

### 21 MPa hydraulic cylinders

- Double acting hydraulic cylinders for 21 MPa with bores from 40 mm to 250 mm
- More compact as compared to 210H-3 Series
- High-performance cushion reduces a shock at stroke-end.
- The adoption of newly designed cushion valve allows easy cushion adjustment.



#### Terminologies

**Nominal pressure**  
Pressure given to a cylinder for convenience of naming.

It is not always the same as the working pressure (rated pressure) that guarantees performance under the specified conditions.

**Maximum allowable pressure**  
The maximum allowable pressure generated in a cylinder (surge pressure, etc.).

**Proof test pressure**  
Test pressure against which a cylinder can withstand without unreliable performance at the return to nominal pressure.

**Minimum operating pressure**  
The minimum pressure that a cylinder placed horizontally without a load can work

**Notes**  
• The hydraulic pressure generated in a cylinder due to the inertia of load must be lower than the maximum allowable pressure.

• In case that the lock nut is attached to the piston rod end thread part, increase the thread length (dimension A).

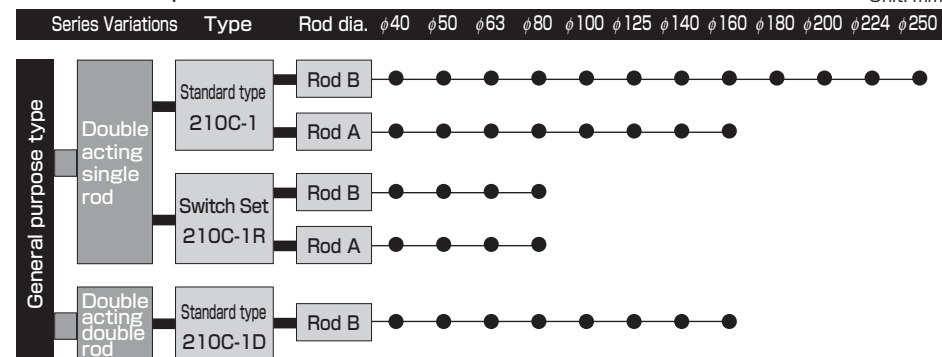
• For the internal structure, refer to the sectional drawings at the end of this catalog.

• Conex, material of the boots, is the registered trademark of Teijin Limited.

#### Standard Specifications

Type	Standard type, Switch Set	
Nominal pressure	21 MPa	
Maximum allowable pressure	Rod side: Rod A 26.5 MPa    Cap side: Rod A 26.5 MPa Rod B 24.5 MPa                    Rod B 26.5 MPa	
Proof test pressure	31.5 MPa	
Minimum operating pressure	Rod side: Rod A 0.6 MPa or less    Cap side: 0.3 MPa or less Rod B 0.45 MPa or less	
Working speed range (excluding cushion)	φ40 to φ63 : 8 to 400mm/s φ80 to φ125 : 8 to 300mm/s φ140 to φ250 : 8 to 200mm/s	
Working temperature range (ambient/fluid temperature)	Standard type ..... -10 to +80°C Switch Set ..... -10 to +70°C (No freezing)	
Structure of cushioning	Metal fitting system	
Adaptable fluid	Petroleum-based fluid (When using another fluid, refer to the table of fluid adaptability.)	
Tolerance for thread	JIS 6g/6H	
Tolerance of stroke	0 to 100 mm <sup>+0.8</sup> <sub>0</sub> 101 to 250mm <sup>+1.0</sup> <sub>0</sub> 251 to 630mm <sup>+1.25</sup> <sub>0</sub> 631 to 1000mm <sup>+1.4</sup> <sub>0</sub> 1001 to 1600mm <sup>+1.6</sup> <sub>0</sub> 1601 to 2000mm <sup>+1.8</sup> <sub>0</sub>	
Mounting style	SD, LA, FA, FB, CA, CB, TA, TC	
Accessories	Boots	Standard: Nylon tarpaulin    Semi-standard: Chloroprene, Conex
	Rod end attachments	Rod eye (T-end), Rod clevis (Y-end) with pin
	Others	Lock nut

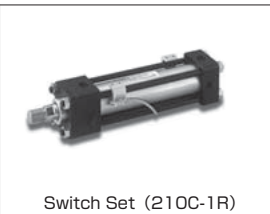
#### Product Lineup



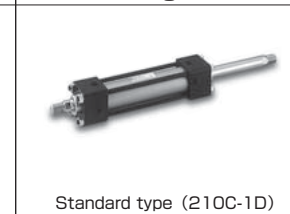
#### Double acting single rod



#### Double acting double rod



#### Double acting double rod



#### Standard Stroke Range Unit: mm

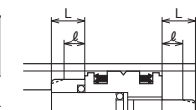
Bore	Stroke
φ40	1500
φ50 to φ250	2000

#### Cushion Stroke Length Unit: mm

Bore	Cushion ring length L	Cushion ring parallel part length ℓ
φ40 to φ63	25	7
φ80 to φ125	30	8
φ140 · φ160	30	12

- The above strokes indicate the maximum available strokes for the standard type. Contact us for longer strokes.
- For the rod buckling, check with the buckling chart in the selection materials. Consult us for bore sizes from 180 mm to 250 mm.

- The cushion stroke lengths in case of cylinders used up to the stroke end.
- In the case that a cylinder is not used up to the stroke end, and it is stopped 5 mm or more before the stroke end, the cushioning effect will be weakened. In such a case, consult us.
- Consult us for bore sizes from 180 mm to 250 mm.



### How to order

#### General Purpose Type

● Standard type

210C-1

● Switch Set

210C-1R

Double acting single rod

210C-1 : Standard type  
210C-1R : Switch Set

Double acting double rod  
210C-1D : Standard type

- 1 Nitrile rubber ( $\phi 40$  to  $\phi 250$ )
- 2 Urethane rubber ( $\phi 40$  to  $\phi 250$ )
- 3 Fluorocarbon ( $\phi 40$  to  $\phi 160$ )
- 6 HNBR ( $\phi 40$  to  $\phi 160$ )

For 140 and 160 mm bore standard cylinders with rod A and Switch Set Cylinders, only [1] and [2] can be used.

Cylinder bore (mm)  
Standard type:  $\phi 40$  to  $\phi 250$   
Switch Set:  $\phi 40$  to  $\phi 80$

A Rod A  
B Rod B

- B With cushions on both ends
- R With cushion on the rod side
- H With cushion on the cap side
- N No cushion

Note) The rod side of the 40 mm bore cylinder with rod A is provided with a fixed cushion.

Cylinder stroke (mm)

None Rc thread  
G G thread

Port position (A, B, C, D)

● Note on ordering Switch Set  
● When no sensor is required, specify 0 for the sensor symbol ① and the sensor quantity ②.

Sensor symbol  
Note) Select applicable sensors out of the Sensor List.

Sensor quantity (1, 2, to n)

The rod end attachments are dedicated to the rod B. To use them for the rod A, give instructions to change the rod end thread length to that of the rod B.

T Rod eye (T-end)  
Y Rod clevis (Y-end)

K Long thread with lock nut  
The rod end thread length (dimension A) is longer.

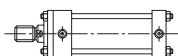
J Nylon tarpaulin  
UN Chloroprene  
JK Conex

The item enclosed by broken line needs not to be entered, if unnecessary. Semi-standard specification



#### Mounting style

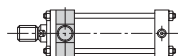
SD SD style (basic style)



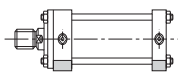
FB FB style (cap flange)



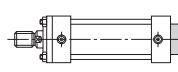
TA TA style (rod trunnion)



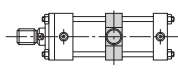
LA LA style (side lugs)



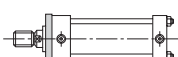
CA CA style (cap eye)



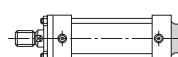
TC TC style (intermediate trunnion)



FA FA style (rod flange)



CB CB style (cap clevis)



### Sensor List

Type	Sensor symbol	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Indicating lamp	Wiring method	Cord length	Applicable load							
Reed sensor	AF AX101 CE	DC:5 to 30V AC:5 to 120V	DC:5 to 40mA AC:5 to 20mA	DC:1.5W AC:2VA	None Provided	LED (Lights in red when sensing)	0.3mm <sup>2</sup> , 2-core, outer dia. $\phi$ 4mm Rear wiring	1.5m	Small relay, programmable controller							
	AG AX105 CE							5m								
	AH AX111 CE							1.5m								
	AJ AX115 CE	5m														
	AK AX125 CE	DC:30V or less AC:120V or less	DC:40mA or less AC:20mA or less	DC:1.5W AC:2VA	None	None	None	5m								
	AL AX11B CE	DC:5 to 30V	5 to 40mA					1.5W		0.5m						
	AM AX135 CE	DC:5 to 30V	5 to 40mA					1.5W		0.5m						
	AN AZ101 CE	DC:5 to 30V AC:5 to 120V	DC:5 to 40mA AC:5 to 20mA	DC:1.5W AC:2VA	None Provided	LED (Lights in red when sensing)	0.3mm <sup>2</sup> , 2-core, outer dia. $\phi$ 4mm Upper wiring	1.5m								
	AR AZ105 CE							5m								
	AS AZ111 CE							1.5m								
	AT AZ115 CE	5m														
	AW AZ125 CE	DC:30V or less AC:120V or less	DC:40mA or less AC:20mA or less	DC:1.5W AC:2VA	None	None	None	5m								
AX AZ11A CE	DC:5 to 120V	5 to 20mA	2VA					0.5m								
AY AZ135 CE	DC:5 to 30V	5 to 40mA	1.5W					0.5m								
Solid state sensor	BE AX201CE-1	DC:5 to 30V	5 to 40mA	—	Provided	LED (Lights in red when sensing)	0.3mm <sup>2</sup> , 2-core, outer dia. $\phi$ 4mm Rear wiring	1.5m	Small relay, programmable controller							
	BF AX205CE-1							5m								
	CG AX211CE-1							1.5m								
	CH AX215CE-1							5m								
	CI AX21DCE-1							4-pin connector type, Rear wiring		0.5m						
	CJ AX21DCE-1							1m								
	CK AZ201CE-1							1.5m								
	CL AZ205CE-1							5m								
	CM AZ211CE-1							1.5m								
	CN AZ215CE-1							5m								
	Solid state sensor (CE conformal)							CO AX211CE-1		DC:5 to 30V	5 to 40mA	—	Provided	LED (2-LED type in red/green)	0.3mm <sup>2</sup> , 2-core, outer dia. $\phi$ 4mm Rear wiring	1.5m
								CP AX215CE-1								5m
CQ AX21BCE-1		4-pin connector type Rear wiring	0.5m													
CR AZ211CE-1		1.5m														
CS AZ215CE-1		5m														
CT AZ21BCE-1		4-pin connector type Upper wiring	0.5m													

Notes ● For the sensors without a protective circuit, be sure to provide a protective circuit (SK-100) with the load when using any induction load (relay, etc.).

- The output logic of AX and AZ135CE is B contact. When the piston is detected, the sensor contact turns off (the lamp turns on).
- For the details of sensors, be sure to read the sensor specifications at the end of this catalog.
- We recommend AND Unit (AU series) for multiple sensors connected in series.

For details, refer to AND Unit at the end of this catalog.

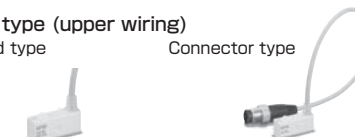
#### AX type (rear wiring)

Cord type Connector type



#### AZ type (upper wiring)

Cord type Connector type



#### Adaptability of Fluid to Seal Material

Seal material	Adaptable fluid				
	Petroleum-based fluid	Water-glycol fluid	Phosphate ester fluid	Water in oil fluid	Oil in water fluid
1 Nitrile rubber	○	○	×	○	○
2 Urethane rubber	◎	×	×	△	△
3 Fluorocarbon	○	×	○	○	○
6 HNBR	○	◎	×	◎	◎

Notes)

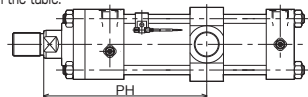
1. ◎: Applicable ×: Inapplicable Consult us before using the △-marked items.
2. The ◎-marked items are recommended seal materials in case of giving the first priority to abrasion resistance.

### Sensor Mountable Minimum Stroke Unit: mm

Bore	Styles other than TC		TC style	
	With one sensor	With two sensors	With one sensor	With two sensors
φ40	20	20(50)	50	130
φ50	15	20(45)	50	130
φ63	20	20(50)	60	150
φ80	20	20(50)	70	170

Note) The parenthesized values apply in the case where two sensors are mounted on the same surface.

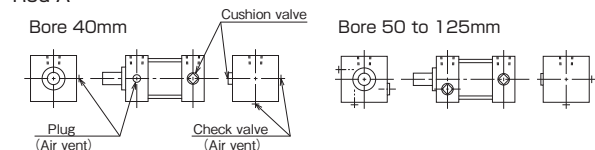
Note) ● For the TC style with one sensor, the cylinder strokes when the TC accessory is positioned at the place other than the center (as shown below) are shown in the table.



