



Compact Vacuum Regulator

VSRVV Series

● Port size: ø6, ø8, R1/4

Circuit Diagram Symbol



VSRVV Series

Model No. Notation

Capable of controlling not only source pressure but also end-point pressure

■ Easy adjustment improves workability!



■ **Contributes to equipment weight reduction**

Achieves 50%* weight reduction

Body is resin, metal part material is aluminum.

Weight
Up to
50%
Reduced

*Compared to our conventional product (Elbow type)

■ **Copper-based metals not used**

Ideal for rechargeable battery manufacturing processes

SUS, aluminum alloy used in flow path section. Ideal for applications sensitive to copper ions.

Flow Path
Copper-free
Material
Restriction

■ **Ozone-resistant materials used as standard**

Special nitrile rubber adopted

Valve section, diaphragm section standardly adopt ozone-resistant materials for deterioration prevention.

Ozone Resistant
Special Nitrile
Rubber
Adopted

■ **Abundant piping variations** *Excluding pressure gauges and sensors

Elbow A Type

Direct connection possible to the vacuum port of the vacuum source.



Elbow B Type

Connection possible to the vacuum pad holder.



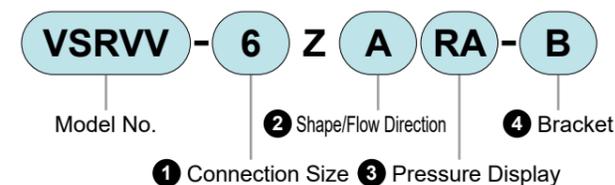
Union Type

Primary and secondary side fittings rotate individually, allowing free piping.



Model No. Notation

● Compact Vacuum Regulator

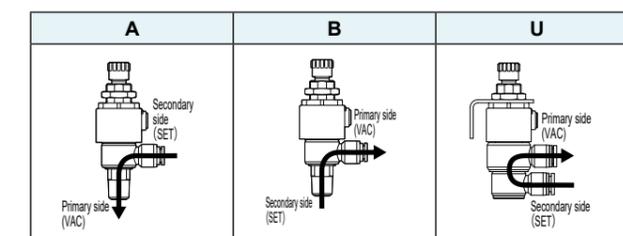


1 Connection Size

Code	Content
6	ø6 Push-in fitting
8	ø8 Push-in fitting

2 Shape/Flow Direction

Code	Content
A	Elbow A Type (R1/4)
B	Elbow B Type (R1/4)
U	Union Type

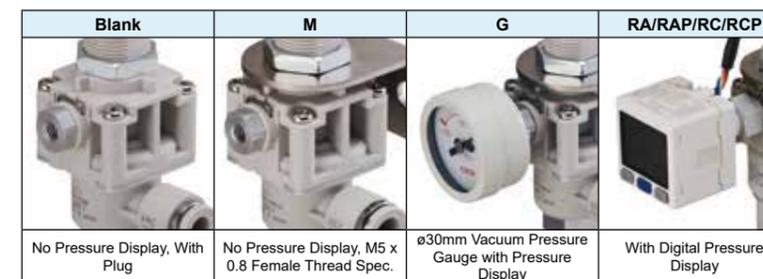


*1: In the case of U, only 'Blank' can be selected for 4 Bracket. (Bracket is standard equipment.)

*2: The A-type and B-type have the same external dimensions, but they cannot be changed after ordering.

3 Pressure Display

Code	Content
Blank	No Pressure Display(With Plug)
M	No Pressure Display(M5 x 0.8 Female Thread Spec.)
G	With Pressure Display(*30 Vacuum Pressure Gauge)
RA	With Digital Pressure Display(NPN SW 2 points + Analog Output)
RAP	With Digital Pressure Display(PNP SW 2 points + Analog Output)
RC	With Digital Pressure Display(NPN SW 2 points + Copy Function)
RCP	With Digital Pressure Display(PNP SW 2 points + Copy Function)



4 Bracket

Code	Content
Blank	None
B	With Bracket

*1: When 2 Shape/Flow Direction is U, only 'Blank' can be selected for 4. (Bracket is standard equipment.)

Regarding Elbow Type Control Direction

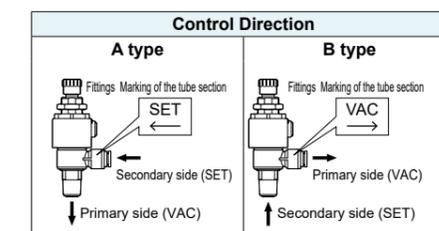
Elbow types are classified as A type and B type depending on the control direction. A type and B type can be distinguished by the marking on the fitting part.

Dedicated Part Model No.

● Dedicated Bracket

VSRVV - B

Model No.



