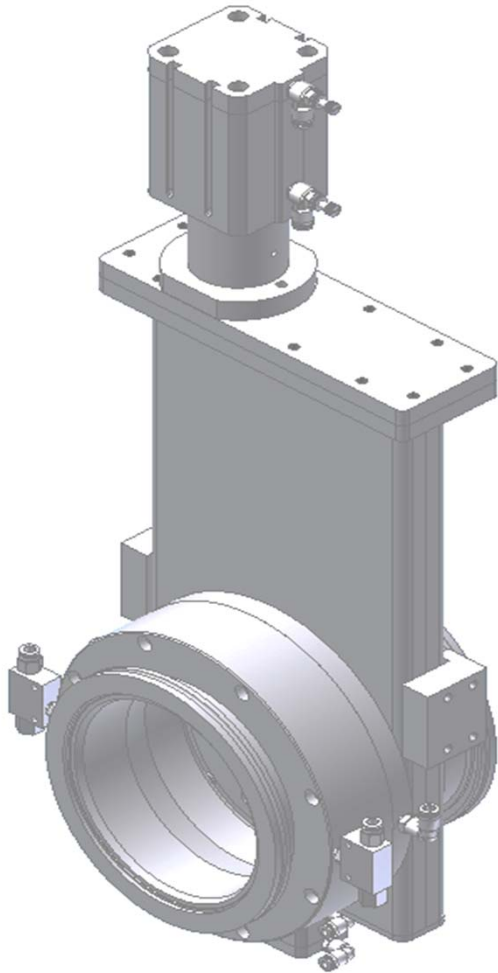


Company Introduction

Vacuum Gate Valve

2019. 01

沅進工業有限公司



Contents

- 1_Company Introduction
- 2_Products Introduction
- 3_Products Features & Advantages
- 4_Products Series
- 5_Manufacturing & Assembly Process Chart
- 6_Competitors Comparison
- 7_ Reference

Vacuum Gate Valve



Gate Valve Manufacturer that develops New
Products every year

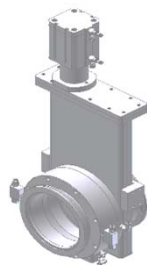
Ensure Quality by Best Process Step

All products are produced in clean room

Company Intro

Company Name	沅進工業有限公司
Main Business	Vacuum & Semiconductor Gate Valves Manufacturing
Headquarters	台北市龍江路377巷17號3樓
Factory	新北市樹林區西圳街2段80巷1-5號
No. of Employees	7 People
E-MAIL	service@prosani.com.tw
TEL	☎ 02-26683300 / (Fax) 2-26683322

Double Prevention Gate Valve



Main Products

- Manual Lock Valve : "Lock Function" of Valve Self Closing During Pumping
- Special Valve : All Metal Fitting+ Sol Valve +Sensor + D-Sub + Angle Valve Mount
- 3rd Position Valve : Half Open Function for Pressure control

Main Valves Introduction



Pneumatic Gate Valve

- Product Range : 1.5" ~ 22"
- HV / UHV available
- Cycles of first service : 250,000
- Response Time : 0.2sec ~ 3sec

Pneumatic
Type

Manual Lock Gate Valve

- Product Range : 1.5" ~ 12"
- HV / UHV available
- Cycles of first service : 250,000

Manual
Lock Type



Special Type Gate Valve



- Product Range : 1.5" ~ 22"
- HV / UHV available
- Cycles of first service : 200,000
- Response Time : 0.2sec
- Customer Specified Flanges
- Available to Mount Angle Valve and etc

Special Type

3 Position Gate Valve

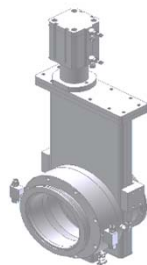
3 Position
Type

- Product Range : 2.5" ~ 12"
- HV / UHV available
- Cycles of first service : 200,000
- Pressure Control Valve by 3rd Position



GATE
VALVES

Vacuum Gate Valve



Main Products

- Shield GV : To block the flow of gas and powder into the valve Body
- Double Prevention : Shield + Protection Ring
- Heating GV : Suitable for Harsh process by heating JKT or Heater insertion
- Large Slit Valve : Customized Large Opening size