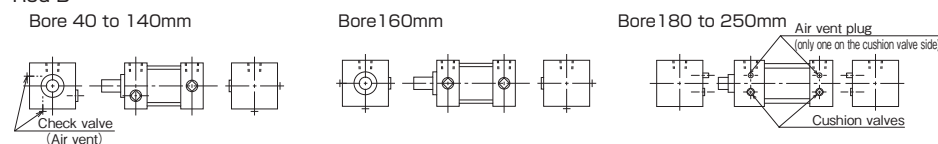
● For the minimum dimension PH of TC style for mounting sensor, refer to the dimensional drawings of TC style.

### Cushion valve and check valve (air vent) positions depending on cylinder bore (when port is on A and cushion is on B)

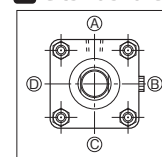
#### Rod A



#### Rod B



### Standard specifications



- With cushions on both ends
- Port position (A), cushion valve position (B)

Notes) There are check valves on two sides out of the four outer sides of cap and head cover except the port and cushion sides. The check valve is concurrently used with air vent.

### Change of port position

When modifying the positions, enter the symbol shown in the dimensional drawings.

(Example) 210C-1 2LA50BB100-B A-J  
 Port position (A, B, C, D)  
 Cushion valve position (A, B, C, D, O)

- In case that the cushion is not equipped, the cushion valve position is "O".
- In case of the mounting style LA, the port and cushion valve are positioned on A, B or D. If you want to position any of them on C, consult us.

### Port G thread type

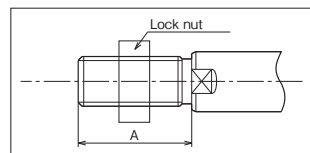
For a port G thread type cylinder, make an order in accordance with the following procedure.

(Example) 210C-1 2LA50BB100-G A B -J  
 Port G thread type  
 Port position  
 Cushion valve position

### Notes on ordering cylinder with lock nut

The rod end thread length (dimension A) is longer when a lock nut is attached to the rod end.

(Example) 210C-1 2LA50BB100-A B -K  
 Long thread with lock nut



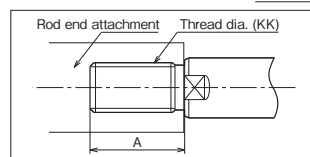
Dimension A without lock nut A=30  
 Dimension A of long thread with lock nut A=50

Note) When a lock nut is attached to the rod end, dimension A must be equal to or longer than that of the long thread with lock nut. For details, refer to the dimensional drawings of rod end attachments.

### Notes on ordering cylinder with rod end attachment for rod A

When the cylinder uses the rod A and has a rod end attachment, give instructions to change the standard rod A end thread diameter, pitch and length to those of the standard rod B.

(Example) 210C-1 2LA50AB100-A B -T  
 Rod end attachment (T-end)



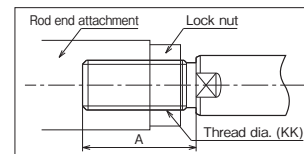
Standard rod A KK=M30x1.5 A=35  
 Standard rod B KK=M24x1.5 A=30

Note) For details, refer to the dimensional drawings of rod end attachments.

### Notes on ordering cylinder with rod end attachment for rod A and lock nut

When the cylinder uses the rod A and has a rod end attachment and a lock nut, change the standard rod A end thread diameter, pitch and length to those of the rod B, and specify the long threaded portion of rod B for the thread length (dimension A).

(Example) 210C-1 2LA50AB100-A B -T K  
 Rod end attachment (T-end)  
 Long thread with lock nut



Standard rod A KK=M30x1.5 A=35  
 Rod B KK=M24x1.5 A=50 (long thread)

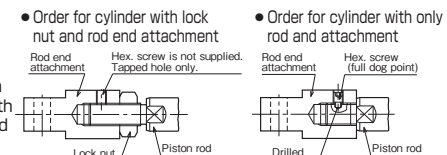
Note) When a lock nut is attached to the rod end, dimension A must be equal to or longer than that of the long thread with lock nut. For details, refer to the dimensional drawings of rod end attachments.

### Semi-standard range

- Change in piston rod end
- Change in TC accessory position (dimensional symbol: PH)
- With boots
- Plated cylinder tube (hard chrome plating thickness: 0.02 mm)
- Specification of working fluid (water-glycol fluid)
- Specification of dimension BB (extension of tie rod)

### Delivery of rod end attachment (T-end or Y-end)

A delivery method for a cylinder provided with a lock nut and a rod end attachment differs from that for a cylinder provided with a rod end attachment only (without a lock nut). For details, refer to the dimensional drawings of rod end attachments.



Unit: kg

### Weight Table

Bore (mm)	Rod type	Basic weight (SD style)		Mounting accessory weight										Rod end attachment weight				
		Additional weight per mm of stroke		LA		FA		FB	CA	CB	TA	TC	Rod eye (T-end)	Rod clevis (Y-end)	With lock nut			
		Single rod	Double rod	Single rod	Double rod	Single rod	Double rod								Nut only	Standard		
φ40	A	4.2	-	0.012	-	0.33	-	0.60	-	0.89	0.42	0.58	0.17	0.67	-	-	0.11	0.18
	B	4.1	5.0	0.011	0.014	0.33	0.38	0.52	0.52	0.89	0.42	0.58	0.17	0.67	0.74	1.17	0.07	0.12
φ50	A	7.1	-	0.019	-	0.78	-	1.24	-	1.72	0.81	1.19	0.28	1.08	-	-	0.22	0.36
	B	6.9	8.5	0.016	0.021	0.78	0.88	1.00	1.00	1.72	0.81	1.19	0.28	1.08	1.67	2.30	0.11	0.18
φ63	A	11.1	-	0.029	-	1.12	-	1.66	-	2.68	1.48	2.08	0.54	1.80	-	-	0.48	0.81
	B	10.5	13.2	0.024	0.032	1.12	1.30	1.50	1.50	2.68	1.48	2.08	0.54	1.80	2.51	3.97	0.22	0.36
φ80	A	18.9	-	0.043	-	1.57	-	2.55	-	4.04	2.46	3.64	1.17	3.25	-	-	0.91	1.48
	B	17.9	22.8	0.036	0.049	1.57	1.87	2.09	2.09	4.04	2.46	3.64	1.17	3.25	3.77	6.54	0.48	0.81
φ100	A	29.0	-	0.065	-	2.44	-	5.11	-	7.67	4.92	7.17	2.87	7.02	-	-	1.84	3.10
	B	27.2	35.2	0.054	0.073	2.44	2.90	4.23	4.23	7.67	4.92	7.17	2.81	7.02	7.47	12.62	0.91	1.48
φ125	A	52.2	-	0.104	-	4.46	-	7.21	-	12.61	8.80	13.68	5.01	14.15	-	-	3.23	5.80
	B	49.9	65.2	0.084	0.114	4.46	5.30	6.19	6.19	12.61	8.80	13.68	5.01	14.15	12.41	22.96	1.84	3.10
φ140	A	74.5	-	0.131	-	8.18	-	8.71	-	16.77	11.79	18.72	7.43	20.61	-	-	5.16	9.60
	B	71.1	94.6	0.109	0.149	8.18	8.38	5.76	5.76	16.77	11.79	18.72	7.43	20.61	19.17	33.75	2.50	4.42
φ160	A	101.7	-	0.166	-	13.21	-	13.10	-	25.22	17.54	26.48	12.02	26.14	-	-	6.22	11.14
	B	97.6	129.9	0.142	0.192	13.21	14.22	10.16	10.16	25.22	17.54	26.48	12.02	26.14	26.97	46.72	3.23	5.80
φ180	B	151	-	0.170	-	-	-	20.10	-	41.10	40.10	-	-	30.90	-	-	-	-
φ200	B	237	-	0.220	-	-	-	35.00	-	70.10	47.90	-	-	50.70	-	-	-	-
φ224	B	282	-	0.280	-	-	-	42.20	-	82.80	68.30	-	-	64.80	-	-	-	-
φ250	B	381	-	0.330	-	-	-	72.40	-	124.00	96.40	-	-	93.70	-	-	-	-

Notes) ● The lock nut long thread weight applies in the case where the lock nut symbol is K. The lock nut weight includes the weight of the extended part of the thread length.  
 ● The rod eye and rod clevis are dedicated to the rod B. When the rod A is used, change the rod end thread diameter to that of the rod B.

### Sensor Additional Weight

Unit: kg

Sensor	AX/AZ type		
	Bore (mm)	Cord length 1.5 m	Cord length 5 m
φ40 · φ50		0.05	0.13
φ63 · φ80		0.07	0.15

Calculation formula) Cylinder weight (kg) = basic weight + (cylinder stroke (mm) × additional weight per mm of stroke) + (sensor additional weight × sensor quantity) + mounting accessory weight + rod end attachment weight

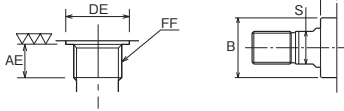
Calculation example) 210C-1R, rod B, bore φ63, cylinder stroke 500 mm, LA style, 2 pcs of AX215  
 10.5 + (500 × 0.024) + 1.12 + (0.15 × 2) = 23.92 kg

CAD/DATA  
210C-1/THC1 [Bore] A. B is available.

### SD

210C-1 [2] SD [Bore] [B] B Stroke

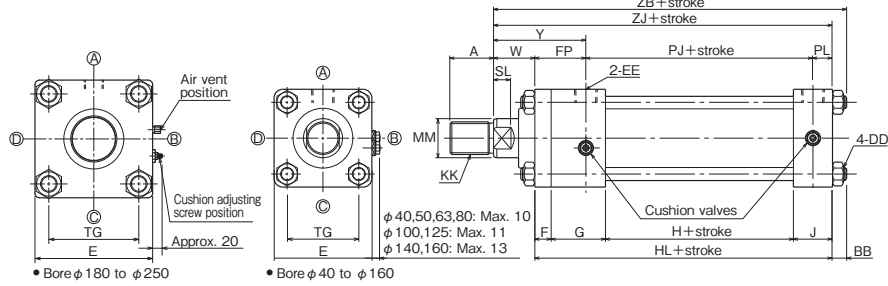
Port G thread type



Rod dia.	OF	DF	LF
φ90	φ89.5	φ12	28
φ100	φ99.5	φ12	28
φ110	φ109.5	φ15	30
φ125	φ124	φ15	35
φ140	φ139	φ15	35

Note) The diameter of the rod B of 160 mm bore cylinder is 90 mm, but it is the width across flats.

• Rod dia. of φ90 or more



• Bore φ180 to φ250

• Bore φ40 to φ160

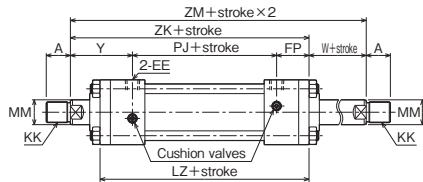
- The rod side of the 40 mm bore cylinder with rod A is provided with a fixed cushion.
- The positions of cushion valves depend on the cylinder bore.
- For the thread length (dimension A) when the lock nut is used, refer to "Thread length of rod end with lock nut."
- If you want to change the rod protrusion length, specify dimension W.
- If the port size exceeds 1 inch, it is recommended to order G thread or pipe flange. In such a case, contact us. (Order made)
- For the cylinders with bores from 180 to 250 mm, the cover fixing method varies depending on the stroke as shown below.

Fixing method	Tie rod type	Tube flange type
stroke	up to 1500	1501 to 2000

Note) The tube flange cylinder has the same dimensions as the tie rod cylinder.

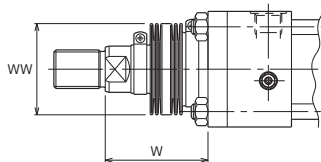
### Double acting double rod (rod B)

• Bore φ40 to φ160



### With Boots

210C-1/THC1 [Bore] K



	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Heat proof	80°C	130°C	200°C

Notes)

- Remember that the heat proof field in the table above shows the allowable temperatures for the boots, not for the cylinder.
- The boots have been mounted at our factory prior to delivery.
- Conex is the registered trademark of Teijin Limited.

### Dimension W Rod B

	φ40 · φ50	1/3.5 stroke+X
Nylon tarpaulin	φ63 to φ100	1/4 stroke+X
Chloroprene	φ125 to φ160	1/5 stroke+X
Conex	φ40 · φ50	1/2.5 stroke+X
	φ63 to φ100	1/3 stroke+X
	φ125 · φ140	1/3.5 stroke+X
	φ160	1/4 stroke+X

### Rod A

	φ40	1/3.5 stroke+X
Nylon tarpaulin	φ50 to φ80	1/4 stroke+X
Chloroprene	φ100 to φ160	1/5 stroke+X
Conex	φ40	1/2.5 stroke+X
	φ50 to φ80	1/3 stroke+X
	φ100	1/3.5 stroke+X
	φ125 to φ160	1/4 stroke+X

- If the calculated value has a fractional part, round it up.
- For the dimensions of 180 to 250 mm bore cylinders with boots, contact us.

