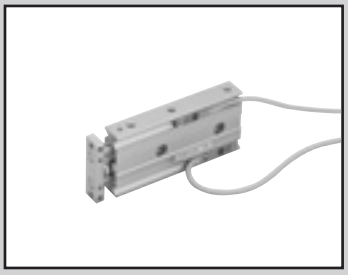


Twin rod cylinder Double acting/standard

STR2-B Series

● Bore size: ø6/ø10/ø16/ø20/ø25/ø32

JIS symbol

RoHS CAD

Structure and material restriction

	Structure	Material restriction			Model No.
P7 Series	Exhaust treatment				P72
	Vacuum treatment				P73
P5 Series	Exhaust treatment	Copper-based materials prohibited	Silicon-based materials prohibited	Halogen-based materials prohibited (fluorine, chlorine, bromine)	P52
	Vacuum treatment	Copper-based materials prohibited	Silicon-based materials prohibited	Halogen-based materials prohibited (fluorine, chlorine, bromine)	P53

Specifications

Descriptions		STR2-B-P7*/P5*					
Bore size mm		ø6	ø10	ø16	ø20	ø25	ø32
Actuation		Double acting					
Working fluid		Compressed air					
Max. working pressure MPa		0.7 (≈100 psi, 7 bar)					
Min. working pressure MPa		0.2*	0.15**	0.1 (≈15 psi, 1 bar)			
Proof pressure MPa		1.05 (≈150 psi, 10.5 bar)					
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)					
Port size		M5					Rc1/8
Port size (relief port)		M5					Rc1/8
Stroke tolerance mm		+2.0 0					
Adjustable stroke range mm		0 to -5					
Working piston speed mm/s		50 to 500					
Non-rotating accuracy		±0.2°	±0.1°			±0.3°	
Piston rod bearing		Ball bearing					
Cushion		Rubber cushion					
Lubrication		Not available					
Allowable energy absorption J	PUSH	0.008	0.061	0.181	0.303	0.68	1.3
	PULL	0.059	0.083	0.083	0.127	0.237	0.311

*0.2 (≈29 psi, 2 bar), **0.15 (≈22 psi, 1.5 bar)

Stroke length

Bore size	Stroke (mm)	Max. stroke (mm)	Available stroke (mm)	Min. stroke (mm)	Min. stroke with switch (mm)
ø6	10, 20, 30, 40, 50	50	Up to 100	5	10
ø10					
ø16	10, 20, 30, 40, 50 60, 70, 80, 90, 100	100 *1	Up to 200		
ø20					
ø25					
ø32					

*1: The custom stroke length is available by 1 mm increments.
However, the total length is the same as that of the next longer standard stroke length.

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	Push	-	-	11.3	17.0	22.6	28.3	33.9	39.6
	Pull	-	-	6.28	9.42	12.6	15.7	18.8	22.0
ø10	Push	-	23.6	31.4	47.1	62.8	78.5	94.2	1.10×10^2
	Pull	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4
ø16	Push	40.2	60.3	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2
	Pull	24.5	36.8	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2
ø20	Push	62.8	94.2	1.26×10^2	1.88×10^2	2.51×10^2	3.14×10^2	3.77×10^2	4.40×10^2
	Pull	40.2	60.3	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2
ø25	Push	98.2	1.47×10^2	1.96×10^2	2.95×10^2	3.93×10^2	4.91×10^2	5.89×10^2	6.87×10^2
	Pull	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2
ø32	Push	1.61×10^2	2.41×10^2	3.22×10^2	4.83×10^2	6.43×10^2	8.04×10^2	9.65×10^2	1.13×10^3
	Pull	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2

