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Vacuum Gate Valves

SCIENCE PROBE Products

- ▶ HV GATE VALVE
- ▶ UHV GATE VALVE
- ▶ SPECIAL GATE VALVE
- ▶ SHIELD GATE VALVE
- ▶ 3rd POSITION GATE VALVE
- ▶ MULTI POSITION GATE VALVE
- ▶ HEATING GATE VALVE
- ▶ CONTROL SYSTEM GATE VALVE
- ▶ ALUMINUM GATE VALVE
- ▶ TRANSFER VALVE
- ▶ LARGE GATE VALVE (CUSTOMIZED LARGE VALVE)
- ▶ TRIPLE PREVENTION GATE VALVE
- ▶ CLAMP

Overseas Business Partners

World Best Science Probe

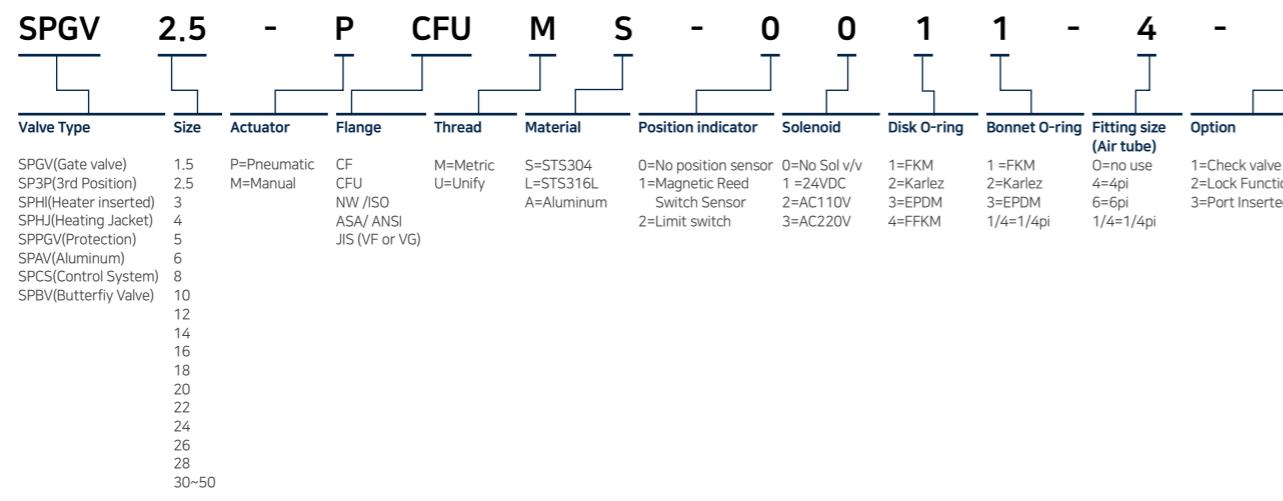
Our goal is Global Network Build.
Enlargement Semiconductor & Semiconductor
Equipment Markets.
Strengthen Global Competitiveness by Expanding
Overseas Market.



