

GV-A

Manufactured by Germany's Elster GmbH krom schroder High-Performance Gas Solenoid Valve for Industrial Applications

Overview

The GV-A High-Performance Gas Solenoid Valve for Industrial Applications is a safety shutoff valve for gas burners and gas combustion equipment.

This product was made by Elster GmbH krom
schroder and imported from Germany.

Features

- The GV-A consists of a valve unit, which is equipped with compact solenoid coils, and dedicated flanges.
- The maximum operating pressure is 50 kPa.
- This product is available in both quick-open and slow-open types. The quick-open type has a mechanism for adjusting the maximum flow rate. The slow-open type has a mechanism for adjusting the initial gas flow rate and maximum flow rate.
- The Proof of Closure (POC) switch, which operates only when the valve is completely closed, has an indicator that allows visual checking of valve operation. Models with the POC switch are available.
- The blue LED, which is a standard feature, allows visual checking of power status.
- The product complies with EN 161 Class A.
- This product has obtained SIL2 and PLd certification. When two GV-A units are connected in series, the product complies with SIL3 and PLe.



The blue LED indicates that the solenoid valve is powered.



Inset: Solenoid valve equipped with dedicated pipe flanges (sold separately)

SIL 3 (Safety Integrity Level 3)

Safety systems must receive SIL safety certification by a third party. SIL3 is the level at which risk is reduced between 1/1,000 and 1/10,000 of the risk at a plant where safety measures are not adopted. SIL1 indicates that risk is reduced to the 1/10–1/100 range.

PL (Performance Level)

The performance level indicates the ability of safety-related parts to perform a safety function. Hardware failure rates and software safety requirements were added to the qualitative requirements described in category B, items 1 to 4 in EN 954-1 and ISO 13849-1: 1999 (JIS B 9705-1:2000) to provide quantitative safety levels designated from PLa to PLe.

Note JIS stands for Japanese Industrial Standards

Specifications

Base model number (product name)	High-performance gas solenoid valve for industrial applications		
Applicable gas type *1	Natural gas, LP gas (propane, butane), air, Hydrogen		
Maximum operating pressure	50 kPa		
Leakage	At 50 kPa, both internal and external leakage: GV-A100, GV-A200: 40 ml/h or less GV-A300: 60 ml/h or less		
Valve operation	When not powered: closed		
Valve operation type	Two types: quick-open and slow-open		
Valve opening time	Quick-open type: 1 second or less Slow-open type: approx. 10 seconds or less		
Valve closing time	1 second or less (both quick- and slow-open types)		
Initial gas flow rate adjustment range	0 to 70 % (function is available only for slow-open type)		
Maximum flow rate adjustment range	20 to 100 %		
Allowable ambient temperature	-20 to 60 °C (without condensation)		
Storage temperature	-20 to +40 °C (without condensation)		
Standards	EN 13611 EN 161 Class A Group 2		
Rated supply power	100 V AC (50/60 Hz) 200 V AC (50/60 Hz)		
Allowable power	-15 to +10 % of the rated voltage		
Cable gland	M20 × 1.5		
Electrical wiring	2.5 mm dia. max. (12 AWG recommended)		
Power consumption	Model No.	100 V AC model	200 V AC model
	GV-A100	25 W (26 VA)	25 W (26 VA)
	GV-A200	36 W (40 VA)	40 W (44 VA)
	GV-A300	36 W (40 VA)	40 W (44 VA)
Protection class	IP65 (except for electrical wiring ports. Cannot be installed outdoors)		
Valve main unit material	Aluminum alloy		
Valve sealing material	NBR		
Connecting flange	Rp (ISO 7-1—compliant parallel internal thread for pipes)		
Pressure measurement port thread size	G ¼ female thread		
POC switch contact rating	12 to 30 V DC, 2 to 100 mA		
POC switch service life	200,000 cycles		

*1 Gas must be dry and not contain corrosive components (chlorine, sulfur, or acid). It must be clean, without dust or oil mist.

Design Life

• Compliant with EN 13511 and EN 161

Model No.	Design life	
	Operations (cycles)	Time (years)
GV-A100, GV-A200	500,000	10
GV-A300	200,000	10

Design life is based on operation count or number of years, whichever is sooner.

