

Standard hydraulic cylinders TJ, TH, TM series



Functional Symbol



- TJ series: These standard hydraulic cylinders satisfy the specifications of the JIS B 8354 standard, and they are destined for use in machine tools and other general sectors of industry.
- TH series: Features higher pressure levels (21 MPa) than the TJ series.
- TM series: Mill cylinders destined mainly for use in steel-making machinery.

Model Code

TJ(W)(3)-FA40(C)B100-(1537)(L70)(P1)(B)(W)(N)(M)(Z1)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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1 Series

TJ: Used with working pressures up to 14 MPa
(However, up to 7 MPa only for support unit models FA, FB and LB)

TH: Used with working pressures up to 21 MPa

TM: Mill standard type

2 Rod model

Omitted for single rod type

W: Double rod type (TJ series only)

3 Gasket material

Material Symbol	Series		
	TJ	TH	TM
Omitted	Nitrile rubber	Urethane rubber	Nitrile rubber
1	(Nitrile rubber)	Nitrile rubber	(Nitrile rubber)
2	Urethane rubber	(Urethane rubber)	Urethane rubber
3	Fluororubber		
4	Polytetrafluoroethylene (PTFE)		
5	Metal		

Note: Symbols (1 to 5) are to be entered in the sequence of the rods and piston if the rod gaskets and piston gaskets are made of different materials.

Example: "12" is entered when nitrile rubber is to be used for the rod gaskets and urethane rubber is to be used for the piston gaskets.

4 Support unit models

Support Unit	Series	TJ	TH	TM
SD: Basic		○	○	—
FA: Rod side rectangular flange		○	○	○
FB: Head side rectangular flange		○*	○	○
FC: Rod side square flange		○*	—	—
FD: Head side square flange		○	—	—
FY: Rod side rectangular flange		○	—	—
FZ: Head side rectangular flange		○	—	—
LA: Foot in direction perpendicular to axis		○	○	○
LB: Foot in axial direction		○*	—	—
TA: Rod side integrated trunnion		○	—	—
TC: Intermediate fixed trunnion		○	○	○
CA: Separated eye		○	—	○
CB: Separated clevis		○	—	—
CC: Fixed eye		—	○	—

* 7 MPa specification.

5 Cylinder bore size

Bore Size mm	Series	TJ	TH	TM
30		○	—	—
40		○	○	○
50		○	○	○
63		○	○	○
80		○	○	○
100		○	○	○
125		○	○	○
140		○	○	○
150		○	—	—
160		○	○	○
180		○	—	○
200		○	—	○
224		○	—	○
250		○	—	○

6 Type of rod diameter

Omit: B series (56% of cylinder bore size)

C: C series (45% of cylinder bore size); applicable only to TJ series

A: A series (71% of cylinder bore size); applicable only to TM series

7 Cushion

N: No cushion

R: Cushion provided at rod side

H: Cushion provided at head side

B: Cushions provided at both sides

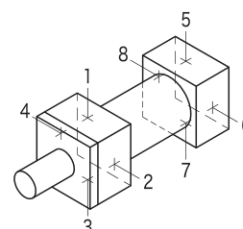
Note: It is not possible to fit the cushion mechanisms on the rod and head sides of TJ ø30, rod side of the TH ø40, rod side of the TM ø40A to ø63A series or rod side of the TM ø40B series.

8 Stroke

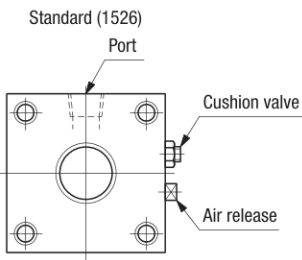
The stroke required within the maximum strokes set forth on page P1-3 is entered here.

9 Connection port, cushion valve/air release positions

The rod side connection port, head side connection port, rod side cushion valve/air release and head side cushion valve/air release positions are entered here in sequence.



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- Omitted (standard) when the connection port positions are '15' as shown in the figure and when the cushion valve/air release positions are '26'.
 - Only the port positions are entered if the cushion valve/air release positions are 90° to the right of the ports as seen from the rod side.
Example: Only '16' is entered if the port positions are '16' and the cushion valve/air release positions are '27'.
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- Standard (1526) Port
- Cushion valve
- Air release
- 10 Intermediate trunnion position (applicable to support unit model type TC)
Omit: standard (refer to dimensions on page P1-17)
L***: If a position other than the standard position is required, enter the XF in the dimension.
- 11 Bellows (dust-proof cover)
Omit: not provided
P1: Nylon tarpaulin (heat resistance: 80°C)
P2: Neoprene (heat resistance: 130°C)
P3: Conex (heat resistance: 400°C)

- 12 End screw shape
Omit: standard
B: Special
- 13 Rod pop-out length
Omit: standard
W: Special
- 14 Lock nut
Omit: not provided
N: Lock nut provided
- 15 End fitting
Omit: not provided
M: Single thread end fitting
F: Double thread end fitting
- 16 Pin (for support unit model type CB and double thread end fitting)
Omit: not provided
Z1: 1 pin
Z2: 2 pins
Note: Two split pins are provided for each pin.

Specifications

Series	Support Unit Model	Nominal Pressure MPa	Maximum Allowable Pressure/Pressure Resistance MPa				Cylinder Bore Size mm	Cylinder Speed mm/sec		Minimum Working Pressure MPa	Ambient Temperature °C	Thrust Efficiency	Pipe Connection System			
			Rod Side			Head Side		Min.	Max.							
			Rod Diameter Symbol A	Rod Diameter Symbol B	Rod Diameter Symbol C											
TJ	FA FB LB	7	—	13.5/14.2	11/11.6	9/10.5	φ 30～φ 63 φ 80～φ 125 φ 140～φ 250		400 300 200	0.3	－5 ～＋80	0.9	JIS pipe taper thread			
	SD, FC FD, FY FZ, LA CA, CB TA, TC	14	—	18/21	14/21	18/21	φ 30～φ 63 φ 80～φ 125 φ 140～φ 250		400 300 200							
	TH	SD, FA FB, LA CC, TC	21	—	25/31.5	—	27/31.5	φ 40～φ 63 φ 80～φ 125 φ 140, φ 160	400 300 200							
TM	FA, FB LA, CA TC	14	23/28		—	23/28	φ 40～φ 140 φ 160～φ 250	10 20	500	0.3 0.5	－10 ～＋80	0.95	JIS B 2291* Type SSA welding flange provided			

* This may refer to the flange provided for type SSA welding as stipulated in the JIS B 2291 standard or to the flange provided for connecting the taper threads for JIS pipes using the SSA mounting method stipulated in JIS B 2291.

- The 'maximum allowable pressure' is the allowable value of the surge pressure, the pressure that is generated in excess or any other pressure generated inside the cylinder during use in excess of the pressure set for the hydraulic circuit.
- The 'nominal pressure' is the pressure set for the relief valve in the hydraulic circuit that uses the cylinder.
- The minimum cylinder speed and minimum working pressure exclude the speed and pressure generated during the cushion stroke.
- When the cylinder is to be used at the maximum cylinder speed, set the pressure generated inside the cylinder chamber as a result of the load inertia to below the maximum allowable pressure.
- The minimum working pressure refers to the pressure when the pressure is supplied from the head side.

Specifications

● Maximum strokes and cushion strokes

Cylinder Bore Size mm	Maximum Stroke			Cushion Stroke					
	TJ	TH	TM	TJ	TH	TM			
ϕ 30	1200	—	—	—	—	—			
ϕ 40		1200	2000	20	20	25			
ϕ 50									
ϕ 63	1600	1600					25	25	35
ϕ 80									
ϕ 100		2000	2000	2500	30	—			
ϕ 125									
ϕ 140	—		—	30			—	40	
ϕ 150	2000		2500		30	—			50
ϕ 160									
ϕ 180									
ϕ 200	—		3000	30	—	50			
ϕ 224									
ϕ 250				35					

Stroke tolerance (JIS B 8354 class A)

Stroke mm	Tolerance mm
Less than 100	+0.8 0
101~ 250	+1.0 0
251~ 630	+1.25 0
631~1000	+1.4 0
1001~1600	+1.6 0
1601~2000	+1.8 0
2001~2500	+2.0 0
2501~3000	+2.2 0

Note: The maximum stroke is also limited by the buckling strength so select the rod diameter by referring to the "Quick reference table for buckling" on page P1-5.

● Piston surface area and velocity ratio (single rod type)

Cylinder Bore Size mm	Rod Diameter Symbol	Rod Diameter mm	Velocity Ratio	Piston Surface Area cm ²		Cylinder Bore Size mm	Rod Diameter Symbol	Rod Diameter mm	Velocity Ratio	Piston Surface Area cm ²	
				Push Pull	Head Side					Head Side	Rod Side
φ 30	B	φ 18	1 : 1.55		7.0		A	φ 100	1 : 2.04		75.3
φ 40	A	φ 28	1 : 1.96			φ 140	B	φ 80	1 : 1.48	153.9	103.6
	B	φ 22.4	1 : 1.46		12.5		C	φ 63	1 : 1.25		122.7
	C	φ 18	1 : 1.25								
φ 50	A	φ 35.5	1 : 2.02			φ 150	B	φ 85	1 : 1.47	176.7	119.9
	B	φ 28	1 : 1.46		19.6		C	φ 67	1 : 1.25		141.4
	C	φ 22.4	1 : 1.25								
φ 63	A	φ 45	1 : 2.04			φ 160	A	φ 112	1 : 1.96	201.0	102.5
	B	φ 35.5	1 : 1.47		31.1		B	φ 90	1 : 1.46		137.4
	C	φ 28	1 : 1.24				C	φ 71	1 : 1.24		161.4
φ 80	A	φ 56	1 : 1.96			φ 180	A	φ 125	1 : 1.93	254.4	131.7
	B	φ 45	1 : 1.46		50.2		B	φ 100	1 : 1.45		175.9
	C	φ 35.5	1 : 1.24				C	φ 80	1 : 1.25		204.2
φ 100	A	φ 71	1 : 2.02			φ 200	A	φ 140	1 : 1.96	314.1	160.2
	B	φ 56	1 : 1.46		78.5		B	φ 112	1 : 1.46		215.6
	C	φ 45	1 : 1.25				C	φ 90	1 : 1.25		250.5
φ 125	A	φ 90	1 : 2.08			φ 224	A	φ 160	1 : 2.04	394.0	193
	B	φ 71	1 : 1.48		122.7		B	φ 125	1 : 1.45		271.3
	C	φ 56	1 : 1.25				C	φ 100	1 : 1.25		315.5
φ 150	A	φ 100	1 : 2.08			φ 250	A	φ 180	1 : 2.08	490.8	236.4
	B	φ 80	1 : 1.46				B	φ 140	1 : 1.46		336.9
	C	φ 63	1 : 1.25				C	φ 112	1 : 1.25		392.3

Note: In the case of the double rod type, the velocity ratio is 1:1, and the piston surface area is the rod side surface area given in the above table for both sides.

Weight

● TJ series (single rod type)

Unit: kg

Cylinder Bore Size mm	Rod Diameter Symbol	Basic Weight													Weight per 100 mm of Stroke	Accessories			
		Support Unit Model														End Fitting		Pin	Nut
		SD	LA	LB	FA	FB	FC	FD	FY	FZ	CA	CB	TA	TC		Single Thread	Double Thread		
ϕ 30	B	2. 4	2. 9	3. 0	2. 7	3. 0	3. 1	3. 4	2. 8	3. 1	2. 9	3. 0	2. 5	2. 9	0. 7	0. 4	0. 6	0. 1	0. 02
	C	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—
ϕ 40	B	4. 0	4. 5	4. 6	4. 3	4. 7	4. 8	5. 1	4. 4	4. 9	4. 6	4. 7	4. 2	4. 8	1. 1	0. 5	0. 6	0. 1	0. 04
	C	3. 9	4. 4	4. 5	4. 2	4. 6	4. 7	5. 0	4. 3	4. 8	4. 5	4. 6	4. 1	4. 7	1. 0				0. 02
ϕ 50	B	5. 8	7. 2	7. 3	6. 4	7. 0	7. 2	7. 8	6. 7	7. 5	6. 8	6. 9	6. 2	6. 9	1. 4	0. 9	1. 2	0. 2	0. 07
	C	5. 7	7. 1	7. 2	6. 3	6. 9	7. 1	7. 7	6. 6	7. 4	6. 7	6. 8	6. 1	6. 8	1. 2				0. 04
ϕ 63	B	9. 2	10. 2	10. 5	10. 0	11. 0	11. 2	12. 2	10. 3	11. 6	11. 4	12. 0	10. 0	11. 4	2. 1	2. 6	3. 2	0. 6	0. 16
	C	8. 9	9. 9	10. 2	9. 7	10. 7	10. 9	11. 9	10. 0	11. 3	11. 1	11. 7	9. 7	11. 1	1. 9				0. 07
ϕ 80	B	15. 9	17. 6	18. 0	17. 2	18. 9	19. 0	20. 7	17. 6	19. 9	19. 0	19. 6	16. 7	18. 7	3. 5	3. 0	3. 8	0. 6	0. 35
	C	15. 2	16. 9	17. 3	16. 5	18. 2	18. 3	20. 0	16. 9	19. 2	18. 3	18. 9	16. 0	18. 0	3. 0				0. 16
ϕ 100	B	25. 4	27. 5	28. 8	27. 7	30. 6	30. 4	33. 2	28. 7	32. 7	30. 9	32. 1	27. 0	30. 6	5. 0	6. 3	7. 7	1. 2	0. 7
	C	24. 3	26. 4	27. 7	26. 6	29. 5	29. 3	32. 1	27. 6	31. 6	29. 8	31. 0	25. 9	29. 5	4. 3				0. 35

