

Vacuum Right Angle Valve

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1. Foreword

This manual applies to VPC right angle valve. Product covers pneumatic angle valve and its related options and accessories.

➤ If the operator could not find relevant information in this manual, please contact VPC

2. Product Series ----- AVP (pneumatic)

VPC vacuum right angle valve are divided into two groups:

- a. Small Series - Pneumatic HV angle valve
- b. Large Series - Pneumatic HV angle valve

AV -- Series	Type	Flange type
KF10~KF50	air open-spring close	KF / CF
ISO63~ISO320	air open-air close	ISO /CF

3. Operating Principles

3.1 Operating theory:

Small valve from KF10~KF50 are normally closed. In the event of air failure, valve automatically closes by a spring. To open, pressurized air goes into the inlet of cylinder housing, pushes the piston up to open the valve. Muffler is used to silence exhaust air. To close, air is released, spring pushes piston down to closes the valve. Air flow sequence logic is controlled by a 3-way solenoid valve.

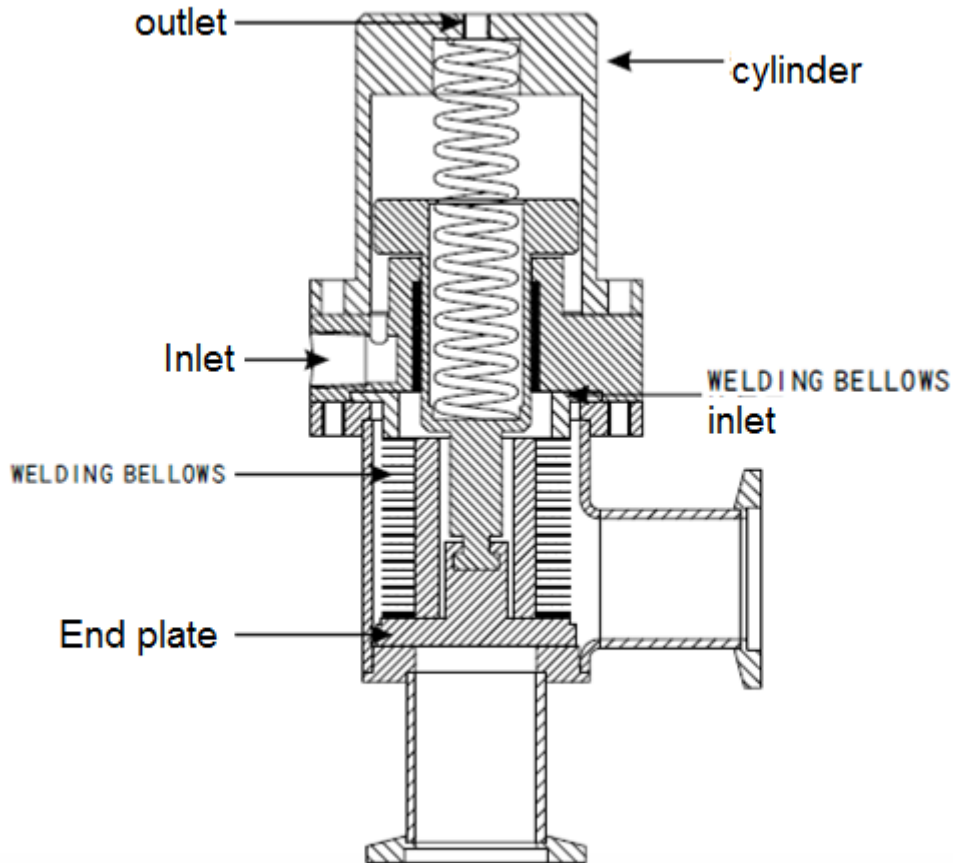


Figure 1: KF 16 ~ KF 50, air open - spring close

Large valve from ISO63~ISO320 are double-acting (air-open and air-close). Pressured air feeds into inlet side of cylinder housing, pushes the piston up to open the valve. When pressured air is switched to the outlet side of cylinder housing, piston is pushed down, thus closes the valve. Air flow sequence logic is controlled by a 4-way solenoid valve.

