

07

SECTION CONTENTS

GATE VALVE

General Information	7-I
Ordering Information	7-VI
Technical Data	7-VIII
HV Gate Valve (with Bellows)	7-1
UHV Gate Valve (with Bellows)	7-3
Gate Valve Kit	7-5

General Information

Theory of Operation

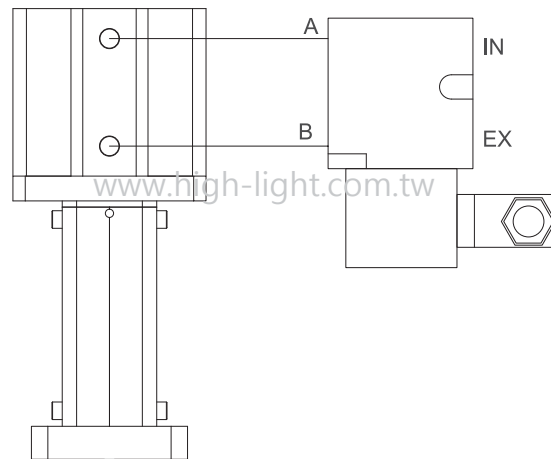


- UHV Series valves are toggle action, linear travel gate valves. The gate carriage moves in the valve body on a set of wheels, moved back and forth by a manual or pneumatically actuated valve stem which passes through a metal bellows.
- To close the valve, the carriage moves forward on wheels until it reaches the end of the valve case. When the carriage stops, the toggle linkage continues to travel and extend. The gate does not move forward, only upward toward the port seal surface. There is no abrasion or damage to the O-ring. The gate moves up to the port into its sealing position. The O-ring is compressed, making a leak-tight seal. The toggle linkage continues to move forward until the toggle knee passes center and locks, providing positive closure protection in the event control power, or air pressure, is lost.

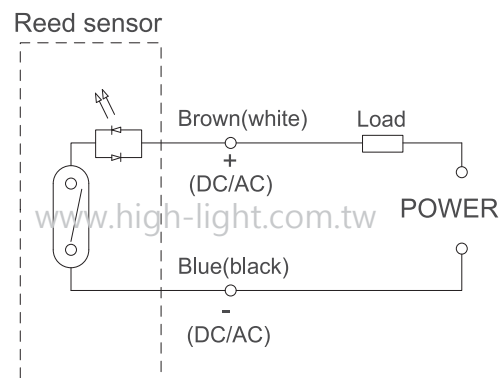
Specifications

1	Material :	Body	304 S.S.
		Carriage	304 S.S.
		Gate	304 S.S.
		Bellows	AM350
2	Cycles to first maintenance :	size under 4" (included)	100,000 cycles
		size above 4"	50,000 cycles
3	Hellium leak rates at 1 atm differential :	< 5 x 10 ⁻¹⁰ std cc/sec for gasket seal	
4	Bakeable Temperature :	Open	200
		Closed	150
5	Pressure Range :	10 ⁻¹⁰ torr ~ ATM	
6	Maximun ΔP :	20 Torr before opening	
7	Standard Seal :	Gate	Viton® O'ring
		Bonnet	Viton® O'ring / OFHC Copper
8	Size :	2" to 12"	
9	Actuator :	Electro-Pneumatic or Manual	
10	Surface Treatment :	Scotch Polished	
11	Options:	a. Position indicator	
		b. Pneumatic control solenoid valve	
		c. Roughing port	
		d. Other material Gate O'ring seal	

Pneumatic Solenoid Connection



External Position Indicator



- A selection of two position indicators are offered by HTC to fill a range of mechanical, and electronic requirements. Signals from the sensor can be employed to activate a variety of external devices such as indicator lights, alarms or other instruments. A valve can be wired so that its accidental opening would affect the shutdown of an entire system for its protection. These position indicators are very useful in automatic process control applications. Signals from the opening or closing of a valve can be employed to trigger complex procedures in computer controlled high vacuum systems.
- This option employs two reed sensors , which are positioned in-line with a vertical stem extension of the pneumatic actuator piston. These positions correspond to the closed and open positions of the valve gate.