Weight

Unit: kg

Cylinder Bore Size mm	Rod Diameter Symbol	Basic Weight													Weight per 100 mm of Stroke	Accessories			
		Support Unit Model														End Fitting		Pin	Nut
		SD	LA	LB	FA	FB	FC	FD	FY	FZ	CA	CB	TA	TC		Single Thread	Double Thread		
ϕ 125	B	44.8	47.8	50.5	48.2	53.4	52.8	58.0	49.5	56.6	55.1	57.3	47.9	51.8	7.6	12.0	15.0	2.4	1.4
	C	42.9	45.9	48.6	46.3	51.5	50.9	56.1	47.6	54.7	53.2	55.4	46.0	49.9	6.5				0.7
ϕ 140	B	59.4	63.0	67.5	63.9	70.9	69.9	76.9	65.8	75.8	76.0	80.3	65.6	71.4	10.1	23.3	29.9	4.7	1.8
	C	56.6	60.2	64.7	61.1	68.1	67.1	74.1	63.0	73.0	73.2	77.5	62.8	68.6	8.6				1.0
ϕ 150	B	68.7	72.6	78.2	74.4	82.9	81.5	90.0	76.7	88.4	87.1	95.7	74.9	81.7	10.8	23.8	30.7	4.7	2.1
	C	65.6	69.5	75.1	71.3	79.8	78.4	86.9	73.6	85.3	84.0	92.6	71.8	78.6	9.2				1.2
ϕ 160	B	84.0	89.2	94.6	91.3	102.1	100.6	111.3	93.7	107.9	107.6	113.1	92.8	100.4	13.3	27.3	36.8	6.0	2.4
	C	79.6	84.8	90.2	86.9	97.7	96.2	106.9	89.3	103.5	103.2	108.7	88.4	96.0	11.4				1.4
ϕ 180	B	118.3	125.1	132.7	126.7	141.1	138.7	153	130	150	152.9	162	130.9	140.5	17.3	48.6	58.7	9.6	3.9
	C	111.7	118.5	126.1	120.1	134.5	132.1	146.4	123.4	143.4	146.3	155.4	124.3	133.9	15.0				1.8
ϕ 200	B	161.2	171.2	183.2	173.7	193.6	191.4	211.4	178.4	205.9	212.4	226.4	179.2	164.7	21.8	69.9	77.9	13.6	4.9
	C	153.3	163.3	175.3	165.8	185.7	183.5	203.5	170.5	198	204.5	218.5	171.3	156.8	19.1				2.4
ϕ 224	B	206.7	217.4	240.8	224.9	252.4	248.4	275.8	232.4	271.3	272	289.1	231.4	248.7	26.6	94.5	117.3	18.1	7.7
	C	193.8	204.5	227.9	212	239.5	235.5	262.9	219.5	258.4	259.1	276.2	218.5	235.8	23.1				3.9
ϕ 250	B	292	306.1	340	313.9	352.1	345.1	383.3	322.9	376.9	368	385.1	316.7	339.4	32.8	98.6	123.2	18.1	10
	C	272.4	286.5	320.4	294.3	332.5	325.5	363.7	313.3	357.3	348.4	365.5	297.1	319.8	28.5				4.9

● TJ series (double rod type)

Unit: kg

Cylinder Bore Size mm	Rod Diameter Symbol	Basic Weight								Weight per 100 mm of Stroke	Accessories			
		Support Unit Model									End Fitting		Pin	Nut
		SD	LA	LB	FA	FC	FY	TA	TC		Single Thread	Double Thread		
φ 30	B	3. 3	3. 8	3. 9	3. 6	4. 0	3. 7	3. 4	3. 8	0. 9	0. 4	0. 6	0. 1	0. 02
	C	—	—	—	—	—	—	—	—	—				—
φ 40	B	4. 9	5. 4	5. 5	5. 2	5. 7	5. 3	5. 1	5. 7	1. 4	0. 5	0. 6	0. 1	0. 04
	C	4. 8	5. 3	5. 4	5. 1	5. 6	5. 2	5. 0	5. 6	1. 2				0. 02
φ 50	B	7. 2	8. 6	8. 7	7. 8	8. 6	8. 1	7. 6	8. 3	1. 9	0. 9	1. 2	0. 2	0. 07
	C	7. 0	8. 4	8. 5	7. 6	8. 4	7. 9	7. 4	8. 1	1. 5				0. 04
φ 63	B	11. 5	12. 5	12. 8	12. 3	13. 5	12. 6	12. 3	13. 7	2. 9	2. 6	3. 2	0. 6	0. 16
	C	11. 1	12. 1	12. 4	11. 9	13. 1	12. 2	11. 9	13. 3	2. 4				0. 07
φ 80	B	20. 0	21. 7	22. 1	21. 3	23. 1	21. 7	20. 8	22. 8	4. 8	3. 0	3. 8	0. 6	0. 35
	C	19. 1	20. 8	21. 2	20. 4	22. 2	20. 8	19. 9	21. 9	3. 8				0. 16
φ 100	B	32. 1	34. 2	35. 5	34. 4	37. 1	35. 4	33. 7	37. 3	6. 9	6. 3	7. 7	1. 2	0. 7
	C	30. 5	32. 6	33. 9	32. 8	35. 5	33. 8	32. 1	35. 7	5. 6				0. 35
φ 125	B	55. 5	58. 5	61. 2	58. 9	63. 5	60. 2	58. 6	62. 5	10. 7	12. 0	15. 0	2. 4	1. 4
	C	51. 7	54. 7	57. 4	55. 1	59. 7	56. 4	54. 8	58. 7	8. 4				0. 7
φ 140	B	73. 7	77. 3	81. 8	78. 2	84. 2	80. 1	79. 9	85. 7	14. 1	23. 3	29. 9	4. 7	1. 8
	C	68. 1	71. 7	76. 2	72. 6	78. 6	74. 5	74. 3	80. 1	11. 1				1. 0
φ 150	B	85. 3	89. 2	94. 8	91. 0	98. 1	93. 3	91. 5	98. 3	15. 3	23. 8	30. 7	4. 7	2. 1
	C	79. 1	83. 0	88. 6	84. 8	91. 9	87. 1	85. 3	92. 1	12. 0				1. 2
φ 160	B	114. 3	119. 5	124. 9	121. 6	130. 9	124	123	130. 7	18. 3	27. 3	36. 8	6. 0	2. 4
	C	105. 5	110. 7	116. 1	112. 8	122. 1	115. 2	114. 2	121. 9	14. 5				1. 4

● TH series

Unit: kg

Cylinder Bore Size mm	Basic Weight						Weight per 100 mm of Stroke	Accessories			
	Support Unit Model							End Fitting		Pin	Nut
	SD	LA	FA	FB	CC	TC		Single Thread	Double Thread		
φ 40	5. 2	6. 2	6. 2	6. 7	6. 3	6. 2	1. 2	1. 1	1. 1	0. 2	0. 04
φ 50	8. 4	8. 8	9. 1	9. 8	9. 0	9. 0	2. 0	1. 6	1. 8	0. 3	0. 07
φ 63	12. 9	14. 2	14. 8	16. 3	14. 6	14. 9	3. 1	2. 7	3. 0	0. 6	0. 16
φ 80	23. 7	24. 5	24. 4	27. 5	25. 5	26. 3	4. 5	5. 4	6. 2	1. 2	0. 35
φ 100	40. 0	41. 7	42. 6	48. 0	43. 5	46. 2	6. 1	10. 0	11. 7	2. 3	0. 70
φ 125	67. 6	71. 2	75. 5	85. 6	78. 2	80. 0	10. 0	20. 3	22. 2	4. 7	1. 4
φ 140	87. 4	91. 8	93. 6	107. 2	103. 9	105. 3	11. 3	29. 3	29. 0	6. 2	1. 8
φ 160	119. 7	125	126. 6	145. 4	136. 1	141. 3	14. 7	43. 2	47. 3	9. 4	2. 4

P
1-4

Hydraulic Cylinders

Weight

● TM series (rod diameter symbol A)

Unit: kg

Cylinder Bore Size mm	Basic Weight					Weight per 100 mm of Stroke	Added Weight of Threaded Rod	Accessories			
	Support Unit Model							End Fitting		Pin	Nut
	LA	FA	FB	CA	TC			Single Thread	Double Thread		
φ 40	12. 1	10. 1	11. 1	11. 1	11. 2	1. 1	0. 1	1. 2	1. 4	0. 1	0. 07
φ 50	15. 8	13. 9	15. 5	15. 2	14. 8	1. 5	0. 2	2. 0	2. 2	0. 2	0. 16
φ 63	24. 6	22. 5	24. 9	24. 4	24. 0	2. 3	0. 3	3. 2	3. 6	0. 5	0. 35
φ 80	37. 0	34. 1	37. 4	38. 6	37. 0	3. 6	0. 5	6. 0	6. 0	0. 9	0. 7
φ 100	60. 7	57. 4	63. 4	65. 5	62. 0	6. 6	1. 2	11. 6	11. 4	1. 8	1. 4
φ 125	109. 4	104. 7	115. 6	120. 7	115. 8	8. 3	2. 2	22. 5	25. 2	3. 2	2. 4
φ 140	139. 9	135. 5	150. 6	156. 6	149. 1	11. 4	3. 9	32. 5	32. 3	5. 2	3. 9
φ 160	169. 1	179. 1	188. 5	197. 6	186. 8	14. 4	4. 3	46. 4	47. 4	6. 2	4. 6
φ 180	239	251. 9	265. 4	283. 1	262. 1	19. 2	7. 5	78. 8	77. 4	10. 7	8. 0
φ 200	325. 3	339. 8	356. 8	373. 4	352. 4	23. 4	9. 4	101. 3	92. 5	14. 8	11. 1
φ 224	427. 9	455. 8	477. 9	504. 7	477. 1	28. 8	14. 5	140. 2	135. 9	22. 5	16. 9
φ 250	573. 4	610	639	676. 4	638. 9	36. 4	21. 3	199. 7	187. 6	32. 4	24. 3

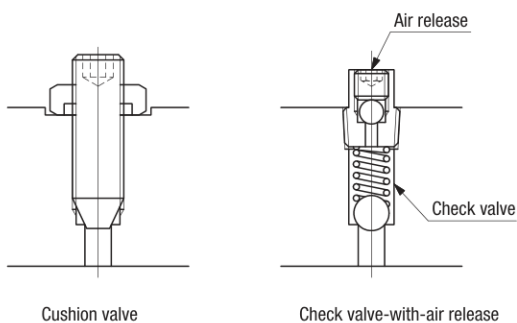
● TM series (rod diameter symbol B)

Unit: kg

Cylinder Bore Size mm	Basic Weight					Weight per 100 mm of Stroke	Added Weight of Threaded Rod	Accessories			
	Support Unit Model							End Fitting		Pin	Nut
	LA	FA	FB	CA	TC			Single Thread	Double Thread		
φ 40	12.0	10.0	11.0	11.0	11.1	0.9	0.1	1.3	1.5	0.06	0.04
φ 50	15.6	13.7	15.3	15.0	14.6	1.2	0.1	2.2	2.3	0.1	0.07
φ 63	24.1	22.1	24.4	23.9	23.5	1.8	0.2	3.5	3.8	0.2	0.16
φ 80	36.3	33.4	36.7	37.8	36.2	2.9	0.3	6.5	6.4	0.5	0.35
φ 100	58.9	55.6	61.6	63.7	60.2	5.4	0.5	13.0	12.5	0.9	0.7
φ 125	106.2	101.5	112.4	117.6	112.7	6.4	1.2	24.9	26.9	1.8	1.4
φ 140	134.6	130.2	145.3	151.3	143.9	9.2	1.6	36.9	35.6	2.5	1.8
φ 160	158.8	171.2	178.2	187.3	176.5	11.7	2.2	51.0	50.7	3.2	2.4
φ 180	220.6	238.2	247	264.7	243.7	15.7	3.9	87.2	83.4	5.2	3.9
φ 200	302.2	322.2	333.8	350.3	329.3	19.1	4.3	112.6	100.8	6.2	4.6
φ 224	398.6	432.4	448.6	475.3	447.8	22.7	7.5	155.7	147.2	10.7	8.0
φ 250	527.2	572.6	592.8	630.1	592.7	28.5	9.4	225.2	206.5	14.8	11.1

Notes on Operation

● Cushion valve and air release



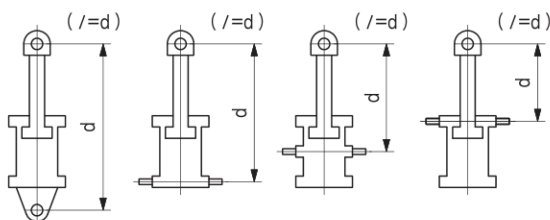
- Cushion valve: Loosen the lock nut, and turn the adjustment screw to adjust. The cushioning effect is increased as the screw is turned clockwise.
- Air release: Be absolutely sure to release the air when the cylinder has been installed. Failing to release the air completely may give rise to the stick-slip phenomenon. Also bear in mind that if any air is still left when a high pressure has been generated inside the cylinder, the lip of the rubber gasket may be damaged. To release the air, open the air release on the low-pressure side and keep releasing the air until the hydraulic fluid is no longer cloudy.