Vacuum Components

Vacuum Related Components

VSRL

VSECV

VSRVV

VRA2000

VSLF

VSF, VSFU, VSFJ

FSL

VFA

VSUS

VST

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Ending

Ending

Regulator Section Specifications

Item	VSRVV		
Pressure Display	Without Pressure Gauge	Large Digital Display Vacuum Pressure Switch	ø30 Vacuum Pressure Gauge
Operating Fluid	Air		
Operating Pressure kPa	-100 to 100		-100 to 0
Set Pressure kPa	-100 to -1.3		
Suction Flow Rate L/min (ANR)	30		
Operating Temperature °C	0 to 50 (However, no freezing)		0 to 40 (However, no freezing)

Pressure Sensor with Digital Display Specifications

Item	Pressure Sensor with Digital Display			
	Analog Output (RA)	With Copy Function(RC)	Analog Output (RAP)	With Copy Function(RCP)
Operating Pressure	-100 to 100 kPa			
Proof Pressure	300 kPa			
Environmental Resistance	Protection Structure	Equivalent to IEC Standard IP40		
	Ambient Temperature (During Storage)	-10 to 60°C (No condensation and no freezing)		
	Ambient Temperature (During Operation)	0 to 50°C (No condensation and no freezing)		
	Ambient Humidity (Storage/Operating)	35 to 85% RH (No condensation)		
Power Supply Voltage	12 VDC to 24 VDC ±10% Ripple (P-P) ±10% or less			
Current Consumption	≤40 mA (No load)			
Pressure Display	Display Update Rate	5 times/sec		
	Display Accuracy	±2% F.S. ±1 digit		
	Digital Display	Main Display: 2 Colors (red, green) Sub-display: Orange		
Switch Output	Number of Output Points	2 points		
	Output Method	NPN Open Collector	PNP Open Collector	
	Switch Rating	≤30 VDC 125 mA		≤24 VDC 125 mA
Analog Output	Internal Voltage Drop	≤1.5 V		
	Output Voltage	1 to 5V: ±2.5% F.S. or less, Linearity: ±1% F.S. or less, Output Impedance: approx. 1 kΩ		
FSL	Temperature Characteristics	≤ ±2.5% F.S. (0 to 50°C, at 25°C)		
	Repeatability	±0.2% F.S. ±1 digit		
VFA	Differential (Hysteresis)	Adjustable		
	Response Time	Selectable (2.5 or less/25/100/250/500/1000/1500 ms)		

Display Magnification(Unit)	Pressure Range(Rated Display Range)
x1 (kPa)	-100 to 100
x1 (MPa)	-
x0.75 (cmHg)	-75 to 75
x0.01 (bar)	-1.00 to 1.00
x0.145 (psi)	-14.5 to 14.5

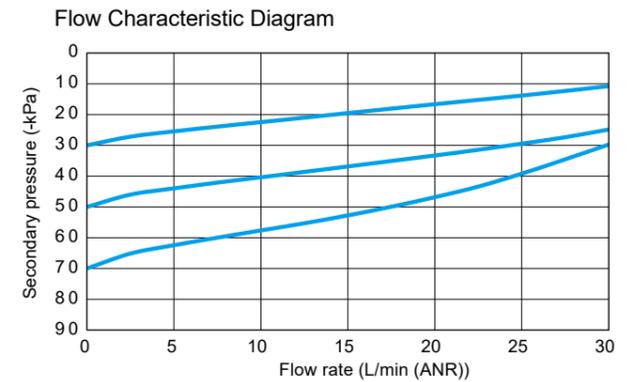
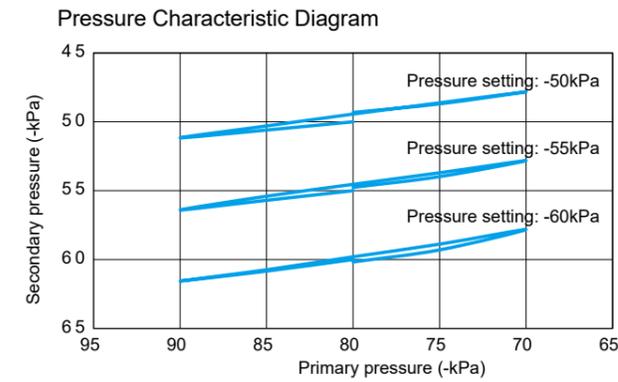
Vacuum Pressure Gauge Section Specifications

Item	Vacuum Pressure Gauge
Pressure Display (kPa)	-100 to 0
Pressure Display Accuracy	5% F.S. (at 25°C)

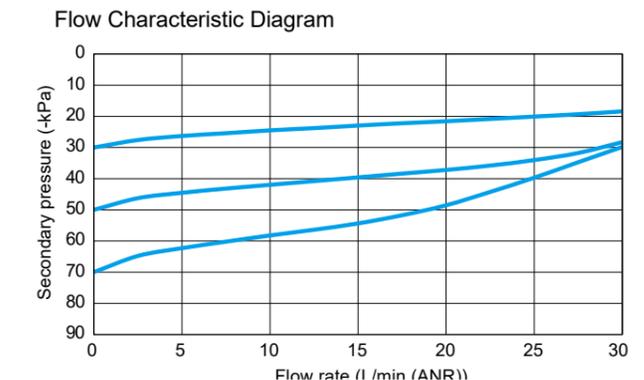
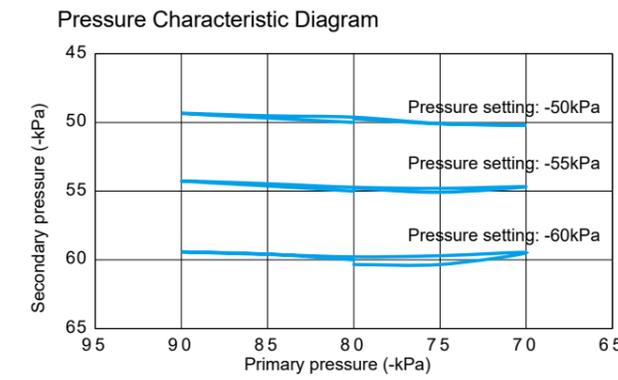
Pressure Characteristics / Flow Characteristics

