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**CATALOG No.96F** GENERAL CATALOG

# **FOOT SWITCHES**

Made in Japan



## **SM2 Series**



Class change of each protection cover, action property and point of contact constitution are possible by a faculty as for SM2 series it can combine.

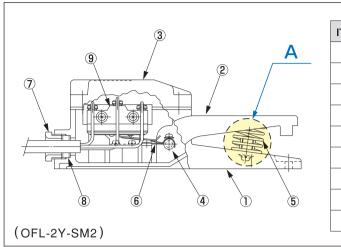
## Features

- It is excellent in the credibility and durability.
- It can use by dust-proof, drip-proof and oiltight structure in the place of bad environmental. (Waterproof strength seal switch inclusion)
- Change of protection cover is possible each model
- It can apply to a wide range such as momentary, alternate, 2 steps and twin type.

#### Major Applications

It can select in point of the machine tool, press machine, medical appliances, woodworking machine, plant industry, each industrial device etc. and the faculty.

#### SM2 Type Inner part structure



#### 2Y-SM2 series is operating 2 steps.





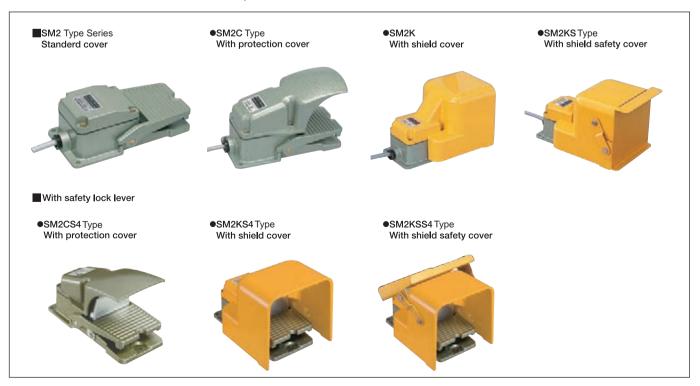
**1**OJIDEN FOOT LIMITSWITCH is shown.

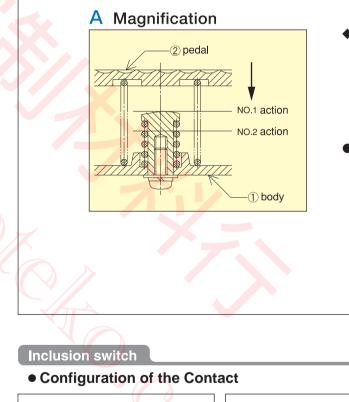
(2) The property of a switch, pole number and the faculty are shown.

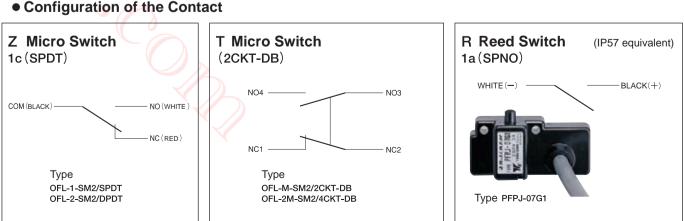
3 SM2 series is shown.