Switch specifications

● 1-color/2-color display

Descriptions	Proximity 2-wire		Proximity 3-wire			Reed 2-wire			
	K2H/K2V	K2YH/K2YV	K3H/K3V	K3PH/K3PV (custom order)	K3YH/K3YV	K0H/K0V		K5H/K5V	
Applications	Programmable controller		Programmable controller, relay			Programmable controller, relay		Programmable controller, relay IC circuit (without indicator lamp), serial connection	
Output method	-		NPN output	PNP output	NPN output	-			
Power supply voltage	-		10 to 28 VDC			-			
Load voltage	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 20 mA (*2)		50 mA or less			5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Indicator lamp	LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)		-	
Leakage current	1 mA or less		10 μA or less			0 mA			
Weight g	1 m: 18 3 m: 49 5 m: 80	1 m: 31 3 m: 85 5 m: 139	1 m: 18 3 m: 49 5 m: 80		1 m: 31 3 m: 85 5 m: 139	1 m: 18 3 m: 49 5 m: 80			

*1: Refer to page 309 for detailed switch specifications and Dimensions.
*2: Max. load current: 20mA at 25°C.The current is lower than 25 mA if the operating ambient temperature around the switch is higher than 20˚C. (60 to 5 mA at 10°C)

Cylinder weight

Unit: g

Bore size	Weight for 0 mm stroke length STR2-B	Additional weight per S = 10 mm
ø6	74	10
ø10	169	14
ø16	320	20
ø20	445	40
ø25	662	52
ø32	1233	83

(Example) Product weight

STR2-B-6-10-K2H-D-P7*

- Product weight for 0 mm stroke length..... 74 g
- Additional weight for stroke length 10 mm.....10 g × 1 = 10 g
- Weight of 2 cylinder switches. .....18 g × 2 = 36 g
- Product weight.....74g + 10g + 36 g = 120 g

How to order

Without switch (Magnet for switch incorporated)

STR2-B-16-30——O P72

With switch (Magnet for switch incorporated)

STR2-B-16-30-K0H-R-O P72

Model No.

Ⓐ Bearing

Ⓑ Bore size

Ⓒ Stroke length
■ The custom stroke length is available by 1 mm increments.

Ⓓ Switch model No.
*1

Ⓔ Switch quantity

Ⓕ Option
*2
*3

Ⓖ Clean room specifications

Code	Content
Ⓐ Bearing	
B	Ball bearing

Ⓑ Bore size (mm)	
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

Ⓒ Stroke (mm)

Bore size	Stroke	Available stroke	Custom stroke
ø6	**5 to 50**	**Up to 100**	**By 1 mm increments**
ø10	**5 to 50**	**Up to 100**	
ø16	**5 to 100**	**Up to 200**	
ø20	**5 to 100**	**Up to 200**	
ø25	**5 to 100**	**Up to 200**	
ø32	**5 to 100**	**Up to 200**	

Ⓓ Switch model No.

Lead wire straight	Lead wire L-shaped	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
K0H*	**K0V***	Reed	●	●	1-color display	2 wires
K5H*	**K5V***		●	●	Without indicator lamp	
K2H*	**K2V***	Proximity		●	1-color display	2 wires
K3H*	**K3V***			●		3 wires
K3PH*	**K3PV***			●	1-color display (custom order)	3 wires
K2YH*	**K2YV***			●	2-color display	2 wires
K3YH*	**K3YV***			●		3 wires

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓔ Switch quantity	
R	1 (on rod end)
H	1 (on head end)
D	2

Ⓕ Option	
Blank	None
O	Piping port position on the 180° opposite side

Ⓖ Clean room specifications

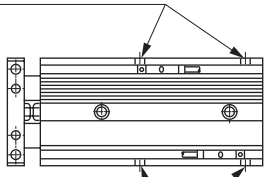
	Structure	Material restriction
P72	Exhaust treatment	-
P73	Vacuum treatment	-
P52	Exhaust treatment	Copper-based/silicon-based/halogen-based materials (fluorine, chlorine, bromine) are prohibited
P53	Vacuum treatment	Copper-based/silicon-based/halogen-based materials (fluorine, chlorine, bromine) are prohibited

⚠ Precautions for model No. selection

*1: STR2-B-6 and 10 are not compatible with a reed switch.
Ⓓ Switches other than switch model No. are also available.
(custom order)
Refer to page 309 for the details.

*2: The piping port positions for "O" are as shown in the figure below.

Piping port positions for standard (blank)



Piping port position on the 180° opposite side (code: O) piping port

*3: Refer to page 238 for combination of variations/ options.