Pressure Characteristics / Flow Characteristics

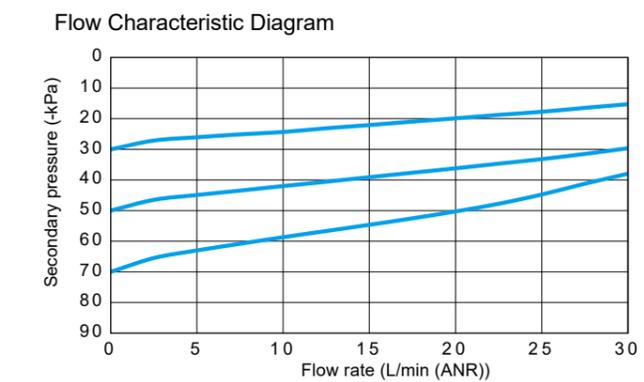
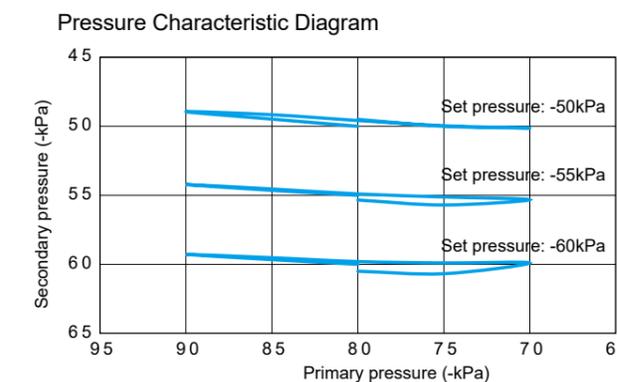
Elbow A Type



Elbow B Type



Union Type



Vacuum Components

Vacuum Related Components

VSRL

VSECV

VSRVV

VRA2000

VSLF

VSF, VSFU, VSFJ

FSL

VFA

VSUS

VST

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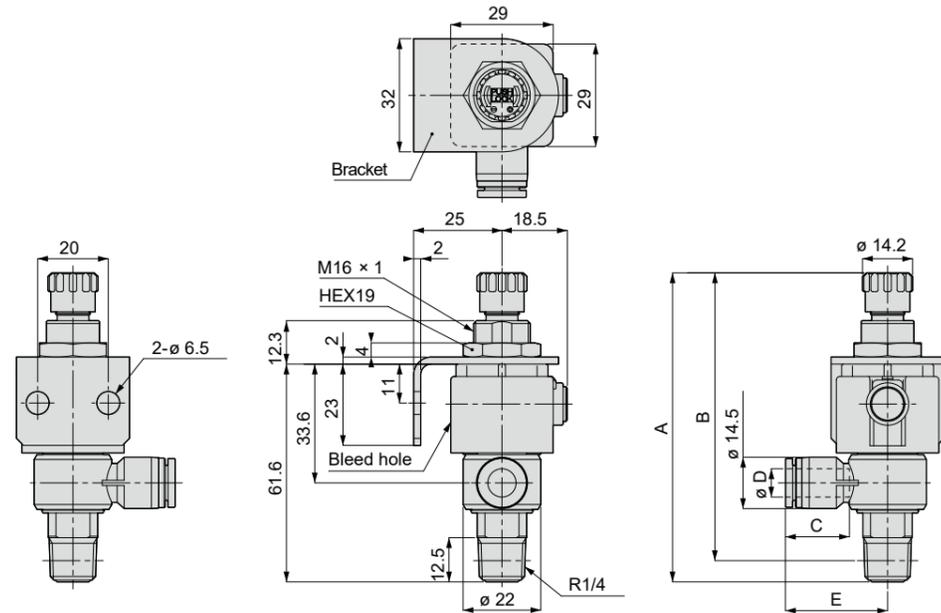
VST

Ending

Ending

External Dimension Drawings

● Elbow Type, No Pressure Display (With Plug) VSRVV-□A / VSRVV-□B



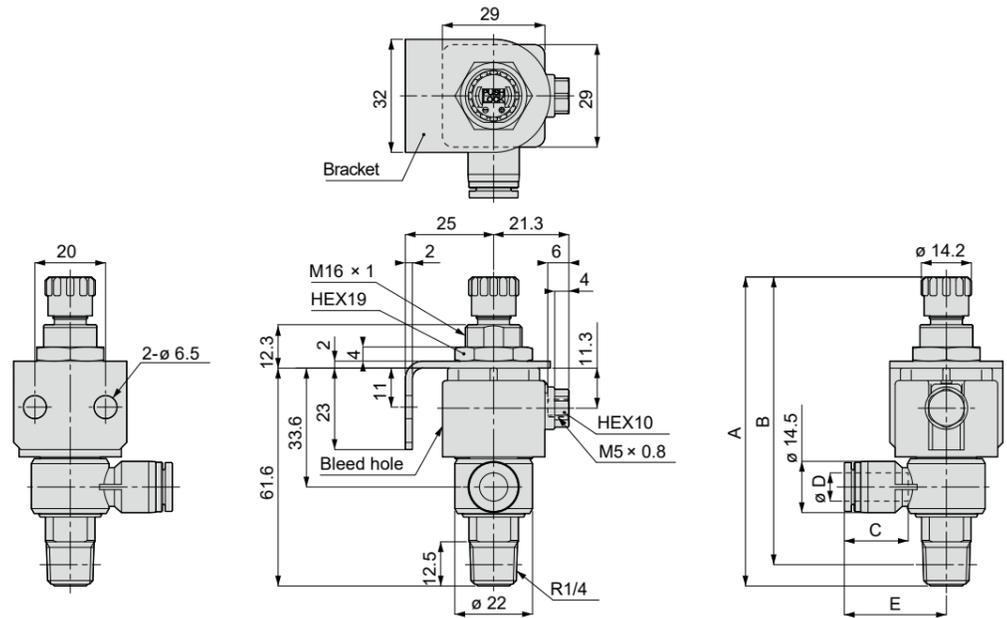
* The external dimension diagram on the left is for the type with bracket.

