

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS B 8605 : 2002
(JSRAE/JSA)

Stop valves for refrigerants

ICS 23.060.50; 27.200

Reference number : JIS B 8605 : 2002 (E)

PROTECTED BY COPYRIGHT

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by the Japan Society of Refrigeration Air Conditioning Engineers (JSRAE)/ the Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS B 8605 : 1999** is replaced with this Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

Date of Establishment: 1971-03-01

Date of Revision: 2002-09-20

Date of Public Notice in Official Gazette: 2002-09-20

Investigated by: Japanese Industrial Standards Committee
Standards Board

Technical Committee on Industrial
Machinery

JIS B 8605:2002, First English edition published in 2003-02

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2003

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

PROTECTED BY COPYRIGHT

Contents

	Page
1 Scope	1
2 Normative references	1
3 Stop valves in general	1
3.1 Names of principal parts	1
3.2 Types	1
3.3 Construction of type designation	3
3.4 Performance	3
3.5 Materials	3
3.6 Construction in general	3
3.7 Dimensions	4
3.8 Appearance	7
3.9 Designation of stop valve	7
3.10 Marking	8
Annex 1 (normative) Test and inspection methods for stop valves	11
Annex 2 (normative) Gland type stop valves	14
Annex 3 (normative) Bellows type and diaphragm type stop valves	27

Stop valves for refrigerants

1 Scope This Japanese Industrial Standard specifies the stop valves for refrigerants (hereafter referred to as “stop valves”).

The general matters are given in the body of this text, tests and inspecting methods in Annex 1, gland type stop valves in Annex 2, and bellows type and diaphragm type stop valves in Annex 3.

Remarks : The pressure used in this Standard is gauge pressure.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 0203 *Taper pipe threads*

JIS B 0405 *General tolerances—Part 1 : Tolerances for linear and angular dimensions without individual tolerance indications*

JIS B 2238 *General rules for steel pipe flanges*

JIS B 8270 *Pressure vessels (General standard)*

JIS B 8602 *Pipe flanges for refrigerants*

JIS B 8607 *Flare type and brazing type fittings for refrigerants*

JIS G 5501 *Grey iron castings*

JIS G 5502 *Spheroidal graphite iron castings*

JIS G 5705 *Malleable iron castings*

3 Stop valves in general

3.1 Names of principal parts The names of the principal parts of the stop valves are shown in Attached Figs. 1 to 4.

3.2 Types The types of the stop valves shall be classified as follows: according to the maximum working pressures, types of stop valve, shapes of valve casing, types of pipe connecting area, and sizes.

a) **Maximum working pressures** The maximum working pressures and the symbols shall be as given in Table 1.

Table 1 Maximum working pressures and symbols

Maximum working pressure	Symbol
2.00 MPa	2
3.00 MPa	3
3.45 MPa	3.45
4.30 MPa	4.3
5.00 MPa	5

- b) **Types of stop valve** The types of the stop valve and the symbols shall be classified according to the sealing methods between the valve rod and the valve casing, and as given in Table 2.

Table 2 Types of stop valve

Type of stop valve	Sealing method	Symbol
Gland type	That performs sealing by gland packing, O-ring, etc.	P
Bellows type	That performs sealing by bellows	B
Diaphragm type	That performs sealing by diaphragm	D

- c) **Shapes of valve casing** The shapes of the valve casing and the symbols shall be classified according to whether the directions of outlet and inlet of stop valve are at right angles or in a straight line, and as given in Table 3.

Table 3 Shapes of valve casing

Shape of valve casing	Direction of inlet and outlet of stop valve	Symbol
Angle	That of at right angles	A
Globe	That of in a straight line	G

- d) **Types of pipe connecting area** The types of pipe connecting area shall be classified according to the forms when a stop valve is installed to a pipe, and as given in Table 4.