Science Probe Products

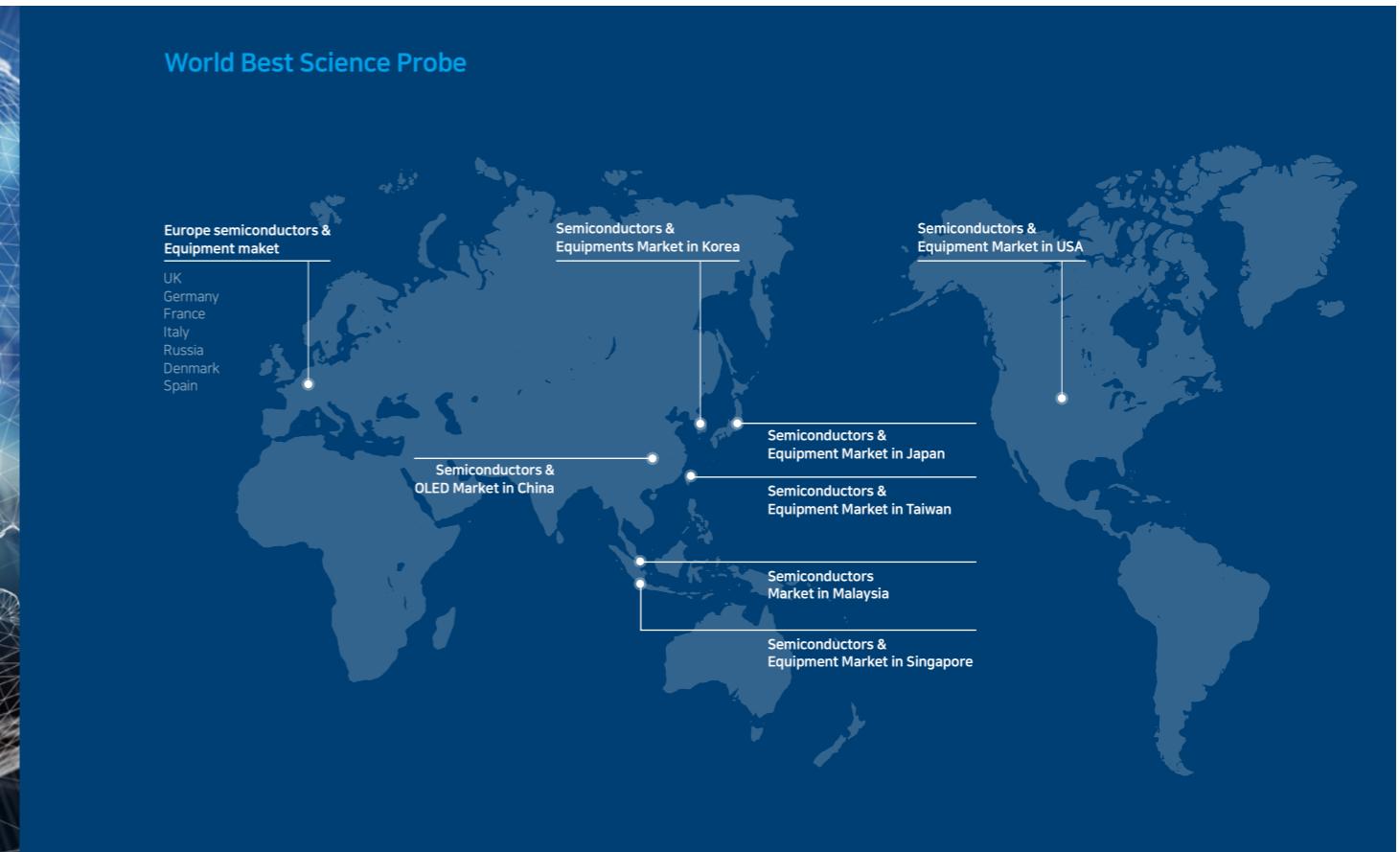
Ordering number

SP Ordering Number Configurator for Reference only

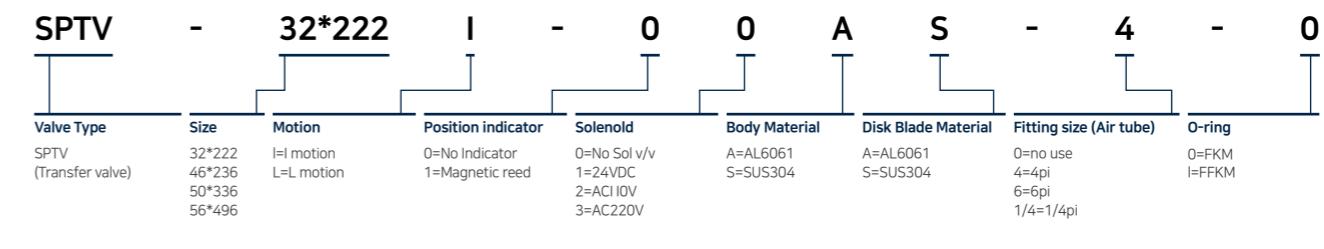


※ If you want 3rd position gate valve with flange and size ISO100, ordering number : SP3P4-PISO(For the 3rd position gate valve, only the pneumatic type is available.)
※ The number after the thread is optional, and you can write it directly in the PO or write a longer ordering numbers in the example above.

