

User Manual

Rectangular Gate Valve

Product No : V70-P-0533-8-1-BPAZFABA

Series V70

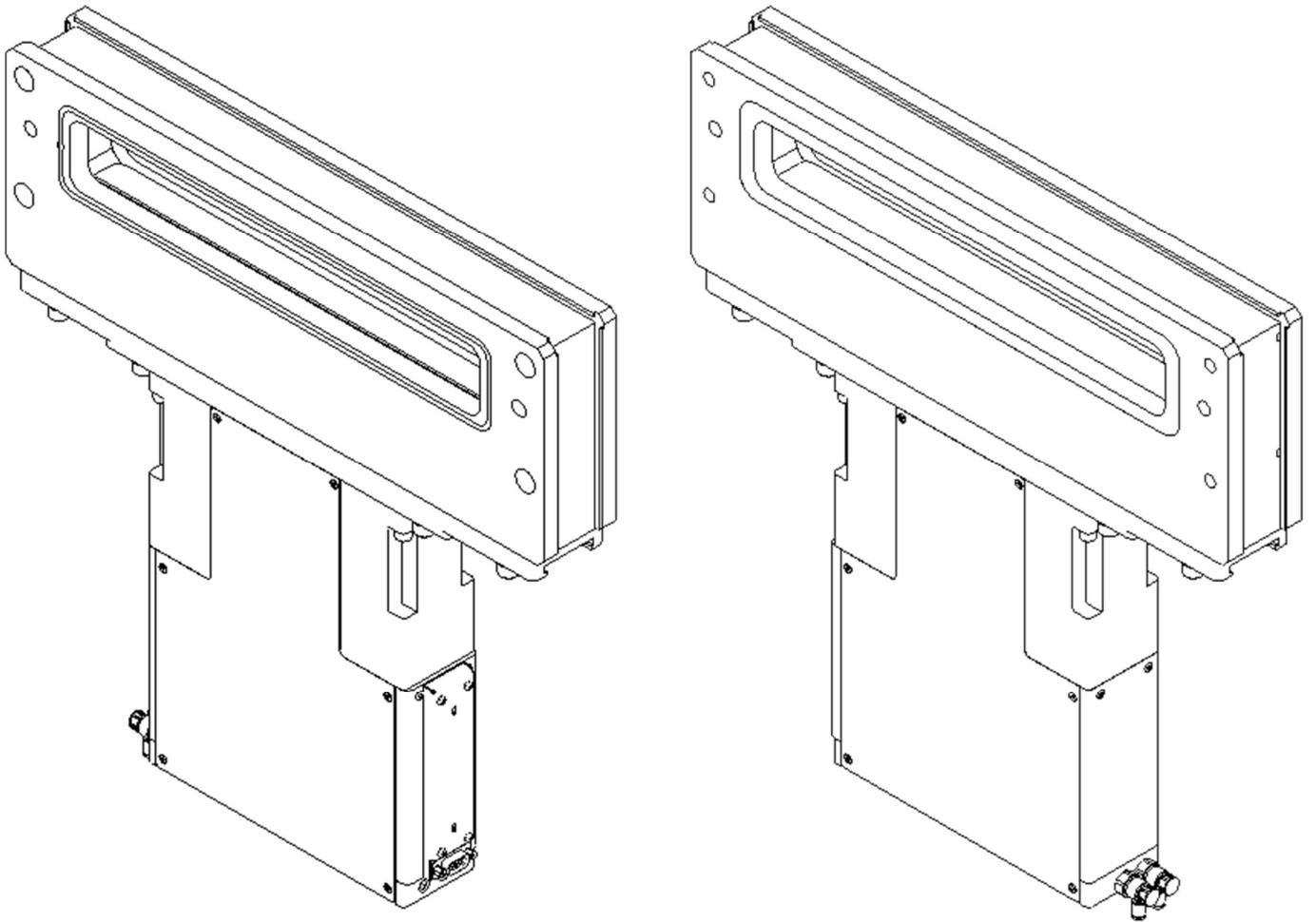


Table of Contents

Summary	2
Product Package, Warranty Period	2
Request for Repair and Other Information	2
Explanation on Product	3
Product Specification	3, 4
Product Outside View	5, 6
Explanation on Each Part of the Product	7
Operation Principle	7
Control	8
Installation and Use of the Product	9, 10
Maintenance and Repair	11, 12, 13
Troubleshooting	14
Address and Contact Number	14

Rectangular Gate Valve / Series V70

■ Summary

We sincerely thank you for adopting our Rectangular Gate Valve.
We stated the contents for the safest and correct use of the Product in this Manual.
Please check and be well-informed of the contents of this Manual before using the product.

■ Product Packaging

This Product is consigned in the condition and form stated in the image below.
(※ The pictures below may differ from the real ones, please refer to them.)
Please check the status of the BOX when opening the product, and if there is any damage or pollution please check the detailed contents and contact us.