● Quick reference table for buckling

Follow the steps below to check the buckling strength as determined by the load, mounting length and rod diameter.

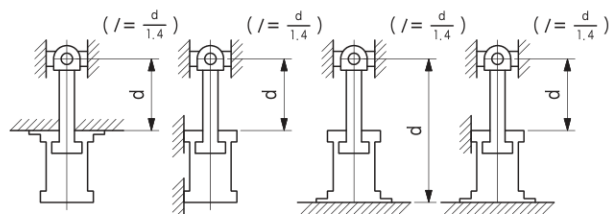
1. Check which of the states shown in the figures below the support unit model is in, and calculate the maximum mounting length d from the dimensions (when the end is extended).

● In the case of double-ended pin joint



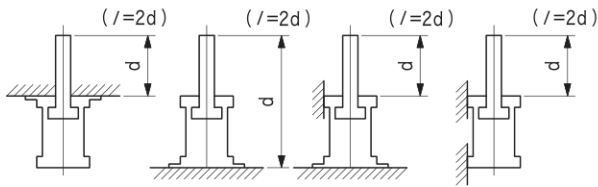
2. Calculate buckling length l using the l and d relational expression in the figure below.
3. In the following table, use the load and rod diameter intersection point as L .
4. If $l \leq L$, the buckling strength is sufficient.

● In the case of a fixed cylinder and rod end guide (pin joint)

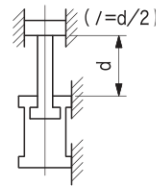


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● In the case of a fixed cylinder and free rod end



● In the case of a fixed cylinder and rod end guide



● Value of "L" (maximum buckling length) for rod diameter and load

Unit: mm

Load N	φ 18	φ 22 (φ 22.4)	φ 28	φ 36 (φ 35.5)	φ 45	φ 56	φ 63	φ 67	φ 70 (φ 71)	φ 80	φ 85	φ 90	φ 100	φ 110 (φ 112)	φ 125	φ 140	φ 160	φ 180
1000	1630	2530	3950															
1500	1330	2070	3230	5190	8340													
2000	1160	1790	2800	4490	7220	11180												
2500	1030	1600	2500	4020	6460	10000	12660	14320										
3000	940	1460	2280	3670	5900	9130	11560	13070	14680	18640	21040							
3500	870	1350	2110	3400	5460	8450	10700	12100	13590	17250	19480	21840						
4000	820	1270	1980	3180	5110	7910	10010	11320	12710	16140	18220	20430	25220	31630				
4500	770	1190	1860	3000	4810	7460	9440	10670	11990	15220	17180	19260	23770	29820	37150	46600		
5000	730	1130	1770	2840	4570	7070	8950	10130	11370	14440	16300	18270	22550	28290	35240	44210	57740	73080
6000	670	1030	1610	2600	4170	6460	8170	9240	10380	13180	14880	16680	20590	25830	32170	40360	52710	66710
7000	620	960	1490	2400	3860	5980	7570	8560	9610	12200	13770	15440	19060	23910	29780	37360	48800	61760
8000	580	900	1400	2250	3610	5590	7080	8010	8990	11410	12880	14440	17830	22370	27860	34950	45650	57770
9000	550	840	1320	2120	3400	5270	6670	7550	8470	10760	12150	13620	16810	21090	26270	32950	43040	54470
10000	520	800	1250	2010	3230	5000	6330	7160	8040	10210	11520	12920	15950	20010	24920	31260	40830	51670
15000	420	650	1020	1640	2640	4080	5170	5850	6560	8330	9410	10550	13020	16330	20350	25520	33340	42190
20000	370	570	880	1420	2280	3540	4480	5060	5690	7220	8150	9130	11280	14150	17620	22100	28870	36540
25000	330	510	790	1270	2040	3160	4000	4530	5090	6460	7290	8170	10090	12650	15760	19770	25820	32680
30000	300	460	720	1160	1870	2890	3660	4130	4640	5890	6650	7460	9210	11550	14390	18050	23570	29830
35000	280	430	670	1070	1730	2670	3380	3830	4300	5460	6160	6910	8530	10690	13320	16710	21820	27620
40000	260	400	630	1010	1620	2500	3170	3580	4020	5100	5760	6460	7970	10000	12460	15630	20410	25840
45000	240	380	590	950	1520	2360	2980	3380	3790	4810	5430	6090	7520	9430	11750	14740	19250	24360
50000	230	360	560	900	1440	2240	2830	3200	3600	4570	5150	5780	7130	8950	11140	13980	18260	23110
60000	210	330	510	820	1320	2040	2580	2920	3280	4170	4710	5270	6510	8170	10170	12760	16670	21100
70000	200	300	470	760	1220	1890	2390	2710	3040	3850	4360	4880	6030	7560	9420	11820	15430	19530
80000	180	280	440	710	1140	1770	2240	2530	2840	3610	4070	4570	5640	7070	8810	11050	14440	18270
90000	170	270	420	670	1080	1670	2110	2390	2680	3400	3840	4310	5320	6670	8310	10420	13610	17220
100000	160	250	400	640	1020	1580	2000	2260	2540	3230	3640	4090	5040	6330	7880	9890	12910	16340
150000	130	210	320	520	830	1290	1630	1850	2080	2640	2980	3340	4120	5170	6430	8070	10540	13340
200000		180	280	450	720	1120	1420	1600	1800	2280	2580	2890	3570	4470	5570	6990	9130	11550
250000		160	250	400	650	1000	1270	1430	1610	2040	2310	2580	3190	4000	4980	6250	8170	10340
300000		150	230	370	590	910	1160	1310	1470	1860	2100	2360	2910	3650	4550	5710	7450	9430
350000			210	340	550	850	1070	1210	1360	1730	1950	2180	2700	3380	4210	5280	6900	8730
400000			200	320	510	790	1000	1130	1270	1670	1820	2040	2520	3160	3940	4940	6460	8170
450000			190	300	480	750	940	1070	1200	1520	1720	1930	2380	2980	3720	4660	6090	7700
500000				280	460	710	900	1010	1140	1440	1630	1830	2260	2830	3520	4420	5770	7310
600000				260	420	650	820	930	1040	1320	1490	1670	2060	2580	3220	4040	5270	6670
700000				240	390	600	760	860	960	1220	1380	1540	1910	2390	2980	3740	4880	6180
800000					360	560	710	800	900	1140	1290	1440	1780	2240	2790	3500	4570	5780
900000					340	530	670	760	850	1080	1220	1360	1680	2110	2630	3300	4300	5450
1000000					320	500	630	720	800	1020	1150	1290	1600	2000	2490	3130	4080	5170

P
1-6

Hydraulic Cylinders

Dimensions (applicable pages for TJ series)

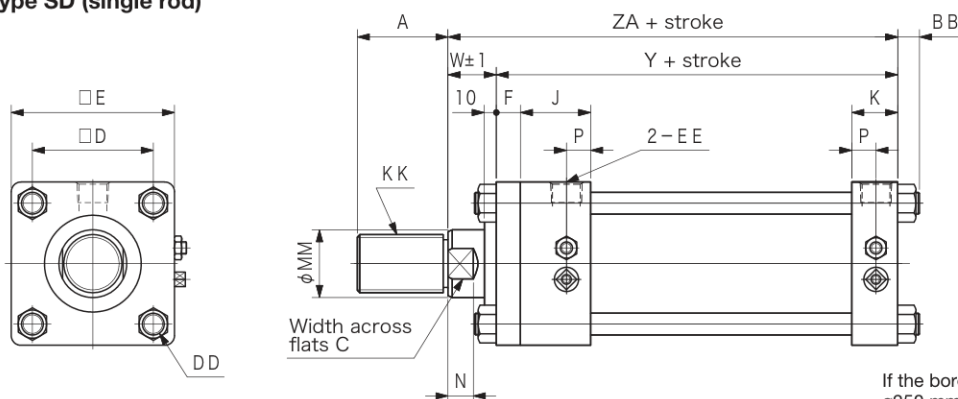
SD/SDWP1-7
FA/FAWP1-8
FBP1-9
FC/FCWP1-10
FDP1-11
FY/FYWP1-12
FZP1-13
LA/LAWP1-14
LB/LBWP1-15
TA/TAWP1-16

TC/TCWP1-17
CAP1-18
CBP1-19
Cushion valve/air releaseP1-20
Single thread end fittingP1-20
Double thread end fittingP1-20
BellowsP1-21
PinP1-21
Lock nutP1-21

Consult Tokyo Keiki for the dimensions of the TM and TH series.

Dimensions (TJ series, port position symbol '15')

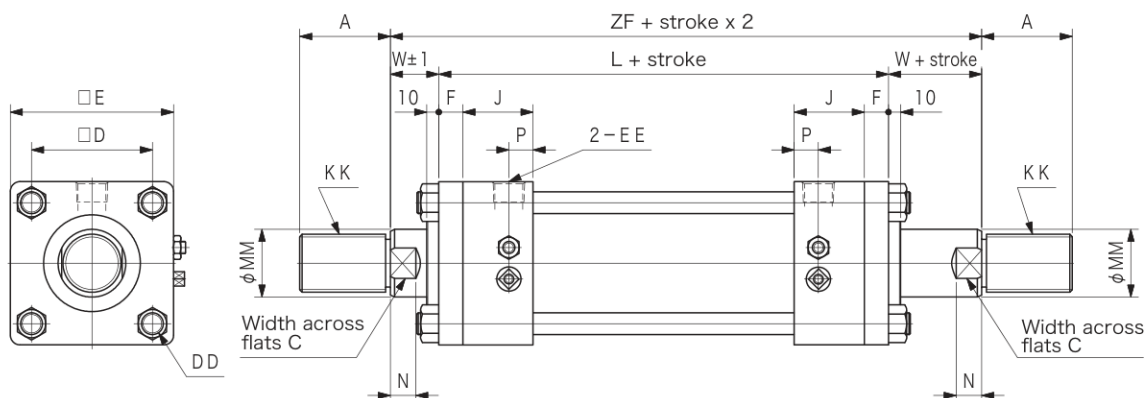
• Type SD (single rod)



If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000
14	Less than 800	800~2000

• Type SDW (double rod)



