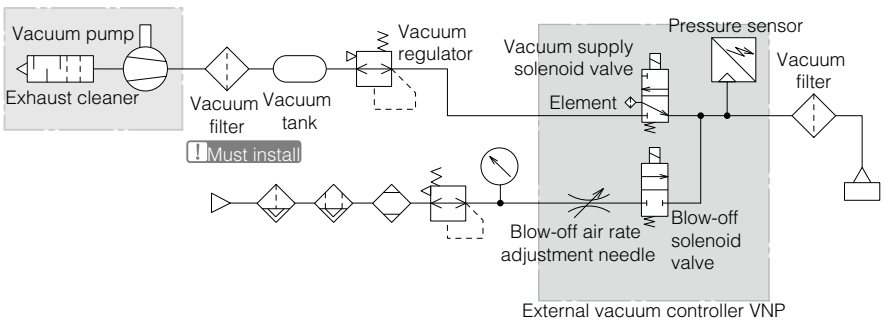
Rotary vacuum pump realizing low driving noise, low vibration, low heat generation, low dust generation and long life.

Rotary vacuum pump RPV06 Series

Characteristics

- Contribute to energy saving
  The top level high efficiency in the industry is realized for the pumping speed per motor power 1(W).
  → 1.0/1.2 [pumping speed (ℓ/min)/motor power (W)] (50/60Hz)
- Light weight and compact
  Space saving is realized by adoption of the special rotor form.
  Max weight: about 10.5Kgs. Max. dimension: 125 x 397.6 x 181mm (width x depth x height)*
  * Max. weight and max. dimension are of 120L type RPV064-120V200.
- Low heat generation
  Low generation of heat is realized by adoption of forced air-cooling system.
- Low driving noise and vibration
  Low noise operation and low vibration are realized by full balancing design for rotary part.
  Silent : ≦ 58dB / ≦ 63dB (50Hz/60Hz)
  Vibration : About 1/10 of equivalent other brand models. (*)
  * Our investigation. Same level as air conditioner or quiet car.
- Long life
  Maintenance free for nearly 30,000 hours operation.
  (* Under our operating conditions. The product life varies depending on the operation conditions and the inhaled gas (moisture or dust), etc)
  High durability is realized by adopting of super engineering plastic, which is excellent in self-lubricity and wear resistance, and special surface treatment.
  Providing minimum clearance between rotor and cylinder wall, realize the fundamentally contactless structure and minimization of sliding parts.
  Adoption of magnet-coupling, no sliding seal required.
- Low generation of dust
  Lubrication is unnecessary by adoption of the excellent clean vacuum grease for low dust and low volatile.
  Low dust generation is realized by minimization of sliding parts.
  Contamination to surrounding area is controlled.
- Contribute to environment, and Safe design
  RoHS compliant and CE marking compliant. (Single-phase 100V with built-in power switch type is not compliant with CE marking.)
- Variety of options
  Not only a pump but also push-in fittings and exhaust cleaners (exhaust mufflers) are prepared.