Main Valves Introduction



Shield Gate Valve

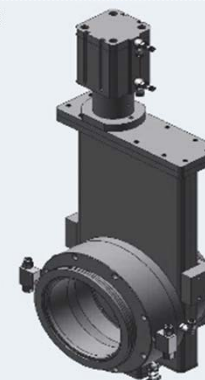
- Product Range : 2.5" ~ 12"
- HV / UHV available
- Cycles of first service : 250,000
- Response Time : 0.2sec ~ 3sec

Shield Type

Double Prevention Gate Valve

- Product Range : 4" ~ 10"
- HV / UHV available
- Cycles of first service : 200,000
- Shield

Double Prevention Type



Heating Type Gate Valve



- Product Range : 2" ~ 12"
- HV / UHV available
- Cycles of first service : 200,000
- Response Time : 0.2sec ~ 3sec
- Customer Specified Flanges
- Heating Temp : 450°C

Heating Type

Slit Valve

Large Slit Valve

- Product Range : Customized
- Feedthrough : Viton or Welded Bellows
- Cycles of first service : 10,000 ~ 300,000



GATE VALVES

Double Prevention Gate Valve



It is an invention that complements the drawbacks of Protection function which is vulnerable to Powder, and it is a product that is excellent in PGV Life Time and can give quality stability

Product Introduction

Ceramic Ball Mechanism

It adopts **Ball type design** and is not influenced by vibration or shock, guarantees more than **250,000** cycles, and easy to overhaul and low repair cost [Manage with Parts Kit]

Particle Free

No corrosion through Strong Ceramic Ball application and **Particle Free**
[No history of Ceramic breakage]

Shield Protection

Protective function of **shield** type keeps less than 1mm gap between gate valve body and blocker so prevent powder intrusion into the valve and Life time is semi-permanent

Protection Ring

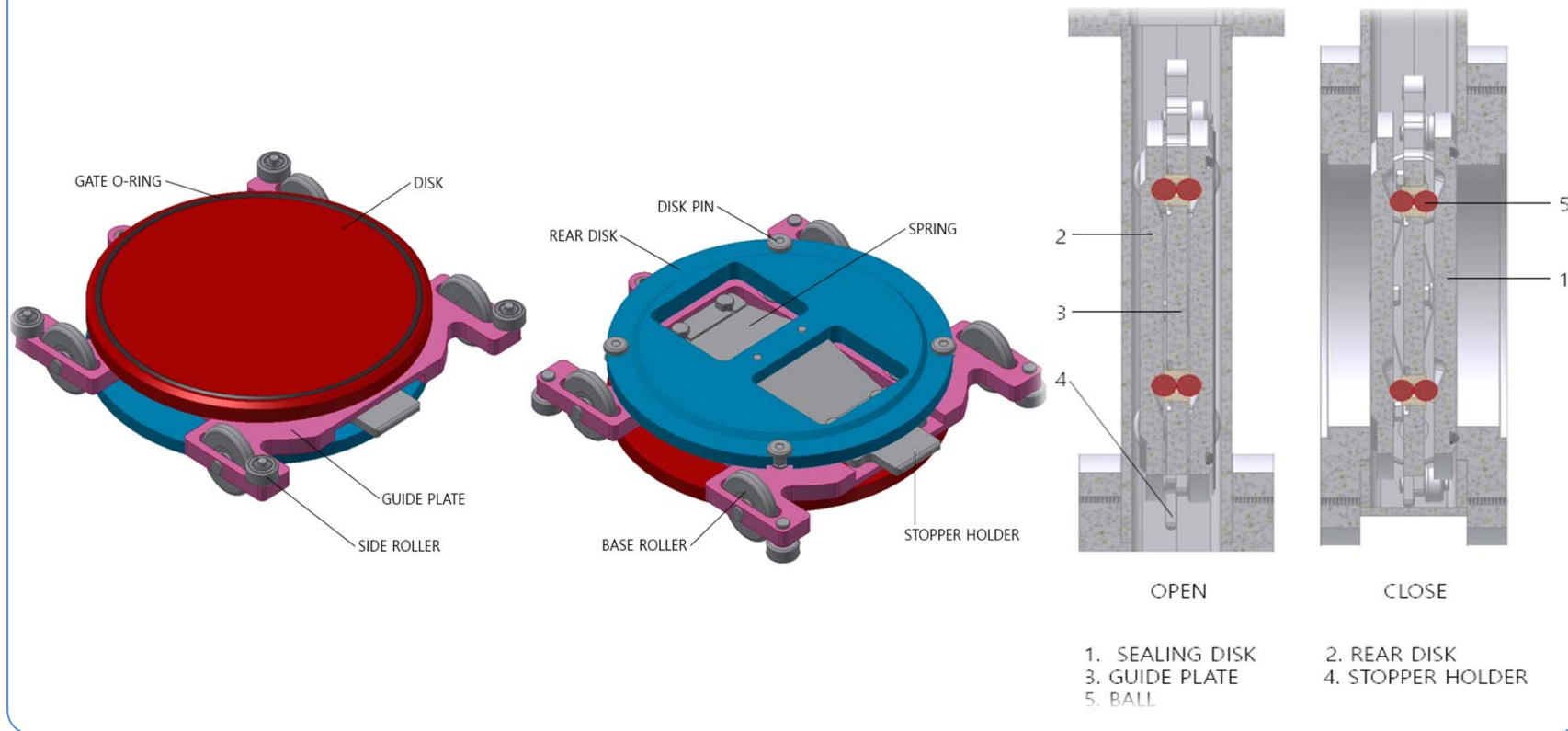
Protection Ring is effective to prevent the accumulation of powder by **special drawing** as well as preventing the adhesion of powder by the **buffing(polishing)** process

