Cylinder switch guide

CONTENTS

The cylinder switches T2YH, T2YV, T3YH, and T3YV are scheduled for end of production at the end of December 2023.

Discrete switch model No.

Model No. of discrete switch unit is as below.

SW - Switch model No.

Axial lead wire (H) direction and L-shaped lead wire (V) direction are available.

Cylinder switch variation

CKD cylinders with switches cover wide applications with miniature to large cylinders and rotary actuators. Refer to the variation table below to select the ideal product.

Proximity switch																																	Descriptions
M Series				R Series					T Series												K Series					F Series								
M2	M2WV	M3	M3WV	R1	R2	R2Y	R3	R3Y	T1	T2	T2J	T2Y	T2W	T2YL	T3	T3P	T3Y	T3W	T3YL	T2YD	K2	K2Y	K3	K3P	K3Y	F2	F2Y	F2S	F3	F3Y	F3P	F3S	
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Grommet
				●	●	●	●	●																									Terminal box
●	●			●	●	●			●	●	●	●	●	●						●	●	●				●	●	●					2-wire
		●	●				●	●							●	●	●	●	●				●	●	●				●	●	●	●	3-wire
●	● *1	●	● *1	●	●	● *1	●	● *1	●	●	●	● *1	● *1	● *1	●	● *2	● *1	● *1	● *1	● *1	●	● *1	●	● *2	● *1	● *2	● *1	●	● *2	● *1	● *1	●	LED (Lit when ON)
																																	Neon light (Lit when OFF)
																																	No indicator lamp
	●		●			●		●				●	●	●			●	●	●	●		●			●		●			●			2-color LED
		●					●	●																									5 VDC
●	●				●	●				●	●	●	●	●						●	●	●				●	●	●					10 VDC to 30 VDC
		●	●				●	●							●	●	●	●	●				●	●	●				●	●	●	●	30 VDC or less
				●					●																								100 VAC
				●					●																								200 VAC
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Programmable controller
		●	●	●			●	●									●	●	●				●	●	●				●	●	●	●	IC circuit
		●	●	●			●	●	●								●	●	●				●	●	●				●	●	●	●	Compact relay, valve
																																	Large relay, valve

*1: LEDs are red/green.
*2: LEDs are yellow.
*3: LEDs are green.
*4: LEDs other than those in *1 to *3 are red.

Descriptions		Reed switch																		
		M Series		R Series				T Series			K Series		F Series	H Series		E Series		V Series		
		M0	M5	R0	R4	R5	R6	T0	T5	T8	K0	K5	F0	H0	H0Y	E0	ET0	V0		
Connection	Grommet	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●		
	Terminal box			●	●	●	●									●				
Number of connections	2-wire	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	3-wire																			
With indicator lamp	LED (Lit when ON)	●		●			●	●		●	●		● *2	● *3	● *1	●	● *2	●		
	Neon light (Lit when OFF)				●															
	No indicator lamp		●			●			●			●								
	2-color LED														●					
Working voltage	5 VDC		●			●			●			●								
	10 VDC to 30 VDC														●			●		
	30 VDC or less	●	●	●		●	●	●	●	●	●	●	●	●		●	●			
	100 VAC	●	●	●	●	●		●	●	●	●	●		●		●	●	●		
	200 VAC			●	●	●				●						●				
Applications	Programmable controller	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		
	IC circuit		●			●			●			●								
	Compact relay, valve	●	●	●		●		●	●	●	●	●		●		●	●	●		
	Large relay, valve				●															

Cylinder with switch variations

CKD cylinders with switches cover wide applications with miniature to large cylinders and rotary actuators. Refer to the variation table below to select the ideal product.

Proximity switch																																		
F Series								M Series					R Series					T Series											K Series					
F2	F2Y	F2S	F3	F3Y	F3P	F3S	M2	M2WV	M3	M3P	M3WV	R1	R2	R2Y	R3	R3Y	T1	T2	T2J	T2W	T2Y	T2YL	T3	T3P	T3W	T3Y	T3YL	T2YD	K2	K2Y	K3	K3P	K3Y	
																		●		●			●	●	●									
																	●	●	●	●	●	▲	●	●	●	●	▲							
																	●	●	●	●	●		●	●	●	●	▲							
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● *7	● *7	● *7	● *7	● *7	● *7	● *7											● *3	●	●	●	●	▲	●	●	●	●	▲	●						
● *7	● *7	● *7	● *7	● *7	● *7	● *7											● *3	●	●	●	●		●	●	●	●		●						
																	● *6	●	● *6	●	● *6	▲	●	●	●	● *6	▲	● *3						
●	●	●	●	●	●	●																												
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																	●	●	●	●	●		●	●	●	●		●						

*1: Including made-to-order products
*2: ▲ is mountable depending on variation. H type (L2), Coolant proof (G2/G3), etc.
*3: Excluding ø16 or less
*4: Excluding ø12, ø16, position locking all bore sizes
*5: Excluding ø40 or less
*6: ø12 and ø16 of standard, X, Y, O, F, B, W and M are L1

Cylinder model		Bore size	Mounting method			Compatibility with body	Reed switch															
							M Series		R Series				T Series			K Series		F Series	H Series		E Series	
			Band	Tie rod	Rail		M0	M5	R0	R4	R5	R6	T0	T5	T8	K0	K5	F0	H0	H0Y	E0	ET0
Pencil shaped cylinder	SCP*3	ø6 to ø16	●					●					●	●								
Medium bore size cylinder	CMK2	ø20 to ø40	●			Magnet provided as standard							●	●	●							
Medium bore size cylinder	CMA2	ø20 to ø40	●			Magnet provided as standard							●	●	●							
Round shaped cylinder	SCM	ø20 to ø100	●		●	Magnet provided as standard							●	●	● *5							
Global cylinder Tie rod cylinder	SCG	ø40 to ø100		●		Magnet provided as standard							●	●	●							
Medium bore size cylinder	SCA2	ø40 to ø100		●		Magnet provided as standard							●	●	●				▲	▲	▲	
Large bore size cylinder with valve	SCA2-V	ø40 to ø100		●		Magnet provided as standard							●	●								
Large bore size cylinder	SCS2	ø125 to ø250		●									●	●	●							
Small cylinder with valve	CKV2	ø20 to ø40	●			Magnet provided as standard							●	●	●							
Cylinder with valve	CAV2 COV2	ø50 to ø100		●		Magnet provided as standard							●	●	●							
Compact cylinder	SSD2	ø12 to ø200			●								●	●	● *9							▲
Guided super compact cylinder	SSG	ø12 to ø100			●								●	●	● *10							
Compact cylinder	SSD	ø12 to ø160			●								●	●	● *9							▲
Small direct mounting cylinder	MDC2	ø4 to ø10			●													●				
Small cylinder with suction pad	MVC	ø6, ø10			●	Magnet provided as standard												●				
Compact cylinder	SMG	ø6 to ø32			●											●	●					
Small compact cylinder	MSD	ø6 to ø16			●													●				
Small guided compact cylinder	MSDG	ø6 to ø16			●													●				
Flat compact cylinder	FC*	ø25 to ø63			●		● *8	● *8														
Stopper cylinder	STK	ø20 to ø50			●	Magnet provided as standard							●	●	●							
Brake cylinder	ULKP	ø16	●				● *8	● *8														
Brake cylinder	ULK	ø20 to ø40	●			Magnet provided as standard							●	●	●							
Brake cylinder	JSK2	ø20 to ø40	●			Magnet provided as standard							●	●	●							
Brake cylinder	JSM2	ø20 to ø40	●			Magnet provided as standard							●	●	●							
Tie rod cylinder with brake	JSG	ø40 to ø100		●		Magnet provided as standard							●	●	●							
Brake cylinder medium bore size	JSC3	ø40 to ø100		●		Magnet provided as standard							●	●	●				▲	▲		
Brake cylinder large bore size	JSC4	ø125 to ø180		●									●	●	●							
Position locking compact cylinder	USSD	ø40 to ø63			●								●	●	●							
Free position locking flat cylinder	UFCD	ø25 to ø63			●		● *8	● *8														
Free position locking Medium bore size cylinder	USC	ø40 to ø100		●		Magnet provided as standard							●	●	●				▲	▲		

*7: Mountable for ø20 and ø25 of SSD2. Mountable for ø25 of SSG
*8: Only V type (L-shaped lead wire) mountable
*9: Excluding ø12 to ø32 of L, XL, YL, OL, LF, BL, WL, ML, ø12 and ø16 of KL, DL, and ø16 of QL
*10: Excluding ø32 or less

Cylinder switch

Proximity switch																																		
F Series								M Series					R Series					T Series												K Series					
F2	F2Y	F2S	F3	F3Y	F3P	F3S	M2	M2WV	M3	M3P	M3WV	R1	R2	R2Y	R3	R3Y	T1	T2	T2J	T2Y	T2W	T2YL	T3	T3P	T3Y	T3W	T3YL	T2YD	K2	K2Y	K3	K3P	K3Y	
● *10	● *10	● *10	● *10	● *10		● *10												● *11			● *11		● *11			● *11								
● *10	● *10	● *10	● *10	● *10	● *10	● *10												● *11			● *11		● *11	● *11		● *11								
● *10	● *10	● *10	● *10	● *10	● *10	● *10												● *11			● *11		● *11	● *11		● *11								
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● *7	● *7	● *7	● *7	● *7	● *7	● *7											● *3	●	● *3	● *3	●		●	●	● *3	●		● *2						
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																	●	●	●	●	●		●	●	●	●								
							● *8		● *8	● *8																										

*1: Including made-to-order products
*2: ▲ is mountable depending on variation. H type (L2), Coolant proof (G2/G3), etc.
*3: Excluding ø16 or less
*4: Excluding ø12, ø16, position locking all bore sizes
*5: Excluding ø40 or less
*6: ø12 and ø16 of standard, X, Y, O, F, B, W and M are L1

Cylinder model		Bore size	Mounting method			Compatibility with body	Reed switch																
							M Series		R Series				T Series			K Series		F Series	H Series		E Series	
			Band	Tie rod	Rail		M0	M5	R0	R4	R5	R6	T0	T5	T8	K0	K5	F0	H0	H0Y	E0	ET0
	Linear slide cylinder	LCW			●	Magnet provided as standard							●*11	●*11								
	Linear slide cylinder	LCR			●	Magnet provided as standard							●*11	●*11								
	Linear slide cylinder	LCG			●	Magnet provided as standard							●*11	●*11								
	Thin linear slide cylinder	LCX			●	Magnet provided as standard							●	●								
	Linear slide cylinder	LCM			●																	
	Guided cylinder	STM			●	Magnet provided as standard																
	Global cylinder Guided cylinder	STG			●	Magnet provided as standard							●	●	●*4							
	Guided cylinder	STS/L			●	Magnet provided as standard							●	●	●*3							
	Twin rod cylinder	STR2			●	Magnet provided as standard										●	●					
	Unit cylinder	UCA2			●								●	●								
	High energy absorption cylinder	HCM			●	Magnet provided as standard							●	●	●							
	High speed cylinder	HCA	●			Magnet provided as standard			●	●	●	●										
	Rodless cylinder	SRL3			●	Magnet provided as standard	●	●														
	High precision guided rodless cylinder	SRG3			●		●	●														
	High precision guided rodless cylinder	SRM3			●								●	●	●							
	Rodless cylinder with brake	SRT3			●	Magnet provided as standard	●	●														
	Magnet rodless cylinder	MRL2			●																	
	Magnet rodless cylinder with high precision guide	MRG2			●	Magnet provided as standard							●	●								
	Clamp cylinder	CAC4		●		Magnet provided as standard							●	●	●				▲	▲		
	Position locking clamp cylinder	UCAC2		●		Magnet provided as standard							●	●	●				▲	▲		
	Lightweight clamp cylinder	CAC-N		●		Magnet provided as standard							●	●	●							
	Position locking clamp cylinder	UCAC-N		●		Magnet provided as standard							●	●	●							
	Rotary clamp cylinder	RCS2			●	Magnet provided as standard							●	●	●*12							
	Rotary clamp cylinder	RCC2			●	Magnet provided as standard							●	●								
	Robot cylinder	MFC		●					●	●	●	●										
	High power cylinder	SHC		●		Magnet provided as standard			●	●	●	●							▲			
	Mechanical power cylinder	MCP	For actual thrust 2 t, 5 t		●	●	Magnet provided as standard						●	●	●							
	Guideless cylinder	GLC	ø40 to ø100		●		Magnet provided as standard		●	●	●	●							▲			
	Rotary actuator	RRC	Size: 8, 32, 63			●	Magnet provided as standard						●	●	●							
	Table rotary actuator	GRC	Size: 5 to 80			●	Magnet provided as standard															
	Rotary actuator	RV3*	Size: 50 to 300				●*8	●*8														
	Hand-chuck		Hand : Cylinders II P786-P789 Chuck: Cylinders II P956-P957 Reference																			

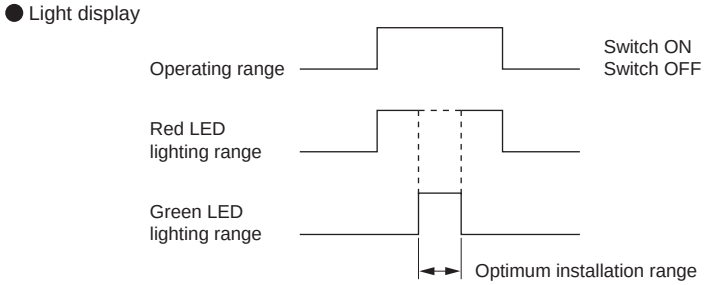
*7: Mountable for ø20 and ø25.
*8: Only V type (L-shaped lead wire) mountable
*9: Excluding ø12 to ø32 of L, XL, YL, OL, LF, BL, WL, ML, ø12 and ø16 of KL, DL, and ø16 of QL
*10: Excluding ø16 and over
*11: Excluding ø12 or less
*12: Excluding ø12 and ø16

2-color LED proximity cylinder switch

Overview

Conventionally, the pneumatic cylinder position detection switch required installation and adjustment because of the operating range and hysteresis. With the 2-color LED proximity cylinder switch, the optimum installation position is instantly indicated by the green LED lighting at the optimum installation position, and the red LED lighting at the normal operating range. This eliminates the time and hassle required to adjust the switch and prevents setting errors, allowing high-reliability equipment to be configured.

● Light display



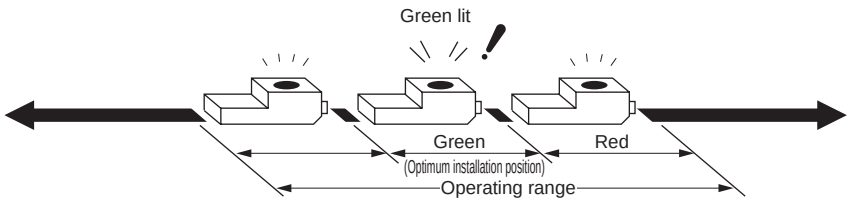
Features

● Easy installation and adjustment

Since the green LED lights at the optimal installation position, the switch can be installed and adjusted very easily.

● High reliability

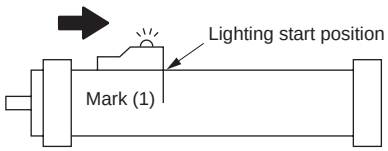
The switch uses our original hybrid IC integrated magnetic resistance element, making it even more reliable.



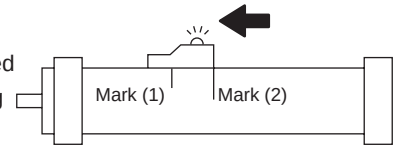
● Comparison of cylinder and switch setting

[Conventional] ——————————→ [2-color LED switch]

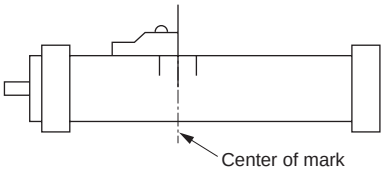
(1) The switch is moved in one direction and the lighting start position is marked.



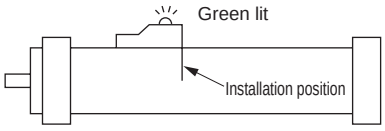
(2) In the same manner, the switch is moved from the other direction, and the lighting start position is marked.



(3) The end of the switch is set and fixed at the center of the two marks.

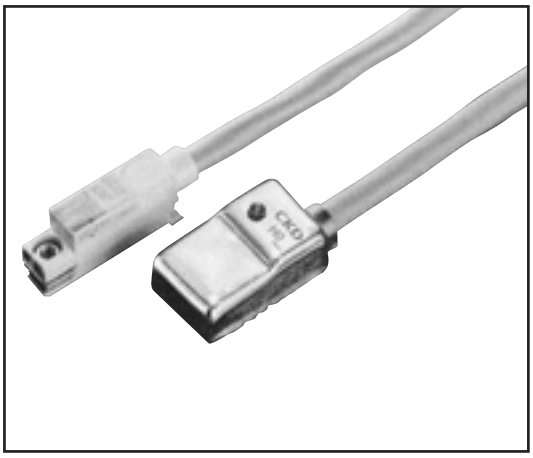


(1) The switch is moved in only one direction, and is fixed at the position where the green LED lights.



2-color LED switch is
(1) Quick to install
(2) Easy to install
(3) Free of setting errors

Strong magnetic field proof cylinder switch



Overview

This cylinder switch is used in environments having strong magnetic fields, such as near spot welding machines and magnetizing units in automotive plants, etc.

Features

● Easy installation/position adjustment (V0, T2YD)
Uses the rail mounting method. Mountable with a single set screw, and with easy position adjustment.

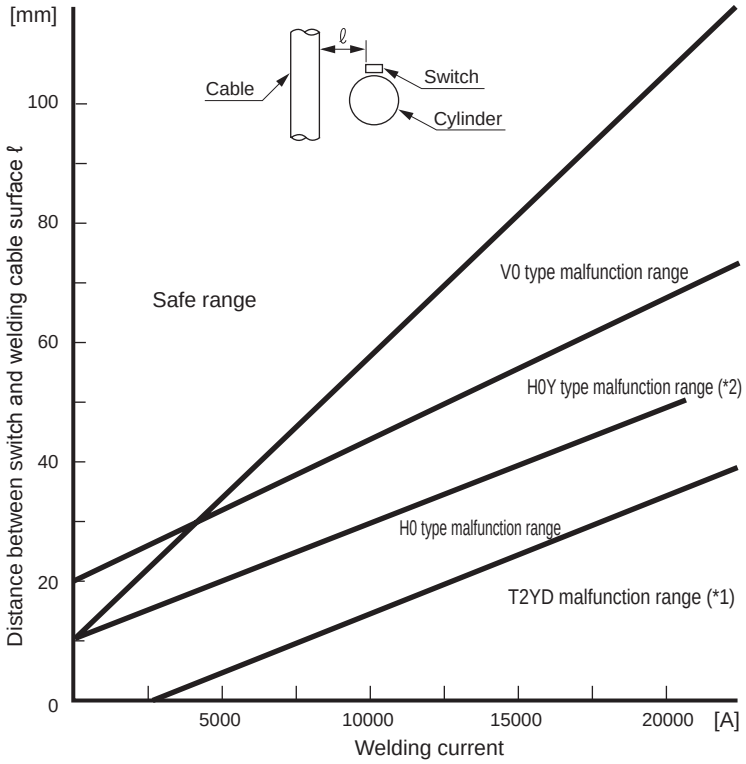
● Heat resistant material
Metal (H0, H0Y) and self-extinguishing resin UL94-V0 (V0, T2YD) body, and flame-resistant lead wires (optional for T2YD) have been adopted. Prevents body and lead wire burning or welding due to spatter.

