

Round small-bore hydraulic cylinders with cushion

- Small-bore hydraulic cylinders for 10 MPa with bores of 20, 25 and 32 mm.
- The cylinders with any of these bores are provided with variable cushions.
- Floating cushion realizes smooth startup.
- Newly designed cushion valve allows easy cushion adjustment.
- Applicable to increased speed (max. working speed: 500 mm/s)
- Wide variety of new-type small sensors for better maintainability.



Standard Specifications

Type	Standard type	Switch Set
Nominal pressure	10 MPa	
Maximum allowable pressure	12 MPa	
Proof test pressure	15 MPa	
Minimum operating pressure	0.3 MPa or less	
Working speed range	8 to 500 mm/s (excluding cushion) (Cylinders without cushion: 8 to 100 mm/s) Note 1)	
Working temperature range (ambient/fluid temperature)	-10 to +80°C Note 2) (No freezing)	-10 to +70°C (No freezing)
Structure of cushioning	Metal fitting system (floating cushion)	
Adaptable fluid	Petroleum-based fluid (When using another fluid, refer to the table of fluid adaptability.)	
Tolerance for thread	JIS 6g/6H	
Tolerance of stroke	0 to 100 mm ^{+0.8} ₀ 251 to 500 mm ^{+1.25} ₀	101 to 250 mm ^{+1.0} ₀ 501 to 850 mm ^{+1.4} ₀
Mounting style	SD, LB, FA, CA	
Accessories	Rod end attachments: Rod eye (T-end), rod clevis (Y-end) with pin, floating joint (F-end)	

Terminologies

Nominal pressure

Pressure given to a cylinder for convenience of naming. It is not always the same as the working pressure (rated pressure) that guarantees

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

Proof test pressure

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

Minimum operating pressure

Minimum pressure at which cylinder installed horizontally operates under no load.

- The hydraulic pressure generated in a cylinder due to the inertia of load must be lower than the maximum allowable pressure.
- For the internal structure, refer to the sectional drawings at the end of this catalog. Note 1) Use the cylinder at an inertia force lower than the allowable inertia force shown in the selection materials.

Note 2) The working temperature range varies depending on the seal material. For details, refer to the following page.

Standard Stroke Range

Unit: mm

Bore	Stroke
φ20	800
φ25	800
φ32	850

- The above strokes indicate the maximum available strokes for the standard type.
- For the rod buckling, check with the buckling chart in the selection materials. Contact us for longer strokes.

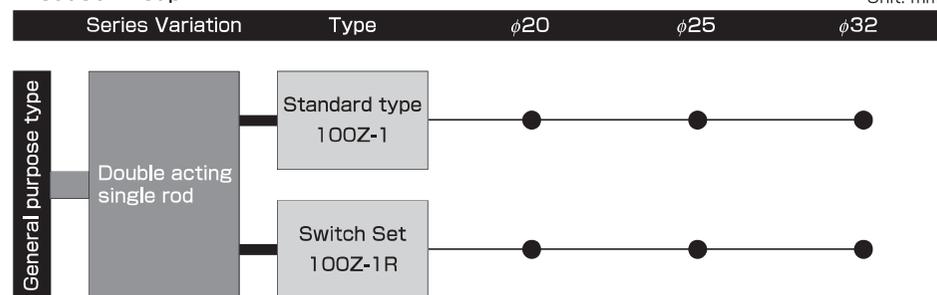
Sensor Mountable Minimum Stroke

Unit: mm

Bore	With one sensor	With two sensors
φ20	15	25
φ25		
φ32		

Unit: mm

Product Lineup



- Notes) ● When using a sensor, use a Switch Set Cylinder.
● No sensor can be mounted onto the standard type cylinder.

Double acting single rod



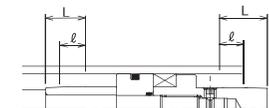
Standard type(100Z-1) Switch Set(100Z-1R)

Cushion Stroke Length

Unit: mm

Bore	Cushion ring effective length L	Cushion ring parallel part length ℓ	Cushioning
φ20·φ25·φ32	13	5	Variable cushion

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



Adaptability of Fluid to Seal Material and Working Temperature Range

Symbol	Seal material	Adaptable fluid					Fluid temp. and ambient temp. (°C)								
		Petroleum-based fluid	Water-glycol fluid	Phosphate ester fluid	Water in oil fluid	Oil in water fluid	-50	-10	0	50	80	100	120	150	
1	Nitrile rubber	○	○	×	○	○									
6	HNBR	◎	◎	×	◎	◎									Notes)

Notes) ●◎: Applicable ×: Inapplicable

- The ◎-marked items are recommended seal materials in case of giving the first priority to abrasion resistance.
- When HNBR is used for water-glycol fluid, water in oil fluid, or oil in water fluid, use the cylinder in a fluid temperature range from -10 to +100°C.
- The working temperature ranges of the seal materials are shown above. The temperature ranges differ from the cylinder working temperature ranges. If the cylinder is used at a higher temperature, contact us.

