

Discontinue



Air operated valve for high vacuum

AVB⁴₅⁶₇ 1V Series

- Formed bellows type
- Aluminum body type



Model No.	Actuation	Orifice
AVB41V	NC	ø16
AVB51V	NC	ø24
AVB61V	NC	ø40
AVB71V	NC	ø50

Much smaller and lighter with aluminum body

● Miniature switch mountable

A reed switch (proximity, reed) can be connected to confirm the operation. (The switch rail kit is required for retrofitting.)

● Long-life formed bellows

Material: SUS316L

Durability: 1 million times (*1)

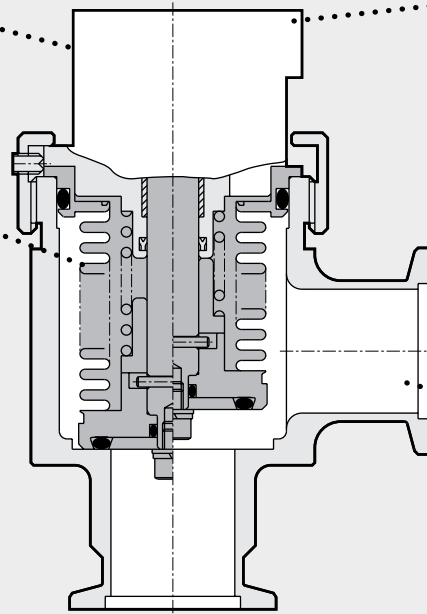
*1 Life when working media is inert gas within specified range, which does not contain solids such as reaction products.

● Usable with back pressure

The vacuum pump can be connected to either port.

● Quick attachment and removal

The bellows can be attached and removed easily using a hexagon wrench. This greatly reduces "washing" and "replacement" processes.



● 30% lower total height

The compact body uses less space than the conventional model (AVB**3).

● No gas traps

There is no dead space where gas may get trapped. (Body has no welded parts.)

● Low dust generation

Wetted areas (flow path) have no sliding sections that may generate particles.

● Light weight

(Average 60% lighter than conventional product)
The aluminum body and dedicated actuator reduce the weight by approx. 1/3 of the conventional product (SUS body).

⚠ Precautions

Always read page 9 in the introduction and the precautions on page 88 to 91 to ensure correct, safe use of this product.

- Working media
- Installation
- Direction when connecting piping
- Proximity switch, reed switch

Specifications



Descriptions	AVB41V	AVB51V	AVB61V	AVB71V
Working fluid	Vacuum and inert gas			
Working pressure range Pa(abs)	1.3×10^{-6} to 1×10^5			
Maximum working differential pressure MPa	0.1			
Valve seat leakage Pa·m ³ /s(He)	1.3×10^{-10} or less			
External leakage Pa·m ³ /s(He)	1.3×10^{-11} or less			
Withstanding pressure MPa	0.3			
Fluid temperature °C	5 to 60			
Ambient temperature °C	0 to 60			
Orifice mm	ø16	ø24	ø40	ø50
Conductance Note 1 ℓ/s	5	13	47	80
Connection	NW16	NW25	NW40	NW50
Control pressure MPa	0.4 to 0.6			
Weight kg	0.45	0.50	1.15	1.20
JIS symbol				

Note 1: The conductance is the theoretical calculation value at the molecular flow range, and is not the actual measurement value.