● No polarity (H0, T2YD, H0Y)
Integrated diode bridge eliminates polarity. Eliminates the time required for checking positive and negative polarity, preventing connection errors.

● 2-color LED for easy installation adjustment (T2YD, H0Y)
Since the green LED lights at the optimal installation position, the switch can be installed and adjusted very easily.

⚠CAUTION

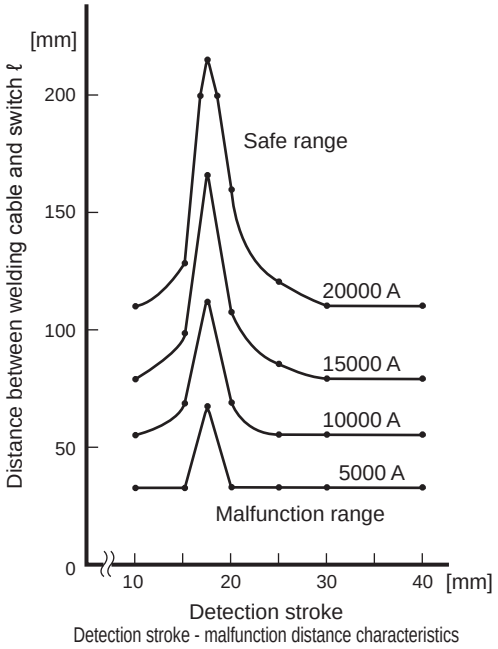
(1) Spot welding current - malfunction distance characteristics
(For detection stroke 30 mm and over for V0 switch)



The above external magnetic field resistance properties apply when H0 is installed within the "max. sensitivity position ±1 mm," within the "max. sensitivity position ±1.5 mm" for V0, and within the "optimum installation range" for H0Y. Install switches within this range. Do not apply welding current to flow during movement of the cylinder piston.
If 2 or more welding cables are energized simultaneously, the magnetic flux will increase due to the synergistic effect of the cables. Contact CKD before use. Note that the switch cannot be set within the cable loop.

*1: Indicates malfunction occurring when the cylinder piston magnet is degaussed by a welding field.
*2: Malfunction of H0Y indicates output malfunction.
*3: T2YD is a switch dedicated for AC magnetic field.

(2) SSD detection stroke - malfunction distance characteristics
(V0 switch)



Detection stroke - malfunction distance characteristics

When using with the detection stroke set to 30 mm or less, provide the distance in the figure above between the welding cable and switch.

(3) H type cylinder switch
Magnetic performance near spot welding

Degaussing occurs when an alternating current magnetic field is applied to the magnet. Measures have been taken for the cylinder with H type switch magnet. While degaussing does not occur up to 15,000 A, at over 15,000 A, provide the above distance between the cylinder tube and welding cable surfaces.

MEMO

M Series	Application Cylinder	FC* RV3 * SRL3 SRG3 SRT3 UFCD

M*V

M*H

Specifications

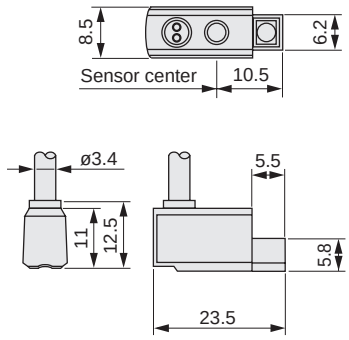
Item	2-wire proximity		3-wire proximity		
	M2V/M2H	M2WV(2-color LED)	M3H/V (NPN output))	M3PH/V (PNP output)	M3WV (2-color LED)
Applications	Dedicated for programmable controller		For programmable controller, relay, IC circuit, compact solenoid valve		
Output method	-		NPN output	PNP output	NPN output
Power supply voltage	-		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 30mA		100 mA or less		
Current consumption	-		10 mA or less with 24 VDC	10 mA or less with 24 VDC	15 mA or less with 24 VDC
Internal voltage drop	4 V or less		0.5 V or less		
Indicator	Red LED (Lit when ON)	Red/green LED (Lit when ON)	Red LED(Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less		10 μA or less	0.05 mA or less	10 μA or less
Lead wire length	1m (Oil resistant vinyl cabtyre cable 2-conductor 0.2mm^2)		1m (Oil resistant vinyl cabtyre cable 3-conductor 0.15mm^2)		
Shock resistance	980m/s^2				
Insulation resistance	100 MΩ and over with 500 VDC megger				
Withstand voltage	No failure after 1 minute of 1,000 VAC application.				
Ambient temperature	-10 to +60°C				
Degree of protection	IEC standards IP67, JIS C0920 (water tight)				
Weight	1 m: 22 g 3 m: 57 g 5 m: 93 g		1 m: 22 g 3 m: 57 g 5 m: 93 g		

Item	2-wire reed			
	M0V/M0H		M5V/M5H	
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator lamp), serial connection	
Power supply voltage	-			
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 50mA	7 to 20mA	50 mA or less	20 mA or less
Current consumption	-			
Internal voltage drop	3 V or less (with 30 mA load current for DC)		0.1V or less (*4)	
Indicator	Red LED (Lit when ON)		No indicator lamp	
Leakage current	0 mA			
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2mm^2)			
Shock resistance	294 m/s^2			
Insulation resistance	100 MΩ and over with 500 VDC megger			
Withstand voltage	No failure after 1 minute of 1,000 VAC application.			
Ambient temperature	-10 to +60°C			
Degree of protection	IEC standards IP67, JIS C0920 (water tight)			
Contact protection circuit*5	None			
Weight	1 m: 22 g 3 m: 57 g 5 m: 93 g			

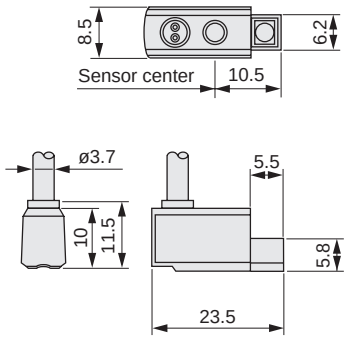
*1: M*H is available for SRL3, SRG3, and SRT3.
*2: Refer to the pages of each cylinder model for switch model No. capable of installing on a cylinder.
*3: Contact CKD separately for cylinder switch with connector.
*4: Internal resistance 0.5 Ω or less.
***5: Refer to Intro Page 80 for contact protective measures.**

Dimensions

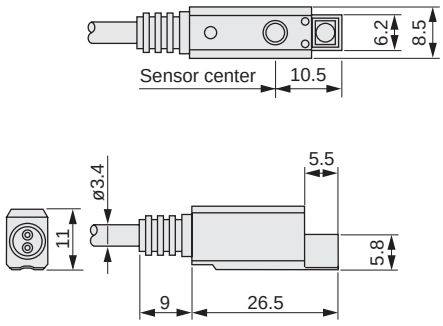
● M*V Series (L-shaped lead wire)



● M*W Series (2-color LED, L-shaped lead

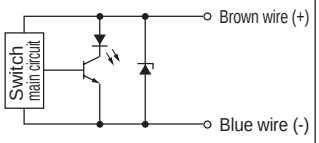


● M*H Series (straight lead wire)

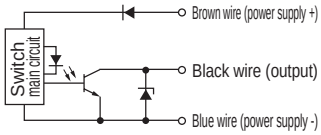


Switch internal circuit diagram

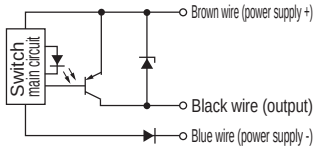
● M2V/M2H/M2WV



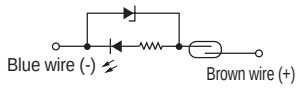
● M3V/M3H/M3WV



● M3PV/M3PH



● M0V/M0H



● M5V/M5H

R Series	Application cylinder	GLC HCA MFC SHC

CE (R1,Excluding R4)

R*/R*Y

R*B

Specifications

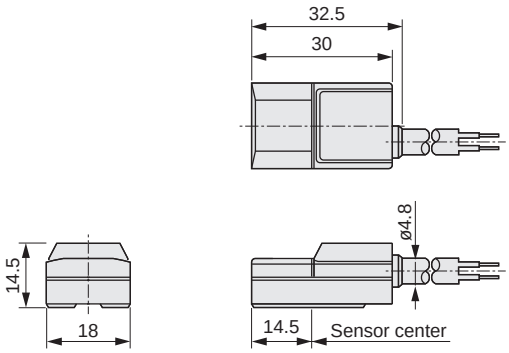
Item	2-wire proximity			3-wire proximity	
	R1/R1K	R2/R2K	R2Y/ R2YK (2-color LED)	R3/R3K	R 3Y/R3YK (2-color LED)
Applications	Programmable controller, relay, compact solenoid valve	Dedicated for programmable controller		Programmable controller, relay, IC circuit, solenoid valve	
Output method	-			NPN output	
Power supply voltage	-	-		4.5 to 28 VDC	
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less	30 VDC or less
Load current	5 to 100mA	5 to 30mA		200 mA or less	100 mA or less
Current consumption	-	-		With 24 VDC (when ON)	
				10 mA or less	16 mA or less
Internal voltage drop	10% or less of load voltage	4 V or less		0.5 V or less with 150 mA	0.5 V or less
Indicator	Red LED (Lit when ON)		Red/green LED (Lit when ON)	Red LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less with 100 VAC, 2 mA or less with 200 VAC	1 mA or less		10 μA or less	
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.3mm^2)			1 m (oil resistant vinyl cabtyre cable 3-conductor 0.2mm^2)	
Shock resistance	980 m/s^2				
Insulation resistance	20 MΩ and over with 500 VDC megger				
Withstand voltage	1500 VAC, per minute No failure after application	No failure after 1 minute of 1,000 VAC application.			
Ambient temperature	-10 to +60°C				
Degree of protection	Grommet: IEC standards IP67, JIS C0920 (water-tight)				
Option	With terminal box R*B (no waterproof)				
Weight	1 m: 42 g 3 m: 100 g 5 m: 158 g		1 m: 56 g 3 m: 114 g 5 m: 172 g	1 m: 42 g 3 m: 100 g 5 m: 158 g	1 m: 56 g 3 m: 114 g 5 m: 172 g

Item	2-wire reed								
	R 0			R 4		R 5			R 6
Applications	Relay, programmable For controllers			For high capacity relay, solenoid valve		For programmable controller, relay, IC circuit (no indicator lamp), serial connection			Dedicated for programmable controller (with DC self-hold)
Power supply voltage	-			-		-			-
Load voltage	12/24 VDC	110 VAC	220 VAC	110 VAC	220 VAC	5/12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 50mA	7 to 20mA	7 to 10mA	20 to 200mA	10 to 200mA	50 mA or less	20 mA or less	10 mA or less	5 to 50mA
Current consumption	-			-		-			-
Internal voltage drop	3.0 V or less			2 V or less		0.5V or less (*1)			5 V or less
Indicator	Red LED(Lit when ON)			Neon light OFF (Lit when OFF)		No			Red LED (Lit when ON)
Leakage current	0 mA			1 mA or less		0 mA			0.1 mA or less
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.3mm^2)								
Shock resistance	294 m/s^2								
Insulation resistance	20 MΩ and over with 500 VDC megger								
Withstand voltage	No failure after 1 minute of 1,500 VAC application.								
Ambient temperature	-10 to +60°C								
Degree of protection	Grommet: IEC standards IP67, JIS C0920 (water-tight)								
Contact protection circuit*2	Yes								None
Option	With terminal box R*B (no waterproof)								
Weight	1 m: 42 g 3 m: 100 g 5 m: 158 g								

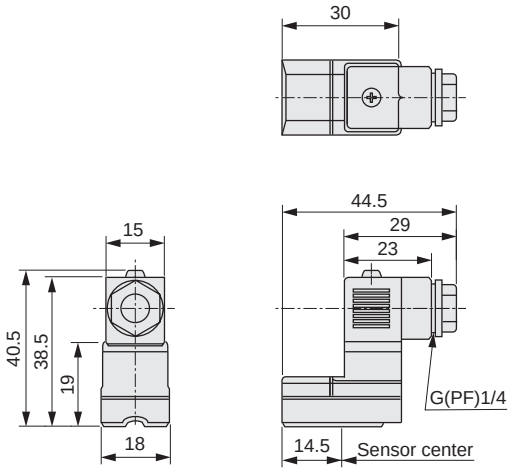
*1: Internal resistance 10 Ω or less.
*2: Refer to Intro Page 80 for contact protective measures.

Dimensions

● R Series (grommet)

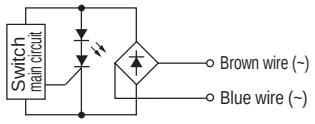


● R Series (terminal box R*B)

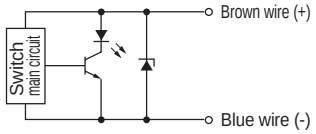


Switch internal circuit diagram

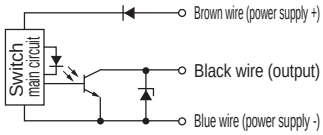
● R1



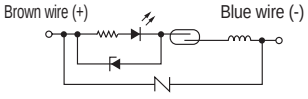
● R2/R2Y



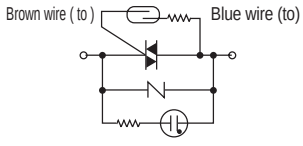
● R3/R3Y



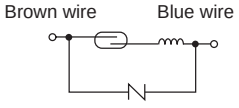
● R0



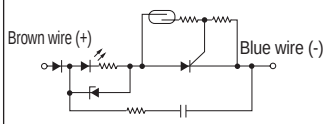
● R4



● R5



● R6



T Series	Application cylinder													
		CAC4	CKV2	CMA2	CMK2	HCM	JSC3	JSC4	JSG	JSK2	JSM2	LCG	LCR	LCW
		LCX	MRG2	MRL2	RCS2	RCC2	RRC	SCA2	SCG	SCM	SCP*3	SCS2	SRM3	SSD
		SSD2	SSG	STG	STS/STL	STK	UCA2	UCAC2	ULK	Hand	Chuck			

CE (T1,excluding T8)

T*H/T*WH

T*V/T*WV

T1H

T1V

T8H/T*YH
T2JH

T8V/T*YV
T2JV

Specifications

Item	2-wire proximity						3-wire proximity			
	T1H/T1V	T2H/T2V	T2HR3/T2VR3 (Bending resistant lead wire)	T2JH/T2JV (Off-delay)	T2YH/T2YV (2-color LED)	T2WH/T2WV (2-color LED)	T3H/T3V	T3PH/T3PV (PNP output)	T3YH/T3YV (2-color LED)	T3WH/T3WV(2-color LED)
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller					For programmable controller, relay			
Output method	-						NPN output	PNP output	NPN output	NPN output
Power supply voltage	-						10 to 28 VDC			
Load voltage	85 to 265 VAC	10 to 30 VDC				24 VDC ±10%	30 VDC or less			
Load current	5 to 100 mA	5 to 20 mA (*1)					100 mA or less		50 mA or less	
Current consumption	-	-					With 24 VDC 10 mA or less	With 24 VDC 10 mA or less	10 mA or less with 24 VDC	
Internal voltage drop	10% or less of load voltage	4 V or less					0.5 V or less			
Off-delay time	-			200±50 ms	-		-			
Indicator	Red LED(Lit when ON)				Red/greenLED (Lit when ON)	Red/greenLED (Lit when ON)	Red LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	
Leakage current	1 mA or less with 100 VAC, 2 mA or less with 200 VAC	1 mA or less					10 μA or less			
Lead wire length *6	1 m (oil resistant vinyl Cabtyre cable 2-conductor 0.3mm²)	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2mm²)	3 m (elasticity, oil resistance Vinyl cabtyre cable 2-conductor 0.2mm²)	1 m (oil resistant vinyl cab Tire cable 2-conductor 0.3mm²)		1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2mm²)	1 m (oil resistant vinyl cab Tire cable 3-conductor 0.2mm²)		1 m (oil resistant vinyl Cabtyre cable 3-conductor 0.3mm²)	1 m (oil resistant vinyl Cabtyre cable 3-conductor 0.2mm²)
Shock resistance	980m/s²									
Insulation resistance	100 MΩ and over with 500 VDC megger	20 MΩ and over with 500 VDC megger		100 MΩ and over with 500 VDC megger		20 MΩ and over with 500 VDC megger	20 MΩ and over with 500 VDC megger		100 MΩ and over with 500 VDC megger	20 MΩ and over with 500 VDC megger
Withstand voltage	No failure after 1 minute of 1,500 VAC application.	No failure after 1 minute of 1,000 VAC application.								
Ambient temperature	-10 to +60°C									
Degree of protection	IEC standards IP67, JIS C0920 (water tight)									
Weight	1 m: 33g 3 m: 87g 5 m: 142g	1 m: 18 g 3 m: 49 g 5 m: 80 g		1 m: 33 g 3 m: 87 g 5 m: 142 g		1 m: 18 g 3 m: 49 g 5 m: 80 g	1 m: 18 g 3 m: 49 g 5 m: 80 g		1 m: 33 g 3 m: 87 g 5 m: 142 g	1 m: 18 g 3 m: 49 g 5 m: 80 g

Descriptions	2-wire reed						
	T0H/T0V		T5H/T5V		T8H/T8V		
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator lamp), serial connection		For programmable controller, relay		
Power supply voltage	-						
Load voltage	DC12/24V	110 VAC	DC5/12/24V	110 VAC	DC12/24V	110 VAC	220 VAC
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Current consumption	-						
Internal voltage drop	3 V or less (For DC, at load current 30mA)		0.1V or less (*5)		4 V or less		
Indicator	Red LED (Lit when ON)		No indicator lamp		Red LED (Lit when ON)		
Leakage current	0 mA						
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2mm²)				1 m (oil resistant vinyl cabtyre cable 2-conductor 0.3mm²)		
Shock resistance	294 m/s²						
Insulation resistance	20 MΩ and over with 500 VDC megger				100 MΩ and over with 500 VDC megger		
Withstand voltage	No failure after 1 minute of 1,000 VAC application.				No failure after 1 minute of 1,500 VAC application		
Ambient temperature	-10 to +60°C						
Degree of protection	IEC standards IP67, JIS C0920 (water tight)						
Contact protection circuit *6	None				Yes		
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g				1 m: 33g 3 m: 87g 5 m: 142g		

*1:The above max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*2: T2HR3, T2VR3, T3PH and T3PV switches are available as made to order when installed onto compatible cylinders.
*3: T2JH and T2JV switches are available as made to order when installed onto SRL3 (ø32 to ø100), MRL2, LCR, UCAC2 or Hand-chuck.
*4: Switch types are limited depending on cylinder. Refer to each cylinder page for the details.
*5: Internal resistance 0.5 Ω or less. *6:Refer to Intro Page 80 for contact protective measures.

