Small pneumatic cylinders ensuring 970 kinds of system designs

- Since the cylinders can be disassembled, they can be easily inspected and maintained, and they can be used for a long time and are interchangeable.
- An optimum type can be selected from a wide range of types including the block type standard and non-rotating types.
- The use of hex. rods eliminates the necessity of locking guides.
- System upgrading only by mounting a sensor on the cylinder body
- The cushioning mechanism ensures smooth adjustment and excellent durability.

Cylinder Specifications: Standard

Series variations		Double acting single rod				Single acting single rod		Double acting double rod	
Type		Standard type	Switch Set	VAL Set	SV Set	Standard type	Switch Set	Standard type	Switch Set
Cylinder bore (mm)		ϕ20・ϕ25・ϕ32・ϕ40							
Working fluid		Air							
Lubrication		Unnecessary							
Working pressure range		0.05 to 1 MPa		0.15 to 1 MPa		0.15 to 1 MPa		0.05 to 1 MPa	
Proof test pressure		1.5 MPa							
Working speed range		50 to 700 mm/s Note 1)		50 to 500 mm/s Note 1)		50 to 700 mm/s Note 1)			
Working temperature range		−10 to +70℃ (No freezing)		−10 to +50℃ (No freezing)		−10 to +70℃(No freezing)			
Structure of cushioning		Standard: With cushion pad Semi-standard: With cushion(ϕ32 and ϕ40)				With shock absorbing pad			
Tolerance for thread		JIS 6g/6H							
Mounting style	Basic style	SD, SD w/ bracket, LB, LS (only ϕ20 and ϕ25), FA, FB, TA, TA w/ bracket, TB, TB w/ bracket, CU, CU w/ bracket		SD, LC, FA, TA, TA w/ bracket, TC, TC w/ bracket, AD, BD		SD, SD w/ bracket, LB, LS (only ϕ20 and ϕ25), FA, FB, TA, TA w/ bracket, TB, TB w/ bracket, CU, CU w/ bracket		SD, LB, FA, TA, TA w/ bracket	
	Clevis cut style Rear port style Note 3)	SK・SP・LK Note 2)・LP Note 2)・FK・FP・TK・TP・AD・AP・BD・BP		——		SK・SP・LK Note 2)・LP Note 2)・FK・FP・TK・TP・AD・AP・BD・BP		——	
Accessories	Boots	Nylon tarpaulin							
	Rod end attachments	Rod eye with spherical bearing (S-end), rod clevis (Y-end) with pin, floating joint (F-end)							

Note 1) When the sensor is installed at the intermediate position, the cylinder max. speed must be less than 300 mm/s for reasons of the response speed of the load relay.
2) LK and LP are applicable only to 20 and 25mm bore cylinders.
3) Rear port style with cushions is not available.

Cylinder Specifications: Non-rotating type

Series Variations		Double acting single rod				Single acting single rod	
Type		Standard type	Switch Set	VAL Set	SV Set	Standard type	Switch Set
Cylinder bore (mm)		ϕ25・ϕ40					
Working fluid		Air					
Lubrication		Unnecessary (but possible)					
Working pressure range		0.1 to 1 MPa		0.15 to 1 MPa			
Proof test pressure		1.5 MPa					
Working speed range		50 to 700mm/s Note 1)		50 to 500mm/s Note 1)		50 to 700mm/s Note 1)	
Working temperature range		−10 to +70℃ (No freezing)		−10 to +50℃ (No freezing)		−10 to +70℃ (No freezing)	
Structure of cushioning		Standard: With cushion pad Semi-standard: With cushion(ϕ40) Note 4)				With shock absorbing pad	
Note 2) Allowable rotating angle		ϕ25: ±1.5° ・ ϕ40: ±1°					
Allowable torque		ϕ25: 0.49 N・m or less ϕ40: 0.98 N・m or less					
Tolerance for thread		JIS 6g/6H					
Mounting style	Basic style	LB		SD, LC, FA, TA, AD, TA w/ bracket, TC, TC w/ bracket, BD		LB	
	Clevis cut style Rear port style Note 4)	SK・SP・LK Note 3)・LP Note 3)・FK・FP・TK・TP・AD・AP・BD・BP		——		SK・SP・LK Note 3)・LP Note 3)・FK・FP・TK・TP・AD・AP・BD・BP	
Accessories	Boots	Nylon tarpaulin					
	Rod end attachments	Rod eye with spherical bearing (S-end), rod clevis (Y-end), floating joint (F-end)					

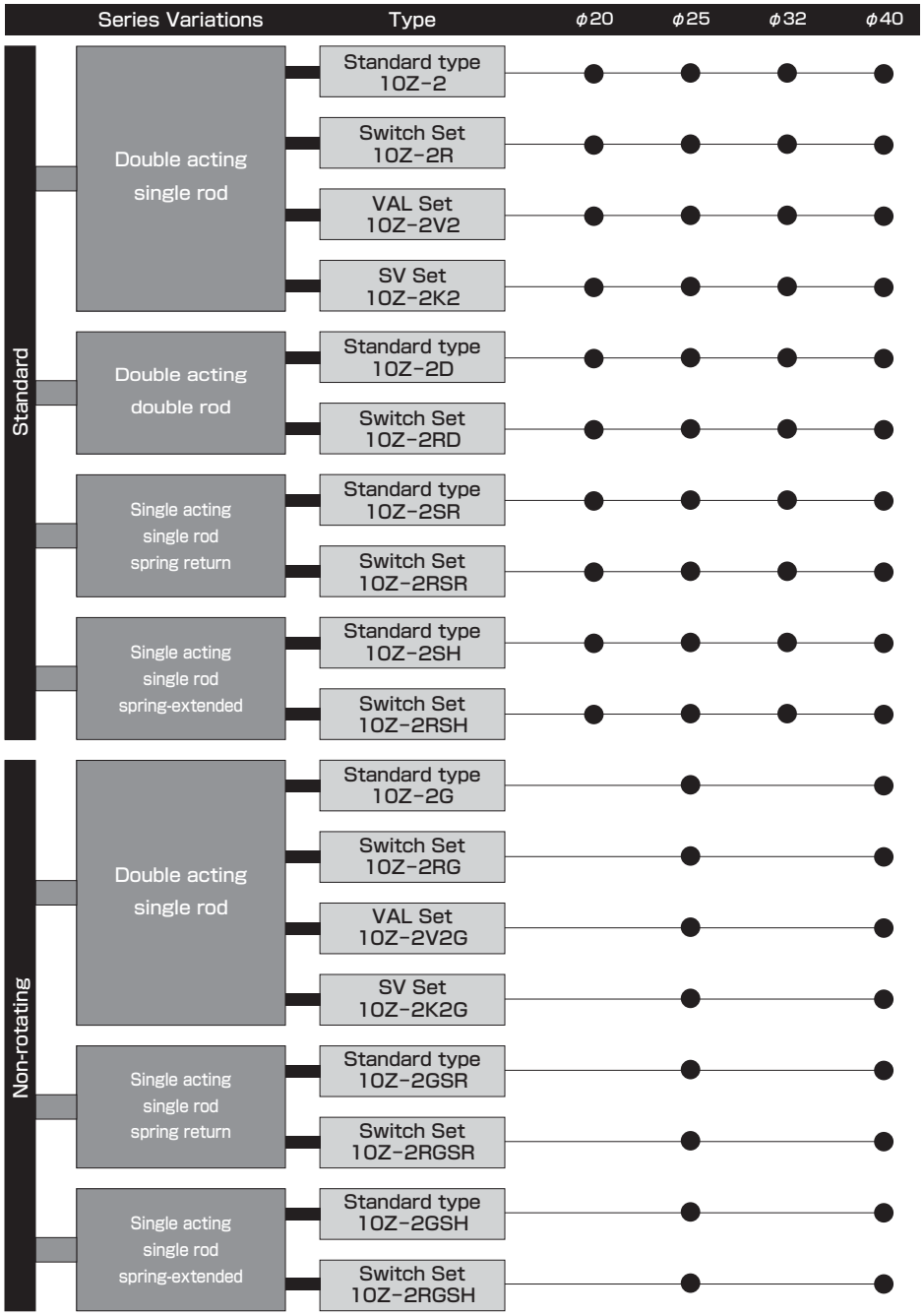
Note 1) When the sensor is installed at the intermediate position, the cylinder max. speed must be less than 300 mm/s for reasons of the response speed of the load relay.
2) The allowable rotating angle refers to the clearance in the piston rod rotating direction at the stroke end. When using it together with another guide, use a round rod.
3) LK and LP are applicable only to 25mm bore cylinders.
4) Rear port style with cushions is not available.

Valve Specifications

Model number	RB512V1SA1D	RB512V1SA1DW	RB512V1SA2D	RB512V1SA2DW	RB512V1SA8D	RB512V1SA8DW
Rated voltage	100 V AC(50/60Hz)		200 V AC(50/60Hz)		24 V DC	
Regulation of voltage	±10% of rated voltage					
Power consumption	50Hz: 6.0 VA/60Hz: 4.9 VA				2.5W	
Part number of coil ass'y (with DIN socket)	NAS8-22-1D	NAS8-22-1DW (with lamp and protective circuit)	NAS8-22-2D	NAS8−22−2DW (with lamp and protective circuit)	NAS8-22-8D	NAS8−22−8DW (with lamp and protective circuit)

- For voltage not shown above, contact us.

Product Lineup



Spring Force of Single Acting Cylinders (SR type/SH type)

Unit: N

Bore	Load	Stroke (mm)			
		25	50	75	100
ϕ20	Initial load	12.9			
	End load	32.2			
ϕ25	Initial load	20.4			
	End load	50.7			
ϕ32	Initial load	32.3			
	End load	79.9			
ϕ40	Initial load	50.6			
	End load	125.2			

● The non-rotating cylinders come in bore sizes of 25 and 40 mm.

Sensor Mountable Minimum Stroke

Unit: mm

Bore \ Sensor	With 1 sensor							
	AX type	ZC201	ZC205	ZC230	ZC253	JR type	JS type	SR type
ϕ20 to ϕ40	10	10	15	10	10	10	15	15

Bore \ Sensor	With 2 sensor							
	AX type	ZC201	ZC205	ZC230	ZC253	JR type	JS type	SR type
ϕ20 to ϕ40	15	15	15	10	10	15	20	25

Note) Switch Set and SV Set Cylinders have the same dimensions.

Cushion Stroke (with cushion)

Unit: mm

Bore	Cushion stroke
ϕ32	14
ϕ40	15

Standard Stroke Range

Double acting/Standard

Unit: mm

Bore \ Stroke	15	25	30	50	75	100	125	150	175	200	250	300	350	400	450	500	Stroke limit
ϕ20	○	○	○	○	○	○	○	○	○	○	–	–	–	–	–	–	900
ϕ25	○	○	○	○	○	○	○	○	○	○	○	○	–	–	–	–	900
ϕ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	–	–	900
ϕ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	900

Note) If a stroke other than the above standard strokes (○-marked) is required, consult us.

Single acting/Standard

Unit: mm

Bore \ Stroke	25	50	75	100	Stroke limit
ϕ20	○	○	○	○	150
ϕ25	○	○	○	○	200
ϕ32	○	○	○	○	200
ϕ40	○	○	○	○	200

Note) If a stroke other than the above standard strokes (○-marked) is required, consult us.

Double acting/Non-rotating

Unit: mm

Bore \ Stroke	15	25	30	50	75	100	125	150	175	200	250	300	Stroke limit
ϕ25	○	○	○	○	○	○	○	○	○	○	○	○	500
ϕ40	○	○	○	○	○	○	○	○	○	○	○	○	500

Note) If a stroke other than the above standard strokes (○-marked) is required, consult us.

Single acting/Non-rotating

Unit: mm

Bore \ Stroke	25	50	75	100	Stroke limit
ϕ25	○	○	○	○	150
ϕ40	○	○	○	○	200

Note) If a stroke other than the above standard strokes (○-marked) is required, consult us.

How to order

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

	❶ Type	❷ Mounting style	❸ Cylinder bore	❹ Cushioning	❺ Stroke	❻ Sensor symbol	❼ Sensor quantity	❽ Rod end attachment	❾ Bracket	❿ Boots
● Standard type	10Z-2	SD	40	N	100		–	Y	B	– J
● Switch Set	10Z-2R	SD	40	N	100	– AH	2	– Y	B	– J

Standard

10Z-2	Double acting single rod/standard type
10Z-2R	Double acting single rod/Switch Set
10Z-2D	Double acting double rod/standard type
10Z-2RD	Double acting double rod/Switch Set
10Z-2SR	Single acting spring return/standard type
10Z-2RSR	Single acting spring return/Switch Set
10Z-2SH	Single acting spring-extended/Standard type
10Z-2RSH	Single acting spring-extended/Switch Set

Non-rotating

10Z-2G	Double acting single rod/standard type
10Z-2RG	Double acting single rod/Switch Set
10Z-2GSR	Single acting spring return/standard type
10Z-2RGSR	Single acting spring return/Switch Set
10Z-2GSH	Single acting spring-extended/Standard type
10Z-2RGSH	Single acting spring-extended/Switch Set

Mounting style

Cylinder bore (mm)
ϕ20·ϕ25·ϕ32·ϕ40

Note) The non-rotating cylinders come in bore sizes of 25 and 40 mm. The basic mounting style for the non-rotating cylinders is SK.

N No cushion
B With cushions on both ends

Cylinder stroke (mm)

Note) The 32 and 40mm bore standard cylinders have cushions. Only the 40mm bore non-rotating cylinders have cushions. Rear port cylinders do not have cushions.
● For single acting double rod cylinders, only N can be specified.

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

Sensor quantity (1 or 2 to n)

S Rod eye with spherical bearing (S-end)
Y Rod clevis (Y-end) with pin
F Floating joint (F-end)

With bracket
Applicable mounting styles:
SD, TA, TB, TC, CU

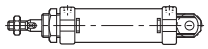
Boots
Nylon tarpaulin
Note) The boots cannot be fitted to AD, AP, BD or BP style.

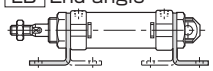
!Note on ordering Switch Set
● Sensors are not mounted on cylinders at delivery.

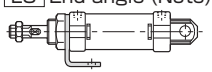
Mounting Style

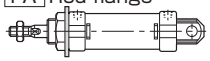
Standard type/Switch Set

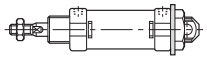
Basic style

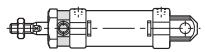
SD Basic style 

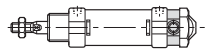
LB End angle 

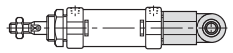
LS End angle (Note) 

FA Rod flange 

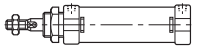
FB Cap flange 

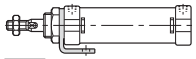
TA Rod trunnion 

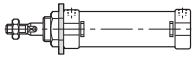
TB Cap trunnion 

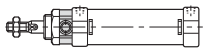
CU Cap eye with spherical bearing 

Clevis cut style

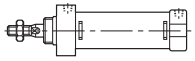
SK Basic style 

LK End angle (Note) 

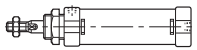
FK Rod flange 

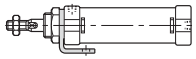
TK Rod trunnion 

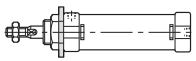
AD Block type end angle 

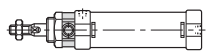
BD Block type flange 

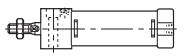
Rear port style

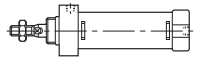
SP Basic style 

LP End angle (Note) 

FP Rod flange 

TP Rod trunnion 

AP Block type end angle 

BP Block type flange 

Notes) ● LS, LK and LP style cylinders come in bore sizes of 20 and 25 mm.
● Non-rotating LK and LP style cylinders come in bore sizes of 25 mm only.

How to order

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

	❶ Type	❷ Mounting style	❸ Cylinder bore	❹ Cushioning	❺ Stroke	❻ Valve operating method	❼ Valve voltage	❽ Sensor symbol	❾ Sensor quantity	❿ Rod end attachment	⓫ Bracket	⓬ Boots
● VAL Set	10Z-2V2	SD	40	N	100 –	A	1			– Y	B	– J
● SV Set	10Z-2K2	SD	40	N	100 –	A	1	AH	2	– Y	B	– J

Standard

10Z-2V2: Double acting single rod/VAL Set
10Z-2K2: Double acting single rod/SV Set

Non-rotating

10Z-2V2G: Double acting single rod/standard type
10Z-2K2G: Double acting single rod/SV Set

Mounting style

Cylinder bore (mm)
ϕ20・ϕ25・ϕ32・ϕ40

N No cushion
B With cushions on both ends

1 100 V AC 50/60Hz
2 200 V AC 50/60Hz
8 24 V DC
Note) For voltage not shown above, contact us.

A Energized extending type (with lamp and protective circuit)
B Energized retracting type (with lamp and protective circuit)
G Energized extending type (without lamp)
H Energized retracting type (without lamp)

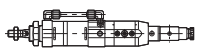
Note) ● In the case of standard cylinders, 32 and 40mm bore cylinders have cushions.
In the case of non-rotating cylinders, only 40mm bore cylinders have cushions.

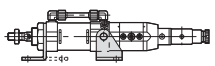
For explanation of other types, refer to the standard and Switch Set types.

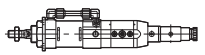
Note) ● Non-rotating cylinders come in bore sizes of 25 and 40 mm.

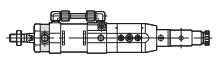
Mounting style

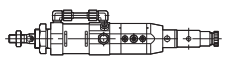
VAL Set/SV Set

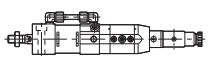
SD Basic style 

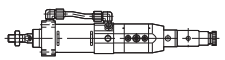
LC End angle 

FA Rod flange 

TA Rod trunnion 

TC Cap trunnion 

AD Block type end angle 

BD Block type flange 

✪Semi-standard range

- ● Double rod type ● With boots
- ● Change of piston rod end (Dimensional symbol: WF, A, KK)
- ● Single acting cylinders having strokes other than the standard strokes
- ● With cushion
  Standard: ϕ32 and ϕ40;
  Non-rotating: ϕ40 only; Single acting type/double rod type/rear port style: No cushion

✪Delivery state

- ● The product will be delivered without mounting accessory and rod end attachment mounted.
- ● Switch Set Cylinders will be delivered without a sensor mounted on the cylinder body.
- ● All VAL Set and SV Set Cylinders will come in the energized extending type. (They can be switched to the energized retracting type by changing the valve position.)

✪To place an order for a sensor only, see the model number of the sensor.

Sensor List

Semi-standard specification

Type	Sensor symbol	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Indicating lamp	Wiring method	Cord length	Applicable load
Reed sensor	AF AX101CE	DC: 5 to 30V AC: 5 to 120V	DC: 5 to 40mA AC: 5 to 20mA	DC:1.5W AC:2VA	None	LED (Lights in red when sensing)	0.3 mm², 2-core, outer dia. ϕ4 mm, rear wiring	1.5m	Small relay, programmable controller
	AG AX105CE							5m	
	AH AX111CE				Provided			1.5m	
	AJ AX115CE							5m	
	AE AX125CE	DC: 30 V or less AC: 120 V or less	DC: 40 mA or less AC: 20 mA or less		None	None		5m	
	AK AX11ACE	AC: 5 to 120V	5 to 20mA	2VA	Provided	LED (Lights in red when sensing)	4-pin connector type, rear wiring	0.5m	
	AL AX11BCE	DC: 5 to 30V	5 to 40mA	1.5W				0.5m	
	AM AX135CE	AC: 90 to 240V DC: 90 to 240V	5 to 300mA	B contact output	Provided	LED (Lights in red when not sensing)	0.3 mm², 2-core, outer dia. ϕ4 mm, rear wiring	5m	
	JA ZC201A	AC: 115 V or less	AC: 25 mA or less	—	None	None	0.2 mm², 2-core, outer dia. ϕ3 mm, rear wiring	1m	
	JB ZC201B	DC: 28 V or less	DC: 40 mA or less					3m	
	JC ZC205A	DC: 10 to 28V	DC: 5 to 40mA	30VA	None	LED (Lights in red when sensing)		1m	
	JD ZC205B							3m	
	A JR101	DC: 5 to 50V AC: 5 to 120V	DC: 3 to 40mA AC: 3 to 20mA	DC:1.5W AC:2VA	None	LED (Lights in red when sensing)	0.3 mm², 2-core, outer dia. ϕ3.4 mm, rear wiring	1.5m	
	B JR105							5m	
	S SR405	AC: 80 to 220V	2 to 300mA	30VA	Provided	Neon lamp (Lights in red when not sensing)	0.5 mm², 2-core, outer dia. ϕ6 mm, rear wiring	5m	
Solid state sensor	BE AX201CE-1	DC: 5 to 30V	5 to 40mA	—	Provided	LED (Lights in red when sensing)	0.3 mm², 2-core, outer dia. ϕ4 mm, rear wiring	1.5m	Small relay, programmable controller
	BF AX205CE-1							5m	
	CE AX211CE-1					LED (2-LED type in red/green)		1.5m	
	CF AX215CE-1							5m	
	JJ ZC230A	DC: 10 to 28V	4 to 50mA	—	Provided	LED (Lights when sensing)	0.2 mm², 2-core, outer dia. ϕ3 mm, rear wiring	1m	
	JK ZC230B							3m	
	JL ZC253A	DC: 28 V or less	100 mA or less	—	Provided	LED (Lights when sensing)	0.2 mm², 3-core, outer dia. ϕ3 mm, rear wiring	1m	
	JM ZC253B							3m	
	I JS211M	DC: 10 to 30V	6 to 70mA	—	Provided	LED (Lights in red when sensing)	0.3 mm², 2-core, outer dia. ϕ3.4 mm, rear wiring	1.5m	
	O JS215M							5m	
	CT AX211CE-1	DC: 5 to 30V	5 to 40mA	—	Provided	LED (2-LED type in red/green)	0.3 mm², 2-core, outer dia. ϕ4 mm, rear wiring	1.5m	
	CU AX215CE-1							5m	
	CV AX21BCE-1						4-pin connector type, rear wiring	0.5m	
	CW AZ211CE-1						0.3 mm², 2-core, outer dia. ϕ4 mm, upper wiring	1.5m	
	CX AZ215CE-1							5m	
	CY AZ21BCE-1						4-pin connector type, upper wiring	0.5m	

Notes)
- For the sensors without a protective circuit, be sure to provide a protective circuit (SK-100) with the load when using any induction load (relay, etc.).
- The output logic of AX135CE is B contact. When the piston is detected, the sensor contact turns off (the lamp turns on).
- For the detailed specifications and handling of sensors, see the sensor specifications at the end of this catalog.
- The AX type sensors can be mounted on any model in addition to the above models. See the sensor specifications at the end of this catalog.
- We recommend AND Unit (AU series) for multiple sensors connected in series. For details, refer to AND Unit at the end of this catalog.

