

CONVUM

CVZ
series

Multistage Ejector



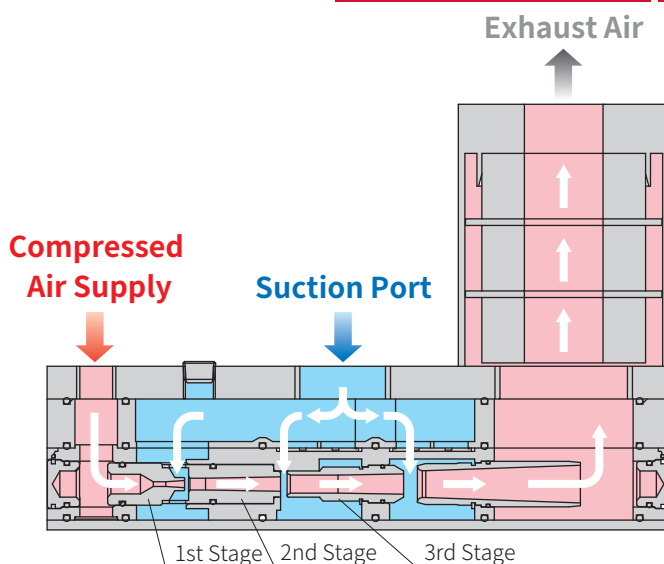
Multistage Ejector

CVZ
series



Equipped with a three-stage flow multi-nozzle system,
delivering a maximum suction flow rate of 877 L/min (ANR).

Ideal for handling porous workpieces, heavy loads, and large-volume evacuation.



CVZ-(3/4/3R/4R)-ZSR



CVZ-(1/2/1R/2R)-ZSR

Three-stage nozzles provide both a high suction flow rate (up to 877 L/min (ANR)Note1) and a high vacuum level (-88 kPa). By using the exhaust air from each nozzle as the supply pressure for the next nozzle, it achieves extremely high efficiency.

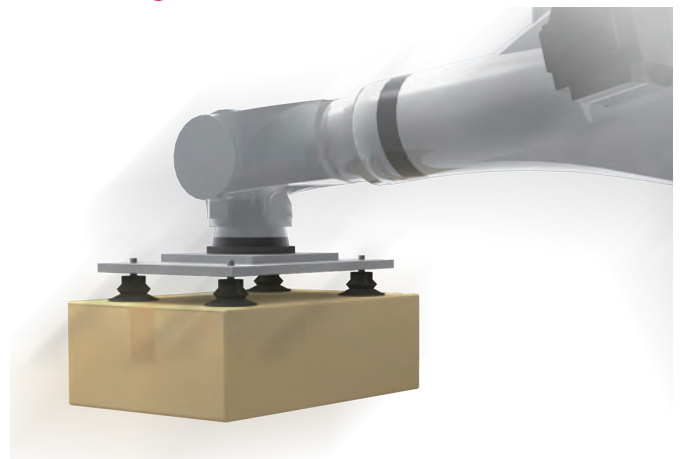
Note1) For model CVZ-4-ZSR at a supply pressure of 0.55 MPa.

○ Vacuum Handling of Sheet Metal Parts



Multiple ejectors can be consolidated into a single CVZ unit, reducing the number of units required and simplifying maintenance.

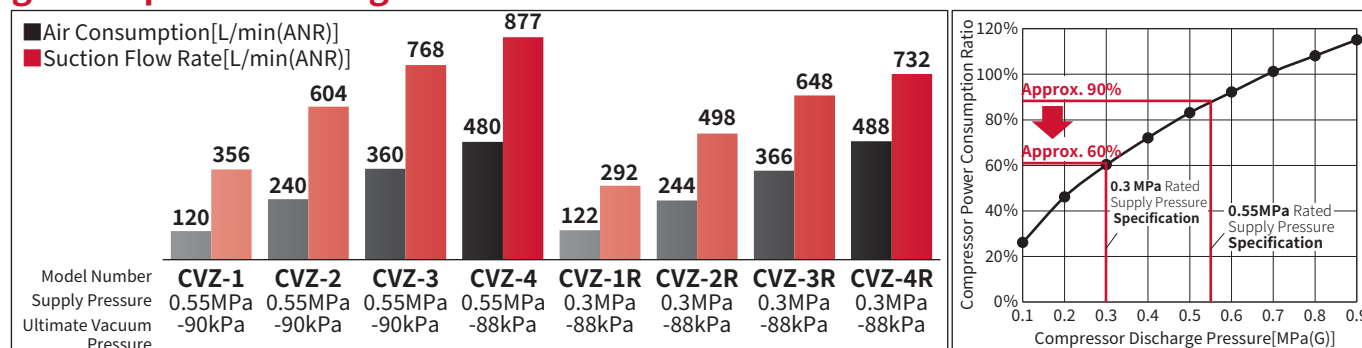
○ Cardboard Box Suction



The ejector's suction flow rate exceeds the air permeability of the workpiece, enabling stable suction.

The number of nozzles (air consumption) can be selected according to the required suction flow rate.

By selecting the 0.3 MPa supply pressure specification, the compressor discharge pressure can be reduced, enabling energy savings and providing a greater pressure margin.



A large-capacity filter can be installed to separate foreign matter and debris.

Large-Capacity Filter
CVZF series



- Clear Case for Visual Clog Inspection.
- Can be disassembled for cleaning, and the filter element can also be replaced.
- Can be directly mounted to the suction port of the CVZ.



Equipped with a vacuum pressure monitoring port, allowing a pressure sensor to be mounted directly on the unit.



Vacuum Pressure Monitoring Port
Rp1/8



Note) It is not possible to install both a box-type pressure sensor and a large-capacity filter simultaneously, as they interfere with each other.
If both are required, attach a fitting to the vacuum pressure monitoring port and use tubing or similar means to extend the connection before mounting the pressure sensor.

Model Number

CVZ-1R-ZSR

① ② ③ ④

① Number of Nozzles, Supply Pressure

1	1pc, 0.55 MPa Specification	1R	1 pc, 0.3 MPa Specification
2	2pc, 0.55 MPa Specification	2R	2pc, 0.3 MPa Specification
3	3pc, 0.55 MPa Specification	3R	3pc, 0.3 MPa Specification
4	4pc, 0.55 MPa Specification	4R	4pc, 0.3 MPa Specification

② Pressure Sensor

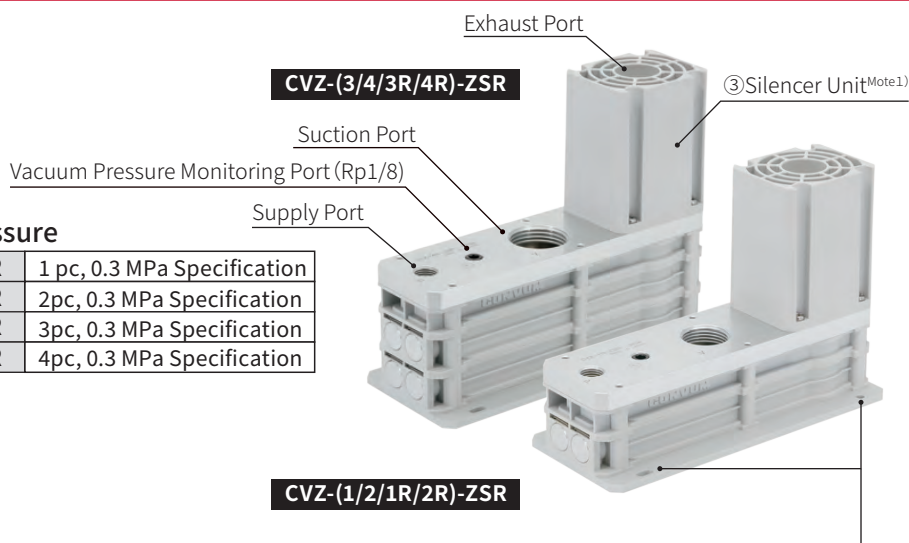
Z	None
---	------

③ Silencer Unit

S	With
---	------

④ Port Thread Standard

R	Rp
---	----



Mounting Hole (Two Locations on the Opposite Side as Well)

Note 1) The silencer unit is removable and can be fitted with a fitting.