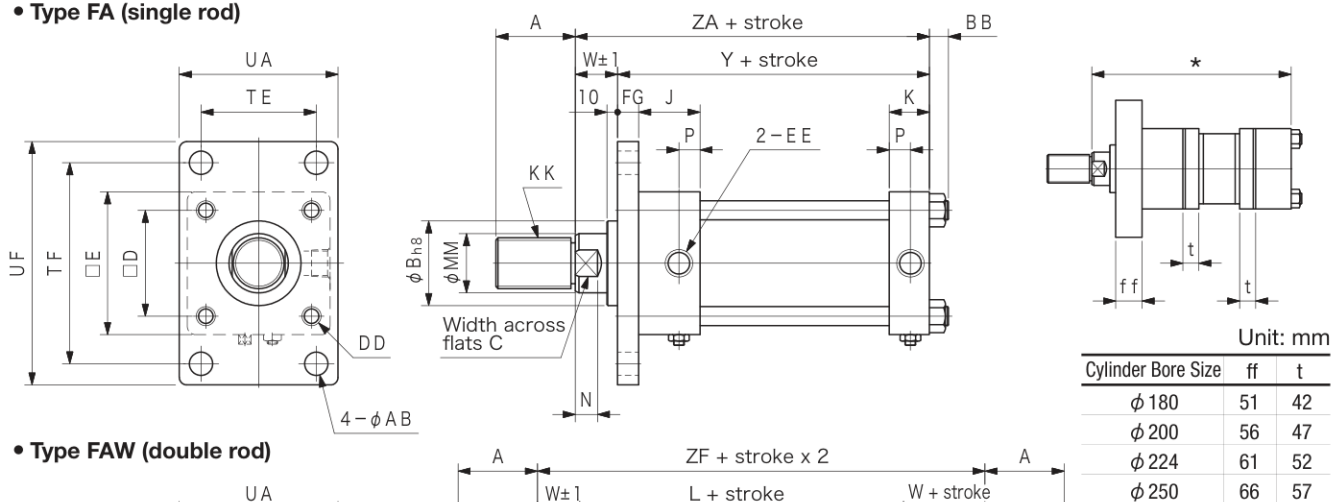
Dimensions table

Unit: mm

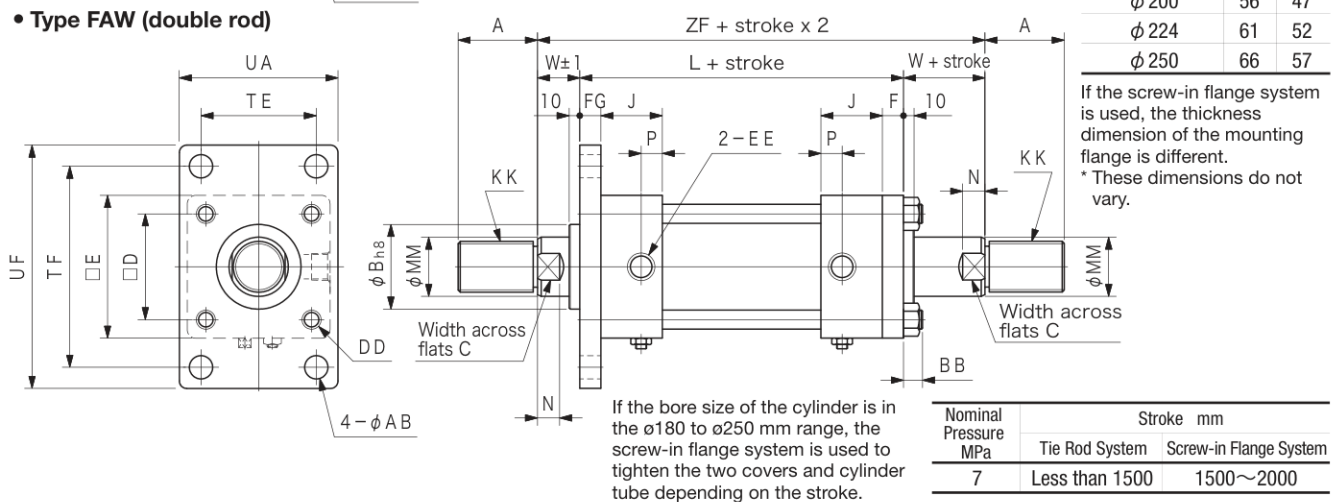
Cylinder Bore Size		$\phi 30$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 150$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 224$	$\phi 250$
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	K K	M16 × 1.5	M20 × 1.5	M24 × 1.5	M30 × 1.5	M39 × 1.5	M48 × 1.5	M64 × 2	M72 × 2	M76 × 2	M80 × 2	M95 × 2	M100 × 2	M120 × 2	M130 × 2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K	—	M16 × 1.5	M20 × 1.5	M24 × 1.5	M30 × 1.5	M39 × 1.5	M48 × 1.5	M56 × 2	M60 × 2	M64 × 2	M72 × 2	M80 × 2	M95 × 2	M100 × 2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346
	B B	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	D D	M8 × 1.25	M10 × 1.5	M10 × 1.5	M12 × 1.5	M16 × 1.5	M18 × 1.5	M22 × 1.5	M24 × 1.5	M27 × 1.5	M27 × 1.5	M30 × 1.5	M33 × 1.5	M39 × 1.5	M42 × 1.5
	E E	Rc3/8	Rc1/2	Rc1/2	Rc3/4	Rc3/4	Rc1	Rc1	Rc1	Rc1	Rc1-1/4	Rc1-1/2	Rc1-1/2	Rc2	Rc2
	Cushion Stroke	—	20	20	20	20	25	25	25	25	25	30	30	35	35
	Z A	171	171	185	198	219	232	265	280	290	308	330	356	365	411
	Z F	226	226	242	264	292	312	354	376	388	414	432	464	482	542
	L	166	166	182	194	222	232	264	276	288	304	322	354	362	412

Dimensions (TJ series, port position symbol '15')

• Type FA (single rod)



• Type FAW (double rod)



Unit: mm

Cylinder Bore Size	ff	t
φ 180	51	42
φ 200	56	47
φ 224	61	52
φ 250	66	57

If the screw-in flange system is used, the thickness dimension of the mounting flange is different.
* These dimensions do not vary.

If the bore size of the cylinder is in the φ180 to φ250 mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

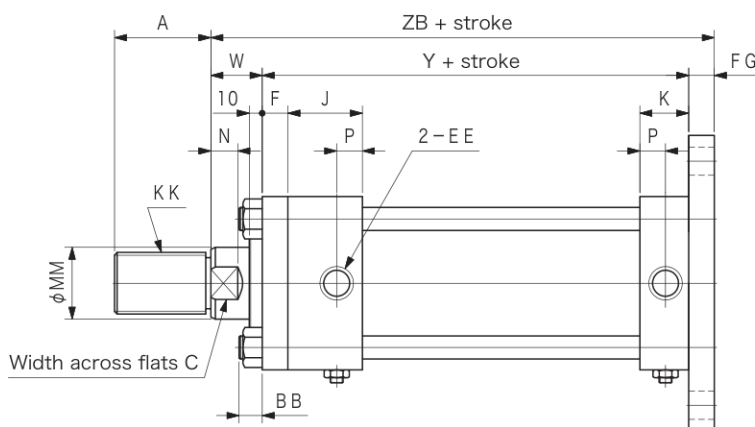
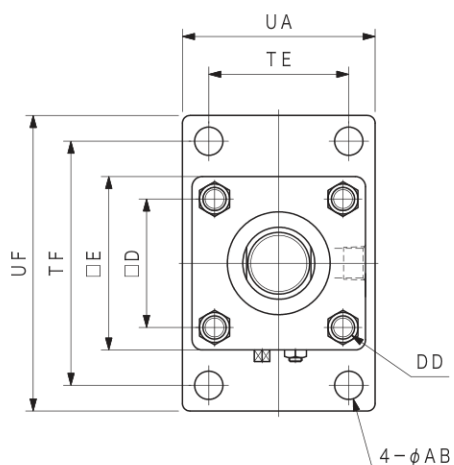
Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000

Dimensions table

Dimensions table															Unit: mm		
Symbol	Cylinder Bore Size	φ 30	φ 40	φ 50	φ 63	φ 80	φ 100	φ 125	φ 140	φ 150	φ 160	φ 180	φ 200	φ 224	φ 250		
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140		
	K K	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2		
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195		
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170		
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130		
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44		
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112		
	K K	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2		
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150		
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140		
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105		
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38		
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250		
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325		
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46		
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115		
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95		
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55		
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65		
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346		
	B B	10	11	11	13	16	18	21	22	25	25	27	29	34	37		
	D D	M8×1.25	M10×1.5	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M24×1.5	M27×1.5	M27×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5		
	E E	Rc3/8			Rc1/2		Rc3/4			Rc1			Rc1-1/4		Rc1-1/2		Rc2
	Cushion Stroke	—		20			25						30			35	
	U A	63	69	85	98	118	150	175	195	210	225	243	272	310	335		
T E	40±0.13	46±0.13	58±0.15	65±0.15	87±0.18	109±0.18	130±0.20	145±0.20	155±0.20	170±0.20	185±0.23	206±0.23	230±0.23	250±0.23			
T F	88±0.18	95±0.18	115±0.18	132±0.20	155±0.20	190±0.23	224±0.23	250±0.23	270±0.26	285±0.26	315±0.26	355±0.29	395±0.29	425±0.32			
U F	109	118	145	165	190	230	272	300	320	345	375	425	475	515			
Z A	171	171	185	198	219	232	265	280	290	308	330	356	365	411			
A B	11±0.5	11±0.5	14±0.5	18±0.7	18±0.7	22±0.7	26±0.7	26±0.7	30±0.7	33±0.7	33±0.7	36±0.7	42±0.7	45±0.7			
F G	11±0.2	11±0.2	13±0.2	15±0.2	18±0.3	20±0.3	24±0.3	26±0.3	28±0.3	31±0.3	33±0.3	37±0.3	41±0.3	46±0.3			
L	166	166	182	194	222	232	264	276	288	304	322	354	362	412			
Z F	226	226	242	264	292	312	354	376	388	414	432	464	482	542			

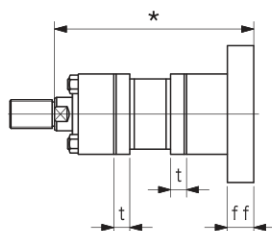
Dimensions (TJ series, port position symbol '15')

• Type FB (single rod)



Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000

If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.



Unit: mm	
ZB + Stroke	Tolerance
~ 300	± 1.25
301 ~ 1000	± 1.6
1001 ~	± 2.0

Unit: mm		
Cylinder Bore Size	ff	t
$\phi 180$	51	42
$\phi 200$	56	47
$\phi 224$	61	52
$\phi 250$	66	57

If the screw-in flange system is used, the thickness dimension of the mounting flange is different.

* These dimensions do not vary.

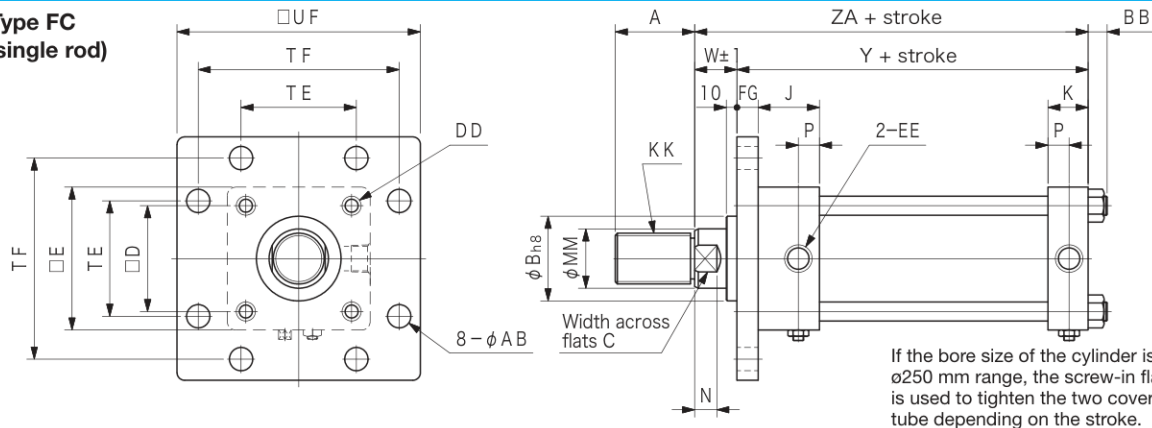
Dimensions table

Unit: mm

Symbol		Cylinder Bore Size	$\phi 30$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 150$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 224$	$\phi 250$
Rod diameter symbol B	MM		18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	K K	M16 $\times$ 1.5	M20 $\times$ 1.5	M24 $\times$ 1.5	M30 $\times$ 1.5	M39 $\times$ 1.5	M48 $\times$ 1.5	M64 $\times$ 2	M72 $\times$ 2	M76 $\times$ 2	M80 $\times$ 2	M95 $\times$ 2	M100 $\times$ 2	M120 $\times$ 2	M130 $\times$ 2	
	A		25	30	35	45	60	75	95	100	115	120	140	150	180	195
	B		36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C		14	19	24	30	41	50	65	75	80	85	95	105	115	130
Rod diameter symbol C	N		10	11	13	15	18	21	25	30	32	35	35	38	41	44
	MM		—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K		—	M16 $\times$ 1.5	M20 $\times$ 1.5	M24 $\times$ 1.5	M30 $\times$ 1.5	M39 $\times$ 1.5	M48 $\times$ 1.5	M56 $\times$ 2	M60 $\times$ 2	M64 $\times$ 2	M72 $\times$ 2	M80 $\times$ 2	M95 $\times$ 2	M100 $\times$ 2
	A		—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B		—	36	40	46	55	65	80	85	90	95	105	115	125	140
Common dimensions	C		—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N		—	10	11	13	15	18	21	23	25	25	30	35	35	38
	D		40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E		55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F		11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J		42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K		28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P		15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W		30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y		141	141	155	163	184	192	220	230	240	253	275	301	305	346
	BB		10	11	11	13	16	18	21	22	25	25	27	29	34	37
	DD		M8 $\times$ 1.25	M10 $\times$ 1.5	M10 $\times$ 1.5	M12 $\times$ 1.5	M16 $\times$ 1.5	M18 $\times$ 1.5	M22 $\times$ 1.5	M24 $\times$ 1.5	M27 $\times$ 1.5	M27 $\times$ 1.5	M30 $\times$ 1.5	M33 $\times$ 1.5	M39 $\times$ 1.5	M42 $\times$ 1.5
	EE		Rc3/8	Rc1/2	Rc1/2	Rc3/4	Rc3/4	Rc1	Rc1	Rc1	Rc1	Rc1	Rc1-1/4	Rc1-1/2	Rc2	Rc2
	Cushion Stroke		—	20	20	20	20	25	25	25	25	25	30	30	35	35
	UA		63	69	85	98	118	150	175	195	210	225	243	272	310	335
	TE		40 $\pm$ 0.13	46 $\pm$ 0.13	58 $\pm$ 0.15	65 $\pm$ 0.15	87 $\pm$ 0.18	109 $\pm$ 0.18	130 $\pm$ 0.20	145 $\pm$ 0.20	155 $\pm$ 0.20	170 $\pm$ 0.20	185 $\pm$ 0.23	206 $\pm$ 0.23	230 $\pm$ 0.23	250 $\pm$ 0.23
	TF		88 $\pm$ 0.18	95 $\pm$ 0.18	115 $\pm$ 0.18	132 $\pm$ 0.20	155 $\pm$ 0.20	190 $\pm$ 0.23	224 $\pm$ 0.23	250 $\pm$ 0.23	270 $\pm$ 0.26	285 $\pm$ 0.26	315 $\pm$ 0.26	355 $\pm$ 0.29	395 $\pm$ 0.29	425 $\pm$ 0.32
	UF		109	118	145	165	190	230	272	300	320	345	375	425	475	515
	ZB		182	182	198	213	237	252	289	306	318	339	363	393	406	457
	AB		11 $\pm$ 0.5	11 $\pm$ 0.5	14 $\pm$ 0.5	18 $\pm$ 0.7	18 $\pm$ 0.7	22 $\pm$ 0.7	26 $\pm$ 0.7	26 $\pm$ 0.7	30 $\pm$ 0.7	33 $\pm$ 0.7	33 $\pm$ 0.7	36 $\pm$ 0.7	42 $\pm$ 0.7	45 $\pm$ 0.7
	FG		11 $\pm$ 0.2	11 $\pm$ 0.2	13 $\pm$ 0.2	15 $\pm$ 0.2	18 $\pm$ 0.3	20 $\pm$ 0.3	24 $\pm$ 0.3	26 $\pm$ 0.3	28 $\pm$ 0.3	31 $\pm$ 0.3	33 $\pm$ 0.3	37 $\pm$ 0.3	41 $\pm$ 0.3	46 $\pm$ 0.3