■ Warranty Period

The warranty period of this Product is 1 year, and we provide free warranty repair during the warranty period for the failure or defect which occurred during the normal transportation or operation of the product. But, please consider that in the following cases there may be charged specific fees after the reparation.

- 1) Failure due to natural disasters.
- 2) Failure due to improper and negligent use of the product after installation.
- 3) Failure which occurred due to the use in an environment which does not comply with the product specifications.
- 4) Failure due to repair or modification by any person other than the service personnel of the Company.

■ Request for Repair and Other Information

In case of any anomaly of the product please check the contents of the Troubleshooting Item (Page 13) in this Product Instruction Manual, and if the reparation is required, please let us know the Product Number, Management Number and the Trouble which occurred.

Additional 1) Please refer to the contents of Page 13 for more detailed information.
Additional 2) Please consider that the contents of this Manual may be modified without prior notice for the improvement of the product.
Also, if there is any unclear/imprecise matter in the contents of this Manual or any omission therein, please do not hesitate to contact us.

Rectangular Gate Valve / Series V70

■ Explanation on Product

Type of Product : Rectangular Gate Valve / 50x336 Slit Valve

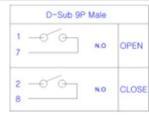
Product Number : V70-P-0533-8-1-BPAZFABA

■ Product Specification

1	Product Name (Series)		Rectangular Gate Valve
2	Product Number (Drawing No)		V70-P-0533-8-1-BPAZFABA-A
3	Fitting Standard		SEMI E21.1-1296
4	Gate Size (mm)		50 x 336
5	Pressure Range		1.0xE-7 Pa to 1.2xE5 Pa(abs)
6	Differential pressure on the gate in opening direction		≤ 0.12 MPa
7	Differential pressure on the gate in closing direction		≤ 0.12 MPa
8	Differential pressure at opening		≤ 0.003 MPa (3kPa) in either direction
9	Helium Leak Rate	External	< 1.0xE-10 Pa*m³/sec
		Internal	< 1.0xE-10 Pa*m³/sec
* Detecting for 30 seconds right after Helium spray (at 20°C)			
* No leak at the lowest allowed air pressure			
10	Feed through		Welded Bellows Seal
11	Actuator type		Double Acting
12	Air connection		OD Ø4, Speed Controller (Meter-out)
13	Volume of air cylinder		Open: 230cm³, Close: 200cm³
14	Air Pressure	Operation Pressure	0.5 MPa (Tolerance level : 0.45 ~ 0.6 MPa)
		Design Pressure	≤1 MPa
* Should be operated normally at the lowest allowed air pressure and no leak at the highest allowed air pressure			
15	Open / Close Time	Open	Min 1.5 sec (Setting 3.0 ± 0.5 sec)
		Close	Min 1.5 sec (Setting 3.0 ± 0.5 sec)
* Air Tube & length : OD Ø4, 2M / * Air pressure : 0.5 MPa / Solenoid valve : Flow Coefficient(Cv) 9.5mm²(0.53)			
16	Air Less Lock	Open	No
		Close	Lock
17	Mounting position		Drive section is turned to the top or bottom
18	Interface		* Refer to the drawing
19	Life cycles	Mechanism	1,000,000
		Bellows	1,000,000
		O-Ring(Seal)	1,000,000
		Lubrication	1,000,000
20	Temperature	Valve Body	≤ 120°C
		Gate(Seat)	≤ 120°C
		Actuator	≤ 60°C
21	Weight		< 17Kgf