4 Pedal protection cover (C·K·KS) model is shown.

5 Pedal safety lock lever (S4) model is shown.





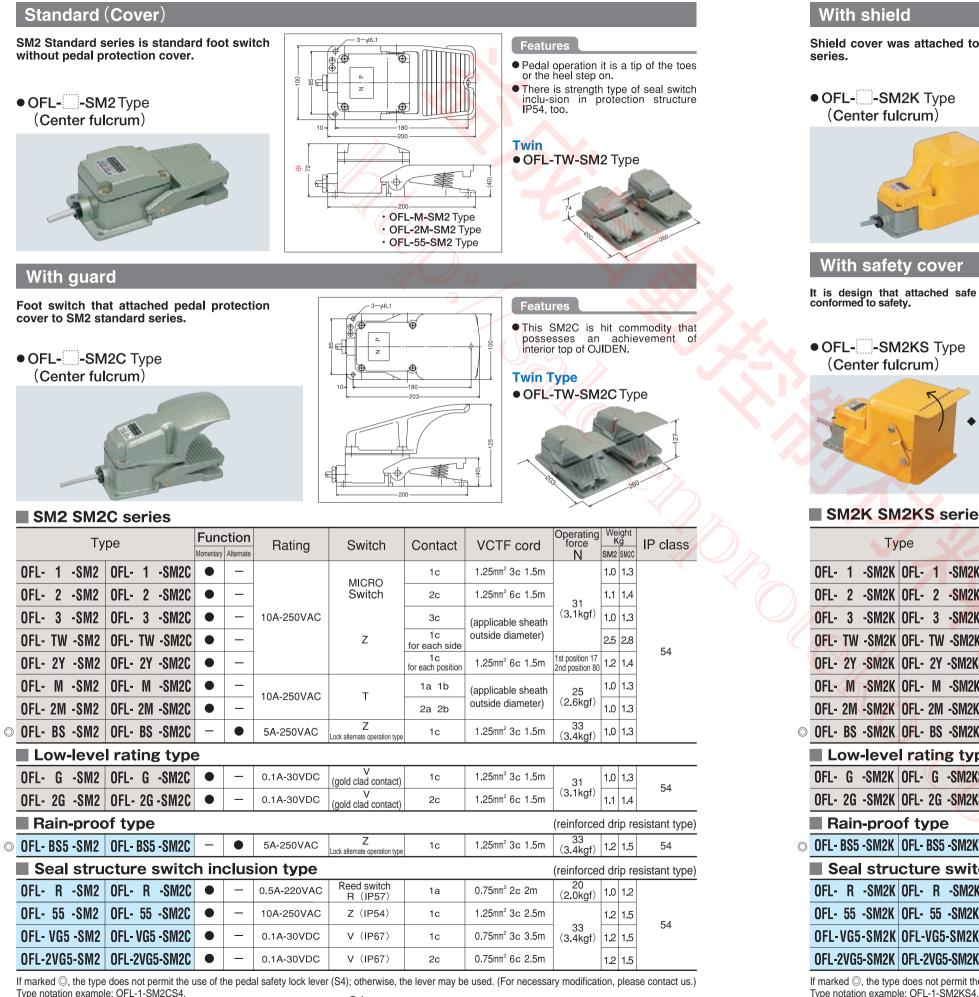


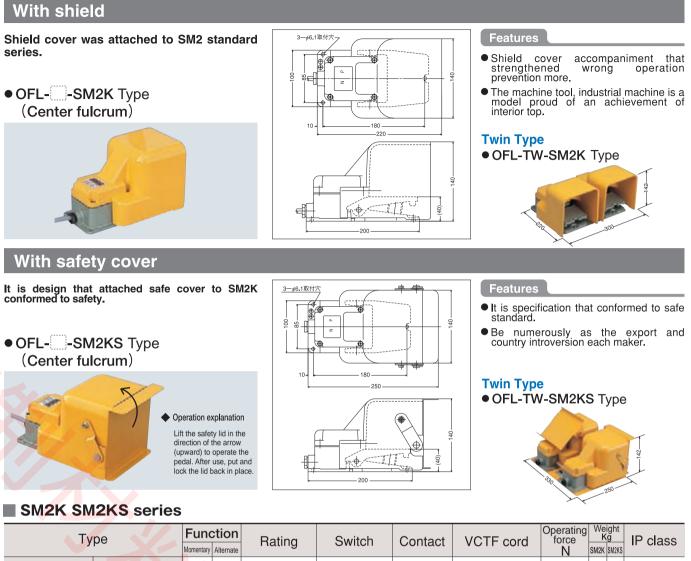
ITEM	PART NAME	MATERIAL
1	Body	Aluminum alloy die-cast (Munsell: 2.5G 7 /4)
2	Pedal	Aluminum alloy die-cast (Munsell: 2.5G 7/4)
3	Cover	Aluminum alloy die-cast (Munsell: 2.5G 7/4)
4	Hinge shaft	Steel (plated)
5	Spring	Piano wire (plated)
6	Operating lever	Phosphor bronze plate (PBS)
Ø	Seal connector (G1/2 screw)	Polyacetal resin (black)
8	Rubber packing	Chloroprene rubber (black)
9	Built-in switch	Z-type microswitch

◆ 2 steps can be acted by using 2 switches. 1 step of the switch acts in NO. 1 action of A figure. When it moreover steps into, it steps on, the pressure drastically increases and 2 steps of the switch acts in NO. 2 action. If a leg is separated from a pedal, a switch will do self-return from 2 steps in the order of 1 step. (Each step SPDT)

• It can make point of contactconstitution 1a1b(DB) combination process.