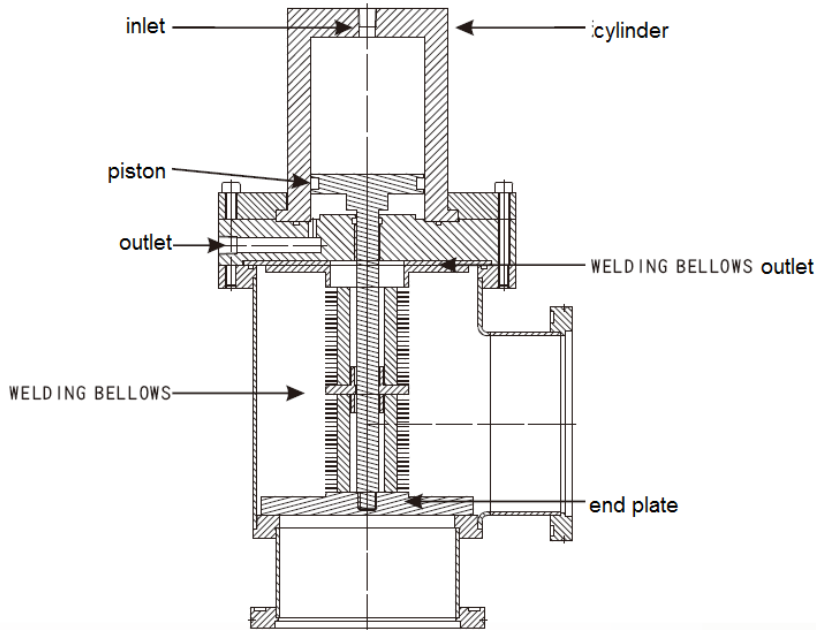


Figure 2: ISO63 ~ ISO320, air open – air close

4. Safety procedures and risk prevention

4.1 Install Notes

After installation, leak test to ensure that the system is in good vacuum environment. Make sure solenoid valve, sensors or other accessories are operating properly.

4.2 Handling Precautions

Wear lint-free gloves before handling the valves. Use caution if valve was under high temperature. Disassemble small valve size KF40~KF50 with an aid of mechanical press. Small valve has strong extension spring inside and needs to be held down during assembly or disassembly

4.3 Warranty

Disassembly of product automatically voids the warranty. Assembly of valve by untrained person can lead to poor performance or functional failure. Contact manufacturer for any special requirement.

4.4 Maintenance Considerations

Use factory certified maintenance kit for replacement or maintenance.

4.5 Notice of dangerous substances

When valve was exposed to dangerous materials (flammable, explosive, corrosive) operator must exercise caution when opening the valve. Make sure adequate ventilation is used to suck the exhaust fume away from operator.

5. Operating environment and installation information

5.1 Specifications

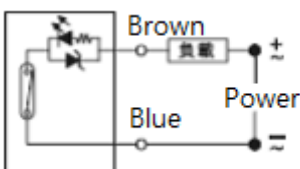
Pressure range is suitable for	5 Bar ~ 1×10^{-8} mbar	3750 Torr ~ 7.6×10^{-9} Torr
Leak rate	1×10^{-9} mbar L / S, River	1×10^{-9} Torr I / s, He
Maximum operating temperature	100°C	212°F
Min. operating temperature	0°C	32°F
Bake temperature	150°C	320°F
Rated maximum pressure(closed)	2 bar	1500 Torr
Rated operating pressure cylinder	5.89bar	85 psi
Product rating life	AM350 Welding bellows: 1,500,000 316L Welding Bellows: 800,000	

5.2 Sensor Specifications:

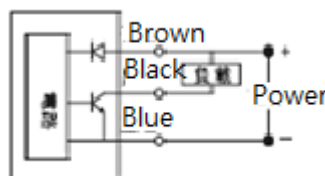
Product available in two different specifications for use

Wiring methods	3-wire (NPN / PNP) / 2-wire (Reed)
Use the maximum switching current voltage	12~24VDC (3wire) / 12~240VAC (2-wire)
Switching current voltage range	200 mA. max.
LED Color	NPN-Red, PNP-Green, Reed-red