### Dimensional Table

Symbol Bore	Rod B									Rod A								
	A	B	KK	MM	S	SL	VD	W	Y	A	B	KK	MM	S	SL	VD	W	Y
φ40	25	φ40	M20×1.5	φ22	19	11	11	32	70	30	φ43	M24×1.5	φ28	24	14	15	32	70
φ50	30	φ46	M24×1.5	φ28	24	14	13	36	78	35	φ55	M30×1.5	φ36	30	16	15	36	78
φ63	35	φ55	M30×1.5	φ36	30	16	15	43	90	45	φ65	M39×1.5	φ45	41	20	19	43	90
φ80	45	φ65	M39×1.5	φ45	41	20	12	48	105	55	φ80	M48×1.5	φ56	50	23	19	48	105
φ100	55	φ80	M48×1.5	φ56	50	23	15	53	114	75	φ95	M64×2	φ70	65	27	19	53	114
φ125	75	φ95	M64×2	φ70	65	27	19	60	133	90	φ120	M80×2	φ90	-	-	28	60	133
φ140	80	φ105	M72×2	φ80	75	31	15	60	141	105	φ130	M95×2	φ100	-	-	24	60	141
φ160	90	φ120	M80×2	φ90	85	33	15	60	146	110	φ140	M100×2	φ110	-	-	24	60	146
φ180	105	φ130	M95×2	φ100	-	-	10	55	154	-	-	-	-	-	-	-	-	-
φ200	110	φ140	M100×2	φ110	-	-	10	55	170	-	-	-	-	-	-	-	-	-
φ224	130	φ155	M120×2	φ125	-	-	10	60	175	-	-	-	-	-	-	-	-	-
φ250	140	φ170	M130×2	φ140	-	-	10	65	196	-	-	-	-	-	-	-	-	-

Symbol Bore	AE	BB	DD	DE	E	EE	F	FF	FP	G	H	HL	J	LZ	PJ	PL	TG
φ40	12	11	M10×1.25	φ25.5	□65	Rc3/8	11	G3/8	38	43	62	147	31	170	94	15	□45
φ50	14	13	M12×1.25	φ30	□80	Rc1/2	13	G1/2	42	47	66	162	36	186	102	18	□56
φ63	14	14	M14×1.5	φ30	□94	Rc1/2	15	G1/2	47	50	73	174	36	203	109	18	□68
φ80	16	16	M16×1.5	φ36.9	□114	Rc3/4	18	G3/4	57	60	83	202	41	239	125	20	□84
φ100	16	18	M18×1.5	φ36.9	□135	Rc3/4	22	G3/4	61	60	90	213	41	254	132	20	□102
φ125	18	21	M22×1.5	φ46.1	□165	Rc1	24	G1	73	75	98	248	51	296	160	25	□125
φ140	18	25	M27×2	φ46.1	□192	Rc1	32	G1	81	75	108	266	51	322	160	25	□144
φ160	18	27	M30×2	φ46.1	□218	Rc1	37	G1	86	75	127	290	51	351	179	25	□164
φ180	-	32	M36×1.5	-	□255	Rc1 1/4	41	-	99	106	106	330	77	-	202	29	□195
φ200	-	37	M42×1.5	-	□295	Rc1 1/2	51	-	115	116	116	369	86	-	220	34	□220
φ224	-	39	M45×1.5	-	□325	Rc1 1/2	51	-	115	116	125	378	86	-	229	34	□243
φ250	-	41	M48×1.5	-	□355	Rc2	56	-	131	136	130	428	106	-	252	45	□268

Symbol Bore	ZB	ZJ	ZK	ZM
φ40	190	179	202	234
φ50	211	198	222	258
φ63	231	217	246	289
φ80	266	250	287	335
φ100	284	266	307	360
φ125	329	308	356	416
φ140	351	326	382	442
φ160	377	350	411	471
φ180	385	417	-	-
φ200	424	461	-	-
φ224	438	477	-	-
φ250	493	534	-	-

### With Boots

Bore	Symbol	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
WW	Rod B	φ50	φ63	φ71	φ80	φ100	φ125	φ125	φ140
	Rod A	φ63	φ71	φ80	φ100	φ125	φ140	φ160	φ180
X	Rod B	45	45	55	55	55	65	65	65
	Rod A	45	55	55	55	65	65	65	65

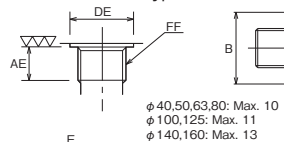


CAD/DATA 210C-1/THC1 [Bore] A. B is available.

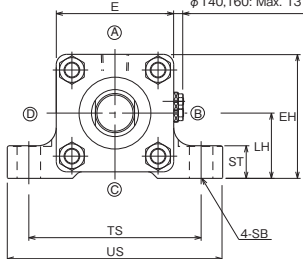
### LA

210C-1 [2] LA [Bore] [B] B Stroke

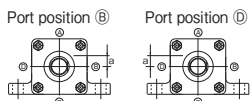
Port G thread type



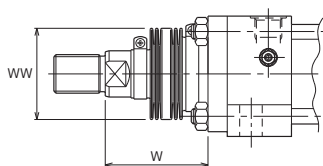
φ40,50,63,80: Max. 10  
φ100,125: Max. 11  
φ140,160: Max. 13



- The rod side of the 40 mm bore cylinder with rod A is provided with a fixed cushion.
- The positions of cushion valves depend on the cylinder bore.
- For the thread length (dimension A) when the lock nut is used, refer to "Thread length of rod end with lock nut."
- For a cylinder with a port or a cushion valve on the © side, consult us.
- When the part is on the ® or © side, it is positioned as shown below.
- If you want to change the rod protrusion length, specify dimension W.



### With Boots



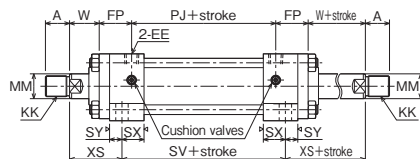
### Dimension W Rod B

Nylon tarpaulin Chloroprene	φ40 · φ50	1/3.5 stroke+X
	φ63 to φ100	1/4 stroke+X
	φ125 to φ160	1/5 stroke+X
Conex	φ40 · φ50	1/2.5 stroke+X
	φ63 to φ100	1/3 stroke+X
	φ125 · φ140	1/3.5 stroke+X
	φ160	1/4 stroke+X

• If the calculated value has a fractional part, round it up.

### Double acting double rod (rod B)

• Bore φ40 to φ160



Note) Dimension "a" in case of port position on ® or ©

Bore	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
Symbol	5	6	6	10	10	10	0	0

210C-1/THC1 [Bore] K

	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Heat proof	80°C	130°C	200°C

Notes)

- Remember that the heat proof field in the table above shows the allowable temperatures for the boots, not for the cylinder.
- The boots have been mounted at our factory prior to delivery.
- Conex is the registered trademark of Teijin Limited.

### Rod A

Nylon tarpaulin Chloroprene	φ40	1/3.5 stroke+X
	φ50 to φ80	1/4 stroke+X
	φ100 to φ160	1/5 stroke+X
Conex	φ40	1/2.5 stroke+X
	φ50 to φ80	1/3 stroke+X
	φ100	1/3.5 stroke+X
	φ125 to φ160	1/4 stroke+X

### Dimensional Table

Symbol Bore	Rod B							Rod A								
	A	B	KK	MM	S	SL	VD	W	A	B	KK	MM	S	SL	VD	W
φ40	25	φ40	M24×1.5	φ22	19	11	11	32	30	φ43	M24×1.5	φ28	24	14	15	32
φ50	30	φ46	M24×1.5	φ28	24	14	13	36	35	φ55	M30×1.5	φ36	30	16	15	36
φ63	35	φ55	M30×1.5	φ36	30	16	15	43	45	φ65	M39×1.5	φ45	41	20	19	43
φ80	45	φ65	M39×1.5	φ45	41	20	12	48	55	φ80	M48×1.5	φ56	50	23	19	48
φ100	55	φ80	M48×1.5	φ56	50	23	15	53	75	φ95	M64×2	φ70	65	27	19	53
φ125	75	φ95	M64×2	φ70	65	27	19	60	90	φ120	M80×2	φ90	-	-	28	60
φ140	80	φ105	M72×2	φ80	75	31	15	60	105	φ130	M95×2	φ100	-	-	24	60
φ160	90	φ120	M80×2	φ90	85	33	15	60	110	φ140	M100×2	φ110	-	-	24	60

Symbol Bore	AE	DE	E	EE	EH	FF	FP	JS	LH	PJ	SB	SS	ST	SV	SW	SX	SY	TS
φ40	12	φ25.5	□65	Rc3/8	68.5	G3/8	38	31	36±0.15	94	φ11	105	15	116	15	27	16	98
φ50	14	φ30	□80	Rc1/2	85	G1/2	42	36	45±0.15	102	φ14	113	20	124	18	29	18	115
φ63	14	φ30	□94	Rc1/2	97	G1/2	47	36	50±0.15	109	φ18	123	25	137	18	32	18	136
φ80	16	φ36.9	□114	Rc3/4	117	G3/4	57	41	60±0.25	125	φ18	143	30	161	20	39	21	155
φ100	16	φ36.9	□135	Rc3/4	137.5	G3/4	61	41	70±0.25	132	φ22	150	35	164	18	37	23	190
φ125	18	φ46.1	□165	Rc1	167.5	G1	73	51	85±0.25	150	φ26	173	45	192	23	47	28	224
φ140	18	φ46.1	□192	Rc1	196	G1	81	56	100±0.25	160	φ30	183	45	202	28	47	28	262
φ160	18	φ46.1	□218	Rc1	224	G1	86	60	115±0.25	179	φ33	202	55	217	30	45	30	294

Symbol Bore	US	XB	XS	ZD
φ40	122	164	59	190
φ50	145	180	67	211
φ63	169	199	76	231
φ80	190	230	87	266
φ100	230	248	98	284
φ125	272	285	112	329
φ140	320	303	120	356
φ160	356	329	127	386

### With Boots

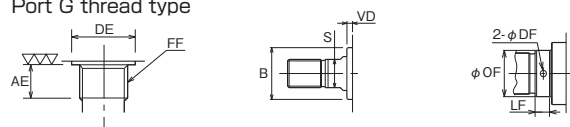
Bore	Symbol	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
		WW	Rod B	φ50	φ63	φ71	φ80	φ100	φ125
	Rod A	φ63	φ71	φ80	φ100	φ125	φ140	φ160	φ180
X	Rod B	45	45	55	55	55	65	65	65
	Rod A	45	55	55	55	65	65	65	65

CAD/DATA 210C-1/THC1 [Bore] A. B is available.

### FA

210C-1 [2] FA [Bore] [B] [Stroke]

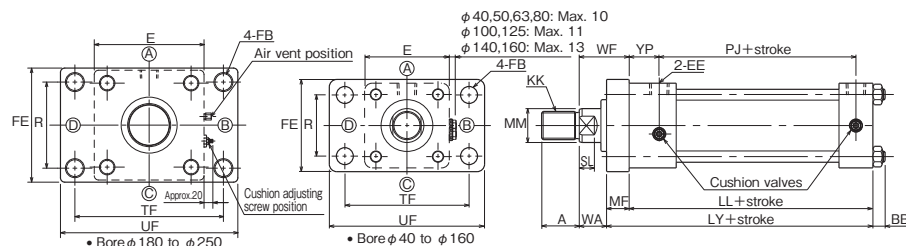
Port G thread type



Rod dia.	OF	DF	LF
φ90	φ89.5	φ12	28
φ100	φ99.5	φ12	28
φ110	φ109.5	φ15	30
φ125	φ124	φ15	35
φ140	φ139	φ15	35

Note) The diameter of the rod B of 160 mm bore cylinder is 90 mm, but it is the width across flats.

• Rod dia. of φ90 or more



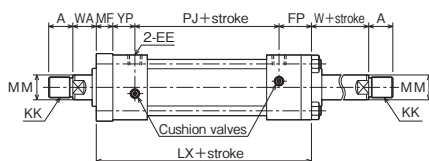
- The rod side of the 40 mm bore cylinder with rod A is provided with a fixed cushion.
- The positions of cushion valves depend on the cylinder bore.
- For the thread length (dimension A) when the lock nut is used, refer to "Thread length of rod end with lock nut."
- If you want to change the rod protrusion length, specify dimension WA.
- If the port size exceeds 1 inch, it is recommended to order G thread or pipe flange. In such a case, contact us. (Order made)
- For the cylinders with bores from 180 to 250 mm, the cover fixing method varies depending on the stroke as shown below.

Fixing method	Tie rod type	Tube flange type
stroke	up to 1500	1501 to 2000

Note) The tube flange cylinder has the same dimensions as the tie rod cylinder.

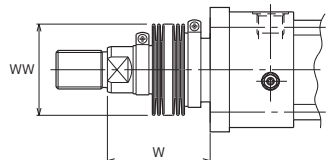
### Double acting double rod (rod B)

• Bore φ40 to φ160



### With Boots

210C-1/THC1 [Bore] K



	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Heat proof	80°C	130°C	200°C

Notes)

- Remember that the heat proof field in the table above shows the allowable temperatures for the boots, not for the cylinder.
- The boots have been mounted at our factory prior to delivery.
- Conex is the registered trademark of Teijin Limited.

### Dimension W

#### Rod B

Nylon tarpaulin (φ40 · φ50 1/3.5 stroke+X)  
Chloroprene (φ63 to φ100 1/4 stroke+X)  
(φ125 to φ160 1/5 stroke+X)

Conex (φ40 · φ50 1/2.5 stroke+X)  
(φ63 to φ100 1/3 stroke+X)  
(φ125 · φ140 1/3.5 stroke+X)  
(φ160 1/4 stroke+X)

#### Rod A

Nylon tarpaulin (φ40 1/3.5 stroke+X)  
Chloroprene (φ50 to φ80 1/4 stroke+X)  
(φ100 to φ160 1/5 stroke+X)

Conex (φ40 1/2.5 stroke+X)  
(φ50 to φ80 1/3 stroke+X)  
(φ100 1/3.5 stroke+X)  
(φ125 to φ160 1/4 stroke+X)

- If the calculated value has a fractional part, round it up.
- The gland bush for the mounting style FA differs from that for a cylinder with boots.
- For the dimensions of 180 to 250 mm bore cylinders with boots, contact us.