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Ordering Numbers for Transfer Valves



Science Probe Product

HV GATE VALVE



- Low Particle by Ceramic Ball Mechanism
- Easy Maintenance using Repair Parts Kit
- Applications: Pump isolation

Science Probe Product

UHV GATE VALVE



- Low Particle by Ceramic Ball Mechanism
- Easy Maintenance using Repair Parts Kit
- Applications : UHV isolation in research and industry

Specifications

GATE SEAL TYPE	HV GATE VALVE
Operation	Manual / Pneumatic
Flange Size (ID)	1.5"~14"
Flange Type	ISO, JIS, ASA, CF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	1.5"~ 6": 1×10^{-10} mbar to 1400 mbar 8"~ 14": 1×10^{-10} mbar to 1200 mbar
Differential pressure at opening	≤ 30 mbar

Differential pressure on the gate	1.5"~ 6": ≤ 1400 mbar / 8"~ 14": ≤ 1200 mbar
Leak rate	< 1×10^{-10} mbar l/sec
Cycles until first service	250,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80°C
Bake Temperature	≤ 150 °C
Materials	Body (Stainless Steel304 or 316L) / Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4~7 bar

Specifications

GATE SEAL TYPE	UHV GATE VALVE
Operation	Manual/ Pneumatic
Flange Size (ID)	1.5"~ 12"
Flange Type	CF
Feedthrough	Welded Bellows (AM350 or STS316L)
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Cu Gasket
Response Time	≤ 2 sec
Operate Pressure Range	1.5"~ 6": 1×10^{-10} mbar to 1400mbar 8"~ 12": 1×10^{-10} mbar to 1200mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	1.5"~ 6": ≤ 1400 mbar / 8"~ 12": ≤ 1200 mbar

Leak rate	< 1×10^{-10} mbar l/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 250 °C
Teamperature for Actuator	≤ 150°C
Temperature for Position Indicator	~ 150°C
Bake Temperature	≤ 200 °C
Materials	Body (Stainless Steel304 or 316L) / Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4~7 bar

Science Probe Product

SPECIAL GATE VALVE



- Easy Maintenance using Repair Parts Kit
- Wire up Solenoid Valve & Position Sensor to 15 Pin D-Sub Connector
- Limit Switch
- Lock Function
- Speed Controller & Solenoid Valve(2 Port+ N2 Port) are connected by Stainless Steel Tube (60)
- Applications: Pump isolation, High level of process by product in the gas stream

Science Probe Product

SHIELD GATE VALVE



- Less than 1 mm gap between valve body and blocker
- Prevents in flow gas(powder) into inside of valve body
- Applications: Pump isolation, High level of process by product in the gas stream

Specifications

GATE SEAL TYPE	SPECIAL GATE VALVE
Operation	Pneumatic
Flange Size (ID)	4" ~ 8"
Flange Type	ISO, JIS, ASA, CF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Viton O-Ring
Response Time	≤ 0.3 sec ~ 2 sec
Operate Pressure Range	4" ~ 6": 1x10 ⁻¹⁰ mbar to 1400mbar 8": 1x10 ⁻¹⁰ mbar to 1200mbar
Differential pressure at opening	≤ 30 mbar

Differential pressure on the gate	4" ~ 6": ≤ 1400 mbar / 8": ≤ 1200 mbar
Leak rate	< 1x10 ⁻¹⁰ mbar l/sec
Cycles until first service	250,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 60°C
Bake Temperature	≤ 150 °C
Materials	Body (Stainless Steel304) / Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Specifications