● AX type sensor ● ZC type sensor ● JR/JS type sensor ● SR type sensor

Cord type Connector type

Standard type/Switch Set

Mounting style	Name	Standard: Double acting/single acting: Basic style	Standard: Double acting/single acting: Clevis cut style	Standard: Double acting/single acting: Rear port style	Standard: Double rod type: Basic style	Non-rotating: Double acting/single acting: Basic style	Non-rotating: Double acting/single acting: Clevis cut style	Non-rotating: Double acting/single acting: Rear port style
SD	Basic style	○	○	(○)	○	—	○	(○)
SD with bracket	Basic style with bracket	○	—	—	—	—	—	—
LB	End angle	○	—	—	○	○	—	—
LS	End angle	○	○	(○)	—	—	○	(○)
FA	Rod flange	○	○	(○)	○	—	○	(○)
FB	Cap flange	○	—	—	—	—	—	—
TA	Rod trunnion	○	○	(○)	○	—	○	(○)
TA with bracket	Rod trunnion with bracket	○	○	(○)	○	—	○	(○)
TB	Cap trunnion	○	—	—	—	—	—	—
TB with bracket	Cap trunnion with bracket	○	—	—	—	—	—	—
CU	Cap eye with spherical bearing	○	—	—	—	—	—	—
CU with bracket	Cap eye with spherical bearing and bracket	○	—	—	—	—	—	—
AD	Block type/ end angle	—	○	—	—	—	○	—
AP		—	—	(○)	—	—	—	(○)
BD	Block type/ flange	—	○	—	—	—	○	—
BP		—	—	(○)	—	—	—	(○)

Note) Single acting (spring-extended) cylinders with the mounting styles marked with (○) cannot be fabricated.

Mounting Accessory Part Number

Mounting style \ Bore	ϕ20	ϕ25	ϕ32	ϕ40
LB	MAZ3-LB020		MAZ3-LB032	MAZ3-LB040
LC	MAZ3-LC020		MAZ3-LC032	MAZ3-LC040
LS	MAZ3-LS020		—	—
FA, FB	MAZ3-FA020		MAZ3-FA032	MAZ3-FA040
TA, TB	MAZ3-TA020		MAZ3-TA032	MAZ3-TA040
TC	MAZ3-TC020		MAZ3-TC032	MAZ3-TC040
CU	MAZ3-CU020	MAZ3-CU025	MAZ3-CU032	MAZ3-CU040

Lock Nut Part Number

Bore	Standard	Non-rotating
ϕ20	LNA-08Z-A	—
ϕ25	LNA-10Z-A	LNA-08Z-A
ϕ32		—
ϕ40	LNA-12Z-A	LNA-12Z-A

Bracket Part Number

Bracket \ Bore	ϕ20	ϕ25	ϕ32	ϕ40
For SD (with pin)	MAZ3-BK020PA		MAZ3-BK032PA	MAZ3-BK040PA
For S-end/CU (with pin)	MAZ3-BK020PB	MAZ3-BK032PB		MAZ3-BK040PB
For TA/TB/TC	MAZ3-BK020		MAZ3-BK032	MAZ3-BK040

Weight Table Round type

Standard Double acting type

Unit: g

Bore mm	Basic weight				Additional weight	
	Standard type	VAL Set	Clevis cut style	Rear port style	With cushion	Additional weight per mm of stroke
ϕ20	222	588	204	192	–	1.6
ϕ25	300	659	283	267	–	2.4
ϕ32	469	831	446	433	11	3.2
ϕ40	708	1,092	670	653	47	4.0

Note) Rear port style with cushions is not available.

Standard Single acting type

Unit: g

Bore mm	Basic weight			Additional weight			
	Standard type	Clevis cut style	Rear port style	Additional weight for stroke			
				25	50	75	100
ϕ20	288	270	258	40	147	253	360
ϕ25	392	375	359	60	211	362	513
ϕ32	606	583	570	80	301	523	744
ϕ40	889	851	834	100	381	662	942

Note) To obtain the weight of a single acting cylinder, add the additional weight for stroke to the basic weight.

Standard Double rod type

Unit: g

Bore mm	Basic weight	Additional weight
	Standard type	Additional weight per mm of stroke
ϕ20	249	1.6
ϕ25	299	2.4
ϕ32	578	3.2
ϕ40	870	4.0

● The weight of double rod cylinder includes the weight of two rod end lock nuts and one lock nut for mounting accessory.

Non-rotating Double acting type

Unit: g

Bore mm	Basic weight			Additional weight	
	Clevis cut style (basic style)	VAL Set	Rear port style	With cushion	Additional weight per mm of stroke
ϕ25	281	657	265	–	2.4
ϕ40	644	1,066	628	45	4.0

Notes) ● The sensor additional weight includes the weight of sensor bracket.
● Rear port style with cushions is not available.

Non-rotating Single acting type

Unit: g

Bore mm	Basic weight		Additional weight			
	Clevis cut style (basic style)	Rear port style	Additional weight for stroke			
			25	50	75	100
ϕ25	372	356	60	210	359	509
ϕ40	828	812	100	384	668	952

Note) ● To obtain the weight of a single acting cylinder, add the additional weight for stroke to the basic weight.

Mounting Accessory/Rod End Attachment Weight

Unit: g

Bore mm	Mounting accessory weight											Rod end attachment weight	
	SD with bracket	LB	LC	LS	FA FB	TA TB	TA with bracket TB with bracket	TC	TC with bracket	CU	CU with bracket	Rod eye (T-end)	Rod clevis (Y-end) with pin
ϕ20	115	140	150	60	55	55	140	30	100	130	240	50	55
ϕ25	115	140	150	60	55	55	140	30	100	130	280	75	100
ϕ32	150	220	210	–	90	90	210	30	125	125	275	75	100
ϕ40	185	280	280	–	110	130	275	70	175	150	335	110	175

Double acting type Calculation formula: Cylinder weight (g)=basic weight+(sensor additional weight)+(cushion additional weight)+mounting accessory weight+additional weight per mm of stroke×cylinder stroke (mm)

Calculation example: Bore 32 mm, cylinder stroke 200 mm, standard double acting, Switch Set, LB, 3 pcs of sensors with cords, with cushion 693+112+11+220+3.2×200=1676g

Single acting type Calculation formula: Cylinder weight (g)=basic weight+(sensor additional weight)+mounting accessory weight+additional weight for stroke (mm)

Calculation example: Bore 32 mm, cylinder stroke 100 mm, standard single acting (spring return), Switch Set

Weight Table Block type

Standard Double acting type

Unit: g

Bore (mm)	Basic weight						Additional weight	
	Block type flange			Block type end angle				
	Standard type	VAL Set	Rear port style	Standard type	VAL Set	Rear port style	With cushion	Additional weight per mm of stroke
ϕ20	197	581	185	204	587	191	–	1.6
ϕ25	284	661	269	299	673	283	–	2.4
ϕ32	414	799	402	452	837	440	18	3.2
ϕ40	647	1,069	631	677	1,099	661	47	4.0

Note) Rear port style with cushions is not available.

Standard Single acting type

Unit: g

Bore (mm)	Basic weight				Additional weight			
	Block type flange		Block type end angle		Additional weight for stroke			
	Standard type	Rear port style	Standard type	Rear port style	25	50	75	100
ϕ20	263	251	270	257	40	147	253	360
ϕ25	376	361	391	375	60	211	362	513
ϕ32	551	539	589	577	80	301	523	744
ϕ40	828	812	858	842	100	381	662	942

Non-rotating Double acting type

Unit: g

Bore (mm)	Basic weight						Additional weight	
	Block type flange			Block type end angle				
	Standard type	VAL Set	Rear port style	Standard type	VAL Set	Rear port style	With cushion	Additional weight per mm of stroke
ϕ25	270	647	255	296	672	280	–	2.4
ϕ40	635	1057	619	685	1,107	668	41	4.0

Note) Rear port style with cushions is not available.

Non-rotating Single acting type

Unit: g

Bore (mm)	Basic weight				Additional weight			
	Block type flange		Block type end angle		Additional weight for stroke			
	Standard type	Rear port style	Standard type	Rear port style	25	50	75	100
ϕ25	361	346	387	371	60	210	359	509
ϕ40	819	803	869	852	100	384	668	952

Sensor Additional Weight

Unit: g

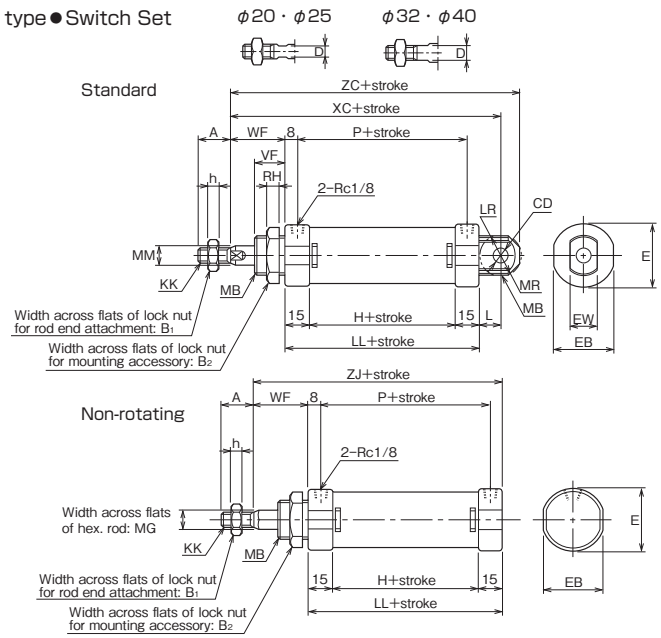
Symbol / Bore	AX type			ZC type		JR/JS type		SR type
	Cord length 1.5 m	Cord length 5 m	With connector	Cord length 1 m	Cord length 3 m	Cord length 1.5 m	Cord length 5 m	Cord length 5 m
ϕ20	50	130	40	25	55	35	35	112
ϕ25								
ϕ32								
ϕ40								

Note) ● The sensor additional weight includes the weight of sensor bracket.

SD

Double acting single rod | Standard | 10Z−2 | SD | Bore | Cushioning | Stroke |
| Non-rotating | 10Z−2G | SK | Bore | Cushioning | Stroke |

● Standard type ● Switch Set



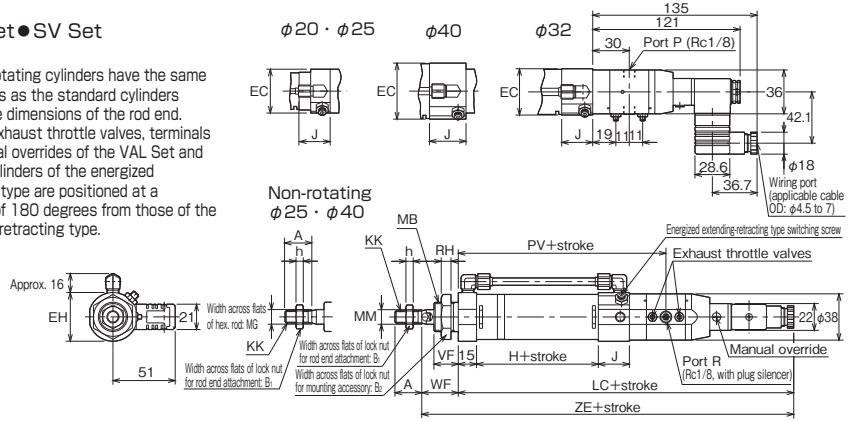
Related models: Clevis cut style, rear port style, models with cushion, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

Double acting single rod | Standard | 10Z−2V2 | SD | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |
| Non-rotating | 10Z−2V2G | SD | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |

● VAL Set ● SV Set

- The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end.
- Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.



Related models: Models with cushion, models with boots

This figure shows the dimensional drawing of an energized extending type cylinder.

Dimensional Table

Symbol / Bore	A		B1		B2	CD	D	E	EB	EC	EH
	Standard	Non-rotating	Standard	Non-rotating							
ϕ20	20(20)	—	13	—	30	ϕ8H9	6	ϕ28	26	36	ϕ38
ϕ25	22(22)	20(17)	17	13	30	ϕ8H9	8	ϕ33	31	36	ϕ38
ϕ32	22(19)	—	17	—	32	ϕ10H9	10	ϕ40	38	38	ϕ40
ϕ40	24(21)	24(21)	19	19	41	ϕ12H9	12	ϕ48	46	46	ϕ48

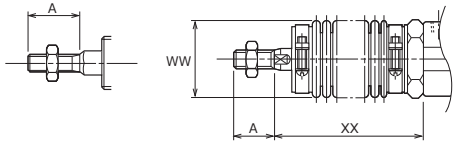
Symbol / Bore	EW	H	h		J	KK		L	LC	LL
			Standard	Non-rotating		Standard	Non-rotating			
ϕ20	$16^{-0.1}_{-0.3}$	44	5	—	26	M8×1.25	—	12	220	74
ϕ25	$16^{-0.1}_{-0.3}$	44	6	5	25.5	M10×1.25	M8×1.25	12	219.5	74
ϕ32	$16^{-0.1}_{-0.3}$	50	6	—	25.5	M10×1.25	—	14	225.5	80
ϕ40	$20^{-0.1}_{-0.3}$	52	7	7	30	M12×1.25	M12×1.25	16	232	82

Symbol / Bore	LR	MB	MG	MM	MR	P	PV	RH	VF	WF	XC	ZC	ZE	ZJ
ϕ20	R11	M22×1.5	—	ϕ8	R12	58	115	7	16(13)	24	110	120	244	98
ϕ25	R11	M22×1.5	9	ϕ10	R12	58	114.5	7	18(15)	28	114	124	247.5	102
ϕ32	R13	M24×2	—	ϕ12	R14	64	120.5	8	20(16)	30	124	136	255.5	110
ϕ40	R15	M30×2	14	ϕ14	R16	66	127	9	22(18)	32	130	142	264	114

Note) The parenthesized values of dimensions A and VF indicate the screw length.

With Boots

Non-rotating
ϕ25 · ϕ40



Dimensional Table

Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

SD

Single acting type

Spring return Standard 10Z−2SR SD Bore Cushioning Stroke

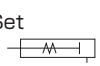
Non-rotating 10Z−2GSR SK Bore Cushioning Stroke

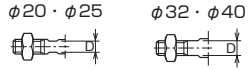
Spring-extended Standard 10Z−2SH SD Bore Cushioning Stroke

Non-rotating 10Z−2GSH SK Bore Cushioning Stroke

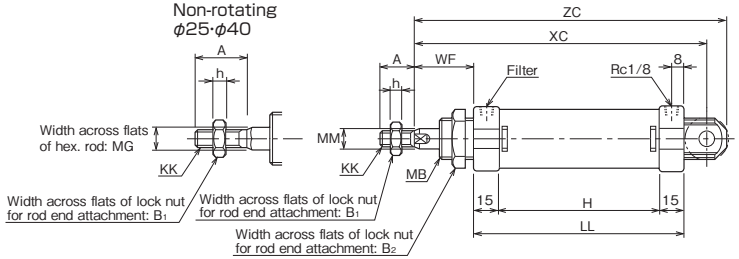
●Standard type●Switch Set

Spring return (SR type)

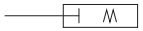


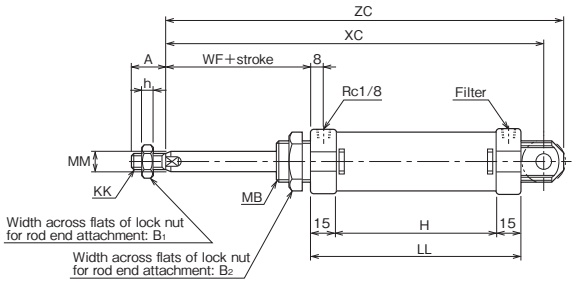


Non-rotating
φ25·φ40



Spring-extended (SH type)





・The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

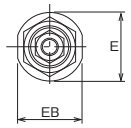
Related models: Clevis cut style, rear port style, models with boots The non-rotating cylinders are basically mounted in the clevis cut style.

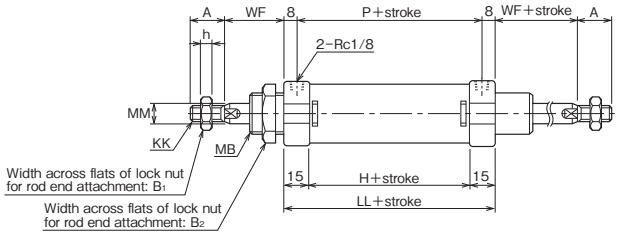
Double acting double rod Standard 10Z−2D SD Bore Cushioning Stroke

●Standard type●Switch Set

Standard

Both ends loaded





●Non-rotating double rod cylinders with cushions are not available.

Related models: Models with boots

Dimensional Table

Symbol / Bore	A		B1		B2	D	E	EB	h		KK		MB	MG	MM	P	WF
	Standard	Non-rotating	Standard	Non-rotating					Standard	Non-rotating	Standard	Non-rotating					
φ20	20(20)	—	13	—	30	6	φ28	26	5	—	M8×1.25	—	M22×1.5	—	φ8	58	24
φ25	22(22)	20(17)	17	13	30	8	φ33	31	6	5	M10×1.25	M8×1.25	M22×1.5	9	φ10	58	28
φ32	22(19)	—	17	—	32	10	φ40	38	6	—	M10×1.25	—	M24×2	—	φ12	64	30
φ40	24(21)	24(21)	19	19	41	12	φ48	46	7	7	M12×1.25	M12×1.25	M30×2	14	φ14	66	32

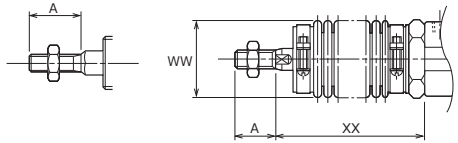
Symbol / Stroke / Bore	H					LL					XC			
	Double rod type	Single acting type				Double rod type	Single acting type				25		50	
		25	50	75	100		25	50	75	100	SR type	SH type	SR type	SH type
φ20	44	94	144	194	244	74	124	174	224	274	160	185	210	260
φ25	44	94	144	194	244	74	124	174	224	274	164	189	214	264
φ32	50	100	150	200	250	80	130	180	230	280	174	199	224	274
φ40	52	102	152	202	252	82	132	182	232	282	180	205	230	280

Symbol / Stroke / Bore	XC				ZC							
	75		100		25		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
φ20	260	335	310	410	170	195	220	270	270	345	320	420
φ25	264	339	314	414	174	199	224	274	274	349	324	424
φ32	274	349	324	424	186	211	236	286	286	361	336	436
φ40	280	355	330	430	192	217	242	292	292	367	342	442

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
φ25・φ40

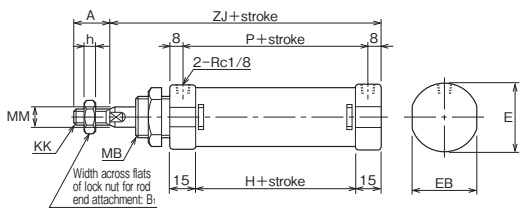


Dimensional Table

Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
φ20	20	—	φ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
φ25	22	20	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
φ32	22	—	φ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
φ40	24	24	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

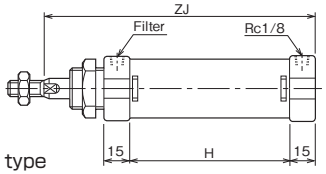
Related models Clevis cut style/SK (basic style)

Double acting type

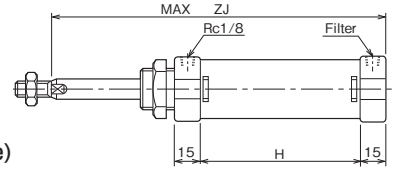


Single acting type

SR type

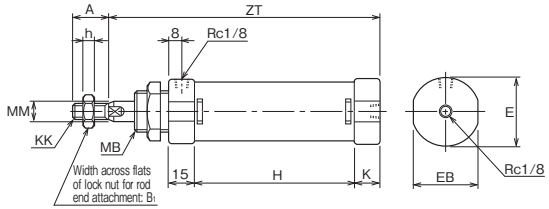


SH type



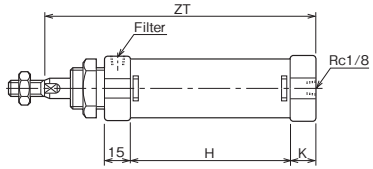
Related models Rear port style/SP (basic style)

Double acting type

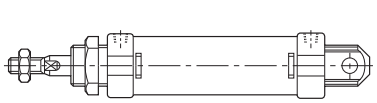


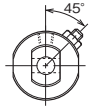
Single acting type

SR type

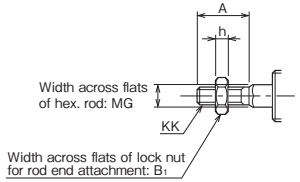


Related models Models with cushion/SD (basic style)





Non-rotating ϕ40



- For these models, only 32 and 40mm bore cylinders can be manufactured, but single acting type/double rod type/double acting type rear port style cylinders cannot be manufactured. Only the 40mm bore non-rotating cylinders have cushions.
- For the dimensions not shown above, refer to the SD style (basic style).
- The standard strokes of single acting cylinders are 25, 50, 75 and 100 mm. Contact us for other strokes.
- The non-rotating cylinders have the same dimensions as those shown above except the dimensions of the rod end and cap cover.