Prolonged operation at high temperatures can result in premature wear of rubber materials and a shorter operating lifespan than the above values.

Safety Characteristics

• B_{10d}

Mean operation cycles until 10 % of components have a dangerous failure *

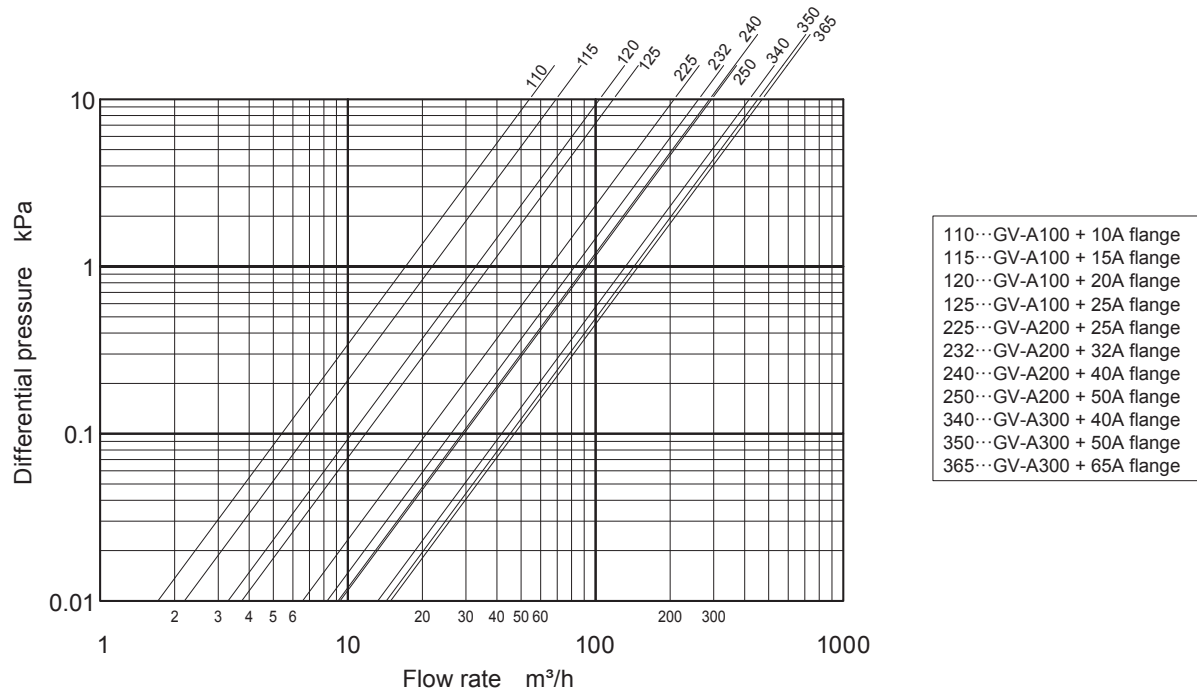
Model No.	Mean operation cycles
GV-A100	15,845,898
GV-A200, GV-A300	15,766,605

* For B_{10d}, refer to EN ISO 13849-1: 2008.

Flow Rate Characteristics

• For single-valve configuration

The graph assumes a specific gravity of 0.65, temperature of 0 °C, and pressure of 101.325 kPa.