UHV Gate Valve



Applications

- The HTC stainless steel body offers one of the smallest interior surface areas in the vacuum industry. The body and all major internal components has been welded by TIG (Tungsten Inert Gas), Welding Fixture for the special use ensuring maximum joint integrity. This eliminates the possibility of " virtual leaks " or entrapment areas and minimizes body distortion found in gate valves. For maintenance purposes, the carriage assembly can be removed from the body without removing the valve from the system. These valves can be used with cryo-pumps, turbo molecular pumps or in any applications requiring clean, high life cycle, low maintenance and low outgassing valves with positive shut-off characteristics. Available in all flange configurations. KF, ISO, ANSI, JIS, and CF.

- Here are some general options that are available with most of our valve products. These options are in addition to whatever features you choose for your valve. (See the Gate Valve Ordering Information for more information on these features.)
- 1.Flange Options: Port flanges are available in a variety of configurations and geometries. The more common flange types are listed here. Others are routinely supplied, please call the factory for information.
- 2.Solenoid Control Valves: HTC valves with pneumatic actuators are supplied with a 110 VAC, 60 Hz solenoid control valve. Other solenoids are available, refer to Ordering Information for a partial list. There is an additional charge for most special solenoid valves. Please consult the factory for current price information.
- 3.Fittings Option: Fittings, such as VCR[®] or PT fittings, may be installed on valves. The fittings are used to add items, i.e.: gas lines, T.C. tubes, leak valves or up-to-air valves, to a system via the valve. Consult the factory for prices and configurations.
- 4.Roughing Ports: Are available for valves, the most commonly supplied are:

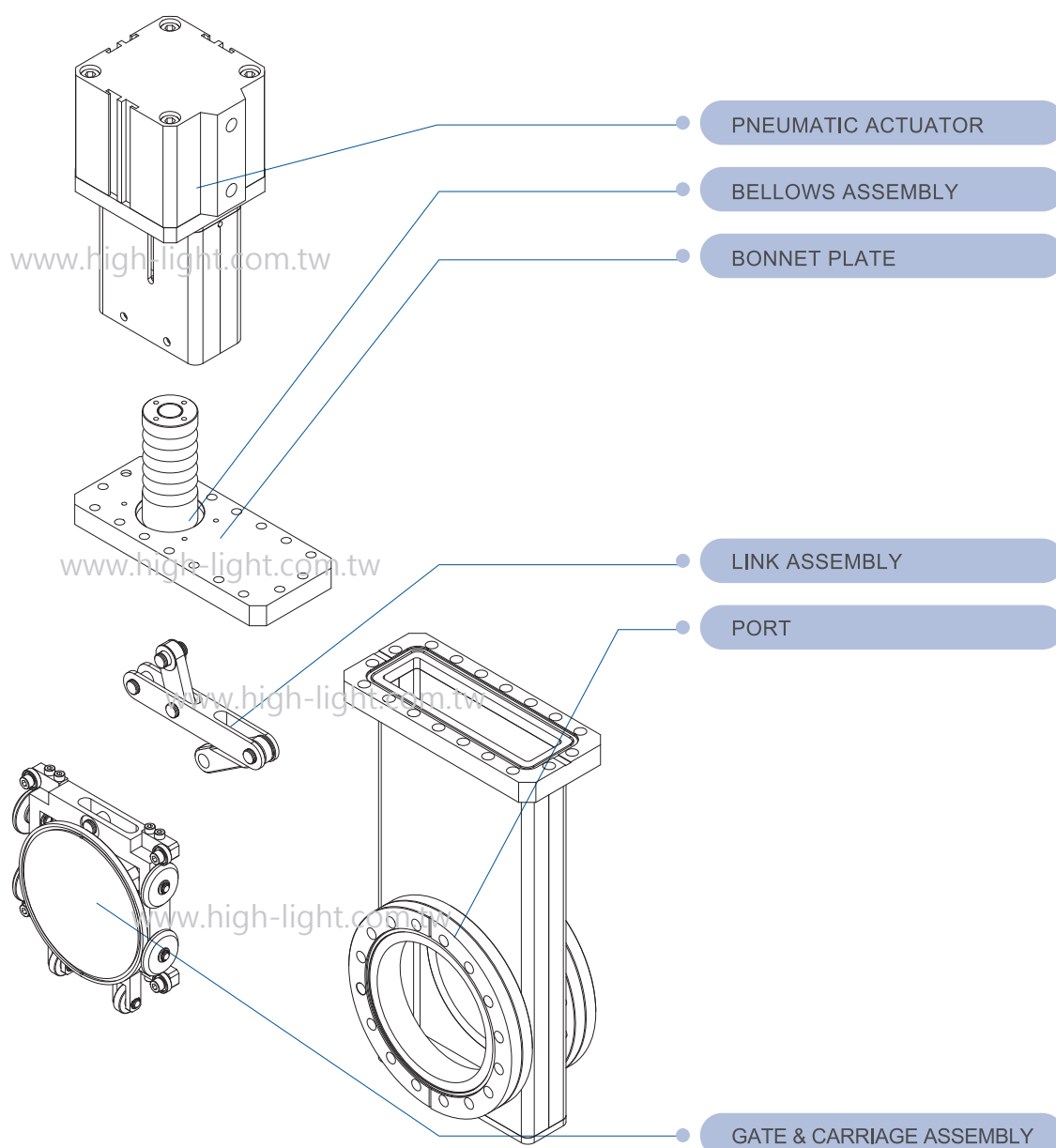
Valves with ConFlat port flanges are usually supplied with a ConFlat flange roughing port(s). Valves with ISO port flanges are usually supplied with an ISO flange roughing port(s). You may choose and specify otherwise.