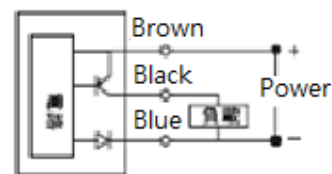
5.3 Second-line type Reed



3-wire NPN



3-wire PNP

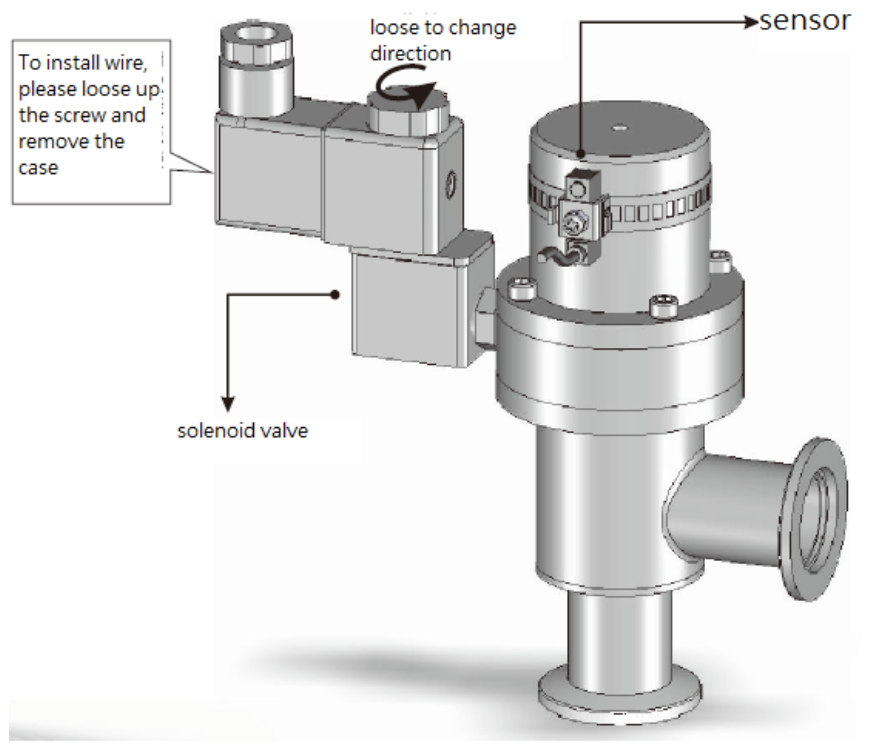


5.4 Sensor parts list

5.6 Solenoid valve Specifications

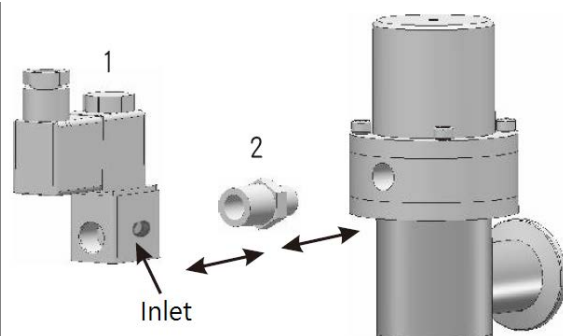
Over aperture	1/8" NPT (single action) / 1/4" NPT (double action)
Voltage option	DC: 24V AC: 110V / 220V
Maximum pressure	12 kgf / cm ² (170 psi)

