

Gas combustion systems

- Gas combination valve
- Medium pressure gas safety shutoff control system
- Safety residual pressure exhaust valve
- Motorized valve ● Solenoid valve



Safety and Reliability
for gas energy control

With reliable gas control, we can help create an affluent society



The structure, function, and material of the system product are closely checked to ensure high safety.



We continuously pursue the ideal gas combustion components, and propose highly reliable systems based on safety.



We contribute to a society that can develop sustainably, adapting to carbon neutrality and clean energy.

Water coolers/Heaters



Building/factory air conditioning, aquarium, etc.

Boilers



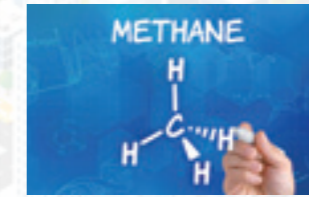
Hospitals, thermal power plants, food plants, etc.

Industrial furnaces



Incinerators, industrial product coaters, dryers, etc.

Methanation



Control of greenhouse gases, decarbonization, etc.

Burners



Industrial components, equipment, agriculture, etc.

Clean energy



Hydrogen extraction, hydrogen combustion, etc.



Intermediate pressure gas combination valve

GHV Series

- Supports up to intermediate pressures (up to 50kPa)
- Supports dual gas cutoff by incorporating two solenoid valves
- Space saving and reduced piping hours are possible by integration of solenoid valve + governor + solenoid valve
- Port size change by replacing the flange is possible



Medium pressure gas combination valve

GRV Series (Japan only)

- Large flow rate/space saving
- Supports up to medium pressure B (up to 0.3MPa)
- Slow open/quick shut with hydraulic drive
- Wide pressure adjusting range (10kPa to 150kPa)
- With indicator
- Connected delivery eliminates complicated piping work



Gas cutoff valve

VNA/VLA Series

- Hydrogen gas compatible option is added to the working fluid
- Supports up to intermediate pressures
- Supports a wide range of bore sizes (Rp1/2 to 2 1/2)
- Slow open prevents the burner from going out (VLA)



Fluid operated 2-position cutoff valve

HK1 Series

- Supports intermediate pressure to medium pressure gas
- With gas flow rate adjustment function (excluding size 125 to 200A)
- With indicator for checking valve open/close state

Hydrogen option

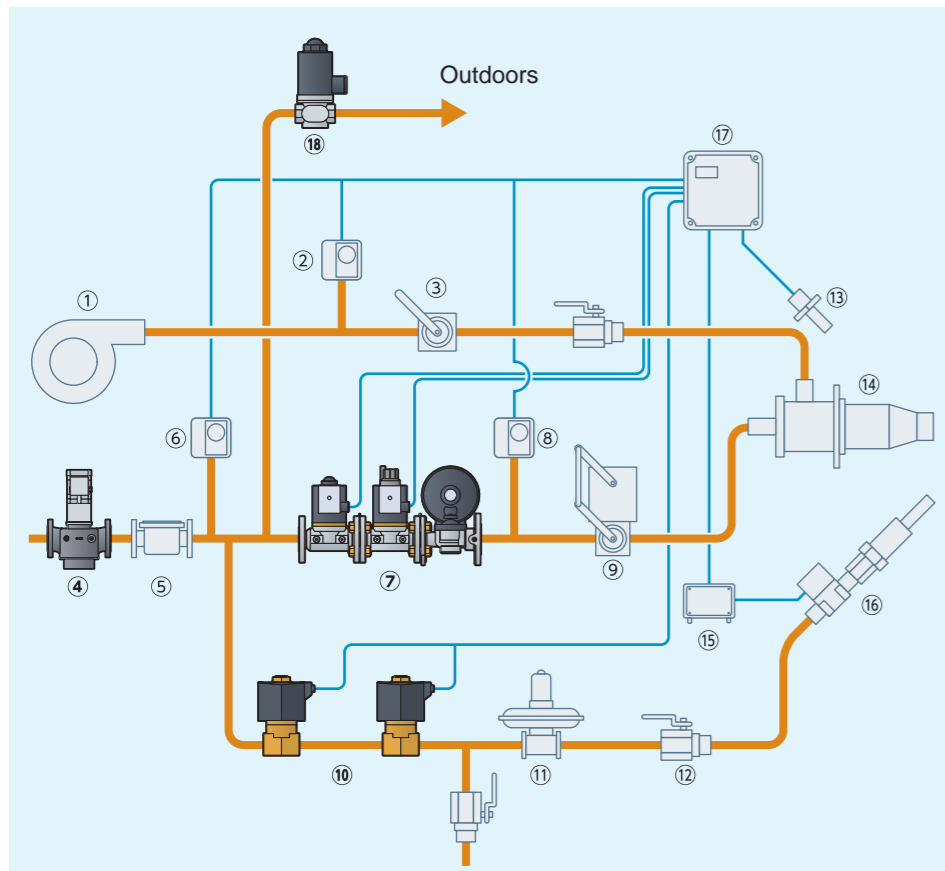
These options guarantee the use of hydrogen gas in low pressure, intermediate pressure, and medium pressure series.



In pursuit of system safety from every angle, CKD offers

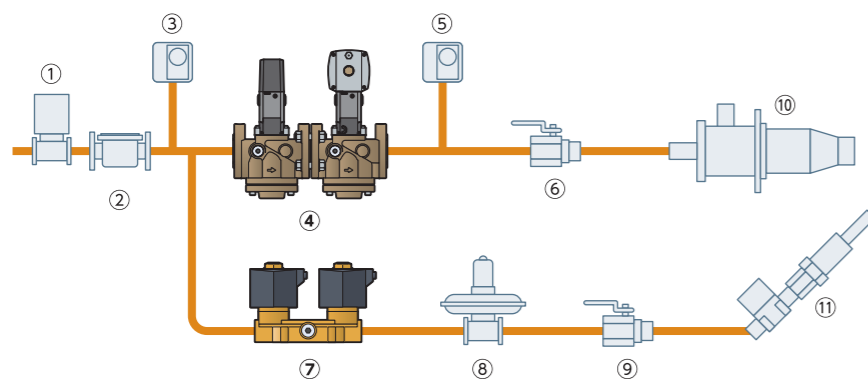
components required for gas combustion systems.

Example of system circuit



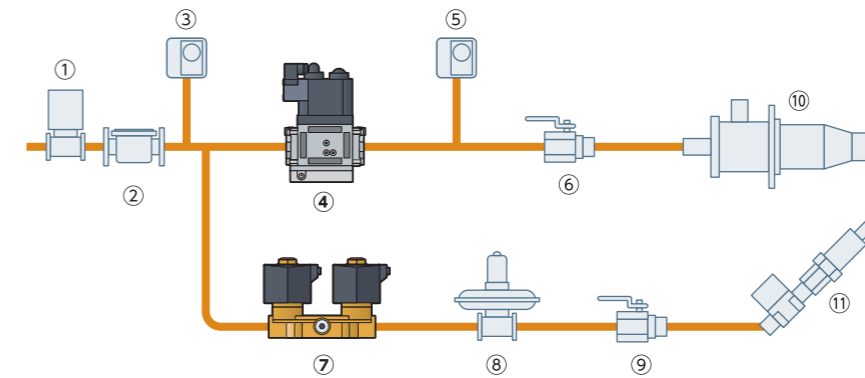
- ① Air blower
- ② Air pressure switch (lower limit)
- ③ Butterfly valve
- ④ Source valve HK1
- ⑤ Filter
- ⑥ Gas pressure switch (lower limit)
- ⑦ Safety shutoff control system TAC-25
- ⑧ Gas pressure switch (upper limit)
- ⑨ With control motor Butterfly valve
- ⑩ Solenoid valve (pilot system) AB4X
- ⑪ Governor (pilot system)
- ⑫ Gas control valve
- ⑬ UV phototube
- ⑭ Burner (pre-mixing)
- ⑮ Ignition transformer
- ⑯ Pilot burner
- ⑰ Automatic burner controller
- ⑱ Solenoid relief valve VNR

Medium pressure circuit



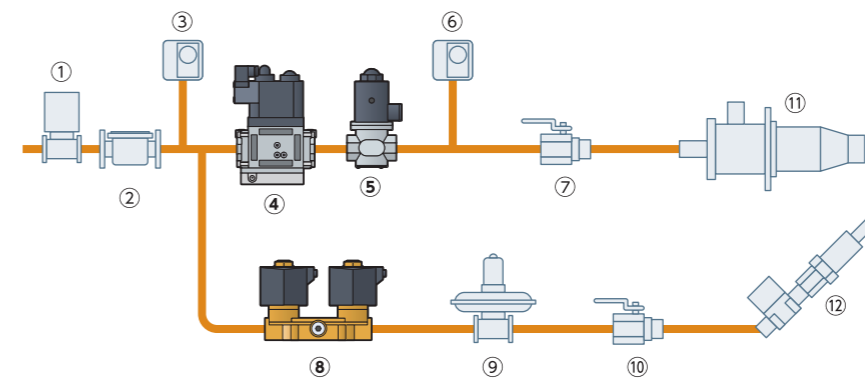
- ① Valve
- ② Filter
- ③ Pressure switch (lower limit)
- ④ Medium pressure gas combination valve GRV Series
- ⑤ Pressure switch (upper limit)
- ⑥ Gas control valve
- ⑦ Solenoid valve AB4X
- ⑧ Governor
- ⑨ Gas control valve
- ⑩ Burner
- ⑪ Pilot burner

Intermediate pressure circuit (combination valve used)



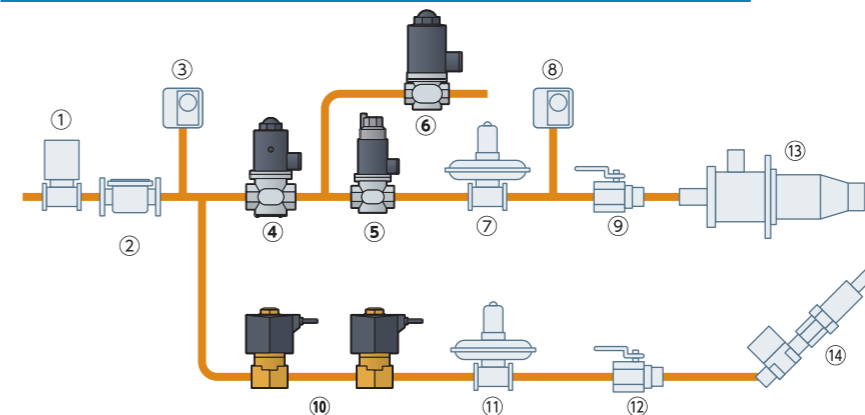
- ① Valve
- ② Filter
- ③ Pressure switch (lower limit)
- ④ Intermediate pressure gas combination valve GHV-G
- ⑤ Pressure switch (upper limit)
- ⑥ Gas control valve
- ⑦ Solenoid valve AB4X
- ⑧ Governor
- ⑨ Gas control valve
- ⑩ Burner
- ⑪ Pilot burner

