CKD

New Products

Compact vacuum regulator
VSRVV Series
Push locking

Easy adjustment increases workability!

Contributes to equipment weight reduction

50%*Lighter weight is achieved

The body is made of resin and the metal part material is made of aluminum.

Weight 50% Less (Max.)

* Compared to CKD conventional products (elbow)

Copper is not used

Ideal for rechargeable battery manufacturing processes

SUS and aluminum alloy are used in flow path. Ideal for applications susceptible to copper ions.

Flow path: Copper-based material restriction

Standard ozone-resistant materials

Special nitrile rubber used

Ozone-proof materials for degradation prevention are used as standard for the valve part and diaphragm part.

Ozone resistance: Special nitrile rubber Adoption

A wide range of piping variations

Elbow A type

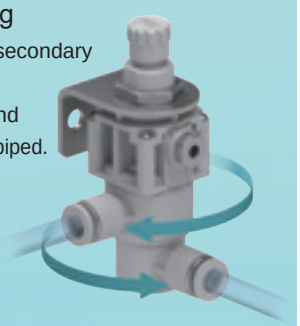
Can be directly connected to vacuum port of vacuum source.

Elbow B type

Can be connected to the vacuum pad holder.

Union fitting

Primary and secondary fittings rotate individually and can be freely piped.



CKD Corporation

CC-1588A

Source pressure as well as terminals can be controlled.
Compact vacuum regulator

VSRVV Series

● Port size: ø6, ø8, R1/4

JIS symbol 

RoHS

Features

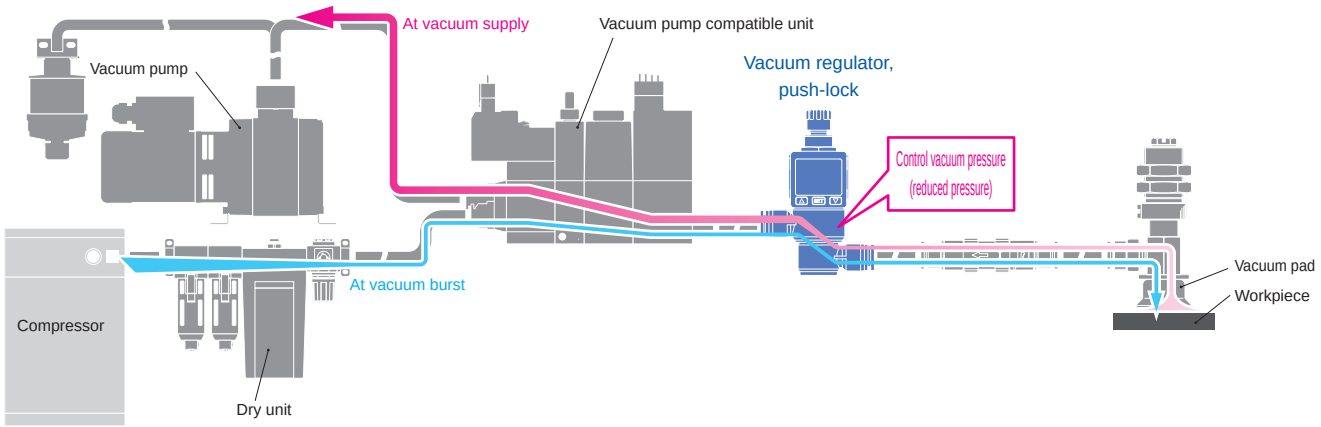
■Suitable for source pressure control of small vacuum pump.

■Pressure control of individual pads inserted between vacuum valve and suction pad is also possible.

■Elbow A type (R1/4) directly connectable to the vacuum port of the vacuum pump is available.

■Elbow B type (R1/4) can be mounted directly to the pad diameter ø150, ø200 mm holder for pressure control.

Piping example



How to order

● Compact vacuum regulator

VSRVV - 6 Z A RA - B

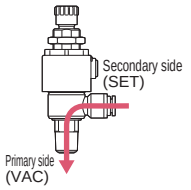
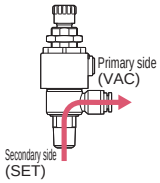
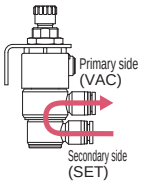
❶ Connection size
❷ Shape/flow direction
❸ Pressure display
❹ Bracket

❶ Connection size

6	ø6 push-in fitting
8	ø8 push-in fitting

❷ Shape/flow direction

A	Elbow A type (R1/4)
B	Elbow B type (R1/4)
U	Union fitting

A	B	U
		

*1: In the case of U, only Blank can be selected for ❹ .(Bracket is equipped as standard)
*2: Type A and B have the same dimensions, but cannot be changed later.

❸ Pressure display

Blank	No pressure display (with plug)
M	No pressure display (M5×0.8 female thread specifications)
G	With pressure display (ø30 vacuum pressure gauge)
RA	With digital pressure display (NPN_SW2 points + analog output)
RAP	With digital pressure display (PNP_SW2 points + analog output)
RC	With digital pressure display (NPN_SW2 points + copy function)
RCP	With digital pressure display (PNP_SW2 points + copy function)

Blank	M	G	RA/RAP/RC/RCP
			
With no pressure display plug	M5×0.8 female thread without pressure display specifications	With pressure display ø30 mm vacuum negative pressure gauge	With digital pressure display

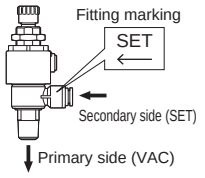
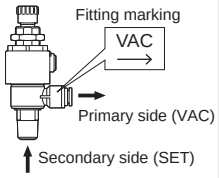
❹ Bracket

Blank	No
B	With bracket

*1: When ❷ is U, only Blank can be selected for ❹ (Bracket is equipped as standard)

Elbow control direction

Elbow type is available 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.