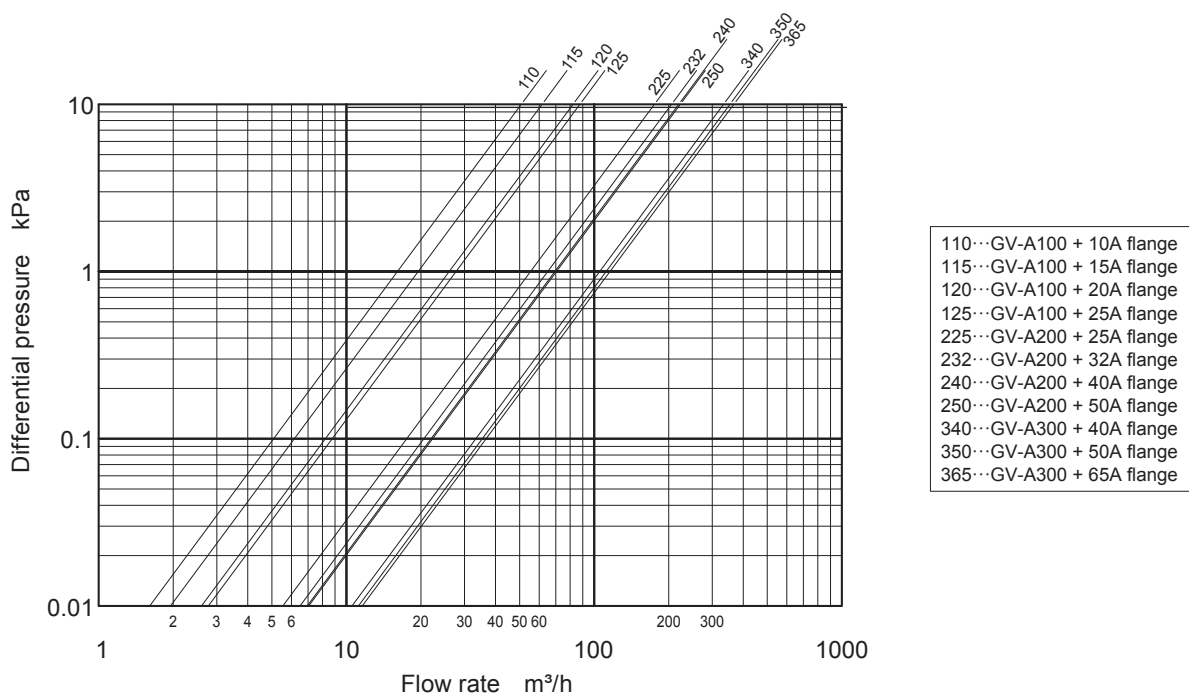


Flow rate and Cv according to valve size and connection port diameter

Model No. (valve size)	Connection port diameter	Flow rate (m³/h) at differential pressure of 0.25 kPa		Cv
		Specific gravity 0.65	Specific gravity 1.53	
GV-A100	10A (Rp ¾)	8.5	5.6	5.8
	15A (Rp ½)	10.9	7.1	7.4
	20A (Rp ¾)	16.4	10.7	11.1
	25A (Rp 1)	18.6	12.1	12.6
GV-A200	25A (Rp 1)	32.8	21.4	22.2
	32A (Rp 1¼)	41.2	26.9	27.9
	40A (Rp 1½)	45.6	29.7	30.9
	50A (Rp 2)	46.5	30.3	31.4
GV-A300	40A (Rp 1½)	66.0	43.0	44.6
	50A (Rp 2)	71.5	46.6	48.3
	65A (Rp 2½)	74.4	48.5	50.3

● **For double-valve configuration**

The graph assumes a specific gravity of 0.65, temperature of 0 °C, and pressure of 101.325 kPa.



Flow rate and Cv according to valve size and connection port diameter

Model No. (valve size)	Connection port diameter	Flow rate (m³/h) at differential pressure of 0.25 kPa		Cv
		Specific gravity 0.65	Specific gravity 1.53	
GV-A100	10A (Rp 3/8)	8.5	5.2	5.4
	15A (Rp 1/2)	9.7	6.4	6.6
	20A (Rp 3/4)	13.0	8.5	8.8
	25A (Rp 1)	13.8	9.0	9.4
GV-A200	25A (Rp 1)	27.7	18.0	18.7
	32A (Rp 1 1/4)	32.5	21.2	22.0
	40A (Rp 1 1/2)	34.7	22.6	23.5
	50A (Rp 2)	35.2	23.0	23.8
GV-A300	40A (Rp 1 1/2)	52.6	34.3	35.6
	50A (Rp 2)	55.9	36.4	37.8
	65A (Rp 2 1/2)	57.9	37.8	39.2

Model Number

Basic model No.	Valve size	Operation type	Power voltage rating	POC switch	Inspection report	Add'l proc.	Description
GV-A							High-performance gas solenoid valve for industrial applications
	100						Valve size 1 (port size: 10A, 15A, 20A, 25A)
	200						Valve size 2 (port size: 25A, 32A, 40A, 50A)
	300						Valve size 3 (port size: 40A, 50A, 65A)
		N					Quick-open type
		L					Slow-open type
			P				100 V AC
			Y				200 V AC
				*1 GR			With POC switch Fluid flows from left to right, as viewed from the front of the terminal box (blue LED)
				*1 GL			With POC switch Fluid flows from right to left, as viewed from the front of the terminal box (blue LED)
				00			None
					D		With inspection report
					0		Without inspection report
						0	None