Switch specifications

Descriptions	Proximity switch		Reed switch	
	T2H/T2V	T3H/T3V	TOH/TOV	T5H/T5V
Applications	Programmable controller	Relay, programmable controller	Relay, programmable controller	Programmable controller, relay, IC Circuit (without light), serial connection
Power voltage	—	10 to 28V DC	—	—
Load voltage/current	10 to 30V DC, 5 to 20mA Note 3	30V DC or less, 100mA or less	12/24V DC 5 to 50mA 100V AC 7 to 20mA	12/24V DC 50mA or less 100V AC 20mA or less
Power consumption	—	10mA or less at 24VDC (ON)	—	—
Internal voltage drop	4V or less	0.5V or less	2.4V or less	0V
Light	Illuminating diode (lights when ON)			—
Leakage current	1mA or less	10 μA or less	0	0
Lead wire length Note 2	Standard 1m (oil-resistant vinyl cabtire cord 2-conductor 0.2mm ²)	Standard 1m (oil-resistant vinyl cabtire cord 3-conductor 0.2mm ²)	Standard 1m (oil-resistant vinyl cabtire cord 2-conductor 0.2mm ²)	
Maximum impact	980m/s ²		294m/s ²	
Insulation resistance	20MΩ or more when measured with 500V DC megger			
Withstand voltage	No failure when 1000V AC is applied for 1 minute			
Ambient temperature range	-10 to +60°C			
Protective structure	IEC Standard IP67, JIS CO920 (water-tight type), oil-resistant			

Note 2: 3 m and 5 m leads are available as options.

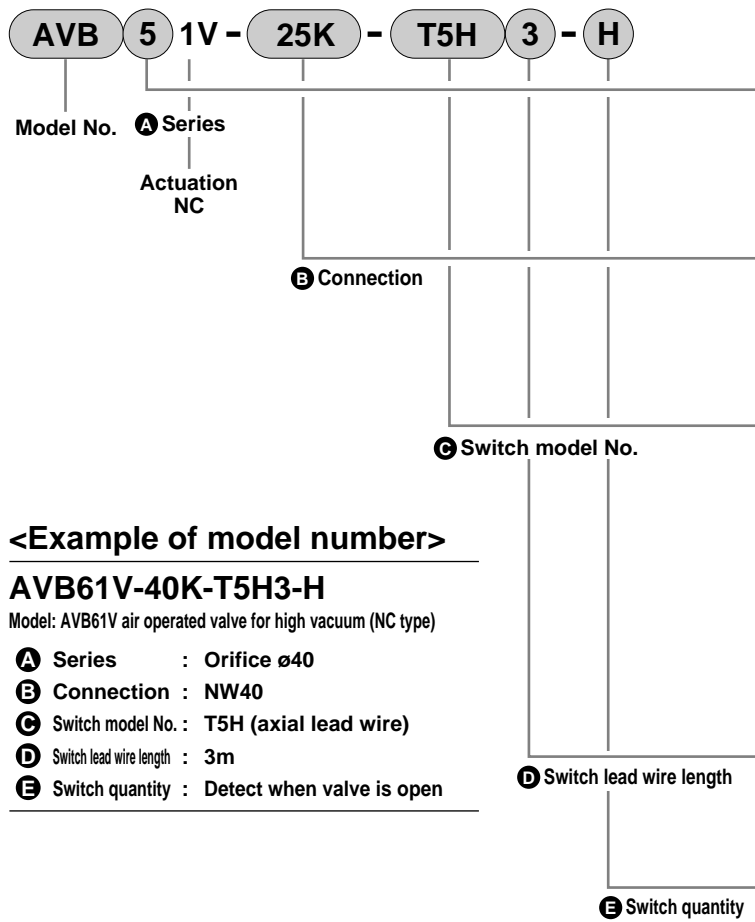
Note 3: The maximum load current 20 mA above is at 25°C.

If the switch's working ambient temperature is higher than 25°C, load current will be lower than 20 mA (5 to 10 mA at 60°C).

Note 4: The switch rail kit is required for retrofitting (See page 94).

Note 5: See page 89 to 91 for other precautions for using the switches.

How to order



<Example of model number>

AVB61V-40K-T5H3-H

Model: AVB61V air operated valve for high vacuum (NC type)

- A** Series : Orifice ϕ 40
- B** Connection : NW40
- C** Switch model No. : T5H (axial lead wire)
- D** Switch lead wire length : 3m
- E** Switch quantity : Detect when valve is open

Symbol	Descriptions	
A Series		
4	Orifice ϕ 16	
5	Orifice ϕ 24	
6	Orifice ϕ 40	
7	Orifice ϕ 50	