Ejector Performance Table

Model Number	Supply Pressure [MPa]	Maximum Vacuum Pressure [kPa]	Suction Flow Rate [L/min(ANR)]	Air Consumption [L/min(ANR)]	Suction Port Thread Size	Supply Port Thread Size
CVZ-1-ZSR	0.55	-90	356	120	Rp3/4	Rp1/4
CVZ-2-ZSR			604	240		
CVZ-3-ZSR			768	360		
CVZ-4-ZSR		-88	877	480	Rp1	
CVZ-1R-ZSR	0.3	-88	292	122	Rp3/4	
CVZ-2R-ZSR			498	244		
CVZ-3R-ZSR			648	366	Rp1	
CVZ-4R-ZSR			732	488		

Model Number List • Mass

CODE	Model Number	Mass
204200002	CVZ-1-ZSR	730g
204200006	CVZ-2-ZSR	737g
204200010	CVZ-3-ZSR	901g
204200014	CVZ-4-ZSR	908g

CODE	Model Number	Mass
204200080	CVZ-1R-ZSR	730g
204200081	CVZ-2R-ZSR	737g
204200082	CVZ-3R-ZSR	901g
204200083	CVZ-4R-ZSR	908g

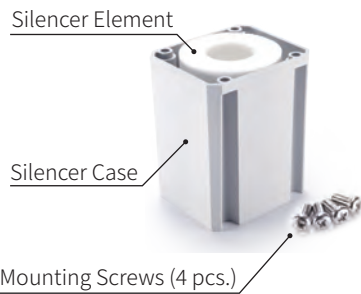
Specifications

	Unit	CVZ-1	CVZ-2	CVZ-3	CVZ-4	CVZ-1R	CVZ-2R	CVZ-3R	CVZ-4R
Fluid Used		Oil-Free Compressed Air							
Ambient Temperature	°C	0 ~ 50 (No Freezing)							
Operating Pressure Range	MPa	0.15 ~ 0.6							
Supply Pressure	MPa	0.55				0.3			
Exhaust Sound	Block the Vacuum Port. Vacuum Port Open	60	67	67	65	67	70	70	72
Volume		84	85	87	87	82	84	86	86

Maintenance Parts Model Number

Silencer Unit

CVZ-SU



Silencer Element

CVZ-SE



Model Number List • Mass

CODE	Model Number	Mass
218000773	CVZ-SU	100g

Model Number List • Mass

CODE	Model Number	Mass
218000774	CVZ-SE	11g

Large-Capacity Filter Model Number

CVZF-12

①

① Thread Size (Applicable Ejector)

12	G3/4 Note 1)	(CVZ-1/2/1R/2R)
34	G1 Note 1)	(CVZ-3/4/3R/4R)

Note 1) Can be connected to the vacuum port (Rp thread) of the **CVZ-□-ZSR**

Model Number List

CODE	Model Number	Mass
500900036	CVZF-12	350g
500900037	CVZF-34	350g

Note 2) The Large-Capacity Filter (CVZF) is an optional component sold separately.

① Thread Size



CVZF-12

Suction Port (Rp 1)



After Installation

Large-Capacity Filter Specifications

	Unit	CVZF-12	CVZF-34
Fluid Used		Air	
Ambient Temperature	°C	0 ~ 60	
Operating Pressure Range	MPa	-100 ~ 0	
Vacuum Release Pressure		0.5 MPa or less Note1)	
Vacuum Port Thread Size	MPa	Rp1	
Filtration Rating Note2)	μm	10	
Filtration Area	mm ²	6983	
Recommended Flow Rate Note3)	L/min(ANR)	450	600

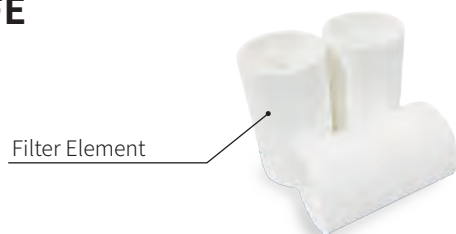
Note 4) Since this is a vacuum filter, do not use it for applications other than momentary pressurization such as vacuum release.

Note 5) Based on our measurement conditions.

Note 6) Air Flow Rate at an Initial Pressure Loss of 5 kPa.

Filter Element (3 pcs.)

CVZF-FE



Model Number List • Mass

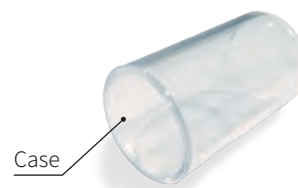
CODE	Model Number	Mass
500900041	CVZF-FE	2.5g ^{Note 2)}

Note 1) One order includes three filter elements (equivalent to three replacements).

Note 2) Mass per element.

Case

CVZF-CA



Model Number List • Mass

CODE	Model Number	Mass
500900042	CVZF-CA	80g

Replacement O-ring Set

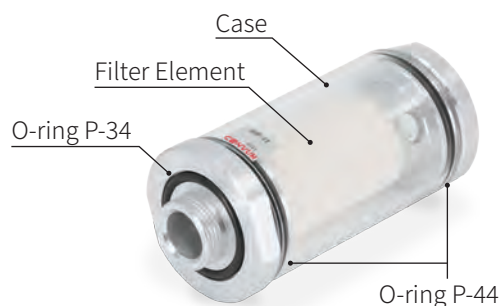
CVZF-PA



Model Number List • Mass

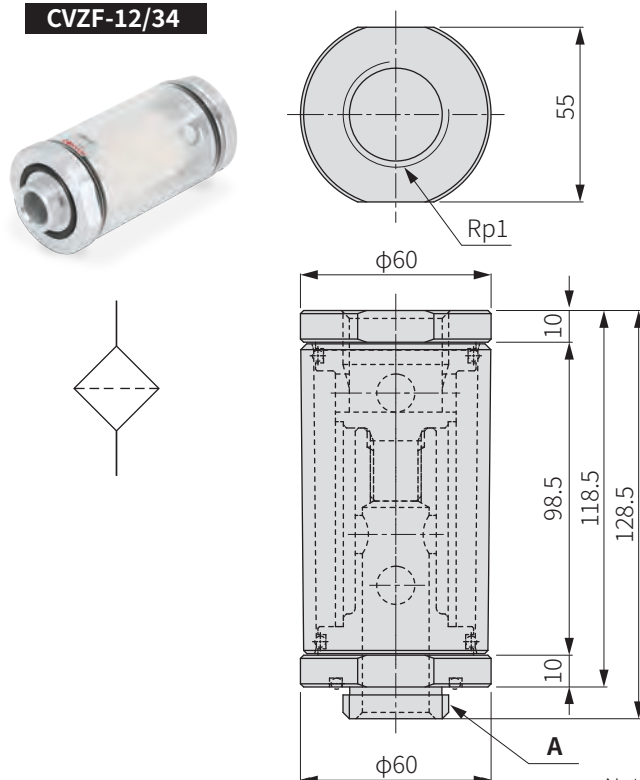
CODE	Model Number	Mass
500900043	CVZF-PA	5g

Note 3) P-34 : Each set consists of one O-ring P-34 and two O-ring P-44s.