GATE SEAL TYPE	Shield GATE VALVE
Operation	Manual/ Pneumatic
Flange Size (ID)	2.5"~10"
Flange Type	ISO, JIS, ASA, CF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	2.5" ~ 6": 1x10 ⁻¹⁰ mbarto 1400mbar 8" ~ 10": 1x10 ⁻¹⁰ mbar to 1200mbar
Differential pressure at opening	≤ 30 mbar

Differential pressure on the gate	2.5" ~ 6": ≤ 1400 mbar / 8" ~ 10": ≤ 1200 mbar
Leak rate	< 1x10 ⁻¹⁰ mbar l/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80°C
Bake Temperature	≤ 150 °C
Materials	Body (Stainless Steel304) / Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Science Probe Product

3rd POSITION GATE VALVE



- 3 Position Function
 - Valve Open, Valve Close, 3rd POSITION
- Equipment can read valve state through connect to 9 Pin D-Sub of the Valve
- Manual and Pneumatic valve combination
- Applications: Any other process that requires pressure control

Science Probe Product

MUTI POSITION GATE VALVE



- Multi-position gate valves are essential in applications like the semiconductor industry where pressure where pressure & conductance are required
- Full open and close positions are controlled using a pneumatic solenoid valve with a position transmitter
- All position controls are operated by a controller
- Able to operate the remote controller by the interface

Specifications

GATE SEAL TYPE	3rd POSITION GATE VALVE
Operation	Pneumatic
Flange Size (ID)	2.5"~12"
Flange Type	ISO, JIS, ASA, CF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	2.5" ~ 6": 1x10 ⁻¹⁰ mbar to 1400mbar 8" ~ 12": 1x10 ⁻¹⁰ mbar to 1200mbar
Differential pressure at opening	≤ 30 mbar

Differential pressure on the gate	2.5" ~ 6":≤ 1400 mbar / 8" ~ 12":≤ 1200 mbar
Leak rate	< 1x10 ⁻¹⁰ mbar l/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 60°C
Bake Temperature	≤ 150 °C
Materials	Body (Stainless Steel304) / Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Specifications

GATE SEAL TYPE	Muti Position Gate Valve
Operation	Pneumatic
Flange Size (ID)	2.5"~12"
Flange Type	ISO, JIS, ASA, CF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	2.5" ~ 6": 1x10 ⁻¹⁰ mbarto 1400mbar 8" ~ 12": 1x10 ⁻¹⁰ mbarto 1200mbar
Differential pressure at opening	≤ 30 mbar

Differential pressure on the gate	2.5" ~ 6":≤ 1400 mbar / 8" ~ 12":≤ 1200 mbar
Leak rate	< 1x10 ⁻¹⁰ mbar l/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 60°C
Bake Temperature	≤ 150 °C
Materials	Body (Stainless Steel304) / Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Science Probe Product

HEATING GATE VALVE



- ▶ Heating Function using Jacket or Heater inserted
- ▶ Heating Controller
- ▶ Applications : Process with by products such as powder, gas

Science Probe Product

CONTROL SYSTEM GATE VALVE



- ▶ Body Material : Stainless Steel
- ▶ Compact Design
- ▶ Integrated pressure controller with stepper motor
- ▶ Applications: Any other process that requires pressure control and isolation

Specifications

GATE SEAL TYPE		HEATING GATE VALVE
Operation		Manual/ Pneumatic
Flange Size (ID)		1.5"~12"
Flange Type		ISO, JIS, ASA, CF
Feedthrough		Welded Bellows
Gate Seal		Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal		Viton O-Ring
Response Time		≤ 2 sec
Operate Pressure Range		1.5" ~ 6": 1 x10 ⁻¹⁰ mbar to 1400 mbar 8" ~ 12": 1 x10 ⁻¹⁰ mbar to 1200 mbar
Differential pressure at opening		≤ 30 mbar

Differential pressure on the gate	1.5" ~ 6":≤ 1400 mbar / 8" ~ 12":≤ 1200 mbar
Leak rate	< 1 x10 ⁻¹⁰ mbar l/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80 °C
Bake Temperature	≤ 200 °C
Materials	Body (Stainless Steel304) / Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Specifications