# **SM2** Series







#### SM2K SM2KS series

		Ту	vpe			Alternate	Rating	Switch	Contact	VCTF cord	Operating force N	Weight Kg SM2K SM2K	IP class
	0FL- 1	-SM2K	0FL- 1	-SM2KS		-		MICRO	1c	1.25mm² 3c 1.5m		1.8 2.2	2
	0FL- 2	-SM2K	0FL- 2	-SM2KS		-		Switch	2c	1.25mm² 6c 1.5m	31	2.0 2.4	ŀ
	OFL- 3	-SM2K	0FL- 3	-SM2KS	•	-	10A-250VAC		3c	(applicable sheath	(3.1kgf)	1.7 2.1	
	OFL- TW	-SM2K	OFL- TW	-SM2KS	•	-		Z	1c 各側とも	outside diameter)		3.9 4.3	54
	OFL- 2Y	-SM2K	OFL- 2Y	-SM2KS	•	-			1c 各段とも	1.25mm² 6c 1.5m	1st position 17 2nd position 80	1.9 2.3	
	OFL- M	-SM2K	OFL- M	-SM2KS		-	10A-250VAC	т	1a 1b	(applicable sheath	25	1.6 2.0	)
	OFL- 2M	-SM2K	OFL- 2M	-SM2KS		-	104-230 VAC	I	2a 2b	outside diameter)	(2.6kgf)	1.7 2.1	
O	OFL- BS	-SM2K	OFL- BS	-SM2KS	-		5A-250VAC	Z Lock alternate operation type	1c	1.25mm² 3c 1.5m	33 (3.4kgf)	1.8 2.2	2
	Low	/-leve	l ratin	g type	е								
	OFL- G	-SM2K	OFL- G	-SM2KS		-	0.1A-30VDC	V (gold clad contact)	1c	1.25mm² 3c 1.5m	31	1.8 2.2	54
	OFL- 2G	-SM2K	0FL- 2G	-SM2KS		_	0.1A-30VDC	V (gold clad contact)	2c	1.25mm² 6c 1.5m	(3.1kgf)	2.0 2.4	
	Raiı	n-proe	of type	e							(reinforce	d drip r	esistant type)
O	OFL-BS	i -SM2K	OFL-BS5	-SM2KS	-		5A-250VAC	Z Lock alternate operation type	1c	1.25mm² 3c 1.5m	33 (3.4kgf)	2.0 2.4	54
	Sea	l stru	cture	switc	h in	clus	ion type				(reinforce	d drip r	esistant type)
	OFL- R	-SM2K	OFL- R	-SM2KS		<u> </u>	0.5A-220VAC	Reed switch R (IP57)	1a	0.75mm² 2c 2m	20 (2.0kgf)	1.8 2.2	2
	0FL- 55	-SM2K	0FL- 55	-SM2KS			10A-250VAC	Z (IP54)	1c	1.25mm² 3c 2.5m		2.0 2.4	54
	OFL-VG	5-SM2K	OFL-VG5	5-SM2KS		_	0.1A-30VDC	V (IP67)	1c	0.75mm² 3c 3.5m	33 (3.4kgf)	2.0 2.4	
	OFL-2VG	5-SM2K	OFL-2VG	5-SM2KS		_	0.1A-30VDC	V (IP67)	2c	0.75mm² 6c 2.5m		2.1 2.5	
	If marked (	the type	does not r	ermit the	use of t	he ned	al safety lock lever	(S4) otherwise th	e lever may h	e used. (For necessa	ny modificat	ion nle	

Type notation example: OFL-1-SM2CS4. 21



If marked O, the type does not permit the use of the pedal safety lock lever (S4): otherwise, the lever may be used. (For necessary modification, please contact us.) 22

## **2NY-SM2 Series**

#### 3 position type

OFL-2NY-SM2 type series is OFF⇒ON⇒OFF for the risk aversion based on ergonomics. 3 position (three-step type) foot swich.

#### Features

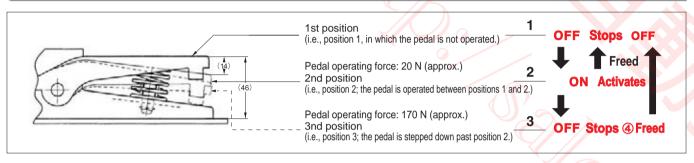
• It is excellent in the credibility.