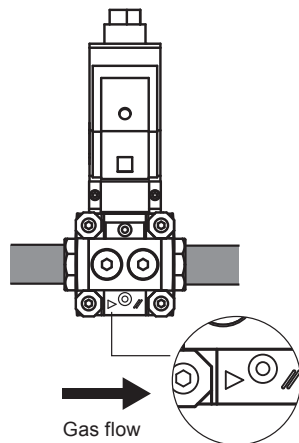
Note: Obtain the dedicated flange (sold separately) that is appropriate for the pipe size.

*1 Because the coil of the GV-A with POC switch does not rotate, the orientation of the terminal box cannot be changed.

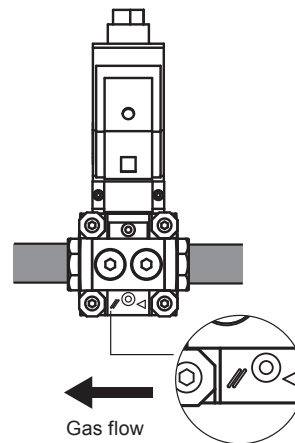
Check the fluid flow direction and select an appropriate model so that the front of the terminal box (blue LED) faces you after the valve is installed.

■ Gas flow direction for models GR and GL with POC switch


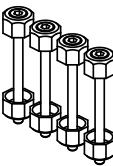
Model GR with POC switch



Model GL with POC switch



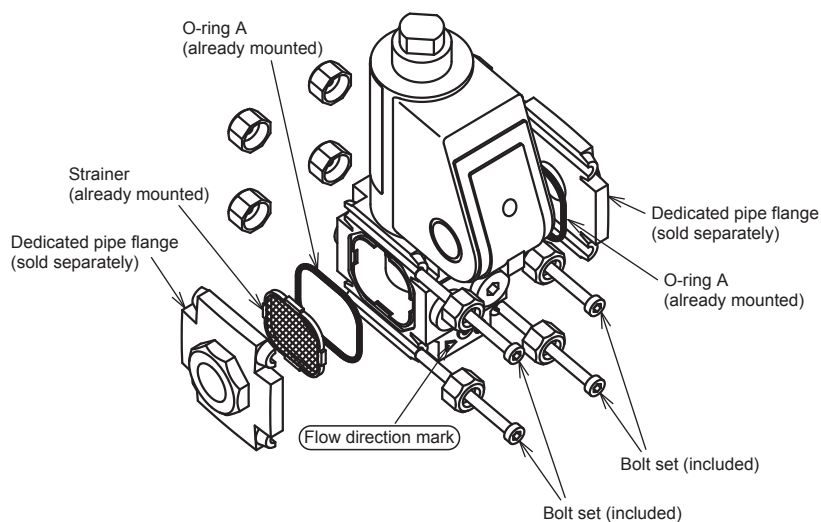
The following items are included with the GV-A.

Name	Model No.	Qty.	Notes
Valve unit	GV-A	1	For details, see the above "Model Number" table.
 M20 cable gland	-	2	For models with a POC switch (model No. GV-A____GR__ or GV-A____GL__)
		1	For models other than the above
 Bolt set	-	4	Set of bolts with octagonal washers and nuts
Strainer	-	1	Already mounted on the valve unit
O-ring A	-	2	Already mounted on the valve unit (O-ring is used between the valve and the dedicated pipe flange)

⚠ CAUTION

- The required optional parts are different depending on whether the GV-A is used in a single-valve configuration or double-valve configuration.

■ Optional parts for single-valve configuration



The following parts are required.

● Dedicated pipe flange (quantity: 2)

The inner diameter of the connecting pipe is determined by the type of dedicated pipe flange.



(1) For valve size 1 (valve unit model No.: GV-A100)

Model No.	Name	Product code *	Remarks
74921504	Port size 10A for valve size 1	FLV110R/B	
74921505	Port size 15A for valve size 1	FLV115R/B	
74922229	Port size 20A for valve size 1	FLV120R/B	
74922230	Port size 25A for valve size 1	FLV125R/B	Do not select a 25A flange for valve size 2.

