

Further Compact With Adoption Of Band Type Small Switch.

- With the adoption of stainless steel tube, the external shape has become simple.
- System improved type as it becomes switch-set cylinder only by mounting switch on cylinder body.
- For the switch mounting method, it can be mounted simply with the adoption of band type.
The switch setting position can also be selected freely by mounting band.
- 6 types of mounting style are prepared so that the ideal mounting method can be selected.
- Stainless steel (with Hard Chrome plating) have been adopting for piston rod.



Cylinder Specifications

Structure		Double acting type/Single rod	Single acting type(Spring return type)
Type		Fundamental type・Switch set	Fundamental type・Switch set
Series		10Z-3	10Z-3SR
Cylinder bore (mm)		φ12・φ16	
Working fluid		Air	
Lubrication		Unnecessay	
Operating prssure		0.07 ~ 1MPa	0.15 ~ 1MPa
Proof test pressure		1.5MPa	
Speed range		50 ~ 500mm/s(Note)	
Temperature range		- 10 ~ + 70 (Do not use when frozen.)	
Structure of cushioning		With cushion pad	
Tolerance for thread		JIS 6g/6H	
Tolerance of stroke		200mm or less ^{+1.0} ₀	
Mounting style	Basic type	SD・SD with B・LB・LS・FA・FB	
	Clevis cut type	SK・LK・FK	
	Post-port type	SP・LP・FP	
Accessories	Rod end attachment	Rod end spherical eye(S type)・Rod end clevis with pin(Y type)	

Note :

When setting switch at the intermediate position, keep the cylinder maximum speed under 300mm/sec to preserve the switch detection capabilities.

- Consult with us separately in case that the port position is modified.

Single Acting Type Cylinder Spring Force

Unit : N

Stroke Bore		15	25	50
φ12	Initial load	8.34	7.37	4.94
	End load	9.81		
φ16	Initial load	10.28	9.32	6.88
	End load	11.76		

Minimum Cylinder Stroke for Mounting Switch

Unit : mm

Switch Bore	With 1 switch						With 2 switches					
	ZC201	ZC205	ZC230	ZC253	JR type	JS type	ZC201	ZC205	ZC230	ZC253	JR type	JS type
φ12	10	15	10	10	10	10	15	15	10	10	15	20
φ16												

Lines

Unit : mm

Type	Structure	φ12	φ16
Round rod type	Double Acting Single Rod	Fundamental Type 10Z-3	
		Switch Set 10Z-3	
	Single Acting Type Single Rod Spring Return Type	Fundamental Type 10Z-3SR	
		Switch Set 10Z-3SR	

Type Outline

			Basic type	Basic type with bracket	End angles mounting (Both sides)	End angles mounting (One sides)	Head flange mounting	Cap flange mounting
Double Acting Type 10Z-3	Fundamental Type	Basic Type	●	●	●	●	●	●
		Clevis Cut Type	●	-	-	●	●	-
		Post-Port Type	●	-	-	●	●	-
	Switch Set	Basic Type	●	●	●	●	●	●
		Clevis Cut Type	●	-	-	●	●	-
		Post-Port Type	●	-	-	●	●	-
Single Acting Type Spring Return Type 10Z-3SR	Fundamental Type	Basic Type	●	●	●	●	●	●
		Clevis Cut Type	●	-	-	●	●	-
		Post-Port Type	●	-	-	●	●	-
	Switch Set	Basic Type	●	●	●	●	●	●
		Clevis Cut Type	●	-	-	●	●	-
		Post-Port Type	●	-	-	●	●	-

Weight Table

Unit : g

Bore (mm)	Basic weight			Additional weight per stroke 1mm	Mounting accessories weight									Rod end attachment weight	
	Basic type (SD)	Clevis cut type (SK)	Post-port type (SP)		Basic type					Clevis cut type		Post-port type		Rod end eye(T)	Rod end clevis(Y) with pin
					SD with B	LB	LS	FA	FB	LK	FK	LP	FP		
φ12	65(67)	55(57)	55(57)	0.38	58	81	35.5	23	23	35.5	23	35.5	23	24	20
φ16	87(86)	77(76)	77(76)	0.42											

Note : Parenthesized are weight of single acting type.

Switch Additional Weight

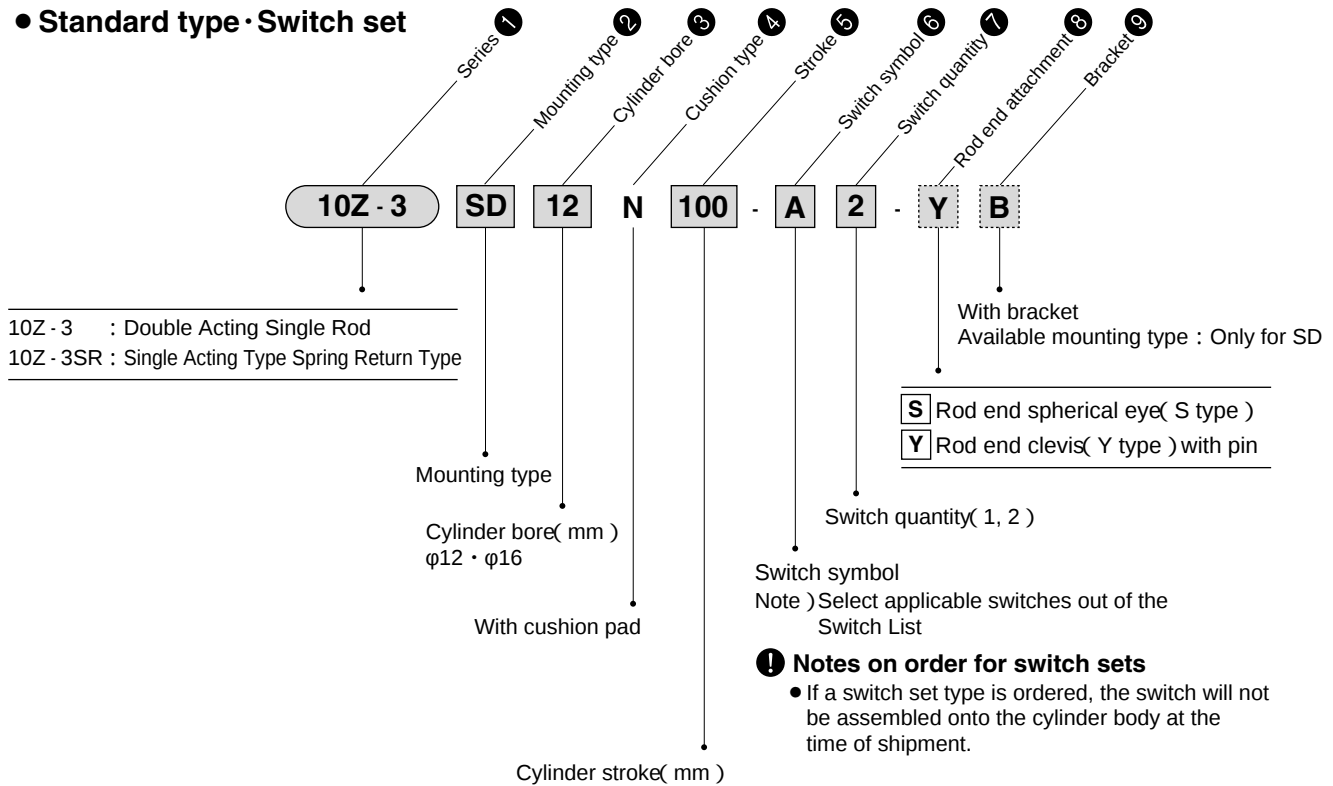
Unit : g

Bore (mm)	ZC type		JR · JS type	
	Cord length 1m	Cord length 3m	Cord length 1.5m	Cord length 5m
φ12	25	55	35	98
φ16				

Note : Switch additional weight includes the weight of switch bracket.

Calculation formula	Cylinder weight(g) = Basic weight + (Cylinder stroke mm × Additional weight per stroke 1mm) + (Switch additional weight × Quantity of Switch) + Mounting accessories weight + Rod end attachment weight
Calculation example	10Z-3 Double acting, clevis cut type LK·Bore φ12·Cylinder stroke 50mm·ZC201A(Cord length 1m) 2 pieces Rod end clevis(Y type) 55 + (50 × 0.38) + (25 × 2) + 35.5 + 20 = 179.5g

• Standard type • Switch set



Note) Products are delivered without mounting switch, mounting accessories, rod end attachments.

Standard Stroke

• Double Acting Type

Unit : mm

Bore \ Stroke	Stroke						Max. stroke
	15	25	30	50	75	100	
$\phi 12$							200
$\phi 16$							200

- Consult with us separately in case that stroke other than above standard stroke(marked with $\circ$) is desired.

• Single Acting Type(Spring Return Type)

Unit : mm

Bore \ Stroke	Stroke				Max. stroke
	15	25	30	50	
$\phi 12$					50
$\phi 16$					50

- Consult with us separately in case that stroke other than above standard stroke(marked with $\circ$) is desired.

Switch List

Kind	Switch symbol	Load voltage range	Load current range	Maximum open/close capacity	Protective circuit	Indicating lamp	Wiring method	Code length	Applicable load device
Contact	 ZC201A	AC:115V or less	AC:25mA or less	-	None	None	0.2mm ² 2-core, outside diameter φ3mm Rear wiring	1m	Small relay programmable controller
	 ZC201B	DC:28V or less	DC:40mA or less					3m	
	 ZC205A	DC:10 ~ 28V	DC:5 ~ 40mA	-	None	LED (lights up during ON)		1m	
	 ZC205B							3m	
	 JR101	DC:5 ~ 50V	DC:3 ~ 40mA	DC:1.5W AC:2VA	None	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ3.4mm Rear wiring	1.5m	
	 JR105	AC:5 ~ 120V	AC:3 ~ 20mA					5m	
No contact	 ZC230A	DC:10 ~ 28V	4 ~ 50mA	-	Present	LED (lights up during ON)	0.2mm ² 2-core, outside diameter φ3mm Rear wiring	1m	Small relay programmable controller
	 ZC230B							3m	
	 ZC253A	DC:28V or less	100mA or less	-	Present	LED (lights up during ON)	0.2mm ² 3-core, outside diameter φ3mm Rear wiring	1m	
	 ZC253B							3m	
	 JS211M	DC:10 ~ 30V	6 ~ 70mA	-	Present	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ3.4mm Rear wiring	1.5m	
	 JS215M							5m	

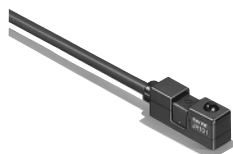
Notes) • For the switches without a protective circuit, be sure to provide the protective circuit(SK-100)with load devices when using induction load devices(relay, etc.)

• For the handling of switches, be sure to refer to the switch specifications in the end of this catalogue.

• ZC type switch



• JR·JS type switch

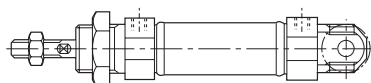


Mounting type

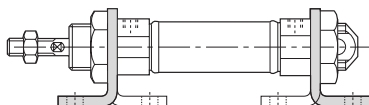
Standard type·Switch set

Basic type

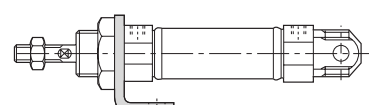
SD Basic type



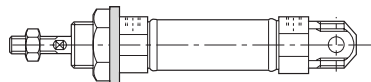
LB End angles mounting



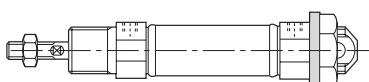
LS End angles mounting



FA Head rectangular flange mounting

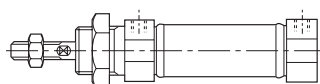


FB Cap rectangular flange mounting

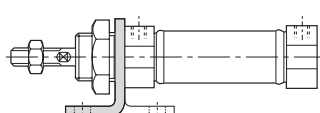


Clevis cut type

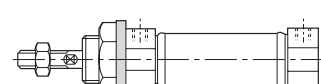
SK Basic type



LK End angles mounting

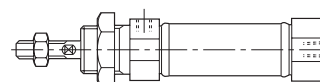


FK Head flange mounting

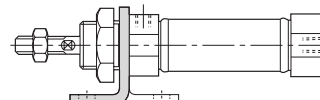


Post-port type

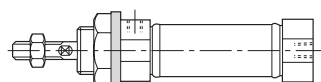
SP Basic type



LP End angles mounting



FP Head flange mounting

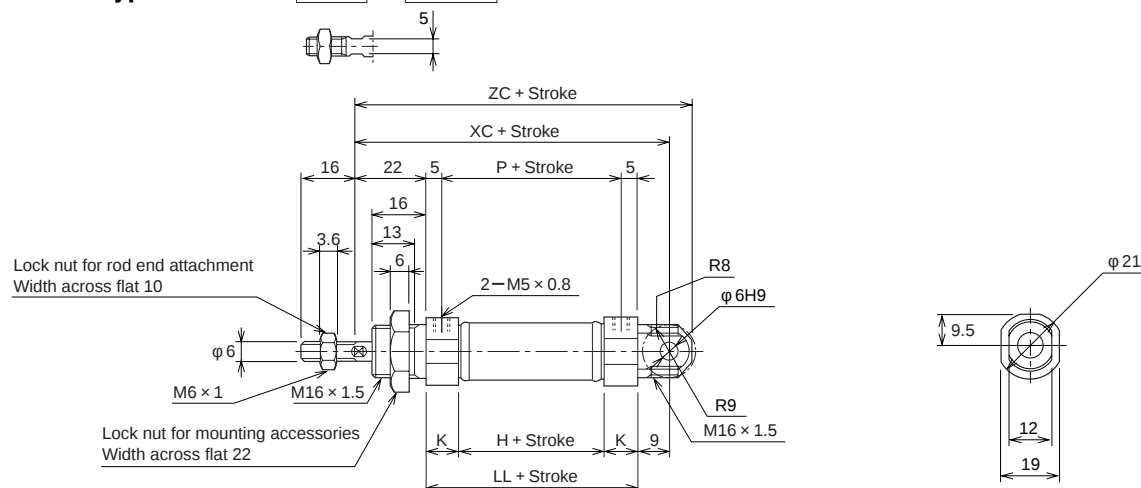


10Z-3/TAZ3 Bore A, B CAD/DATA is available.



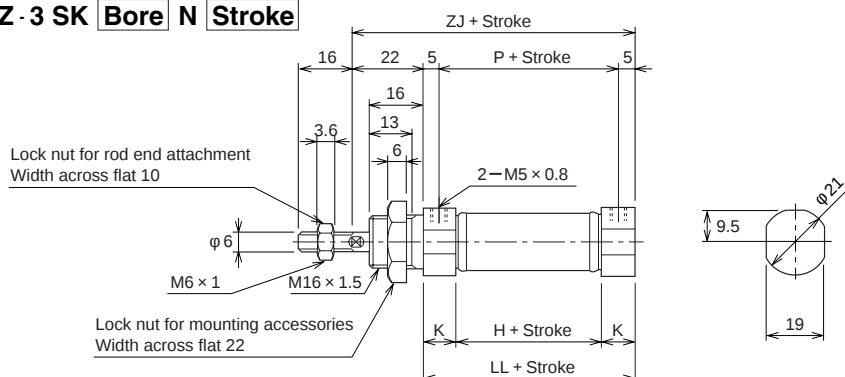
SD

Fundamental Type 10Z - 3 SD Bore N Stroke



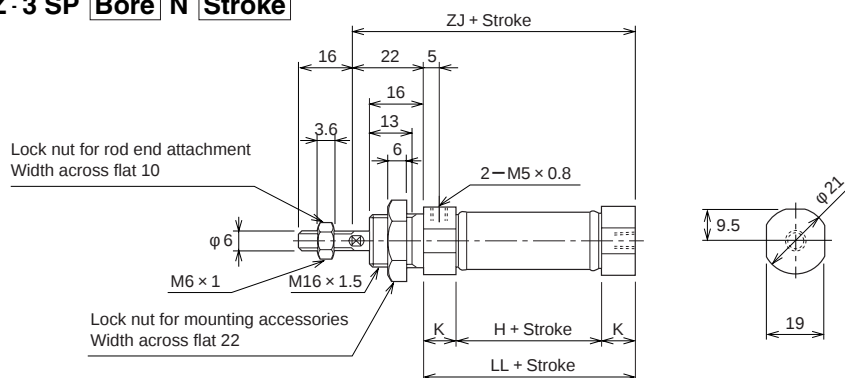
SK

Clevis cut Type 10Z - 3 SK Bore N Stroke



SP

Post-port Type 10Z - 3 SP Bore N Stroke



- Double acting type and single acting type are the same dimension.
- For single acting type, filter is mounted at head port.

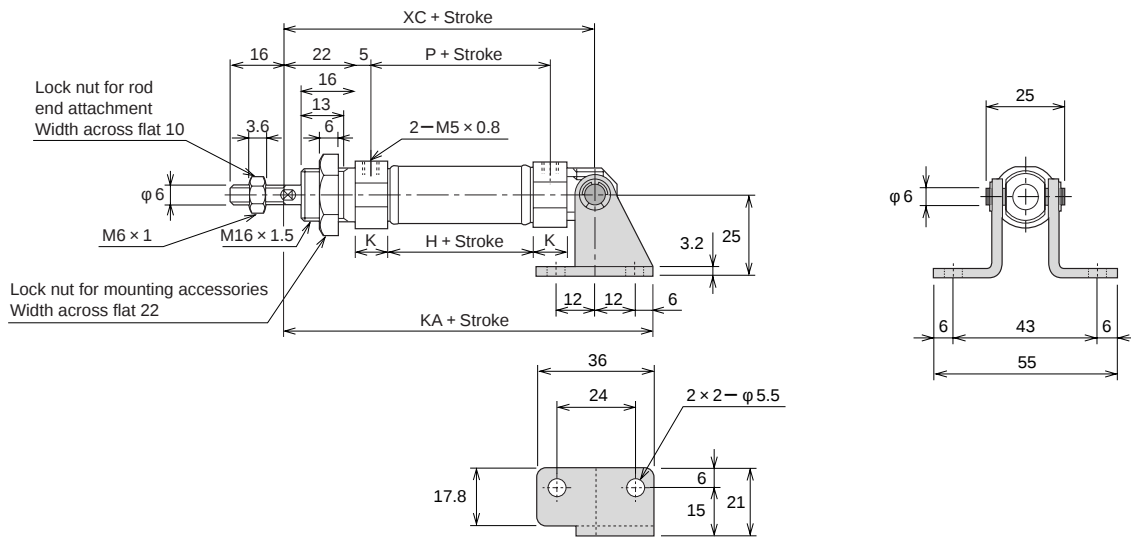
Dimensional Table

Symbol Bore	H	K	LL	P	XC	ZC	ZJ
$\phi 12$	25	9.5	44	34	75	82	66
$\phi 16$	31	10	51	41	82	89	73

CAD/DATA is
10Z-3/TAZ3 Bore A, B available.

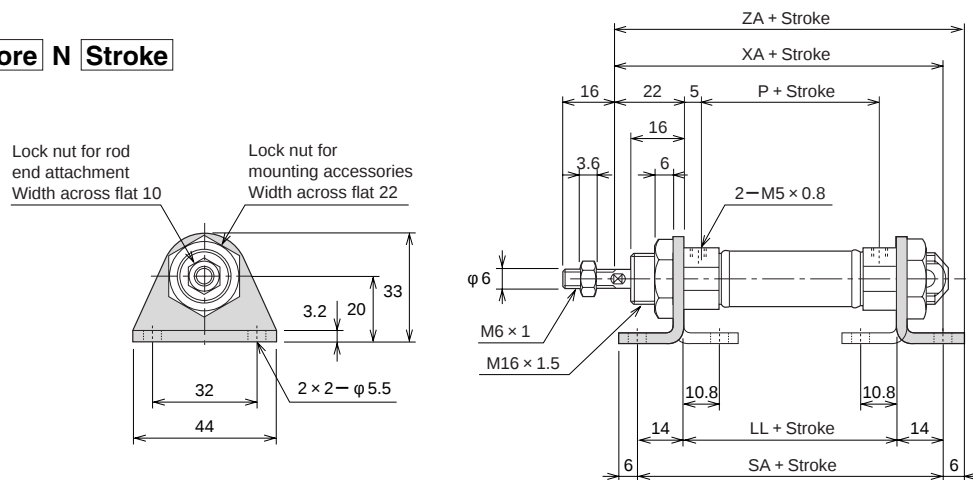
SD with B

10Z - 3 SD Bore N Stroke · B



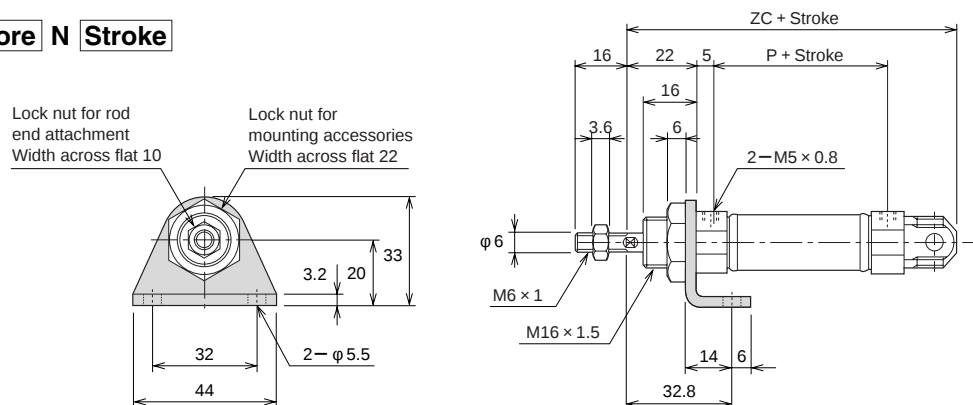
LB

10Z - 3 LB Bore N Stroke



LS

10Z - 3 LS Bore N Stroke



- For dimension other than the drawings, refer to SD type (Basic type).
- Double acting type and single acting type are the same dimension.
- For single acting type, filter is mounted at head port.

Dimensional Table

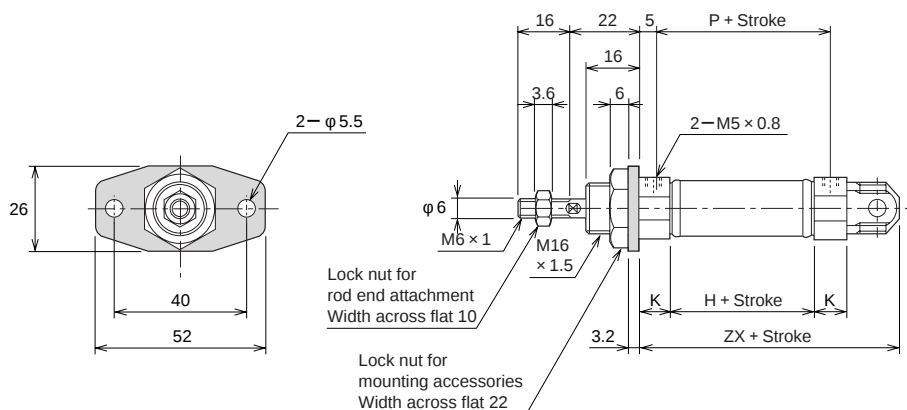
Symbol Bore	H	K	KA	LL	P	SA	XA	XC	ZA	ZC
φ12	25	9.5	93	44	34	72	80	75	86	82
φ16	31	10	100	51	41	79	87	82	93	89

10Z-3/TAZ3 Bore A, B available.



FA

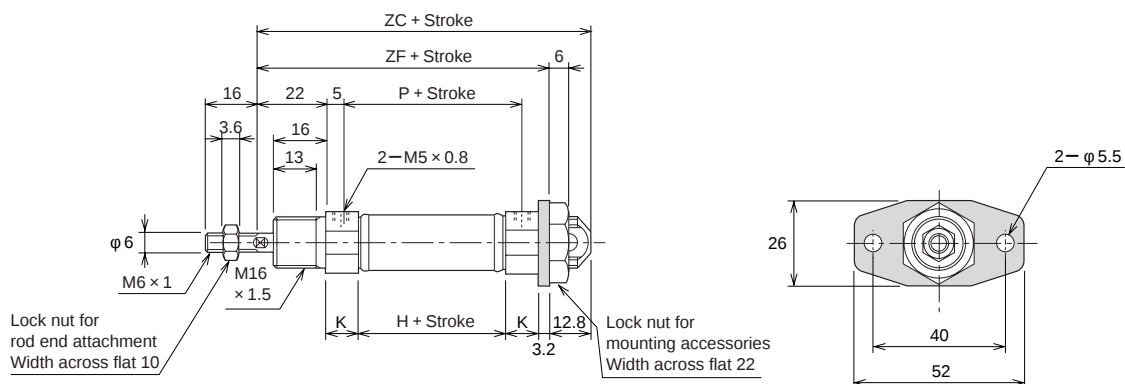
10Z - 3 FA Bore N Stroke



Relative Models : Cleves cut type(FK type) · Post-port type(FP type)

FB

10Z - 3 FB Bore N Stroke



- For dimension other than the drawings, refer to SD type(Basic type).
- Double acting type and single acting type are the same dimension.
- For single acting type, filter is mounted at head port.

Dimensional Table

Symbol Bore	H	K	P	ZC	ZF	ZX
$\phi 12$	25	9.5	34	82	69.2	60
$\phi 16$	31	10	41	89	76.2	67

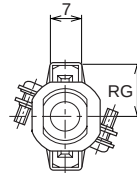
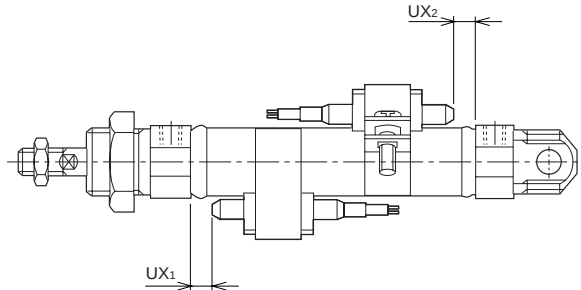
CAD/DATA is available.
10Z-3/TAZ3 Bore A, B



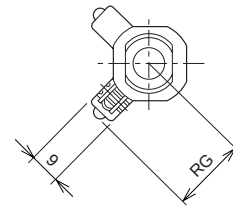
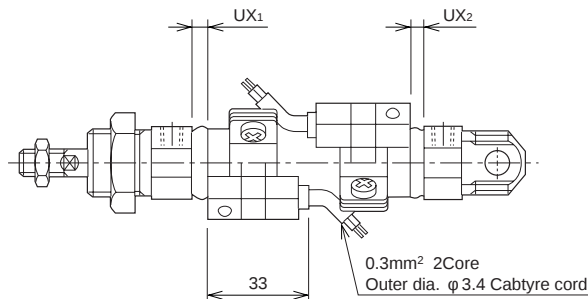
Switch Set

10Z-3 Mounting type Bore N Stroke Switch symbol Switch quantity

- ZC type switch



- JR·JS type switch



- For dimension other than this drawing, refer to the fundamental type.
- Double acting type and single acting type are the same dimension.

Relative Models : Clevis cut type(SK type)·Post-port type(SP type)

Dimensional Table

Bore mm	RG		UX1					UX2				
	ZC type	JR·JS type	Contact			No contact		Contact			No contact	
			ZC201	ZC205	JR type	ZC230·ZC253	JS type	ZC201	ZC205	JR type	ZC230·ZC253	JS type
$\phi 12$	15	17	4.5	1	0	3	3	5.5	2	1	4	3
$\phi 16$	17	19	9	5.5	4	7.5	5	8	4.5	3	6.5	5

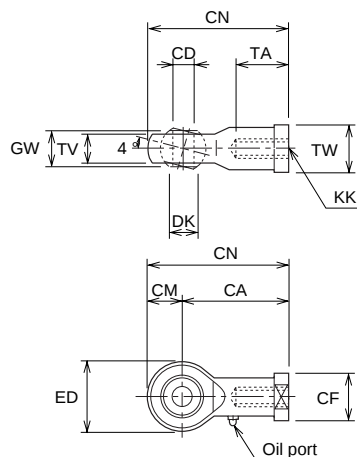
Note) The dimension UX indicates the optimum switch mounting position at the detection of the stroke end.

Working Range and Difference

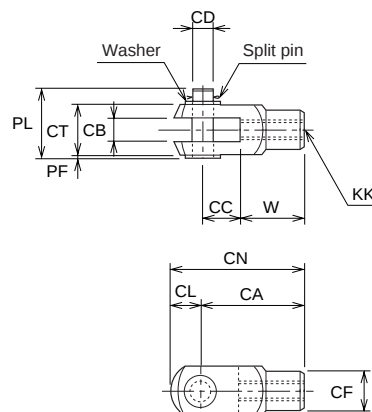
Bore mm	Contact						No contact					
	ZC201		ZC205		JR type		ZC230		ZC253		JS type	
	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference
$\phi 12$	3 ~ 6	1.5 or less	4 ~ 6	1.5 or less	4 ~ 6	2 or less	1 ~ 3	0.5 or less	1 ~ 3	0.5 or less	8 ~ 10	1 or less
$\phi 16$	4 ~ 9		4 ~ 7				1 ~ 4		2 ~ 3		9 ~ 12	

Rod End Attachment

- Rod End Spherical Eye(S type)



- Rod End Clevis(Y type)
With Pin



Dimensional Table/S Type

Symbol	Parts code	CA	CD	CF	CM	CN	DK	ED	GW	KK	TA	TV	TW
Bore													
φ12	RSA - 06 - A	30	φ6H9	φ13	9	39	φ9	18	9 ⁰ _{-0.1}	M6 × 1	14	6.75 ± 0.1	11
φ16													

Dimensional Table/Y Type

Symbol	Parts code	CA	CB	CC	CD	CF	CL	CN	CT	KK	PF	PL	W
Bore													
φ12	RYA - 06 - A	24	6 ^{+0.4} _{+0.15}	12	φ6 ^{H8} _{f7}	φ10	7	31	□12	M6 × 1	1.5	18.5	12
φ16													

Rod End Lock Nut Parts Code

Bore	Code
φ12	LNA - 06Z - A
φ16	LNA - 06Z - A

Handling Instructions

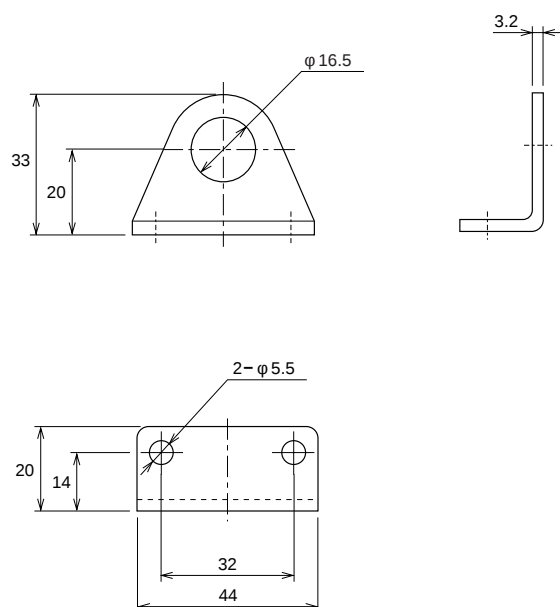
Fastening Torque of Attachment

The respective nuts and bolts shall be fastened by clamp torque of the following tables.

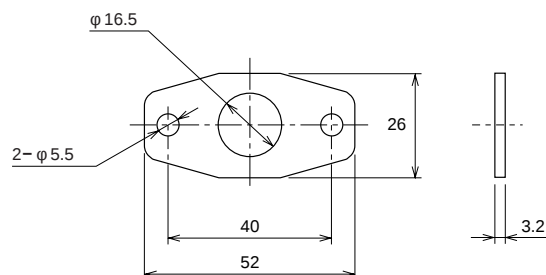
	M16(φ12, 16)
Clamp torque of nut for mounting accessories	53.9N · m
	M6(φ12, 16)
Clamp torque of nut for fixing rod end attachment	4.81N · m

Mounting Accessories

● End Angles Mounting

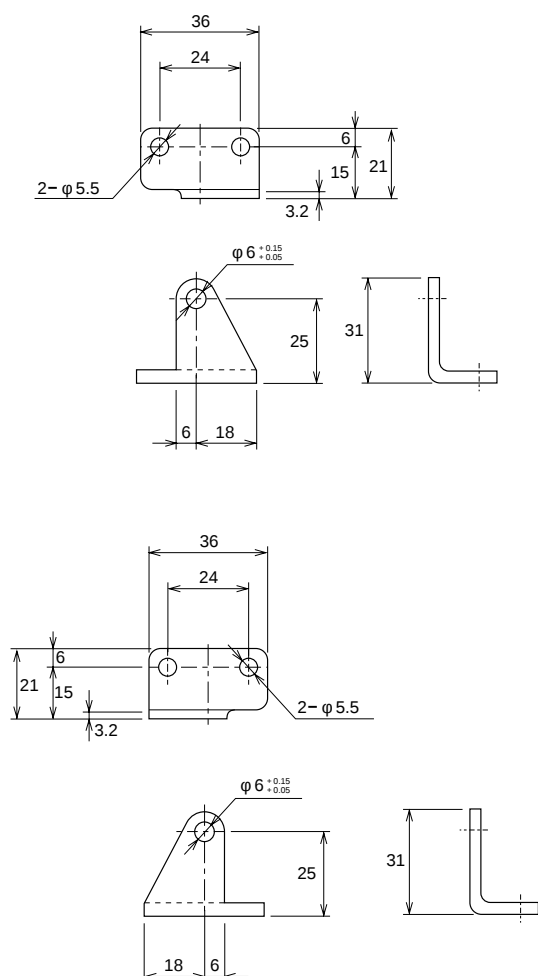


● Flange Mounting

**Bracket**

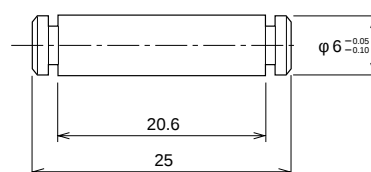
● For SD Type

(1 set of each 1 pcs)

**Pin**

● For SD Type With B

(With 2 Retaining Rings-E type)

**Mounting Accessories Parts Code**

Bore	LB	LS·LK·LP	FA·FB	SD type bracket (With pin)
$\phi 12$	MAZ3·LB012	MAZ3·LS012	MAZ3·FA012	MAZ3·BK012PA
$\phi 16$	MAZ3·LB012	MAZ3·LS012	MAZ3·FA012	MAZ3·BK012PA

Further Compact With Adoption Of Band Type Small Switch.

- The simple shape is available with the adoption of stainless steel tube.
- The system is improved as switch-set cylinder is available only by mounting a switch for cylinder body.
- For the switch mounting method, switch can be mounted simply with the adoption of band type. The switch setting position can also be selected freely with the movement of band.
- There are 17 types of mounting style so that the best mounting method can be chosen.
- Stainless steel(with Hard Chrome plating)have been adopting for standard piston rod of bore size 20mm to 30mm.



Cylinder Specifications/Standard

Structure	Double acting type/Single rod		Double acting type/ Double rod	Single acting type (Spring return type)	Single acting type (Spring push type)	
Type	Fundamental type・ Switch set	Val set ・ SV set	Fundamental type・ Switch set	Fundamental type・ Switch set	Fundamental type・ Switch set	
Series	10Z - 3	10Z - 3V2	10Z - 3D	10Z - 3SR	10Z - 3SH	
Cylinder bore mm	φ20, φ25, φ32, φ40, φ50, φ63	φ20, φ25, φ32, φ40	φ20, φ25, φ32, φ40, φ50, φ63	φ20, φ25, φ32, φ40		
Working fluid	Air					
Lubrication	Unnecessary					
Operating pressure	0.05 ~ 1MPa(φ20 ~ φ40) 0.02 ~ 1MPa(φ50・φ63)	0.15 ~ 1MPa	0.05 ~ 1MPa(φ20 ~ φ40) 0.02 ~ 1MPa(φ50 ・ φ63)	0.15 ~ 1MPa		
Proof test pressure	1.5MPa					
Note 1 Speed range	20 ~ 700mm/s	20 ~ 500mm/s	50 ~ 700mm/s(φ20 ~ φ40) 20 ~ 700mm/s(φ50 ~ φ63)	50 ~ 700mm/s		
Note 2 Temperature range	- 10 ~ + 70	- 10 ~ + 50	- 10 ~ + 70	- 10 ~ + 70		
Structure of cushioning	Standard:With cushion pad(φ20 ~ φ40), With both ends cushioned(φ50・φ63), Semi-standard:With cushion(Only a part of types)					
Tolerance for thread	JIS 6g/6H					
Tolerance of stroke	250mm or less ^{+1.0} ₀ 251 ~ 900mm ^{+1.5} ₀					
Mounting Style	Basic type	SD・SD with B(Only for φ20 ~ φ40)・LS(Only for φ20・φ25)・LB・FA・FB・TA・TA with B・TB・TB with B・CA (Only for φ50・φ63)・CU (Only for φ20 ~ φ40)・CU with B(Only for φ20 ~ φ40)	SD・LC・FA・TA・TA with B・TC・TC with B・AD・BD	SD・LB・FA・TA・TA with B・AD・BD	SD・SD with B・LS(Only for φ20・φ25)・LB・FA・FB・TA・TA with B・TB・TB with B・CU・CU with B	
	Clevis cut type	SK・LK(Only for φ20・φ25)・FK・TK・TK with B・AD・BD	—	—	SK・LK(Only for φ20・φ25)・FK・TK・TK with B・AD・BD	
	Post-port type	SP・LP(Only for φ20・φ25)・FP・TP・TP with B・AP・BP	—	—	SP・LP(Only for φ20・φ25)・FP・TP・TP with B・AP・BP	—
Accessories	Boots	Nylon tarpaulin				
	Rod end attachment	Rod end eye(T type)(Only for φ50, φ63)・Rod end spherical eye(S type)・Rod end clevis with pin(Y type)・F joint(F type)				

Note 1). When setting switch at the intermediate, position keep the cylinder maximum speed under 300mm/sec to preserve the switch detection capabilities.

2. As to the temperature range, it shall be used on the unfrozen condition.

- In case that the port position and cushion needle position are modified, consult with us separately.

Cylinder Specifications/Non-Rotating Rod Type

Structure		Double acting type/Single rod		Double acting type/Double rod	Single Acting/Single Rod
Type		Fundamental type・Switch set	Val set ・ SV set	Fundamental type・Switch set	
Series		10Z - 3G	10Z - 3V2G	10Z - 3GD	10Z - 3GSR,10Z - 3GSH
Cylinder bore mm		φ25, φ40, φ50, φ63	φ25, φ40	φ25, φ40, φ50, φ63	φ 25, φ 40
Working fluid		Air			
Lubrication		Unnecessary			
Operating pressure		0.1 ~ 1MPa(φ25・φ40) 0.05 ~ 1MPa(φ50・φ63)	0.15 ~ 1MPa	0.1 ~ 1MPa(φ25・φ40) 0.05 ~ 1MPa(φ50・φ63)	0.15 ~ 1MPa
Proof test pressure		1.5MPa			
Note ㉞ Speed range		50 ~ 700mm/s	50 ~ 500mm/s	50 ~ 700mm/s	
Note ㉟ Temperature range		- 10 ~ + 70	- 10 ~ + 50	- 10 ~ + 70	
Note ㊱ Structure of cushioning		Standard:With cushion pad(φ20 ~ φ40), With both ends cushioned(φ50・φ63), Semi-standard:With cushion(Only φ40)			With cushion pad
Note ㊲ Telerauce rotating angle		φ25: ± 1.5 ° φ40: ± 1 ° φ50・φ63: ± 0.8 °			
Allowable torque		φ25:0.49N・m or less φ40:0.98N・m or less φ50・φ63:3.4N・m or less			
Tolerance for thread		JIS 6g/6H			
Tolerance of stroke		250mm or less ^{+ 1 0} 251 ~ 900mm ^{+ 1 4} 0			
Mounting Style	Basic type	LB	SD・LC・FA・TA・TA with B・TC・TC with B・AD・BD	SD・LB・FA・TA・TA with B・AD・BD	LB
	Clevis cut type	SK・LK(Only for φ25)・FK・TK・TK with B	—	—	SK・LK(φ25 only)・FK・TK・TK with B
	Post-port type	SP・LP(Only for φ25)・FP・TP・TP with B・AP・BP	—	—	SP・LP(φ25 only)・FP・TP・TP with B・AP・BP
Accessories	Boots	Nylon tarpaulin			
	Rod end attachment	Rod end eye(T type ㊸ Only for φ50, φ63)・Rod end spherical eye(S type)・Rod end clevis with pin(Y type)			

Note 1) When setting switch at the intermediate, position keep the cylinder maximum speed under 300mm/sec to preserve the switch detection capabilities.

2. As to the temperature range, it shall be used on the unfrozen condition.

3. Cylinder with cushion of non-rotating rod(φ25)/double rod/single acting type/Val set can not be manufactured.

4. The tolerance difference of rotation angle indicates the gap of piston rod rotation direction at stroke end.

5. In case of the joint use with other guide, round rod shall be used.

• In case that the port position and cushion needle position are modified, consult with us separately.

Valve Specifications

Code	RB512V1SA1D	RB512V1SA1DW	RB512V1SA2D	RB512V1SA2DW	RB512V1SA8D	RB512V1SA8DW
Rated voltage	AC100V(50/60Hz)		AC200V(50/60Hz)		DC24V	
Voltage fluctuation range	Rated voltage of ± 10%					
Current consumption	50Hz : 6.0VA/60Hz : 4.9VA				2.5W	
Coil Assy (With DIN socket) code	NAS8 - 22 - 1D	NAS8 - 22 - 1DW (With lanp・ protective circuit)	NAS8 - 22 - 2D	NAS8 - 22 - 2DW (With lanp・ protective circuit)	NAS8 - 22 - 8D	NAS8 - 22 - 8DW (With lanp・ protective circuit)

• If using a different voltage from above one, please do not hesitate to contact us.

Lines

Unit : mm

	Type	Structure	φ20	φ25	φ32	φ40	φ50	φ63
Round rod type	Double Acting Single Rod	Standard type/Switch set 10Z - 3	●	●	●	●	●	●
		Val set/SV set 10Z - 3V2	●	●	●	●		
	Double Acting Double Rod	Standard type/Switch set 10Z - 3D	●	●	●	●	●	●
	Single Acting Type Single Rod Spring Return Type	Standard type/Switch set 10Z - 3SR	●	●	●	●		
	Single Acting Type Single Rod Spring Push Type	Standard type/Switch set 10Z - 3SH	●	●	●	●		
	With stroke adjustment (pull side)	Standard type/Switch set 10Z - 3A2	●	●	●	●	●	●
	With stroke adjustment (push side)	Standard type/Switch set 10Z - 3A1	●	●	●	●	●	●
	Dual stroke (Made-to-order)	Single Rod 10Z - 3Q1	●	●	●	●	●	●
		Double Rod 10Z - 3Q2	●	●	●	●	●	●
Non-rotating rod type	Double Acting Single Rod	Standard type/Switch set 10Z - 3G		●		●	●	●
		Val set/SV set 10Z - 3V2G		●		●		
	Double Acting Double Rod	Standard type/Switch set 10Z - 3GD		●		●	●	●
	Single Acting Type Single Rod Spring Return Type	Standard type/Switch set 10Z - 3GSR		●		●		
	Single Acting Type Single Rod Spring Push Type	Standard type/Switch set 10Z - 3GSH		●		●		
	With stroke adjustment (pull side)	Standard type/Switch set 10Z - 3GA2		●		●	●	●
	With stroke adjustment (push side)	Standard type/Switch set 10Z - 3GA1		●		●	●	●

Single Acting Type(SR type・SH type) Spring Force

Unit : N

Bore (mm)	Load	Stroke (mm)									
		15	25	30	50	75	100	125	150	175	200
φ 20	Initial load	20.6	12.9	20.6	12.9						
	End load	32.2									
φ 25	Initial load	32.5	20.4	32.5	20.4						
	End load	50.7									
φ 32	Initial load	51.3	32.3	51.3	32.3						
	End load	79.9									
φ 40	Initial load	80.4	50.6	80.4	50.6						
	End load	125.2									

Minimum Cylinder Stroke for Mounting Switch

Unit : mm

Bore (mm)	With 1 switch									With 2 switches								
	Contact					No contact				Contact					No contact			
	AX	ZC201	ZC205	JR	SR	AX	ZC230	ZC253	JS	AX	ZC201	ZC205	JR	SR	AX	ZC230	ZC253	JS
φ20	10	10	15	10	15	10	10	10	10	15	15	15	15	35	20	10	10	20
φ25					10													
φ32																		
φ40					15													
φ50					10													
φ63																		

Note : Dimensions of Non-rotating rod type switch set and SV set are the same.