Double Prevention Gate Valve



- Ball Mechanism Method of Main Slide Gate Valve**
- Performance proven in process production equipment
- Consist of semi permanent ceramic ball and SUS plate spring

Mechanism

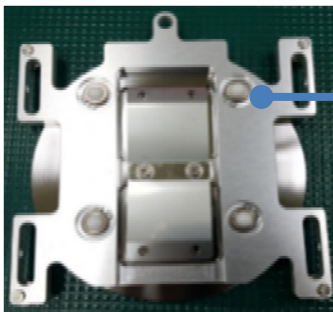
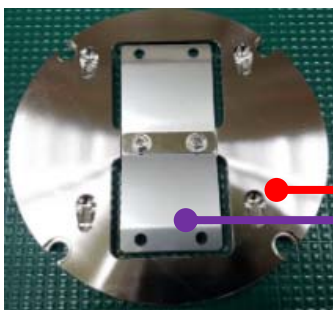


Double Prevention Gate Valve



- Particle Free with Ceramic and Metal Touch Drive
- Outstanding product sold to mass production equipments
- Metal and metal touch drive's method generates large amount of particles [Comparison Table]

Particle Free



Never broken Ceramic Ball by Metal Friction and not cause particle generates between metal and ceramic balls



Semi-permanent plate spring (SUS steel plate) ensures stability when valve is driven



Consist of Fixed Ball Guide and strong Ceramic Ball

Vacuum Gate Valve



Technical Specifications - Detail Specifications

Technical Specifications

Materials	Body	SUS 304 / AL6061(Anodizing)	
	Mechanism	SUS 304(EP)	
	Gate Sealing	O-ring (VITON)	
Response Time		Open → Close : Less than 2sec	
Actuator		Air Cylinder	
He Leak Rate		Sealing : $< 1 \times 10^{-10}$ torr l/sec Bellows Sealing : $< 1 \times 10^{-10}$ torr l/sec	
Operating temp.		≤ 200 °C	
Pressure range		1×10^{-10} torr to 1.4 bar	
Differential pressure on the gate		Lower than 1.4 bar (in either direction)	
Differential pressure at opening		≤ 30 mbar	
Cycles until first service		250,000 cycles	
Temperature		Body	Lower than 250 °C
		Valve	Lower than 150 °C
Installation direction		Any	
Operating Pressure (N2)		4~7kgf/cm ²	