Dimensions (TJ series, port position symbol '15')

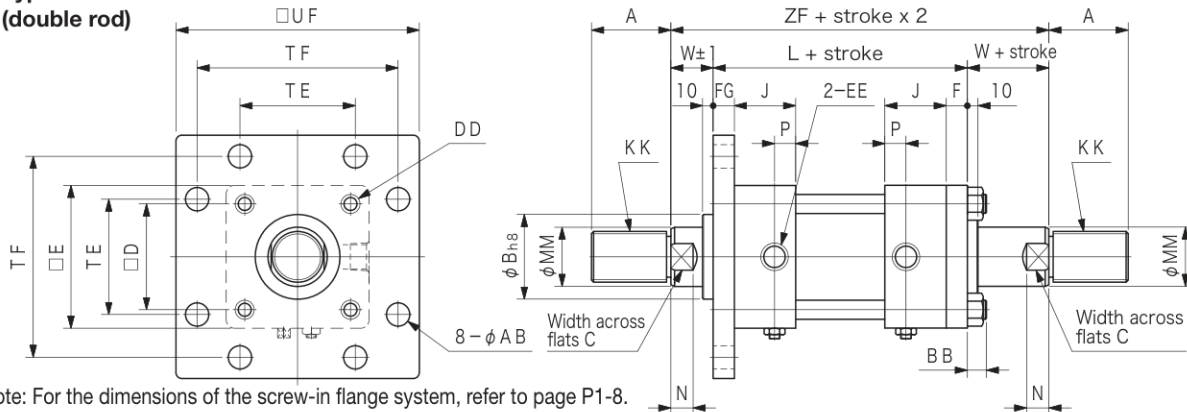
• Type FC (single rod)



If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000
14	Less than 800	800~2000

• Type FCW (double rod)



Note: For the dimensions of the screw-in flange system, refer to page P1-8.

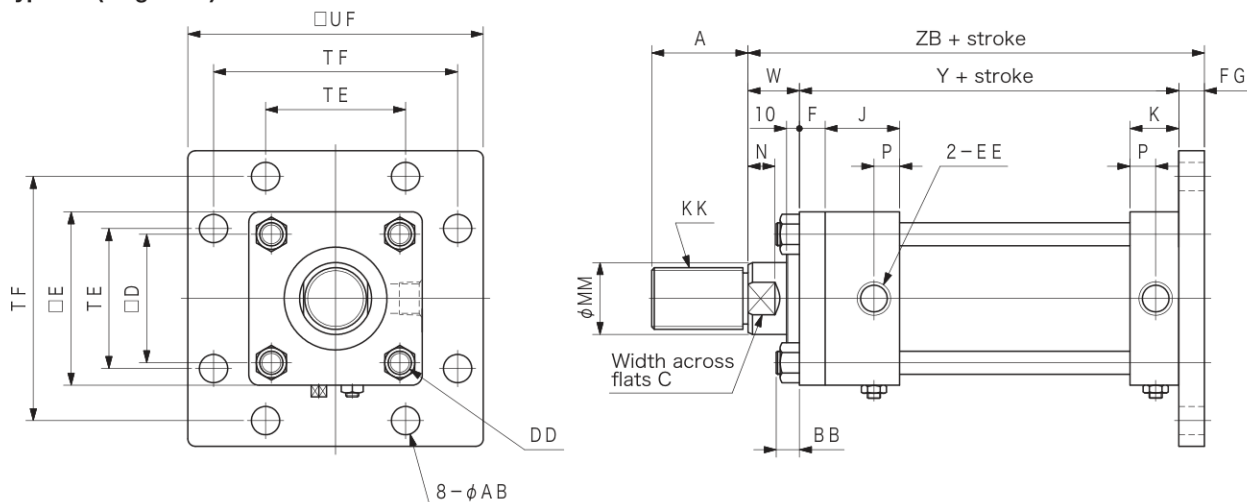
Dimensions table

Unit: mm

Symbol		Cylinder Bore Size													
Rod diameter symbol B		φ 30	φ 40	φ 50	φ 63	φ 80	φ 100	φ 125	φ 140	φ 150	φ 160	φ 180	φ 200	φ 224	φ 250
	MM	18	22. 4	28	35. 5	45	56	71	80	85	90	100	112	125	140
	K K	M16×1. 5	M20×1. 5	M24×1. 5	M30×1. 5	M39×1. 5	M48×1. 5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
N	10	11	13	15	18	21	25	30	32	35	35	38	41	44	
Rod diameter symbol C	MM	—	18	22. 4	28	35. 5	45	56	63	67	71	80	90	100	112
	K K	—	M16×1. 5	M20×1. 5	M24×1. 5	M30×1. 5	M39×1. 5	M48×1. 5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346
	B B	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	D D	M8×1. 25	M10×1. 5	M10×1. 5	M12×1. 5	M16×1. 5	M18×1. 5	M22×1. 5	M24×1. 5	M27×1. 5	M27×1. 5	M30×1. 5	M33×1. 5	M39×1. 5	M42×1. 5
	E E	Rc3/8		Rc1/2		Rc3/4		Rc1			Rc1-1/4		Rc1-1/2		Rc2
Cushion Stroke		—		20				25				30		35	
T E		40±0. 13	46±0. 13	58±0. 15	65±0. 15	87±0. 18	109±0. 18	130±0. 20	145±0. 20	155±0. 20	170±0. 20	185±0. 23	206±0. 23	230±0. 23	250±0. 23
T F		88±0. 18	95±0. 18	115±0. 18	132±0. 20	155±0. 20	190±0. 23	224±0. 23	250±0. 23	270±0. 26	285±0. 26	315±0. 26	355±0. 29	395±0. 29	425±0. 32
U F		109	118	145	165	190	230	272	300	320	345	375	425	475	515
Z A		171	171	185	198	219	232	265	280	290	308	330	356	365	411
A B		11±0. 5	11±0. 5	14±0. 5	18±0. 7	18±0. 7	22±0. 7	26±0. 7	26±0. 7	30±0. 7	33±0. 7	33±0. 7	36±0. 7	42±0. 7	45±0. 7
L		166	166	182	194	222	232	264	276	288	304	322	354	362	412
Z F		226	226	242	264	292	312	354	376	388	414	432	464	482	542
F G		11±0. 2	11±0. 2	13±0. 2	15±0. 2	18±0. 3	20±0. 3	24±0. 3	26±0. 3	28±0. 3	31±0. 3	33±0. 3	37±0. 3	41±0. 3	46±0. 3

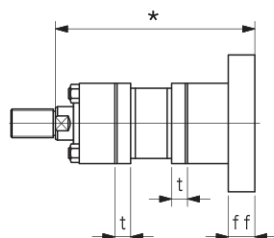
Dimensions (TJ series, port position '15')

• Type FD (single rod)



If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000
14	Less than 800	800~2000



Unit: mm

Cylinder Bore Size	ff	t
$\phi 180$	51	42
$\phi 200$	56	47
$\phi 224$	61	52
$\phi 250$	66	57

If the screw-in flange system is used, the thickness dimension of the mounting flange is different.

* These dimensions do not vary.

Unit: mm

ZB + Stroke	Tolerance
~ 300	± 1.25
301 ~ 1000	± 1.6
1001 ~	± 2.0

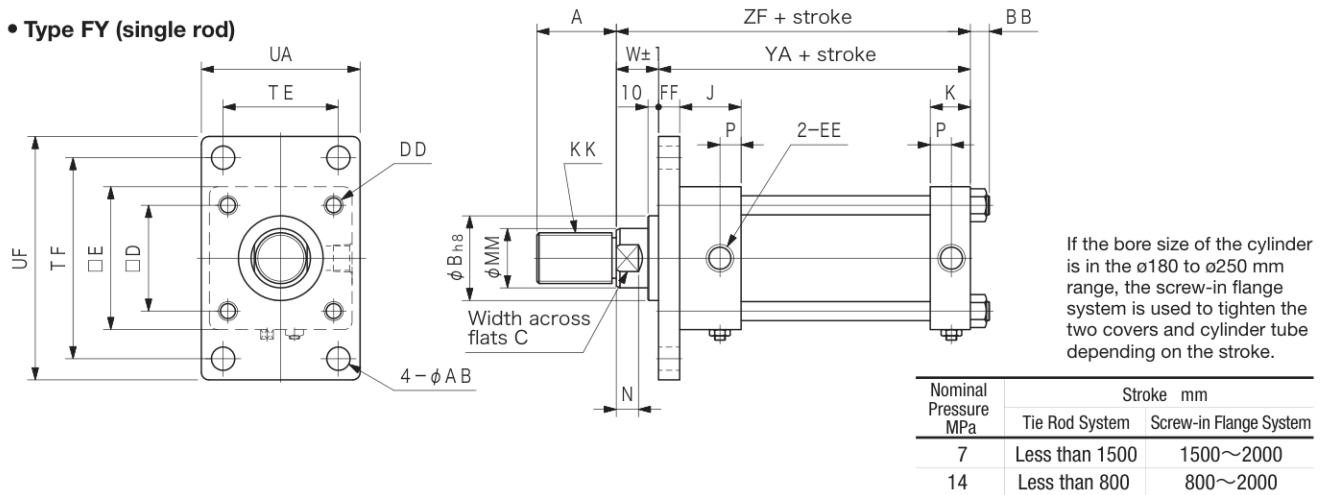
Dimensions table

Unit: mm

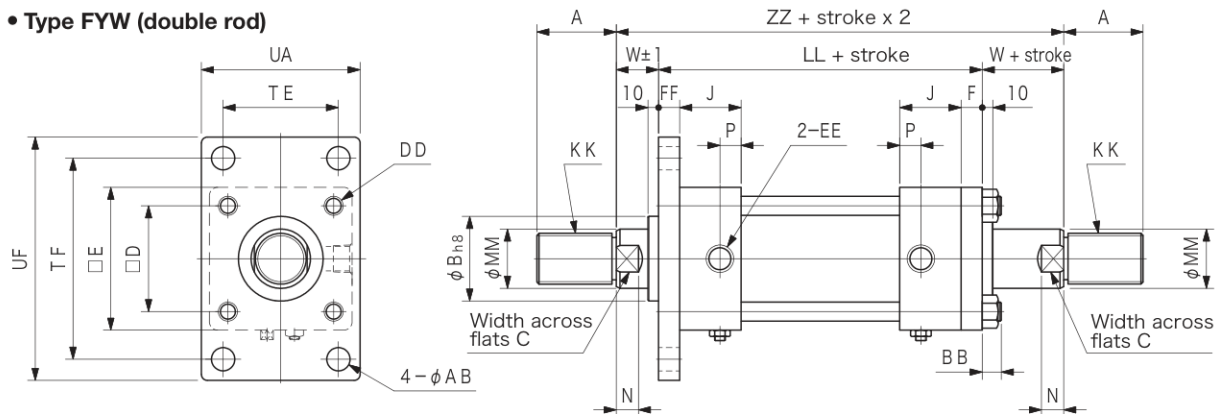
Symbol		Cylinder Bore Size													
		$\phi 30$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 150$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 224$	$\phi 250$
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	K K	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346
	BB	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	DD	M8×1.25	M10×1.5	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M24×1.5	M27×1.5	M27×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5
	EE	Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1-1/4	Rc1-1/2	Rc2	Rc2-1/4	Rc2-1/2	Rc2-3/4	Rc3	Rc3-1/4	Rc3-1/2	Rc3-3/4
	Cushion Stroke	—	20	25	30	35	40	45	50	55	60	65	70	75	80
	FG	11±0.2	11±0.2	13±0.2	15±0.2	18±0.3	20±0.3	24±0.3	26±0.3	28±0.3	31±0.3	33±0.3	37±0.3	41±0.3	46±0.3
	TE	40±0.13	46±0.13	58±0.15	65±0.15	87±0.18	109±0.18	130±0.20	145±0.20	155±0.20	170±0.20	185±0.23	206±0.23	230±0.23	250±0.23
	TF	88±0.18	95±0.18	115±0.18	132±0.20	155±0.20	190±0.23	224±0.23	250±0.23	270±0.26	285±0.26	315±0.26	355±0.29	395±0.29	425±0.32
	UF	109	118	145	165	190	230	272	300	320	345	375	425	475	515
	ZB	182	182	198	213	237	252	289	306	318	339	363	393	406	457
	AB	11±0.5	11±0.5	14±0.5	18±0.7	18±0.7	22±0.7	26±0.7	26±0.7	30±0.7	33±0.7	33±0.7	36±0.7	42±0.7	45±0.7