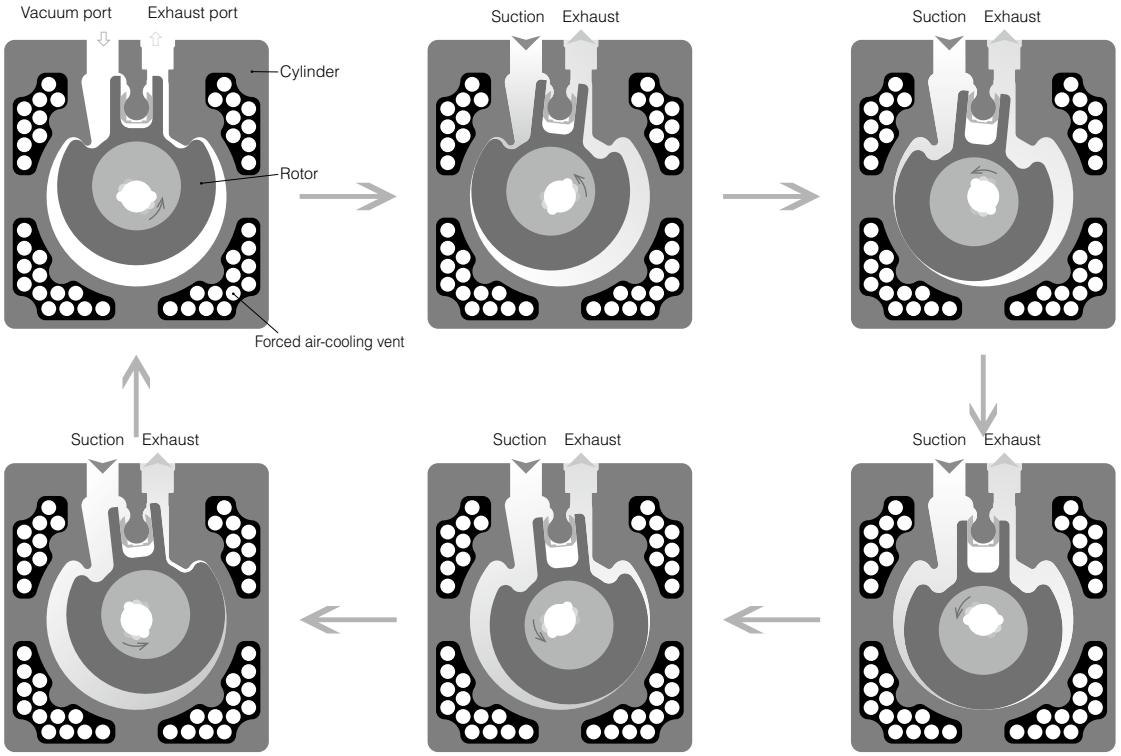
Schematic diagram (example) when using suction transport



* Compressed air is not necessary for suction transport by using the external vacuum controller VNP, which have direct operating valve for vacuum supply and blow-off solenoid valve. (Compressed air is necessary for blow-off.) Therefore, the consumption amount of compressed air can be remarkably reduced.

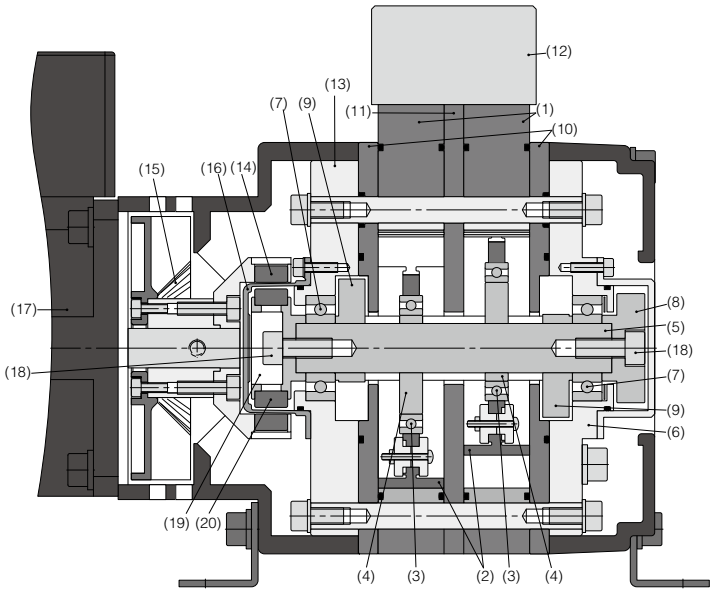
⚠ The rotary vacuum pump is a precision equipment. Do not let moisture, debris and dust flow into the pump by always installing a vacuum filter to an upstream piping.

Operating principle



① The eccentric rotor is placed in the space formed by the cylinder and plates which sandwich the cylinder.
② When the rotor carries out eccentric rotations, air is inhaled by the pressure difference to atmospheric pressure with increasing capacity of the space formed between the rotor of vacuum port side and cylinder. At the same time, air is discharged with decreasing capacity of the space formed in the rotor of exhaust port side and cylinder.
③ By performing this operation continuously, the air transfer from the vacuum port to the exhaust port is realized.

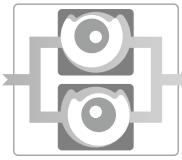
Construction (Parallel twin, 60W motor type : RPV062-60)



No.	Parts	Material
(1)	Cylinder	aluminum alloy
(2)	Rotor	PPS resin
(3)	Bearing	stainless steel
(4)	Crank plate	stainless steel
(5)	Main shaft	stainless steel
(6)	Side block E	aluminum alloy
(7)	Bearing	stainless steel
(8)	Balancer E	stainless steel
(9)	Balancer R	stainless steel
(10)	Side plate	aluminum alloy
(11)	Center plate	aluminum alloy
(12)	Manifold	aluminum alloy
(13)	Side block M	aluminum alloy
(14)	Magnet	Neodymium magnet
(15)	Cooling fan	PPS resin
(16)	Sealing cup	PPS resin
(17)	Motor	aluminum alloy, etc.
(18)	Cap screw	stainless steel
(19)	Inner coupling	stainless steel
(20)	Magnet	Neodymium magnet

* All seal rubber material is FKM.