Control direction	
Type A	Type B
	

● Dedicated part model No.

・Dedicated bracket

VSRVV-B

Regulator specifications

Descriptions	VSRVV		
Pressure display	No pressure gauge	Vacuum pressure switch with large digital display	ø30 vacuum pressure gauge
Working fluid	Air		
Working pressure kPa	-100 to 100		-100 to 0
Set pressure kPa	-100 to -1.3		
Intake flow rate ℓ/min (ANR)	30		
Operating ambient temperature °C	0 to 50 (no freezing)		0 to 40 (no freezing)

Pressure sensor with digital display specification

Descriptions		Pressure sensor with digital display			
		Analog output (RA)	With copy function (RC)	Analog output (RAP)	With copy function (RCP)
Working pressure		-100 to 100 kPa			
Proof pressure		300 kPa			
Environmental resistance	Degree of protection	IEC standards IP40 or equivalent			
	Ambient temperature (in storage)	-10 to 60°C (no condensation or freezing)			
	Ambient temperature (in use)	0 to 50°C (no condensation or freezing)			
	Ambient humidity (in storage/in use)	35 to 85% RH (no condensation)			
Power supply voltage		12 to 24 VDC±10% ripple (P-P) ±10% or less			
Current consumption		40 mA or less (no load)			
Pressure display	Display frequency	5 cycles/second			
	Display accuracy	±2%F.S. ±1digit			
	Digital display	Main display: 2 colors (red, green) Sub-display: orange			
Switch output	No. of output points	2 points			
	Output method	NPN open collector		PNP open collector	
	Switch rating	30 VDC, 125 mA or less		24 VDC, 125 mA or less	
	Internal voltage drop	1.5 V or less			
Analog output	Output voltage	1 to 5V±2.5%F.S. or less linearity ±1%F.S. or less output impedance approx. 1 kΩ			
Temperature characteristics		±2.5%F.S. or less (0 to 50°C, at25°C)			
Repeatability		±0.2%F.S. ±1digit			
Hysteresis		Adjustment is possible			
Responsivity		Selectable (2.5 or less/25/100/250/500/1000/1500msec)			

Display magnification (unit)	Pressure range (rated display range)
×1(kPa)	-100 to 100
×1(MPa)	-
×0.75(cmHg)	-75 to 75
×0.01(bar)	-1.00 to 1.00
×0.145(psi)	-14.5 to 14.5

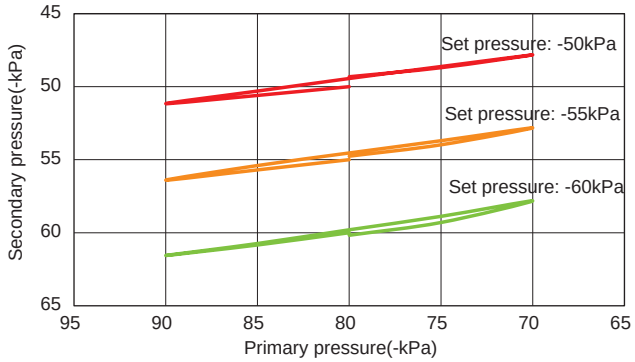
Vacuum pressure gauge specifications

Item	Vacuum pressure gauge
Pressure display kPa	-100 to 0
Pressure display accuracy	5% F.S (at 25°C)

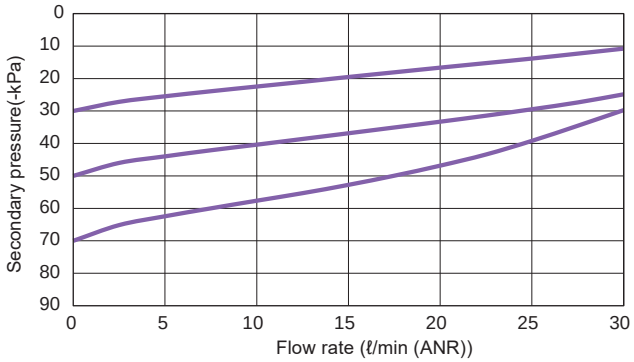
Pressure characteristics/flow characteristics