Roughing ports with flanges other than those listed above, i.e.: ANSI, VCR[®] fittings or tubes without flanges, are also available, please consult the factory for prices.

When ordering roughing ports, please consider:

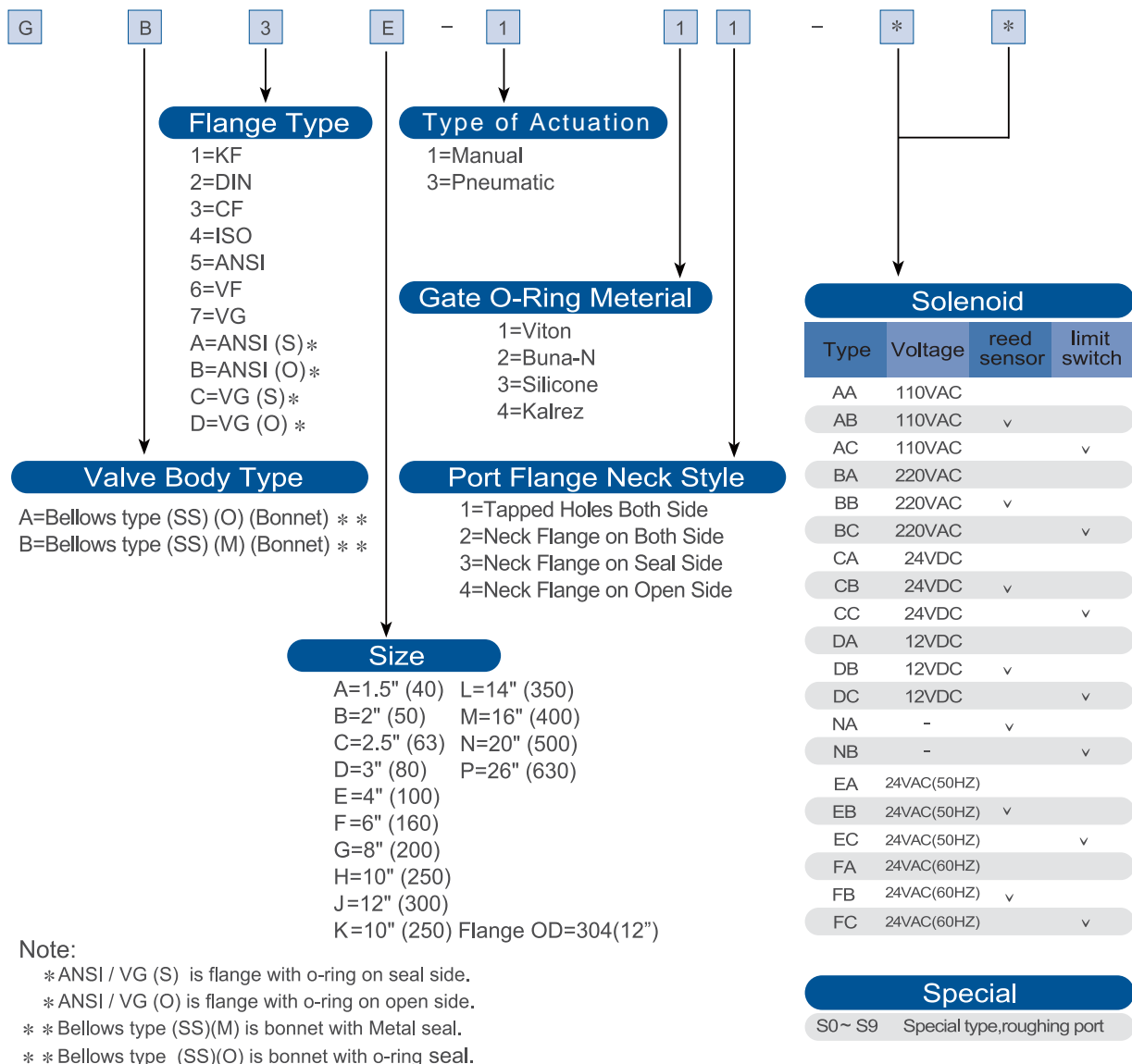
- 1. the roughing port I.D., and
- 2. the roughing port flange O.D.