(2) For valve size 2 (valve unit model No.: GV-A200)

Model No.	Name	Product code *	Remarks
74922231	Port size 25A for valve size 2	FLV225R/B	Do not select a 25A flange for valve size 1.
74922232	Port size 32A for valve size 2	FLV232R/B	
74922233	Port size 40A for valve size 2	FLV240R/B	Do not select a 40A flange for valve size 3.
74922234	Port size 50A for valve size 2	FLV250R/B	Do not select a 50A flange for valve size 3.

(3) For valve size 3 (valve unit model No.: GV-A300)

Model No.	Name	Product code *	Remarks
74922235	Port size 40A for valve size 3	FLV340R/B	Do not select a 40A flange for valve size 2.
74922236	Port size 50A for valve size 3	FLV350R/B	Do not select a 50A flange for valve size 2.
74922237	Port size 65A for valve size 3	FLV365R/B	

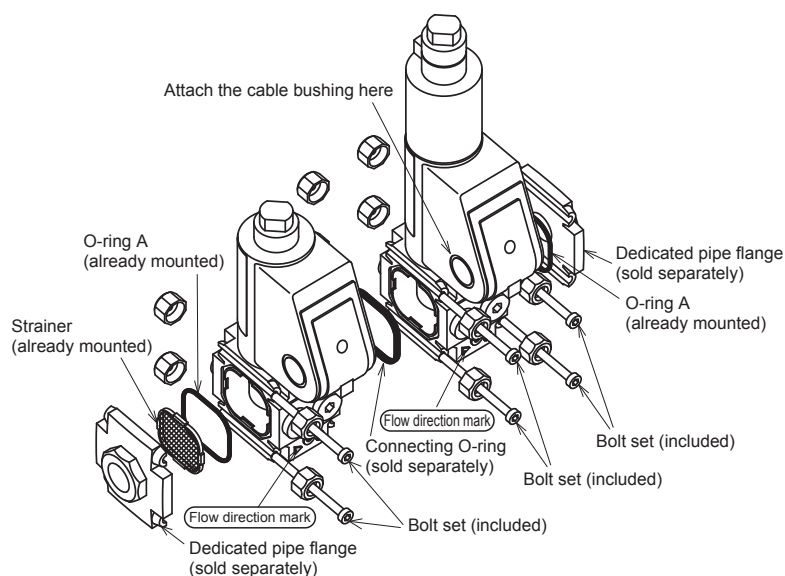
* A product identification code that is printed on the product package. It is separate from the model number.
Valve size and pipe size can be recognized by checking this code.

■ Optional parts for double-valve configuration

The following parts are required.

● Dedicated pipe flange (quantity: 2)

The inner diameter of the connecting pipe is determined by the type of dedicated pipe flange.



(1) For valve size 1 (valve unit model No.: GV-A100)

Model No.	Name	Product code *	Remarks
74921504	Port size 10A for valve size 1	FLV110R/B	
74921505	Port size 15A for valve size 1	FLV115R/B	
74922229	Port size 20A for valve size 1	FLV120R/B	
74922230	Port size 25A for valve size 1	FLV125R/B	Do not select a 25A flange for valve size 2.

(2) For valve size 2 (valve unit model No.: GV-A200)

Model No.	Name	Product code *	Remarks
74922231	Port size 25A for valve size 2	FLV225R/B	Do not select a 25A flange for valve size 1.
74922232	Port size 32A for valve size 2	FLV232R/B	
74922233	Port size 40A for valve size 2	FLV240R/B	Do not select a 40A flange for valve size 3.
74922234	Port size 50A for valve size 2	FLV250R/B	Do not select a 50A flange for valve size 3.

(3) For valve size 3 (valve unit model No.: GV-A300)

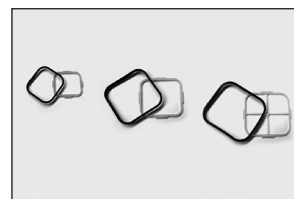
Model No.	Name	Product code *	Remarks
74922235	Port size 40A for valve size 3	FLV340R/B	Do not select a 40A flange for valve size 2.
74922236	Port size 50A for valve size 3	FLV350R/B	Do not select a 50A flange for valve size 2.
74922237	Port size 65A for valve size 3	FLV365R/B	

* A product identification code that is printed on the product package. It is separate from the model number.
Valve size and pipe size can be recognized by checking this code.

