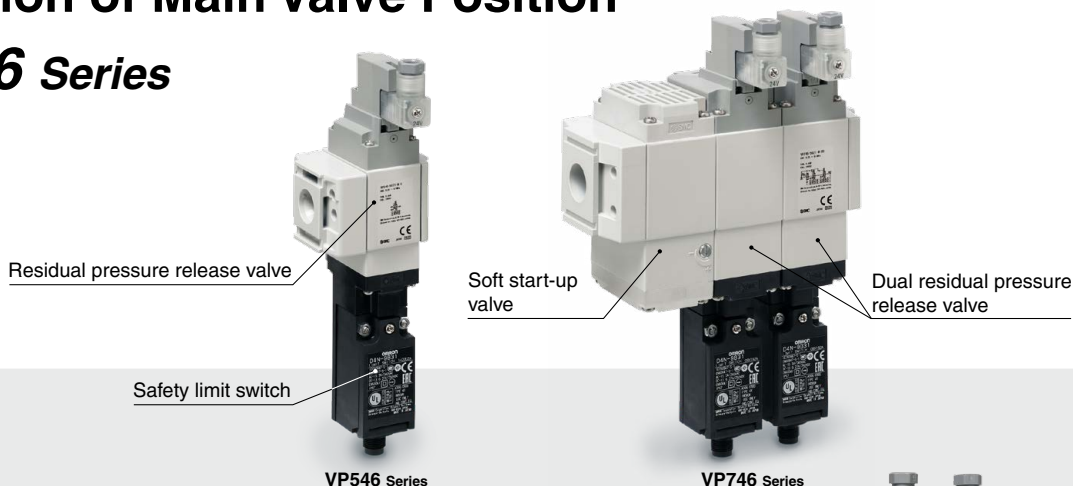
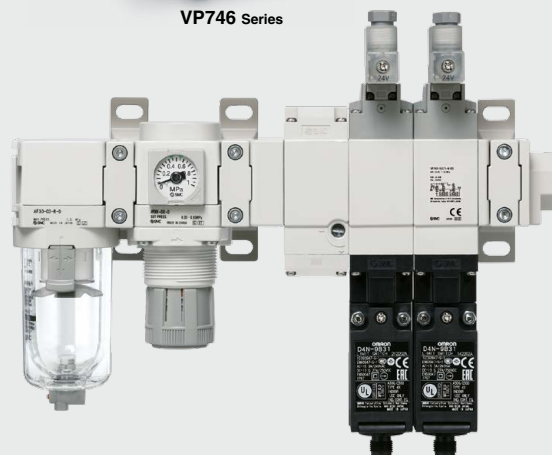






# 3-Port Solenoid Valve Modular Type/ Residual Pressure Release Valve with Detection of Main Valve Position *VP546/746 Series*



## Features

- Can be connected to modular type F.R.L. units (AC-D series)
- With main valve position detection function  
The main valve position detection function is used to detect inconsistencies between input signals and valve operations.
- A model with a soft start-up function is also available.
- Variations



Residual Pressure Release Valve		Dual Residual Pressure Release Valve If one of the valves fails to operate, the other one releases the residual pressure.	
	With soft start-up function		With soft start-up function
			

- A variety of safety limit switches (Made by OMRON or Rockwell Automation) are available.
- Features a check valve built into the pilot flow path (Supports pilot pressure drops caused by pressure fluctuations on the inlet side)



## Caution

To ensure the safest possible operation of this product, please be sure to thoroughly read the "Safety Instructions" in our "Best Pneumatics" catalog before use.

## Valve Specifications

Valve specifications	Fluid		Air	
	Type of actuation		N.C. (Spring return)	
	Pressure specifications		Standard	High pressure
	Internal pilot operating pressure range		0.25 to 0.7 MPa	0.25 to 1.0 MPa
	External pilot operating pressure range	Operating pressure range	Without soft start-up function	0.05 to 0.7 MPa
			With soft start-up function	0.05 to 1.0 MPa
		Pilot pressure range		
			Same as the operating pressure (Min. 0.25 MPa)	
	Max. operating frequency		30 cycles/min	
	Min. operating frequency		1 cycle/week	
	Ambient and fluid temperatures		-10 to 50°C (No freezing)	
	Ambient humidity		20 to 90%RH (No condensation)	
	Manual override		None	
	Pilot exhaust		Individual exhaust	
	Lubrication		Not required	
	Mounting orientation		Unrestricted	
Coil specifications	Impact/Vibration resistance		150/30 m/s	
	Enclosure		IP65	
	Operating environment		Indoors	
	Coil rated voltage		24 VDC	
	Allowable voltage fluctuation		±10% of the rated voltage	
Safety limit switch specifications	Power consumption		0.45 W	
	Surge voltage suppressor		Varistor	
	Indicator light		LED	
	Manufacturer		Made by OMRON	Made by Rockwell Automation
	Electrical entry		G1/2, M12 connector	M12 connector
	Contact resistance		25 mΩ or less	50 mΩ or less
	Min. applicable load (Load resistance)		5 VDC, 1 mA	5 VDC, 5 mA
	Max. voltage		24 VDC	
	Max. load current		50 mA	
	Max. load inductance		0.5 H	
	Insulation voltage		300 V	600 V
	Protection against electric shock		Class II (EN60947-5-1:2004)	

\* This valve is a large flow rate pilot-operated solenoid valve. If the operating pressure falls below 0.25 MPa due to a pressure drop caused by insufficient air supply, it may not be able to switch properly.

## Flow Rate Characteristics/Weight

Model	Flow rate characteristics						Weight [g]		
	1 → 2 (P → A)			2 → 3 (A → R)			Safety limit switch specifications		
	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv	Nil: G1/2 (OMRON)	M: M12 connector (OMRON)	S1: M12 connector (Rockwell Automation)
VP546(K)-S	8.8	0.18	2.1	8.3	0.18	2.0	459	466	485
VP546(K)-SS	6.6	0.13	1.5				671	678	697
VP546(K)-D	6.6	0.13	1.5				803	817	855
VP546(K)-DS	5.6	0.06	1.3				1,015	1,030	1,067
VP746(K)-S	14.2	0.22	3.4	12.3	0.25	3.0	808	815	834
VP746(K)-SS	10.6	0.11	2.4				1,274	1,281	1,300
VP746(K)-D	10.8	0.13	2.5				1,395	1,409	1,447
VP746(K)-DS	8.9	0.08	2.0				1,861	1,876	1,914

## How to Order

**Modular Type** **VP 5 46 R K - 5 DZ 1 - M R - S S F**

**Series**

5	VP500
7	VP700

**Pilot**

Nil	Internal pilot
R	External pilot

**Pressure specifications**

Nil	Standard (0.7 MPa)
K	High pressure (1.0 MPa)

**Rated voltage**

5	24 VDC
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**Electrical entry**

DZ	DIN terminal (With connector), With light/surge voltage suppressor
YZ	DIN (EN 175301-803C) terminal (With connector), With light/surge voltage suppressor

**Safety limit switch/Wiring**

Nil	G1/2 (Made by OMRON)
M	M12 connector (Made by OMRON)
S1	M12 connector (Made by Rockwell Automation)

**Thread (External pilot only)**

Nil	Rc
F	G
N	NPT

\* Thread type of the external pilot port

**Soft start-up function**

Nil	None
S	With soft start-up function

**No. of residual pressure exhaust valves**

S	Single
D	Dual

**Flow direction**

Nil	Left to right
R	Right to left

### **Caution**

Connection threads are not available for the 3-port solenoid valve/residual pressure release valve with detection of main valve position. Order a piping adapter and spacer with bracket separately.

## Simple Specials System

For modular connection units (shipped assembled), the simple specials system can be used.



### Short lead times

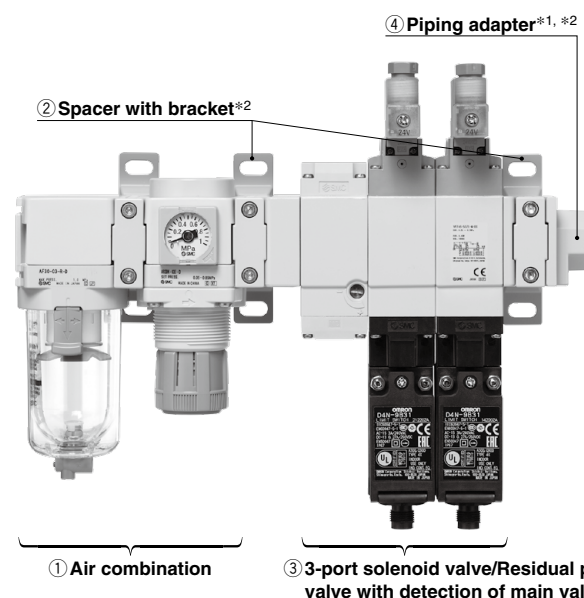
This system enables us to respond to your special needs (accessory assembly or the designing of a modular unit) as quickly as standard products.

Please contact your local sales representative for more details.

### Repeat orders

Once we receive a simple special part number from one of your previous orders, we will process the order, manufacture the product, and deliver it to you as quickly as possible.

## Simple Specials Combination Example



- ① Air combination AC30B-03E-D ..... 1 pc.
- ② Spacer with bracket Y300T-D ..... 2 pcs.
- ③ 3-port solenoid valve/Residual pressure release valve with detection of main valve position  
VP546-5DZ1-M-DS ..... 1 pc.
- ④ Piping adapter E300-03-D ..... 1 pc.

### Applicable Combinations/ Attachment Combinations (Refer to the next page.)

- \*1 Connection threads are not available for the 3-port solenoid valve/residual pressure release valve with detection of main valve position. Select a piping adapter.
- \*2 Refer to the next page for details on the spacer with bracket and piping adapter.