Intermediate pressure circuit (combination valve used: Hi-Lo-OFF control)



- ① Valve
- ② Filter
- ③ Pressure switch (lower limit)
- ④ Intermediate pressure gas combination valve GHV-G
- ⑤ Flow rate switching solenoid valve VNA-R
- ⑥ Pressure switch (upper limit)
- ⑦ Gas control valve
- ⑧ Solenoid valve AB4X
- ⑨ Governor
- ⑩ Gas control valve
- ⑪ Burner
- ⑫ Pilot burner
















Intermediate pressure circuit (conventional circuit)

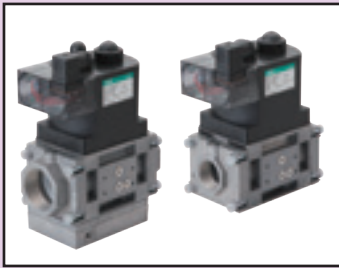


- ① Valve
- ② Filter
- ③ Pressure switch (lower limit)
- ④ Flow rate switching solenoid valve VNA
- ⑤ Gas cutoff valve VLA
- ⑥ Solenoid relief valve VNR
- ⑦ Governor
- ⑧ Pressure switch (upper limit)
- ⑨ Gas control valve
- ⑩ Solenoid valve AB4X
- ⑪ Governor
- ⑫ Gas control valve
- ⑬ Burner
- ⑭ Pilot burner

Selection guide

: Not applicable
 Port size column
○ : Rp ● : JIS flange
▲ : DIN flange ● : Rp and JIS flange

| Series name | | | Working pressure | | | Compatible with hydrogen gas | Opening operation | | Port size | | | | | | | | | | | | Description Page | | | |
|---|----------|---|------------------|-----------------------|-----------------|------------------------------|-------------------|------|-----------|-----|-----|-----|-------|-------|-----|-------|-----|------|------|------|------------------|------|------|----|
| | | | Low pressure | Intermediate pressure | Medium pressure | | Quick | Slow | 8A | 15A | 20A | 25A | 32A | 40A | 50A | 65A | 80A | 100A | 125A | 150A | | 200A | 250A | |
| | | | | | | | | | 1/4 | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | | 8 | 10 | |
| Gas combination valve | GHV |  | ○ | ○ | | ○ | ○ | ○ | | | | | ○ | ○ | ○ | ○ | | | | | | | | 3 |
| | GRV |  | ○ | ○ | ○ | ○ | | ○ | | | | | | | | | | | | | | | | 7 |
| Solenoid valve | DSG |  | ○ | | | ○ | ○ | | | | | | ○ | ○ | | | | | | | | | | 9 |
| | DSG-W |  | ○ | | | ○ | ○ | | | | | | ○ | ○ | | | | | | | | | | 13 |
| | VNA |  | ○ | ○ | | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | | | | | | | | 15 |
| | VLA |  | ○ | ○ | | ○ | | ○ | | | | | ○ | ○ | ○ | ○ | ○ | | | | | | | 21 |
| | VNA-R/RH |  | ○ | ○ | ○ | ○ | ○ | | | | | | ○ | ○ | ○ | ○ | | | | | | | | 25 |
| | VNR |  | ○ | ○ | | ○ | ○ | | | | | | | ○ | ○ | ○ | ○ | | | | | | | 29 |
| Medium pressure gas Safety shutoff Control system | TAC-25 |  | | | ○ | | ○ | ○ | | | | | | | | | | | | | | | | 31 |
| | VNM |  | ○ | ○ | ○ | ○ | ○ | | | | | | | ● | | | | | | | | | | 35 |
| | VLM |  | ○ | ○ | ○ | ○ | | ○ | | | | | | ● | | | | | | | | | | 37 |
| | C25N-B |  | | | ○ | | | | | | | | | | | | | | | | | | | 39 |
| Safety residual pressure exhaust valve | VNM-25-K |  | ○ | ○ | ○ | | ○ | | | | | | ● | | | | | | | | | | | 41 |
| Motorized valve | HK1 |  | ○ | ○ | ○ | ○ | | ○ | | | | | | | | | | | | | | | | 43 |
| | HS |  | ○ | ○ | ○ | ○ | | ○ | | | | | | | ● | | | | | | | | | 47 |



Intermediate pressure gas combination valve

GHV Series

- NC (Open when energized)
- City gas/LPG
- Port size: Rp1, Rp1¹/₄, Rp1¹/₂, Rp2



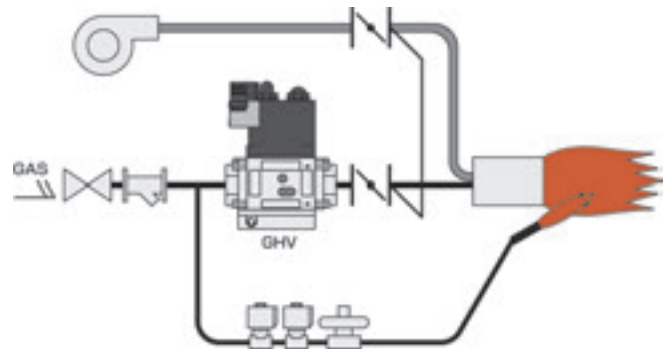
Features

- Integrated structure/space-saving
 - Compact integration of two solenoid valves, including a governor function
 - Face to face 1/3 (50A, compared to CKD conventional products)
 - A single unit handles JIS B 8415 double cutoff, realizing space saving of equipment/systems.
- Wiring and piping work-hour reduction (solenoid valve is simultaneous energizing type)
 - By integrating double cutoff, wiring and piping hours can be reduced by one machine worth.
- Up to intermediate pressures (up to 50 kPa) allowed
- Selectable variations
 - Solenoid valve with built-in governor + solenoid valve
 - Solenoid valve + solenoid valve
 - Solenoid valve + solenoid valve (slow open)
- Option
 - With closing confirmation switch (mounted to secondary side solenoid valve)
- Port size change is easy
 - Port size can be changed by replacing the flange from 25A to 50A.

Applications

- Gas boilers
- Industrial furnaces
- Gas absorption water coolers/heaters
- Drying furnaces
- Hydrogen-related devices (only hydrogen gas option is used as the working fluid)

System example



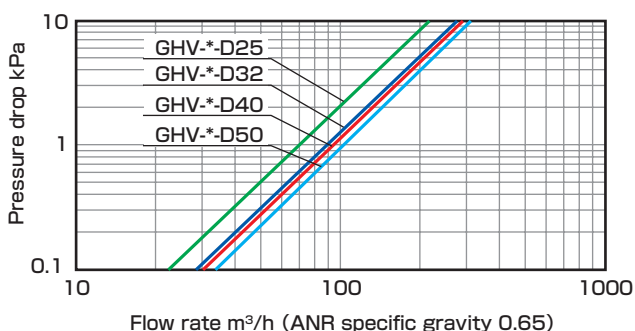
Specifications

| Item | GHV-G | | | | GHV-N | | | | GHV-L | | | |
|---|---|-------------------------------|-------------------------------|------|--|-------------------------------|-------------------------------|------|--|-------------------------------|-------------------------------|------|
| | -D25 | -D32 | -D40 | -D50 | -D25 | -D32 | -D40 | -D50 | -D25 | -D32 | -D40 | -D50 |
| Working fluid | City gas/LPG (hydrogen gas * 1) | | | | | | | | | | | |
| Working pressure kPa | 0 to 50 | | | | | | | | | | | |
| Secondary pressure kPa | 0.4 to 2.0 | | | | | | | | | | | |
| Flow rate ^{Specific gravity of city gas 0.65} _{ΔP=0.25kPa} m ³ /h(ANR) | 35 | 43.7 | 47.5 | 51 | 35 | 43.7 | 47.5 | 51 | 35 | 43.7 | 47.5 | 51 |
| Rated voltage V | | | | | 100 AC ^{+10%} / _{-15%} | | | | 200 AC ^{+10%} / _{-15%} | | | |
| Frequency Hz | Common in 50 and 60 | | | | | | | | | | | |
| Power consumption (apparent power) VA | 80 | | | | | | | | | | | |
| Ambient temperature °C | -15 to 70 (no freezing) *2 | | | | | | | | -15 to 60 (no freezing) | | | |
| Closing time s | 1.0 or less | | | | | | | | | | | |
| Frequency cycles/min. | 10 or less | | | | | | | | 1 or less | | | |
| Mounting orientation | Range of vertical direction with the coil on top to horizontal direction with the coil horizontal. (vertical piping installation available) | | | | | | | | | | | |
| Connection | Screw-in (Rp) | | | | | | | | | | | |
| Port size | 1 | 1 ¹ / ₄ | 1 ¹ / ₂ | 2 | 1 | 1 ¹ / ₄ | 1 ¹ / ₂ | 2 | 1 | 1 ¹ / ₄ | 1 ¹ / ₂ | 2 |
| Weight kg | 6.1 | | | | 5.5 | | | | 5.8 | | | |
| Proof pressure kPa | 75 | | | | | | | | | | | |
| Opening time s | - | | | | 1 or less | | | | Approx. 10 | | | |
| Start gas adjustment % | - | | | | - | | | | 0 to 70 | | | |
| Re-energizing intermission time s | - | | | | - | | | | 5 or more | | | |
| Degree of protection | IP 54 or equiv. | | | | | | | | | | | |

*1 : Only the option for hydrogen gas as the working fluid can be used.

*2 : When type with closing confirmation switch is selected, -15 to 60 (no freezing)

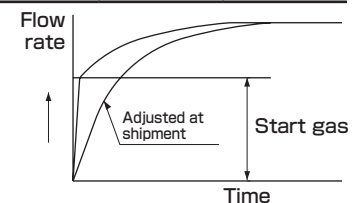
Flow characteristics



Reference: Conversion coefficient $\text{Converted flow rate} = (\text{flow rate in table}) \times (\text{coefficient})$

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

Opening characteristics (GHV-L)



How to order

GHV - G - D40 - E H2 - AC100V

Model No.



