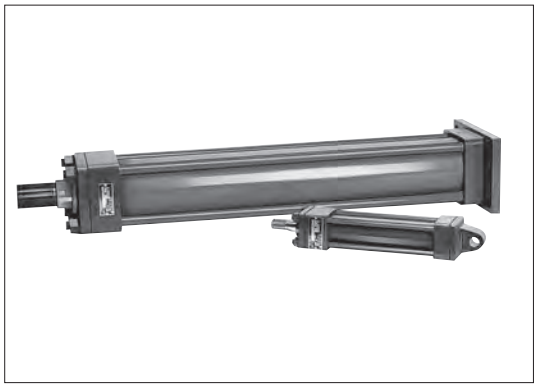
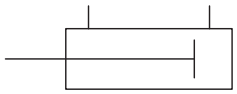
Standard hydraulic cylinders
TJ, TH, TM series



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

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

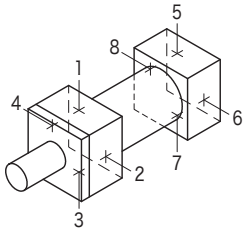
Note: It is not possible to fit the cushion mechanisms on the rod and head sides of TJ ø30, rod side of the TH ø40, rod side of the TM ø40A to ø63A series or rod side of the TM ø40B series.

8 Stroke

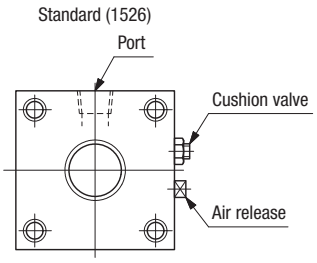
The stroke required within the maximum strokes set forth on page P1-3 is entered here.

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.



- 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'.



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	φ30～φ63	8	400	0.3	−5 ～+80	0.9	JIS pipe taper thread
							φ80～φ125		300				
							φ140～φ250		200				
	SD, FC FD, FY FZ, LA CA, CB TA, TC	14	—	18/21	14/21	18/21	φ30～φ63		400				
							φ80～φ125		300				
							φ140～φ250		200				
TH	SD, FA FB, LA CC, TC	21	—	25/31.5	—	27/31.5	φ40～φ63		400				
							φ80～φ125		300				
							φ140, φ160		200				
TM	FA, FB LA, CA TC	14	23/28		—	23/28	φ40～φ140	10	500	0.3	−10 ～+80	0.95	JIS B 2291* Type SSA welding flange provided
							φ160～φ250	20		0.5			

* 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		
	TJ	TH	TM
φ30	1200	—	—
φ40		1200	2000
φ50			
φ63	1600	1600	
φ80			2500
φ100	2000	2000	
φ125			
φ140			
φ150		—	—
φ160		2000	2500
φ180		—	
φ200			3000
φ224			
φ250			

Cushion Stroke		
TJ	TH	TM
—	—	—
20	20	25
25	25	35
	30	
	—	—
	30	40
30	—	50
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	Rod Side				Push Pull	Head Side	Rod Side
φ30	B	φ18	1：1. 55	7. 0	4. 5	φ140	A	φ100	1：2. 04	153. 9	75. 3
φ40	A	φ28	1：1. 96	12. 5	6. 4		B	φ80	1：1. 48		103. 6
	B	φ22. 4	1：1. 46		8. 6		C	φ63	1：1. 25		122. 7
	C	φ18	1：1. 25		10. 0	φ150	B	φ85	1：1. 47	176. 7	119. 9
φ50	A	φ35. 5	1：2. 02	19. 6	9. 7		C	φ67	1：1. 25		141. 4
	B	φ28	1：1. 46		13. 4	φ160	A	φ112	1：1. 96	201. 0	102. 5
	C	φ22. 4	1：1. 25		15. 6		B	φ90	1：1. 46		137. 4
φ63	A	φ45	1：2. 04	31. 1	15. 2		C	φ71	1：1. 24		161. 4
	B	φ35. 5	1：1. 47		21. 2	φ180	A	φ125	1：1. 93	254. 4	131. 7
	C	φ28	1：1. 24		25. 0		B	φ100	1：1. 45		175. 9
φ80	A	φ56	1：1. 96	50. 2	25. 6		C	φ80	1：1. 25		204. 2
	B	φ45	1：1. 46		34. 3	φ200	A	φ140	1：1. 96	314. 1	160. 2
	C	φ35. 5	1：1. 24		40. 3		B	φ112	1：1. 46		215. 6
φ100	A	φ71	1：2. 02	78. 5	38. 9		C	φ90	1：1. 25		250. 5
	B	φ56	1：1. 46		53. 9	φ224	A	φ160	1：2. 04	394. 0	193
	C	φ45	1：1. 25		62. 6		B	φ125	1：1. 45		271. 3
φ125	A	φ90	1：2. 08	122. 7	59. 1		C	φ100	1：1. 25		315. 5
	B	φ71	1：1. 48		83. 1	φ250	A	φ180	1：2. 08	490. 8	236. 4
	C	φ56	1：1. 25		98. 0		B	φ140	1：1. 46		336. 9
							C	φ112	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		
φ30	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—
φ40	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
φ50	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
φ63	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
φ80	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
φ100	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		
φ125	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
φ140	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
φ150	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
φ160	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
φ180	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
φ200	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
φ224	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
φ250	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		
φ30	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	—	—	—	—	—	—	—	—	—				—
φ40	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
φ50	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
φ63	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
φ80	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
φ100	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
φ125	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
φ140	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
φ150	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
φ160	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		
φ40	5.2	6.2	6.2	6.7	6.3	6.2	1.2	1.1	1.1	0.2	0.04
φ50	8.4	8.8	9.1	9.8	9.0	9.0	2.0	1.6	1.8	0.3	0.07
φ63	12.9	14.2	14.8	16.3	14.6	14.9	3.1	2.7	3.0	0.6	0.16
φ80	23.7	24.5	24.4	27.5	25.5	26.3	4.5	5.4	6.2	1.2	0.35
φ100	40.0	41.7	42.6	48.0	43.5	46.2	6.1	10.0	11.7	2.3	0.70
φ125	67.6	71.2	75.5	85.6	78.2	80.0	10.0	20.3	22.2	4.7	1.4
φ140	87.4	91.8	93.6	107.2	103.9	105.3	11.3	29.3	29.0	6.2	1.8
φ160	119.7	125	126.6	145.4	136.1	141.3	14.7	43.2	47.3	9.4	2.4

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		
ϕ40	12. 1	10. 1	11. 1	11. 1	11. 2	1. 1	0. 1	1. 2	1. 4	0. 1	0. 07
ϕ50	15. 8	13. 9	15. 5	15. 2	14. 8	1. 5	0. 2	2. 0	2. 2	0. 2	0. 16
ϕ63	24. 6	22. 5	24. 9	24. 4	24. 0	2. 3	0. 3	3. 2	3. 6	0. 5	0. 35
ϕ80	37. 0	34. 1	37. 4	38. 6	37. 0	3. 6	0. 5	6. 0	6. 0	0. 9	0. 7
ϕ100	60. 7	57. 4	63. 4	65. 5	62. 0	6. 6	1. 2	11. 6	11. 4	1. 8	1. 4
ϕ125	109. 4	104. 7	115. 6	120. 7	115. 8	8. 3	2. 2	22. 5	25. 2	3. 2	2. 4
ϕ140	139. 9	135. 5	150. 6	156. 6	149. 1	11. 4	3. 9	32. 5	32. 3	5. 2	3. 9
ϕ160	169. 1	179. 1	188. 5	197. 6	186. 8	14. 4	4. 3	46. 4	47. 4	6. 2	4. 6
ϕ180	239	251. 9	265. 4	283. 1	262. 1	19. 2	7. 5	78. 8	77. 4	10. 7	8. 0
ϕ200	325. 3	339. 8	356. 8	373. 4	352. 4	23. 4	9. 4	101. 3	92. 5	14. 8	11. 1
ϕ224	427. 9	455. 8	477. 9	504. 7	477. 1	28. 8	14. 5	140. 2	135. 9	22. 5	16. 9
ϕ250	573. 4	610	639	676. 4	638. 9	36. 4	21. 3	199. 7	187. 6	32. 4	24. 3

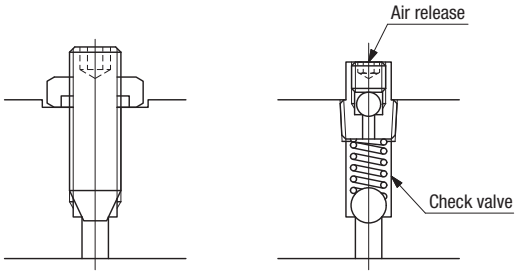
● TM series (rod diameter symbol B)

