

JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS B 4501 : 1996

Thread rolling cylindrical dies

ICS 25. 100. 50

Descriptors : thread-rolling dies, dies (threading), screw-cutting tools, thread-cutting,
circular shape, thread forms

Reference number : JIS B 4501 : 1996 (E)

B 4501:1996

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

Date of Establishment: 1965-04-01

Date of Revision: 1996-12-20

Date of Public Notice in Official Gazette: 1996-12-20

Investigated by: Japanese Industrial Standards Committee

Divisional Council on FA

JIS B 4501:1996, First English edition published in 1997-07

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

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

© JSA 1997

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

Thread rolling cylindrical dies

1 Scope This Japanese Industrial Standard specifies the thread rolling cylindrical dies (hereafter referred to as "dies".) to be used for press rolling of external threads given in the following.

Type of thread	Designation of thread	Applicable standard
Metric coarse screw thread	M2 to M68	JIS B 0205
Metric fine screw thread	M4×0.5 to M68×1.5	JIS B 0207

Remarks : The standards cited in this Standard are as given in the following:

- JIS B 0101 *Screw threads and fasteners – Vocabulary*
- JIS B 0123 *Designation of screw threads*
- JIS B 0176 *Threading tools – Vocabulary*
- JIS B 0205 *Metric coarse screw threads*
- JIS B 0207 *Metric fine screw threads*
- JIS B 0401 *System of limits and fits*
- JIS B 0405 *General tolerances – Part 1 : Tolerances for linear and angular dimensions without individual tolerance indications*
- JIS B 0601 *Surface roughness – Definitions and designation*
- JIS B 0659 *Roughness comparison specimens*
- JIS B 3102 *Gauge blanks for screw thread limit gauges*
- JIS B 7153 *Measuring microscopes*
- JIS B 7420 *Limit gauges*
- JIS B 7421 *Tolerances allowable deviations and permissible wears of limit gauges*
- JIS B 7502 *Micrometer callipers*
- JIS B 7503 *Dial gauges*
- JIS B 7507 *Vernier, dial and digital callipers*
- JIS B 7515 *Cylinder gauges*
- JIS B 7519 *Microindicators*
- JIS B 7726 *Rockwell and Rockwell superficial hardness testing machine*
- JIS G 4404 *Alloy tool steels*
- JIS Z 2245 *Method of Rockwell and Rockwell superficial hardness test*

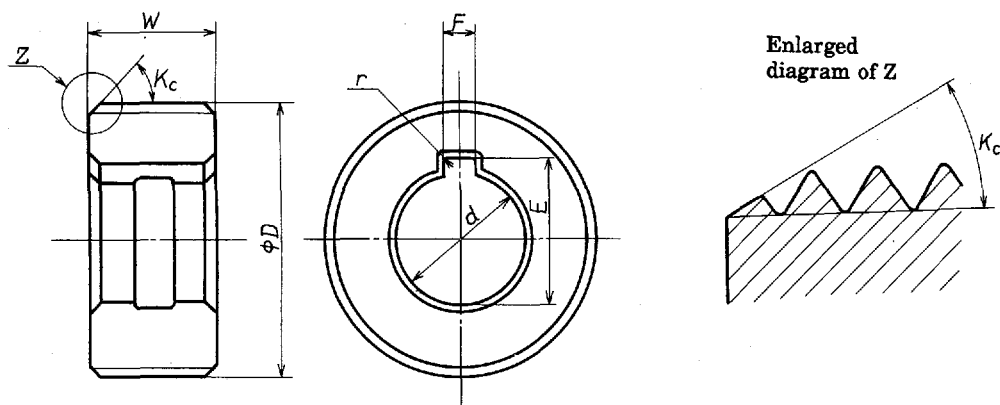
2 Definitions The definitions of main terms to be used in this Standard shall be in accordance with **JIS B 0176** and **JIS B 0101**.

2
B 4501 : 1996

3 Types The types of the dies shall be 7 types of Type 1, Type 2, Type 3, Type 4, Type 5, Type 6 and Type 7 according to the applicable thread rolling machines.