① Variation of models

② Port size

③ Option

④ Hydrogen compatible option

⑤ Voltage

| Code | Description | |
|-------------------------------------|--|---|
| 1 Variation | | |
| G | Solenoid valve with built-in governor + solenoid valve | |
| N | Solenoid valve + solenoid valve | |
| L | Solenoid valve + solenoid valve (slow open) | |
| 2 Port size | | |
| D00 | Without flange | |
| D25 | Rp1 | |
| D32 | Rp1 ¹ / ₄ | |
| D40 | Rp1 ¹ / ₂ | |
| D50 | Rp2 | |
| 3 Option | | |
| Blank | None | |
| E | With closing confirmation switch | |
| 4 Hydrogen compatible option | | |
| Blank | Standard |  |
| H2 | Working fluid: Hydrogen gas |  |
| 5 Voltage | | |
| AC100V | 100 VAC 50Hz/60Hz | |
| AC200V | 200 VAC 50Hz/60Hz | |

● Flange set

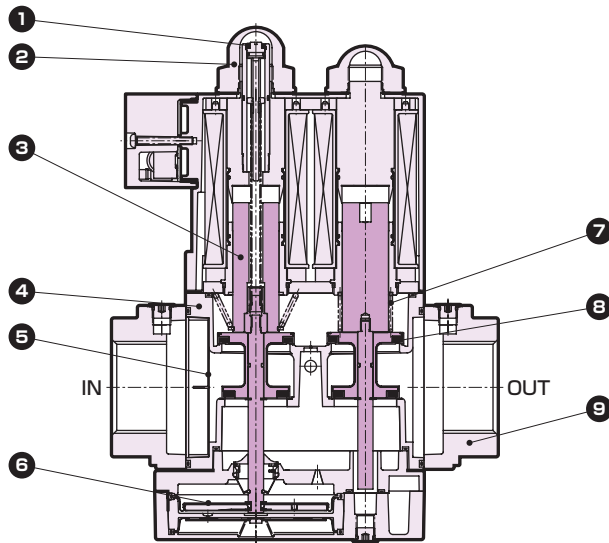
GHV - FLANGE - D40

Model No.

① Port size

| Code | Description | |
|--------------------|---------------------------------|--|
| 1 Port size | | |
| D25 | Rp1 | |
| D32 | Rp1 ¹ / ₄ | |
| D40 | Rp1 ¹ / ₂ | |
| D50 | Rp2 | |

Internal structure/material



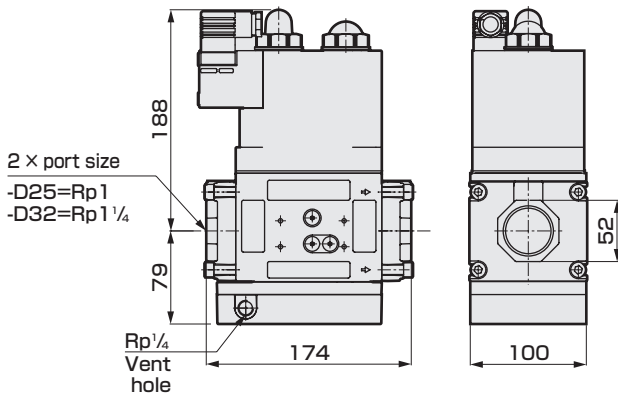
Cannot be disassembled

| Part No. | Part name | Material |
|----------|---------------------------|-------------------------------------|
| 1 | Pressure adjustment screw | Stainless steel |
| 2 | Governor cap | Resin |
| 3 | Plunger | Steel |
| 4 | Body | Aluminum die-casting |
| 5 | Strainer | Resin |
| 6 | Diaphragm | Nitrile rubber |
| 7 | Spring | Stainless steel, spring steel |
| 8 | Valve | Nitrile rubber/aluminum die-casting |
| 9 | Flange | Aluminum die-casting |

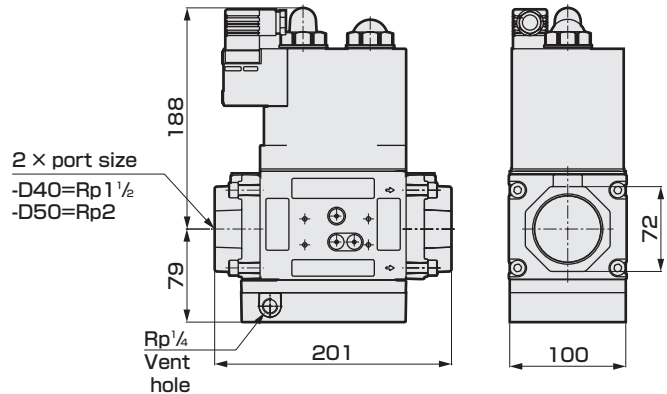
Dimensions

● Solenoid valve with built-in governor + solenoid valve

- GHV-G-D25/D32

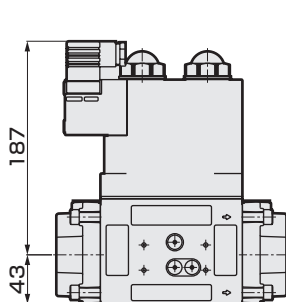


- GHV-G-D40/D50



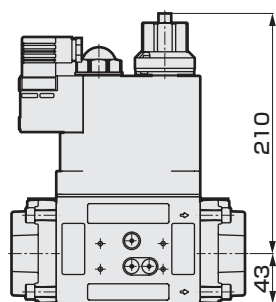
● Solenoid valve + solenoid valve

- GHV-N-D25 to D50



● Solenoid valve + solenoid valve (slow open)

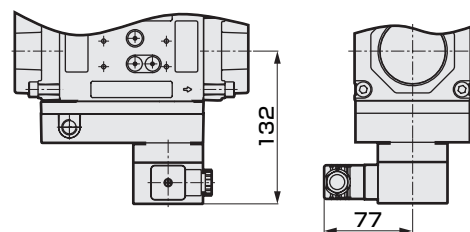
- GHV-L-D25 to D50



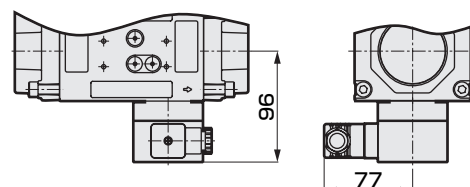
Optional dimensions

● Closing confirmation switch

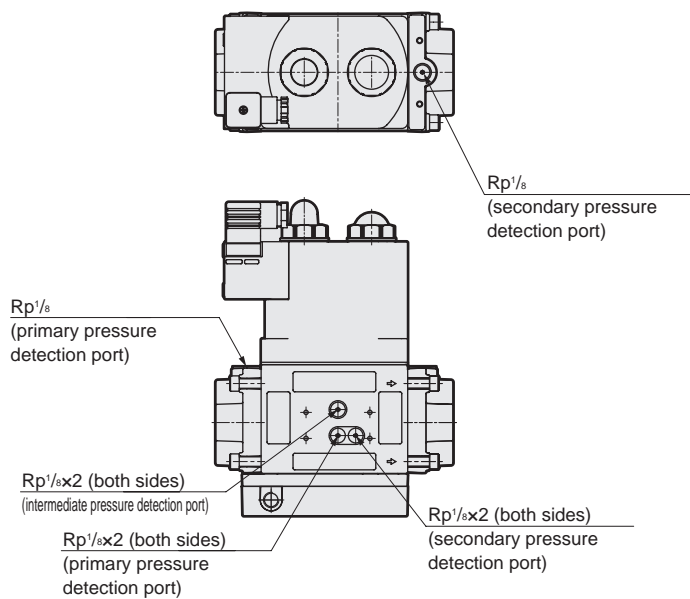
- GHV-G-D25 to D50-E



- GHV-N-D25 to D50-E



Pressure detection port layout drawing





Medium pressure gas combination valve

GRV Series

- City gas/LPG
- Port size: 40A (JIS flange)



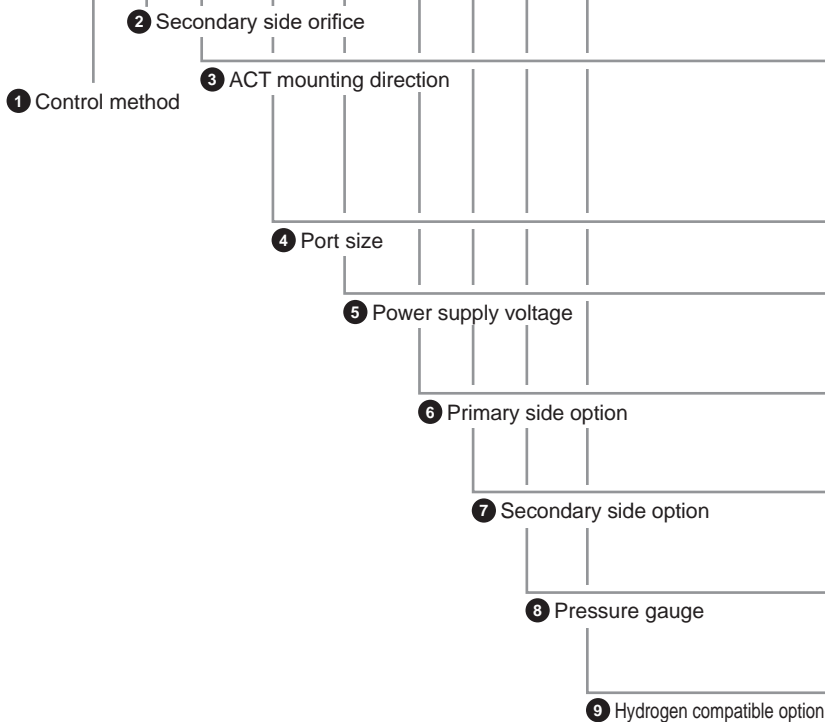
Specifications

| Item | Control system | Pressure reduction control | | | ON/OFF control | | |
|--|-------------------------|--|------|------|----------------|------|------|
| | Secondary side orifice | ø15 | ø25 | ø40 | ø15 | ø25 | ø40 |
| Working fluid | | City gas/LPG (hydrogen gas *1) | | | | | |
| Working pressure | MPa | 0 to 0.3 | | | | | |
| Secondary pressure adjusting range | kPa | 10 to 70 (for low pressure) | | | - | | |
| | | 60 to 150 (for high pressure) | | | - | | |
| Flow rate: Specific gravity of natural gas 0.65 ΔP=0.25 kPa | m ³ /h (ANR) | 13.8 | 29.5 | 38.8 | 13.8 | 29.5 | 38.8 |
| Rated voltage | VAC | 100, 200 ^{+10%} _{-15%} | | | | | |
| Frequency | Hz | 50.60 | | | | | |
| Power consumption (apparent power) | VA | 26 | | | | | |
| Ambient temperature | °C | -10 to 60 | | | | | |
| Opening operating time | sec | Fully open 17 seconds or less | | | | | |
| Closing operating time | sec | 1 second or less | | | | | |
| Frequency | cycles/min | 4 or less | | | | | |
| Connection | | Flange (JIS B 2239 10K RF) | | | | | |
| Port size | | 40A | | | | | |
| Mounting orientation | | Vertical direction with the actuator up or vertical piping direction | | | | | |
| Weight | kg | 27.5 | | | 27 | | |
| Proof pressure | MPa | Body | 0.45 | | Body | 0.45 | |
| | | Governor | 0.2 | | | - | |

* 1: Only the option for hydrogen gas as the working fluid can be used.