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		
ϕ40	12. 0	10. 0	11. 0	11. 0	11. 1	0. 9	0. 1	1. 3	1. 5	0. 06	0. 04
ϕ50	15. 6	13. 7	15. 3	15. 0	14. 6	1. 2	0. 1	2. 2	2. 3	0. 1	0. 07
ϕ63	24. 1	22. 1	24. 4	23. 9	23. 5	1. 8	0. 2	3. 5	3. 8	0. 2	0. 16
ϕ80	36. 3	33. 4	36. 7	37. 8	36. 2	2. 9	0. 3	6. 5	6. 4	0. 5	0. 35
ϕ100	58. 9	55. 6	61. 6	63. 7	60. 2	5. 4	0. 5	13. 0	12. 5	0. 9	0. 7
ϕ125	106. 2	101. 5	112. 4	117. 6	112. 7	6. 4	1. 2	24. 9	26. 9	1. 8	1. 4
ϕ140	134. 6	130. 2	145. 3	151. 3	143. 9	9. 2	1. 6	36. 9	35. 6	2. 5	1. 8
ϕ160	158. 8	171. 2	178. 2	187. 3	176. 5	11. 7	2. 2	51. 0	50. 7	3. 2	2. 4
ϕ180	220. 6	238. 2	247	264. 7	243. 7	15. 7	3. 9	87. 2	83. 4	5. 2	3. 9
ϕ200	302. 2	322. 2	333. 8	350. 3	329. 3	19. 1	4. 3	112. 6	100. 8	6. 2	4. 6
ϕ224	398. 6	432. 4	448. 6	475. 3	447. 8	22. 7	7. 5	155. 7	147. 2	10. 7	8. 0
ϕ250	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　　Check valve-with-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.

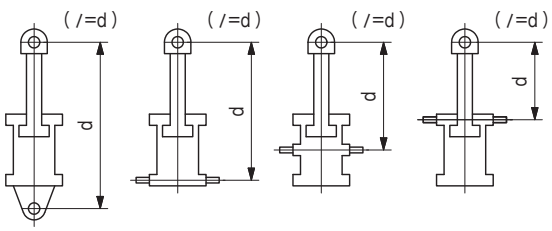
○ Air release: Be absolutely sure to release the air when the cylinder has been installed. Failing to release the air completely may give rise to the stick-slip phenomenon. Also bear in mind that if any air is still left when a high pressure has been generated inside the cylinder, the lip of the rubber 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

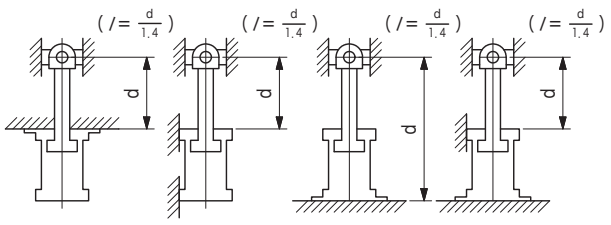
Follow the steps below to check the buckling strength as determined by the load, mounting length and rod diameter.

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).
2. Calculate buckling length / using the / 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, the buckling strength is sufficient.

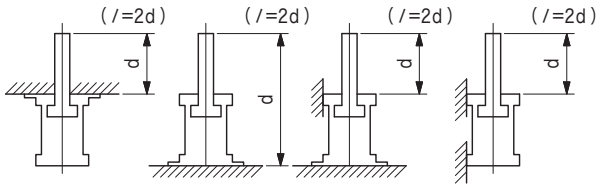
● In the case of double-ended pin joint



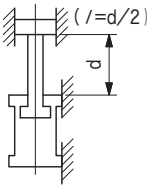
● In the case of a fixed cylinder and rod end guide (pin joint)



● 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

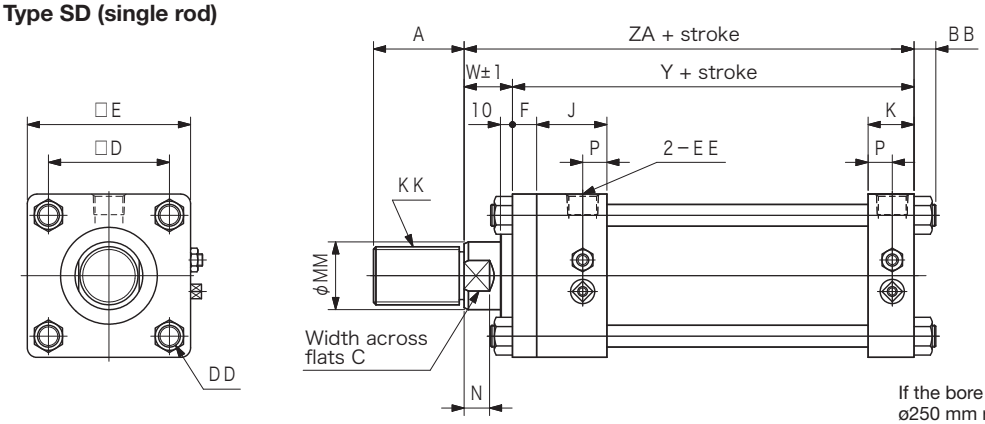
Load N \ Rod Diameter	φ18	φ22 (φ22. 4)	φ28	φ36 (φ35. 5)	φ45	φ56	φ63	φ67	φ70 (φ71)	φ80	φ85	φ90	φ100	φ110 (φ112)	φ125	φ140	φ160	φ180
1000	1630	2530	3950															
1500	1330	2070	3230	5190	8340													
2000	1160	1790	2800	4490	7220	11180												
2500	1030	1600	2500	4020	6460	10000	12660	14320										
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

Dimensions (applicable pages for TJ series)

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

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

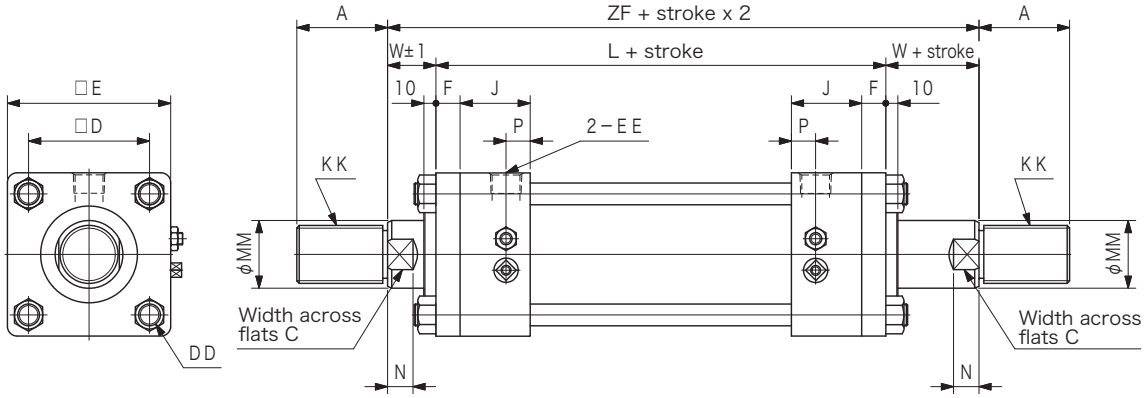
• **Type SD (single rod)**



If the bore size of the cylinder is in the ø180 to ø250 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)**



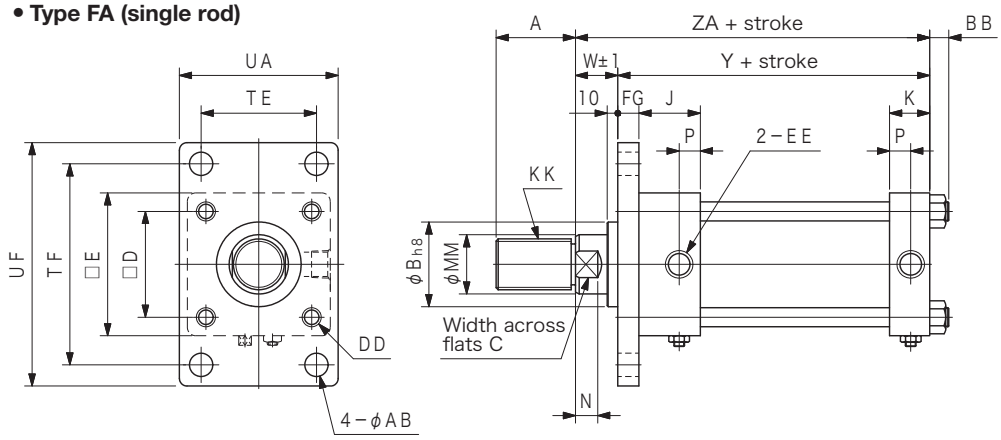
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
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 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)

