Diameter

The nominal diameter of valves of which face-to-face and end-to-end dimensions are specified in this Standard shall be in accordance with JIS B 2001. Further, the nominal diameter given in parentheses in Attached Table 2 should not preferably be used.

8. Series of Face-to-face and End-to-end Dimensions

Series of face-to-face and end-to-end dimensions of valves shall be classified according to the use, type, connection end and material of valve casing, and the series number shall be as follows:

- (1) The series number of face-to-face and end-to-end dimensions of valve for general mechanical equipment shall be as given in Attached Table 1-1.
- (2) The series number of face-to-face and end-to-end dimensions of valve for ship shall be as given in Attached Table 1-2.
- (3) The series number of face-to-face and end-to-end dimensions of valve for outdoor waterworks shall be as given in Attached Table 1-3.
- (4) The series number of face-to-face and end-to-end dimensions of regulating valve shall be as given in Attached Table 1-4.

Reference: The number of basic series of Attached Table 2 of ISO is in accordance with ISO 5752.

9. Face-to-face and End-to-end Dimensions of Valves

Face-to-face and end-to-end dimensions of valves shall be as follows:

- (1) The face-to-face and end-to-end dimensions of gate valve for mechanical equipment shall be as given in Attached Table 2-1.
- (2) The face-to-face and end-to-end dimensions of globe valve and swing check valve for general mechanical equipment shall be as given in Attached Table 2-2.
- (3) The face-to-face and end-to-end dimensions of angle valve for general mechanical equipment shall be as given in Attached Table 2-3.
- (4) The face-to-face and end-to-end dimensions of ball valve and plug valve for general mechanical equipment shall be as given in Attached Table 2-4.
- (5) The face-to-face and end-to-end dimensions of butterfly valve for general mechanical equipment shall be as given in Attached Table 2-5.
- (6) The face-to-face and end-to-end dimensions of gate valve for ship shall be as given in Attached Table 2-6.
- (7) The face-to-face and end-to-end dimensions of globe valve for ship shall be as given in Attached Table 2-7.
- (8) The face-to-face and end-to-end dimensions of angle valve for ship shall be as given in Attached Table 2-8.
- (9) The face-to-face and end-to-end dimensions of swing check valve shall be as given in Attached Table 2-9.

- (10) The face-to-face and end-to-end dimensions of butterfly valve for ship shall be as given in Attached Table 2-10.
- (11) The face-to-face and end-to-end dimensions of gate valve and butterfly valve for outdoor waterworks shall be as given in Attached Table 2-11.
- (12) The face-to-face and end-to-end dimensions of regulating valve shall be as given in Attached Table 2-12.

10. Regulation of Face-to-face and End-to-end Dimensions by Gasket Seat of Flange

Regulation of face-to-face and end-to-end dimensions by gasket seat of flange shall be as follows:

- (1) The face-to-face and end-to-end dimensions of valves using male-female flange and tongue and groove flange of nominal pressure K shall be L_2 or L_3 in Fig. 3 and determined by increasing or decreasing the regulation dimension of Table 1 to the dimension of Attached Table 2.

Fig. 3. Face-to-face and End-to-end Dimensions
(in the Case of Male-female and Tongue-and-groove Flanges)