Large-Capacity Filter Outline Drawing and Pneumatic Symbol

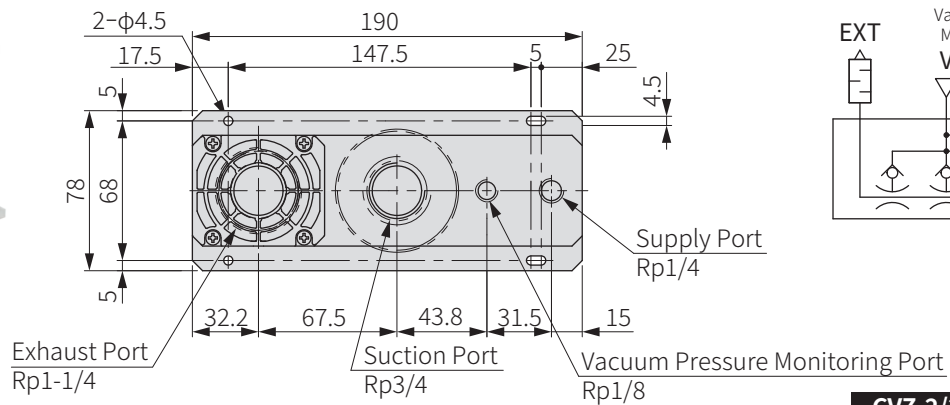
CVZF-12/34



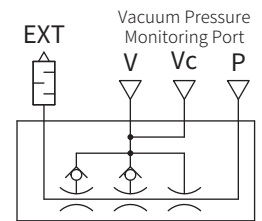
Model Number	A
CVZF-12	G3/4 ^{Note3)}
CVZF-34	G1 ^{Note3)}

Note 3) Can be connected to the vacuum port (Rp thread) of the CVZ-□-ZSR.

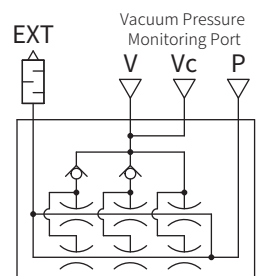
CVZ-1/2/1R/2R-ZSR



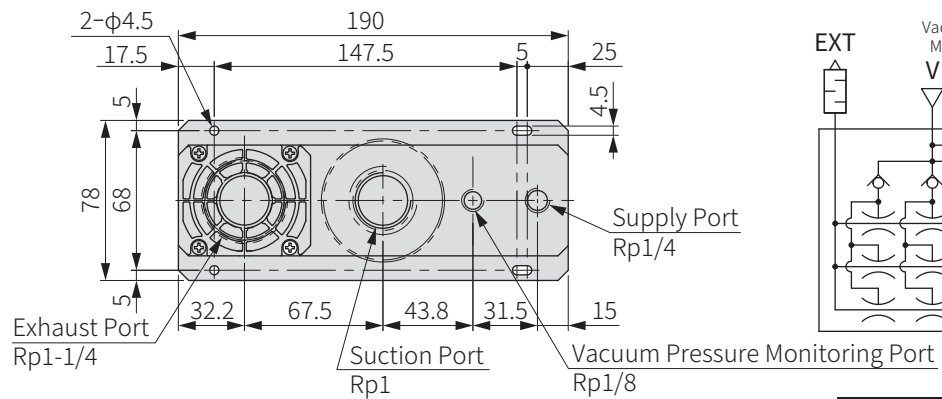
CVZ-1/1R-ZSR



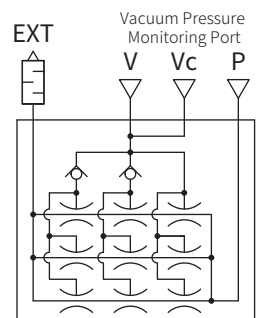
CVZ-2/2R-ZSR



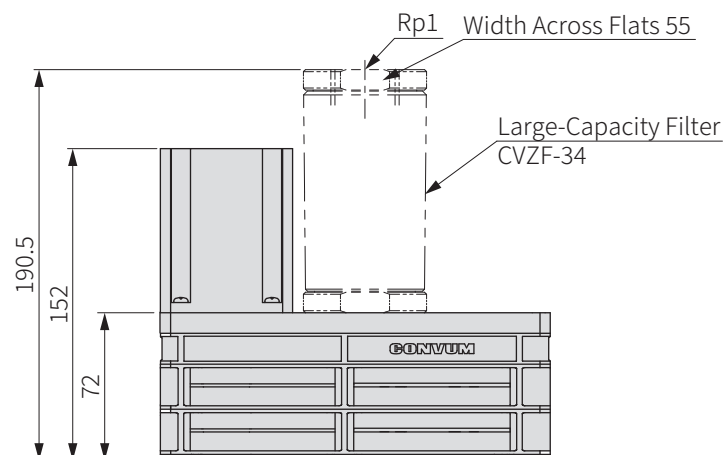
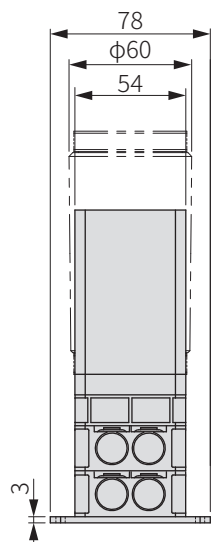
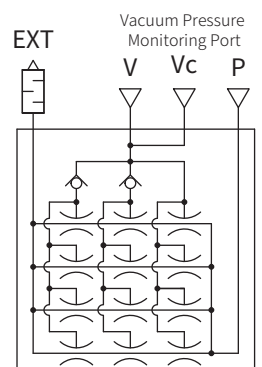
CVZ-3/4/3R/4R-ZSR



CVZ-3/3R-ZSR



CVZ-4/4R-ZSR



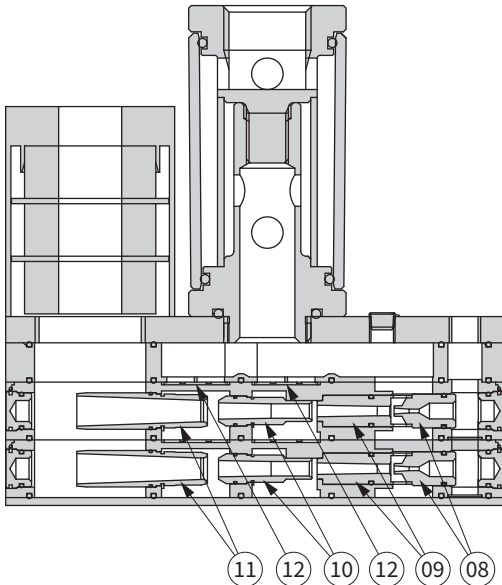
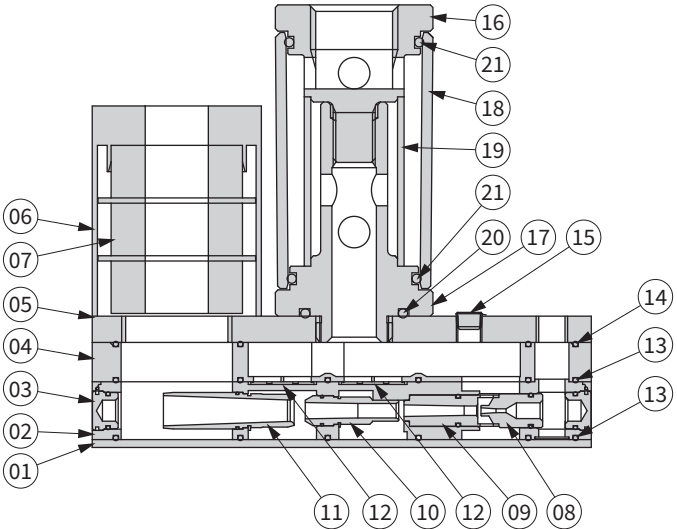
Construction Drawing