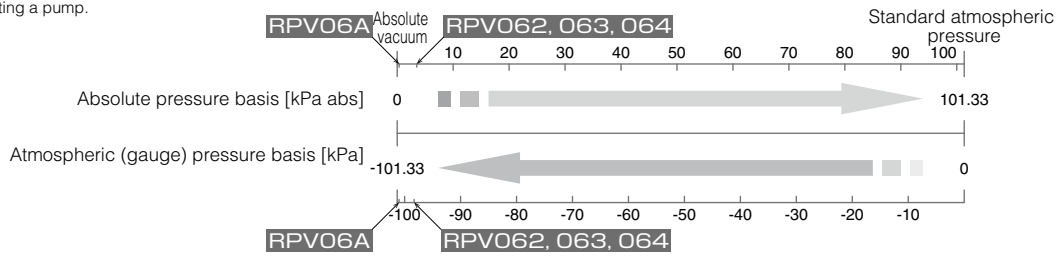
Specifications

Type			Medium vacuum, 30L		Low vacuum, 60L	
Model code			RPV06A-40T200	RPV06A-60S100 (S100SW (*2))	RPV062-60T200	RPV062-60S100 (S100SW (*2))
Numbers of cylinder			Twin (2)		Twin (2)	
Cylinder layout			In-line layout 		Parallel layout 	
Pumping speed (ℓ/min)		50Hz	30.0		60.0	
		60Hz	36.0		72.0	
Final vacuum (Pa abs)		50Hz	≦350		≦3,500	
		60Hz	≦300		≦3,000	
Final vacuum (kPa G)		50Hz	≦-100.95		≦-97.8	
		60Hz	≦-101.0		≦-98.3	
Max. suction pressure			Atmospheric pressure			
Ambient temperature (indoor) (°C)			5 ~ 40			
Ambient humidity (indoor)			Max 85%RH (no dew condensation)			
Gas (inhaled gas)			No corrosive or exposable gas			
Vibration of installation site			Max 4.9m/s² (10 to 60Hz)			
Altitude of installation site			1000m ASL or less			
Install orientation			Motor axis to be horizontal			
Motor	Output (W)		40	60	60	
	Type		3-phase motor, Built-in thermal protector Heat proof class: 130(B)	Single-phase capacitor type induction motor Built-in thermal protector, Heat proof class: 130(B)	3-phase motor, Built-in thermal protector Heat proof class: 130(B)	Single-phase capacitor type induction motor Built-in thermal protector, Heat proof class: 130(B)
	Voltage (V)		200	100	200	100
	Rated current (A)	50Hz	0.31	0.83	0.45	1.3
		60Hz	0.29	0.7	0.41	1.2
	Rated rotation speed (min⁻¹)	50Hz	1,350	1,250	1,350	1,250
		60Hz	1,625	1,600	1,625	1,575
	Striking current (A)	50Hz	0.9	1.7	1.3	2.4
		60Hz	0.82	1.5	1.2	2.3
Operation noise (dB (A)) (*1)		50Hz	≦58			
		60Hz	≦63			
Vacuum port size			G3/8		G1/2	
Exhaust port size			G1/4		G3/8	
Dimensions (width x depth x height) (mm)			125×284.6×166.5 125×299.6×166.5 (S100) 125×299.6×180.8 (S100SW *2)		125×299.6×176 (S100SW (*2): 125×299.6×180.7)	
Weight (kg)			7.2 (S100SW (*2): 7.6 (including accessories)		7.5 (S100SW (*2): 7.9 (including accessories))	
Cooling system			Forced air cooling			

*1. Operating noise is an actually measured value excluding suction and exhaust noises, and is not a guaranteed value. Operating noise varies depending on operating condition.
*2. Power switch built-in type. Not compliant with CE marking.