Table 4 Types of pipe connecting area

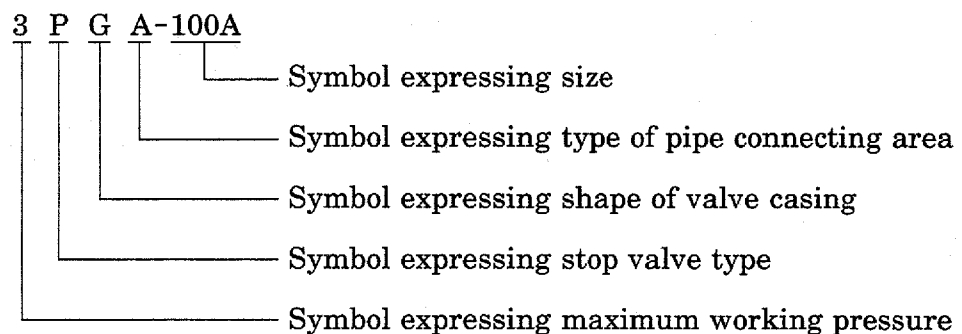
Type of pipe connecting area	Symbol
Screwed type	T
Flanged type, group A	A
Flanged type, group R	R
Flared type	F
Brazed type	B
Steel-pipe butted type	W
Die-forging butted or slip-on type	D

- e) **Sizes** The sizes of the stop valve shall be expressed by the nominal sizes of the pipe connecting area.

When the sizes are to be expressed by symbols, these shall be expressed by A series.

3.3 Construction of type designation The type designation of the stop valve shall be expressed by arranging the symbols specified in 3.2 a) to e) in the order thereof, and be as follows:

Example : For 3 MPa gland type globe type stop valve flanged type group A 100A



3.4 Performance When subjected to the tests in accordance with Annex 1, the performances of the stop valve shall conform to the following:

- a) **Pressure proof performance** The stop valve shall be free from such abnormalities as cracks, deformations and leakage.
- b) **Airtightness performance** The stop valve shall be free from leakage.

3.5 Materials The materials of the stop valve shall not be deteriorated by the actions of refrigerant, absorption solution, lubricant or by their mixture.

3.6 Construction in general The construction of the stop valve shall generally be as follows:

- a) The stop valve shall operate smoothly in opening and closing and shall be so constructed as to be closed by turning the valve rod in a clockwise direction.
- b) The cover of the stop valve shall not be rotated by opening and closing operations.

Moreover, when the cover is of a screw thread attaching system, the locking device as given in Attached Fig. 4 shall be provided. However, a stop valve having such a construction that external leakage does not occur if the cover dislocates as given in Attached Fig. 3 may be excluded.

- c) The gasket seat of the stop valve whose pipe connecting area is the flanged type shall be of grooved type (female) and the companion flange and the fastening bolt shall be as specified in **JIS B 8602**.
- d) The stop valve of the flared type pipe connecting area shall have a hook for the spanner wrench or the like on the valve casing or a substitute for that.
- e) The stop valve shall be provided with an opposite seat, or be of double sealed construction.

3.7 Dimensions The principal dimensions of the stop valves shall be as given in Annex 2 Tables 3 to 12 and Annex 3 Tables 2 to 5, and as follows:

- a) Machined parts shall conform to the Medium Grade of **JIS B 0405**.
- b) **Screwed type** The dimensional tolerances for stop valves whose pipe connecting area is of the screwed type shall be as follows:
 - 1) Pipe threads shall be in accordance with **JIS B 0203**.
 - 2) The dimensional tolerances on face-to-face dimension (for machine-worked end faces) shown in Fig. 1 shall be ± 1.5 mm for globe valves and ± 0.8 mm for angle valves.
 - 3) The tolerances on the angle between the axial lines of threaded parts at both ends shown in Fig. 1 shall be ± 2 mm at the distance of 300 mm from the screwed-in end.