### Dimensional Table

Symbol	Rod B										Rod A									
	A	B	KK	MM	S	SL	VD	W	WA	WF	A	B	KK	MM	S	SL	VD	W	WA	WF
φ40	25	φ40	M20×1.5	φ22	19	11	7	32	28	43	30	φ43	M24×1.5	φ28	24	14	11	32	28	43
φ50	30	φ46	M24×1.5	φ28	24	14	6	36	29	49	35	φ55	M30×1.5	φ36	30	16	8	36	29	49
φ63	35	φ55	M30×1.5	φ36	30	16	6	43	34	58	45	φ65	M39×1.5	φ45	41	20	10	43	34	58
φ80	45	φ65	M39×1.5	φ45	41	20	6	48	42	66	55	φ80	M48×1.5	φ56	50	23	13	48	42	66
φ100	55	φ80	M48×1.5	φ56	50	23	6	53	44	75	75	φ95	M64×2	φ70	65	27	10	53	44	75
φ125	75	φ95	M64×2	φ70	65	27	6	60	47	84	90	φ120	M80×2	φ90	-	-	15	60	47	84
φ140	80	φ105	M72×2	φ80	75	31	6	60	51	92	105	φ130	M95×2	φ100	-	-	15	60	51	92
φ160	90	φ120	M80×2	φ90	85	33	6	60	51	97	110	φ140	M100×2	φ110	-	-	15	60	51	97
φ180	105	φ130	M95×2	φ100	-	-	10	-	55	116	-	-	-	-	-	-	-	-	-	-
φ200	110	φ140	M100×2	φ110	-	-	10	-	55	121	-	-	-	-	-	-	-	-	-	-
φ224	130	φ155	M120×2	φ125	-	-	10	-	60	131	-	-	-	-	-	-	-	-	-	-
φ250	140	φ170	M130×2	φ140	-	-	10	-	65	141	-	-	-	-	-	-	-	-	-	-

Symbol	AE	BB	DE	E	EE	FB	FF	Rod B		FP	LL	LX	Rod A				PJ	R
								FE	FE				LY	LY	MF	MF		
φ40	12	11	φ25.5	□65	Rc3/8	φ11	G3/8	73	80	38	136	174	151	151	15	15	94	46
φ50	14	13	φ30	□80	Rc1/2	φ14	G1/2	85	92	42	149	193	169	169	20	20	102	58
φ63	14	14	φ30	□94	Rc1/2	φ18	G1/2	98	105	47	159	212	183	183	24	24	109	65
φ80	16	16	φ36.9	□114	Rc3/4	φ18	G3/4	125	140	57	184	245	208	208	24	24	125	87
φ100	16	18	φ36.9	□135	Rc3/4	φ22	G3/4	150	165	61	191	263	222	222	31	31	132	109
φ125	18	21	φ46.1	□165	Rc1	φ26	G1	175	195	73	224	309	261	261	37	37	150	130
φ140	18	25	φ46.1	□192	Rc1	φ30	G1	195	215	81	234	331	275	275	41	41	160	145
φ160	18	27	φ46.1	□218	Rc1	φ33	G1	225	245	86	253	360	299	299	46	46	179	170
φ180	-	32	-	□255	Rc1 1/4	φ39	-	265	-	99	289	-	350	-	61	-	202	200
φ200	-	37	-	□295	Rc1 1/2	φ48	-	315	-	115	318	-	384	-	66	-	220	230
φ224	-	39	-	□325	Rc1 1/2	φ48	-	335	-	115	327	-	398	-	71	-	229	250
φ250	-	41	-	□355	Rc2	φ56	-	375	-	131	372	-	448	-	76	-	252	275

Symbol	TF	UF	YP
φ40	95	118	27
φ50	115	145	29
φ63	132	165	32
φ80	155	190	39
φ100	190	230	39
φ125	224	272	49
φ140	250	300	49
φ160	285	345	49
φ180	345	412	58
φ200	412	500	64
φ224	425	515	64
φ250	480	585	75

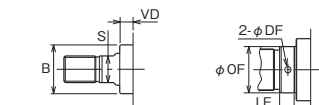
### With Boots

Bore	Symbol	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
		WW	Rod B	φ50	φ63	φ71	φ80	φ100	φ125
X	Rod A	φ63	φ71	φ80	φ100	φ125	φ140	φ160	φ180
	Rod B	45	45	55	55	55	65	65	65
	Rod A	45	55	55	55	65	65	65	65

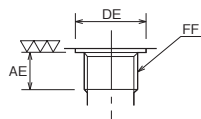
CAD/DATA 210C-1/THC1 [Bore] A. B is available.

### FB

210C-1 [2] FB [Bore] [B] [Stroke]

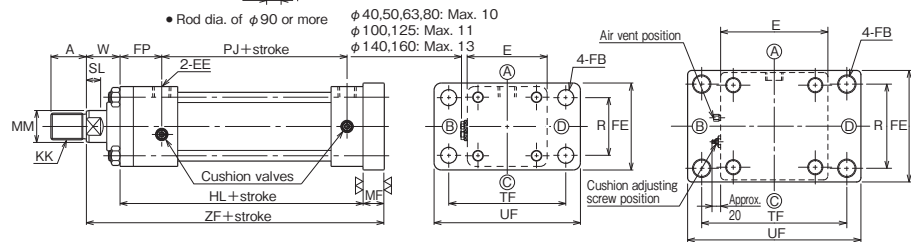


Port G thread type



Rod dia.	OF	DF	LF
φ90	φ89.5	φ12	28
φ100	φ99.5	φ12	28
φ110	φ109.5	φ15	30
φ125	φ124	φ15	35
φ140	φ139	φ15	35

Note) The diameter of the rod B of 160 mm bore cylinder is 90 mm, but it is the width across flats.



• Rod dia. of φ90 or more φ40,50,63,80: Max. 10  
φ100,125: Max. 11  
φ140,160: Max. 13

• Bore φ40 to φ160

• Bore φ180 to φ250

- The rod side of the 40 mm bore cylinder with rod A is provided with a fixed cushion.
- The positions of cushion valves depend on the cylinder bore.
- For the thread length (dimension A) when the lock nut is used, refer to "Thread length of rod end with lock nut."
- If the port size exceeds 1 inch, it is recommended to order G thread or pipe flange. In such a case, contact us. (Order made)
- For the cylinders with bores from 180 to 250 mm, the cover fixing method varies depending on the stroke as shown below.

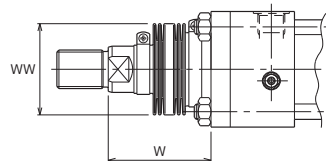
• If you want to change the rod protrusion length, specify dimension W.

Fixing method	Tie rod type	Tube flange type
stroke	up to 1500	1501 to 2000

Note) The tube flange cylinder has the same dimensions as the tie rod cylinder.

### With Boots

210C-1/THC1 [Bore] K



	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Heat proof	80°C	130°C	200°C

Notes)

- Remember that the heat proof field in the table above shows the allowable temperatures for the boots, not for the cylinder.
- The boots have been mounted at our factory prior to delivery.
- Conex is the registered trademark of Teijin Limited.

### Dimension W

#### Rod B

Nylon tarpaulin	φ40 · φ50	1/3.5 stroke+X
Chloroprene	φ63 to φ100	1/4 stroke+X
	φ125 to φ160	1/5 stroke+X
Conex	φ40 · φ50	1/2.5 stroke+X
	φ63 to φ100	1/3 stroke+X
	φ125 · φ140	1/3.5 stroke+X
	φ160	1/4 stroke+X

#### Rod A

Nylon tarpaulin	φ40	1/3.5 stroke+X
Chloroprene	φ50 to φ80	1/4 stroke+X
	φ100 to φ160	1/5 stroke+X
Conex	φ40	1/2.5 stroke+X
	φ50 to φ80	1/3 stroke+X
	φ100	1/3.5 stroke+X
	φ125 to φ160	1/4 stroke+X

- If the calculated value has a fractional part, round it up.
- For the dimensions of 180 to 250 mm bore cylinders with boots, contact us.

### Dimensional Table

Symbol	Rod B								Rod A							
	A	B	KK	MM	S	SL	VD	W	A	B	KK	MM	S	SL	VD	W
φ40	25	φ40	M20×1.5	φ22	19	11	11	32	30	φ43	M24×1.5	φ28	24	14	15	32
φ50	30	φ46	M24×1.5	φ28	24	14	13	36	35	φ55	M30×1.5	φ36	30	16	15	36
φ63	35	φ55	M30×1.5	φ36	30	16	15	43	45	φ65	M39×1.5	φ45	41	20	19	43
φ80	45	φ65	M39×1.5	φ45	41	20	12	48	55	φ80	M48×1.5	φ56	50	23	19	48
φ100	55	φ80	M48×1.5	φ56	50	23	15	53	75	φ95	M64×2	φ70	65	27	19	53
φ125	75	φ95	M64×2	φ70	65	27	19	60	90	φ120	M80×2	φ90	-	-	28	60
φ140	80	φ105	M72×2	φ80	75	31	15	60	105	φ130	M95×2	φ100	-	-	24	60
φ160	90	φ120	M80×2	φ90	85	33	15	60	110	φ140	M100×2	φ110	-	-	24	60
φ180	105	φ130	M95×2	φ100	-	-	10	55	-	-	-	-	-	-	-	-
φ200	110	φ140	M100×2	φ110	-	-	10	55	-	-	-	-	-	-	-	-
φ224	130	φ155	M120×2	φ125	-	-	10	60	-	-	-	-	-	-	-	-
φ250	140	φ170	M130×2	φ140	-	-	10	65	-	-	-	-	-	-	-	-

Symbol	AE	DE	E	EE	FB	FE	FF	FP	HL	MF	PJ	R	TF	UF	ZF
φ40	12	φ25.5	□65	Rc3/8	φ11	73	G3/8	38	147	15	94	46	95	118	194
φ50	14	φ30	□80	Rc1/2	φ14	85	G1/2	42	162	20	102	58	115	145	218
φ63	14	φ30	□94	Rc1/2	φ18	98	G1/2	47	174	24	109	65	132	165	241
φ80	16	φ36.9	□114	Rc3/4	φ18	125	G3/4	57	202	24	125	87	155	190	274
φ100	16	φ36.9	□135	Rc3/4	φ22	150	G3/4	61	213	31	132	109	190	230	297
φ125	18	φ46.1	□165	Rc1	φ26	175	G1	73	248	37	150	130	224	272	345
φ140	18	φ46.1	□192	Rc1	φ30	195	G1	81	266	41	160	145	250	300	367
φ160	18	φ46.1	□218	Rc1	φ33	225	G1	86	290	46	179	170	285	345	396
φ180	-	-	□255	Rc1 1/4	φ39	265	-	99	330	61	202	200	345	412	446
φ200	-	-	□295	Rc1 1/2	φ48	315	-	115	369	66	220	230	412	500	490
φ224	-	-	□325	Rc1 1/2	φ48	335	-	115	378	71	229	250	425	515	509
φ250	-	-	□355	Rc2	φ56	375	-	131	428	76	252	275	480	585	569

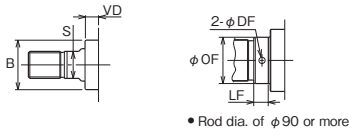
### With Boots

Bore	Symbol	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
WW	Rod B	φ50	φ63	φ71	φ80	φ100	φ125	φ125	φ140
	Rod A	φ63	φ71	φ80	φ100	φ125	φ140	φ160	φ180
X	Rod B	45	45	55	55	55	65	65	65
	Rod A	45	55	55	55	65	65	65	65

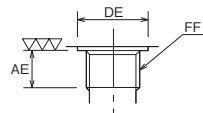
CAD/DATA 210C-1/THC1 [Bore] A. B is available.

### CA

210C-1 [2] CA [Bore] [B] [Stroke]

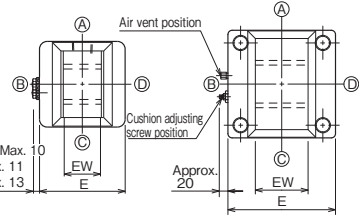
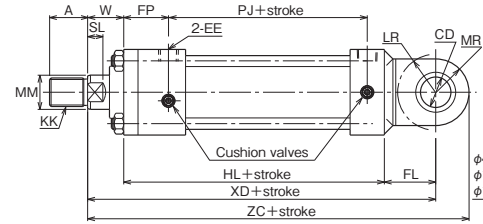


Port G thread type



Rod dia.	OF	DF	LF
$\phi 90$	$\phi 89.5$	$\phi 12$	28
$\phi 100$	$\phi 99.5$	$\phi 12$	28
$\phi 110$	$\phi 109.5$	$\phi 15$	30
$\phi 125$	$\phi 124$	$\phi 15$	35
$\phi 140$	$\phi 139$	$\phi 15$	35

Note) The diameter of the rod B of 160 mm bore cylinder is 90 mm, but it is the width across flats.