T Series	AC magnetic field	Application cylinder	CAC4	JSC3	JSC4	JSG	RCC2	RCS2	SCA2	SCG
			SCM	SCS2	SRG3	SRL3	SRM3	SRT3	SSD	SSD2
			SSG	STG	STS/STL	UCAC2	USC	USSD		

T2YD

Specifications

Item	2-wire proximity		
	T2YD	T2YDT	T2YDU(Made to order)
Applications	Dedicated for programmable controller		
Indicator	Red/green LED (Lit when ON)		
Load voltage	24 VDC ±10%		
Load current	5 to 20mA		
Internal voltage drop	6 V or less		
Leakage current	1.0 mA or less		
Output delay time *1 (ON delay, OFF delay)	60 ms or less		
Lead wire length	1 m (oil resistant vinyl cabtyre cable ø6, 0.5 mm^2× 2-conductor) *2	1 m (flame-resistant vinyl cabtyre cable ø6, 0.5 mm^2× 2-conductor) *2	0.3 m (flame-resistant vinyl cabtyre cable with M12 cable connector, AWG20, 2-conductor)
Insulation resistance	100 MΩ and over with 500 VDC megger		
Withstand voltage	No failure after 1 minute of 1,000 VAC application.		
Shock resistance	980 m/s^2		
Ambient temperature	-10 to +60°C		
Degree of protection	JIS C0920 (water-tight), IEC standards IP67		
Weight	1 m: 61 g 3 m: 166 g 5 m: 272 g		35

*1: Indicates the time from magnetic sensor detection of the piston magnet until switch output.
*2: 3 m and 5 m lead wires are available as options.
3: The AC magnetic field proof switch (T2YD) is for AC welding machines, so the effect of strong magnetic field proof performance cannot be obtained with DC welding machines.

T Series	Cutting oil	Application cylinder	CMK2-G2/3	HRL-G2/3	SCA2-G2/3	SCG-G2/3
			SSD-G2/3	SSD2-G2/3	STG-G2/3	STS/STL-G2/3

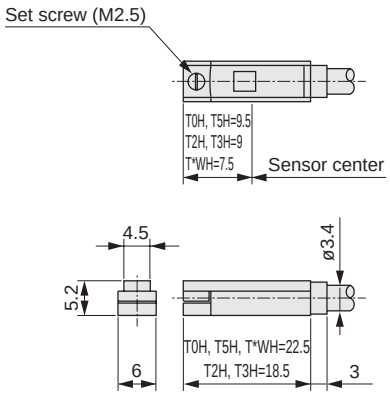
T*YLH

Specifications

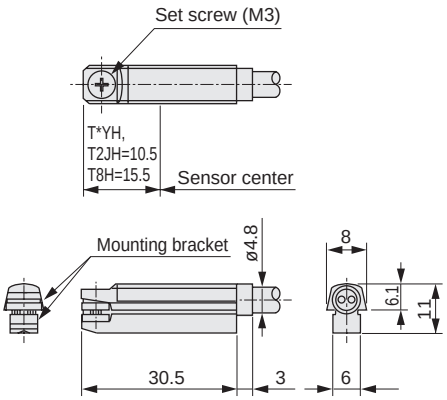
Item	2-wire proximity	3-wire proximity
	T2YLH, T2YLV	T3YLH, T3YLV
Applications	Dedicated for programmable controller	Programmable controller, relay
Output method	-	NPN output
Power supply voltage	-	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less
Load current	5 to 20mA	50 mA or less
Current consumption	-	10 mA or less at 24 VDC (when ON)
Internal voltage drop	4 V or less	0.5 V or less
Leakage current	1 mA or less	10 μA or less
Indicator	Red/green LED (Lit when ON)	
Lead wire	Oil resistant vinyl cabtyre cable 0.3mm^2, 2 conductor 1 m	Oil resistant vinyl cabtyre cable 0.2mm^2, 3 conductor 1 m
Insulation resistance	100 MΩ and over with 500 VDC megger	
Withstand voltage	No failure after 1 minute of 1,000 VAC application.	
Shock resistance	980m/s^2	
Hysteresis	1.5 mm or less	
Ambient temperature	-10 to +60°C	
Degree of protection	IEC Standards IP67, JIS C0920 (water-tight), oil resistance (substrate coating)	
Weight	1 m: 33g 3 m: 87g 5 m: 142g	

Dimensions

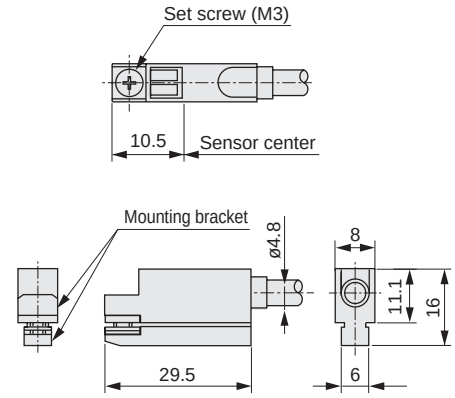
● T*H/T*WH Series
(straight lead wire)



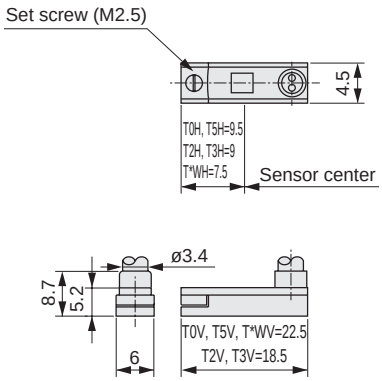
● T*YH/T2JH/T8H Series
(straight lead wire)



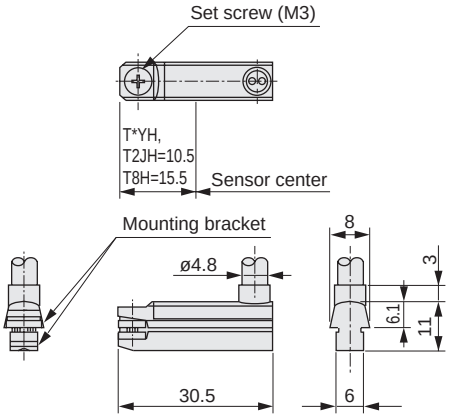
● T1H Series
(straight lead wire)



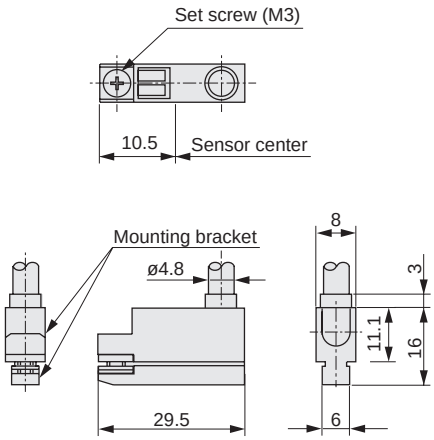
● T*V/T*WV Series
(L-shaped lead wire)



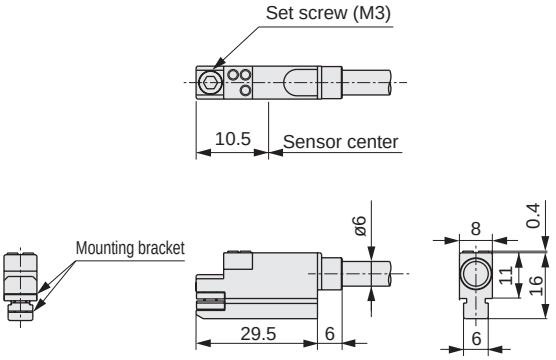
● T*YV/T2JV/T8V Series
(L-shaped lead wire)



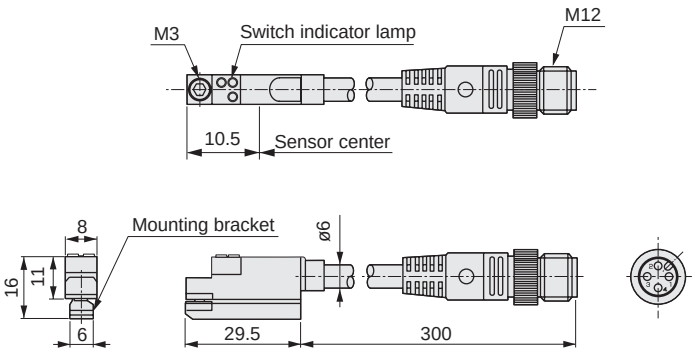
● T1V Series
(L-shaped lead wire)



● T2YD (switch for AC magnetic field)

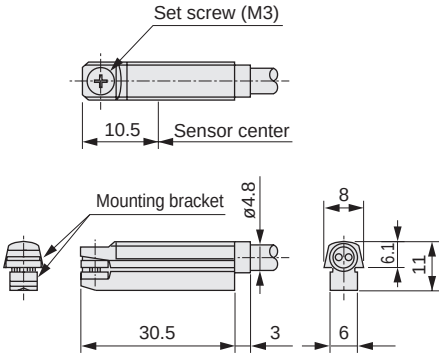


● T2YDU (switch for AC magnetic field with M12 cable connector)

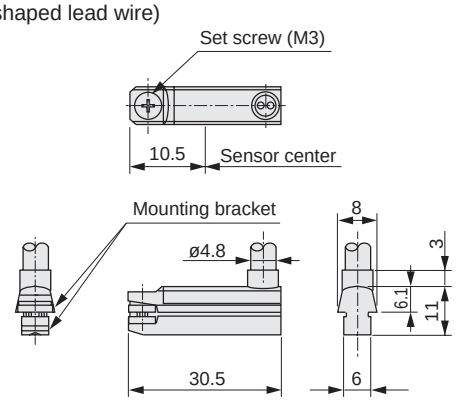


Dimensions

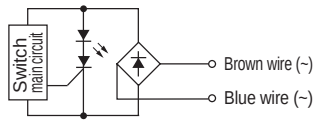
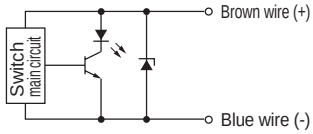
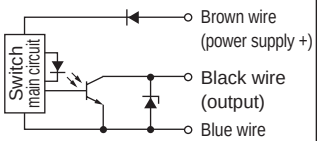
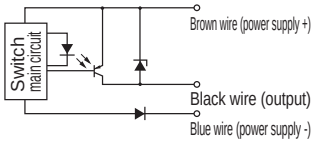
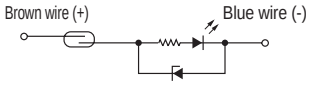
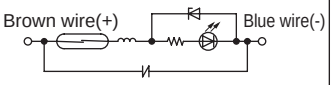
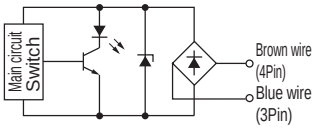
● T*YLH Series
(straight lead wire)



● T*YLV Series
(L-shaped lead wire)



Switch internal circuit diagram

● T1H/T1V	● T2H/T2V/T2YH/T2YV/T2WH/ T2WV/T2JH/T2JV/T2YLH/T2YLV	● T3H/T3V/T3YH/T3YV/T3WH/ T3WV/T3YLH/T3YLV	● T3PH/T3PV
			
● T0H/T0V	**● T5H/T5V**	**● T8H/T8V**	**● T2YD/T2YDT/T2YDU**
			 This switch is not polarized. Values in ( ) are the pin layout for T2YDU. However, 1-pin and 2-pin are NC

K Series	Application cylinder	SMG STR2

K*H
K3PH

K*V
K3PV

K*YH

K*YV

Specifications

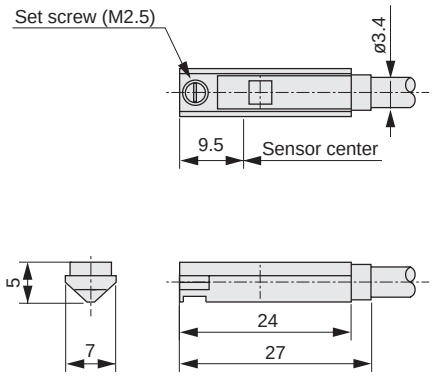
Item	2-wire proximity		3-wire proximity		
	K2H/K2V	K2YH/K2YV	K3H/V (NPN output)	K3PH/V (PNP output)	K3YH/V (2-color LED)
Applications	Dedicated for programmable controller		For programmable controller, relay		
Output method	-		NPN output	PNP output	NPN output
Power supply voltage	-		10 to 28 VDC		
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 20 mA (*1)		50 mA or less		
Current consumption	-		10 mA or less with 24 VDC	10 mA or less with 24 VDC	10 mA or less with 24 VDC
Internal voltage drop	4 V or less		0.5 V or less		
Indicator	Red LED(Lit when ON)	Red/green LED (Lit when ON)	Red LED(Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less		10 μA or less		
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2mm^2)	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.3mm^2)	1 m (oil resistant vinyl cabtyre cable 3-conductor 0.2mm^2)		1 m (oil resistant vinyl cabtyre cable 3-conductor 0.2mm^2)
Shock resistance	980m/s^2				
Insulation resistance	20 MΩ and over with 500 VDC megger	100 MΩ and over with 500 VDC megger	20 MΩ and over with 500 VDC megger		100 MΩ and over with 500 VDC megger
Withstand voltage	No failure after 1 minute of 1,000 VAC application.				
Ambient temperature	-10 to +60°C				
Degree of protection	IEC standards IP67, JIS C0920 (water tight)				
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g	1 m: 31 g 3 m: 85 g 5 m: 139 g	1 m: 18 g 3 m: 49 g 5 m: 80 g		1 m: 31 g 3 m: 85 g 5 m: 142 g

Item	2-wire reed			
	K0H/K0V		K5H/K5V	
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator lamp), serial connection	
Power supply voltage	-			
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 50mA	7 to 20mA	50 mA or less	20 mA or less
Current consumption	-			
Internal voltage drop	3 V or less (with 30mA load current for DC)		0.1V or less (*3)	
Indicator	Red LED(Lit when ON)		-	
Leakage current	0 mA			
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2mm^2)			
Shock resistance	294 m/s^2			
Insulation resistance	20 MΩ and over with 500 VDC megger			
Withstand voltage	No failure after 1 minute of 1,000 VAC application.			
Ambient temperature	-10 to +60°C			
Degree of protection	IEC standards IP67, JIS C0920 (water tight)			
Contact protection circuit*4	None			
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g			

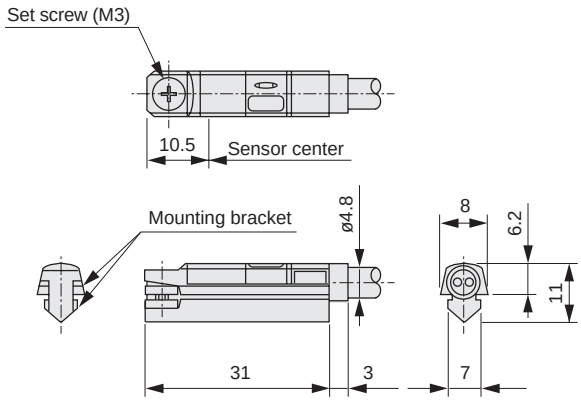
*1: The above max. load current is the value at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*2: Installation of K3PH, K3PV onto compatible cylinders is made to order.
*3: Internal resistance 0.5 Ω or less.
*4: Refer to Intro Page 80 for contact protective measures.

Dimensions

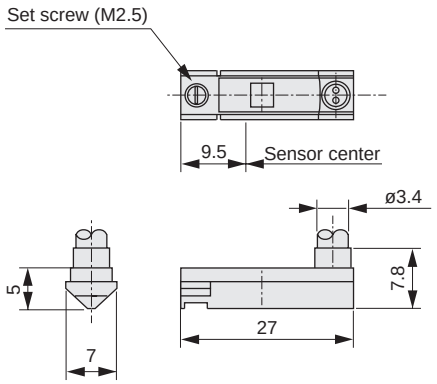
● K*H Series (axial lead wire)



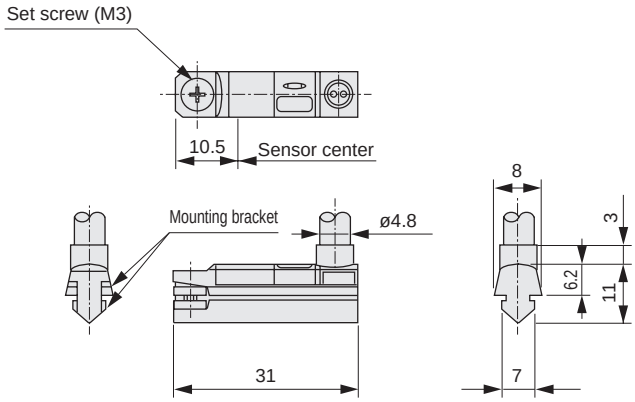
● K*YH Series
(2-color LED, axial lead wire)



● K*V Series (L-shaped lead wire)

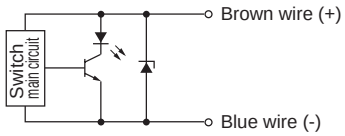


● K*YV Series
(2-color LED, L-shaped lead wire)

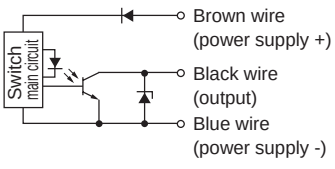


Switch internal circuit diagram

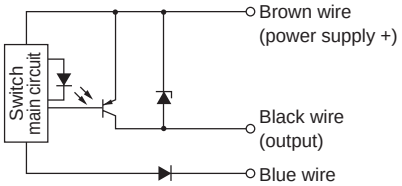
● K2H/K2V/K2YH/K2YV



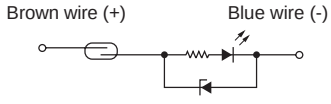
● K3H/K3V/K3YH/K3YV



● K3PH/K3PV



● K0H/K0V



● K5H/K5V

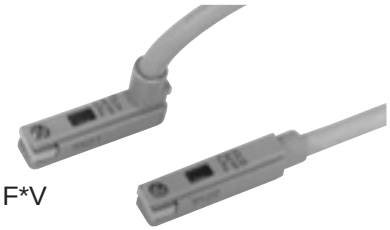
F Series	Application cylinder	CKL2 LCG LCM LCR MDC2 MSD MSDG-L MVC RCS2 SSD2 STM hand (LSH BSA2 LHA)

Uses a bend-resistant lead wire as standard.

* There are bore sizes which cannot be combined.