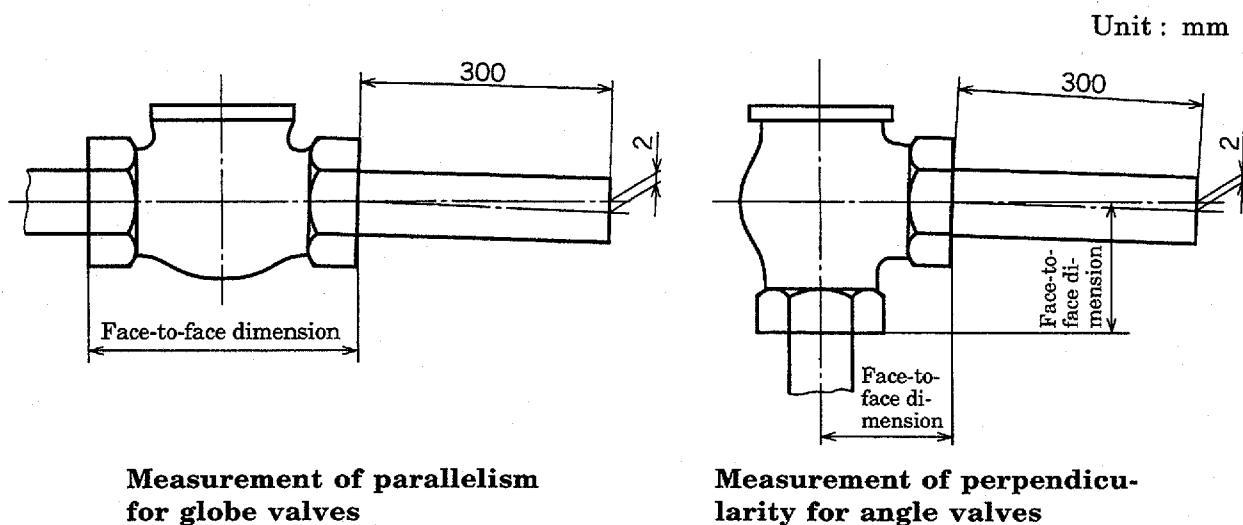


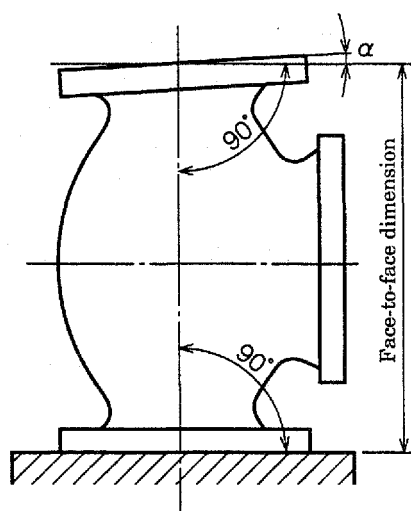
Fig. 1 Measurement of parallelism and perpendicularity of threaded part

c) **Flanged type** The dimensional tolerances for stop valves of which the pipe connecting area is of flanged type shall be as follows:

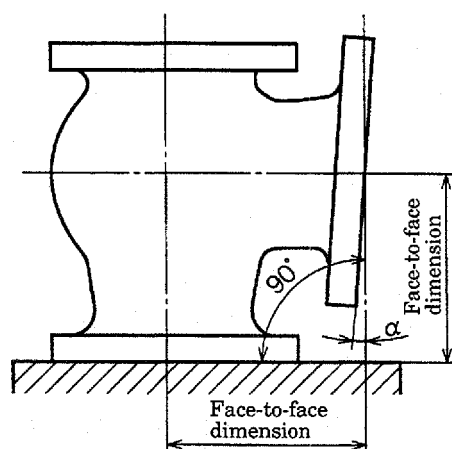
- 1) The dimensional tolerances of the flanges shall be as specified in **JIS B 2238**.
- 2) The tolerances on the parallelism and perpendicularity for the flanges at both ends shown in Fig. 2 shall be as given in Table 5.
- 3) The tolerances on face-to-face dimension shown in Fig. 2 shall be as given in Table 5.

Table 5 Dimensional tolerances of flanged type and slip-on type stop valves

Nominal diameter of stop valve	Tolerances		
	Parallelism and perpendicularity α min	Face-to-face dimensions	
		mm	
		Glove valve	Angle valve
100A or under	± 30	± 1.5	± 0.8
125A or over up to and incl. 200A	± 20	± 1.5	± 0.8



Measurement of parallelism between faces of glove valve



Measurement of perpendicularity between faces of angle valve

Fig. 2 Measuring method for parallelism and perpendicularity of flange

d) **Flared type** The dimensional tolerances for stop valves of which the pipe connecting area is of flared type shall be as follows:

- 1) The dimensional tolerances for pipe fitting ends and flare nuts shall be in accordance with **JIS B 8607**.

- 2) The tolerances for face-to-face dimension of fitting faces at both ends shall be ± 1.5 mm for globe valves, and ± 0.8 mm for angle valves.
- e) **Slip-on type** The dimensional tolerances for stop valves of which the pipe connecting area is of copper pipe slip-on type shall be as follows:
- 1) The dimensional tolerances on bore diameter at pipe slip-on part of the valve casing shall conform to Table 6.
 - 2) The tolerances for parallelism and perpendicularity at both end faces of valve casing shall be as given in Table 5.