Weight Table

Unit: kg

Bore mm	Standard type/Switch Set 100Z-1·100Z-1R			Sensor additional weight			Mounting accessory weight		Rod end attachment weight		
	Basic weight	Additional weight per mm of stroke	Cord length 1.5 m	Cord length 5 m	Connector type	LB	FA	Rod eye (T-end)	Rod clevis (Y-end) with pin	Floating joint (F-end)	
											AX type
φ20	0.79	0.76	0.0022	0.05	0.11	0.04	0.28	0.13	0.08	0.10	0.11
φ25	1.05	1.00	0.0033				0.28	0.19	0.13	0.10	0.19
φ32	1.80	1.72	0.0056				0.69	0.31	0.20	0.28	0.39

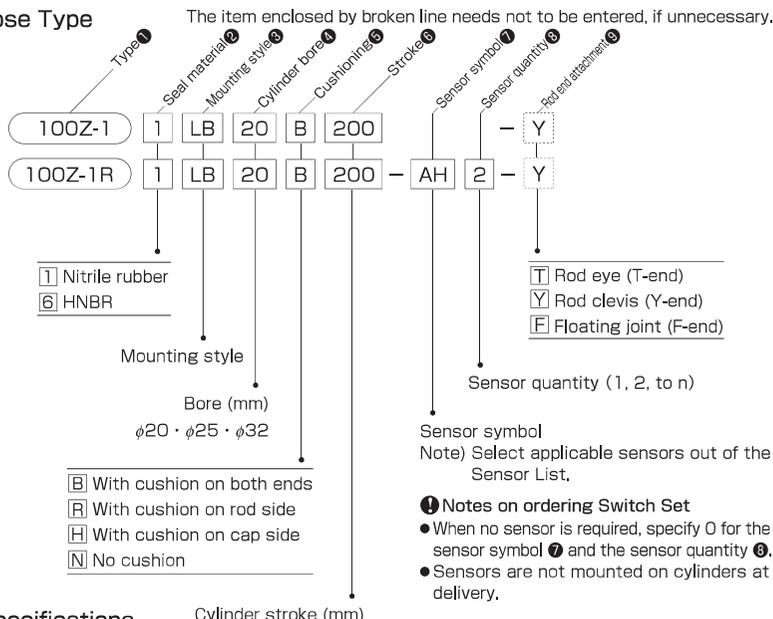
Calculation formula] Cylinder weight (kg)=basic weight+(cylinder stroke (mm)×additional weight per mm of stroke)
+(sensor additional weight×sensor quantity)+mounting accessory weight+rod end attachment weight
Calculation example] 100Z-1R, bore φ32, cylinder stroke 200 mm, 2 pcs of AX111 (cord length 1.5 m), LB style, rod eye (T-end)
1.80+(200×0.0056)+(0.05×2)+0.69+0.20=3.91kg

How to order

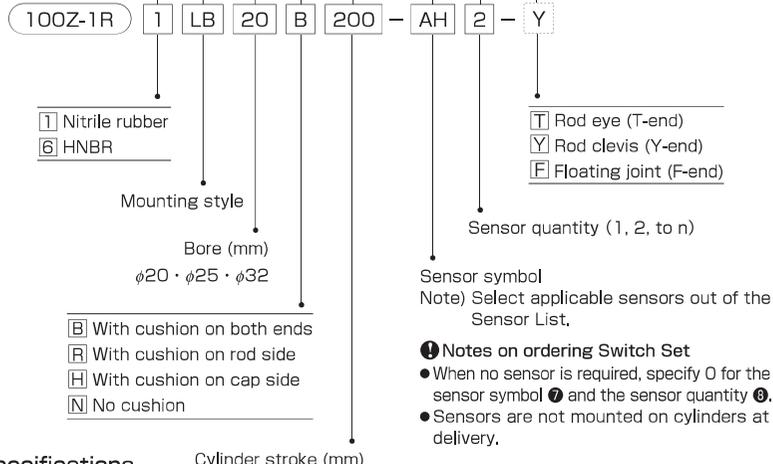
General Purpose Type

The item enclosed by broken line needs not to be entered, if unnecessary.

Standard type



Switch Set



- 1 Nitrile rubber
- 6 HNBR

Mounting style

Bore (mm)
φ20 · φ25 · φ32

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

Cylinder stroke (mm)

Standard specifications

- Both ends cushioned
- Seal material
- Rod seal and dust wiper: HNBR
- Piston seal: HNBR
- Securing O-ring: Nitrile rubber or HNBR (Note)
- (Note) When the seal material symbol is 6, the securing O-ring made of HNBR is used.

Semi-standard range

- Cutting oil proof sensors WR and WS
- Change of rod end shape and size
- Water-glycol fluid

End Lock Nut Part Number

Bore	Part number
φ20	LNH-10F-H
φ25	LNH-12F-H
φ32	LNH-16F-H

Sensor Mountable Minimum Stroke Unit: mm

Bore	With one sensor	With two sensors
φ20	15	25
φ25		
φ32		

Standard Stroke Range Unit: mm

Bore	Stroke
φ20	800
φ25	800
φ32	850

- The above strokes indicate the maximum available strokes for the standard type.
- For the rod buckling, check with the buckling chart in the selection materials.