Unit (mm)

Model No.	Applicable Tube O.D. øD	A		B		C	E	Weight (g)
		Locked	Adjusting	Locked	Adjusting			
VSRVV-6ZA/6ZB	6	84.9	87.4	81.4	78.9	17	29	63
VSRVV-6ZA/6ZB-B								87
VSRVV-8ZA/8ZB	8	84.9	87.4	81.4	78.9	18.1	28.9	63
VSRVV-8ZA/8ZB-B								88

*B dimension is a reference dimension after screw tightening.

● Elbow Type, No Pressure Display (M5×0.8 Female Thread Specification) VSRVV-□AM/VSRVV-□BM



* The external dimension diagram on the left is for the type with bracket.

Unit (mm)

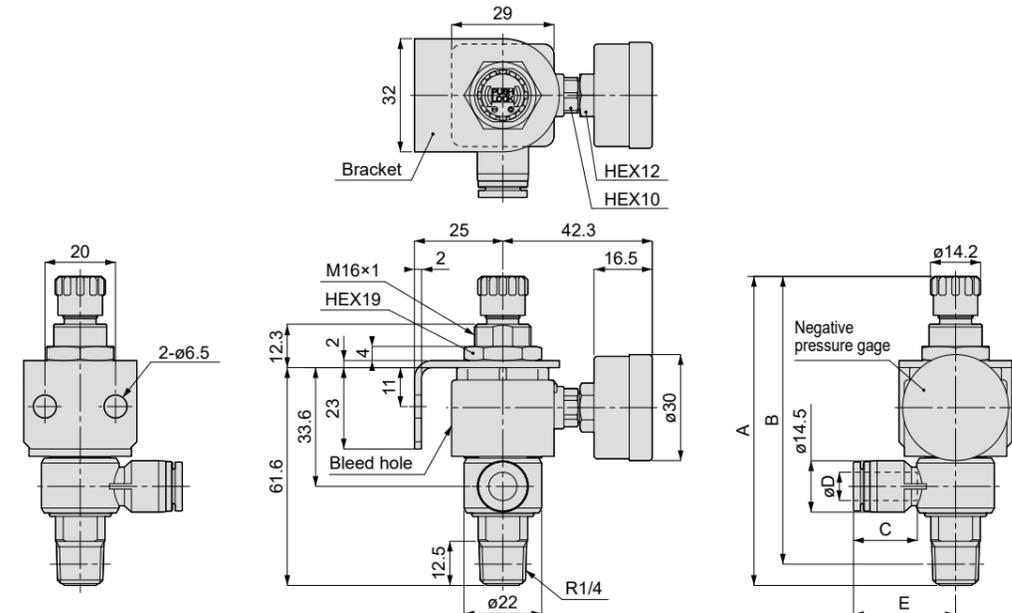
Model No.	Applicable Tube O.D. øD	A		B		C	E	Weight (g)
		Locked	Adjusting	Locked	Adjusting			
VSRVV-6ZAM/6ZBM	6	84.9	87.4	81.4	78.9	17	29	64
VSRVV-6ZAM/6ZBM-B								88
VSRVV-8ZAM/8ZBM	8	84.9	87.4	81.4	78.9	18.1	28.9	64
VSRVV-8ZAM/8ZBM-B								89

*B dimension is a reference dimension after screw tightening.

External Dimension Drawings

External Dimension Drawings

● Elbow Type, With Pressure Display (ø30 Vacuum Pressure Gauge) VSRVV-□AG / VSRVV-□BG