CVZ-1/2/1R/2R-ZSR CVZF-12 Large-Capacity Filter Connected State

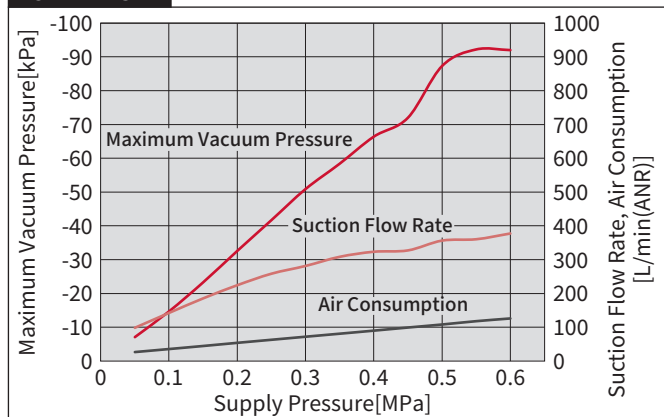
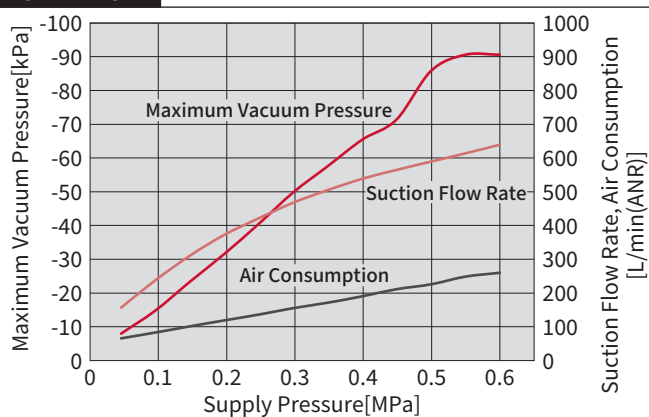
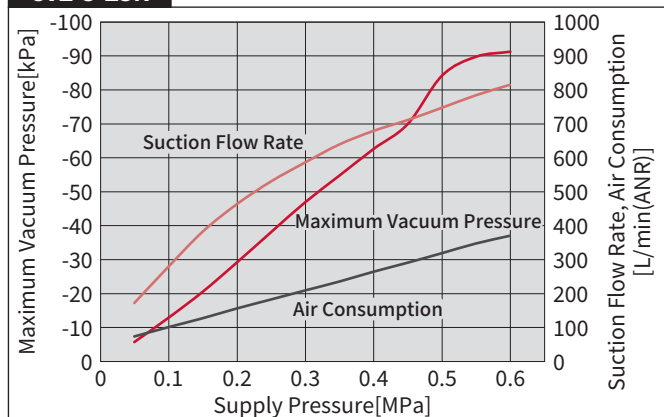
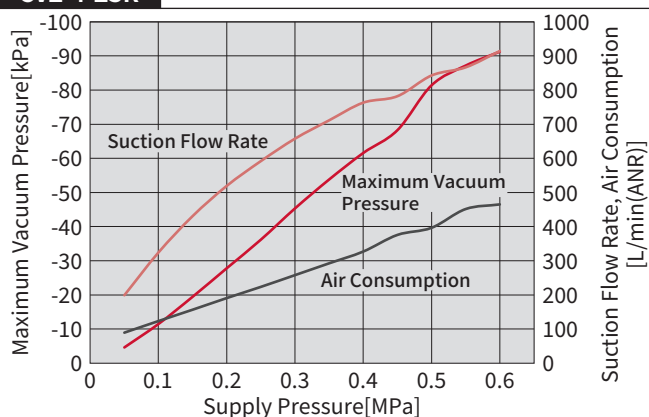
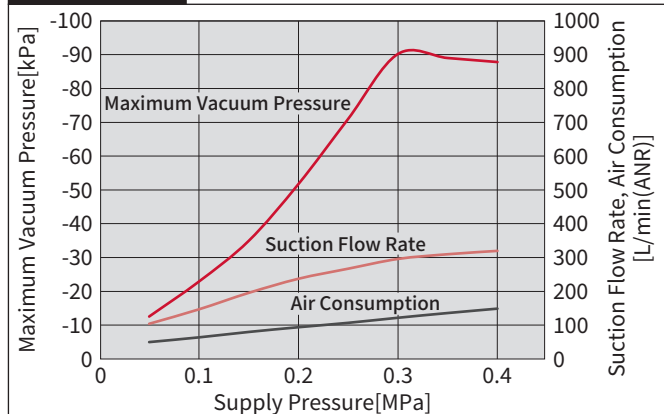
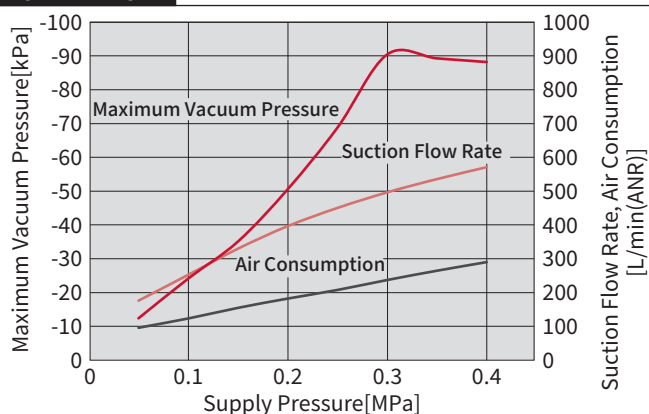
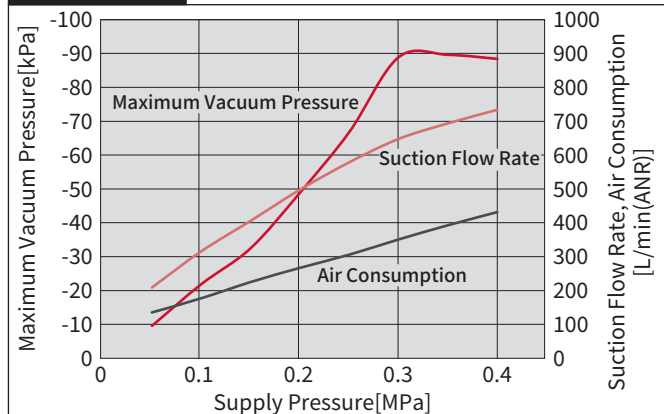
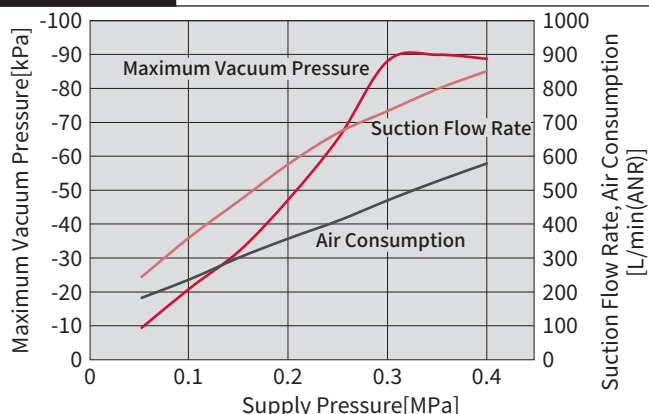
CVZ-3/4/3R/4R-ZSR CVZF-34 Large-Capacity Filter Connection State

Note) The Large-Capacity Filter (CVZF) is an optional component sold separately.

Note) The Large-Capacity Filter (CVZF) is an optional component sold separately.