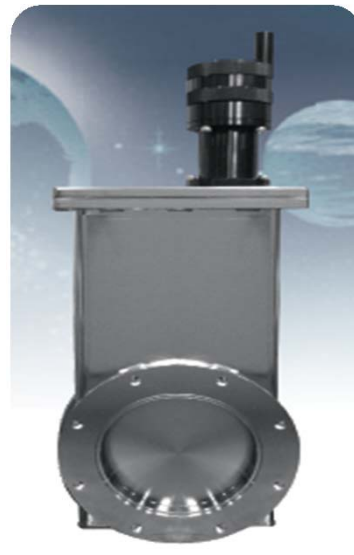
Vacuum Gate Valve



Pneumatic & Manual (Lock) GV

- Line Up by Product Size and Flange Type
- ID 1.5" ~ 30", ISO & CF & JIS & ASA Flange etc
- Exist Manual GV of Locking Function

Pneumatic / Manual GV



LOCK

UNLOCK



Vacuum Gate Valve



Special type of customized GV

- Suppling to Overseas Semiconductor "I" Company
- Closing valve within 0.3 second when pump down

Custmized GV

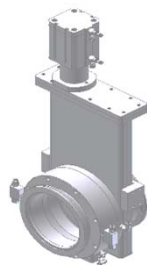


Connect to the Pump by Soldering Solenoid Valve and Indicator Sensor

Consist of All Metal Fitting + Solenoid Valve + Indicator Sensor + D-Sub + Manual Angle Valve Mounted

Manual Angle Valve for Internal Vacuum Check

3rd Position Gate Valve



3rd Posiotion of Half Open GV

- Full Open , Full Close , Half Open
- Multi Position Scheduled to add features

3rd Position GV



Product Range : DN100 ~ DN320

HV / UHV available

Cycles of first service : 200,000



Option

JIS, ASA and Custom flanges

Alternate o-ring material

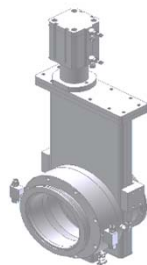
Alternate solenoid voltages

UHV copper bonnet version

Roughing ports

Local or Remote controller adaptable

Heating Gate Valve



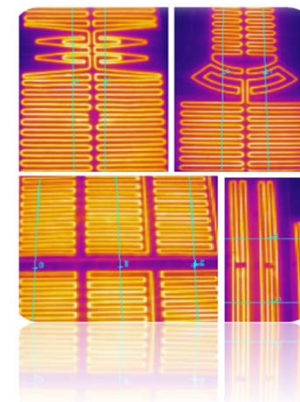
Temperature-controlled Heating GV

- Temperature-control by Jacket or Heater Incerted
- 1CH ~ 4CH Controller

Heating GV



- ✓ Fixation of hot wire is fixed by automatic sewing machine, no external pressure problem
- ✓ Using CAD, heat line layout considering heat distribution
- ✓ There is no problem in arranging hot wire on curved pipe



- ✓ Reducer, Clamp, Elbow, and so on. In all cases, there is no overload

Product Range : DN50 ~ DN320
HV / UHV available
Cycles of first service : 200,000
PM cycle becomes longer
Low power consumption
Heating temperature : 450°C

Option

JIS, ASA and Custom flanges
Alternate o-ring material
Alternate solenoid voltages
UHV copper bonnet version
Heating controller adaptable (1~4ch)

