

JIS

JAPANESE INDUSTRIAL STANDARD

**Hydraulic cylinder —
mounting dimensions**

JIS B 8367—1990

Translated and Published

by

Japanese Standards Association

Printed in Japan

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

J I S

Hydraulic cylinder -
mounting dimensions

B 8367-1990

1. Scope

This Japanese Industrial Standard specifies the mounting methods of the hydraulic cylinders of the types given in the following (hereafter referred to as the "cylinders") to be used in the hydraulic systems for general industry.

- (1) 16 MPa {163 kgf/cm²} hydraulic cylinder type I (hereafter referred to as the type 16H-I).
- (2) 16 MPa {163 kgf/cm²} hydraulic cylinder type II (hereafter referred to as the type 16H-II).
- (3) 25 MPa {255 kgf/cm²} hydraulic cylinder (hereafter referred to as the type 25H).

Remarks 1. This Standard specifies the required dimensions and sizes for interchangeability so as not to obstruct the technical development of manufacturers, and it does not specify the interior designs of the cylinders.

2. The applicable Standards to this Standard are as given in the following:

JIS B 0142 Glossary of Terms for Oil Hydraulics and Pneumatics

JIS B 0203 Taper Pipe Threads

JIS B 0207 Metric Fine Screw Threads

JIS B 8366 Fluid Power Cylinder - General Rules for Requirement of Component and Identification Code of Mounting Dimensions and Mounting Types

ISO 497 Guide to the choice of series of preferred numbers and of series containing more rounded values of preferred numbers

3. The equivalent International Standards to this Standard are given in Attached Table 23.
4. The units and numerical values given in { } in this Standard are in accordance with the traditional units, and are appended for informative reference.

Reference Standard:

JIS B 8368-Pneumatic Cylinders - Mounting Dimensions

2. Definitions

For the purposes of this Standard the following definitions apply, and others are in accordance with JIS B 0142.

Informative Reference: The prescriptions of the terms are given in ISO 5598.

- (1) rod side ⁽¹⁾ That side from which the piston rod is exposed to outside.
- (2) head side ⁽¹⁾ That side from which the piston rod is not exposed to outside.

Note ⁽¹⁾ In JIS B 0142, the rod side is defined as the head side, and the head side, as the cap side.

3. Inside Diameters of Cylinders

The inside diameters of the cylinders (hereafter referred to as the "inside diameter") shall be in accordance with Table 1.

Table 1. Inside Diameters of Cylinders

Unit: mm

Type	Inside diameters
Type 16H-I	25, 32, 40, 50, 63, 80, 100, 125, 160, 200, 250, 320, 400, 500
Type 16H-II	25, 32, 40, 50, 63, 80, 100, 125, 160, 200
Type 25H	50, 63, 80, 100, 125, 160, 200, 250, 320, 400, 500

4. Nominal Strokes

The nominal strokes (hereafter referred to as the "strokes") shall be in accordance with Table 2, and the tolerances on strokes shall be in accordance with Table 3.

Table 2. Nominal Strokes

Unit: mm

25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 630, 800, 1000, 1250, 1500, 2000
--

Remark: In the case where other numerical values than given in Table are required, these shall be in accordance with R' 10 of ISO 497.

Table 3. Tolerances on Strokes

Unit: mm

Inside diameter	Stroke (S)	Tolerances on strokes	
		Type 16H-I	Type 16H-II and Type 25H
25	$S \leq 500$	+2 0	+ 3 0
32	$500 < S \leq 1\,250$	+3.2 0	+ 4 0
40	$1\,250 < S \leq 3\,150$	Upon agreement between the parties concerned	+ 6 0
50	$3\,150 < S \leq 3\,000$	Upon agreement between the parties concerned	+10 0
63 80 100	$S \leq 500$	+2.5 0	+ 3 0
	$500 < S \leq 1\,250$	+4 0	+ 4 0
	$1\,250 < S \leq 3\,150$	Upon agreement between the parties concerned	+ 6 0
	$3\,150 < S \leq 8\,000$	Upon agreement between the parties concerned	+10 0
125 160 200 250	$S \leq 500$	+4 0	+ 3 0
	$500 < S \leq 1\,250$	+5 0	+ 4 0
	$1\,250 < S \leq 3\,150$	Upon agreement between the parties concerned	+ 6 0
	$3\,150 < S \leq 3\,000$	Upon agreement between the parties concerned	+10 0
320 400 500	$S \leq 500$	—	+ 3 0
	$500 < S \leq 1\,250$	—	+ 4 0
	$1\,250 < S \leq 3\,150$	—	+ 6 0
	$3\,150 < S \leq 8\,000$	—	+10 0

Remark: The tolerances on the strokes exceeding the values given in Table shall be as agreed between the parties concerned.