Cushion Stroke

Bore	Cushion stroke
φ50・φ63	14mm

The items in broken lines in the codes below need not to be entered, if unnecessary. Semi-standard specification

• Standard type • Switch set

10Z - 3
SD
25
N
100 -
 AH
2 -
 Y
B -
 J

Series ① Mounting type ② Cylinder bore ③ Cushion type ④ Stroke ⑤ Switch symbol ⑥ Switch quantity ⑦ Rod end attachment ⑧ Bracket ⑨ Boots ⑩

Round rod type
 10Z - 3 Double Acting Single Rod
 10Z - 3D Double Acting Double Rod
 10Z - 3SR Single Acting Type Spring Return Type
 10Z - 3SH Single Acting Type Spring Push Type
 Non-rotating rod type
 10Z - 3G Double Acting Single Rod
 10Z - 3GD Double Acting Double Rod
 10Z - 3GSR Single Acting Type Spring Return Type
 10Z - 3GSH Single Acting Type Spring Push Type

Note)For Non-rotating rod type,
 Basic type(with clevis)
 is not available.

Mounting type
 SD type, TA type, TB type, TK type, CU type
 ($\phi 20 \sim \phi 40$), TA type, TB type($\phi 50 \sim \phi 40$)

Boots
 Nylon tarpaulin
 Note)Boot for cylinder is not
 available for AD,BD,and BP

S type(Rod end spherical eye)
 T-end(rod end eye χ Only for $\phi 50 \sim \phi 63$)
 Y-end(rod end clevis)
 F-end(F-joint χ for 7 MPa)

Switch quantity(1, 2, to n)

Switch symbol
 Note) Select applicable switches out of the
 Switch List

! Notes on order for switch sets
 • Switches are not mounted to cylinders at delivery.

Cylinder bore(mm)
 Round rod type $\phi 20 \cdot \phi 25 \cdot \phi 32 \cdot \phi 40 \cdot \phi 50 \cdot \phi 63$
 Non-rotating rod type $\phi 25 \cdot \phi 40 \cdot \phi 50 \cdot \phi 63$

N With cushion pad
 B With cushion

Note)Uncushioned type of $\phi 50 \cdot \phi 63$ is
 semi-standard.(not standard)

Cylinder stroke(mm)

• VAL set • SV set

10Z - 3V2
SD
25
N
100 -
 A
2
AH
2 -
 Y
B -
 J

Series ① Mounting type ② Cylinder bore ③ Cushion type ④ Stroke ⑤ Valve operation method ⑥ Valve voltage ⑦ Switch symbol ⑧ Switch quantity ⑨ Rod end attachment ⑩ Bracket ⑪ Boots ⑫

Round rod type
 10Z - 3V2 Double Acting Single Rod
 Non-rotating rod type
 10Z - 3V2G Double Acting Double Rod

Mounting type
 SD type, TA type, TB type, TK type, CU type
 ($\phi 20 \sim \phi 40$), TA type, TB type($\phi 50 \sim \phi 40$)

Cylinder bore(mm)
 $\phi 20 \cdot \phi 25 \cdot \phi 32 \cdot \phi 40$
 Note)Non-rotating rod type is
 only for $\phi 25, \phi 40$.

With cushion pad

Valve operation method
 1 AC100V 50/60Hz
 2 AC200V 50/60Hz
 8 DC24V

Note)Application for exceptional voltage needs
 consultation with us.

A Energized push type(with lamp, protective circuit)
 B Energized pull type(with lamp, protective circuit)
 G Energized push type(no lamp)
 H Energized pull type(no lamp)

Cylinder stroke(mm)

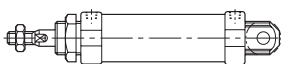
Note) For the details of types other than the above, refer to the specifications of the standard type, switch set.

Mounting type

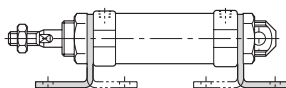
Standard type· Switch set

Basic type

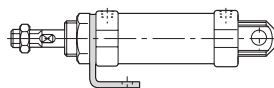
SD Basic type



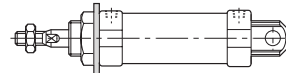
LB End angles mounting



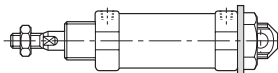
LS End angles mounting(Note)



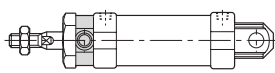
FA Head flange mounting



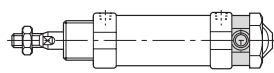
FB Cap flange mounting



TA Head trunnion type



TB Cap trunnion type



CA Eye mounting(only for $\phi 50 \cdot \phi 63$)

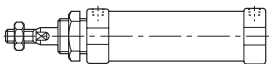


CU Cap spherical eye mounting



Clevis cut type

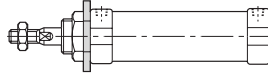
SK Basic type



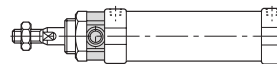
LK End angles mounting(Note)



FK Head flange mounting



TK Head trunnion type



AD Block type foot mounting

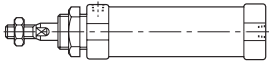


BD Block type flange mounting



Post-port type

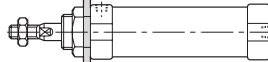
SP Basic type



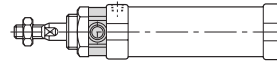
LP End angles mounting(Note)



FP Head flange mounting



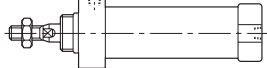
TP Head trunnion type



AP Block type foot mounting



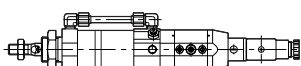
BP Block type flange mounting



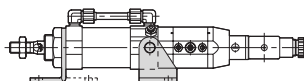
Mounting type

Valve mounted type

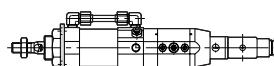
SD Basic type



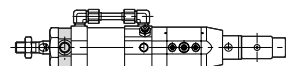
LC End angles mounting



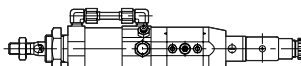
FA Head flange mounting



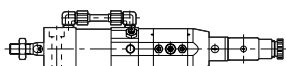
TA Cap trunnion type



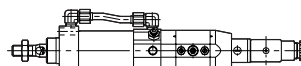
TC Cap trunnion type



AD Block type foot mounting



BD Block type flange mounting



Note) Only bore $\phi 20$, $\phi 25$ for LS type, LK type, LP type.
LK, LP with non-rotating rod are only for 25.

Switch List

Semi-standard specification

Kind	Switch symbol	Load voltage range	Load current range	Maximum open/close capacity	Protective circuit	Indicating lamp	Wiring Method	Code length	Applicable load device
Contact	 AX101	DC:5 ~ 30V AC:5 ~ 120V	DC:5 ~ 40mA AC:5 ~ 20mA	DC:1.5W AC:2VA	None	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ4mm Rear wiring	1.5m	Small relay programmable controller
	 AX105							5m	
	 AX111				Present	1.5m			
	 AX115					5m			
	 AX125	DC:30V or less AC:120V or less	DC:40mA or less AC:20mA or less	None	None	5m			
	 AX11A	AC:5 ~ 120V	5 ~ 20mA	2VA	Present	LED (red light lights up during ON)	4-pin connector type Rear wiring	0.5m	
	 AX11B	DC:5 ~ 30V	5 ~ 40mA	1.5W				0.5m	
	 ZC201A	AC:115V or less	AC:25mA or less	-	None	None	0.2mm ² 2-core, outside diameter φ3mm Rear wiring	1m	
	 ZC201B	DC:28V or less	DC:40mA or less					3m	
	 ZC205A	DC:10 ~ 28V	DC:5 ~ 40mA	-	None	LED (red light lights up during ON)		1m	
	 ZC205B							3m	
	 JR101	DC:5 ~ 50V	DC:3 ~ 40mA	DC:1.5W	None	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ3.4mm Rear wiring	1.5m	
	 JR105	AC:5 ~ 120V	AC:3 ~ 20mA	AC:2VA				5m	
	 SR405	AC:80 ~ 220V	2 ~ 300mA	30VA	Present	Neon lamp (red light lights up during OFF)	0.5mm ² 2-core, outside diameter φ6mm Rear wiring	5m	
No contact	 AX201	DC:5 ~ 30V	5 ~ 40mA	-	Present	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ4mm Rear wiring	1.5m	Small relay programmable controller
	 AX205							5m	
	 AX211					LED (2-lamp type in red/green)		1.5m	
	 AX215							5m	
	 ZC230A	DC:10 ~ 28V	4 ~ 50mA	-	Present	LED (lights up during ON)	0.2mm ² 2-core, outside diameter φ3mm Rear wiring	1m	
	 ZC230B							3m	
	 ZC253A	DC:28V or less	100mA or less	-	Present	LED (lights up during ON)	0.2mm ² 3-core, outside diameter φ3mm Rear wiring	1m	
	 ZC253B							3m	
	 JS211M	DC:10 ~ 30V	6 ~ 70mA	-	Present	LED (lights up during ON)	0.3mm ² 2-core, outside diameter φ3.4mm Rear wiring	1.5m	
	 JS215M							5m	
No contact (Corresponding CE marking)	 AX211CE	DC:5 ~ 30V	5 ~ 40mA	-	Present	LED (2-lamp type in red/green)	0.3mm ² 2-core, outside diameter φ4mm Rear wiring	1.5m	
	 AX215CE							5m	
	 AX21BCE						4-pin connector type Rear wiring	0.5m	
	 AZ211CE						0.3mm ² 2-core, outside diameter φ4mm Upper wiring	1.5m	
	 AZ215CE							5m	
	 AZ21BCE						4-pin connector type Upper wiring	0.5m	

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

- For the handling of switches, be sure to refer to the switch specifications in the end of this catalogue.
- All the AX type switches can be mounted. For the types other than the above, refer to the switch specifications in the end of this catalogue.
- We recommend AND UNIT (AU series) for multiple switches connected in series.

• AX type switch

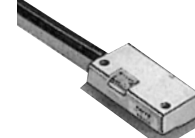
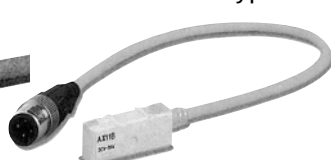
• ZC type switch

• JR・JS type switch

• SR type switch

Code type

Connector type



Standard Stroke Fabrication Range

Unit : mm

	Structure	Type	Bore	Cylinder stroke (mm)																MAX Stroke
				15	25	30	50	75	100	125	150	175	200	250	300	350	400	450	500	
Round rod type	Double Acting Single Rod	Standard type Switch set 10Z - 3	φ20	○	○	○	○	○	○	○	○	○	○	-	-	-	-	-	-	900
			φ25	○	○	○	○	○	○	○	○	○	○	○	○	-	-	-	-	900
			φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	-	-	900
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	900
			φ50	-	○	-	○	○	○	-	○	-	○	○	○	○	○	○	○	900
			φ63	-	○	-	○	○	○	-	○	-	○	○	○	○	○	○	○	900
	Double Acting Double Rod	Standard type Switch set 10Z - 3D	φ20	○	○	○	○	○	○	○	○	○	○	-	-	-	-	-	-	450
			φ25	○	○	○	○	○	○	○	○	○	○	○	○	-	-	-	-	450
			φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	-	-	450
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	-	450
			φ50	-	○	-	○	○	○	-	○	-	○	○	○	○	○	○	-	450
			φ63	-	○	-	○	○	○	-	○	-	○	○	○	○	○	○	-	450
	Single Acting Type Single Rod	Standard type Switch set 10Z - 3SR 10Z - 3SH	φ20	○	○	○	○	○	○	○	○	-	-	-	-	-	-	-	-	150
			φ25	○	○	○	○	○	○	○	○	○	○	-	-	-	-	-	-	200
			φ32	○	○	○	○	○	○	○	○	○	○	-	-	-	-	-	-	200
			φ40	○	○	○	○	○	○	○	○	○	○	-	-	-	-	-	-	200
Non-rotating rod type	Double Acting Single Rod	Standard type Switch set 10Z - 3G	φ25	○	○	○	○	○	○	○	○	○	○	○	○	-	-	-	-	500
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	-	-	-	-	500
			φ50	-	○	-	○	○	○	-	○	-	○	○	○	-	-	-	-	500
			φ63	-	○	-	○	○	○	-	○	-	○	○	○	-	-	-	-	500
	Double Acting Double Rod	Standard type Switch set 10Z - 3GD	φ25	○	○	○	○	○	○	○	○	○	○	○	○	-	-	-	-	450
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	-	-	-	-	450
			φ50	-	○	-	○	○	○	-	○	-	○	○	○	-	-	-	-	450
			φ63	-	○	-	○	○	○	-	○	-	○	○	○	-	-	-	-	450
	Single Acting Type Single Rod	Standard type Switch set 10Z - 3GSR 10Z - 3GSH	φ25	-	○	-	○	○	○	○	○	○	○	-	-	-	-	-	-	200
			φ40	-	○	-	○	○	○	○	○	○	○	-	-	-	-	-	-	200

Please refer to the chart of minimum stroke for the switch set type.(Page 16)

Mounting Accessories Parts Code

	φ20	φ25	φ32	φ40	φ50	φ63
LB type	MAZ3 - LB020		MAZ3 - LB032	MAZ3 - LB040	MAZ3 - LB050	MAZ3 - LB063
LC type	MAZ3 - LC020		MAZ3 - LC032	MAZ3 - LC040	-	-
LS type	MAZ3 - LS020		-	-	-	-
LK type						
LP type						
FA type	MAZ3 - FA020		MAZ3 - FA032	MAZ3 - FA040	MAZ3 - FA050	MAZ3 - FA063
FB type						
FK type						
FP type						
TA type	MAZ3 - TA020		MAZ3 - TA032	MAZ3 - TA040	MAZ3 - TA050	
TB type						
TK type						
TP type						
TC type	MAZ3 - TC020		MAZ3 - TC032	MAZ3 - TC040	-	-
CU type	MAZ3 - CU020	MAZ3 - CU025	MAZ3 - CU032	MAZ3 - CU040	-	-

Bracket Parts Code

	φ20	φ25	φ32	φ40	φ50	φ63
For SD(With pin)	MAZ3 - BK020PA		MAZ3 - BK032PA	MAZ3 - BK040PA	-	-
For S·CU(With pin)	MAZ3 - BK020PB	MAZ3 - BK032PB		MAZ3 - BK040PB	-	-
For TA·TB·TC	MAZ3 - BK020		MAZ3 - BK032	MAZ3 - BK040	MAZ3 - BK050	MAZ3 - BK063

Rod End Lock Nut Parts Code

Bore	Round rod type	Non-rotating rod type
φ20	LNA - 08Z - A	-
φ25	LNA - 10Z - A	LNA - 08Z - A
φ32		-
φ40	LNA - 12Z - A	LNA - 12Z - A
φ50	LNA - 16Z - A	LNA - 16Z - A
φ63		

Made-to-order specifications

Dual stroke
(Both sides rod)

● 10Z-3Q2



● Cylinder bore(mm) : φ20, φ25, φ32, φ40, φ50, φ63

With stroke adjustment
(push side)

● 10Z-3A1

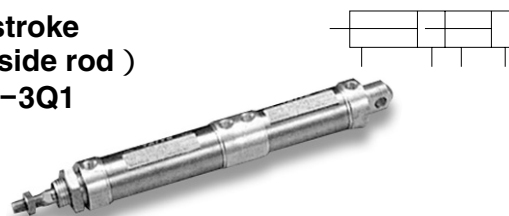


● Cylinder bore(mm) : φ20, φ25, φ32, φ40, φ50, φ63

Stroke adjustable range : 0 ~ 50mm

Dual stroke
(one side rod)

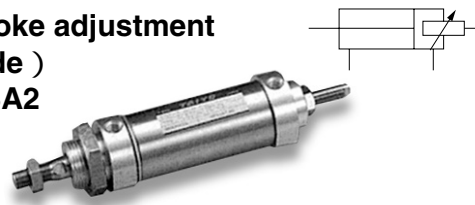
● 10Z-3Q1



● Cylinder bore(mm) : φ20, φ25, φ32, φ40, φ50, φ63

With stroke adjustment
(pull side)

● 10Z-3A2



● Cylinder bore(mm) : φ20, φ25, φ32, φ40, φ50, φ63

Stroke adjustable range : 0 ~ 50mm

Round Rod Type/Double Acting

Unit : g

Bore (mm)	Basic weight					Additional weight per stroke 1mm	
	Double Acting/Single Rod				Double Acting/Double Rod		
	Basic type		Clevis cut type	Post-port type	Basic type		
	Standard type	Val set	Standard type	Standard type	Standard type	Single Rod	Double Rod
φ20	155	530	137	137	186	0.85	1.25
φ25	220	600	203	203	274	1.15	1.8
φ32	320	705	297	297	398	1.65	2.55
φ40	520	910	482	487	630	2.15	3.4
φ50	985	-	920	935	1165	3.27	5.73
φ63	1350	-	1280	1300	1530	4.36	6.82

Round Rod Type/Single Acting Type

Unit : g

Bore (mm)	Basic weight			Stroke additional weight					
	Single Acting/Single Rod								
	Basic type	Clevis cut type	Post-port type						
	Standard type	Standard type	Standard type	15	25	30	50	75	100
φ20	221	203	203	12	20	90	106	192	278
φ25	312	295	295	16.5	27.5	125	147	266.5	386
φ32	457	434	434	24	40	185	217	394	571
φ40	701	663	663	31.5	52.5	244	286	519.5	753

Non-rotating Rod Type/Double Acting

Unit : g

Bore (mm)	Basic weight					Additional weight per stroke 1mm	
	Double Acting/Single Rod				Double Acting/Double Rod		
	Basic type		Clevis cut type	Post-port type	Basic type		
	Standard type	Val set	Standard type	Standard type	Standard type	Single Rod	Double Rod
φ25	220	600	203	203	274	1.1	1.8
φ40	510	900	472	472	620	2.1	3.4
φ50	985	-	920	935	1165	3.27	5.73
φ63	1350	-	1280	1300	1530	4.36	6.82

Mounting Accessories· Rod End Attachment Weight

Unit : g

Bore (mm)	Mounting accessories weight																						Rod end attachment weight					
	Basic type											Clevis cut type						Post-port type										
	SD/ B	LS	LB	LC	FA FB	CA	TA TB	TA/B TB/B	TC	TC/ B	CU/ B	LK	FK	TK	TK/ B	AD	BD	LP	FP	TP	TP/ B	AP	BP	Eye (S)	Eye (T)	Clevis (Y)	F	
φ20	115	60	140	150	55	-	55	140	30	100	130	240	60	58	55	140	11(29)	8(76)	60	55	55	140	11(29)	8(76)	50	-	55	60
φ25	115	60	140	150	55	-	55	140	30	100	130	280	60	55	55	140	38(55)	26(43)	60	55	55	140	38(55)	26(43)	75	-	100	100
φ32	150	-	220	210	90	-	90	210	30	125	125	275	-	90	90	210	62(85)	45(68)	-	90	90	210	62(85)	45(68)	75	-	100	100
φ40	185	-	280	280	110	-	130	275	70	175	150	335	-	110	130	275	78(116)	49(87)	-	110	130	275	78(116)	49(87)	110	-	175	100
φ50	-	-	560	-	315	-	335	795	-	-	-	-	-	315	335	795	180(245)	105(170)	-	315	335	795	180(245)	105(170)	210	200	340	380
φ63	-	-	705	-	420	-	335	795	-	-	-	-	-	420	335	795	270(335)	135(200)	-	420	335	795	270(335)	135(200)	210	200	340	380

● Parenthesized are the mounting accessories weight of double rod type.

Switch additional weight

Unit : g

Bore (mm)	AX type			ZC type		JR · JS type		SR type
	Code length 1.5m	Code length 5m	Connector type	Code length 1m	Code length 3m	Code length 1.5m	Code length 5m	Code length 5m
φ20	50	130	40	25	55	35	98	271
φ25								
φ32								
φ40								
φ50								
φ63								

Note) ● Switch additional weight includes the weight of switch bracket.

Calculation formula Cylinder weight(g) = Basic weight + (Cylinder stroke mm × Additional weight per stroke 1mm) + (Switch additional weight × Switch quantity) + Mounting accessories weight + Rod end attachment weight

Calculation example 10Z - 3 Clevis cut type Bore φ20 Cylinder stroke 50mm AX215A(Code length 5m)2pieces FK type
 $137 + (0.85 \times 50) + (130 \times 2) + 60 = 499.5g$

10Z-3/TAZ3 Bore A CAD/DATA is available.



SD

Double Acting Single Rod

Round rod type

10Z - 3 SD

Bore

Cushioning

Stroke

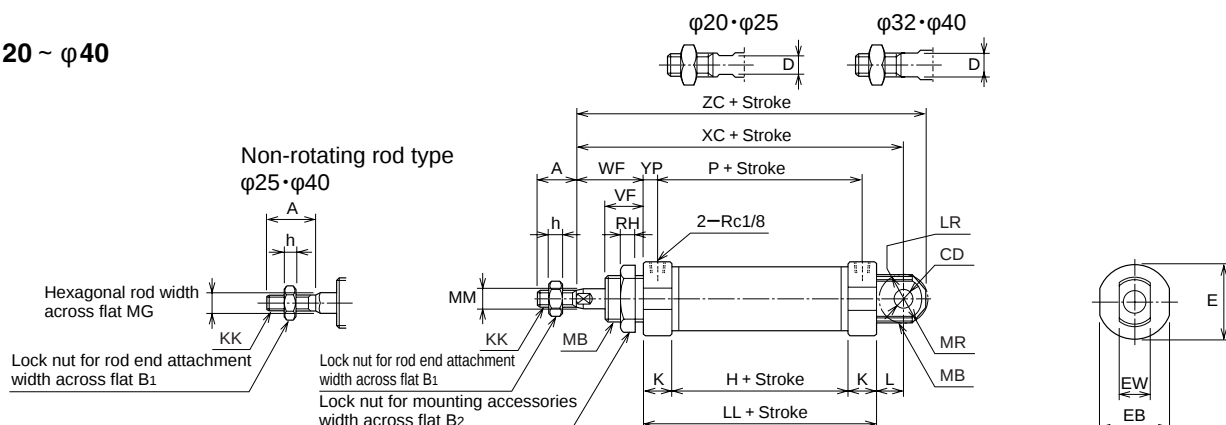
Non-rotating rod type

10Z - 3G SK

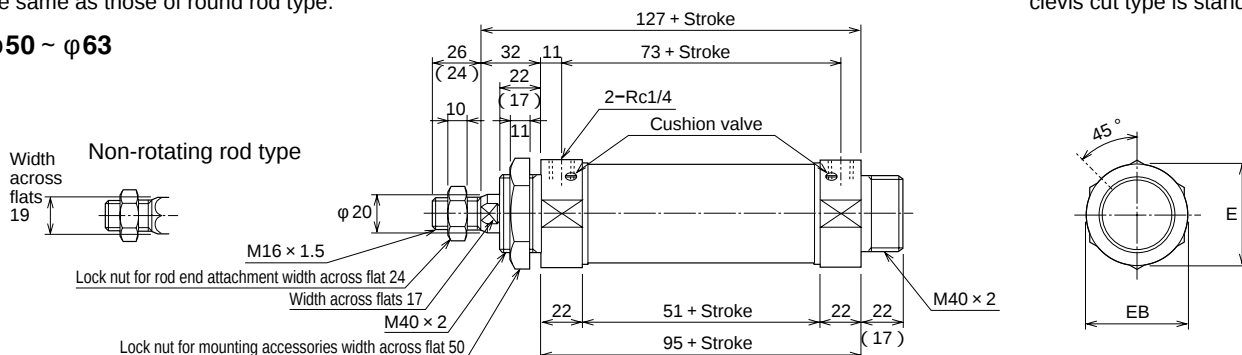
Bore

Cushioning

Stroke

• $\phi 20 \sim \phi 40$ 

- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

• $\phi 50 \sim \phi 63$ 

- Parenthesized figure is the dimension of screw length.
- All the dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Dimensional Table

Bore	Symbol	E	EB
$\phi 50$		$\phi 56$	54
$\phi 63$		$\phi 70$	68

Relative model : Clevis cut type(SK) Post-port type(SP) With boots

For non-rotating rod type, clevis cut type is standard.

Double Acting Single Rod

Round rod type

10Z - 3V2 SD

Bore

N

Stroke

Valve operation method

Valve voltage

Non-rotating rod type

10Z - 3V2G SD

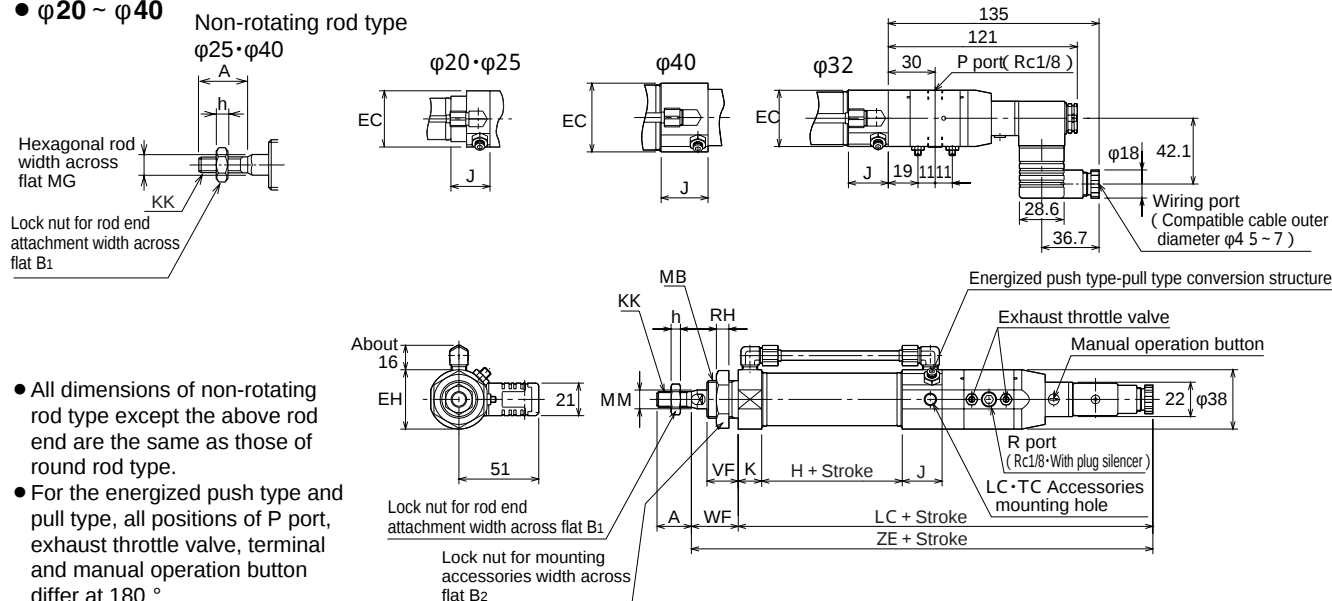
Bore

N

Stroke

Valve operation method

Valve voltage

• $\phi 20 \sim \phi 40$ 

- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.
- For the energized push type and pull type, all positions of P port, exhaust throttle valve, terminal and manual operation button differ at 180°

Relative models : With boots

The above drawings are the dimensional drawings of energized push type.

Dimensional Table

Symbol Bore	A		B1		B2	CD	D	E	EB	EC	EH	EW	H	h		J	K	KK	
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type										Round rod type	Non-rotating rod type			Round rod type	Non-rotating rod type
φ 20	20(20)	-	13	-	30	φ8H9	6	φ28	26	36	φ38	16 ^{+0.1} _{-0.3}	31	5	-	25	14	M8 × 1.25	-
φ 25	22(22)	20(17)	17	13	30	φ8H9	8	φ31	29	36	φ38	16 ^{+0.1} _{-0.3}	35	6	5	25	14.5	M10 × 1.25	M8 × 1.25
φ 32	22(19)	-	17	-	32	φ10H9	10	φ38	36	36	φ38	16 ^{+0.1} _{-0.3}	40	6	-	25.5	15	M10 × 1.25	-
φ 40	24(21)	24(21)	19	19	41	φ12H9	12	φ46	44	44	φ46	20 ^{+0.1} _{-0.3}	42	7	7	30	15	M12 × 1.25	M12 × 1.25

Symbol Bore	L	LC	LL	LR	MB	MG	MM	MR	P	RH	VF	WF	XC	YP	ZC	ZE
φ 20	12	205	59	R11	M22 × 1.5	-	φ8	R12	45	7	16(13)	24	95	7	105	229
φ 25	12	209.5	64	R11	M22 × 1.5	9	φ10	R12	49	7	18(15)	28	104	7.5	114	237.5
φ 32	14	215.5	70	R13	M24 × 2	-	φ12	R14	55	8	20(16)	30	114	7.5	126	245.5
φ 40	16	222	72	R15	M30 × 2	14	φ14	R16	57	9	22(18)	32	120	7.5	132	254

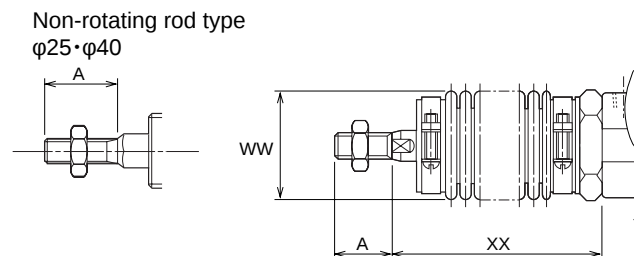
Parenthesized figure of A·VF is the dimension of screw length.

CAD/DATA is available.
10Z-3/TAZ3 Bore K

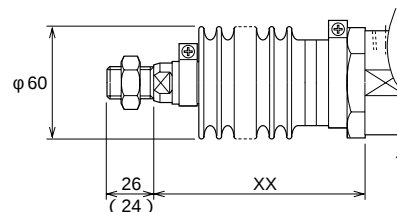


With Boots

φ20 ~ φ40



φ50·φ63

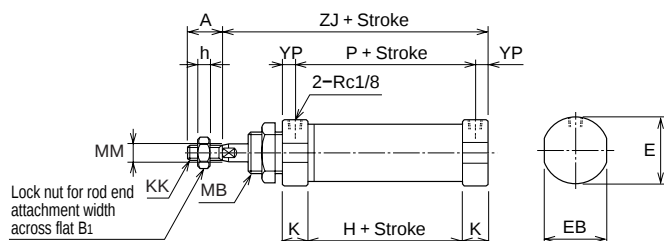


- Parenthesized figure is the dimension of screw length.
 $XX = 1/4(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

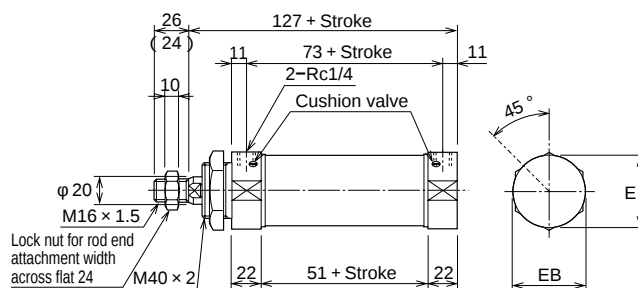
Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																													
				~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500			
	Round rod type	Non-rotating rod type		Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type		
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-		
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231		
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-		
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175		

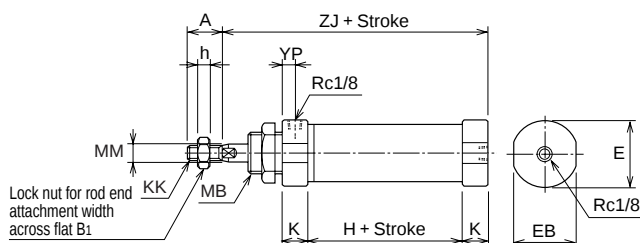
Parenthesized figure of A is the dimension of screw length.

Relative model Clevis cut type/SK(Basic type)• $\phi 20 \sim \phi 40$ 

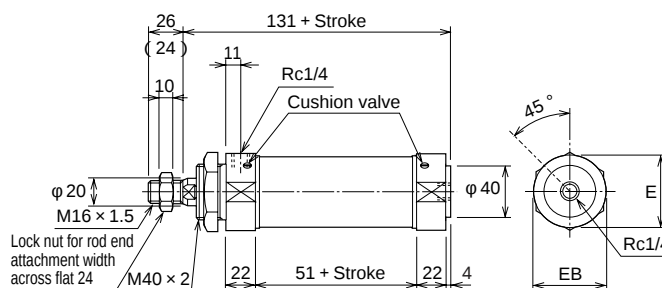
• For dimensions not given in the above drawings,
ref to SD type(basic type)

• $\phi 50 \cdot \phi 63$ 

• Parenthesized figure is the dimension of screw length.

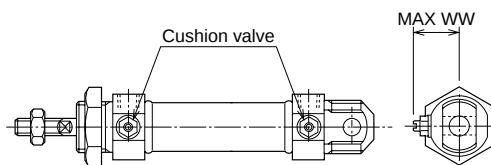
Relative model Post-port type/SP(Basic type)• $\phi 20 \sim \phi 40$ 

• For dimensions not given in the above drawings,
ref to SD type(basic type)

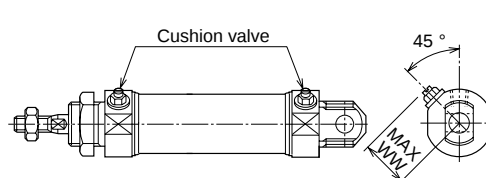
• $\phi 50 \cdot \phi 63$ **Dimensional table**

Bore	Symbol	E	EB
$\phi 50$		$\phi 56$	54
$\phi 63$		$\phi 70$	68

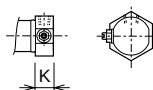
• Parenthesized figure is the dimension of screw length.

Relative model With cushion/SD(Basic type)• $\phi 20 \cdot \phi 25$ 

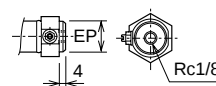
• For dimensions not given in the above drawings,
ref to SD type(basic type)

• $\phi 32 \cdot \phi 40$ 

• Clevis cut type



• Post-port type



• For the above sectional drawings, bore is $\phi 20, \phi 25$.

Dimensional Table

Symbol Bore	A		B1		E	EB	H	h		K
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type				Round rod type	Non-rotating rod type	
φ 20	20(20)	-	13	-	φ28	26	31	5	-	14
φ 25	22(22)	20(17)	17	13	φ31	29	35	6	5	14.5
φ 32	22(19)	-	17	-	φ38	36	40	6	-	15
φ 40	24(21)	24(21)	19	19	φ46	44	42	7	7	15

Symbol Bore	KK		MB	MM	P	WW	YP	ZJ
	Round rod type	Non-rotating rod type						
φ 20	M8 × 1.25	-	M22 × 1.5	φ8	45	21	7	83
φ 25	M10 × 1.25	M8 × 1.25	M22 × 1.5	φ10	49	22.5	7.5	92
φ 32	M10 × 1.25	-	M24 × 2	φ12	55	29	7.5	100
φ 40	M12 × 1.25	M12 × 1.25	M30 × 2	φ14	57	33	7.5	104

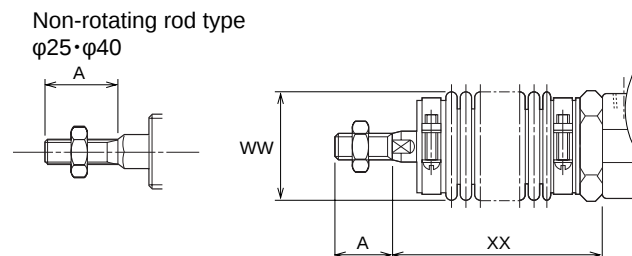
Parentthesized figure of A·VF is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

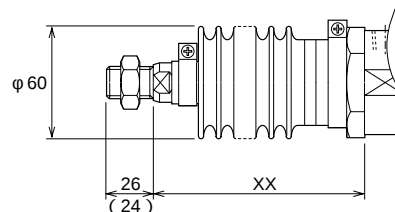


With Boots

φ20 ~ φ40



φ50 · φ63



- Parentthesized figure is the dimension of screw length.
 $XX = 1/4X(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																											
	Round rod type	Non-rotating rod type		~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
				Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175

Parentthesized figure of A is the dimension of screw length.

SD

Double Acting Double Rod

Round rod type

10Z - 3D SD

Bore

Cushioning

Stroke

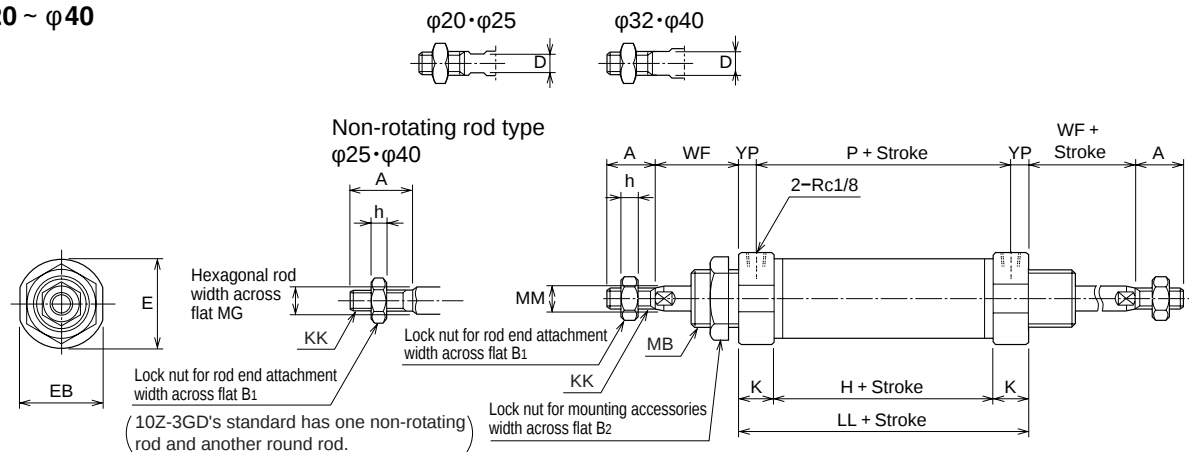
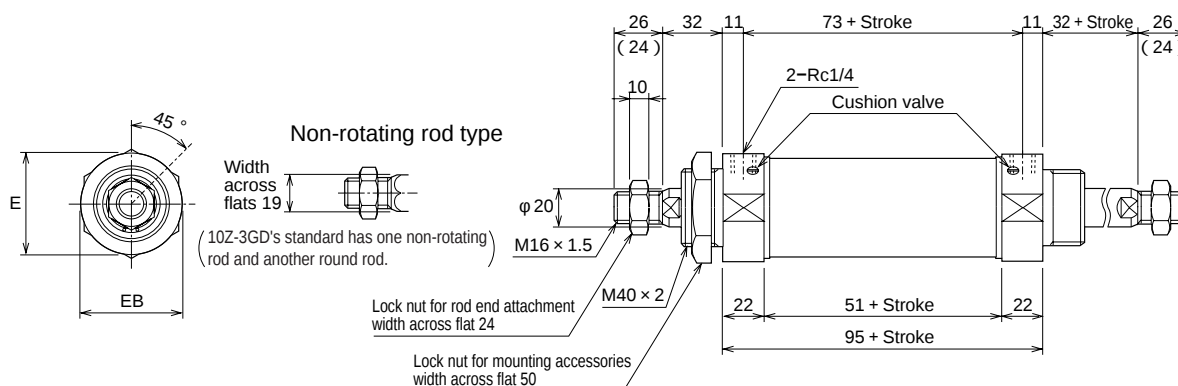
Non-rotating rod type

10Z - 3GD SD

Bore

Cushioning

Stroke

• $\phi 20 \sim \phi 40$ • $\phi 50 \cdot \phi 63$ 

• Parenthesized figure is the dimension of screw length.

Relative model : With boots

Dimensional Table

Bore	Symbol	E	EB
$\phi 50$		$\phi 56$	54
$\phi 63$		$\phi 70$	68

Dimensional Table

Symbol Bore	A		B1		B2	D	E	EB	H	h		K
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type						Round rod type	Non-rotating rod type	
φ 20	20(20)	-	13	-	30	6	φ28	26	31	5	-	14
φ 25	22(22)	20(17)	17	13	30	8	φ31	29	35	6	5	14.5
φ 32	22(19)	-	17	-	32	10	φ38	36	40	6	-	15
φ 40	24(21)	24(21)	19	19	41	12	φ46	44	42	7	7	15

Symbol Bore	KK		LL	MB	MG	MM	P	WF	YP
	Round rod type	Non-rotating rod type							
φ 20	M8 × 1.25	-	59	M22 × 1.5	-	φ8	45	24	7
φ 25	M10 × 1.25	M8 × 1.25	64	M22 × 1.5	9	φ10	49	28	7.5
φ 32	M10 × 1.25	-	70	M24 × 2	-	φ12	55	30	7.5
φ 40	M12 × 1.25	M12 × 1.25	72	M30 × 2	14	φ14	57	32	7.5

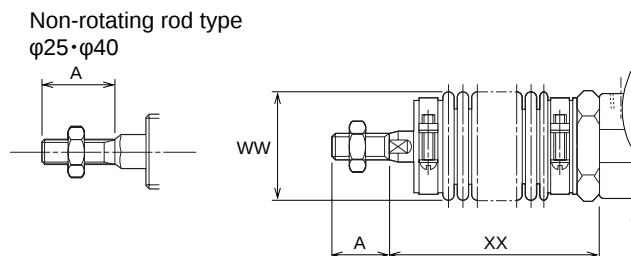
Parentthesized figure of A is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

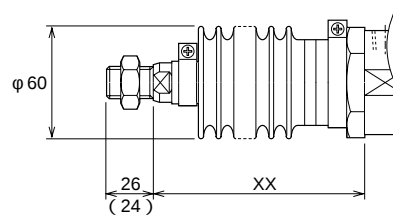


With Boots

φ20 ~ φ40



φ50 · φ63



- Parentthesized figure is the dimension of screw length.
 $XX = 1/4X(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																											
	Round rod type	Non-rotating rod type		~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
				Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175

Parentthesized figure of A is the dimension of screw length.