GATE SEAL TYPE		CONTROL SYSTEM GATE VALVE
Materials	Body	STS304
	Mechanism	STS304,STS420
	Gate Sealing	FKM(VITON)
Flange Size(ID)		1.5" ~ 10"
Feedthrough		Rotary Feedthrough
Actuator		Stepper Motor
He Leak Rate		1x10 ⁻⁹ mbar.l/sec
Pressure Range		1x10 ⁻⁸ mbar to 1.4 bar
Differential Pressure on the Gate		≤ 1.4bar
Differential Pressure at Opening		≤ 30mbar

Cycles until First Service	Pressure Control	1,000,000
Open/Close	200,000	
Temperature	Body	≤ 150°C
	Controller	≤ 35°C
Installation Direction	Any	
Interface	RS232, RS485, Devicenet, Profibus, EtherCat	

Science Probe Product

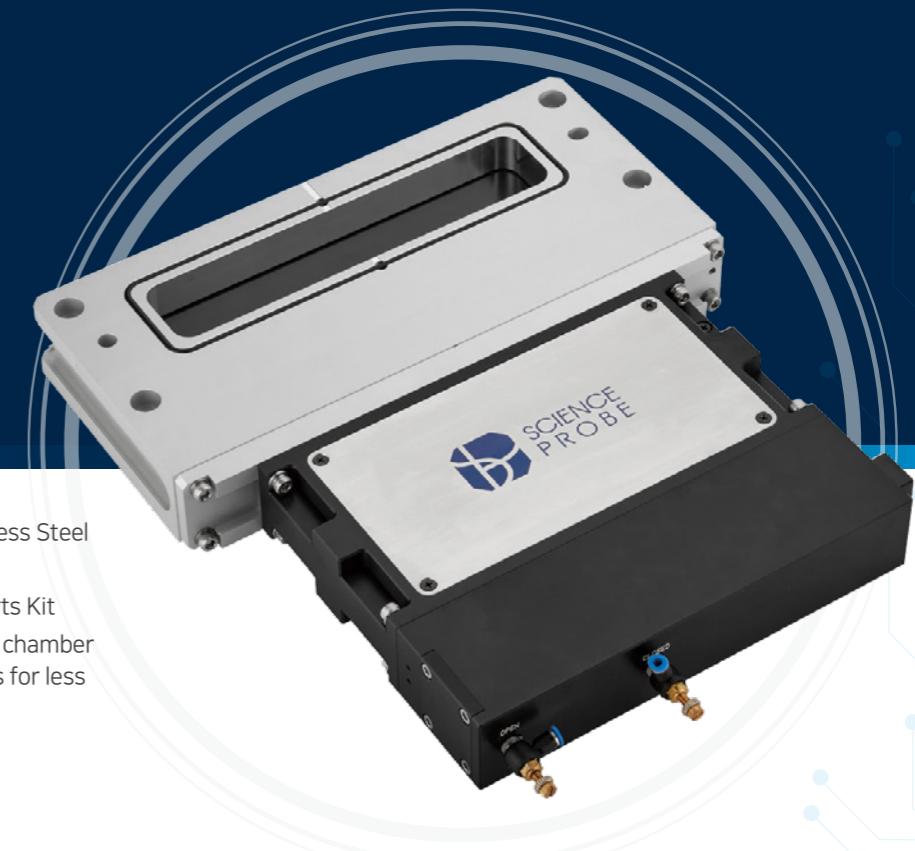
ALUMINUM GATE VALVE LIMIT SWITCH TYPE



- ▶ Proof of performance in mass production process equipment
- ▶ Consist of semi-permanent ceramic ball and leaf spring
- ▶ Applications : Suited to demanding purifier process and pipe line

Science Probe Product

TRANSFER VALVE (I-MOTION)