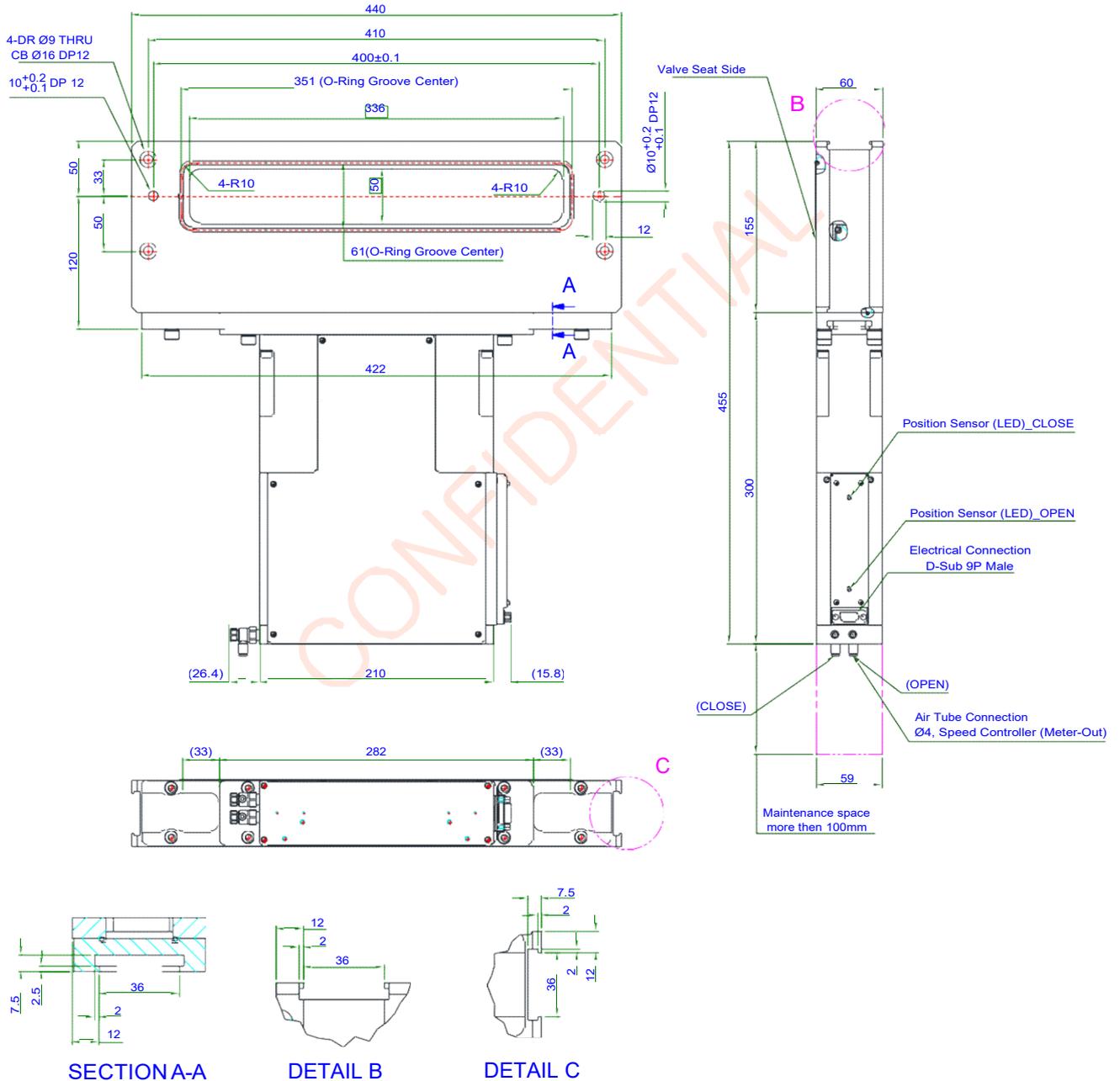
Rectangular Gate Valve / Series V70

■ Product Specification

22	Lubrication	Vacuum Inside	Non lubrication
		Mechanism	PFPE Grease
23	Materials	Valve Body	AL6061
		Gate(Seat)	AL6061
		Bonnet	AL6061
		Shaft(Stem)	STS304
		Mechanism(Cylinder)	AL6061,STS304
		Bellows	AM350
		Bellows End Piece	STS316L
		Valve Body Seal	FKM
		Gate Seal	FKM
		Bonnet Seal	FKM
		Vacuum Seal	FKM
Pneumatic Seal	FKM		
24	Surface treatment	Valve Body	Bare
		Gate(Seat)	Bare
		Bonnet	Bare
		Shaft(Stem)	Bare
		Actuator	Anodizing
25	Electrical Connection	Sensor	* Type : Reed switch * Q'ty : 2ea * Maker : HAMLIN * Model : 59045 - Load Voltage : 24Vdc - Load Current : 5~100mA - Operating In temperatures : -40~ 105 °C
		Connector	D-Sub 9P Male
		Pin Assign	
26	Warranty Conditions	1. In case of product failure within 12 months after delivery due to manufacturer's design fault, manufacturing fault, warranty repair or product exchange will be provided. (exception: No warranty when mechanical life cycles until first service is over even if within 12 months after delivery. 2. In-direct damage(e.g. process shut down cost) is not manufacturer's responsibility. 3. Consumable parts(O-rings, Grease) will be charged even if warranty period. 4. Product failure due to process gas, cleaning gas, by-product will not be warranted. 5. No warranty will be provided in case of instruction not-kept usage.	
27	Packing Specifications	1. First vacuum packing 2. Second box packing with buffer 3. Final examination report included	
28	Remarks / Optional	N/A	