5. Mounting Types of Cylinders, Mounting Dimensions⁽²⁾ and Tolerances on Mounting Dimensions

Note (2) As regards the term of the "mounting dimensions", in the case where it is not liable to cause misunderstanding, simply the "dimension" may also be used, abbreviating the "mounting".

5.1 The mounting types, mounting dimensions and tolerances on mounting dimensions which are not related to strokes shall be in accordance with Table 4.

Table 4. Mounting Types and Mounting Dimensions

Symbol	Mounting Type	Mounting Dimensions		
		Type 16H-I	Type 16H-II	Type 25H
ME5	Rectangular rod cover mounting type	Attached Table 2	-	-
ME6	Rectangular head cover mounting type	Attached Table 3	-	-
MF1	Rod side rectangular flange mounting type	-	Attached Table 15	-
MF2	Head side rectangular flange mounting type	-	Attached Table 15	-
MF3	Rod side round flange mounting type	-	Attached Table 16	Attached Table 20
MF4	Head side round flange mounting type	-	Attached Table 16	Attached Table 20
MP1	Head clevis mounting type	Attached Table 4	-	-
MP3	Head eye mounting type	Attached Table 5	Attached Table 17	Attached Table 21
MP4	Head separated eye mounting type	-	Attached Table 17	Attached Table 21
MP5	Head spherical bearing mounting type	Attached Table 6	Attached Table 17	Attached Table 21
MP6	Head separated spherical bearing mounting type	-	Attached Table 17	Attached Table 21
MS2	Vertical to shaft direction foot mounting type	Attached Table 7	-	-
MT1	Rod cover trunnion mounting type	Attached Table 8	Attached Table 18	-
MT2	Head cover trunnion mounting type	Attached Table 9	Attached Table 18	-
MT4	Intermediate trunnion mounting type	Attached Table 10	Attached Table 18	Attached Table 22
MX1	Double side stud or tie rod mounting type	Attached Table 11	-	-
MX2	Head side stud or tie rod mounting type	Attached Table 12	-	-
MX3	Rod side stud or tie rod mounting type	Attached Table 13	-	-

- Remarks 1. Attached Tables 1, 14 and 19 indicate basic dimensions.
 2. Symbols + and +/- in Attached Tables are in accordance with 7.2 (meanings of letters and symbols) of JIS B 8366.

5.2 Tolerances on mounting dimensions being added with strokes shall be in accordance with Tables 5 and 6.

Furthermore, the tolerances on mounting dimensions being added with strokes shall be given to the values to which strokes have been added.

Table 5. Tolerances on Mounting Dimensions Determined by Strokes
(stroke 1250 mm or under)

Unit: mm

Mounting type symbol	Type Inside diameter Stroke Dimension indi- cating symbol	Type 16H-I			Type 16H-II and Type 25H	
		25, 32, 40, 50	63, 80, 100	125, 180, 200	All inside diameters	
		1250 max.			500 max.	Over 500 up to 1250 or under
ME5	WF Fundamen- tal type	± 1.6	± 2	± 2.5	± 2	± 2.8
	VE Fundamen- tal type	$+1$ 0	$+1$ 0	$+1$ 0	—	—
ME6	ZJ Fundamen- tal type	± 1.6	± 1.6	± 1.6	± 1.5	± 2
MP1 MP3 MP4	XC	± 1.6	± 1.6	± 2	± 1.5	± 2
	XD	—	—	—	± 1.5	± 2
MP5 MP6	XO	± 1.6	± 1.6	± 2	± 1.5	± 2
	XN	—	—	—	± 1.5	± 2
MS2	XS	± 1.6	± 2	± 2.5	—	—
	SS	± 1.6	± 1.6	± 2	—	—
MF3	WC	—	—	—	± 2	± 2.8
MT1	XG	± 1.6	± 2	± 2.5	—	—
MT2	XJ	± 1.6	± 1.6	± 2	—	—
MT4	XV	± 2	± 2	± 2.5	± 2	± 2.8
MF2 MF4	ZP	—	—	—	± 1.5	± 2
	ZF	—	—	—	± 1.5	± 2
MX1 MX2 MX3	BB	± 3 0	± 3 0	± 5 0	—	—
	ZJ	± 1.6	± 1.6	± 1.6	—	—
MX1 MX3	WH	± 1.6	± 2	± 2.5	—	—

Remark: The tolerances on strokes exceeding 1250 mm of Type 16H-I shall be as agreed between the parties concerned.