CE

F*S



F*V

F*H

F*YV
F3PV

F*YH
F3PH

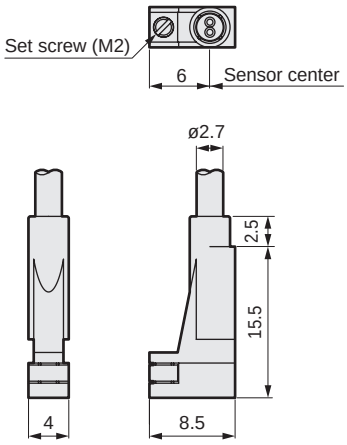
Specifications

Item	2-wire reed	2-wire proximity		3-wire proximity		
	F0H/V	F2H/V / F2S	F2YH/F2YV	F3H/V / F3S	F3PH/V	F3YH/F3YV
Applications	Dedicated for programmable controller			For programmable controller, relay		
Output method	-			NPN output	PNP output	NPN output
Power supply voltage	-			10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	24 VDC ±10%	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20 mA (*1)			50 mA or less		
Current consumption	-			10 mA or less with 24 VDC		
Internal voltage drop	4 V or less			0.5 V or less	0.5 V or less at 30 mA	0.5 V or less
Indicator	Yellow LED (Lit when ON)		*3 Red/green LED (Lit when ON)	Yellow LED *3 (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less			10 μA or less		
Lead wire length	1 m (elasticity, oil resistant vinyl cabtyre cable 2-conductor 0.15mm^2)			1 m (elasticity, oil resistant vinyl cabtyre cable 3-conductor 0.15mm^2)		
Shock resistance	294m/s^2	980 m/s^2				
Insulation resistance	20 MΩ and over with 500 VDC megger					
Withstand voltage	No failure after 1 minute of 1,000 VAC application.					
Ambient temperature	-10 to +60°C					
Degree of protection	IEC standards IP67, JIS C0920 (water-tight)					
Contact protection circuit*4	None	-				
Weight	1 m: 10 g 3 m: 29 g			1 m: 10 g 3 m: 29 g		

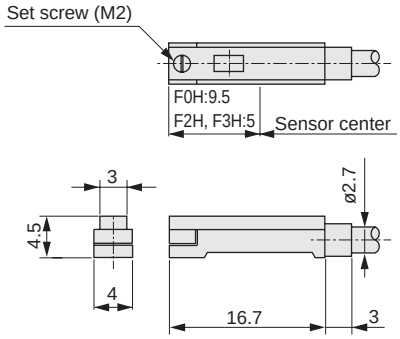
*1:The max. load current is 20mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*2: With F2S and F3S, if mounting two switches in one groove to enable detection at both ends, mount them so that their set screws face outward.
*3: Indicators for F2S and F3S are red.
*4: Refer to Intro Page 80 for contact protective measures.
*5: Uses a bend-resistant lead wire.

Dimensions

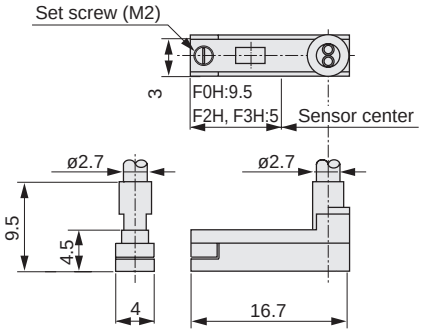
● F*S Series (Lead wire vertical lead-out, for short stroke detection)



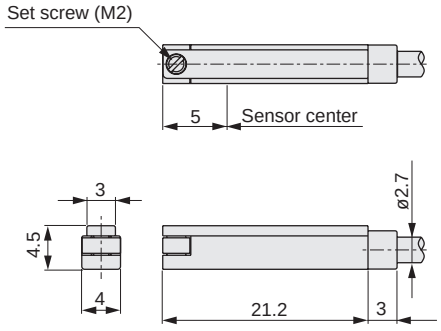
● F*H Series (straight lead wire)



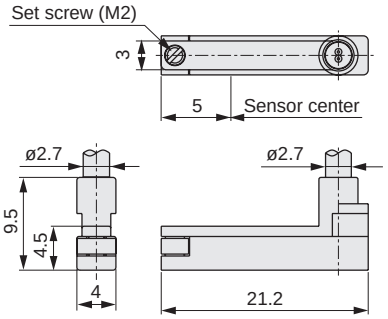
● F*V Series (L-shaped lead wire)



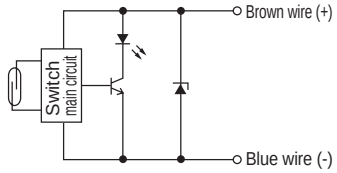
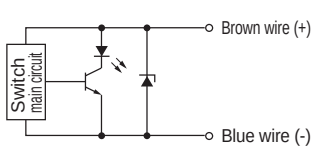
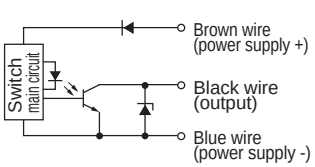
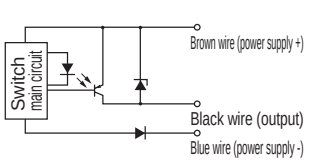
● F*YH/F3PH Series (straight lead wire)



F*YV/F3PV Series (L-shaped lead wire)



Switch internal circuit diagram

● F0H/F0V	● F2S/F2H/F2V/F2YH/F2YV	● F3S/F3H/F3V/F3YH/F3YV	● F3PH/F3PV
			

H Series	Strong magnetic field proof	Applicable cylinder	CAC4-L2 GLC-L2 JSC3-L2 SCA2-L2 SHC-L2 UCAC2-L2 USC-L2

H0

H0Y

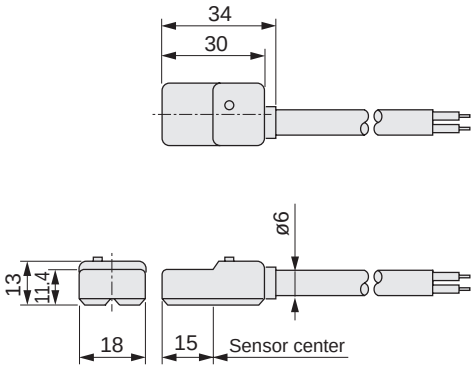
Specifications

Item	2-wire reed		
	H0		H0Y (2-color LED)
Applications	For programmable controller, relay		Dedicated for programmable controller
Load voltage	12/24 VDC	110 VAC	24 VDC ±10%
Load current	5 to 50 mA	7 to 20 mA	5 to 20 mA
Internal voltage drop	5 V or less		6 V or less
Indicator	Green LED (Lit when ON)		Red/green LED (Lit when ON)
Leakage current	0 mA		10 μA or less
Lead wire length	1 m (flame-resistant cabtyre cable 2-conductor 0.5 mm^2)		
Insulation resistance	100 MΩ and over with 500 VDC megger		
Withstand voltage	No failure after 1 minute of 1,000 VAC application.		
Shock resistance	294 m/s^2		
Ambient temperature	-10 (14°F) to +60°C (140°F)		
Degree of protection	IEC Standard IP67, JIS C0920 (water-tight), oil resistance		
Contact protection circuit *1	None		
Weight	1 m:76 g 3 m:181 g 5 m:289 g		

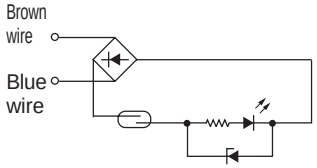
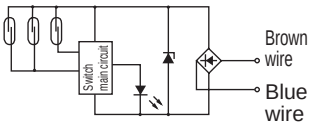
*1: Refer to Intro Page 80 for contact protective measures.

Dimensions

● H Series (strong magnetic field proof)



Switch internal circuit diagram

● H0	● H0Y
	
This switch is not polarized.	This switch is not polarized.

V Series	Small strong magnetic field proof	Applicable cylinder	SSD-L4 SSD2-L4 USSD-L4

V0

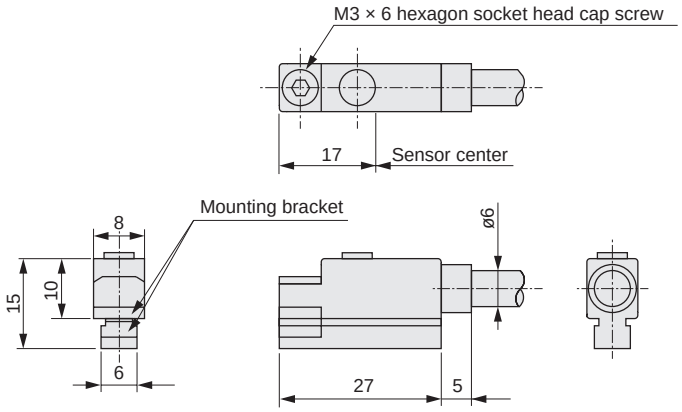
Specifications

Item	2-wire reed	
	V0	
Applications	For relay, programmable controller	
Load voltage	24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA
Internal voltage drop	3.0 V or less (with 40 mA load current)	
Indicator	LED (Lit when ON)	
Leakage current	0 mA	
Lead wire length	1 m (flame-resistant cabtyre cable 2-conductor 0.5 mm^2)	
Insulation resistance	100 MΩ and over with 500 VDC megger	
Withstand voltage	No failure after 1 minute of 1,000 VAC application.	
Shock resistance	294 m/s^2	
Ambient temperature	-10 (14°F) to +60°C (140°F)	
Degree of protection	IEC Standards IP67, JIS C0920 (water-tight), oil resistance	
Contact protection circuit *1	None	
Weight	1 m:63 g 3 m:170 g 5 m:277 g	

*1: Refer to Intro Page 80 for contact protective measures.

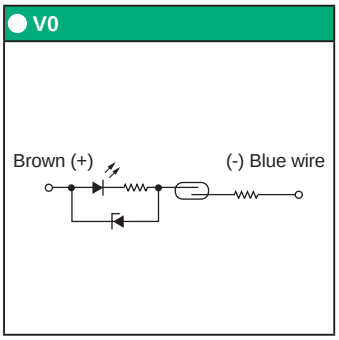
Dimensions

● V Series (strong magnetic field proof)



Switch internal circuit diagram

● V0



E Series	Heat resistance	Applicable cylinder	SCA2-L2T(E0) SSD-T1L(ET0) SSD2-T1L(ET0)

(Excluding E0)

E0

ET0

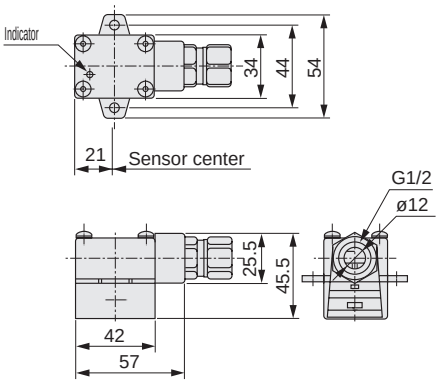
Specifications

Item	2-wire reed				
	E0			ET0	
Applications	For relay, programmable controller				
Load voltage	12/24 VDC	110 VAC	220 VAC	12/24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA	7 to 10 mA	5 to 50 mA	7 to 20 mA
Internal voltage drop	4 V or less			3.0 V or less	
Leakage current	0 mA				
Indicator	Red LED (Lit when ON)			Yellow LED (Lit when ON)	
Conduit screw	G1/2			-	
Lead wire length	-			1 m (heat-resistant fluorine insulation cabtyre cable 2-conductor 0.5 mm^2)	
Insulation resistance	100 MΩ and over with 500 VDC megger				
Withstand voltage	No failure after 1 minute of 1,500 VAC application.			No failure after 1 minute of 1,000 VAC application.	
Shock resistance	294 m/s^2				
Ambient temperature	-10 (14°F) to +120°C (248°F)			-10 (14°F) to +150°C (302°F)	
Degree of protection	IEC Standards IP67, JIS C0920 (water-tight), oil resistance				
Contact protection circuit *1	None				
Weight	164 g			44 g	

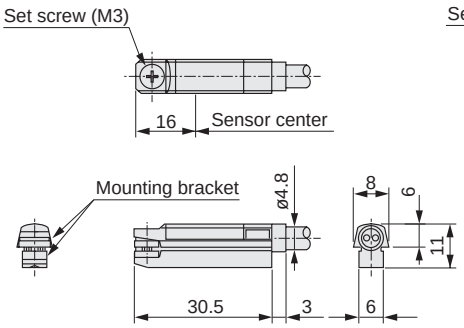
*1: Refer to Intro Page 80 for contact protective measures.

Dimensions

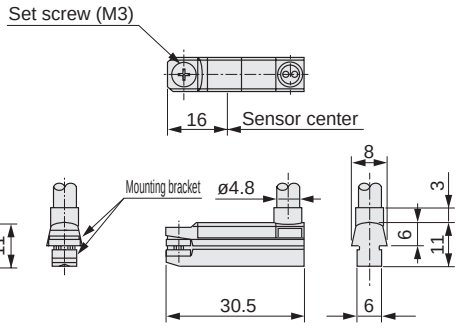
● E Series



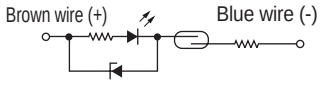
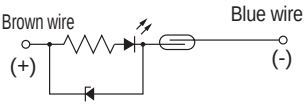
● ET0H Series (axial lead wire)



● ET0V Series (L-shaped lead wire)



Switch internal circuit diagram

● E0	● ET0H
	

Contact protecting circuit box	SKAC/SKDC

Specifications

Item	For AC circuit		For DC circuit
	SKAC		SKDC
Load voltage	100/110 VAC	200/220 VAC	24 VDC
Load current	20 mA or less	10 mA or less	50 mA or less
Lead wire length	1 m (oil resistant vinyl cabtyre cable 2-conductor 0.2 mm^2)		
Shock resistance	980 m/s^2		
Insulation resistance	100 MΩ or more at 500 VDC megger		
Withstand voltage	No failure after 1 minute of 1,500 VAC application		
Ambient temperature	-10 (14°F) to +60°C (140°F)		
Degree of protection	IEC Standards IP67, JIS C0920 (water-tight), oil resistance		

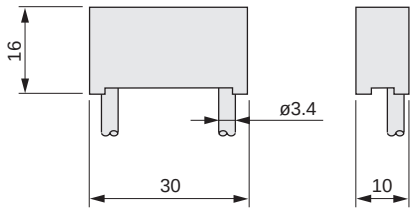
How to order

SW- SKAC

Code	Description
SKAC	Circuit AC
SKDC	Circuit DC

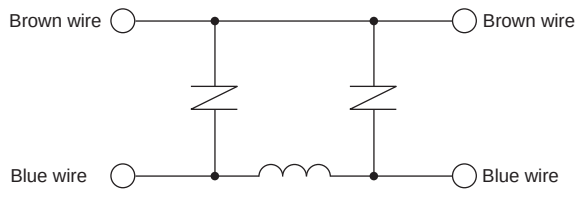
Dimensions

● SKAC/SKDC Series



Internal circuit diagram

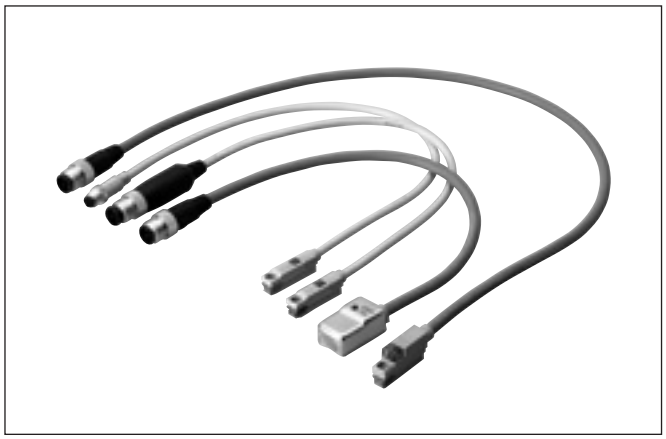
● SKAC/SKDC



*: Input side and output side do not have polarity, so either can be connected to the switch.

Note: SKAC is for AC circuit only and SKDC is for DC circuit only.

Cylinder switch with connector



Features

M8 and M12 connectors with high versatility are adopted

- Conforms to standards No. NECA4202 and IEC947-5-2
- Reduced work-hours for piping and ease of maintenance
- IP67 is adopted as degree of protection
- Protective cover for anti-spatter adherence is available

●For T0H

●For T2YD

CE RoHS

How to order

* This is a made to order product.

●2-wire cylinder switch

SW - T0 H F K
A B C D

Ⓐ Model	Ⓑ Lead wire leadout direction		Ⓒ Connector type, PIN configuration		Lead wire length		Ⓓ Option *3	
T0	H	Straight type	F	M8 connector 4PIN (+) 3-pin (-) *1	Blank	0.3m	K	Protective cover for anti-spatter adherence
T2	V	L-shaped type	M	M12 connector 1PIN (+) 4PIN (-)				
T2W			U	M12 connector 3, 4PIN not polarized *2				
T2YL								
K2Y								
F2Y								

*3: Applies only to T0H□□

*1: Supports only T0, T2, T2W
*2: Does not support T2YL.
Note that the "internal voltage drop" will be higher by 1 V than the specification value listed in the catalog.

●3-wire cylinder switch

SW - T3 H F
A B C

Ⓐ Model	Ⓑ Lead wire leadout direction		Ⓒ Type of connector		Lead wire length	
T3	H	Straight type	F	M8 1PIN(+) 3PIN(-) 4PIN:(OUT)	Blank	0.3m
T3P	V	L-shaped type				
T3W						

●Cylinder switch for strong magnetic field

SW - H0 M
A B

Ⓐ Model	Ⓑ Type of connector		Lead wire length	
H0	M	M12 connector 1, 4PIN not polarized *4	Blank	0.3m
H0Y	U	M12 connector 3, 4PIN not polarized *5		
V0				

*4: Supports only H0, H0Y
*5: V0 only 4PIN (+) 3 PIN (-)

●Cylinder switch dedicated for AC magnetic field

SW - T2YD G K
A B C

Ⓐ Model	Ⓑ Type of connector		Lead wire length		Ⓒ Option	
T2YD	G	Spatter-proof lead wire M12 connector 1, 4-pin no polarity	Blank	0.3m	K	Protective cover for anti-spatter adherence
	B	Spatter-proof lead wire M12 connector 3, 4-pin no polarity				
	U	Flame-resistant lead wire UL electric wire M12 connector 3, 4PIN not polarized				
	W	Flame-resistant lead wire UL electric wire M12 connector 1, 4PIN not polarized				

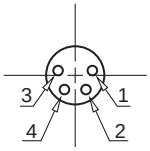
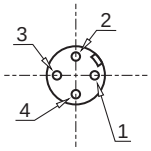
*6 : Cylinder switch specifications are the same as those of lead wire. Refer to Ending Pages 16 to 26 for details.

Pin array of connector

Series	Connector pin array					
	Code	Type of connector	1PIN	2PIN	3PIN	4PIN
2-wire	F	M8	-	-	(-)	(+)
	M	M12	(+)	-	-	(-)
	U		-	-	(±)	(±)
Strong magnetic field proof Dedicated for AC magnetic field	M, G, W		(±)	-	-	(±)
	U, B*		-	-	(±)	(±)
3-wire	F	M8	(+)	-	(-)	(OUT)

* Only SW-V0U is polarized (4-pin (+), 3PIN (-)).