[Example of model No.]

STR2-B-16-30-K0H-R-OP72

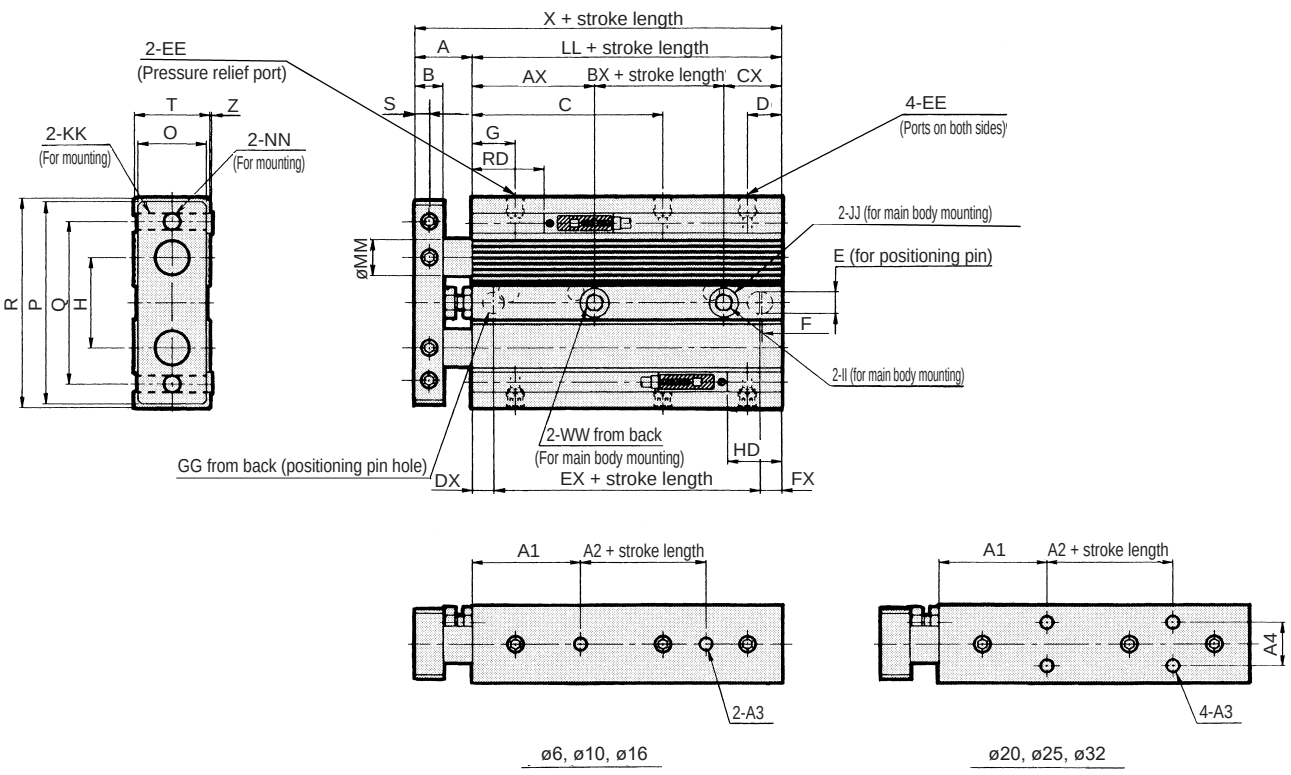
Model: Twin rod cylinder, standard

Ⓐ Bearing : Metal bush bearing
Ⓑ Bore size : ø16 mm
Ⓒ Stroke length : 30 mm
Ⓓ Switch model No. : Reed K0H switch/Lead wire 1 m
Ⓔ Switch quantity : 1 (on rod end)
Ⓕ Option : Piping port position on the 180° opposite side
Ⓖ Clean room specifications : Exhaust treatment

MEMO

Dimensions

● STR2-B-P7*/P5*



ø6, ø10, ø16

ø20, ø25, ø32

*1: When using a custom stroke length, the total length is the same as that of the next longer standard stroke length.
*2: Refer to page 245 for HD, RD and protruding dimensions of the 2-color display switch.