Dimensions (TJ series, port position symbol '15')

• Type FY (single rod)



• Type FYW (double rod)



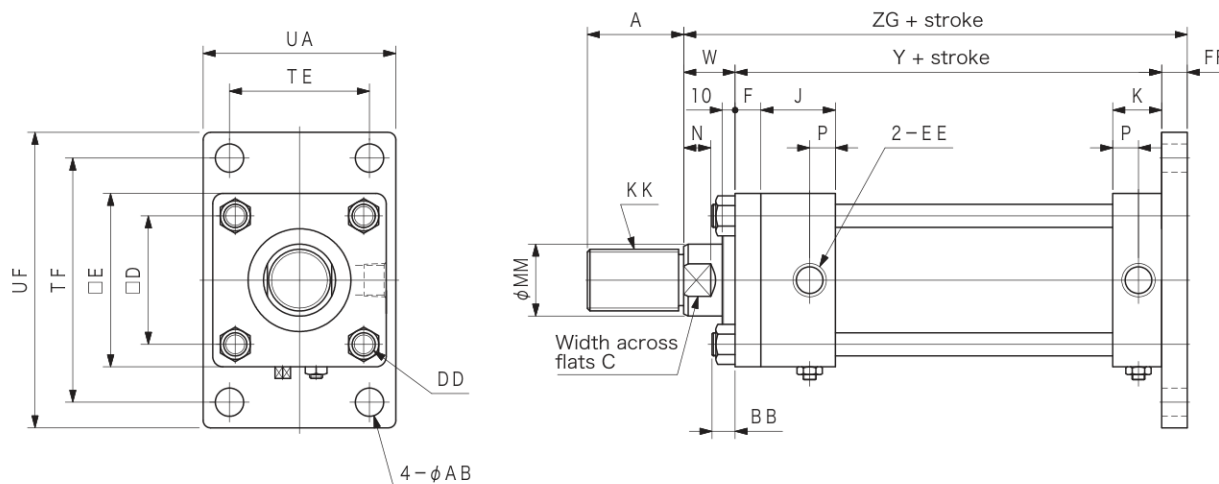
Dimensions table

Unit: mm

Symbol	Cylinder Bore Size	φ 30	φ 40	φ 50	φ 63	φ 80	φ 100	φ 125	φ 140	φ 150	φ 160	φ 180	φ 200	φ 224	φ 250
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	K K	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y A	143	143	160	168	190	200	229	241	251	263	288	315	322	365
	B B	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	DD	M8×1.25	M10×1.5	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M24×1.5	M27×1.5	M27×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5
	E E	Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1	Rc1	Rc1	Rc1	Rc1	Rc1-1/4	Rc1-1/2	Rc1-1/2	Rc2	Rc2
Cushion Stroke		—	20	20	20	25	25	25	25	25	25	30	30	35	35
U A		63	69	85	98	118	150	175	195	210	225	243	272	310	335
T E		40±0.13	46±0.13	58±0.15	65±0.15	87±0.18	109±0.18	130±0.20	145±0.20	155±0.20	170±0.20	185±0.23	206±0.23	230±0.23	250±0.23
T F		88±0.18	95±0.18	115±0.18	132±0.20	155±0.20	190±0.23	224±0.23	250±0.23	270±0.26	285±0.26	315±0.26	355±0.29	395±0.29	425±0.32
U F		109	118	145	165	190	230	272	300	320	345	375	425	475	515
Z F		173	173	190	203	225	240	274	291	301	318	343	370	382	430
A B		11±0.5	11±0.5	14±0.5	18±0.7	18±0.7	22±0.7	26±0.7	26±0.7	30±0.7	33±0.7	33±0.7	36±0.7	42±0.7	45±0.7
F F		13±0.2	13±0.2	18±0.3	20±0.3	24±0.3	28±0.3	33±0.3	37±0.3	39±0.3	41±0.3	46±0.3	51±0.3	58±0.3	65±0.5
L L		168	168	187	199	228	240	273	287	299	314	335	368	379	431
Z Z		228	228	247	269	298	320	363	387	399	424	445	478	499	561

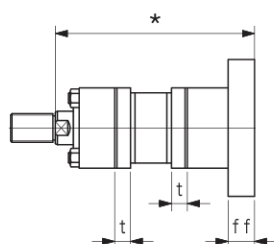
Dimensions (TJ series, port position symbol '15')

• Type FZ (single rod)



If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000
14	Less than 800	800~2000



Unit: mm		
Cylinder Bore Size	ff	t
$\phi 180$	51	42
$\phi 200$	56	47
$\phi 224$	61	52
$\phi 250$	66	57

If the screw-in flange system is used, the thickness dimension of the mounting flange is different.

* These dimensions do not vary.

Unit: mm	
ZG + Stroke	Tolerance
~ 300	± 1.25
301 ~ 1000	± 1.6
1001 ~	± 2.0

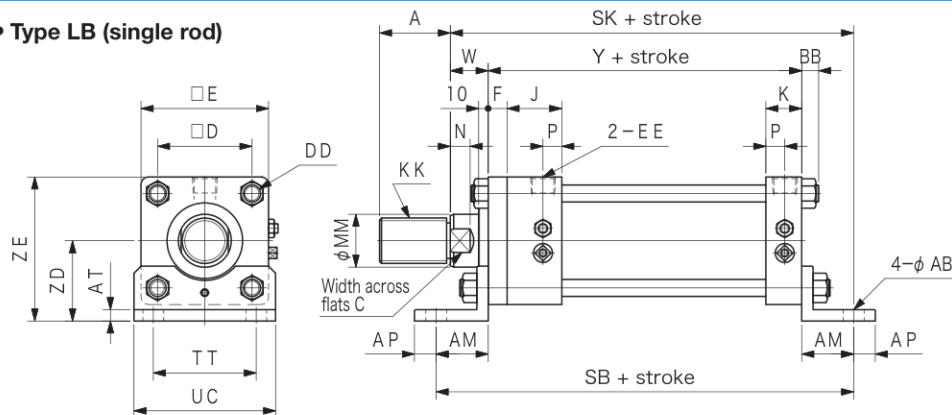
Dimensions table

Unit: mm

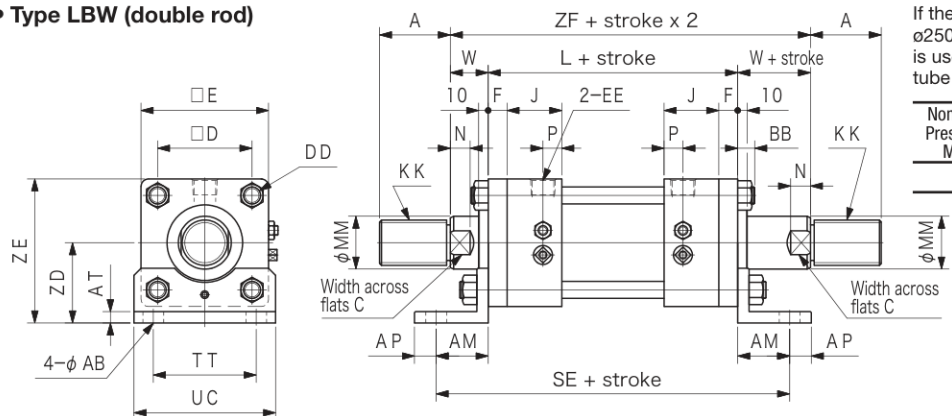
Symbol		Cylinder Bore Size													
		$\phi 30$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 150$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 224$	$\phi 250$
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	K K	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346
	BB	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	DD	M8×1.25	M10×1.5	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M24×1.5	M27×1.5	M27×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5
	EE	Rc3/8	Rc1/2	Rc1/2	Rc3/4	Rc3/4	Rc1	Rc1	Rc1	Rc1	Rc1	Rc1-1/4	Rc1-1/2	Rc2	Rc2
	Cushion Stroke	—	20	20	20	25	25	25	25	25	25	30	30	35	35
	FF	13±0.2	13±0.2	18±0.3	20±0.3	24±0.3	28±0.3	33±0.3	37±0.3	39±0.3	41±0.3	46±0.3	51±0.3	58±0.3	65±0.5
	UA	63	69	85	98	118	150	175	195	210	225	243	272	310	335
	TE	40±0.13	46±0.13	58±0.15	65±0.15	87±0.18	109±0.18	130±0.20	145±0.20	155±0.20	170±0.20	185±0.23	206±0.23	230±0.23	250±0.23
	TF	88±0.18	95±0.18	115±0.18	132±0.20	155±0.20	190±0.23	224±0.23	250±0.23	270±0.26	285±0.26	315±0.26	355±0.29	395±0.29	425±0.32
	UF	109	118	145	165	190	230	272	300	320	345	375	425	475	515
	ZG	184	184	203	218	243	260	298	317	329	349	376	407	423	476
	AB	11±0.5	11±0.5	14±0.5	18±0.7	18±0.7	22±0.7	26±0.7	26±0.7	30±0.7	33±0.7	33±0.7	36±0.7	42±0.7	45±0.7

Dimensions (TJ series, port position symbol '15')

• Type LB (single rod)



• Type LBW (double rod)



If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000

Unit: mm

SK SB + Stroke SE	Tolerance
~ 300	± 1.25
301 ~ 1000	± 1.6
1001 ~	± 2.0

Dimensions table

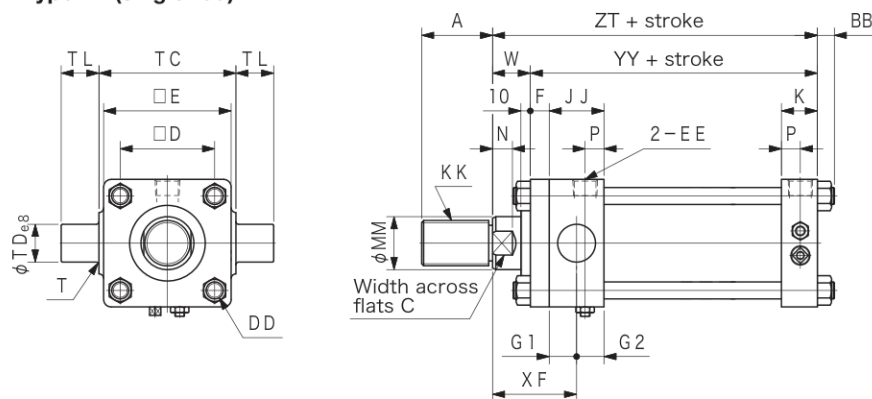
Unit: mm

Symbol		Cylinder Bore Size													
		$\phi 30$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 150$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 224$	$\phi 250$
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	K K	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
Rod diameter symbol C	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44
	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
Common dimensions	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346
	BB	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	DD	M8×1.25	M10×1.5	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M24×1.5	M27×1.5	M27×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5
	EE	Rc3/8	Rc1/2	Rc1/2	Rc3/4	Rc3/4	Rc1	Rc1	Rc1	Rc1	Rc1-1/4	Rc1-1/2	Rc1-1/2	Rc2	Rc2
Cushion Stroke		—	20	20	20	25	25	25	25	25	25	30	30	35	35
TT		40±0.13	46±0.13	58±0.15	65±0.15	87±0.18	109±0.18	130±0.20	145±0.20	155±0.20	170±0.20	185±0.23	206±0.23	230±0.23	250±0.23
UC		63	69	85	98	118	150	175	195	210	225	243	272	310	335
ZD		40±0.15	43±0.15	50±0.15	60±0.15	72±0.25	85±0.25	105±0.25	115±0.25	123±0.25	132±0.25	148±0.25	165±0.25	185±0.25	208±0.25
ZE		67.5	75.5	87.5	105	127	152.5	187.5	207.5	221	237	265.5	296	331	370.5
AT		8	8	8	10	12	12	15	18	18	18	20	25	30	35
AM		32	32	35	42	50	55	66	70	75	75	85	98	115	130
AP		13	13	15	18	20	23	29	30	30	35	40	40	45	50
SB		205	205	225	247	284	302	352	370	390	403	445	497	535	606
SK		203	203	220	240	269	287	331	350	365	383	415	454	480	541
AB		11±0.5	11±0.5	14±0.5	18±0.7	18±0.7	22±0.7	26±0.7	26±0.7	30±0.7	33±0.7	33±0.7	36±0.7	42±0.7	45±0.7
L		166	166	182	194	222	232	264	276	288	304	322	354	362	412
ZF		226	226	242	264	292	312	354	376	388	414	432	464	482	542
SE		230	230	252	278	322	342	396	416	438	454	492	550	592	672

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Dimensions (TJ series, port position symbol '15')