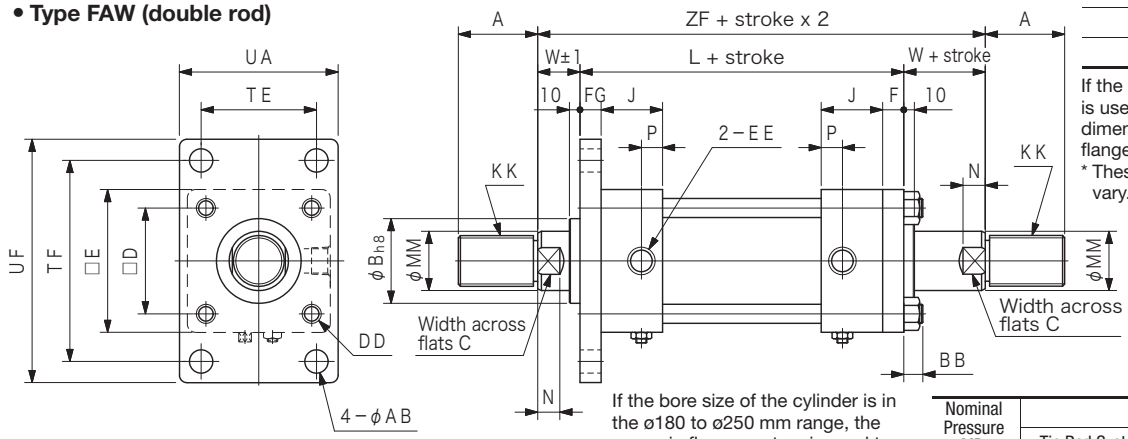


Unit: mm

Cylinder Bore Size	ff	t
φ180	51	42
φ200	56	47
φ224	61	52
φ250	66	57

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

• Type FAW (double rod)



If the bore size of the cylinder is in the ø180 to ø250 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

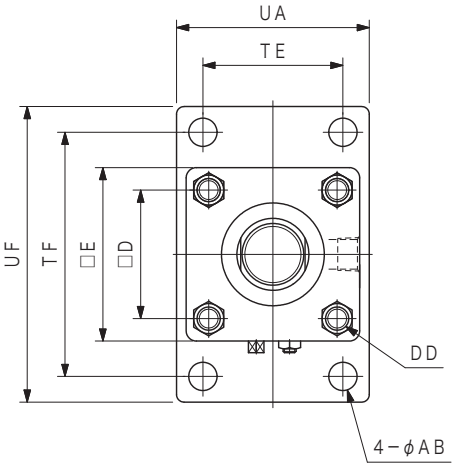
Dimensions table

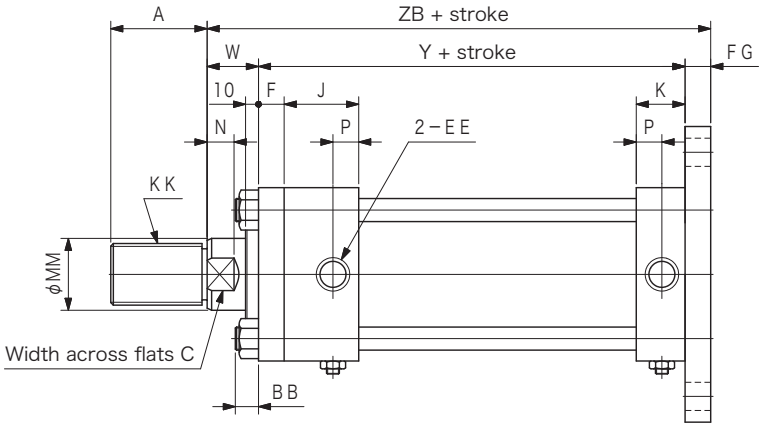
Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
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')

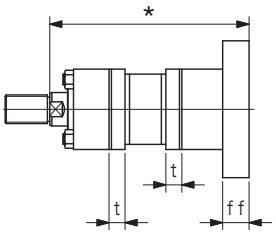
• **Type FB (single rod)**





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 ø180 to ø250 mm range, the screw-in flange system is used to tighten the two covers and cylinder tube depending on the stroke.



Unit: mm

Cylinder Bore Size	ff	t
φ180	51	42
φ200	56	47
φ224	61	52
φ250	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

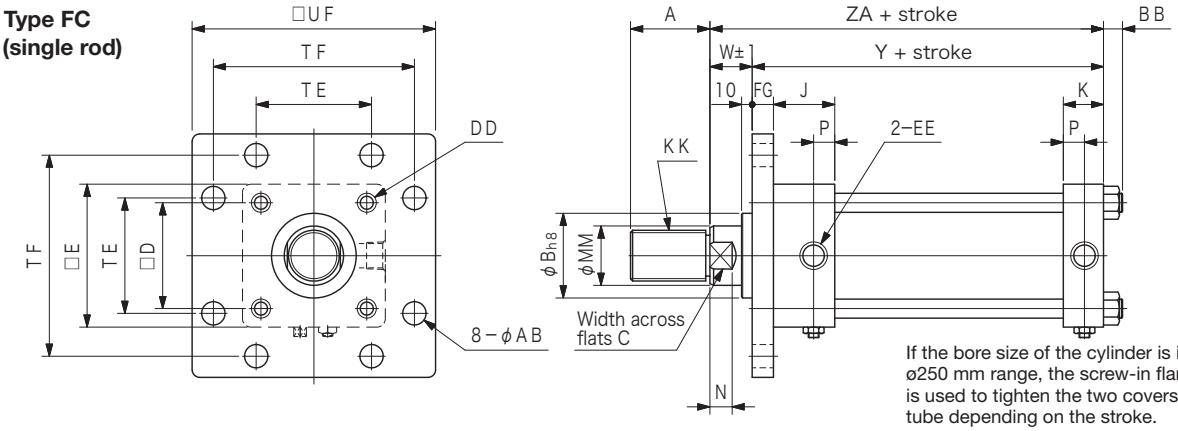
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
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	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
	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 B		182	182	198	213	237	252	289	306	318	339	363	393	406	457
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

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

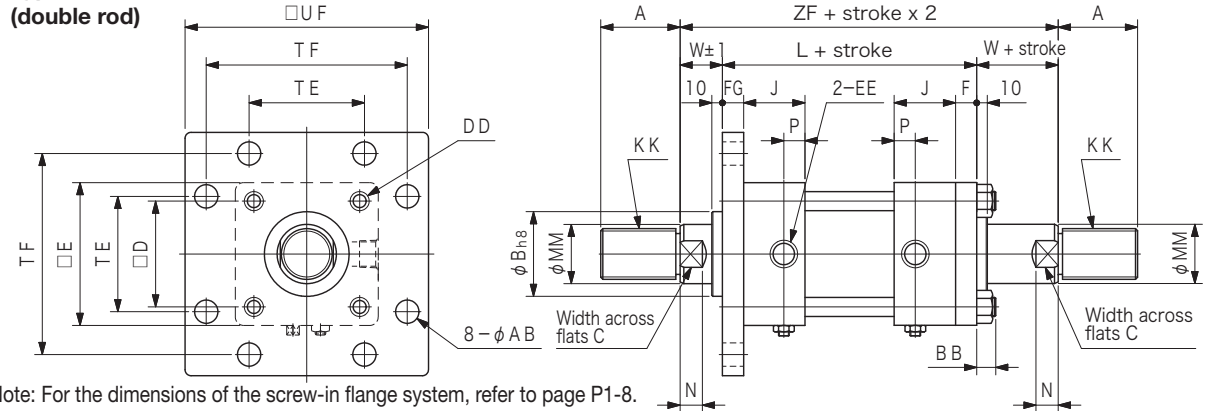
• Type FC (single rod)



If the bore size of the cylinder is in the ø180 to ø250 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.

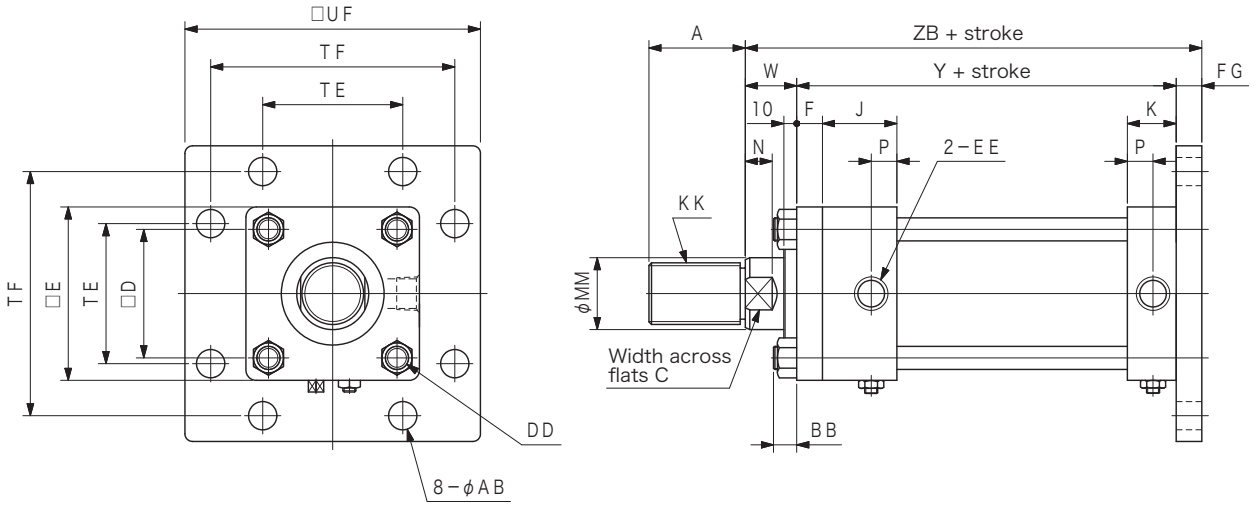
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
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
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