SD

Single Acting Type

Spring Return Type

Round rod type	10Z - 3SR	SD	Bore	Cushioning	Stroke
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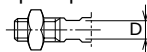
Non-rotating rod type	10Z - 3GSR	SK	Bore	Cushioning	Stroke
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Spring Push Type

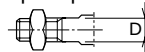
Round rod type	10Z - 3SH	SD	Bore	Cushioning	Stroke
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Non-rotating rod type	10Z - 3GSH	SK	Bore	Cushioning	Stroke
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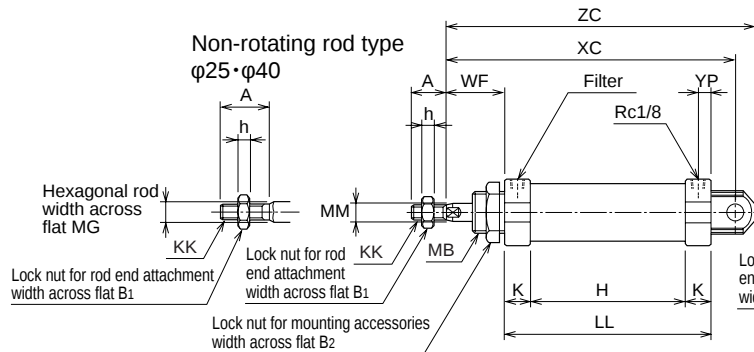
φ20・φ25



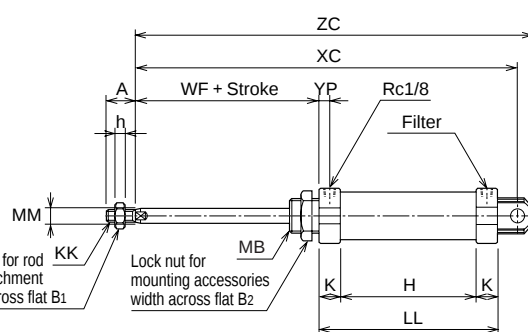
φ32・φ40



• Spring Return Type (SR type)



• Spring Push Type (SH type)



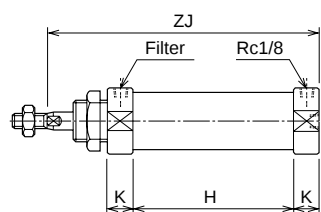
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : Clevis cut type(SK)Post-port type(SP)With boots

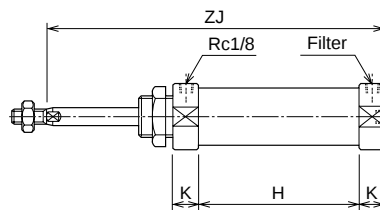
For non-rotating rod type, clevis cut type is standard.

Relative model Clevis cut type/SK(Basic type)

• Spring Return Type (SR type)



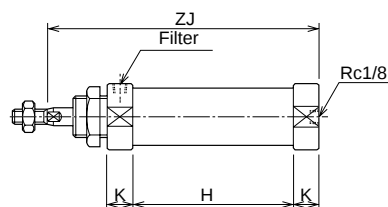
• Spring Push Type (SH type)



- For the dimensions of clevis cut type, post-port type except the above-mentioned, refer to SD type(basic type)

Relative model Post-port type/SR(Basic type)

• Spring Return Type (SR type)



Dimensional Table

Symbol Stroke Bore	A		B ₁		B ₂	D	h		K	KK		MB	MG	MM	WF	YP
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type			Round rod type	Non-rotating rod type		Round rod type	Non-rotating rod type					
φ 20	20(20)	-	13	-	30	6	5	-	14	M8 × 1.25	-	M22 × 1.5	-	φ8	24	7
φ 25	22(22)	20(17)	17	13	30	8	6	5	14.5	M10 × 1.25	M8 × 1.25	M22 × 1.5	9	φ10	28	7.5
φ 32	22(19)	-	17	-	32	10	6	-	15	M10 × 1.25	-	M24 × 2	-	φ12	30	7.5
φ 40	24(21)	24(21)	19	19	41	12	7	7	15	M12 × 1.25	M12 × 1.25	M30 × 2	14	φ14	32	7.5

Symbol Stroke Bore	H										LL									
	15	25	30	50	75	100	125	150	175	200	15	25	30	50	75	100	125	150	175	200
φ 20	71	81	111	131	181	231	281	331	381	431	99	109	139	159	209	259	309	359	409	459
φ 25	75	85	115	135	185	235	285	335	385	465	104	114	144	164	214	264	314	364	414	464
φ 32	80	90	120	140	190	240	290	340	390	440	110	120	150	170	220	270	320	370	420	470
φ 40	82	92	122	142	192	242	292	342	392	442	112	122	152	172	222	272	322	372	422	472

Symbol Stroke Bore	XC																			
	15		25		30		50		75		100		125		150		175		200	
	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type
φ 20	135	150	145	170	175	205	195	245	245	320	295	395	345	470	395	545	445	620	495	695
φ 25	144	159	154	179	184	214	204	254	254	329	304	404	354	479	404	554	454	629	504	704
φ 32	154	169	164	189	194	224	214	264	264	339	314	414	364	489	414	564	464	639	514	714
φ 40	160	175	170	195	200	230	220	270	270	345	320	420	370	495	420	570	470	645	520	720

Symbol Stroke Bore	ZC																			
	15		25		30		50		75		100		125		150		175		200	
	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type
φ 20	145	160	155	180	185	215	205	255	255	330	305	405	355	480	405	555	455	630	505	705
φ 25	154	169	164	189	194	224	214	264	264	339	314	414	364	489	414	564	464	639	514	714
φ 32	166	181	176	201	206	236	226	276	276	351	326	426	376	501	426	576	476	651	526	726
φ 40	172	187	182	207	212	242	232	282	282	357	332	432	382	507	432	582	482	657	532	732

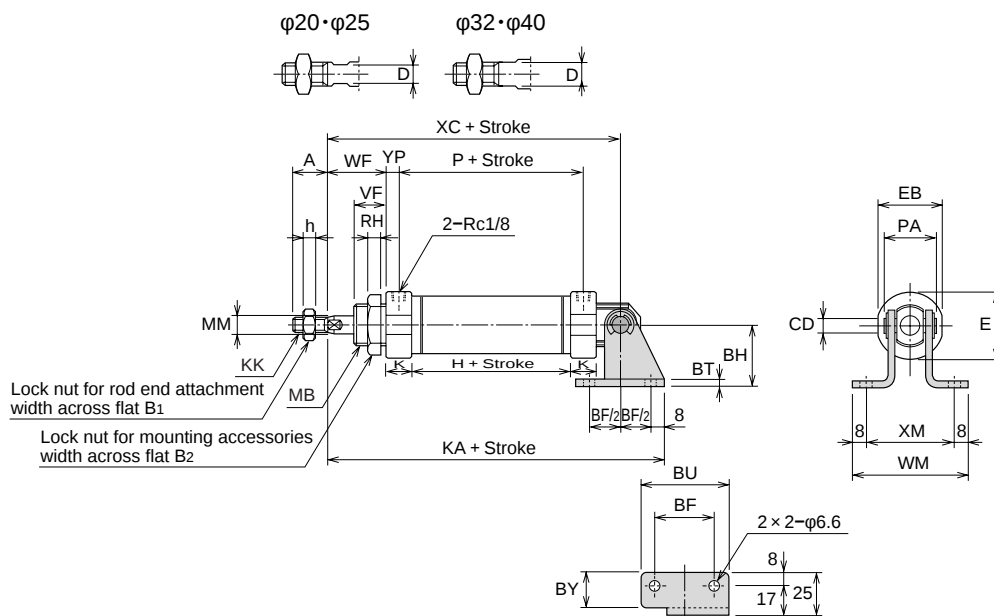
Symbol Stroke Bore	ZJ																			
	15		25		30		50		75		100		125		150		175		200	
	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type
φ 20	123	138	133	158	163	193	183	233	233	308	283	383	333	458	383	533	433	608	483	683
φ 25	132	147	142	167	172	202	192	242	242	317	292	392	342	467	392	542	442	617	492	692
φ 32	140	155	150	175	180	210	200	250	250	325	300	400	350	475	400	550	450	625	500	700
φ 40	144	159	154	179	184	214	204	254	254	329	304	404	354	479	404	554	454	629	504	704

Parentthesized figure of A is the dimension of screw length.

SD with B

Double Acting Single Rod Round rod type 10Z - 3 SD Bore Cushioning Stroke - B

- $\phi 20 \sim \phi 40$



- Non-rotating rod is not available.
- For dimensions not given in the above drawings, ref to SD type (basic type)

Relative model : With cushion • With boots

Dimensional Table

Symbol Bore	A	B1	B2	BF	BH	BT	BU	BY	CD	D	E	EB	H	h	K
φ 20	20(20)	13	30	32	32	3.2	48	21.8	φ8	6	φ28	26	31	5	14
φ 25	22(22)	17	30	32	32	3.2	48	21.8	φ8	8	φ31	29	35	6	14.5
φ 32	22(19)	17	32	36	36	4	52	21	φ10	10	φ38	36	40	6	15
φ 40	24(21)	19	41	40	40	4	56	21	φ12	12	φ46	44	42	7	15

Symbol Bore	KA	KK	MB	MM	P	PA	RH	VF	WF	WM	XC	XM	YP
φ 20	119	M8 × 1.25	M22 × 1.5	φ8	45	31	7	16(13)	24	67	95	51	7
φ 25	128	M10 × 1.25	M22 × 1.5	φ10	49	31	7	18(15)	28	67	104	51	7.5
φ 32	140	M10 × 1.25	M24 × 2	φ12	55	32	8	20(16)	30	67	114	51	7.5
φ 40	148	M12 × 1.25	M30 × 2	φ14	57	36	9	22(18)	32	71	120	55	7.5

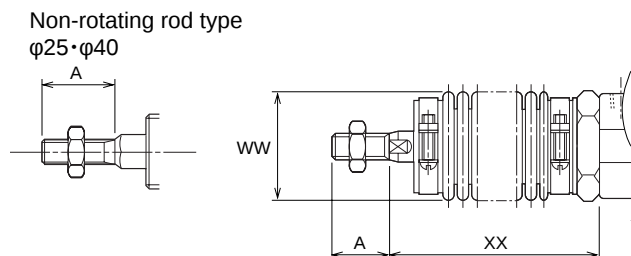
Parenthesized figure of A·VF is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

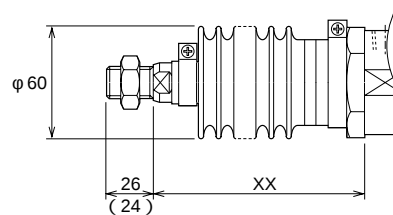


With Boots

φ20 ~ φ40



φ50 · φ63



- Parenthesized figure is the dimension of screw length.
 $XX = 1/4X(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																											
				~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175

Parenthesized figure of A is the dimension of screw length.



LB

Double Acting Single Rod

Round rod type

10Z - 3 LB

Bore

Cushioning

Stroke

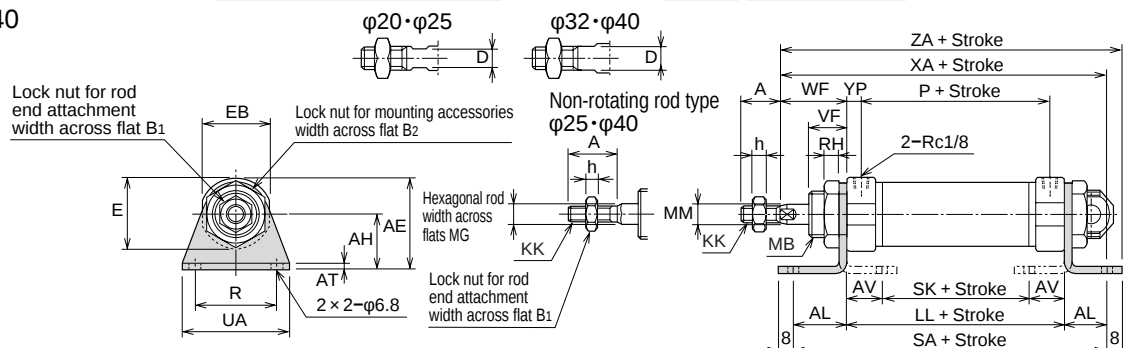
Non-rotating rod type

10Z - 3G LB

Bore

Cushioning

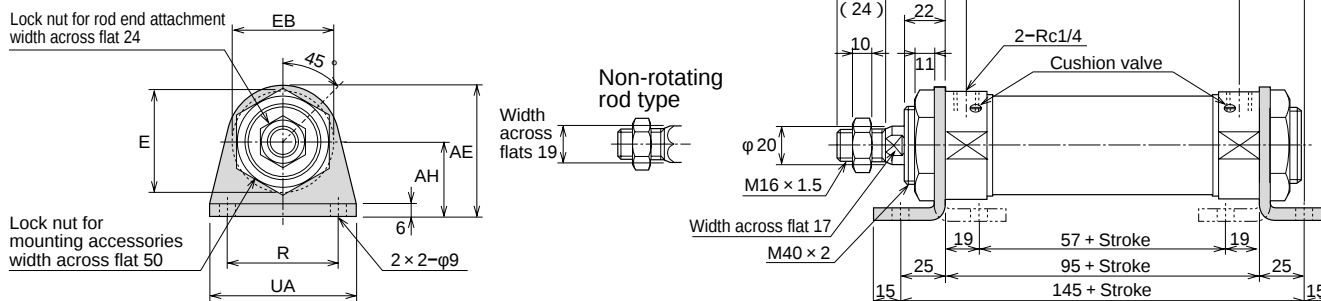
Stroke

• $\phi 20 \sim \phi 40$ 

• For dimensions not given in the above drawings, ref to SD type(basic type)

• All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : With cushion · With boots

• $\phi 50 \sim \phi 63$ 

• Parenthesized figure is the dimension of screw length.

• All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : With boots

Dimensional Table

Bore	Symbol	AE	AH	E	EB	R	UA
$\phi 50$		70	40	$\phi 56$	54	60	80
$\phi 63$		80	45	$\phi 70$	68	74	95

LC Val Set

Double Acting Single Rod

Round rod type

10Z - 3V2 LC

Bore

N

Stroke

Valve operation method

Valve voltage

Non-rotating rod type

10Z - 3V2G LC

Bore

N

Stroke

Valve operation method

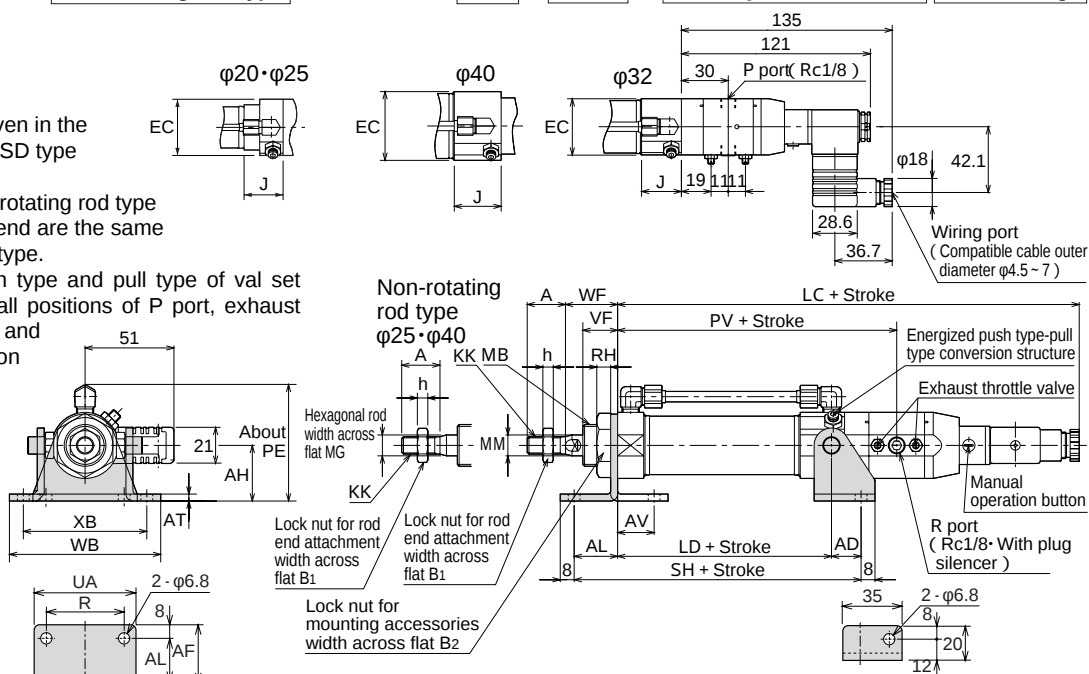
Valve voltage

• $\phi 20 \sim \phi 40$

• For dimensions not given in the above drawings,ref to SD type (basic type)

• All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

• For the energized push type and pull type of val set and SV set cylinder, all positions of P port, exhaust throttle valve, terminal and manual operation button differ at 180°.



Relative model : With boots

The above drawings are the dimensional drawings of energized push type.

Dimensional Table

Symbol Bore	A		AD	AE	AF	AH	AL	AT	AV	B1		B2	D	E	EB	EC	h		J	KK	
	Round rod type	Non-rotating rod type								Round rod type	Non-rotating rod type						Round rod type	Non-rotating rod type		Round rod type	Non-rotating rod type
φ 20	20(20)	-	19	42	24	25	16	3.2	12.8	13	-	30	6	φ28	26	36	5	-	25	M8 × 1.25	-
φ 25	22(22)	20(17)	19	42	24	25	16	3.2	12.8	17	13	30	8	φ31	29	36	6	5	25	M10 × 1.25	M8 × 1.25
φ 32	22(19)	-	17	51	33	32	25	4	21	17	-	32	10	φ38	36	36	6	-	25.5	M10 × 1.25	-
φ 40	24(21)	24(21)	15	59	33	36	25	4	21	19	19	41	12	φ46	44	44	7	7	30	M12 × 1.25	M12 × 1.25

Symbol Bore	LC	LD	LL	MB	MG	MM	P	PE	PV	R	RH	SA	SH	SK	UA	VF	WB	WF	XA	XB	YP	ZA
φ 20	205	62.5	59	M22 × 1.5	-	φ8	45	59	100	40	7	91	97.5	33.4	55	16(13)	87	24	99	71	7	107
φ 25	209.5	67	64	M22 × 1.5	9	φ10	49	59	104.5	40	7	96	102	38.4	55	18(15)	87	28	108	71	7.5	116
φ 32	215.5	73	70	M24 × 2	-	φ12	55	66	110.5	45	8	120	115	28	60	20(16)	87	30	125	71	7.5	133
φ 40	222	77	72	M30 × 2	14	φ14	57	74	117	50	9	122	117	30	65	22(18)	95	32	129	79	7.5	137

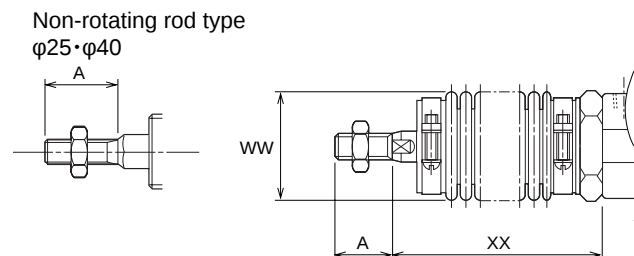
Parenthesized figure of A~VF is the dimension of screw length.

CAD/DATA is available.
10Z-3/TAZ3 Bore K

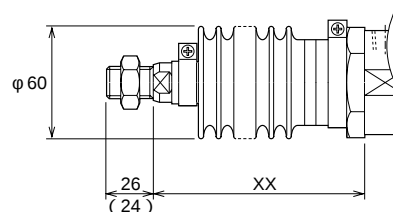


With Boots

φ20 ~ φ40



φ50 · φ63



- Parenthesized figure is the dimension of screw length.
 $XX = 1/4(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																													
				~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500			
	Round rod type	Non-rotating rod type		Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type		
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-		
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231		
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-		
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175		

Parenthesized figure of A is the dimension of screw length.

10Z-3/TAZ3 Bore A CAD/DATA is available.



LS

Double Acting Single Rod

Round rod type

10Z - 3 LS

Bore

Cushioning

Stroke

Non-rotating rod type

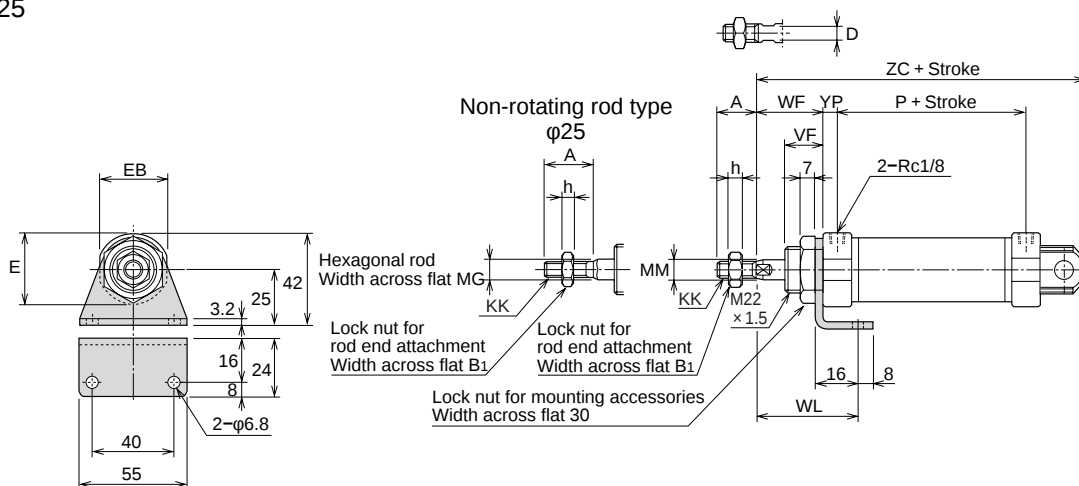
10Z - 3G LK

Bore

Cushioning

Stroke

• $\phi 20 \cdot \phi 25$



- For dimensions not given in the above drawings, ref to SD type(basic type)
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : Clevis cut type(LK type) Post-port type(LP type) With cushion With boots

For non-rotating rod type, clevis cut type is standard.

Dimensional Table

Symbol Bore	A		B1		D	E	EB	h	
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type				Round rod type	Non-rotating rod type
φ 20	20(20)	-	13	-	6	φ28	26	5	-
φ 25	22(22)	20(17)	17	13	8	φ31	29	6	5

Symbol Bore	KK		MM	MG	P	VF	WF	WL	YP	ZC
	Round rod type	Non-rotating rod type								
φ 20	M8 × 1.25	-	φ8	-	45	16	24	36.8	7	105
φ 25	M10 × 1.25	M8 × 1.25	φ10	9	49	18	28	40.8	7.5	114

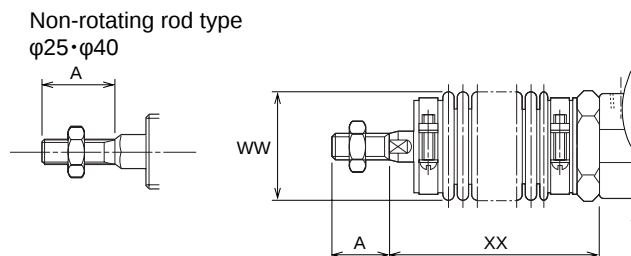
Parentthesized figure of A is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

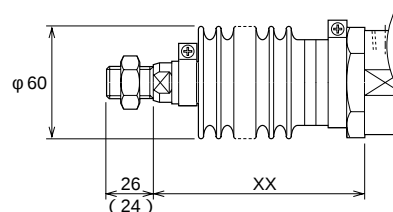


With Boots

φ20 ~ φ40



φ50 · φ63



- Parentthesized figure is the dimension of screw length.
 $XX = 1/4(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																											
	Round rod type	Non-rotating rod type		~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
				Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175

Parentthesized figure of A is the dimension of screw length.

CAD/DATA is available.
10Z-3/TAZ3 Bore A



FA

Double Acting Single Rod

Round rod type

10Z - 3

FA

Bore

Cushioning

Stroke

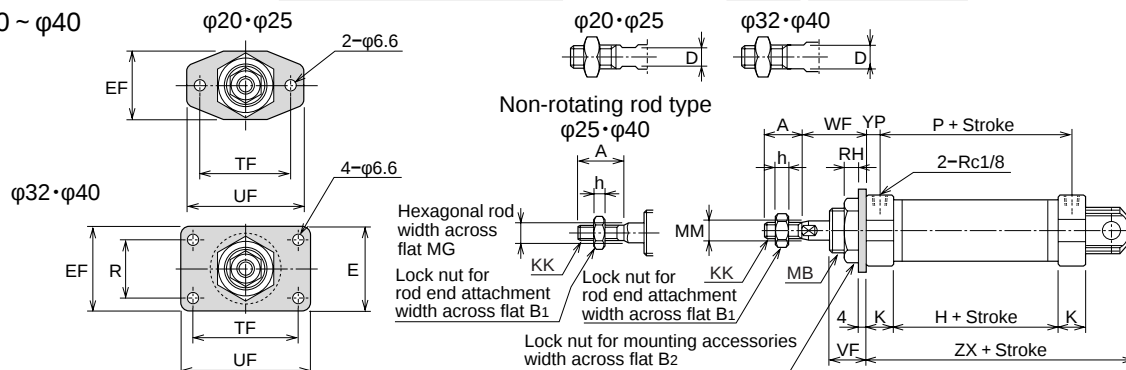
Non-rotating rod type

10Z - 3G FK

Bore

Cushioning

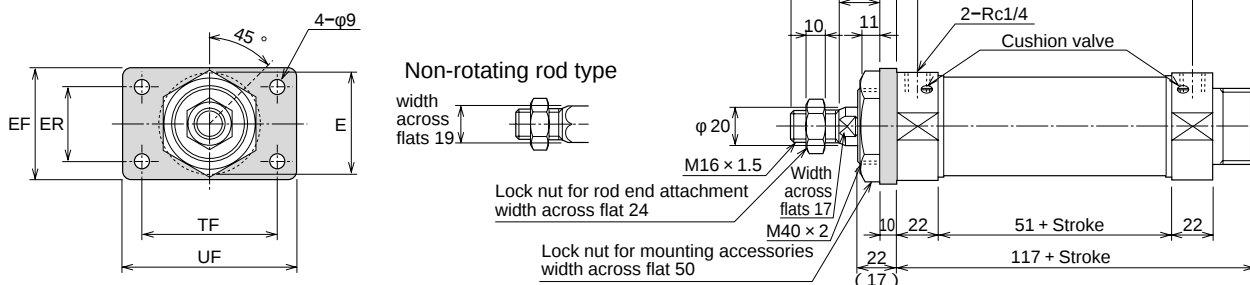
Stroke

• $\phi 20 \sim \phi 40$ 

- For dimensions not given in the above drawings, refer to SD type(basic type)
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : Clevis cut type(FK type) Post-port type(FP type) With cushion · With boots

For non-rotating rod type, clevis cut type is standard.

• $\phi 50 \sim \phi 63$ 

- Parenthesized figure is the dimension of screw length.
- All the dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Dimensional Table

Symbol Bore	E	EF	ER	TF	UF
φ50	φ56	60	40	74	94
φ63	φ70	70	50	80	100

Relative model : Clevis cut type(FK) Post-port type(FP) With boots

For non-rotating rod type, clevis cut type is standard.

Val Set

Double Acting Single Rod

Round rod type

10Z - 3V2

FA

Bore

N

Stroke

Valve operation method

Valve voltage

Non-rotating rod type

10Z - 3V2G FA

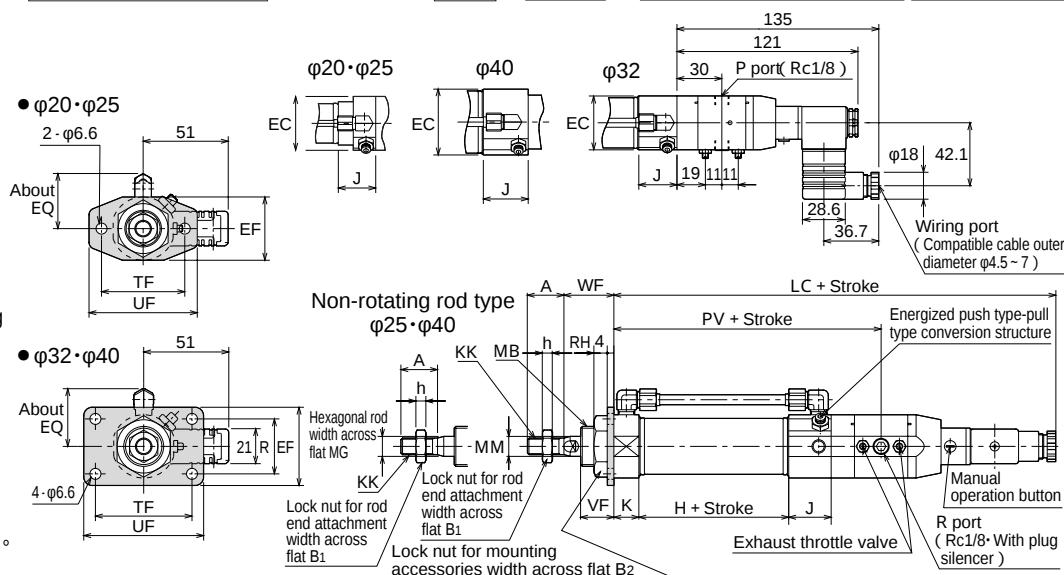
Bore

N

Stroke

Valve operation method

Valve voltage

• $\phi 20 \sim \phi 40$ 

- For dimensions not given in the above drawings, refer to SD type(basic type)
- All dimensions of non-rotating rod type except the rod end are the same as those of round rod type.
- For the energized push type and pull type of Val set and SV set cylinder, all positions of P port, exhaust throttle valve, terminal and manual operation button differ at 180°

Relative models : With boots

The above drawings are those of energized push type.

Dimensional Table

Symbol Bore	A		B1		B2	D	E	EC	EF	EQ	H	h		J	K
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type								Round rod type	Non-rotating rod type		
φ 20	20(20)	-	13	-	30	6	φ28	36	38	34	31	5	-	25	14
φ 25	22(22)	20(17)	17	13	30	8	φ31	36	38	34	35	6	5	25	14.5
φ 32	22(19)	-	17	-	32	10	φ38	36	47	34	40	6	-	25.5	15
φ 40	24(21)	24(21)	19	19	41	12	φ46	44	51	38	42	7	7	30	15

Symbol Bore	KK		LC	MB	MG	MM	P	PV	R	RH	TF	UF	VF	WF	YP	ZX
	Round rod type	Non-rotating rod type														
φ 20	M8 × 1.25	-	205	M22 × 1.5	-	φ8	45	100	-	7	50	65	16	24	7	81
φ 25	M10 × 1.25	M8 × 1.25	209.5	M22 × 1.5	9	φ10	49	104.5	-	7	50	65	18	28	7.5	86
φ 32	M10 × 1.25	-	215.5	M24 × 2	-	φ12	55	110.5	33	8	58	72	20	30	7.5	96
φ 40	M12 × 1.25	M12 × 1.25	222	M30 × 2	14	φ14	57	117	36	9	70	84	22	32	7.5	100

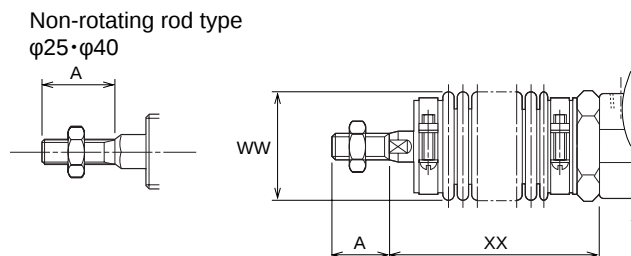
Parenthesized figure of A is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

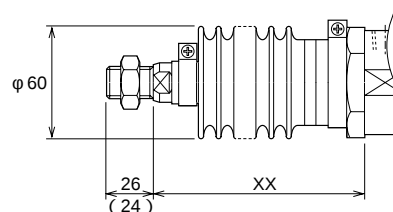


With Boots

φ20 ~ φ40



φ50 · φ63



- Parenthesized figure is the dimension of screw length.
 $XX = 1/4X(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																											
	Round rod type	Non-rotating rod type		~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
				Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175

Parenthesized figure of A is the dimension of screw length.

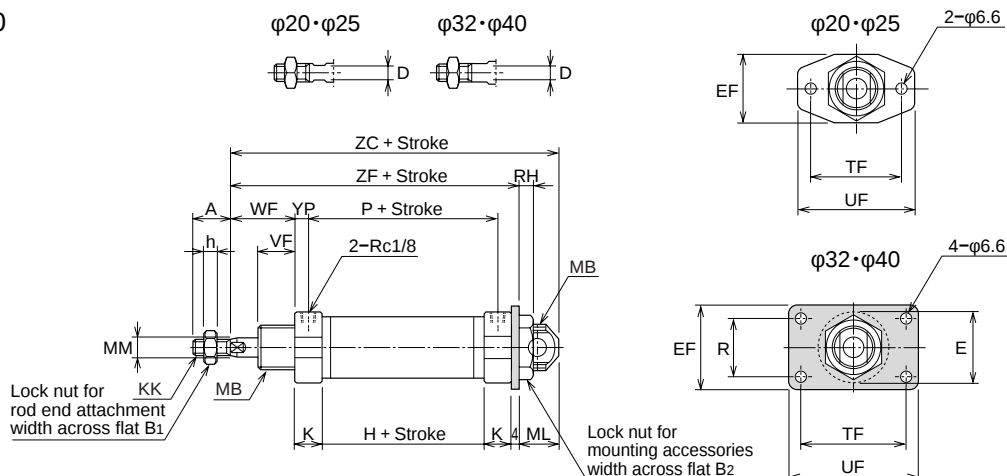
10Z-3/TAZ3 Bore A CAD/DATA is available.



FB

Double Acting Single Rod Round rod type 10Z-3 FB Bore Cushioning Stroke

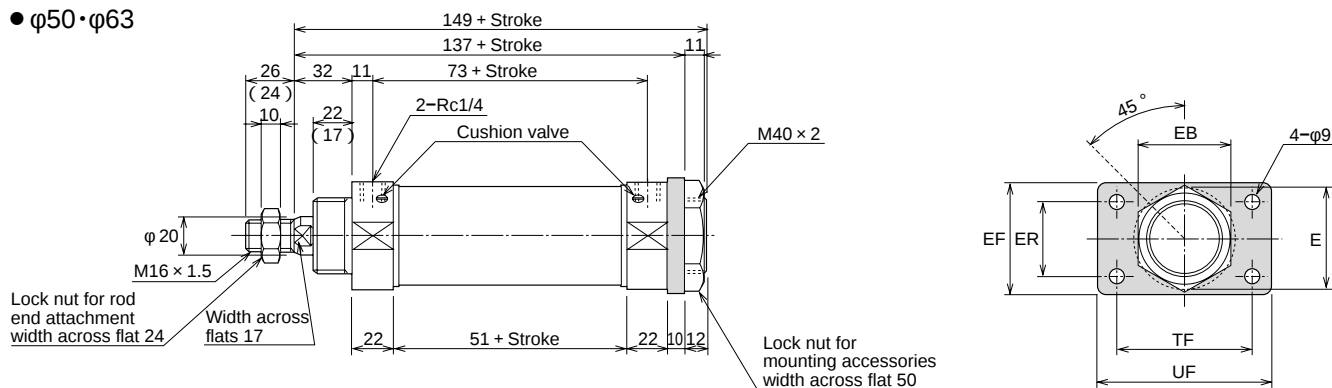
- $\phi 20 \sim \phi 40$



- Non-rotating rod type is not available.
- For dimensions not given in the above drawings, ref to SD type(basic type)

Relative model : With cushion • With boots

- $\phi 50 \cdot \phi 63$



- Non-rotating rod type is not available.
- Parenthesized figure is the dimension of screw length.

Relative model : With boots

Dimensional Table

Bore	Symbol	E	EB
$\phi 50$		$\phi 56$	54
$\phi 63$		$\phi 70$	68

Dimensional Table

Symbol Bore	A	B ₁	B ₂	D	E	EF	H	h	K	KK	MB
φ 20	20(20)	13	30	6	φ28	38	31	5	14	M8 × 1.25	M22 × 1.5
φ 25	22(22)	17	30	8	φ31	38	35	6	14.5	M10 × 1.25	M22 × 1.5
φ 32	22(19)	17	32	10	φ38	47	40	6	15	M10 × 1.25	M24 × 2
φ 40	24(21)	19	41	12	φ46	51	42	7	15	M12 × 1.25	M30 × 2

Symbol Bore	ML	MM	P	R	RH	TF	UF	VF	WF	YP	ZC	ZF
φ 20	18	φ8	45	-	7	50	65	16(13)	24	7	105	87
φ 25	18	φ10	49	-	7	50	65	18(15)	28	7.5	114	96
φ 32	22	φ12	55	33	8	58	72	20(16)	30	7.5	126	104
φ 40	24	φ14	57	36	9	70	84	22(18)	32	7.5	132	108

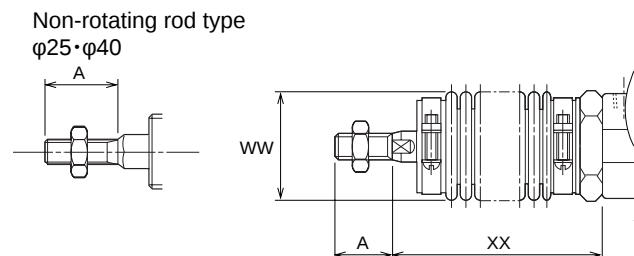
Parenthesized figure of A·VF is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

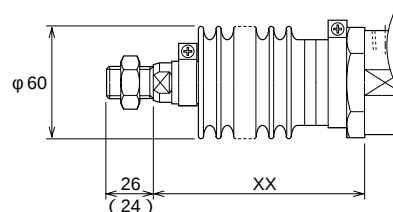


With Boots

φ20 ~ φ40



φ50 · φ63



- Parenthesized figure is the dimension of screw length.
 $XX = 1/4X(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																											
				~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type			
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175

Parenthesized figure of A is the dimension of screw length.

CAD/DATA is available.
10Z-3/TAZ3 Bore A

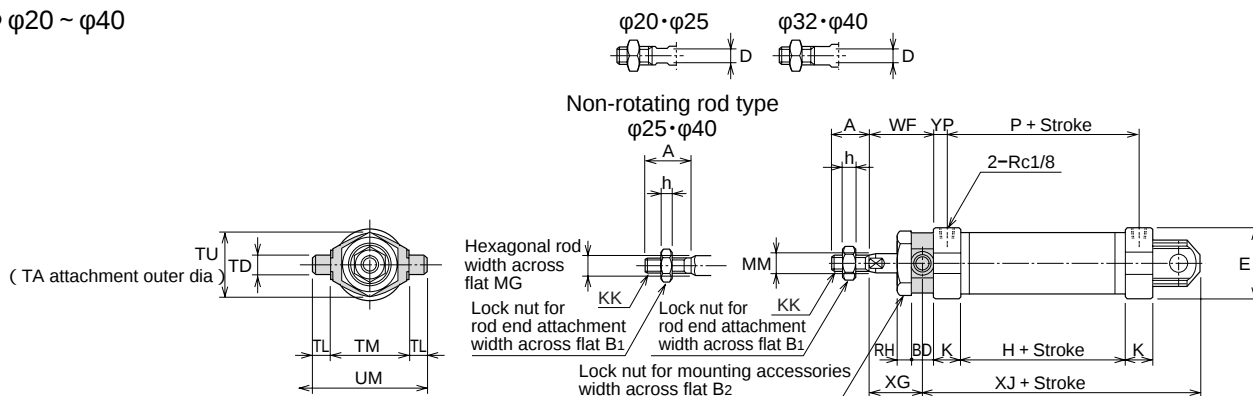


TA

Double Acting Single Rod

Round rod type	10Z - 3	TA	Bore	Cushioning	Stroke
Non-rotating rod type	10Z - 3G TK	Bore	Cushioning	Stroke	

- $\phi 20 \sim \phi 40$

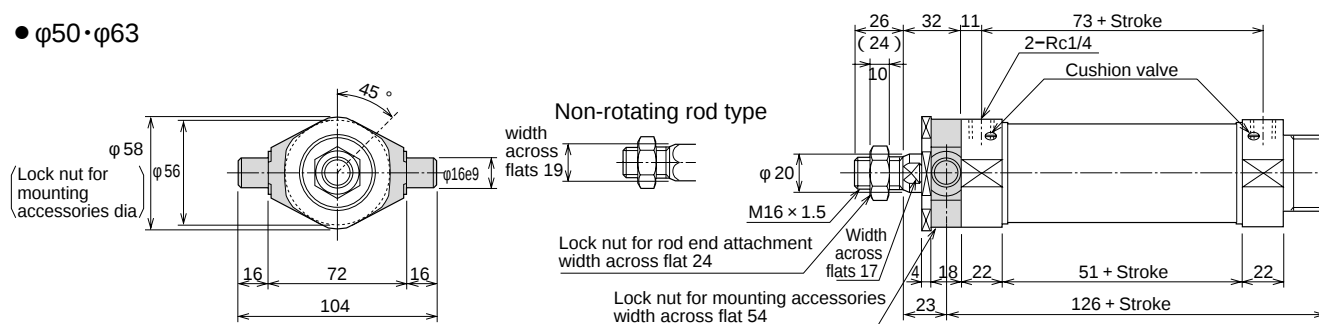


- For dimensions not given in the above drawings, ref to SD type(basic type)
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

For non-rotating rod type, clevis cut type is standard.

Relative model : Clevis cut type(TK) Post-port type(TP) With cushion • With boots

- $\phi 50 \cdot \phi 63$



- Parenthesized figure is the dimension of screw length.
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

For non-rotating rod type, clevis cut type is standard.

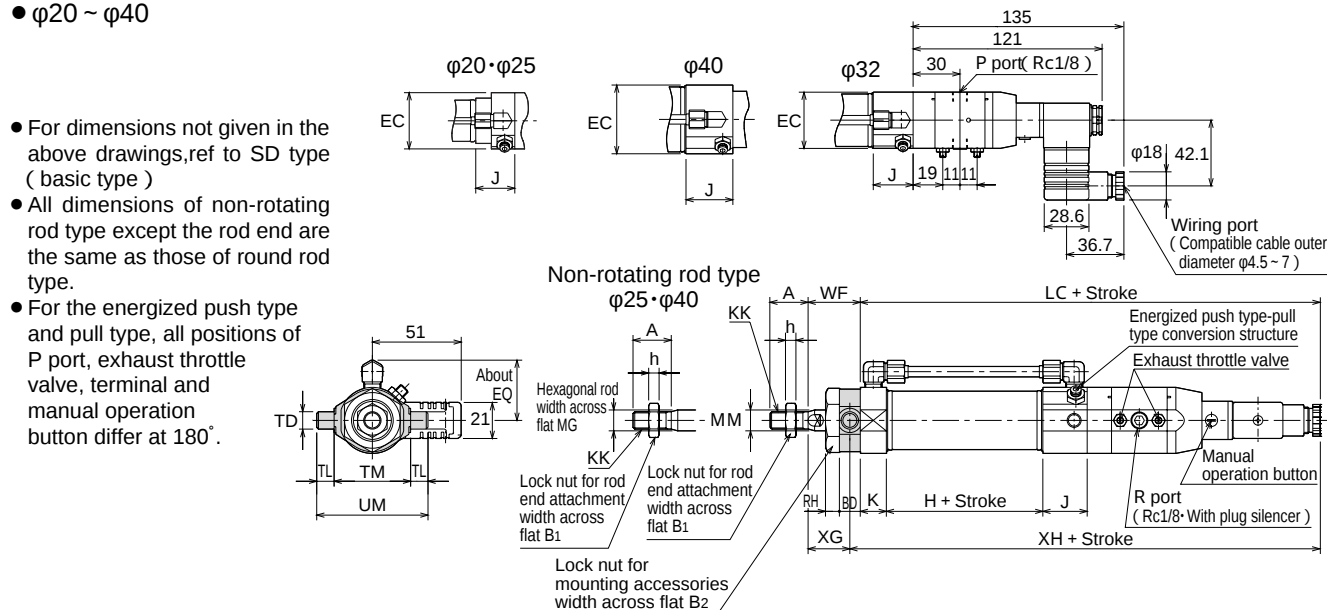
Relative model : Clevis cut type(TK) Post-port type(TP)

Val Set

Double Acting Single Rod

Round rod type	10Z - 3V2	TA	Bore	N	Stroke	Valve operation method	Valve voltage
Non-rotating rod type	10Z - 3V2G TA	Bore	N	Stroke	Valve operation method	Valve voltage	

- $\phi 20 \sim \phi 40$



- For dimensions not given in the above drawings, ref to SD type (basic type)
- All dimensions of non-rotating rod type except the rod end are the same as those of round rod type.
- For the energized push type and pull type, all positions of P port, exhaust throttle valve, terminal and manual operation button differ at 180°.