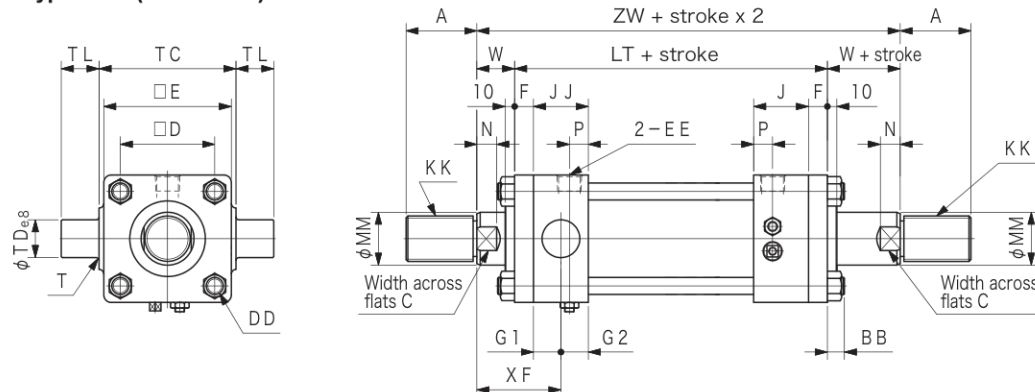
• Type TA (single rod)



If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000
14	Less than 800	800~2000

• Type TAW (double rod)



Dimensions table

Unit: mm

Symbol		Cylinder Bore Size													
Rod diameter symbol B	MM	$\phi 30$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 150$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 224$	$\phi 250$
	K K	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y Y	141	141	155	163	184	192	220	230	240	263	275	301	315	346
	B B	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	D D	M8×1.25	M10×1.5	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M24×1.5	M27×1.5	M27×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5
	E E	Rc3/8	Rc1/2	Rc1/2	Rc3/4	Rc3/4	Rc1	Rc1	Rc1	Rc1	Rc1-1/4	Rc1-1/2	Rc1-1/2	Rc2	Rc2
	Cushion Stroke	—	20	20	20	25	25	25	25	25	30	30	30	35	35
	T C	58 ⁰ _{-0.30}	69 ⁰ _{-0.30}	85 ⁰ _{-0.35}	98 ⁰ _{-0.35}	118 ⁰ _{-0.35}	145 ⁰ _{-0.40}	175 ⁰ _{-0.40}	195 ⁰ _{-0.46}	206 ⁰ _{-0.46}	218 ⁰ _{-0.46}	243 ⁰ _{-0.46}	272 ⁰ _{-0.52}	300 ⁰ _{-0.52}	335 ⁰ _{-0.57}
	T L	20±0.3	20±0.3	25±0.3	31.5±0.3	31.5±0.3	40±0.3	50±0.3	63±0.3	63±0.3	71±0.5	80±0.5	90±0.5	100±0.5	100±0.5
	T D	20	20	25	31.5	31.5	40	50	63	63	71	80	90	100	100
	Z T	171	171	185	198	219	232	265	280	290	318	330	356	375	411
	X F	62	62	66	74	82	89	103	112	112	126	130.5	139.5	153.5	168.5
	G 1	21	21	23	24	29	29	34	36	34	40	42.5	47.5	52.5	57.5
	G 2	21	21	23	24	29	29	34	32	34	39	42.5	47.5	52.5	57.5
	T	R2	R2	R2.5	R2.5	R2.5	R3	R3	R4	R4	R4	R4	R5	R5	R5
	J J	42	42	46	48	58	58	68	68	68	79	85	95	105	115
	L T	166	166	182	194	222	232	264	276	288	314	322	354	372	412
	Z W	226	226	242	264	292	312	354	376	388	424	432	464	492	542

The rod side connection port is positioned at the standard position in the figure above (or on the side opposite to the one shown).

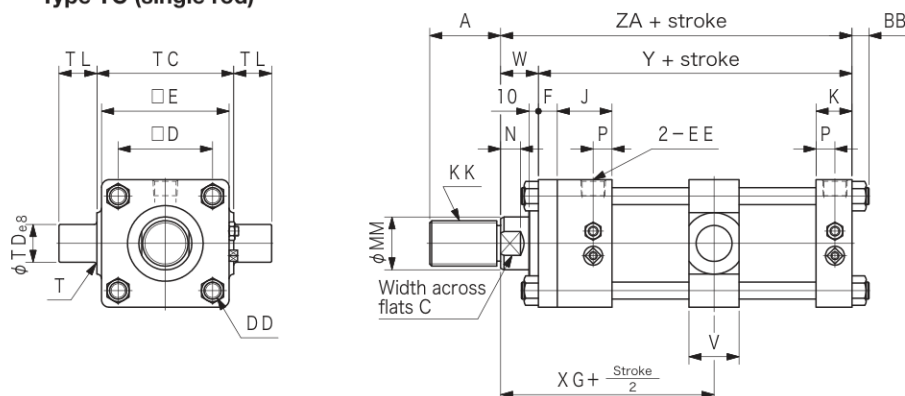
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P
1-16

Hydraulic Cylinders

Dimensions (TJ series, port position '15')

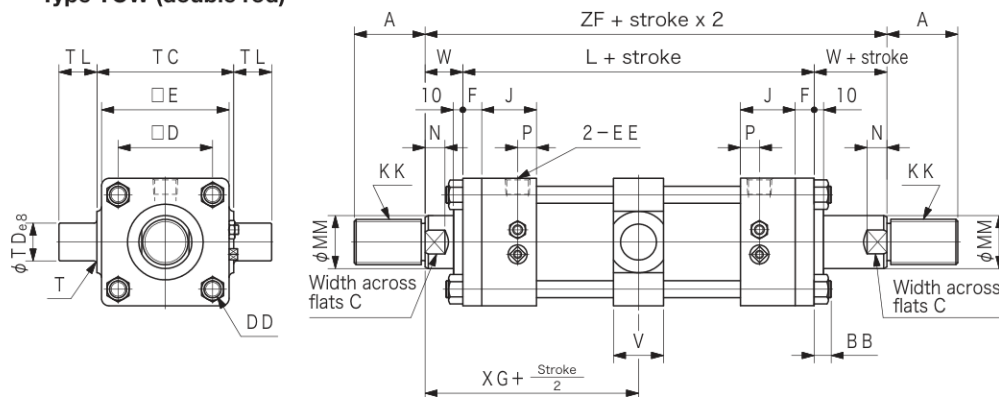
• Type TC (single rod)



If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000
14	Less than 800	800~2000

• Type TCW (double rod)



Unit: mm	
XF=XG + Stroke/2	Tolerance
~ 300	±1.25
301 ~ 1000	±1.6
1001 ~	±2.0

Dimensions table

Unit: mm

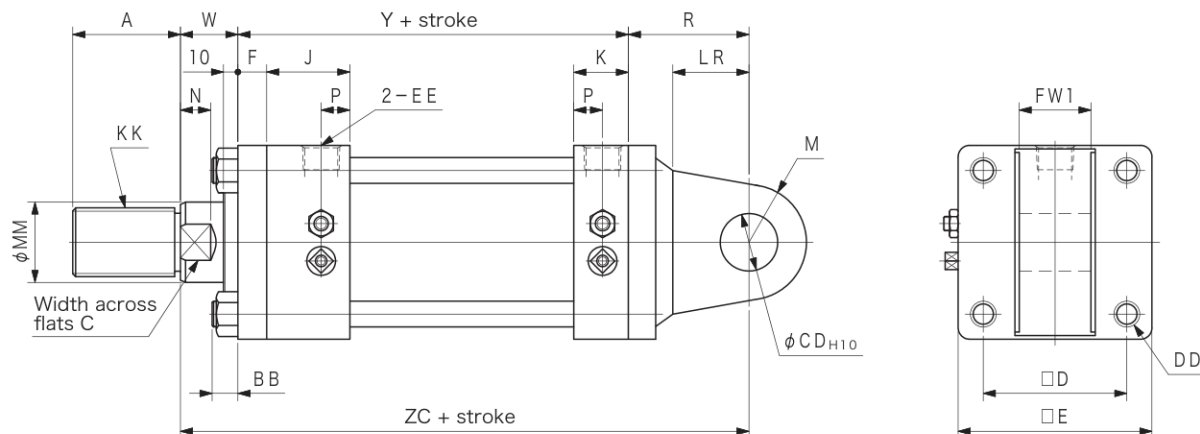
Symbol		Cylinder Bore Size													
		$\phi 30$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 150$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 224$	$\phi 250$
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	K K	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346
	BB	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	DD	M8×1.25	M10×1.5	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M24×1.5	M27×1.5	M27×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5
	E E	Rc3/8	Rc1/2	Rc1/2	Rc3/4	Rc3/4	Rc1	Rc1	Rc1	Rc1	Rc1-1/4	Rc1-1/2	Rc1-1/2	Rc2	Rc2
	Cushion Stroke	—	20	20	20	20	25	25	25	25	30	30	30	35	35
	T C	58 ⁰ _{-0.30}	69 ⁰ _{-0.30}	85 ⁰ _{-0.35}	98 ⁰ _{-0.35}	118 ⁰ _{-0.35}	145 ⁰ _{-0.40}	175 ⁰ _{-0.40}	195 ⁰ _{-0.46}	206 ⁰ _{-0.46}	218 ⁰ _{-0.46}	243 ⁰ _{-0.46}	272 ⁰ _{-0.52}	300 ⁰ _{-0.52}	335 ⁰ _{-0.57}
	T L	20±0.3	20±0.3	25±0.3	31.5±0.3	31.5±0.3	40±0.3	50±0.3	63±0.3	63±0.3	71±0.5	80±0.5	90±0.5	100±0.5	100±0.5
	T D	20	20	25	31.5	31.5	40	50	63	63	71	80	90	100	100
	Z A	171	171	185	198	219	232	265	280	290	308	330	356	365	411
	X G	113	113	121	132	146	156	177	188	194	207	216	232	241	271
	V	28	28	33	43	43	53	58	78	78	88	98	108	117	117
	T	R2	R2	R2.5	R2.5	R2.5	R3	R3	R4	R4	R4	R4	R5	R5	R5
	L	166	166	182	194	222	232	264	276	288	304	322	354	362	412
	Z F	226	226	242	264	292	312	354	376	388	414	432	464	482	542

Standard position XG + stroke/2: When the bellows (dust-proof cover) is attached, the XG dimension will differ.

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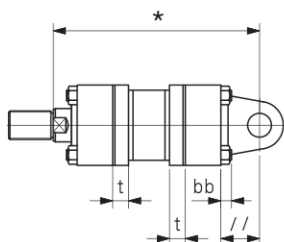
Dimensions (TJ series, port position '15')

• Type CA (single rod)



If the bore size of the cylinder is in the $\phi 180$ to $\phi 250$ mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.

Nominal Pressure MPa	Stroke mm	
	Tie Rod System	Screw-in Flange System
7	Less than 1500	1500~2000
14	Less than 800	800~2000



Unit: mm			
Cylinder Bore Size	bb	//	t
$\phi 180$	27	114	42
$\phi 200$	29	130	47
$\phi 224$	34	141	52
$\phi 250$	37	135	57

If the screw-in flange system is used, the bolt head will protrude as shown in the figure on the left.
* These dimensions do not vary.

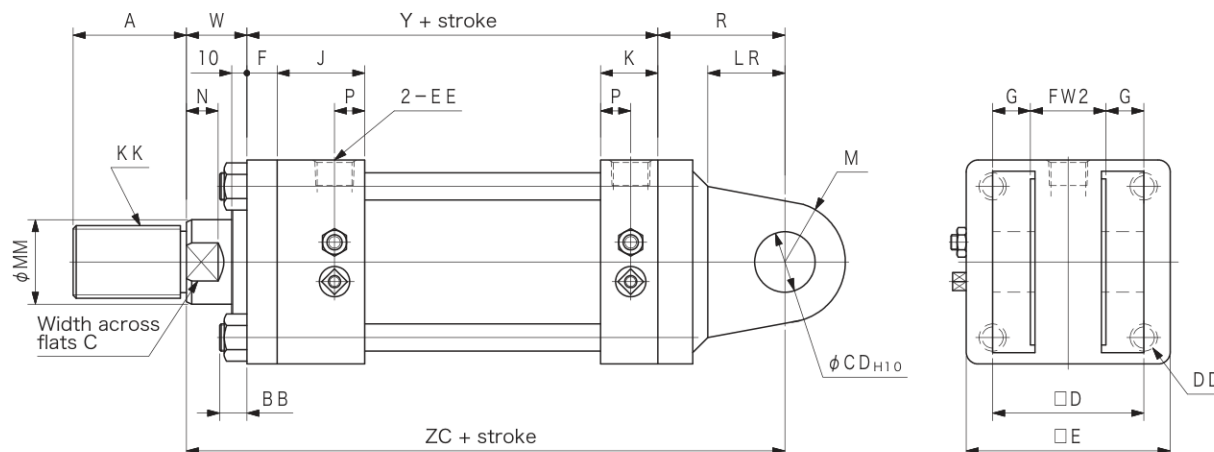
Unit: mm	
ZC + Stroke	Tolerance
~ 300	± 1.25
301 ~ 1000	± 1.6
1001 ~	± 2.0