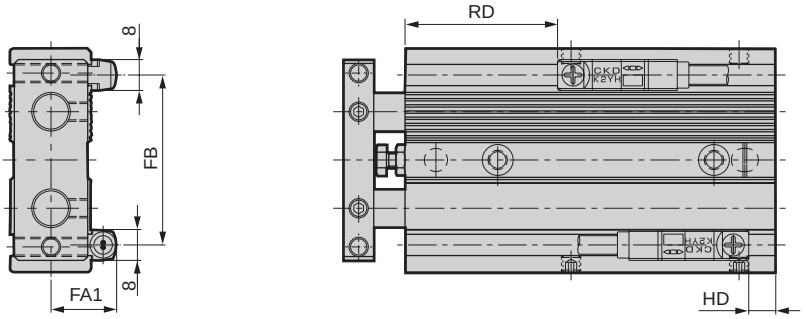
Code / Bore size (mm)	A	B	C	D	E	EE	F	G	GG	H	II	JJ	KK	LL	MM	NN	O
ø6	12	6	34.5	7.5	$4^{+0.07}_{+0.02}$ depth 3	M5	1	11	$4^{+0.07}_{+0.02}$ depth 3	14	ø3.4	6.5 spot face depth 3.3	M3 penetrating	54	4	M3 penetrating	11
ø10	14	6	45	7	$4^{+0.07}_{+0.02}$ depth 4	M5	1	15	$4^{+0.07}_{+0.02}$ depth 4	20	ø4.3	8 spot face depth 4.4	M4 penetrating	65	6	M4 penetrating	13
ø16	16	8	53	9.5	$6^{+0.07}_{+0.02}$ depth 6	M5	1	12	$6^{+0.07}_{+0.02}$ depth 6	25	ø4.3	8 spot face depth 4.4	M5 penetrating	76	10	M5 penetrating	19
ø20	20	10	56	9.5	$6^{+0.07}_{+0.02}$ depth 6	M5	1	12.5	$6^{+0.07}_{+0.02}$ depth 6	28	ø5.2	9.5 spot face depth 5.4	M5 penetrating	85	12	M5 penetrating	24
ø25	22	12	54	10.5	$6^{+0.07}_{+0.02}$ depth 6	M5	1	13.5	$6^{+0.07}_{+0.02}$ depth 6	34	ø6.3	11 spot face depth 6.5	M6 penetrating	85	14	M6 penetrating	30
ø32	22	12	66	11	$6^{+0.07}_{+0.02}$ depth 6	Rc1/8	1	14	$6^{+0.07}_{+0.02}$ depth 6	44	ø6.3	11 spot face depth 6.5	M6 penetrating	101	16	M6 penetrating	36

Code / Bore size (mm)	P	Q	R	S	T	WW	X	AX	BX	CX	DX	EX	FX	Z	A1	A2	A3	A4	K0/K5/K2/K3 HD	K0/K5/K2/K3 RD
ø6	34	29	36	3	13	M4 depth 5	66	30	10	14	7	40	7	0.5	25	10	M3 depth 4	-	3.5	31
ø10	42	36	44	3	15	M5 depth 6	79	34	14	17	8	48	9	0.5	25	20	M3 depth 3.5	-	2.5	43
ø16	56	45	58	4	21	M5 depth 6	92	34	26	16	8	60	8	0	30	25	M4 depth 4	-	7	49.5
ø20	60	50	62	5	27	M6 depth 8	105	34	33	18	9	67	9	0	30	30	M4 depth 4	13	10.5	55
ø25	70	60	72	6	33	M8 depth 8	107	34	33	18	9	67	9	0	30	30	M5 depth 6	18	11.5	53.5
ø32	94	75	96	6	38	M8 depth 8	123	34	47	20	9	83	9	0	30	40	M5 depth 8	24	15.5	65.5

*3: STR2-B6 and 10 are not compatible with K0 and K5 reed switches.
*4: The cylinder may tilt due to uneven surface if it is installed with the spot face side (JJ) contacted. In this case, change the port position or use the option of piping port position on the 180° opposite side (O) to keep the spot face side from being the contacting surface.
*5: HD and RD dimensions for 10 mm stroke length differ from these dimensions according to the setting.