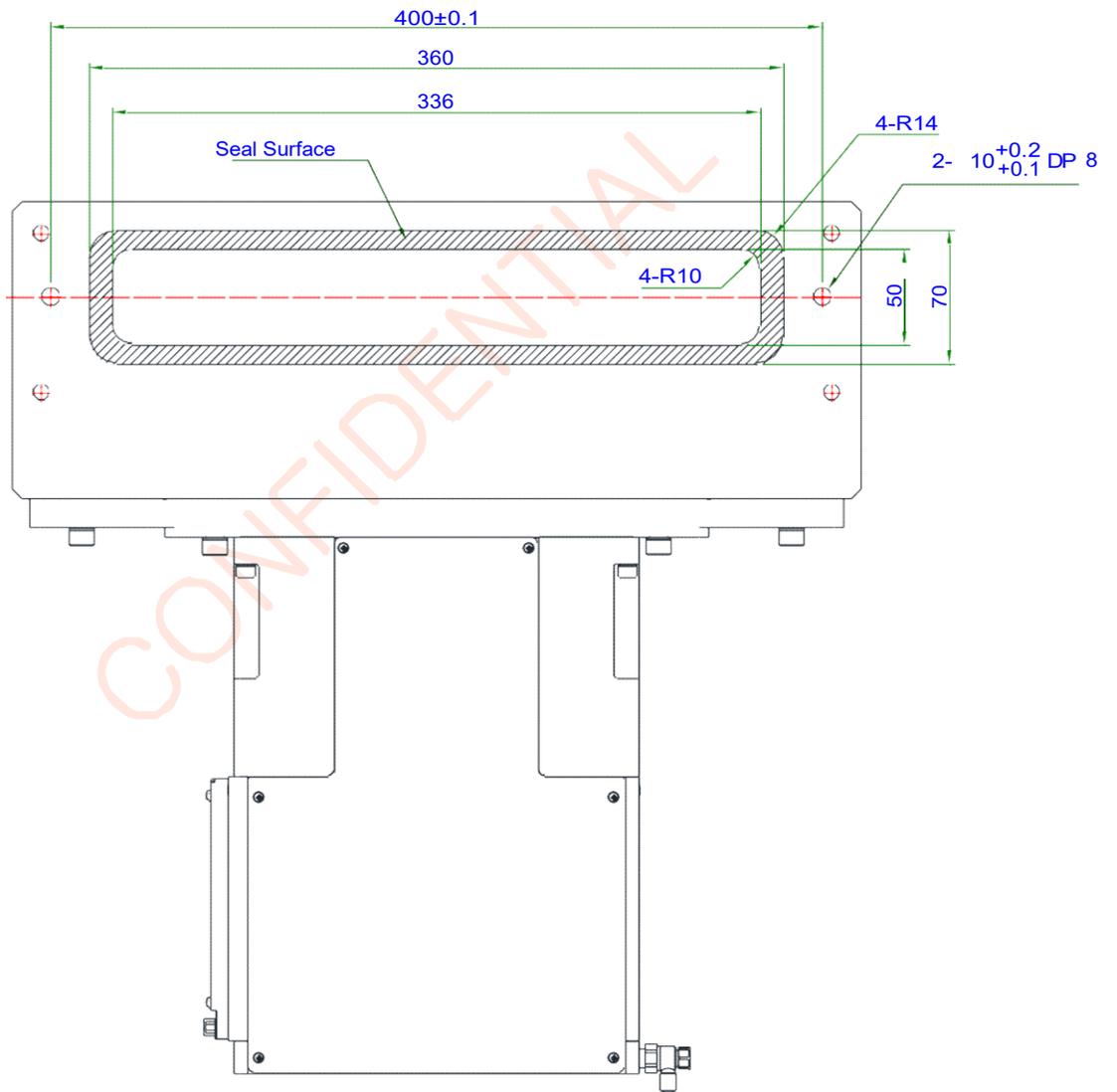
Rectangular Gate Valve / Series V70

■ Product Outside View



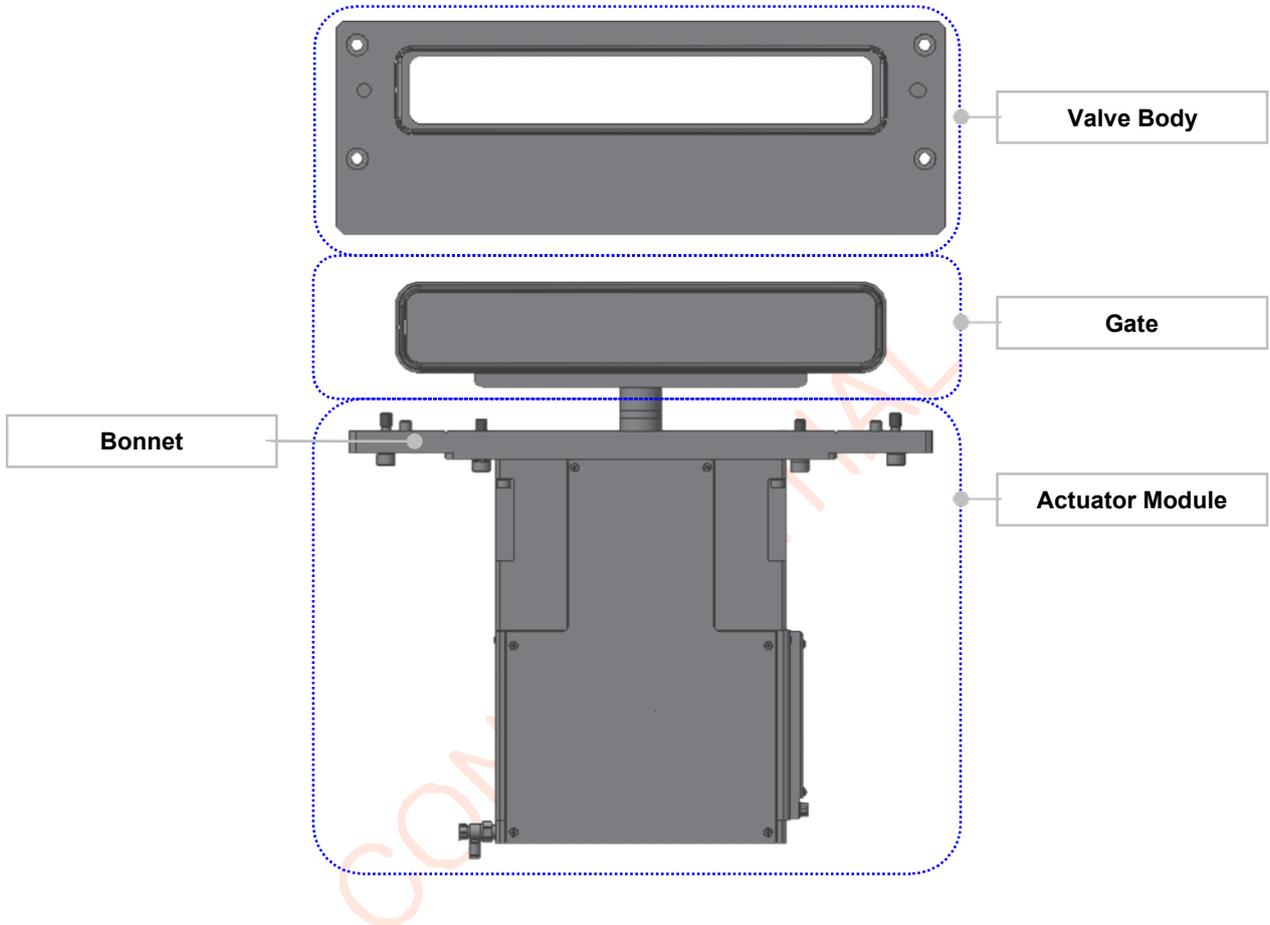
Rectangular Gate Valve / Series V70

■ Product Outside View

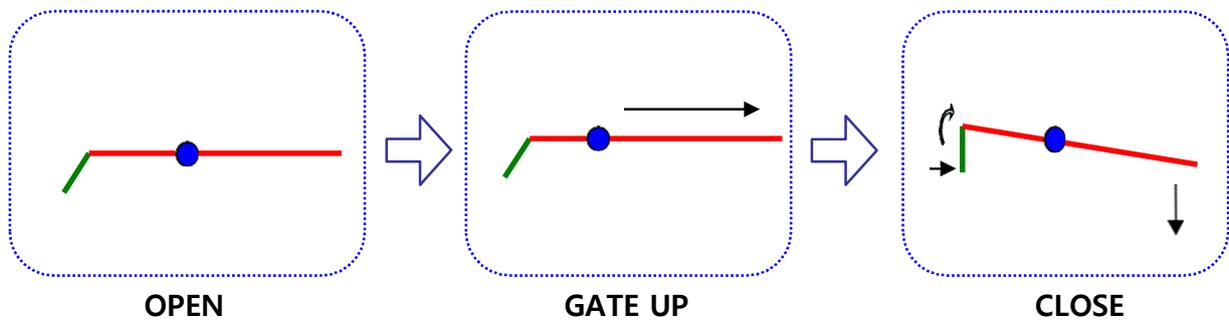


Rectangular Gate Valve / Series V70

■ Explanation on Each Part of the Product



■ Operation Principle



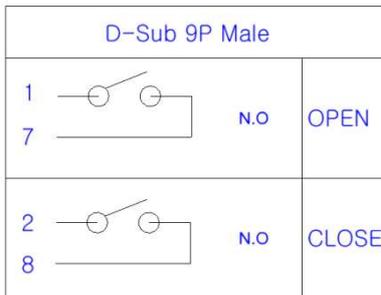
Rectangular Gate Valve / Series V70

■ Control

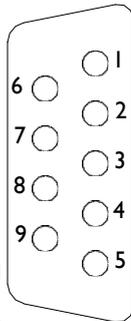
- 1) It is processed with D-Sub 9P Male Connector.
- 2) The Auto Switch applied in this product is the 59045 of HAMLIN.
- 3) Please perform the wiring work referencing the following image for the safest and correct use of this product.

⚠ (Caution) Always connect after checking if the voltage supplied to the product is complying with the Product Specification.