Table 6 Dimensional tolerances for slip-on type stop valves

Unit : mm

Reference outside diameter of copper pipe	Dimensional tolerances (for reference outside diameter of copper pipe)
6.35	+0.14 to +0.26
9.52	+0.14 to +0.26
12.70	+0.14 to +0.30
15.88	+0.17 to +0.33
19.05	+0.17 to +0.33
25.40	+0.20 to +0.40
31.75	+0.20 to +0.40

- f) **Butted type** The dimensional tolerances for stop valves of which the pipe connecting area is of butted type shown in Fig. 3 shall be as follows:
- 1) The dimensional tolerances on outside diameter and wall thickness of pipe fitting part shall be in accordance with the respective standards for specified pipe materials.
 - 2) The tolerances on parallelism and perpendicularity of both end faces shall be as given in Table 7 and the tolerances on face-to-face dimensions shall be as given in Table 8.

Table 7 Angular tolerances for butted type stop valves

Designation of stop valve	Tolerances on angle α
100A or under	$\pm 1^\circ$
125A or over up to and incl. 200A	$\pm 45'$

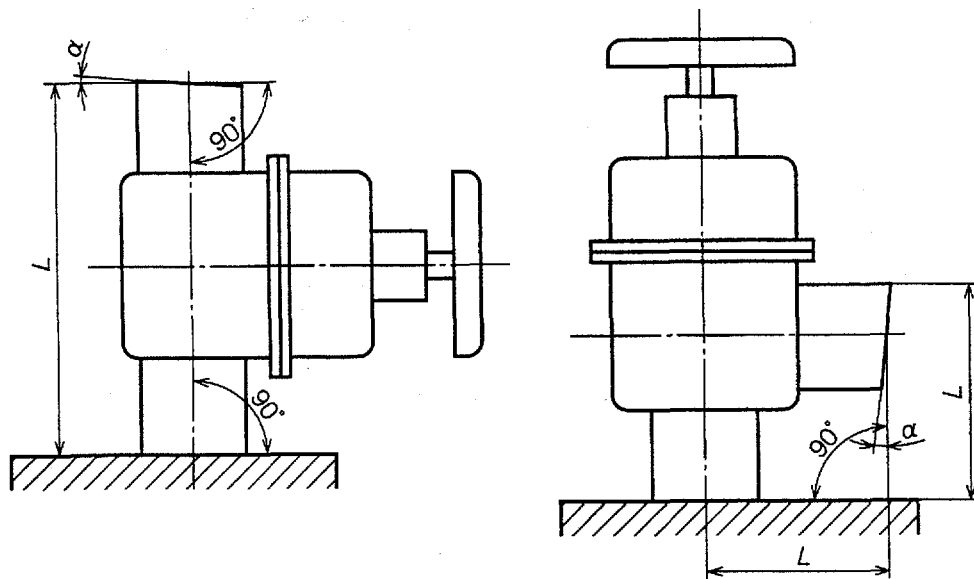


Fig. 3 Dimensional tolerances for butted type stop valves

Table 8 Dimensional tolerances for butted type stop valves

Unit : mm

Division of face-to-face dimension L	Under 200	200 or over to and excl. 400	400 or over to and excl. 650
Dimensional tolerances	± 2.0	± 3.0	± 4.0

3.8 Appearance The appearance of stop valve shall be as follows:

- Castings shall be free from harmful cavities, fins, sand burning, sand inclusions, scale, cracks, etc. on both inside and outside surfaces.
- Forgings shall be free from laps, Hardie flaws, etc.
- Welded products shall be free from detrimental defects such as incomplete penetration, cracks throughout total length of welding on both inside and outside surfaces, and the reinforcement of weld shall be smooth in shape.
- No harmful flaw, nor any unevenness of finish shall be found on the machine-worked surfaces.
- Edges or corners, for which no dimension is specified, shall be properly chamfered or rounded.
- Portions through which the fluid passes shall be those which have been properly finished and cleaned.

3.9 Designation of stop valve The stop valve shall be designated by the type designation following the number of standard or title of standard, and it shall be expressed by the designation of A series. That of screwed type may also be expressed by B series.

3.10 Marking The stop valve shall be marked with the following information indelibly.

- a) Size
- b) Type of pipe connecting area
- c) Shape of casing
- d) Type of stop valve
- e) Maximum working pressure
- f) Direction of flow
- g) Directions of opening and closing
- h) Manufacturer's name or abbreviation

If the marking is difficult, the symbols for expressing the items **b)** to **d)** may be omitted.