5.7 KF10, F16, KF40, KF50 -- Assembly



5.8 Solenoid parts list

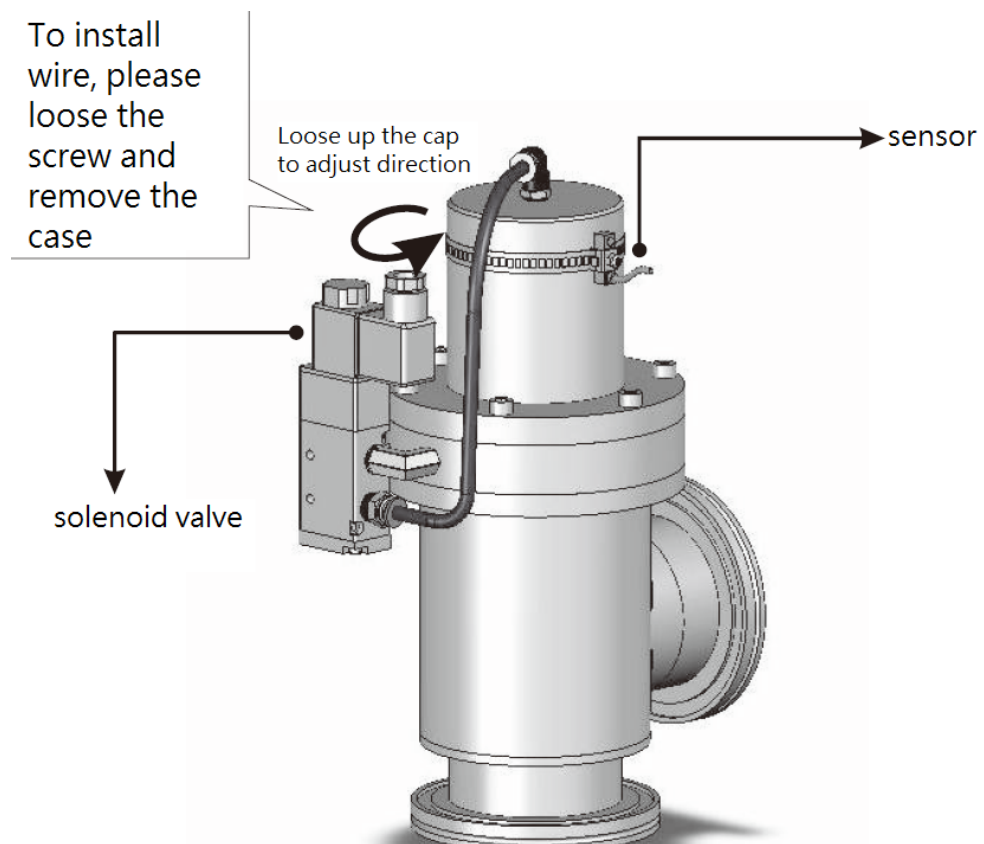
No	Accessories
1	3-Way solenoid valve
2	1/8" NPT x 1 / 8" NPT
3	1/8" NPT screw cap



Solenoid installation

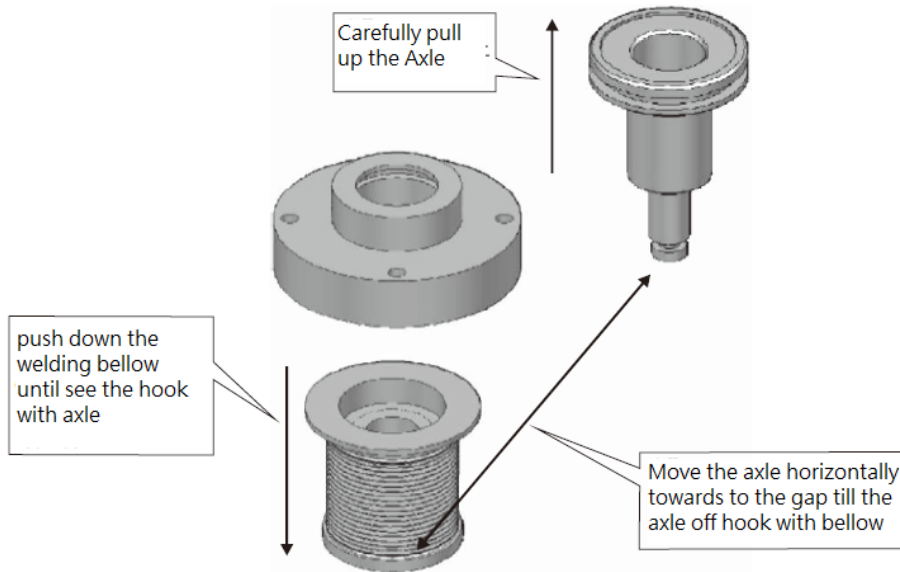
1. Fasten 1/8" NPT fitting to solenoid.
2. Install solenoid valve to cylinder air inlet.