Elbow A type

Pressure characteristics graph

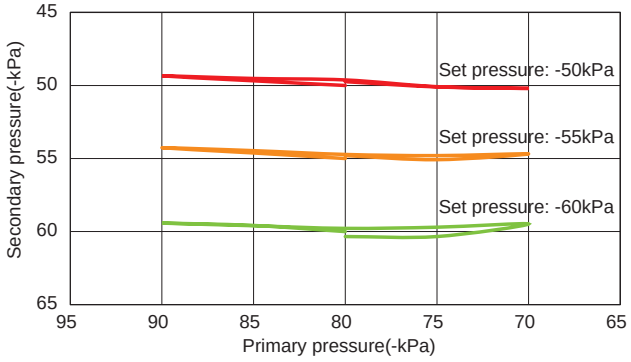


Flow characteristics graph

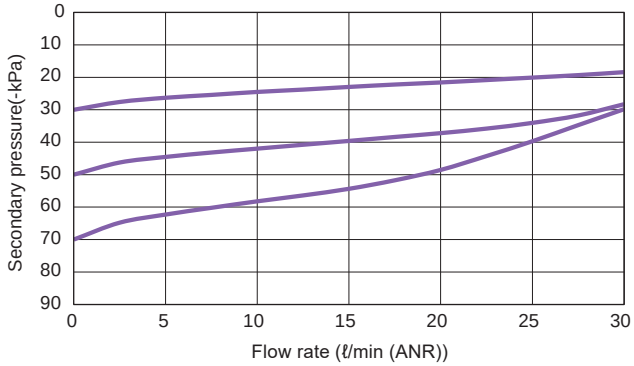


Elbow B type

Pressure characteristics graph

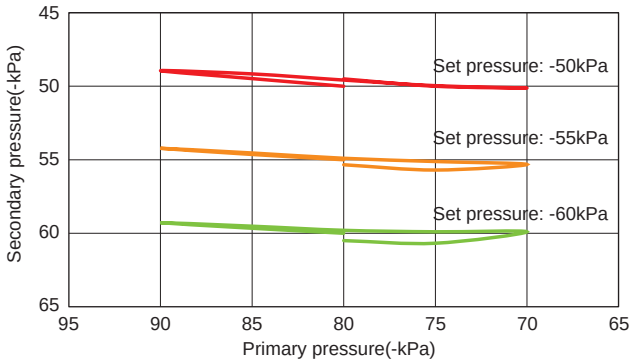


Flow characteristics graph

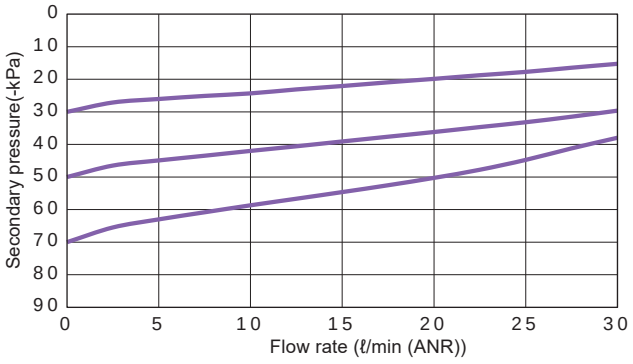


Union fitting

Pressure characteristics graph

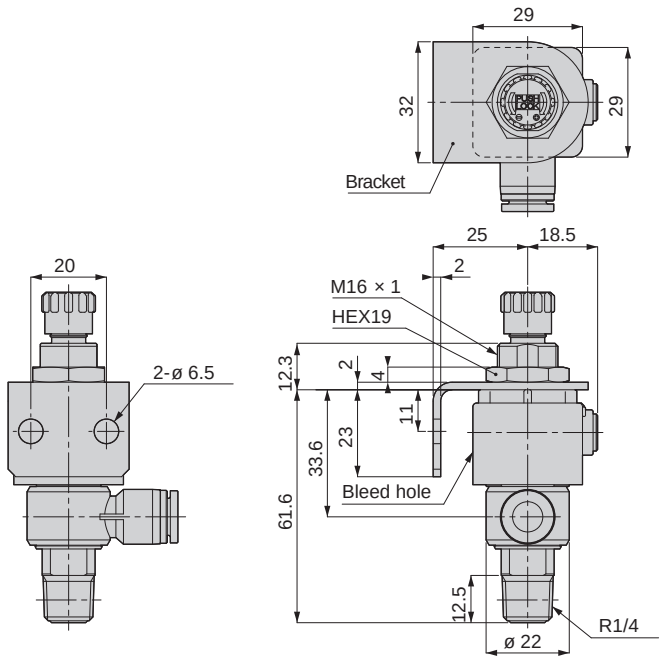


Flow characteristics graph



Dimensions

●Elbow, without pressure display (with plug) VSRVV-□A/VSRVV-□B



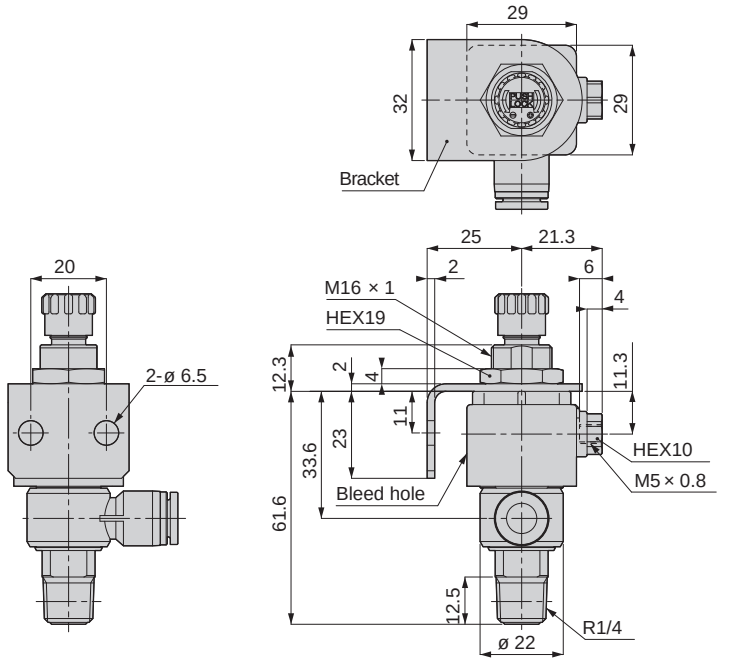
*The dimensions on the left is the drawing for the type with bracket.

Unit (mm)

Model No.	Compatible tube O.D. øD	A		B		C	E	Weight (g)
		When locked	During adjustment	When locked	During adjustment			
VSRVV-6ZA/6ZB	6	84.9	87.4	81.4	78.9	17	29	63
VSRVV-6ZA/6ZB-B								87
VSRVV-8ZA/8ZB	8					18.1	28.9	63
VSRVV-8ZA/8ZB-B								88

*1:B dimensions are reference dimensions after tightening.