How to order

GRV - 2 2 R 40S 2 - N 1 N H2



| 1 Control method | |
|------------------|----------------------------|
| 1 | ON/OFF control |
| 2 | Pressure reduction control |

| 2 Secondary side orifice | |
|--------------------------|-----|
| 1 | ø15 |
| 2 | ø25 |
| 3 | ø40 |

| 3 ACT mounting direction | |
|--------------------------|----------|
| L | OUT side |
| R | IN side |

*Direction of the ACT terminal box viewed from the IN side flange

| 4 Port size | |
|-------------|--------------|
| 40S | 40A (flange) |

| 5 Power supply voltage | |
|------------------------|-------------------|
| 1 | 100 VAC 50Hz/60Hz |
| 2 | 200 VAC 50Hz/60Hz |

| 6 Primary side option | |
|-----------------------|-----------------|
| N | None |
| 1 | With POC switch |

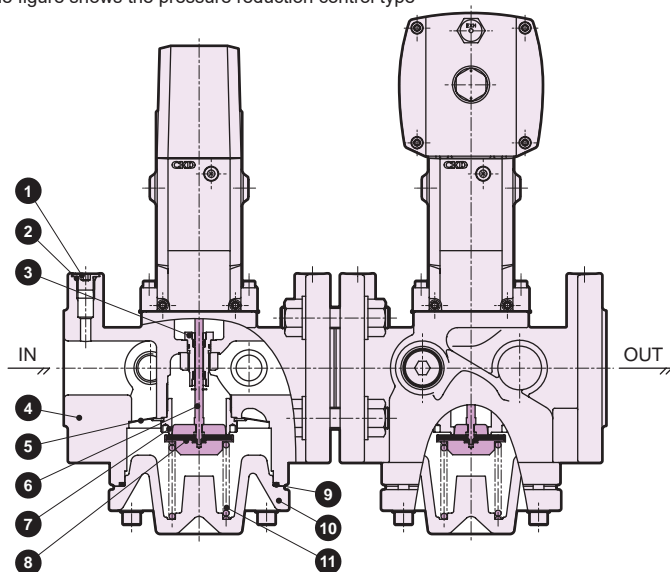
| 7 Secondary side option | |
|-------------------------|-----------------|
| N | None |
| 1 | With POC switch |

| 8 Pressure gauge (included) | |
|-----------------------------|--------------|
| N | None |
| A | 0 to 0.4 MPa |

| 9 Hydrogen compatible option | | |
|------------------------------|-----------------------------|--|
| Blank | Standard | |
| H2 | Working fluid: Hydrogen gas | |

Internal structure/material

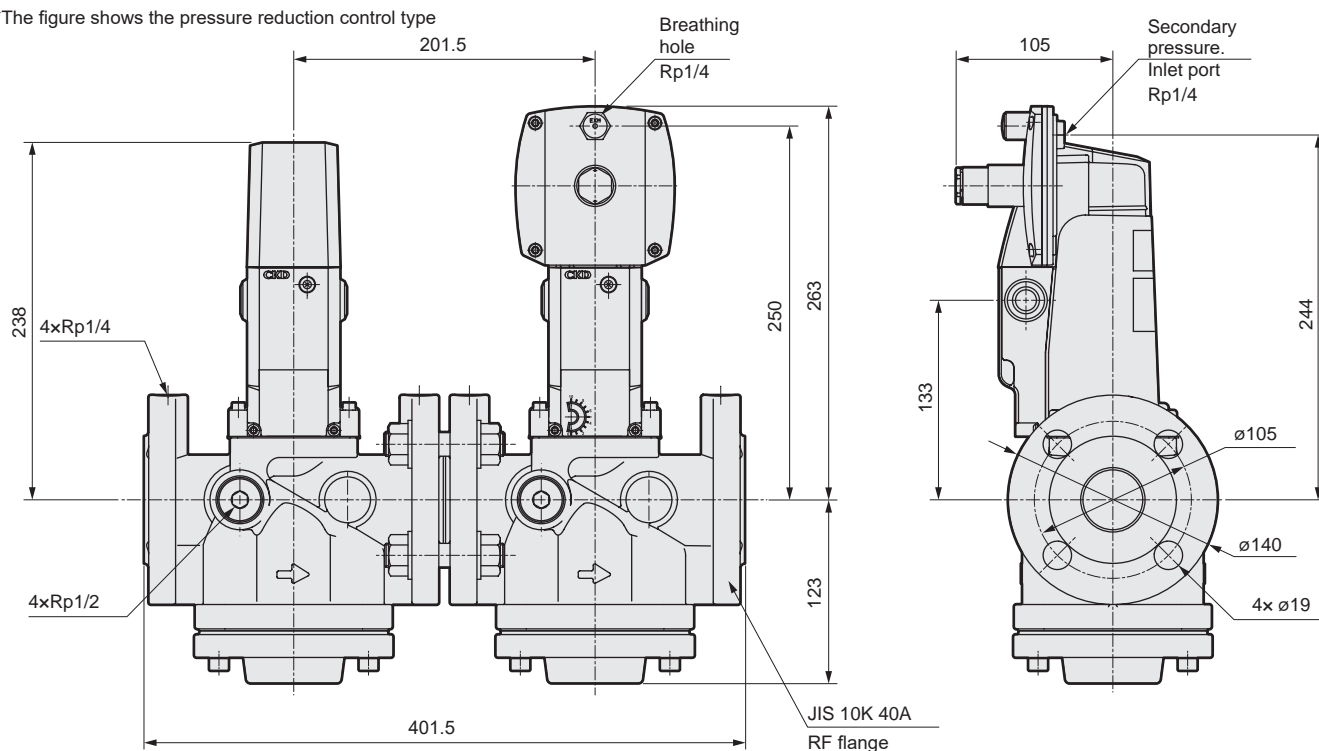
*The figure shows the pressure reduction control type



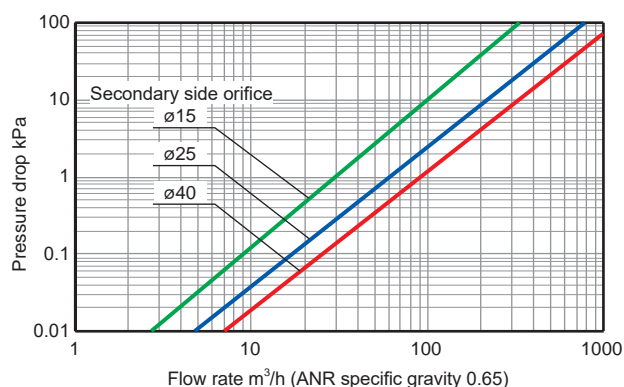
| Part No. | Part name | Material |
|----------|--------------|------------------------------------|
| 1 | Plug | Carbon steel |
| 2 | O-ring | Nitrile rubber |
| 3 | Guide | Stainless steel |
| 4 | Body | Ductile cast iron |
| 5 | Filter | Stainless steel wire |
| 6 | Rod | Stainless steel |
| 7 | Valve seat | Stainless steel |
| 8 | Valve body | Stainless steel and nitrile rubber |
| 9 | O-ring | Nitrile rubber |
| 10 | Bottom cover | Ductile cast iron |
| 11 | Spring | Stainless steel wire |

Dimensions

*The figure shows the pressure reduction control type



Flow characteristics (at primary side supply pressure 0.1 MPa)



Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Air (Reference) | Hydrogen gas *1 |
|------------------|----------------|---------|-----------------|-----------------|
| Specific gravity | 0.65 | 1.6 | 1 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.8 | 3.04 |

* 1: Only the option for hydrogen gas as the working fluid can be used.



Equivalent to "DIN3394" group B for double cutoff compliant with low pressure (5 kPa) specifications

Gas cutoff valve (quick open) **DSG Series**

- NC (Open when energized)
- City gas/LPG
- Port size: Rp1/2, Rp3/4, Rp1



Features

- Japan Gas Component Inspection Association (JIA) type certified product
Applicable models:
DSG-15-AC100V, AC200V
DSG-20-AC100V, AC200V
DSG-25-AC100V, AC200V
*Optional products are not supported.
- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.
- Built-in strainer for a structure that stops foreign matter such as dust in front of the valve during piping.
- Equipped with JIS standard conduit thread, making electrical wiring easy.