- ▶ Body Material : Aluminum or Stainless Steel
- ▶ Compact Design
- ▶ Easy Maintenance using Repair Parts Kit
- ▶ Applications: Transfer and process chamber isolation in semiconductor systems for less than 450mm wafers

Specifications

GATE SEAL TYPE		ALUMINUM GATE VALVE
Operation		Pneumatic
Flange Size (ID)		1.5"~10"
Materials	Body	AL6061 (Anodizing)
	Mechanism	AL6061 (Anodizing)
	Gate	O-ring (VITON)
	Vacuum Sealing	O-ring (VITON)
Response Time		≤ 3 sec
Actuator		Air Cylinder
Operate Leak Rate		<1x10 ⁻¹⁰ mbar l/sec

Operation time	≤ 200 °C
Pressure range	1 x 10 ⁻⁸ mbar to 1200 mbar
Differential pressure on the gate	≤ 1200 mbar
Differential pressure at opening	≤ 30 mbar
Cycles unit first service	100,000
Temperature for Valve Body	≤ 120°C
Temperature for Actuator	≤ 60 °C
Installation direction Any	Any
Operating Pressure(N2)	4 ~ 7 bar

Specifications

GATE SEAL TYPE	TRANSFER VALVE(I-MOTION)
Operation	Pneumatic
Flange Size (ID)	32 X 222 / 46 X 236 / 50 X 336 / 56 X 496
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Vulcanized Seal
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	1 x 10 ⁻⁸ mbar to 1200 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	≤ 1200 mbar

Leak rate	Stainless : < 1 x 10 ⁻⁹ mbar l/sec Aluminum : < 1 x 10 ⁻⁹ mbar l/sec
Cycles until first service	≥ 1,000,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80°C
Bake Temperature	≤ 200 °C
Materials	Stainless Steel304, AL6061 Anodizing
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Science Probe Product

TRANSFER VALVE (L-MOTION)



- ▶ Body Material : Aluminum or Stainless Steel
- ▶ Compact Design
- ▶ Easy Maintenance using Repair Parts Kit
- ▶ Applications : Transfer and process chamber isolation in semiconductor systems for less than 450mm wafers

Science Probe Product

BUTTERFLY VALVE



- ▶ Body Material : Aluminum or Stainless Steel
- ▶ Compact Design
- ▶ Integrated Controller High Performance
- ▶ Easy Maintenance using Repair Parts Kit
- ▶ Applications : Pressure control for semiconductors and industrial process

Specifications

GATE SEAL TYPE	TRANSFER VALVE(L-MOTION)
Operation	Pneumatic
Flange Size (ID)	32 X 222 / 46 X 236 / 50 X 336 / 56 X 496
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Vulcanized Seal
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	1 x 10 ⁻⁶ mbar to 1200 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	≤ 1200 mbar

Leak rate	Stainless: < 1 x 10 ⁻⁹ mbar l/sec Aluminum: < 1 x 10 ⁻⁹ mbar l/sec
Cycles until first service	≥ 1,000,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80°C
Bake Temperature	≤ 200 °C
Materials	Stainless Steel304, AL6061 Anodizing
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Specifications

GATE SEAL TYPE	BUTTERFLY VALVE		
Materials	Body	STS304	
	Mechanism	STS304	
	Gate Sealing	FKM (VITON)	
Flange Size(ID)	DN40, DN50, DN63, DN80, DN100		
Feedthrough	Rotary Feedthrough		
Actuator	Stepper Motor		
He Leak Rate	1 x 10 ⁻⁹ mbar.l/sec		
Pressure Range	1 x 10 ⁻⁶ mbar to 1.2 bar		
Differential Pressure on the Gate	≤ 1.4 bar		
Differential Pressure at Opening	≤ 30mbar		

Cycles until First Service	250,000
Temperature	Body: ≤ 150°C Controller: ≤ 35°C
Installation Direction	Any
Interface	RS232, RS485, Devicenet, Profibus, EtherCat