## Spacer with Bracket

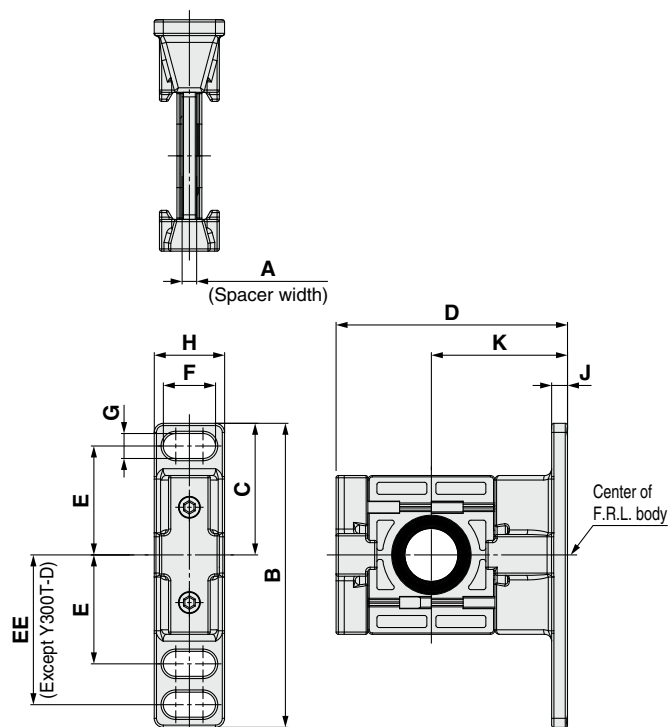
Y **300** **□** - D  
① ②

Spacer with bracket  
(Y□T-D)



	Symbol	Description	① Body size [Applicable AC size]	
			300 [AC30]	400 [AC40]
②	Bracket	T	Spacer with bracket	

## Dimensions

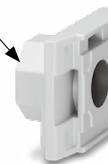


Part no.	A	B	C	D	E	EE	F	G	H	J	K	Applicable size
Y300T-D	4.2	85	42.5	67.5	35	—	14	7	20	6	41	AC30-D
Y400T-D	5.2	115	50	85.5	40	55	18	9	26	7	50	AC40-D

## Piping Adapter

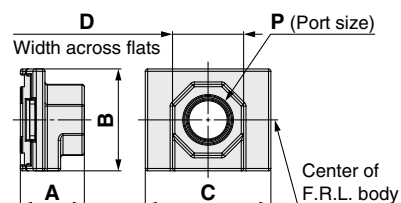
E **300** - **□** **03** - D  
① ② ③

Port size



	Symbol	Description	① Body size [Applicable AC size]	
			300 [AC30]	400 [AC40]
②	Pipe thread type	Nil	Rc	●
		N	NPT	●
		F	G	●
③	Port size	+		
		02	1/4	●
		03	3/8	●
		04	1/2	●
		06	3/4	—

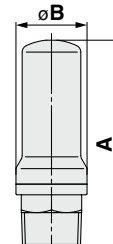
## Dimensions



Model	P	A	B	C	D	Applicable AC size
E300-D	1/4, 3/8, 1/2	27	43	53	30	AC30-D
E400-D	1/4, 3/8, 1/2, 3/4	30	51	71	36	AC40-D

## Silencer

Compact  
resin type



[mm]

Model	Port size R	A	B
AN30-03	3/8	58.5	20

## Applicable Combinations/Attachment Combinations

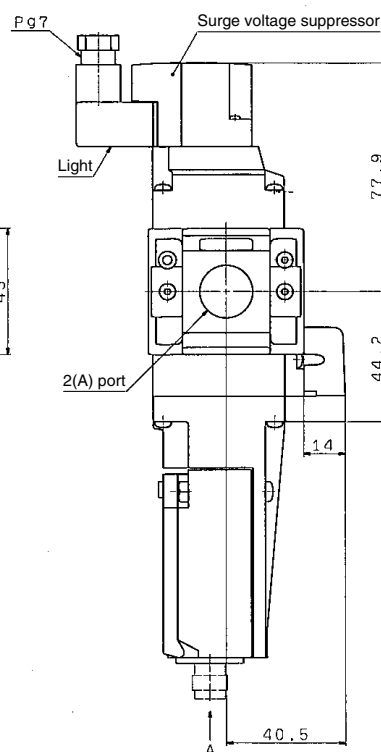
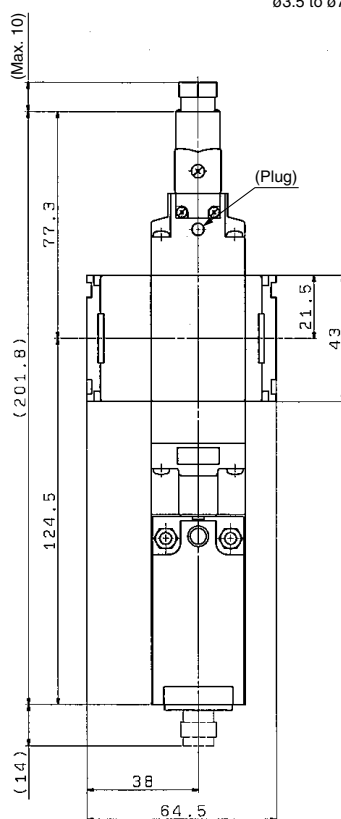
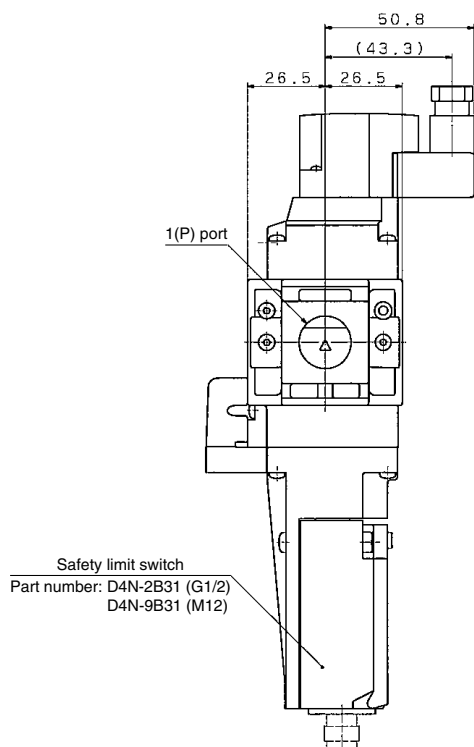
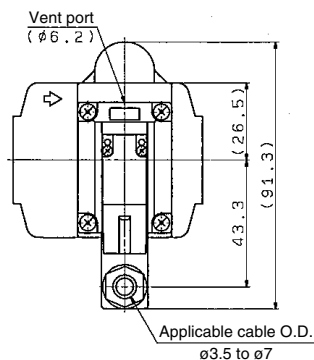
Residual pressure relief 3-port solenoid valve	Air combination	Spacer with bracket	Piping adapter	Silencer
VP546	AC30□-D	Y300T-D	E300-□03-D	AN30-03
VP746	AC40□-D	Y400T-D	E400-□04-D	AN30-03

## Dimensions

VP546□□-5□1-□□-S□

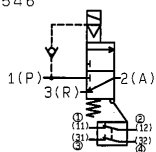
Safety limit switch

Made by OMRON

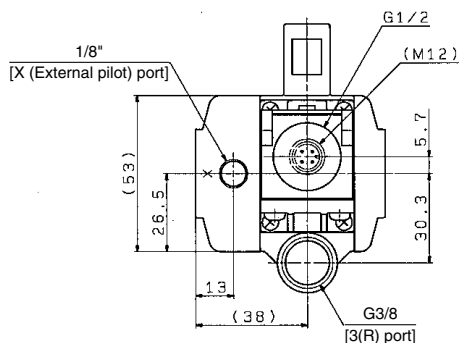
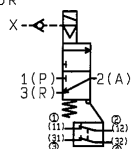


Symbol

VP546



VP546R



### Terminal/Pin Numbers (Built-in switch 2 N.C.)

M12 connector pin number	Wiring specification
①	
②	
③	
④	

G1/2 terminal number	Wiring specification
(11)	
(12)	
(31)	
(32)	

### Recommended Crimped Terminals

Manufacturer	Type	Wiring size
J.S.T. Mfg. Co., Ltd.	FV0.5-3.7 (F type) V0.5-3.7 (Straight type)	AWG20 (0.5 mm <sup>2</sup> )

J.S.T. Mfg. Co., Ltd. is a Japanese manufacturer.

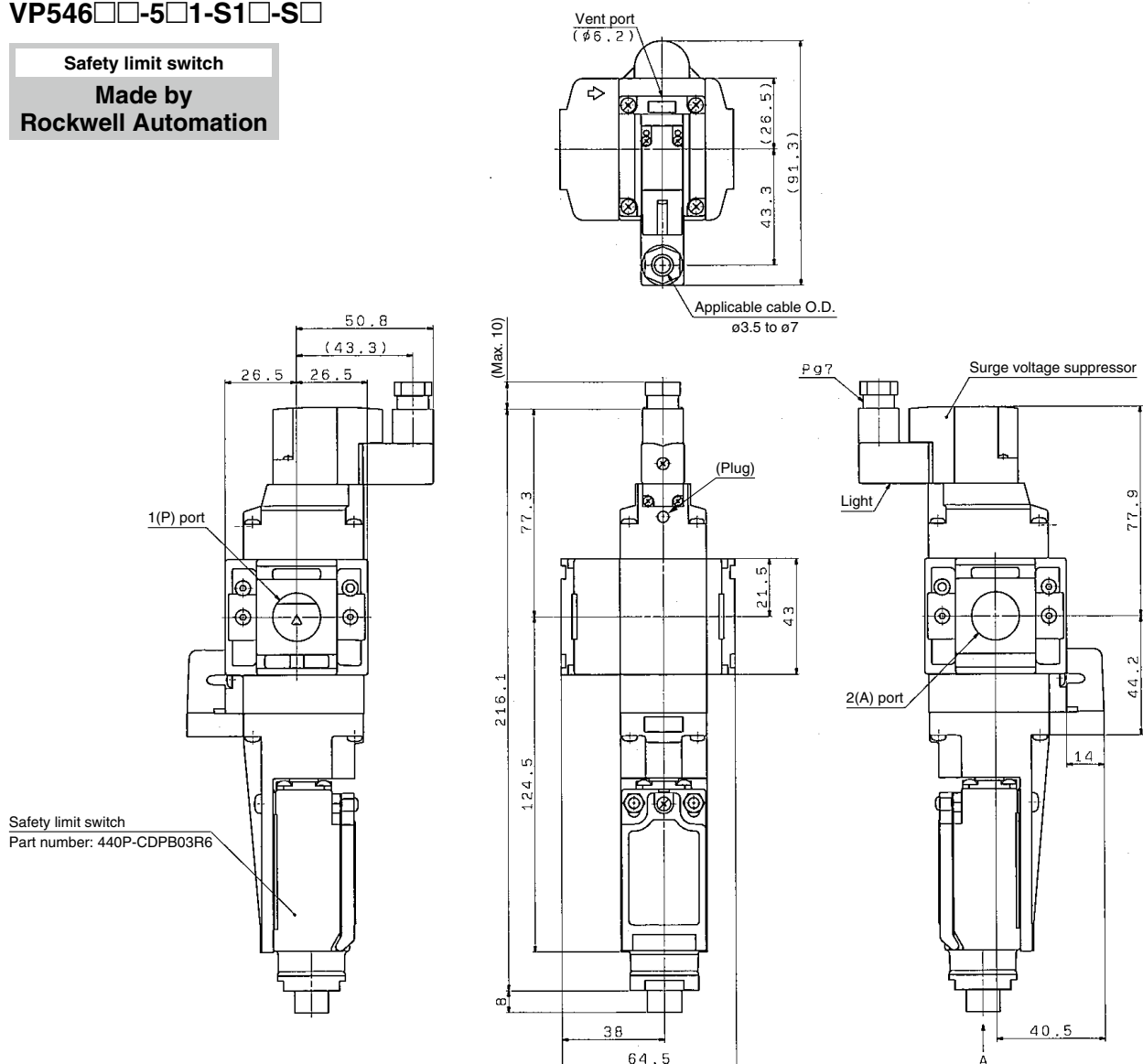
## Dimensions

VP546□□-5□1-S1□-S□

Safety limit switch

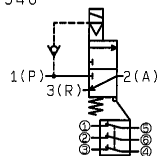
Made by

Rockwell Automation

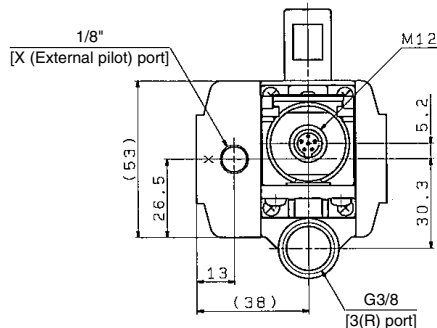
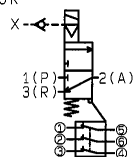