1. Valve Connector



Wiring diagrams

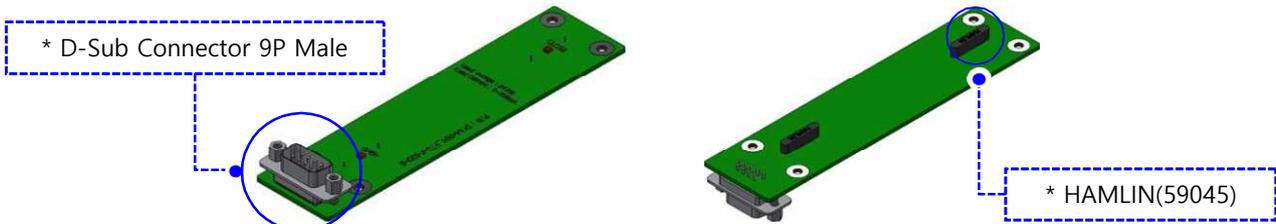


D-Sub 9P Male Connector

Pin No.	Description	
1	Open	(+)
2	Close	(+)
3	No Connecting	
4	No Connecting	
5	No Connecting	
6	No Connecting	
7	Open	(-)
8	Close	(-)
9	No Connecting	

2. Sensor

Electrical Specifications and Operating Characteristics			Form A SPST-NO Standard	Form A SPST-NO High Voltage
Contact Type				
Contact Rating		Watt - max.	10	10
Voltage	Switching	Vdc - max.	200	300
	Breakdown	Vdc - min.	250	450
Current	Switching	A - max.	0.5	0.5
	Carry	A - max.	1.0	1.5
Resistance	Contact,Initial	Ω - max.	0.2	0.2
	Insulation	Ω - min.	10 ¹¹	10 ¹¹
Capacitance	Contact	p F - typ.	0.3	0.2
Temperature	Operating	°C	-40 to +105	-20 to +105
	Storage	°C	-65 to +105	-65 to +105
Time	Operate	ms - typ.	1.0	1.0
	Release	ms - typ.	1.0	1.0
Shock	11 ms 1/2 sine	G - max.	100	100
Vibration	50-2000 Hz	G - max.	30	30



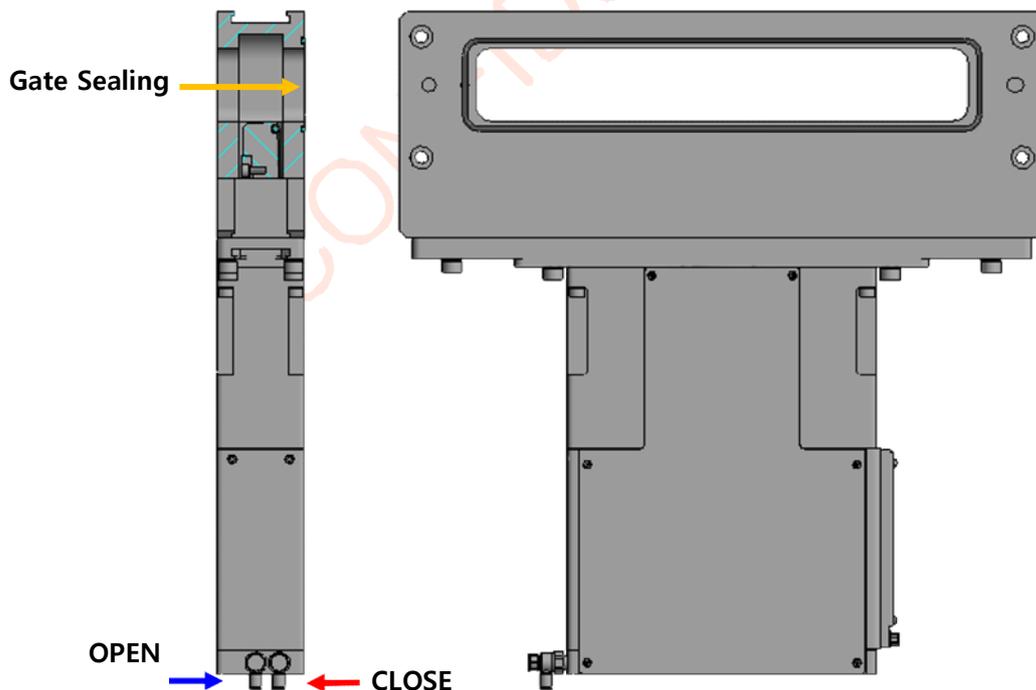
Rectangular Gate Valve / Series V70

■ Installation and Use of Product

1. Precautions and Warnings

- 1) Please clean the product before installation to prevent any intrusion of foreign substance into the Valve.
(Reference) The product is consigned after being cleaned before consignment.
- 2) Install the product in the vacuum SYSTEM, and perform the AIR TUBE and wiring works.
 (Caution) There may occur accident due to malfunction or negligence.
- 3) Please do not touch the product when it is running.
 (Danger) There is risk of amputation (cut) and confinement.
 (Danger) There is risk of electric shock.