Dimensional Table

Symbol / Stroke / Bore	A		B_1		E	EB	h		K	KK	
	Standard	Non-rotating	Standard	Non-rotating			Standard	Non-rotating		Standard	Non-rotating
ϕ20	20(20)	—	13	—	ϕ28	26	5	—	8	M8×1.25	—
ϕ25	22(22)	20(17)	17	13	ϕ33	31	6	5	8	M10×1.25	M8×1.25
ϕ32	22(19)	—	17	—	ϕ40	38	6	—	10	M10×1.25	—
ϕ40	24(21)	24(21)	19	19	ϕ48	46	7	7	10	M12×1.25	M12×1.25

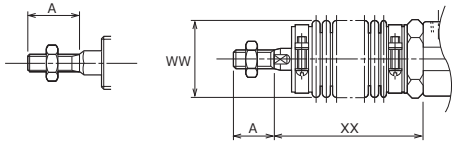
Symbol / Stroke / Bore	MB	MG	MM	P	H					ZJ						
					Double acting type	Single acting type				Double acting type	25		50		75	
						25	50	75	100		SR type	SH type	SR type	SH type	SR type	SH type
ϕ20	M22×1.5	—	ϕ8	58	44	94	144	194	244	98	148	173	198	248	248	323
ϕ25	M22×1.5	9	ϕ10	58	44	94	144	194	244	102	152	177	202	252	252	327
ϕ32	M24×2	—	ϕ12	64	50	100	150	200	250	110	160	185	210	260	260	335
ϕ40	M30×2	14	ϕ14	66	52	102	152	202	252	114	164	189	214	264	264	339

Symbol / Stroke / Bore	ZJ		ZT									
	100		Double acting type	25		50		75		100		
	SR type	SH type		SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	
ϕ20	298	398	91	141	—	191	—	241	—	291	—	
ϕ25	302	402	95	145	—	195	—	245	—	295	—	
ϕ32	310	410	105	155	—	205	—	255	—	305	—	
ϕ40	314	414	109	159	—	209	—	259	—	309	—	

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



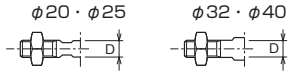
Dimensional Table

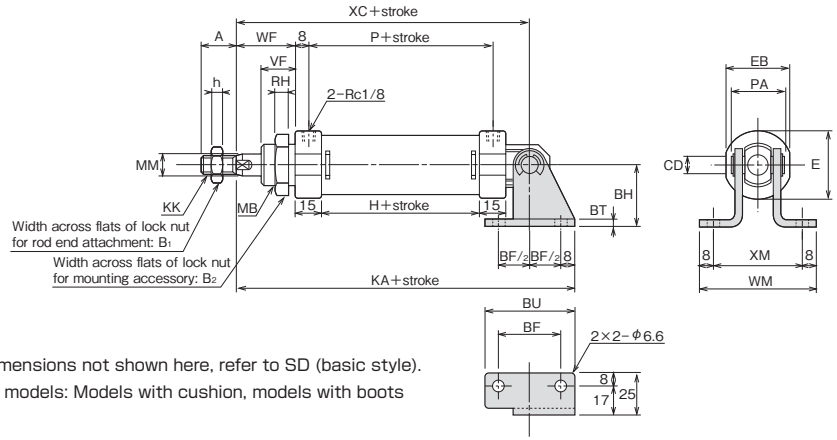
Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																											
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

SD with Bracket

Double acting single rod [Standard] 10Z−2 SD [Bore] [Cushioning] [Stroke] − B

●Standard type ●Switch Set





●For dimensions not shown here, refer to SD (basic style).

Related models: Models with cushion, models with boots

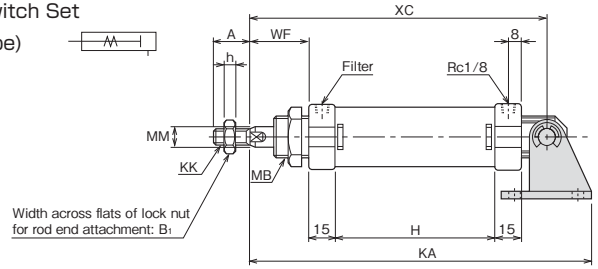
Single acting type

Spring return [Standard] 10Z−2SR SD [Bore] N [Stroke] − B

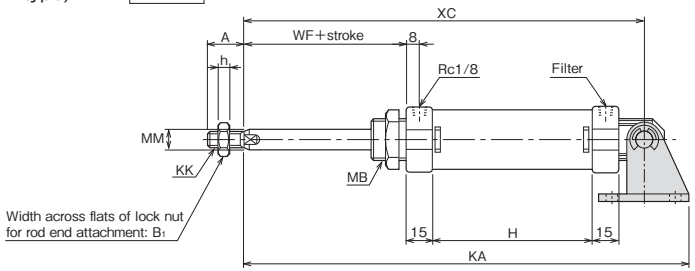
Spring-extended [Standard] 10Z−2SH SD [Bore] N [Stroke] − B

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●For dimensions not shown here, refer to SD (basic style).

Related models: Models with boots

Dimensional Table

Bore \ Symbol Stroke	A	B_1	B_2	BF	BH	BT	BU	CD	D	E	EB	H				
												Double acting type	Single acting type			
													25	50	75	100
ϕ20	20(20)	13	30	32	32	3.2	48	ϕ8	6	ϕ28	26	44	94	144	194	244
ϕ25	22(22)	17	30	32	32	3.2	48	ϕ8	8	ϕ33	31	44	94	144	194	244
ϕ32	22(19)	17	32	36	36	4	52	ϕ10	10	ϕ40	38	50	100	150	200	250
ϕ40	24(21)	19	41	40	40	4	56	ϕ12	12	ϕ48	46	52	102	152	202	252

Bore \ Symbol Stroke	h	KA									KK	MB	MM	P	PA	RH
		Double acting type	25		50		75		100							
			SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type						
ϕ20	5	134	184	209	234	284	284	359	334	434	M8×1.25	M22×1.5	ϕ8	58	31	7
ϕ25	6	138	188	213	238	288	288	363	338	438	M10×1.25	M22×1.5	ϕ10	58	31	7
ϕ32	6	150	200	225	250	300	300	375	350	450	M10×1.25	M24×2	ϕ12	64	32	8
ϕ40	7	158	208	233	258	308	308	383	358	458	M12×1.25	M30×2	ϕ14	66	36	9

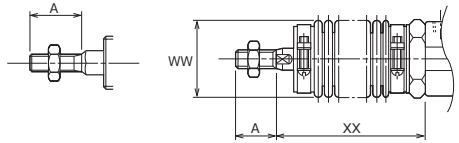
Bore \ Symbol Stroke	VF	WF	WM	XC								XM
				Double acting type	25		50		75		100		
					SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type	
ϕ20	16(13)	24	67	110	160	185	210	260	260	335	310	410	51
ϕ25	18(15)	28	67	114	164	189	214	264	264	339	314	414	51
ϕ32	20(16)	30	67	124	174	199	224	274	274	349	324	424	51
ϕ40	22(18)	32	71	130	180	205	230	280	280	355	330	430	55

Note) The parenthesized values of dimensions A and VF indicate the screw length.

With Boots

Non-rotating

ϕ25・ϕ40



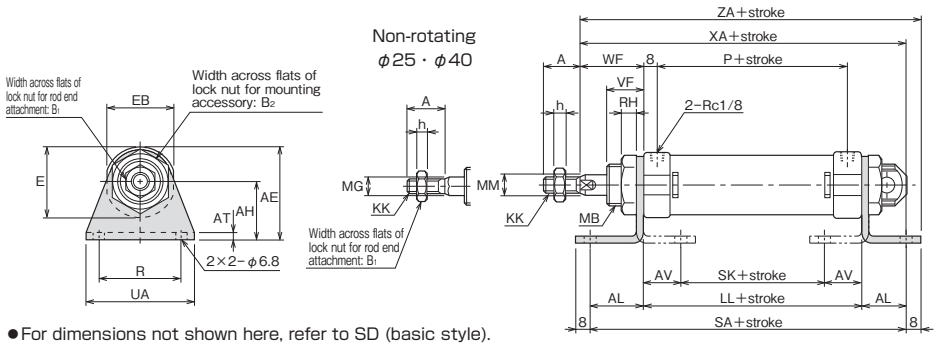
Dimensional Table

Bore \ Symbol Stroke	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

LB

Double acting single rod | Standard | 10Z−2 | LB | Bore | Cushioning | Stroke |
Non-rotating | 10Z−2G | LB | Bore | Cushioning | Stroke |

●Standard type ●Switch Set



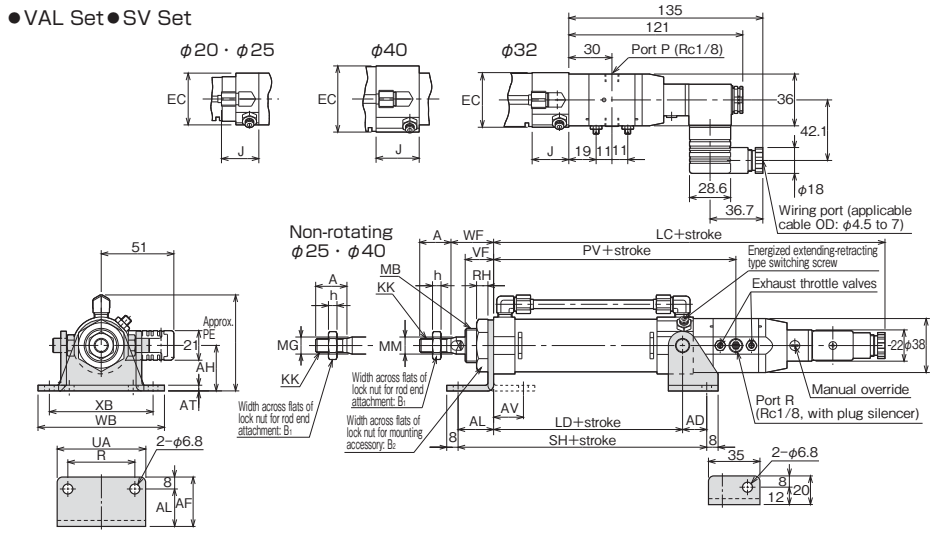
●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end.

Related models: Models with cushion, models with boots

LC

Double acting single rod | Standard | 10Z−2V2 | LC | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |
Non-rotating | 10Z−2V2G | LC | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |

●VAL Set ●SV Set



●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.
●Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.

Related models: Models with cushion, models with boots

This figure shows the dimensional drawing of an energized extending type cylinder.

Dimensional Table

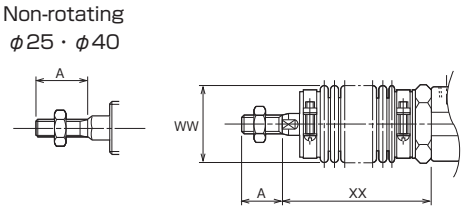
Symbol / Bore	A		AD	AE	AF	AH	AL	AT	AV	B1		B2	D
	Standard	Non-rotating								Standard	Non-rotating		
ϕ20	20(20)	—	19	42	24	25	16	3.2	12.8	13	—	30	6
ϕ25	22(22)	20(17)	19	42	24	25	16	3.2	12.8	17	13	30	8
ϕ32	22(19)	—	17	52	33	32	25	4	21	17	—	32	10
ϕ40	24(21)	24(21)	15	60	33	36	25	4	21	19	19	41	12

Symbol / Bore	E	EB	EC	h		J	KK		LC	LD	LL	MB
				Standard	Non-rotating		Standard	Non-rotating				
ϕ20	ϕ28	26	36	5	—	26	M8×1.25	—	220	77.5	74	M22×1.5
ϕ25	ϕ33	31	36	6	5	25.5	M10×1.25	M8×1.25	219.5	77	74	M22×1.5
ϕ32	ϕ40	38	38	6	—	25.5	M10×1.25	—	225.5	83	80	M24×2
ϕ40	ϕ48	46	46	7	7	30	M12×1.25	M12×1.25	232	87	82	M30×2

Symbol / Bore	MG	MM	P	PE	PV	R	RH	SA	SH	SK	UA	VF	WB	WF	XA	XB	ZA
ϕ20	—	ϕ8	58	59	115	40	7	106	112.5	48.4	55	16	87	24	114	71	122
ϕ25	9	ϕ10	58	59	114.5	40	7	106	112	48.4	55	18	87	28	118	71	126
ϕ32	—	ϕ12	64	68	120.5	45	8	130	125	38	60	20	89	30	135	73	143
ϕ40	14	ϕ14	66	76	127	50	9	132	127	40	65	22	97	32	139	81	147

Note) The parenthesized values of dimension A indicate the screw length.

With Boots



Dimensional Table

Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Stan-dard	Non-rotating		Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

LB

Single acting type

Spring return Standard 10Z−2SR LB Bore N Stroke

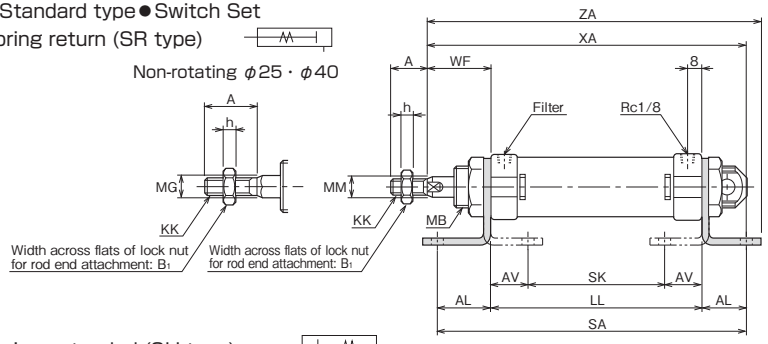
Non-rotating 10Z−2GSR LB Bore N Stroke

Spring-extended Standard 10Z−2SH LB Bore N Stroke

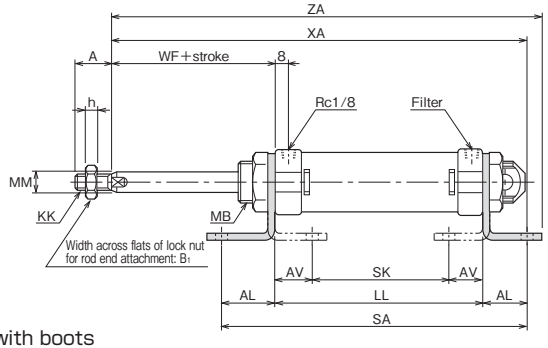
Non-rotating 10Z−2GSH LB Bore N Stroke

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



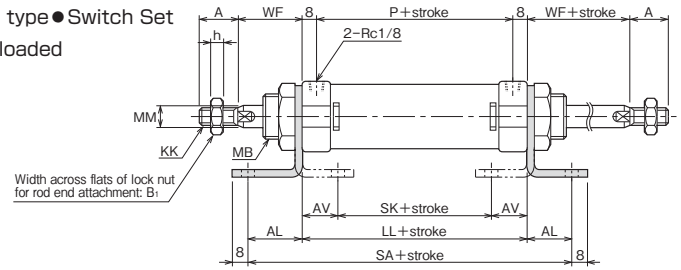
●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.

Related models: Models with boots

Double acting double rod Standard 10Z−2D LB Bore N Stroke

●Standard type ●Switch Set

Both ends loaded



●For dimensions not shown here, refer to SD (basic style).
●Non-rotating double rod cylinders with cushions are not available.

Related models: Models with boots

Dimensional Table

Symbol / Stroke / Bore	A		B_1		h		KK		MB
	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	
ϕ20	20(20)	—	13	—	5	—	M8×1.25	—	M22×1.5
ϕ25	22(22)	20(17)	17	13	6	5	M10×1.25	M8×1.25	M22×1.5
ϕ32	22(19)	—	17	—	6	—	M10×1.25	—	M24×2
ϕ40	24(21)	24(21)	19	19	7	7	M12×1.25	M12×1.25	M30×2

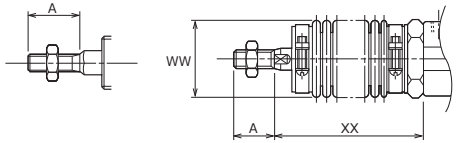
Symbol / Stroke / Bore	MG	MM	P	WF	LL					SA					SK				
					Double rod type	Single acting type				Double rod type	Single acting type				Double rod type	Single acting type			
						25	50	75	100		25	50	75	100		25	50	75	100
ϕ20	—	ϕ8	58	24	74	124	174	224	274	106	156	206	256	306	48.4	98.4	148.4	198.4	248.4
ϕ25	9	ϕ10	58	28	74	124	174	224	274	106	156	206	256	306	48.4	98.4	148.4	198.4	248.4
ϕ32	—	ϕ12	64	30	80	130	180	230	280	130	180	230	280	330	38	88	138	188	238
ϕ40	14	ϕ14	66	32	82	132	182	232	282	132	182	232	282	332	40	90	140	190	240

Symbol / Stroke / Bore	XA								ZA							
	25		50		75		100		25		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	SR type	SH type	SR type	SH type
ϕ20	164	189	214	264	264	339	314	414	172	197	222	272	272	347	322	422
ϕ25	168	193	218	268	268	343	318	418	176	201	226	276	276	351	326	426
ϕ32	185	210	235	285	285	360	335	435	193	218	243	293	293	368	343	443
ϕ40	189	214	239	289	289	364	339	439	197	222	247	297	297	372	347	447

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



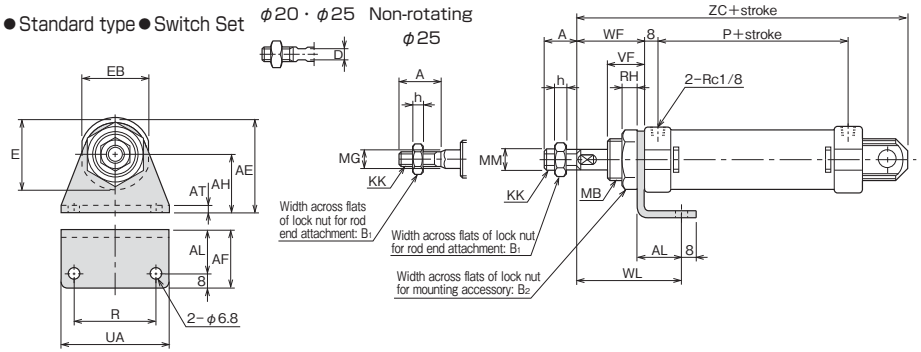
Dimensional Table

Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																							
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

LS

Double acting single rod
Standard 10Z−2 LS Bore Cushioning Stroke
Non-rotating 10Z−2G LK Bore Cushioning Stroke

● Standard type ● Switch Set



● For dimensions not shown here, refer to SD (basic style).
● The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

Related models: Clevis cut style, rear port style, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

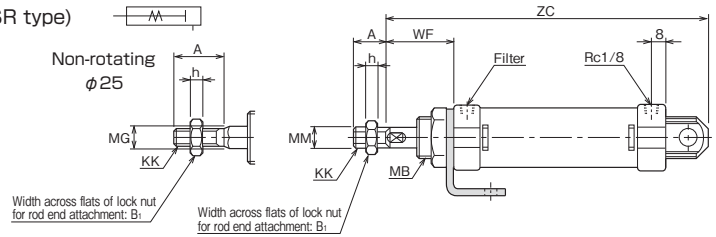
Single acting type

Spring return
Standard 10Z−2SR LS Bore N Stroke
Non-rotating 10Z−2GSR LK Bore N Stroke

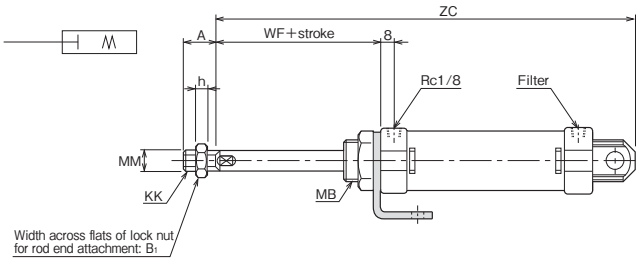
Spring-extended
Standard 10Z−2SH LS Bore N Stroke
Non-rotating 10Z−2GSH LK Bore N Stroke

● Standard type ● Switch Set

Spring return (SR type)



Spring-extended (SH type)



● For dimensions not shown here, refer to SD (basic style).
● The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

Related models: Clevis cut style, rear port style, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

Dimensional Table

Bore \ Symbol/Stroke	A		AE	AF	AH	AL	AT	B1		B2	D	E	EB
	Standard	Non-rotating						Standard	Non-rotating				
ϕ 20	20(20)	—	42	24	25	16	3.2	13	—	30	6	ϕ 28	26
ϕ 25	22(22)	20(17)	42	24	25	16	3.2	17	13	30	8	ϕ 33	31

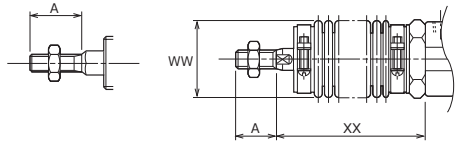
Bore \ Symbol/Stroke	h		KK		MB	MG	MM	P	R	RH	UA	VF	WF
	Standard	Non-rotating	Standard	Non-rotating									
ϕ 20	5	—	M8× 1.25	—	M22× 1.5	—	ϕ8	58	40	7	55	16	24
ϕ 25	6	5	M10× 1.25	M8× 1.25	M22× 1.5	9	ϕ10	58	40	7	55	18	28