●Elbow, no pressure display (M5×0.8 female thread specifications) VSRVV-□AM/VSRVV-□BM



*The dimensions on the left is the drawing for the type with bracket.

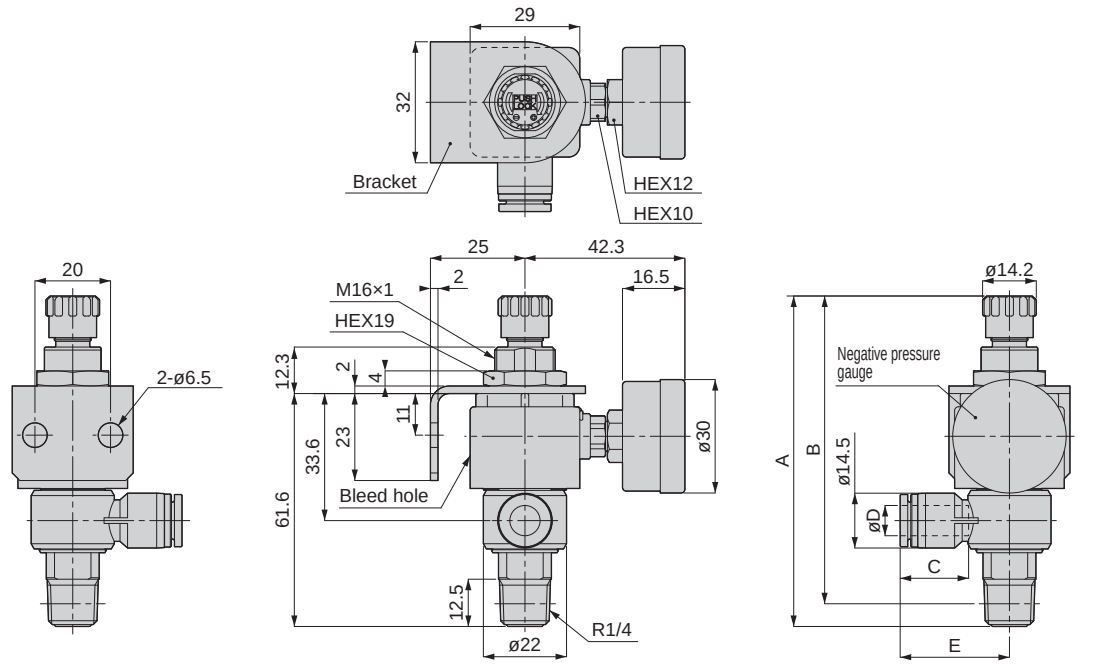
Unit (mm)

Model No.	Compatible tube O.D. øD	A		B		C	E	Weight (g)
		When locked	During adjustment	When locked	During adjustment			
VSRVV-6ZAM/6ZBM	6	84.9	87.4	81.4	78.9	17	29	64
VSRVV-6ZAM/6ZBM-B								88
VSRVV-8ZAM/8ZBM	8					18.1	28.9	64
VSRVV-8ZAM/8ZBM-B								89

*1:B dimensions are reference dimensions after tightening.

Dimensions

●Elbow, with pressure display (ø30 vacuum pressure gauge) VSRVV-□AG/VSRVV-□BG



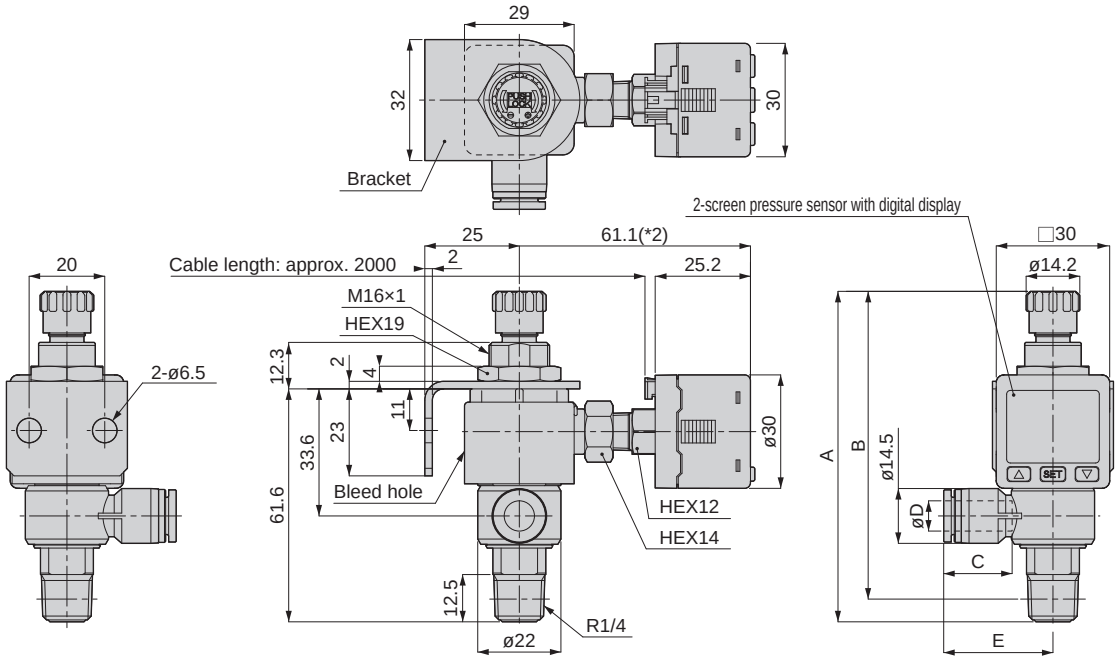
*The dimensions on the left is the drawing for the type with bracket.