Science Probe Product

TRIPLE PREVENTION GATE VALVE

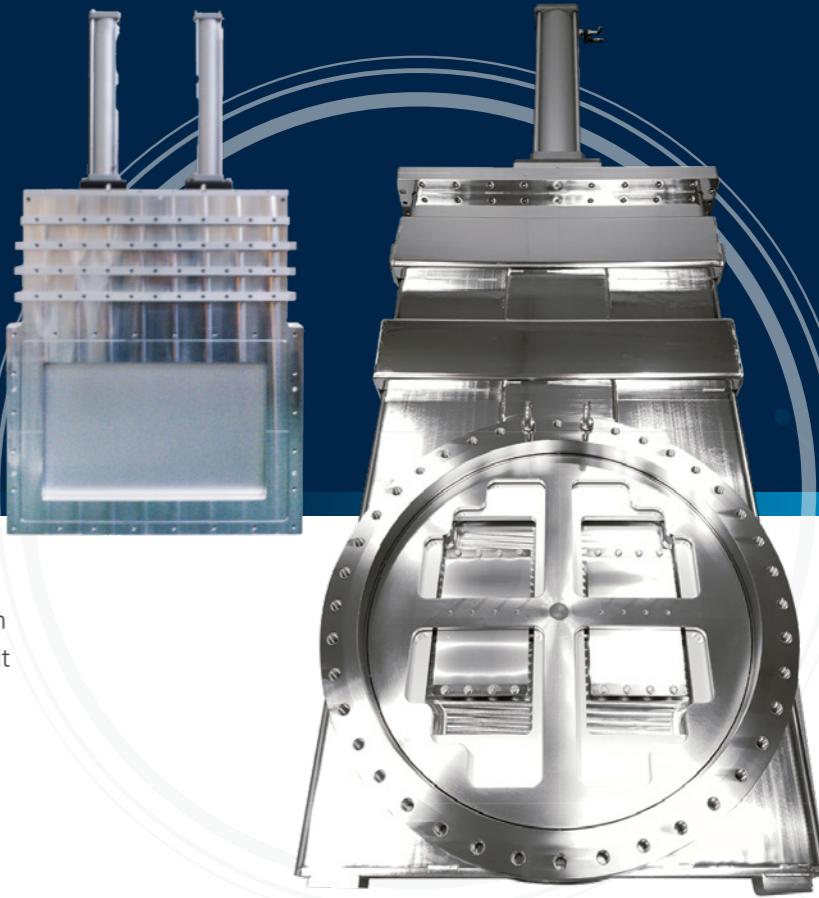


- ▶ Triple Prevention Function
- ▶ Valve Controller (1CH~ 4CH)
- ▶ Applications :

Process with by products such as powder and gas in semiconductor line Prevent back stream

Science Probe Product

LARGE GATE VALVE CUSTOMIZED LARGE VALVE

**Large gate VALVE**

- ▶ Low Particle by Ceramic Ball Mechanism
- ▶ Easy Maintenance using Repair Parts Kit
- ▶ Applications : Isolation valve for research and industry

Customized large valve

- ▶ Customized Order Made
- ▶ Applications : Large coating systems

Specifications

GATE SEAL TYPE	Triple Prevention Gate Valve
Operation	Pneumatic
Flange Size (ID)	1.5"~10"
Flange Type	ISO, KF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring
Bonnet Seal	Viton O-Ring
Response Time	≤ 0.3 sec ~ 0.6 sec
Operate Pressure Range	1.5" ~ 6": 1 x 10 ⁻¹⁰ mbar to 1400 mbar 8" ~ 10": 1 x 10 ⁻¹⁰ mbar to 1200 mbar
Differential pressure on the gate	1.5" ~ 6": ≤1400 mbar / 8" ~ 10" ≤ 1200 mbar

Leak rate	< 1 x 10 ⁻¹⁰ mbar l/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80°C
Bake Temperature	≤ 150 °C
Materials	Stainless Steel304, AL6061 Anodizing
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