● Connecting O-ring set

Use these parts for connecting valve units. The set includes an O-ring and an R-frame.

Model No.	Name
74924978	Connecting O-ring set for valve size 1
74924979	Connecting O-ring set for valve size 2
74924980	Connecting O-ring set for valve size 3



● Cable bushing set

These parts are used to connect the terminal boxes of the GV-A units.

Model No.	Name
74921985	Cable bushing set for valve size 1
74921986	Cable bushing set for valve size 2
74921987	Cable bushing set for valve size 3



Note: When connecting a unit with POC and a unit without POC, since the height of the terminal boxes differs, the terminal boxes cannot be connected.

■ Other optional parts

● Pressure tap

The pressure tap can be connected to the pressure-measuring ports on the front and back of the valve unit to measure the primary and secondary pressure of the gas.

Model No.	Name	Product code	Remarks
74923390	Pressure tap	Pressure tap G $\frac{1}{4}$ P Alu + Viton /B	



● Bolt set

Use these parts for maintenance if needed.

These parts in the required quantity are included with the purchased GV-A.

Model No.	Name
74921992	Bolt set for valve size 1
74921993	Bolt set for valve size 2
74921994	Bolt set for valve size 3



Bolt set

Bolt (2)
Washer (2)
Nut (2)

● Strainer set

Use these parts for maintenance if needed.

These parts in the required quantity are included with the purchased GV-A.

Model No.	Name
74921997	Strainer set for valve size 1
74921998	Strainer set for valve size 2
74921999	Strainer set for valve size 3

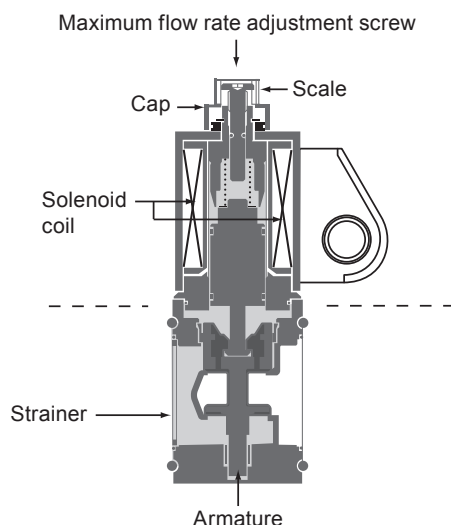


Strainer set

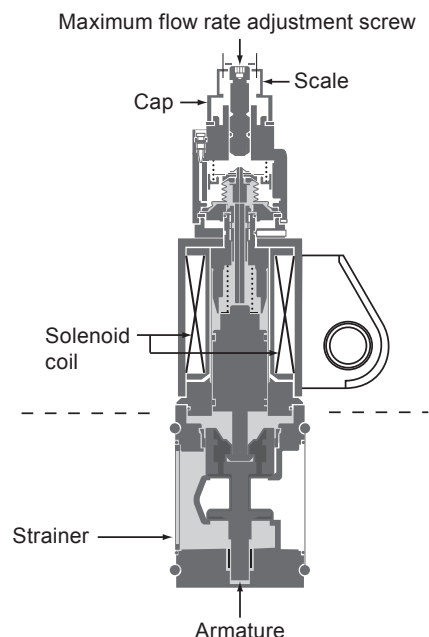
Strainer (1)
O-ring * (2)
These O-rings are used to install the dedicated pipe flanges.

Structure of Valve Unit (without POC Switch)

- Quick-open type



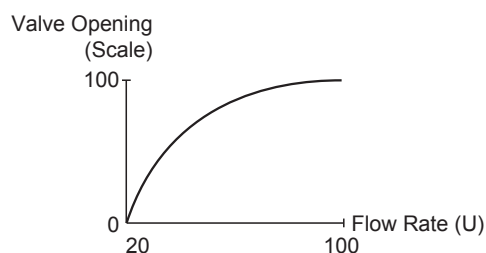
- Slow-open type



Adjustment of Maximum Flow Rate

The position for maximum flow rate is set at the factory. Adjust the maximum flow rate according to the application.