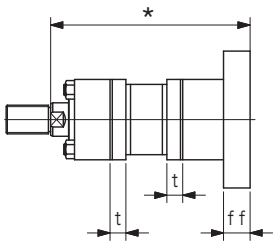
Dimensions (TJ series, port position symbol '15')

• **Type FD (single rod)**



If the bore size of the cylinder is in the ø180 to ø250 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
φ180	51	42
φ200	56	47
φ224	61	52
φ250	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

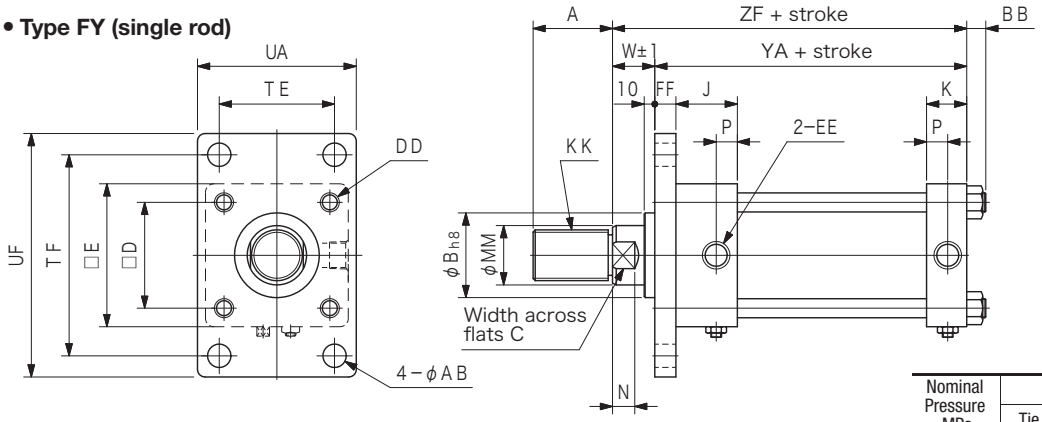
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
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
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
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 B		182	182	198	213	237	252	289	306	318	339	363	393	406	457
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

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

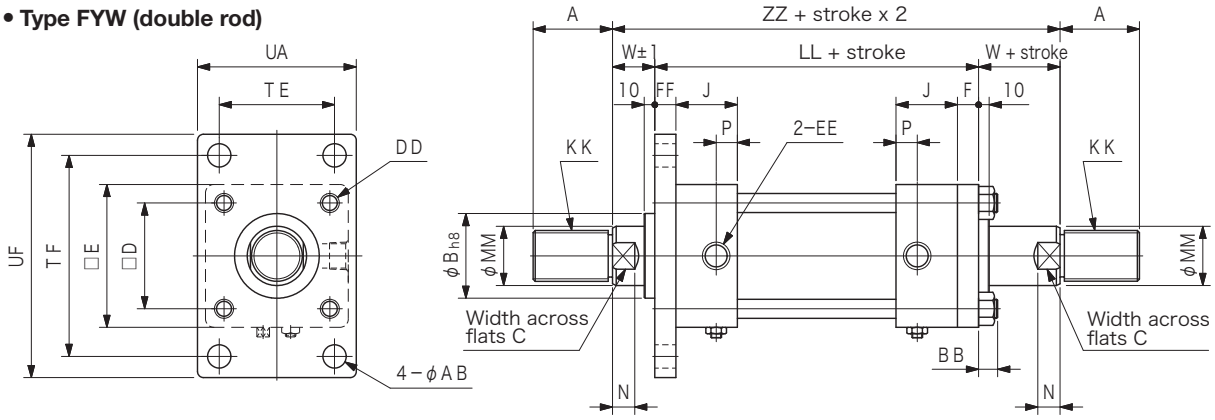
• **Type FY (single rod)**



If the bore size of the cylinder is in the ø180 to ø250 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 FYW (double rod)**



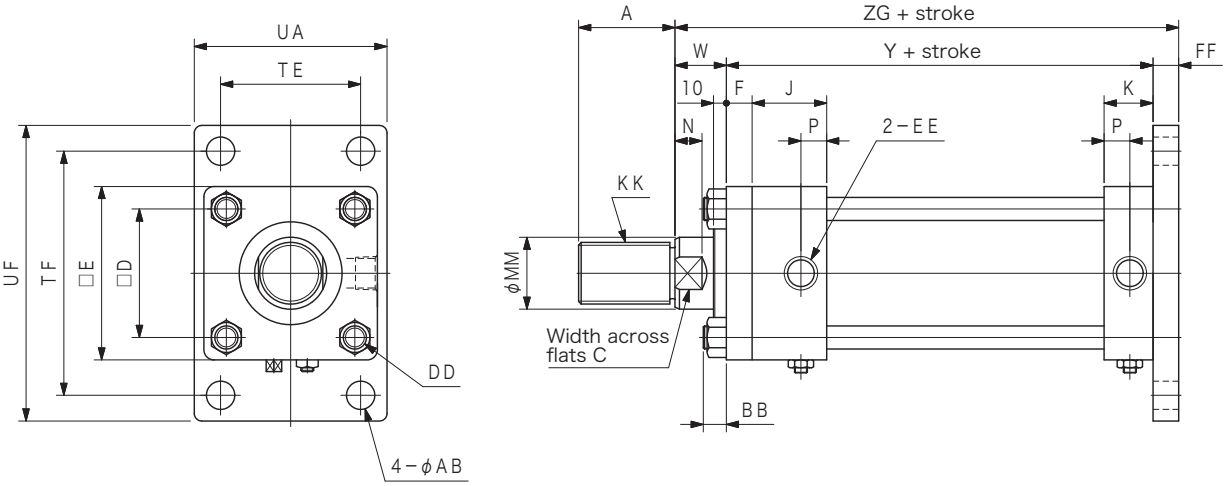
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	KK	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
	KK	—	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
	YA	143	143	160	168	190	200	229	241	251	263	288	315	322	365
	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
Cushion Stroke		—	20			25						30			35
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
ZF		173	173	190	203	225	240	274	291	301	318	343	370	382	430
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
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
LL		168	168	187	199	228	240	273	287	299	314	335	368	379	431
ZZ		228	228	247	269	298	320	363	387	399	424	445	478	499	561

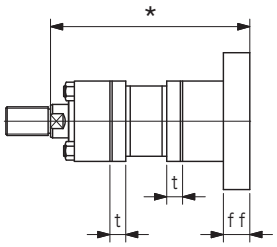
Dimensions (TJ series, port position symbol '15')

• Type FZ (single rod)



If the bore size of the cylinder is in the ø180 to ø250 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
φ180	51	42
φ200	56	47
φ224	61	52
φ250	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