Bore \ Symbol/Stroke	WL	ZC								
		Double acting type	25		50		75		100	
			SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type
ϕ 20	36.8	120	170	195	220	270	270	345	320	420
ϕ 25	40.8	124	174	199	224	274	274	349	324	424

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



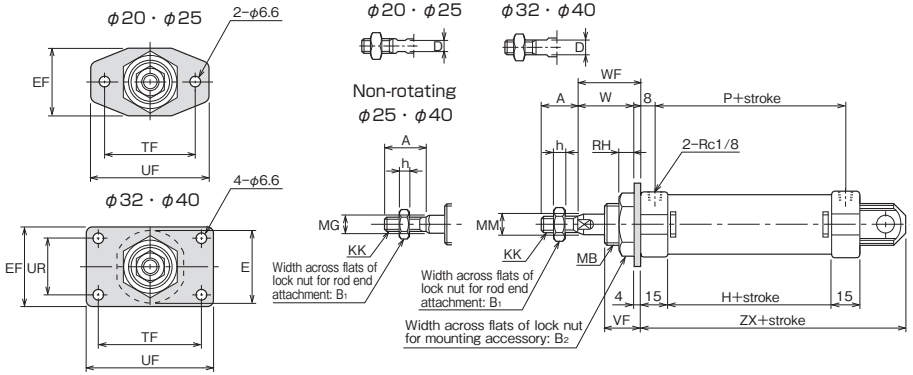
Dimensional Table

Bore \ Symbol/Stroke	A		WW	Dimension XX for each stroke																							
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
ϕ 20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ 25	22	20	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	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ 40	24	24	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

FA

Double acting single rod | Standard | 10Z−2 FA | Bore | Cushioning | Stroke |
Non-rotating | 10Z−2G FK | Bore | Cushioning | Stroke |

● Standard type ● Switch Set



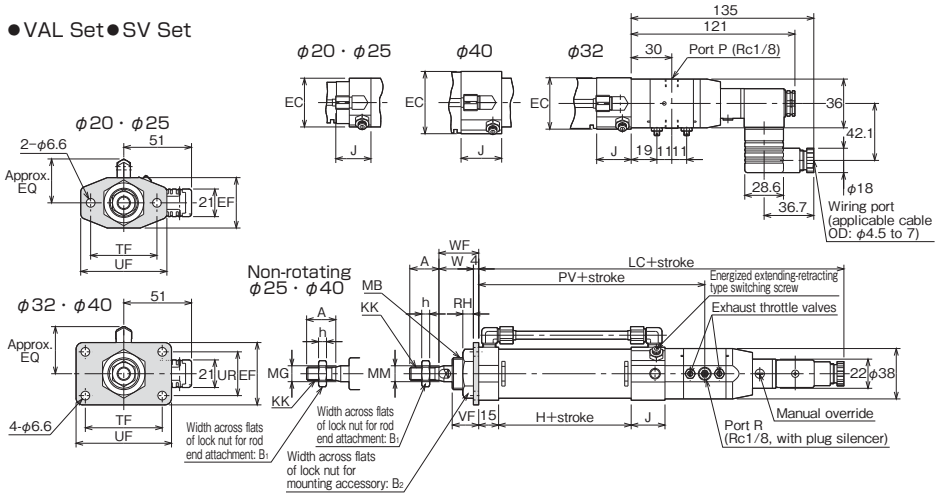
- For dimensions not shown here, refer to SD (basic style).
- The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

Related models: Clevis cut style, rear port style, models with cushion, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

Double acting single rod | Standard | 10Z−2V2 FA | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |
Non-rotating | 10Z−2V2G FA | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |

● VAL Set ● SV Set



- For dimensions not shown here, refer to SD (basic style).
- The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.
- Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.

Related models: Models with cushion, models with boots

This figure shows the dimensional drawing of an energized extending type cylinder.

Dimensional Table

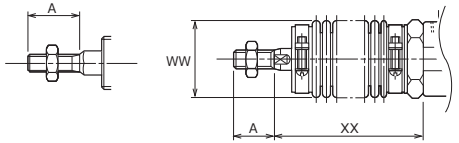
Symbol / Bore	A		B1		B2	D	E	EC	EF	EQ	H	h	
	Standard	Non-rotating	Standard	Non-rotating								Standard	Non-rotating
φ20	20(20)	—	13	—	30	6	φ28	36	38	34	44	5	—
φ25	22(22)	20(17)	17	13	30	8	φ33	36	38	34	44	6	5
φ32	22(19)	—	17	—	32	10	φ40	38	47	36	50	6	—
φ40	24(21)	24(21)	19	19	41	12	φ48	46	51	40	52	7	7

Symbol / Bore	J	KK		LC	MB	MG	MM	P	PV	RH	TF	UF	UR	VF	W	WF	ZX
		Standard	Non-rotating														
φ20	26	M8×1.25	—	220	M22×1.5	—	φ8	58	115	7	50	65	—	16	20	24	96
φ25	25.5	M10×1.25	M8×1.25	219.5	M22×1.5	9	φ10	58	114.5	7	50	65	—	18	24	28	96
φ32	25.5	M10×1.25	—	222.5	M24×2	—	φ12	64	120.5	8	58	72	33	20	26	30	106
φ40	30	M12×1.25	M12×1.25	232	M30×2	14	φ14	66	127	9	70	84	36	22	28	32	110

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
φ25・φ40



Dimensional Table

Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
φ20	20	—	φ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
φ25	22	20	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
φ32	22	—	φ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
φ40	24	24	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

FA

Single acting type

Spring return Standard 10Z−2SR FA Bore N Stroke

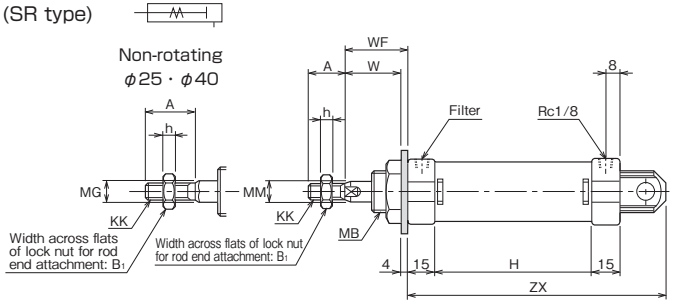
Non-rotating 10Z−2GSR FK Bore N Stroke

Spring-extended Standard 10Z−2SH FA Bore N Stroke

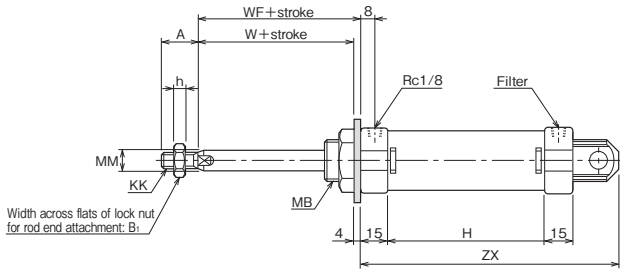
Non-rotating 10Z−2GSH FK Bore N Stroke

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

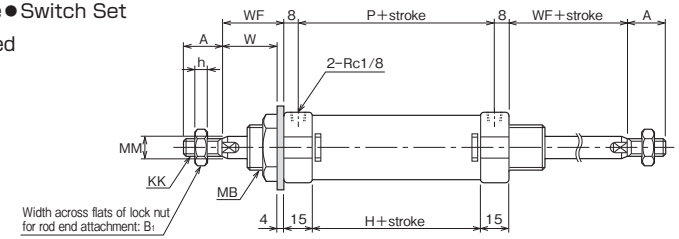
Related models: Clevis cut style, rear port style, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

Double acting double rod Standard 10Z−2DG FA Bore N Stroke

●Standard type ●Switch Set

Both ends loaded



●For dimensions not shown here, refer to SD (basic style).
●Non-rotating double rod cylinders with cushions are not available.

Related models: Models with boots

Dimensional Table

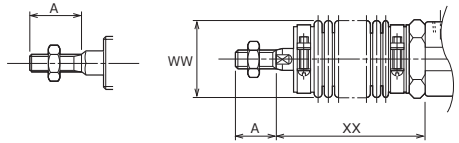
Bore	A Standard	A Non-rotating	B1 Standard	B1 Non-rotating	h Standard	h Non-rotating	KK Standard	KK Non-rotating	MB	MG	MM	P	W	WF
ϕ20	20(20)	—	13	—	5	—	M8×1.25	—	M22×1.5	—	ϕ8	58	20	24
ϕ25	22(22)	20(17)	17	13	6	5	M10×1.25	M8×1.25	M22×1.5	9	ϕ10	58	24	28
ϕ32	22(19)	—	17	—	6	—	M10×1.25	—	M24×2	—	ϕ12	64	26	30
ϕ40	24(21)	24(21)	19	19	7	7	M12×1.25	M12×1.25	M30×2	14	ϕ14	66	28	32

Bore \ Stroke	H Double rod type	H Single acting type 25	50	75	100	ZX Single acting type 25	50	75	100
ϕ20	44	94	144	194	244	146	196	246	296
ϕ25	44	94	144	194	244	146	196	246	296
ϕ32	50	100	150	200	250	156	206	256	306
ϕ40	52	102	152	202	252	160	210	260	310

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



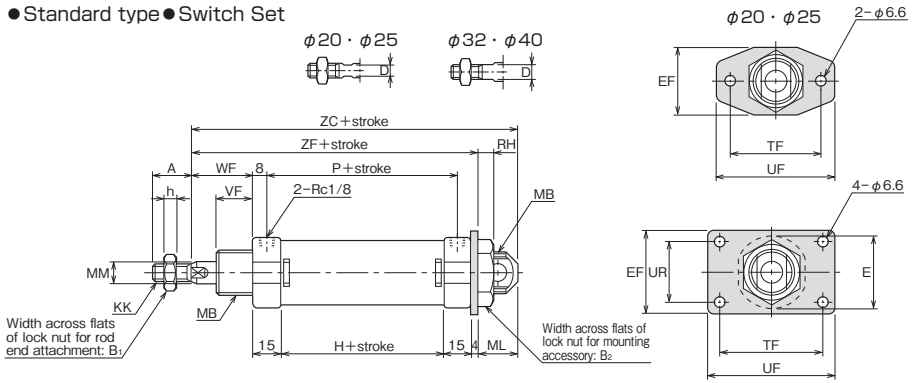
Dimensional Table

Bore	A Standard	A Non-rotating	WW	Dimension XX for each stroke to 25 Standard	to 25 Non-rotating	to 50 Standard	to 50 Non-rotating	to 75 Standard	to 75 Non-rotating	to 100 Standard	to 100 Non-rotating	to 125 Standard	to 125 Non-rotating	to 150 Standard	to 150 Non-rotating	to 175 Standard	to 175 Non-rotating	to 200 Standard	to 200 Non-rotating	to 250 Standard	to 250 Non-rotating	to 300 Standard	to 300 Non-rotating	to 350 Standard	to 350 Non-rotating	to 400 Standard	to 400 Non-rotating	to 450 Standard	to 450 Non-rotating	to 500 Standard	to 500 Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

FB

Double acting single rod [Standard] 10Z−2 FB [Bore] [Cushioning] [Stroke]

●Standard type ●Switch Set



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

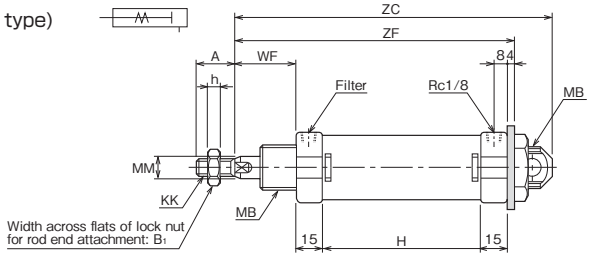
Related models: Models with cushion, models with boots

Single acting type

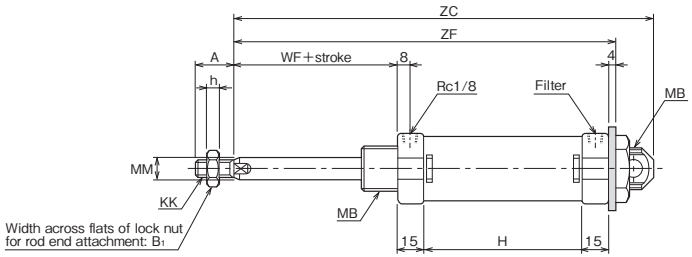
Spring return [Standard] 10Z−2SR FB [Bore] N [Stroke] − B
Spring-extended [Standard] 10Z−2SH FB [Bore] N [Stroke] − B

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

Related models: Models with boots

Dimensional Table

Symbol / Stroke / Bore	A	B1	B2	D	E	EF	H: Double acting type	H: Single acting type 25	50	75	100	h	KK	MB	ML	MM
ϕ20	20(20)	13	30	6	ϕ28	38	44	94	144	194	244	5	M8×1.25	M22×1.5	18	ϕ8
ϕ25	22(22)	17	30	8	ϕ33	38	44	94	144	194	244	6	M10×1.25	M22×1.5	18	ϕ10
ϕ32	22(19)	17	32	10	ϕ40	47	50	100	150	200	250	6	M10×1.25	M24×2	22	ϕ12
ϕ40	24(21)	19	41	12	ϕ48	51	52	102	152	202	252	7	M12×1.25	M30×2	24	ϕ14

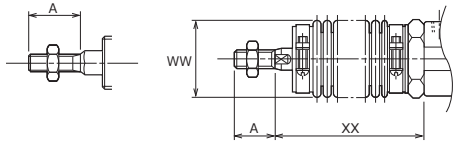
Symbol / Stroke / Bore	P	RH	TF	UF	UR	VF	WF	ZC: Double acting type	ZC: 25 SR type	25 SH type	50 SR type	50 SH type	75 SR type	75 SH type	100 SR type	100 SH type
ϕ20	58	7	50	65	—	16(13)	24	120	170	195	220	270	270	345	320	420
ϕ25	58	7	50	65	—	18(15)	28	124	174	199	224	274	274	349	324	424
ϕ32	64	8	58	72	33	20(16)	30	136	186	211	236	286	286	361	336	436
ϕ40	66	9	70	84	36	22(18)	32	142	192	217	242	292	292	367	342	442

Symbol / Stroke / Bore	ZF: Double acting type	25 SR type	25 SH type	50 SR type	50 SH type	75 SR type	75 SH type	100 SR type	100 SH type
ϕ20	102	152	177	202	252	252	327	302	402
ϕ25	106	156	181	206	256	256	331	306	406
ϕ32	114	164	189	214	264	264	339	314	414
ϕ40	118	168	193	218	268	268	343	318	418

Note) The parenthesized values of dimensions A and VF indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



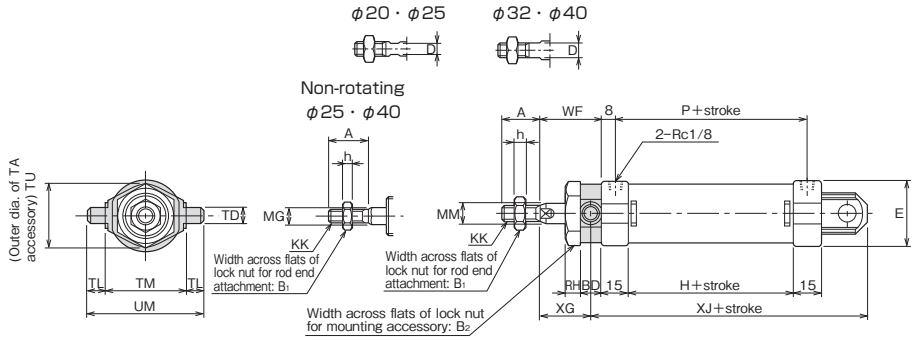
Dimensional Table

Symbol / Stroke / Bore	A Standard	A Non-rotating	WW	Dimension XX for each stroke: to 25 Standard	to 25 Non-rotating	to 50 Standard	to 50 Non-rotating	to 75 Standard	to 75 Non-rotating	to 100 Standard	to 100 Non-rotating	to 125 Standard	to 125 Non-rotating	to 150 Standard	to 150 Non-rotating	to 175 Standard	to 175 Non-rotating	to 200 Standard	to 200 Non-rotating	to 250 Standard	to 250 Non-rotating	to 300 Standard	to 300 Non-rotating	to 350 Standard	to 350 Non-rotating	to 400 Standard	to 400 Non-rotating	to 450 Standard	to 450 Non-rotating	to 500 Standard	to 500 Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

TA

Double acting single rod | Standard | 10Z−2 | TA | Bore | Cushioning | Stroke
Non-rotating | 10Z−2G | TK | Bore | Cushioning | Stroke

●Standard type ●Switch Set



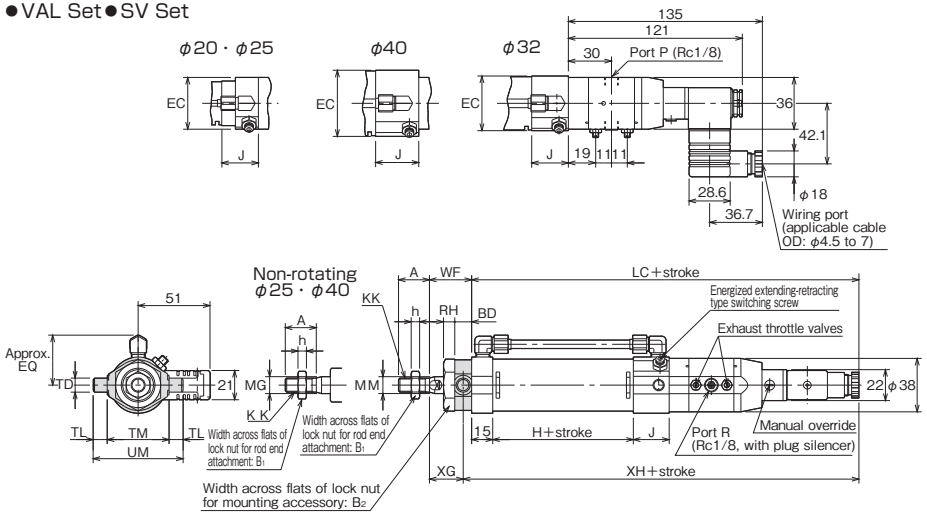
●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

Related models: Clevis cut style, rear port style, models with cushion, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

Double acting single rod | Standard | 10Z−2V2 | TA | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage
Non-rotating | 10Z−2V2G | TA | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage

●VAL Set ●SV Set



●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.
●Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.

Related models: Models with cushion, models with boots

This figure shows the dimensional drawing of an energized extending type cylinder.

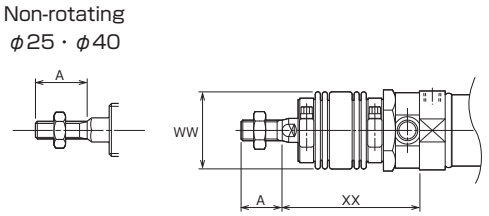
Dimensional Table

Symbol / Bore	A		B1		B2	BD	D	E	EC	EQ	H	h		J
	Standard	Non-rotating	Standard	Non-rotating								Standard	Non-rotating	
φ20	20(20)	—	13	—	30	10	6	φ28	36	34	44	5	—	26
φ25	22(22)	20(17)	17	13	30	10	8	φ33	36	34	44	6	5	25.5
φ32	22(19)	—	17	—	32	12	10	φ40	38	36	50	6	—	25.5
φ40	24(21)	24(21)	19	19	41	14	12	φ48	46	40	52	7	7	30

Symbol / Bore	KK		LC	MG	MM	P	RH	TD	TL	TM	TU	UM	WF	XG	XH	XJ
	Standard	Non-rotating														
φ20	M8×1.25	—	220	—	φ8	58	7	φ8e9	8	36	32	52	24	19	225	101
φ25	M10×1.25	M8×1.25	219.5	9	φ10	58	7	φ8e9	8	36	32	52	28	23	224.5	101
φ32	M10×1.25	—	225.5	—	φ12	64	8	φ10e9	10	44	36	64	30	24	231.5	112
φ40	M12×1.25	M12×1.25	232	14	φ14	66	9	φ12e9	12	50	44	74	32	25	239	117

Note) The parenthesized values of dimension A indicate the screw length.

With Boots



Dimensional Table

Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
φ20	20	—	φ36	59	—	69	—	79	—	84	—	94	—	104	—	114	—	124	—	144	—	164	—	184	—	204	—	224	—	244	—
φ25	22	20	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
φ32	22	—	φ40	55	—	65	—	75	—	80	—	90	—	95	—	105	—	110	—	130	—	140	—	160	—	180	—	200	—	220	—
φ40	24	24	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

TA

Single acting type

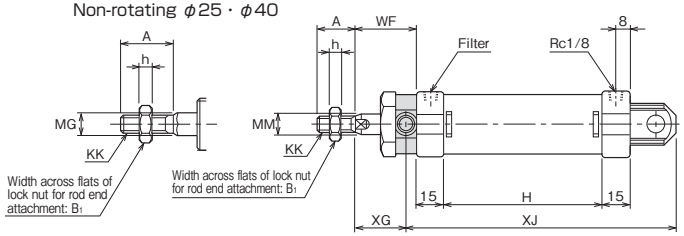
Spring return | Standard | 10Z−2SR TA | Bore | N | Stroke |
Non-rotating | 10Z−2GSR TK | Bore | N | Stroke |

Spring-extended | Standard | 10Z−2SH TA | Bore | N | Stroke |
Non-rotating | 10Z−2GSH TK | Bore | N | Stroke |

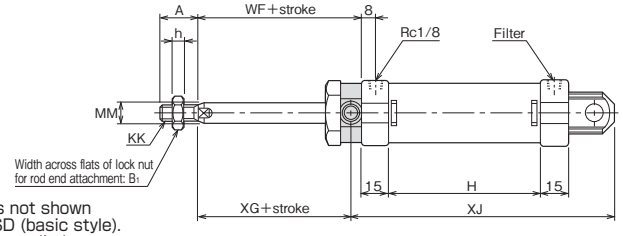
● Standard type ● Switch Set

Spring return (SR type)

Non-rotating ϕ25 · ϕ40



Spring-extended (SH type)



● For dimensions not shown here, refer to SD (basic style).
● The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

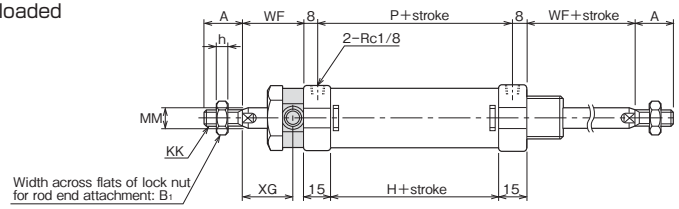
Related models: Clevis cut style, rear port style, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

Double acting double rod | Standard | 10Z−2D TA | Bore | N | Stroke |

● Standard type ● Switch Set

Both ends loaded



● For dimensions not shown here, refer to SD (basic style).
● Non-rotating double rod cylinders with cushions are not available.