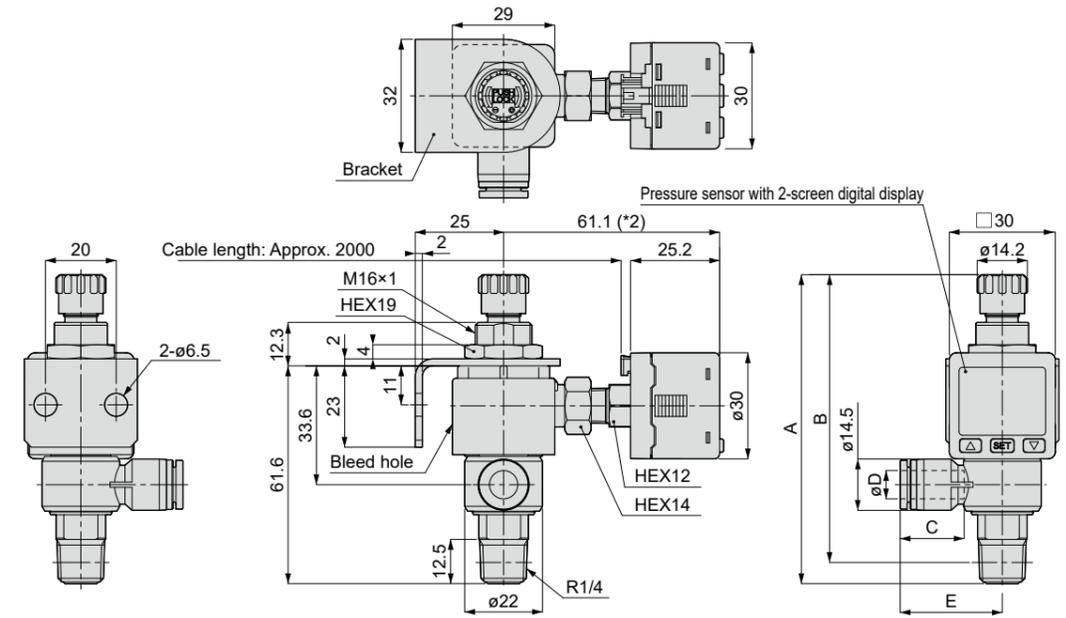
* The external dimension diagram on the left is for the type with bracket.

Unit (mm)

Model No.	Applicable Tube O.D. øD	A		B		C	E	Weight (g)
		Locked	Adjusting	Locked	Adjusting			
VSRVV-6ZAG/6ZBG	6	84.9	87.4	81.4	78.9	17	29	120
VSRVV-6ZAG/6ZBG-B								145
VSRVV-8ZAG/8ZBG	8	84.9	87.4	81.4	78.9	18.1	28.9	120
VSRVV-8ZAG/8ZBG-B								145

*B dimension is a reference dimension after screw tightening.

● Elbow Type, With Pressure Display (With Digital Display Pressure Sensor) VSRVV-□AR□ / VSRVV-□BR□



* The external dimension diagram on the left is for the type with bracket.

Unit (mm)

Model No.	Applicable Tube O.D. øD	A		B		C	E	Weight (g)
		Locked	Adjusting	Locked	Adjusting			
VSRVV-6ZAR□/6ZBR□	6	84.9	87.4	81.4	78.9	17	29	146
VSRVV-6ZAR□/6ZBR□-B								170
VSRVV-8ZAR□/8ZBR□	8	84.9	87.4	81.4	78.9	18.1	28.9	146
VSRVV-8ZAR□/8ZBR□-B								170

*1: B dimension is a reference dimension after screw tightening. *2: For handling the pressure sensor, please refer to the instruction manual.

Vacuum Components
Vacuum Related Components

VSRL

VSECV

VSRVV

VRA2000

VSLF

VSFB,
VSFU,
VSFJ

FSL

VFA

VSUS

VST

Ending

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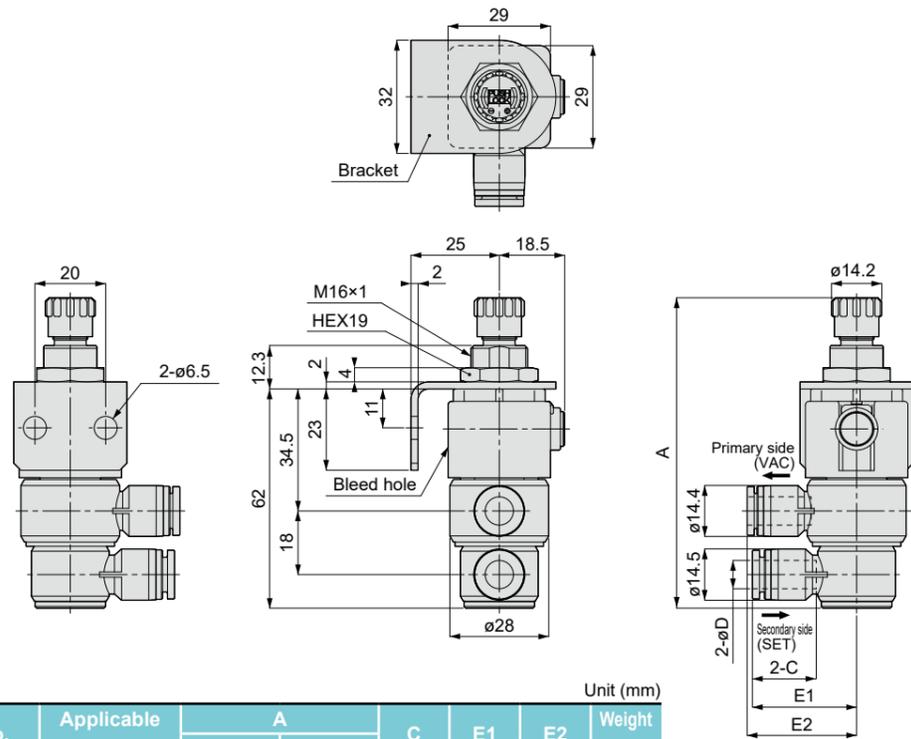
VSUS