Unit (mm)

Model No.	Compatible tube O.D. øD	A		B		C	E	Weight (g)
		When locked	During adjustment	When locked	During adjustment			
VSRVV-6ZAG/6ZBG	6	84.9	87.4	81.4	78.9	17	29	120
VSRVV-6ZAG/6ZBG-B								145
VSRVV-8ZAG/8ZBG	8					18.1	28.9	120
VSRVV-8ZAG/8ZBG-B								145

*1:B dimensions are reference dimensions after tightening.

●Elbow, with pressure display (with pressure sensor and digital display) VSRVV-□AR□/VSRVV-□BR□



*The dimensions on the left is the drawing for the type with bracket.

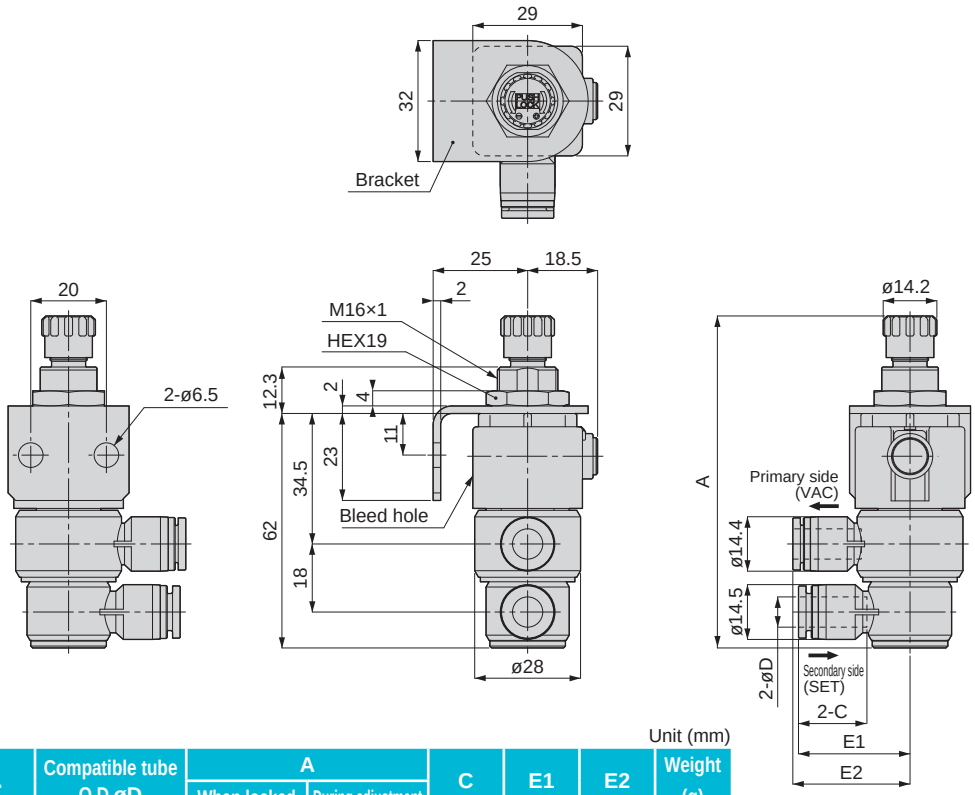
Unit (mm)

Model No.	Compatible tube O.D. øD	A		B		C	E	Weight (g)
		When locked	During adjustment	When locked	During adjustment			
VSRVV-6ZAR□/6ZBR□	6	84.9	87.4	81.4	78.9	17	29	146
VSRVV-6ZAR□/6ZBR□-B								170
VSRVV-8ZAR□/8ZBR□	8					18.1	28.9	146
VSRVV-8ZAR□/8ZBR□-B								170

*1:B dimensions are reference dimensions after tightening. *2:Refer to the instruction manual for details on how to handle the pressure sensor.

Dimensions

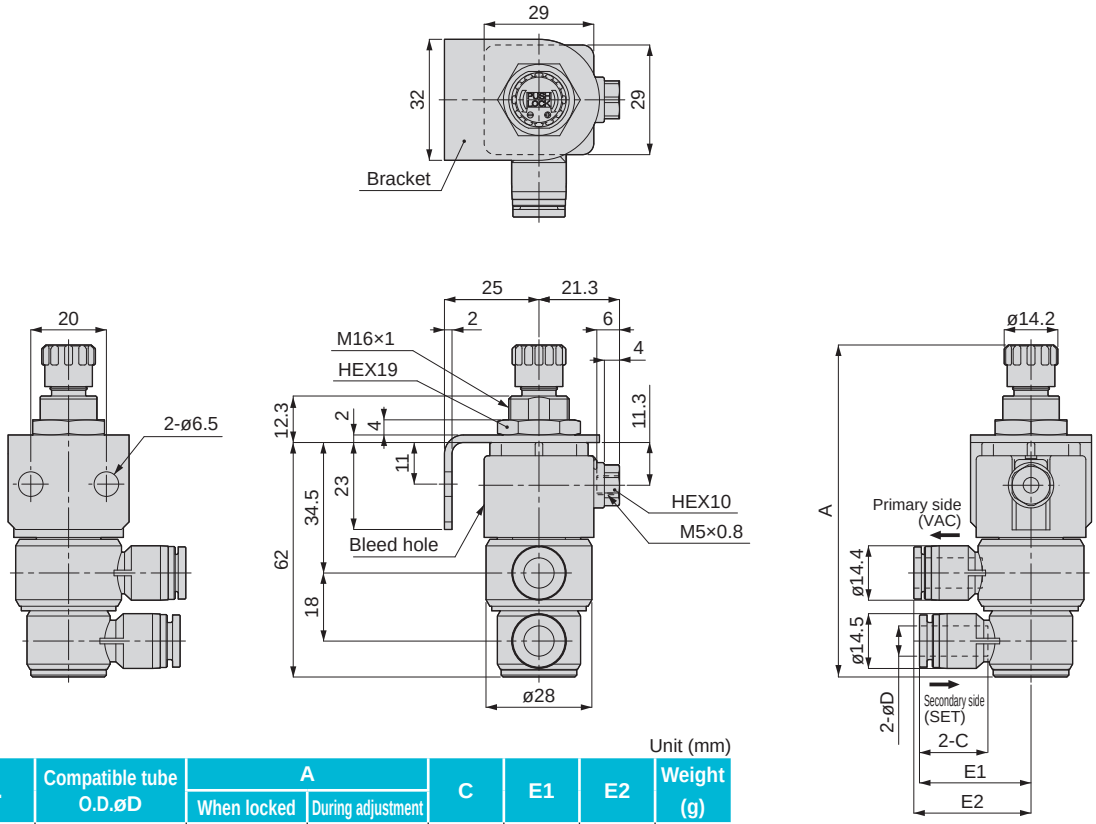
●Union, without pressure display (with plug) VSRVV-□U