Adaptability of Fluid to Seal Material

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

- Notes) 1. ○, ◎: Applicable ×: Inapplicable
- 2. The ◎-marked items are recommended seal materials in case of giving the first priority to abrasion resistance.

Sensor List

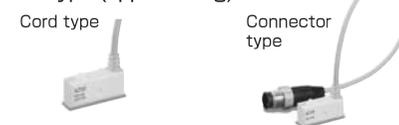
Type	Sensor symbol	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Indicating lamp	Wiring method	Cord length	Applicable load
Reed sensor	AF AX101CE	DC: 5 to 30 V AC: 5 to 120 V	DC: 5 to 40 mA AC: 5 to 20 mA	DC: 1.5W AC: 2VA	None	LED (Lights in red when sensing)	0.3 mm ² , 2-core, outer dia. φ4 mm, rear wiring	1.5 m	Small relay, programmable controller
	AG AX105CE							5 m	
	AH AX111CE							1.5 m	
	AJ AX115CE	5 m							
	AE AX125CE	DC: 30 V or less AC: 120 V or less	DC: 40 mA or less AC: 20 mA or less	2 VA	None	None	4-pin connector type, rear wiring	5 m	
	AK AX11ACE	AC: 5 to 120 V	AC: 5 to 20 mA					0.5 m	
	AL AX11BCE	DC: 5 to 30 V	DC: 5 to 40 mA					0.5 m	
	AP AZ101CE	DC: 5 to 30 V AC: 5 to 120 V	DC: 5 to 40 mA AC: 5 to 20 mA	DC: 1.5 W AC: 2 VA	Provided	LED (Lights in red when sensing)	0.3 mm ² , 2-core, outer dia. φ4 mm, upper wiring	1.5 m	
	AR AZ105CE							5 m	
	AS AZ111CE							1.5 m	
	AT AZ115CE	5 m							
	AN AZ125CE	DC: 30 V or less AC: 120 V or less	DC: 40 mA or less AC: 20 mA or less	2 VA	None	None	4-pin connector type, upper wiring	5 m	
	AU AZ11ACE	AC: 5 to 120 V	AC: 5 to 20 mA					0.5 m	
	AW AZ11BCE	DC: 5 to 30 V	DC: 5 to 40 mA					0.5 m	
	Solid state sensor	AM AX135CE	AC/DC: 90 to 240V	5 to 300 mA	B contact output	Provided	LED (Lights in red when not sensing)	0.3 mm ² , 2-core, outer dia. φ4 mm, rear wiring 0.3 mm ² , 2-core, outer dia. φ4 mm, upper wiring	
AY AZ135CE		5 m							
BE AX201CE-1		DC: 5 to 30V							5 to 40 mA
BF AX205CE-1			5 m						
CE AX211CE-1			1.5 m						
CF AX215CE-1			5 m						
CH AX21CCE-1			4-pin connector type, rear wiring						
CJ AX21DCE-1			1 m						
BM AZ201CE-1			1.5 m						
BN AZ205CE-1			5 m						
CM AZ211CE-1			1.5 m						
CN AZ215CE-1			5 m						
CT AX211CE-1			0.3 mm ² , 2-core, outer dia. φ4 mm, rear wiring						
CU AX215CE-1			5 m						
CV AX21BCE-1			4-pin connector type, rear wiring						
CW AZ211CE-1	0.5 m								
CX AZ215CE-1	1.5 m								
CY AZ21BCE-1	0.3 mm ² , 2-core, outer dia. φ4 mm, upper wiring								
0.5 m									

- Notes) ● For the sensors without a protective circuit, be sure to provide a protective circuit (SK-100) with the load when using any induction load (relay, etc.).
- The output logic of AX and AZ135CE is B contact. When the piston is detected, the sensor contact turns off (the lamp turns on).
- For handling of sensors, be sure to see the sensor specifications at the end of this catalog.
- All AX type sensors can be mounted. For types other than the above, see the sensor specifications at the end of this catalog.
- The sensor AX125 is a heat proof type. It can be used at an ambient temperature of up to 100°C.
- We recommend AND Unit (AU series) for multiple sensors connected in series. For details, refer to AND Unit at the end of this catalog.