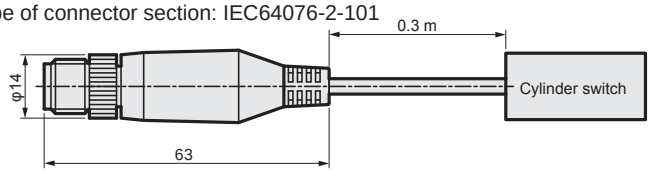
Connector specifications

Item	M8	M12
Pin array		
Shock resistance	294 m/s²	
Degree of protection	IP67	
Insulation resistance	100 MΩ with 500 VDC megger	
Withstand voltage	1000 VAC for 1 minute (between contacts and between contact housings) leakage current 1 mA or less	

dimensions

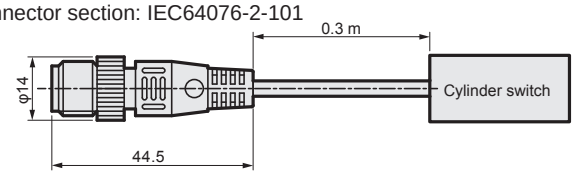
①M12 connector (connector for 2-wire cylinder switch, only pin array code of "U")

Standard for outer shape of connector section: IEC64076-2-101



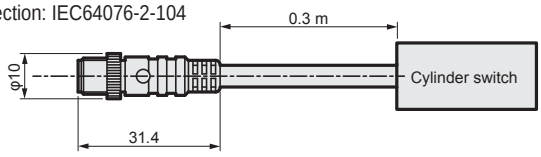
②M12 connector (M12 connector other than ①)

Standard for outer shape of connector section: IEC64076-2-101



③M8 connector (supporting all models)

Standard for outer shape of connector section: IEC64076-2-104



* For the external dimensions of the cylinder switch, refer to Ending Pages 18 to 26.

Series option

T type cylinder switch with off delay timer
T2JH/T2JV

Overview

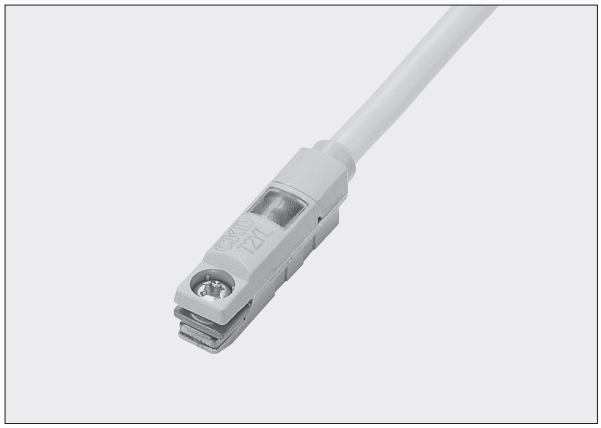
Optimum for intermediate detection of high speed cylinder.
Off delay timer realizes secure PC input.

Features

· PC input malfunctions at cylinder intermediate detection are prevented.
· Off delay timer 200±50 ms
· Installation to rodless cylinder SRL3 is possible.
· A great variety of cylinders.

* Made-to-order product when a switch is installed on the cylinder.
* Switchs are limited depending on cylinder. Refer to each cylinder page for the details.

T type cylinder switch coolant proof
T2YLH/V, T3YLH/V



Overview

This is a cylinder switch that prevents coolant for machine tools used at machining site, etc., from entering the cylinder switch.

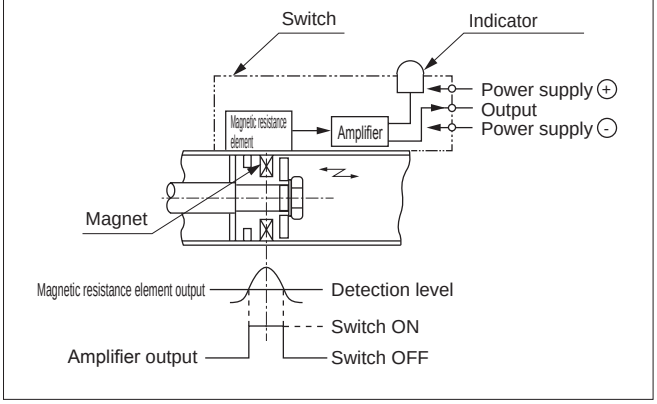
Features

· Oil resistance increased by applying coating to the circuit board.
  Usable even in an environment exposed to coolant.
· A great variety of cylinders

* Made-to-order product when a switch is installed on the cylinder.

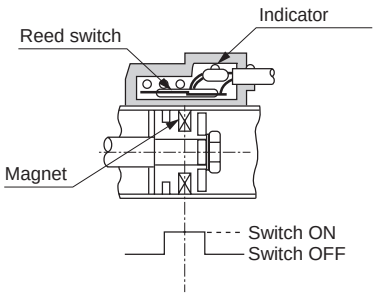
Operational principle

Proximity switch



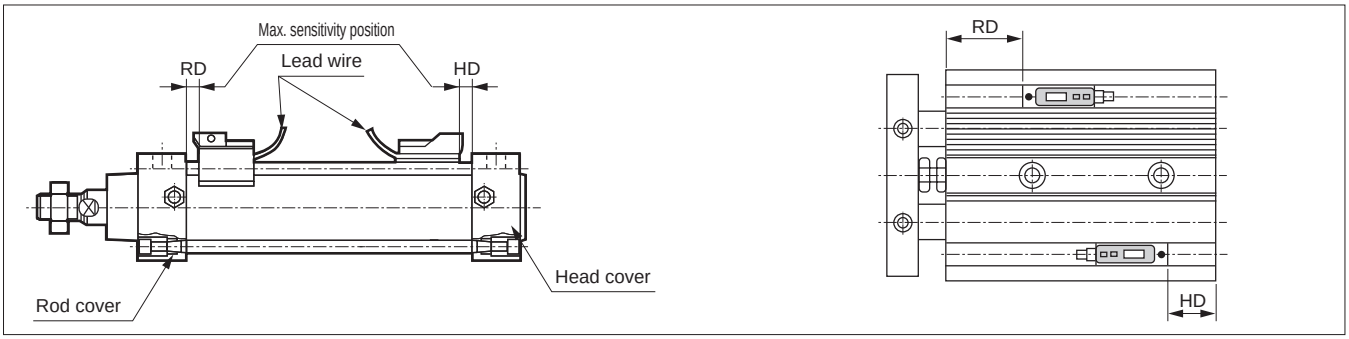
The magnetic field changes when the piston's magnet approaches, and the magnetic resistance element's output voltage changes as shown in the figure. Switching output as shown above is attained when this signal is amplified.

Reed switch



The magnetic field is generated when the piston's magnet approaches, and the contact matching the reed switch direction is magnetized to generate an attraction force and close the contact.

Switch mounting position



● Stroke end installation

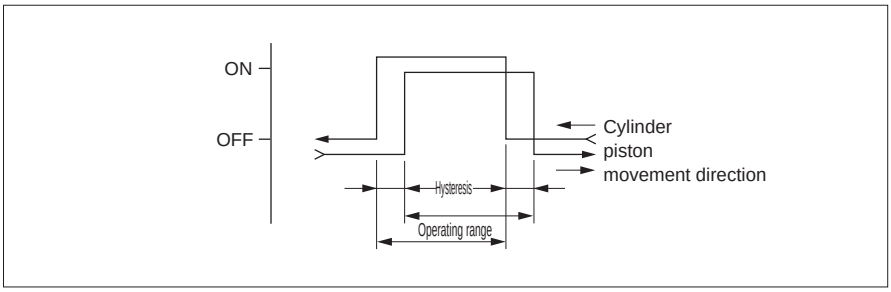
To check that the switch functions at the max. sensitivity position, mount 1 each at the rod side RD dimension position and at the head side HD dimension position.
HD and RD dimensions differ based on a cylinder. Refer to each cylinder dimension.
Mount the switch so the lead wire comes to the inside as shown above.

● Intermediate stroke position installation

In detection at the middle of the stroke, fix the piston at the stop position, and move the switch back and forth over the piston. Find the position where the switch turns ON first. The point between these 2 positions is the max. sensitivity position at that piston position, and is the installation position.

● Circumference direction installation

Differs depending on mounting bracket. When using a band, no limits are set on circumference direction.When using a tie rod, the position can be rotated in 90° increments. Circumferential rotation is not possible for the rail method.



Operating range

● The operating range is from the point where the piston moves and the switch turns ON to the point where the piston moves further in the same direction and the switch turns OFF.

The center of the operating range is max. sensitivity position. If this position is set as the piston stop position, it is not affected by disturbance and switch operation is stable.

Hysteresis

● Hysteresis is the distance from the point where the piston moves and the switch turns ON to the point where the piston moves in the reverse direction and the switch turns OFF. If the piston stops between these points, switch operation becomes unstable and is easily adversely affected by external sources. Please be careful.

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
Pencil shaped cylinder ● Applicable switch: Proximity switch (T2□, T3□, T2W□, T3W□), reed switch (T0□, T5□)								
SCP*3	ø6	1.5 to 4	2.5 to 5	1.5 or less	1.0 or less	4 to 6	3 or less	I-3
	ø10	1.5 to 5.5	2.5 to 6			3.5 to 7		
	ø16	2 to 6	2.5 to 6			3.5 to 7.5		
Medium bore size cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
CMK2	ø20	2.5 to 5.5	3.5 to 7.5	1.5 or less	1.0 or less	6.5 to 11	3 or less	I-79
	ø25	2.5 to 5.5	3.5 to 7.5			7.5 to 12		
	ø32	2.5 to 6	3.5 to 8			6.5 to 11.5		
	ø40	3 to 7	4 to 9			7.5 to 13.5		
Medium bore size cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
CMA2	ø20	3 to 6	5 to 6.5	1.5 or less	1.0 or less	8.5 to 12	3 or less	I-191
	ø30	3 to 5.5	6 to 7			8 to 13		
	ø40	2.5 to 5.5	5.5 to 7.5			8.5 to 12.5		
Round shaped cylinder • Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
SCM	ø20	3 to 8	4.5 to 9	1.5 or less	1.0 or less	6 to 14	3 or less	I-213
	ø25	3 to 9	5 to 9			5 to 14		
	ø32	3 to 8	5 to 9			5 to 12		
	ø40	3 to 9	5.5 to 9.5			6 to 14		
	ø50	3 to 9	6 to 10			6 to 14		
	ø63	3 to 9	6 to 10.5			7 to 15		
	ø80	4 to 10	6.5 to 11			7 to 15		
	ø100	4 to 10	7 to 11.5			9 to 15		
Tie rod cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
SCG	ø32	2 to 7	6 to 9	1.5 or less	1.0 or less	6 to 11	3 or less	I-335
	ø40	2 to 7	6.5 to 9			7 to 12		
	ø50	2 to 7	7 to 10			7.5 to 12		
	ø63	2 to 7.5	7 to 10			8.5 to 13		
	ø80	2.5 to 8	7.5 to 10.5			9 to 13.5		
	ø100	2.5 to 8	8 to 11			9 to 14		
Medium bore size cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
SCA2	ø40	2 to 7	3 to 10	1.5 or less	1.0 or less	5 to 12.5	3 or less	I-427
	ø50	2 to 7.5	3 to 10			5.5 to 13.5		
	ø63	2.5 to 7.5	3.5 to 10.5			5.5 to 14		
	ø80	3 to 8	4 to 11.5			6.5 to 14.5		
	ø100	3 to 8.5	4 to 11.5			6.5 to 15.5		
Medium bore size cylinder ● Applicable switch: Reed switch for strong magnetic fields (H0□) * The values in ( ) indicate H0Y.								
SCA2-L2	ø40	-		-	-	4 to 7.5(10.5 to 13.5)	3 or less	I-427
	ø50					4 to 7.5(11 to 14)		
	ø63					5 to 8(11.5 to 14.5)		
	ø80					5 to 8(10.5 to 14.5)		
	ø100					5 to 8(10.5 to 14.5)		
Large bore size cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
SCS2	ø125	7.5 to 14	14 to 21	1.5 or less	1.0 or less	11 to 16	3 or less	I-605
	ø140	7.5 to 14	18 to 26					
	ø160	7.5 to 14	18 to 26					
	ø180	7.5 to 14	18 to 26					
	ø200	7.5 to 14	18 to 26					

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
Tie rod cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
CKV2	ø20	2.5 to 5.5	3.5 to 7.5	1.5 or less	1.0 or less	6.5 to 11	3 or less	I-659
	ø25	2.5 to 5.5	3.5 to 7.5			7.5 to 12		
	ø32	2.5 to 6	3.5 to 8			6.5 to 11.5		
	ø40	3 to 7	4 to 9			7.5 to 13.5		
Tie rod cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
CAV2-L **COVP2-L** **COVN2-L**	ø50	3.8 to 6.7	4 to 6	0.8 or less	0.7 or less	7.7 to 8.3	1 or less	I-687
	ø75	3.8 to 6.7	4 to 6			7.7 to 8.3		
	ø100	3.8 to 6.7	4 to 6			7.7 to 8.3		
Compact cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
SSD2	ø12	1.5 to 5.5	3 to 6	1.5 or less	1.0 or less	5 to 8	3 or less	I-729
	ø16	1.5 to 4.5	3 to 7			4 to 9		
	ø20	3 to 8	4.5 to 8			6 to 14		
	ø25	3 to 9	4.5 to 8			5 to 14		
	ø32	3 to 8	4.5 to 8			5 to 12		
	ø40	3 to 9	5 to 8.5			6 to 14		
	ø50	3 to 9	5.5 to 9.5			6 to 14		
	ø63	3 to 9	5.5 to 9.5			7 to 15		
	ø80	4 to 10	6 to 10			7 to 15		
	ø100	4 to 10	6 to 10			9 to 15		
	ø125	4 to 10	8 to 10			9 to 15		
	ø140	4 to 10	8 to 10			9 to 15		
	ø160	4 to 10	8 to 10			9 to 15		
Compact cylinder ● Applicable switch: Reed switch (ET0□)								
SSD2-T1L	ø16	-		-	-	8 to 11.5	3 or less	I-729
	ø20					9 to 13.5		
	ø25					9.5 to 14		
	ø32					9 to 13		
	ø40					9 to 14		
	ø50					11 to 16		
	ø63					13 to 18		
Compact cylinder • Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
SSG	ø12	1.5 to 5.5	3 to 6	1.5 or less	1.0 or less	5 to 8	3 or less	I-1049
	ø16	1.5 to 4.5	3 to 7			4 to 9		
	ø20	3 to 8	4.5 to 8			6 to 14		
	ø25	3 to 9	4.5 to 8			5 to 14		
	ø32	3 to 8	4.5 to 8			5 to 12		
	ø40	3 to 9	5 to 8.5			6 to 14		
	ø50	3 to 9	5.5 to 9.5			7 to 15		
	ø63	3 to 9	5.5 to 9.5			7 to 15		
	ø80	4 to 10	6 to 10			9 to 15		
	ø100	4 to 10	6 to 10			9 to 15		

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
Compact cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
SSD	ø12	1.5 to 5.5	3 to 6	1.5 or less	1.0 or less	5 to 8	3 or less	I-1065
	ø16	1.5 to 4.5	3 to 7			4 to 9		
	ø20	3 to 8	4.5 to 8			6 to 14		
	ø25	3 to 9	4.5 to 8			5 to 14		
	ø32	3 to 8	4.5 to 8			5 to 12		
	ø40	3 to 9	5 to 8.5			6 to 14		
	ø50	3 to 9	5.5 to 9.5			6 to 14		
	ø63	3 to 9	5.5 to 9.5			7 to 15		
	ø80	4 to 10	6 to 10			7 to 15		
	ø100	4 to 10	6 to 10			9 to 15		
	ø125	4 to 10	8 to 10			9 to 15		
	ø140	4 to 10	8 to 10			9 to 15		
	ø160	4 to 10	8 to 10			9 to 15		
Compact cylinder ● Applicable switch: Reed switch (ET0□)								
SSD-T1L	ø16	-		-	-	8 to 11.5	3 or less	I-1065
	ø20					9 to 13.5		
	ø25					9.5 to 14		
	ø32					9 to 13		
	ø40					9 to 14		
	ø50					11 to 16		
	ø63					13 to 18		
Small direct mounting cylinder ● Applicable switch: Proximity switch (F2□, F3□), reed switch (F0□)								
MDC2	ø6	1.5 to 3.5	-	1.0 or less	-	3.5 to 6.0	1.0 or less	I-1327
	ø8							
	ø10							
MDC2-X	ø6	2.0 to 3.5	-	1.0 or less	-	5.5 to 7.5	1.0 or less	
	ø8							
	ø10							
MDC2-Y	ø6	1.5 to 3.5	-	1.0 or less	-	4.5 to 6.0	1.0 or less	
	ø8							
	ø10							
Small cylinder/suction pad ● Applicable switch: Proximity switch (F2□, F3□), reed switch (F0□)								
MVC	ø6	1.5 to 3.5	-	1.0 or less	-	3.5 to 6.0	1.0 or less	I-1353
	ø10					4.5 to 6.0		
Compact cylinder ● Applicable switch: Proximity switch (K2□, K3□, K3P□, K2Y□, K3Y□), reed switch (K0□, K5□)								
SMG	ø6	1.5 to 7	3.5 to 7.5	2 or less	1.5 or less	3 to 9.5	3 or less	I-1365
	ø10	1.5 to 7	3.5 to 7.5			3.5 to 9.5		
	ø16	1.5 to 7	4.5 to 8.5			4 to 11		
	ø20	2.5 to 9	5 to 9			5 to 12.5		
	ø25	3.5 to 11	5.5 to 9.5			6.5 to 14		
	ø32	3.5 to 11.5	1.5 to 10.5			5.5 to 14		
Small compact cylinder ● Applicable switch: Proximity switch (F2□, F3□), reed switch (F0□)								
MSD-*L MSDG-L	ø6	1.5 to 3.0	-	1.0 or less	-	5 to 6	1.0 or less	I-1397
	ø8	1.5 to 3.5	-			5.5 to 6.5		
	ø12	1.5 to 3.5	-			5.5 to 7.5		
	ø16	1.5 to 3.5	-			4.5 to 7		