The above drawings are the dimensional drawings of energized push type.

Relative model : With boots

Dimensional Table

Symbol Bore	A		B1		B2	BD	D	E	EC	EQ	H	h		J	K
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type								Round rod type	Non-rotating rod type		
φ 20	20(20)	-	13	-	30	10	6	φ28	36	34	31	5	-	25	14
φ 25	22(22)	20(17)	17	13	30	10	8	φ31	36	34	35	6	5	25	14.5
φ 32	22(19)	-	17	-	32	12	10	φ38	36	34	40	6	-	25.5	15
φ 40	24(21)	24(21)	19	19	41	14	12	φ46	44	38	42	7	7	30	15

Symbol Bore	KK		LC	MG	MM	P	RH	TD	TL	TM	TU	UM	WF	XG	XH	XJ	YP
	Round rod type	Non-rotating rod type															
φ 20	M8 × 1.25	-	205	-	φ8	45	7	φ8e9	8	36	32	52	24	19	210	86	7
φ 25	M10 × 1.25	M8 × 1.25	209.5	9	φ10	49	7	φ8e9	8	36	32	52	28	23	214.5	91	7.5
φ 32	M10 × 1.25	-	215.5	-	φ12	55	8	φ10e9	10	44	36	64	30	24	221.5	102	7.5
φ 40	M12 × 1.25	M12 × 1.25	222	14	φ14	57	9	φ12e9	12	50	44	74	32	25	229	107	7.5

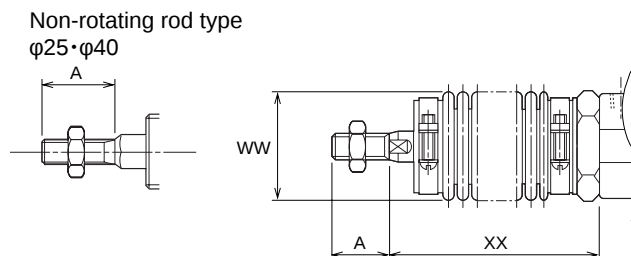
Parenthesized figure of A is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

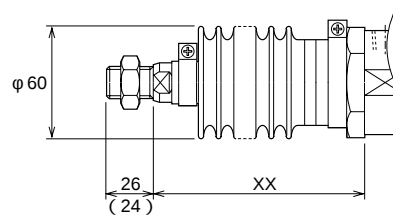


With Boots

φ20 ~ φ40



φ50 · φ63



• Parenthesized figure is the dimension of screw length.

$$XX = 1/4X(\text{Stroke}) + 65$$

At less than 50mm stroke, equation above can't be applied.

Please calculate by this : $XX = 1/4 \times (\text{Stroke}) + 80$

Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore			A		WW	Chart of the XX dimensions																											
						~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
Round rod type		Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type			
φ 20	20(20)	-	φ36	59	-	69	-	79	-	84	-	94	-	104	-	114	-	124	-	144	-	164	-	184	-	204	-	224	-	244	-		
φ 25	22(22)	20(17)	φ36	63	56	73	66	83	76	88	81	98	91	108	101	118	111	128	121	148	141	168	161	188	181	208	201	228	221	248	241		
φ 32	22(19)	-	φ40	55	-	65	-	75	-	80	-	90	-	95	-	105	-	110	-	130	-	140	-	160	-	180	-	200	-	220	-		
φ 40	24(21)	24(21)	φ45	52	45	62	55	67	60	72	65	82	75	92	85	97	90	102	95	112	105	127	120	137	130	152	145	172	165	192	185		

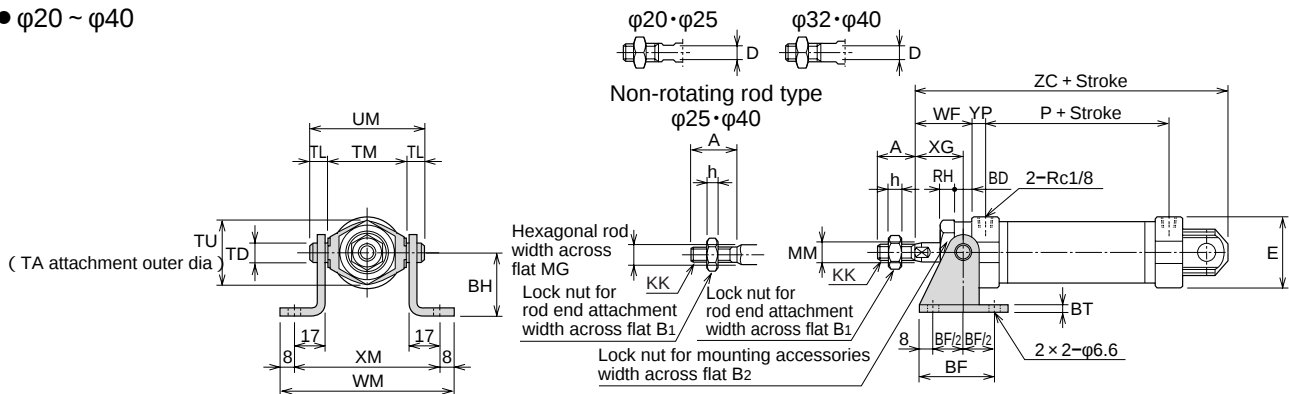
Parenthesized figure of A is the dimension of screw length.

TA with B

Double Acting Single Rod

Round rod type	10Z-3	TA	Bore	Cushioning	Stroke	- B
Non-rotating rod type	10Z-3G	TK	Bore	Cushioning	Stroke	- B

- $\varphi 20 \sim \varphi 40$

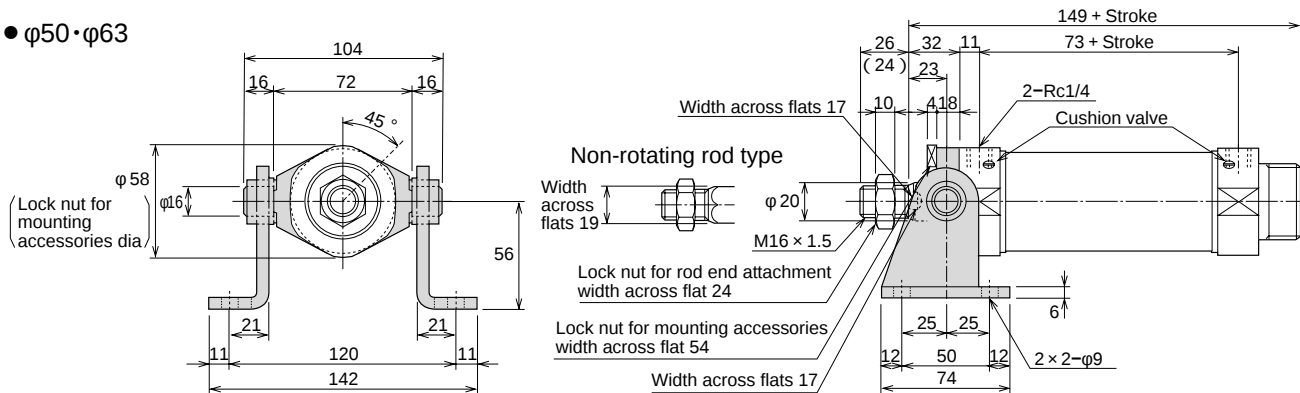


- For dimensions not given in the above drawings, ref to SD type(basic type)
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

For non-rotating rod type, clevis cut type is standard.

Relative model : Clevis cut type(TK with B) Post-port type(TP with B) With cushion・With boots

- φ50・φ63



- Parenthesized figure is the dimension of screw length.
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : Clevis cut type(TK) Post-port type(TP)

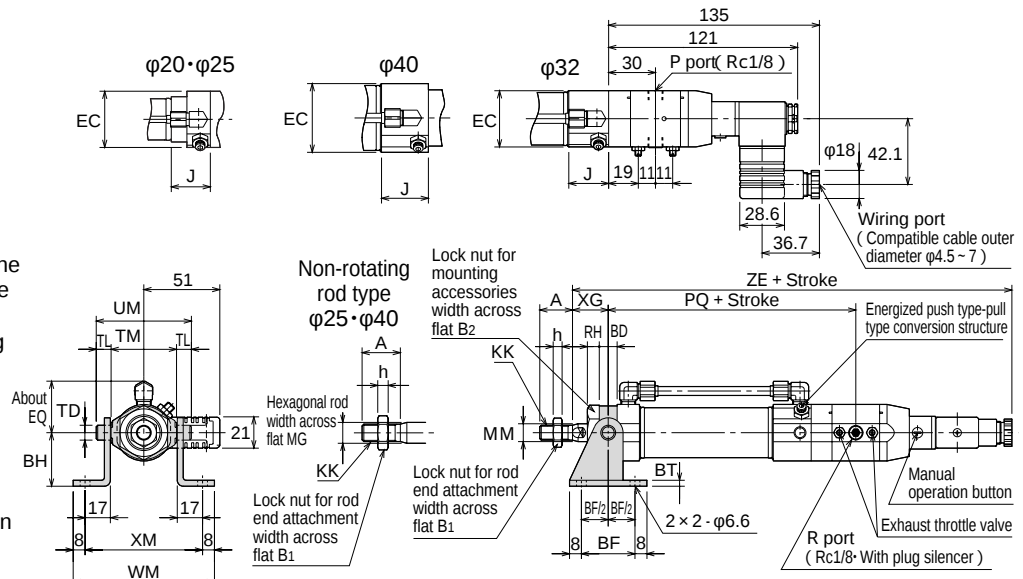
For non-rotating rod type, clevis cut type is standard.

Val Set

Double Acting Single Rod

Round rod type	10Z · 3V2 TA	Bore	N	Stroke	-	Valve operation method	Valve voltage	- B
Non-rotating rod type	10Z · 3V2G TA	Bore	N	Stroke	-	Valve operation method	Valve voltage	- B

- $\varphi 20 \sim \varphi 40$



- For dimensions not given in the above drawings, ref to SD type (basic type)
- All dimensions of non-rotating rod type except the rod end are the same as those of round rod type.
- For the energized push type and pull type, all positions of P port, exhaust throttle valve, terminal and manual operation button differ at 180°.

Relative model : With boots

The above drawings are the dimensional drawings of energized push type.

Dimensional Table

Symbol Bore	A		B1		B2	BD	BF	BH	BT	D	E	EC	EQ	h		J
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type										Round rod type	Non-rotating rod type	
φ 20	20(20)	-	13	-	30	10	32	32	3.2	6	φ28	36	34	5	-	25
φ 25	22(22)	20(17)	17	13	30	10	32	32	3.2	8	φ31	36	34	6	5	25
φ 32	22(19)	-	17	-	32	12	36	36	4	10	φ38	36	35	6	-	25.5
φ 40	24(21)	24(21)	19	19	41	14	40	40	4	12	φ46	44	39	7	7	30

Symbol Bore	KK		MG	MM	P	PQ	RH	TD	TL	TM	TU	UM	WF	WM	XG	XM	YP	ZC	ZE
	Round rod type	Non-rotating rod type																	
φ 20	M8 × 1.25	-	-	φ8	45	105	7	φ8e9	8	36	32	52	24	87	19	71	7	105	229
φ 25	M10 × 1.25	M8 × 1.25	9	φ10	49	109.5	7	φ8e9	8	36	32	52	28	87	23	71	7.5	114	237.5
φ 32	M10 × 1.25	-	-	φ12	55	116.5	8	φ10e9	10	44	36	64	30	95	24	79	7.5	126	245.5
φ 40	M12 × 1.25	M12 × 1.25	14	φ14	57	124	9	φ12e9	12	50	44	74	32	101	25	85	7.5	132	254

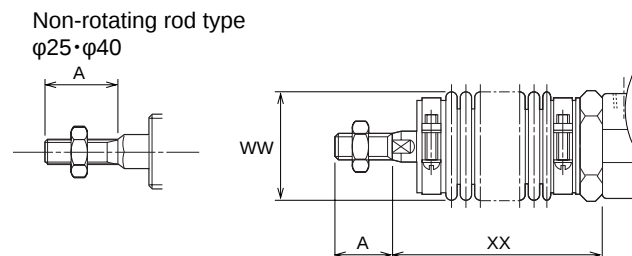
Parenthesized figure of A is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

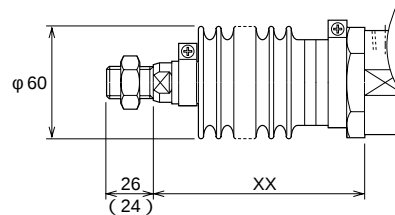


With Boots

φ20 ~ φ40



φ50 · φ63



● Parenthesized figure is the dimension of screw length.

$$XX = 1/4X(\text{Stroke}) + 65$$

At less than 50mm stroke, equation above can't be applied.

Please calculate by this : $XX = 1/4 \times (\text{Stroke}) + 80$

Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore			A		WW	Chart of the XX dimensions																													
						~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500			
Round rod type		Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type					
φ 20	20(20)	-	φ36	59	-	69	-	79	-	84	-	94	-	104	-	114	-	124	-	144	-	164	-	184	-	204	-	224	-	244	-				
φ 25	22(22)	20(17)	φ36	63	56	73	66	83	76	88	81	98	91	108	101	118	111	128	121	148	141	168	161	188	181	208	201	228	221	248	241				
φ 32	22(19)	-	φ40	55	-	65	-	75	-	80	-	90	-	95	-	105	-	110	-	130	-	140	-	160	-	180	-	200	-	220	-				
φ 40	24(21)	24(21)	φ45	52	45	62	55	67	60	72	65	82	75	92	85	97	90	102	95	112	105	127	120	137	130	152	145	172	165	192	185				

Parenthesized figure of A is the dimension of screw length.

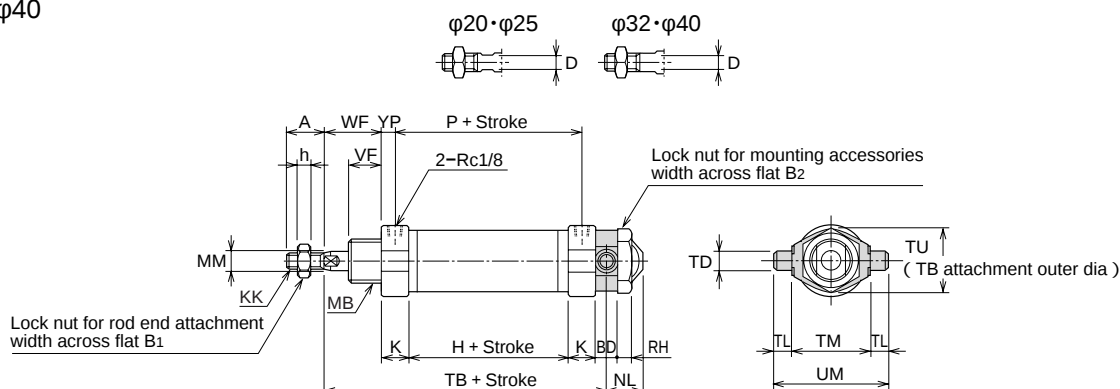
10Z-3/TAZ3 Bore A CAD/DATA is available.



TB

Double Acting Single Rod Round rod type 10Z - 3 TB Bore Cushioning Stroke

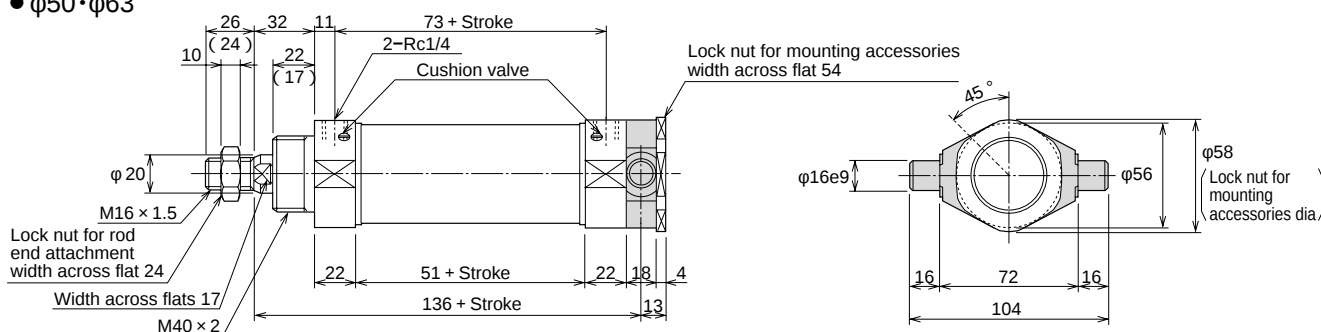
- $\phi 20 \sim \phi 40$



- Non-rotating rod type is not available.
- For dimensions not given in the above drawings, ref to SD type(basic type)

Relative model : With cushion • With boots

- $\phi 50 \sim \phi 63$



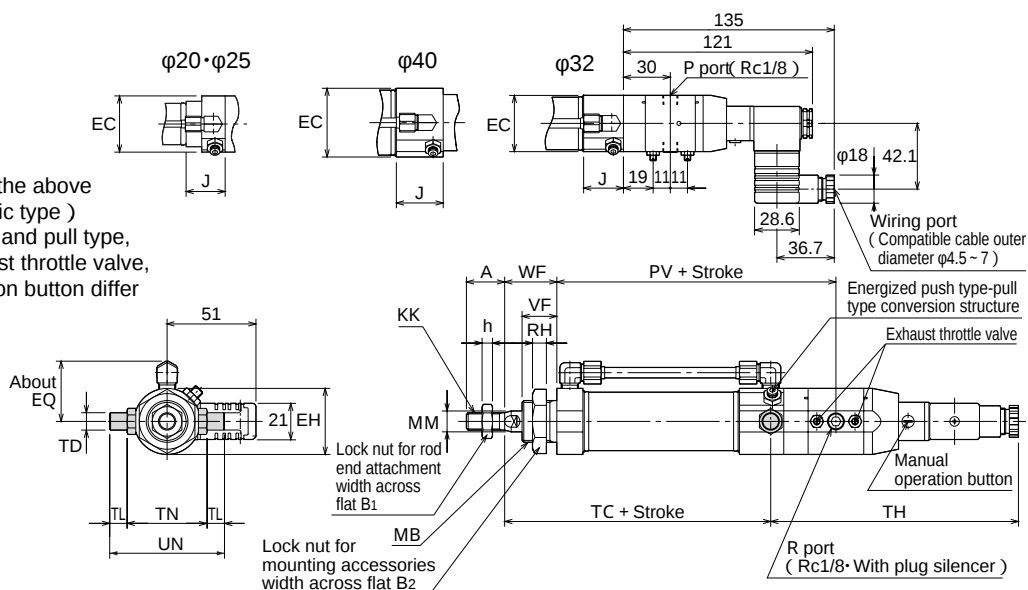
- Non-rotating rod type is not available.
- Parenthesized figure is the dimension of screw length.

Relative model : With boots

TC Val Set

Double Acting Single Rod Round rod type 10Z - 3V2 TC Bore N Stroke - Valve operation method Valve voltage

- $\phi 20 \sim \phi 40$



- For dimensions not given in the above drawings, ref to SD type(basic type)
- For the energized push type and pull type, all positions of P port, exhaust throttle valve, terminal and manual operation button differ at 180°.

Relative model : With boots

The above drawings are the dimensional drawings of energized push type.

Dimensional Table

Symbol Bore	A	B ₁	B ₂	BD	D	EC	EH	EQ	H	h	J	K	KK	MB	MM
φ 20	20(20)	13	30	10	6	36	φ38	34	31	5	25	14	M8 × 1.25	M22 × 1.5	φ8
φ 25	22(22)	17	30	10	8	36	φ38	34	35	6	25	14.5	M10 × 1.25	M22 × 1.5	φ10
φ 32	22(19)	17	32	12	10	36	φ38	35	40	6	25.5	15	M10 × 1.25	M24 × 2	φ12
φ 40	24(21)	19	41	14	12	44	φ46	39	42	7	30	15	M12 × 1.25	M30 × 2	φ14

Symbol Bore	NL	P	PV	RH	TB	TC	TD	TH	TL	TM	TN	TU	UM	UN	VF	WF	YP
φ 20	17	45	100	7	88	86.5	φ8e9	142.5	8	36	46	32	52	62	16(13)	24	7
φ 25	17	49	104.5	7	97	95	φ8e9	142.5	8	36	46	32	52	62	18(15)	28	7.5
φ 32	20	55	110.5	8	106	103	φ10e9	142.5	10	44	46	36	64	66	20(16)	30	7.5
φ 40	21	57	117	9	111	109	φ12e9	145	12	50	54	44	74	78	22(18)	32	7.5

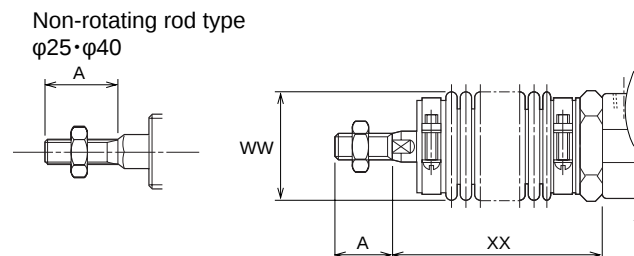
Parenthesized figure of A·VF is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

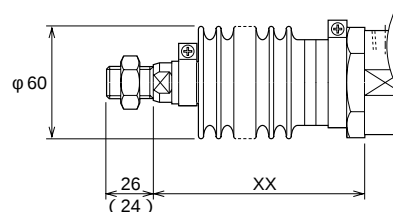


With Boots

φ20 ~ φ40



φ50 · φ63



- Parenthesized figure is the dimension of screw length.
 $XX = 1/4(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																											
				~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175

Parenthesized figure of A is the dimension of screw length.

Dimensional Table

Symbol Bore	A	B1	B2	BF	BH	BT	D	E	EC	EQ	h	J	KK	MB	MM	P	PV
φ 20	20(20)	13	30	32	32	3.2	6	φ28	36	34	5	25	M8 × 1.25	M22 × 1.5	φ8	45	100
φ 25	22(22)	17	30	32	32	3.2	8	φ31	36	34	6	25	M10 × 1.25	M22 × 1.5	φ10	49	104.5
φ 32	22(19)	17	32	36	36	4	10	φ38	36	35	6	25.5	M10 × 1.25	M24 × 2	φ12	55	110.5
φ 40	24(21)	19	41	40	40	4	12	φ46	44	39	7	30	M12 × 1.25	M30 × 2	φ14	57	117

Symbol Bore	RH	TB	TC	TD	TL	TM	TN	TU	UM	UN	VF	WF	WM	WN	XM	XN	XT	YP	ZE
φ 20	7	88	86.5	φ8e9	8	36	46	32	52	62	16(13)	24	87	97	71	81	112	7	229
φ 25	7	97	95	φ8e9	8	36	46	32	52	62	18(15)	28	87	97	71	81	121	7.5	237.5
φ 32	8	106	103	φ10e9	10	44	46	36	64	66	20(16)	30	95	97	79	81	132	7.5	245.5
φ 40	9	111	109	φ12e9	12	50	54	44	74	78	22(18)	32	101	105	85	89	139	7.5	254

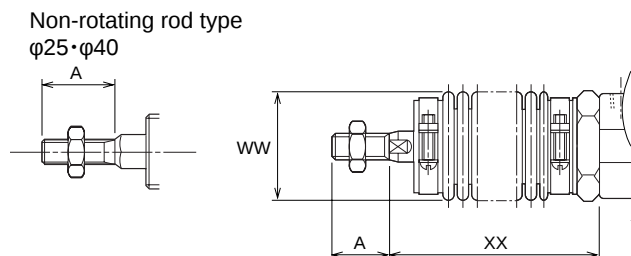
Parenthesized figure of A・VF is the dimension of screw length.

10Z-3/TAZ3 Bore K CAD/DATA is available.

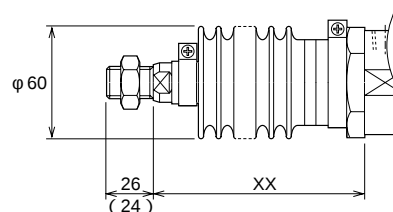


With Boots

φ20 ~ φ40



φ50 ・ φ63



- Parenthesized figure is the dimension of screw length.
 $XX = 1/4X(\text{Stroke}) + 65$
Fractions less than decimal point shall be raised.

Dimensional Table

Symbol Stroke Bore	A		WW	Chart of the XX dimensions																											
				~ 25		~ 50		~ 75		~ 100		~ 125		~ 150		~ 175		~ 200		~ 250		~ 300		~ 350		~ 400		~ 450		~ 500	
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type			
φ 20	20(20)	-	φ36	49	-	59	-	69	-	74	-	84	-	94	-	104	-	114	-	134	-	154	-	174	-	194	-	214	-	234	-
φ 25	22(22)	20(17)	φ36	53	46	63	56	73	66	78	71	88	81	98	91	108	101	118	111	138	131	158	151	178	171	198	191	218	211	238	231
φ 32	22(19)	-	φ40	45	-	55	-	65	-	70	-	80	-	85	-	95	-	100	-	120	-	130	-	150	-	170	-	190	-	210	-
φ 40	24(21)	24(21)	φ45	42	35	52	45	57	50	62	55	72	65	82	75	87	80	92	85	102	95	117	110	127	120	142	135	162	155	182	175

Parenthesized figure of A is the dimension of screw length.

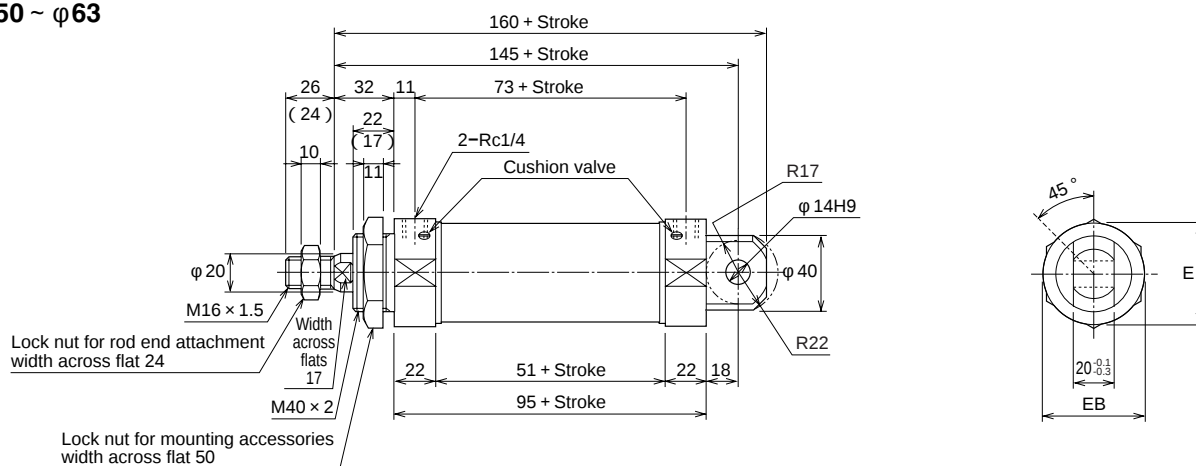
10Z-3/TAZ3 Bore A CAD/DATA is available.



CA

Double Acting Single Rod Round rod type 10Z - 3 CA Bore Cushioning Stroke

- $\phi 50 \sim \phi 63$



- Non-rotating rod type is not available.
- Parenthesized figure is the dimension of screw length.
- For dimensions not given in the above drawings, ref to SD type(basic type)

Relative model : With boots

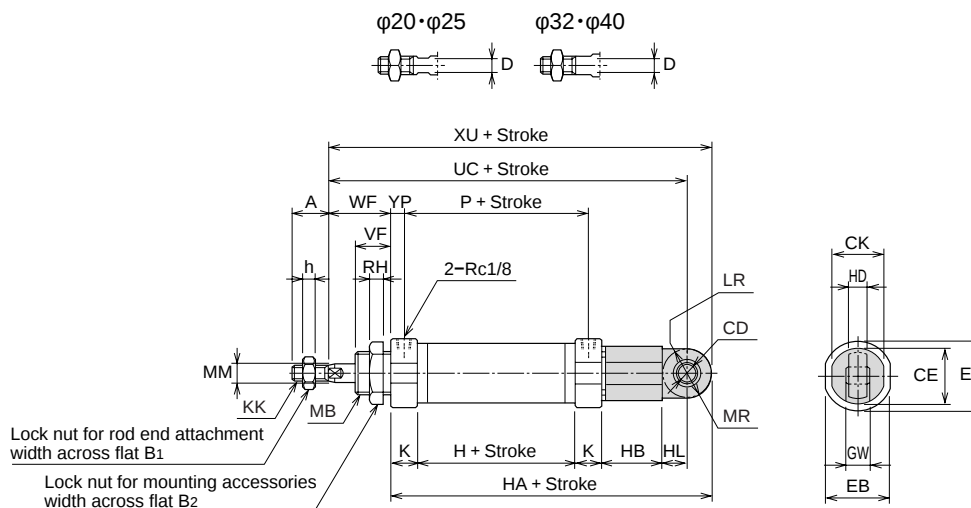
Dimensional table

Bore	Symbol	E	EB
$\phi 50$		$\phi 56$	54
$\phi 63$		$\phi 70$	68

CU

Double Acting Single Rod Round rod type 10Z - 3 CU Bore Cushioning Stroke

- $\phi 20 \sim \phi 40$



- Non-rotating rod type is not available.
- For dimensions not given in the above drawings, ref to SD type(basic type)

Relative model : With cushion • With boots

Dimensional Table

Symbol Bore	A	B ₁	B ₂	BF	BH	BT	BU	BY	CD	CE	CK	D	E	EB	GW	H	HA	HB	HD	HL
φ 20	20(20)	13	30	32	32	3.2	48	21.8	φ8	φ32	30	6	φ28	26	12 ⁰ _{-0.3}	31	121	33	10.5	15
φ 25	22(22)	17	30	36	36	4	52	21	φ10	φ32	30	8	φ31	29	14 ⁰ _{-0.3}	35	126	33	10.5	15
φ 32	22(19)	17	32	36	36	4	52	21	φ10	φ32	30	10	φ38	36	14 ⁰ _{-0.3}	40	132	33	10.5	15
φ 40	24(21)	19	41	40	40	4	56	21	φ12	φ38	36	12	φ46	44	16 ⁰ _{-0.3}	42	142	37	12	17

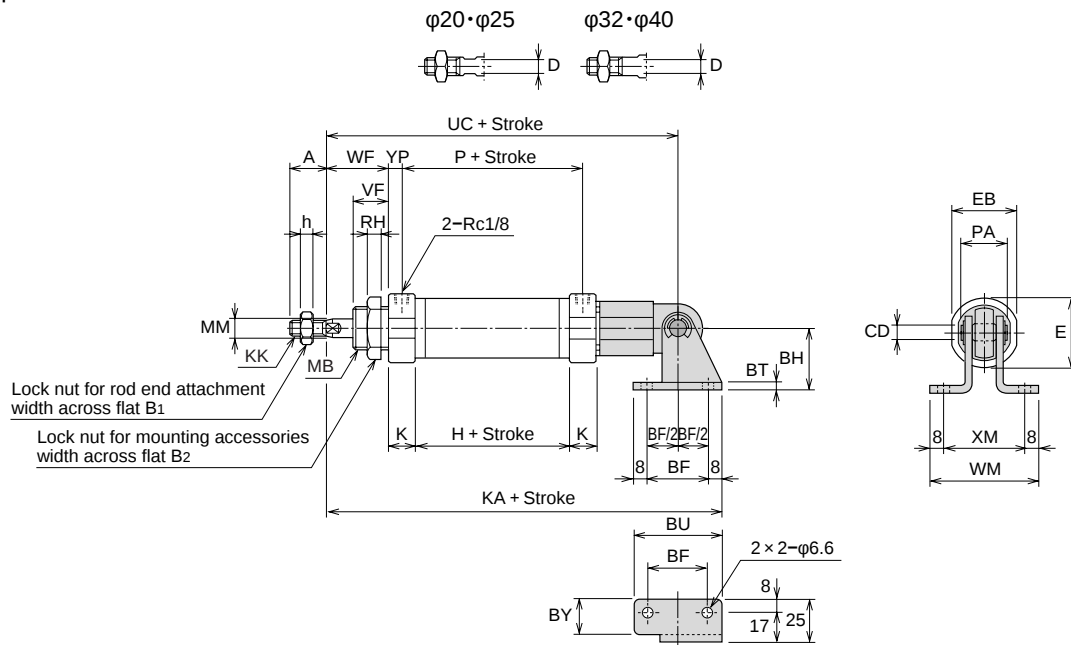
Symbol Bore	h	K	KA	KK	LR	MB	MM	MR	P	PA	RH	UC	VF	WF	WM	XM	XU	YP
φ 20	5	14	155	M8 × 1.25	R14	M22 × 1.5	φ8	R14	45	27	7	131	16(13)	24	63	47	145	7
φ 25	6	14.5	166	M10 × 1.25	R14	M22 × 1.5	φ10	R14	49	29	7	140	18(15)	28	65	49	154	7.5
φ 32	6	15	174	M10 × 1.25	R14	M24 × 2	φ12	R14	55	29	8	148	20(16)	30	65	49	162	7.5
φ 40	7	15	186	M12 × 1.25	R16	M30 × 2	φ14	R16	57	32	9	158	22(18)	32	67	51	174	7.5

Parenthesized figure of A・VF is the dimension of screw length.

CU with B

Double Acting Single Rod **Round rod type** 10Z - 3 CU **Bore** **Cushioning** **Stroke** - B

• φ20 ~ φ40



- Non-rotating rod type is not available.
- For dimensions not given in the above drawings, ref to SD type(basic type)

Relative model : With cushion・With boots

CAD/DATA is

10Z-3/TAZ3 Bore A, B available.



AD

Double Acting Single Rod

Round rod type

10Z - 3

AD

Bore

Cushioning

Stroke

Non-rotating rod type

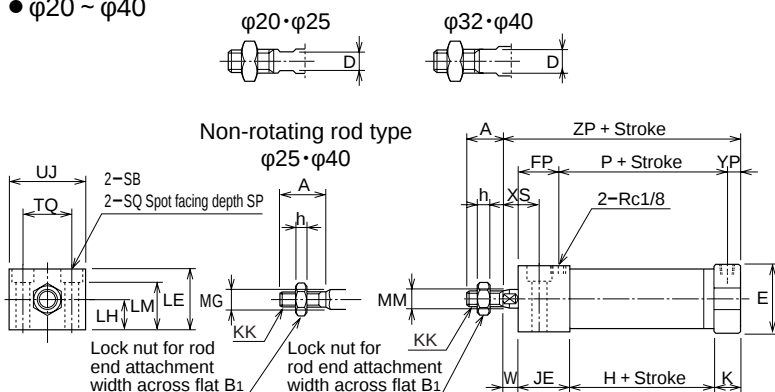
10Z - 3G AD

Bore

Cushioning

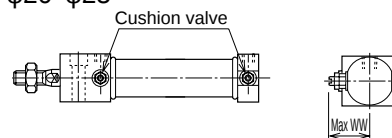
Stroke

- $\phi 20 \sim \phi 40$

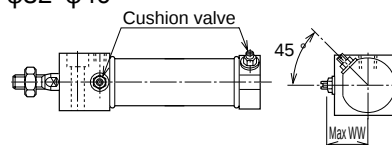


Relative model With cushion

- Bore $\phi 20 \cdot \phi 25$



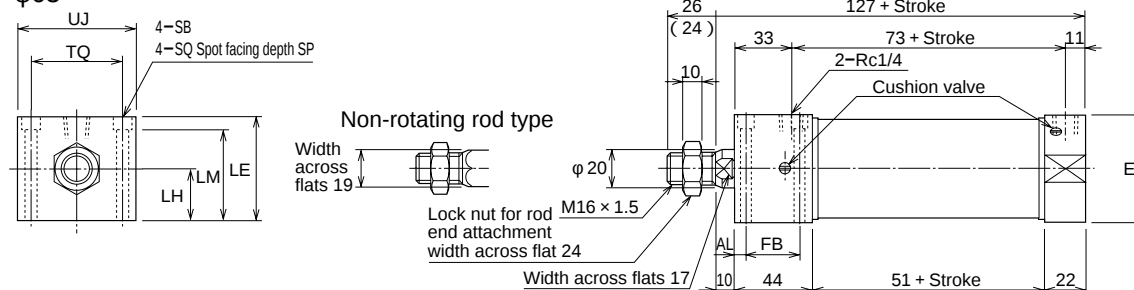
- Bore $\phi 32 \cdot \phi 40$



Relative model : Post-port type(AP)With cushion

Clevis cut type is standard.

- $\phi 50 \cdot \phi 63$



- Parenthesized figure is the dimension of screw length.
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Dimensional Table

Bore	Symbol	AL	E	FB	LE	LH	LM	SB	SP	SQ	TQ	UJ
$\phi 50$		7	$\phi 56$	30	56	28	49.5	$\phi 6.6$	6.5	$\phi 11$	50	64
$\phi 63$		9	$\phi 70$	27	70	35	61.4	$\phi 9$	8.6	$\phi 14$	56	74

Relative model : Post-port type(AP)

For standard and non-rotating rod type, clevis cut type is standard.

Val Set

Double Acting Single Rod

Round rod type

10Z - 3V2

AD

Bore

N

Stroke

Valve operation method

Valve voltage

Non-rotating rod type

10Z - 3V2G AD

Bore

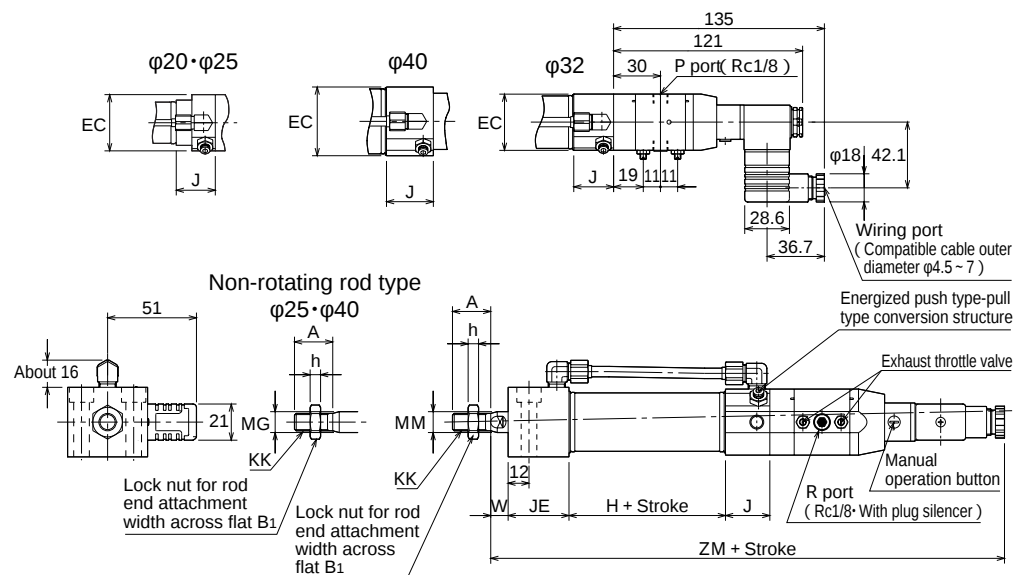
N

Stroke

Valve operation method

Valve voltage

- $\phi 20 \sim \phi 40$



- For dimensions not given in the above drawings, ref to AD type(basic type)
- All dimensions of non-rotating rod type except the rod end are the same as those of round rod type.
- For the energized push type and pull type, all positions of P port, exhaust throttle valve, terminal and manual operation button differ at 180°.

The above drawings are the dimensional drawings of energized push type.

Dimensional Table

Symbol Bore	A		B ₁		D	E	EC	FP	H	h		J	JE	K
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type						Round rod type	Non-rotating rod type			
φ 20	20(20)	-	13	-	6	φ28	36	23	31	5	-	25	30	14
φ 25	22(22)	20(17)	17	13	8	φ31	36	25.5	35	6	5	25	32.5	14.5
φ 32	22(19)	-	17	-	10	φ38	36	28	40	6	-	25.5	35	15
φ 40	24(21)	24(21)	19	19	12	φ46	44	30	42	7	7	30	37	15

Symbol Bore	KK		LE	LH	LM	MG	MM	P	SB	SP	SQ	TQ	UJ	W	WW	XS	YP	ZP	ZM
	Round rod type	Non-rotating rod type																	
φ 20	M8 × 1.25	-	28	14	21.5	-	φ8	45	φ6.6	6.5	φ11	20	34	8	25.5	18	7	83	229
φ 25	M10 × 1.25	M8 × 1.25	34	17	27.5	9	φ10	49	φ6.6	6.5	φ11	24	38	10	27	20	7.5	92	237.5
φ 32	M10 × 1.25	-	40	20	31.4	-	φ12	54.5	φ9	8.6	φ14	30	46	10	35	22	7.5	100	245.5
φ 40	M12 × 1.25	M12 × 1.25	48	24	37.2	14	φ14	56.5	φ11	10.8	φ17.5	36	56	10	39	22	7.5	104	254

Parentthesized figure of A is the dimension of screw length.

AD

Double Acting Double Rod

Round rod type

10Z - 3D AD

Bore

Cushioning

Stroke

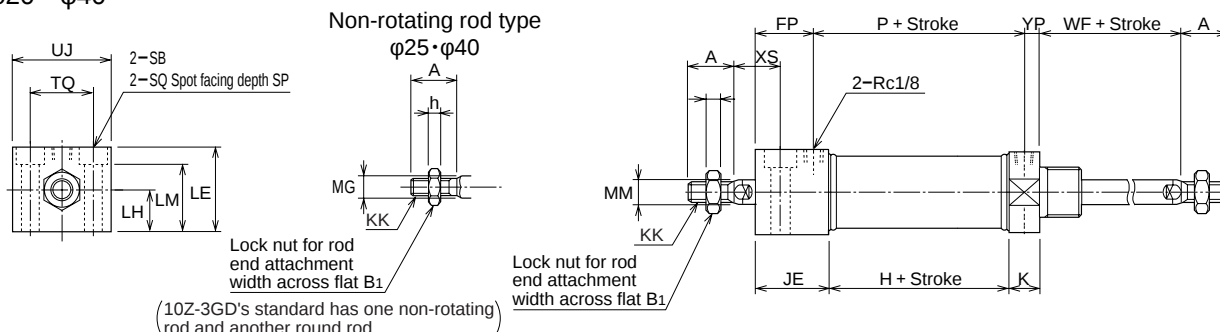
Non-rotating rod type

10Z - 3GD AD

Bore

Cushioning

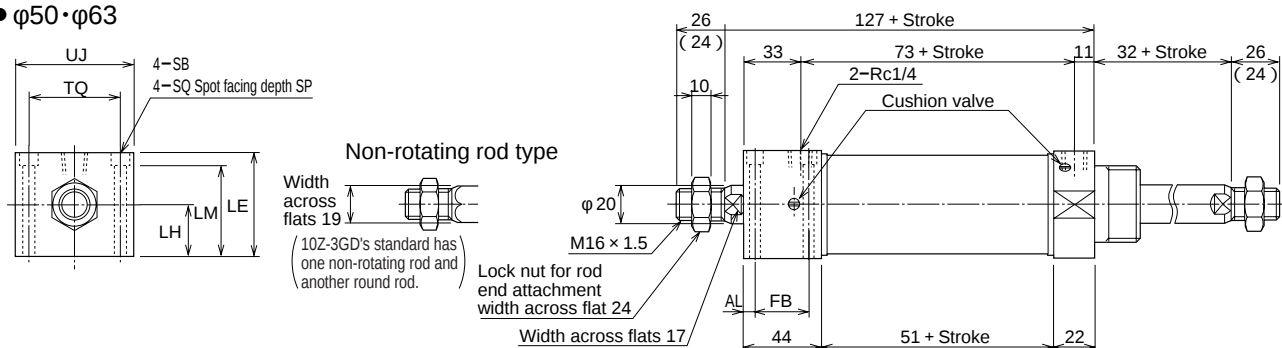
Stroke

• $\phi 20 \sim \phi 40$ 

• For dimensions not given in the above drawings, ref to AD type(basic type)

• All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : With cushion

• $\phi 50 \cdot \phi 63$ 

• Parenthesized figure is the dimension of screw length.