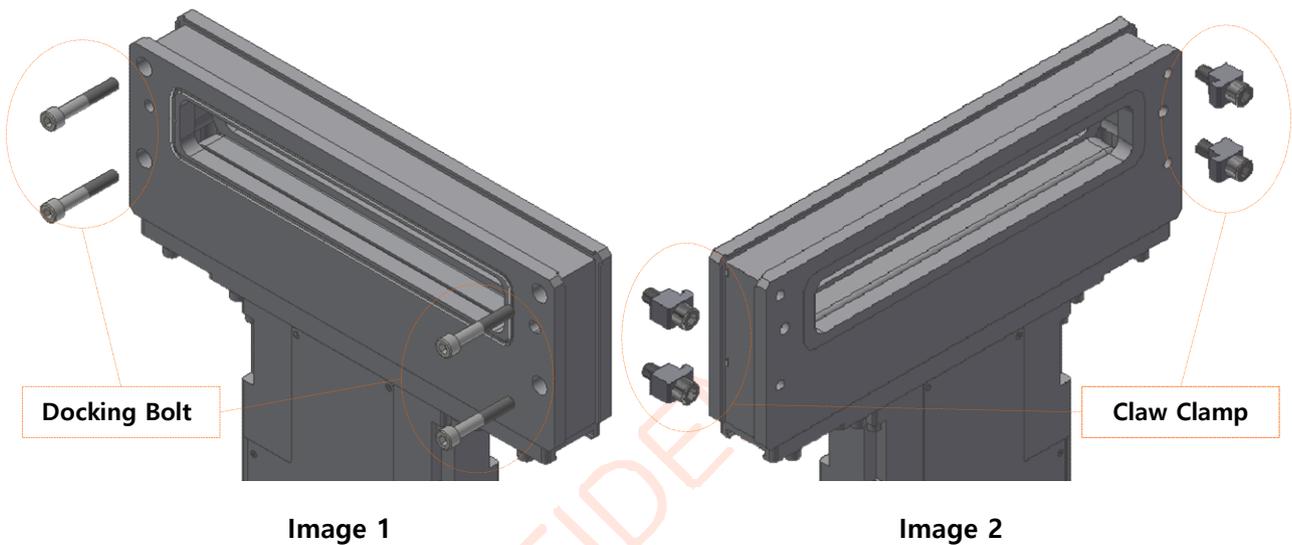
2. Installation of VALVE in the Vacuum SYSTEM



- 1) Compressed air pressure: 0.5 MPa (Tolerance level: 0.45~0.6MPa) / 62-87 psi
- 2) Air Connection: OD Ø4
Connect the tube according to the "Open, Close" label. (Refer to the Image)

■ Installation and Use of Product

3. VALVE installation in vacuum system.



- 1) Please perform the fixing into the equipment by using the Docking Bolt as stated in the "IMAGE 1".
- 2) After completing the installation of "IMAGE 1", use the Claw Clamp and fix according to the direction stated in the "IMAGE 2".

 (Caution)

- Check the status of Seal O-Ring of the attaching part before operation
(There may occur Leak due to foreign substances or by damage in the O-Ring)
- Check the installation location and attachment status
(Leak may occur if the attachment status is faulty or when the installation location is incorrect)

■ MAINTENANCE AND REPAIR

1. Maintenance and Preparation for Operation

No particular maintenance is required for this product under Clean Environmental Conditions during the designated cycle, but according to the utilization environment, the user may be required to perform maintenance or repair before the designated cycle.

 (Caution) Please perform the operation in Clean Environment to prevent entrance of any pollution or particle into the product, and please be fully informed on matters on handling such as installation or operation for the safety of the operator before operation and pay special attention.

1.1 Parts and Tools for Maintenance

- 1) Wrench set (mm)
- 2) O-Ring Pick
- 3) Rubber Gloves
- 4) D.I.(Deionize) Water
- 5) Clean Wiper

1.2 Base Operation

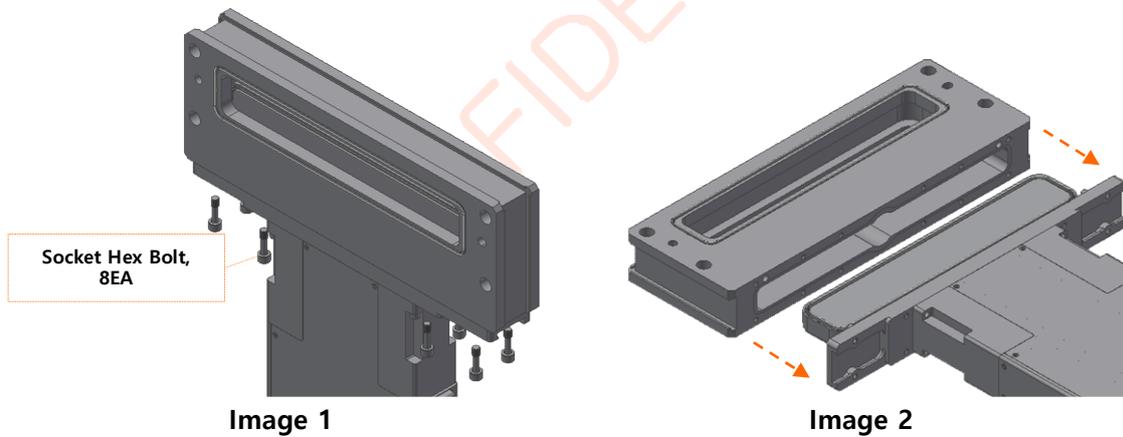
- 1) Chamber → Vent, Valve → Make to OPEN Status.
- 2) Separate the compressed air and power supply connections from the valve.