**1 OFF** 

3 O

- It can use by drip-proof oiltight structure in the place of bad environment.
- Change of protection cover is possible each model.
- Bytwo points of contact (2a), double safety measures are possible
- Standard specification with the attached code 2.5m.

#### Pedal Positions and the Workings of the Triple (3-position) Type Foot Switch



#### 3-position Foot Switch -- Perfect Choice for Hazard Avoidance in Emergencies









#### 2NY-SM2 type series

	Туре	Weight kg (approx.)	Operating force	Function	Rating	Switch or Contact	S-VCTF cord	IP class
0	FL-2NY-SM2	2.0				3-position switch	Included; outside	
0	FL-2NY-SM2C	2.2	(1)→② 20N ②→③ 170N	Momentary	Resistance load	(uses NO-C segment) 2 contacts	diameter φ8.2 (0.75 mm <sup>2</sup> 5 strands, 2.5 m).	54
0	FL-2NY-SM2K	2.7				- <u>NO1: white</u>		54
0	FL-2NY-SM2KS	3.1				C1: black	: red E: green	

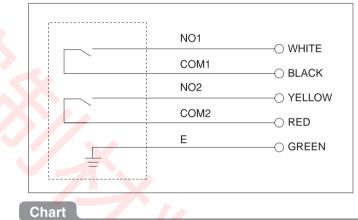
#### 2-poles 3 position

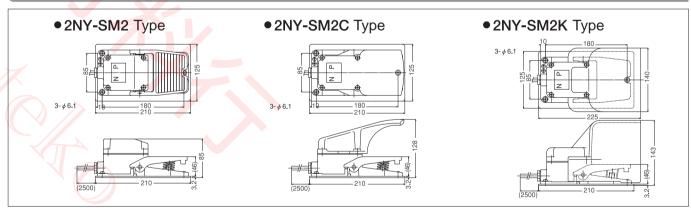
Double safety measures are possible for the three optimal positions for risk aversion because of two points of contact. (2a)

#### Characteristics of the Built-in Enable Switch and Pedal Operation

- The switch is a 3-position foot switch ergonomically designed to cycle through OFF>ON>OFF positions for hazard-free operation.
- The shift from position 1 to 2 provides a light-yet-firm feel in response to stepping on the pedal thanks to the internal snap-action mechanism. (operating force: 20 N)
- The shift from position 2 to 3, on the other hand, is accompanied by a firm feel in response to stepping on the pedal. (operating force: 170 N)
- The switch is constructed in such a way that it will not go ON when the pedal is stepped on and released (i.e., a shift from position 3 to 1, with the switch going OFF in response to each operation; 9.2.5.8 of IEC60204-1)
- The switch is composed of parts certified under (compliant with) overseas major safety standards.

#### Contact Configuration and Connection Cords (color coding)





Points to Note When Handling the Switches fires, product damage and malfunction, and other incidents.

- Be sure that the electrical ratings are within the indicated range.
- To use the 3-position switch as part of a system configured to high safety standards, connect its 2 contacts to a mismatch detection circuit (e.g., safety relay module; • Be sure that the operating range (stroke) of the pedal is free of a foreign object ISO13849-1/EN954-1). during use.
- Be sure that the wiring is correct, noting the contact configuration and lead wire color • To fix the switch in place, remove the base, and mount it on a level surface using coding scheme. Inappropriate wiring can cause malfunction, short-circuiting, or other the 3-\u03c6.1 mounting hole. such problems
- Be sure to turn off the power before wiring or maintenance/inspection work to avoid electric shocks and fires.
- Do not replace the accessory cords or the built-in switch. Doing so could lead to deterioration of the property of the switch to resist water or adversely affect its operating characteristics.

125V

#### Contact Ratings (built-in enable switch)

	Rated conducted curre	ЗA			
۱	Rated operating voltag	30V	125V		
		40	Resistance load	_	1A
	Rated operating current	AC	Induction load		0.7A
	(le)	50	Resistance load	1A	0.2A
		DC	Induction load	0.7A	0.1A
	Contact configuration (	2 contacts			
	Minimum applicable lo	ad (reference	e only) = 3 V AC/DC, 5 m	A	

(The actual operating range may vary depending on operating conditions and load types.)