Vacuum pressure indication

* Absolute pressure (kPa abs or Pa abs) and gauge pressure (kPa G) are used in Pisco's vacuum pump catalogue. Be careful not to make a mistake in a unit when selecting a pump.



Specifications (Continued from the previous page)

Type		Low vacuum, 90L	Low vacuum, 120L
Model code		RPV063-90T200	RPV064-120V200
Numbers of cylinder		Triple (3)	Quad (4)
Cylinder layout		Parallel layout	Parallel layout
Pumping speed (ℓ/min)	50Hz	90.0	120.0
	60Hz	108.0	144.0
Final vacuum (Pa abs)	50Hz	≦3,500	
	60Hz	≦3,000	
Final vacuum (kPa G)	50Hz	≦-97.8	
	60Hz	≦-98.3	
Max. suction pressure		Atmospheric pressure	
Ambient temperature (indoor) (°C)		5 ~ 40	
Ambient humidity (indoor)		Max 85%RH (no dew condensation)	
Gas (inhaled gas)		No corrosive or exposable gas	
Vibration of installation site		Max 4.9m/s² (10 to 60Hz)	
Altitude of installation site		1000m ASL or less	
Install orientation		Motor axis to be horizontal	
Motor	Output (W)	90	120
	Type	3-phase motor, Built-in thermal protector Heat proof class: 130(B)	
	Voltage (V)	200	200
	Rated current (A) 50Hz	0.62	0.74
	Rated current (A) 60Hz	0.56	0.68
	Rated rotation speed (min^{-1}) 50Hz	1,350	1,350
	Rated rotation speed (min^{-1}) 60Hz	1,625	1,600
	Striking current (A) 50Hz	2.0	2.62
	Striking current (A) 60Hz	1.8	2.38
Operation noise (dB (A)) (*1)	50Hz	≦58	
	60Hz	≦63	
Vacuum port size		G1/2	
Exhaust port size		G3/8	
Dimensions (width x depth x height) (mm)		125×340.6×181	125×397.6×181
Weight (kg)		9.0 (*2)	10.5 (*2)
Cooling system		Forced air cooling	

*1. Operating noise is an actually measured value excluding suction and exhaust noises, and is not a guaranteed value. Operating noise varies depending on operating condition.
*2. Weight includes attached 2 blank plugs.

Detailed Safety Instructions

Before using the PISCO products, be sure to read the “Safety Instructions”, “Common Safety Instructions for Products in This Catalog on page 13 to 16, “Common Safety Instructions for Rotary vacuum pump Series on page 72. Read the Instruction Manual and motor handling instruction manual, enclosed to the product as well.

⚠Warning : 1. The power cable used for the pump with a built-in power switch shall be connected to 3-conductive electrical outlet. When using 3-prong to 2-prong electrical adapter, make sure to connect the ground wire to the ground terminal near the outlet.
2. Connect the power cord to three-pronged power socket. When using a three-prong/two-prong adapter, make sure to connect ground wire to the ground terminal of power socket side.
3. The motor of RPV064-120 should be wired using the self-hold circuit, which uses a relay and a switch, or etc. so that a pump does not restart automatically.
4. The motor of the power switch built-in type is equipped with an automatic reset type thermal protector. Thermal protector activates to stop the motor in case the temperature inside the motor exceeds the prescribed temperature. Operation restarts automatically when the temperature of the motor drops to safety level. To prevent a danger by unexpected restart, make sure to turn off the main power supply before maintenance and inspection.

Model Designation (Example)

RPV06 (1) **2-60** (2) **T200** (3) - **12** (4) - **30** (5) - **6** (6)

(1) Series

RPV06: Rotary vacuum pump 06 series

(2) Cylinder numbers and layout, motor power output

Code	2-60	3-90	4-120	A-40	A-60
Combination	Parallel twin, 60W motor	Parallel triple, 90W motor	Parallel quad, 120W motor	In-line twin, 40W motor	In-line twin, 60W motor
Final vacuum [50Hz/60Hz] (Pa abs)	≦3,500 /≦3,000			≦350 /≦300	≦ 350 / ≦ 350
Final vacuum [50Hz/60Hz] (kPa G)	≦-97.8 /≦-98.3			≦-100.95 /≦-101.0	≦-100.95 /≦-101.0

(3) Motor type

Code	S100	S100SW	T200	V200
Type	Single phase 100VAC induction motor	Single phase 100VAC induction motor with a built-in power switch	3 phase 200/220/230VAC induction motor	3 phase 200VAC induction motor
RPV06A-40	—	—	○	—
RPV06A-60	○ : Available	○	—	—
RPV062-60	○	○	○	—
RPV063-90	—	—	○	—
RPV064-120	—	—	—	○

* For S100SW type, an electrical power cable (2m), a 3-prong to 2-prong electrical adapter, and a tubular fuse (5A) are enclosed.