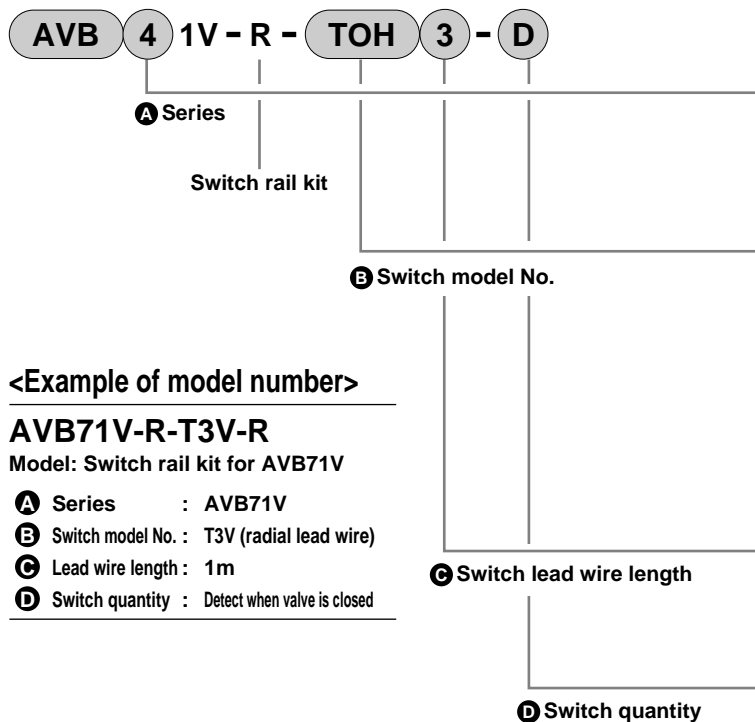
B Connection		
16K	NW16	Only AVB41V is available
25K	NW25	Only AVB51V is available
40K	NW40	Only AVB61V is available
50K	NW50	Only AVB71V is available

C Switch model No.			
Blank	Without switch		
T0H	Axial lead wire	Reed	2 wire
T5H			
T0V	Radial lead wire	Reed	2 wire
T5V			
T2H	Axial lead wire	Proximity	3 wire
T3H			
T2V	Radial lead wire	Proximity	2 wire
T3V			

D Switch lead wire length	
Blank	1m(standard)
3	3m
5	5m

E Switch quantity	
Blank	Without switch
H	Detect when valve is open
R	Detect when valve is closed
D	Detect when valve is open/closed

<How to order switch rail kit>



<Example of model number>

AVB71V-R-T3V-R

Model: Switch rail kit for AVB71V

- A** Series : AVB71V
- B** Switch model No. : T3V (radial lead wire)
- C** Lead wire length : 1m
- D** Switch quantity : Detect when valve is closed

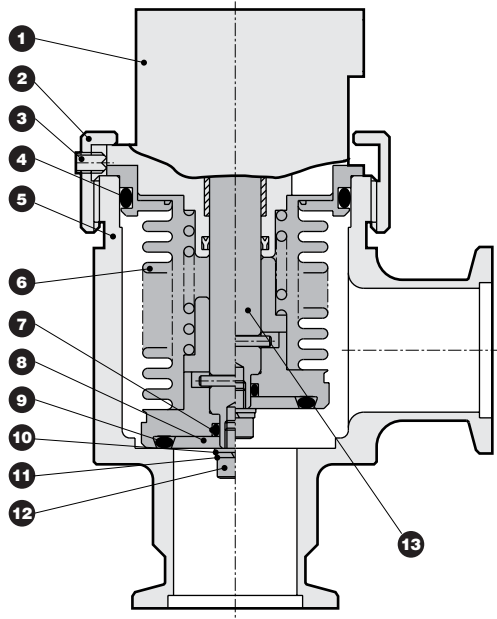
Symbol	Descriptions	
A Series		
4	AVB41V	
5	AVB51V	
6	AVB61V	
7	AVB71V	

B Switch model No.			
T0H	Axial lead wire	Reed	2 wire
T5H			
T0V	Radial lead wire	Reed	2 wire
T5V			
T2H	Axial lead wire	Proximity	3 wire
T3H			
T2V	Radial lead wire	Proximity	2 wire
T3V			