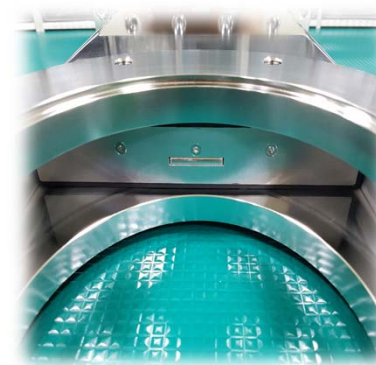
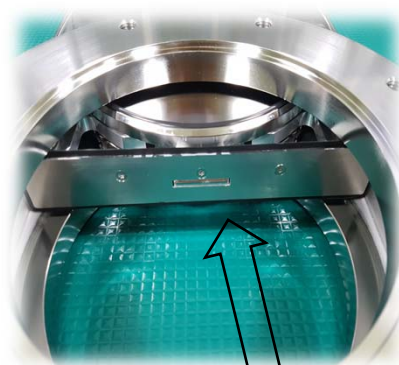
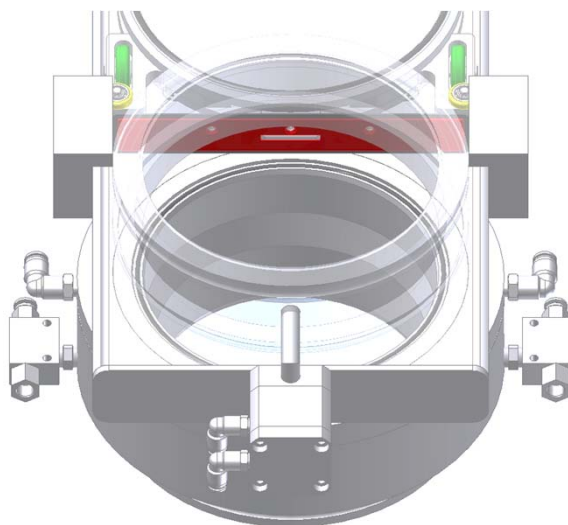
Double Prevention Gate Valve



Shield method that permanently increases PGV life

- Gained a good reputation from clients
- PGV includes this function by Basic mounting specification

Shield Protect



Gas(Powder) Blocker

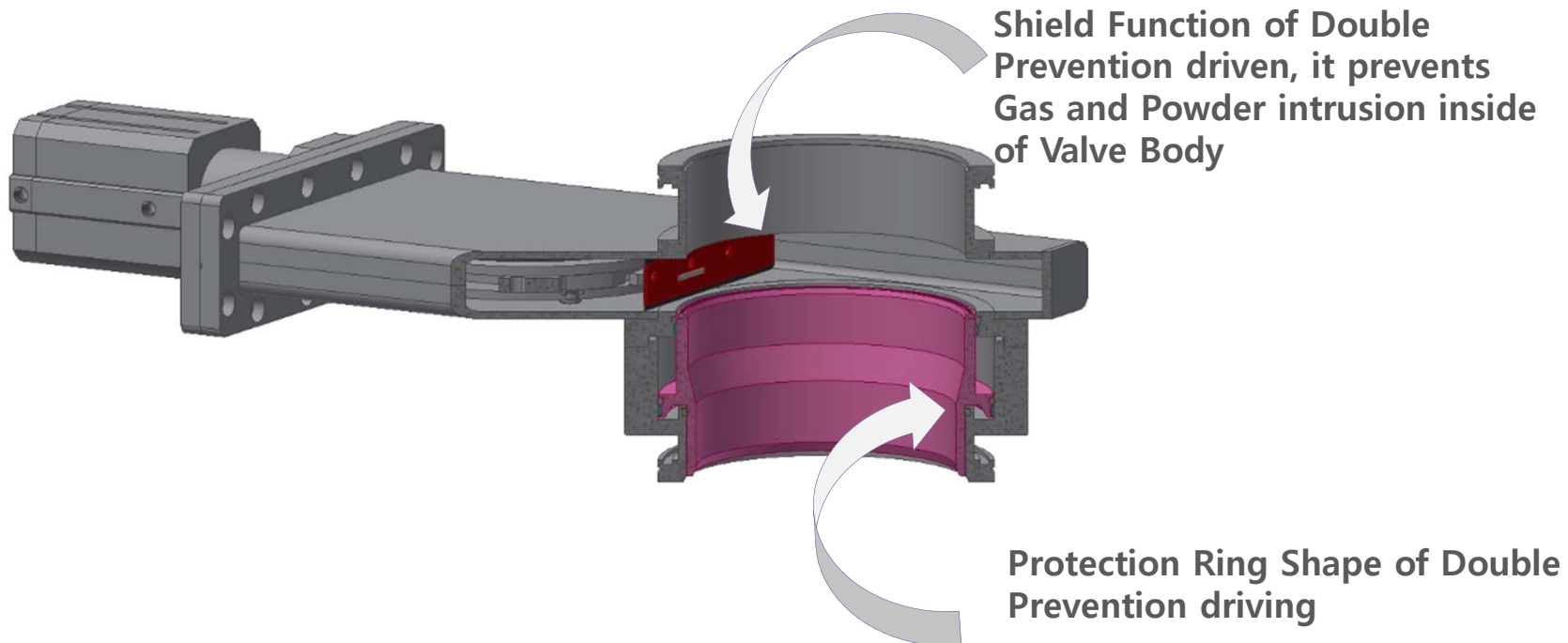
Blocker and valve body is less than 1mm gap, blocking powder and gas to inside
Shield Blocker is AL 1.5t material considering resilience and It is produced by compressing Viton powder with heat