■ MAINTENANCE AND REPAIR

2. Gate & Bonnet Seal Replacement

 (Caution) Engineers in the field should release the vacuum of the equipment and disconnect the electricity

- 1) Cut off the power Connection of the POWER CABLE on the equipment side Connected to the valve.
- 2) Loosen the Socket Hex Bolt 8EA. (Image 1)
- 3) Separate the Actuator Module in the direction shown in the Image below. (Image 2)
- 4) The separated Valve Body is cleaned using D.I.(Deionize) Water. (Image 2)
(Ethanol can be used depending on the clean environment, and cleaning may vary if the degree of contamination is severe.)



■ MAINTENANCE AND REPAIR

2. Gate & Bonnet Seal Replacement

- 5) Loosen the Wrench Bolt and then Separate the Gate. (Image 3)
- 6) Replace Gate O-Ring (AS568A-375), Bonnet O-Ring (AS568A-178). (Image 4, 5)
- 7) Perform the assembly to the order contrary to this content after completing the operation.

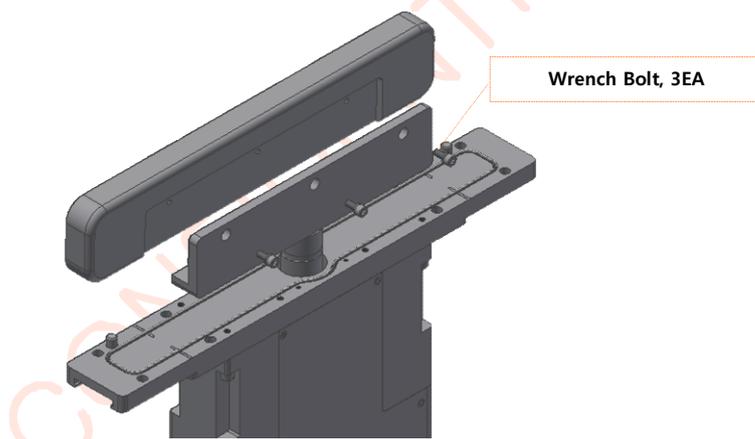


Image 3

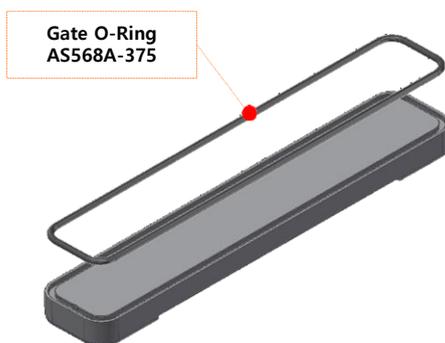


Image 4

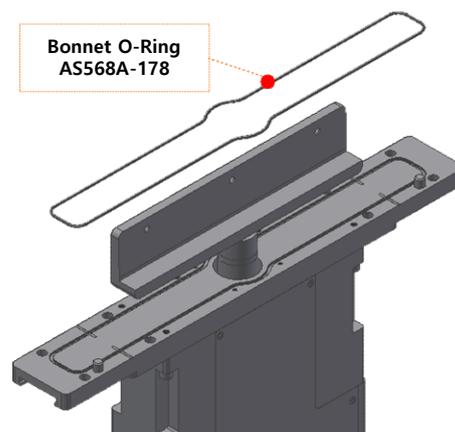


Image 5

■ Troubleshooting

1) When you have an issue in using it, refer to the tabulation below.

And when you feel repair needed, request us for repair.

 (Caution) Periodical Maintenance is recommended on customer's process circumstances.

2) Let us know the model number, and the detail of the issue. That will help us make a fast reaction.

Issue	What to check	How to act
Operation	Air cylinder leak check	Cylinder repair or replacement; request for repair
	Air pressure	Air pressure(CDA) adjustment
	CDA connection	Air Tube connection fix
	Position indicating sensor	Sensor adjustment/replacement; or request for repair
Sensing Signal	Connector connection	Connector replacement
	Position Sensor	Sensor adjustment/replacement; or request for repair
Internal leak	Gate seal contamination	Cleaning
	Gate seal damage	Seal replacement
	Air pressure	Air pressure adjustment
External leak	Housing seal contamination	Cleaning
	Flange leak	Cleaning and/or Flange O-ring replacement
	Bellows leak	Request for repair
	Bonnet seal damage	Seal replacement and/or Request for repair