	Part Names	Material		Part Names	Material
01	Plate	Aluminum Alloy	13	Gasket 1	NBR
02	Body 1	PA	14	Gasket 2	NBR
03	Plug	Aluminum Alloy	15	Threaded Plug	Carbon Steel
04	Body 2	PA	16	Filter Body 1	Aluminum Alloy
05	Supply Plate	Aluminum Alloy	17	Filter Body 2	Aluminum Alloy
06	Silencer	PA	18	Case	PC
07	Part Names	PVF、Felt	19	Element	PVF
08	Nozzle 1	Aluminum Alloy	20	O-ring 1	NBR
09	Nozzle 2	Aluminum Alloy	21	O-ring 2	NBR
10	Nozzle 3	Aluminum Alloy			
11	Diffuser	Aluminum Alloy			
12	Check Valve	HNBR			

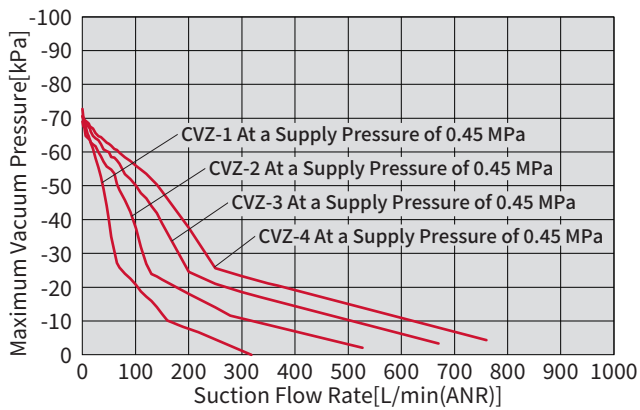
CVZ-1-ZSR

CVZ-2-ZSR

CVZ-3-ZSR

CVZ-4-ZSR

CVZ-1R-ZSR

CVZ-2R-ZSR

CVZ-3R-ZSR

CVZ-4R-ZSR


Note) The data shown are actual measured values obtained under our test conditions and are not guaranteed specifications.
Please use them as reference values for product selection and operation.

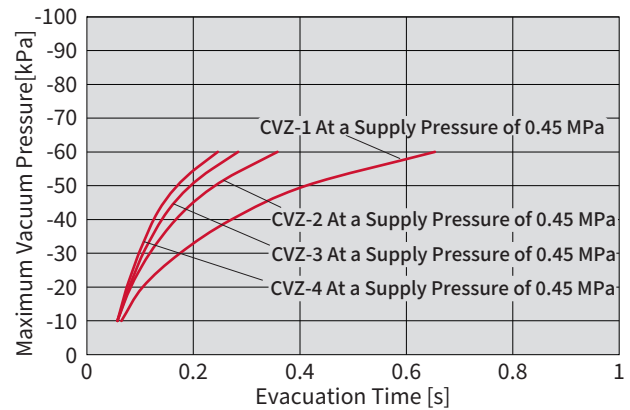
Suction Flow Rate vs. Maximum Vacuum Pressure Characteristics

Response Time (1 L Tank Evacuation Time)