- The rod side of the 40 mm bore cylinder with rod A is provided with a fixed cushion.
- The positions of cushion valves depend on the cylinder bore.
- For the thread length (dimension A) when the lock nut is used, refer to "Thread length of rod end with lock nut."
- If the port size exceeds 1 inch, it is recommended to order G thread or pipe flange. In such a case, contact us. (Order made)
- For the cylinders with bores from 180 to 250 mm, the cover fixing method varies depending on the stroke as shown below.

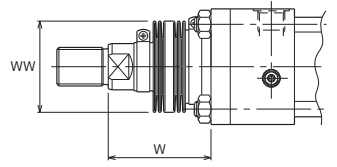
• If you want to change the rod protrusion length, specify dimension W.

Fixing method	Tie rod type	Tube flange type
stroke	up to 1500	1501 to 2000

Note) The tube flange cylinder has the same dimensions as the tie rod cylinder.

### With Boots

210C-1/THC1 [Bore] K



	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Heat proof	80°C	130°C	200°C

Notes)  
 • Remember that the heat proof field in the table above shows the allowable temperatures for the boots, not for the cylinder.  
 • The boots have been mounted at our factory prior to delivery.  
 • Conex is the registered trademark of Teijin Limited.

### Dimension W Rod B

Nylon tarpaulin	$\phi 40 \cdot \phi 50$	1/3.5 stroke+X
Chloroprene	$\phi 63$ to $\phi 100$	1/4 stroke+X
	$\phi 125$ to $\phi 160$	1/5 stroke+X
Conex	$\phi 40 \cdot \phi 50$	1/2.5 stroke+X
	$\phi 63$ to $\phi 100$	1/3 stroke+X
	$\phi 125 \cdot \phi 140$	1/3.5 stroke+X
	$\phi 160$	1/4 stroke+X

### Rod A

Nylon tarpaulin	$\phi 40$	1/3.5 stroke+X
Chloroprene	$\phi 50$ to $\phi 80$	1/4 stroke+X
	$\phi 100$ to $\phi 160$	1/5 stroke+X
Conex	$\phi 40$	1/2.5 stroke+X
	$\phi 50$ to $\phi 80$	1/3 stroke+X
	$\phi 100$	1/3.5 stroke+X
	$\phi 125$ to $\phi 160$	1/4 stroke+X

- If the calculated value has a fractional part, round it up.
- For the dimensions of 180 to 250 mm bore cylinders with boots, contact us.

### Dimensional Table

Symbol Bore	Rod B							Rod A								
	A	B	KK	MM	S	SL	VD	W	A	B	KK	MM	S	SL	VD	W
$\phi 40$	25	$\phi 40$	M20×1.5	$\phi 22$	19	11	11	32	30	$\phi 43$	M24×1.5	$\phi 28$	24	14	15	32
$\phi 50$	30	$\phi 46$	M24×1.5	$\phi 28$	24	14	13	36	35	$\phi 55$	M30×1.5	$\phi 36$	30	16	15	36
$\phi 63$	35	$\phi 55$	M30×1.5	$\phi 36$	30	16	15	43	45	$\phi 65$	M39×1.5	$\phi 45$	41	20	19	43
$\phi 80$	45	$\phi 65$	M39×1.5	$\phi 45$	41	20	12	48	55	$\phi 80$	M48×1.5	$\phi 56$	50	23	19	48
$\phi 100$	55	$\phi 80$	M48×1.5	$\phi 56$	50	23	15	53	75	$\phi 95$	M64×2	$\phi 70$	65	27	19	53
$\phi 125$	75	$\phi 95$	M64×2	$\phi 70$	65	27	19	60	90	$\phi 120$	M80×2	$\phi 90$	-	-	28	60
$\phi 140$	80	$\phi 105$	M72×2	$\phi 80$	75	31	15	60	105	$\phi 130$	M95×2	$\phi 100$	-	-	24	60
$\phi 160$	90	$\phi 120$	M80×2	$\phi 90$	85	33	15	60	110	$\phi 140$	M100×2	$\phi 110$	-	-	24	60
$\phi 180$	105	$\phi 130$	M95×2	$\phi 100$	-	-	10	55	-	-	-	-	-	-	-	-
$\phi 200$	110	$\phi 140$	M100×2	$\phi 110$	-	-	10	55	-	-	-	-	-	-	-	-
$\phi 224$	130	$\phi 155$	M120×2	$\phi 125$	-	-	10	60	-	-	-	-	-	-	-	-
$\phi 250$	140	$\phi 170$	M130×2	$\phi 140$	-	-	10	65	-	-	-	-	-	-	-	-

Symbol Bore	AE	CD	DE	E	EE	EW	FF	FL	FP	HL	LR	MR	PJ	XD	ZC
$\phi 40$	12	$\phi 20H10$	$\phi 25.5$	$\square 65$	Rc3/8	$25_{-0.1}^{-0.4}$	G3/8	35	38	147	R25	R25	94	214	239
$\phi 50$	14	$\phi 25H10$	$\phi 30$	$\square 80$	Rc1/2	$32_{-0.1}^{-0.4}$	G1/2	44	42	162	R32	R30	102	242	272
$\phi 63$	14	$\phi 32H10$	$\phi 30$	$\square 94$	Rc1/2	$40_{-0.1}^{-0.4}$	G1/2	54	47	174	R40	R35	109	271	306
$\phi 80$	16	$\phi 40H10$	$\phi 36.9$	$\square 114$	Rc3/4	$50_{-0.1}^{-0.4}$	G3/4	66	57	202	R50	R40	125	316	356
$\phi 100$	16	$\phi 50H10$	$\phi 36.9$	$\square 135$	Rc3/4	$63_{-0.1}^{-0.4}$	G3/4	79	61	213	R63	R50	132	345	395
$\phi 125$	18	$\phi 63H10$	$\phi 46.1$	$\square 165$	Rc1	$80_{-0.1}^{-0.6}$	G1	90	73	248	R71	R63	150	398	461
$\phi 140$	18	$\phi 70H10$	$\phi 46.1$	$\square 192$	Rc1	$90_{-0.1}^{-0.6}$	G1	99	81	266	R80	R70	160	425	495
$\phi 160$	18	$\phi 80H10$	$\phi 46.1$	$\square 218$	Rc1	$100_{-0.1}^{-0.6}$	G1	110	86	290	R90	R80	179	460	540
$\phi 180$	-	$\phi 90H10$	-	$\square 255$	Rc1 1/4	$125_{-0.1}^{-0.6}$	-	145	99	330	R120	R108	202	530	638
$\phi 200$	-	$\phi 100H10$	-	$\square 295$	Rc1 1/2	$125_{-0.1}^{-0.6}$	-	155	115	369	R130	R120	220	579	699
$\phi 224$	-	$\phi 112H10$	-	$\square 325$	Rc1 1/2	$140_{-0.1}^{-0.6}$	-	175	115	378	R150	R135	229	613	748
$\phi 250$	-	$\phi 125H10$	-	$\square 355$	Rc2	$160_{-0.1}^{-0.6}$	-	195	131	428	R165	R150	252	688	838

### With Boots

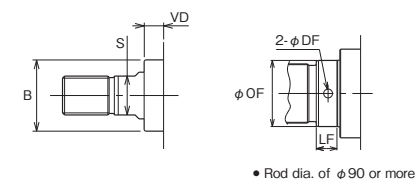
Bore	Symbol	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 160$
		WW	Rod B	$\phi 50$	$\phi 63$	$\phi 71$	$\phi 80$	$\phi 100$	$\phi 125$
	Rod A	$\phi 63$	$\phi 71$	$\phi 80$	$\phi 100$	$\phi 125$	$\phi 140$	$\phi 160$	$\phi 180$
X	Rod B	45	45	55	55	55	65	65	65
	Rod A	45	55	55	55	65	65	65	65



CAD/DATA 210C-1/THC1 [Bore] A. B is available.

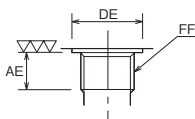
### CB

210C-1 [2] CB [Bore] [B] B Stroke



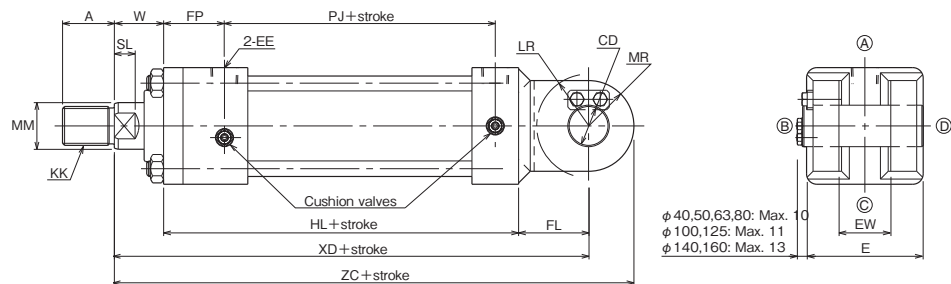
• Rod dia. of φ90 or more

Port G thread type



Rod dia.	OF	DF	LF
φ90	φ89.5	φ12	28
φ100	φ99.5	φ12	28
φ110	φ109.5	φ15	30

Note) The diameter of the rod B of 160 mm bore cylinder is 90 mm, but it is the width across flats.



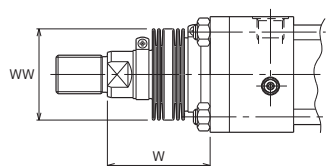
φ 40,50,63,80: Max. 10  
φ 100,125: Max. 11  
φ 140,160: Max. 13

- The rod side of the 40 mm bore cylinder with rod A is provided with a fixed cushion.
- The positions of cushion valves depend on the cylinder bore.
- For the thread length (dimension A) when the lock nut is used, refer to "Thread length of rod end with lock nut."

- If you want to change the rod protrusion length, specify dimension W.

### With Boots

210C-1/THC1 [Bore] K



	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Heat proof	80°C	130°C	200°C

Notes)

- Remember that the heat proof field in the table above shows the allowable temperatures for the boots, not for the cylinder.
- The boots have been mounted at our factory prior to delivery.
- Conex is the registered trademark of Teijin Limited.

### Dimension W

#### Rod B

Nylon tarpaulin	(φ40 · φ50	1/3.5 stroke+X
Chloroprene	(φ63 to φ100	1/4 stroke+X
	(φ125 to φ160	1/5 stroke+X

Conex	(φ40 · φ50	1/2.5 stroke+X
	(φ63 to φ100	1/3 stroke+X
	(φ125 · φ140	1/3.5 stroke+X
	(φ160	1/4 stroke+X

#### Rod A

Nylon tarpaulin	(φ40	1/3.5 stroke+X
Chloroprene	(φ50 to φ80	1/4 stroke+X
	(φ100 to φ160	1/5 stroke+X

Conex	(φ40	1/2.5 stroke+X
	(φ50 to φ80	1/3 stroke+X
	(φ100	1/3.5 stroke+X
	(φ125 to φ160	1/4 stroke+X

- If the calculated value has a fractional part, round it up.

### Dimensional Table

Symbol Bore	Rod B								Rod A							
	A	B	KK	MM	S	SL	VD	W	A	B	KK	MM	S	SL	VD	W
φ40	25	φ40	M20×1.5	φ22	19	11	11	32	30	φ43	M24×1.5	φ28	24	14	15	32
φ50	30	φ46	M24×1.5	φ28	24	14	13	36	35	φ55	M30×1.5	φ36	30	16	15	36
φ63	35	φ55	M30×1.5	φ36	30	16	15	43	45	φ65	M39×1.5	φ45	41	20	19	43
φ80	45	φ65	M39×1.5	φ45	41	20	12	48	55	φ80	M48×1.5	φ56	50	23	19	48
φ100	55	φ80	M48×1.5	φ56	50	23	15	53	75	φ95	M64×2	φ70	65	27	19	53
φ125	75	φ95	M64×2	φ70	65	27	19	60	90	φ120	M80×2	φ90	-	-	28	60
φ140	80	φ105	M72×2	φ80	75	31	15	60	105	φ130	M95×2	φ100	-	-	24	60
φ160	90	φ120	M80×2	φ90	85	33	15	60	110	φ140	M100×2	φ110	-	-	24	60

Symbol Bore	AE	CD	DE	E	EE	EW	FF	FL	FP	HL	LR	MR	PJ	XD	ZC
φ40	12	φ20 <sup>H10/18</sup>	φ25.5	□65	Rc3/8	25 <sup>+0.4/+0.1</sup>	G3/8	35	38	147	R25	R25	94	214	239
φ50	14	φ25 <sup>H10/18</sup>	φ30	□80	Rc1/2	32 <sup>+0.4/+0.1</sup>	G1/2	44	42	162	R32	R30	102	242	272
φ63	14	φ32 <sup>H10/18</sup>	φ30	□94	Rc1/2	40 <sup>+0.4/+0.1</sup>	G1/2	54	47	174	R40	R35	109	271	306
φ80	16	φ40 <sup>H10/18</sup>	φ36.9	□114	Rc3/4	50 <sup>+0.4/+0.1</sup>	G3/4	66	57	202	R50	R40	125	316	356
φ100	16	φ50 <sup>H10/18</sup>	φ36.9	□135	Rc3/4	63 <sup>+0.4/+0.1</sup>	G3/4	79	61	213	R63	R50	132	345	395
φ125	18	φ63 <sup>H10/18</sup>	φ46.1	□165	Rc1	80 <sup>+0.6/+0.1</sup>	G1	90	73	248	R71	R63	150	398	461
φ140	18	φ70 <sup>H10/18</sup>	φ46.1	□192	Rc1	90 <sup>+0.6/+0.1</sup>	G1	99	81	266	R80	R70	160	425	495
φ160	18	φ80 <sup>H10/18</sup>	φ46.1	□218	Rc1	100 <sup>+0.6/+0.1</sup>	G1	110	86	290	R90	R80	179	460	540

### With Boots

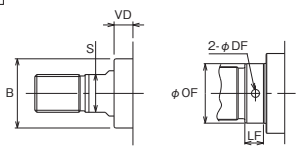
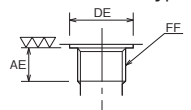
Bore	Symbol	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
WW	Rod B	φ50	φ63	φ71	φ80	φ100	φ125	φ125	φ140
	Rod A	φ63	φ71	φ80	φ100	φ125	φ140	φ160	φ180
X	Rod B	45	45	55	55	55	65	65	65
	Rod A	45	55	55	55	65	65	65	65

CAD/DATA 210C-1/THC1 [Bore] A. B is available.