5.9 ISO63~ISO320 Assembly



5.10 Bellows installation

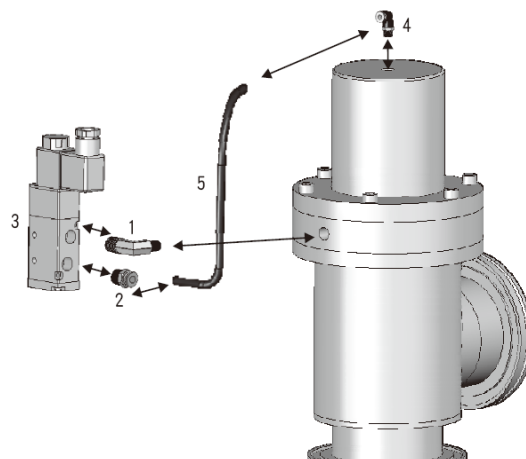
- Step1: compress bellows down firmly by hand until you can see hooked position.
- Step2: engage piston's shoulder end to the hook inside bellow.
- Step3: release hand gently.



5.11 Solenoid parts list

NO	Accessories
1	1/8" NPT x 1/4" pipe fittings
2	1/4" NPT x 6 mm
3	Double-acting solenoid valve
4	1/8" NPT x 6mm air fitting
5	6mm pneumatic tube

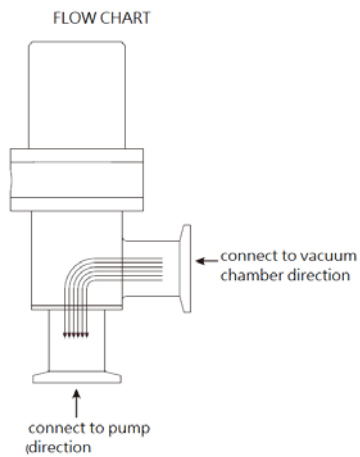
5.12 Solenoid valve installation



5.13 Connect to external piping

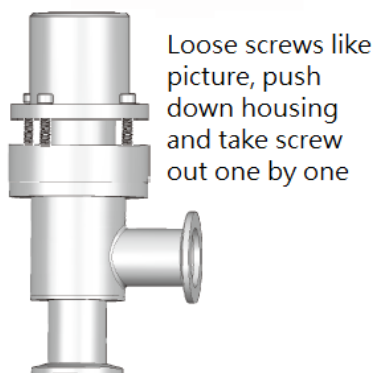
Make sure that vacuum pump-side connects to the bottom port, while the side port connects to a vacuum chamber side.

- * Vacuum gas flow direction
- * Side port connects to vacuum chamber
- * Bottom port connects to vacuum pump

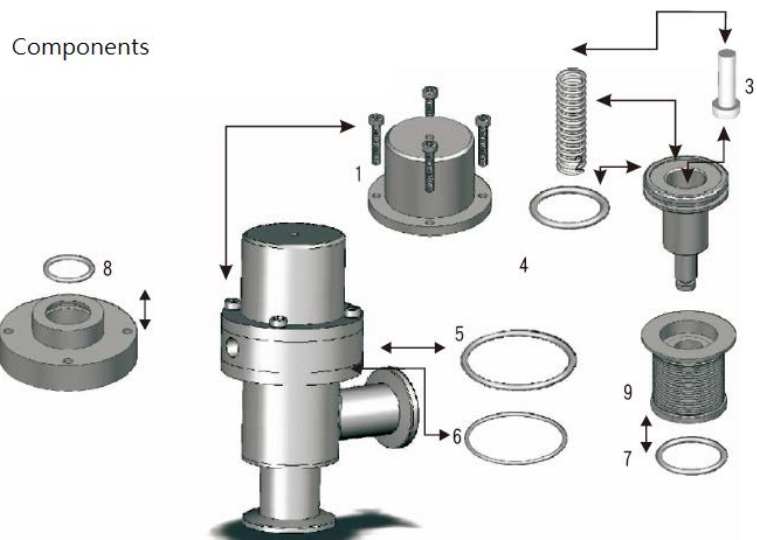


DIY maintenance

KF16, KF40, KF50 parts diagram



When removing the screws, pay attention to spring pop-up.
For safety reason, it is recommended not to immediately remove the screws,



NO	Name
1	Screw
2	Spring
3	Spring fixtures- KF40 / KF50
4	O - Ring # 1 -spindle
5	O - Ring # 2 -cylinder
6	O - Ring # 3 -valve caps
7	O - Ring # 4 -valve cover
8	O - Ring # 5 -sleeve
9	Welding Bellow

(8), AM350, life cylce to1,500,000 times.

316L material, life cycle to 800,000.