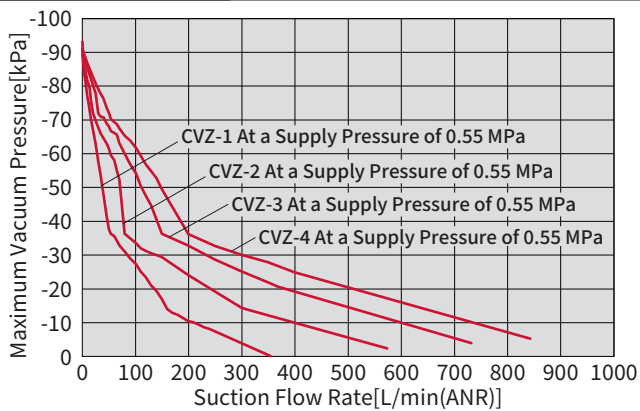
CVZ-1/2/3/4-ZSR



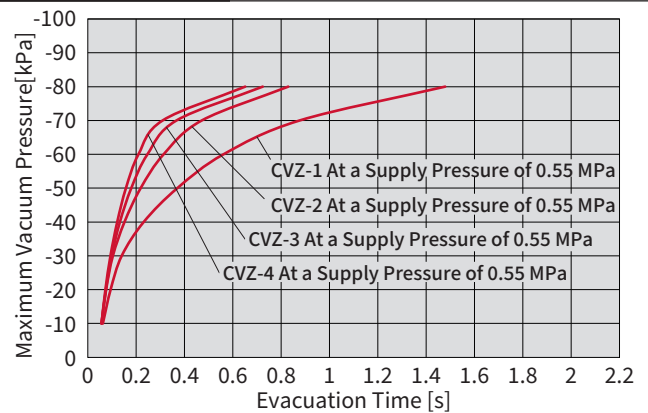
CVZ-1/2/3/4-ZSR



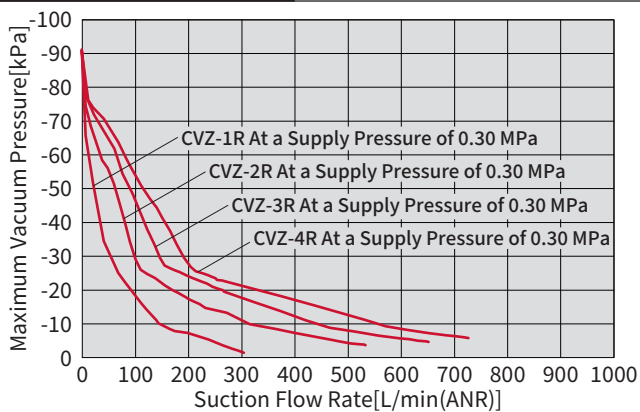
CVZ-1/2/3/4-ZSR



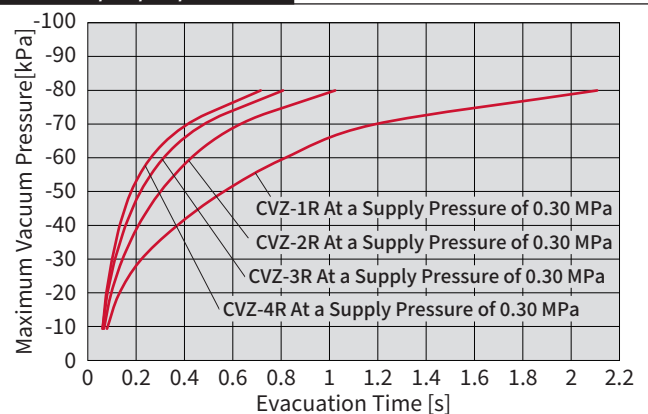
CVZ-1/2/3/4-ZSR



CVZ-1R/2R/3R/4R-ZSR

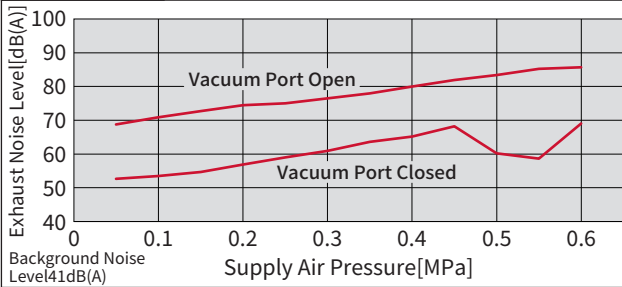
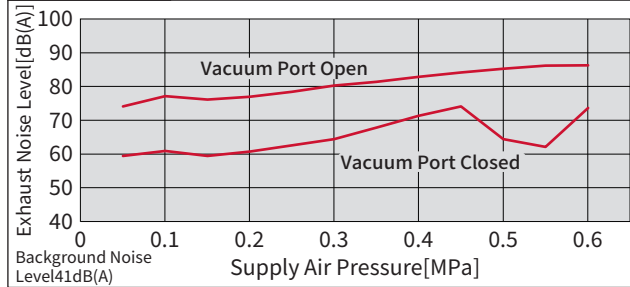
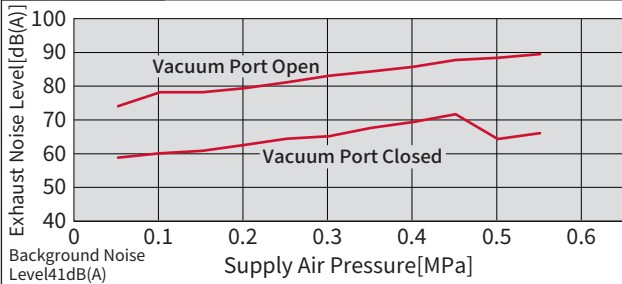
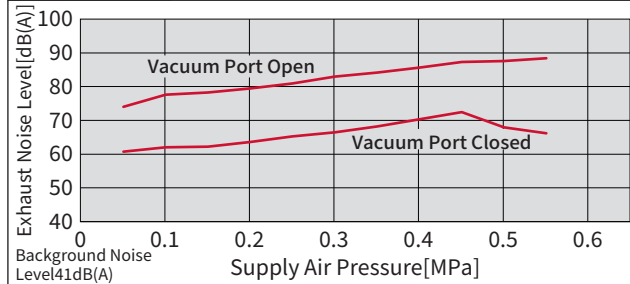
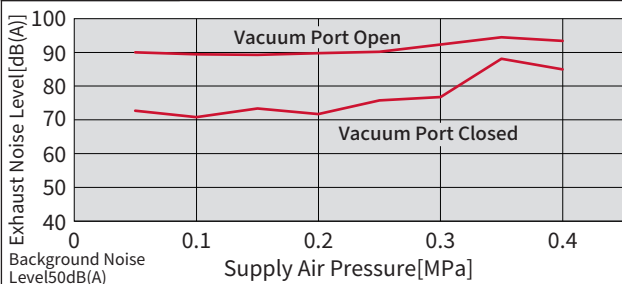
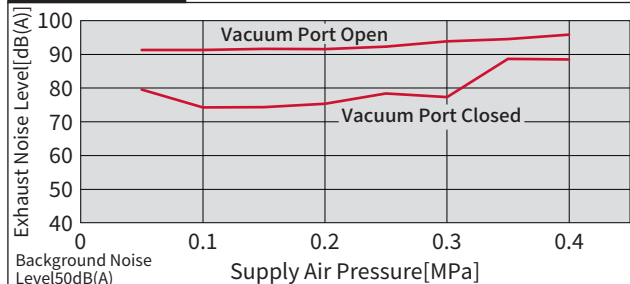
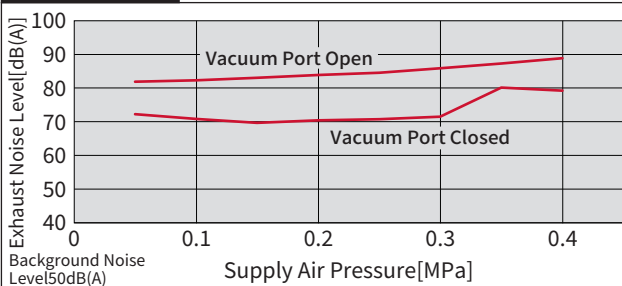
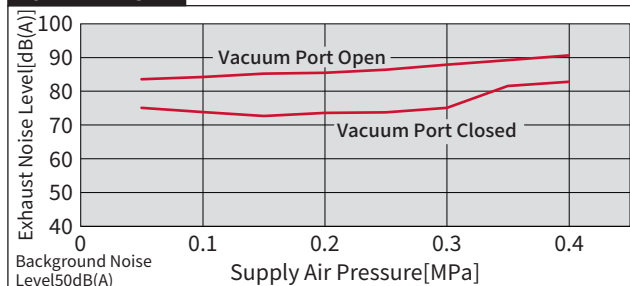


CVZ-1R/2R/3R/4R-ZSR



Note) The data shown are experimental values obtained under our test conditions and are not guaranteed specifications. Use them as reference values for product selection and operation.

Note) The measurement data shown are experimental values obtained under our test conditions and are not guaranteed specifications. Please use them as reference values for product selection and operation.

Exhaust Noise Level
CVZ-1-ZSR

CVZ-2-ZSR

CVZ-3-ZSR

CVZ-4-ZSR

CVZ-1R-ZSR

CVZ-2R-ZSR

CVZ-3R-ZSR

CVZ-4R-ZSR


Note) The measurement data shown are experimental values obtained under our test conditions and are not specifications.
Please use them as reference values for product selection and operation.



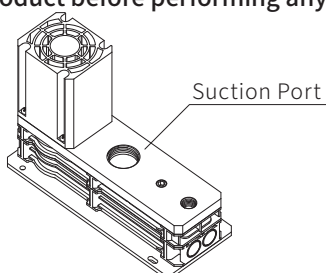
Official website

Before use, be sure to read the "For Safe Use" section in this catalog, the "General Precautions" and "Common Precautions for CONVUM Products" in the General Catalog, as well as the Instruction Manual for this product.
<https://www.convum.co.jp/english/index.html>

Handling and Operating Precautions

⚠ CAUTION

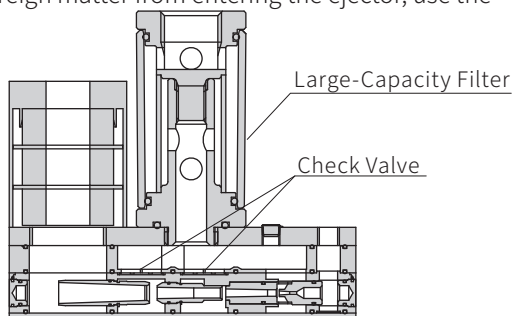
Do not touch or place your hands near the suction port while the ejector is in operation.
 Since this product has a large suction port and a high suction flow rate, there is a risk of injury due to suction. Always stop the product before performing any work on or near it.



⚠ CAUTION

Since this product incorporates a check valve, its service life is limited due to the presence of moving parts. Operating conditions that place excessive stress on the check valve, such as suction of foreign matter, exposure to chemicals or high concentrations of ozone, use in combination with other vacuum generators, or continuous suction over extended periods, may shorten the product's service life.

To prevent foreign matter from entering the ejector, use the

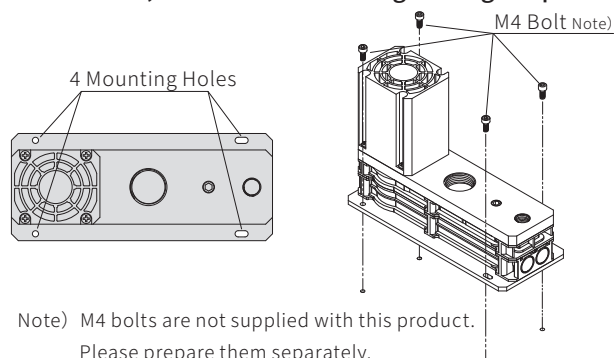


Equipment Installation Procedure

⚠ CAUTION

Use the mounting holes on the plate located on the bottom of the body to securely fasten the product to the equipment before use.

For M4 bolts, the recommended tightening torque is 1.5 N·m.

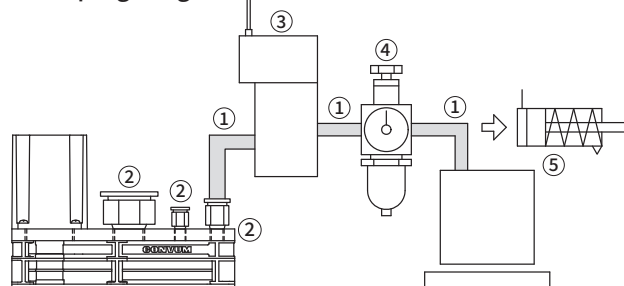


Note) M4 bolts are not supplied with this product.
 Please prepare them separately.