### TA

210C-1 [2] TA [Bore] [B] B Stroke

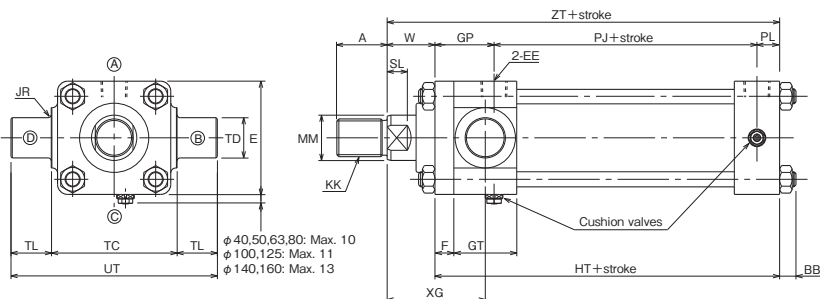
Port G thread type



Rod dia.	OF	DF	LF
φ90	φ89.5	φ12	28
φ100	φ99.5	φ12	28
φ110	φ109.5	φ15	30

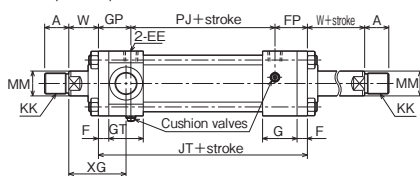
Note) The diameter of the rod B of 160 mm bore cylinder is 90 mm, but it is the width across flats.

• Rod dia. of φ90 or more



### Double acting double rod (rod B)

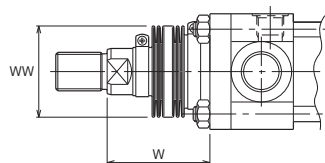
• Bore φ40 to φ160



- The rod side of the 40 mm bore cylinder with rod A is provided with a fixed cushion.
- The positions of cushion valves depend on the cylinder bore.
- For the thread length (dimension A) when the lock nut is used, refer to "Thread length of rod end with lock nut."
- If you want to change the rod protrusion length, specify dimension W.
- The port and cushion positions on the rod side are only (A) or (C) for structural reasons.

### With Boots

210C-1/THC1 [Bore] K



	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Heat proof	80°C	130°C	200°C

Notes)

- Remember that the heat proof field in the table above shows the allowable temperatures for the boots, not for the cylinder.
- The boots have been mounted at our factory prior to delivery.
- Conex is the registered trademark of Teijin Limited.

### Rod A

Nylon tarpaulin	φ40	1/3.5 stroke+X
Chloroprene	φ50 to φ80	1/4 stroke+X
	φ100 to φ160	1/5 stroke+X

Conex	φ40	1/2.5 stroke+X
	φ50 to φ80	1/3 stroke+X
	φ100	1/3.5 stroke+X
	φ125 to φ160	1/4 stroke+X

### Dimension W Rod B

Nylon tarpaulin	φ40 · φ50	1/3.5 stroke+X
Chloroprene	φ63 to φ100	1/4 stroke+X
	φ125 to φ160	1/5 stroke+X

Conex	φ40 · φ50	1/2.5 stroke+X
	φ63 to φ100	1/3 stroke+X
	φ125 · φ140	1/3.5 stroke+X
	φ160	1/4 stroke+X

- If the calculated value has a fractional part, round it up.

### Dimensional Table

Symbol Bore	Rod B							Rod A								
	A	B	KK	MM	S	SL	VD	W	A	B	KK	MM	S	SL	VD	W
φ40	25	φ40	M20×1.5	φ22	19	11	11	32	30	φ43	M24×1.5	φ28	24	14	15	32
φ50	30	φ46	M24×1.5	φ28	24	14	13	36	35	φ55	M30×1.5	φ36	30	16	15	36
φ63	35	φ55	M30×1.5	φ36	30	16	15	43	45	φ65	M39×1.5	φ45	41	20	19	43
φ80	45	φ65	M39×1.5	φ45	41	20	12	48	55	φ80	M48×1.5	φ56	50	23	19	48
φ100	55	φ80	M48×1.5	φ56	50	23	15	53	75	φ95	M64×2	φ70	65	27	19	53
φ125	75	φ95	M64×2	φ70	65	27	19	60	90	φ120	M80×2	φ90	-	-	28	60
φ140	80	φ105	M72×2	φ80	75	31	15	60	105	φ130	M95×2	φ100	-	-	24	60
φ160	90	φ120	M80×2	φ90	85	33	15	60	110	φ140	M100×2	φ110	-	-	24	60

Symbol Bore	AE	BB	DE	E	EE	F	FF	FP	G	GP	GT	HT	JR	JT	PJ	PL	TC
φ40	12	11	φ25.5	□65	Rc3/8	11	G3/8	38	43	38	43	147	R2.5	170	94	15	70 <sup>0</sup> <sub>-0.3</sub>
φ50	14	13	φ30	□80	Rc1/2	13	G1/2	42	47	42	47	162	R2.5	186	102	18	85 <sup>0</sup> <sub>-0.35</sub>
φ63	14	14	φ30	□94	Rc1/2	15	G1/2	47	50	47	50	174	R2.5	203	109	18	100 <sup>0</sup> <sub>-0.35</sub>
φ80	16	16	φ36.9	□114	Rc3/4	18	G3/4	57	60	57	60	202	R3	239	125	20	125 <sup>0</sup> <sub>-0.4</sub>
φ100	16	18	φ36.9	□135	Rc3/4	22	G3/4	61	60	66	65	218	R3	259	132	20	155 <sup>0</sup> <sub>-0.4</sub>
φ125	18	21	φ46.1	□165	Rc1	24	G1	73	75	73	75	248	R4	296	150	25	195 <sup>0</sup> <sub>-0.46</sub>
φ140	18	25	φ46.1	□192	Rc1	32	G1	81	75	86	80	271	R4	327	160	25	220 <sup>0</sup> <sub>-0.46</sub>
φ160	18	27	φ46.1	□218	Rc1	37	G1	86	75	111	100	315	R4	376	179	25	240 <sup>0</sup> <sub>-0.46</sub>

Symbol Bore	TD	TL	UT	XG	ZT
φ40	φ20e9	20	110	65	179
φ50	φ25e9	25	135	72	198
φ63	φ32e9	32	164	83	217
φ80	φ40e9	40	205	96	250
φ100	φ50e9	50	255	107	271
φ125	φ63e9	63	321	122	308
φ140	φ70e9	70	360	132	331
φ160	φ80e9	80	400	147	375

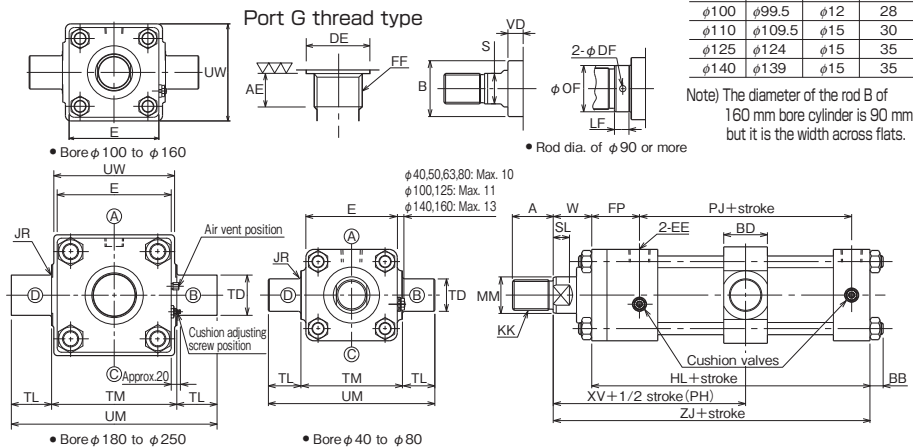
### With Boots

Bore	Symbol	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
		WW	Rod B	φ50	φ63	φ71	φ80	φ100	φ125
X	Rod B	45	45	55	55	55	65	65	65
	Rod A	45	55	55	55	65	65	65	65

CAD/DATA 210C-1/THC1 [Bore] A. B is available.

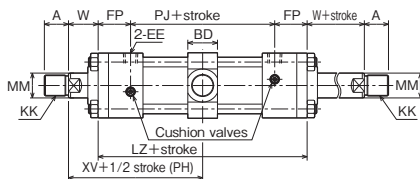
### TC

210C-1 [2] TC [Bore] [B] B Stroke



### Double acting double rod (rod B)

• Bore φ40 to φ160

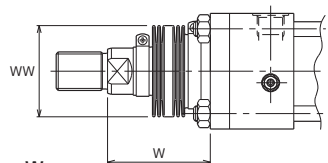


Fixing method	Tie rod type	Tube flange type
stroke	up to 1500	1501 to 2000

Note) The tube flange cylinder has the same dimensions as the tie rod cylinder.

### With Boots

210C-1/THC1 [Bore] K



	Standard	Semi-standard	
Material	Nylon tarpaulin	Chloroprene	Conex
Heat proof	80°C	130°C	200°C

Notes)

- Remember that the heat proof field in the table above shows the allowable temperatures for the boots, not for the cylinder.
- The boots have been mounted at our factory prior to delivery.
- Conex is the registered trademark of Teijin Limited.

### Rod A

Nylon tarpaulin	φ40	1/3.5 stroke+X
Chloroprene	φ50 to φ80	1/4 stroke+X
	φ100 to φ160	1/5 stroke+X

### Conex

	φ40	1/2.5 stroke+X
	φ50 to φ80	1/3 stroke+X
	φ100	1/3.5 stroke+X
	φ125 to φ160	1/4 stroke+X

### Dimension W

Nylon tarpaulin	φ40 · φ50	1/3.5 stroke+X
	φ63 to φ100	1/4 stroke+X
	φ125 to φ160	1/5 stroke+X
Chloroprene	φ40 · φ50	1/2.5 stroke+X
	φ63 to φ100	1/3 stroke+X
	φ125 · φ140	1/3.5 stroke+X
	φ160	1/4 stroke+X
	φ160	1/4 stroke+X

- If the calculated value has a fractional part, round it up.
- For the dimensions of 180 to 250 mm bore cylinders with boots, contact us.