Ordering Information

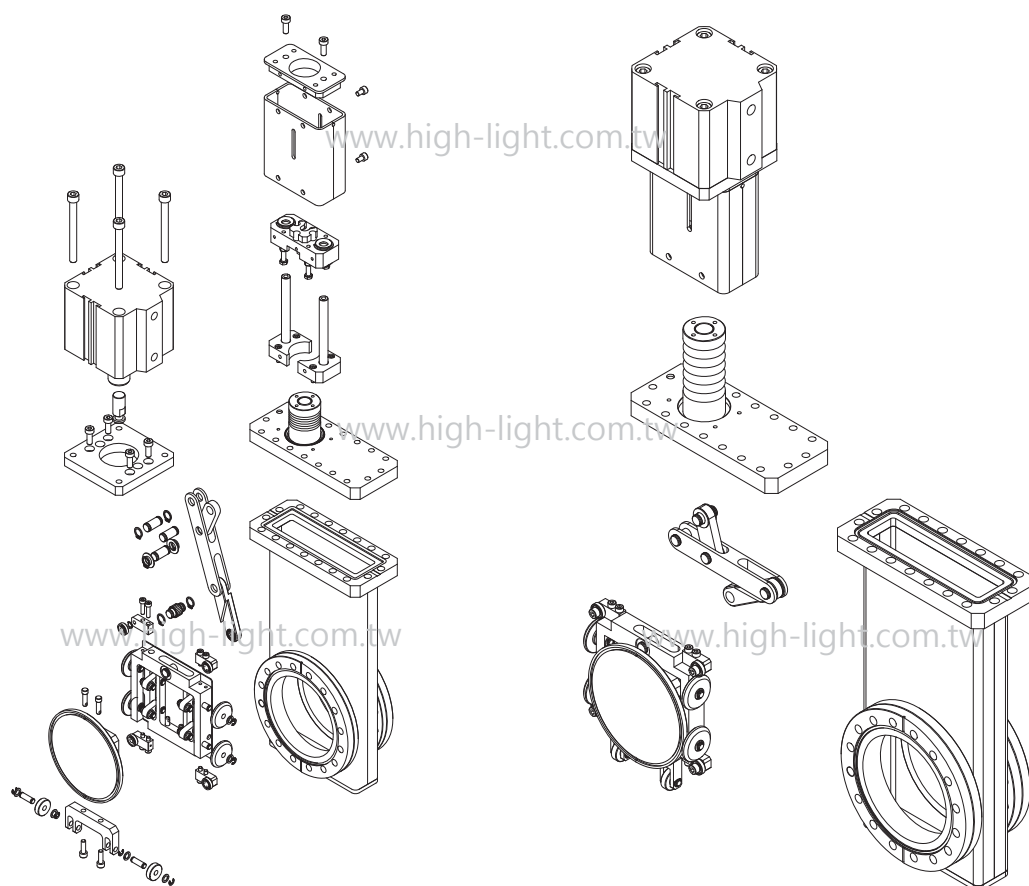


Numbering System

- This numbering system was developed to insure the valve supplied is exactly what you need. It addresses questions concerning available features and options for the valve, and incorporates that information in the valve number.