VST

Ending

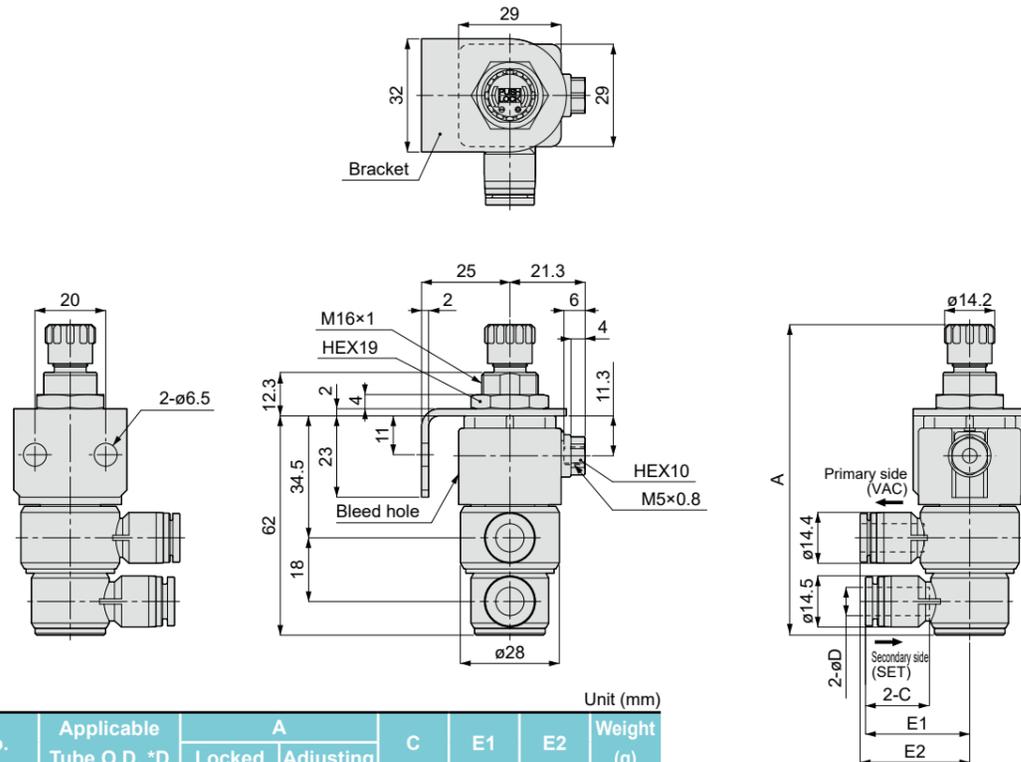
External Dimension Drawings

● Union Type, No Pressure Display (with Stop Plug) VSRVV-□U



Model No.	Applicable Tube O.D. *D	A		C	E1	E2	Weight (g)
		Locked	Adjusting				
VSRVV-6ZU	6	85.3	87.8	17	29	31.1	108
VSRVV-8ZU	8			18.1	29.5	31	109

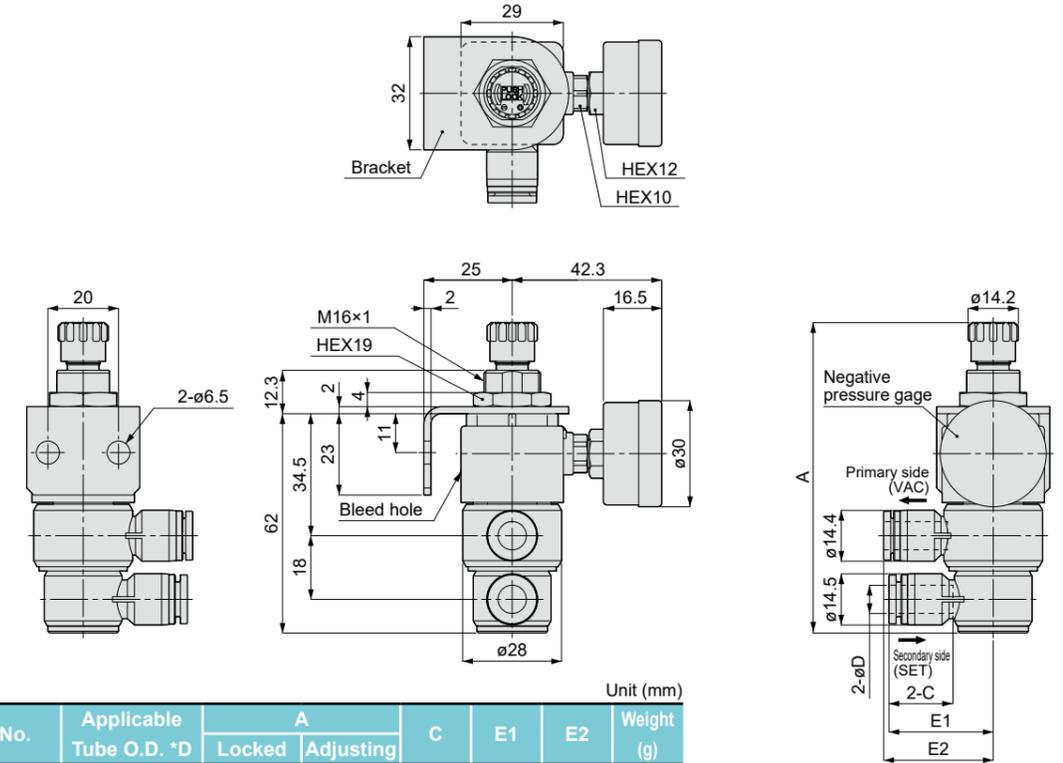
● Union Type, No Pressure Display (M5 x 0.8 Female Thread Spec.) VSRVV-□UM