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
Flat compact cylinder ● Applicable switch: Proximity switch (M2V, M3V, M3PV, M2WV, M3WV), reed switch (M0V, M5V)								
FCS-L	ø25	9 to 12	6 to 11	1.5 or less	1.0 or less	7 to 8.5	3 or less	I-1455
	ø32	9 to 12	6 to 11			7 to 8.5		
	ø40	8.5 to 12	6 to 11			7 to 8.5		
	ø50	8 to 12	6 to 11			6.5 to 8.5		
	ø63	8 to 12	6 to 11			6.5 to 8.5		
FCH-L **FCD-L** **FCD-DL** **FCD-KL**	ø25	6 to 12	5 to 11	1.5 or less	1.0 or less	7 to 12	3 or less	
	ø32	6 to 12	5 to 11			7 to 12		
	ø40	6 to 12	5 to 11			7 to 12		
	ø50	6 to 12	5 to 11			7 to 12		
	ø63	6 to 12	5 to 11			7 to 12		
Stopper cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
STK	ø20	3 to 8	4.5 to 8	1.5 or less	1.5 or less	6 to 14	3 or less	I-1491
	ø32	3 to 8	4.5 to 8			5 to 12		
	ø40	3 to 9	5 to 8.5			6 to 14		
	ø50	3 to 9	5.5 to 9.5			6 to 14		
Brake cylinder ● Applicable switch: Proximity switch (M2V, M3V, M3PV, M2WV, M3WV), reed switch (M0V, M5V)								
ULKP	ø16	5 to 9.5	4.5 to 9.5	1.5 or less	1.0 or less	5 to 9.5	3 or less	II-661
Brake cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
ULK	ø20	2.5 to 5.5	3.5 to 7.5	1.5 or less	1.0 or less	6.5 to 11	3 or less	II-661
	ø25	2.5 to 5.5	3.5 to 7.5			7.5 to 12		
	ø32	2.5 to 6	3.5 to 8			6.5 to 11.5		
	ø40	3 to 7	4 to 9			7.5 to 13.5		
Brake cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
JSK2	ø20	2.5 to 5.5	3.5 to 7.5	1.5 or less	1.0 or less	6.5 to 11	3 or less	II-691
	ø25	2.5 to 5.5	3.5 to 7.5			7.5 to 12		
	ø32	2.5 to 6	3.5 to 8			6.5 to 11.5		
	ø40	3 to 7	4 to 9			7.5 to 13.5		
Brake cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
JSM2	ø20	3 to 6	5 to 6.5	1.5 or less	1.0 or less	8.5 to 12	3 or less	II-710
	ø30	3 to 5.5	6 to 7			8 to 13		
	ø40	2.5 to 5.5	5.5 to 7.5			8.5 to 12.5		
Tie rod cylinder with brake ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
JSG	ø32	2 to 7	6 to 9	1.5 or less	1.0 or less	6 to 11	3 or less	II-727
	ø40	2 to 7	6.5 to 9			7 to 12		
	ø50	2 to 7	7 to 10			7.5 to 12		
	ø63	2 to 7.5	7 to 10			8.5 to 13		
	ø80	2.5 to 8	7.5 to 10.5			9 to 13.5		
	ø100	2.5 to 8	8 to 11			9 to 14		

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
Brake cylinder	● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)							
JSC3 (Medium bore size)	ø40	2 to 7	3 to 10	1.5 or less	1.0 or less	5 to 12.5	3 or less	II-757
	ø50	2 to 7.5	3 to 10			5.5 to 13.5		
	ø63	2.5 to 7.5	3.5 to 10.5			5.5 to 14		
	ø80	3 to 8	4 to 11.5			6.5 to 14.5		
	ø100	3 to 8.5	4 to 11.5			6.5 to 15.5		
Brake cylinder	● Applicable switch: Strong magnetic field proof reed switch (H0□)					* The values in ( ) indicate H0Y.		
JSC3-L2 (Medium bore size)	ø40	-		-		4 to 7.5(10.5 to 13.5)	3 or less	II-757
	ø50					4 to 7.5(11 to 14)		
	ø63					5 to 8(11.5 to 14.5)		
	ø80					5 to 8(10.5 to 14.5)		
	ø100					5 to 8(10.5 to 14.5)		
Brake cylinder	● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)							
JSC4 (Large bore size)	ø125	7.5 to 14	14 to 21	1.5 or less	1.0 or less	11 to 16	3 or less	II-757
	ø140	7.5 to 14	18 to 26			11 to 16		
	ø160	7.5 to 14	18 to 26			11 to 16		
	ø200	7.5 to 14	18 to 26			11 to 16		
Position locking compact cylinder	● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)							
USSD	ø20	3 to 8	4.5 to 8	1.5 or less	1.0 or less	6 to 14	3 or less	II-831
	ø25	3 to 9	4.5 to 8			5 to 14		
	ø32	3 to 8	4.5 to 8			5 to 12		
	ø40	3 to 9	5 to 8.5			6 to 14		
	ø50	3 to 9	5.5 to 9.5			6 to 14		
	ø63	3 to 9	5.5 to 9.5			7 to 15		
Free position locking flat cylinder	● Applicable switch: Proximity switch (M2□, M3□, M3P□, M2W□, M3W□), reed switch (M0□, M5□)							
UFCD	ø25	6 to 12	5 to 11	1.5 or less	1.0 or less	7 to 12	3 or less	II-875
	ø32	6 to 12	5 to 11			7 to 12		
	ø40	6 to 12	5 to 11			7 to 12		
	ø50	6 to 12	5 to 11			7 to 12		
	ø63	6 to 12	5 to 11			7 to 12		
Free position locking Medium bore size cylinder	● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)							
USC	ø40	2 to 7	3 to 10	1.5 or less	1.0 or less	5 to 12.5	3 or less	II-891
	ø50	2 to 7.5	3 to 10			5.5 to 13.5		
	ø63	2.5 to 7.5	3.5 to 10.5			5.5 to 14		
	ø80	3 to 8	4 to 11.5			6.5 to 14.5		
	ø100	3 to 8.5	4 to 11.5			6.5 to 15.5		
Free position locking Medium bore size cylinder	● Applicable switch: Reed switch for strong magnetic field (H0□)					* The values in ( ) indicate H0Y.		
USC-L2	ø40	-		-	-	4 to 7.5(10.5 to 13.5)	3 or less	II-891
	ø50					4 to 7.5(11 to 14)		
	ø63					5 to 8(11.5 to 14.5)		
	ø80					5 to 8(10.5 to 14.5)		
	ø100					5 to 8(10.5 to 14.5)		
Guided cylinder	● Applicable switch: Proximity switch (F2□, F3□, F2Y□, F3Y□)							
STM	ø10	2.5 to 4.5	2.5 to 5.5	1.5 or less	1.5 or less	-	-	II-309
	ø16	2.5 to 4.5	2.5 to 5.5					

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
Guided cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
STG	ø12	1.5 to 4.5	4 to 6	1.5 or less	1.5 or less	6 to 10	3 or less	II-329
	ø16	1.5 to 4.5	4 to 6			4 to 9		
	ø20	3 to 8	5 to 8.5			6 to 14		
	ø25	3 to 9	5 to 8.5			5 to 14		
	ø32	3 to 9	5 to 9			5 to 12		
	ø40	3 to 9	6 to 10			6 to 14		
	ø50	3 to 9	6 to 10			6 to 14		
	ø63	3 to 9	6 to 10			7 to 15		
	ø80	4 to 10	7 to 10			7 to 15		
Guided cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
STS/L	ø8	1.5 to 3.5	4 to 6	1.5 or less	1.5 or less	5 to 9	3 or less	II-437
	ø12	1.5 to 4.5	4 to 6			6 to 10		
	ø16	1.5 to 4.5	4 to 6			4 to 9		
	ø20	3 to 8	5 to 8.5			6 to 14		
	ø25	3 to 9	5 to 8.5			5 to 14		
	ø32	3 to 8	5 to 9			5 to 12		
	ø40	3 to 9	6 to 10			6 to 14		
	ø50	3 to 9	6 to 10			6 to 14		
	ø63	3 to 9	6 to 10			7 to 15		
	ø80	4 to 10	7 to 10			7 to 15		
	ø100	2 to 9	7 to 10			7 to 15		
Linear slide cylinder ● Applicable switch: Proximity switch (F2□, F3□, F2Y□, F3Y□)								
LCW	ø12	3.5 to 6.5	4.5 to 6.5	1.0 or less	1.0 or less	-	-	II-5
Linear slide cylinder ● Applicable switch: Proximity switch (T2□, T3□, T2W□, T3W□), reed switch (T0□, T5□)								
LCW	ø16	3 to 5	4 to 5.5	1.0 or less	1.0 or less	6.5 to 9.5	3.0 or less	II-5
	ø20	4.5 to 6.5	5.5 to 6.5			8 to 12		
Linear slide cylinder ● Applicable switch: Proximity switch (F2□, F3□, F2Y□, F3Y□)								
LCR	ø6	2 to 4	2.5 to 5.5	1.0 or less	1.0 or less	-	-	II-55
	ø8		3.5 to 6					
	ø12		3 to 4.5					
Linear slide cylinder ● Applicable switch: Proximity switch (T2□, T3□, T2W□, T3W□), reed switch (T0□, T5□)								
LCR	ø16	2 to 4	3 to 4.5	1.0 or less	1.0 or less	5 to 9	1.0 or less	II-55
	ø20	2 to 5.5	4 to 5.5			6.5 to 11		
	ø25	2.5 to 6	3.5 to 6			8 to 12		
Linear slide cylinder ● Applicable switch: Proximity switch (F2□, F3□, F2Y□, F3Y□)								
LCG	ø6	2 to 4	2.5 to 5.5	1.0 or less	1.0 or less	-	-	II-137
	ø8		3.5 to 6					
	ø12		3 to 4.5					
Linear slide cylinder ● Applicable switch: Proximity switch (T2□, T3□, T2W□, T3W□), reed switch (T0□, T5□)								
LCG	ø16	2 to 4	3 to 4.5	1.0 or less	1.0 or less	5 to 9	1.0 or less	II-137
	ø20	2 to 5.5	4 to 5.5			6.5 to 11		
	ø25	2.5 to 6	3.5 to 6			8 to 12		
Linear slide cylinder ● Applicable switch: Proximity switch (T2□, T3□, T2W□, T3W□), reed switch (T0□, T5□)								
LCX	ø25	0.5 to 6	1.0 to 5.5	2 or less	2 or less	2 to 10.5	3.5 or less	II-201
	ø32	1.0 to 5.5	0.5 to 5.0			1 to 11		

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
Linear slide cylinder ● Applicable switch: Proximity switch (F2□, F3□, F2Y□, F3Y□)								
LCM	ø4.5	1 to 3	2 to 4	1.0 or less	1.0 or less	-	-	II-261
	ø6							
	ø8							
Twin rod cylinder ● Applicable switch: Proximity switch (K2□, K3□, K3P□, K2Y□, K3Y□), reed switch (K0□, K5□)								
STR2	ø6	1 to 6	4 to 7.5	2.0 or less	1.5 or less	4 to 9(STR2-M)	3.0 or less	II-567
	ø10	1 to 5.5	4 to 7.5			4 to 9(STR2-M)		
	ø16	1.5 to 7.5	4.5 to 9			5 to 12.5		
	ø20	3 to 9	5.5 to 10			6.5 to 14.5		
	ø25	3.5 to 10.5	6.5 to 10.5			8 to 14.5		
	ø32	-	-			-		
Unit cylinder ● Applicable switch: Proximity switch (T2□, T3□), reed switch (T0□, T5□)								
UCA2-*L	ø10	1.5 to 4	-	1.5 or less	-	4.5 to 8	3.0 or less	II-625
	ø16							
	ø25							
	ø32							
Hi energy absorption cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
HCM	ø20	3 to 8	4.5 to 9	1.5 or less	1.0 or less	6 to 14	3 or less	I-941
	ø25	3 to 9	5 to 9			5 to 14		
	ø32	3 to 8	5 to 9			5 to 12		
	ø40	3 to 9	5.5 to 9.5			6 to 14		
	ø50	3 to 9	6 to 10			6 to 14		
	ø63	3 to 9	6 to 10.5			7 to 15		
High speed cylinder ● Applicable switch: Proximity switch (R1, R2, R3, R2Y, R3Y), reed switch (R0, R4, R5, R6)								
HCA	ø20	6 to 14	11 to 18	1.5 or less	1.0 or less	7 to 14	3.0 or less	I-959
	ø25	6 to 14	11 to 18			8 to 13		
	ø32	6 to 14	11 to 18			9 to 14		
	ø50	6 to 14	11 to 18			9 to 14		
Rodless cylinder ● Applicable switch: Proximity switch (M2□, M3□, M3P□, M2WV, M3WV), reed switch (M0□, M5□)								
SRL3	ø12	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11	3.0 or less	I-1551
	ø16	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11		
	ø20	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11		
	ø25	9.5 to 15.5	9 to 14	2.0 or less	1.5 or less	8.5 to 13.5	3.5 or less	
	ø32	7.5 to 15	8 to 14	2.0 or less	1.5 or less	7 to 13.5		
	ø40	11.5 to 17.5	10 to 16.5	2.0 or less	1.5 or less	10 to 16		
	ø50	11 to 24	17 to 27	2.5 or less	1.5 or less	17 to 27	3.0 or less	
	ø63	11 to 24	17 to 27	2.5 or less	1.5 or less	17 to 27		
	ø80	26.5 to 45.5	16.5 to 40	5.0 or less	3.0 or less	20.5 to 41		
	ø100	25.5 to 40.5	21.5 to 36	3.0 or less	2.5 or less	24 to 37		
Rodless cylinder ● Applicable switch: Proximity switch (T2W□, T3W□, T2YD)								
SRL3	ø12	-	2 to 7	-	1.0 or less	-	-	I-1551
	ø16	-	2 to 7					
	ø20	-	3 to 8	-	1.5 or less			
	ø25	-	3 to 10					
	ø32	-	3 to 10					
	ø40	-	4 to 11					
	ø50	-	9 to 16					
	ø63	-	9 to 16					
	ø80	-	10 to 24	-	2.0 or less			
	ø100	-	10 to 24					

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
High precision guided rodless cylinder	● Applicable switch: Proximity switch (M2□, M3□, M3P□, M2WV, M3WV), reed switch (M0□, M5□)							
SRG3	ø12	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11	3.0 or less	I-1627
	ø16	4 to 13	4 to 12			3 to 11		
	ø20	9.5 to 15.5	9 to 14	2.0 or less	1.5 or less	3 to 11		
	ø25	9.5 to 15.5	9 to 14			8.5 to 13.5	3.5 or less	
High precision guided rodless cylinder	● Applicable switch: Proximity switch (T2W□, T3W□, T2YD)							
SRG3	ø12	-	2 to 7	-	1.0 or less	-	-	I-1627
	ø16	-	2 to 7					
	ø20	-	3 to 8	-	1.5 or less			
	ø25	-	3 to 10					
High precision guided rodless cylinder	● Applicable switch: Proximity switch (T2Y□, T3Y□, T2W□, T3W□, T2YD), reed switch (T0□, T5□, T8□)							
SRM3	ø25	-	6 to 9	-	1.0 or less	5.5 to 11	2.0 or less	I-1655
	ø32	-	6.5 to 9			5.5 to 10		
	ø40	-	7.5 to 10.5			5.5 to 9		
	ø63	-	8 to 11			5.5 to 10		
Rodless cylinder with brake	● Applicable switch: Proximity switch (M2□, M3□, M3P□, M2WV, M3WV), reed switch (M0□, M5□)							
SRT3	ø12	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11	3.0 or less	I-1685
	ø16	4 to 13	4 to 12			3 to 11		
	ø20	4 to 13	4 to 12			3 to 11		
	ø25	9.5 to 15.5	9 to 14	2.0 or less	1.5 or less	8.5 to 13.5	3.5 or less	
	ø32	7.5 to 15	8 to 14			7 to 13.5		
	ø40	11.5 to 17.5	10 to 16.5			10 to 16		
	ø50	16.5 to 24	14 to 21			14.5 to 21.5		
	ø63	16 to 24	14 to 21			14.5 to 21.5		
Rodless cylinder	● Applicable switch: Proximity switch (T2W□, T3W□, T2YD)							
SRT3	ø12	-	2 to 7	-	1.0 or less	-	-	I-1685
	ø16	-	2 to 7					
	ø20	-	3 to 8	-	1.5 or less			
	ø25	-	3 to 10					
	ø32	-	3 to 10					
	ø40	-	4 to 11					
	ø50	-	9 to 16					
	ø63	-	9 to 16					
Magnet rodless cylinder	● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2W□, T3W□, T2Y□, T3Y□, T1□)							
MRL2	ø6	2 to 5	5.5 to 6.5	1.0 or less	1.0 or less	-	-	I-1713
	ø10	2.5 to 5.5	6 to 7.5					
	ø16	2 to 5	5.5 to 7					
	ø20	2 to 5	6 to 5.5					
	ø25	2 to 5	6 to 5.5					
	ø32	2 to 4.5	5.5 to 6.5					
Magnet rodless cylinder with high precision guide	● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2W□, T3W□,T2Y□, T3Y□, T1□), reed switch (T0□, T5□)							
MRG2	ø10	2 to 4.5	5.5 to 7	0.5 or less	0.5 or less	6.5 to 7.5	1 or less	I-1745
	ø16	2 to 5	6 to 7.5			7 to 8	2 or less	
	ø25	2 to 5	6 to 7			7.5 to 8	2 or less	

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
Clamp cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
CAC4	ø40	2 to 6.5	5.7 to 6.5	1.5 or less	1.0 or less	6.7 to 10.8	3 or less	II-989
	ø50	2.5 to 6.0	5.9 to 6.8			7.8 to 11.3		
	ø63	2.5 to 6	6.1 to 6.8			8.2 to 11.4		
	ø80	3 to 7	7.7 to 8.5			9 to 10.9		
Clamp cylinder ● Applicable switch: Reed switch for strong magnetic field (H0□)								
CAC4-L2	ø40	-		-	-	6.7 to 10.8	3 or less	II-989
	ø50					7.8 to 11.3		
	ø63					8.2 to 11.4		
	ø80					6.6 to 7.5		
Clamp cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
UCAC2	ø50	2.5 to 6.0	5.9 to 6.8	1.5 or less	1.0 or less	7.8 to 11.3	3 or less	II-1013
	ø63	2.5 to 6.5	6.1 to 6.8			8.2 to 11.4		
Clamp cylinder ● Applicable switch: Reed switch for strong magnetic field (H0□)								
UCAC2-L2	ø50	-		-	-	7.8 to 11.3	3 or less	II-1013
	ø63					8.2 to 11.4		
Lightweight clamp cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
CAC	ø32	2.5 to 6	3.5 to 8	1.5 or less	1.0 or less	6.5 to 11.5	3 or less	II-1027
	ø40	3 to 7	4 to 9			7.5 to 13.5		
Position locking, lightweight clamp cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2Y□, T3Y□, T2YD, T1□), reed switch (T0□, T5□, T8□)								
UCAC	ø32	2.5 to 6	3.5 to 8	1.5 or less	1.0 or less	6.5 to 11.5	3 or less	II-1027
	ø40	3 to 7	4 to 9			7.5 to 13.5		
Rotary clamp cylinder ● Applicable switch: Proximity switch (T2□„ T3□„ T3P□„ T2J□„ T2Y□„ T3Y□„ T2YD, T1□„), reed switch (T0□, T5□„ T8□„)								
RCS2	ø12	1.5 to 5.5	3 to 6	1.5 or less	1.0 or less	5 to 8	3 or less	
	ø16	1.5 to 4.5	3 to 7			4 to 9		
	ø20	3 to 8	4.5 to 8			6 to 14		
	ø25	3 to 9	4.5 to 8			5 to 14		
	ø32	3 to 8	4.5 to 8			5 to 12		
	ø40	3 to 9	5 to 8.5			6 to 14		
	ø50	3 to 9	5.5 to 9.5			6 to 14		
	ø63	3 to 9	5.5 to 9.5			7 to 15		
Rotary clamp cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2W□, T3W□, T2Y□, T3Y□, T2YD), reed switch (T0□, T5□)								
RCC2	ø16	2 to 5	3 to 7	1.5 or less	1.0 or less	4 to 9	3 or less	II-1047
	ø20	3 to 8	4.5 to 8			6 to 14		
	ø25	3 to 9	4.5 to 8			5 to 14		
	ø32	3 to 8	4.5 to 8			5 to 12		
	ø40	3 to 9	5 to 8.5			6 to 14		
	ø50	3 to 9	5.5 to 9.5			6 to 14		
	ø63	3 to 9	5.5 to 9.5			7 to 15		
Rotary clamp cylinder ● Applicable switch: Proximity switch (T2□, T3□, T2W□, T3W□), reed switch (T0□, T5□)								
RCS	ø16	2 to 5	3 to 7	1.5 or less	1.0 or less	4 to 9	3 or less	II-1069