Precautions for Compressed Air Supply

⚠ CAUTION

CVZ Piping Diagram



① Use piping with an inner diameter of Ø8 mm or larger for the supply side.

If the piping length exceeds 2 m, use piping with a larger inner diameter.

If the supply-side piping is too small in diameter or too long, the piping resistance may increase and the specified vacuum performance may not be achieved.

Use piping with the largest possible inner diameter.

② When installing a pipe fitting, prevent cutting chips and sealant from entering the product.

In addition, the recommended tightening torque for pipe fittings is shown below.

Thread Size	Recommended Tightening Torque
1/8	5 [N·m]
1/4	6 [N·m]
3/4	15 [N·m]
1	30 [N·m]

③ Use a standard 2-port solenoid valve to switch the ejector between vacuum generation and stop modes. Also, ensure that the operating pressure and flow rate required for the ejector are sufficiently secured.

If the effective cross-sectional area of the solenoid valve is too small and the flow rate is insufficient, the specified vacuum performance may not be achieved.

Use a solenoid valve with the largest possible effective cross-sectional area.

④ Ensure that the filter regulator can provide the operating pressure and flow rate required by the ejector.

Since the operating pressure is the pressure at the compressed air supply port of the ejector while the ejector is generating vacuum, set the pressure while taking pressure drop into consideration.

⑤ Ensure that the compressor has sufficient capacity, including the requirements of other actuators and pneumatic equipment.

In addition, branch the piping for the ejector from the main air supply line as close to the compressor as possible, separately from the piping for other pneumatic actuators.

A decrease in the supply pressure and flow rate to the ejector may prevent sufficient vacuum pressure from being achieved.

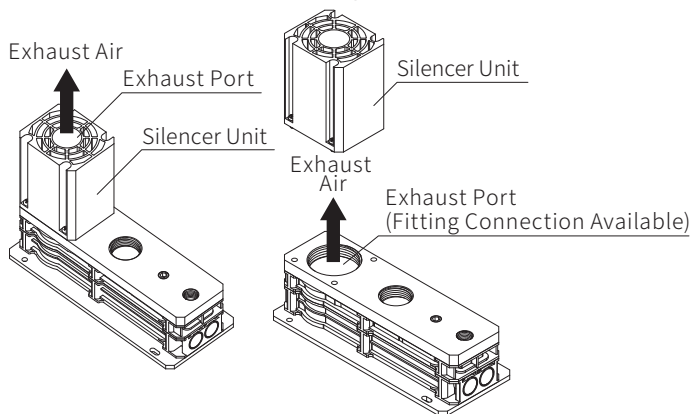
In addition, operation of cylinders or other solenoid valves may cause the vacuum pressure to become unstable.

Precautions for Exhaust Piping

⚠ CAUTION

Do not cover or block the exhaust port of the silencer. The Silencer Unit can be removed and a pipe fitting installed to exhaust through a hose; however, vacuum performance may be reduced in such cases. Conduct testing to confirm that the required vacuum pressure can be achieved.

A increase in exhaust resistance may prevent the required vacuum performance from being achieved.



Silencer Element

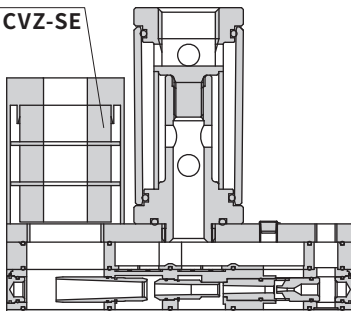
⚠ CAUTION

The Silencer Element may become clogged due to the accumulation of fluids such as oil and water, or other contaminants, resulting in increased exhaust resistance and reduced vacuum performance.

Perform routine inspections and cleaning of the Silencer, and replace the Silencer Element as necessary.

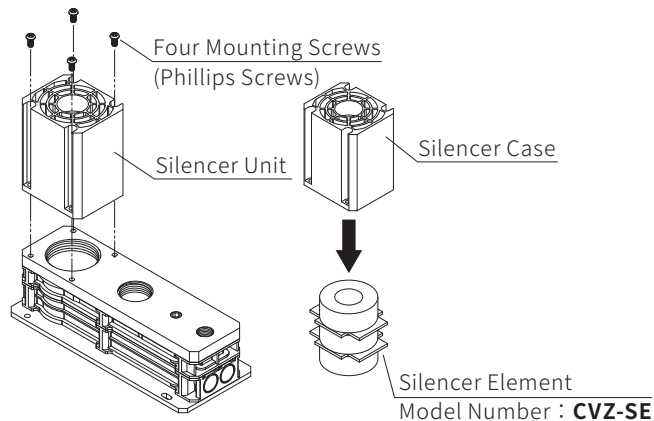
Silencer Element

Model Number : CVZ-SE



Silencer Element Replacement Procedure

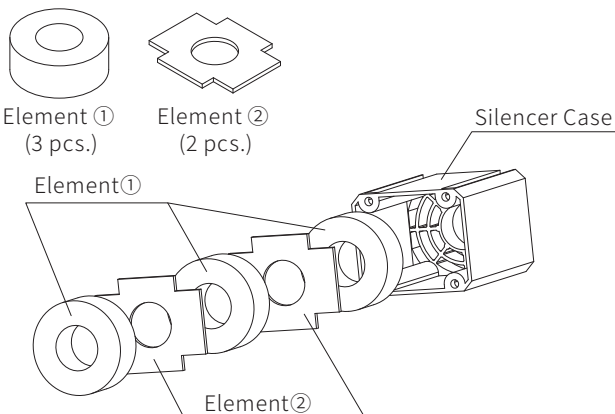
- ① Using a Phillips screwdriver, remove the four mounting screws securing the Silencer Unit, and then remove the Silencer Unit.
- ② Remove the Silencer Element from the Silencer Case.



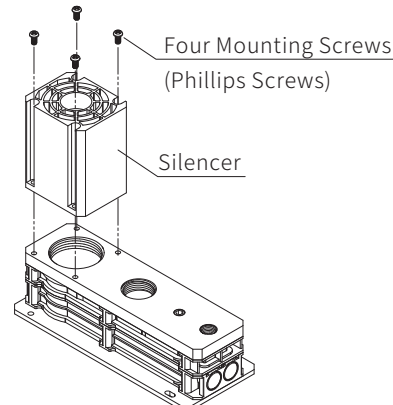
- ② Insert the new Silencer Elements into the Silencer Case. Refer to the figure for the correct insertion order.

Silencer Element

Model Number : CVZ-SE



- ③ Align the Silencer Unit in position and tighten the four mounting screws using a Phillips screwdriver. The recommended tightening torque is 1.5 N · m.





Official website

Before use, be sure to read the "For Safe Use" section in this catalog, the "General Precautions" and "Common Precautions for CONVUM Products" in the General Catalog, as well as the Instruction Manual for this product.
<https://www.convum.co.jp/english/index.html>

Handling and Operating Precautions

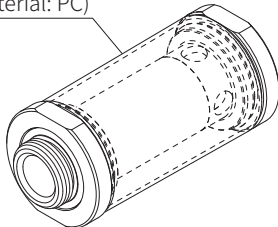
⚠ CAUTION

This filter is designed for vacuum applications only.
 Do not use it in any line other than a vacuum line.
 Do not use it for applications involving pressure except for momentary pressurization, such as vacuum release.