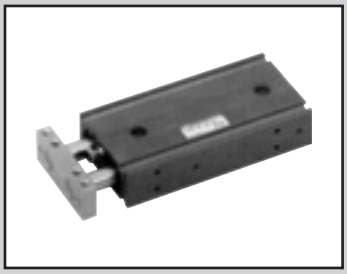
Dimensions with switches (2-color display switch)

2-color display swtich ($K2Y^{H}/_{V}$, $K3Y^{H}/_{V}$)



● 2-color display K□YH/V

Code / Bore size (mm)	FA1	FB	RD	HD
ø6	13.5	24	30	2.5
ø10	14.5	34	42	1
ø16	17	44	48.5	5.5
ø20	20	49	54	9.5
ø25	23	58	52.5	10.5
ø32	25.5	71	64.5	14.5



Twin rod cylinder Double acting/fine speed

STR2-BF Series (Made to order)

● Bore size: ø10/ø16/ø20/ø25/ø32

JIS symbol

RoHS CAD

Structure and material restriction

	Structure	Model No.
P7 Series	Exhaust treatment	P72
	Vacuum treatment	P73

Specifications

Descriptions	STR2-BF-P7*				
Bore size mm	ø10	ø16	ø20	ø25	ø32
Actuation	Double acting				
Working fluid	Compressed air				
Max. working pressure MPa	0.7				
Min. working pressure MPa	0.15**	0.1			
Ambient temperature °C	5 to 60				
Port size	M5				Rc1/8
Port size (relief port)	M5				Rc1/8
Stroke tolerance mm	0 to -5				
Working piston speed mm/s	1 to 200				
Non-rotating accuracy	±0.1°			±0.3°	
Piston rod bearing	Ball bearing				
Cushion	Rubber cushion				
Lubrication	Lubrication not possible				
Allowable energy absorption J	0.061	0.181	0.303	0.68	1.3

* The low speed (STR2-0) is recommended for ø6.

Stroke length

Model No.	Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)	Available stroke (mm)	Min. stroke (mm)	Min. stroke with switch (mm)
STR2-BF	ø10	10, 20, 30, 40, 50	50	Up to 100	5	10
	ø16, ø20, ø25, ø32	10, 20, 30, 40, 50, 60, 70, 80, 90, 100	100	Up to 200		

*1: The custom stroke length is available by 1 mm increments. However, the total dimensions are the same as the longer standard stroke length.

Switch specifications

● 1-color/2-color display

Descriptions	Proximity 2-wire		Proximity 3-wire			Reed 2-wire			
	K2H/K2V	K2YH/K2YV	K3H/K3V	K3PH/K3PV (custom order)	K3YH/K3YV	K0H/K0V		K5H/K5V	
Applications	Programmable controller		Programmable controller, relay			Programmable controller, relay		Programmable controller, relay IC circuit (without indicator lamp), serial connection	
Output method	-		NPN output	PNP output	NPN output	-			
Power supply voltage	-		10 to 28 VDC			-			
Load voltage	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 20 mA (*2)		50 mA or less			5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Indicator lamp	LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/Green LED (Lit when ON)	LED (Lit when ON)		-	
Leakage current	1 mA or less		10 μA or less			0 mA			
Weight g	1 m: 18 3 m: 49 5 m: 80	1 m: 31 3 m: 85 5 m: 139	1 m: 18 3 m: 49 5 m: 80		1 m: 31 3 m: 85 5 m: 139	1 m: 18 3 m: 49 5 m: 80			

*1: Refer to page 309 for detailed switch specifications and Dimensions.
*2: Max. load current: 20mA at 25°C.The current is lower than 25 mA if the operating ambient temperature around the switch is higher than 20°C. (60 to 5 mA at 10°C)