Operating range and hysteresis of each cylinder model with switch

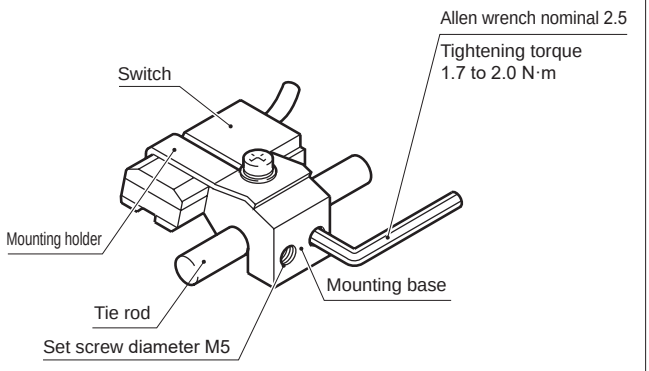
Model No.	Bore size (mm)	Proximity switch				Reed switch		Page
		Operating range		Hysteresis		Operating range	Hysteresis	
		1-color type	2-color type	1-color type	2-color type			
High power cylinder ● Applicable switch: Proximity switch (R1, R2, R3, R2Y, R3Y), reed switch (R0, R4, R5, R6)								
SHC	ø40	6.5 to 11.5		1.5 or less		9.5 to 12.5	3.0 or less	II-1095
	ø50	8 to 12.5				10.5 to 14.5		
	ø63	7.5 to 12.5				10.5 to 14.5		
	ø80	8 to 13.5				11.5 to 15.5		
	ø100	8 to 14				12 to 16		
High power cylinder ● Applicable switch: Reed switch (H0)								
SHC-L2	ø40	-		-		4 to 7	3.0 or less	II-1095
	ø50					5 to 7.5		
	ø63					5 to 8		
	ø80					5 to 8		
	ø100					5 to 8		
Mechanical power cylinder ● Applicable switch: Proximity switch (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
MCP-S	2t	4 to 10	6 to 10	1.5 or less	1.0 or less	7 to 15	3 or less	II-1033
	5t	4 to 10	8 to 10			9 to 15		
MCP-W (rapid feed part)	2t	3.5 to 6.0	4.6 to 9.2	1.5 or less	1.0 or less	7.6 to 12.8	3 or less	
	5t	4.0 to 8	5.5 to 11.9			8.9 to 14.1		
Guideless cylinder ● Applicable switch: Proximity switch (R1, R2, R3, R2Y, R3Y), reed switch (R0, R4, R5, R6)								
GLC	ø40	7 to 17		1.5 or less		11.5 to 16.5	3.0 or less	II-1151
	ø50	9 to 17				13 to 18		
	ø63	10 to 18				15 to 20		
	ø80	8 to 19				15 to 20		
	ø100	11 to 20.5				13.5 to 19		
Guideless cylinder ● Applicable switch: Reed switch (H0)								
GLC-L2	ø40	-		-		4 to 9	3.0 or less	II-1151
	ø50					4 to 9		
	ø63					4 to 10		
	ø80					5 to 11		
	ø100					5 to 11		
Rotary actuator ● Applicable switch: Proximity switch (T2□, T3□, T2W□, T3W□, T2Y□, T3Y□, T1□), reed switch (T0□, T5□, T8□)								
RRC	8	15° to 60°	20° to 70°	-	-	70° to 90°	-	II-1241
	32	10° to 30°	10° to 30°			30° to 40°		
	63	10° to 30°	10° to 30°			30° to 40°		
Table rotary actuator ● Applicable switch: Proximity switch (T2□, T3□, T2W□, T3W□, T2Y□, T3Y□, T1□)								
GRC	5	10° to 35°	30° to 40°	-	-	-	-	II-1255
	10	5° to 30°	20° to 30°					
	20	10° to 35°	25° to 35°					
	30	5° to 25°	15° to 25°					
	50	5° to 25°	15° to 25°					
	80	5° to 25°	15° to 25°					
Compact rotary actuator ● Applicable switch: Proximity switch (SR-□)								
RV3*	3	15°±7°	-	3° or less	-	-	-	II-1293
	10	15°±7°	-					
	20	15°±7°	-					
	30	15°±7°	-					
Compact rotary actuator ● Applicable switch: Proximity switch (FR-□)								
RV3*	3	23°±7°	-	2° or less	-	-	-	II-1293
	10	23°±7°	-					
	20	23°±7°	-					
	30	23°±7°	-					
Large rotary actuator ● Applicable switch: Proximity switch (M2V, M3V, M3PV), reed switch (M0V, M5V)								
RV3*	50	Approx. 40°	-		-	Approx. 25°	-	II-1293
	150	Approx. 25°	-			Approx. 15°		
	300	Approx. 25°	-			Approx. 15°		
	800	Approx. 25°	-			Approx. 15°		

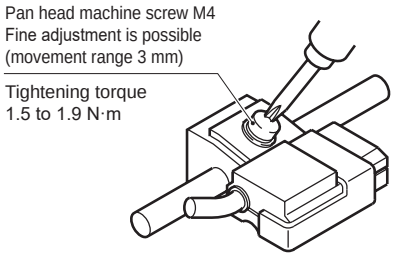
⚠CAUTION Relocation of switch

Tie rod mounting

Loosening the two set screws for fixing the mounting base by 1/2 to 3/4 turns allows you to move the switch axially without fallout.
After adjustment, lightly press the holder so that the switch contacts the tube, and tighten the set screw.
Tightening torque is 1.7 to 2.0 N·m. It is tightened enough if the Allen wrench begins to bend.

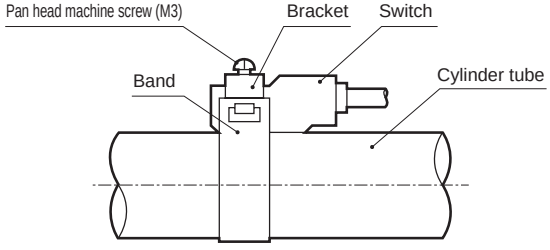
● Movement and tightening diagram





Band mounting

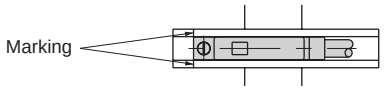
Loosen the fixing screw (pan head machine screw), move the body and band along the cylinder tube, and tighten the screw at the specified position. For fine adjustment, fix the band position and move only the switch body. Tightening torque is 0.5 to 0.7N·m.
Tightening torque for HCA ø80 and ø100 is 1.0 to 1.5 N·m.



Band mounting

(1) When moving the switch position to the stroke direction

- The 1-color LED switch can be fine-tuned by ±3 mm from the default. If the adjusting range exceeds ±3 mm, or when fine-tuning the 2-color LED switch, move the band position.
- The switch bracket rail has a marking 4 mm from the rail end. Use as a guide to the mounting position when replacing the switch. Switch rail markings are set to the default switch max. sensitivity position. The max. sensitivity position will change when the switch is changed or when the band is moved. Adjust the position accordingly in this case.

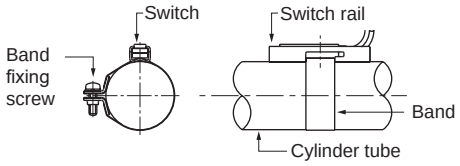


(2) When moving the switch position to the circumferential direction

- Loosen the band fixing screw, shift the switch rail in the circumferential direction, then tighten at the specified position. Tightening torque is 0.8 to 1.0 N·m.

(3) Shifting the band position

- Loosen the band fixing screw, shift the switch rail and band along the cylinder tube, and tighten at the specified position. Tightening torque is 0.8 to 1.0 N·m.



Switch groove mounting

Loosen the fixing screw (set screw), move the switch body along the switch groove, and tighten the screw at the specified position.
When using T2, T2W, T3, T3W, T0, T5, K2, K3, K0 or K5, use a flathead screwdriver (clockwork screwdriver, precision screwdriver, etc.) with a 5 to 6 mm grip diameter, a 2.4 mm or smaller tip and thickness 0.3 mm or less to tighten the screws with a tightening torque of 0.1 to 0.2 N·m.
When using T*C, T2J, T2Y, T3Y, K2Y, K3Y, T2YD, T1, T8, T2YL, T3YL or ET0, tighten with a tightening torque of 0.5 to 0.7 N·m.
When using F2*, F3*, F2Y* or F3Y*, tighten with a tightening torque of 0.03 to 0.08 N·m.

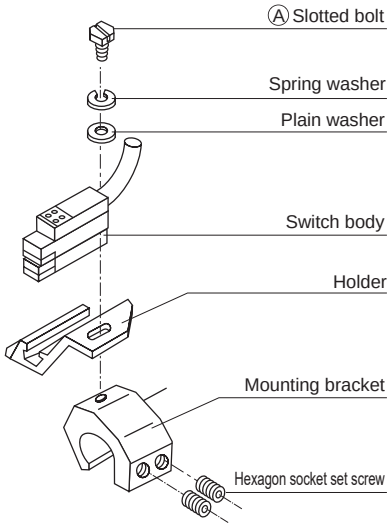
T2YD Tie rod mounting

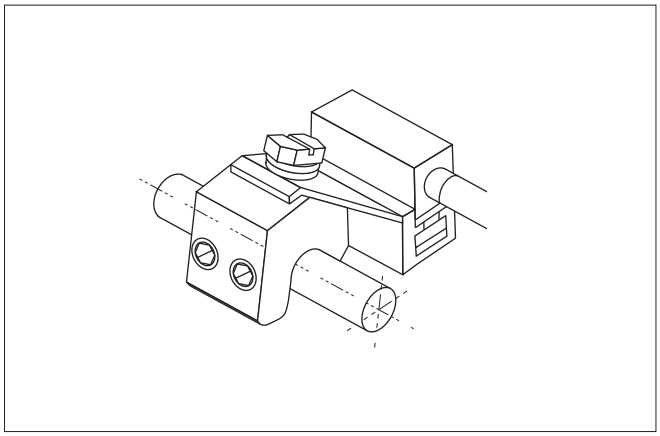
(1) Fine adjustment

Loosen the slotted hex socket bolt Ⓐ, move only the switch body, and fix at the required position. Tightening torque is 0.5 to 0.7 N·m.

(2) Rough adjustment

Completely loosen the slotted bolt Ⓐ and set screws, and move the entire mounting bracket to the required position. Tighten the slotted bolt Ⓐ. Tightening torque is 0.5 to 0.7 N·m.
Then tighten the set screw. Tightening torque is 1.7 to 2.0 N·m.





⚠ Notes for contact protection circuits (SKAC and SKDC)

If a reed switch is used and load falls under any of the following conditions, the contact may be kept on and the service life may become shorter. To prevent that, connect a contact protection circuit within 2 m from the switch.

- When the work load is an inductive load (relay, valve, etc., (coil-drive load)) or capacitance load (programmable controller, etc., (load including capacitor))
- When the lead wire lengths are as follows
  - 12 VDC : 100 m or more
  - 24 VDC : 50 m or more
  - 100 VAC : 20 m or more
  - 200 VAC : 10 m or more
- When overvoltage or overcurrent may occur due to other causes

For details on contact protection circuits, refer to Ending Page 27.

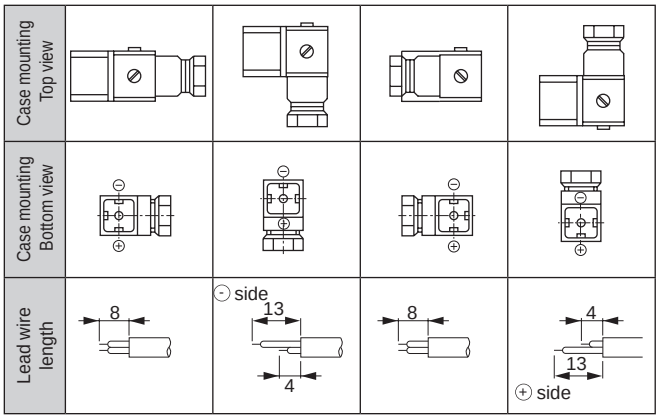
How to install the product to R*B terminal box

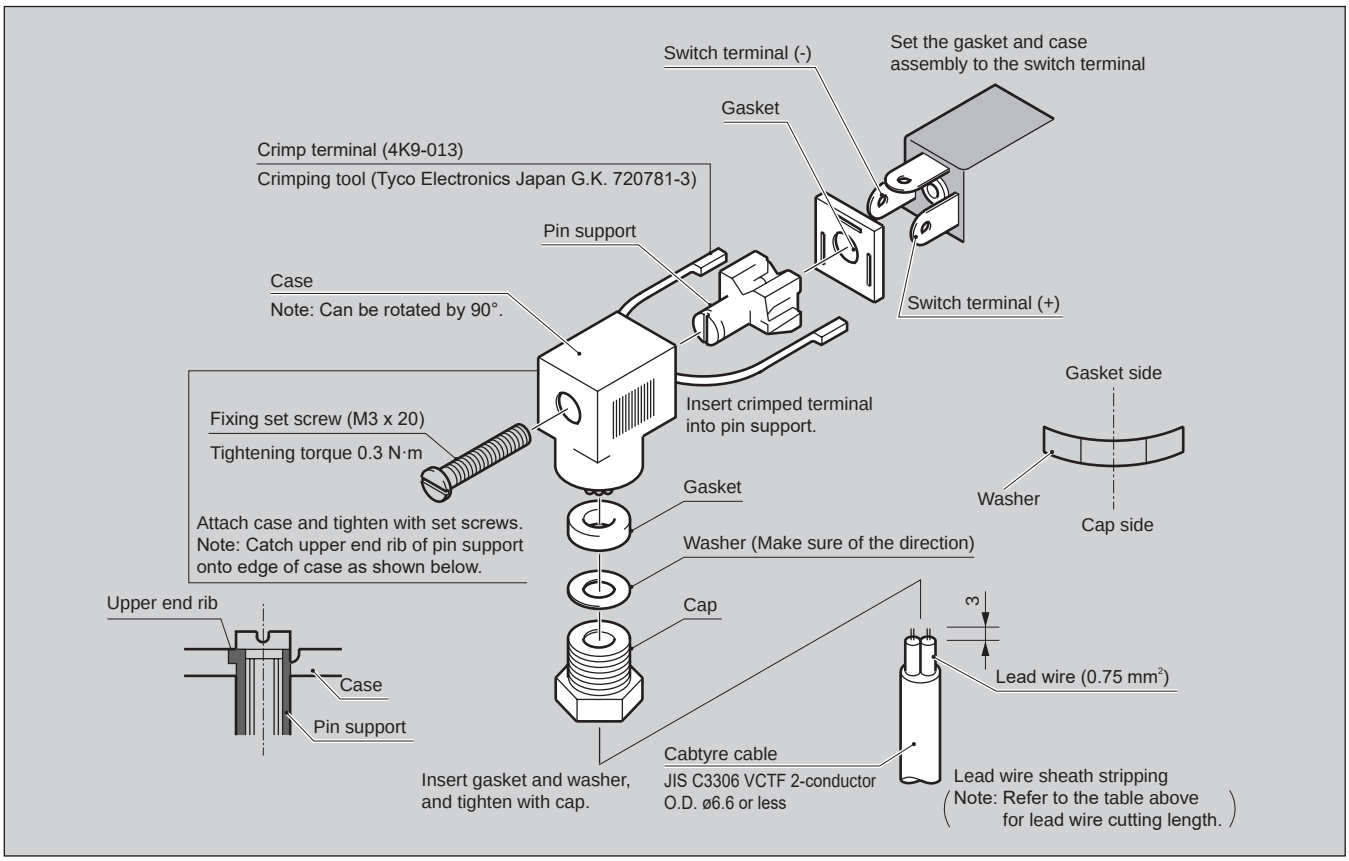
See the figure below and follow the following procedure to connect with the R*B terminal box.

(1) Remove the fixing screw completely and pull out the terminal box from the switch.
(2) Push out the pin support from the top of the case to separate the case and pin support.
(3) Remove the cap and take out the washer and gasket.
(4) Determine the direction to draw the lead wire from the terminal box.
(5) Refer to the top view of the case mounting orientation, and cut the lead wire based on the lead-out direction. Then strip the seal/sheath.
(6) Crimp the included terminal.
(7) Pass the lead wire through in the sequence of cap, washer, gasket, and case with attention to the orientation. Insert the lead wire into the case and pull it out with needle-nose pliers.
(8) Insert the terminal into the pin support and at the same time, push them into the case making sure of their direction. Push them until the upper end rib of the pin support comes out of the top of the case.
(9) Insert the fixing screw into the case and pin support.
(10) Insert the gasket and washer into the case and fix them by tightening the cap.
(11) Set the case to the switch terminal and fix it with the fixing screw.

● Lead cutting length

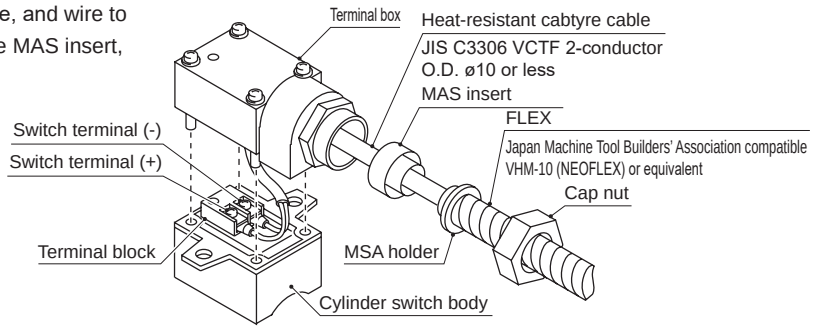
The lead cutting length differs with the case mounting orientation. Refer to the following table.