Symbol

VP546



VP546R



## Pin Numbers (Built-in switch 3 N.C.)

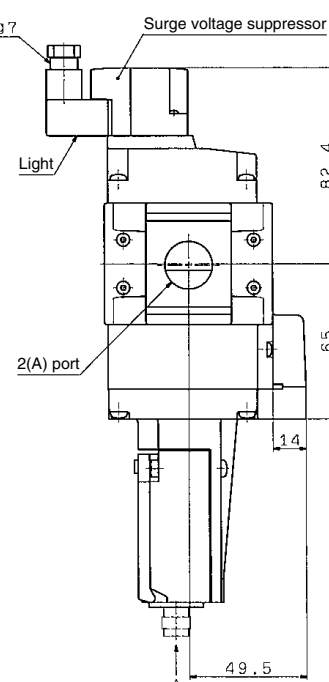
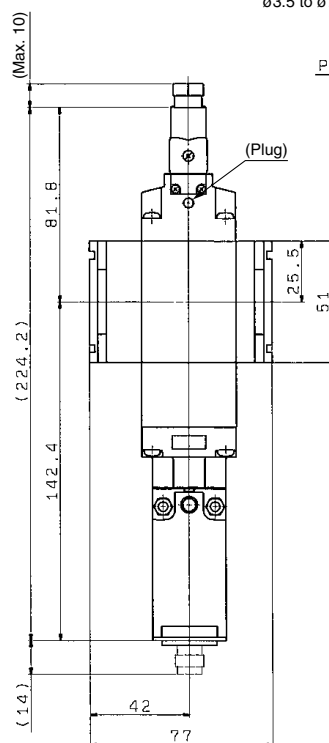
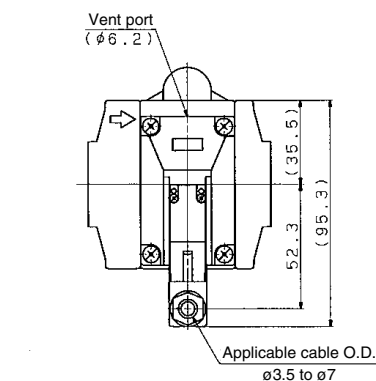
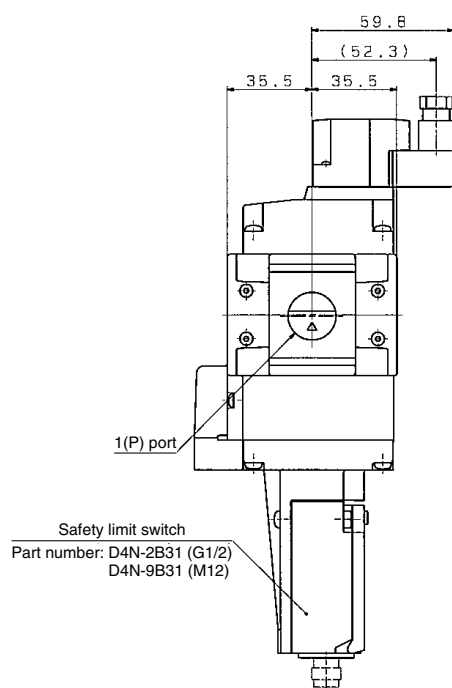
M12 connector pin number	Wiring specification
①	
⑤	
②	
⑥	
③	
④	

## Dimensions

VP746□□-5□1-□□-S□

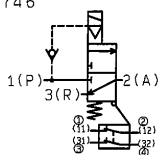
Safety limit switch

Made by OMRON

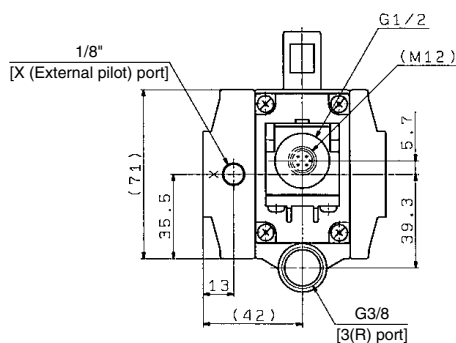
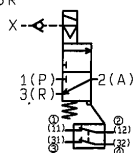


Symbol

VP746



VP746R



### Terminal/Pin Numbers (Built-in switch 2 N.C.)

M12 connector pin number	Wiring specification
①	
②	
③	
④	

G1/2 terminal number	Wiring specification
(11)	
(12)	
(31)	
(32)	

### Recommended Crimped Terminals

Manufacturer	Type	Wiring size
J.S.T. Mfg. Co., Ltd.	FV0.5-3.7 (F type) V0.5-3.7 (Straight type)	AWG20 (0.5 mm <sup>2</sup> )

J.S.T. Mfg. Co., Ltd. is a Japanese manufacturer.

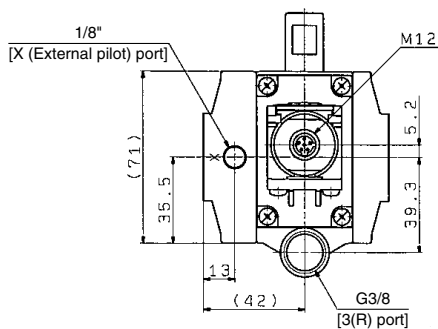
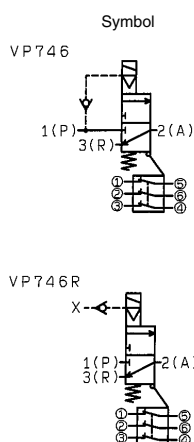
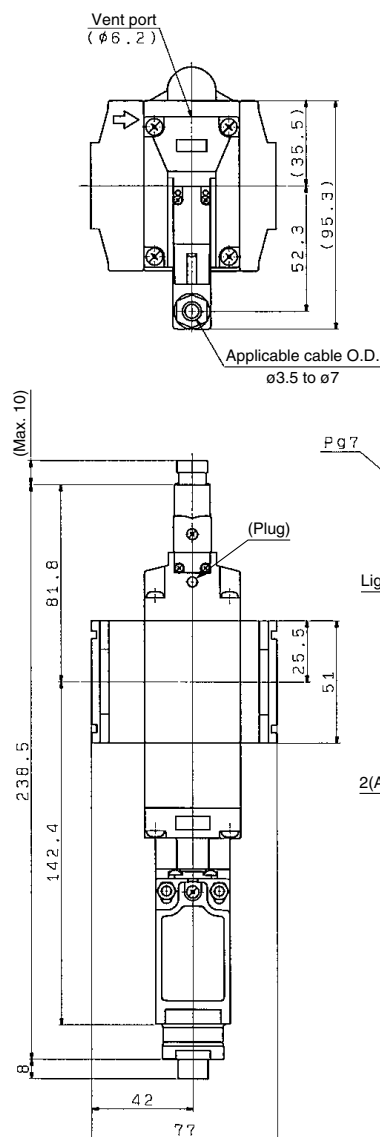
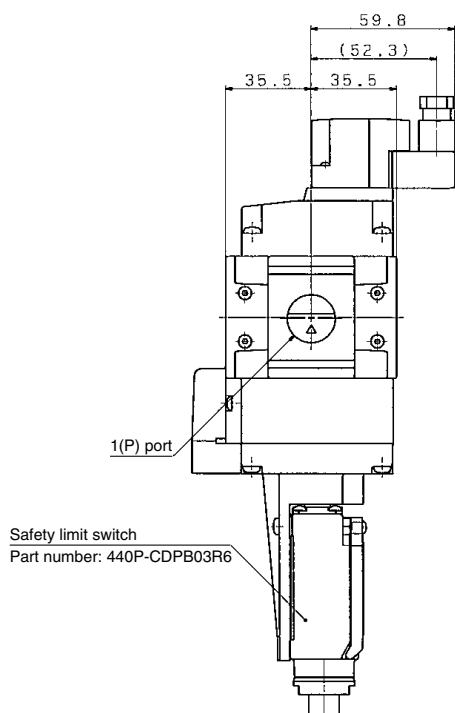
## Dimensions