Double Prevention Gate Valve



Shield Blocker and Protection Ring Shape
Double Prevention function of powder blocking method expects superior performance for valve moving and life expectancy

Product Introduction



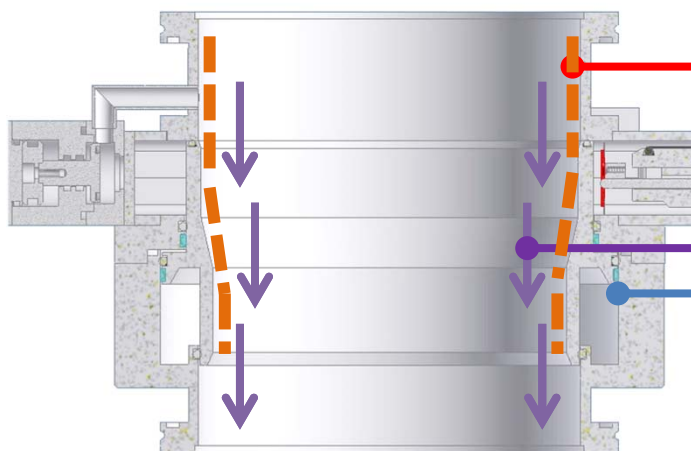
Double Prevention Gate Valve



Protection Ring core description for Double Prevention

- Buffing(Polishing) Process
- Internal flow velocity rise design for Protection Ring
- Ternary Section O-ring application ensures stable driving

Protection Ring



Polishing Process

Prevent accumulation of Powder by improving internal roughness of flange through Polishing

[Reference]

Flow Velocity Rise Design

As the middle section of the Protection Ring becomes narrower, it is effectively judged to prevent the powder from sticking due to the rise of the flow velocity

Ternary Section O-Ring

Protection ring drive stability secured Ternary Section o-ring (300,000 Cycles Guaranteed)

[Reference]

Double Prevention Gate Valve



Application for 3 Way O-Ring and Polishing of Protection Ring

- 3 Way O-ring adopts stable movement performance
- Powder accumulation prevention estimation by roughness management of buffing (polishing) process

Ternary Section O-Ring & Polishing

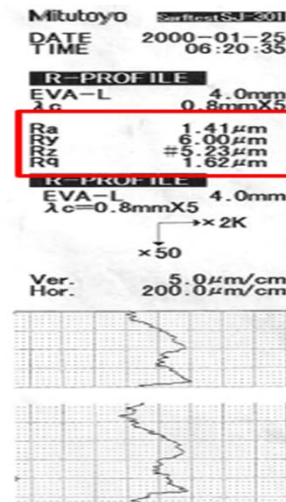
Chemical Structure Of Fluoroelastomers



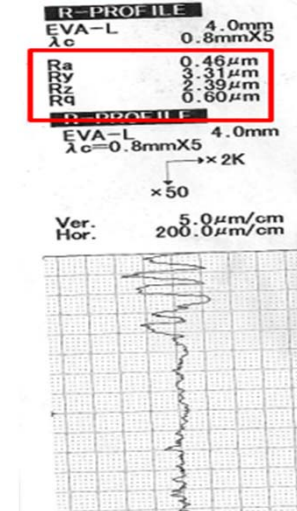
Ternary Section O-Ring (Viton:F608) is excellent hardness compared to Normal Viton O-Ring and Suitable for exercise performance (300,000 Cycles guaranted) Hardness Shore A : 80~85