- Relationship between valve opening and flow rate

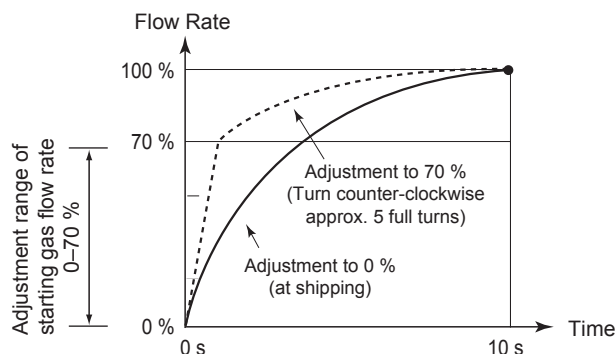


Adjustment of Initial Gas Flow Rate (for Slow-Open Type Only)

The initial flow rate is the flow rate of the gas that is supplied to the pipe immediately after the power is turned on. The flow rate can be adjusted within a range of 0 to 70 %.

The valve reaches the maximum flow rate position from the initial gas flow rate position in about 10 seconds or less.

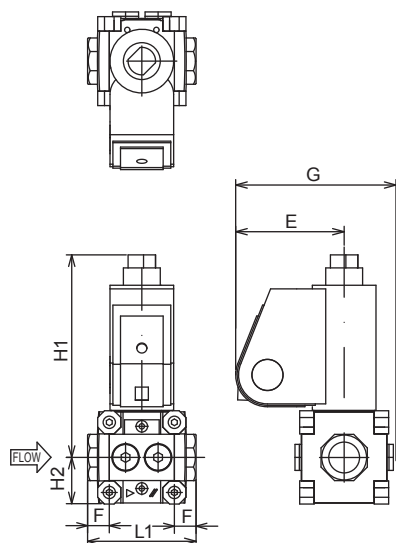
- Relationship between rotation of the damper unit and the initial flow rate



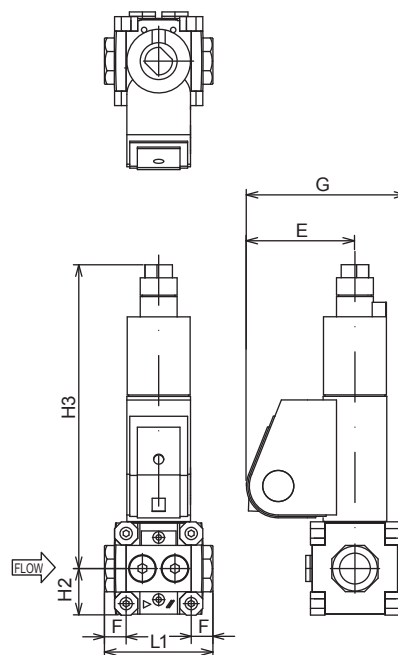
External Dimensions

■ Without POC switch

● Quick-open type

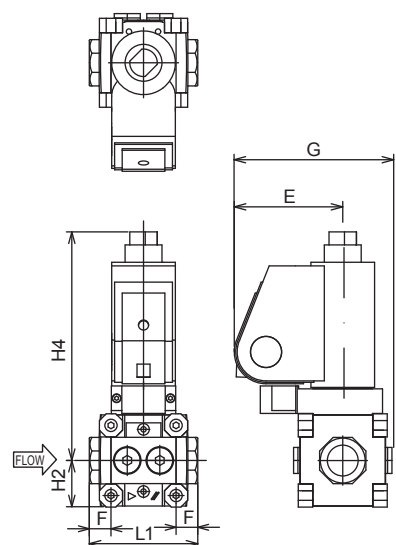


● Slow-open type

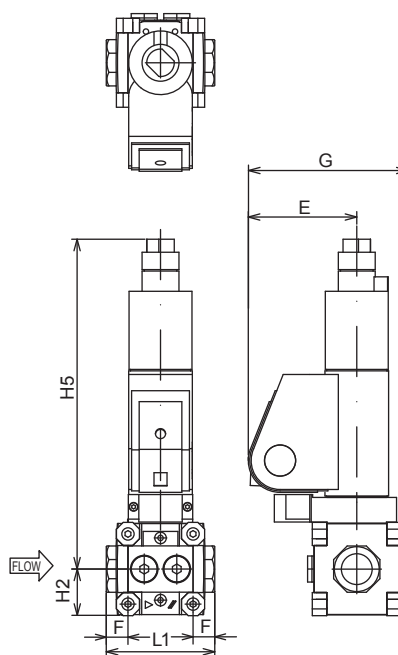


■ With POC switch

● Quick-open type (model GR)