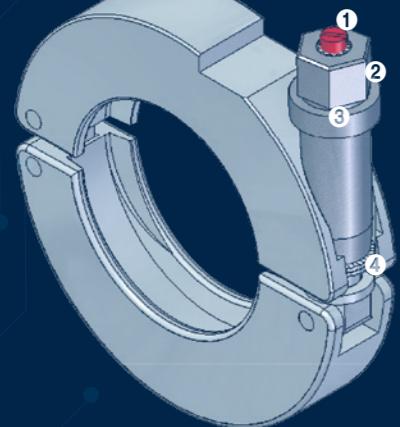
Specifications

GATE SEAL TYPE	LARGE GATE VALVE / CUSTOMIZED LARGE TRASFER VALVE
Operation	Pneumatic
Flange Size (ID)	1.5" ~ 50" / 80 X 500 / 100 X 400 / 200 X 1800 / 650 x 1050, etc
Flange Type	ISO, JIS, ASA / Customized
Feedthrough	Viton O-Ring / Welded Bellows / O-Ring Seal
Gate Seal	Viton O-Ring / KalrezO-Ring
Bonnet Seal	Viton O-Ring
Response Time	Adjustable / ≤ 2 sec
Operate Pressure Range	1 x 10 ⁻⁹ mbar to 1000 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	≤ 1000 mbar

Leak rate	< 1 x 10 ⁻⁹ mbar l/sec / < 5 x 10 ⁻⁹ mbar l/sec
Cycles until first service	10,000 ~ 100,000 / 10,000 ~ 200,000
Temperature for Valve Body	≤ 150 °C / ≤ 200 °C
Temperature for Actuator	≤ 80°C
Bake Temperature	≤ 150 °C
Materials	Stainless Steel304, AL6061 Anodizing / Stainless Steel304, A5083-A7075
Mounting Position	Any
Operating Pressure (N2)	6 ~ 8 bar

Science Probe Product

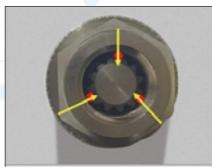
CLAMP



Product Characteristic

**① Fool Proof Device**

Visually identifiable when fastening
Apply the device

**② 3 Position Lock Device**

Development of technology to
prevent loosening of 12 tooth
screws at 3 points

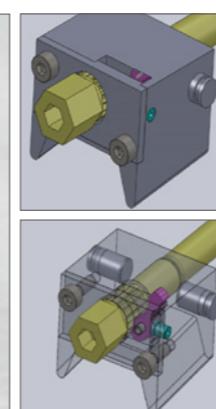
**③ Slip Prevention nut**

Slip processing to improve
workability when rotating by hand

**④ Slip Prevention washer**

First locking effect by fastening
washer to prevent slipping

Lock Chain Clamp View



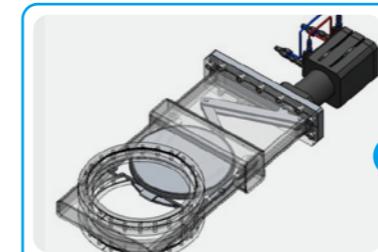
In LOCK state, LOCK state is maintained while being
shunted, and no reverse rotation is performed

Available Sizes: NW25, NW40, NWSO

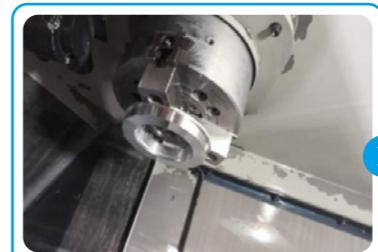
Available Sizes : NW63, NW80, NWI 00, NWI 25, NWI 60

Science Probe Product

VACUUM GATE VALVES



Design



Machining



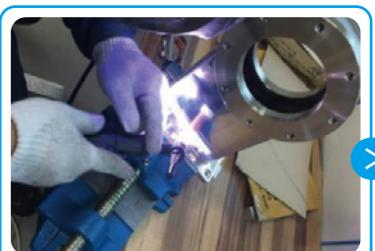
Measurement



Surface Treatment



Brazing



Tig Welding



Assembly



Leak Test



Packing