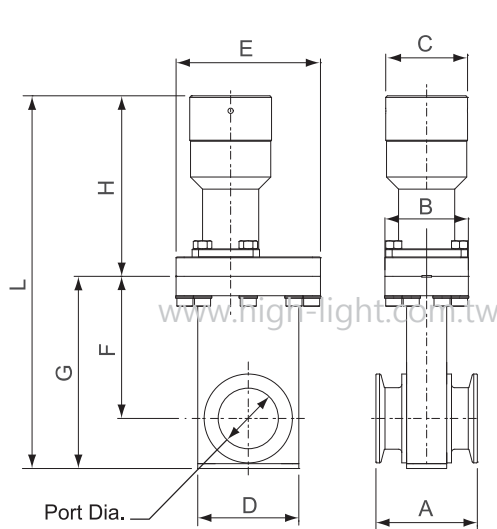
Technical Data



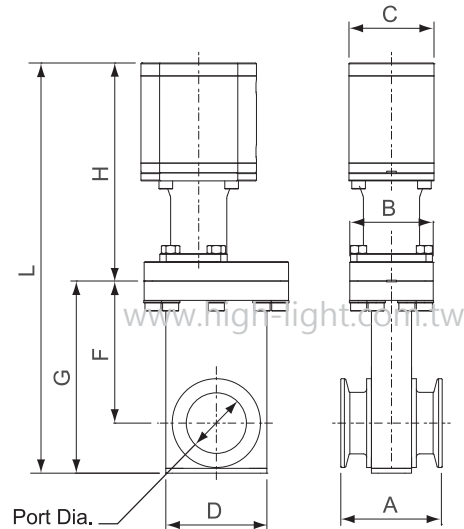
Body Size	Standard Flange O.D.			Weight kg	Air Pressure kg/cm ²	Actuated Frequen Opening & Closing ^{cy}
	ISO	CF	KF			
1.5"	*	69.5	50	2.6	5 ~ 8	2 seconds
2"	*	86	75	4	5 ~ 8	2 seconds
2.5"	130	113.6	*	10	5 ~ 8	3 seconds
4"	165	151.6	*	22	5 ~ 8	3 seconds
6"	225	202.5	*	28	5 ~ 8	5 seconds
8"	285	253.2	*	40	5 ~ 8	5 seconds
10"	335	336.5	*	59	5 ~ 8	7 seconds
12"	425	355.6	*	86	5 ~ 8	7 seconds

KF Flange

HV Series (with Bellows, Elastomer Bonnet Seal)



Manual (Fig1)



Pneumatic (Fig2)

Model No.	Part No.	Port Dia	Bonnet Seal	Actuator type	Fig.	Flange O.D.
GVB-SS-KF40-M	GA1A-112	38	Viton®	M*	1	55
GVB-SS-KF40-P	GA1A-312	38	Viton®	P**	2	55
GVB-SS-KF50-M	GA1B-112	50	Viton®	M*	1	75
GVB-SS-KF50-P	GA1B-312	50	Viton®	P**	2	75

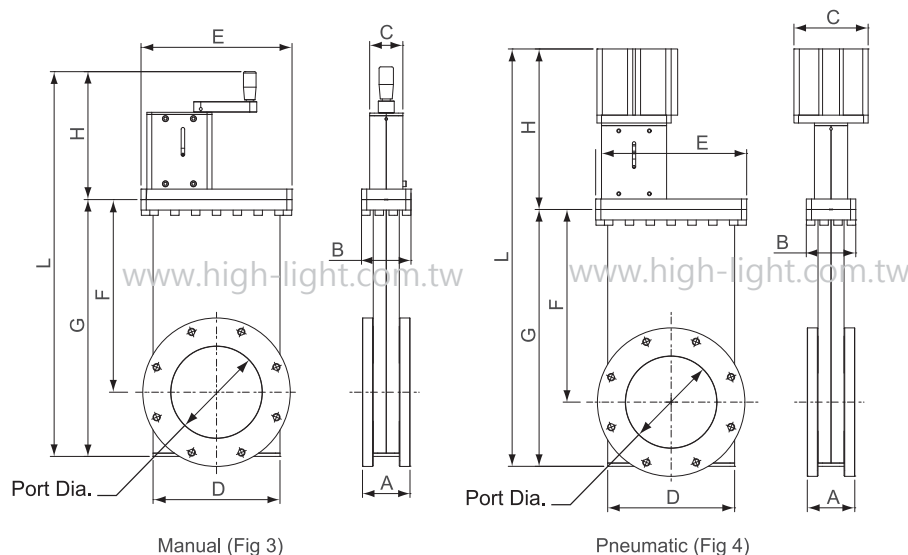
Model No.	A	B	C	D	E	F	G	H	L
GVB-SS-KF40-M	50	52	51	63	90	88	119	113	232
GVB-SS-KF40-P	50	52	53	63	90	88	119	135	254
GVB-SS-KF50-M	59	56	51	81	104	123	167	129	296
GVB-SS-KF50-P	59	56	53	81	104	123	167	154	321