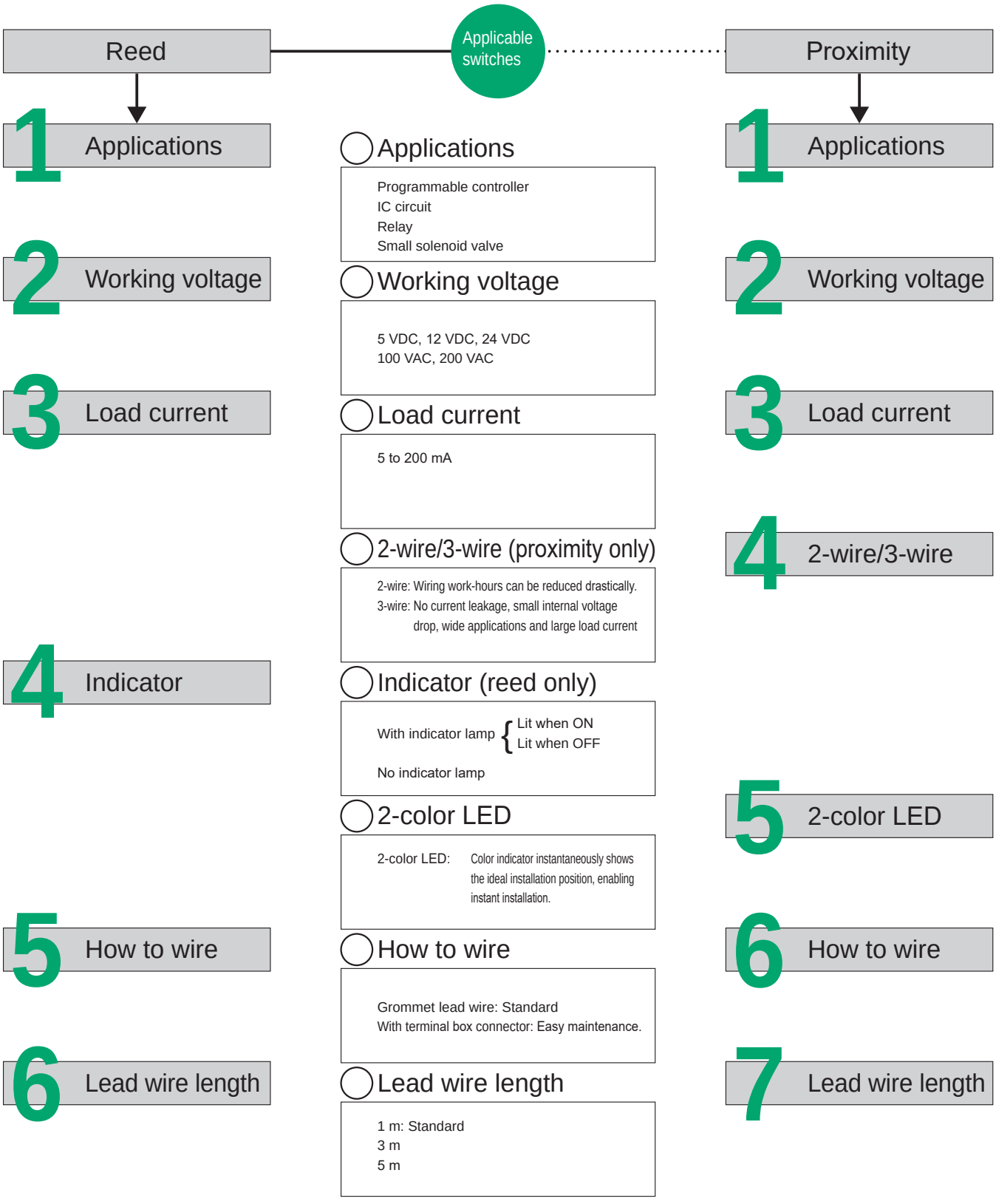
How to install the product to E0 terminal box

Prepare a heat-resistant cabtyre cable and flexible tube, and wire to the terminal box with reference to the figure below. The MAS insert, MAS holder, and cap nut are included as accessories.

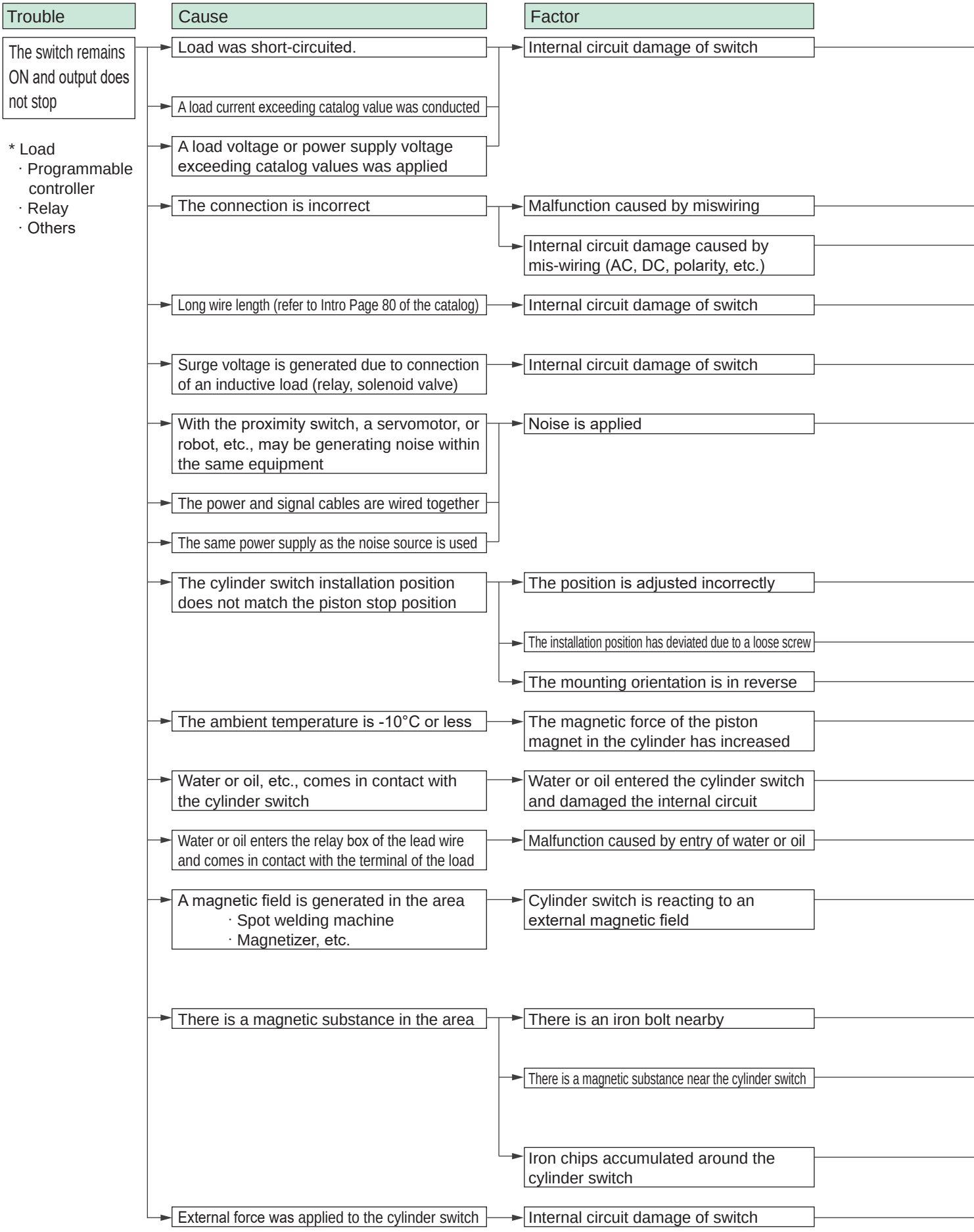


When selecting a cylinder switch, first, check whether reed or proximity switch is used, then follow the selection chart below.

Cylinder switch selection chart



Troubleshooting [Cylinder switch] (1)



Countermeasures
(1) Replace the cylinder switch and select a cylinder switch with maximum rating matching the load rating
(1) Connect correctly
(1) Replace the cylinder switch and connect correctly
(1) Replace the cylinder switch and wire the protective circuit (Refer to Intro Pages 80 and 82)
(1) Replace the cylinder switch and wire the protective circuit (Refer to Intro Pages 80 and 82)
(1) Add a noise filter or replace with a reed switch
(2) Separate the power cable and signal cable
(3) Separate the power source
(1) Adjust the position again
(1) Tighten within the specified tightening torque range
(1) Mount in the correct direction
(1) Raise the ambient temperature to -10°C or higher
(1) Change from standard cylinder switch to T□YL of coolant proof specifications (T-switch only)
(2) Replace the cylinder switch, and provide a partition so that water and oil do not make excessive contact.
(1) Set a partition so water and oil do not come in contact with the relay box, or place the relay box in a waterproof box
(1) Change to a strong magnetic field proof switch. The cylinder body must also be changed to one for strong magnetic fields
(2) Check that magnetic fields are not applied a. Move the magnetic field generator away. b. Set a magnetic material partition between the magnetic field origin and cylinder switch
(3) Provide magnetic shield
(1) Replace with a stainless steel bolt
(2) Mount the cylinder switch on a surface distanced from the iron bolt
(1) Separate the cylinder switch from the magnetic substance to the value recommended in the catalog
(2) Mount the cylinder switch on a surface distanced from the magnetic substance
(3) Change the magnetic substance's material to a nonmagnetic material such as stainless steel, aluminum, copper, etc.
(1) Remove iron chips
(1) Replace the cylinder switch and check that external force is not applied to the cylinder switch

Troubleshooting [Cylinder switch] (2)

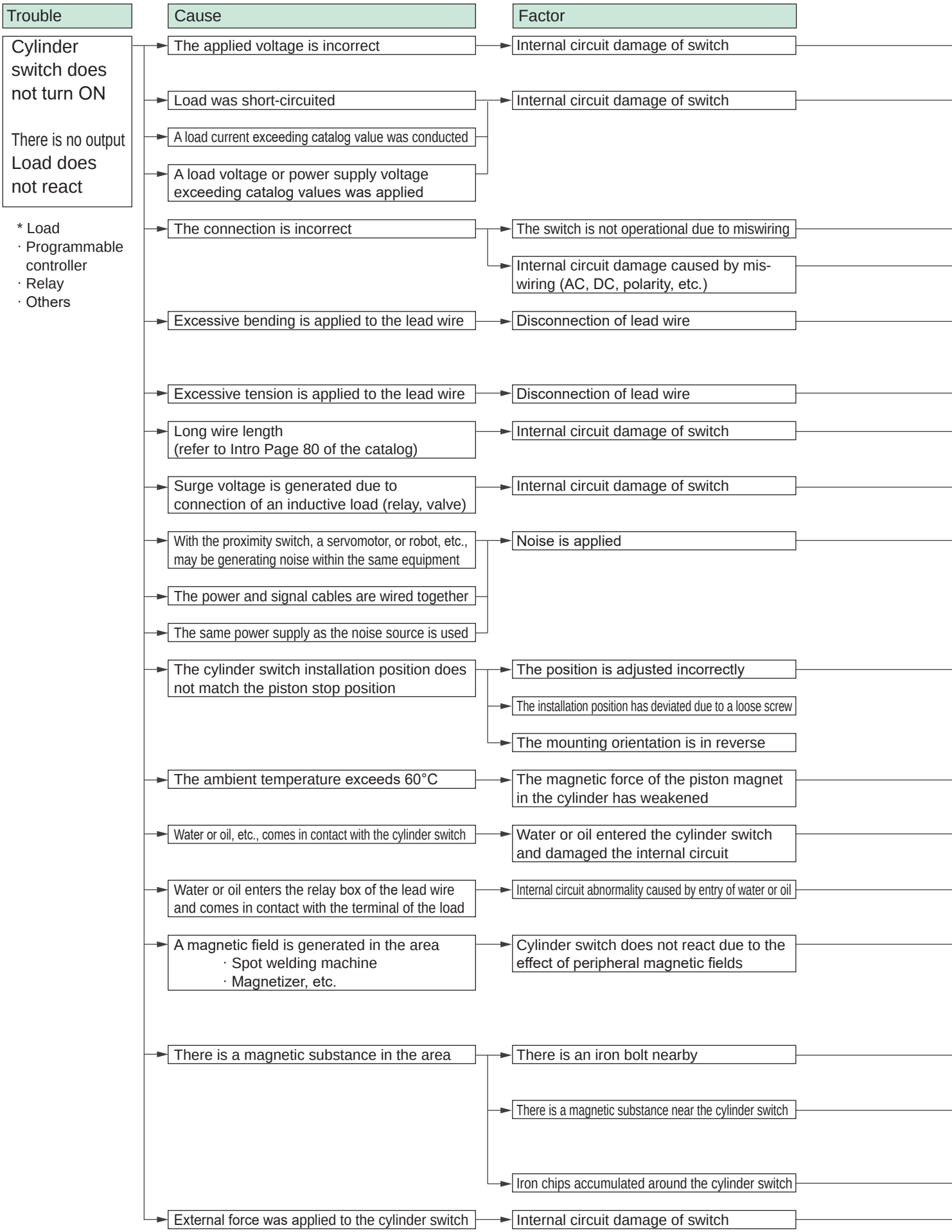
Trouble	Cause	Factor
The cylinder switch turns ON/OFF but the load remains ON	The relation of the cylinder switch leakage current and load input specifications is Leakage current > OFF current	The load reacts to the leakage current.
		Leakage current increases because of the parallel connection (Refer to Intro Page 81 of the catalog)
The output correctly turns ON/OFF but the indicator lamp does not turn on	The wiring poles are reversed (only when using reed □0 with DC).	Malfunction caused by miswiring

Countermeasures
(1) Change the cylinder switch from □2 to □0 or □3 type
(2) Change the cylinder switch to one with a large load OFF current value
(3) Wire the bleeder resistance

* Select a programmable controller or relay, etc.,
  that does not malfunction due to proximity switch leakage current.
* For the load input specifications, check the model No.
  and contact the manufacturer or CKD.

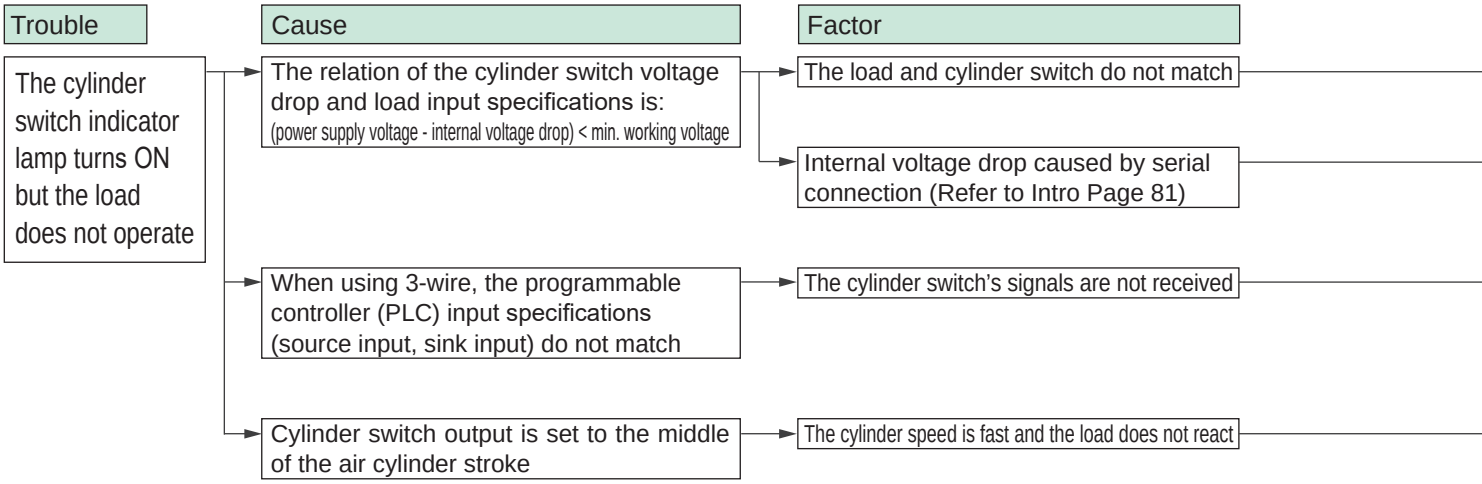
Countermeasures
(1) Wire normally

Troubleshooting [Cylinder switch] (3)



Countermeasures
(1) Replace the cylinder switch and set the correct rated voltage (2) Replace with a cylinder switch in correct rated voltage
(1) Replace the cylinder switch and select a cylinder switch with maximum rating matching the load rating
(1) Connect correctly
(1) Replace the cylinder switch and connect correctly
(1) Replace the cylinder switch and provide a sufficient bending radius (9 mm or over) for the lead wire so that one location is not subject to excessive bending (2) Change the cylinder switch to T2□R type with elasticity specifications (T-switch only)
(1) Replace the cylinder switch, and take measures to prevent excessive tension from being applied
(1) Replace the cylinder switch and wire the protective circuit (Refer to Intro Pages 80 and 82)
(1) Replace the cylinder switch and wire the protective circuit (Refer to Intro Pages 80 and 82)
(1) Add a noise filter or replace with a reed switch
(2) Separate the power cable and signal cable
(3) Separate the power source
(1) Adjust the position again
(1) Tighten within the specified tightening torque range
(1) Mount in the correct direction
(1) Lower the ambient temperature to 60°C or less (2) Replace with a heat-resistant cylinder switch (Refer to the catalog for compatible models)
(1) Change from standard cylinder switch to T□YL of coolant proof specifications (T-switch only) (2) Replace the cylinder switch, and provide a partition so that water and oil do not make excessive contact
(1) Set a partition so water and oil do not come in contact with the relay box, or place the relay box in a waterproof box
(1) Change to a strong magnetic field proof switch. The cylinder body must also be changed to one for strong magnetic fields (2) Check that magnetic fields are not applied a. Move the magnetic field generator away. b. Set a magnetic material partition between the magnetic field origin and cylinder switch (3) Provide magnetic shield
(1) Replace with a stainless steel bolt (2) Mount the cylinder switch on a surface distanced from the iron bolt
(1) Separate the cylinder switch from the magnetic substance to the value recommended in the catalog (2) Mount the cylinder switch on a surface distanced from the magnetic substance (3) Change the magnetic substance's material to a nonmagnetic material such as stainless steel, aluminum, copper, etc.
(1) Remove iron chips
(1) Replace the cylinder switch and check that external force is not applied to the cylinder switch

Troubleshooting [Cylinder switch] (4)



Countermeasures
(1) Replace the cylinder switch with a model with small internal voltage drop □2 type → □0 type → □3 type → □5 type
(2) Replace the load with one with smaller min. working voltage

(1) Source input ---- Select NPN output □3 type (NPN output is standard)
(2) Sink input -------- Select PNP output □3P type (T, K, M or F-switch only)
(3) Change the cylinder switch to 2-wire

(1) Change to T2J with OFF delay specifications (T-switch only)
(2) Connect several cylinder switches in parallel to increase the operating range.
(3) Connect a sensor controller, etc., between the cylinder switch and load, and change to a signal time that matches load performance. Example: OMRON S3D2
(4) Decrease cylinder speed