Related models: Models with boots

Dimensional Table

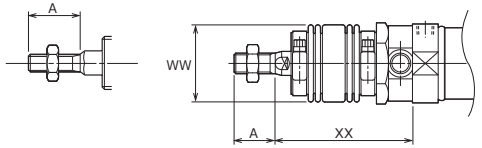
Bore	A Standard	A Non-rotating	B_1 Standard	B_1 Non-rotating	h Standard	h Non-rotating	KK Standard	KK Non-rotating	MG	MM	P	WF	XG
ϕ20	20(20)	—	13	—	5	—	M8×1.25	—	—	ϕ8	58	24	19
ϕ25	22(22)	20(17)	17	13	6	5	M10×1.25	M8×1.25	9	ϕ10	58	28	23
ϕ32	22(19)	—	17	—	6	—	M10×1.25	—	—	ϕ12	64	30	24
ϕ40	24(21)	24(21)	19	19	7	7	M12×1.25	M12×1.25	14	ϕ14	66	32	25

Bore \ Stroke	H Double rod type	H Single acting type 25	50	75	100	XJ Single acting type 25	50	75	100
ϕ20	44	94	144	194	244	151	201	251	301
ϕ25	44	94	144	194	244	151	201	251	301
ϕ32	50	100	150	200	250	162	212	262	312
ϕ40	52	102	152	202	252	167	217	267	317

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
ϕ25 · ϕ40



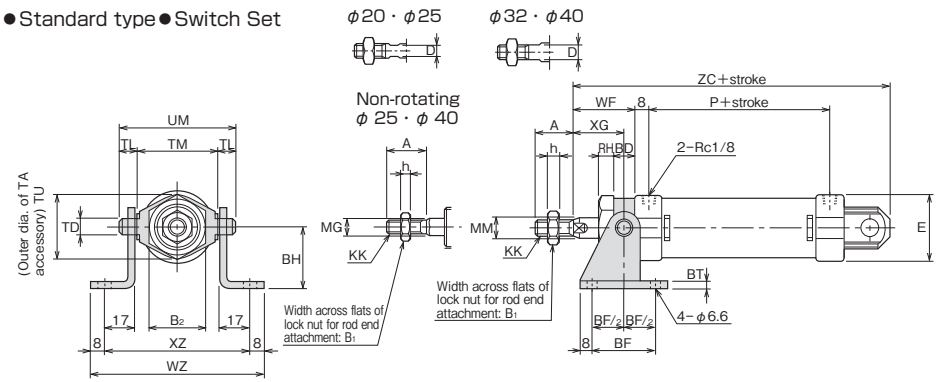
Dimensional Table

Bore	A Standard	A Non-rotating	WW	Dimension XX for each stroke: to 25 Standard	to 25 Non-rotating	to 50 Standard	to 50 Non-rotating	to 75 Standard	to 75 Non-rotating	to 100 Standard	to 100 Non-rotating	to 125 Standard	to 125 Non-rotating	to 150 Standard	to 150 Non-rotating	to 175 Standard	to 175 Non-rotating	to 200 Standard	to 200 Non-rotating	to 250 Standard	to 250 Non-rotating	to 300 Standard	to 300 Non-rotating	to 350 Standard	to 350 Non-rotating	to 400 Standard	to 400 Non-rotating	to 450 Standard	to 450 Non-rotating	to 500 Standard	to 500 Non-rotating
ϕ20	20	—	ϕ36	59	—	69	—	79	—	84	—	94	—	104	—	114	—	124	—	144	—	164	—	184	—	204	—	224	—	244	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	55	—	65	—	75	—	80	—	90	—	95	—	105	—	110	—	130	—	140	—	160	—	180	—	200	—	220	—
ϕ40	24	24	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

TA with Bracket

Double acting single rod | Standard | 10Z−2 | TA | Bore | Cushioning | Stroke | −B
Non-rotating | 10Z−2G | TK | Bore | Cushioning | Stroke | −B

●Standard type ●Switch Set



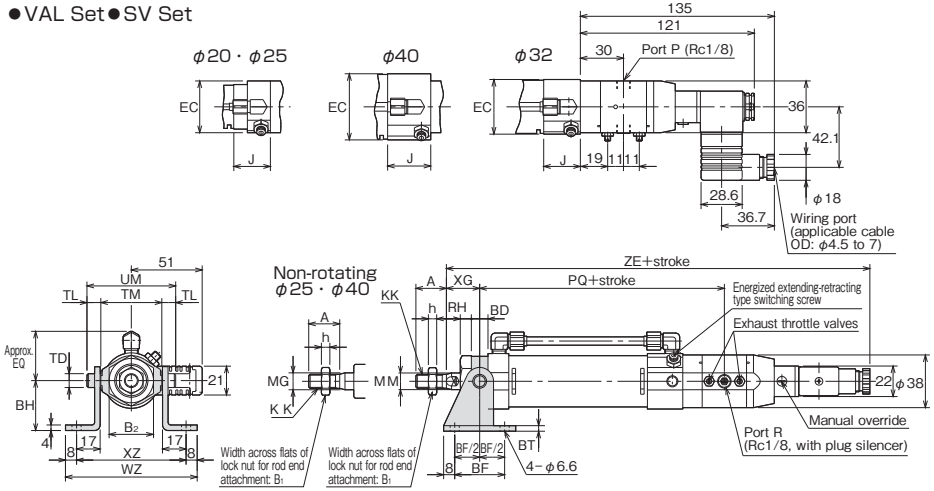
●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

Related models: Clevis cut style, rear port style, models with cushion, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

Double acting single rod | Standard | 10Z−2V2 | TA | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage | −B
Non-rotating | 10Z−2V2G | TA | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage | −B

●VAL Set ●SV Set



●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.
●Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.

Related models: Models with cushion, models with boots

This figure shows the dimensional drawing of an energized extending type cylinder.

Dimensional Table

Symbol / Bore	A		B1		B2	BD	BF	BH	BT	D	E
	Standard	Non-rotating	Standard	Non-rotating							
ϕ20	20(20)	—	13	—	30	10	32	32	3.2	6	ϕ28
ϕ25	22(22)	20(17)	17	13	30	10	32	32	3.2	8	ϕ33
ϕ32	22(19)	—	17	—	32	12	36	36	4	10	ϕ40
ϕ40	24(21)	24(21)	19	19	41	14	40	40	4	12	ϕ48

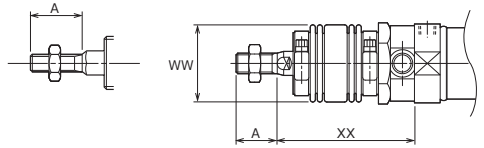
Symbol / Bore	EC	EQ	h		J	KK		MG	MM	P
			Standard	Non-rotating		Standard	Non-rotating			
ϕ20	36	34	5	—	26	M8×1.25	—	—	ϕ8	58
ϕ25	36	34	6	5	25.5	M10×1.25	M8×1.25	9	ϕ10	58
ϕ32	38	36	6	—	25.5	M10×1.25	—	—	ϕ12	64
ϕ40	46	40	7	7	30	M12×1.25	M12×1.25	14	ϕ14	66

Symbol / Bore	PQ	RH	TD	TL	TM	TU	UM	WF	WZ	XG	XZ	ZC	ZE
ϕ20	120	7	ϕ8e9	8	36	32	52	24	87	19	71	120	244
ϕ25	119.5	7	ϕ8e9	8	36	32	52	28	87	23	71	124	247.5
ϕ32	126.5	8	ϕ10e9	10	44	36	64	30	95	24	79	136	255.5
ϕ40	134	9	ϕ12e9	12	50	44	74	32	101	25	85	142	264

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



Dimensional Table

Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
ϕ20	20	—	ϕ36	59	—	69	—	79	—	84	—	94	—	104	—	114	—	124	—	144	—	164	—	184	—	204	—	224	—	244	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	55	—	65	—	75	—	80	—	90	—	95	—	105	—	110	—	130	—	140	—	160	—	180	—	200	—	220	—
ϕ40	24	24	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

TA with Bracket

Single acting type

Spring return Standard 10Z−2SR TA Bore N Stroke −B

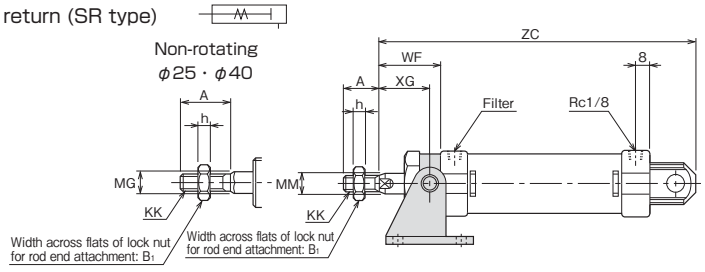
Non-rotating 10Z−2GSR TK Bore N Stroke −B

Spring-extended Standard 10Z−2SH TA Bore N Stroke −B

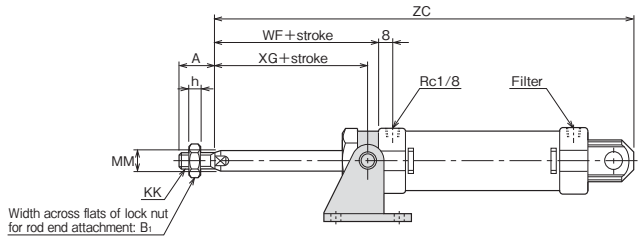
Non-rotating 10Z−2GSH TK Bore N Stroke −B

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●For dimensions not shown here, refer to SD (basic style).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end and cap cover shown above.

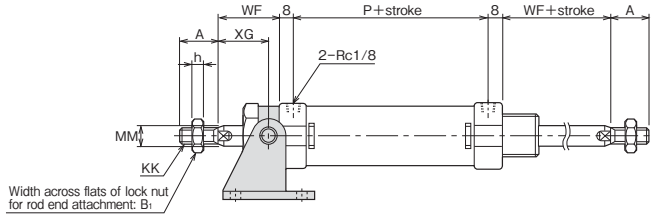
Related models: Clevis cut style, rear port style, models with cushion, models with boots

The non-rotating cylinders are basically mounted in the clevis cut style.

Double acting double rod Standard 10Z−2D TA Bore N Stroke −B

●Standard type ●Switch Set

Both ends loaded



●For dimensions not shown here, refer to SD (basic style).
●Non-rotating double rod cylinders with cushions are not available.

Related models: Models with boots

Dimensional Table

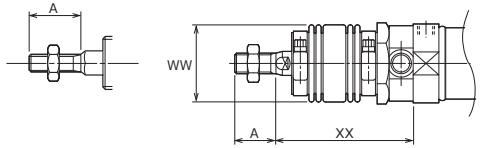
Bore	A Standard	A Non-rotating	B1 Standard	B1 Non-rotating	h Standard	h Non-rotating	KK Standard	KK Non-rotating	MG	MM	P	WF	XG
ϕ20	20(20)	—	13	—	5	—	M8×1.25	—	—	ϕ8	58	24	19
ϕ25	22(22)	20(17)	17	13	6	5	M10×1.25	M8×1.25	9	ϕ10	58	28	23
ϕ32	22(19)	—	17	—	6	—	M10×1.25	—	—	ϕ12	64	30	24
ϕ40	24(21)	24(21)	19	19	7	7	M12×1.25	M12×1.25	14	ϕ14	66	32	25

Bore \ Stroke	ZC 25 SR type	ZC 25 SH type	ZC 50 SR type	ZC 50 SH type	ZC 75 SR type	ZC 75 SH type	ZC 100 SR type	ZC 100 SH type
ϕ20	170	195	220	270	270	345	320	420
ϕ25	174	199	224	274	274	349	324	424
ϕ32	186	211	236	286	286	361	336	436
ϕ40	192	217	242	292	292	367	342	442

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



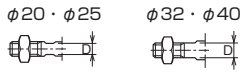
Dimensional Table

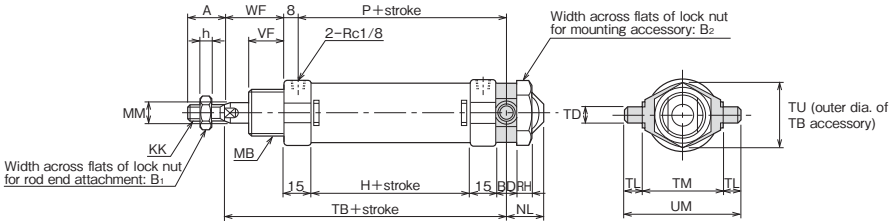
Bore	A Standard	A Non-rotating	WW	Dimension XX for each stroke: to 25 Standard	to 25 Non-rotating	to 50 Standard	to 50 Non-rotating	to 75 Standard	to 75 Non-rotating	to 100 Standard	to 100 Non-rotating	to 125 Standard	to 125 Non-rotating	to 150 Standard	to 150 Non-rotating	to 175 Standard	to 175 Non-rotating	to 200 Standard	to 200 Non-rotating	to 250 Standard	to 250 Non-rotating	to 300 Standard	to 300 Non-rotating	to 350 Standard	to 350 Non-rotating	to 400 Standard	to 400 Non-rotating	to 450 Standard	to 450 Non-rotating	to 500 Standard	to 500 Non-rotating
ϕ20	20	—	ϕ36	59	—	69	—	79	—	84	—	94	—	104	—	114	—	124	—	144	—	164	—	184	—	204	—	224	—	244	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	55	—	65	—	75	—	80	—	90	—	95	—	105	—	110	—	130	—	140	—	160	—	180	—	200	—	220	—
ϕ40	24	24	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

TB

Double acting single rod Standard 10Z−2 TB Bore Cushioning Stroke

●Standard type ●Switch Set





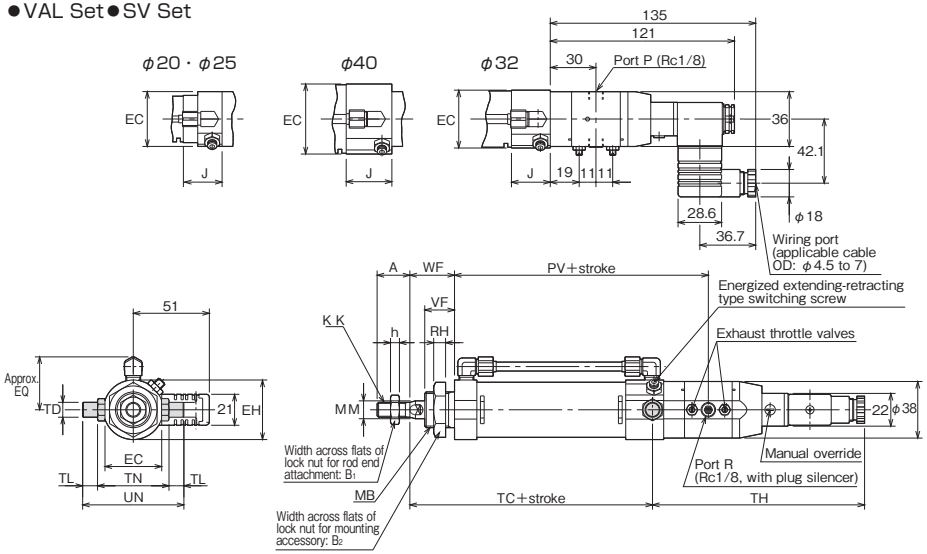
●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

Related models: Models with cushion, models with boots

TC

Double acting single rod Standard 10Z−2V2 TC Bore Cushioning Stroke − Valve operating method Valve voltage

●VAL Set ●SV Set



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).
●Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.

Related models: Models with cushion, models with boots

This figure shows the dimensional drawing of an energized extending type cylinder.

Dimensional Table

Bore \ Symbol	A	B_1	B_2	BD	D	EC	EH	EQ	H
φ20	20(20)	13	30	10	6	36	φ38	34	44
φ25	22(22)	17	30	10	8	36	φ38	34	44
φ32	22(19)	17	32	12	10	38	φ40	36	50
φ40	24(21)	19	41	14	12	46	φ48	40	52

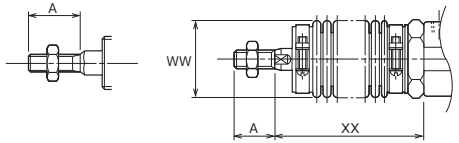
Bore \ Symbol	h	J	KK	MB	MM	NL	P	PV	RH	TB
φ20	5	26	M8×1.25	M22×1.5	φ8	17	58	115	7	103
φ25	6	25.5	M10×1.25	M22×1.5	φ10	17	58	114.5	7	107
φ32	6	25.5	M10×1.25	M24×2	φ12	20	64	120.5	8	116
φ40	7	30	M12×1.25	M30×2	φ14	21	66	127	9	121

Bore \ Symbol	TC	TD	TH	TL	TM	TN	TU	UM	UN	VF	WF
φ20	101.5	φ8e9	142.5	8	36	46	32	52	62	16(13)	24
φ25	105	φ8e9	142.5	8	36	46	32	52	62	18(15)	28
φ32	113	φ10e9	142.5	10	44	48	36	64	68	20(16)	30
φ40	119	φ12e9	145	12	50	56	44	74	80	22(18)	32

Note) The parenthesized values of dimensions A and VF indicate the screw length.

With Boots

Non-rotating
φ25・φ40



Dimensional Table

Bore \ Symbol \ Stroke	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
φ20	20	—	φ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
φ25	22	20	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
φ32	22	—	φ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
φ40	24	24	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

TB

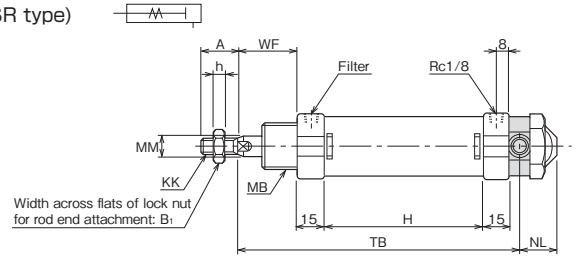
Single acting type

Spring return Standard 10Z−2SR TB Bore N Stroke

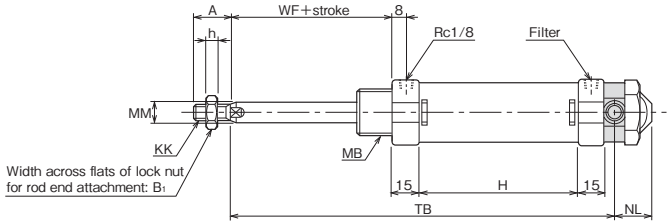
Spring-extended Standard 10Z−2SH TB Bore N Stroke

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

Related models: Models with boots

Dimensional Table

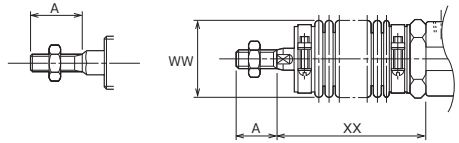
Symbol / Stroke / Bore	A	B_1	h	KK	MB	MM	NL	WF	H			
									Single acting type			
									25	50	75	100
φ20	20(20)	13	5	M8×1.25	M22×1.5	φ8	17	24	94	144	194	244
φ25	22(22)	17	6	M10×1.25	M22×1.5	φ10	17	28	94	144	194	244
φ32	22(19)	17	6	M10×1.25	M24×2	φ12	20	30	100	150	200	250
φ40	24(21)	19	7	M12×1.25	M30×2	φ14	21	32	102	152	202	252

Symbol / Stroke / Bore	TB							
	25		50		75		100	
	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type
φ20	153	178	203	253	253	328	303	403
φ25	157	182	207	257	257	332	307	407
φ32	166	191	216	266	266	341	316	416
φ40	171	196	221	271	271	346	321	421

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
φ25・φ40



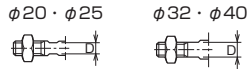
Dimensional Table

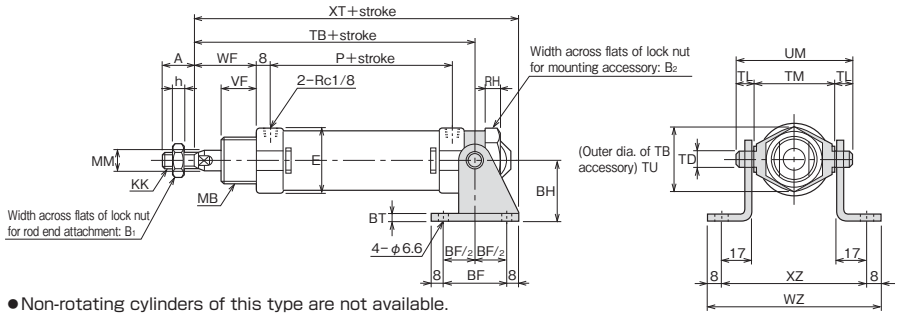
Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
φ20	20	—	φ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
φ25	22	20	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
φ32	22	—	φ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
φ40	24	24	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

TB with Bracket

Double acting single rod | Standard | 10Z−2 TB | Bore | Cushioning | Stroke | − B

●Standard type ●Switch Set





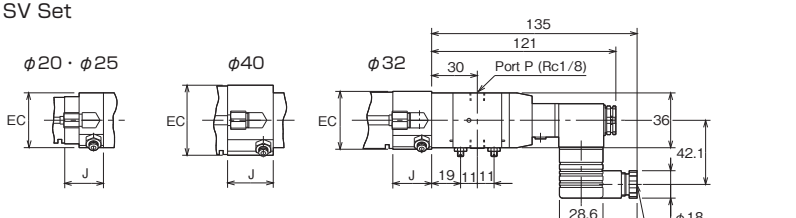
●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

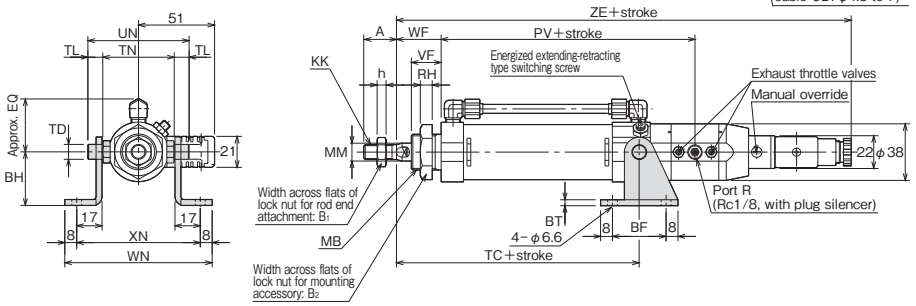
Related models: Models with cushion, models with boots

TC with Bracket

Double acting single rod | Standard | 10Z−2V2 TC | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage | − B

●VAL Set ●SV Set





●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).
●Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.