* M : Manual

* * P : Pneumatic

ISO - Flange

HV Series (with Bellows, Elastomer Bonnet Seal)



Model No.	Part No.	Port Dia.	Bonnet Seal	Actuator type	Fig.	Flange O.D.	Bolt P.C.D.	Bolt Size
GVB-SS-ISO63-M	GA4C-111	63.5	Viton®	M*	3	130	110	M8 × 4
GVB-SS-ISO63-P	GA4C-311	63.5	Viton®	P**	4	130	110	M8 × 4
GVB-SS-ISO100-M	GA4E-111	102	Viton®	M*	3	165	145	M8 × 8
GVB-SS-ISO100-P	GA4E-311	102	Viton®	P**	4	165	145	M8 × 8
GVB-SS-ISO160-M	GA4F-111	153	Viton®	M*	3	225	200	M10 × 8
GVB-SS-ISO160-P	GA4F-311	153	Viton®	P**	4	225	200	M10 × 8
GVB-SS-ISO200-M	GA4G-111	204	Viton®	M*	3	285	260	M10 × 12
GVB-SS-ISO200-P	GA4G-311	204	Viton®	P**	4	285	260	M10 × 12
GVB-SS-ISO250-P	GA4H-311	250	Viton®	P**	4	335	310	M10 × 12
GVB-SS-ISO320-P	GA4J-311	305	Viton®	P**	4	425	395	M10 × 12

Model No.	A	B	C	D	E	F	G	H	L
GVB-SS-ISO63-M	57	76	46	112	145	189	251	179	430
GVB-SS-ISO63-P	57	76	94	112	145	189	251	219	470
GVB-SS-ISO100-M	57	76	46	142	178	224	305	183	486
GVB-SS-ISO100-P	57	76	94	142	178	224	305	223	528
GVB-SS-ISO160-M	66	76	51	196	232	294	392	261	653
GVB-SS-ISO160-P	66	76	114	196	232	294	392	239	631
GVB-SS-ISO200-M	65	78	51	243	277	348	472	261	733
GVB-SS-ISO200-P	65	78	114	243	277	348	472	239	711
GVB-SS-ISO250-P	95.4	95	114	323	360	505	690	340	1030
GVB-SS-ISO320-P	103.6	105	140	367	415	554	750	361	1111