Applications

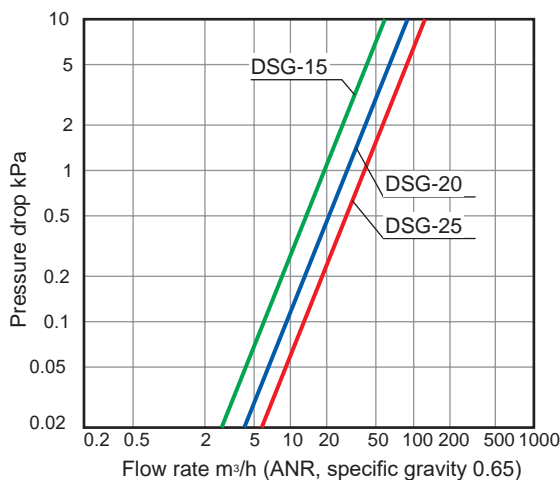
- Gas boilers
- Industrial furnaces
- Gas absorption water coolers/heaters
- Drying furnaces
- Hydrogen-related devices (only hydrogen gas option is used as the working fluid)
- Other

Specifications

| Item | DSG-15 | DSG-20 | DSG-25 |
|--|--|--------|---------------------------------------|
| Working fluid | City gas/LPG (hydrogen gas *1) | | |
| Working pressure kPa | 0 to 5 | | |
| Flow rate ^{Specific gravity of city gas 0.65} _{ΔP=0.25kPa} m ³ /h (ANR) | 9.8 | 15.0 | 20.0 |
| Cv | 6.6 | 10.1 | 13.4 |
| Rated voltage V | 100AC ^{+10%} _{-15%} | | 200AC ^{+10%} _{-15%} |
| Frequency Hz | Common to 50 and 60 | | |
| Power consumption (apparent power) VA | 16 | | |
| Ambient temperature °C | -20 to +60 (no freezing) | | |
| Opening time s | 0.5 or less | | |
| Closing time s | 1.0 or less | | |
| Frequency cycles/min | 30 or less | | |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal | | |
| Connection | Screw-in (Rp) | | |
| Port size | 1/2 | 3/4 | 1 |
| Weight kg | 1.0 | 1.2 | 1.2 |
| Proof pressure MPa | 0.1 | | |
| Degree of protection | IP51 or equivalent (IP21 or equivalent with HP terminal box) | | |

* 1: Only the option for hydrogen gas as the working fluid can be used.

Flow characteristics



Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

How to order

DSG - **15** - **Y** **H2** - **AC100V**



Model No.

1 Port size

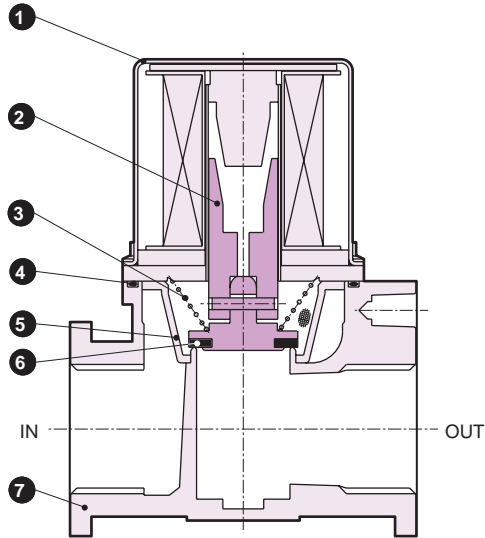
2 Option

3 Hydrogen compatible option

4 Voltage

| Code | Description | |
|-------------------------------------|------------------------------|---|
| 1 Port size | | |
| 15 | Rp1/2 | |
| 20 | Rp3/4 | |
| 25 | Rp1 | |
| 2 Option | | |
| Blank | Standard | |
| Y | With flow rate adjustment | |
| 3M | HP terminal box (G1/2) | |
| P | With pressure detection port | |
| 3 Hydrogen compatible option | | |
| Blank | Standard |  |
| H2 | Working fluid: Hydrogen gas |  |
| 4 Voltage | | |
| AC100V | 100 VAC 50/60 Hz | |
| AC200V | 200 VAC 50/60 Hz | |

Internal structure/material

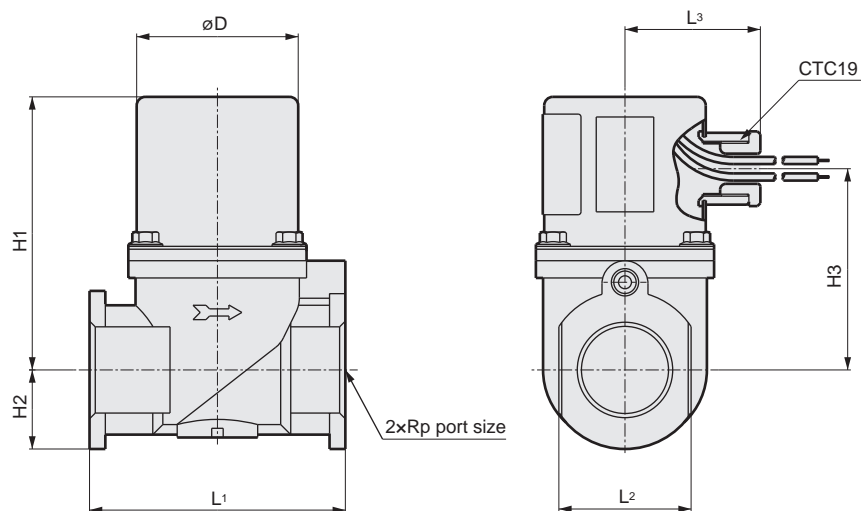


Cannot be disassembled

| Part No. | Part name | Material |
|----------|------------|----------------------|
| 1 | Bonnet | Steel |
| 2 | Plunger | Stainless steel |
| 3 | Spring | Stainless steel wire |
| 4 | O-ring | Nitrile rubber |
| 5 | Strainer | Resin |
| 6 | Valve disc | Nitrile rubber |
| 7 | Body | Aluminum die-casting |

Dimensions

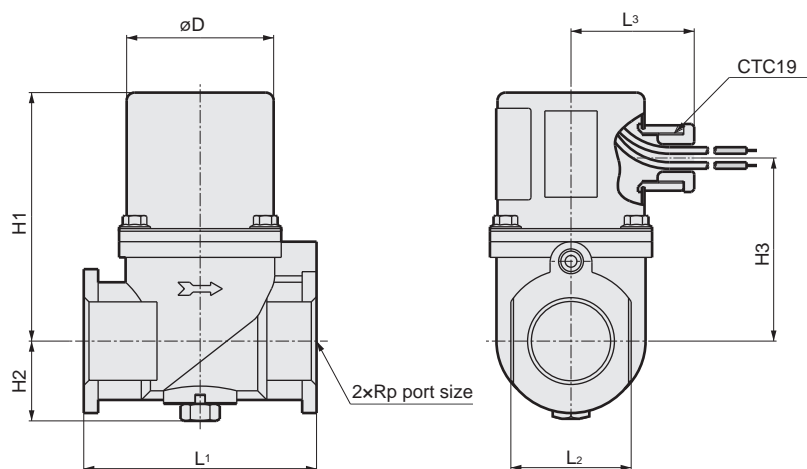
- Standard
DSG-15 to 25



| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----|
| DSG-15 | 1/2 | 91 | 17.5 | 67 | 69 | 32 | 47 | 56 |
| DSG-20 | 3/4 | 95 | 27.5 | 71 | 89 | 46 | 47 | 56 |
| DSG-25 | 1 | 95 | 27.5 | 71 | 89 | 46 | 47 | 56 |

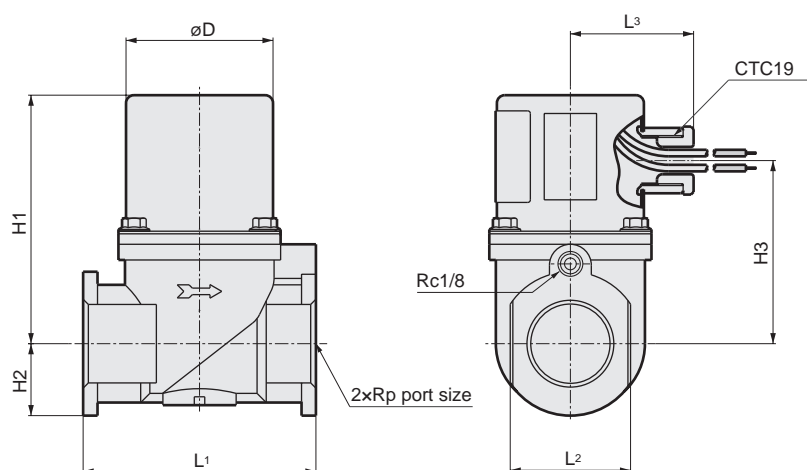
Optional dimensions

- With flow rate adjustment
DSG-15 to 25-Y



| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----|
| DSG-15-Y | 1/2 | 91 | 24 | 67 | 69 | 32 | 47 | 56 |
| DSG-20-Y | 3/4 | 95 | 30.5 | 71 | 89 | 46 | 47 | 56 |
| DSG-25-Y | 1 | 95 | 30.5 | 71 | 89 | 46 | 47 | 56 |

- With pressure detection port
DSG-15 to 25-P



| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----|
| DSG-15-P | 1/2 | 91 | 17.5 | 67 | 69 | 32 | 47 | 56 |
| DSG-20-P | 3/4 | 95 | 27.5 | 71 | 89 | 46 | 47 | 56 |
| DSG-25-P | 1 | 95 | 27.5 | 71 | 89 | 46 | 47 | 56 |



Equivalent to "DIN3394" group B for double cutoff valve compliant with low pressure (5 kPa) specifications

Gas double cutoff valve (quick open) DSG-W Series

- NC (Open when energized)
- City gas/LPG
- Port size: Rp3/4, Rp1



Features

- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.
- Built-in strainer for a structure that stops foreign matter such as dust in front of the valve during piping.

Applications

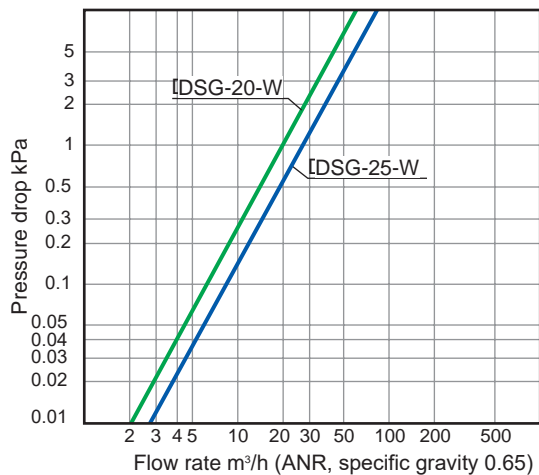
- Gas boilers
- Industrial furnaces
- Gas absorption water coolers/heaters
- Drying furnaces
- Hydrogen-related devices (Only the option for hydrogen gas as the working fluid can be used.)
- Other

Specifications

| Item | DSG-20-W | DSG-25-W |
|--|--|--|
| Working fluid | City gas/LPG (hydrogen gas *1) | |
| Working pressure kPa | 0 to 5 | |
| Flow rate $\frac{\text{Specific gravity of city gas } 0.65}{\Delta P=0.25\text{Pa}}$ m ³ /h (ANR) | 10.5 | 14.0 |
| Cv | 7.0 | 9.4 |
| Rated voltage V | 100 AC ^{+10%} _{-15%} | 200 AC ^{+10%} _{-15%} |
| Frequency Hz | Common to 50 and 60 | |
| Power consumption (apparent power) VA | 16x2 | |
| Ambient temperature °C | -20 to +60 (no freezing) | |
| Opening time s | 0.5 or less | |
| Closing time s | 1.0 or less | |
| Frequency cycles/min | 30 or less | |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal | |
| Connection | Screw-in (Rp) | |
| Port size | 3/4 | 1 |
| Weight kg | 2.0 | 2.0 |
| Proof pressure MPa | 0.1 | |
| Degree of protection | IP 21 or equiv. | |

* 1: Only the option for hydrogen gas as the working fluid can be used.