(4) Vacuum port

Combination \ Tube O.D.(mm)		ø10 (*1)		ø12		ø16	
Code	Push-in fitting (*3) Straight	10		12		16	
	Push-in fitting (*3) Elbow	20		22		26	
	Compression fitting Straight	A0	B0	A2	B2	A6	B6
	Compression fitting Tube I.D.(mm)	ø6.5	ø7.5	ø8	ø9	ø11	ø13
	No fitting (*2)	No code					

*1. ø10 fitting cannot be selectable for RPV064-120
*2. The thread sizes of pump's port are different depending on (2) the cylinder numbers, layout and motor power output. Please refer to Table-1.
*3. Push-in fittings permit a leakage. Use compression fittings if there is any usability problem.

(5) Air supply (PS) port size

Combination \ Tube O.D.(mm)		ø10 (*1)		ø12		ø16 (*2)	
Code	Push-in fitting (*3) Straight	30		32		36	
	Push-in fitting (*3) Elbow	40		42		46	
	Compression fitting Straight	C0	D0	C2	D2	C6	D6
	Compression fitting Tube I.D.(mm)	ø6.5	ø7.5	ø8	ø9	ø11	ø13
	No fitting (*2)	No code					

*1. ø10 fitting cannot be selectable for RPV064-120.
*2. ø16 fitting cannot be selectable for RPV06A-40.
*3. The thread sizes of pump's port are different depending on (2) the cylinder numbers, layout and motor power output. Please refer to Table-1

(6) Exhaust cleaner (with fittings)

Combination \ Tube O.D.(mm)	ø10 (*1)	ø12	ø16
Code: Exhaust cleaner only	0		
Code: Exhaust cleaner & straight fitting	5 (*2)		
Code: Exhaust cleaner & elbow fitting	6 (*2)		
Code: No exhaust cleaner & fittings	No code		

*1. ø10 fitting cannot be selectable for RPV064-120.
*2. When selecting code "5" or "6", the tube O.D. of the fitting is same size as the exhaust port (selected in (5)).
* Connection thread size of exhaust cleaner is Rc1/2.

Table-1. Thread size of vacuum & exhaust port

Thread size / Model code	Vacuum port G3/8	Vacuum port G1/2	Exhaust port G1/4	Exhaust port G3/8
RPV06A-40T200	○ : Available	—	○	—
RPV06A-60□	○	—	○	—
RPV062-60□	—	○	—	○
RPV063-90T200	—	○	—	○
RPV064-120V200	—	○	—	○

Note: The pump without a built-in power switch does not come with electrical power cables for motor. Properly connect cables by following the enclosed motor handling instruction manual and detailed safety instructions.

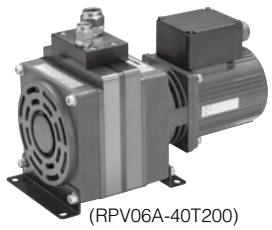
RoHS The products listed in this page are ECO-friendly products.
* Please refer to page 4 for the details of ECO-friendly products.

In-line / Twin

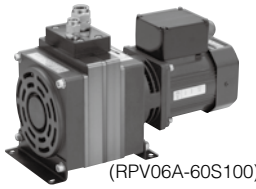
Medium vacuum, 30L

RPV06A

Model code
RPV06A-40(60)3-4-5-6
RPV06A-40T200-4-5-6
RPV06A-60S100-4-5-6



(RPV06A-40T200)



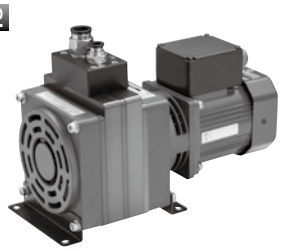
(RPV06A-60S100)