• All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Dimensional Table

Bore	Symbol	AL	E	FB	LE	LH	LM	SB	SP	SQ	TQ	UJ
$\phi 50$		7	$\phi 56$	30	56	28	49.5	$\phi 6.6$	6.5	$\phi 11$	50	64
$\phi 63$		9	$\phi 70$	27	70	35	61.4	$\phi 9$	8.6	$\phi 14$	56	74

Single Acting Type

Spring Return Type

Round rod type

10Z - 3GSR AD

Bore

Cushioning

Stroke

Non-rotating rod type

10Z - 3GSR AD

Bore

Cushioning

Stroke

Spring Push Type

Round rod type

10Z - 3GSH AD

Bore

Cushioning

Stroke

Non-rotating rod type

10Z - 3GSH AD

Bore

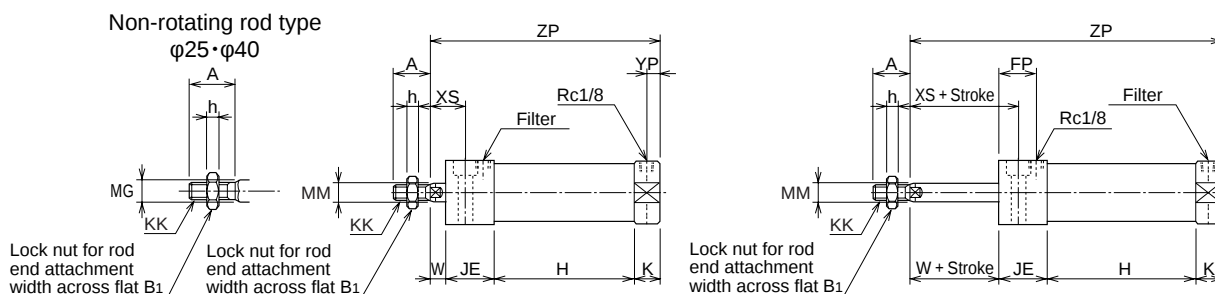
Cushioning

Stroke

• $\phi 20 \sim \phi 40$

Spring Return Type(SR type)

Spring Push Type(SH type)



• For dimensions not given in the above drawings, ref to AD type(basic type)

• All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : Post-port type(AP)

Clevis cut type is standard.

Dimensional Table

Symbol Bore	A		B1		FP	h		JE	K	KK		LE	LH	LM	MG	MM	P	SB	SP	SQ	TQ	UJ	XS	W	WF	YP
	Round rod type	Non-rotating rod type	Round rod type	Non-rotating rod type		Round rod type	Non-rotating rod type			Round rod type	Non-rotating rod type															
φ 20	20(20)	-	13	-	23	5	-	30	14	M8 × 1.25	-	28	14	21.5	-	φ8	45	φ6.6	6.5	φ11	20	34	18	8	24	7
φ 25	22(22)	20(17)	17	13	25.5	6	5	32.5	14.5	M10 × 1.25	M8 × 1.25	34	17	27.5	9	φ10	49	φ6.6	6.5	φ11	24	38	20	10	28	7.5
φ 32	22(19)	-	17	-	28	6	-	35	15	M10 × 1.25	-	40	20	31.4	-	φ12	54.5	φ9	8.6	φ14	30	46	22	10	30	7.5
φ 40	24(21)	24(21)	19	19	30	7	7	37	15	M12 × 1.25	M12 × 1.25	48	24	37.2	14	φ14	56.5	φ11	10.8	φ17.5	36	56	22	10	32	7.5

Symbol Stroke Bore	H							ZP											
	Double Rod	Single Acting Type						15		25		30		50		75		100	
		15	25	30	50	75	100	SR Type	SH Type	SR Type	SH Type	SR Type	SH Type	SR Type	SH Type	SR Type	SH Type	SR Type	SH Type
φ 20	31	71	81	111	131	181	231	123	138	133	158	163	193	183	233	233	308	283	383
φ 25	35	75	85	115	135	185	235	132	147	142	167	172	202	192	242	242	317	292	392
φ 32	40	80	90	120	140	190	240	140	155	150	175	180	210	200	250	250	325	300	400
φ 40	42	82	92	122	142	192	242	144	159	154	179	184	214	204	254	254	329	304	404

Parentthesized figure of A is the dimension of screw length.

CAD/DATA is

10Z-3/TAZ3 Bore A, B available.



BD

Double Acting Single Rod

Round rod type

10Z - 3

BD Bore

Cushioning

Stroke

Non-rotating rod type

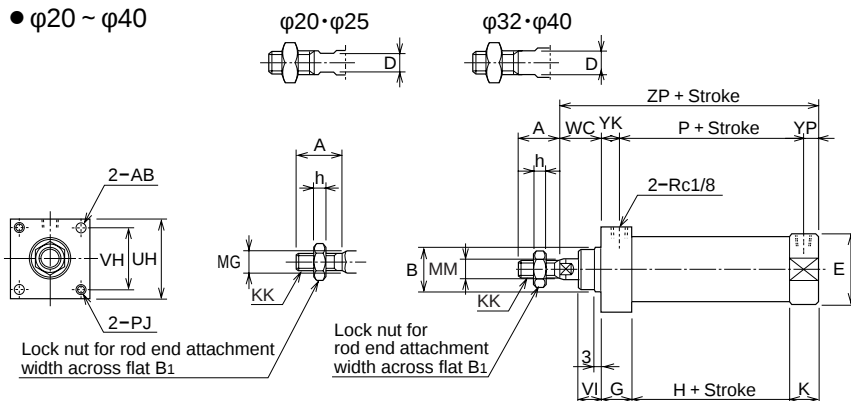
10Z - 3G BD

Bore

Cushioning

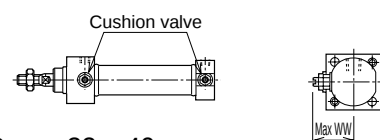
Stroke

- $\phi 20 \sim \phi 40$

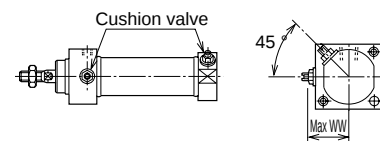


Relative model With cushion

- Bore $\phi 20 \cdot \phi 25$



- Bore $\phi 32 \cdot \phi 40$

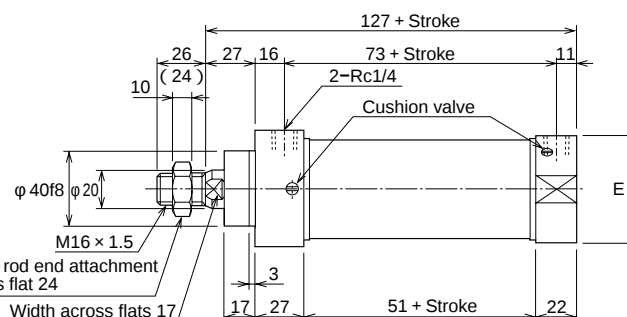
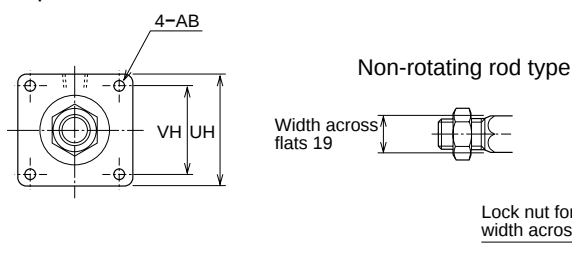


Clevis cut type is standard.

- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : Post-port type(BP)With cushion

- $\phi 50 \cdot \phi 63$



- Parenthesized figure is the dimension of screw length.
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : Post-port type(BP)

Dimensional Table

Bore	Symbol	AB	E	VH	UH
$\phi 50$		$\phi 6.6$	$\phi 56$	$\square 48$	$\square 62$
$\phi 63$		$\phi 9$	$\phi 70$	$\square 58$	$\square 74$

For standard and non-rotating rod type, clevis cut type is standard.

Val Set

Double Acting Single Rod

Round rod type

10Z - 3V2

BD Bore

N Stroke

Valve operation method

Valve voltage

Non-rotating rod type

10Z - 3V2G BD

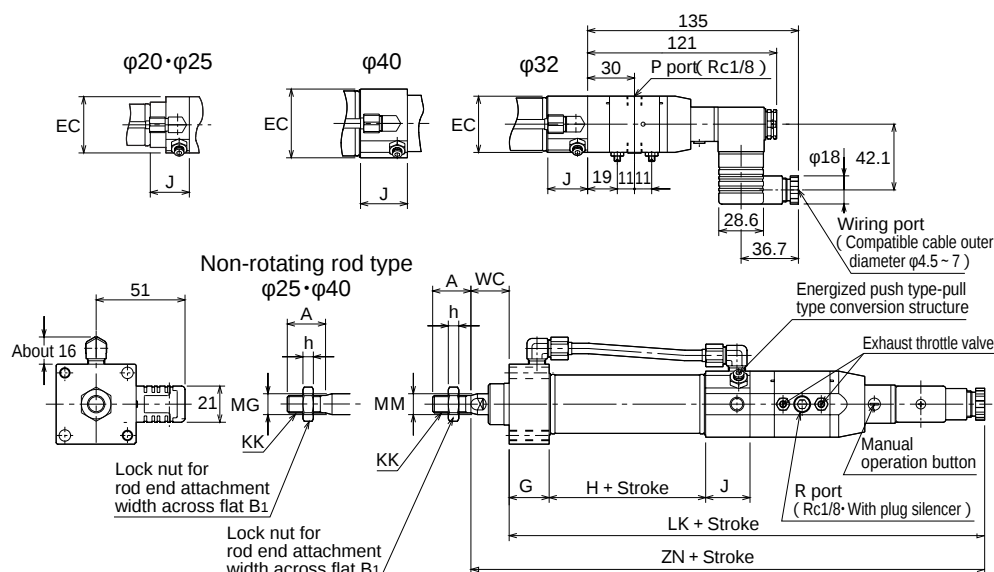
Bore

N Stroke

Valve operation method

Valve voltage

- $\phi 20 \sim \phi 40$



- For dimensions not given in the above drawings, ref to BD type(basic type)
- All dimensions of non-rotating rod type except the rod end are the same as those of round rod type.
- For the energized push type and pull type, all positions of P port, exhaust throttle valve, terminal and manual operation button differ at 180°.

The above drawings are the dimensional drawings of energized push type.

Dimensional Table

Symbol Bore	A		AB	B	B1		D	E	EC	G	H	h		J	K
	Round rod type	Non-rotating rod type			Round rod type	Non-rotating rod type						Round rod type	Non-rotating rod type		
φ 20	20(20)	-	φ5.5	φ20f8	13	-	6	φ28	36	20	31	5	-	25	14
φ 25	22(22)	20(17)	φ5.5	φ22f8	17	13	8	φ31	36	22.5	35	6	5	25	14.5
φ 32	22(19)	-	φ6.6	φ24f8	17	-	10	φ38	36	23	40	6	-	25.5	15
φ 40	24(21)	24(21)	φ9	φ28f8	19	19	12	φ46	44	25	42	7	7	30	15

Symbol Bore	KK		LK	MG	MM	P	PJ	UH	VI	VH	WC	WW	YK	YP	ZP	ZN
	Round rod type	Non-rotating rod type														
φ 20	M8 × 1.25	-	211	-	φ8	45	M5 × 0.8	□34	10	□24	18	25.5	13	7	83	229
φ 25	M10 × 1.25	M8 × 1.25	217.5	9	φ10	49	M5 × 0.8	□38	10	□28	20	27	15.5	7.5	92	237.5
φ 32	M10 × 1.25	-	223.5	-	φ12	54.5	M6 × 1	□46	12	□36	22	35	16	7.5	100	245.5
φ 40	M12 × 1.25	M12 × 1.25	232	14	φ14	56.5	M8 × 1.25	□56	12	□42	22	39	18	7.5	104	254

Parentthesized figure of A is the dimension of screw length.

BD

Double Acting Double Rod

Round rod type

10Z - 3D BD

Bore

Cushioning

Stroke

Non-rotating rod type

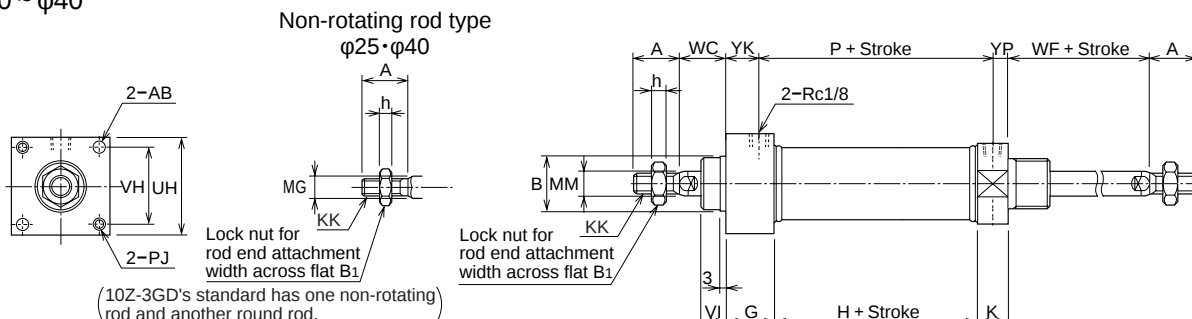
10Z - 3GD BD

Bore

Cushioning

Stroke

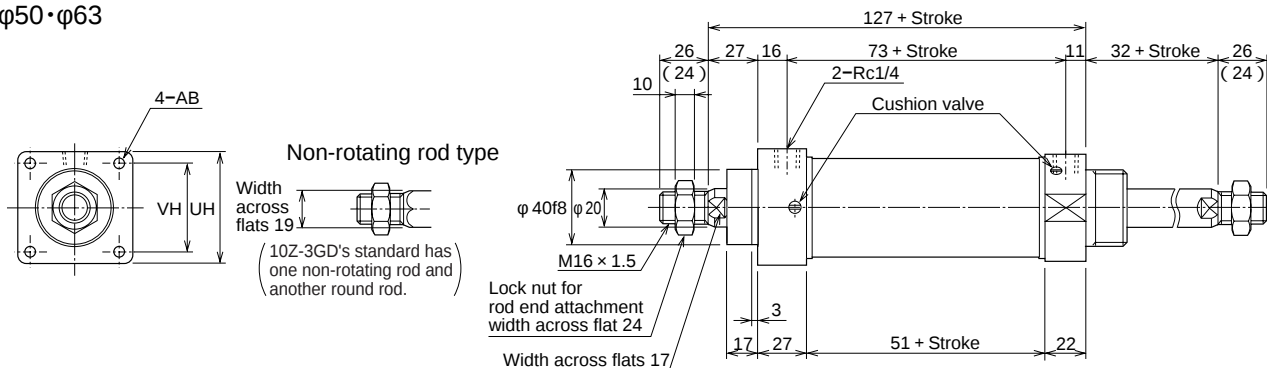
- $\phi 20 \sim \phi 40$



- For dimensions not given in the above drawings, ref to BD type(basic type)
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : With cushion

- $\phi 50 \cdot \phi 63$



Dimensional Table

Bore	Symbol	AB	E	VH	UH
$\phi 50$		$\phi 6.6$	$\phi 56$	$\square 48$	$\square 62$
$\phi 63$		$\phi 9$	$\phi 70$	$\square 58$	$\square 74$

- Parenthesized figure is the dimension of screw length.
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Single Acting Type

Spring Return Type

Round rod type

10Z - 3GSR BD

Bore

Cushioning

Stroke

Non-rotating rod type

10Z - 3GSR BD

Bore

Cushioning

Stroke

Spring Push Type

Round rod type

10Z - 3GSH BD

Bore

Cushioning

Stroke

Non-rotating rod type

10Z - 3GSH BD

Bore

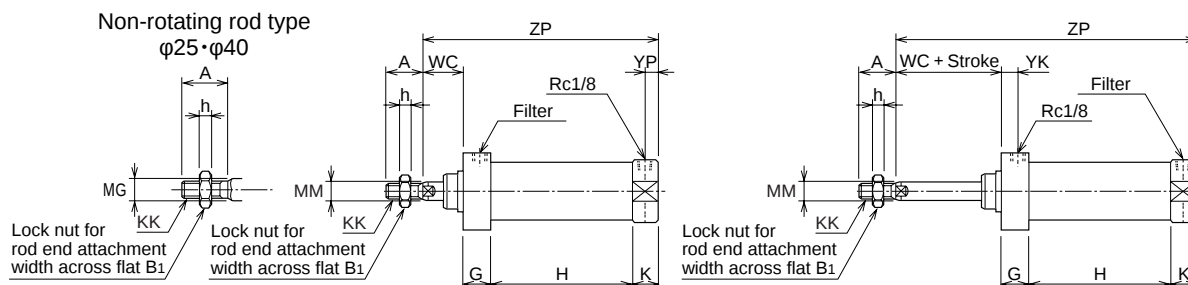
Cushioning

Stroke

- $\phi 20 \sim \phi 40$

Spring Return Type(SR type)

Spring Push Type(SH type)



- For dimensions not given in the above drawings, ref to BD type(basic type)
- All dimensions of non-rotating rod type except the above rod end are the same as those of round rod type.

Relative model : Post-port type(BP)

Clevis cut type is standard.

Dimensional Table

Symbol Bore	A		AB	B	B1		G	h		K	KK		MG	MM	P	PJ	UH	VH	VI	WC	WF	YK	YP
	Round rod type	Non-rotating rod type			Round rod type	Non-rotating rod type		Round rod type	Non-rotating rod type		Round rod type	Non-rotating rod type											
φ 20	20(20)	-	φ5.5	φ20f8	13	-	20	5	-	14	M8 × 1.25	-	-	φ8	45	M5 × 0.8	□34	□24	10	18	24	13	7
φ 25	22(22)	20(17)	φ5.5	φ22f8	17	13	22.5	6	5	14.5	M10 × 1.25	M8 × 1.25	9	φ10	49	M5 × 0.8	□38	□28	10	20	28	15.5	7.5
φ 32	22(19)	-	φ6.6	φ24f8	17	-	23	6	-	15	M10 × 1.25	-	-	φ12	54.5	M6 × 1	□46	□36	12	22	30	16	7.5
φ 40	24(21)	24(21)	φ9	φ28f8	19	19	25	7	7	15	M12 × 1.25	M12 × 1.25	14	φ14	56.5	M8 × 1.25	□56	□42	12	22	32	18	7.5

Symbol Stroke Bore	H							ZP											
	Double Rod	Single Acting Type						15		25		30		50		75		100	
		15	25	30	50	75	100	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type
φ 20	31	71	81	111	131	181	231	123	138	133	158	163	193	183	233	233	308	283	383
φ 25	35	75	85	115	135	185	235	132	147	142	167	172	202	192	242	242	317	292	392
φ 32	40	80	90	120	140	190	240	140	155	150	175	180	210	200	250	250	325	300	400
φ 40	42	82	92	122	142	192	242	144	159	154	179	184	214	204	254	254	329	304	404

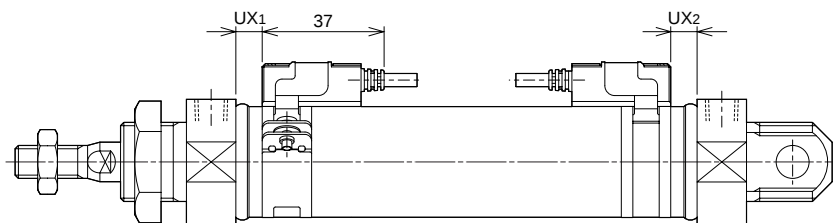
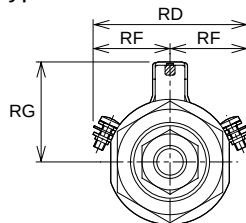
Parentthesized figure of A is the dimension of screw length.

Switch set/SV set

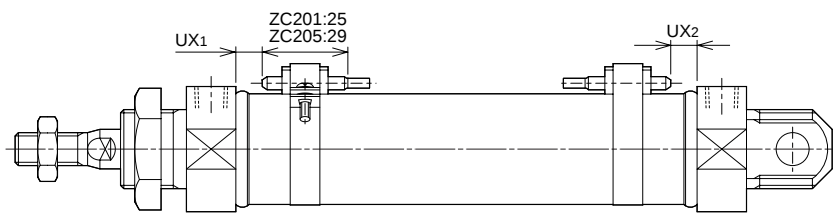
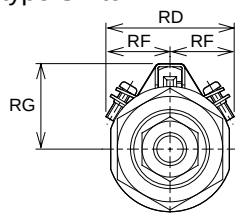
Double Acting

10Z - 3 Mounting type Bore Cushioning Stroke - Switch symbol Quantity of Switch**10Z - 3V2** Mounting type Bore N Stroke - Valve operation method Valve voltage Switch symbol Quantity of Switch

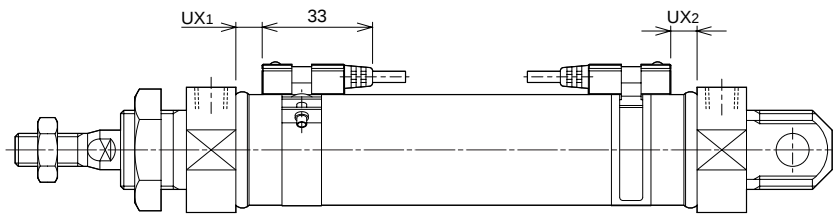
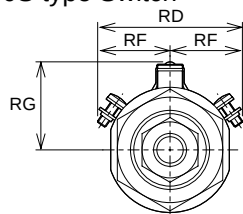
● AX type Switch



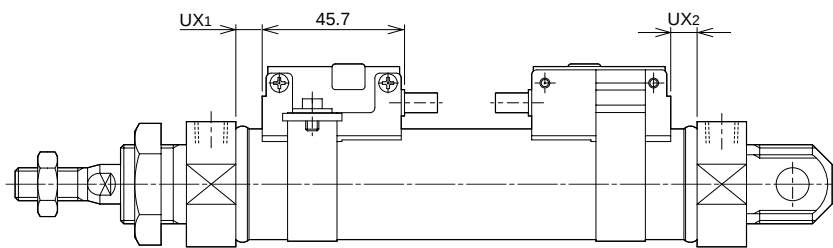
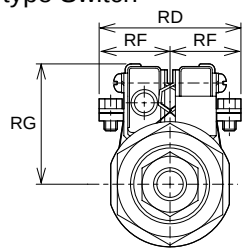
● ZC type Switch



● JR·JS type Switch

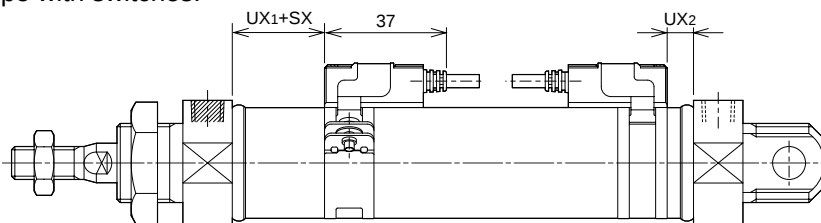


● SR type Switch

**10Z - 3SR** Mounting type Bore N Stroke - Switch symbol Quantity of Switch

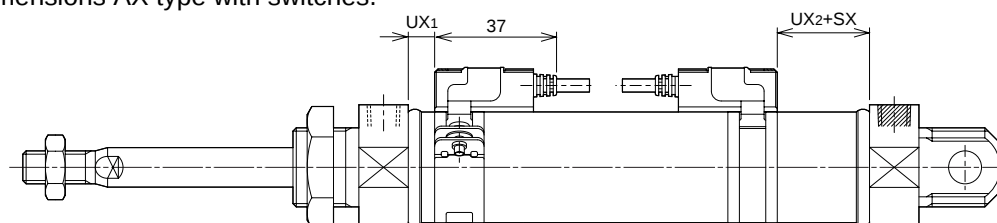
● Spring Return Type

This is the dimensions AX type with switches.

**10Z - 3SH** Mounting type Bore N Stroke - Switch symbol Quantity of Switch

● Spring Push Type

This is the dimensions AX type with switches.



Dimensional Table

Symbol Bore	RD				RF				RG			
	AX type	ZC type	JR·JS type	SR type	AX type	ZC type	JR·JS type	SR type	AX type	ZC type	JR·JS type	SR type
φ20	38	33	40	50	19	16.5	20	25	25	20	21	33
φ25	44	36	42	52	22	18	21	26	27	22	23	35
φ32	48	39	46	54	24	19.5	23	27	31	26	27	38
φ40	54	43	50	58	27	21.5	25	29	35	30	31	43
φ50	60	49	50	48	30	24.5	25	24	39	35	37	46
φ63	68	49	60	52	34	24.5	30	26	47	42	43	53

Symbol Bore	AX1 type		AX2 type		ZC201 type		ZC205 type		ZC230·253 type	
	UX ₁	UX ₂	UX ₁	UX ₂	UX ₁	UX ₂	UX ₁	UX ₂	UX ₁	UX ₂
φ20	7	7	7	7	9.5	7.5	6	4	8	6
φ25	9	8	9	8	11	10	7.5	6.5	9.5	8.5
φ32	10	10	10	10	13.5	12.5	10	9	12	11
φ40	12	12	12	12	13.5	15.5	10	11	12	13
φ50	16	16	16	16	18.5	18.5	15	15	17	17
φ63	16	17	16	17	18.5	18.5	15	15	17	17

Symbol Bore	JR type		JS type		SR type		SX		
	UX ₁	UX ₂	UX ₁	UX ₂	UX ₁	UX ₂	15 strokes	30 strokes	Other than Standard stroke which show as follows.
φ20	4	3	5	5	2	0	25	50	stroke
φ25	6	5	8	8	1	1			
φ32	8	8	10	10	5	5			
φ40	8	9	12	12	6	6			
φ50	12	12	16	16	7	7	-	-	-
φ63	12	12	16	16	7	7	-	-	-

Working Range and Difference

Bore mm	Contact									
	AX1 type		ZC201 type		ZC205 type		JR type		SR type	
	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference
φ20	4 ~ 9	1 or less	5 ~ 9	2 or less	6 ~ 8	0.5 ~ 1.5	4 ~ 5	2 or less	6 ~ 9	2 or less
φ25	5 ~ 9		6 ~ 11		6 ~ 9	2 or less	7 ~ 8		7 ~ 10	
φ32										
φ40										
φ50	6 ~ 10		7 ~ 11		7 ~ 10		8 ~ 9		8 ~ 11	
φ63	8 ~ 11		8 ~ 13		8 ~ 12					

Bore mm	No contact							
	AX2 type		ZC230 type		ZC253 type		JS type	
	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference
φ20	2 ~ 5	1 or less	1 ~ 4	0.5 or less	2 ~ 4	0.5 or less	10 ~ 13	1 or less
φ25			2 ~ 4				11 ~ 14	
φ32	2 ~ 6		2 ~ 5				12 ~ 15	
φ40			2 ~ 4				13 ~ 16	
φ50			3 ~ 5		14 ~ 17			
φ63	3 ~ 6		3 ~ 5					

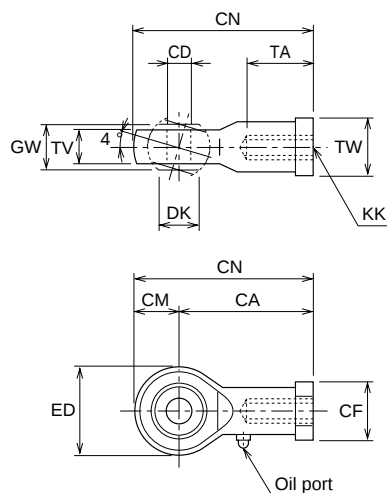
10Z-3/TAZ3 Bore K CAD/DATA is available.



Rod end Attachments

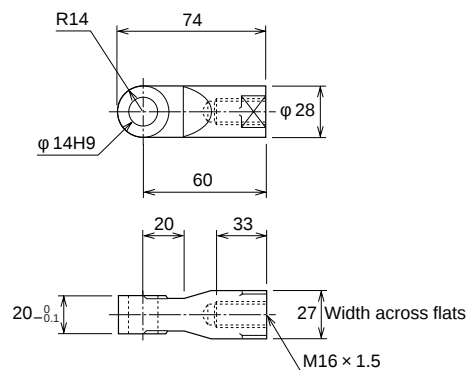
Rod end Spherical Eye(S type)

φ20 ~ φ63



Rod end Eye(T type)

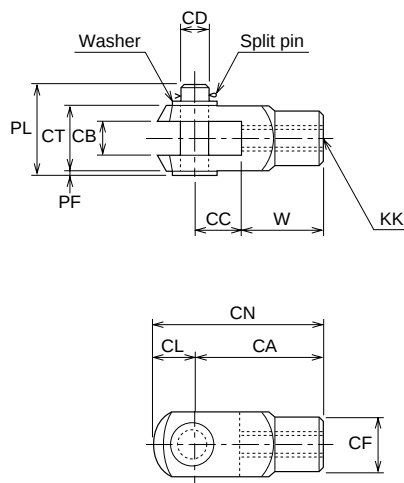
φ50 · φ63



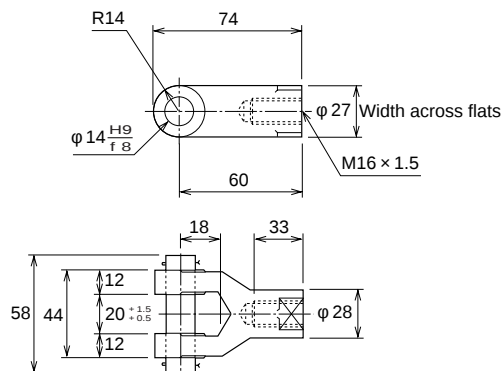
Parts code : RTA - 16 - A

Rod end clevis with pin(Y type)

φ20 ~ φ40



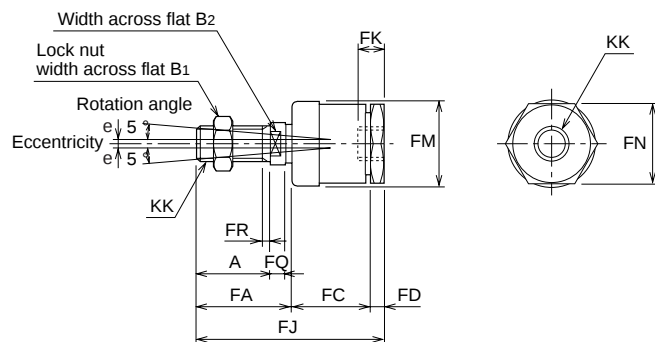
φ50 · φ63



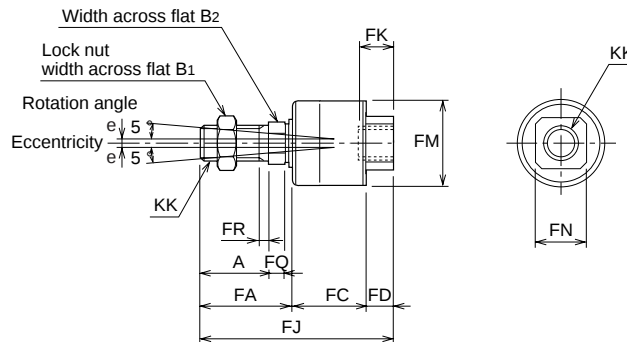
Parts code : RYA - 16 - A

F Joint(F type)

φ20 ~ φ32



φ40 ~ φ63



Note) The insertion of F joint in socket shall not exceed the same dimension as thread dia.
After insertion and collision, it shall be turned back with one or two rotation, and then fixed with lock nut. The excessive insertion may cause the working inferiority.
It shall not be used jointly with TA, TB, TC, CU, type.

Dimensional Table/Rod end spherical eye(S type)

Symbol Bore	Parts code	CA	CD	CF	CM	CN	DK	ED	GW	KK	TA	TV	TW
φ 20	RSA - 08 - A	36	φ8H9	φ16	11	47	φ10.4	22	12 $_{-0.1}^0$	M8 × 1.25	17	9 ± 0.1	14
φ 25	RSA - 10 - A	43	φ10H9	φ19	13	56	φ12.9	26	14 $_{-0.1}^0$	M10 × 1.25	21	10.5 ± 0.1	17
φ 32													
φ 40	RSA - 12 - A	50	φ12H9	φ22	15	65	φ15.4	30	16 $_{-0.1}^0$	M12 × 1.25	24	12 ± 0.1	19
φ 50	RSA - 16 - A	64	φ16H9	φ27	19	83	φ19.4	38	21 $_{-0.1}^0$	M16 × 1.5	33	15 ± 0.1	22
φ 63													

Non-rotating rod end thread of φ25 is designed to fit for the RSA - 08 - A.

Dimensional Table/Rod end clevis with pin(Y type)

Symbol Bore	Parts code	CA	CB	CC	CD	CF	CL	CN	CT	KK	PF	PL	W
φ 20	RYA - 08 - A	32	8 $_{+0.15}^{+0.4}$	16	φ8 $\frac{H8}{f7}$	φ14	10	42	□16	M8 × 1.25	2	24.5	16
φ 25	RYA - 10 - A	40	10 $_{+0.15}^{+0.4}$	20	φ10 $\frac{H8}{f7}$	φ18	12	52	□20	M10 × 1.25	2.5	30	20
φ 32													
φ 40	RYA - 12 - A	48	12 $_{+0.15}^{+0.4}$	24	φ12 $\frac{H8}{f7}$	φ20	14	62	□24	M12 × 1.25	3	36.5	24

Non-rotating rod end thread of φ25 is designed to fit for the RYA - 08 - A.

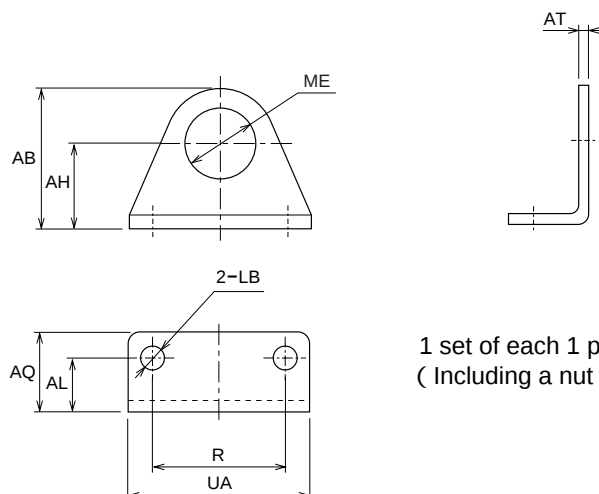
Dimensional Table/F joint(F type)

Symbol Bore	Parts code	A	B ₁	B ₂	e	FA	FC	FD	FJ	FK	FM	FN	FQ	FR	KK
φ 20	RFS - 08T	22.5	13	8	0.5	28	22.5	3.5	54	9	φ20	19	4.5	2.5	M8 × 1.25
φ 25	RFS - 10T	24.5	17	10	1	31	28	4	63	11	φ25	24	4.5	2.5	M10 × 1.25
φ 32															
φ 40	RFS - 12T	24	19	13	1	33	25.5	11	69.5	13.5	φ32	□19	7	3.5	M12 × 1.25
φ 50	RFS - 16T	32	22	17	1.5	43	33	13	89	16	φ40	□24	8	4	M16 × 1.5
φ 63															

Non-rotating rod end thread of φ25 is designed to fit for the RFS - 08T.

Mounting Accessories

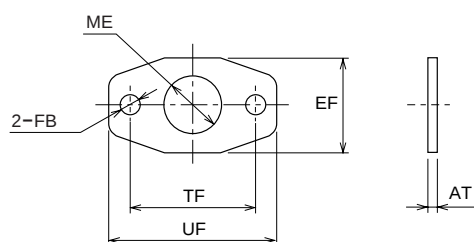
• LB(End angles mounting)



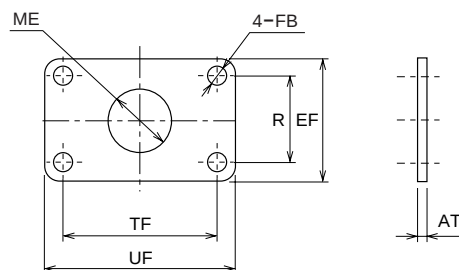
1 set of each 1 pcs
(Including a nut for fastening the bracket.)

• FA(Head flange mounting) • FB(Cap flange mounting)

$\phi 20 \cdot \phi 25$

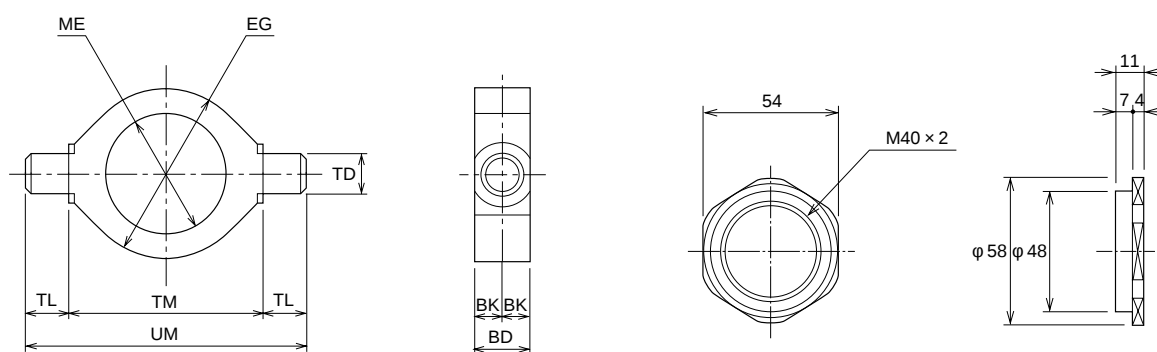


$\phi 32 \sim \phi 63$

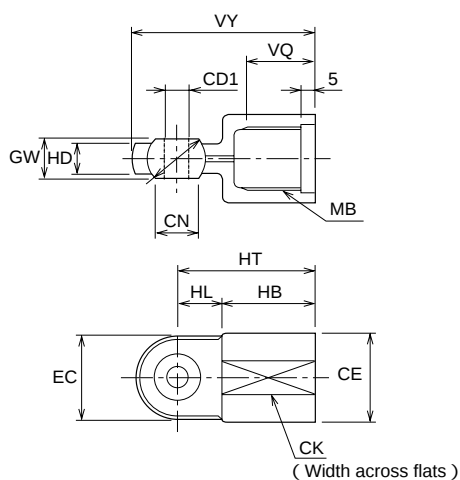


• TA(Head trunnion type) • TB(Cap trunnion type)

• Castle nut for trunnion bracket. Only for $\phi 50 \cdot \phi 63$



• CU(Cap spherical eye mounting)



Dimensional Table/LB(End angles mounting)

Symbol Bore	Parts symbol	AB	AH	AL	AQ	AT	LB	ME	R	UA
φ 20	MAZ3 - LB020	42	25	16	24	3.2	φ 6.8	φ 22.5	40	55
φ 25										
φ 32	MAZ3 - LB032	50	32	25	33	4	φ 6.8	φ 24.5	45	60
φ 40	MAZ3 - LB040	58	36	25	33	4	φ 6.8	φ 30.5	50	65
φ 50	MAZ3 - LB050	70	40	25	40	6	φ 9	φ 40.5	60	80
φ 63	MAZ3 - LB063	77	45	25	40	6	φ 9	φ 40.5	74	95

Dimensional Table/FA(Head flange mounting) · FB(Cap flange mounting)

Symbol Bore	Parts symbol	AT	EF	FB	ME	TF	UF	R
φ 20	MAZ3 - FA020	4	38	φ 6.6	φ 22	50	65	-
φ 25								
φ 32	MAZ3 - FA032	4	47	φ 6.6	φ 24	58	72	33
φ 40	MAZ3 - FA040	4	51	φ 6.6	φ 30	70	84	36
φ 50	MAZ3 - FA050	10	60	φ 9	φ 40	74	94	40
φ 63	MAZ3 - FA063	10	70	φ 9	φ 40	80	100	50

Dimensional Table/TA(Head trunnion type) · TB(Cap trunnion type)

Symbol Bore	Parts symbol	BD	BK	EG	ME	TD	TM	TL	UM
φ 20	MAZ3 - TA020	10	5	φ 32	φ 22.5	φ8e9	36	8	52
φ 25									
φ 32	MAZ3 - TA032	12	6	φ 36	φ 24.5	φ10e9	44	10	64
φ 40	MAZ3 - TA040	14	7	φ 44	φ 30.5	φ12e9	50	12	74
φ 50	MAZ3 - TA050	18	9	φ 56	φ 40.5	φ16e9	72	16	104
φ 63									

Dimensional Table/CU(Cap spherical eye mounting)

Symbol Bore	Parts symbol	CD1	CE	CK	CN	EC	GW	HB	HD	HL	HT	MB	VQ	VY
φ 20	MAZ3 - CU020	φ8H9	φ32	30	φ14.8	28	12 ⁰ _{0.3}	31	10.5	15	46	M22×1.5	23	60
φ 25	MAZ3 - CU025	φ10H9	φ32	30	φ14.8	28	14 ⁰ _{0.3}	31	10.5	15	46	M22×1.5	23	60
φ 32	MAZ3 - CU032	φ10H9	φ32	30	φ14.8	28	14 ⁰ _{0.3}	31	10.5	15	46	M24×2	23	60
φ 40	MAZ3 - CU040	φ12H9	φ38	36	φ15.4	32	16 ⁰ _{0.3}	35	12	17	52	M30×2	26	68

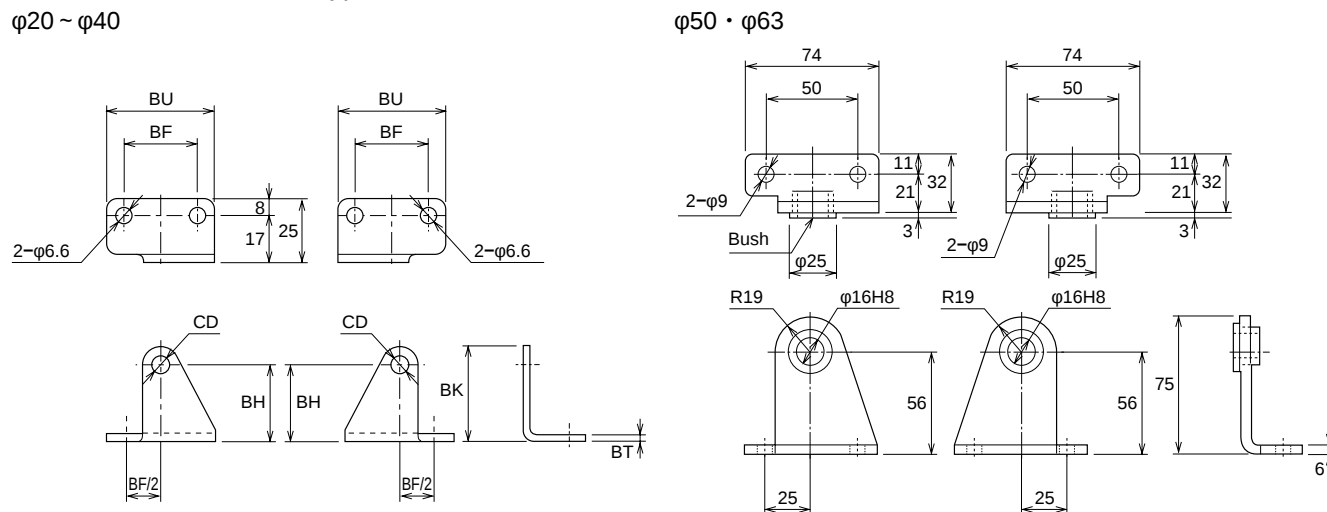
10Z-3/TAZ3 Bore K CAD/DATA is available.