AX type (rear wiring)

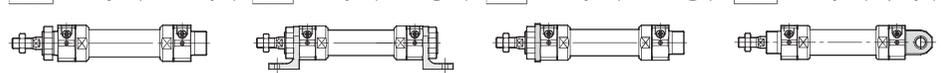


AZ type (upper wiring)



Mounting Style

- SD SD style (basic style)
- LB LB style (end angles)
- FA FA style (rod flange)
- CA CA style (cap eye)



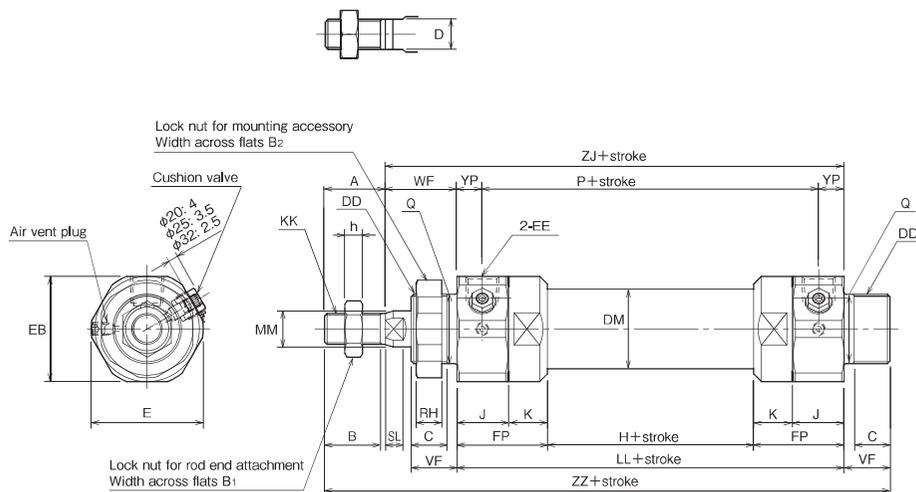
100Z-1/TQHZ1 [Bore] CAD/DATA is available.

SD

100Z-1 [1] SD [Bore] [B] [Stroke]

General Hydraulic Cylinders

100Z-1



● For the mounting of sensors, refer to the dimensional drawings of Switch Set.

Dimensional Table

Symbol	A	B	B ₁	B ₂	C	D	DD	DM	E	EB	EE	FP	H	h	J	K	KK
Bore																	
φ20	22	20	17	32	12	10	M24×1.5	φ25	φ38	36	Rc1/8	31.5	31	6	16	15.5	M10×1.25
φ25	24	22	19	36	14	12	M27×1.5	φ31	φ44	41	Rc1/4	35.5	31	7	20	15.5	M12×1.25
φ32	32	30	22	46	17	16	M36×1.5	φ40	φ53	50	Rc1/4	37	33	10	20	17	M16×1.5

Symbol	LL	MM	P	Q	RH	SL	VF	WF	YP	ZJ	ZZ
Bore											
φ20	94	φ12	78	φ24f8	8	7	16	26	8	120	158
φ25	102	φ14	82	φ27f8	10	7	18	28	10	130	172
φ32	107	φ18	87	φ36f8	10	10	21	34	10	141	194

● The tolerance of MM is f8.

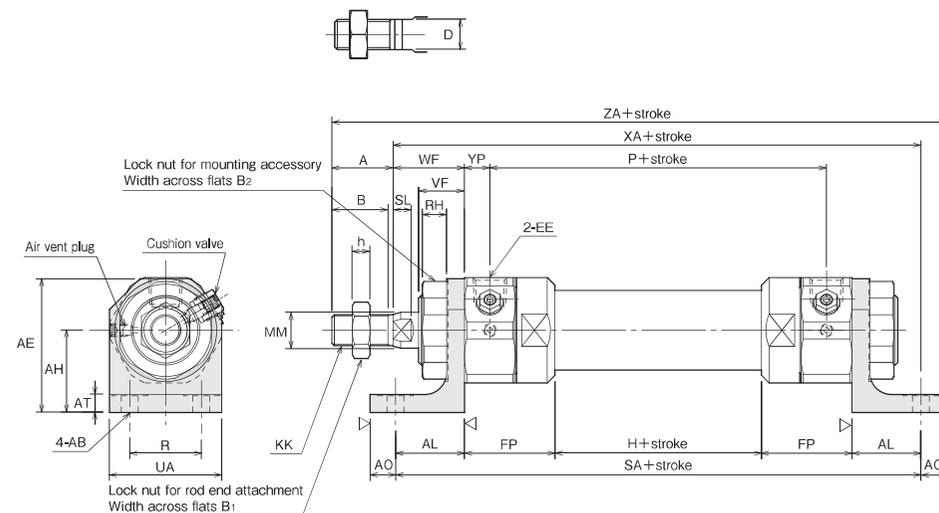
100Z-1/TQHZ1 [Bore] CAD/DATA is available.

LB

100Z-1 [1] LB [Bore] [B] [Stroke]

General Hydraulic Cylinders

100Z-1



● For the mounting of sensors, refer to the dimensional drawings of Switch Set.