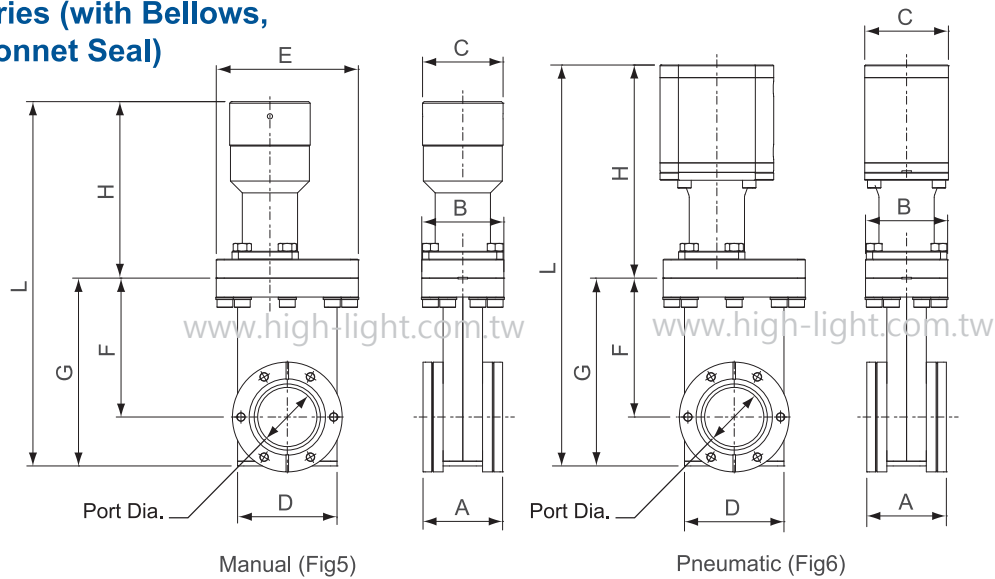
* M : Manual

* * P : Pneumatic

Dimension in mm unless otherwise noted

CF - Flange (Small)

UHV Series (with Bellows, Metal Bonnet Seal)



Model No.	Part No.	Port Dia.	Bonnet Seal	Actuator type	Fig.	Flange O.D.	Bolt P.C.D.	Bolt Size
GVB-SS-CF35-M	GB3A-111	37.5	Metal	M*	5	69.5	58.7	M6×6
GVB-SS-CF35-P	GB3A-311	37.5	Metal	P**	6	69.5	58.7	M6×6
GVB-SS-CF50-M	GB3B-111	50	Metal	M*	5	86	72.4	M8×8
GVB-SS-CF50-P	GB3B-311	50	Metal	P**	6	86	72.4	M8×8

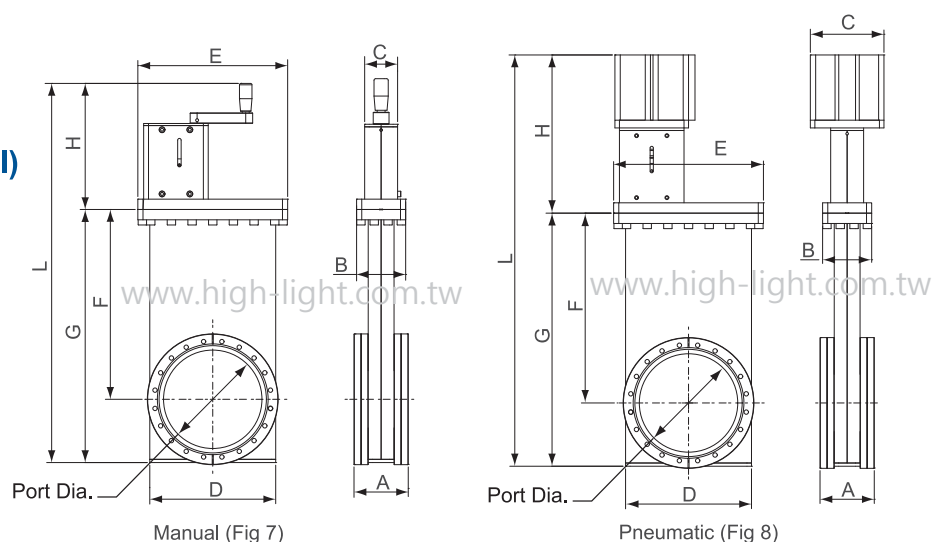
Model No.	A	B	C	D	E	F	G	H	L
GVB-SS-CF35-M	45.4	52	51	63	90	88	119	113	232
GVB-SS-CF35-P	45.4	52	53	63	90	88	119	135	254
GVB-SS-CF50-M	56	56	51	81	104	123	167	129	296
GVB-SS-CF50-P	56	56	53	81	104	123	167	154	321

* M : Manual

* * P : Pneumatic

CF - Flange

UHV Series (with Bellows, Metal Bonnet Seal)