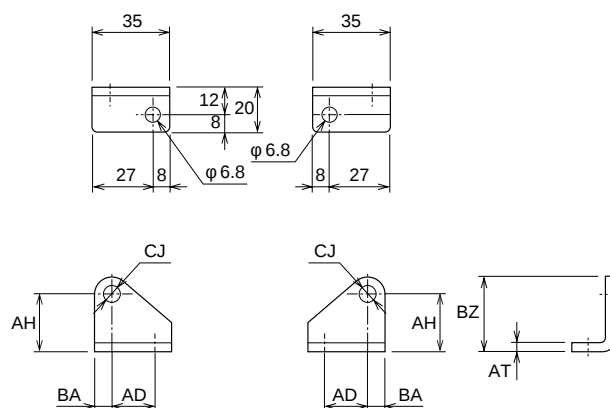
Bracket

- For SD•CU•TA•TB•TC type

$\phi 20 \sim \phi 40$

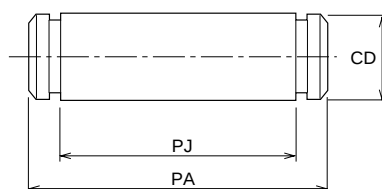


- For LC type bracket



- Pin

- For SD type with B
- For CU type with B



Dimensional Table/For SD·CU·TA·TB·TC type bracket

Symbol Bore	Parts symbol			BF	BH	BK	BT	BU	CD
	SD type	CU type	TA•TB•TC type						
φ 20	MAZ3 - BK020PA	MAZ3 - BK020PB	MAZ3 - BK020	32	32	40	3.2	48	φ8
φ 25		MAZ3 - BK032PB							
φ 32	MAZ3 - BK032PA		MAZ3 - BK032	36	36	46	4	52	φ10
φ 40	MAZ3 - BK040PA	MAZ3 - BK040PB	MAZ3 - BK040	40	40	52	4	56	φ12

Dimensional Table/For LC type bracket(Val set)

Symbol Bore	Parts symbol	AD	AH	AT	BA	BZ	CJ
φ 20	MAZ3 - LC020	19	25	3.2	8	33	φ8
φ 25							
φ 32	MAZ3 - LC032	17	32	4	10	42	φ10
φ 40	MAZ3 - LC040	15	36	4	12	48	φ12

Dimensional Table/Pin

Symbol Bore	CD		PA		PJ	
	SD type	CU type	SD type	CU type	SD type	CU type
φ 20	φ8	φ8	31	27	26	22
φ 25	φ8	φ10	31	29	26	24
φ 32	φ10	φ10	32	29	27	24
φ 40	φ12	φ12	36	32	31	27

With stroke adjustment cylinder specifications

Structure	With stroke adjustment (push side)	With stroke adjustment (pull side)
	Fundamental type · Switch set	Fundamental type · Switch set
Series	10Z - 3 A 1	10Z - 3 A 2
Cylinder bore(mm)	$\phi 20 \cdot \phi 25 \cdot \phi 32 \cdot \phi 40 \cdot \phi 50 \cdot \phi 63$	
Working fluid	Air	
Lubrication	Unnecessay	
Operating pressure	$\phi 20 \sim \phi 40 : 0.05 \sim 0.7\text{MPa}$, $\phi 50 \cdot \phi 63 : 0.02 \sim 0.7\text{MPa}$	
Speed range	20 ~ 700mm/s	
Proof test pressure	1.5MPa	
Temperature range	- 10 ~ + 70 (Do not use when frozen.)	
Structure of cushioning	$\phi 20 \sim \phi 40$: With both sides cushion pad $\phi 50 \cdot \phi 63$: With both sides cushion (The cushion pad of the push side rod when adjustment)	$\phi 20 \sim \phi 40$: With both sides cushion pad (Nothing on the pull side rod when adjustment) $\phi 50 \cdot \phi 63$: With both sides cushion (Nothing on the pull side rod when adjustment)
The method of stroke adjustment	Stopper adajusutment	Adjuster adjustment
Stroke adjustable range	0 ~ 25mm	
Tolerance for thread	JIS 6H/6g	
Mouting type	SD(Basic type) · FA · TA · TA with B	SD(Basic type) · LB · FA · FB · TA · TA with B · TB · TB with B

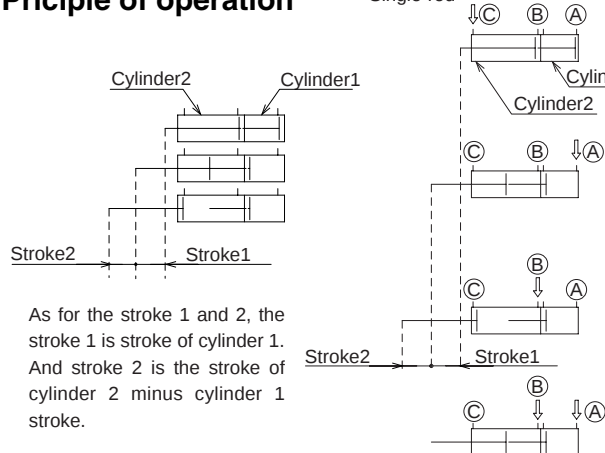
Made-to-order specifications

Dual stroke specifications

Structure	Single-rod	Double rod
	Fundamental type · Switch set	Fundamental type · Switch set
Series	10Z - 3Q1	10Z - 3Q2
Cylinder bore(mm)	$\phi 20 \cdot \phi 25 \cdot \phi 32 \cdot \phi 40 \cdot \phi 50 \cdot \phi 63$	
Working fluid	Air	
Lubrication	Unnecessay	
Operating pressure	0.1 ~ 0.7MPa	$\phi 20 \sim \phi 40 : 0.05 \sim 0.7\text{MPa}$ $\phi 50 \cdot \phi 63 : 0.02 \sim 0.7\text{MPa}$
Speed range	50 ~ 700mm/s	
Proof test pressure	1.5MPa	
Temperature range	- 10 ~ + 70 (Do not use when frozen.)	
Structure of cushioning	$\phi 20 \sim \phi 40$: With both sides cushion pad $\phi 50 \cdot \phi 63$: With both sides cushion	
Tolerance for thread	JIS 6H/6g	
Mouting type	SD(Basic type) · SD with B · LB · FA · FB · TA · TA with B · TB · TB with B	SD(Basic type) · LB · FA · TA · TA with B

Principle of operation

• Single-rod



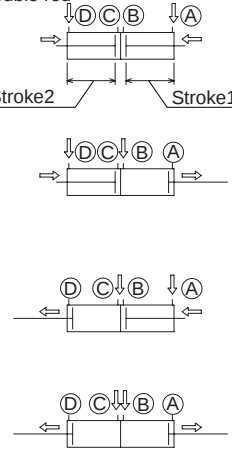
Both stroke of cylinder 1 and 2 will pull in when air are supplied to the C port.

Only the stroke of cylinder 1 will actuate when air are supplied to the A port.

The stroke 2(the stroke of cylinder 2 minus stroke of cylinder 1) will actuate when air are supplied to B port.

2 times output power will developed within the range of stroke of cylinder 1 when air are supplied to both A and B port.

• Double rod

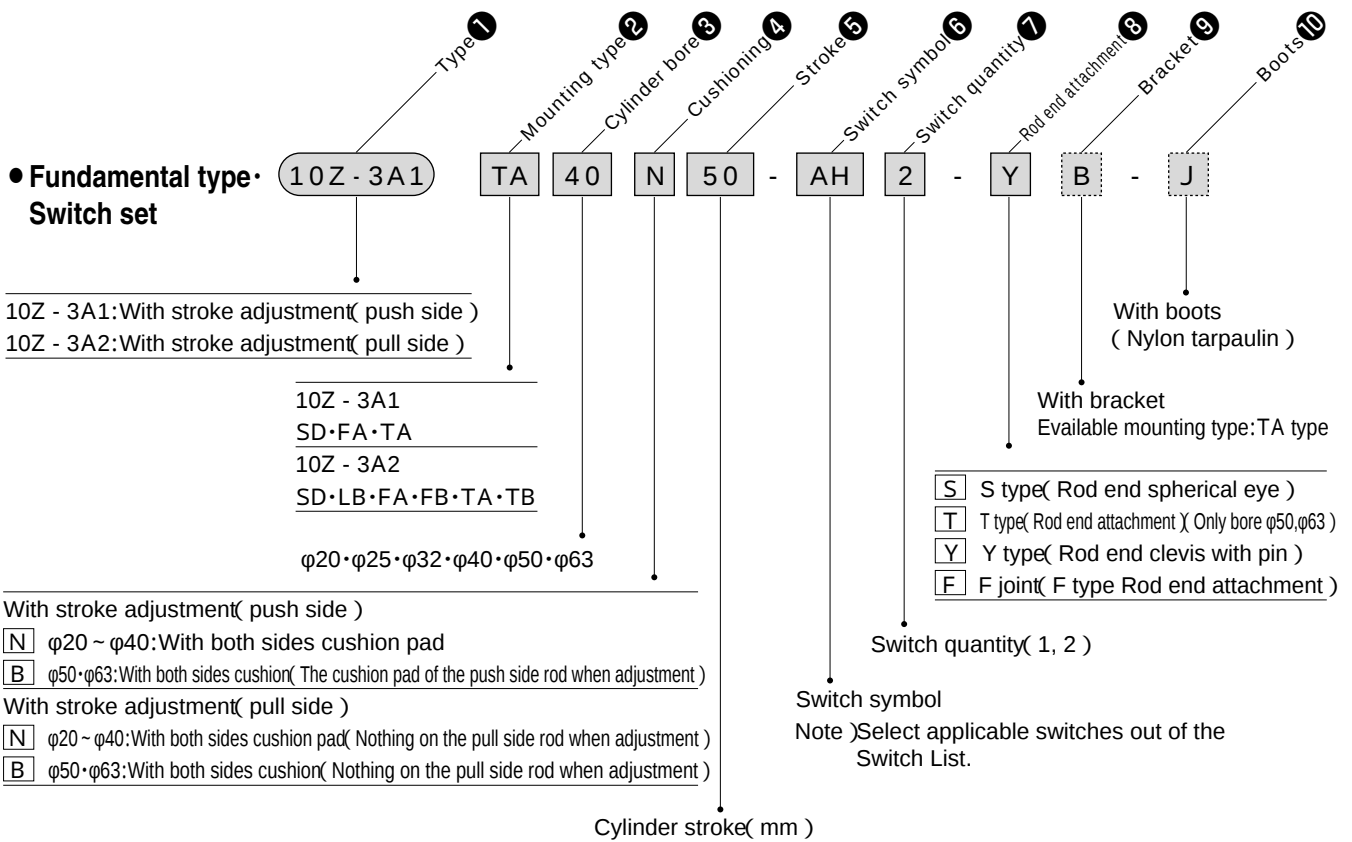


Stroke 1 and 2 will pull in when air are supplied to both A and D port.

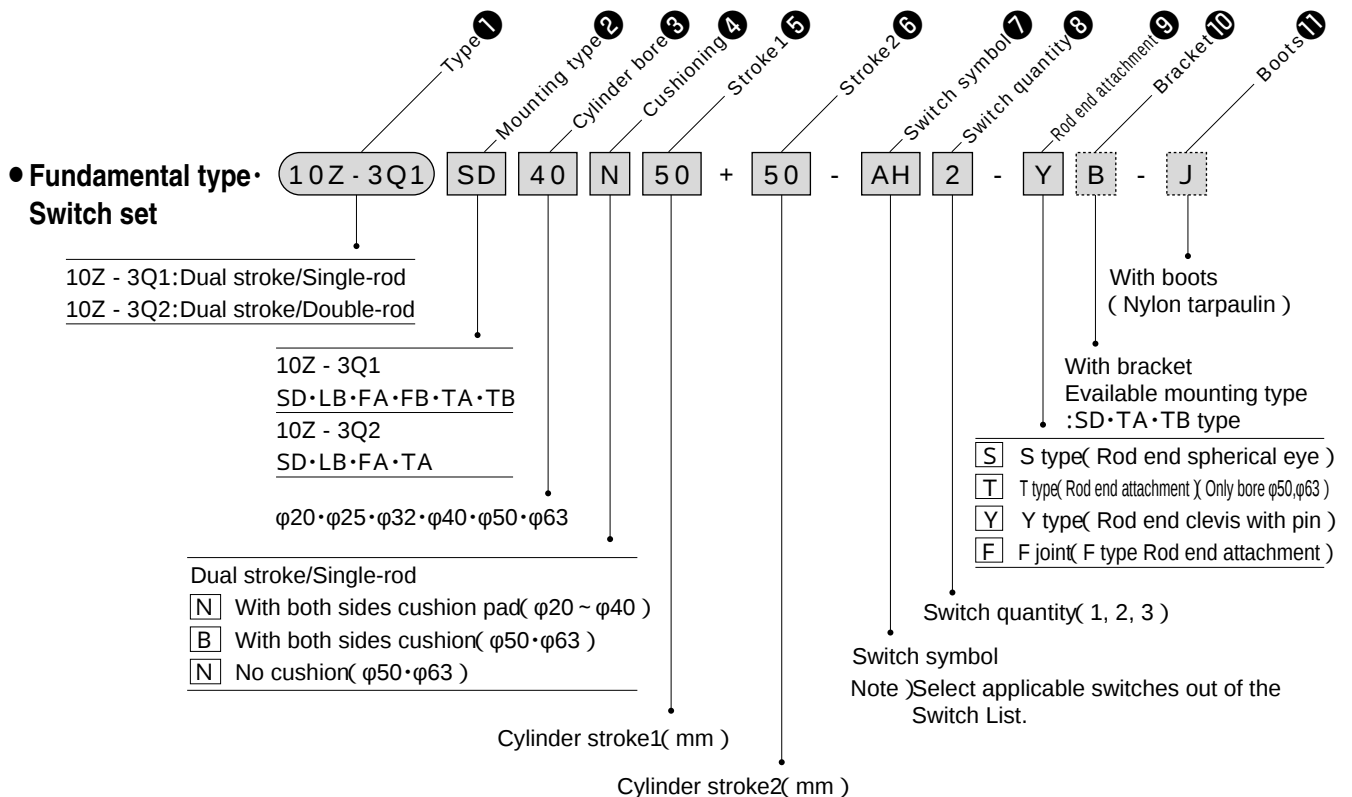
Stroke 2 will pull in and only stroke 1 will actuate when air are supplied to both B and D port.

Stroke 1 will pull in and only stroke 2 will actuate when air are supplied to both A and C port.

Stroke 1 and 2 will actuate when air are supplied to both B and C port.



Please inquiry for more information separately.

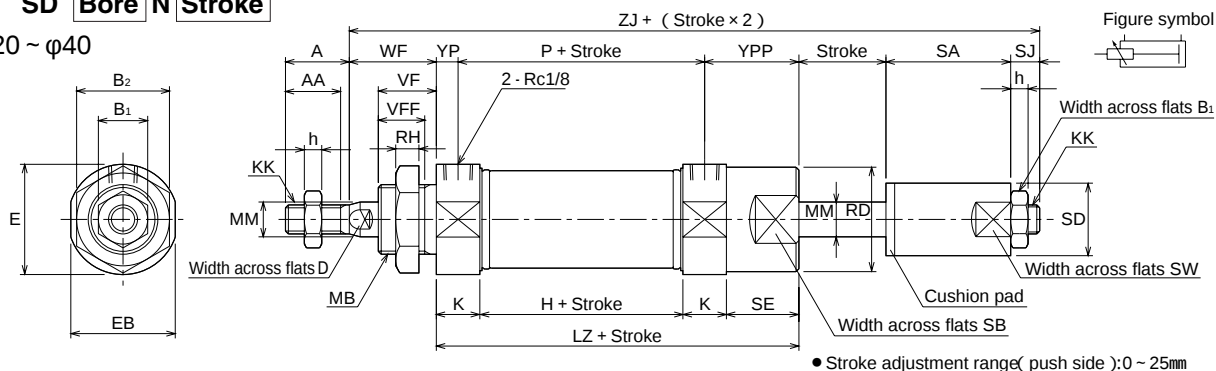


Please inquiry for more information separately.

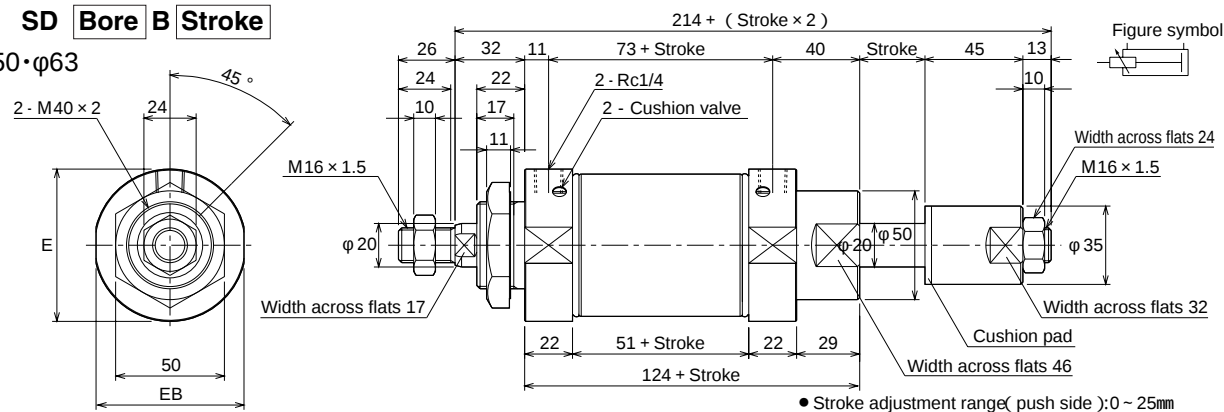
With stroke adjustment (push side)

10Z-3A1 SD **Bore N** **Stroke**

- Bore $\phi 20 \sim \phi 40$

10Z-3A1 SD **Bore B** **Stroke**

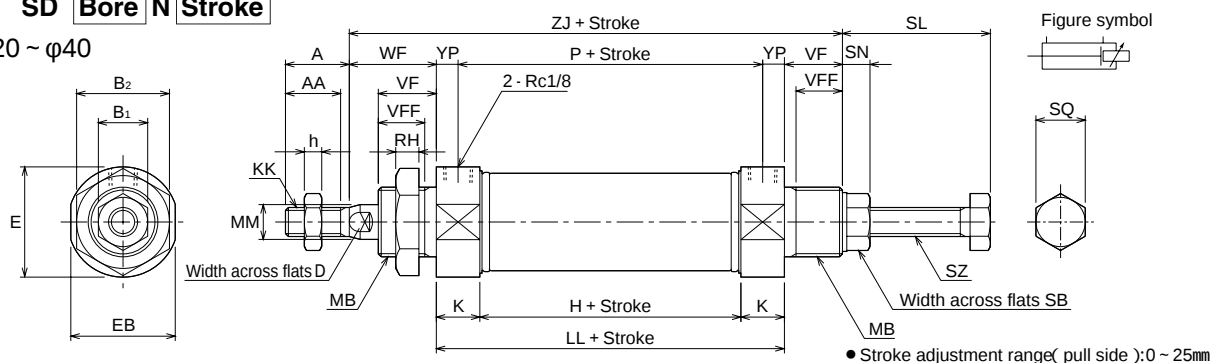
- Bore $\phi 50 \sim \phi 63$



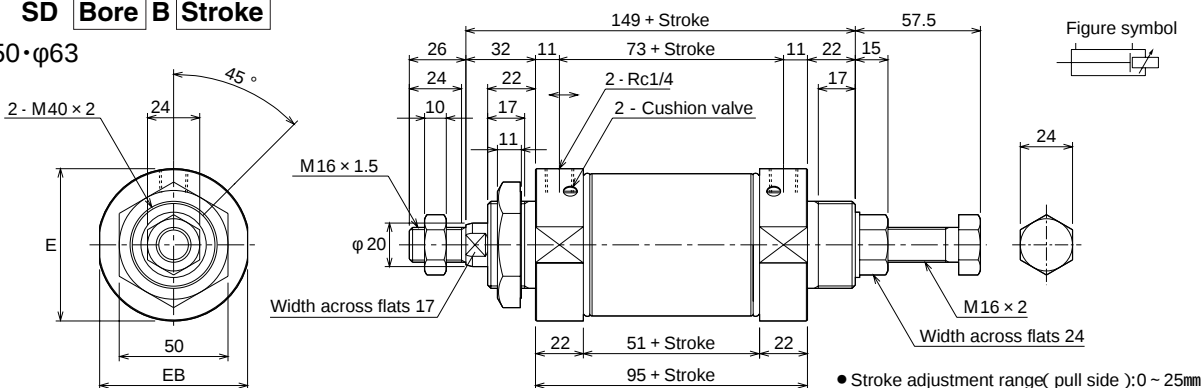
With stroke adjustment (pull side)

10Z-3A2 SD **Bore N** **Stroke**

- Bore $\phi 20 \sim \phi 40$

10Z-3A2 SD **Bore B** **Stroke**

- Bore $\phi 50 \sim \phi 63$



Dimensional Table/With stroke adjustment(push side)

Symbol Bore	A	AA	B ₁	B ₂	D	E	EB	H	h	K	KK	LZ	MB	MM	P	RD	RH	SA
φ 20	20	20	13	30	6	φ 28	26	31	5	14	M8×1.25	82	M22×1.5	φ 8	45	φ 30	7	39
φ 25	22	22	17	30	8	φ 31	29	35	6	14.5	M10×1.25	87	M22×1.5	φ 10	49	φ 30	7	39
φ 32	22	19	17	32	10	φ 38	36	40	6	15	M10×1.25	95	M24×2	φ 12	55	φ 35	8	43
φ 40	24	21	19	41	12	φ 46	44	42	7	15	M12×1.25	99	M30×2	φ 14	57	φ 45	9	43
φ 50	-	-	-	-	-	φ 56	54	-	-	-	-	-	-	-	-	-	-	-
φ 63	-	-	-	-	-	φ 70	68	-	-	-	-	-	-	-	-	-	-	-

Symbol Bore	SB	SD	SE	SJ	SW	VF	VFF	WF	YP	YPP	ZJ
φ 20	27	φ 20	23	8	17	16	13	24	7	30	153
φ 25	27	φ 20	23	9	17	18	15	28	7.5	30.5	163
φ 32	32	φ 25	25	9	22	20	16	30	7.5	32.5	177
φ 40	41	φ 30	27	10	27	22	18	32	7.5	34.5	184
φ 50	-	-	-	-	-	-	-	-	-	-	-
φ 63	-	-	-	-	-	-	-	-	-	-	-

Dimensional Table/With stroke adjustment(pull side)

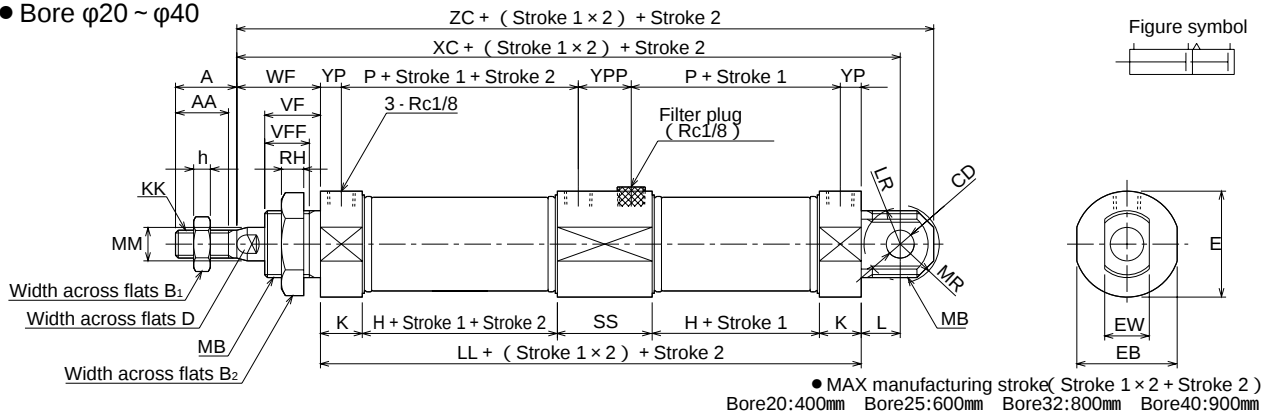
Symbol Bore	A	AA	B ₁	B ₂	D	E	EB	H	h	K	KK	LL	MB	MM	P	RH	SB	SL
φ 20	20	20	13	30	6	φ 28	26	31	5	14	M8×1.25	59	M22×1.5	φ 8	45	7	13	48
φ 25	22	22	17	30	8	φ 31	29	35	6	14.5	M10×1.25	64	M22×1.5	φ 10	49	7	13	46.5
φ 32	22	19	17	32	10	φ 38	36	40	6	15	M10×1.25	70	M24×2	φ 12	55	8	17	51
φ 40	24	21	19	41	12	φ 46	44	42	7	15	M12×1.25	72	M30×2	φ 14	57	9	19	52
φ 50	-	-	-	-	-	φ 56	54	-	-	-	-	-	-	-	-	-	-	-
φ 63	-	-	-	-	-	φ 70	68	-	-	-	-	-	-	-	-	-	-	-

Symbol Bore	SN	SQ	SZ	VF	VFF	WF	YP	ZJ
φ 20	8	13	M8×1.25	16	13	24	7	99
φ 25	8	13	M8×1.25	18	15	28	7.5	110
φ 32	9.5	17	M10×1.5	20	16	30	7.5	120
φ 40	12	19	M12×1.75	22	18	32	7.5	126
φ 50	-	-	-	-	-	-	-	-
φ 63	-	-	-	-	-	-	-	-

Dual stroke/Single-rod

10Z - 3Q1 SD Bore N Stroke 1 + Stroke 2

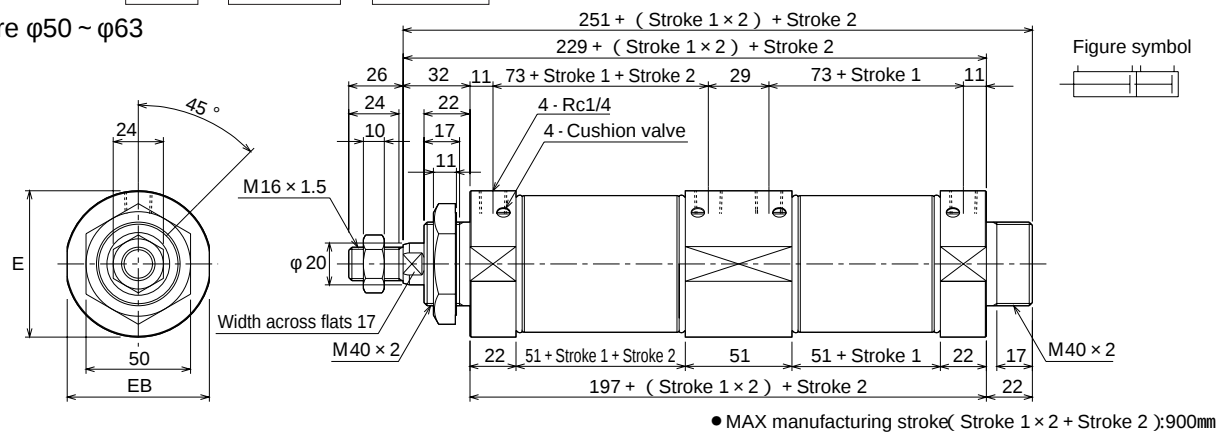
- Bore $\phi 20 \sim \phi 40$



● MAX manufacturing stroke(Stroke 1×2 + Stroke 2)
Bore20:400mm Bore25:600mm Bore32:800mm Bore40:900mm

10Z-3Q1 SD Bore B Stroke 1 + Stroke 2

- Bore $\phi 50 \sim \phi 63$

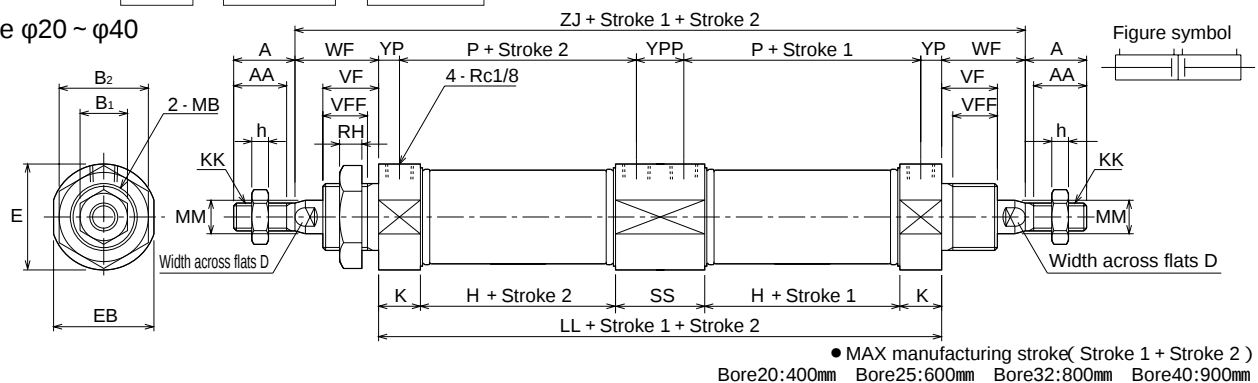


- MAX manufacturing stroke($\text{Stroke 1} \times 2 + \text{Stroke 2}$):900mm

Dual stroke/Double-rod

10Z-3Q2 SD Bore N Stroke 1 + Stroke 2

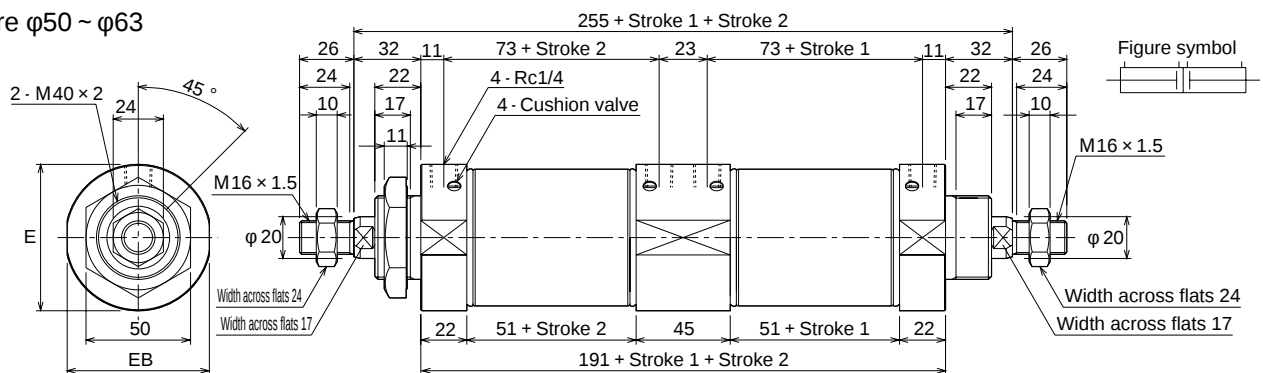
- Bore $\phi 20 \sim \phi 40$



● MAX manufacturing stroke(Stroke 1 + Stroke 2)
Bore20:400mm Bore25:600mm Bore32:800mm Bore40:900mm

10Z - 3Q2 SD Bore B Stroke 1 + Stroke 2

- Bore $\phi 50 \sim \phi 63$



- MAX manufacturing stroke(Stroke 1 + Stroke 2):900mm

Dimensional Table/Dual stroke/Single-rod

Symbol Bore	A	AA	B ₁	B ₂	CD	D	E	EB	EW	H	h	K	KK	L	LL	LR	MB
φ 20	20	20	13	30	φ 8 H9	6	φ 28	26	16 ^{-0.1 -0.3}	31	5	14	M8×1.25	12	121	R 11	M22×1.5
φ 25	22	22	17	30	φ 8 H9	8	φ 31	29	16 ^{-0.1 -0.3}	35	6	14.5	M10×1.25	12	130	R 11	M22×1.5
φ 32	22	19	17	32	φ 10 H9	10	φ 38	36	16 ^{-0.1 -0.3}	40	6	15	M10×1.25	14	144	R 13	M24×2
φ 40	24	21	19	41	φ 12 H9	12	φ 46	44	20 ^{-0.1 -0.3}	42	7	15	M12×1.25	16	149	R 15	M30×2
φ 50	-	-	-	-	-	-	φ 56	54	-	-	-	-	-	-	-	-	-
φ 63	-	-	-	-	-	-	φ 70	68	-	-	-	-	-	-	-	-	-

Symbol Bore	MM	MR	P	RH	SS	VF	VFF	WF	XC	YP	YPP	ZC
φ 20	φ 8	R 12	45	7	31	16	13	24	157	7	17	167
φ 25	φ 10	R 12	49	7	31	18	15	28	170	7.5	17	180
φ 32	φ 12	R 14	55	8	34	20	16	30	188	7.5	19	200
φ 40	φ 14	R 16	57	9	35	22	18	32	197	7.5	20	209
φ 50	-	-	-	-	-	-	-	-	-	-	-	-
φ 63	-	-	-	-	-	-	-	-	-	-	-	-

Dimensional Table/Dual stroke/Double-rod

Symbol Bore	A	AA	B ₁	B ₂	D	E	EB	H	h	K	KK	LL	MB	MM	P	RH	SS	VF
φ 20	20	20	13	30	6	φ 28	26	31	5	14	M8×1.25	121	M22×1.5	φ 8	45	7	31	16
φ 25	22	22	17	30	8	φ 31	29	35	6	14.5	M10×1.25	130	M22×1.5	φ 10	49	7	31	18
φ 32	22	19	17	32	10	φ 38	36	40	6	15	M10×1.25	142	M24×2	φ 12	55	8	32	20
φ 40	24	21	19	41	12	φ 46	44	42	7	15	M12×1.25	146	M30×2	φ 14	57	9	32	22
φ 50	-	-	-	-	-	φ 56	54	-	-	-	-	-	-	-	-	-	-	-
φ 63	-	-	-	-	-	φ 70	68	-	-	-	-	-	-	-	-	-	-	-

Symbol Bore	VFF	WF	YP	YPP	ZJ
φ 20	13	24	7	17	167
φ 25	15	28	7.5	17	182
φ 32	16	30	7.5	17	196
φ 40	18	32	7.5	17	203
φ 50	-	-	-	-	-
φ 63	-	-	-	-	-

Method for Setting of Switch Detection Position

AX Type Switch

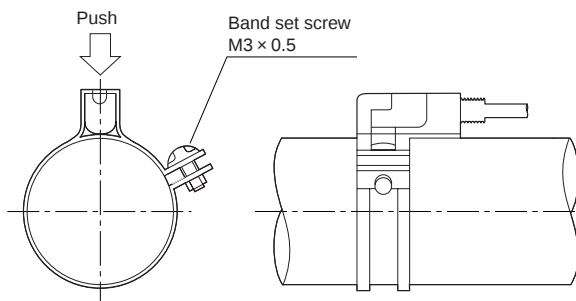
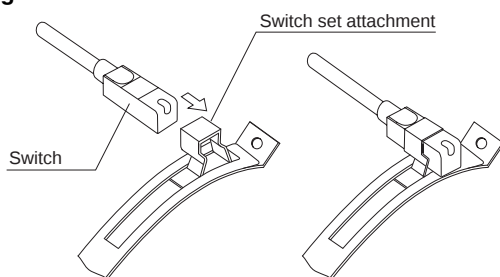


Fig. 1



1. The band body is twisted and side of switch set attachment is extracted from slit for removal.
2. After inserting a switch in the switch set attachment, the switch set attachment shall be again mounted on the band body. (Fig. 1)
3. After removing the band set screw (M3), a band is wound on the cylinder tube and then is set at the detection position.
4. With the mounting hole and screw of band set together, the band set screw is slightly thrust for temporary setting.
5. By moving the band and switch on tube, the detection position shall be set.

The switch lights when it is set ON. The switch detection position delicately varies according to the rotation of piston and change of ambient temperature. Accordingly for the accurate detection, the switch set position shall be set 2 ~ 3mm away from ON position to the intrusion side of piston. For the switch mounting position in case of the stroke end detection, refer to the UX value of catalog. Please adjust the position of switch to confirm the best positions by green light. (2 color position sensor)

6. If the setting position is set, the upper face of switch is slightly pushed and the band set screw is tightened for fixing.
Remmended torque : 0.3N·m
Note) In case that clamp torque is not appropriate, the switch position may slip down.

ZC Type Switch

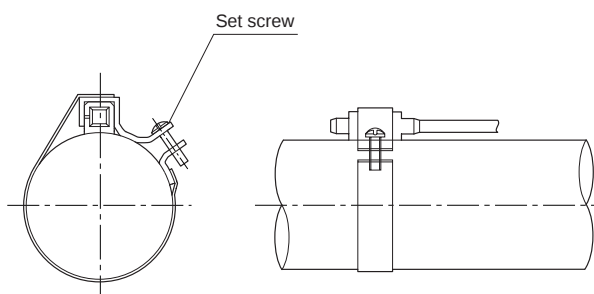
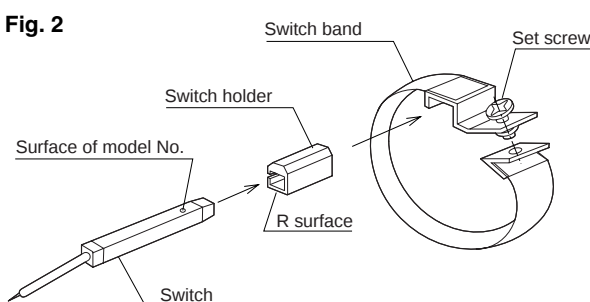


Fig. 2



1. Insert the switch to the switch holder. (Fig. 2)
Please make sure the match of switch and holder surface like Fig. 2.
2. Twist the band loosely round cylinder tube to be the R-surface of holder on the tube.
3. After adjusting the sensing position, fasten the switch by screw tightly.
Note) Be careful about the screw fastening torque.
(Recommended torque is 0.5N·m)
Please adjust the position of switch to confirm the best positions. In case that clamp torque is not appropriate, the switch position may slip down.
4. For the delicate adjustment ,loosen the screw a little bit to move only switch.

JR Type · JS Type Switch

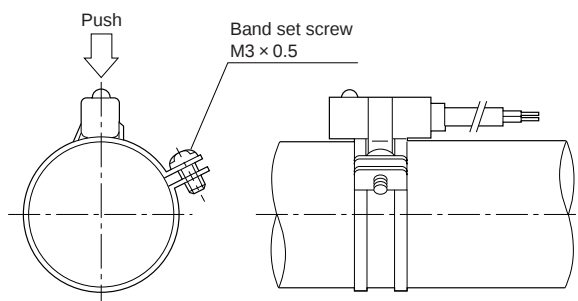
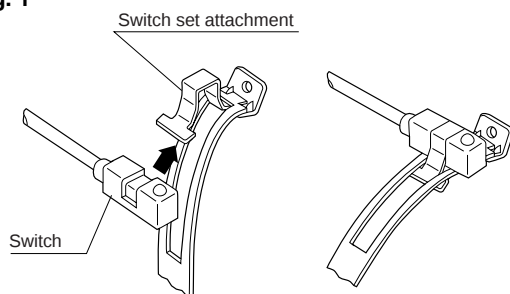


Fig. 1



1. The band body is twisted and side of switch set attachment is extracted from slit for removal.
2. After inserting a switch in the switch set attachment, the switch set attachment shall be again mounted on the band body. (Fig. 1)
3. After removing the band set screw (M3), a band is wound on the cylinder tube and then is set at the detection position.
4. With the mounting hole and screw of band set together, the band set screw is slightly thrust for temporary setting.
5. By moving the band and switch on tube, the detection position shall be set.

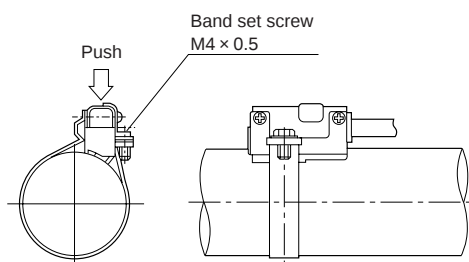
The switch lights when it is set ON. The switch detection position delicately varies according to the rotation of piston and change of ambient temperature. Accordingly for the accurate detection, the switch set position shall be set 2 ~ 3mm away from ON position to the intrusion side of piston. For the switch mounting position in case of the stroke end detection, refer to the UX value of catalog. Please adjust the position of switch to confirm the best positions by green light. (2 color position sensor)

6. If the setting position is set, the upper face of switch is slightly pushed and the band set screw is tightened for fixing.

Remmended torque : $0.3\text{N}\cdot\text{m}$

Note) In case that clamp torque is not appropriate, the switch position may slip down.

SR Type Switch



1. Switch is mounted on band with 2 switch set screw (M3).
Clamp torque : $0.3\text{N}\cdot\text{m}$
2. After the band set screw (M4) is removed, a band is rolled in cylinder tube and then set at approximate detection position.
3. With the set hole and screw of band set, the band set screw is slightly thrust for temporary setting.
4. By moving the band and switch on tube, the detection position shall be set. The working lamp lights for DC and unlights for AC when switch is set ON. The detection position of switch delicately varies with the rotation of piston and change of ambient temperature.

Accordingly for the accurate detection, the switch set position shall be set at position 2 ~ 3mm away from ON position to the intrusion side of piston. For the switch mounting position in case of the stroke end detection, refer to the UX value of catalog.

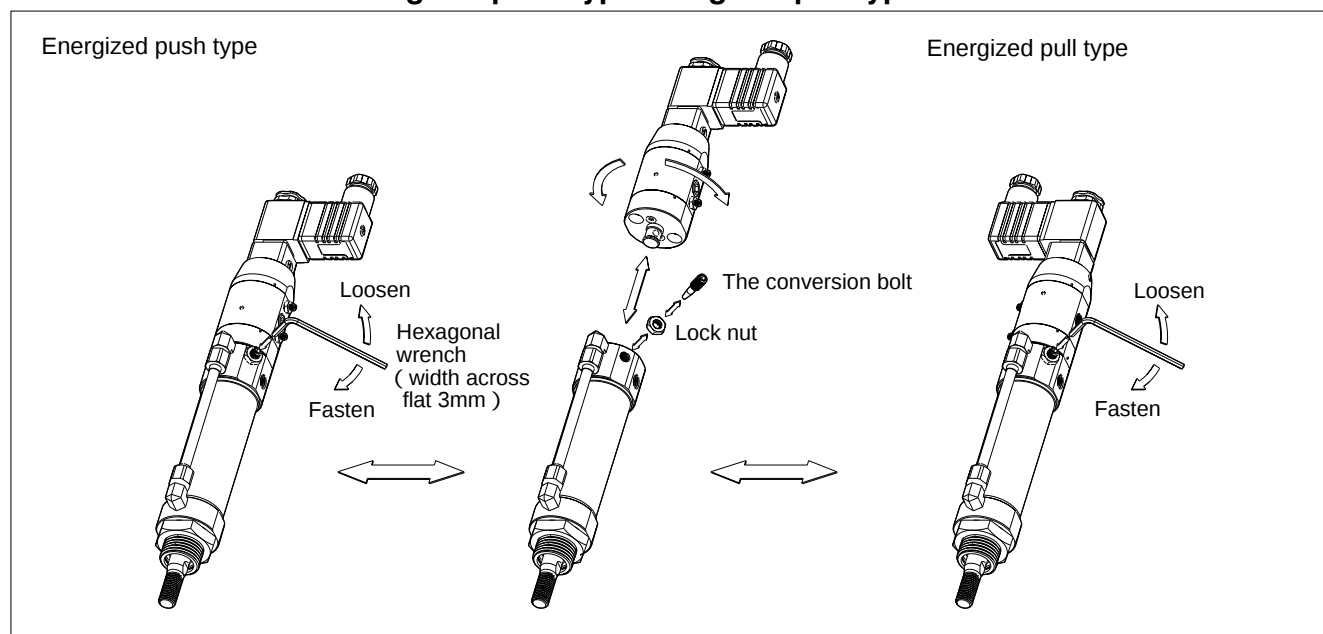
5. If the setting position is set, the upper face of switch is slightly pushed and the band set screw is loosened for fixing.