4 Shapes and dimensions

4.1 Shapes and dimensions The shapes and dimensions of the dies shall be in accordance with Fig. 1 and Tables 1 to 2.



Remarks 1 The chamfer angle K_c of threaded portion shall generally be 30° .

The shape of the crests after chamfering work shall be as agreed between the parties concerned with delivery.

2 The recess of the hole portion shall be provide as required.

Fig. 1 Shapes of dies

Table 1 Dimensions of dies for metric coarse screw threads

Unit : mm

Type	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
Hole diameter d	26	40	54	54	54 70	70 85	100
Width W	30	40, 50	40, 60, 80, 100	40, 60, 80, 100, 120	40, 60, 80, 100, 120, 150, 180	60, 80, 100, 120, 150, 180, 200, 250, 300	100, 120, 150, 180, 200, 250, 300
Dimensions of keyway	F	5	(4) 6	(10) 12	(10) 12	12 (14) 15	15 18 24
	E (ref.)	28.5	43.5	59	59	59 74.5 77	77 91.5 109
Screw threads to be rolled		Number of starts N	Outside diameter $D^{(1)}$	Number of starts N	Outside diameter $D^{(1)}$	Number of starts N	Outside diameter $D^{(1)}$
Designation	Pitch						
M2	0.4	34	59.4	57	99.4		
M2.2	0.45	31	59.4	52	99.5		
M2.5	0.45	26	57.7	45	99.6		
M3	0.5	21	56.5	36	96.6	51	136.7
M3.5	0.6	18	56.3	31	96.8	44	137.2
M4	0.7	16	57.1	27	96.1	38	135.1
M4.5	0.75	14	56.6	24	96.7	34	136.9
M5	0.8	12	54.2	22	99.0	30	134.9
M6	1	10	54.1	18	96.9	25	134.3
M7	1			15	95.8	21	133.9
M8	1.25			13	94.2	19	137.3
M9	1.25			11	90.8	16	131.7
M10	1.5			10	91.1	15	136.3
M11	1.5			9	91.1	13	131.2
M12	1.75			8	87.9	12	131.4
M14	2			7	90.1	10	128.2
M16	2			6	89.4	9	133.5
M18	2.5					8	132.5
M20	2.5					7	130.1
M22	2.5					6	123.7
M24	3						
M27	3					6	152.0
M30	3.5					5	140.7
M33	3.5					5	155.7
M36	4					4	135.9
M39	4					4	147.9
M42	4.5					4	158.9
M45	4.5					3	128.8
M48	5					3	137.1
M52	5						
M56	5.5						
M60	5.5						
M64	6						
M68	6						

Note (1) The outside diameter D of dies shall be in accordance with the following formula:

$$D = d_2 \times N + \frac{2}{3} H$$

where, d_2 : basic dimension of the pitch diameter of thread to be rolled

N : number of starts of dies

H : fundamental triangle height

Remarks: The width of keyway F given in () should not preferably be used.