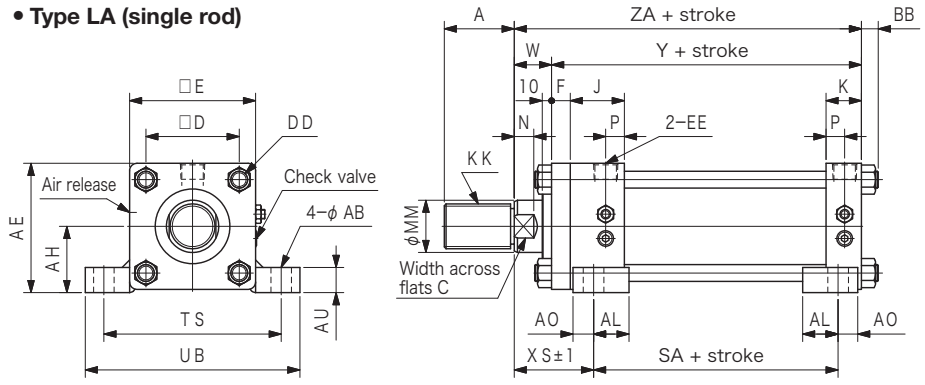
Dimensions table

Unit: mm

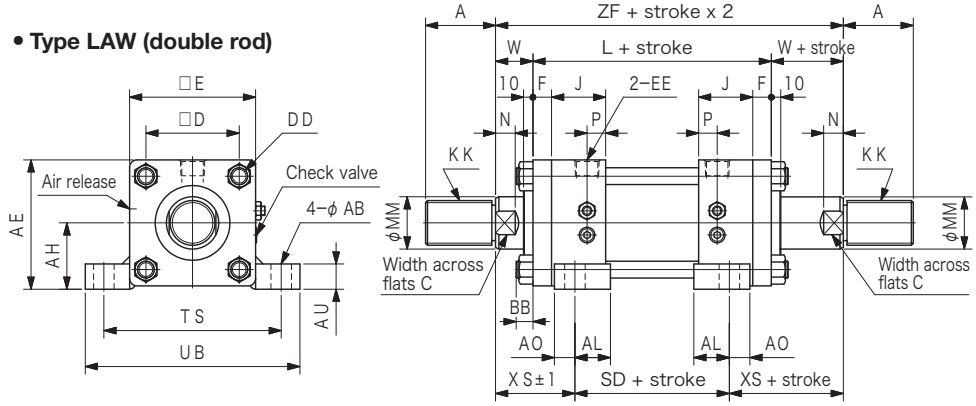
Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
Rod diameter symbol B	MM	18	22. 4	28	35. 5	45	56	71	80	85	90	100	112	125	140
	K K	M16×1. 5	M20×1. 5	M24×1. 5	M30×1. 5	M39×1. 5	M48×1. 5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	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
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
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 G		184	184	203	218	243	260	298	317	329	349	376	407	423	476
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

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

• Type LA (single rod)



• Type LAW (double rod)



If the bore size of the cylinder is in the ø180 to ø250 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

SA / SD + Stroke	Tolerance
～300	±1.25
301～1000	±1.6
1001～	±2.0

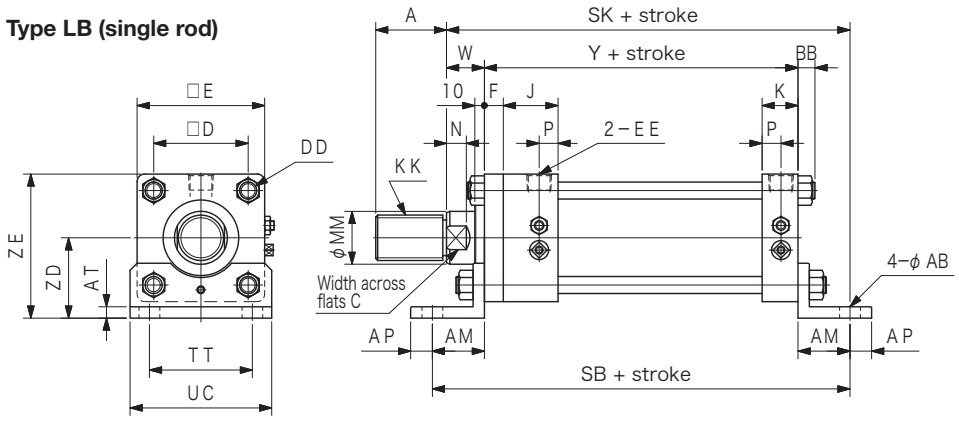
Dimensions table

Unit: mm

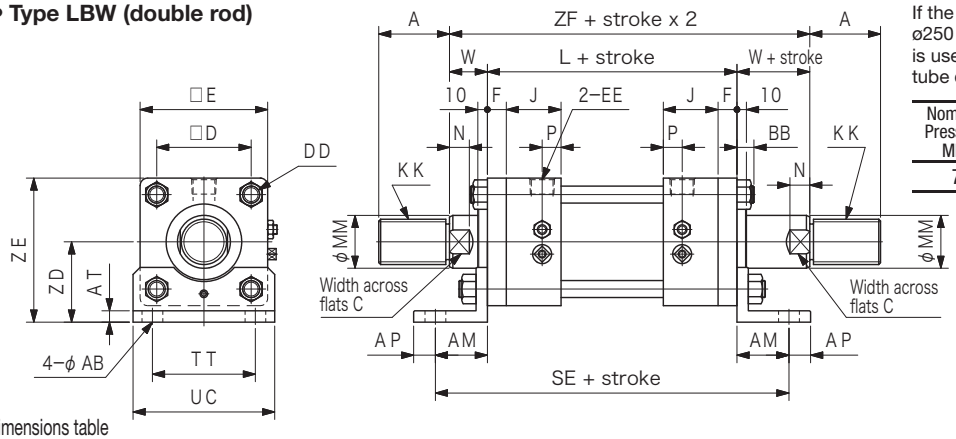
Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
Rod diameter symbol B	MM	18	22. 4	28	35. 5	45	56	71	80	85	90	100	112	125	140
	KK	M16×1. 5	M20×1. 5	M24×1. 5	M30×1. 5	M39×1. 5	M48×1. 5	M64×2	M72×2	M76×2	M80×2	M95×2	M100×2	M120×2	M130×2
	A	25	30	35	45	60	75	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
	KK	—	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
Cushion Stroke		—	20			25						30			35
TS		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
UB		109	118	145	165	190	230	272	300	320	345	375	425	475	515
AU		14	14	17	19	25	27	32	35	37	42	47	52	52	57
AH		35±0. 15	37. 5±0. 15	45±0. 15	50±0. 15	60±0. 25	71±0. 25	85±0. 25	95±0. 25	106±0. 25	112±0. 25	125±0. 25	140±0. 25	150±0. 25	170±0. 25
AE		62. 5	70	82. 5	95	115	138. 5	167. 5	187. 5	204	217	242. 5	271	296	332. 5
ZA		171	171	185	198	219	232	265	280	290	308	330	356	365	411
AO		13	13	14	18	18	22	25	25	28	31	35	39	39	47
AL		31	31	34	32	42	38	41	41	38	40	50	56	56	68
XS		57	57	60	71	74	85	99	106	111	122	123	131	140	158
SA		98	98	108	106	124	122	136	144	146	150	172	186	186	206
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
SD		112	112	122	122	144	142	156	164	166	170	186	202	202	226

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 ø180 to ø250 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

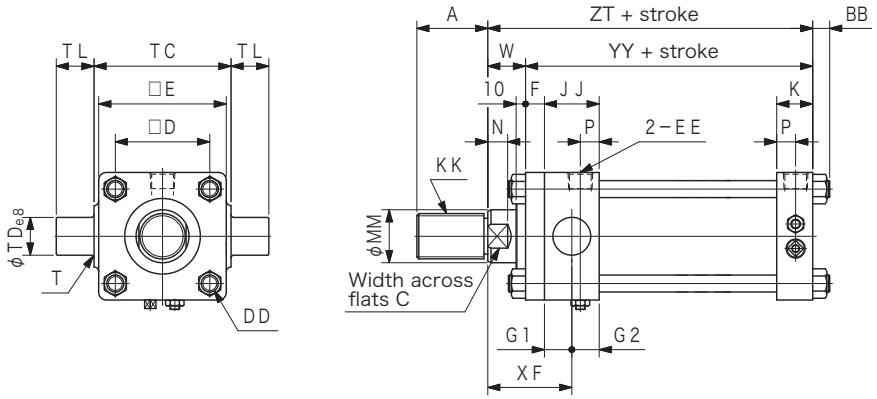
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
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
T T		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
U C		63	69	85	98	118	150	175	195	210	225	243	272	310	335
Z D		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
Z E		67. 5	75. 5	87. 5	105	127	152. 5	187. 5	207. 5	221	237	265. 5	296	331	370. 5
A T		8	8	8	10	12	12	15	18	18	18	20	25	30	35
A M		32	32	35	42	50	55	66	70	75	75	85	98	115	130
A P		13	13	15	18	20	23	29	30	30	35	40	40	45	50
S B		205	205	225	247	284	302	352	370	390	403	445	497	535	606
S K		203	203	220	240	269	287	331	350	365	383	415	454	480	541
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
S E		230	230	252	278	322	342	396	416	438	454	492	550	592	672

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

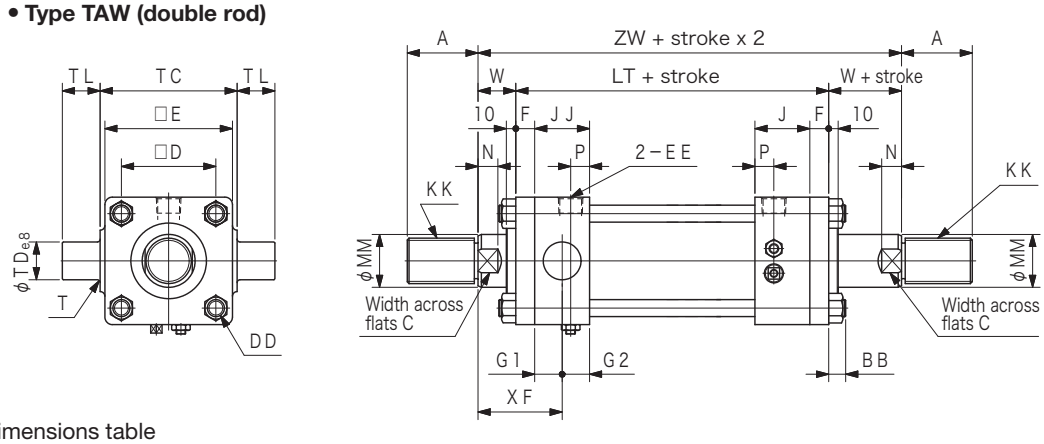
• Type TA (single rod)