Flow characteristics

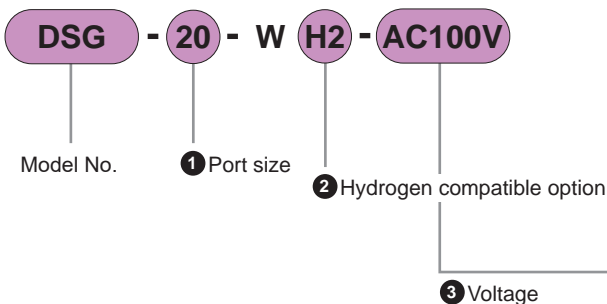




Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

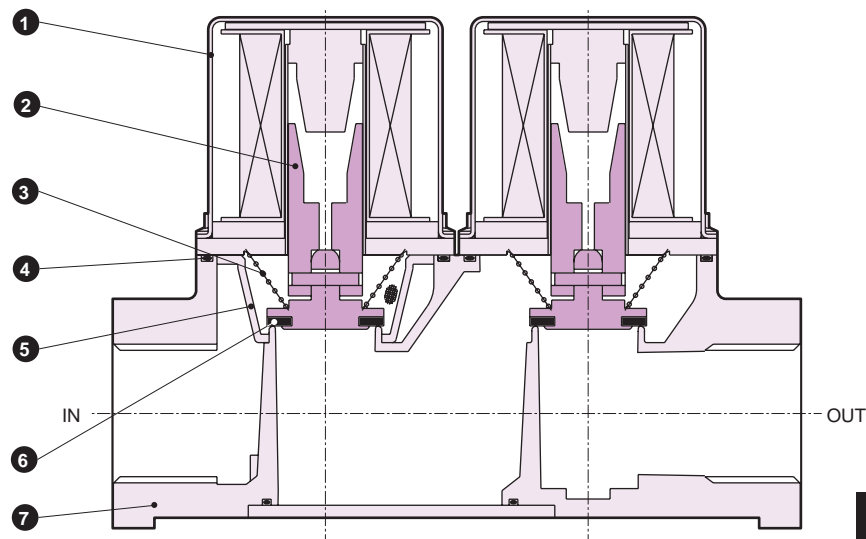
| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

How to order



| Code | Description |
|-------------------------------------|---|
| ① Port size | |
| 20 | Rp3/4 |
| 25 | Rp1 |
| ② Hydrogen compatible option | |
| Blank | Standard  |
| H2 | Working fluid: Hydrogen gas  |
| ③ Voltage | |
| AC100V | 100 VAC 50/60 Hz |
| AC200V | 200 VAC 50/60 Hz |

Internal structure/material

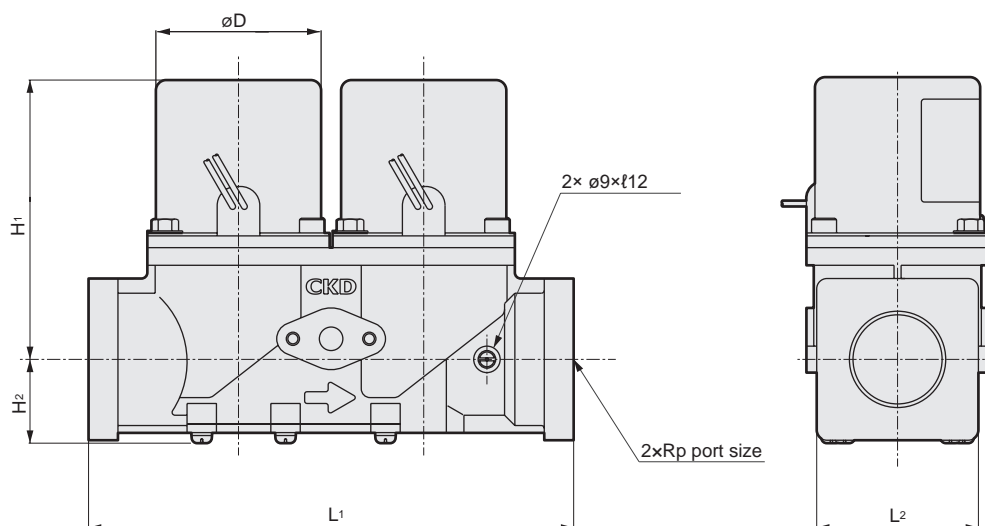


Cannot be disassembled

| Part No. | Part name | Material |
|----------|------------|----------------------|
| 1 | Bonnet | Steel |
| 2 | Plunger | Stainless steel |
| 3 | Spring | Stainless steel wire |
| 4 | O-ring | Nitrile rubber |
| 5 | Strainer | Resin |
| 6 | Valve disc | Nitrile rubber |
| 7 | Body | Aluminum die-casting |

Dimensions

● DSG-20/25-W



| Code Model No. | Port size | H ₁ | H ₂ | L ₁ | L ₂ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----|
| DSG-20-W | 3/4 | 95 | 28.5 | 165 | 55 | 56 |
| DSG-25-W | 1 | 95 | 28.5 | 165 | 55 | 56 |



For double cutoff compliant with low pressure (5 kPa) to intermediate pressure (45 kPa) specifications.

Equivalent to "DIN3394" groups A and B

Gas cutoff valve (quick open) **VNA Series**

- NC (Open when energized)
- City gas/LPG
- Port size: Rp1/2, Rp3/4, Rp1, Rp1 1/4, Rp1 1/2, Rp2, Rp2 1/2



Features

- Japan Gas Component Inspection Association (JIA) type certified product (Applicable models: VNA-32-AC100V, AC200V, VNA-40-AC100V, AC200V, VNA-50-AC100V, AC200V. *Optional products, Other bore sizes are not compliant.)
- For a wide range of gas pressures ranging from low pressure to intermediate pressure.
- Flow rate adjustment (calorie change) is easy, adjustable even after installation.
- Equipped with a robust dedicated terminal box with JIS standard conduit thread, making electrical wiring easy too.
- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.

Applications

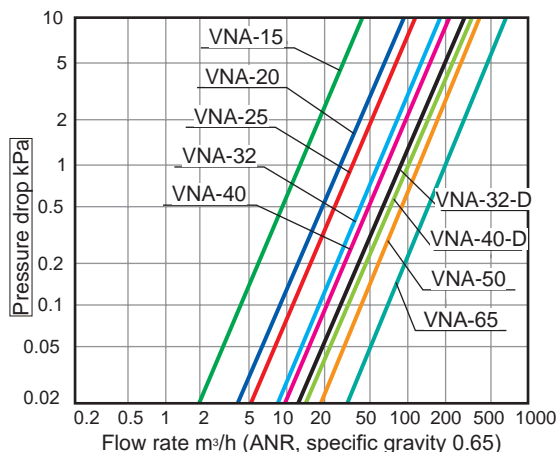
- Gas boilers
- Industrial furnaces
- Gas absorption water coolers/heaters
- Drying furnaces
- Hydrogen-related devices (only hydrogen gas option is used as the working fluid)
- Other

Specifications

| Item | VNA-15 | VNA-20 | VNA-25 | VNA-32 | VNA-40 | VNA-50 | VNA-65 | VNA-32-D | VNA-40-D |
|--|--|---------|--------|--------|---------|--------|--------|----------|----------|
| Working fluid | City gas/LPG (hydrogen gas *1) | | | | | | | | |
| Working pressure kPa | 0 to 45 | 0 to 30 | | | 0 to 20 | | 0 to 5 | | |
| Flow rate <small>Specific gravity of city gas 0.65 ΔP=0.25Pa</small> m ³ /h (ANR) | 6.9 | 14.8 | 18.7 | 30.3 | 34.5 | 70.0 | 112.6 | 45.0 | 49.0 |
| Cv | 4.6 | 9.9 | 12.5 | 20.4 | 23.2 | 47.1 | 75.8 | 30.3 | 33.0 |
| Rated voltage V | 100 AC ^{+10%} / _{-15%} 200 AC ^{+10%} / _{-15%} | | | | | | | | |
| Frequency Hz | Common to 50 and 60 | | | | | | | | |
| Power consumption (apparent power) VA | 31 | | 50 | | 73 | 74 | 50 | | |
| Ambient temperature °C | -20 to +60 (no freezing) | | | | | | | | |
| Opening time s | 0.5 or less | | | | | | | | |
| Closing time s | 1.0 or less | | | | | | | | |
| Frequency cycles/min | 30 or less | | | | | | | | |
| Flow rate adjustment % | 20 to 100 | | | | | | | — | |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal | | | | | | | | |
| Connection | Screw-in (Rp) | | | | | | | | |
| Port size | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 1 1/2 | 1 1/4 | 1 1/2 |
| Weight kg | 1.7 | 2.5 | 2.4 | 4.0 | 3.9 | 8.3 | 14.6 | 3.7 | 3.7 |
| Proof pressure MPa | 0.1 | | | | | | | | |
| Degree of protection | IPX4 | | | | | | | | |

* 1: Only the option for hydrogen gas as the working fluid can be used.

Flow characteristics



Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

How to order

VNA - 40 - D PY H2 - AC100V

Model No.