Table 2 Dimensions of dies for metric fine screw threads

Unit : mm

Type		Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7	
Hole diameter d		26		40		54		54		54	70	70	85	100	
Width W		30		40, 50		40, 60, 80, 100		40, 60, 80, 100, 120		40, 60, 80, 100, 120, 150, 180		60, 80, 100, 120, 150, 180, 200, 250, 300		100, 120, 150, 180, 200, 250, 300	
Dimensions of keyway	F	5		(4)	6	(10)	12	(10)	12	12	(14)	15	15	18	24
	E (ref.)	28.5		44.5		59		59		59	74.5	77	77	91.5	109
Screw threads to be rolled		Number of starts N	Outside diameter $D^{(1)}$	Number of starts N	Outside diameter $D^{(1)}$	Number of starts N	Outside diameter $D^{(1)}$	Number of starts N	Outside diameter $D^{(1)}$	Number of starts N	Outside diameter $D^{(1)}$	Number of starts N	Outside diameter $D^{(1)}$	Number of starts N	Outside diameter $D^{(1)}$
Designation	Pitch														
M4×0.5	0.5	15	55.4	27	99.5	38	139.9	43	158.3						
M4.5×0.5	0.5	13	54.6	23	96.3	33	138.1	38	158.9						
M5×0.5	0.5	12	56.4	21	98.5	29	135.9	34	159.2						
M5.5×0.5	0.5	10	52.0	19	98.6	26	134.8	30	155.5						
M6×0.75	0.75	10	55.6	17	94.2	25	138.3	28	154.8	30	165.8				
M7×0.75	0.75			14	91.6	21	137.2	24	156.7	26	169.7				
M8×1	1			13	96.1	18	132.9	21	154.9	23	169.6				
M8×0.75	0.75			12	90.6	18	135.7	21	158.2	22	165.7				
M9×1	1			11	92.4	16	134.2	19	159.2	20	167.6				
M9×0.75	0.75			11	94.1	16	136.6	18	153.7	19	162.2				
M10×1.25	1.25			10	92.6	15	138.5	17	156.9	18	166.1				
M10×1	1			10	94.1	14	131.5	17	159.5	18	168.9				
M10×0.75	0.75			10	95.6	14	133.6	16	152.6	17	162.2				
M11×1	1			9	93.7	13	135.1	15	155.8	16	166.2				
M11×0.75	0.75			9	95.0	13	137.1	15	158.1	16	168.6				
M12×1.5	1.5			8	89.1	12	133.2	14	155.2	15	166.3	18	199.3		
M12×1.25	1.25			8	90.2	12	135.0	14	157.4	15	168.5	18	202.1		
M12×1	1			8	91.4	12	136.8	14	159.5	14	159.5	18	204.9		
M14×1.5	1.5			7	92.0	10	131.1	12	157.2	12	157.2	15	196.3		
M14×1.25	1.25			7	93.0	10	132.6	12	159.0	12	159.0	15	198.5		
M14×1	1			7	94.0	10	134.1	11	147.4	12	160.8	15	200.8		
M15×1.5	1.5			6	85.0	9	127.1	11	155.2	12	169.2	14	197.2		
M15×1	1			6	86.7	9	129.7	11	158.4	11	158.4	14	201.5		
M16×1.5	1.5			6	91.0	9	136.1	10	151.1	11	166.2	13	196.2		
M16×1	1			6	92.7	9	138.7	10	154.1	11	169.4	13	200.1		
M17×1.5	1.5					8	129.1	9	145.1	10	161.1	13	209.2		
M17×1	1					8	131.4	9	147.7	10	164.1	12	196.8		
M18×2	2					8	134.8	9	151.5	10	168.2	12	201.6	14	235.0
M18×1.5	1.5					8	137.1	9	154.1	9	154.1	12	205.2	14	239.2
M18×1	1					8	139.4	9	156.7	9	156.7	12	208.8	14	243.5
M20×2	2					7	132.1	8	150.8	9	169.5	11	206.9	13	244.4
M20×1.5	1.5					7	134.0	8	153.1	8	153.1	10	191.1	12	229.2
M20×1	1					7	136.0	8	155.4	8	155.4	10	194.1	12	232.8
M22×2	2					6	125.4	7	146.1	8	166.8	9	187.5	11	228.9
M22×1.5	1.5					6	127.0	7	148.0	8	169.1	9	190.1	11	232.2
M22×1	1					6	128.7	7	150.0	7	150.0	9	192.7	11	235.4
M24×2	2					6	137.4	6	137.4	7	160.1	8	182.8	10	228.2
M24×1.5	1.5					6	139.0	6	139.0	7	162.0	8	185.1	10	231.1
M24×1	1					5	117.3	6	140.7	7	164.0	8	187.4	10	234.1
M25×2	2					5	119.7	6	143.4	7	167.1	8	190.8	10	238.2
M25×1.5	1.5					5	121.0	6	145.0	7	169.0	8	193.1	10	241.2
M25×1	1					5	122.3	6	146.7	6	146.7	8	195.4	10	244.1
M26×1.5	1.5					5	126.0	6	151.0	6	151.0	8	201.1	9	226.1