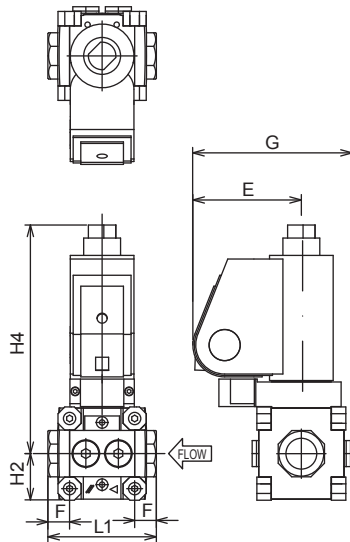


● Slow-open type (model GR)

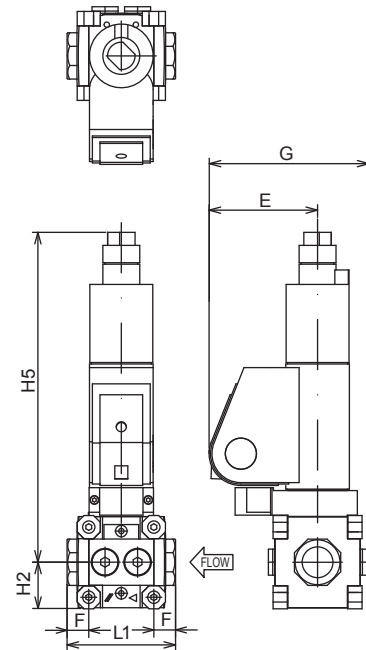


■ With POC switch

● Quick-open type (model GL)



● Slow-open type (model GL)



Model No.	Connection port diameter	Dimensions (mm)									Weight (kg)
		L1	F ^{*1}	E	H1	H2	H3	H4	H5	G ^{*2}	
GV-A100 (valve size 1)	10A (Rp ⅜)	75	15	75	143	32	208	161	226	109	Approx. 2
	15A (Rp ½)										
	20A (Rp ¾)	91	23								
	25 A (Rp 1)										
GV-A200 (valve size 2)	25 A (Rp 1)	128	30	85	170	47	235	191	256	134	Approx. 5
	32A (Rp 1¼)										
	40A (Rp 1½)										
	50A (Rp 2)										
GV-A300 (valve size 3)	40A (Rp 1½)	155	36	85	180	59	245	201	266	142	Approx. 6
	50A (Rp 2)										
	65A (Rp 2½)										

*1 Dedicated pipe flanges (the parts indicated with F in the above figure) are sold separately.

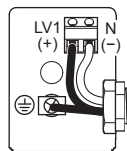
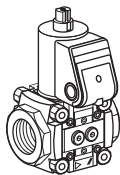
*2 Dimension G is calculated based on the data provided by the manufacturer.

Terminal Connections

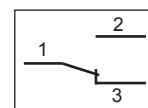
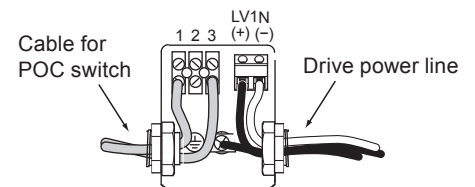
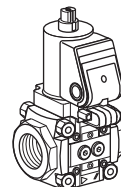
Connect the high potential (H) wire to LV1(+) and the low potential (G) wire to N(-).

Connect the ground wire to the ground terminal.

● Without POC switch



● With POC switch



When valve is closed

For the following POC switch equipped slow-open models, do not use terminal 2.

GV-A ___ L _ GR _ 0

GV-A ___ L _ GL _ 0

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Specifications are subject to change without notice.

azbil

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