Parallel / Twin,

Low vacuum, 30L

RPV062

Model code
RPV062-603-4-5-6
RPV062-60T200-4-5-6
RPV062-60S100-4-5-6

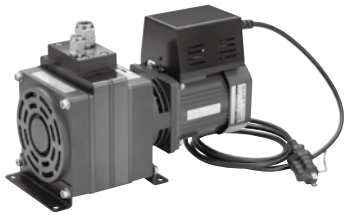


In-line / Twin / Power switch built-in

Medium vacuum, 30L

RPV06A

Model code
RPV06A-60S100SW-4-5-6
RPV06A-60S100SW-4-5-6

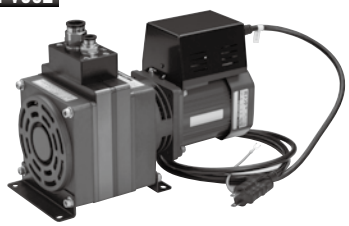


Parallel / Twin / Power switch built-in

Low vacuum, 60L

RPV062

Model code
RPV062-60S100SW-4-5-6
RPV062-60S100SW-4-5-6

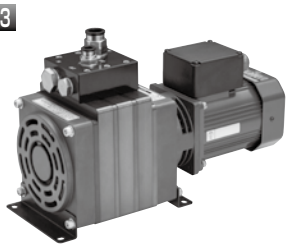


Parallel / Triple

Low vacuum, 90L

RPV063

Model code
RPV063-90T200-4-5-6
RPV063-90T200-4-5-6

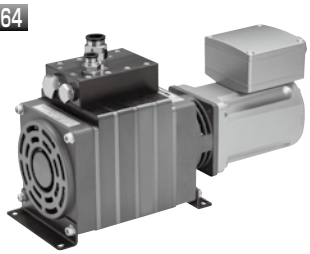


Parallel / Quad

Low vacuum, 120L

RPV064

Model code
RPV064-120V200-4-5-6
RPV064-120V200-4-5-6



Caution
* 4: Replaced with vacuum port code.
* 5: Replaced with exhaust port code.
* 6: Replaced with exhaust cleaner (with fittings) code.
* Make-to-order item.

Package specification
1 pc. in a box

The products listed in this page are ECO-friendly products.
* Please refer to page 4 for the details of ECO-friendly products.

Optional parts

PC Push-in fitting straight type for vacuum port

Model code PCøD-G
PC10-G3
PC10-G4
PC12-G3
PC12-G4
PC16-G3
PC16-G4

PL Push-in fitting elbow type for vacuum port

Model code PLøD-G
PL10-G3
PL10-G4
PL12-G3
PL12-G4
PL16-G3
PL16-G4

PC Push-in fitting straight type for exhaust port

Model code PCøD-G
PC10-G2
PC10-G3
PC12-G2
PC12-G3
PC16-G3

PL Push-in fitting elbow type for exhaust port

Model code PLøD-G
PL10-G2
PL10-G3
PL12-G2
PL12-G3
PL16-G3

NBC Compression fitting straight type for vacuum port

Model code NBCøD-G
NBC1065-G3
NBC1065-G4
NBC1075-G3
NBC1075-G4
NBC1280-G3
NBC1280-G4
NBC1290-G3
NBC1290-G4
NBC1611-G3
NBC1611-G4
NBC1613-G3
NBC1613-G4

NBC Compression fitting straight type for exhaust port

Model code NBCøD-G
NBC1065-G2
NBC1065-G3
NBC1075-G2
NBC1075-G3
NBC1280-G2
NBC1280-G3
NBC1290-G2
NBC1290-G3
NBC1611-G3
NBC1613-G3

RPVF-04 Exhaust cleaner

Model code
RPVF-04

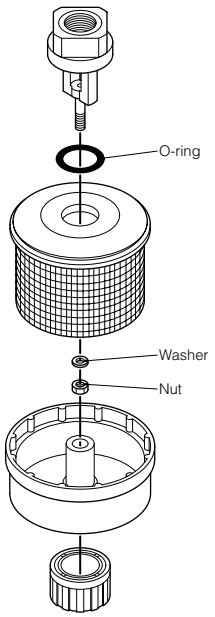
PC Push-in fitting straight type for exhaust cleaner

Model code PCøD-R
PC10-04
PC12-04
PC16-04

PL Push-in fitting elbow type for exhaust cleaner

Model code PLøD-R
PL10-04
PL12-04
PL16-04

Replacement element



Exhaust cleaner element
Model code: **RPVFE-04**

Exhaust cleaner element Model code
RPVFE-04

Package specification
Exhaust cleaner: 1pc. in a box
Fittings (straight and elbow) for vacuum port/ exhaust port / exhaust cleaner: 10pcs in a bag
Exhaust cleaner element: 1pc. in a bag

Common Safety Instructions for Rotary vacuum pump Series

□ Before selecting or using PISCO products, read the following instructions. Read the detailed instructions for individual series.