Table 6. Tolerances on Mounting Dimensions Determined by Strokes
(In the case of stroke exceeding 1250 mm)

Unit: mm

Mounting type symbol	Type Inside diameter Dimension indi- cating symbol Stroke	Type 16H-II and Type 25H	
		All inside diameters	
		Over 1250 up to 3150 or under	Over 3150 up to 8000 or under
Funda- mental type	WF	± 4	± 8
	ZJ	± 3	± 5
MP3	XC	± 3	± 5
MP4	XD	± 3	± 5
MP5	XO	± 3	± 5
MP6	XN	± 3	± 5
MT4	XV	± 4	± 8
MF2 MF4	ZP ZF	± 3	± 5
MF3	WC	± 4	± 8

5.3 Dimensions of Type 16H-I The mounting dimensions and filling place of mounting of the type 16H-I shall be in accordance with Attached Tables 1 to 13.

5.4 Dimensions of Type 16H-II The mounting dimensions and filling place of mounting of the type 16H-II shall be in accordance with Attached Tables 14 to 18.

5.5 Dimensions of Type 25H The mounting dimensions and filling place of mounting of the type 25H shall be in accordance with Attached Tables 19 to 22.

6. Combinations of Inside Diameters and Port Threads and Port Flanges

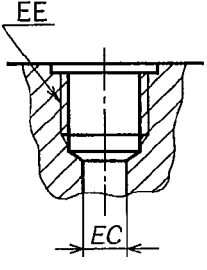
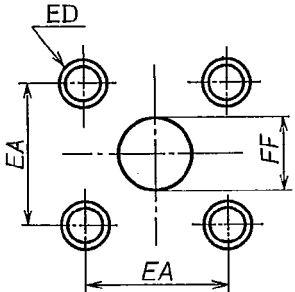
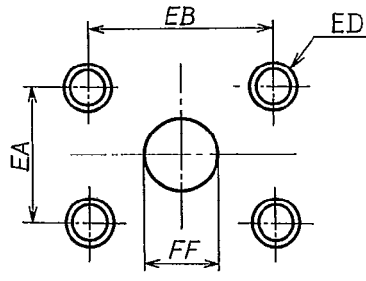
The combinations of inside diameters and port threads and port flanges shall be in accordance with Tables 7 and 8.

Table 7. Combinations of Inside Diameter and Port Threads of Type 16H-I

Inside diameter	EE	
	Pipe thread	Metric thread
25	Rc $1/4$	M14×1.5
32	Rc $1/4$	M14×1.5
40	Rc $3/8$	M18×1.5
50	Rc $1/2$	M22×1.5
63	Rc $1/2$	M22×1.5
80	Rc $3/4$	M27×2
100	Rc $3/4$	M27×2
160	Rc 1	M33×2
200	Rc 1 $1/4$	M42×2

- Remarks 1. The pipe threads shall be in accordance with JIS B 0203.
2. The metric threads shall be in accordance with JIS B 0207.

Table 8. Combinations of Inside Diameters and Port Threads of Type 16H-II and Type 25H

Inside diameter	Port		Square port flange					Rectangular port flange				
												
	Pipe thread	Metric thread	EC min.	Nominal flange dimension	FF 0 -1.5	EA ±0.25	ED	Nominal flange dimension	FF 0 -1.5	EA ±0.25	EB ±0.25	ED
25	Rc 1/4	M14×1.5	6									
32	Rc 3/8	M18×1.5	10									
40 50	Rc 1/2	M22×1.5	12									
63 80	Rc 3/4	M27×2	16	13	15	29.7	M 8×1.25	13	12.7	17.50	38.10	M 8×1.25
100 125	Rc 1	M33×2	20	19	20	35.3	M 8×1.25	19	19.1	22.25	47.65	M10×1.5
160 200	Rc 1 1/4	M42×2	25	25	25	43.8	M10×1.5	25	25.4	26.20	52.35	M10×1.5
250 320	Rc 1 1/2	M50×2	32	32	32	51.6	M12×1.75	32	31.8	30.20	58.70	M10×1.75
400 500	Rc 2	M60×2	38	38	38	60	M14×2	38	38.1	35.70	69.85	M14×2

Remark: The pipe threads of the port threads shall be in accordance with JIS B 0203.

7. Clear Statement of Applicable Standards

When this Standard is quoted to the specifications, catalogs and sales data, the number of the Standard and the title of the Standard shall be stated clearly.