Dimensions table

		Unit: mm													
Symbol	Cylinder Bore Size	$\phi 30$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 150$	$\phi 160$	$\phi 180$	$\phi 200$	$\phi 224$	$\phi 250$
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	K K	M16 $\times$ 1.5	M20 $\times$ 1.5	M24 $\times$ 1.5	M30 $\times$ 1.5	M39 $\times$ 1.5	M48 $\times$ 1.5	M64 $\times$ 2	M72 $\times$ 2	M76 $\times$ 2	M80 $\times$ 2	M95 $\times$ 2	M100 $\times$ 2	M120 $\times$ 2	M130 $\times$ 2
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112
	K K	—	M16 $\times$ 1.5	M20 $\times$ 1.5	M24 $\times$ 1.5	M30 $\times$ 1.5	M39 $\times$ 1.5	M48 $\times$ 1.5	M56 $\times$ 2	M60 $\times$ 2	M64 $\times$ 2	M72 $\times$ 2	M80 $\times$ 2	M95 $\times$ 2	M100 $\times$ 2
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346
	BB	10	11	11	13	16	18	21	22	25	25	27	29	34	37
	DD	M8 $\times$ 1.25	M10 $\times$ 1.5	M10 $\times$ 1.5	M12 $\times$ 1.5	M16 $\times$ 1.5	M18 $\times$ 1.5	M22 $\times$ 1.5	M24 $\times$ 1.5	M27 $\times$ 1.5	M27 $\times$ 1.5	M30 $\times$ 1.5	M33 $\times$ 1.5	M39 $\times$ 1.5	M42 $\times$ 1.5
	EE	Rc3/8		Rc1/2		Rc3/4		Rc1		Rc1-1/4		Rc1-1/2		Rc2	
	Cushion Stroke	—		20		25		25		30		35			
	Z C	209	209	230	261	291	316	365	400	412	445	480	526	550	596
	R	38	38	45	63	72	84	100	120	122	137	150	170	185	185
	L R	20	20	25	40	40	50	63	80	80	90	100	115	125	125
	C D	16	16	20	31.5	31.5	40	50	63	63	71	80	90	100	100
	FW 1	25 ^{+0.1} _{-0.4}	25 ^{+0.1} _{-0.4}	31.5 ^{+0.1} _{-0.4}	40 ^{+0.1} _{-0.4}	40 ^{+0.1} _{-0.4}	50 ^{+0.1} _{-0.4}	63 ^{+0.1} _{-0.4}	80 ^{+0.1} _{-0.6}	80 ^{+0.1} _{-0.6}	80 ^{+0.1} _{-0.6}	100 ^{+0.1} _{-0.6}	125 ^{+0.1} _{-0.6}	125 ^{+0.1} _{-0.6}	125 ^{+0.1} _{-0.6}
	M	R16	R16	R20	R31.5	R31.5	R40	R50	R63	R63	R71	R80	R90	R100	R100

Dimensions (TJ series, port position '15')

• Type CB (single rod)



Unit: mm

ZC + Stroke	Tolerance
~ 300	±1.25
301 ~ 1000	±1.6
1001 ~	±2.0

Dimensions table

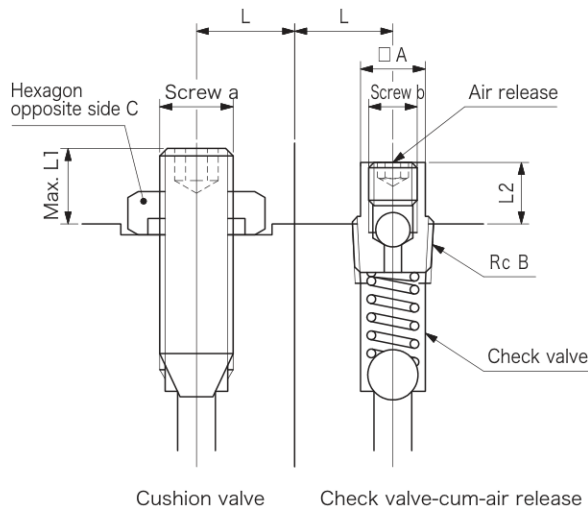
Unit: mm

Symbol		Cylinder Bore Size	φ 30	φ 40	φ 50	φ 63	φ 80	φ 100	φ 125	φ 140	φ 150	φ 160	φ 180	φ 200	φ 224	φ 250
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140	
	K K	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2	
	A	25	30	35	45	60	75	95	110	115	120	140	150	180	195	
	B	36	40	46	55	65	80	95	105	110	115	125	140	150	170	
	C	14	19	24	30	41	50	65	75	80	85	95	105	115	130	
	N	10	11	13	15	18	21	25	30	32	35	35	38	41	44	
Rod diameter symbol C	MM	—	18	22.4	28	35.5	45	56	63	67	71	80	90	100	112	
	K K	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2	
	A	—	25	30	35	45	60	75	80	85	95	110	120	140	150	
	B	—	36	40	46	55	65	80	85	90	95	105	115	125	140	
	C	—	14	19	24	30	41	50	55	63	65	75	85	95	105	
	N	—	10	11	13	15	18	21	23	25	25	30	35	35	38	
Common dimensions	D	40	46	54	66	82	100	126	138	150	160	182	200	225	250	
	E	55	65	75	90	110	135	165	185	196	210	235	262	292	325	
	F	11	11	13	15	18	20	24	26	28	31	33	37	41	46	
	J	42	42	46	48	58	58	68	68	68	69	85	95	95	115	
	K	28	28	32	32	38	38	48	48	48	49	71	79	79	95	
	P	15	15	17	17	20	20	25	25	25	26	43	47	47	55	
	W	30	30	30	35	35	40	45	50	50	55	55	55	60	65	
	Y	141	141	155	163	184	192	220	230	240	253	275	301	305	346	
	B B	10	11	11	13	16	18	21	22	25	25	27	29	34	37	
	D D	M8×1.25	M10×1.5	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M24×1.5	M27×1.5	M27×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5	
	E E	Rc3/8		Rc1/2		Rc3/4		Rc1				Rc1-1/4		Rc1-1/2		Rc2
Cushion Stroke		—		20			25					30			35	
Z C		209	209	230	261	291	316	365	400	412	445	480	526	550	596	
R		38	38	45	63	72	84	100	120	122	137	150	170	185	185	
L R		20	20	25	40	40	50	63	80	80	90	100	115	125	125	
C D		16	16	20	31.5	31.5	40	50	63	63	71	80	90	100	100	
FW 2		25 ^{+0.4 +0.1}	25 ^{+0.4 +0.1}	31.5 ^{+0.4 +0.1}	40 ^{+0.4 +0.1}	40 ^{+0.4 +0.1}	50 ^{+0.4 +0.1}	63 ^{+0.4 +0.1}	80 ^{+0.6 +0.1}	80 ^{+0.6 +0.1}	80 ^{+0.6 +0.1}	100 ^{+0.6 +0.1}	125 ^{+0.6 +0.1}	125 ^{+0.6 +0.1}	125 ^{+0.6 +0.1}	
G		12.5	12.5	16	20	20	25	31.5	40	40	40	50	50	63	63	
M		R16	R16	R20	R31.5	R31.5	R40	R50	R63	R63	R71	R80	R90	R100	R100	

Only the tie rod system can be used with this mounting type.

Dimensions (TJ series)

• Cushion valve/check valve-cum-air release



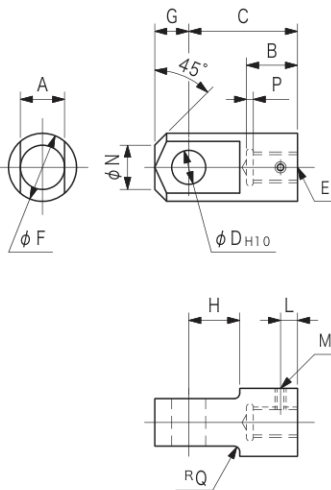
Dimensions table

Unit: mm

	Cushion Valve				Check Valve-cum-Air Release					
Cylinder Bore Size	a	L1		c	A	B	b	L2	L	
		Rod Side	Head Side							
φ 30	M10×1.5			17	7	1/8	M5	9	7	
φ 40		14	13						9	
φ 50		12	12						10	
φ 63		11	11							
φ 80		13	13		9	1/4	M6	10	13	
φ 100		11	11							
φ 125		13	13							
φ 140		11	11							12
φ 150										
φ 160										
φ 180										
φ 200	M16×1.5	17	17	26	14	1/2	M10	12	20	
φ 224					17	3/4		13		
φ 250					19	1				25

Accessories (TJ series)

Single thread end fitting

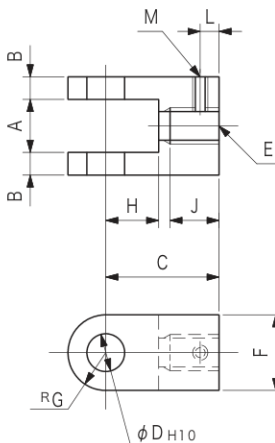


Dimensions table

Unit: mm

Cylinder Bore Size		φ 30	φ 40	φ 50	φ 63	φ 80	φ 100	φ 125	φ 140	φ 150	φ 160	φ 180	φ 200	φ 224	φ 250
Symbol		25 ^{+0.1} _{-0.4}	25 ^{+0.1} _{-0.4}	31.5 ^{+0.1} _{-0.4}	40 ^{+0.1} _{-0.4}	40 ^{+0.1} _{-0.4}	50 ^{+0.1} _{-0.4}	63 ^{+0.1} _{-0.4}	80 ^{+0.1} _{-0.6}	80 ^{+0.1} _{-0.6}	80 ^{+0.1} _{-0.6}	100 ^{+0.1} _{-0.6}	125 ^{+0.1} _{-0.6}	125 ^{+0.1} _{-0.6}	125 ^{+0.1} _{-0.6}
A		25	25	31.5	40	40	50	63	80	80	80	100	125	125	125
C		50	55	65	92	107	135	168	210	215	230	260	285	330	345
D		16	16	20	31.5	31.5	40	50	63	63	71	80	90	100	100
F		35	35	45	65	65	85	105	130	130	150	170	190	210	210
G		16	16	20	31.5	31.5	40	50	63	63	71	80	90	100	100
H		20	20	25	40	40	50	63	80	80	90	100	115	125	125
L		15	15	15	15	15	20	20	20	20	20	30	30	30	30
M		M8	M8	M8	M8	M8	M10	M10	M10	M10	M10	M12	M12	M12	M12
N		25	25	32	40	40	55	68	85	85	95	105	130	130	130
P		5	5	5	5	5	5	8	8	8	8	8	8	8	8
Q		2	2	2.5	2.5	2.5	3	3	4	4	4	4	5	5	5
Rod diameter symbol	B	B	27	32	37	47	62	78	98	113	118	123	144	154	200
	E	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	C	B	—	27	32	37	47	62	78	83	88	98	113	123	144
Socket set screw	E	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M95×2	M100×2
		M8×8	M8×8	M8×8	M8×8	M8×8	M10×15	M10×15	M10×20	M10×20	M10×20	M12×25	M12×25	M12×25	M12×25
	Spacer	—	—	φ6×2.5	φ6×9.5	φ6×5	φ8×3.5	φ8×5.5	φ8×9	φ8×7	φ8×15	φ10×12.5	φ10×20	φ10×20	φ10×15

Double thread end fitting



Dimensions table

Unit: mm

Cylinder Bore Size		φ 30	φ 40	φ 50	φ 63	φ 80	φ 100	φ 125	φ 140	φ 150	φ 160	φ 180	φ 200	φ 224	φ 250
Symbol		25 ^{+0.4} _{+0.1}	25 ^{+0.4} _{+0.1}	31.5 ^{+0.4} _{+0.1}	40 ^{+0.4} _{+0.1}	40 ^{+0.4} _{+0.1}	50 ^{+0.4} _{+0.1}	63 ^{+0.4} _{+0.1}	80 ^{+0.6} _{+0.1}	80 ^{+0.6} _{+0.1}	80 ^{+0.6} _{+0.1}	100 ^{+0.6} _{+0.1}	125 ^{+0.6} _{+0.1}	125 ^{+0.6} _{+0.1}	125 ^{+0.6} _{+0.1}
A		25	25	31.5	40	40	50	63	80	80	80	100	125	125	125
B		12.5	12.5	16	20	20	25	31.5	40	40	40	50	50	63	63
C		50	55	65	92	107	135	168	210	215	230	260	285	330	345
D		16	16	20	31.5	31.5	40	50	63	63	71	80	90	100	100
F		32	32	40	63	63	80	100	126	126	142	160	180	200	200
G		16	16	20	31.5	31.5	40	50	63	63	71	80	90	100	100
H		20	20	25	40	40	50	63	80	80	90	100	115	125	125
L		15	15	15	15	15	20	20	20	20	20	30	30	30	30
M		M8	M8	M8	M8	M8	M10	M10	M10	M10	M10	M12	M12	M12	M12
Rod diameter symbol	B	E	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M130×2
	J	27	32	37	47	62	78	98	113	118	123	143	153	183	198
	C	E	—	M16×1.5	M20×1.5	M24×1.5	M30×1.5	M39×1.5	M48×1.5	M56×2	M60×2	M64×2	M72×2	M80×2	M100×2
Socket set screw	J	—	27	32	37	47	62	78	83	88	98	113	123	143	153
		M8×12	M8×12	M8×12	M8×12	M8×12	M10×20	M10×20	M10×25	M10×25	M10×25	M12×35	M12×35	M12×35	M12×35
	Spacer	φ6×5	φ6×3	φ6×7	φ6×13	φ6×8.5	φ8×6	φ8×11	φ8×19	φ8×17	φ8×15	φ10×17.5	φ10×27.5	φ10×30.5	φ10×25.5

P
1-20

Hydraulic Cylinders