Dimensional Table

Symbol	A	AB	AE	AH	AL	AO	AT	B	B ₁	B ₂	D	EE	FP	H	h	KK
Bore																
φ20	22	φ7	48	30±0.25	25	10	7	20	17	32	10	Rc1/8	31.5	31	6	M10×1.25
φ25	24	φ7	52.5	32±0.25	27	10	7	22	19	36	12	Rc1/4	35.5	31	7	M12×1.25
φ32	32	φ9	66	40±0.25	35	12	10	30	22	46	16	Rc1/4	37	33	10	M16×1.5

Symbol	MM	P	R	RH	SA	SL	UA	VF	WF	XA	YP	ZA
Bore												
φ20	φ12	78	25	7.5	144	7	41	16	26	145	8	177
φ25	φ14	82	28	9.5	156	7	44	18	28	157	10	191
φ32	φ18	87	33	9.5	177	10	54	21	34	176	10	220

● The tolerance of MM is f8.

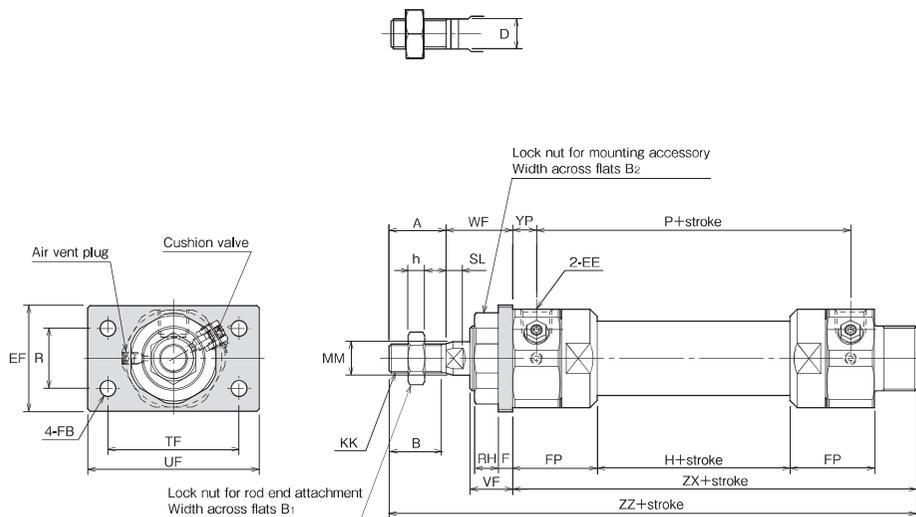
100Z-1/TQHZ1 [Bore] CAD/DATA is available.

FA

100Z-1 [1] FA [Bore] [B] [Stroke]

General Hydraulic Cylinders

100Z-1



●For the mounting of sensors, refer to the dimensional drawings of Switch Set.

Dimensional Table

Symbol	A	B	B ₁	B ₂	D	EE	EF	F	FB	FP	H	h	KK	MM
Bore														
φ20	22	20	17	32	10	Rc1/8	38	6	φ6.6	31.5	31	6	M10×1.25	φ12
φ25	24	22	19	36	12	Rc1/4	44	6	φ6.6	35.5	31	7	M12×1.25	φ14
φ32	32	30	22	46	16	Rc1/4	50	9	φ9	37	33	10	M16×1.5	φ18

Symbol	P	R	RH	SL	TF	UF	VF	WF	YP	ZX	ZZ
Bore											
φ20	78	25	8	7	50	65	16	26	8	110	158
φ25	82	25	10	7	55	72	18	28	10	120	172
φ32	87	25	10	10	84	104	21	34	10	128	194

●The tolerance of MM is f8.

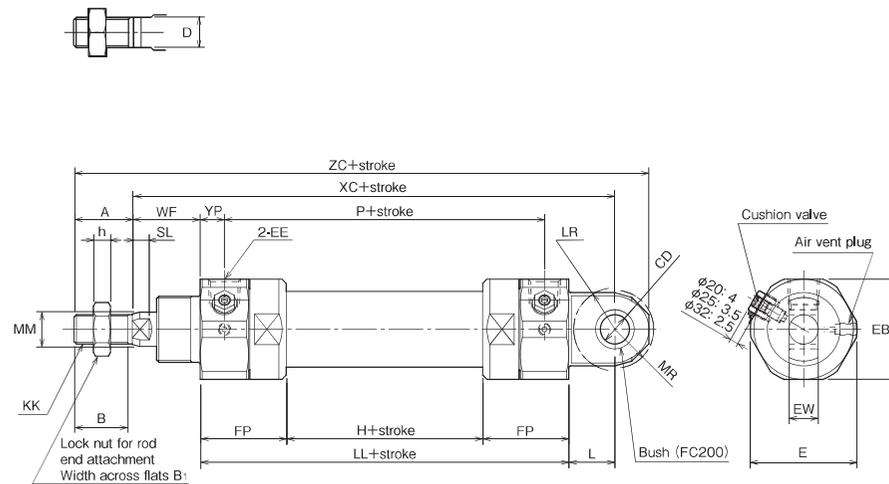
100Z-1/TQHZ1 [Bore] CAD/DATA is available.

CA

100Z-1 [1] CA [Bore] [B] [Stroke]

General Hydraulic Cylinders

100Z-1



●For the mounting of sensors, refer to the dimensional drawings of Switch Set.