VP746□□-5□1-S1□-S□

Safety limit switch

Made by

Rockwell Automation



### Pin Numbers (Built-in switch 3 N.C.)

M12 connector pin number	Wiring specification
①	
⑤	
②	
⑥	
③	
④	

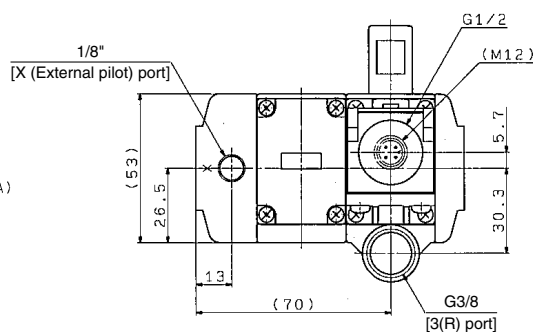
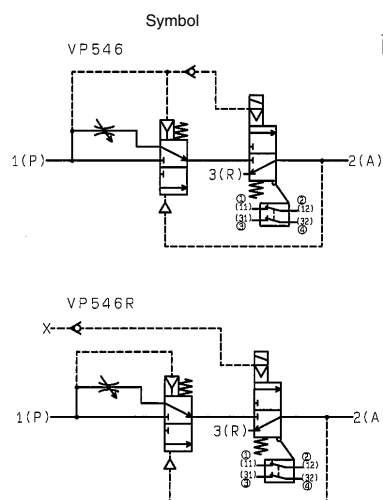
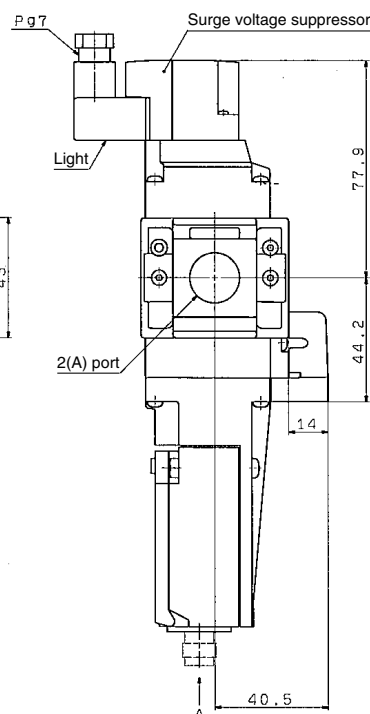
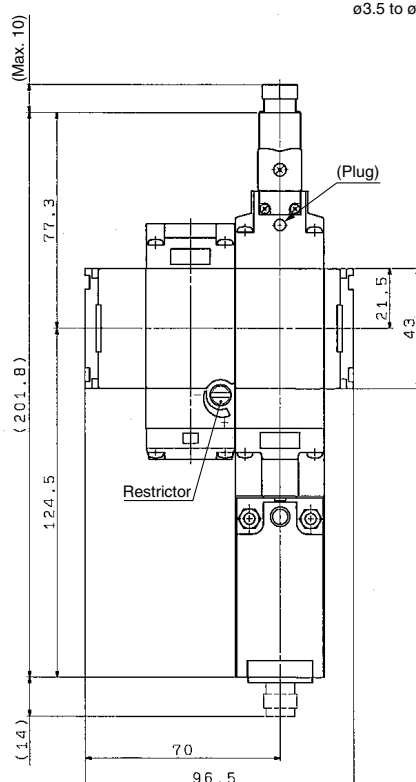
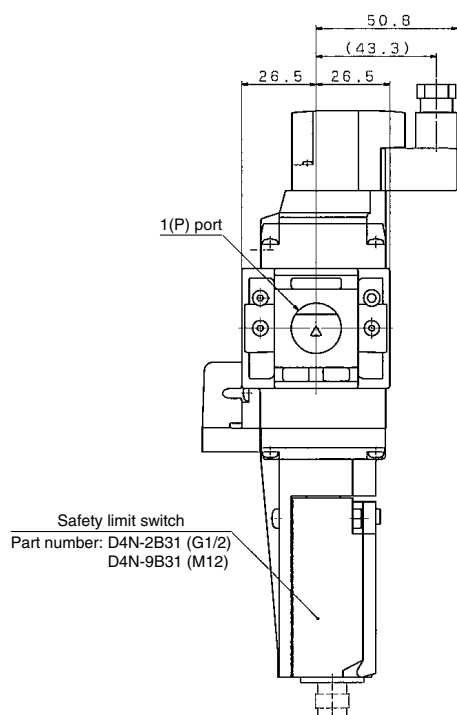
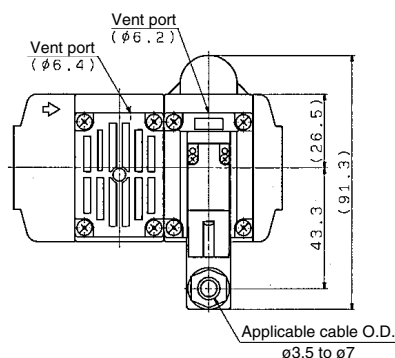


## Dimensions

VP546□□-5□1-□□-SS□

Safety limit switch

Made by OMRON



### Terminal/Pin Numbers (Built-in switch 2 N.C.)

M12 connector pin number	Wiring specification
①	
②	
③	
④	

G1/2 terminal number	Wiring specification
(11)	
(12)	
(31)	
(32)	

### Recommended Crimped Terminals

Manufacturer	Type	Wiring size
J.S.T. Mfg. Co., Ltd.	FV0.5-3.7 (F type)	AWG20 (0.5 mm <sup>2</sup> )
	V0.5-3.7 (Straight type)	

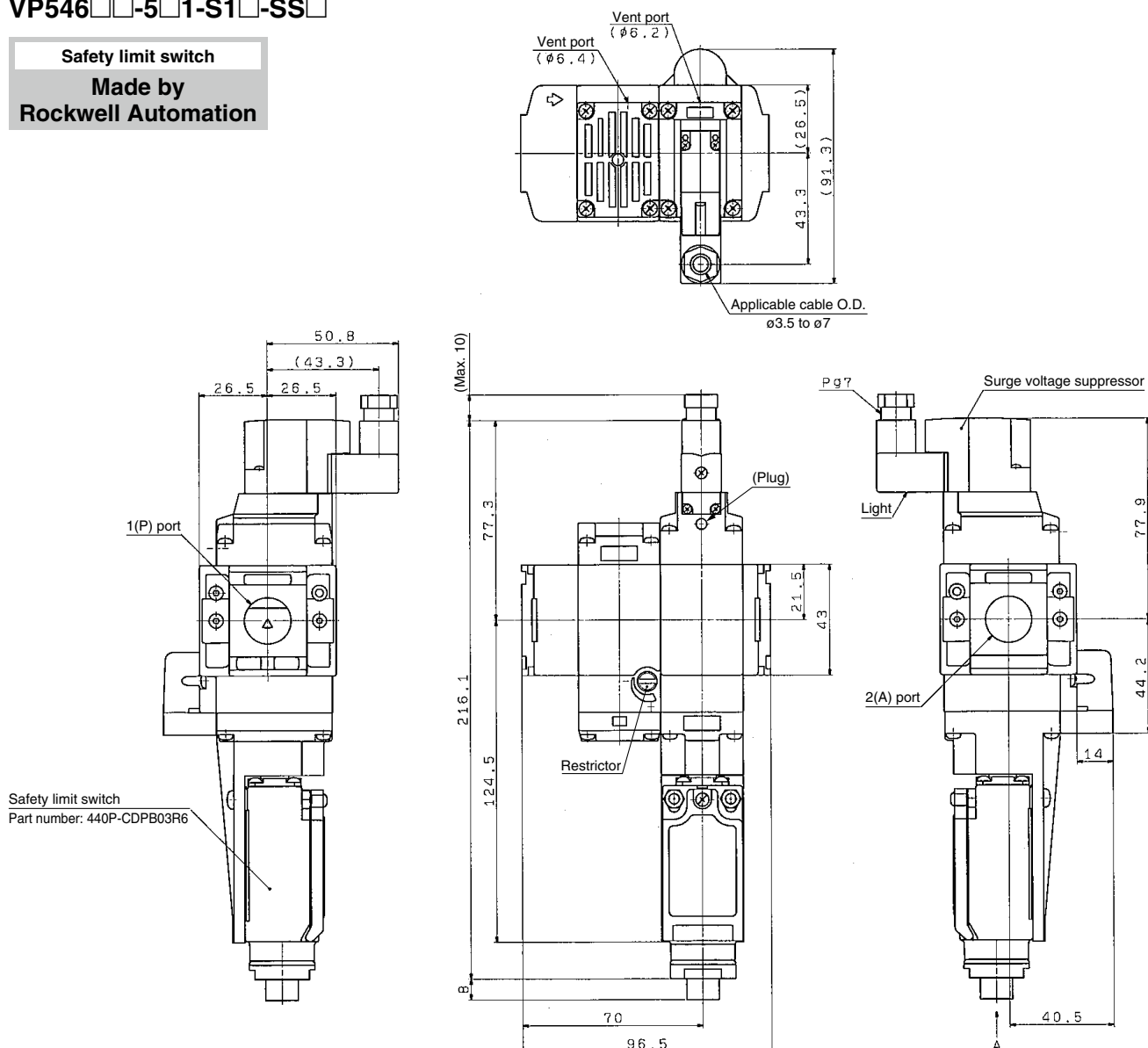
J.S.T. Mfg. Co., Ltd. is a Japanese manufacturer.