Related models: Models with cushion, models with boots

This figure shows the dimensional drawing of an energized extending type cylinder.

Dimensional Table

Symbol / Bore	A	B_1	B_2	BF	BH	BT	D	E	EC	EQ
φ20	20(20)	13	30	32	32	3.2	6	φ28	36	34
φ25	22(22)	17	30	32	32	3.2	8	φ33	36	34
φ32	22(19)	17	32	36	36	4	10	φ40	38	36
φ40	24(21)	19	41	40	40	4	12	φ48	46	40

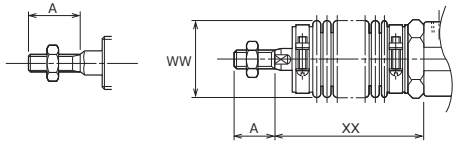
Symbol / Bore	TL	TM	TN	TU	UM	UN	VF	WF	WN	WZ	XN	XT	XZ	ZE
φ20	8	36	46	32	52	62	16(13)	24	97	87	81	127	71	244
φ25	8	36	46	32	52	62	18(15)	28	97	87	81	131	71	247.5
φ32	10	44	48	36	64	68	20(16)	30	99	95	83	142	79	255.5
φ40	12	50	56	44	74	80	22(18)	32	107	101	91	149	85	264

Symbol / Bore	h	J	KK	MB	MM	P	PV	RH	TB	TC	TD
φ20	5	26	M8×1.25	M22×1.5	φ8	58	115	7	103	101.5	φ8e9
φ25	6	25.5	M10×1.25	M22×1.5	φ10	58	114.5	7	107	105	φ8e9
φ32	6	25.5	M10×1.25	M24×2	φ12	64	120.5	8	116	113	φ10e9
φ40	7	30	M12×1.25	M30×2	φ14	66	127	9	121	119	φ12e9

Note) The parenthesized values of dimensions A and VF indicate the screw length.

With Boots

Non-rotating
φ25・φ40



Dimensional Table

Symbol: Stroke / Bore	A		WW	Dimension XX for each stroke																									
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Standard	Non-rotating		Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating	Standard	Non-rotating
φ20	20	—	φ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
φ25	22	20	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
φ32	22	—	φ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
φ40	24	24	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

TB with Bracket

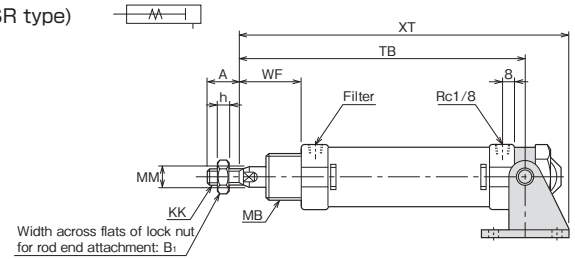
Single acting type

Spring return Standard 10Z−2SR TB Bore N Stroke − B

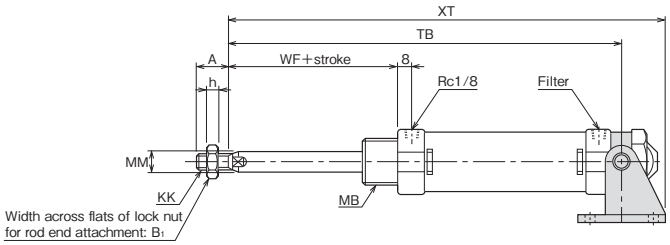
Spring-extended Standard 10Z−2SH TB Bore N Stroke − B

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

Related models: Models with boots

Dimensional Table

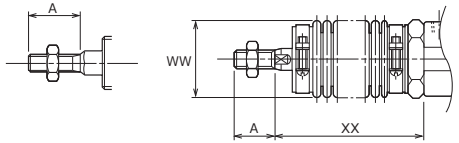
Symbol / Bore	A	B1	h	KK	MB	MM	WF
ϕ20	20(20)	13	5	M8×1.25	M22×1.5	ϕ8	24
ϕ25	22(22)	17	6	M10×1.25	M22×1.5	ϕ10	28
ϕ32	22(19)	17	6	M10×1.25	M24×2	ϕ12	30
ϕ40	24(21)	19	7	M12×1.25	M30×2	ϕ14	32

Symbol / Stroke / Bore	TB								XT							
	25		50		75		100		25		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	SR type	SH type	SR type	SH type
ϕ20	153	178	203	253	253	328	303	403	177	202	227	277	277	352	327	427
ϕ25	157	182	207	257	257	332	307	407	181	206	231	281	281	356	331	431
ϕ32	166	191	216	266	266	341	316	416	192	217	242	292	292	367	342	442
ϕ40	171	196	221	271	271	346	321	421	199	224	249	299	299	374	349	449

Note) The parenthesized values of dimension A indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



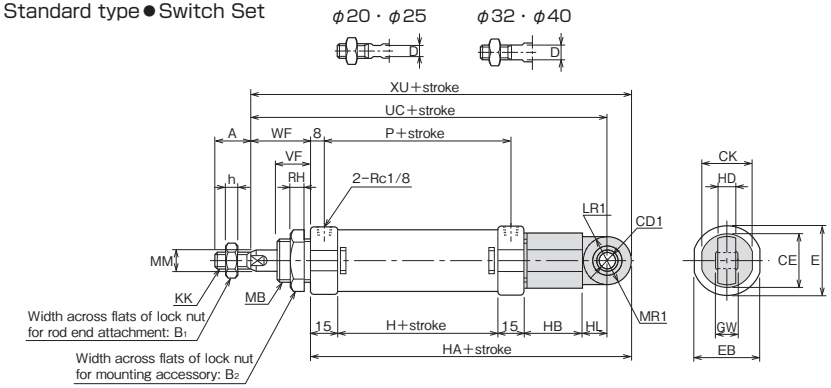
Dimensional Table

Symbol / Stroke / Bore	A		WW	Dimension XX for each stroke																							
				to 25		to 50		to 75		to 100		to 125		to 150		to 175		to 200		to 250		to 300		to 350		to 400		to 450		to 500	
	Stan-dard	Non-rotating		Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating	Stan-dard	Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

CU

Double acting single rod Standard 10Z−2 CU Bore Cushioning Stroke

●Standard type ●Switch Set



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

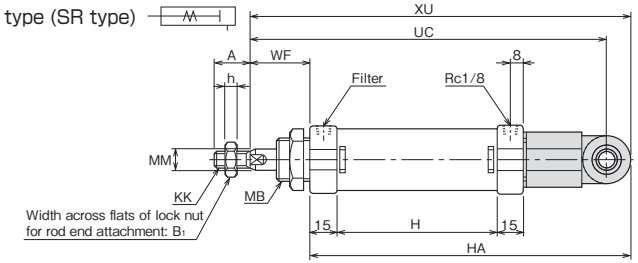
Related models: Models with cushion, models with boots

Single acting type

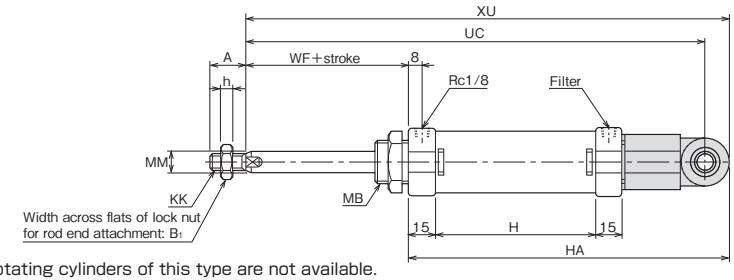
Spring return Standard 10Z−2SR CU Bore N Stroke
Spring-extended Standard 10Z−2SH CU Bore N Stroke

●Standard type ●Switch Set

Spring return type (SR type)



Spring-extended type (SH type)



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

Related models: Models with boots

Dimensional Table

Symbol / Stroke / Bore	A	B1	B2	CD1	CE	CK	D	E	EB	GW	H: Double acting type	H: Single acting type 25	50	75	100	h
ϕ20	20(20)	13	30	ϕ8H9	ϕ32	30	6	ϕ28	26	$12^{0}_{-0.3}$	44	94	144	194	244	5
ϕ25	22(22)	17	30	ϕ10H9	ϕ32	30	8	ϕ33	31	$14^{0}_{-0.3}$	44	94	144	194	244	6
ϕ32	22(19)	17	32	ϕ10H9	ϕ32	30	10	ϕ40	38	$14^{0}_{-0.3}$	50	100	150	200	250	6
ϕ40	24(21)	19	41	ϕ12H9	ϕ38	36	12	ϕ48	46	$16^{0}_{-0.3}$	52	102	152	202	252	7

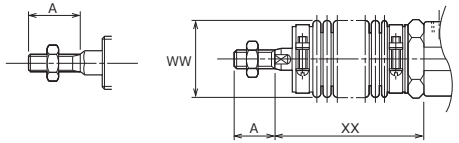
Symbol / Stroke / Bore	HA: Double acting type	HA: Single acting type 25	50	75	100	HB	HD	HL	KK	LR1	MB	MM	MR1	P	RH
ϕ20	136	186	236	286	336	33	10.5	15	M8×1.25	R14	M22×1.5	ϕ 8	R14	58	7
ϕ25	136	186	236	286	336	33	10.5	15	M10×1.25	R14	M22×1.5	ϕ10	R14	58	7
ϕ32	142	192	242	292	342	33	10.5	15	M10×1.25	R14	M24×2	ϕ12	R14	64	8
ϕ40	152	202	252	302	352	37	12	17	M12×1.25	R16	M30×2	ϕ14	R16	66	9

Symbol / Stroke / Bore	UC: Double acting type	UC: 25 SR type	25 SH type	50 SR type	50 SH type	75 SR type	75 SH type	100 SR type	100 SH type	VF	WF	XU: Double acting type	XU: 25 SR type	25 SH type	50 SR type	50 SH type	75 SR type	75 SH type	100 SR type	100 SH type
ϕ20	146	196	221	246	296	296	371	346	446	16(13)	24	160	210	235	260	310	310	385	360	460
ϕ25	150	200	225	250	300	300	375	350	450	18(15)	28	164	214	239	264	314	314	389	364	464
ϕ32	158	208	233	258	308	308	383	358	458	20(16)	30	172	222	247	272	322	322	397	372	472
ϕ40	168	218	243	268	318	318	393	368	468	22(18)	32	184	234	259	284	334	334	409	384	484

Note) The parenthesized values of dimensions A and VF indicate the screw length.

With Boots

Non-rotating
ϕ25・ϕ40



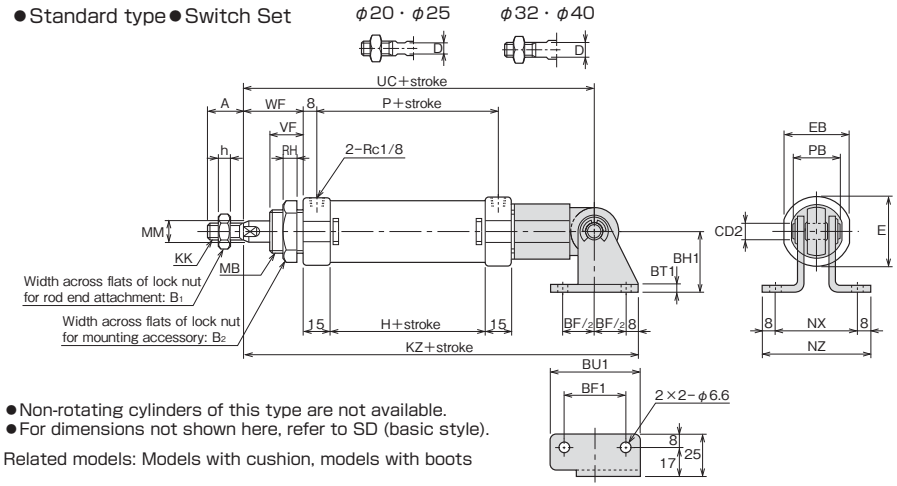
Dimensional Table

Symbol / Stroke / Bore	A Standard	A Non-rotating	WW	Dimension XX for each stroke: to 25 Standard	to 25 Non-rotating	to 50 Standard	to 50 Non-rotating	to 75 Standard	to 75 Non-rotating	to 100 Standard	to 100 Non-rotating	to 125 Standard	to 125 Non-rotating	to 150 Standard	to 150 Non-rotating	to 175 Standard	to 175 Non-rotating	to 200 Standard	to 200 Non-rotating	to 250 Standard	to 250 Non-rotating	to 300 Standard	to 300 Non-rotating	to 350 Standard	to 350 Non-rotating	to 400 Standard	to 400 Non-rotating	to 450 Standard	to 450 Non-rotating	to 500 Standard	to 500 Non-rotating
ϕ20	20	—	ϕ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
ϕ25	22	20	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
ϕ32	22	—	ϕ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
ϕ40	24	24	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

CU with Bracket

Double acting single rod [Standard] 10Z−2 CU [Bore] [Cushioning] [Stroke] − B

●Standard type ●Switch Set



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

Related models: Models with cushion, models with boots

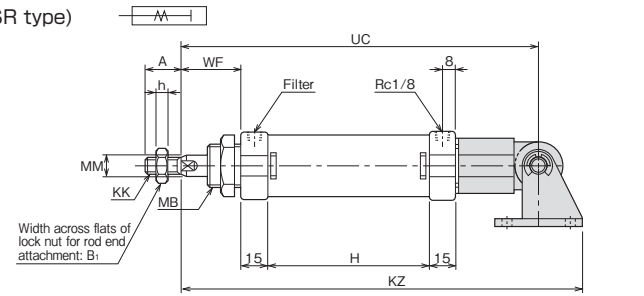
Single acting type

Spring return [Standard] 10Z−2SR CU [Bore] N [Stroke] − B

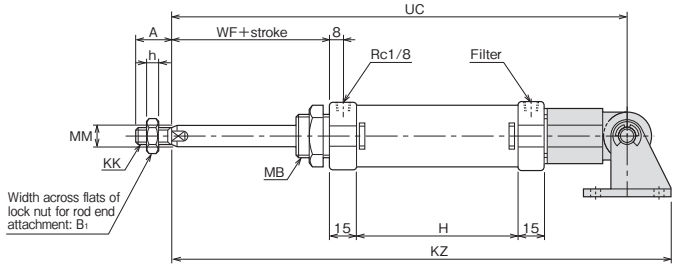
Spring-extended [Standard] 10Z−2SH CU [Bore] N [Stroke] − B

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●Non-rotating cylinders of this type are not available.
●For dimensions not shown here, refer to SD (basic style).

Related models: Models with boots

Dimensional Table

Symbol / Stroke / Bore	A	B1	B2	BF1	BH1	BT1	BU1	CD2	D	E	EB	H: Double acting type	H: Single acting type 25	50	75	100
φ20	20(20)	13	30	32	32	3.2	48	φ8	6	φ28	26	44	94	144	194	244
φ25	22(22)	17	30	36	36	4	52	φ10	8	φ33	31	44	94	144	194	244
φ32	22(19)	17	32	36	36	4	52	φ10	10	φ40	38	50	100	150	200	250
φ40	24(21)	19	41	40	40	4	56	φ12	12	φ48	46	52	102	152	202	252

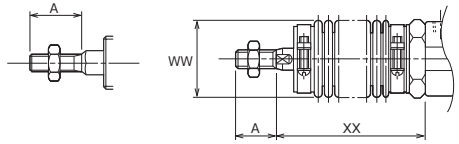
Symbol / Stroke / Bore	h	KK	KZ: Double acting type	KZ: 25 SR type	KZ: 25 SH type	KZ: 50 SR type	KZ: 50 SH type	KZ: 75 SR type	KZ: 75 SH type	KZ: 100 SR type	KZ: 100 SH type	MB	MM	NX
φ20	5	M8×1.25	170	220	245	270	320	320	395	370	470	M22×1.5	φ8	47
φ25	6	M10×1.25	176	226	251	276	326	326	401	376	476	M22×1.5	φ10	49
φ32	6	M10×1.25	184	234	259	284	334	334	409	384	484	M24×2	φ12	49
φ40	7	M12×1.25	196	246	271	296	346	346	421	396	496	M30×2	φ14	51

Symbol / Stroke / Bore	NZ	P	PB	RH	UC: Double acting type	UC: 25 SR type	UC: 25 SH type	UC: 50 SR type	UC: 50 SH type	UC: 75 SR type	UC: 75 SH type	UC: 100 SR type	UC: 100 SH type	VF	WF
φ20	63	58	27	7	146	196	221	246	296	296	371	346	446	16(13)	24
φ25	65	58	29	7	150	200	225	250	300	300	375	350	450	18(15)	28
φ32	65	64	29	8	158	208	233	258	308	308	383	358	458	20(16)	30
φ40	67	66	32	9	168	218	243	268	318	318	393	368	468	22(18)	32

Note) The parenthesized values of dimensions A and VF indicate the screw length.

With Boots

Non-rotating
φ25・φ40



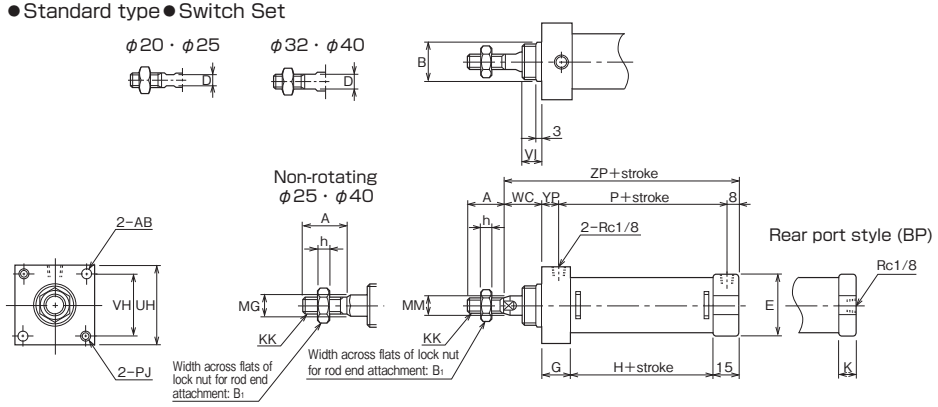
Dimensional Table

Symbol / Stroke / Bore	A Standard	A Non-rotating	WW	Dimension XX for each stroke: to 25 Standard	to 25 Non-rotating	to 50 Standard	to 50 Non-rotating	to 75 Standard	to 75 Non-rotating	to 100 Standard	to 100 Non-rotating	to 125 Standard	to 125 Non-rotating	to 150 Standard	to 150 Non-rotating	to 175 Standard	to 175 Non-rotating	to 200 Standard	to 200 Non-rotating	to 250 Standard	to 250 Non-rotating	to 300 Standard	to 300 Non-rotating	to 350 Standard	to 350 Non-rotating	to 400 Standard	to 400 Non-rotating	to 450 Standard	to 450 Non-rotating	to 500 Standard	to 500 Non-rotating
φ20	20	—	φ36	49	—	59	—	69	—	74	—	84	—	94	—	104	—	114	—	134	—	154	—	174	—	194	—	214	—	234	—
φ25	22	20	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
φ32	22	—	φ40	45	—	55	—	65	—	70	—	80	—	85	—	95	—	100	—	120	—	130	—	150	—	170	—	190	—	210	—
φ40	24	24	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

BD

Double acting single rod | Standard | 10Z−2 | BD | Bore | Cushioning | Stroke |
| Non-rotating | 10Z−2G | BD | Bore | Cushioning | Stroke |

●Standard type ●Switch Set



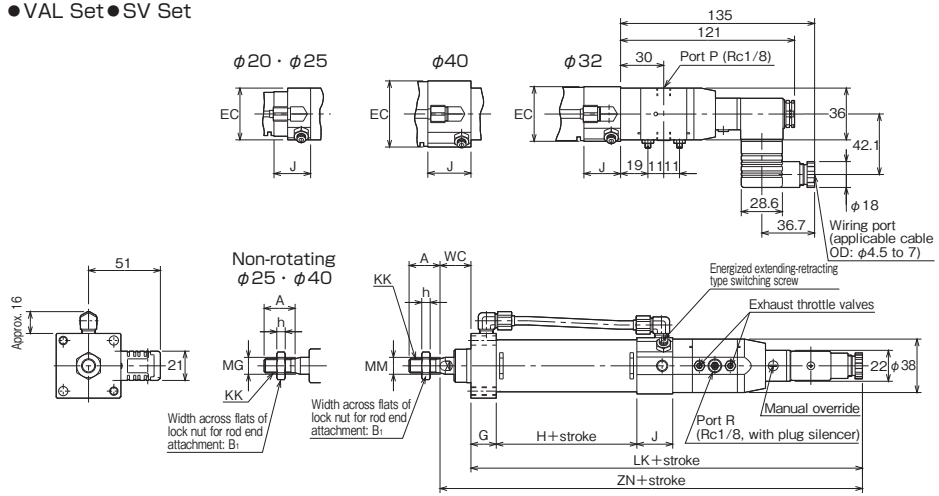
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.