Dimensional Table

Symbol	A	B	B ₁	CD	D	E	EB	EE	EW	FP	H	h	KK	L
Bore														
φ20	22	20	17	φ10H9	10	φ38	36	Rc1/8	10 ^{-0.22}	31.5	31	6	M10×1.25	17
φ25	24	22	19	φ12H9	12	φ44	41	Rc1/4	12 ^{-0.27}	35.5	31	7	M12×1.25	19
φ32	32	30	22	φ16H9	16	φ53	50	Rc1/4	16 ^{-0.27}	37	33	10	M16×1.5	22

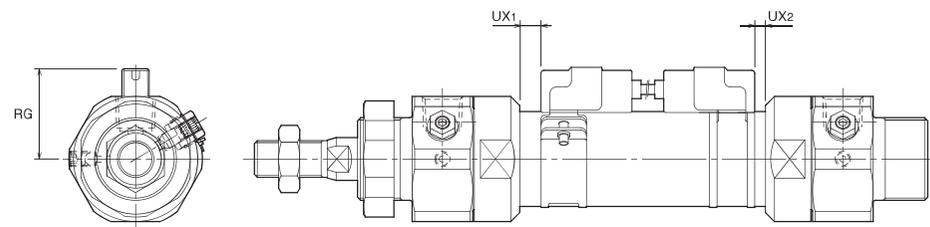
Symbol	LL	LR	MM	MR	P	SL	WF	XC	YP	ZC
Bore										
φ20	94	R15	φ12	R14	78	7	26	137	8	171
φ25	102	R17	φ14	R16	82	7	28	149	10	187
φ32	107	R20	φ18	R19	87	10	34	163	10	211

●The tolerance of MM is f8.

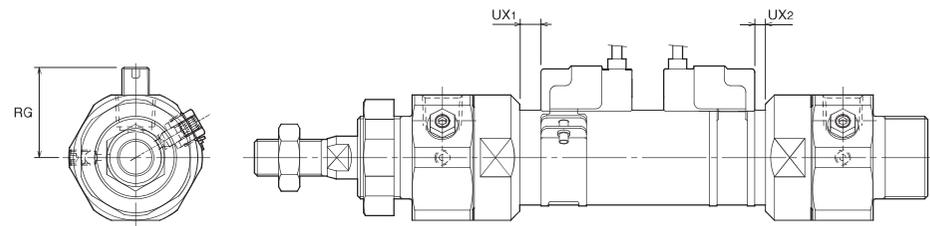
Switch Set

100Z-1R 1 Mounting style Bore B Stroke — Sensor symbol Sensor quantity

AX type



AZ type



Dimensional Table

Symbol	RG	Reed sensor		Solid state sensor	
		UX ₁	UX ₂	UX ₁	UX ₂
Bore	AX type	AX1**	AX1**	AX2**	AX2**
φ20	27	10	3.5	10	3.5
φ25	30	10	4	10	4
φ32	34	11	4	11	4

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

Operating Range and Hysteresis

Symbol	Reed sensor		Solid state sensor	
	AX1** · AZ1**		AX2** · AZ2**	
Bore	Operating range	Hysteresis	Operating range	Hysteresis
φ20	5 to 11	2 or less	4 to 7	1 or less
φ25	7 to 12			
φ32	8 to 14			

Setting method of sensor detecting position

AX/AZ type

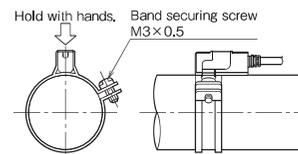
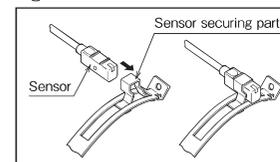


Fig. 1



1. AX/AZ type: As shown in Fig. 1, insert the sensor to the sensor securing part on the band.
2. Loosen the band securing screw (M3), and slide the band on the tube.
3. Keep pressing the sensor upper surface at the detecting position, and tighten the band securing screw to secure the band.
Tightening torque: Approx. 0.3 N·m

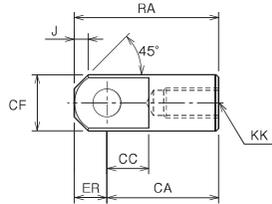
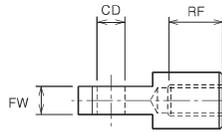
Note) Tighten the securing screw to the appropriate tightening torque. Inappropriate tightening torque may cause the off-center of the sensor position.
When a 2-LED sensor is used, ensure that the green lamp of the sensor lights up at the desired position.

4. The lamp lights up when the sensor is set to the ON position.
5. Mount a sensor to the most suitable position to detect the stroke end with the "sensor mounting dimension" (dimension UX).

100Z-1/TQHZ1 [Bore] is available. 