## Dimensions

VP546□□-5□1-S1□-SS□

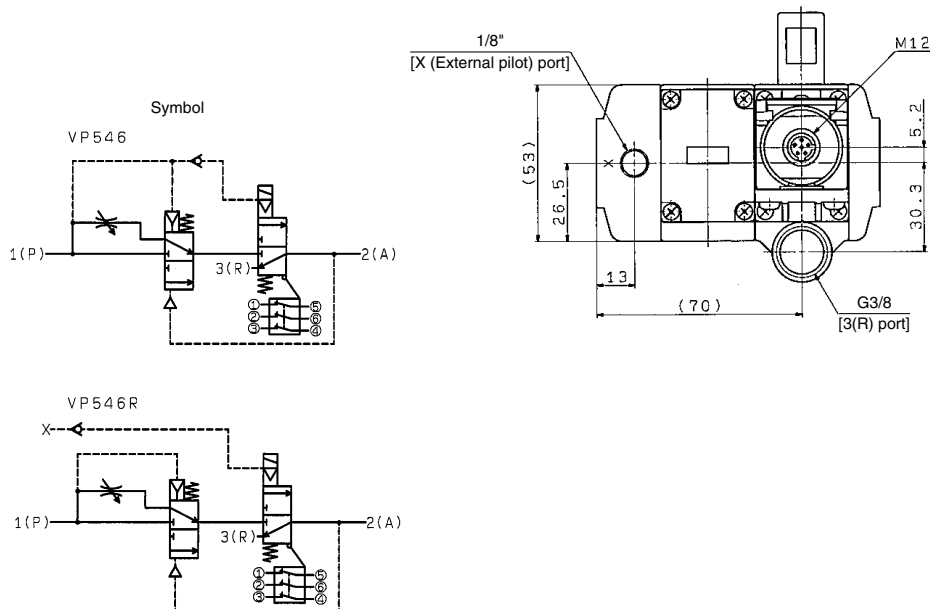
Safety limit switch

Made by  
Rockwell Automation



## Pin Numbers (Built-in switch 3 N.C.)

M12 connector pin number	Wiring specification
①	
⑤	
②	
⑥	
③	
④	

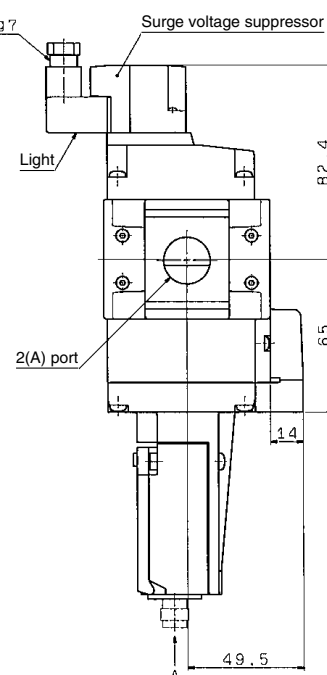
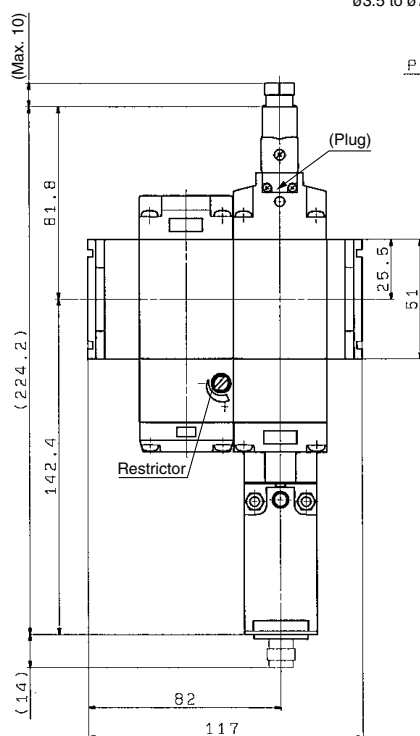
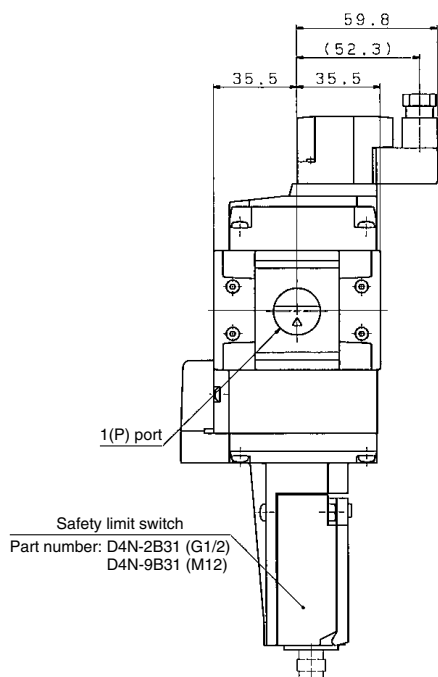
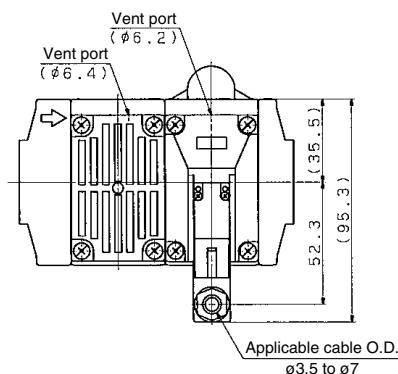


## Dimensions

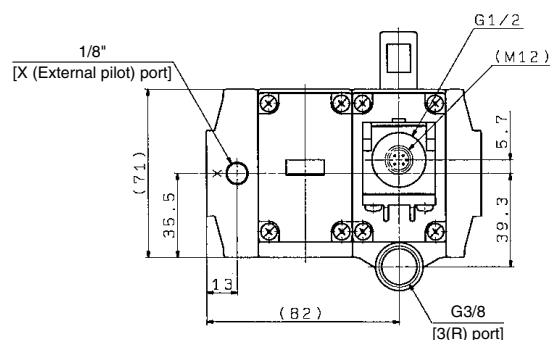
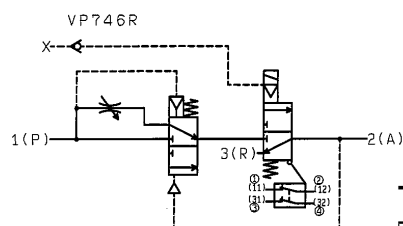
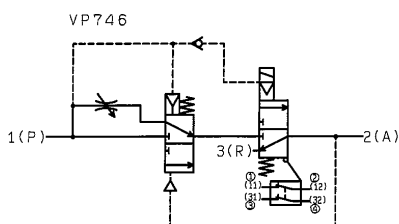
VP746□□-5□1-□□-SS□

Safety limit switch

Made by OMRON



Symbol



### Terminal/Pin Numbers (Built-in switch 2 N.C.)

M12 connector pin number	Wiring specification
①	
②	③ ②
③	④ ①
④	

G1/2 terminal number	Wiring specification
(11)	
(12)	
(31)	
(32)	

### Recommended Crimped Terminals

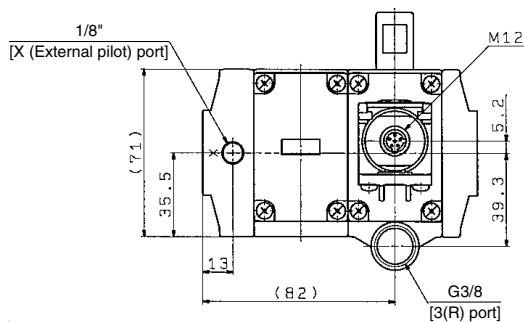
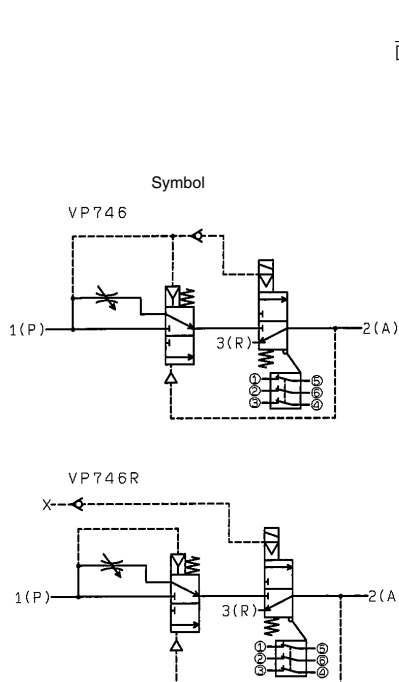
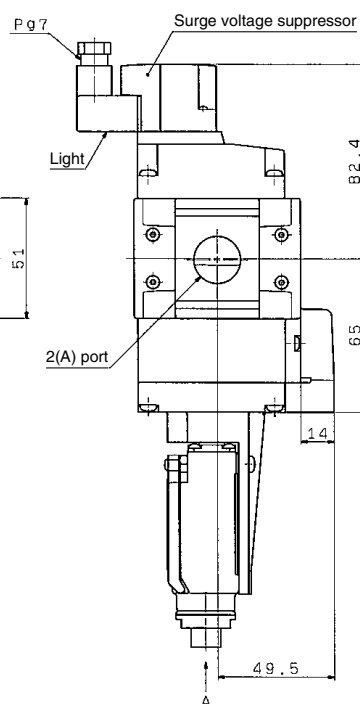
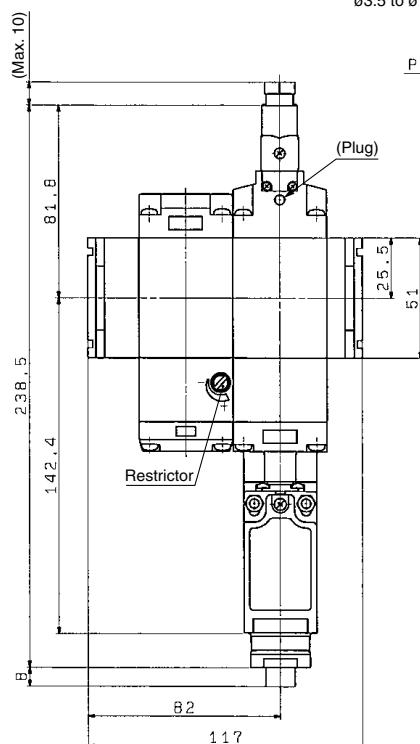
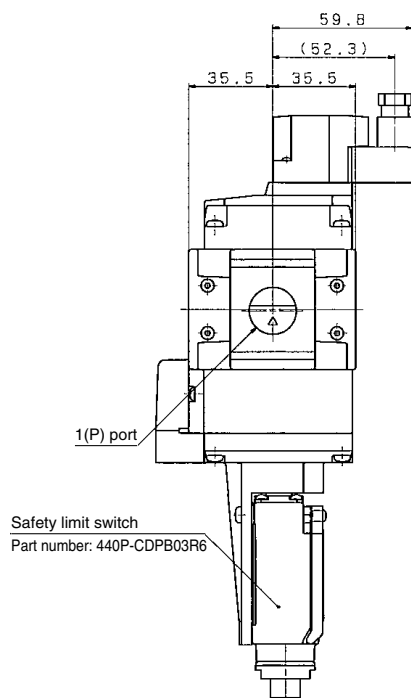
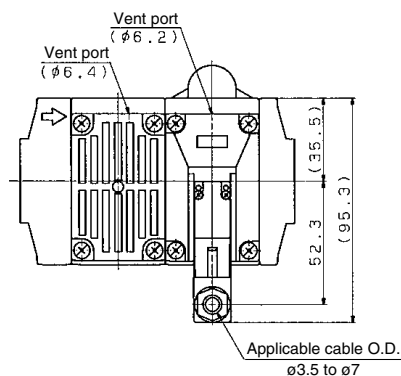
Manufacturer	Type	Wiring size
J.S.T. Mfg. Co., Ltd.	FV0.5-3.7 (F type)	AWG20 (0.5 mm <sup>2</sup> )
	V0.5-3.7 (Straight type)	

J.S.T. Mfg. Co., Ltd. is a Japanese manufacturer.