Model No.	Part No.	Port Dia.	Bonnet Seal	Actuator type	Fig.	Flange O.D.	Bolt P.C.D.	Bolt Size
GVB-SS-CF63-M	GB3C-111	63.5	Metal	M*	7	113.6	92.1	M8 × 8
GVB-SS-CF63-P	GB3C-311	63.5	Metal	P**	8	113.6	92.1	M8 × 8
GVB-SS-CF100-M	GB3E-111	100	Metal	M*	7	151.6	130.3	M8 × 16
GVB-SS-CF100-P	GB3E-311	100	Metal	P**	8	151.6	130.3	M8 × 16
GVB-SS-CF150-M	GB3F-111	152	Metal	M*	7	202.5	181	M8 × 20
GVB-SS-CF150-P	GB3F-311	152	Metal	P**	8	202.5	181	M8 × 20
GVB-SS-CF200-M	GB3G-111	200	Metal	M*	7	253.2	231.8	M8 × 24
GVB-SS-CF200-P	GB3G-311	200	Metal	P**	8	253.2	231.8	M8 × 24
GVB-SS-CF275-P	GB3H-311	250	Metal	P**	8	336.5	306.5	M10×30
GVB-SS-CF300-P	GB3J-311	305	Metal	P**	8	355.6	325.7	M10×30

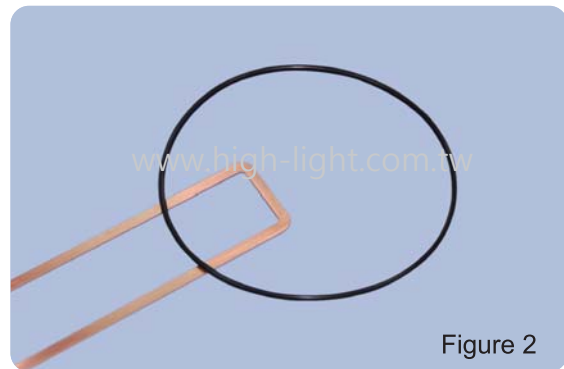
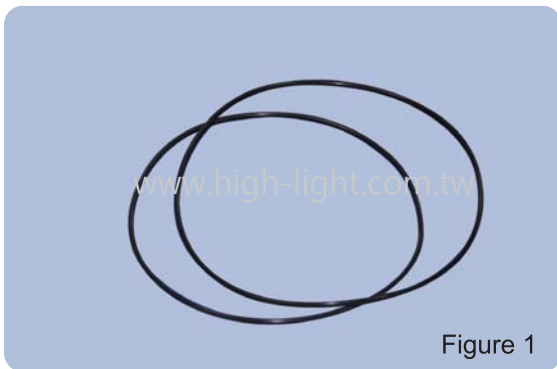
Model No.	A	B	C	D	E	F	G	H	L
GVB-SS-CF63-M	69	76	46	112	145	189	251	179	430
GVB-SS-CF63-P	69	76	94	112	145	189	251	219	470
GVB-SS-CF100-M	73	76	46	142	178	224	305	183	488
GVB-SS-CF100-P	73	76	94	142	178	224	305	223	528
GVB-SS-CF150-M	78	76	51	195	232	294	392	261	653
GVB-SS-CF150-P	78	76	114	195	232	294	392	239	631
GVB-SS-CF200-M	82.4	78	51	196	277	348	472	261	733
GVB-SS-CF200-P	82.4	78	114	196	277	348	472	239	711
GVB-SS-CF275-P	106.4	95	114	323	360	505	690	340	1030
GVB-SS-CF300-P	112.6	105	104	367	415	554	750	361	1111

* M : Manual

* * P : Pneumatic

Dimension in mm unless otherwise noted

Gate Valve Kit



Spare Parts For 1.5"~12" HV Type

Kit P/N	Content	Figure	For Port Size inch/(mm)
GA1A112K	Gate seal x 1 – Viton Bonnet seal x 1 – Viton	1	1.50" / (40)
GA1B112K			2.00" / (50)
GA4C111K			2.50" / (63)
GA4E111K			4.00" / (100)
GA4F111K			6.00" / (160)
GA4G111K			8.00" / (200)
GA4H111K			10.0" / (250)
GA4J111K			12.0" / (320)

Spare Parts For 1.5"~12" UHV Type

Kit P/N	Content	Figure	For Port Size inch/(mm)
GB3A111K	Gate seal x 1 – Viton Bonnet seal x 1 – OFHC Copper	2	1.50" / (35)
GB3B111K			2.00" / (50)
GB3C111K			2.50" / (63)
GB3E111K			4.00" / (100)
GB3F111K			6.00" / (150)
GB3G111K			8.00" / (200)
GB3H111K			10.0" / (250)
GB3J111K			12.0" / (300)