Remmended torque : $0.3\text{N}\cdot\text{m}$

Note) In case that clamp torque is not appropriate, the switch position may slip down.

Val Set Handling Instructions

Conversion outline for energized push type-energized pull type



As the above picture, fasten the energised push-type pull-type conversion device with a 3mm hex, wrench. When connecting, turn 180 ° degrees and tighten the conversion bolt.

Clamp torque 2.40N·m

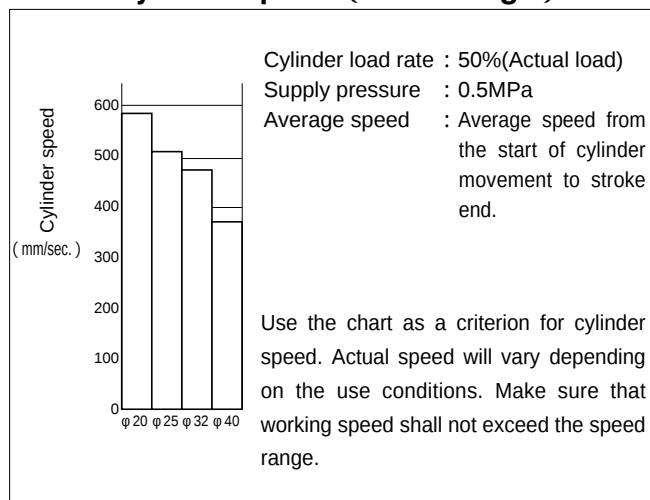
How to use exhaust throttle valve

• Energized push type	• Energized pull type
Speed control in forward movement...Adjust exhaust throttle valve.(M1) Speed control in backward movement...Adjust exhaust throttle valve.(M2)	Speed control in backward movement...Adjust exhaust throttle valve. (M1) Speed control in forward movement...Adjust exhaust throttle valve. (M2)
• The exhaust throttle valve shall be adjusted by minus driver and fixed by lock nut. Clamp torque:0.69N·m • Do not fasten the exhaust throttle valve over 4 rotation from full opening. From totally closed position, turn about 3.6 times to fully open.	

How to use manual operation button

0 position	1 position
• Energized push type When switching the manual operation button 1, the cylinder moves forward on regardless of whether solenoid is energized. • Energized pull type When switching the manual operation button 1, the cylinder moves backward on regardless of whether solenoid is energized. After the manual operation, make sure to return the button to its original position. (0 position)	

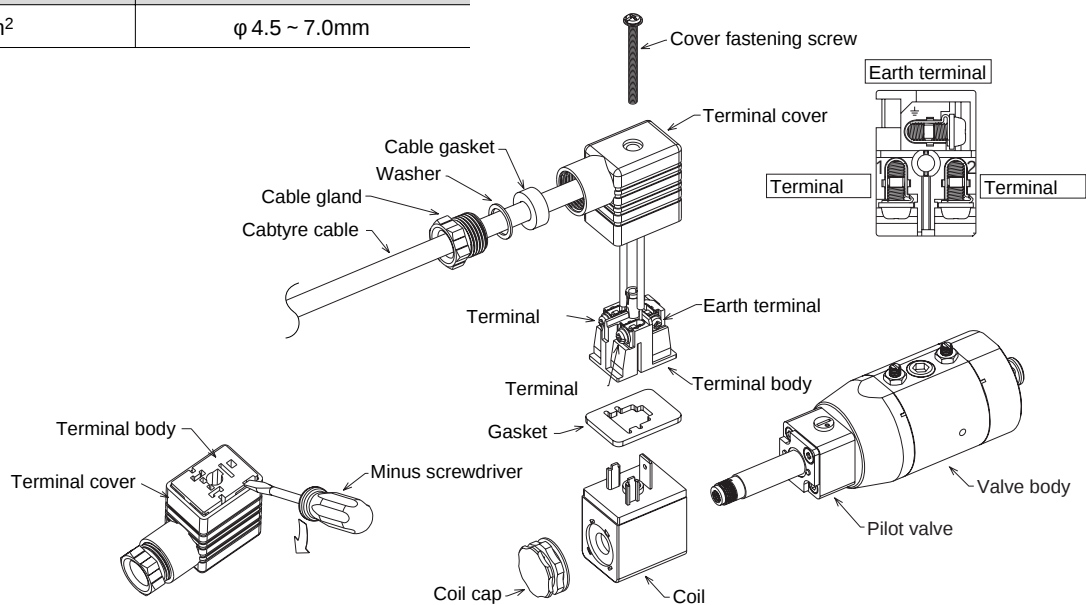
Val set cylinder speeds(Max. Range)



Valve Wiring Method

- (1) Please loosen the screw first, and then disassemble the terminal cover from the terminal body.
- (2) Set the cable through the cable gland, washer, gasket and terminal cover.
- (3) Three screws should be loosen for wiring.(terminal No. , and an earth)
- (4) After assembled the terminal cover with the terminal body, fasten them to the coil. (Remmended torque : $0.4\text{N}\cdot\text{m}$)
- (5) After wiring finished, fasten the cable gland to the cover.(Remmended torque : $0.6\text{N}\cdot\text{m}$)

Wire size	Cable diameter
$0.5 \sim 1.5\text{mm}^2$	$\phi 4.5 \sim 7.0\text{mm}$



You can disassemble the coil from the pilot valve by loosening the coil cap. (Remmended torque : $0.6\text{N}\cdot\text{m}$)

Adjustment of Cushion(In Case of With Cushion)

- The cushion adjustment is changed by air pressure, mass flow of load and cylinder speed, etc. Accordingly for the cushion adjustment, the actual goods shall be mounted on the similar conditions. The cushion adjustment shall be conducted in the direction for transferring from high cushion to low cushion, while cushion needle is loosened gradually in the situation, in which it has been opened at $45^\circ \sim 90^\circ$ from full closing. In the high cushion area, the kinetic energy and the energy absorption are not conducted smoothly and the bound phenomenon is caused. Reversely in the low cushion area, the energy absorption is small against kinetic energy. Piston hits directly against cover, thereby generating the sound of impact. As the destruction of cover is caused, the adjustment shall be conducted while the movement of cylinder is fully observed.

Cylinder bore	Necessary tool	Lock nut clamp torque
$\phi 20, \phi 25$	7mm Spanner Minus driver	$0.69\text{N}\cdot\text{m}$
$\phi 32, \phi 40$	8mm Spanner Minus driver	$1.42\text{N}\cdot\text{m}$

Clamp Torque for Attachment

The respective nut and bolt shall be fastened by clamp torque shown in the following table.

	M22($\phi 20, \phi 25$)	M24($\phi 32$)	M30($\phi 40$)
Clamp torque of nut for mounting attachment	$147\text{N}\cdot\text{m}$	$181\text{N}\cdot\text{m}$	$363\text{N}\cdot\text{m}$

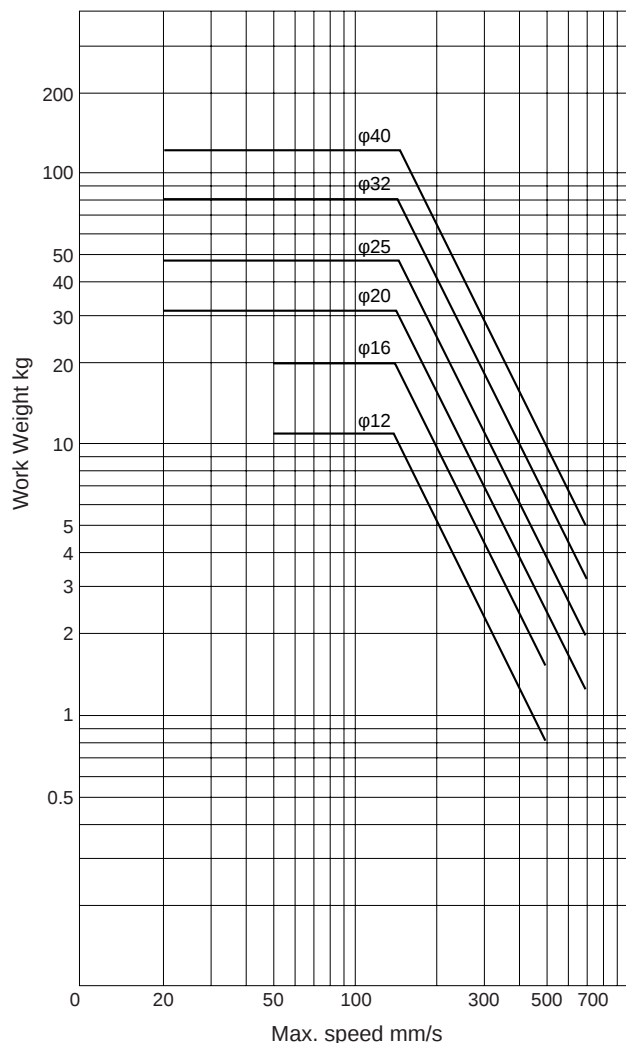
	M8($\phi 20, \phi 25$)	M10($\phi 32$)	M12($\phi 40$)
Clamp torque of nut for fixing rod end attachment	$12.0\text{N}\cdot\text{m}$	$24.0\text{N}\cdot\text{m}$	$42.2\text{N}\cdot\text{m}$

Note) The size of rod end thread of bore 25 rod is M10 for round rod and M8 for non-rotating rod.

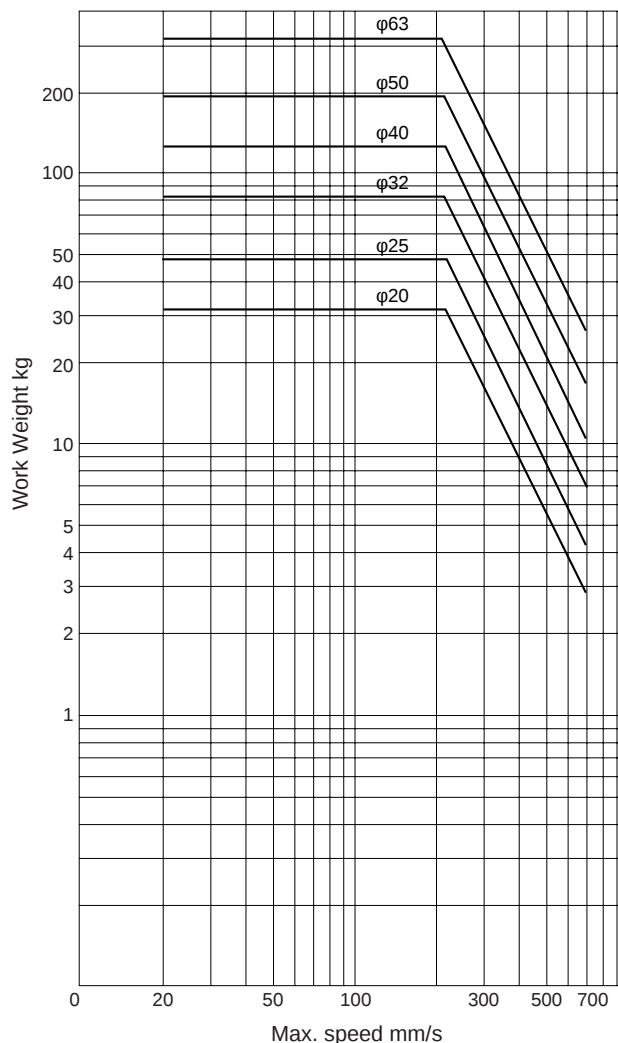
Selection Manual

Allowable Kinetic Energy

● With cushion pad (Both sides)



● With air cushion (Both sides)



Allowable Kinetic Energy

Cylinder bore(mm)	With cushion pad	With air cushion
φ 12	0.11J	—
φ 16	0.21J	—
φ 20	0.31J	0.69J
φ 25	0.50J	1.1J
φ 32	0.81J	1.8J
φ 40	1.3J	2.7J
φ 50	—	4.4J
φ 63	—	7.0J

For the cushion mechanism contained in cylinder, there are two types - - cushion pad and air cushion. (As it can not be contained for some types, refer to the type outline.) For deciding the cushion mechanism, it shall be confirmed that the kinetic energy of load is computed with the calculation formula at right or that it shall not exceed the allowable kinetic energy according to the graph of allowable kinetic energy. In case that it exceeds, it is necessary to work out measures that the bore of cylinder is made large or that the external stopper such as shock absorber is provided.

$$\text{Kinetic energy of load } Ex = \frac{W}{2g} V^2$$

W : Work weight(kg)

g : Weight acceleration 980(cm/s²)

V : Piston speed(cm/s)

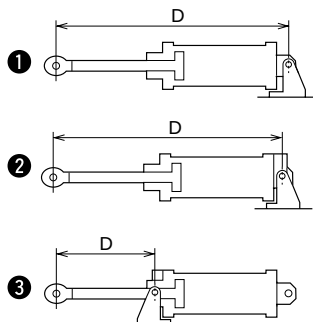
Way Of Looking At Graph

Compute the work weight (rod end load) at max. speed 500mm/s with cushion pad of cylinder bore φ32.

Load 6kg is computed by extending to over 500mm/s according to graph of above table and then extending to left the point of intersection with line of cylinder bore φ32.

Stroke Selection

• Case of Pin Joint at Both End ($D=L$)

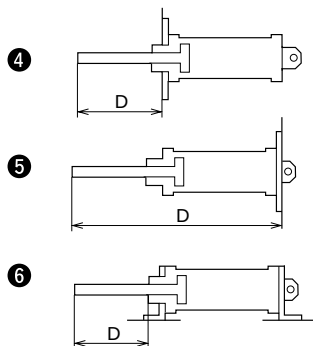


Max. Stroke

Unit : mm

Mounting style Working pressure (MPa) Bore mm	CA type				TA type				TB type			
	0.3	0.5	0.7	1	0.3	0.5	0.7	1	0.3	0.5	0.7	1
φ12	237	173	139	109	-	-	-	-	-	-	-	-
φ16	163	115	89	67	-	-	-	-	-	-	-	-
φ20	243	176	139	107	563	427	355	291	247	179	143	111
φ25	313	228	183	143	707	538	447	367	317	232	187	146
φ32	355	260	209	164	800	609	508	417	359	264	213	168
φ40	389	285	230	180	872	665	554	456	393	289	234	185
φ50	667	497	407	326	1455	1116	936	775	671	502	411	331
φ63	511	377	305	241	1145	876	733	605	516	381	310	246

• Case of Cylinder Fixed, Rod End Free($D=L/2$)

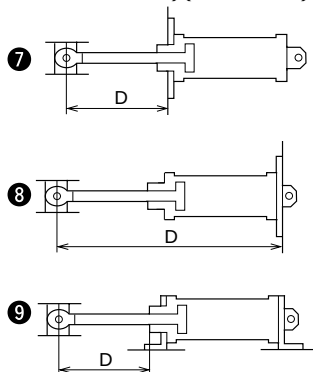


Max. Stroke

Unit : mm

Mounting style Working pressure (MPa) Bore mm	SD type(Head cover thrust), LB type				FA type				FB type				SD type(Cap thrust)			
	0.3	0.5	0.7	1	0.3	0.5	0.7	1	0.3	0.5	0.7	1	0.3	0.5	0.7	1
φ12	244	180	147	116	247	183	150	119	99	67	50	35	100	68	51	36
φ16	174	126	100	78	177	129	103	81	60	36	23	12	61	37	25	13
φ20	257	189	153	121	261	193	157	125	99	65	47	31	99	65	47	31
φ25	326	241	196	156	330	245	200	160	131	89	66	46	131	89	66	46
φ32	371	276	225	180	375	280	229	184	151	103	77	55	151	103	77	55
φ40	405	301	246	196	409	305	250	200	166	114	87	62	166	114	87	62
φ50	694	525	434	354	714	545	454	374	295	210	165	124	300	215	170	129
φ63	539	404	333	269	559	424	353	289	217	150	114	82	222	155	119	87

• Cylinder Fixed, Rod End Guide (Case of Pin Joint) ($D=1.4L$)

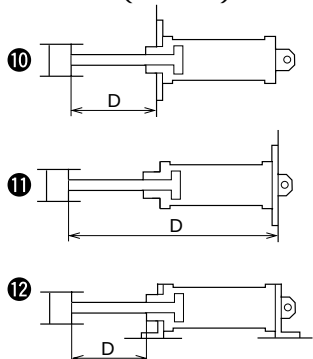


Max. Stroke

Unit : mm

Mounting style Working pressure (MPa) Bore mm	SD type(Head cover thrust), LB type				FA type				FB type				SD type(Cap thrust)			
	0.3	0.5	0.7	1	0.3	0.5	0.7	1	0.3	0.5	0.7	1	0.3	0.5	0.7	1
φ12	752	574	479	395	755	577	482	398	352	263	216	174	354	265	218	175
φ16	554	421	350	286	557	424	353	289	250	183	148	116	252	185	149	118
φ20	798	609	507	417	802	613	511	421	370	275	224	179	370	275	224	179
φ25	1003	766	639	527	1007	770	643	531	469	351	288	231	469	351	288	231
φ32	1133	866	724	597	1137	870	728	601	531	398	327	263	531	398	327	263
φ40	1234	943	788	651	1238	947	792	655	581	436	358	289	581	436	358	289
φ50	2048	1573	1321	1095	2068	1593	1341	1115	972	734	608	495	977	739	613	500
φ63	1613	1237	1036	857	1633	1257	1056	877	754	566	466	376	759	571	471	381

• Case of Cylinder Fixed, Rod End Guide($D=2L$)



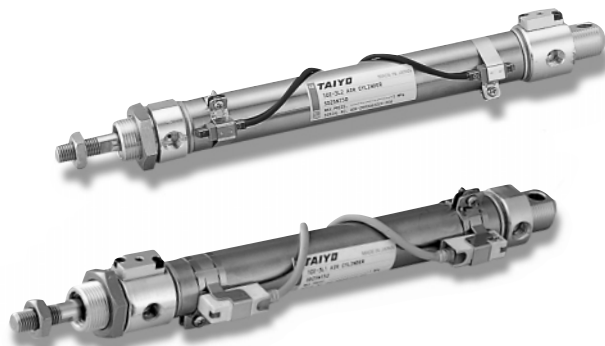
Max. Stroke

Unit : mm

Mounting style Working pressure (MPa) Bore mm	SD type(Head cover thrust), LB type				FA type				FB type				SD type(Cap thrust)			
	0.3	0.5	0.7	1	0.3	0.5	0.7	1	0.3	0.5	0.7	1	0.3	0.5	0.7	1
φ12	1090	836	701	580	1093	839	704	583	522	394	327	266	523	396	328	268
φ16	808	617	516	425	811	620	519	428	377	282	231	186	379	283	232	187
φ20	1159	888	744	615	1163	892	748	619	550	415	342	278	550	415	342	278
φ25	1454	1115	935	774	1458	1119	939	778	695	526	435	355	695	526	435	355
φ32	1640	1259	1056	875	1644	1263	1060	879	785	594	493	402	785	594	493	402
φ40	1787	1371	1150	953	1791	1375	1154	957	857	650	539	441	857	650	539	441
φ50	2951	2272	1912	1590	2971	2292	1932	1610	1423	1084	903	742	1428	1089	908	747
φ63	2330	1792	1505	1250	2350	1812	1525	1270	1112	843	700	572	1117	848	705	577

With The Safety Lock Structure. Can Be Locked The Piston Rod Accuratel, In Case Of Emergency.

- With the prevention of drop and troubles in re-operation, it contributes to the safety of man and apparatus.
- For the safety lock structure, there are two types : head side and cap side, and the selection is available according to applications.
- The release of lock can be simply conducted even with the manual operation.
- In order to select the best mounting method, there are 14 types of mounting style.



Cylinder Specifications

Structure		Double acting type/Single rod	
Type		Fundamental type・Switch set	
		With safety lock at head side	With safety lock at cap side
Series		10Z - 3L1	10Z - 3L2
Cylinder bore (mm)		φ20・φ25・φ32・φ40	
Working fluid		Air	
Lubrication		Unnecessary	
Operating prssure		0.2 ~ 1MPa	
Proof test pressure		1.5MPa	
Note 1) Speed range		20 ~ 700mm/s	
Note 2) Temperature range		- 10 ~ + 70 (Do not use when frozen.)	
Structure of cushioning		With cushion pad	
Tolerance for thread		JIS 6g/6H	
Tolerance of stroke		250mm or less. $^{+1.0}_0$ 251 ~ 900mm $^{+1.5}_0$	
Mounting style	Basic type	SD・SD with B・LS・LB・FA・FB・TB・TB with B・CU・CU with B	SD・SD with B・LS・LB・FA・FB・TA・TA with B・CU・CU with B
	Clevis cut type	SK・LK・FK	SK・LK・FK・TK・TK with B・AD・BD
	Post-port type	SP・LP・FP	SP・LP・FP・TP・TP with B・AP・BP
Accessories	Boots	Nylon tarpaulin	
	Rod end attachment	Rod end spherical eye(S type) Rod end clevis with pin(Y type)・F joint(F type)	
Lock spec.	Back lash	φ20・φ25 : 1mm or less φ32・φ40 : 1.5mm or less	
	Note 3) Holding force	φ20 : 220N φ32 : 550N	φ25 : 330N φ40 : 860N

Note)

1. When setting switch at the intermediate position, keep the cylinder maximum speed under 300mm/sec to preserve the switch detection capabilities.
2. As to the working temperature range, it shall be used in unfrozen environment.
3. The load rate shall be used at less than 65%.

Standard Stroke Fabrication Range

Unit : mm

Bore \ Stroke	15	25	30	50	75	100	125	150	175	200	250	300	350	400	450	500	Max. stroke
φ20											-	-	-	-	-	-	900
φ25													-	-	-	-	900
φ32															-	-	900
φ40																	900

In case that stroke other than the above standard stroke (O marked) is desired, consult with us separately.

Lines

Unit : mm

Structure	Type	φ20	φ25	φ32	φ40
Round rod type	Double Acting Single Rod				
	With safety lock at head side 10Z - 3L1	●	●	●	●
	With safety lock at cap side 10Z - 3L2	●	●	●	●

Type Outline	Basic type	Basic type with bracket	End angles mounting/Both sides	End angles mounting/One sides	Head flange mounting	Cap flange mounting	Head trunnion mounting	Head trunnion mounting with bracket	Cap trunnion mounting	Cap trunnion mounting with bracket	Eye mounting with spherical bearing	Eye mounting spherical bearing Bracket	Block type foot mounting	Block type flange mounting
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Head side with Safety lock 10Z - 3L1	Basic type	●	●	●	●	●			●	●	●	●		
	Clevis cut type	●	●		●	●								
	Post-port type	●	●		●	●								
Cap side with Safety lock 10Z - 3L2	Basic type	●	●	●	●	●	●	●			●	●		
	Clevis cut type	●	●		●	●		●	●				●	●
	Post-port type	●	●		●	●		●	●				●	●

Weight Table

Unit : g

Bore (mm)	Basic weight			Additional weight per stroke 1mm	Mounting accessories weight					
	Basic type	Clevis cut type	Post-port type		Basic type					
					SD with B	LB	LS	FA FB	TA TB	TA with B TB with B
φ20	163(167)	145(149)	145(157)	0.85	115	140	60	55	55	140
φ25	226(233)	209(216)	209(224)	1.15	115	140	60	55	55	140
φ32	364(377)	341(354)	341(364)	1.65	150	220	-	90	90	210
φ40	573(587)	535(549)	535(564)	2.15	185	280	-	110	130	275

Bore (mm)	Mounting accessories weight												Rod end attachment weight		
	Clevis cut type						Post-port type						Rod end eye (S type)	Rod end clevis (Y type) with pin	F joint (F type)
	LK	FK	TK	TK with B	AD	BD	LP	FP	TP	TP with B	AP	BP			
φ20	60	55	55	140	11	8	60	55	55	140	11	8	50	55	60
φ25	60	55	55	140	38	26	60	55	55	140	38	26	75	100	100
φ32	-	90	90	210	62	45	-	90	90	210	62	45	75	100	100
φ40	-	110	130	275	78	59	-	110	130	275	78	59	110	175	100

Note) ● Parenthesized are the weight of cap sided safety lock.

Switch Additional Weight

Unit : g

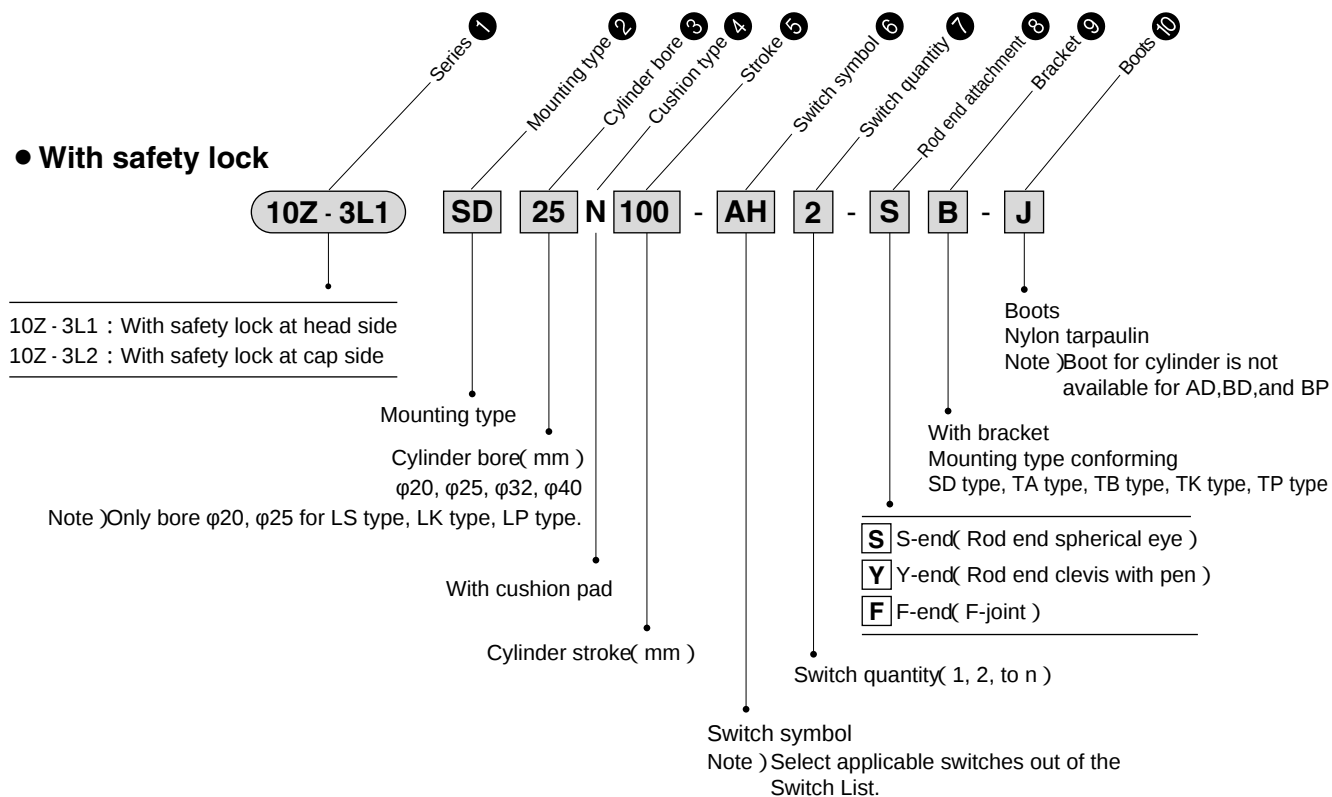
Bore (mm)	AX type			ZC type		JR・JS type		SR type
	Cord length 1.5m	Cord length 5m	Connector type	Cord length 1m	Cord length 3m	Cord length 1.5m	Cord length 5m	Cord length 5m
φ20								
φ25	50	130	40	25	55	35	98	247
φ32								
φ40								

Note) ● Switch additional weight includes the weight of switch bracket.

Calculation formula Cylinder weight (g) = Basic weight + (Cylinder stroke mm × Additional weight per stroke 1mm) + (Switch additional weight × Quantity of Switch) + Mounting accessories weight + Rod end attachment weight

Calculation example 10Z-3L clevis cut type・Bore 20・Cylinder stroke 50mm・AX215A(Cord length 5m) 2 pieces LK
 $145 + (0.85 \times 50) + (130 \times 2) + 60 = 507.5g$

● With safety lock



❗ Notes on order for switch sets

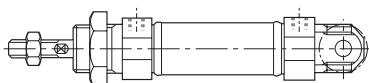
- Switches are not mounted to cylinders at delivery.

Mounting type

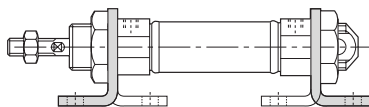
Standard type · Switch set

Basic type

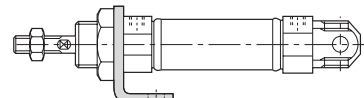
SD Basic type



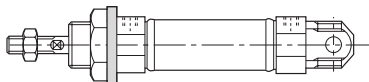
LB End angles mounting



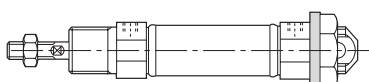
LS End angles mounting



FA Head flange mounting

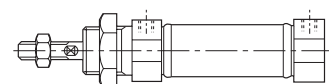


FB Cap flange mounting

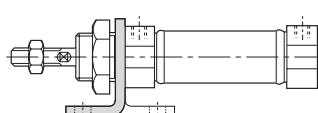


Clevis cut type

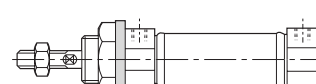
SK Basic type



LK End angles mounting

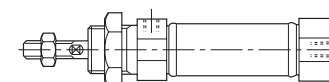


FK Head flange mounting

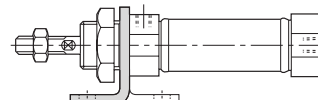


Post-port type

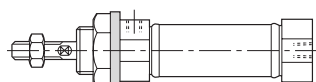
SP Basic type



LP End angles mounting



FP Head flange mounting



Switch List

Semi-standard specification

Product List										
Kind	Switch symbol	Load voltage range	Load current range	Maximum open/close capacity	Protective circuit	Indicating lamp	Wiring Method	Code length	Applicable load device	
Contact	 AX101	DC:5 ~ 30V AC:5 ~ 120V	DC:5 ~ 40mA AC:5 ~ 20mA	DC:1.5W AC:2VA	None	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ4mm Rear wiring	1.5m	Small relay programmable controller	
	 AX105							5m		
	 AX111				Present			1.5m		
	 AX115							5m		
	 AX125	DC:30V or less AC:120V or less	DC:40mA or less AC:20mA or less	2VA	None	None	4-pin connector type Rear wiring	5m		
	 AX11A	AC:5 ~ 120V	5 ~ 20mA					0.5m		
	 AX11B	DC:5 ~ 30V	5 ~ 40mA	1.5W	Present	LED (red light lights up during ON)	0.2mm ² 2-core, outside diameter φ3mm Rear wiring	0.5m		
	 ZC201A	AC:115V or less	AC:25mA or less	-				None		None
	 ZC201B	DC:28V or less	DC:40mA or less	-	None	LED (lights up during ON)	3m			
	 ZC205A	DC:10 ~ 28V	DC:5 ~ 40mA				None	1m		
	 ZC205B									3m
	 JR101	DC:5 ~ 50V	DC:3 ~ 40mA	DC:1.5W AC:2VA	None	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ3.4mm Rear wiring	1.5m		
	 JR105	AC:5 ~ 120V	AC:3 ~ 20mA					5m		
	 SR405	AC:80 ~ 220V	2 ~ 300mA	30VA	Present	Neon lamp (lights up during OFF)	0.5mm ² 2-core, outside diameter φ6mm Rear wiring	5m		
No contact	 AX201	DC:5 ~ 30V	5 ~ 40mA	-	Present	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ4mm Rear wiring	1.5m	Small relay programmable controller	
	 AX205							5m		
	 AX211					LED (2-lamp type in red/green)		1.5m		
	 AX215							5m		
	 ZC230A	DC:10 ~ 28V	4 ~ 50mA	-	Present	LED (lights up during ON)	0.2mm ² 2-core, outside diameter φ3mm Rear wiring	1m		
	 ZC230B							3m		
	 ZC253A	DC:4.5 ~ 28V	100mA or less	-	Present	LED (lights up during ON)	0.2mm ² 3-core, outside diameter φ3mm Rear wiring	1m		
	 ZC253B							3m		
	 JS211M	DC:10 ~ 30V	6 ~ 70mA	-	Present	LED (red light lights up during ON)	0.3mm ² 2-core, outside diameter φ3.4mm Rear wiring	1.5m		
	 JS215M							5m		

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

- For the handling of switches, be sure to refer to the switch specifications in the end of this catalogue.
- We recommend AND UNIT (AU series) for multiple switches connected in series.
- We have developed CE conformed switches.

● AX type switch

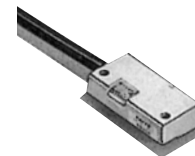
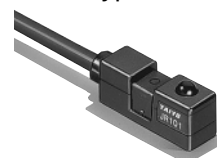
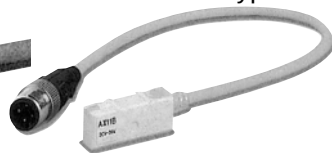
● ZC type switch

● JR・JS type switch

● SR type switch

Code type

Connector type



Rod end Lock nut Parts Code

Bore	Model code
φ20	LNA - 08Z - A
φ25	LNA - 10Z - A
φ32	
φ40	LNA - 12Z - A

★ Delivery form

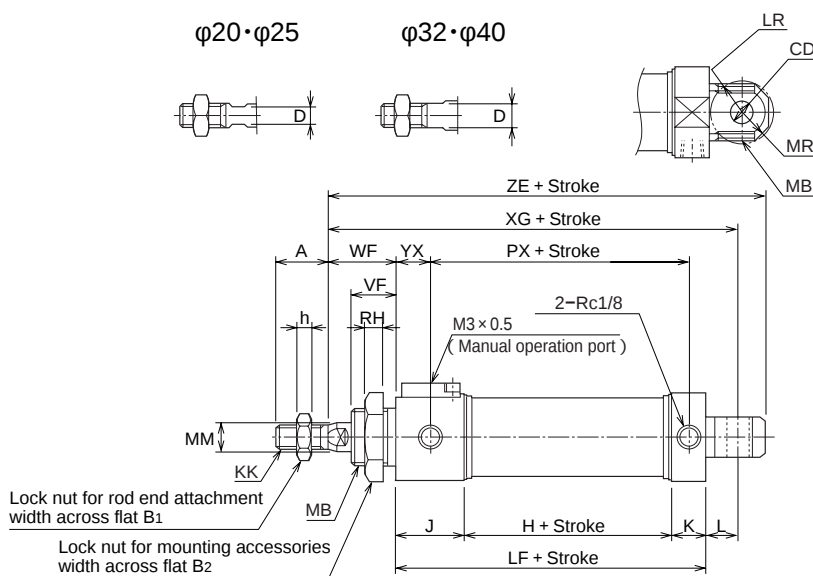
- Products are delivered without switch, mounting accessories, rod end attachment.

10Z-3/TAZ3 Bore B CAD/DATA is available.

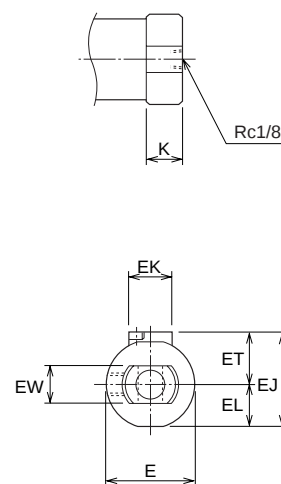


SD

- With safety lock at head side 10Z · 3L1 SD Bore N Stroke



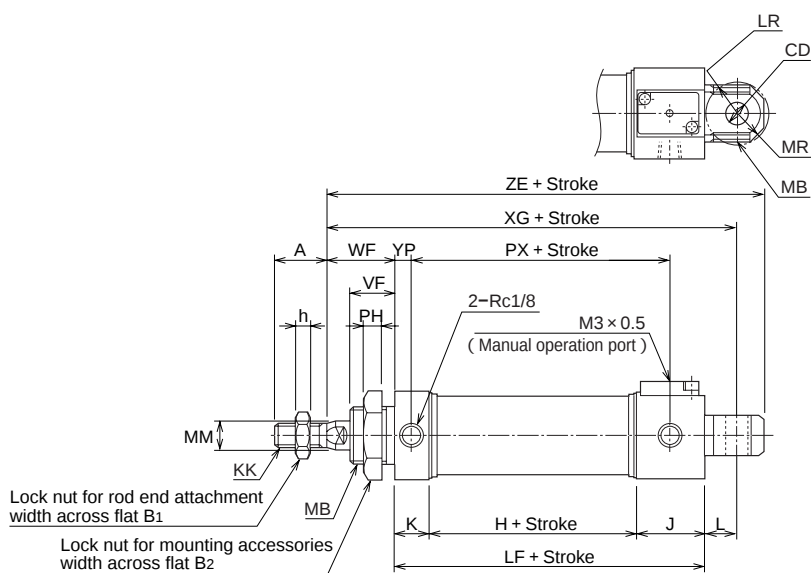
Post-port type(SP)



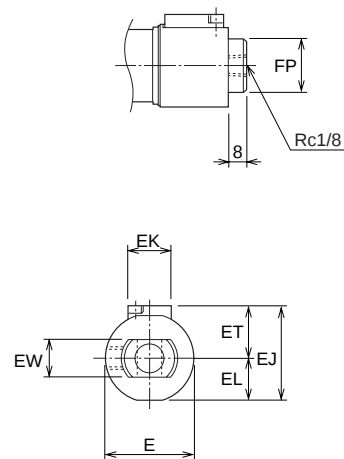
Relative model : Clevis cut type(SK) · With boots

You can check the details in the page of 10Z-3 series.

- With safety lock at cap side 10Z · 3L2 SD Bore N Stroke



Post-port type(SP)



Relative model : Clevis cut type(SK) · With boots

You can check the details in the page of 10Z-3 series.

Dimensional Table

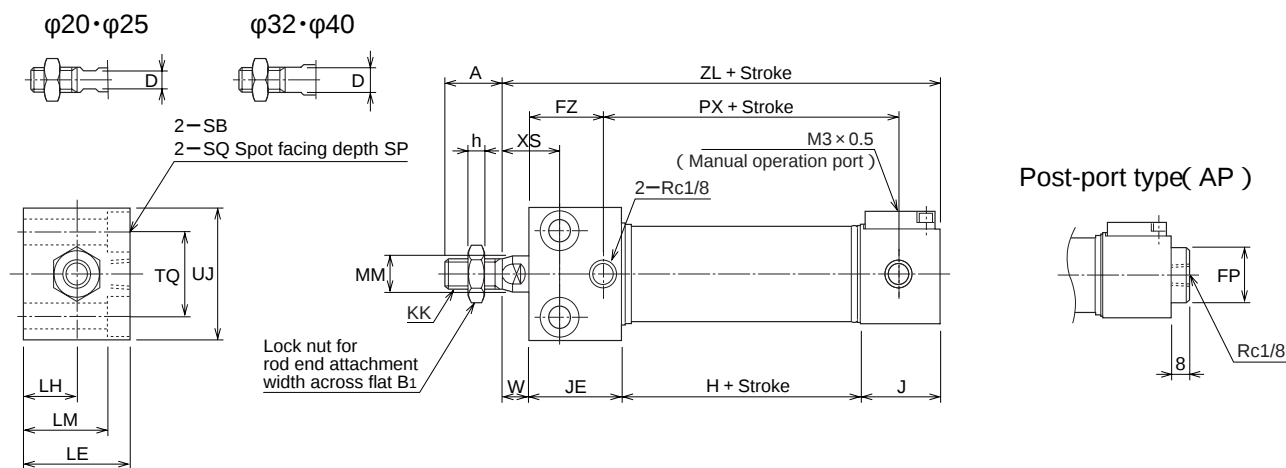
Symbol Bore	A	B ₁	B ₂	CD	D	E	EJ	EK	EL	ET	EW	FP	H	h	J	K
φ 20	20(20)	13	30	φ8H9	6	φ28	31.5	12.5	13	18.5	16 ^{+0.1} _{-0.3}	φ22	31	5	24	14
φ 25	22(22)	17	30	φ8H9	8	φ31	34	12.5	14.5	19.5	16 ^{+0.1} _{-0.3}	φ22	35	6	24.5	14.5
φ 32	22(19)	17	32	φ10H9	10	φ38	40.5	18	18	22.5	16 ^{+0.1} _{-0.3}	φ24	40	6	30	15
φ 40	24(21)	19	41	φ12H9	12	φ46	48	18	22	26	20 ^{+0.1} _{-0.3}	φ30	42	7	30	15

Symbol Bore	KK	L	LF	LR	MB	MM	MR	PX	RH	VF	WF	XG	YX	YP	ZE
φ 20	M8 × 1.25	12	69	R11	M22 × 1.5	φ8	R12	50	7	16(13)	24	105	12	7	115
φ 25	M10 × 1.25	12	74	R11	M22 × 1.5	φ10	R12	54.5	7	18(15)	28	114	12	7.5	124
φ 32	M10 × 1.25	14	85	R13	M24 × 2	φ12	R14	62.5	8	20(16)	30	129	15	7.5	141
φ 40	M12 × 1.25	16	87	R15	M30 × 2	φ14	R16	64.5	9	22(18)	32	135	15	7.5	147

- Parenthesized figure of A・VF is the dimension of screw length.
- Please refer the page of 10Z-3 series about other mountings.(Page 32)

AD

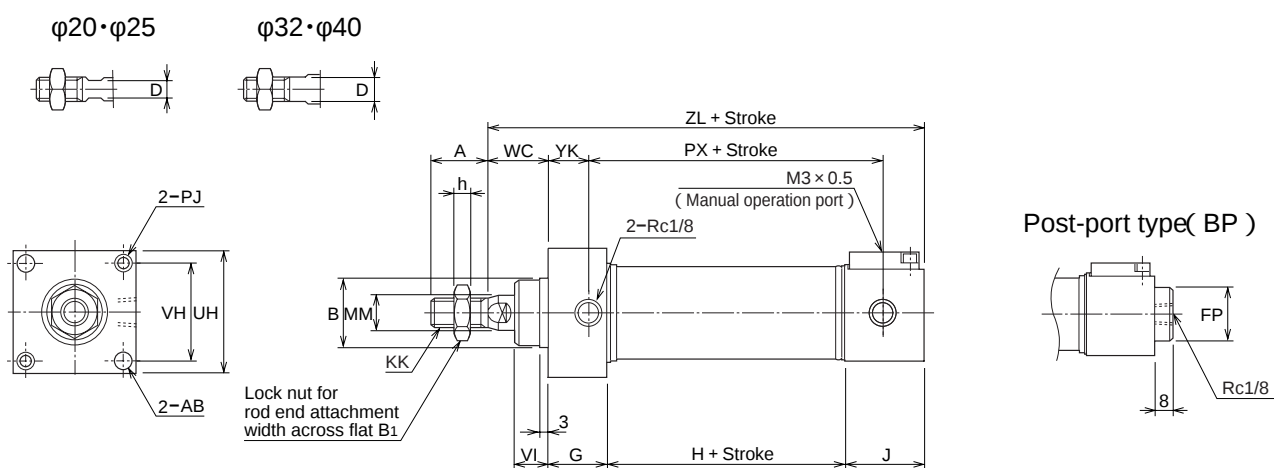
- With safety lock at cap side 10Z - 3L2 AD Bore N Stroke



For non-rotating rod type, clevis cut type is standard.