Model No.	Applicable Tube O.D. *D	A		C	E1	E2	Weight (g)
		Locked	Adjusting				
VSRVV-6ZUM	6	85.3	87.8	17	29	31.1	109
VSRVV-8ZUM	8			18.1	29.5	31	110

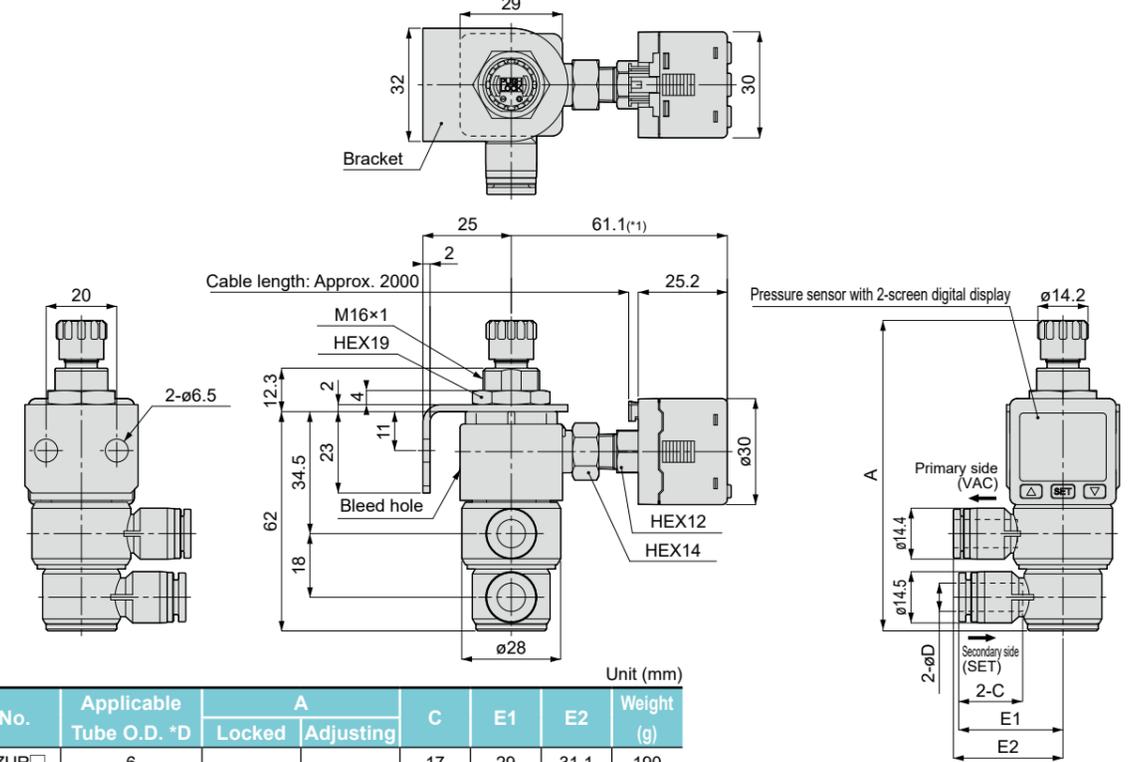
External Dimension Drawings

● Union Type, With Pressure Display (φ30 Vacuum Pressure Gauge) VSRVV-□UG



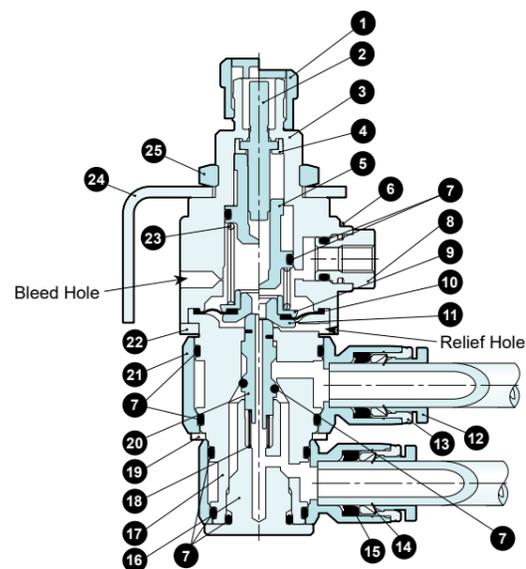
Model No.	Applicable Tube O.D. *D	A		C	E1	E2	Weight (g)
		Locked	Adjusting				
VSRVV-6ZUG	6	85.3	87.8	17	29	31.1	137
VSRVV-8ZUG	8			18.1	29.5	31	138

● Union Type, With Pressure Display (With Digital Display Pressure Sensor) VSRVV-□UR□



Model No.	Applicable Tube O.D. *D	A		C	E1	E2	Weight (g)
		Locked	Adjusting				
VSRVV-6ZUR□	6	85.3	87.8	17	29	31.1	190
VSRVV-8ZUR□	8			18.1	29.5	31	191

*For handling the pressure sensor, please refer to the instruction manual.