#### Performance Testing

Rated insulated voltage (Ui)

Standard operating conditions	Operating ambient temperature: -25~to +60°C (without freezing) Relative humidity (RH): 45% to 85% (without condensation) Storage ambient temperature: -40~to +80°C (without freezing)					
Contact resistance	$50m\Omega$ or less (initial value)					
Insulation resistance	Between live and non-live metal parts: 100MΩ or more (ty 500 VDC insulation tester) Between live areas of different polarities: 100MΩ or more (ty 500 VDC insulation tester)					
Withstand voltage	1500VAC					
Open/close frequency	1200 times/h					
Mechanical life (durability)	1,000,000 activations or more if from position $\bigcirc \Rightarrow \bigcirc \Rightarrow \bigcirc$ 100,000 activations or more if from position $\bigcirc \Rightarrow \oslash \Rightarrow \bigcirc$					
Electrical life (durability)	100,000 activations or more					
Impact resistance	Error operation : 100m/S <sup>2</sup> Durability : 1000m/S <sup>2</sup>					
Vibration resistance	Error operation: 5 to 55 Hz, half amplitude of 0.5 mm or more Durability: 16.7 Hz, half amplitude of 1.5 mm or more					
Protective construction	IP54 (with foot switch enclosed)					

## It is very important that you keep the following in mind when handling the switches to avoid injuries, electric shocks,

- Use the lead wire (green) or an external terminal screw for connection to ground. Doing so is particularly important in avoiding such hazards as electric shocks.
- Do not subject the foot switch to sudden impact. Dropping it or stomping on its pedal could lead to malfunction or result in a shorter service life.
- As necessary, contact us for cord extension or for other requests.

# SM2 Series (TÜV approved)

#### IP class IP54

By regulation, all tooling machines exported to Europe must bear the CE Mark. The products introduced herein are recognized as being EN-compliant (i.e., TUV-certified) and, therefore, may be used with confidence.



**♦**EN

#### Features

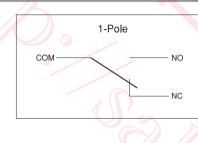
• The SM2 series (**TUV**approved) allows easy

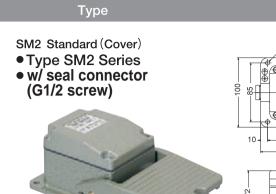
recomposition with each protection cover. The features and the model depend on the protection cover.

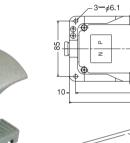
#### Major Applications

Various machine tools, presses, medical appliances, other industrial machines.

#### Contact structure









Туре	Rating	Initial Contact Resistance	Dielecric Strength	Insulation Resistance	Electrical Life	IP class	TÜV Approved.No.
OFL-V-SM2	10A 250V AC	50mΩ Max.	AC2000V 1minute	100MΩ Min.	125.000Min. Operations	Spray resistant type IEC IP 54	
OFL-VG-SM2	0.1A 125V AC 0.1A 30V DC	50mΩ Max.	AC1500V 1minute	100MΩ Min.	1.000.000Min. Operations	Spray resistant type IEC IP 54	B 09 06 15566 004 EN60204-1:2006
OFL-ZG-SM2	0.1A 125V AC 0.1A 30V DC	50mΩ Max.	AC1250V 1minute	100MΩ Min.	2.000.000Min. Operations	Spray resistant type IEC IP 54	

⅔ without cable

Applicable sheath outside diameter:  $\phi 8 \sim \phi 11$ ◆ V · VG TYPE:Solder terminal