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø10	Push	-	23.6	31.4	47.1	62.8	78.5	94.2	1.10×10^2
	Pull	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4
ø16	Push	40.2	60.3	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2
	Pull	24.5	36.8	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2
ø20	Push	62.8	94.2	1.26×10^2	1.88×10^2	2.51×10^2	3.14×10^2	3.77×10^2	4.40×10^2
	Pull	40.2	60.3	80.4	1.21×10^2	1.61×10^2	2.01×10^2	2.41×10^2	2.81×10^2
ø25	Push	98.2	1.47×10^2	1.96×10^2	2.95×10^2	3.93×10^2	4.91×10^2	5.89×10^2	6.87×10^2
	Pull	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2
ø32	Push	1.61×10^2	2.41×10^2	3.22×10^2	4.83×10^2	6.43×10^2	8.04×10^2	9.65×10^2	1.13×10^3
	Pull	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2

Dimensions

It is identical with the double acting clean room specifications. Refer to page 244.

How to order

● Without switch (Magnet for switch incorporated)

STR2 - B F - 16 - 30 ——— O P72

● With switch (Magnet for switch incorporated)

STR2 - B F - 16 - 30 - K0H - R - O P72

Model No. Ⓐ Bearing — Ⓑ Bore size — Ⓒ Stroke length — Ⓓ Switch model No. *1 — Ⓔ Switch quantity — Ⓕ Option *2 — Ⓖ Clean room specifications

■ The custom stroke length is available by 1 mm increments. However, the total length is the same as that of the next longer standard stroke length.

Code	Content
Ⓐ Bearing	
B	Ball bearing
Ⓑ Bore size (mm)	
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

Ⓒ Stroke (mm)

Bore size	Stroke	Available stroke	Custom stroke
ø10	**5 to 50**	**Up to 100**	**By 1mm increments**
ø16	**5 to 100**	**Up to 100**	
ø20	**5 to 100**	**Up to 200**	
ø25	**5 to 100**	**Up to 200**	
ø32	**5 to 100**	**Up to 200**	

Ⓓ Switch model No.

Lead wire straight	Lead wire L-shaped	Contact	Voltage AC	Voltage DC	Display	Lead wire
K0H*	**K0V***	Reed	●	●	1-color display	2 wires
K5H*	**K5V***	Reed	●	●	No indicator lamp	2 wires
K2H*	**K2V***	Proximity		●	1-color display	2 wires
K3H*	**K3V***	Proximity		●	1-color display	3 wires
K3PH*	**K3PV***	Proximity		●	1-color display (custom order)	3 wires
K2YH*	**K2YV***	Proximity		●	2-color display	2 wires
K3YH*	**K3YV***	Proximity		●	2-color display	3 wires

*** Lead wire length**

Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓔ Switch quantity

R	1 (on rod end)
H	1 (on head end)
D	2

Ⓕ Option

Blank	None
O	Piping port position on the 180° opposite side

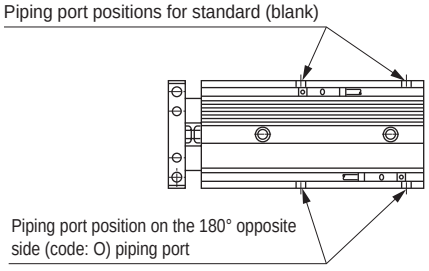
Ⓖ Clean room specifications

	Structure
P72	Exhaust treatment
P73	Vacuum treatment

⚠ Precautions for model No. selection

*1: STR2-BF-10 is not compatible with a reed switch.
*2: The piping port positions for "O" are as shown in the figure below.
*3: Refer to page 238 for combination of variations/options.

Piping port positions for standard (blank)



Piping port position on the 180° opposite side (code: O) piping port

[Example of model No.]

STR2-BF-16-30-K0H-R-OP72

Model: Twin rod cylinder, fine speed

Ⓐ Bearing : Ball bearing
Ⓑ Bore size : ø16 mm
Ⓒ Stroke length : 30 mm
Ⓓ Switch model No. : Reed K0H switch, lead wire 1 m
Ⓔ Switch quantity : 1 (on rod end)
Ⓕ Option : Piping port position on the 180° opposite side
Ⓖ Clean room specifications : Exhaust treatment