1 Port size

2 Capacity

*2

3 Other options

*3

*4

*5

*6

*7

*8



4 Hydrogen compatible

*9 option

5 Voltage

*10

| Model No. | | | | | | |
|-----------|--------|--------|--------|--------|--------|--------|
| VNA-15 | VNA-20 | VNA-25 | VNA-32 | VNA-40 | VNA-50 | VNA-65 |

| Code | Description | VNA-15 | VNA-20 | VNA-25 | VNA-32 | VNA-40 | VNA-50 | VNA-65 |
|-------------------------------------|---------------------------------|--|--------|--------|--------|--------|--------|---|
| 1 Port size | | | | | | | | |
| 15 | Rp1/2 | ● | | | | | | |
| 20 | Rp3/4 | | ● | | | | | |
| 25 | Rp1 | | | ● | | | | |
| 32 | Rp1 ¹ / ₄ | | | | ● | | | |
| 40 | Rp1 ¹ / ₂ | | | | | ● | | |
| 50 | Rp2 | | | | | | ● | |
| 65 | Rp2 ¹ / ₂ | | | | | | | ● |
| 2 Capacity | | | | | | | | |
| Blank | Standard | ● | ● | ● | ● | ● | ● | ● |
| D | Large flow rate specifications | | | | ● | ● | | |
| 3 Other options | | | | | | | | |
| Blank | Standard | None | ● | ● | ● | ● | ● | ● |
| E | Option | With operation confirmation micro switch | ● | ● | ● | ● | ● | ● |
| H | | 0.1 MPa specifications | ● | ● | ● | ● | ● | |
| L | | With power indicator lamp | ● | ● | ● | ● | ● | ● |
| P | | With pressure detection port | ● | ● | ● | ● | ● | ● |
| V | | Vacuum specifications | ● | ● | ● | | | |
| Y | | With flow rate adjustment | | | | ● | ● | |
| ZZ | | Outdoor type | ● | ● | ● | ● | ● | ● |
| 4 Hydrogen compatible option | | | | | | | | |
| Blank | Standard | | | | | | |  |
| H2 | Working fluid: Hydrogen gas | | | | | | |  |
| 5 Voltage | | | | | | | | |
| AC100V | Standard | 100 VAC 50/60 Hz | | | | | | |
| AC200V | | 200 VAC 50/60 Hz | | | | | | |
| AC110V | Option | 110 VAC 50/60 Hz | | | | | | |
| AC220V | | 220 VAC 50/60 Hz | | | | | | |
| DC24V | | 24 VDC | | | | | | |
| DC100V | | 100 VDC | | | | | | |

*1: The combinations indicated with ● above are available.

*2: For large flow rate specifications (2 Capacity "D"), flow rate adjustment is not available. Combinations with flow rate adjustment (3 Other option "Y") are available. 2 In addition, combinations with the 0.1MPa specification (3 Other option "H") and vacuum specification (3 Other option "V") are not available for large flow rate specifications (2 Capacity "D").

*3: For models with operation confirmation micro switch (3 Other option "E"), a pressure detection port is provided as standard. Flow rate adjustment is not available. Combinations with the 0.1MPa specification (3 Other option "H"), vacuum specification (3 Other option "V"), and outdoor specification (3 Other option "ZZ") are not available.

*4: For port sizes 32 and 40 with 0.1MPa specification (3 Other option "H"), a power indicator lamp is provided as standard.

*5: Combination with the power indicator lamp (3 Other option "L") is not available for the outdoor specification (3 Other option "ZZ").

*6: The type with flow rate adjustment (3 Other option "Y") is dedicated for large flow rate specifications (2 Capacity "D"). Standard products all have flow rate adjustment equipped as standard.

*7: Combinations of the outdoor specification (3 Other option "ZZ") with micro switch for operation check (3 Other option "E") and with power indicator lamp (3 Other option "L") are not available.

*8: ● For combinations of other optional specifications other than above, contact CKD.

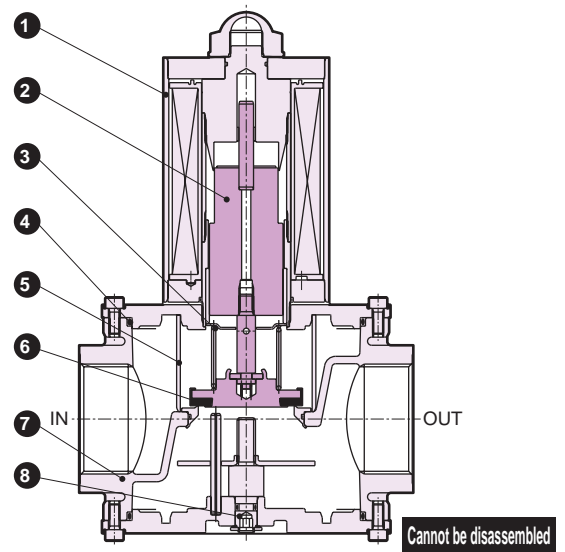
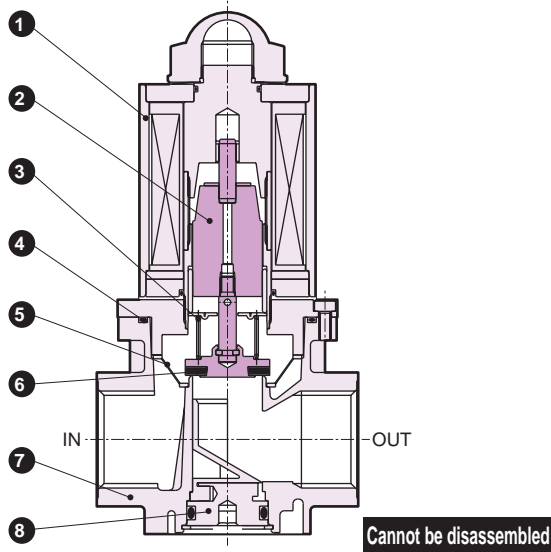
*9: Working gas: Combination of vacuum specification (3 Other option "V") is not available for hydrogen gas option.

*10: For voltages other than above, contact CKD.

Internal structure/material

● VNA-15 to 40

● VNA-50 to 65

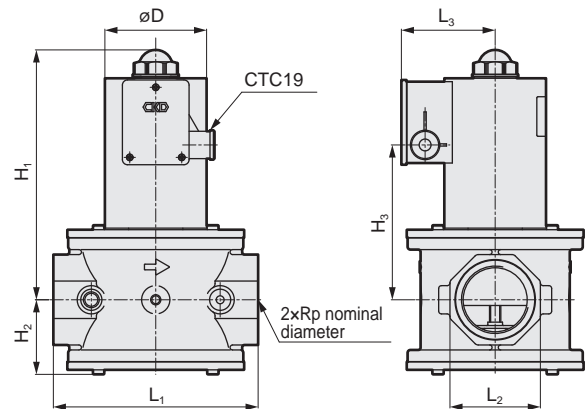
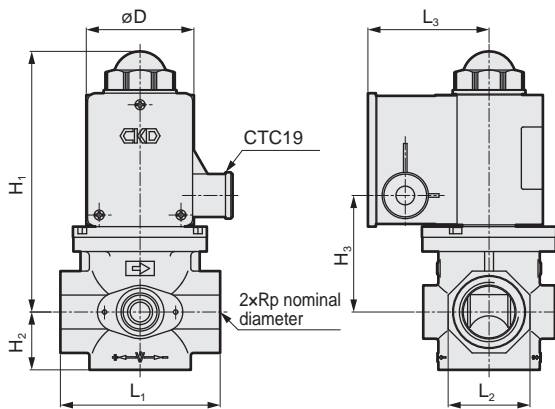


| Part No. | Part name | Material | Part No. | Part name | Material |
|----------|-----------|----------------------|----------|---------------------------|--|
| 1 | Bonnet | Steel | 5 | Strainer | Resin (15 to 50)/stainless steel wire (65) |
| 2 | Plunger | Stainless steel | 6 | Valve disc | Nitrile rubber |
| 3 | Spring | Stainless steel wire | 7 | Body | Aluminum |
| 4 | O-ring | Nitrile rubber | 8 | Flow rate adjusting screw | Aluminum (15 to 40)/steel (50 to 65) |

Dimensions

● VNA-15 to 40

● VNA-50 to 65

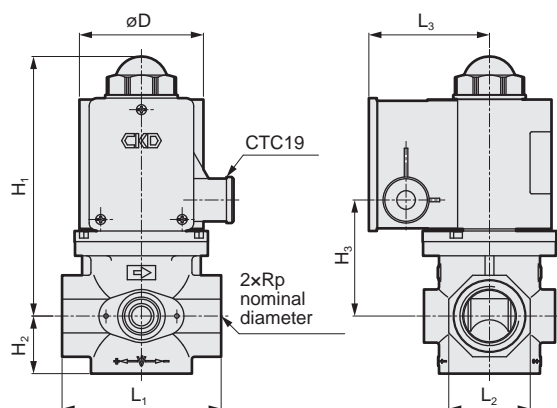


| Code | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | ∅D |
|----------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNA-15 | 1/2 | 132.5 | 24.5 | 51 | 69 | 32 | 63 | 50 |
| VNA-20 | 3/4 | 147 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNA-25 | 1 | 147 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNA-32 | 1 1/4 | 166 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNA-40 | 1 1/2 | 166 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNA-50 | 2 | 221 | 66.5 | 137 | 180 | 80 | 83 | 90 |
| VNA-65 | 2 1/2 | 232 | 77.5 | 148 | 218 | 95 | 101 | 127 |
| VNA-32-D | 1 1/4 | 174.5 | 35 | 93 | 128 | 70 | 73 | 70 |
| VNA-40-D | 1 1/2 | 174.5 | 35 | 93 | 128 | 70 | 73 | 70 |

Optional dimensions

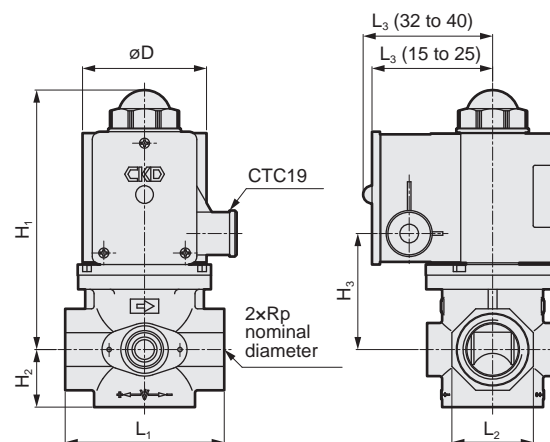
- Vacuum specifications: 1.33×10^{-5} to 101kPa (reverse vacuum not possible)