Unit (mm)

Model No.	Compatible tube O.D.øD	A		C	E1	E2	Weight (g)
		When locked	During adjustment				
VSRVV-6ZU	6	85.3	87.8	17	29	31.1	108
VSRVV-8ZU	8			18.1	29.5	31	109

●Union, without pressure display (M5×0.8 female thread specifications) VSRVV-□UM

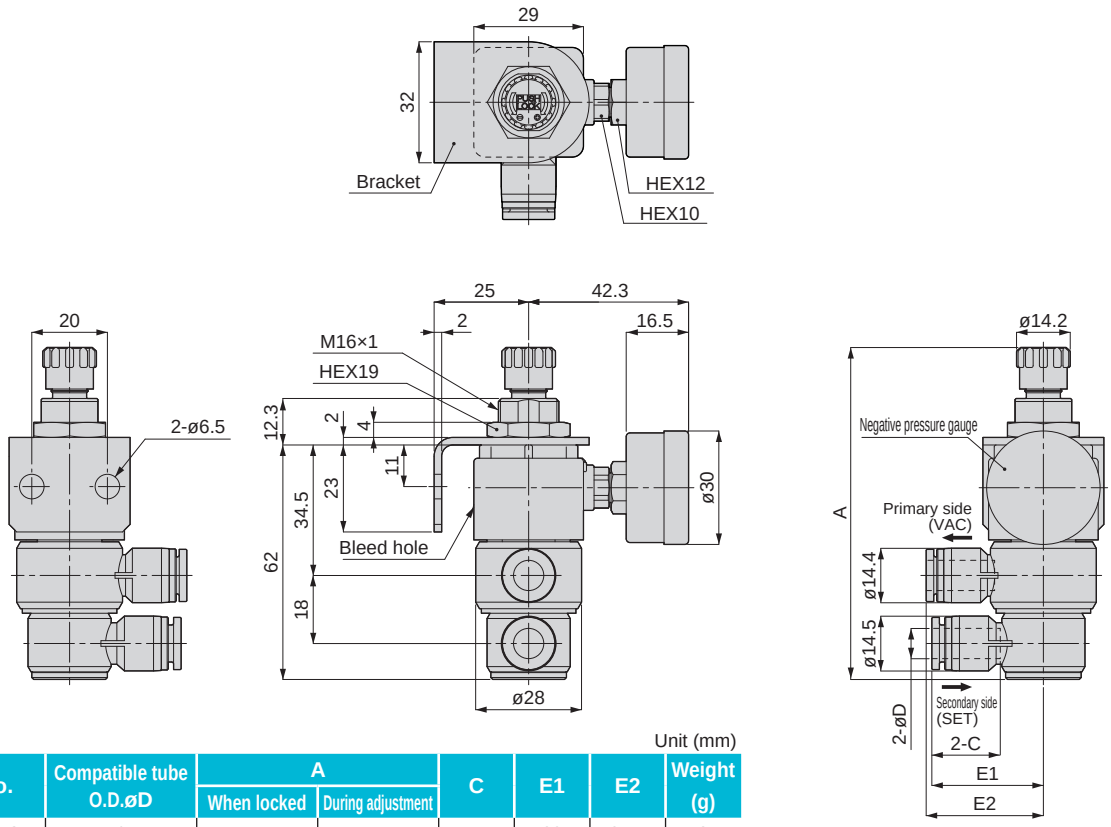


Unit (mm)

Model No.	Compatible tube O.D.øD	A		C	E1	E2	Weight (g)
		When locked	During adjustment				
VSRVV-6ZUM	6	85.3	87.8	17	29	31.1	109
VSRVV-8ZUM	8			18.1	29.5	31	110