◆ ZG TYPE:Screw terminal

## ■ Type OFL-...-SM2 series

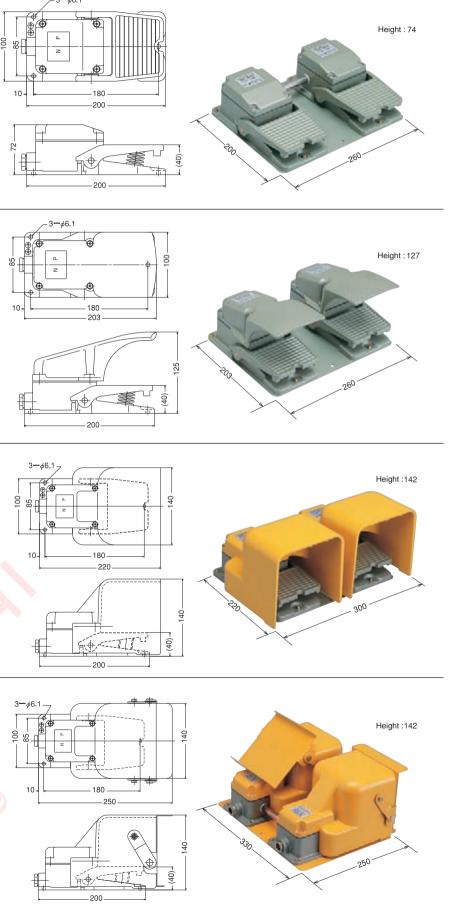
<b>V</b> Туре	VG Type	<b>ZG</b> Type	Function	Contact	Operating	Weight
OFL- V -SM2	OFL- VG -SM2	OFL- ZG -SM2	Momentary	1	31N	820g
OFL- 2V -SM2	OFL- 2VG -SM2	OFL- 2ZG -SM2	Momentary	2	31N	830g
OFL- TV -SM2	OFL- TVG -SM2	OFL- TZG -SM2	Momentary (Twin Type)	1 EACH SIDE	31N	2,340g
OFL-2TV-SM2	OFL-2TVG-SM2	OFL-2TZG-SM2	Momentary (Twin Type)	2 EACH SIDE	31N	2,350g
OFL- V -SM2C	OFL- VG -SM2C	OFL- ZG -SM2C	Momentary	1	31N	1,090g
OFL-2V-SM2C	OFL- 2VG -SM2C	OFL- 2ZG -SM2C	Momentary	2	31N	1,100g
OFL- TV -SM2C	OFL- TVG -SM2C	OFL- TZG -SM2C	Momentary (Twin Type)	1 EACH SIDE	31N	2,880g
OFL-2TV-SM2C	OFL-2TVG-SM2C	OFL-2TZG-SM2C	Momentary (Twin Type)	2 EACH SIDE	31N	2,890g
OFL- V -SM2K	OFL- VG -SM2K	OFL- ZG -SM2K	Momentary	1	31N	1,690g
OFL- 2V -SM2K	OFL- 2VG -SM2K	OFL- 2ZG -SM2K	Momentary	2	31N	1,700g
OFL- TV -SM2K	OFL- TVG -SM2K	OFL- TZG -SM2K	Momentary (Twin Type)	1 EACH SIDE	31N	4,080g
OFL-2TV-SM2K	OFL-2TVG-SM2K	OFL-2TZG-SM2K	Momentary (Twin Type)	2 EACH SIDE	31N	4,090g
OFL- V -SM2KS	OFL- VG -SM2KS	OFL- ZG -SM2KS	Momentary	1	31N	2,090g
OFL- 2V -SM2KS	OFL- 2VG -SM2KS	OFL- 2ZG -SM2KS	Momentary	2	31N	2,100g
OFL- TV -SM2KS	OFL- TVG -SM2KS	OFL- TZG -SM2KS	Momentary (Twin Type)	1 EACH SIDE	31N	5,060g
OFL-2TV-SM2KS	OFL-2TVG-SM2KS	OFL-2TZG-SM2KS	Momentary (Twin Type)	2 EACH SIDE	31N	5,070g

With shield

• Type SM2K Series

With guard

• Type SM2C Series



With safety cover • Type SM2KS Series



#### Twin Type Foot Switch

## SM2 S4 Series (TÜV approved)

#### With pedal lock safety lever



Generating of the trouble by "the thing was dropped", "the pedal having been stepped on carelessey", etc. It is the foot switch which attached the object for malfunction prevention of OJIDEN, and the pedal lock safety lever



• OFL- -SM2KSS4 Type

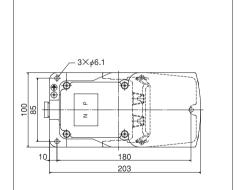
"S4" in SM2 type series.