Machining



Polishing



Double Prevention Gate Valve



Valve Controller Introduction

- Main Controller 1CH & 2CH / 3CH & 4CH
- Local Controller 1CH & 2CH / 3CH & 4CH
- Remote Controller 1CH & 2CH / 3CH & 4CH

Valve Controller



1~2 CH Controller



3~4 CH Controller

- Open/Close Speed LCD Display
- Lamp On when Valve or Pump error
- Auto Close Function
 - Prevention of Back Stream in Pump Trip
- Signal Out
 - Output signal of Open / Close position of valve
- Lock Function
 - Local / Remote Controller operate switech after unlock
- No noise and Low Power Consumption
- History Management
 - Open / Close / Pump Down etc
- UPS Function (1sec)

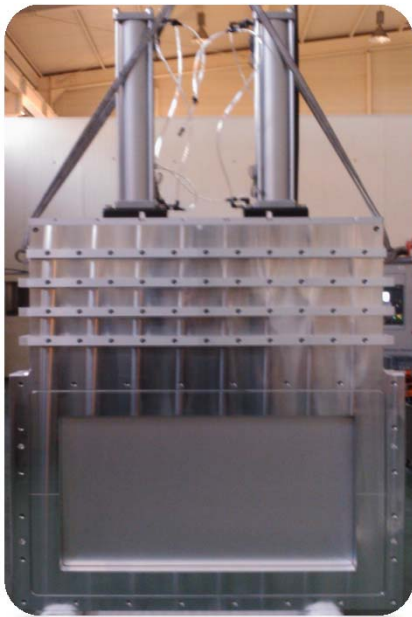
Slit Gate Valve



Large Slit Valve

- Customized Large - Size Production
- Using Welded Bellows Extends Cycles
(Max. 300,000 Cycles Until First Service)

Large Slit GV



Characteristics	Customized Order Made
Operation	Pneumatic
	80*500
Flange Size (ID)	100*400
	200*1800
	650*1050 , etc
Flange Type	Customized
Feedthrough	Welded Bellows
	O-Ring Seal
Gate Seal	Viton O-Ring / Kalrez O-Ring
Operate Pressure Range	1×10-8 torr to 1 bar
Differential pressure on the gate	≤ 1 bar
Leak rate	Sealing : < 5×10-9 torr ℓ/sec
	Bellows Sealing : <1×10-9 torr ℓ/sec
Cycles until first service	10,000 ~ 300,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80 °C
Bake Temperature	≤ 150 °C
Materials	Stainless Steel304 , A5083~A7075
Mounting Position	Any
Operating Pressure (N2)	4~7kgf/cm2

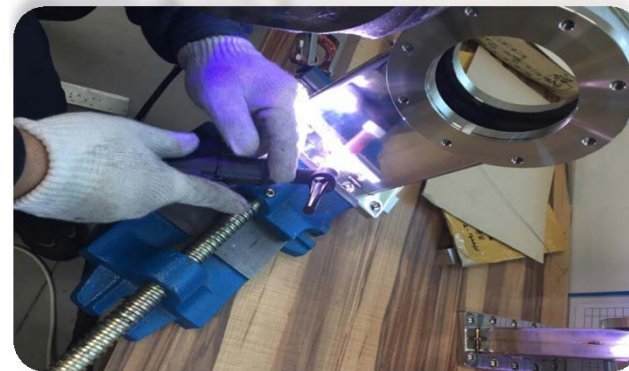
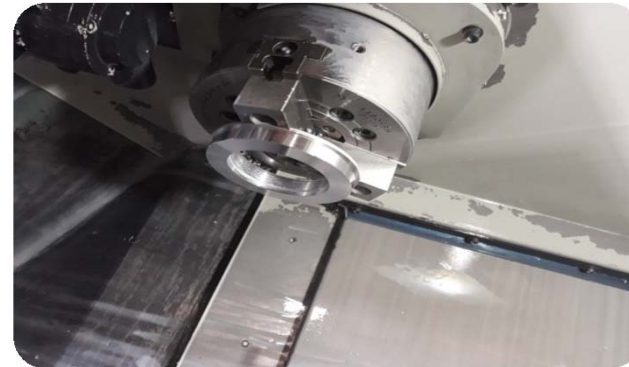
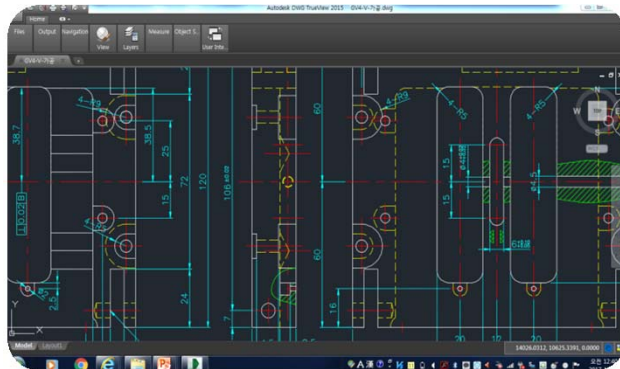
Vacuum Gate Valve