If the bore size of the cylinder is in the ø180 to ø250 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

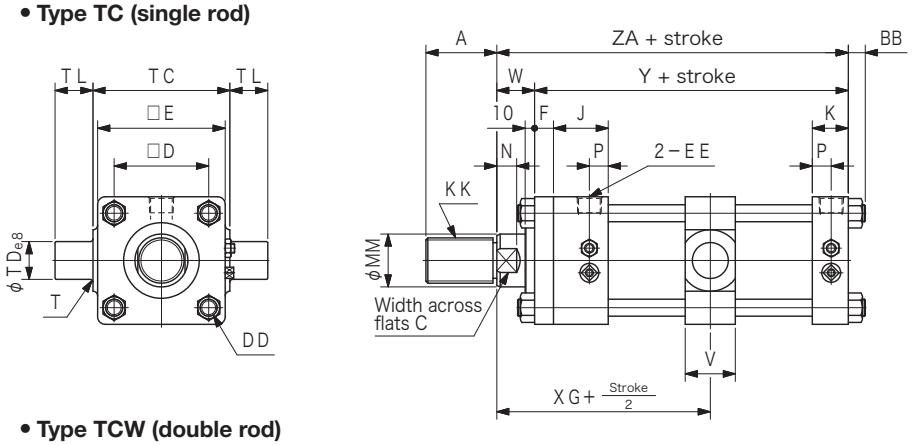
Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
Rod diameter symbol B	MM	18	22.4	28	35.5	45	56	71	80	85	90	100	112	125	140
	KK	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
	KK	—	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
	YY	141	141	155	163	184	192	220	230	240	263	275	301	315	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
Cushion Stroke		—	20			25						30			35
TC		$58^{0}_{-0.30}$	$69^{0}_{-0.30}$	$85^{0}_{-0.35}$	$98^{0}_{-0.35}$	$118^{0}_{-0.35}$	$145^{0}_{-0.40}$	$175^{0}_{-0.40}$	$195^{0}_{-0.46}$	$206^{0}_{-0.46}$	$218^{0}_{-0.46}$	$243^{0}_{-0.46}$	$272^{0}_{-0.52}$	$300^{0}_{-0.52}$	$335^{0}_{-0.57}$
TL		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
TD		20	20	25	31.5	31.5	40	50	63	63	71	80	90	100	100
ZT		171	171	185	198	219	232	265	280	290	318	330	356	375	411
XF		62	62	66	74	82	89	103	112	112	126	130.5	139.5	153.5	168.5
G1		21	21	23	24	29	29	34	36	34	40	42.5	47.5	52.5	57.5
G2		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
JJ		42	42	46	48	58	58	68	68	68	79	85	95	105	115
LT		166	166	182	194	222	232	264	276	288	314	322	354	372	412
ZW		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).

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

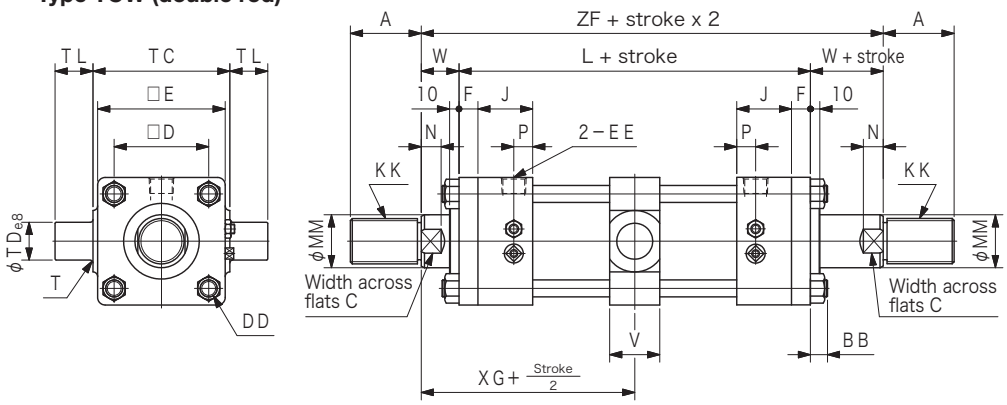
- **Type TC (single rod)**



If the bore size of the cylinder is in the ø180 to ø250 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

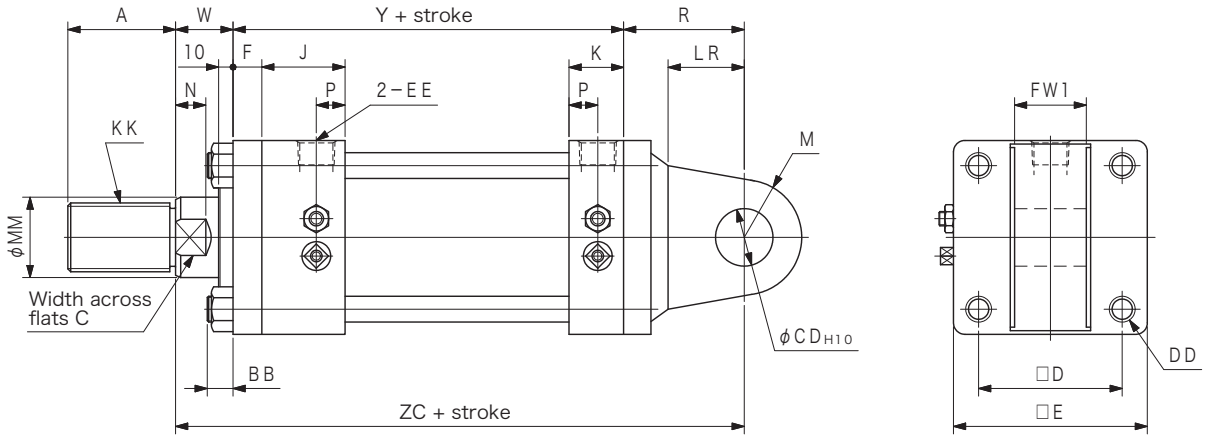
Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
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
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.

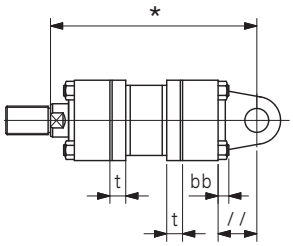
Dimensions (TJ series, port position symbol '15')

• Type CA (single rod)



If the bore size of the cylinder is in the ø180 to ø250 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
φ180	27	114	42
φ200	29	130	47
φ224	34	141	52
φ250	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

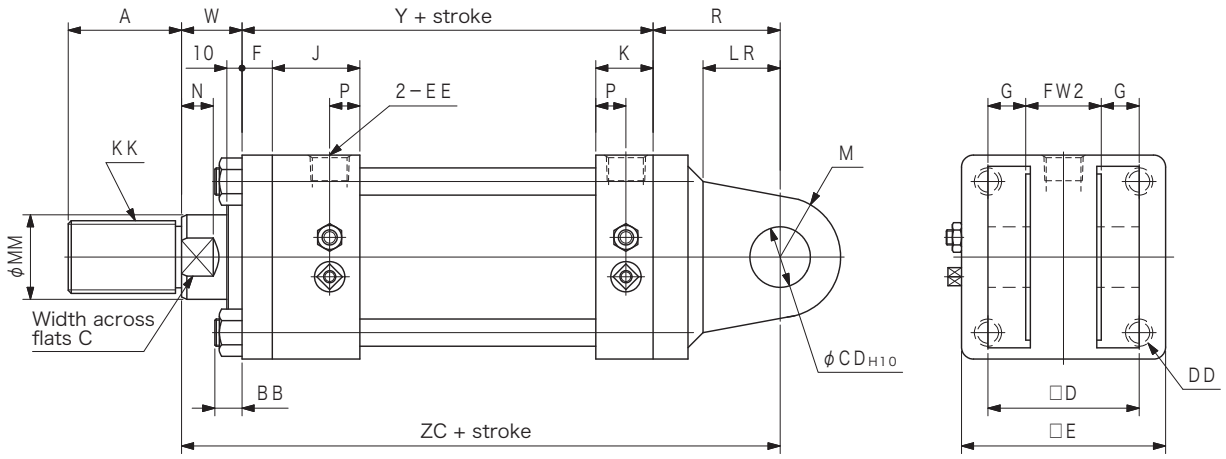
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size		φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
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
F W 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 symbol '15')