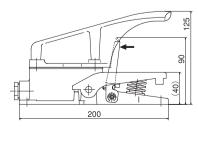
- OFL- -SM2CS4 Type (With protection cover)
- OFL- -SM2KS4 Type (With shield cover)

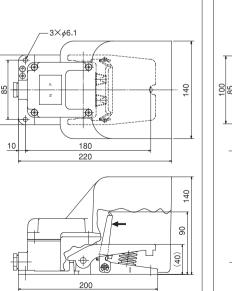


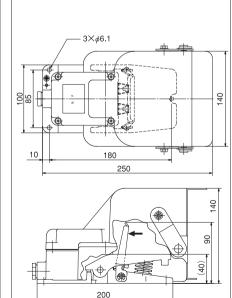


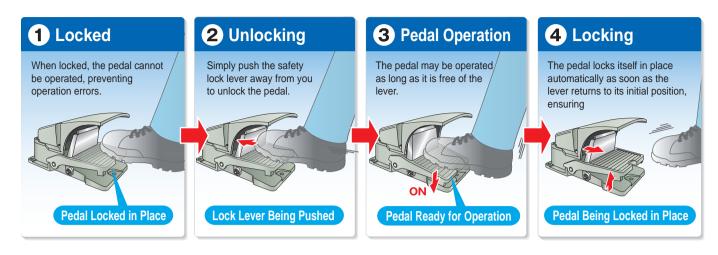












#### Operation of pedal lock safety lever

It works a pedal during bringing down lever within broken line circle to arrow direction (the front) and on and the leg is separated and it is automatic off and the lever return and lock.

#### Specifications

Туре	Rating	Initial Contact Resistance	Dielecric Strength	Insulation Resistance	Electrical Life	IP class	<b>TÜV</b> Approved.No.
OFL-V-SM2CS4	10A 250V AC	50mΩ Max.	AC2000V 1minute	100MΩ Min.	125.000Min. Operations	Spray resistant type IEC IP 54	
OFL-VG-SM2CS4	0.1A 125V AC 0.1A 30V DC	50mΩ Max.	AC1500V 1minute	100MΩ Min.	1.000.000Min. Operations		B 09 06 15566 004 EN60204-1:2006
OFL-ZG-SM2CS4	0.1A 125V AC 0.1A 30V DC	50mΩ Max.	AC1250V 1minute	100MΩ Min.	2.000.000Min. Operations	Spray resistant type IEC IP 54	

\* without cable

Applicable sheath outside diameter:  $\phi 8 \sim \phi 11$ 

◆ V·VG TYPE:Solder terminal ◆ ZG TYPE:Screw terminal

#### Type OFL- -SM2 S4 series

<b>V</b> Туре	VG Type	<b>ZG</b> Type	Function	Contact	Operating	Weight
OFL- V -SM2CS4	OFL- VG -SM2CS4	OFL- ZG -SM2CS4	Momentary	1	31N	1240g
OFL- 2V -SM2CS4	OFL- 2VG -SM2CS4	OFL- 2ZG -SM2CS4	Momentary	2	31N	1250g
OFL- TV -SM2CS4	OFL- TVG - <mark>SM2C</mark> S4	OFL- TZG -SM2CS4	Momentary (Twin Type)	1 EACH SIDE	31N	3180g
OFL-2TV-SM2CS4	OFL-2TVG-SM2CS4	OFL-2TZG-SM2CS4	Momentary (Twin Type)	2 EACH SIDE	31N	3190g
OFL- V -SM2KS4	OFL- VG -SM2KS4	OFL- ZG -SM2KS4	Momentary	1	31N	1840g
OFL- 2V -SM2KS4	OFL- 2VG -SM2KS4	OFL- 2ZG -SM2KS4	Momentary	2	31N	1850g
OFL- TV -SM2KS4	OFL- TVG -SM2KS4	OFL- TZG -SM2KS4	Momentary (Twin Type)	1 EACH SIDE	31N	4380g
OFL-2TV-SM2KS4	OFL-2TVG-SM2KS4	OFL-2TZG-SM2KS4	Momentary (Twin Type)	2 EACH SIDE	31N	4390g
OFL- V -SM2KSS4	OFL- VG -SM2KSS4	OFL- ZG -SM2KSS4	Momentary	1	31N	2240g
OFL- 2V -SM2KSS4	OFL- 2VG -SM2KSS4	OFL- 2ZG -SM2KSS4	Momentary	2	31N	2250g
OFL- TV -SM2KSS4	OFL- TVG -SM2KSS4	OFL- TZG -SM2KSS4	Momentary (Twin Type)	1 EACH SIDE	31N	5360g
OFL-2TV-SM2KSS4	OFL-2TVG-SM2KSS4	OFL-2TZG-SM2KSS4	Momentary (Twin Type)	2 EACH SIDE	31N	5370g

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