Related models: Models with cushion
(Only in clevis cut style. Rear port style with cushions is not available.)

Basic style: Clevis cut

Double acting single rod | Standard | 10Z−2V2 | BD | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |
| Non-rotating | 10Z−2V2G | BD | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |

●VAL Set ●SV Set



●For dimensions not shown here, see the above drawing.
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.
●Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.

Related models: Models with cushion

This figure shows the dimensional drawing of an energized extending type cylinder.

Dimensional Table

Symbol / Bore	A		AB	B	B1		D	E	EC	G	H
	Standard	Non-rotating			Standard	Non-rotating					
ϕ20	20(20)	—	ϕ5.5	ϕ20f8	13	—	6	ϕ28	36	16	44
ϕ25	22(22)	20(17)	ϕ5.5	ϕ22f8	17	13	8	ϕ33	36	18	44
ϕ32	22(19)	—	ϕ6.6	ϕ24f8	17	—	10	ϕ40	38	18	50
ϕ40	24(21)	24(21)	ϕ9	ϕ28f8	19	19	12	ϕ48	46	20	52

Symbol / Bore	h		J	K	KK		LK	MG	MM	P
	Standard	Non-rotating			Standard	Non-rotating				
ϕ20	5	—	26	8	M8×1.25	—	221	—	ϕ8	58
ϕ25	6	5	25.5	8	M10×1.25	M8×1.25	222.5	9	ϕ10	58
ϕ32	6	—	25.5	10	M10×1.25	—	228.5	—	ϕ12	64
ϕ40	7	7	30	10	M12×1.25	M12×1.25	237	14	ϕ14	66

Symbol / Bore	PJ	UH	VI	VH	WC	YP	ZP	ZN
ϕ20	M5×0.8	□34	10	□24	18	9	93(86)	239
ϕ25	M5×0.8	□38	10	□28	20	11	97(90)	242.5
ϕ32	M6×1	□46	12	□36	22	11	105(100)	250.5
ϕ40	M8×1.25	□56	12	□42	22	13	109(104)	259

Note) The parenthesized values of dimension A indicate the screw length.
Note) The parenthesized values of ZP indicate the size of rear port style cylinders.

BD

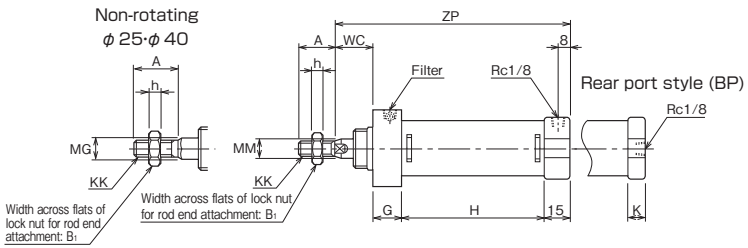
Single acting type

Spring return Standard | 10Z−2SR | BD | Bore | N | Stroke

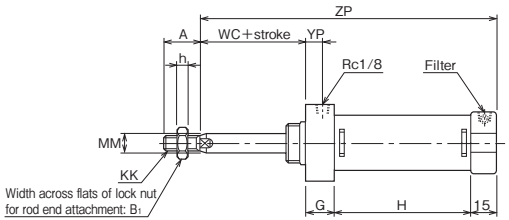
Spring-extended Standard | 10Z−2SH | BD | Bore | N | Stroke

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●For dimensions not shown here, refer to BD (double acting type).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.

Basic style: Clevis cut

Dimensional Table

Symbol / Bore	A		B_1		G	h		K	KK		MG	MM	WC	YP
	Standard	Non-rotating	Standard	Non-rotating		Standard	Non-rotating		Standard	Non-rotating				
ϕ20	20(20)	—	13	—	16	5	—	8	M8×1.25	—	—	ϕ8	18	9
ϕ25	22(22)	20(17)	17	13	18	6	5	8	M10×1.25	M8×1.25	9	ϕ10	20	11
ϕ32	22(19)	—	17	—	18	6	—	10	M10×1.25	—	—	ϕ12	22	11
ϕ40	24(21)	24(21)	19	19	20	7	7	10	M12×1.25	M12×1.25	14	ϕ14	22	13

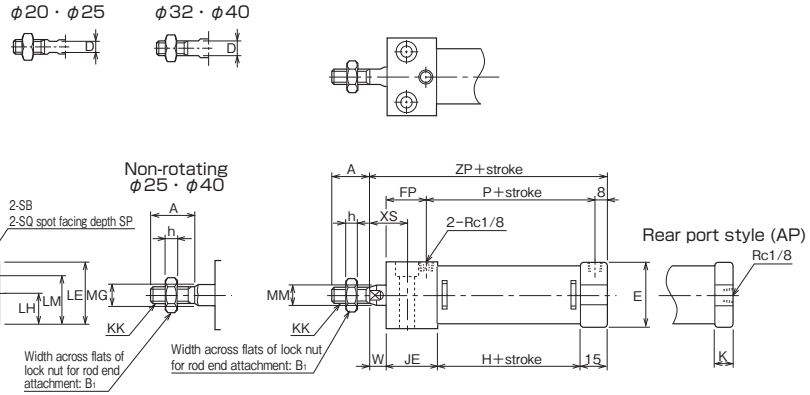
Symbol / Stroke / Bore	H				ZP							
	Single acting type				25		50		75		100	
	25	50	75	100	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type
ϕ20	94	144	194	244	143(136)	168(161)	193(186)	243(236)	243(236)	318(311)	293(286)	393(386)
ϕ25	94	144	194	244	147(140)	172(165)	197(190)	247(240)	247(240)	322(315)	297(290)	397(390)
ϕ32	100	150	200	250	155(150)	180(175)	205(200)	255(250)	255(250)	330(325)	305(300)	405(400)
ϕ40	102	152	202	252	159(154)	184(179)	209(204)	259(254)	259(254)	334(329)	309(304)	409(404)

Note) The parenthesized values of dimension A indicate the screw length.
Note) The parenthesized values of ZP indicate the size of rear port style cylinders.

AD

Double acting single rod | Standard | 10Z−2 | AD | Bore | Cushioning | Stroke |
| Non-rotating | 10Z−2G | AD | Bore | Cushioning | Stroke |

●Standard type ●Switch Set

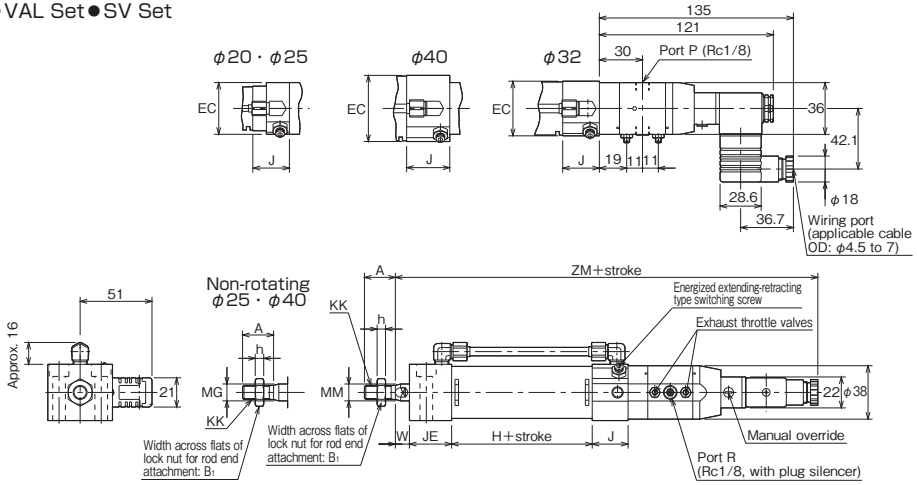


●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.

Related models: Models with cushion
(Only in clevis cut style. Rear port style with cushions is not available.) Basic style: Clevis cut

Double acting single rod | Standard | 10Z−2V2 | AD | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |
| Non-rotating | 10Z−2V2G | AD | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage |

●VAL Set ●SV Set



●For dimensions not shown here, see the above drawing.
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.
●Ports P, exhaust throttle valves, terminals and manual overrides of the VAL Set and SV Set Cylinders of the energized extending type are positioned at a distance of 180 degrees from those of the energized retracting type.

Related models: Models with cushion

This figure shows the dimensional drawing of an energized extending type cylinder.

Dimensional Table

Symbol / Bore	A		B1		D	E	EC	FP	H	h		J	JE	K	W
	Standard	Non-rotating	Standard	Non-rotating						Standard	Non-rotating				
ϕ20	20(20)	—	13	—	6	ϕ28	36	19	44	5	—	26	26	8	8
ϕ25	22(22)	20(17)	17	13	8	ϕ33	36	21	44	6	5	25.5	28	8	10
ϕ32	22(19)	—	17	—	10	ϕ40	38	23	50	6	—	25.5	30	10	10
ϕ40	24(21)	24(21)	19	19	12	ϕ48	46	25	52	7	7	30	32	10	10

Symbol / Bore	KK		LE	LH	LM	MG	MM	P	SB	SP	SQ	TQ	UJ	XS	ZP	ZM
	Standard	Non-rotating														
ϕ20	M8×1.25	—	28	14	21.5	—	ϕ8	58	ϕ6.6	6.5	ϕ11	20	34	18	93(86)	239
ϕ25	M10×1.25	M8×1.25	34	17	27.5	9	ϕ10	58	ϕ6.6	6.5	ϕ11	24	38	20	97(90)	242.5
ϕ32	M10×1.25	—	40	20	31.4	—	ϕ12	64	ϕ9	8.6	ϕ14	30	46	22	105(100)	250.5
ϕ40	M12×1.25	M12×1.25	48	24	37.2	14	ϕ14	66	ϕ11	10.8	ϕ17.5	36	56	22	109(104)	259

Note) The parenthesized values of dimension A indicate the screw length.
Note) The parenthesized values of ZP indicate the size of rear port style cylinders.

AD

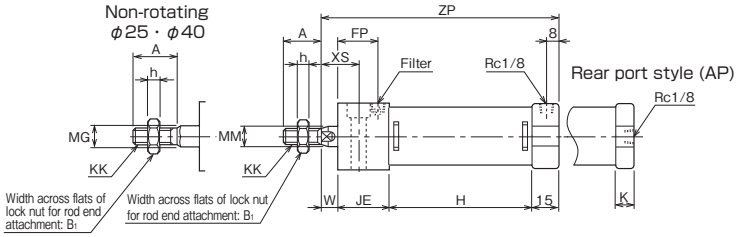
Single acting type

Spring return Standard 10Z−2SR AD Bore N Stroke

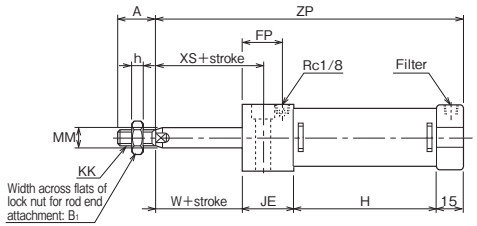
Spring-extended Standard 10Z−2SH AD Bore N Stroke

●Standard type ●Switch Set

Spring return (SR type)



Spring-extended (SH type)



●For dimensions not shown here, refer to AD (double acting type).
●The non-rotating cylinders have the same dimensions as the standard cylinders except the dimensions of the rod end shown above.

Basic style: Clevis cut

Dimensional Table

Symbol / Bore	A		B1		FP	h		JE	K	KK		MG	MM	XS	W
	Standard	Non-rotating	Standard	Non-rotating		Standard	Non-rotating			Standard	Non-rotating				
ϕ20	20(20)	—	13	—	19	5	—	26	8	M8×1.25	—	—	ϕ8	18	8
ϕ25	22(22)	20(17)	17	13	21	6	5	28	8	M10×1.25	M8×1.25	9	ϕ10	20	10
ϕ32	22(19)	—	17	—	23	6	—	30	10	M10×1.25	—	—	ϕ12	22	10
ϕ40	24(21)	24(21)	19	19	25	7	7	32	10	M12×1.25	M12×1.25	14	ϕ14	22	10

Symbol / Stroke / Bore	H				ZP							
	Single acting type				25		50		75		100	
	25	50	75	100	SR type	SH type	SR type	SH type	SR type	SH type	SR type	SH type
ϕ20	94	144	194	244	143(136)	168(161)	193(186)	243(236)	243(236)	318(311)	293(286)	393(386)
ϕ25	94	144	194	244	147(140)	172(165)	197(190)	247(240)	247(240)	322(315)	297(290)	397(390)
ϕ32	100	150	200	250	155(150)	180(175)	205(200)	255(250)	255(250)	330(325)	305(300)	405(400)
ϕ40	102	152	202	252	159(154)	184(179)	209(204)	259(254)	259(254)	334(329)	309(304)	409(404)

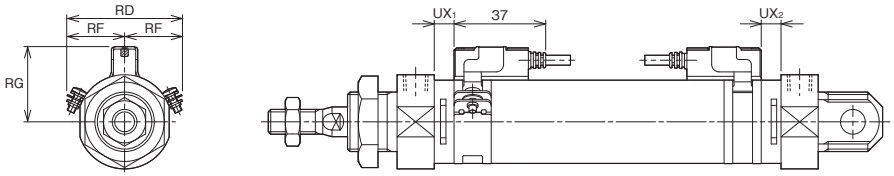
Note) The parenthesized values of dimension A indicate the screw length.
Note) The parenthesized values of ZP indicate the size of rear port style cylinders.

Switch Set/SV Set
Double acting type

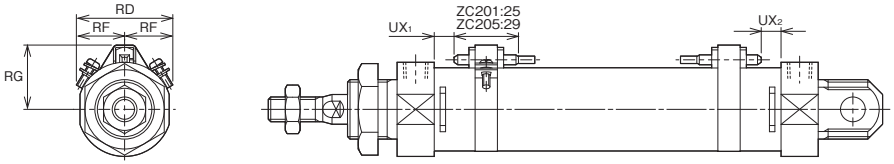
10Z−2R | Mounting style | Bore | Cushioning | Stroke | − | Sensor symbol | Sensor quantity

10Z−2K2 | Mounting style | Bore | Cushioning | Stroke | − | Valve operating method | Valve voltage | Sensor symbol | Sensor quantity

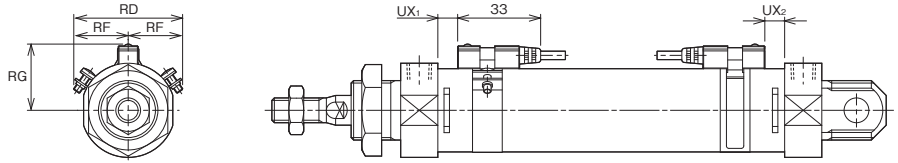
● AX type sensor



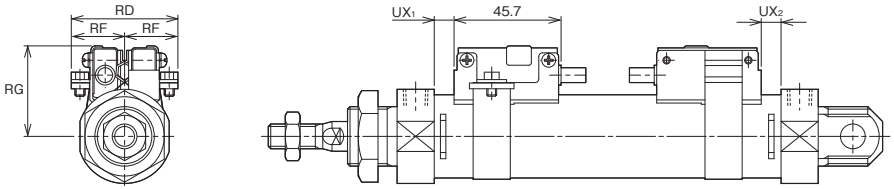
● ZC type sensor



● JR/JS type sensor



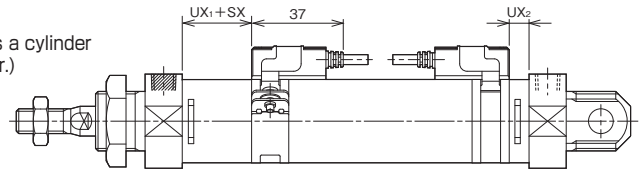
● SR type sensor



Single acting type

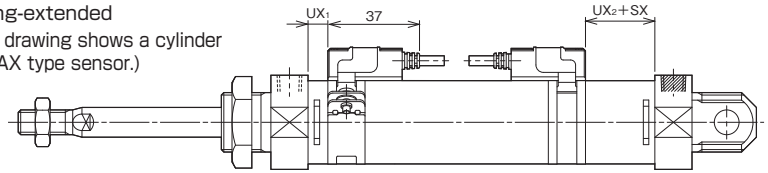
10Z−2RSR | Mounting style | Bore | N | Stroke | − | Sensor symbol | Sensor quantity

● Spring return
(The drawing shows a cylinder with AX type sensor.)



10Z−2RSH | Mounting style | Bore | N | Stroke | − | Sensor symbol | Sensor quantity

● Spring-extended
(The drawing shows a cylinder with AX type sensor.)



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	42	35	42	50	21	17.5	21	25	27	22	23	33
ϕ25	46	37	44	52	23	18.5	22	26	29	24	26	35
ϕ32	52	41	48	54	26	20.5	24	27	33	28	27	38
ϕ40	58	45	52	58	29	22.5	26	29	37	32	29	43

Symbol / Bore	AX type		ZC201 type		ZC205 type		ZC230/253 type		JS type	
	UX1	UX2	UX1	UX2	UX1	UX2	UX1	UX2	UX1	UX2
ϕ20	12	14	14.5	15.5	11	12	13	14	9	9
ϕ25	12	10	15	15	12	12	13.5	13.5	10	10
ϕ32	15	16	17.5	18.5	14	15	16	17	12	12
ϕ40	16	17	18.5	19.5	15	16	17	18	14	14

Symbol / Bore	JS type		SR type		SX		
	UX1	UX2	UX1	UX2	Stroke 15	Stroke 30	Standard strokes other than those shown left
ϕ20	13	13	7	7	25	50	Stroke
ϕ25	13	13	7	7			
ϕ32	16	16	10	10			
ϕ40	17	17	11	11			

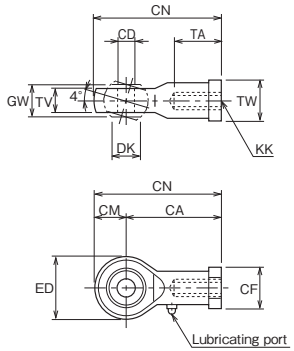
Operating Range and Hysteresis

Bore mm	Reed sensor									
	AX1** type		ZC201 type		ZC205 type		JR type		SR type	
	Operating range	Hysteresis	Operating range	Hysteresis	Operating range	Hysteresis	Operating range	Hysteresis	Operating range	Hysteresis
ϕ20	8 to 11	1 or less	8 to 13	2 or less	8 to 12	2 or less	8 to 11	2 or less	7 to 10	2 or less
ϕ25	8 to 12				9 to 13					
ϕ32	7 to 11		7 to 12		9 to 12				6 to 10	3 or less
ϕ40	6 to 11		6 to 11		7 to 10				9 to 13	

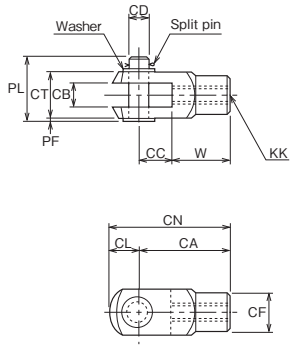
Bore mm	Solid state sensor							
	AX2** type		ZC230 type		ZC253 type		JS type	
	Operating range	Hysteresis	Operating range	Hysteresis	Operating range	Hysteresis	Operating range	Hysteresis
ϕ20	3 to 7	1 or less	3 to 5	0.5 or less	3 to 5	0.5 or less	14 to 17	1 or less
ϕ25	3 to 7		2 to 6				14 to 18	
ϕ32	2 to 6		2 to 5				13 to 17	
ϕ40	2 to 6						12 to 16	

Rod End Attachment

Rod eye with spherical bearing (S-end)

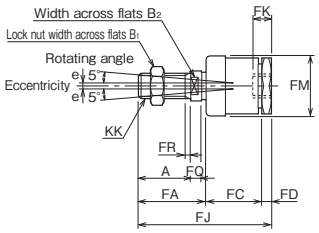


Rod clevis (Y-end) with pin

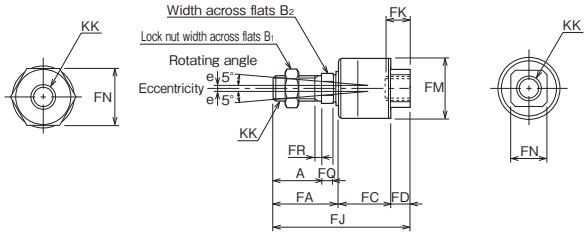


Floating joint (F-end)

ϕ20 to ϕ32



ϕ40



Notes) ● The insertion of the floating joint into the socket shall not equal or exceed the dimension of screw diameter. (Return the joint one or two turns after it gets into contact with the socket bottom, and fix it with a lock nut.) Excessive insertion can cause operation failure.

● DO NOT use together with TA, TB, TC, and CU accessories.