Part No.	Part Name	Material
1	Adjusting Knob	Acetal Resin
2	Adjusting Screw	Steel (Electroless Nickel Plating)
3	Bonnet	Polybutylene terephthalate resin
4	Guide Bushing	Aluminum alloy
5	Adjusting Bushing	Aluminum alloy
6	Stop Pin	Stainless steel
7	O-ring	Special Nitrile Rubber
8	Cartridge	Aluminum alloy
9	Center Disc A	Aluminum alloy
10	Diaphragm	Special Nitrile Rubber
11	Center Disc B	Aluminum alloy
12	Release Ring	Acetal Resin
13	Guide Ring	Special Stainless Steel
14	Locking Finger	Special Stainless Steel
15	Elastomer Sleeve	Special Nitrile Rubber
16	Plug	Aluminum alloy
17	Metal Body	Aluminum alloy
18	Valve Spring	Stainless steel
19	Plate	Aluminum alloy
20	Valve	Aluminum alloy
21	Resin Body	Polybutylene terephthalate resin
22	Body Plate	Aluminum alloy
23	Adjusting Spring	Stainless steel
24	Bracket	Steel (Electroless Nickel Plating)
25	M16 x 1 Hex Nut	Steel (Zinc Plated)

Regarding Product Fixing Method

① Elbow Type Fixing Method

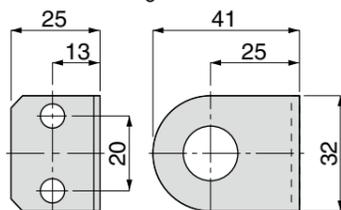
For the elbow type fixing method, use the square part (width across flats: 14 mm) and secure with a tightening torque of 12 to 14 N·m using an appropriate tool. Ensure sufficient space for rotating with tools during mounting. Also, for types with gauges and sensors, ensure sufficient space for rotation with the gauge and sensor attached.

② Fixing Method Using Bracket

● Bracket Fixing Method

Union type and elbow type with bracket are fixed by tightening with M6 screws (customer-supplied) using the bracket fixing holes.

Bracket Mounting Dimensions



Unit: mm

● Body Fixing Method

For union type and elbow type with bracket, after fixing the bracket, use the bracket's body fixing holes and tighten the included M16×1 nut to a torque of 3 to 4 N·m using an appropriate tool.

Ensure sufficient space for rotating with tools during mounting.

③ Fixing Method Using Bulkhead Mounting Hole

When fixing using the bulkhead mounting hole, tighten the included M16×1 nut to a torque of 3 to 4 N·m using an appropriate tool.

Ensure sufficient space for rotating with tools during mounting.

[Applicable Mounting Hole Dimensions]

Inner Diameter: 16.5 mm to 17 mm

Thickness: 8 mm or less



To Use This Product Safely

Be sure to read this before use.

For general pneumatic components precautions, Intro 15 for details.

Individual Precautions: Compact Vacuum Regulator VSRVV Series

Design / Selection

Warning

■ When applying positive pressure to the regulators, do not use the ø30 vacuum pressure gauge. For positive pressure use, use the large digital display vacuum pressure switch. Applying excessive positive pressure poses a risk of equipment damage.

■ Before use, carefully read the instruction manual of the vacuum source to be connected and perform sufficient tests before operating.

Caution

■ Do not apply excessive load or impact to the pressure gauge, pressure switch, or gauge port. Accurate setting is not possible in the direction of decreasing vacuum level (counterclockwise).

■ Do not apply excessive load or impact to the pressure gauge, pressure switch, or gauge port. There is a risk of equipment damage or decreased display accuracy.

■ When attaching a gauge, piping, etc., to the gauge port, use a wrench or similar tool on the hexagonal part of the gauge port (width across flats: 12 mm) to tighten it. Also, for tightening to M5 x 0.8 ports, tighten by referring to the recommended tightening torque in the table below. There is a risk of equipment damage or decreased display accuracy due to leaks.

Recommended Tightening Torque

Thread Size	Tightening Torque
M5 x 0.8 mm	1.0 to 1.5 N·m

■ If there is a possibility of inhaling dust or particulate matter, be sure to install a vacuum filter on the pressure regulating side (work side) of the vacuum regulator. Malfunction may occur due to suction of foreign matter.

■ Do not block the bleed hole or relief hole, as this will make the secondary pressure unstable.

■ When applying positive pressure to the regulator, air will flow out from the bleed hole. Exercise caution when using in cleanrooms, etc.

■ When applying break air, consider the amount of leakage from the bleed hole when setting.

■ Do not excessively turn the pressure adjusting knob counterclockwise from the fully open state, or clockwise from the fully closed state. This can cause damage to the adjusting knob and body. (The product is shipped in a fully closed state.)

■ The pressure adjusting knob is locked when pushed and released when pulled. Always lock it after adjustment. Using it unlocked may cause the adjusting knob to rotate and the pressure to change.

■ When pushing in the pressure adjusting knob, it may stop at an intermediate position between the locked state and the unlocked state depending on the rotational position. In this state, it is not completely locked, so confirm that the adjusting knob is pushed in to the locked position.

■ Forcibly rotating the adjusting knob when it is locked may damage the locking mechanism.

■ Do not use the ø30 mm negative pressure gauge in locations with large pressure fluctuations (high cycle).

■ For handling of the pressure sensor with digital display, please check the common precautions for pressure gauges and sensors in the product catalog, as well as the individual precautions for each.

■ When fixing the product, carefully read the product fixing method in the included instruction manual and tighten the appropriate locations at the specified torque. If other parts are tightened or tightened beyond the specified torque, there is a risk of body damage.

■ Adjust the elbow gauge position using the tightening position. Parts other than the fitting part and adjusting knob do not rotate. Forcibly rotating them poses a risk of body damage.

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