## Dimensions

VP746□□-5□1-S1□-SS□

Safety limit switch  
Made by  
Rockwell Automation



### Pin Numbers (Built-in switch 3 N.C.)

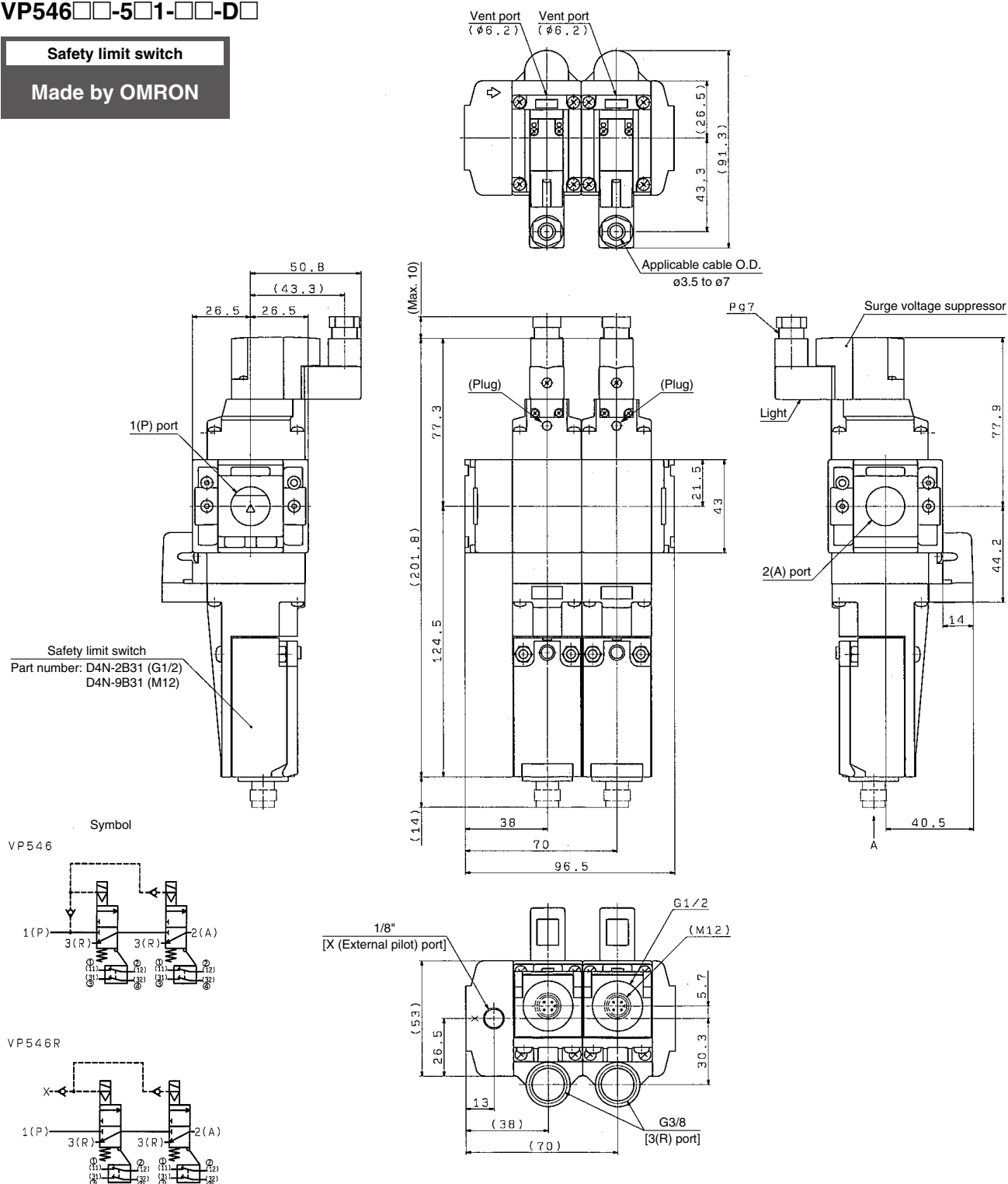
M12 connector pin number	Wiring specification
①	
⑤	
②	
⑥	
③	
④	

## Dimensions

VP546□□-5□1-□□-D□

Safety limit switch

Made by OMRON



### Terminal/Pin Numbers (Built-in switch 2 N.C.)

M12 connector pin number	Wiring specification
①	
②	
③	
④	

G1/2 terminal number	Wiring specification
(11)	
(12)	
(31)	
(32)	

### Recommended Crimped Terminals

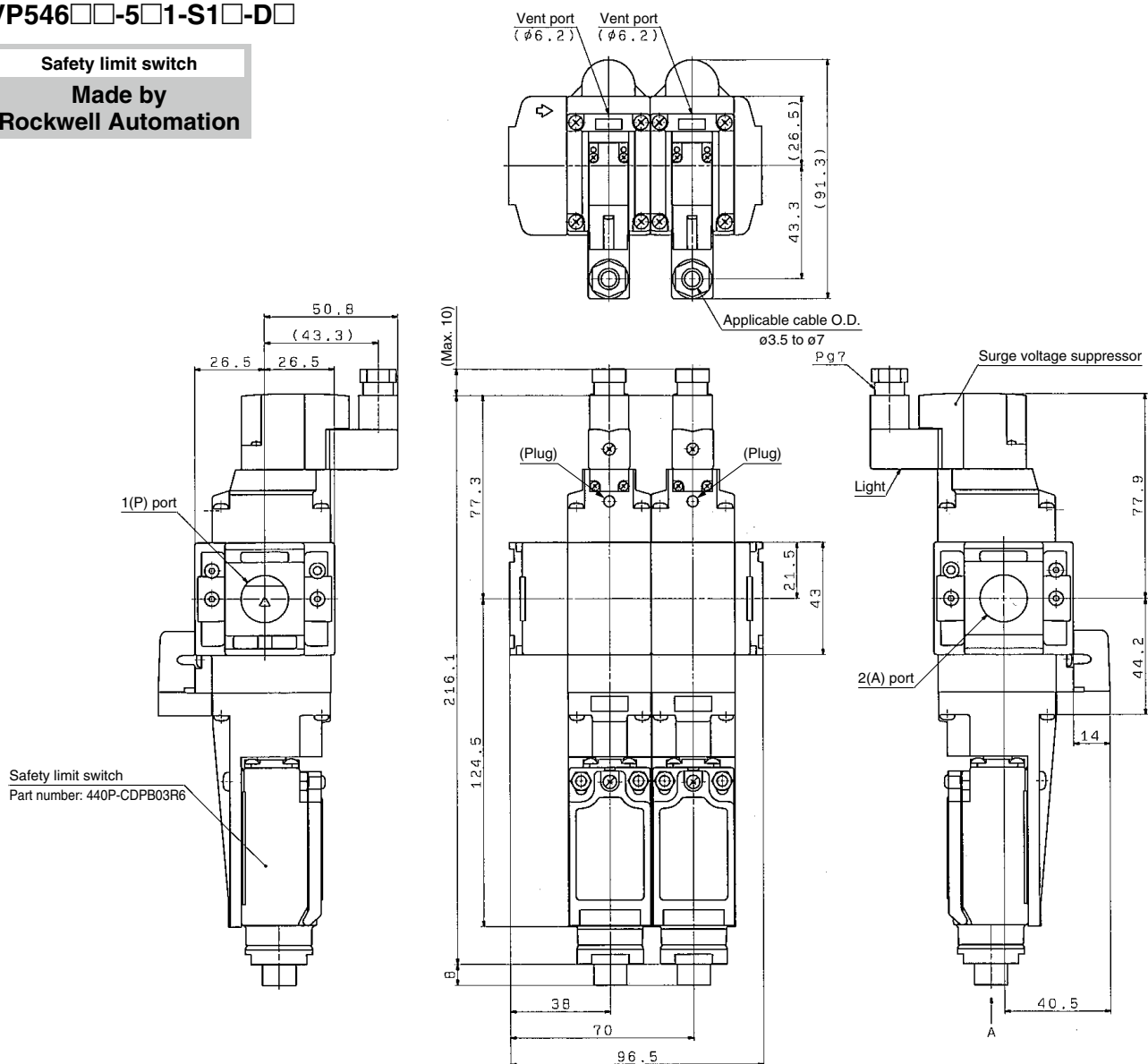
Manufacturer	Type	Wiring size
J.S.T. Mfg. Co., Ltd.	FV0.5-3.7 (F type) V0.5-3.7 (Straight type)	AWG20 (0.5 mm <sup>2</sup> )

J.S.T. Mfg. Co., Ltd. is a Japanese manufacturer.

## Dimensions

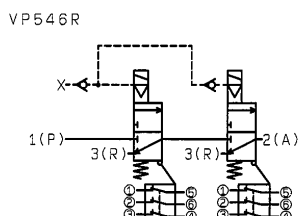
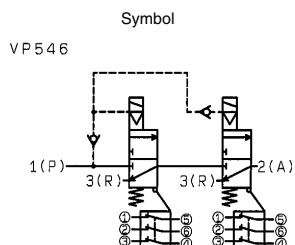
VP546□□-5□1-S1□-D□