### Dimensional Table

Symbol	Rod B							Rod A								
	A	B	KK	MM	S	SL	VD	W	A	B	KK	MM	S	SL	VD	W
φ40	25	φ40	M20×1.5	φ22	19	11	11	32	30	φ43	M24×1.5	φ28	24	14	15	32
φ50	30	φ46	M24×1.5	φ28	24	14	13	36	35	φ55	M30×1.5	φ36	30	16	15	36
φ63	35	φ55	M30×1.5	φ36	30	16	15	43	45	φ65	M39×1.5	φ45	41	20	19	43
φ80	45	φ65	M39×1.5	φ45	41	20	12	48	55	φ80	M48×1.5	φ56	50	23	19	48
φ100	55	φ85	M48×1.5	φ56	50	23	15	53	75	φ95	M64×2	φ70	65	27	19	53
φ125	75	φ95	M64×2	φ70	65	27	19	60	90	φ120	M80×2	φ90	-	-	28	60
φ140	80	φ105	M72×2	φ80	75	31	15	60	105	φ130	M95×2	φ100	-	-	24	60
φ160	90	φ120	M80×2	φ90	85	33	15	60	110	φ140	M100×2	φ110	-	-	24	60
φ180	105	φ130	M95×2	φ100	-	-	10	55	-	-	-	-	-	-	-	-
φ200	110	φ140	M100×2	φ110	-	-	10	55	-	-	-	-	-	-	-	-
φ224	130	φ155	M120×2	φ125	-	-	10	60	-	-	-	-	-	-	-	-
φ250	140	φ170	M130×2	φ140	-	-	10	65	-	-	-	-	-	-	-	-

Symbol	AE	BB	BD	DE	E	EE	FF	FP	HL	JR	LZ	Min. dimension PH	PJ	TD
φ40	12	11	33	φ25.5	□65	Rc3/8	G3/8	38	147	R2.5	170	102.5	94	φ20e9
φ50	14	13	33	φ30	□80	Rc1/2	G1/2	42	162	R2.5	186	112.5	102	φ25e9
φ63	14	14	43	φ30	□94	Rc1/2	G1/2	47	174	R2.5	203	129.5	109	φ32e9
φ80	16	16	53	φ36.9	□114	Rc3/4	G3/4	57	202	R3	239	152.5	125	φ40e9
φ100	16	18	63	φ36.9	□135	Rc3/4	G3/4	61	213	R3	254	166.5	132	φ50e9
φ125	18	21	78	φ46.1	□165	Rc1	G1	73	248	R4	296	198	150	φ63e9
φ140	18	25	88	φ46.1	□192	Rc1	G1	81	266	R4	322	211	160	φ70e9
φ160	18	27	98	φ46.1	□218	Rc1	G1	86	290	R4	351	221	179	φ80e9
φ180	-	32	108	-	□255	Rc1 1/4	-	99	330	R5	-	286	202	φ90e9
φ200	-	37	118	-	□295	Rc1 1/2	-	115	369	R5	-	313	220	φ100e9
φ224	-	39	137	-	□325	Rc1 1/2	-	115	378	R5	-	332.5	229	φ112e9
φ250	-	41	147	-	□355	Rc2	-	131	428	R5	-	370.5	252	φ125e9

Symbol	TL	TM	UM	UW	XV	ZJ
φ40	20	70 <sup>0</sup> <sub>-0.3</sub>	110	-	117	179
φ50	25	85 <sup>0</sup> <sub>-0.35</sub>	135	-	129	198
φ63	32	100 <sup>0</sup> <sub>-0.35</sub>	164	-	144.5	217
φ80	40	125 <sup>0</sup> <sub>-0.4</sub>	205	-	167.5	250
φ100	50	155 <sup>0</sup> <sub>-0.4</sub>	255	□146	180	266
φ125	63	195 <sup>0</sup> <sub>-0.46</sub>	321	□185	208	308
φ140	70	220 <sup>0</sup> <sub>-0.46</sub>	360	□210	221	326
φ160	80	240 <sup>0</sup> <sub>-0.46</sub>	400	□230	235.5	350
φ180	90	280 <sup>0</sup> <sub>-0.8</sub>	460	□270	255	385
φ200	100	320 <sup>0</sup> <sub>-0.8</sub>	520	□305	280	424
φ224	112	355 <sup>0</sup> <sub>-0.8</sub>	579	□335	289.5	438
φ250	125	400 <sup>0</sup> <sub>-0.8</sub>	650	□375	322	493

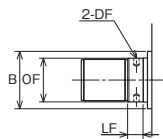
### Possible Minimum Stroke of TC Style

Bore	Minimum stroke
φ180	62
φ200	66
φ224	86
φ250	97

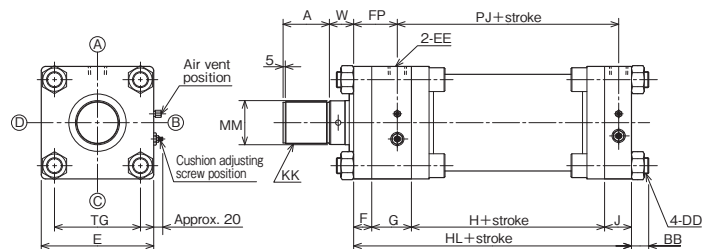
### With Boots

Bore	Symbol	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
WW	Rod B	φ50	φ63	φ71	φ80	φ100	φ125	φ125	φ140
	Rod A	φ63	φ71	φ80	φ100	φ125	φ140	φ160	φ180
X	Rod B	45	45	55	55	55	65	65	65
	Rod A	45	55	55	55	65	65	65	65

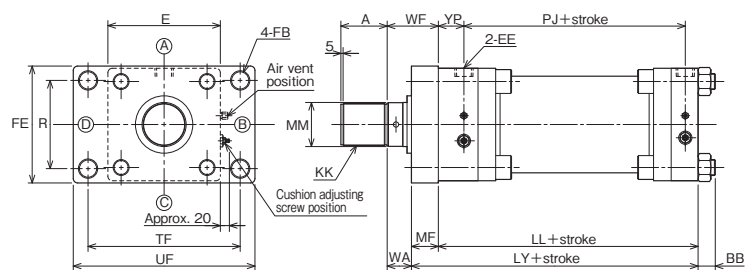
Tube Flange Type (Stroke: 1501 to 2000 mm)



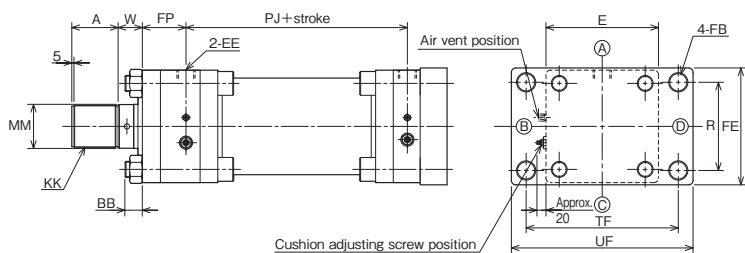
● SD style



● FA style



● FB style



Dimensional Table/Common

Symbol Bore	A	B	DF	E	EE	KK	LF	MM	OF	PJ
φ180	105	φ130	φ12	255	Rc1 <sup>1</sup> / <sub>4</sub>	M95×2	28	φ100	φ99.5	202
φ200	110	φ140	φ15	295	Rc1 <sup>1</sup> / <sub>2</sub>	M100×2	30	φ110	φ109.5	220
φ224	130	φ155	φ15	325	Rc1 <sup>1</sup> / <sub>2</sub>	M120×2	35	φ125	φ123	229
φ250	140	φ170	φ15	355	Rc2	M130×2	35	φ140	φ138	252

Dimensional Table/SD style

Symbol Bore	BB	DD	F	FP	G	H	HL	J	TG	W
φ180	40 or less	M36×1.5	41	99	106	106	330	77	195	55
φ200	45 or less	M42×1.5	51	115	116	116	369	86	220	55
φ224	46 or less	M45×1.5	51	115	116	125	378	86	243	60
φ250	49 or less	M48×1.5	56	131	136	130	428	106	268	65

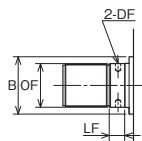
Dimensional Table/FA style

Symbol Bore	BB	FB	FE	LL	LY	MF	TF	UF	WA	WF	YP
φ180	40 or less	φ39	265	289	350	61	345	412	55	116	58
φ200	45 or less	φ48	315	318	384	66	412	500	55	121	64
φ224	46 or less	φ48	335	327	398	71	425	515	60	131	64
φ250	49 or less	φ56	375	372	448	76	480	585	65	141	75

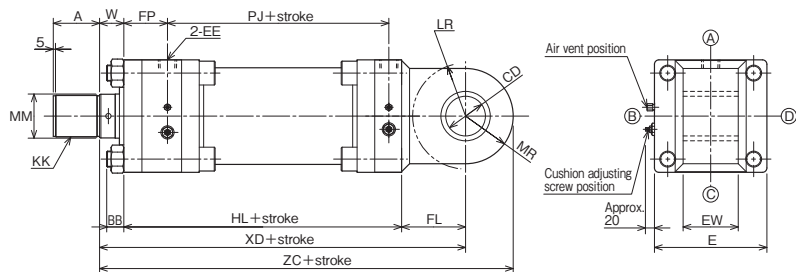
Dimensional Table/FB style

Symbol Bore	BB	FB	FE	FP	HL	MF	R	TF	UF	W	ZF
φ180	40 or less	φ39	265	99	330	61	200	345	412	55	446
φ200	45 or less	φ48	315	115	369	66	230	412	500	55	490
φ224	46 or less	φ48	335	155	378	71	250	425	515	60	509
φ250	49 or less	φ56	375	131	428	76	275	480	585	65	569

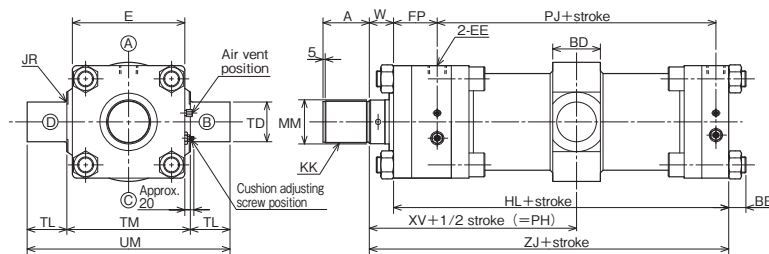
### Tube Flange Type (Stroke: 1501 to 2000 mm)



#### ● CA style



#### ● TC style



### Dimensional Table/Common

Symbol Bore	A	B	DF	E	EE	KK	LF	MM	OF	PJ	W
φ180	105	φ130	φ12	255	Rc1 <sup>1</sup> / <sub>4</sub>	M95×2	28	φ100	φ99.5	202	55
φ200	110	φ140	φ15	295	Rc1 <sup>1</sup> / <sub>2</sub>	M100×2	30	φ110	φ109.5	220	55
φ224	130	φ155	φ15	325	Rc1 <sup>1</sup> / <sub>2</sub>	M120×2	35	φ125	φ123	229	60
φ250	140	φ170	φ15	355	Rc2	M130×2	35	φ140	φ138	252	65

### Dimensional Table/CA style

Symbol Bore	BB	CD	EW	FL	FP	HL	LR	MR	XD	ZC
φ180	40 or less	φ90H10	125 <sup>-0.1</sup> / <sub>-0.6</sub>	145	99	330	R120	R108	530	638
φ200	45 or less	φ100H10	125 <sup>-0.1</sup> / <sub>-0.6</sub>	155	115	369	R130	R120	579	699
φ224	46 or less	φ112H10	140 <sup>-0.1</sup> / <sub>-0.6</sub>	175	115	378	R150	R135	613	748
φ250	49 or less	φ125H10	160 <sup>-0.1</sup> / <sub>-0.6</sub>	195	131	428	R165	R150	688	838

### Dimensional Table/TC style

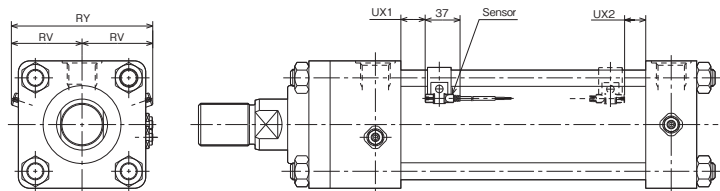
Symbol Bore	BB	BD	FP	HL	JR	Min. PH	TD	TL	TM	UM	XV	ZJ
φ180	40 or less	108	99	330	R5	625	φ90	90	280 <sup>0</sup> / <sub>-0.8</sub>	460	255	385
φ200	45 or less	118	115	369	R5	693	φ100	100	320 <sup>0</sup> / <sub>-0.8</sub>	520	280	424
φ224	46 or less	137	115	378	R5	720.5	φ112	112	355 <sup>0</sup> / <sub>-0.8</sub>	579	289.5	438
φ250	49 or less	147	131	428	R5	826.5	φ125	125	400 <sup>0</sup> / <sub>-0.8</sub>	650	322	493

Note) If dimension PH is smaller than the minimum value, contact us.

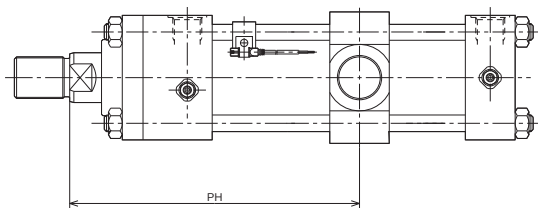


### Switch Set

210C-1R [2] [SD] [Bore B B] [Stroke - A B] [Sensor symbol] [Sensor quantity]



### Minimum dimension PH of Switch Set Cylinder 210C-1R



Note) TC style Switch Set Cylinders are made to order. Consult us in advance.

- The minimum dimension PH of a Switch Set Cylinder is the dimension obtained when the sensor is mounted on the rod side and the trunnion is moved toward the rod side as far as possible.

When boots are provided, dimension W changes. Specify dimension PH.

### Dimensional Table

Bore	Symbol	RV	RY	UX1		UX2		Min. dimension PH
				Reed sensor	Solid state sensor	Reed sensor	Solid state sensor	
φ40	Rod B	40	80	21	24	21	23	176
	Rod A			21	23	21	23	176
φ50	Rod B	46	92	23	25	23	25	187
	Rod A			23	25	23	25	187
φ63	Rod B	53	106	26	29	27	29	208
	Rod A			26	28	27	28	208
φ80	Rod B	61	122	31	34	32	33	236
	Rod A			34	33	32	33	236

Note) Dimension UX indicates the optimum sensor mounting position for detection of stroke end.

### Operating Range and Hysteresis

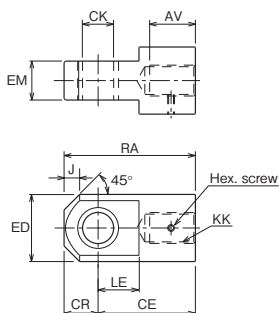
Bore	Reed sensor		Solid state sensor	
	Operating range	Hysteresis	Operating range	Hysteresis
φ40	9	1 or less	4	1 or less
φ50	10		5	
φ63	11		5	
φ80	12		6	

210C-1/THC1 [Bore] A. B CAD/DATA  
is available.