Dimensional Table: Rod eye with spherical bearing (S-end)

Symbol / Bore	Part number	CA	CD	CF	CM	CN	DK	ED	GW	KK	TA	TV	TW
ϕ20	RSA−08−A	36	ϕ8H9	ϕ16	11	47	ϕ10.4	22	$12_{-0.1}^{0}$	M8×1.25	17	9±0.1	14
ϕ25 / ϕ32	RSA−10−A	43	ϕ10H9	ϕ19	13	56	ϕ12.9	26	$14_{-0.1}^{0}$	M10×1.25	21	10.5±0.1	17
ϕ40	RSA−12−A	50	ϕ12H9	ϕ22	15	65	ϕ15.4	30	$16_{-0.1}^{0}$	M12×1.25	24	12±0.1	19

＊For the 25mm bore non-rotating cylinder, use the accessory for the 20mm bore cylinder shown above.

Dimensional Table: Rod clevis (Y-end) with pin

Symbol / Bore	Part number	CA	CB	CC	CD	CF	CL	CN	CT	KK	PF	PL	W
ϕ20	RYA−08−A	32	$8^{+0.4}_{+0.15}$	16	$\phi 8\,\frac{H8}{f7}$	ϕ14	10	42	□16	M8×1.25	2	24.5	16
ϕ25 / ϕ32	RYA−10−A	40	$10^{+0.4}_{+0.15}$	20	$\phi 10\,\frac{H8}{f7}$	ϕ18	12	52	□20	M10×1.25	2.5	30	20
ϕ40	RYA−12−A	48	$12^{+0.4}_{+0.15}$	24	$\phi 12\,\frac{H8}{f7}$	ϕ20	14	62	□24	M12×1.25	3	36.5	24

＊For the 25mm bore non-rotating cylinder, use the accessory for the 20mm bore cylinder shown above.

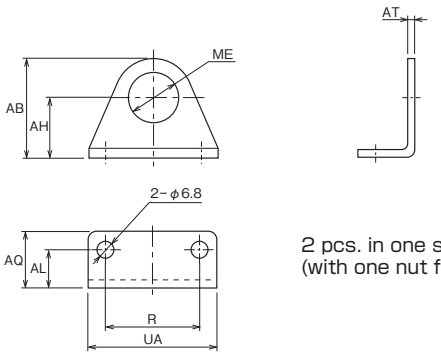
Dimensional Table: Floating joint (F-end)

Symbol / Bore	Part number	A	B_1	B_2	e	FA	FC	FD	FJ	FK	FM	FN	FQ	FR	KK
ϕ20	RFS−08T	22.5	13	8	0.5	28	22.5	3.5	54	9	ϕ20	19	4.5	2.5	M8×1.25
ϕ25 / ϕ32	RFS−10T	24.5	17	10	1	31	28	4	63	11	ϕ25	24	4.5	2.5	M10×1.25
ϕ40	RFS−12T	24	19	13	1	33	25.5	11	69.5	13.5	ϕ32	□19	7	3.5	M12×1.25

＊For the 25mm bore non-rotating cylinder, use the accessory for the 20mm bore cylinder shown above.

Mounting Accessory

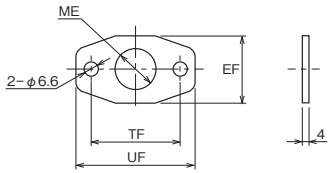
● LB (end angle)



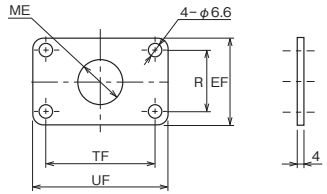
2 pcs. in one set
(with one nut for fitting the accessory)

● FA (rod flange)/FB (cap flange)

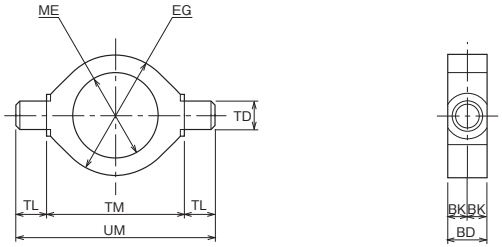
φ20・φ25



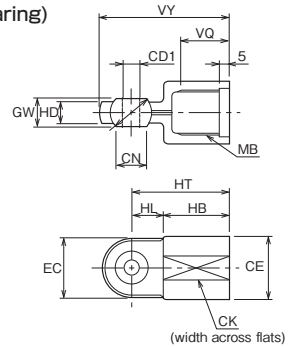
φ32・φ40



● TA (rod trunnion)/TB (cap trunnion)



● CU (cap eye with spherical bearing)



Dimensional Table: LB (end angle)

Symbol / Bore	Part number	AB	AH	AL	AQ	AT	ME	R	UA
φ20 / φ25	MAZ3-LB020	42	25	16	24	3.2	φ22.5	40	55
φ32	MAZ3-LB032	50	32	25	33	4	φ24.5	45	60
φ40	MAZ3-LB040	58	36	25	33	4	φ30.5	50	65

Dimensional Table: FA (rod flange)/FB (cap flange)

Symbol / Bore	Part number	EF	ME	TF	UF	R
φ20 / φ25	MAZ3-FA020	38	φ22	50	65	—
φ32	MAZ3-FA032	47	φ24	58	72	33
φ40	MAZ3-FA040	51	φ30	70	84	36

Dimensional Table: TA (rod trunnion)/TB (cap trunnion)

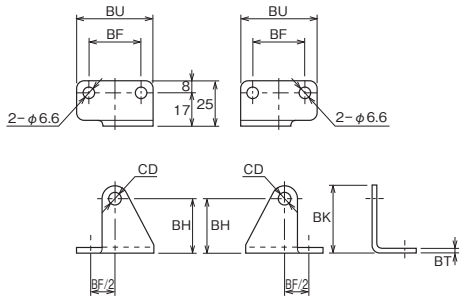
Symbol / Bore	Part number	BD	BK	EG	ME	TD	TM	TL	UM
φ20 / φ25	MAZ3-TA020	10	5	φ32	φ22.5	φ8e9	36	8	52
φ32	MAZ3-TA032	12	6	φ36	φ24.5	φ10e9	44	10	64
φ40	MAZ3-TA040	14	7	φ44	φ30.5	φ12e9	50	12	74

Dimensional Table: CU (cap eye with spherical bearing)

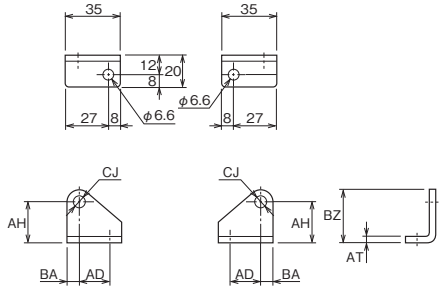
Symbol / Bore	Part number	CD1	CE	CK	CN	EC	GW	HB	HD	HL	HT	MB	VQ	VY
φ20	MAZ3-CU020	φ8H9	φ32	30	φ14.8	28	$12_{-0.3}^{0}$	31	10.5	15	46	M22×1.5	23	60
φ25	MAZ3-CU025	φ10H9	φ32	30	φ14.8	28	$14_{-0.3}^{0}$	31	10.5	15	46	M22×1.5	23	60
φ32	MAZ3-CU032	φ10H9	φ32	30	φ14.8	28	$14_{-0.3}^{0}$	31	10.5	15	46	M24×2	23	60
φ40	MAZ3-CU040	φ12H9	φ38	36	φ15.4	32	$16_{-0.3}^{0}$	35	12	17	52	M30×2	26	68

Bracket

For SD/CU/TA/TB/TC

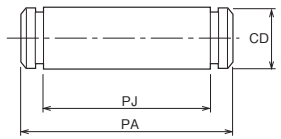


Bracket for LC (VAL Set)



Pin

- For SD with bracket
- For CU with bracket



Dimensional Table: Brackets for SD/CU/TA/TB/TC

Symbol / Bore	Part number			BF	BH	BK	BT	BU	CD
	Part number	For CU style	For TA/TB/TC style						
φ20	MAZ3−BK020PA	MAZ3−BK020PB	MAZ3−BK020	32	32	40	3.2	48	φ8
φ25		MAZ3−BK032PB							
φ32	MAZ3−BK032PA		MAZ3−BK032	36	36	46	4	52	φ10
φ40	MAZ3−BK040PA	MAZ3−BK040PB	MAZ3−BK040	40	40	52	4	56	φ12

Dimensional Table: Brackets for LC (VAL Set)

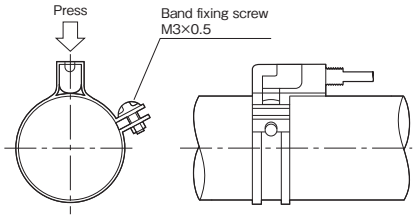
Symbol / Bore	Part number	AD	AH	AT	BA	BZ	CJ
φ20	MAZ3−LC020	19	25	3.2	8	33	φ8
φ25							
φ32	MAZ3−LC032	17	32	4	10	42	φ10
φ40	MAZ3−LC040	15	36	4	12	48	φ12

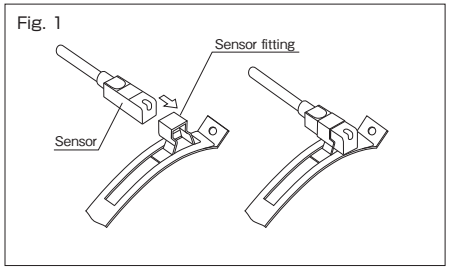
Dimensional Table: Pins

Symbol / Bore	CD		PA		PJ	
	For SD style	For CU style	For SD style	For CU style	For SD style	For CU style
φ20	φ8	φ8	31	27	26	22
φ25	φ8	φ10	31	29	26	24
φ32	φ10	φ10	32	29	27	24
φ40	φ12	φ12	36	32	31	27

Setting method of sensor detecting position

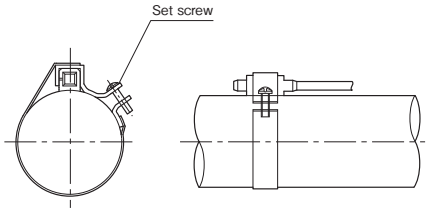
AX type sensor

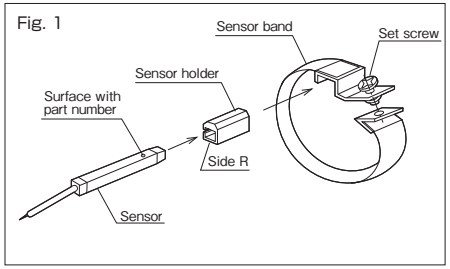




1. Twist the band body, and draw out one end of the sensor fitting from the slit in the band.
2. Insert the sensor to the sensor fitting along the groove, and attach the sensor fitting to the band body. (Fig. 1)
3. After removing the band fixing screw (M3), wind the band on the cylinder tube, and set the band around the detecting position.
4. Align the band mounting hole and the threaded portion, and lightly tighten the band fixing screw to temporarily secure the band.
5. Move the band and the sensor on the tube to determine the detecting position.
   When the sensor turns on, the lamp lights up. The detecting position delicately changes depending on the piston rotating speed and ambient temperature. Therefore, for reliable detection, shift the sensor 2 to 3 mm from the sensor ON position toward the piston start position. To mount a sensor to detect the stroke end, refer to dimension UX shown in the catalog. When a 2-LED sensor is used, ensure that the green lamp lights up at the desired position.
6. After determining the sensor position, gently hold the top of the sensor, and tighten the band fixing screw to secure the band.
   [Recommended tightening torque: 0.3 N·m]
   Note) Inappropriate tightening torque may cause the off-center of the sensor position.

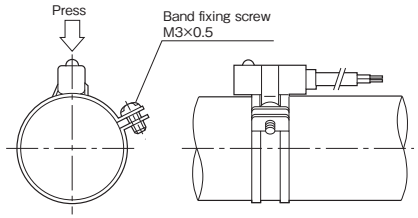
ZC type sensor

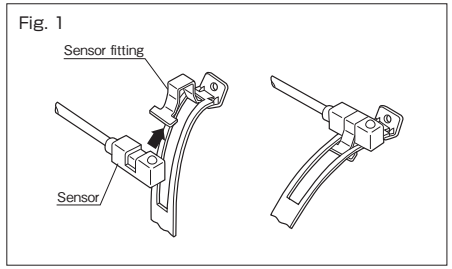




1. Fit the sensor to the sensor holder. (Fig. 1)
   Set the side R of the sensor holder downward, and set the sensor surface with part number upward.
2. Temporarily secure the sensor holder with its side R downward using the sensor band.
3. Keep pressing the top of the sensor at the detecting position, and tighten the set screw to secure the band.
   [Recommended tightening torque: 0.5 N·m]
   Note) Tighten the set screw to the proper tightening torque. Inappropriate tightening torque may cause the off-center of the sensor position.
4. To make a fine adjustment to the sensor position in the axial direction, slightly loosen the set screw, and only the sensor can be moved.

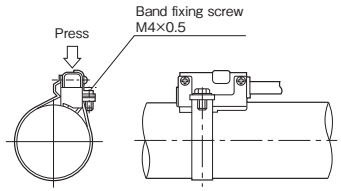
JR/JS type sensors





1. Twist the band body, and draw out one end of the sensor fitting from the slit in the band.
2. Insert the sensor to the sensor fitting along the groove, and attach the sensor fitting to the band body. (Fig. 1)
3. After removing the band fixing screw (M3), wind the band on the cylinder tube, and set the band around the detecting position.
4. Align the band mounting hole and the threaded portion, and lightly tighten the band fixing screw to temporarily secure the band.
5. Move the band and the sensor on the tube to determine the detecting position.
   When the sensor turns on, the lamp lights up. The detecting position delicately changes depending on the piston rotating speed and ambient temperature. Therefore, for reliable detection, shift the sensor 2 to 3 mm from the sensor ON position toward the piston start position. To mount a sensor to detect the stroke end, refer to dimension UX shown in the catalog.
6. After determining the sensor position, gently hold the top of the sensor, and tighten the band fixing screw to secure the band.
   [Recommended tightening torque: 0.3 N·m]
   Note) Inappropriate tightening torque may cause the off-center of the sensor position.

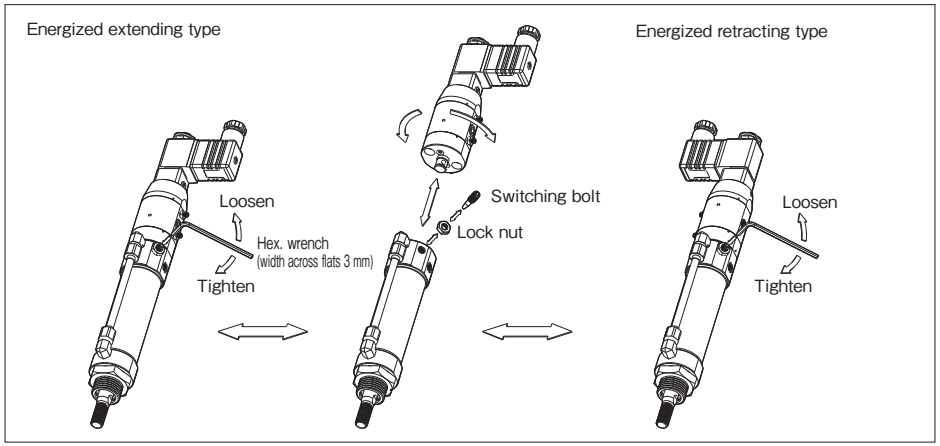
SR type sensor



1. Attach the sensor to the band with two sensor mounting screws (M3).
   [Recommended tightening torque: 0.3 N·m]
2. After removing the band fixing screw (M4), wind the band on the cylinder tube, and set the band around the detecting position.
3. Align the band mounting hole and the threaded portion, and lightly tighten the band fixing screw to temporarily secure the band.
4. Move the band and the sensor on the tube to determine the detecting position.
   The operation lamp goes out when the sensor turns on. The detecting position delicately changes depending on the piston rotating speed and ambient temperature. Therefore, for reliable detection, shift the sensor 2 to 3 mm from the sensor ON position toward the piston start position. To mount a sensor to detect the stroke end, refer to dimension UX shown in the catalog.
5. After determining the sensor position, gently hold the top of the sensor, and tighten the band fixing screw to secure the band.
   [Recommended tightening torque: 0.3 N·m]
   Note) Inappropriate tightening torque may cause the off-center of the sensor position.

VAL Set handling procedures

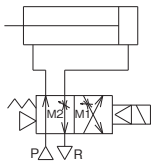
Procedures for switching between energized extending and energized retracting types



As shown in the figure, tighten the energized extending-retracting type switching mechanism with a hex. wrench having a width across flats of 3 mm.
To change the type, turn the mechanism 180°, and tighten the switching bolt.
- Recommended tightening torque: 2.40 N·m

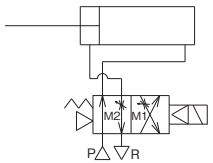
How to use exhaust throttle valves

- Energized extending type



Extending speed control: Adjust the exhaust throttle valve M1.
Retracting speed control: Adjust the exhaust throttle valve M2.

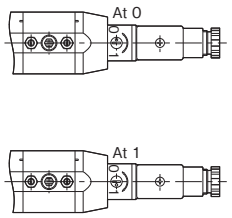
- Energized retracting type



Retracting speed control: Adjust the exhaust throttle valve M1.
Extending speed control: Adjust the exhaust throttle valve M2.

- Adjust the exhaust throttle valve with a slotted screwdriver, and secure it with the lock nut.
- Recommended tightening torque: 0.69 N·m
- Do not loosen the exhaust throttle valve 4 turns or more from the fully closed state. (The valve is fully opened by giving approx. 3.6 turns from the fully closed state.)

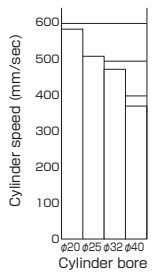
How to use manual override



- Energized extending type
  When the manual override is positioned at 1, the cylinder will move forward without current applied to the solenoid.
- Energized retracting type
  When the manual override is positioned at 1, the cylinder will move backward without current applied to the solenoid.

After using manual override, return the button to the initial state (to 0).

Average speed (max. value) of VAL Set Cylinder



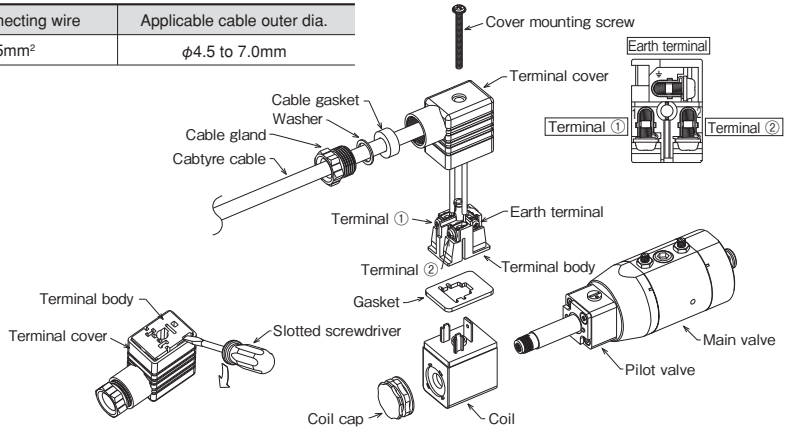
Cylinder load rate : 50% (actual load)
Supply pressure : 0.5 MPa
Average speed : average speed after the cylinder starts moving until it reaches the stroke end

Use the graph to find the approximate cylinder speed. Note that the actual speed varies depending on the working conditions. Ensure that the working speed does not exceed the working speed range.

Valve wiring procedures

(1)Loosen the cover set screw, remove the DIN socket from the coil, and separate the terminal cover and the terminal body using a slotted screwdriver.
(2)Fit the cable gland, washer and cable gasket to the cable (cabtyre cord), and insert the cable to the terminal cover.
(3)Loosen the screws of the terminals ① and ② and earth terminal, and connect the wires. The power supply cable does not have polarity. (When crimp-style terminals are used, use terminals for screw diameter M3.)
(4)Put the terminal body in the terminal cover, tighten the cover mounting screw, and attach the cover to the coil. (Recommended tightening torque: 0.4 N·m)
(5)Tighten the cable gland on the terminal cover. (Recommended tightening torque: 0.6 N·m)

Applicable connecting wire	Applicable cable outer dia.
0.5 to 1.5mm²	ϕ4.5 to 7.0mm



∗ Loosen the coil cap, and the coil can be separated from the pilot valve. (Recommended tightening torque: 0.6 N·m)

Cushion adjusting procedures (for models with cushion)

- Cushion adjustment depends on air pressure, load weight and cylinder speed. Therefore, when adjusting the cushion, set the actual load under the same conditions as the actual operating conditions.
- To adjust the cushion, gradually loosen the cushion valve after opening it 45 to 90° from the fully closed state. Adjust the cushion decreasing the cushioning power from high to low. In the high cushioning power range, the kinetic energy and absorbed energy are not transferred smoothly, and bounding occurs. In the low cushioning power range, the absorbed energy is lower than the kinetic energy, and the piston gets into direct contact with the cover, thereby causing impact noise and damaging the cover. Adjust the cushion carefully observing the behavior of the cylinder.

Cylinder bore	Necessary tools	Recommended lock nut tightening torque
ϕ20, ϕ25	7-mm spanner and slotted screwdriver	0.69N·m
ϕ32, ϕ40	8-mm spanner and slotted screwdriver	1.42N·m

Recommended accessory/attachment tightening torque

Tighten each nut and bolt to the tightening torque shown in the following table.

	M22(ϕ20, ϕ25)	M24(ϕ32)	M30(ϕ40)
Recommended tightening torque of accessory mounting nut	147N·m	181N·m	363N·m

	M8(ϕ20,ϕ25)	M10(ϕ32)	M12(ϕ40)
Recommended tightening torque of rod end attachment fixing nut	12.0N·m	24.0N·m	42.2N·m

Note) For standard and non-rotating cylinders with a bore of 25 mm, use rod end screws M10 and M8, respectively.