Safety limit switch  
Made by  
Rockwell Automation



## Pin Numbers (Built-in switch 3 N.C.)

M12 connector pin number	Wiring specification
①	
⑤	
②	
⑥	
③	
④	

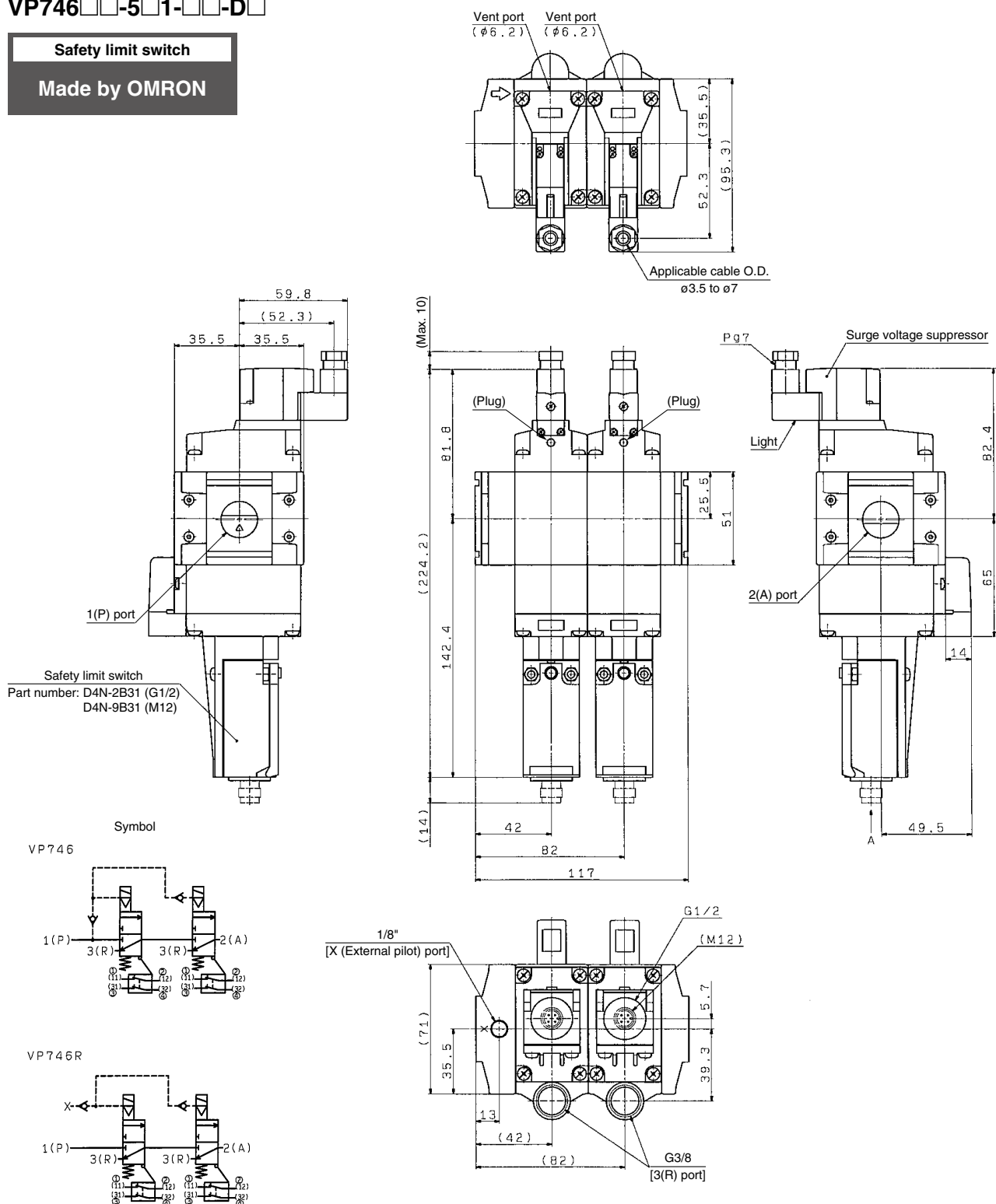


## Dimensions

VP746□□-5□1-□□-D□

Safety limit switch

Made by OMRON



### Terminal/Pin Numbers (Built-in switch 2 N.C.)

M12 connector pin number	Wiring specification	G1/2 terminal number	Wiring specification
①		(11)	
②		(12)	
③		(31)	
④		(32)	

### Recommended Crimped Terminals

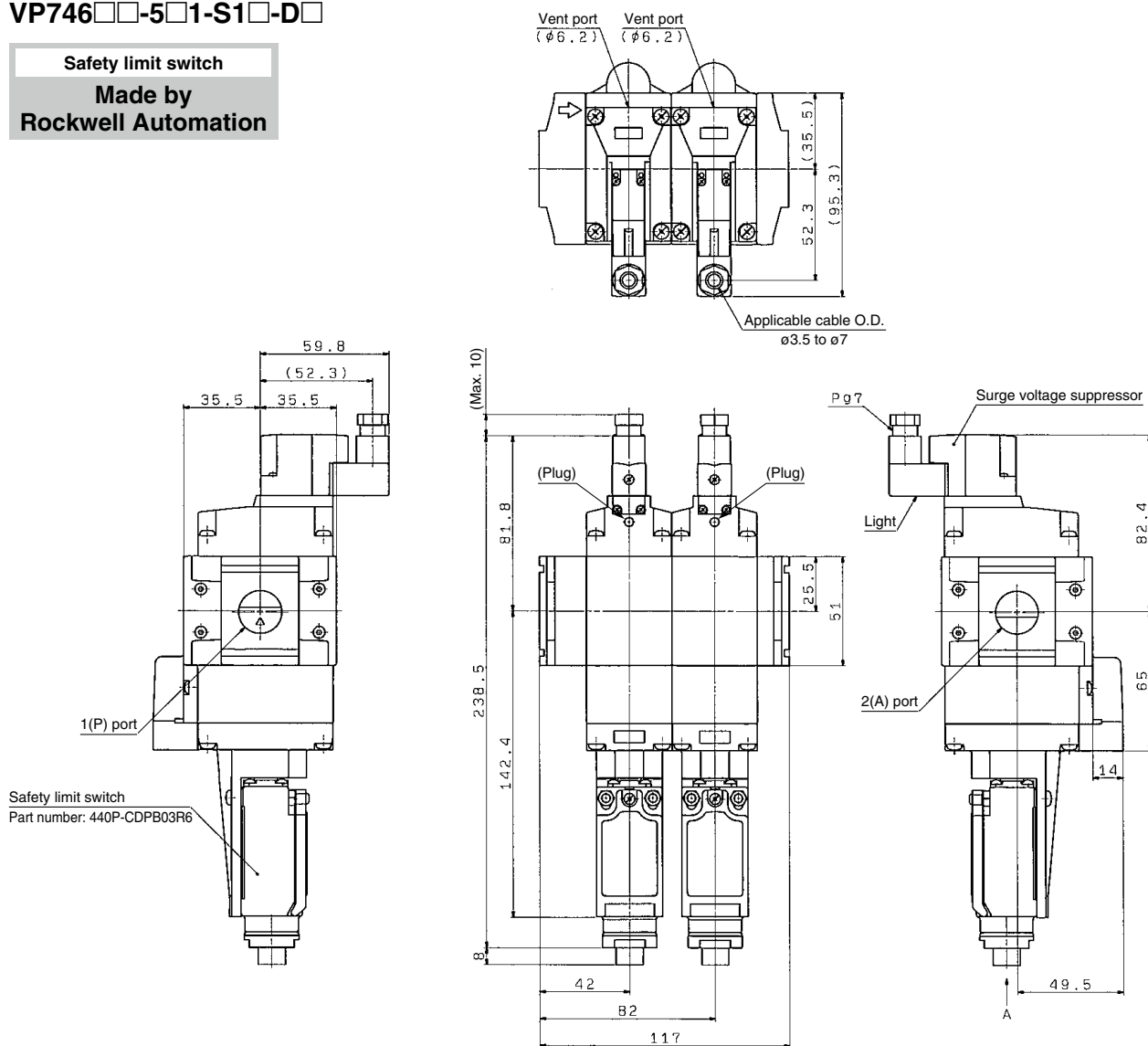
Manufacturer	Type	Wiring size
J.S.T. Mfg. Co., Ltd.	FV0.5-3.7 (F type)	AWG20 (0.5 mm <sup>2</sup> )
	V0.5-3.7 (Straight type)	

J.S.T. Mfg. Co., Ltd. is a Japanese manufacturer.

## Dimensions

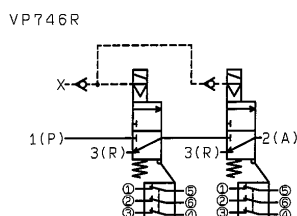
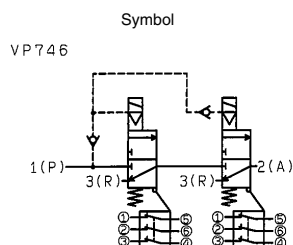
VP746□□-5□1-S1□-D□

Safety limit switch  
Made by  
Rockwell Automation



## Pin Numbers (Built-in switch 3 N.C.)

M12 connector pin number	Wiring specification
①	
⑤	
②	
⑥	
③	③
④	



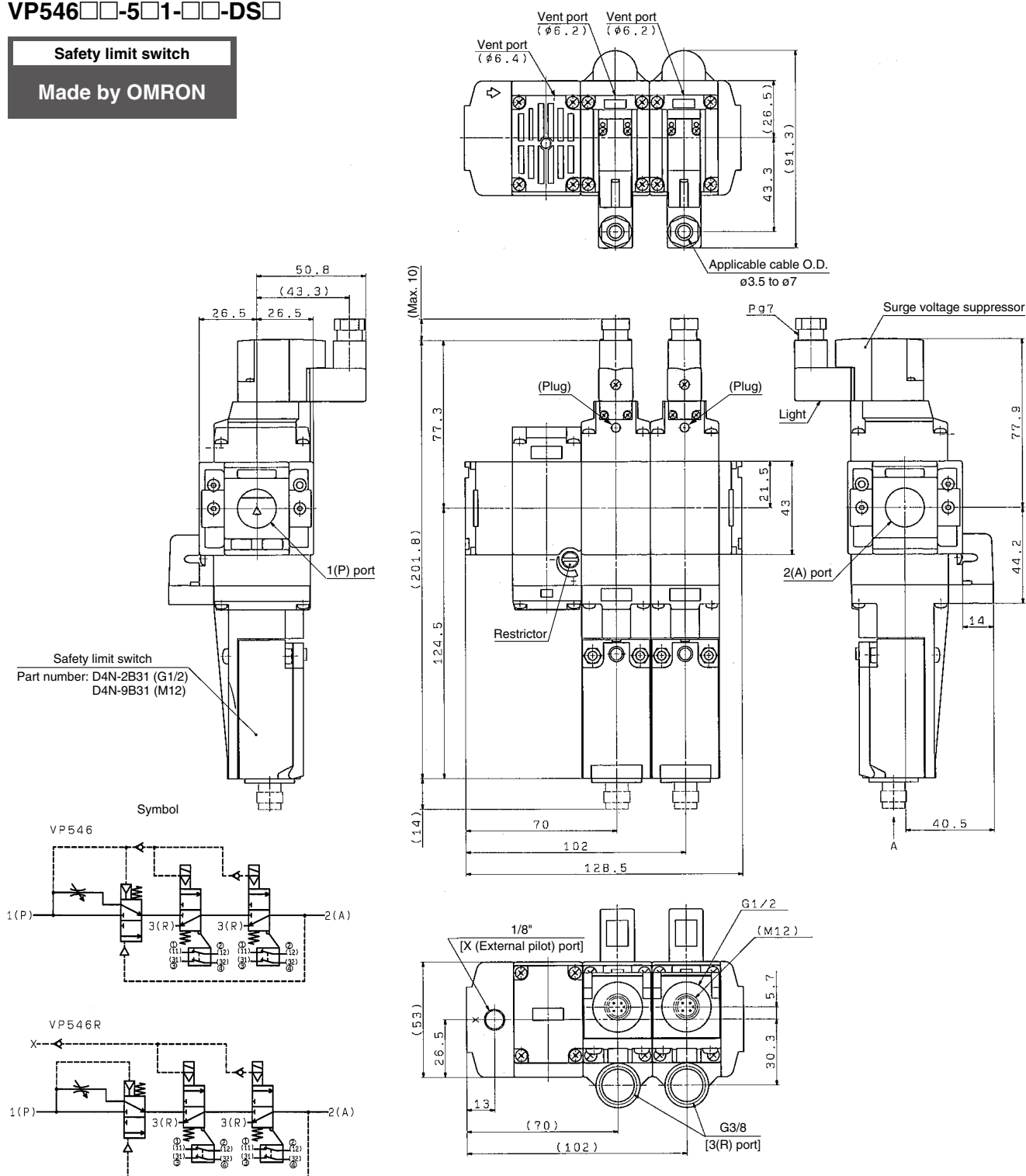


## Dimensions

VP546□□-5□1-□□-DS□

Safety limit switch

Made by OMRON



### Terminal/Pin Numbers (Built-in switch 2 N.C.)

M12 connector pin number	Wiring specification
①	
②	
③	
④	

G1/2 terminal number	Wiring specification
(11)	
(12)	
(31)	
(32)	