BD

- With safety lock at cap side 10Z - 3L2 BD Bore N Stroke



For non-rotating rod type, clevis cut type is standard.

Dimensional Table

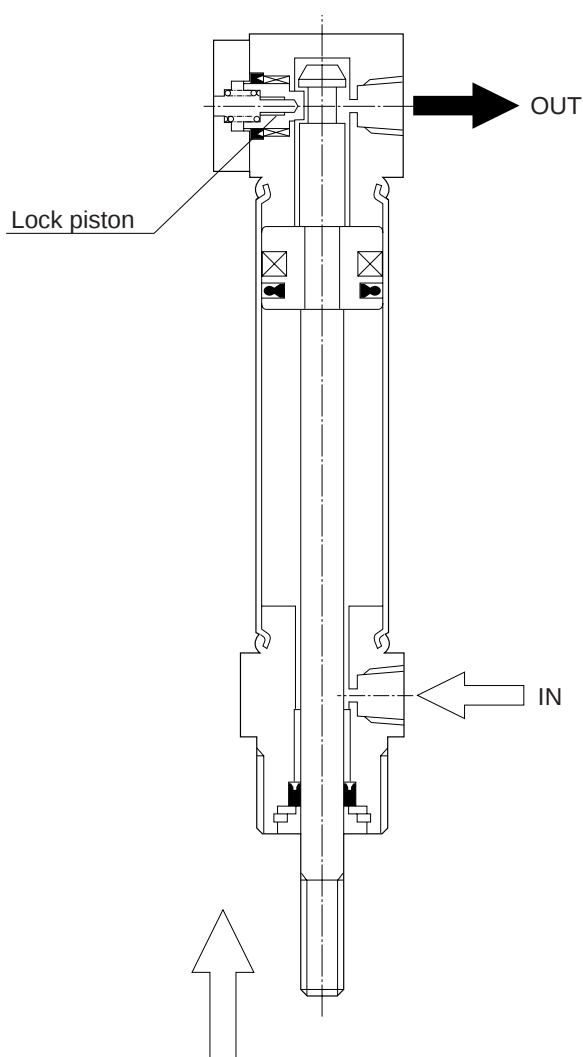
Symbol Bore	A	AB	B	B ₁	D	FP	FZ	G	H	h	J	JE	KK	LE	LH	LM
φ 20	20(20)	φ5.5	φ20f8	13	6	φ22	23	20	31	5	24	30	M8 × 1.25	28	14	21.5
φ 25	22(22)	φ5.5	φ22f8	17	8	φ22	25.5	22.5	35	6	24.5	32.5	M10 × 1.25	34	17	27.5
φ 32	22(19)	φ6.6	φ24f8	17	10	φ24	28	23	40	6	30	35	M10 × 1.25	40	20	31.4
φ 40	24(21)	φ9	φ28f8	19	12	φ30	30	25	42	7	30	37	M12 × 1.25	48	24	37.2

Symbol Bore	MM	PJ	PX	SB	SP	SQ	TQ	UH	UJ	VH	VI	W	WC	XS	YK	ZL
φ 20	φ8	M5 × 0.8	50	φ6.6	6.5	φ11	20	□34	34	□24	10	8	18	18	13	93
φ 25	φ10	M5 × 0.8	54.5	φ6.6	6.5	φ11	24	□38	38	□28	10	10	20	20	15.5	102
φ 32	φ12	M6 × 1	62.5	φ9	8.6	φ14	30	□46	46	□36	12	10	22	22	16	115
φ 40	φ14	M8 × 1.25	64.5	φ11	10.8	φ17.5	36	□56	56	□42	12	10	22	22	18	119

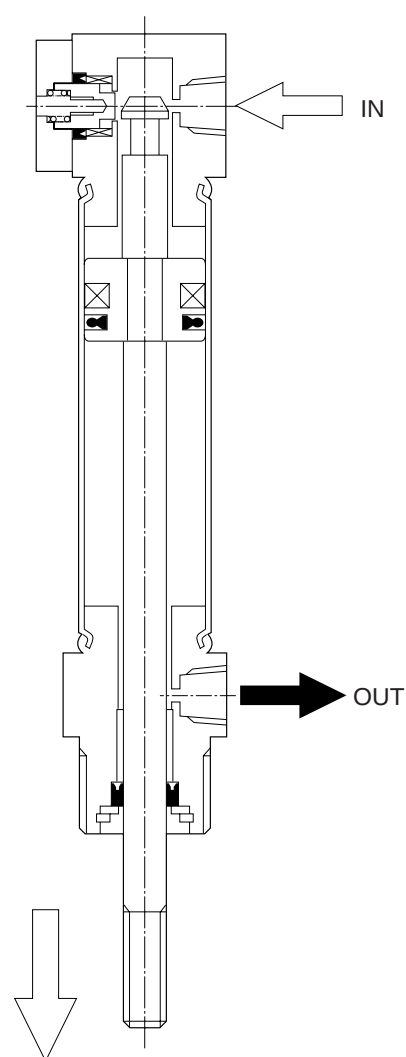
- Parenthesized figure of A is the dimension of screw length.

Working Principles**• Locking**

After piston works until stroke end and air is exhausted, lock piston works with spring force, thereby locking piston rod mechanically.

**• Release of locking**

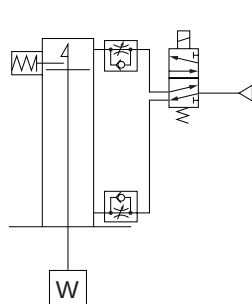
Piston rod works as locking is released after lock piston works when air is supplied to port at lock structure side.



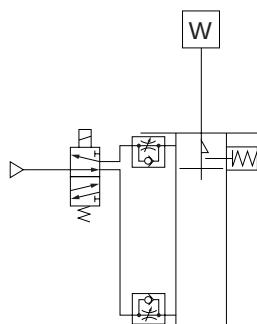
Handling Instructions

Air Pressure Circuit

- At the start (when lock is released) pressure shall be applied temporarily to port at the side where there is no lock mechanism. If the lock is released while load is applied to the lock mechanism (lock piston) the working inferiority and damage may be caused. As there is possibility that piston rod moves rapidly, it is very dangerous.
- Valve, with which pressure at lock side is completely exhausted, shall be selected. Lock shall not be set if the 3 position closed center type and 3 position pressure center type with pressure not exhausted are used.
- The air pressure circuit, for which exhaust pressure is not applied shall be set as there is a case, in which the lock is released if exhaust pressure is applied to port at the lock side during the lock. It shall be noted that the exhaust air side with manifold type valve is in case of concentrated piping.



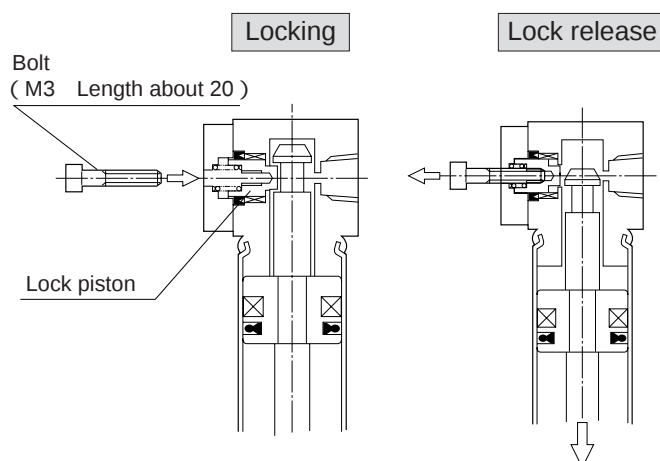
With cap side lock



With head side lock

Manual Lock Release

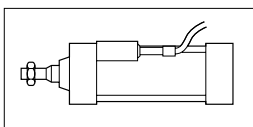
For the manual release of lock, M3 (length about 20) bolt is inserted from the manual release port, and is thrust in the inside lock piston. Then, the bolt is pulled, thereby releasing the lock. In the usual operation, bolt shall be removed.



Handling Instructions

Precautions for Wiring

- Prior to wiring, be sure to shut down the power supply to the electric circuit of the connection side.
 - Otherwise, the operator may get an electric shock during working, or the switches or load devices may be damaged.
- Pay attention to avoid bending, pulling, twist of the switch cord. Especially, provide appropriate measures to avoid any load applied to the end of the switch cord, including the fixing of the switch cord to the tie rod (see the figure below).
 - Otherwise, the cord may be damaged, causing broken wires. Especially, any load applied to the end of the cord may lead to the damaged electric circuit boards in the switches.
 - When fixing the cord to the tie rod, do not clamp the cord excessively. Otherwise, the cord may be damaged, causing broken wires.
- The larger bending radius is better for the cord.
 - If the bending radius is excessively small, the cord may be damaged. The recommended bending radius is twice of the cord dia. or larger.
- If the connection distance is long, fix the cord every 20cm to avoid a sag in the cord.
- When laying the cord on the floor, protect it by covering with metallic tubes to avoid direct treading on it or a crush under machines.
 - Otherwise, the coating of the cord may be damaged, leading to the broken wires or short-circuit.
- The distance between the switches and load devices or power supply must be 10m or shorter.
 - Otherwise, inrush current may occur to the switches during operation, causing the damaged switches. For the countermeasures against inrush current, refer to the "Precautions for contact protection."
- DO NOT bind the cord with high-voltage cables for other electric appliances, the power supply, nor with the power supply cord. NEVER perform wiring near these cables.
 - Otherwise, noises may enter the switch cord from the high-voltage cables and power source or power supply cable, causing the malfunctioned switches or load devices. It is recommended that the cord is protected with a shield tube.



- DO NOT connect the switches direct to the power supply. Be sure to connect them through load devices, such as small relays and programmable controllers.

- Otherwise, short-circuit may occur to the circuit, causing the malfunctions of the switches.
- Use only one relay among the choices shown below or an equivalence.

Omron Corporation	: MY type
Idec Izumi Corporation	: RY type
Fuji Electric Co., Ltd.	: HH-5 type
Matsushita Electric Works, Ltd.	: HC type

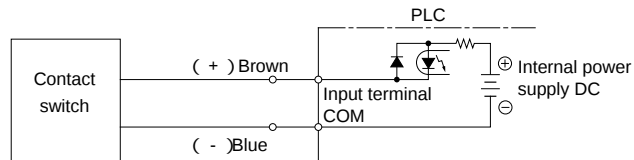
- Perform wiring correctly according to the colors of lead wires.
 - If an electric current is supplied without the correction of the wrong wiring, the switches will be damaged, and the load devices may also be damaged. If wiring is performed incorrectly, it will lead to the inflammable damage of the electric circuit inside the switches, even if the wrong wiring is momentary.

< Connecting Method >

1. Basic Connection

1) Connection to PLC (programmable controller)

a) In the case that the power supply is contained in the PLC

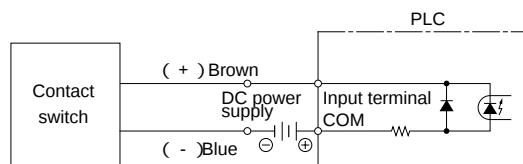


- The circuit diagram above shows the connection example in the case of the DC input type PLC.

(For details, refer to the handling instructions of the PLC.)

- The connection of the AC input type PLC is similar to the above example. Refer to "Precautions for contact protection."

b) In the case that the power supply is not contained in the PLC



- The circuit diagram above shows the connection example in the case of the DC input type PLC.

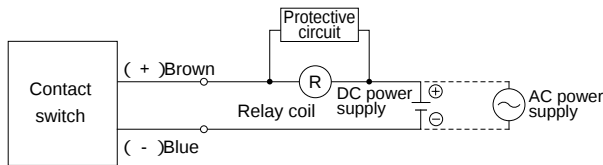
(For details, refer to the handling instructions of the PLC.)

- The connection of the AC input type PLC is similar to the above example. Refer to "Precautions for contact protection."

Precautions for Connection

- Be sure to shut down the power supply to the switches.
 - Otherwise, the operator may get an electric shock during working, or the switches and load devices may be damaged.
- Avoid the voltage and current out of the specifications of the switches, and the load exceeding the contact open/close capacity.
 - Application of wrong voltage or current may lead to malfunctions and damages to the switches.

2) Connection to small relay



- For the protective circuits, refer to " Precautions for contact protection ".

- Remember that the connection of the switches in series will lead to the increased inner drop voltage of the switch output according to the number of the switches. If the inner drop voltage is increased, load devices may not work.
- When connecting the switches in series, set the connection so that the following condition is satisfied: sum of inner drop voltage < working voltage of load devices.
- Set the connection in the case of AC power supply similarly to the above.
- Be sure to connect the protective circuits to the both ends of the relay coil.

2. Multiple Connection

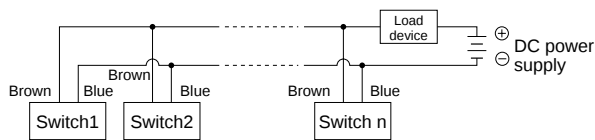
Avoid multiple connection of the switches (connection in series and connection in parallel) since it may be inapplicable depending on the combination of load devices.

1) Connection in parallel

The circuit diagram is shown below.

- Indicator lamps may not light up, depending on the combination of load devices.
- Remember that if any leakage current is present in the switches, it will be increased according to the number of the switches.

The leakage current may lead to the unexpected working or impossibility of return of load devices.

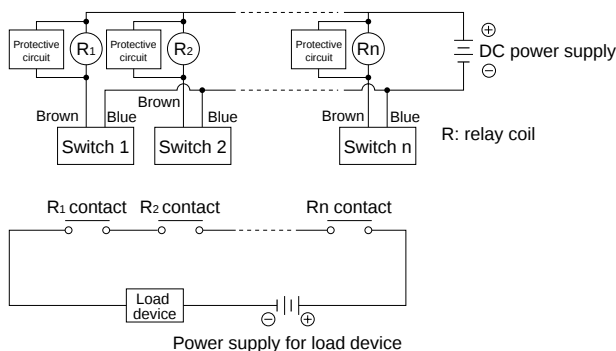


- Set the connection so that the following condition is satisfied: sum of leakage currents < return current value of load devices.
- Set the connection in the case of AC power supply similarly to the above.

2) Connection in series

The circuit shown below is recommended.

Provide a small relay for a switch, and connect the contacts of the small relays in series.

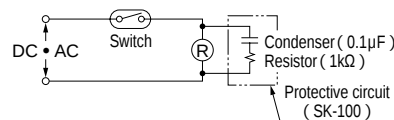


Precautions for Contact Protection

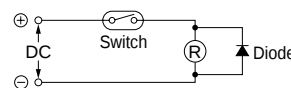
1. Connection to induct load devices (small relay, solenoid valves, etc.)

Remember that surge voltages will occur when the switch is set to the OFF position. Be sure to provide the protective circuit on the side of the load devices to protect the contacts.

- Unless the protective circuit shown below is provided, the internal electric circuit of the switch may be damaged due to the surge voltage.

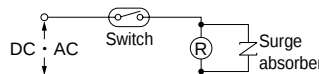


SK-100



R: relay coil

Diode (200 V, 1A or upper)
Take sufficient care not to mistake the polarity of the power supply, + and -.

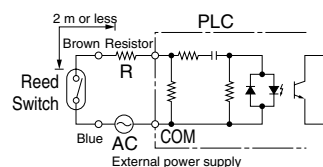


Surge absorber

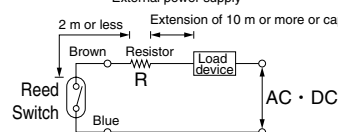
(Use at 24V DC Varistor voltage : approx. 30V
Use at 48V DC Varistor voltage : approx. 60V
Use at 100V AC Varistor voltage : approx. 180V
Use at 200V AC Varistor voltage : approx. 360V)

Handling Instructions

- In the case of the extension of the switch cord by 10m or more, or the connection to the AC input type PLC (programmable controller) and capacity loads (condenser, etc.) inrush current will occur when the switch is set to the ON position. Be sure to provide the protective circuit as shown in the circuit diagram below.

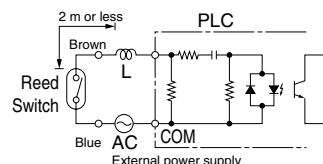


R : inrush current limit resistor
R = apply the possible great resistance within the allowable range of the circuit on the load device.

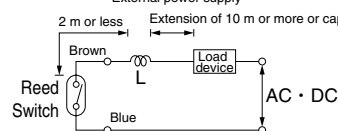


Notes)

- If the applied resistance is excessively great, the load device may not work.
- Provide the wiring for the switches as near as possible (within 2m)



L : choke coil
L = equivalence to approx. 2mH



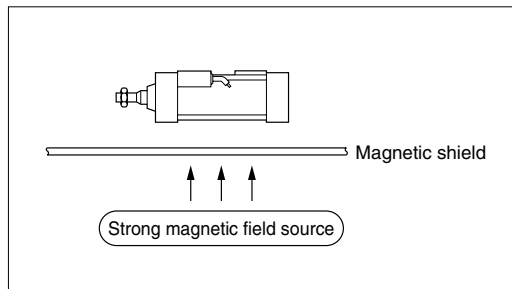
Note)

- Provide the wiring for the switches as near as possible (within 2m)

- Unless the protective circuit shown below is provided, the internal electric circuit of the switch may be damaged due to inrush currents.

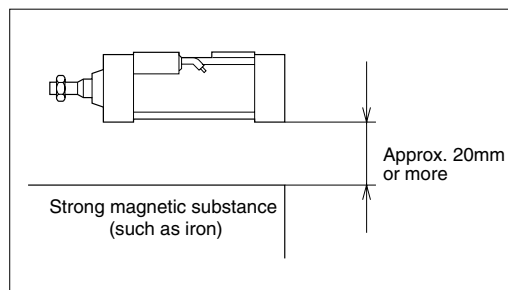
Precautions for Installation

- DO NOT use cylinders and switches in the places where are directly subjected to chips and cutting oil.
 - Otherwise, the cord may be damaged by chips, or cutting oil may enter the switch inside, and short-circuit may occur, causing the malfunctions of the switches.
- Prior to the use of the switches near a strong magnetic field, install the magnetic shield with steel plates (install it 20mm or more distant from the cylinder and switch).
 - Otherwise, the switches may work incorrectly due to the influence of the magnetic field.



- Keep away strong magnetic substances (such as iron) from cylinders outside and switches. Separate them by approx. 20mm or more (as a guide). For compact cylinders, separate them by approx. 10mm or more (KR and ZR type switches)

- Otherwise, the switches may work incorrectly due to the influence of the strong magnetic substances.



Detectable Cylinder Piston Speed

- When mounting the switch on the intermediate position, be sure to adjust the maximum cylinder speed to 300mm/s or slower on account of the response speed of the load relays, etc.
- If the piston speed is excessively high, the switch working time becomes shorter, although the switch works, and load devices including relays may not work. Determine the detectable cylinder piston speed, referring to the formula below.

$$\text{Detectable piston speed (mm/s)} = \frac{\text{working range of switch (mm)}}{\text{working time of load device (ms)}} \times 1000$$

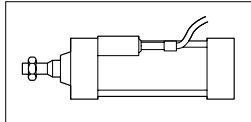
(Notes)

- Refer to the materials related the working time of load devices, including relays, of each manufacturer.
- Apply the minimum value to the working range of a switch, and apply the maximum value to the working time of a load device.

Handling Instructions

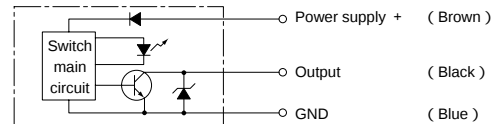
Precautions for Wiring

- For wiring, works shall be conducted by cutting off surely the power supply of electric circuit at the connection side.
 - During the works, workers may receive the electric shock. Switch and load may also be damaged.
- Do not apply loads such as bending, pulling, torsion, etc. to the switch cord. Especially in order that loads are not applied to the switch cord end, the switch cord shall be fixed on the tie rod. (Refer to figure.)
 - The disconnection of cord may be caused. Especially if loads are applied to the cord end, the electric circuit base of switch may be damaged.
 - Even in case that it is fixed on tie rod, do not tighten too much. It may cause the disconnection of cord.
- The bending radius shall be widened as much as possible.
 - It may cause the disconnection of cord. The cord dia. shall be doubled or more.
- In case that the distance to the connection end is long, the cord shall be fixed at the interval of about 20cm so that the cord shall not be loosened.
- For protection, the cord shall be put in metal pipe because it may be stepped directly or buried beneath the device in case that it is set on the ground.
 - Sheath may be damaged, thereby causing the broken wire and short circuit.
- The distance from switch to load and power supply shall be set at less than 10m.
 - If it is set at over 10m, the inrush current generates in switch when used, and the switch may be damaged. The measures for inrush current shall be set upon referring to "precautions for protection of output circuit."
- The cord shall not be bundled with high pressure wire, power source of other electrical appliances and cable for power source or not wired nearby.
 - The wrong working of switch and load may be caused as noise from high pressure wire, power source and cable for power source enter the switch cord. It is recommended that it shall be protected by shield pipe, etc.



- According to the coloring of lead wire, it shall correctly be connected. The works shall be conducted by cutting off surely the power supply of electric circuit device at the connection side when it is connected.

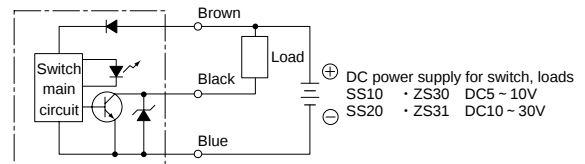
- The short circuit of wrong wiring and loads may cause the damage of switch and electric circuit at load side. Even if it is instantly short circuit, the main circuit and output circuit may be damaged by fire. In addition, the works in power supply may cause the damage of electric circuit at switch, load sides.



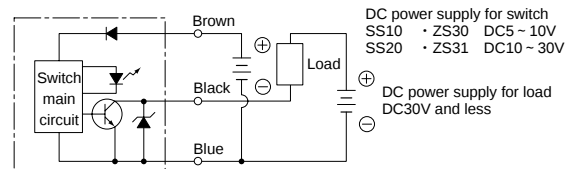
< Connecting Method >

1. Basic Circuit

- In case that power supply of switch and loads is the same.

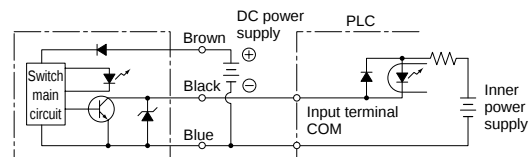


- In case that the power supply of switch and loads is different.



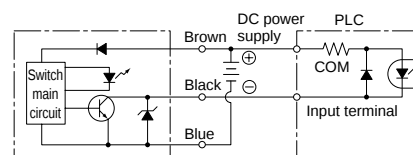
2. Connction With PLC (Programmable controller)

- In case that the power supply is contained in PLC.



- For details, the handling instructions for applied PLC shall fully be confirmed.

- In case that the power supply is not contained in PLC.



- For details, the handling instructions for applied PLC shall fully be confirmed.

Precautions for Connection

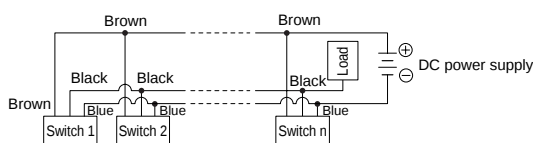
- Do not connect the power supply directly with switch. It shall surely be connected through the specifice loads of small relay, programmable controller, etc.
 - For circuit, the short circuit is caused, and switch is damaged by fire.
- The voltage, current specifications of applied switch, power supply and loads shall fully be confirmed.
 - If the voltage, power supply specifications are mistaken, the working inferiority and damage of switch may be caused.

3. In Case of Plural Connection

As there is the case, in which it can not be used in the combination with load, the plural connection of switch (series, parallel connection) shall be avoided.

1) Parallel connection

- The switch working situation can be confirmed by the indicating lamp of switch. But, it is noted that the leakage current of switch output may increase according to the number of switches. There are cases, in which loads may work or may not return owing to the leakage current.

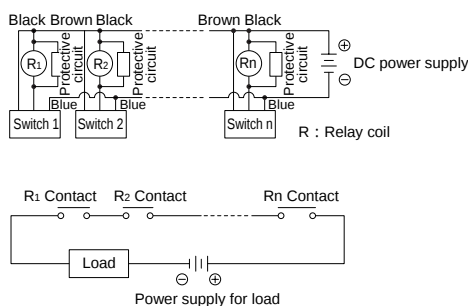


It shall be set for sum of leakage current < return current value of loads.

2) Series connection

- The series connection of fellow switches can not be conducted.

As shown in the following diagram for circuit, the fellow contacts of small relay shall be conducted in series through small relay. In case that PLC is used, the program shall be worked out in order that fellow contacts in PLC are connected in series.



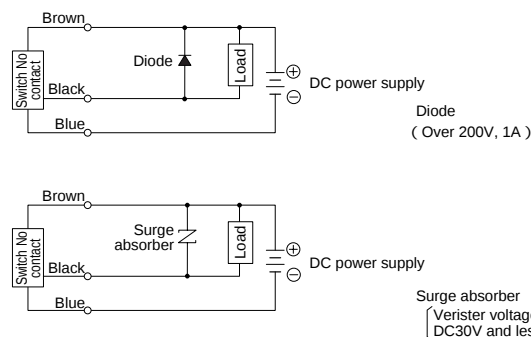
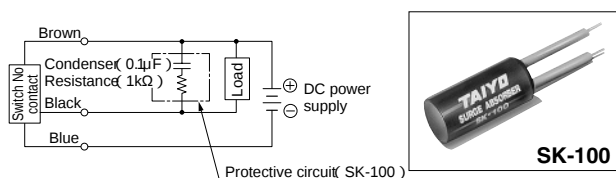
- The protective circuit shall surely be connected at both end of relay coil.

Precautions for Protection of Output Circuit

- In case that induction loads (small relay, solenoid valve, etc.) are connected for use.

As surge voltage is generated with switch at OFF, the protective circuit shall surely be provided at the load side.

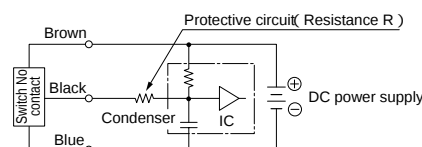
- If there is no protective circuit shown in the following diagram, the internal electric circuit of switch may be damaged by surge voltage.



- In case that the capacity load (condenser, etc.) is connected or that it is extended over 10m.

As the inrush current is generated with switch at ON, the protective circuit shall surely be provided near switch (within 2m from switch) as shown in the following diagram.

- If there is no protective circuit as shown in the following diagram, the internal electric circuit of switch may be damaged by inrush current.



Note) The value of $R(\Omega)$ shall be set to exceed the value computed by the following formula.

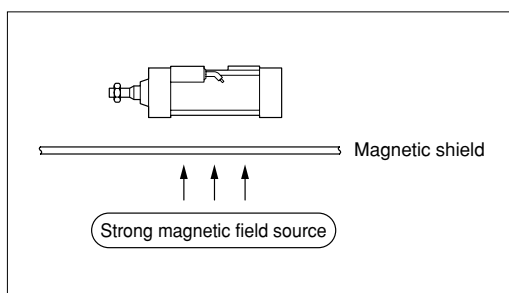
$$R = \frac{V}{0.2} (\Omega) \quad V : \text{Power supply voltage}$$

- In case that noise is mixed with the power supply as the electrical environment is worsened, the noise filter shall be inserted in the power supply line.

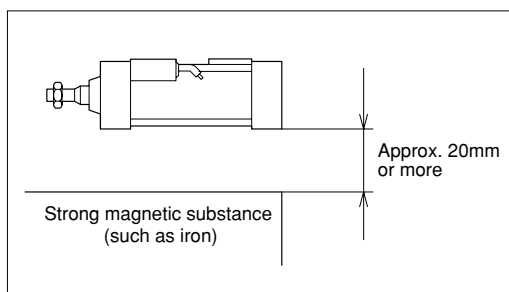
Handling Instructions

Precautions for Installation

- DO NOT use cylinders and switches in the places where are directly subjected to chips and cutting oil.
 - Otherwise, the cord may be damaged by chips, or cutting oil may enter the switch inside, and short-circuit may occur, causing the malfunctions of the switches.
- Prior to the use of the switches near a strong magnetic field, install the magnetic shield with steel plates (install it 20mm or more distant from the cylinder and switch).
 - Otherwise, the switches may work incorrectly due to the influence of the magnetic field.



- Keep away strong magnetic substances (such as iron) from cylinders outside and switches. Separate them by approx. 20mm or more (as a guide) For compact cylinders, separate them by approx. 10mm or more (KR and ZR type switches)
 - Otherwise, the switches may work incorrectly due to the influence of the strong magnetic substances.



Detectable Cylinder Piston Speed

- When mounting the switch on the intermediate position, be sure to adjust the maximum cylinder speed to 300mm/s or slower on account of the response speed of the load relays, etc.
 - If the piston speed is excessively high, the switch working time becomes shorter, although the switch works, and load devices including relays may not work.
- Determine the detectable cylinder piston speed, referring to the formula below.

$$\text{Detectable piston speed (mm/s)} = \frac{\text{working range of switch (mm)}}{\text{working time of load device (ms)}} \times 1000$$

(Notes)

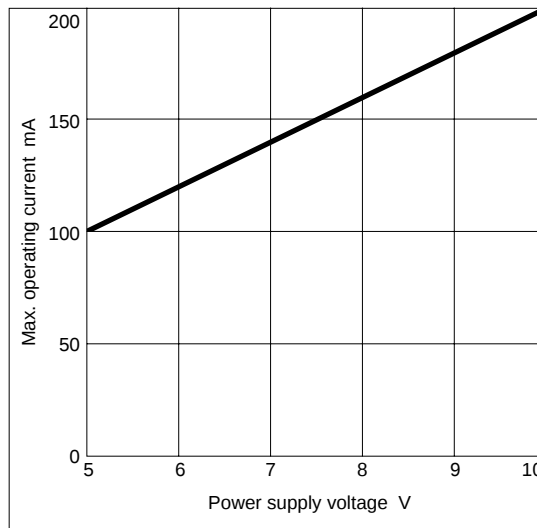
- Refer to the materials related the working time of load devices, including relays, of each manufacturer.
- Apply the minimum value to the working range of a switch, and apply the maximum value to the working time of a load device.

Other Precautions

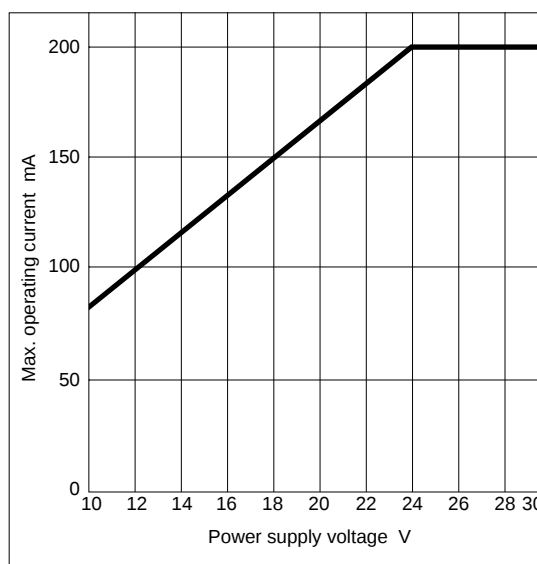
- It is noted that the max. consumption current • max. operating current are changed according to the power supply voltage.

Power Supply Voltage-Max. Operating Current Characteristic Diagram

- For DC5 ~ 10V(SS101, SS105 X ZS201•ZS205•ZS301•ZS305)

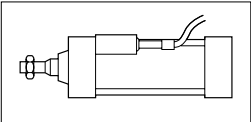


- For DC10 ~ 30V(SS201, SS205 X ZS211•ZS215•ZS311•ZS315)



Handling Instructions

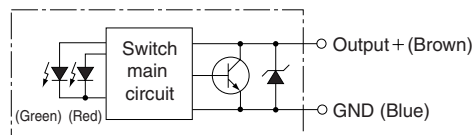
Precautions for Wiring

- Prior to wiring, be sure to shut down the power supply to the electric circuit of the connection side.
 - Otherwise, the operator may get an electric shock during working, or the switches or load devices may be damaged.
- Pay attention to avoid bending, pulling, twist of the switch cord. Especially, provide appropriate measures to avoid any load applied to the end of the switch cord, including the fixing of the switch cord to the tie rod (see the figure below).
 - Otherwise, the cord may be damaged, causing broken wires. Especially, any load applied to the end of the cord may lead to the damaged electric circuit boards in the switches.
 - When fixing the cord to the tie rod, do not clamp the cord excessively. Otherwise, the cord may be damaged, causing broken wires.
- The larger bending radius is better for the cord.
 - If the bending radius is excessively small, the cord may be damaged. The recommended bending radius is twice of the cord dia. or larger.
- If the connection distance is long, fix the cord every 20cm to avoid a sag in the cord.
- When laying the cord on the floor, protect it by covering with metallic tubes to avoid direct treading on it or a crush under machines.
 - Otherwise, the coating of the cord may be damaged, leading to the broken wires or short-circuit.
- The distance between the switches and load devices or power supply must be 10m or shorter.
 - Otherwise, inrush current may occur to the switches during operation, causing the damaged switches. For the countermeasures against inrush current, refer to the "Precautions for output circuit protection".
- DO NOT bind the cord with high-voltage cables for other electric appliances, the power supply, nor with the power supply cord. NEVER perform wiring near these cables.
 - Otherwise, noises may enter the switch cord from the high-voltage cables and power source or power supply cable, causing the malfunctioned switches or load devices. It is recommended that the cord is protected with a shield tube.

Precautions for Connection

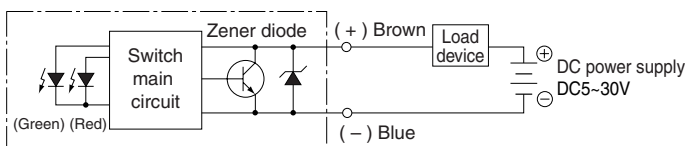
- DO NOT connect the switches direct to the power supply. Be sure to connect them through load devices, such as small relays and programmable controllers.
 - Otherwise, short-circuit may occur to the circuit, causing inflammable damage of the switches.
- Carefully check the switches used, voltage of power supply and load devices, and current specifications.
 - Application of wrong voltage or current may lead to the malfunctioned or damaged switches.
- Perform wiring correctly according to the colors of lead wires. Prior to wiring, be sure to shut down the power supply to the electric circuit of the connection side.

- Wrong wiring and short-circuit of load devices may lead to the damaged switches and electric circuit in the load devices. Even if the short-circuit is momentary, it causes the inflammable damage of the main circuit or output circuit. Operation with electric current supplied may lead to the damages in switches and electric circuit of the load devices.



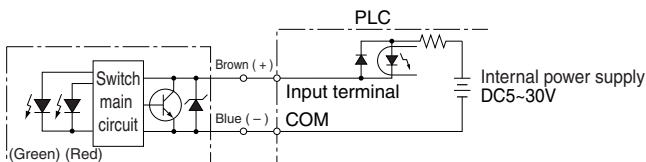
< Connecting Method >

1. Basic Circuit



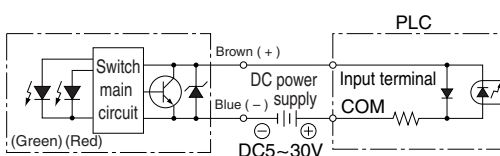
2. Contact to PLC(Programmable controller)

- In the case that the power supply is contained in the PLC



Note) For details, refer to the handling instructions of the PLC used.

- In the case that the power supply is not contained in the PLC



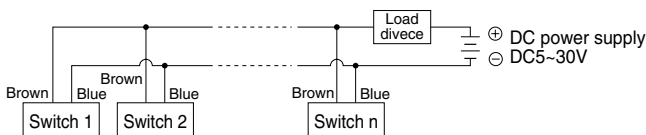
Note) For details, refer to the handling instructions of the PLC used.

3. Multiple Connection

Avoid multiple connection of the switches (connection in series and connection in parallel), since it may be inapplicable depending on the combination of load devices.

1) Connection in parallel

- The working status of the switches can be checked with the indicator lamps of the switches. Remember that leakage currents will be increased according to the number of the switches. The leakage currents may lead to the unexpected working or impossibility of return of load devices.

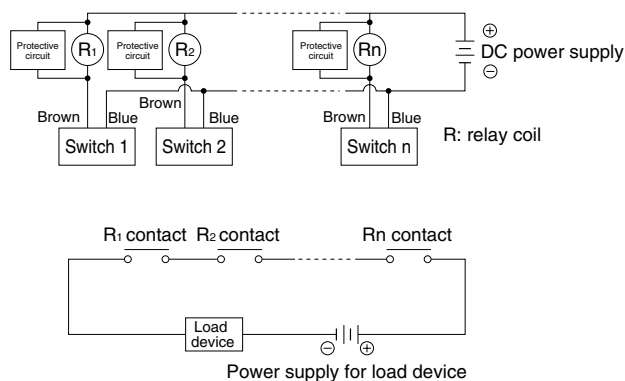


- Set the connection so that the following condition is satisfied:
sum of leakage currents < return current value of load devices.

2) Connection in series

- The connection in series of the switches is impossible.

Provide a small relay as shown in the circuit diagram below, and connect the contacts of the small relays in series, or program the connection so that the PLC internal contacts can be connected in series with the switches.

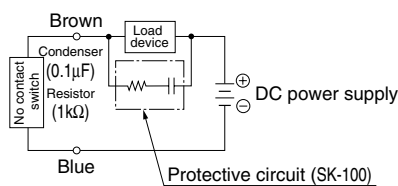


- Note)
- Be sure to connect the protective circuits to the both ends of the relay coil. For the protective circuit and connecting method, refer to the items related to the output circuit protection.
 - If using series unit of AND unit, it could connect maximum 8 point in one unit.

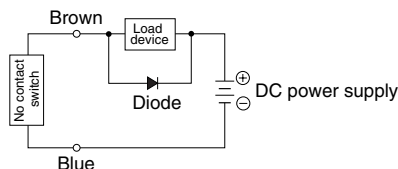
Precautions for Output Circuit Protection

- In the case of the connection to induct load devices (small relay, solenoid valves, etc.) Remember that the surge voltage will occur when the switch is set to the OFF position. Be sure to provide the protective circuit on the side of load devices to protect the contacts.

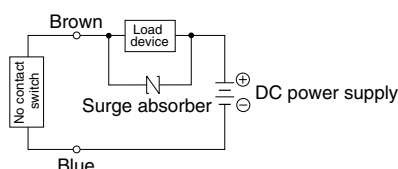
- Unless the protective circuit shown below is provided, the internal electric circuit of the switch may be damaged due to the surge voltage.



SK-100



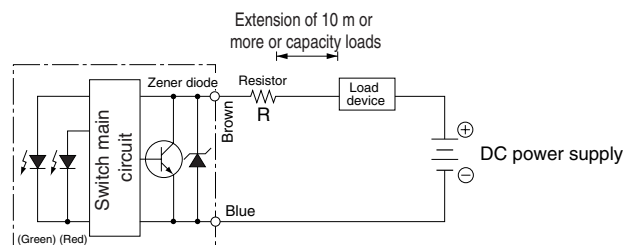
Diode
(200V, 1A or upper)



Surge absorber
[Varistor voltage : 30V
DC or lower]

- In the case of the connection to the capacity loads (condenser, etc.) or the extension of the switch cord by 10m or more inrush currents will occur when the switch is set to the ON position. Be sure to provide the protective circuit near the switch (within 2m from the switch) as shown in the circuit diagram below.

- Unless the protective circuit shown below is provided, the internal electric circuit of the switch may be damaged due to the inrush currents.

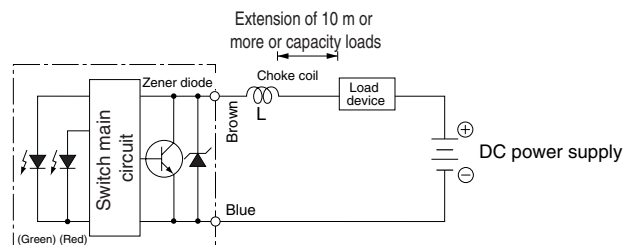


R : inrush current limit resistor

R = apply the possible great resistance within the allowable range of the circuit on the load device.

Notes)

- If the applied resistance is excessively great, the load device may not work.
- Provide the wiring for the switches as near as possible (within 2m)



L : choke coil

L = equivalence to approx. 2mH

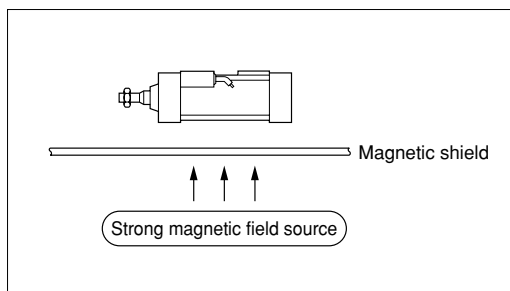
Note)

- Provide the wiring for the switches as near as possible (within 2m).

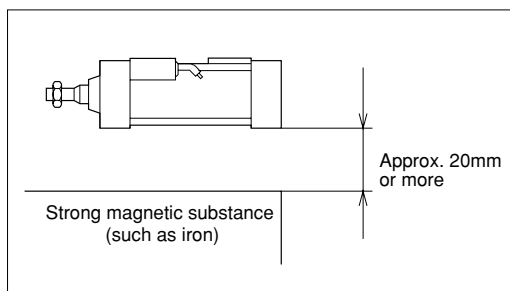
Handling Instructions

Precautions for Installation

- DO NOT use cylinders and switches in the places where are directly subjected to chips and cutting oil.
 - Otherwise, the cord may be damaged by chips, or cutting oil may enter the switch inside, and short-circuit may occur, causing the malfunctions of the switches.
- Prior to the use of the switches near a strong magnetic field, install the magnetic shield with steel plates (install it 20 mm or more distant from the cylinder and switch).
 - Otherwise, the switches may work incorrectly due to the influence of the magnetic field.



- Keep away strong magnetic substances (such as iron) from cylinders outside and switches. Separate them by approx. 20 mm or more (as a guide). For compact cylinders, separate them by approx. 10 mm or more).
 - Otherwise, the switches may work incorrectly due to the influence of the strong magnetic substances.



Detectable Cylinder Piston Speed

- When mounting the switch on the intermediate position, be sure to adjust the maximum cylinder speed to 300 mm/s or slower on account of the response speed of the load relays, etc.
- If the piston speed is excessively high, the switch working time becomes shorter, although the switch works, and load devices including relays may not work. Determine the detectable cylinder piston speed, referring to the formula below.

$$\text{Detectable piston speed (mm/s)} = \frac{\text{working range of switch (mm)}}{\text{working time of load device (ms)}} \times 1000$$

Notes)

- Refer to the materials related the working time of load devices, including relays, of each manufacturer.
- Apply the minimum value to the working range of a switch, and apply the maximum value to the working time of a load device.