Manufacturing process introduction

- Design, machining, measurement, welding process
- TAT Shorten (Currently 4W → 3W)
- Minimize Production Loss (Currently 20% → 10%)

Manufacturing Process



Vacuum Gate Valve



Manufacturing process introduction

- Mass production of valves through its own surface treatment, assembly, inspection and packaging processes
- Valve shipment through 100% full inspection
- Increased productivity through facility investment (Currently 50% → 85%)

Manufacturing Process



Double Prevention Gate Valve



History of Management System of our product Assembly line

- Serial No. allows all of assembly conditions (parts, machining conditions, etc.)
- Quick and efficient A/S response
- Easy manage to Overhaul by Parts Kit purchasing

Assy Process Management Status



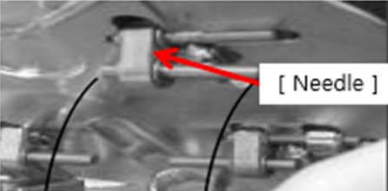
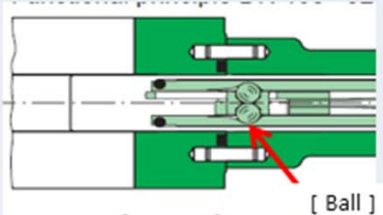



Part Name	Part No.	Inspect Date	Leak Rate : <00×10-10 torr ℓ/sec	Operating Pressure (N2)	Cylinder	Disk O-Ring	Bonnet O- Ring	O-ring protrusion amount	O-ring groove width	O-ring groove depth	BASE 1	BASE 2	BASE 3	BASE 4
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	2.0	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.8	Φ32.8	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.2	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.8	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.2	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.5	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.8	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.8	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.8	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.8	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.8	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	2.0	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.5	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.8	Φ32.8	Φ32.8	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.5	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ33.0
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.5	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.8	Φ32.6	Φ33.0
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	2.0	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.8	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.4	Φ32.6	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.2	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.2	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ32.6
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.8	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ33.0	Φ33.0
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.5	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ32.6
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.5	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.8	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.0	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ32.8
NW100 Pneumatic	SPGV4-PISOS	2017-08-15	1.0	4.0	KOSC50-35	G105	G115	0.70	2.70	2.30	Φ32.6	Φ32.6	Φ32.6	Φ32.6

Double Prevention Gate Valve



Due to the HVA & VAT metal touch drive method
describe vulnerabilities in key areas of particle creation
- No Partice ceramic & metal touch of Operation Part

Comparison Table

ITEM	SCIENCE PROBE	HVA	VAT
Mechanism	Ball Type	Needle Type	Ball(Taper)
	 [Open]  [Close]	 [Needle]	 [Ball]
Important parts Abrasion And Vulnerability (Characteristic)	 [Fixed Ball guide]	 [Needle Pin Groove] [Needle Pin]	 [Ball Taper Guide] [Ball]
	Particle Free by Metal and Ceramic Ball friction Ceramic balls consist of the strength and rigidity of Ceramic (Never broken)	Large Particles by Needle Pin Groove and Needle Pin friction	Scratches due to metal-to-metal friction Change of shape of Ball Taper Guide

Thank You