### Recommended Crimped Terminals

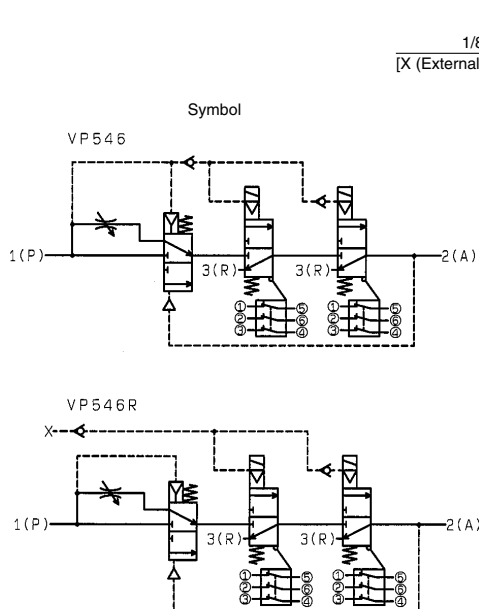
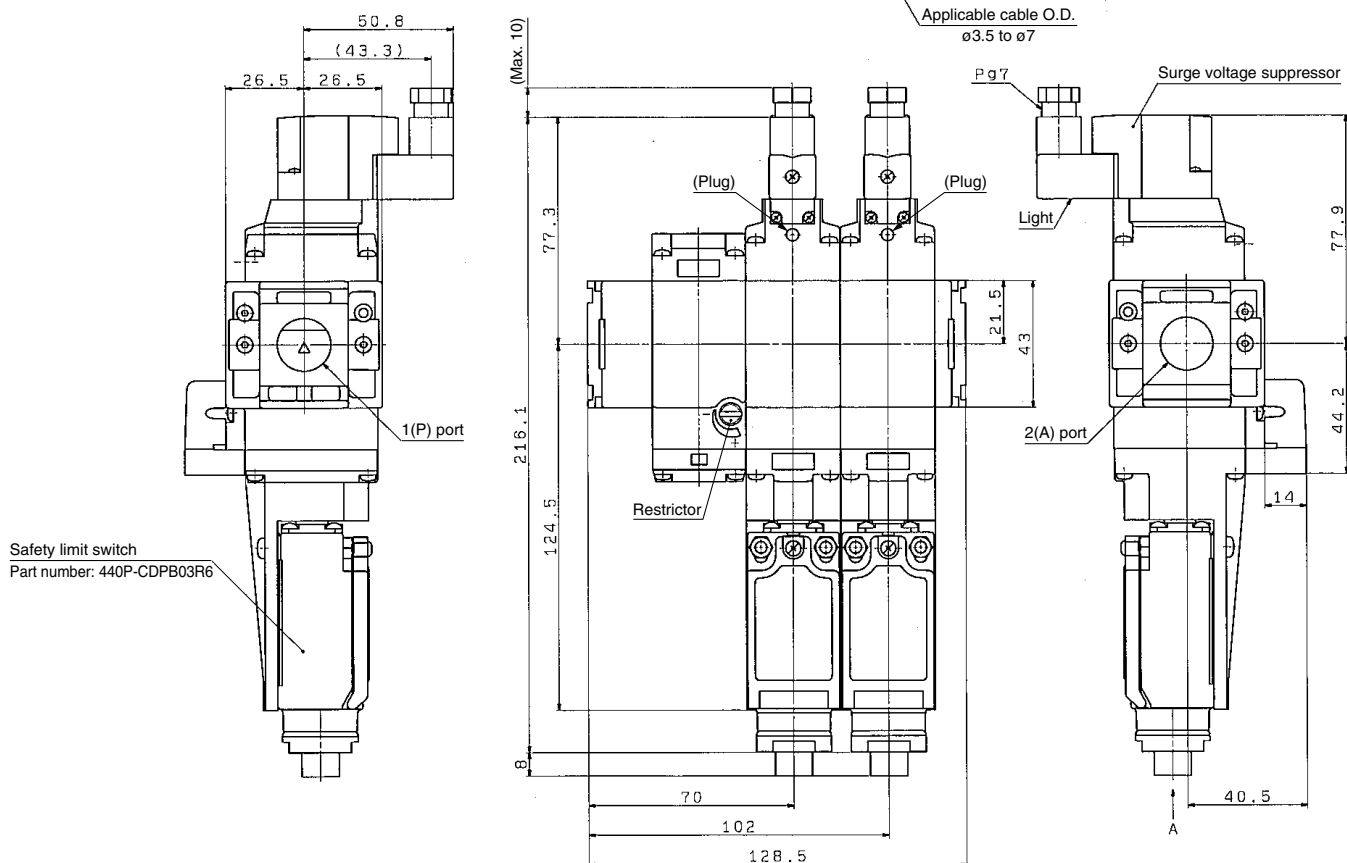
Manufacturer	Type	Wiring size
J.S.T. Mfg. Co., Ltd.	FV0.5-3.7 (F type) V0.5-3.7 (Straight type)	AWG20 (0.5 mm <sup>2</sup> )

J.S.T. Mfg. Co., Ltd. is a Japanese manufacturer.

## Dimensions

VP546□□-5□1-S1□-DS□

Safety limit switch  
Made by  
Rockwell Automation

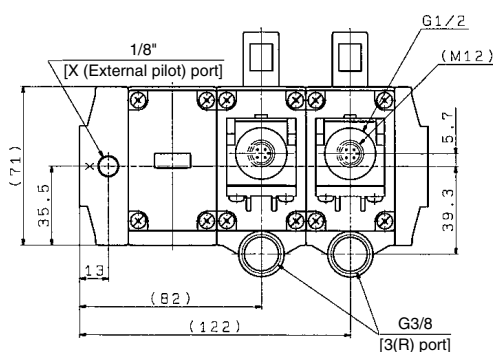


## Pin Numbers (Built-in switch 3 N.C.)

M12 connector pin number	Wiring specification
①	
⑤	
②	
⑥	
③	③
④	

## VP746□□-5□1-□□-DS□

**Made by OMRON**



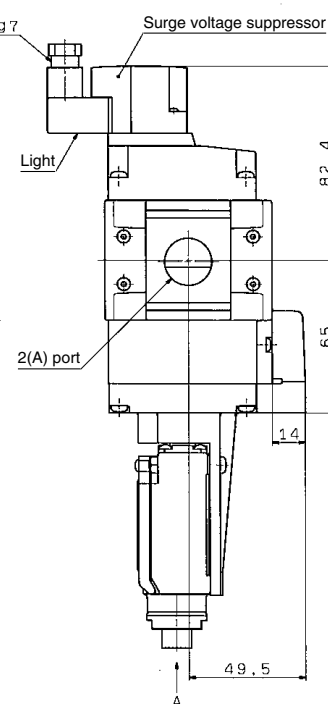
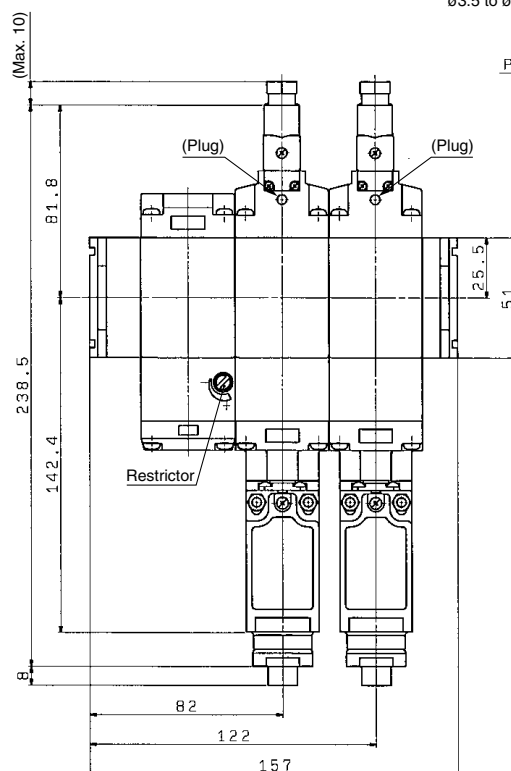
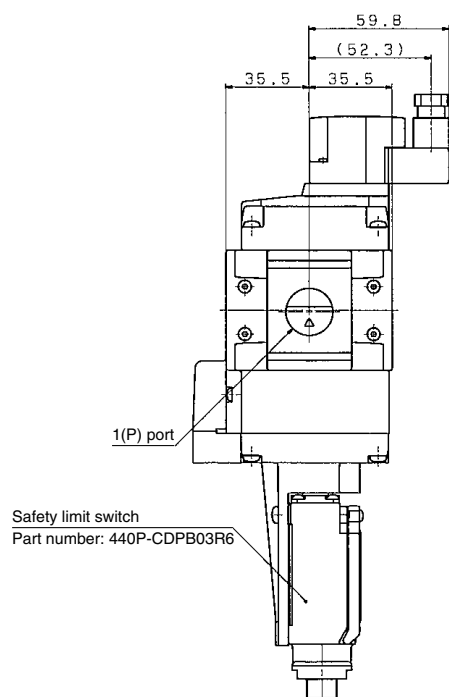
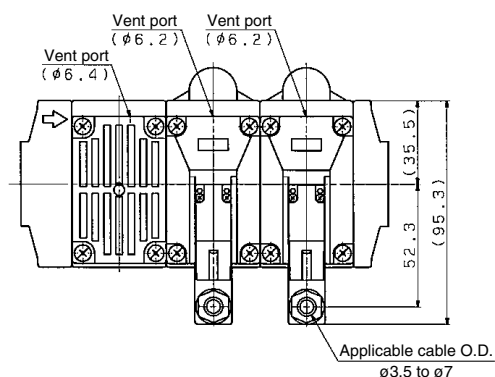
J.S.T. Mfg. Co., Ltd. is a Japanese manufacturer.

## Dimensions

VP746□□-5□1-S1□-DS□

Safety limit switch

Made by  
Rockwell Automation



## Pin Numbers (Built-in switch 3 N.C.)

M12 connector pin number	Wiring specification
①	
⑤	
②	
⑥	
③	
④	