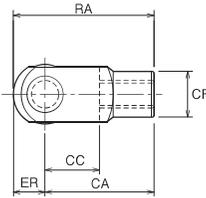
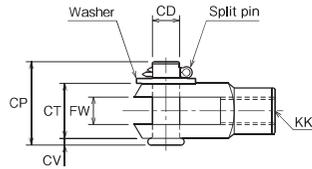
Rod End Attachment

- Rod eye (T-end)

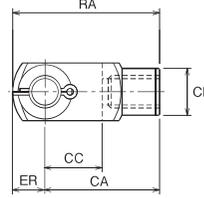
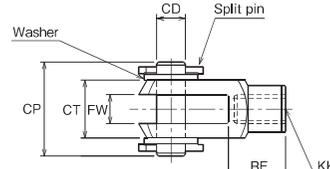


- Rod clevis (Y-end) with pin

● $\phi 20 \cdot \phi 25$

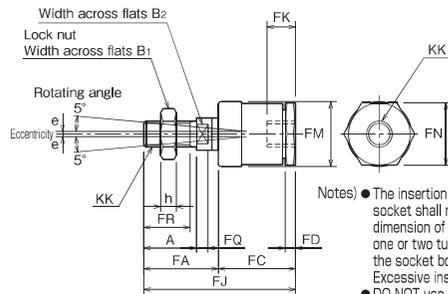


● $\phi 32$

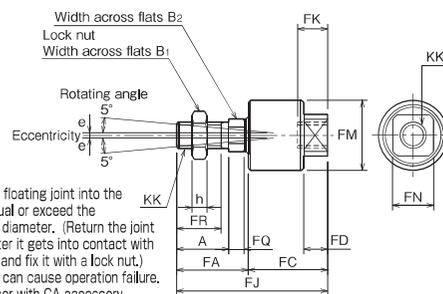


- Floating joint (F-end)

● $\phi 20$



● $\phi 25 \cdot \phi 32$



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 CA accessory.
● The lock nut is indispensable in using the floating joint.
Please don't miss to order the lock nut with the floating joint.

Dimensional Table: Rod eye (T-end)

Symbol	Part number	CA	CC	CD	CF	ER	FW	J	KK	RA	RF
$\phi 20$	RTH-10-H	40	16	$\phi 10H9$	$\phi 20$	12	$10 \begin{smallmatrix} -0.1 \\ -0.4 \end{smallmatrix}$	5	M10×1.25	52	17
$\phi 25$	RTH-12-H	48	18	$\phi 12H9$	$\phi 24$	14	$12 \begin{smallmatrix} -0.1 \\ -0.4 \end{smallmatrix}$	6	M12×1.25	62	23
$\phi 32$	RTH-16-2-H	64	21	$\phi 16H9$	$\phi 30$	16	$16 \begin{smallmatrix} -0.1 \\ -0.4 \end{smallmatrix}$	7	M16×1.5	80	28

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

Symbol	Part number	CA	CC	CD	CF	CP	CT	CV	ER	FW	KK	RA	RF
$\phi 20$	RYH-10-H	40	20	$\phi 10 \begin{smallmatrix} H8 \\ /16 \end{smallmatrix}$	$\phi 18$	30	$\square 20$	2.5	12	$10 \begin{smallmatrix} +0.4 \\ +0.1 \end{smallmatrix}$	M10×1.25	52	—
$\phi 25$	RYH-12-H	48	24	$\phi 12 \begin{smallmatrix} H8 \\ /16 \end{smallmatrix}$	$\phi 20$	36.5	$\square 24$	3	14	$12 \begin{smallmatrix} +0.4 \\ +0.1 \end{smallmatrix}$	M12×1.25	62	—
$\phi 32$	RYH-16-2-H	64	32	$\phi 16 \begin{smallmatrix} H8 \\ /16 \end{smallmatrix}$	$\phi 26$	52	$\square 32$	—	18	$16 \begin{smallmatrix} +0.4 \\ +0.1 \end{smallmatrix}$	M16×1.5	82	28

Dimensional Table: Floating joint (F-end)

Symbol	Part number	A	B ₁	B ₂	e	FA	FC	FD	FJ	FK	FM	FN	FQ	FR	h	KK
$\phi 20$	RFH-10	20.5	17	10	1	29	30	4	59	11	$\phi 25$	24	4.5	18	6	M10×1.25
$\phi 25$	RFH-12	24	19	13	1	33	36.5	9	69.5	13.5	$\phi 32$	19	7	20.5	7	M12×1.25
$\phi 32$	RFH-16	32	22	17	1.5	43	46	13	89	16	$\phi 40$	24	8	28	10	M16×1.5

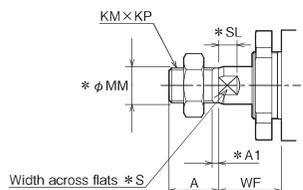
Change of rod end shape

You can specify the shape and dimension of the rod end as shown below using the semi-standard symbols and dimension symbols. (No need to specify the dimension symbol if you order a cylinder with the basic dimension. Specify only the semi-standard symbol).

How to order Series | Model number - x | Semi-standard symbol | Dimension symbol (Specify only when the dimension differs from the basic dimension).

Semi-standard symbol: **A54** KM and KP need to be specified as a pair.