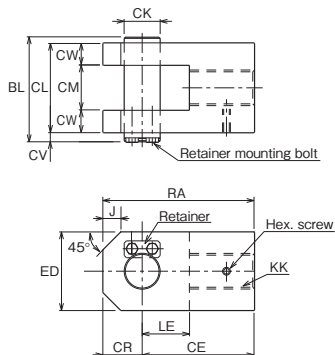
## Rod End Attachment

### ● Rod eye (T-end)



- If the rod A is used, change the rod end thread diameter to that of the rod B.

### ● Rod clevis (Y-end) with pin



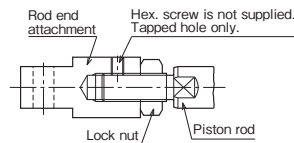
- If the rod A is used, change the rod end thread diameter to that of the rod B.

### ● Delivery of rod end attachment (T-end or Y-end)

- ① When the lock nut and rod end attachment are additionally ordered

The rod end attachment and lock nut are temporarily assembled to the piston rod for delivery. Since the lock nut is not tightened, tighten it after adjusting the position of the rod end attachment.

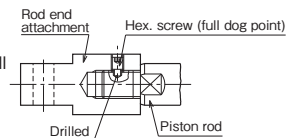
No hex. screw is supplied.



- ② When only the rod end attachment is additionally ordered (without lock nut)

The rod end attachment is tightened to the piston rod, and a drill hole is made on the piston rod for delivery.

If the drill hole is unnecessary, give us such instructions.



## Dimensional Table/Rod eye (T-end)

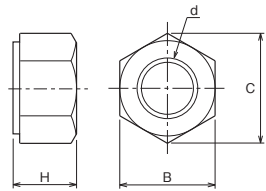
Symbol	Rod B										
	Part number	AV	CE	CK	CR	ED	EM	J	KK	LE	RA
φ40	RTH-20-2-H	32	70	φ20H10	22.5	φ45	25 <sup>-0.1</sup> <sub>-0.4</sub>	8	M20×1.5	27	92.5
φ50	RTH-24-3-H	35	80	φ25H10	30	φ55	32 <sup>-0.1</sup> <sub>-0.4</sub>	15	M24×1.5	34	110
φ63	RTH-30-2-H	40	95	φ32H10	35	φ70	40 <sup>-0.1</sup> <sub>-0.4</sub>	16	M30×1.5	42	130
φ80	RTH-39-2-H	53	110	φ40H10	40	φ80	50 <sup>-0.1</sup> <sub>-0.4</sub>	15	M39×1.5	52	150
φ100	RTH-48-2-H	62	135	φ50H10	50	φ98	63 <sup>-0.1</sup> <sub>-0.4</sub>	20	M48×1.5	65	185
φ125	RTH-64-3-H	80	160	φ63H10	63	φ118	80 <sup>-0.1</sup> <sub>-0.6</sub>	30	M64×2	75	223
φ140	RTH-72-3-H	87	180	φ70H10	70	φ138	90 <sup>-0.1</sup> <sub>-0.6</sub>	35	M72×2	82	250
φ160	RTH-80-3-H	96	195	φ80H10	80	φ158	100 <sup>-0.1</sup> <sub>-0.6</sub>	40	M80×2	94	275

## Dimensional Table/Rod clevis (Y-end) with pin

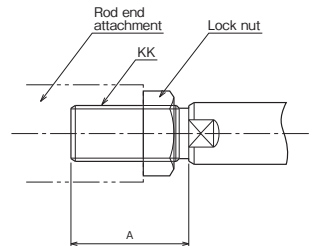
Symbol	Rod B													
	Part number	BL	CE	CK	CL	CM	CR	CV	CW	ED	J	KK	LE	RA
φ40	RYH-20-2-H	63	70	φ20 <sup>H10</sup> <sub>B</sub>	50	25 <sup>+0.4</sup> <sub>+0.1</sub>	22.5	8	12.5	45	8	M20×1.5	27	92.5
φ50	RYH-24-3-H	77	80	φ25 <sup>H10</sup> <sub>B</sub>	64	32 <sup>+0.4</sup> <sub>+0.1</sub>	30	8	16	60	15	M24×1.5	34	110
φ63	RYH-30-1-H	93	95	φ32 <sup>H10</sup> <sub>B</sub>	80	40 <sup>+0.4</sup> <sub>+0.1</sub>	35	8	20	70	16	M30×1.5	42	130
φ80	RYH-39-2-H	117	110	φ40 <sup>H10</sup> <sub>B</sub>	100	50 <sup>+0.4</sup> <sub>+0.1</sub>	40	12	25	80	15	M39×1.5	52	150
φ100	RYH-48-2-H	143	135	φ50 <sup>H10</sup> <sub>B</sub>	126	63 <sup>+0.4</sup> <sub>+0.1</sub>	50	12	31.5	100	20	M48×1.5	65	185
φ125	RYH-64-3-H	183	160	φ63 <sup>H10</sup> <sub>B</sub>	160	80 <sup>+0.6</sup> <sub>+0.1</sub>	63	18	40	120	30	M64×2	75	223
φ140	RYH-72-3-H	203	180	φ70 <sup>H10</sup> <sub>B</sub>	180	90 <sup>+0.6</sup> <sub>+0.1</sub>	70	18	45	140	35	M72×2	82	250
φ160	RYH-80-3-H	223	195	φ80 <sup>H10</sup> <sub>B</sub>	200	100 <sup>+0.6</sup> <sub>+0.1</sub>	80	18	50	160	40	M80×2	94	275

- Notes) ● The rod end attachments are dedicated to the rod B. To use them for the rod A, give instructions to change the rod A end thread diameter to that of the rod B.  
When the rod end attachment and the lock nut are used for a cylinder with the rod A, give instructions to change the rod end thread diameter to the thread diameter of the rod B and change dimension A to that for the use of lock nut.

● Lock nut

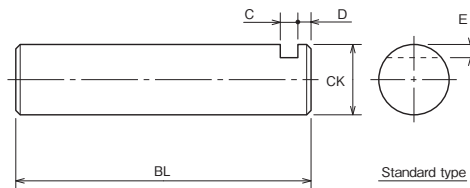


● Thread length of rod end with lock nut



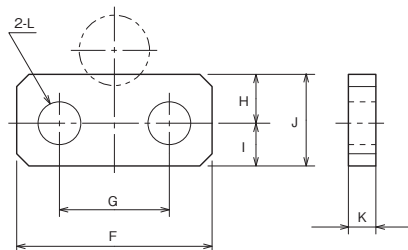
The standard fitting length of the rod end attachment and piston rod is about 80% of the thread diameter. Therefore, if you order a cylinder with a lock nut, dimension A is longer.

● Parallel pin



Standard type

● Retainer



Dimensional Table/Dimension A when lock nut is used (long thread)

Bore	Rod B		Rod A	
	A	KK	A	KK
φ40	45	M20 × 1.5	50	M24 × 1.5
φ50	50	M24 × 1.5	60	M30 × 1.5
φ63	60	M30 × 1.5	80	M39 × 1.5
φ80	80	M39 × 1.5	95	M48 × 1.5
φ100	95	M48 × 1.5	125	M64 × 2
φ125	125	M64 × 2	155	M80 × 2
φ140	140	M72 × 2	185	M95 × 2
φ160	155	M80 × 2	190	M100 × 2

Dimensional Table/Lock nut

Bore	Symbol	Rod B				Rod A				
		Part number	B	C	d	H	Part number	B	C	d
φ40	LNH-20F-1-H	30	34.6	M20 × 1.5	18	LNH-24F-1-H	36	41.6	M24 × 1.5	20
φ50	LNH-24F-1-H	36	41.6	M24 × 1.5	20	LNH-30F-1-H	46	53.1	M30 × 1.5	25
φ63	LNH-30F-1-H	46	53.1	M30 × 1.5	25	LNH-39F-1-H	60	69.3	M39 × 1.5	32
φ80	LNH-39F-1-H	60	69.3	M39 × 1.5	32	LNH-48F-1-H	75	86.6	M48 × 1.5	38
φ100	LNH-48F-1-H	75	86.6	M48 × 1.5	38	LNH-64F-1-H	95	109.7	M64 × 2	51
φ125	LNH-64F-1-H	95	109.7	M64 × 2	51	LNH-80F-1-H	115	132.8	M80 × 2	64
φ140	LNH-72F-1-H	105	121.2	M72 × 2	58	LNH-95F-1-H	135	155.9	M95 × 2	76
φ160	LNH-80F-1-H	115	132.8	M80 × 2	64	LNH-100F-1-H	145	167.4	M100 × 2	80

Dimensional Table/Parallel pin

Bore	Symbol	BL	C	CK	D	E
φ40		63	5	φ20	3	3
φ50		77	5	φ25	3	3.5
φ63		93	5	φ32	3	4
φ80		117	7	φ40	5	5
φ100		143	7	φ50	5	5
φ125		183	10	φ63	8	8
φ140		203	10	φ70	8	8
φ160		223	10	φ80	8	8

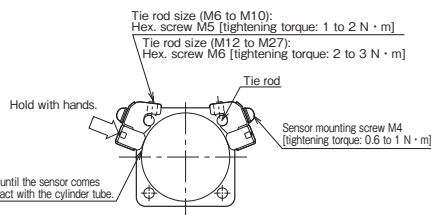
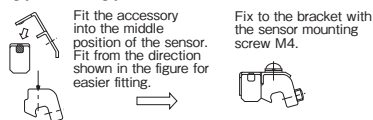
● The tolerance of CK is f8.

Dimensional Table/Retainer

Bore	Symbol	F	G	H	I	J	K	L	Mounting bolt size
φ40		32	18	7.5	7.5	15	4.5	φ7	M6
φ50		32	18	7.5	7.5	15	4.5	φ7	M6
φ63		32	18	7.5	7.5	15	4.5	φ7	M6
φ80		50	30	10	10	20	6	φ10	M8
φ100		65	40	12	10	22	6	φ12	M10
φ125		75	48	17	13	30	9	φ14	M12
φ140		75	48	17	13	30	9	φ14	M12
φ160		75	48	17	13	30	9	φ14	M12

## Setting method of sensor detecting position

## AX type/AZ type

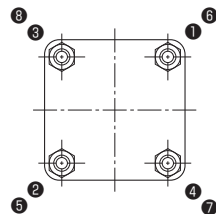


- Loosen the two hex. screws with a hex. wrench, and move them along the tie rod.
- Adjust the detecting position (for the 2-LED type, the position where the green lamp lights up) 2 to 5 mm (about half of the operating range is appropriate) before the required position where the sensor indicator lamp starts to light up (ON). Then, gently hold the top of the sensor so that the cylinder tube contacts the detecting face of the sensor, and clamp the hex. screw to an appropriate tightening torque.  
Note) Inappropriate tightening torque may cause the off-center of the sensor position.
- The indicating lamp lights up when the sensor is set to the ON position.
- Sensors can be mounted to any of four tie rods and on the most suitable position depending on the mounting space of the cylinder and wiring method.
- Mount a sensor to the most suitable position to detect the stroke end with the "sensor mounting dimension" (dimension UX).

## Notes on assembly

## Tightening of tie rods

- DO NOT tighten only one tie rod at a time, but tighten them gradually in the order shown in the right diagram. Uneven tightening of the tie rods can cause operation failure or stick-slip.
- The tie rod tightening torque depends on the mounting accessory and cylinder bore.



## Specified Tie Rod Tightening Torque Table (SD, LA, FA, FB, CA, CB, TA)

Bore (mm)	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160
Tie rod screw	M10×1.25	M12×1.25	M14×1.5	M16×1.5	M18×1.5	M22×1.5	M27×2	M30×2
Tightening torque (N · m)	41	70	120	170	280	500	880	1100

Use hex. nuts conforming to JIS B 1181 Class 2 (material: S45C). When tightening, apply molybdenum paste to the nuts.

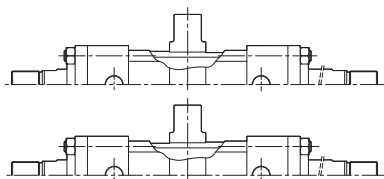
## Specified Tie Rod Tightening Torque Table (TC)

Bore (mm)	φ40	φ50	φ63	φ80	φ100	φ125	φ140	φ160	
Tie rod screw	M10×1.25	M12×1.25	M14×1.5	M16×1.5	M18×1.5	M22×1.5	M27×2	M30×2	
Tightening torque (N · m)	A	41	70	120	200	330	600	1050	1300
	B	41	70	120	170	280	500	880	1100

Use hex. nuts conforming to JIS B 1181 Class 2 (material: S45C). When tightening, apply molybdenum paste to the nuts.

φ40 to φ63

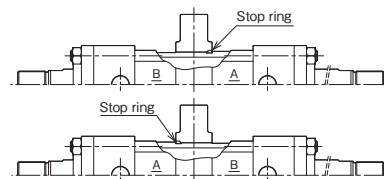
The tightening torque is not directional.



Note) The tie rods do not have built-in stop rings. However, the tubes of some products have directionality. Pay attention to the tube direction.

φ80 to φ160

Tighten to the specified torque from direction A.



Note) The stop ring position depends on the product. Carefully check the direction and tightening torque when assembling.