Dimensions

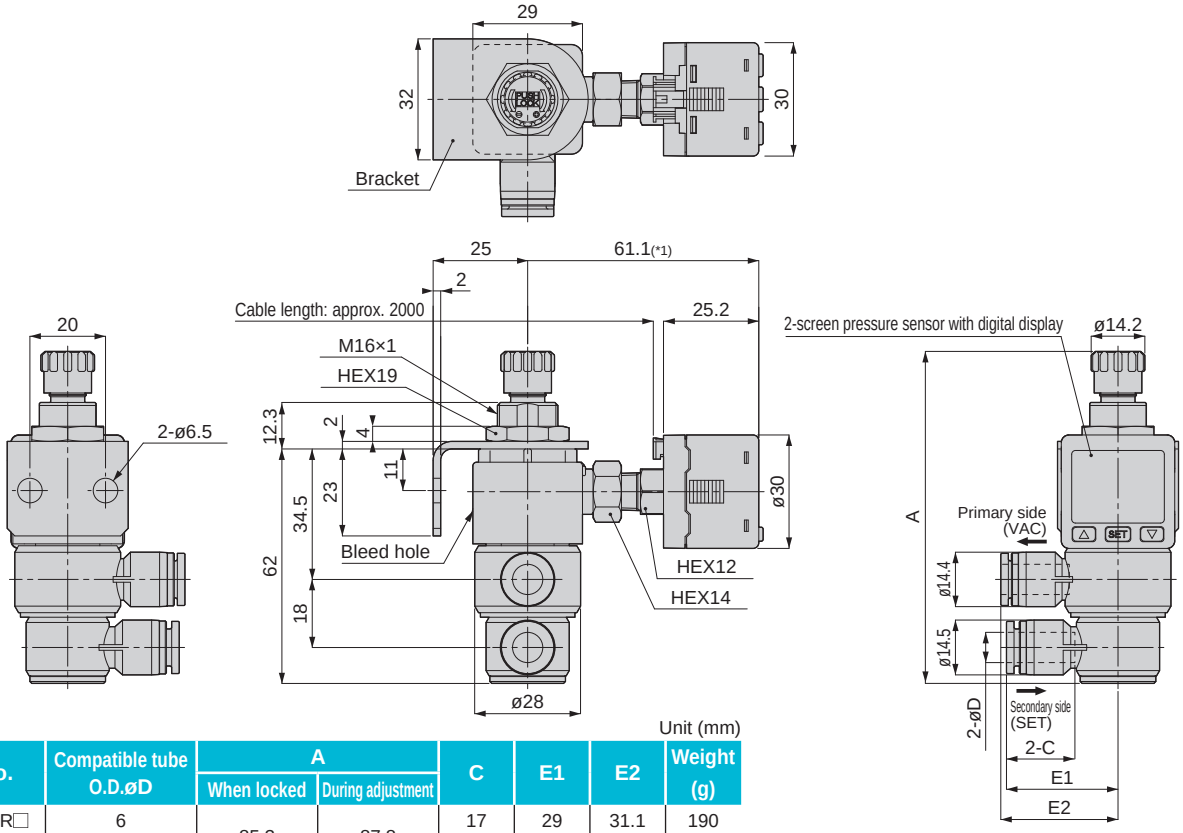
●Union, with pressure display (ø30 vacuum pressure gauge) VSRVV-□UG



Unit (mm)

Model No.	Compatible tube O.D.øD	A		C	E1	E2	Weight (g)
		When locked	During adjustment				
VSRVV-6ZUG	6	85.3	87.8	17	29	31.1	137
VSRVV-8ZUG	8			18.1	29.5	31	138

●Union, with pressure display (with pressure sensor and digital display) VSRVV-□UR□

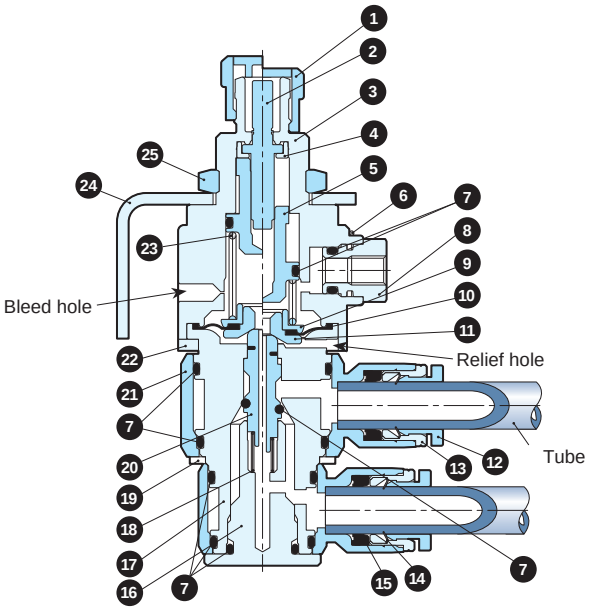


Unit (mm)

Model No.	Compatible tube O.D.øD	A		C	E1	E2	Weight (g)
		When locked	During adjustment				
VSRVV-6ZUR□	6	85.3	87.8	17	29	31.1	190
VSRVV-8ZUR□	8			18.1	29.5	31	191

*1: Refer to the instruction manual for details about how to handle the pressure sensor.