• **Type CB (single rod)**



Unit: mm

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

Dimensions table

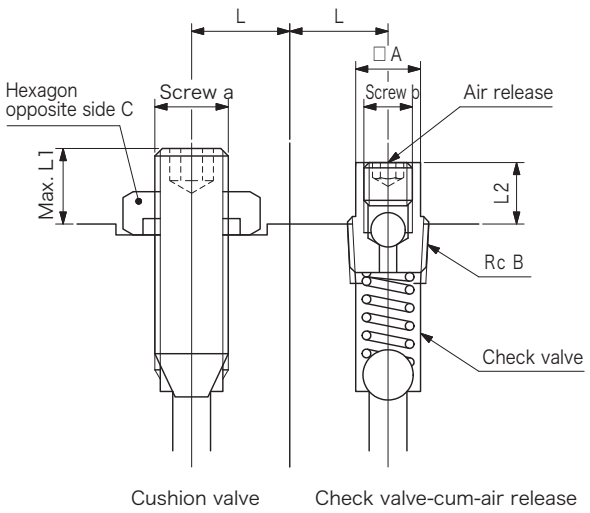
Unit: mm

Symbol	Cylinder Bore Size	φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
Rod diameter symbol B	MM	18	22. 4	28	35. 5	45	56	71	80	85	90	100	112	125	140
	KK	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
	KK	—	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
Cushion Stroke		—	20			25						30			35
ZC		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
LR		20	20	25	40	40	50	63	80	80	90	100	115	125	125
CD		16	16	20	31. 5	31. 5	40	50	63	63	71	80	90	100	100
FW2		$25^{+0.4}_{+0.1}$	$25^{+0.4}_{+0.1}$	$31.5^{+0.4}_{+0.1}$	$40^{+0.4}_{+0.1}$	$40^{+0.4}_{+0.1}$	$50^{+0.4}_{+0.1}$	$63^{+0.4}_{+0.1}$	$80^{+0.6}_{+0.1}$	$80^{+0.6}_{+0.1}$	$80^{+0.6}_{+0.1}$	$100^{+0.6}_{+0.1}$	$125^{+0.6}_{+0.1}$	$125^{+0.6}_{+0.1}$	$125^{+0.6}_{+0.1}$
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



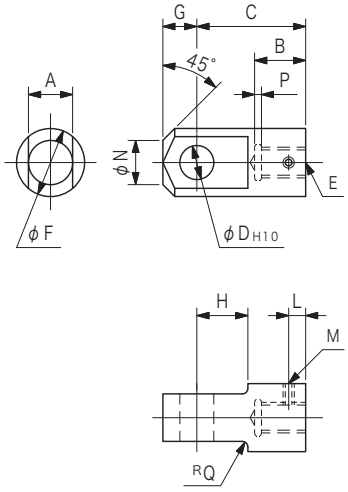
Dimensions table

Unit: mm

Cylinder Bore Size	Cushion Valve a	Cushion Valve L1 Rod Side	Cushion Valve L1 Head Side	Cushion Valve c	Check Valve-cum-Air Release A	B	b	L2	L
φ30									7
φ40	M10×1.5	14	13	17	7	1/8	M5	9	9
φ50		12	12						10
φ63		11	11						
φ80		13	13		9	1/4	M6	10	13
φ100		11	11						
φ125		13	13		12	3/8	M8	11	15
φ140		11	11						
φ150									
φ160	M16×1.5	17	17	26					
φ180					14	1/2	M10	12	20
φ200					17	3/4		13	
φ224									
φ250					19	1			25

Accessories (TJ series)

Single thread end fitting

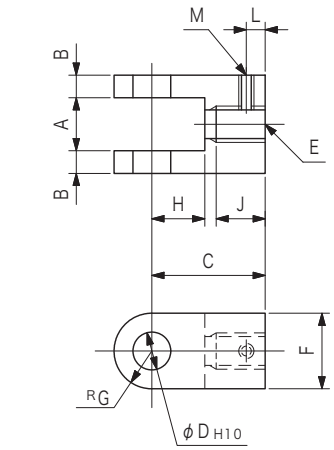


Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size			φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
A			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
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	185	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	154
		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
Socket set screw			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



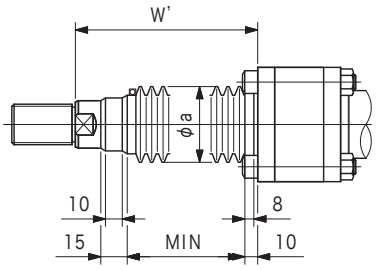
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size			φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
A			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
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	M120×2	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	M95×2	M100×2
		J	—	27	32	37	47	62	78	83	88	98	113	123	143	153
Socket set screw			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/

Accessories (TJ series)

Bellows (dust-proof cover)



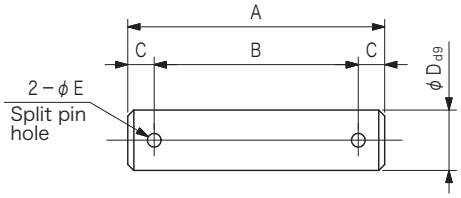
Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size		ϕ30	ϕ40	ϕ50	ϕ63	ϕ80	ϕ100	ϕ125	ϕ140	ϕ150	ϕ160	ϕ180	ϕ200	ϕ224	ϕ250
a	Rod diameter symbol B	50	50	60	70	80	100	115	125	135	140	150	170	180	200
	Rod diameter symbol C	—	45	50	60	70	80	100	105	110	115	125	140	150	170
MIN		1/3.5 × stroke			1/4 × stroke			1/5 × stroke						1/6 × stroke	
W'		MIN+45			MIN+55			MIN+65						MIN+80	

- When calculating the MIN dimension, round off all the decimal places.
- If the bellows is made of Conex, consult Tokyo Keiki for a different dimensions table.

Pin

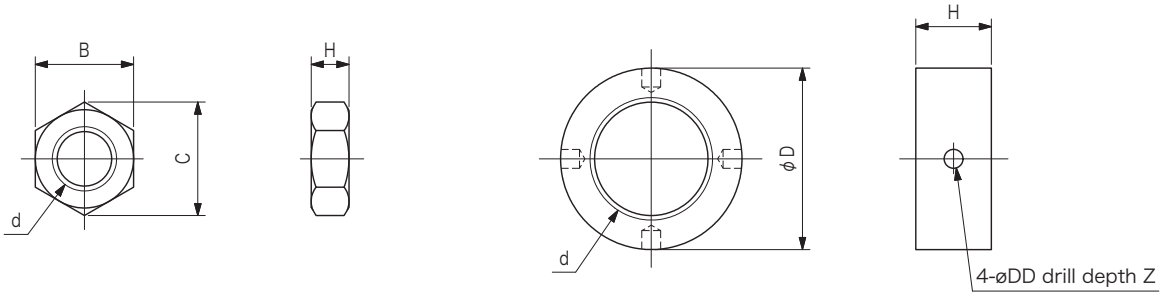


Dimensions table

Unit: mm

Symbol \ Cylinder Bore Size	ϕ30	ϕ40	ϕ50	ϕ63	ϕ80	ϕ100	ϕ125	ϕ140	ϕ150	ϕ160	ϕ180	ϕ200	ϕ224	ϕ250
A	66	66	79. 5	101	101	126	152. 5	191. 5	191. 5	191. 5	242	267	293	293
B	54	54	67. 5	85	85	106	132. 5	167. 5	167. 5	167. 5	210	235	261	261
C	6	6	6	8	8	10	10	12	12	12	16	16	16	16
D	16	16	20	31. 5	31. 5	40	50	63	63	71	80	90	100	100
E	3	3	3	4	4	5	5	6	6	6	8	8	8	8
Split pin nominal dimensions	ϕ3×22 /	ϕ3×22 /	ϕ3×28 /	ϕ4×40 /	ϕ4×40 /	ϕ5×50 /	ϕ5×60 /	ϕ6×75 /	ϕ6×75 /	ϕ6×85 /	ϕ8×95 /	ϕ8×105 /	ϕ8×120 /	ϕ8×120 /

Lock nut (material: SS400)