C Switch lead wire length	
Blank	1m (standard)
3	3m
5	5m

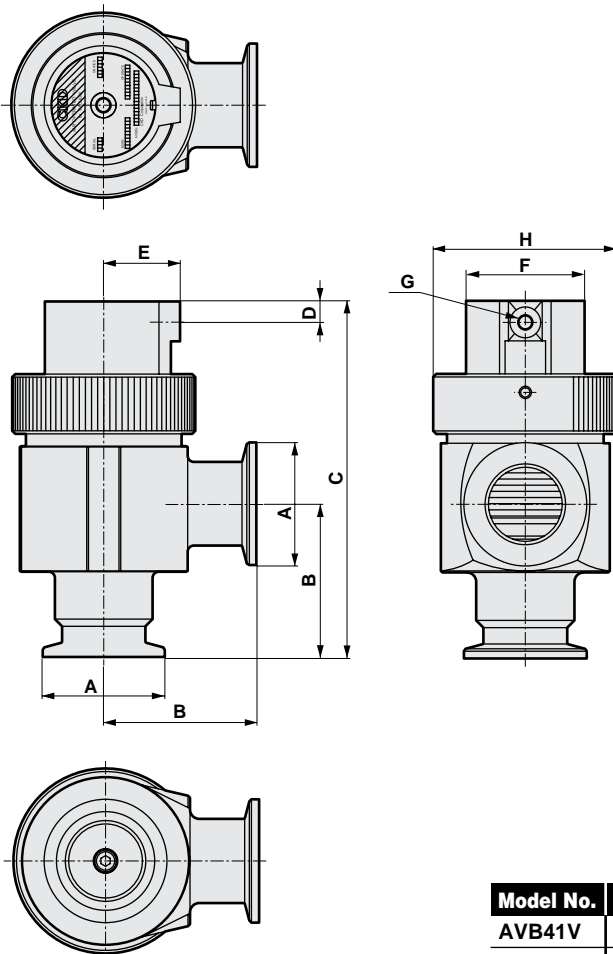
D Switch quantity	
H	Detect when valve is open
R	Detect when valve is closed
D	Detect when valve is open/closed

Internal structure and parts list

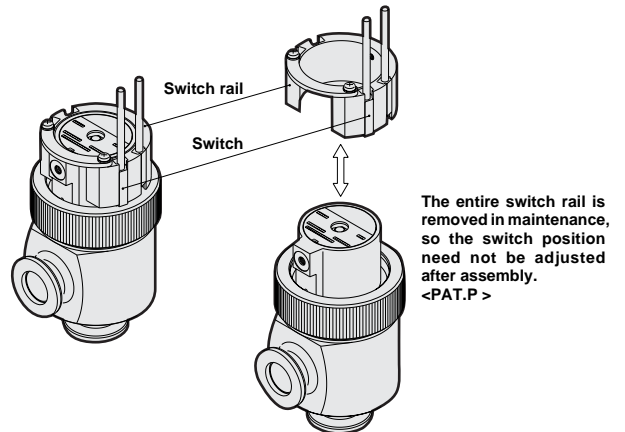


No.	Parts name	Material
1	Cylinder (magnet integrated)	
2	Ring	A5056
3	Hexagon socket head screw	SUSXM7
4	O ring	FKM
5	Body	A6063-0
6	Bellows	SUS316L
7	O ring	FKM
8	Valve disk B	SUS316L
9	O ring	FKM
10	Plain washer	SUS304
11	Spring washer	SUS304
12	Hexagon socket head bolt	SUSXM7
13	Rod	SUS316L

Dimensions



Appearance when switch is mounted



Model No.	A	B	C	D	E	F	G	H
AVB41V	ø30(NW16)	40	106	7	25	ø38.6	M5	ø60
AVB51V	ø40(NW25)	50	116	7	25	ø38.6	M5	ø60
AVB61V	ø55(NW40)	65	157.5	17	35.5	ø58.8	Rc1/8	ø88
AVB71V	ø75(NW50)	70	163	17	35.5	ø58.8	Rc1/8	ø88