Internal structure diagram and parts list



Part number	Part name	Material (treatment)
1	Pressure adjustment knob	Polyacetal
2	Pressure adjustment screw	Steel (electroless nickeling)
3	Bonnet	Polybutylene terephthalate
4	Guide bush	Aluminum alloy (alumite)
5	Pressure adjustment bush	Aluminum alloy (alumite)
6	Stop pin	Stainless steel
7	O-ring	Hydrogenated nitrile rubber
8	Cartridge	Aluminum alloy (alumite)
9	Center disk A	Aluminum alloy (alumite)
10	Diaphragm	Hydrogenated nitrile rubber
11	Center disk B	Aluminum alloy (alumite)
12	Release ring	Polyacetal
13	Guide ring	Special stainless steel (austenitic or ferritic)
14	Lock claw	Special stainless steel (austenitic or ferritic)
15	Elastic sleeve	Hydrogenated nitrile rubber
16	Plug	Aluminum alloy (alumite)
17	Metal body	Aluminum alloy (alumite)
18	Valve spring	Stainless steel
19	Plate	Aluminum alloy (alumite)
20	Valve	Aluminum alloy (alumite)
21	Resin body	Polybutylene terephthalate
22	Body plate	Aluminum alloy (alumite)
23	Pressure adjustment spring	Stainless steel
24	Bracket	Steel (electroless nickeling)
25	M16×1 hexagon nut	Steel (zinc plated)

Product fixing method

Elbow fixing method

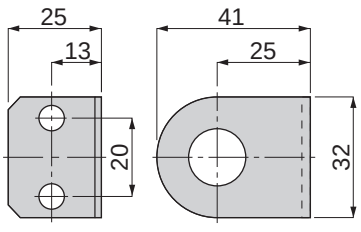
To fix the elbow, use a square part (opposite side: 14mm), and use an appropriate tool to fix with tightening torque of 12 to 14N·m. When mounting, use a tool to secure sufficient space for rotation. For types with gauge and sensor, ensure sufficient space for rotation while the gauge and sensor are attached.

Fixing method using bracket

● Bracket fixing method

For the union type and elbow type with bracket, tighten and fix with M6 screws (optional) using the bracket fixing holes.

Bracket installation dimensions



Unit: mm

● Body fixing method

For the union type and elbow type with bracket, fix the bracket, use the bracket body fixing hole, and tighten the included M16x1 nut with 3 to 4 N·m of torque using an appropriate tool. Secure sufficient space allowing rotation with a tool when mounting.

Fixing method using partition mounting hole

When fixing using the partition mounting hole, tighten the supplied M16×1 nut with a torque of 3 to 4 N·m using an appropriate tool.Secure sufficient space allowing rotation with a tool when mounting.

[Applicable mounting hole dimensions]

Bore size: 16.5mm to 17mm

Thickness: 8 mm or less

Precautions for use

Be sure to read this section before use.
Refer to "Vacuum System Components SELVACS (CC-796A)" for general precautions.

WARNING

■When applying positive pressure to the regulator, do not use a ø30 vacuum pressure gauge. When using with positive pressure, use the vacuum pressure switch with large digital display. The application of excessive positive pressure risks damaging the device.

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

CAUTION

■Set the pressure setting with the vacuum rise direction (clockwise). Accurate setting is not possible with the vacuum drop direction (counterclockwise).

■Do not apply excessive load or shock to pressure gauge, pressure switch, or gauge port. It risks causing damage to the equipment or deterioration of display accuracy.

■When attaching a gauge, piping, etc., to the gauge port, tighten the hexagonal part of the gauge port (12 mm on the opposite side) with a wrench or the like. For tightening to the M5 × 0.8 port, refer to the recommended tightening torque in the table below. It risks causing damage to the equipment, leakage, or deterioration of display accuracy due thereto.

Table. Recommended tightening torque

Thread size	Tightening torque
M5x0.8mm	1.0 to 1.5 N·m

■When there is a possibility of suctioning foreign materials or particles, be sure to install a vacuum filter on the pressure adjustment side (workpiece side) of the vacuum regulator. Suction of foreign matter could cause operation faults.

■Since the secondary pressure is unstable, do not block the bleed hole and the relief hole.

■When applying positive pressure to the regulator, air is discharged from the bleed hole. Be careful when using in a clean room, etc.

■When applying burst air, set with attention to the amount of leakage from the bleed hole.

■Do not turn the pressure adjustment knob excessively counterclockwise from the fully open state or clockwise from the fully closed state. This could damage the pressure adjustment knob or body. (The product is fully closed at shipment.)

■The pressure adjustment knob is locked when pressed and released when pulled. Always lock the valve after adjusting pressure. Using the product in the unlocked state may cause the pressure adjustment knob to turn and cause pressure to change.

■When pushing in the pressure adjustment knob, it may stop at the middle position between the locked state and unlocked state depending on the rotation position. As the knob is not completely locked in this state, confirm that the pressure adjustment knob is pushed to the locked position.

■Pressure adjustment knob forcibly rotating the pressure adjustment knob while locked may damage the lock mechanism.

■Do not use the ø30 mm negative pressure gauge in places where pressure fluctuation is high (high cycle).

■For handling of the pressure sensor with digital display, refer to the product catalog for common and individual precautions for pressure gauges and sensors.

■When fixing the product, read the product fixing method in the attached instruction manual, and tighten the appropriate section with the specified torque. If tightened at or exceeding other parts or designated torque, the body may be damaged.

■Adjust the elbow gauge position using the tightening position. Only the fitting and pressure adjustment knob are rotated. Forcibly rotating the screw may damage the body.

Related products

Vacuum System Components SELVACS

Catalog No. CC-796A

■ Compact design
Each component has been compactly designed to save space.
■ Wide model variation
Extensive model series and variations handle a wide range of fields and applications.
■ Unitized/modularized
The ejector system/vacuum pump system which form the core are unitized and modularized, designed to save space and increase ease of use.

Vacuum regulator VRA2000 Series

Ideal for precise pressure adjustment such as fine workpiece suction or inspection systems.

(Catalog No. CB-024SA)

Vacuum filter VFA Series

Effectively removes dust and moisture suctioned up by vacuum pump or ejector.

(Catalog No. CB-024SA)

If the goods and/or their replicas, the technology and/or software found in this catalog are to be exported from Japan, Japanese laws require the exporter makes sure that they will never be used for the development and/or manufacture of weapons for mass destruction.

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