Dimensions table

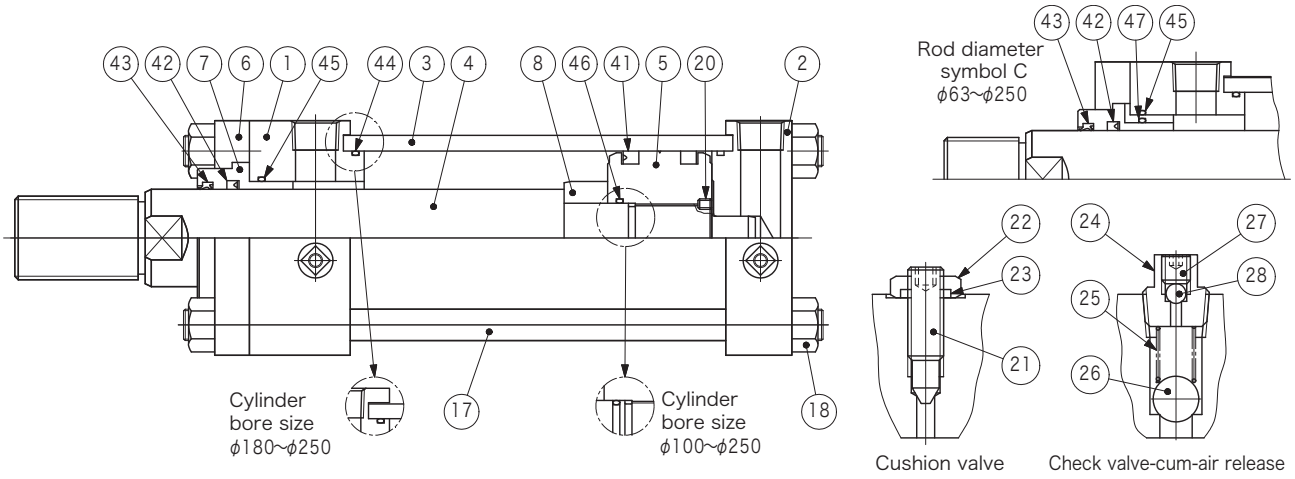
Unit: mm

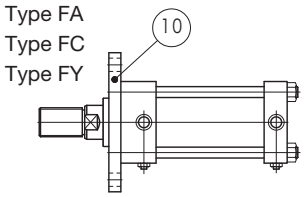
d	M16×1. 5	M20×1. 5	M24×1. 5	M30×1. 5	M39×1. 5	M48×1. 5	M56×2	M60×2	M64×2	M72×2	M76×2	M80×2	M95×2
H	10	12	14	18	23	29	34	36	38	42	46	48	57
B	24	30	36	46	60	75	85	90	95	105	110	115	135
C	27. 7	34. 6	41. 6	53. 1	69. 3	86. 3	98. 1	104	110	121	127	133	156

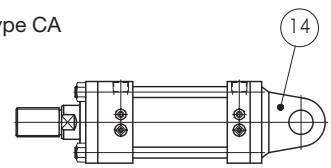
d	M100×2	M120×2	M130×2
H	60	72	78
D	150	180	200
DD	15	15	20
Z	18	18	25

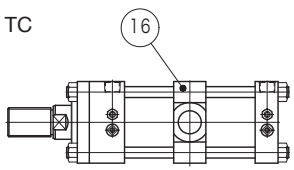
Constructions (TJ series)

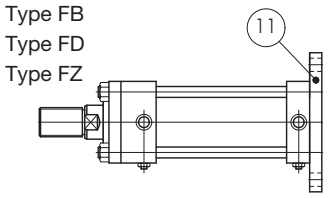
Type SD (basic type)

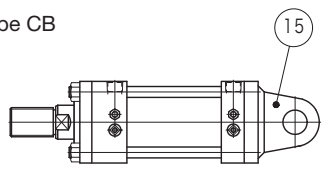


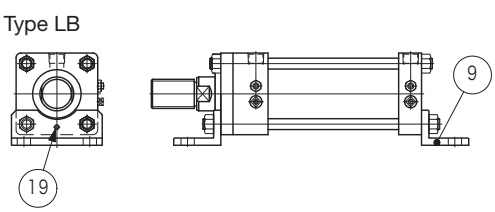












No.	Part Name	Qty	No.	Part Name	Qty	No.	Part Name	Qty	No.	Part Name	Qty	No.	Part Name	Qty	No.	Part Name	Qty
1	Lock cover	1	4	Piston rod	1	7	Bushing	1	10	Rod flange	1	15	Separated clevis	1	18	Hexagon nut	4 to 8
2	Head cover	1	5	Piston	1	*8	Cushion ring	1	11	Head flange	1	16	Trunnion	1	19	Spring pin	2
3	Cylinder tube	1	6	Clamp plate	1	9	Foot	2	14	Separated eye	1	17	Tie rod	4 to 8	20	Set screw	1

	No.	Part Name	Qty	Cylinder Bore Size mm													
				φ30	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ150	φ160	φ180	φ200	φ224	φ250
*1	21	Cushion adjuster	2	—	TJ-01-1			TJ-01-2		TJ-01-3			TJ-01-4			TJ-01-5	
*1	22	Nut	2	—	TJ-02-1								TJ-02-2				
*1	23	Seal	2	—	TJ-03-1								TJ-03-2				
	24	Check plug	2	TJ-04-1				TJ-04-2	TJ-04-3					TJ-04-4	TJ-04-5		TJ-04-6
*1		Check plug (LA)	2	—	Rc1/8			Rc1/4	Rc3/8					Rc1/2	Rc3/4		Rc1
*1	25	Check spring	2	—	TJ-06-1	TJ-06-2		TJ-06-3	TJ-06-4	TJ-06-5		TJ-06-6		TJ-06-7	TJ-06-8		TJ-06-9
*1 *2	26	Check ball	2	—	7			10	1/2					5/8	7/8		1-1/16
	27	Air release screw	2	TJ-05-1				TJ-05-2	TJ-05-3					TJ-05-4			
*2	28	Air release ball	2	1/8				4	6					7			
	24 27 28	Air release assembly	2	VCJ0760A-01				VCJ 0760A-02	VCJ0760A-03					VCJ 0760A-04	VCJ0760A-05		VCJ 0760A-06
*1	22 23	Seal nut	2	420180010-1									420180010-2				
Rod diameter symbol B	41	Piston gasket	2	SKY-22.4	SKY-30	SKY-40	SKY-53	SKY-71	SKY-85	SKY-112	SKY-125	SKY-136	SKY-145	SKY-165	SKY-180	SKY-204	SKY-230
	42	Rod gasket	1	SKY-18	SKY-22.4	SKY-28	SKY-35.5	SKY-45	SKY-56	SKY-71	SKY-80	SKY-85	SKY-90	SKY-100	SKY-112	SKY-125	SKY-140
	43	Dust wiper	1	SDR-18	SDR-22.4	SDR-28	SDR-35.5	SDR-45	SDR-56	SDR-71	SDR-80	SDR-85	SDR-90	SDR-100	SDR-112	SDR-125	SDR-140
	44	O-ring for cover	2	1B-G25	1B-G35	1B-G45	1B-G58(G55)	1B-G75	1B-G95	1B-G120	1B-G135	1B-G145	1B-G150	1B-G170	1B-G190	1B-G210	1B-G240
	45	O-ring for bushing	1	1A-G30	1A-G30	1A-G35	1A-G45	1A-G55	1A-G65	1A-G80	1A-G90	1A-G95	1A-G100	1A-G115	1A-G125	1A-G140	1A-G155
	46	O-ring for piston	1	1A-P14	1A-P15	1A-P20	1A-G25	1A-P32	1A-G35	1A-G45	1A-G50	1A-G55	1A-G60	1A-G70	1A-G80	1A-G90	1A-G100
Rod diameter symbol C	41	Piston gasket	2	—	SKY-30	SKY-40	SKY-53	SKY-71	SKY-85	SKY-112	SKY-125	SKY-136	SKY-145	SKY-165	SKY-180	SKY-204	SKY-230
	42	Rod gasket	1	—	SKY-18	SKY-22.4	SKY-28	SKY-35.5	SKY-45	SKY-56	SKY-63	SKY-67	SKY-71	SKY-80	SKY-90	SKY-100	SKY-112
	43	Dust wiper	1	—	SDR-18	SDR-22.4	SDR-28	SDR-35.5	SDR-45	SDR-56	SDR-63	SDR-67	SDR-71	SDR-80	SDR-90	SDR-100	SDR-112
	44	O-ring for cover	2	—	1B-G35	1B-G45	1B-G58(G55)	1B-G75	1B-G95	1B-G120	1B-G135	1B-G145	1B-G150	1B-G170	1B-G190	1B-G210	1B-G240
	45	O-ring for bushing	1	—	1A-G30	1A-G35	1A-G45	1A-G55	1A-G65	1A-G80	1A-G90	1A-G95	1A-G100	1A-G115	1A-G125	1A-G140	1A-G155
	46	O-ring for piston	1	—	1A-P15	1A-P20	1A-G25	1A-P32	1A-G35	1A-G45	1A-G50	1A-G55	1A-G60	1A-G70	1A-G80	1A-G90	1A-G100
	47	O-ring for spacer	1	—	—	—	1A-G35	1A-G45	1A-G55	1A-G65	1A-G75	1A-G80	1A-G80	1A-G90	1A-G100	1A-G115	1A-G125

*1: The quantities of these parts is 0 if there is no cushion.
*2: The numerical values given for these parts indicate the size of the steel balls. (JIS B 1501)