Applicable dimension symbols: **A** **KM** **KP** **WF**



■ The *-marked dimensions are fixed.
 ■ If you want to change any fixed dimension, consult us.

Note 1)
 The standard dimensions of A54 are the same as those of 100Z-1. When ordering a cylinder with the basic dimensions, the semi-standard symbol and dimension symbol are unnecessary.
 Note 2)
 When screw diameter (KM) and pitch (KP) are changed, the lock nut is not supplied.

Table of Basic Dimensions (Standard dimensions)

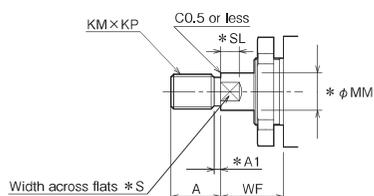
Bore	A	*A1	KM	KP	*MM	*S	*SL	WF	Remarks
φ20	22	2	10	1.25	φ12	10	7	26	Even if KM or KP is changed, dimension A1 is 2.
φ25	24	2	12	1.25	φ14	12	7	28	
φ32	32	2	16	1.5	φ18	16	10	34	

Example)

Bore φ32, rod end shape: same as the standard (drilled), screw: M12×1.5, WF=60, and other dimensions are the same as the basic dimensions.
 100Z-1 6LB32B200-X A54
 KM12, KP-1.5, WF-60

Semi-standard symbol: **A70** KM and KP need to be specified as a pair.

Applicable dimension symbols: **A** **KM** **KP** **WF**



■ The *-marked dimensions are fixed.
 ■ If you want to change any fixed dimension, consult us.

Note)
 When this shape is specified, the rod end lock nut is not supplied.

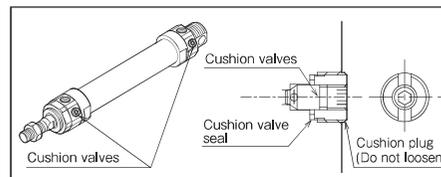
Table of Basic Dimensions (Standard dimensions)

Bore	A	*A1	KM	KP	*MM	*S	*SL	WF	Remarks
φ20	15	3	10	1.25	φ12	10	7	26	Even if KM or KP is changed, dimension A1 is kept as shown right.
φ25	18	3	12	1.25	φ14	12	7	28	
φ32	25	4	16	1.5	φ18	16	10	34	

Example)

Bore φ25, rod end shape: A70, screw: M12×1.25, A=50, WF=40, and other dimensions are the same as the basic dimensions.
 100Z-1R 6LB25B100-X A70
 A-50, WF-40

How to adjust cushion



Adjust the cushion while gradually increasing the piston speed from a speed lower than 50 mm/s.

CAUTION

The cushion has not been adjusted before shipment. Be sure to adjust it.

- 1) Turn only the cushion valve with a hex wrench (2.5 mm) to adjust the speed.
 - Turn clockwise, and the piston speed will be decreased.
 - Turn counterclockwise, and the piston speed will be increased.

CAUTION

If the valve is excessively turned counterclockwise, the cushion will not be effective. If it is excessively turned clockwise, the cushion will work so effectively that the piston may not operate full stroke. In addition, abnormal surge pressure may occur and damage the cylinder.

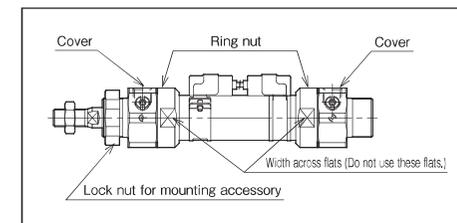
CAUTION

The cushioning mechanism in the cylinder is designed to prevent the cylinder being broken. For inertia force which cannot be absorbed by the cushioning mechanism, install an external inertia force absorbing device, or take measures on the hydraulic circuit.

Notes on installation

- When installing, do not use any width across flats of the ring nut. Doing so will loosen the threaded portions of the cover and ring nut. For installing, use cover width across flats without the cushion valve or the port.
- When the lock nut for mounting accessory is used for installation, tighten the lock nut applying the specified torque shown in the following table. If it is not tightened to the specified torque, it may become loose.

Bore (mm)	φ20	φ25	φ32
Mounting lock nut screw	M24×1.5	M27×1.5	M36×1.5
Width across flats of mounting lock nut (mm)	32	36	46
Tightening torque (N·m)	70	90	120



Width across flats of cover	
Symbol	S (mm)
Bore	
φ20	36
φ25	41
φ32	50

Notes on assembly

- The piston rod and the piston cannot be disassembled.
- When overhauling the cylinder, replace all seals (seals and O-rings).
- When reassembling the cylinder, take care that dust and iron particles do not enter the cylinder.
- Before tightening the ring nuts, apply an appropriate amount of low-strength adhesive (ThreeBond 1342, etc.) to the threaded portions, and tighten them to the specified torque.

Bore (mm)	φ20	φ25	φ32
Ring nut screw	M30×1.5	M35×1.5	M45×1.5
Width across flats of ring nut (mm)	34	39	50
Tightening torque (N·m)	55	80	110