⚠ CAUTION

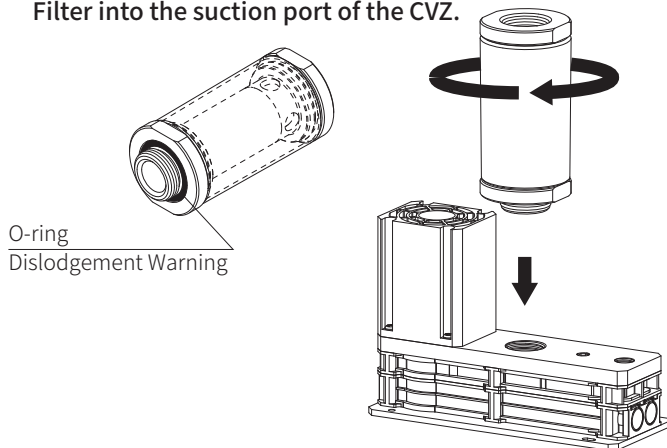
Do not use this product in environments where organic solvents, alkaline chemicals, or cleaning agents may come into contact with it.
 The case is made of polycarbonate (PC), which may crack and become damaged if exposed to such substances.
 For cleaning, use a diluted neutral detergent.

Case (Material: PC)

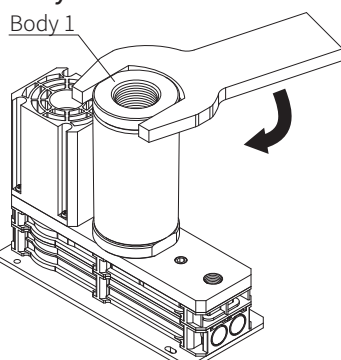


CVZ Installation Procedure

- ① Confirm that the O-ring is properly seated and not dislodged or pinched, then screw the Large-Capacity Filter into the suction port of the CVZ.

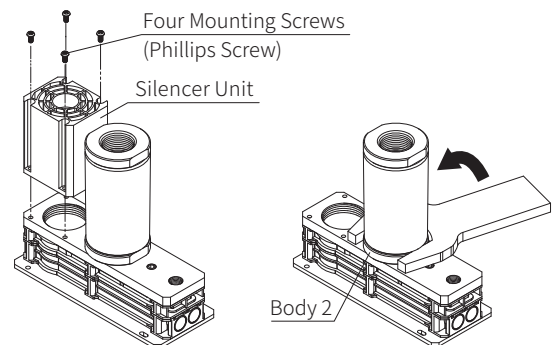


- ② Tighten the Large-Capacity Filter using the width across flats of Filter Body 1.



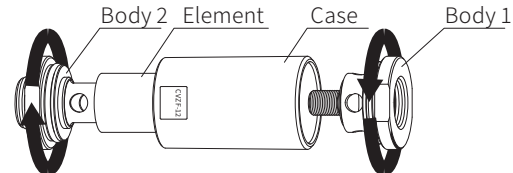
Removal Procedure from CVZ

- ① Remove the four mounting screws securing the Silencer Unit with a Phillips screwdriver, and then remove the Silencer Unit.
- ② Remove it using the width across flats of Body 2 of the Large-Capacity Filter.

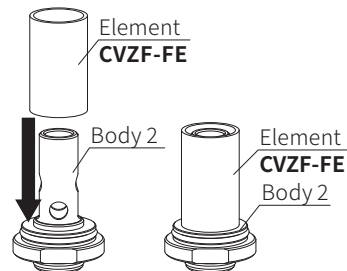


Element Replacement Procedure

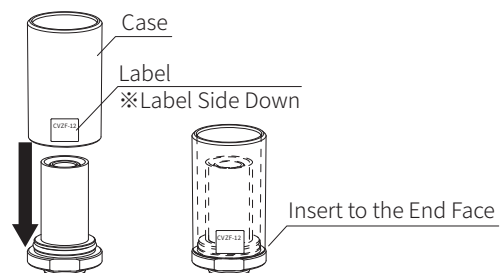
- ① Rotate Filter Body 1 and Filter Body 2 to disassemble them.



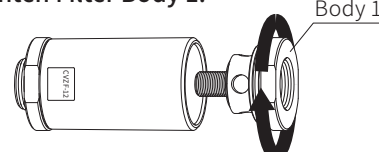
- ② Insert a new Element into Filter Body 2.



- ③ Insert the Case into Filter Body 2, paying attention to its orientation.



- ④ Tighten Filter Body 1.



Safety Instructions

Be sure to read these precautions before use.

Also read and understand the safety instructions provided for each product series.

These safety instructions are intended to prevent personal injury and damage to equipment.
Potential hazards are classified using the labels[DANGER],[WARNING], and[CAUTION].
All of these notices are important and must be observed.

 **DANGER** DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING** WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION** CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

Please also refer to JIS B 8370*¹ and ISO 4414*². Please comply with the Industrial Safety and Health Law, the High Pressure Gas Safety Act, and other applicable safety regulations.

* 1 JIS B 8370 : Pneumatic fluid power — General rules relating to systems.

* 2 ISO 4414 : Pneumatic fluid power — Recommendations for the application of equipment to transmission and control systems.

Even the matters described under [CAUTION] may result in serious consequences depending on the circumstances.

All of these notices are important and must be observed.

WARNING

● Vacuum and pneumatic equipment shall be selected properly.

The compatibility of the vacuum and pneumatic equipment is the responsibility of the person who designs the equipment or decides its specifications.

Since the products specified here are used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.

The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.

This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

● Only personnel with appropriate training should operate machinery and equipment.

Inappropriate usage or handling may cause injury, equipment damage or indirect damage.

Vacuum and pneumatic equipment is intended for industrial use. The assembly, operation and maintenance of machinery or equipment including our products must be performed by an operator who is appropriately trained and experienced.

● Do not operate or reinstall the equipment or machine without first performing a safety check.

• When inspecting or adjusting the equipment, make sure to take measures against the dropping or uncontrolled movements of the actuators.

• Before reinstallation, make sure to switch off power and compressed air supply.

• Before restart, make sure that no parts can break off.

● Use this pneumatic equipment only in accordance with the specifications.

Contact CONVUM when using it outside the specifications.

• Environments outside the specifications, like using in outdoor applications.

• nuclear energy, railways, airplanes, railway cars, ships, medical equipment, food or beverage processing equipment, pharmaceutical equipment, emergency, cutout and similar devices with security issues.

• All machinery which in case of wrong handling or operating might pose hazardous effects on human life or property.

Warranty and Disclaimer

1. Warranty

① If a failure occurs during the warranty period and is determined to be the responsibility of CONVUM, we will provide a replacement product or the necessary replacement parts free of charge, or repair the product free of charge.

② The warranty period for our products is one year from the start of operation or 18 months from the date of delivery, whichever comes first.

However, some products may have specified durability limits, such as operating cycles or sliding distance. For details, please contact our Customer Support Center.

③ The suction cup is a consumable component. Therefore, the one-year warranty period from the start of operation does not apply, and the warranty period is one year from the date of delivery.

However, deterioration of the rubber material or wear resulting from the use of the suction cup is not covered by the warranty, even during the warranty period.

2. Disclaimer

① The warranty does not apply in the following cases:

• Use outside the specifications stated in this catalog or other specification documents.

• Failures caused by factors other than this product.

• Failures or damage resulting from modifications or any other causes not attributable to CONVUM.

• Failures caused by factors that could not reasonably have been foreseen based on the state of technical knowledge at the time of delivery.

• Failures or damage caused by natural disasters, accidents, actions of third parties, intentional acts or negligence by the customer, or other force majeure events.

② This warranty applies only to the product itself and does not cover any indirect, incidental, or consequential damages resulting from product failure.

Specifications are subject to change without notice.

For operating instructions and precautions, refer to our catalog and instruction manual.

For delivery lead times, please contact our Customer Support Center.

CONVUM Ltd.

6-18 Shimomaruko2-chome, Ohta-ku, Tokyo 146-0092, Japan
TEL +81-3-5741-7201

Contact Information
<https://convum.com/contact>



Official website



CONVUM Ltd.

6-18 Shimomaruko2-chome, Ohta-ku, Tokyo 146-0092, Japan
TEL +81-3-5741-7201

ContactInformation
<https://convum.com/contact>

email
faq@convum.co.jp

2025.10.17