⚠ Danger 1. Never vacuum up flammable, explosive gases. Never use the product in the potentially flammable atmosphere, such as flammable or explosive gas. If not, it may cause explosion or fire.

⚠ Warning : 1. Do not operate the pump with blocking a pipe of exhaust side. A motor stops by an electrical overload, which causes a burn, a fire, or motor damage by fire.
2. Do not decompose or remodel the pump. It causes an injury, an electric shock, or a fire by abnormal operation.
3. Never touch rotational part either by a finger or a thing by any means. It causes an injury or a breakage failure.
4. Do not insert either a finger or a thing into vacuum port. It causes an injury or a breakage failure.
5. Turn off the power when abnormality such as unusual noise or odor or smoking is detected. If operation is continued under such abnormal conditions, it will cause an electric shock and a fire.
6. This product is designed as indoor use. When it is used outdoors and exposed to wind or rain, motor becomes insulation failure, and it causes an electric shock or a fire.
7. Do not pour water on a pump and a motor directly nor wash with water. Moreover, do not use it at a place which expose to a liquid. It causes an electric shock, a fire, and failure.
8. Do not touch electrical wire before disconnecting the power source from the motor system for safe isolation. It causes electric shock or fire.
9. Connect the ground wire to the nearest ground terminal. Incomplete grounding could result in electric shock in case of a failure or electric leakage.
10. When wiring to the motor, connect the wires by following the enclosed motor handling instruction manual in the way that thermal protector activates. Use with the wiring that the thermal protector does not activate causes a fire.
11. Inspection & maintenance work should be done only after turning off the power source. For power switch built-in type, make sure to disconnect the power plug from a power socket.
12. Do not damage, bend, pull, or bind the power cord. Do not place heavy objects on it nor let it get caught or pinched. Damage to the cord result in electric shock or fire.
13. Install a Earth Leakage Circuit Breaker by an expert engineer or a qualified electrician. Failure to heed this requirement will result in electrical shock or fire.
14. Installation on a device and replacement should be done by a person with sufficient knowledge and experience.

⚠ Caution : 1. Do not operate the product outside the voltage range specified for the motor. Operation with any voltage other than the rated voltage specified for the motor may result in failure or accident.
2. Do not vacuum compressed air or gases by the vacuum pump. It causes damage to the pump.
3. Since the rotary vacuum pump is the delicate and precision equipment, make sure to install a vacuum filter, which filtration rate is 5μm or less, on vacuum port in order to prevent water mist, dust or particles entering the pump. It causes deterioration in a lifetime or damage of the pump when they enter.
4. Do not lubricate the rotary vacuum pump.
5. Install the rotary vacuum pump with motor axis becomes horizontal.
6. Shock to the pump causes malfunction.
7. Do not use in a closed environment where the motor temperature may increase. This may result in the motor life shortened.
8. Storage and operation must be kept away from place with 4.9m/s^2 or more vibration, a shock, dust, iron powder, oil mist, combustible materials, or corrosive gas (H_2S, SO_2, NO_2, Cl_2, etc.).
9. Push-in fittings permit a leakage. Use compression fittings if there is any usability problem.
10. When transporting the pump, do not hold the sealed connector part or power box on the pump. It causes damage to the pump.
11. The final vacuum and the pumping speed described in the specification are confirmed at the time of delivery inspection according to our standard. The performance after normal operation for a certain running period of time will be shown in the table below possibly.

• Table. Final vacuum and pumping speed based on the running period

Type	Operation period	Final vacuum		Pumping speed
RPV062 RPV063 RPV064	3 years	50Hz	12kPa abs -89.3kPa G	-20% compared with specification value
		60Hz	10kPa abs -91.3kPa G	
RPV06A	1 year	50Hz	1.2kPa abs -100.1kPa G	-20% compared with specification value
		60Hz	1.0kPa abs -100.3kPa G	

*The values are based on our operating conditions. The product life varies depending on the operation conditions and the inhaled gas (moisture or dust), etc.