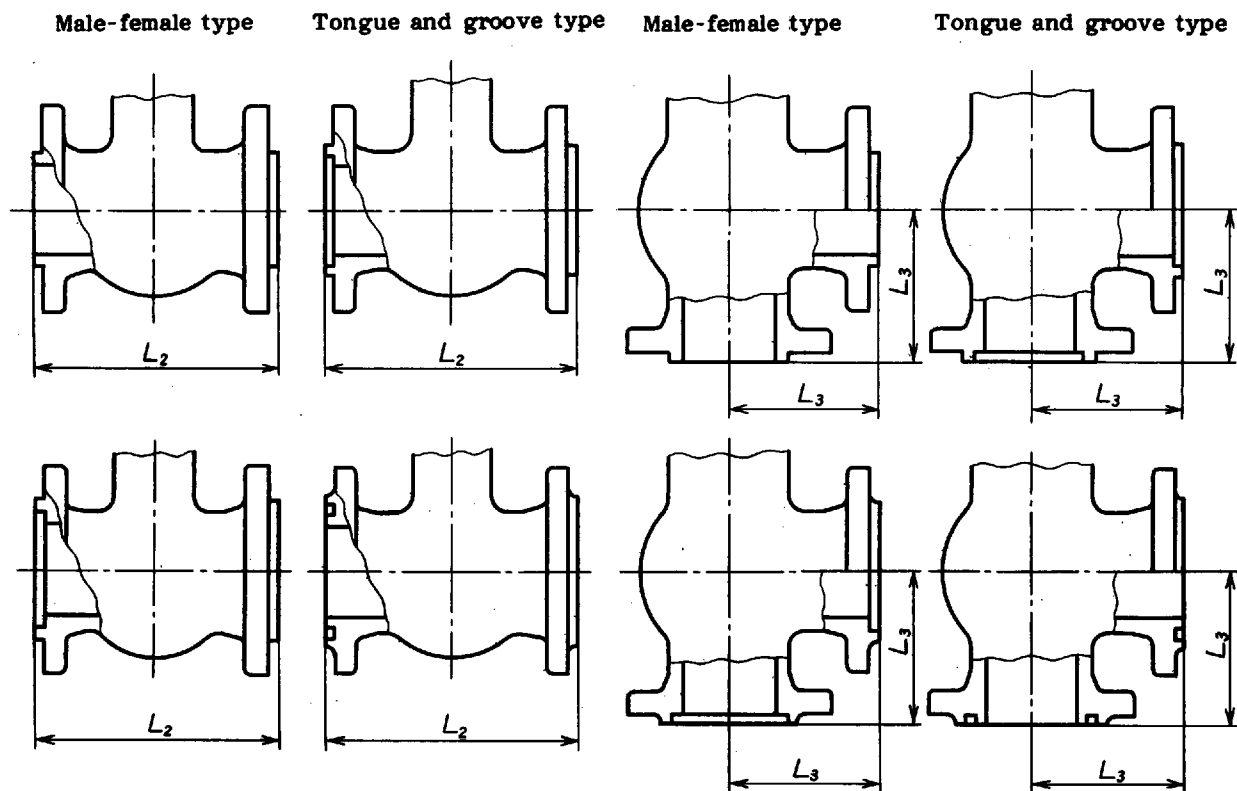


Table 1. Regulation Dimension (In the Case of Male-Female and Tongue-and-Groove Flanges of Nominal Pressure K)

Unit: mm

Type of valve casing Shape of gasket seat		Straight-way type	Angle type
Male-female type	Male	+ 12	+ 6
Tongue and groove type	Female	+ 10	+ 5

- (2) The face-to-face and end-to-end dimensions of valves using male-female flange and tongue-and-groove flange of nominal pressure PN of PN20, PN50 and PN100 shall be L_2 or L_3 of Fig. 3 and be determined by increasing or decreasing the regulation dimension of Table 2 on the basis of the dimension of Attached Table 2.

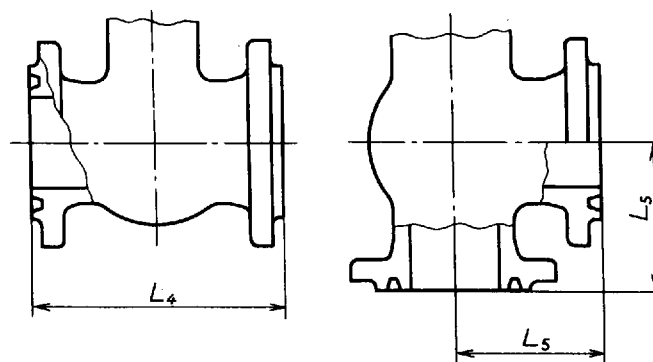
Table 2. Regulation Dimensions (In the case of male-female flange and tongue and groove flange of nominal pressure K)

Unit: mm

Nominal pressure		PN20		PN50		PN100	
Shape of gasket seat	Type of valve casing	Straight-way type	Angle type	Straight-way type	Angle type	Straight-way type	Angle type
Male-female type	Male	+13	+7	+13	+7	0	0
Tongue and groove type	Female	+10	+5	+10	+5	-3	-2

- (3) The face-to-face and end-to-end dimensions of valves using ring joint type flange of nominal pressure PN of PN20, PN50 and PN100 shall be L_4 or L_5 of Fig. 4 and be determined by increasing or decreasing the regulation dimension of Table 3 on the basis of the dimension of Attached Table 2.

Fig. 4. Face-to-face and End-to-end Dimensions (In the Case of Ring-joint Flange of Nominal Pressure PN)



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Table 3. Regulation Dimension (In the case of ring-joint flange of nominal pressure PN)

Unit: mm

Nominal diameter	Nominal pressure Type of valve casing	PN 20		PN 50		PN 100	
		Straight-way type	Angle type	Straight-way type	Angle type	Straight-way type	Angle type
15		—	—	+11	+6	—2	—1
20		—	—				
25				+13	+7	0	0
32							
40							
50							
65							
80							
100							
125							
150		+13	+7	+16	+8	+3	+2
200							
250							
300							
350							
400							
450							
500				+19	+10	+6	+3
600				+22	+11	+10	+5
650		—	—				
700		—	—	+25	+13	+13	+7
750		—	—				
800		—	—				
850		—	—	+29	+15	+16	+8
900		—	—				