VNA-15/20/25-V



- 0.1 MPa specifications

VNA-15 to 40-H



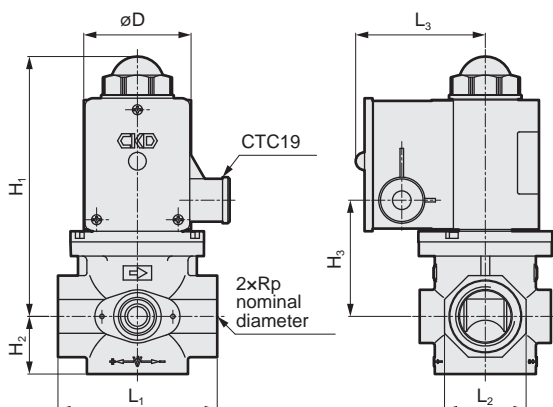
| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNA-15-V | 1/2 | 136.5 | 24.5 | 55 | 69 | 32 | 68 | 60.5 |
| VNA-20-V | 3/4 | 147 | 33 | 65.5 | 89 | 46 | 73 | 70 |
| VNA-25-V | 1 | 147 | 33 | 65.5 | 89 | 46 | 73 | 70 |

*For port sizes 32 and 40, power indicator lamp is provided as standard.

| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNA-15-H | 1/2 | 136.5 | 24.5 | 55 | 69 | 32 | 68 | 60.5 |
| VNA-20-H | 3/4 | 147 | 33 | 65.5 | 89 | 46 | 73 | 70 |
| VNA-25-H | 1 | 147 | 33 | 65.5 | 89 | 46 | 73 | 70 |
| VNA-32-H | 1 1/4 | 193 | 39.5 | 111.5 | 128 | 65 | 88 | 90 |
| VNA-40-H | 1 1/2 | 193 | 39.5 | 111.5 | 128 | 65 | 88 | 90 |

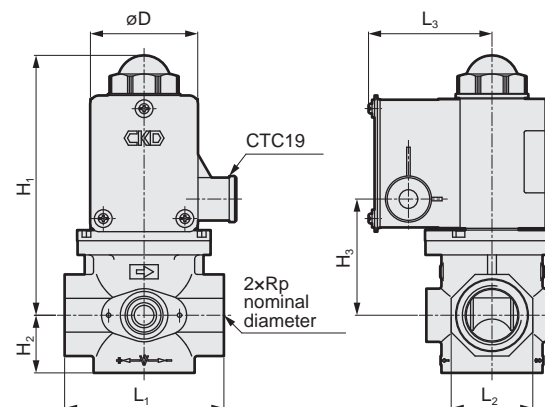
- With power indicator lamp

VNA-15 to 65-L



- Outdoor type

VNA-15 to 65-ZZ

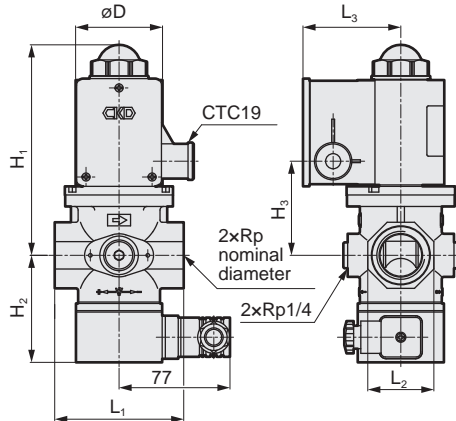


| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNA-15-L | 1/2 | 132.5 | 24.5 | 51 | 69 | 32 | 68 | 50 |
| VNA-20-L | 3/4 | 147 | 33 | 65.5 | 89 | 46 | 73 | 60.5 |
| VNA-25-L | 1 | 147 | 33 | 65.5 | 89 | 46 | 73 | 60.5 |
| VNA-32-L | 1 1/4 | 166 | 39.5 | 84.5 | 128 | 65 | 78 | 70 |
| VNA-40-L | 1 1/2 | 166 | 39.5 | 84.5 | 128 | 65 | 78 | 70 |
| VNA-50-L | 2 | 221 | 66.5 | 137 | 180 | 80 | 88 | 90 |
| VNA-65-L | 2 1/2 | 232 | 77.5 | 148 | 218 | 95 | 106 | 127 |

| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNA-15-ZZ | 1/2 | 132.5 | 24.5 | 51 | 69 | 32 | 63 | 50 |
| VNA-20-ZZ | 3/4 | 147 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNA-25-ZZ | 1 | 147 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNA-32-ZZ | 1 1/4 | 166 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNA-40-ZZ | 1 1/2 | 166 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNA-50-ZZ | 2 | 221 | 66.5 | 137 | 180 | 80 | 83 | 90 |
| VNA-65-ZZ | 2 1/2 | 232 | 77.5 | 148 | 218 | 95 | 101 | 127 |

Optional dimensions

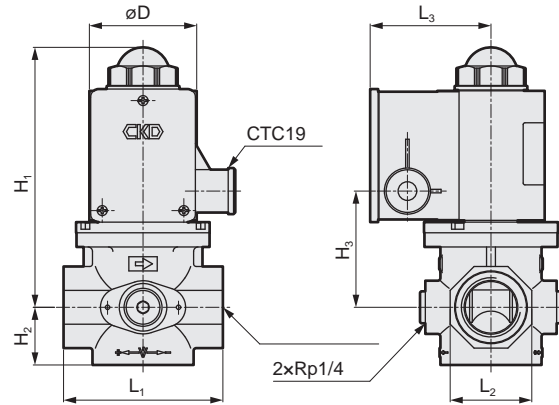
- With operation confirmation micro switch
VNA-15 to 65-E



* Pressure detection port is provided as standard. Flow rate adjustment is not available.

| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNA-15-E | 1/2 | 132.5 | 69.5 | 51 | 69 | 32 | 63 | 50 |
| VNA-20-E | 3/4 | 147 | 75 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNA-25-E | 1 | 147 | 75 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNA-32-E | 1 1/4 | 166 | 81.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNA-40-E | 1 1/2 | 166 | 81.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNA-50-E | 2 | 221 | 104.5 | 137 | 180 | 80 | 83 | 90 |
| VNA-65-E | 2 1/2 | 232 | 115.5 | 148 | 218 | 95 | 101 | 127 |

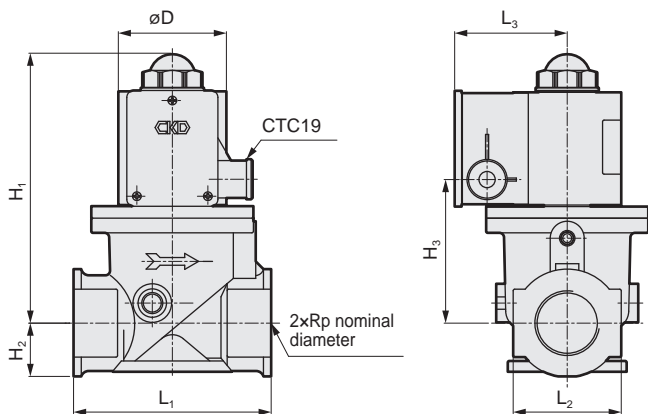
- With pressure detection port
VNA-15 to 65-P



* The pressure detection port is connected to the IN side.

| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNA-15-P | 1/2 | 132.5 | 24.5 | 51 | 69 | 32 | 63 | 50 |
| VNA-20-P | 3/4 | 147 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNA-25-P | 1 | 147 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNA-32-P | 1 1/4 | 166 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNA-40-P | 1 1/2 | 166 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNA-50-P | 2 | 221 | 66.5 | 137 | 180 | 80 | 83 | 90 |
| VNA-65-P | 2 1/2 | 232 | 77.5 | 148 | 218 | 95 | 101 | 127 |

- Large flow rate specifications
VNA-32, 40-D



* Flow rate adjustment is not available.

| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----|
| VNA-32-D | 1 1/4 | 174.5 | 35 | 93 | 128 | 70 | 73 | 70 |
| VNA-40-D | 1 1/2 | 174.5 | 35 | 93 | 128 | 70 | 73 | 70 |



For double cutoff compliant with low pressure (5 kPa) to intermediate pressure (25 kPa) specifications.

Equivalent to "DIN3394" groups A and B

Gas cutoff valve (slow open) **VLA Series**

- NC (when energized Open) type
- City gas/LPG
- Port size: Rp1/2, Rp3/4, Rp1, Rp1¹/₄, Rp1¹/₂, Rp2, Rp2¹/₂



Features

- For a wide range of gas pressures ranging from low pressure to intermediate pressure.
- Flow rate adjustment (calorie change) is easy, adjustable even after installation.
- Equipped with a robust dedicated terminal box with JIS standard conduit thread, making electrical wiring easy too.
- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.

Applications

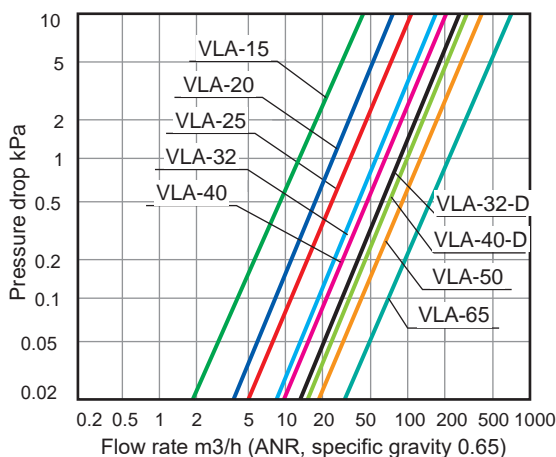
- Gas boilers
- Industrial furnaces
- Gas absorption water coolers/heaters
- Drying furnaces
- Hydrogen-related devices (only hydrogen gas option is used as the working fluid)
- Other

Specifications

| Item | VLA-15 | VLA-20 | VLA-25 | VLA-32 | VLA-40 | VLA-50 | VLA-65 | VLA-32-D | VLA-40-D |
|--|--|--------|---------|---------------------------------------|-------------------------------|--------|-------------------------------|-------------------------------|-------------------------------|
| Working fluid | City gas/LPG (hydrogen gas *1) | | | | | | | | |
| Working pressure kPa | 0 to 25 | | 0 to 20 | | | | | 0 to 5 | |
| Flow rate <small>Specific gravity of city gas 0.65</small> m ³ /h (ANR) | 6.9 | 14.8 | 18.7 | 30.3 | 34.5 | 70.0 | 112.6 | 45.0 | 49.0 |
| Cv | 4.6 | 9.9 | 12.5 | 20.4 | 23.2 | 47.1 | 75.8 | 30.3 | 33.0 |
| Rated voltage V | 100AC ^{+10%} _{-15%} | | | 200AC ^{+10%} _{-15%} | | | | | |
| Frequency Hz | Common to 50 and 60 | | | | | | | | |
| Power consumption (apparent power) VA | 31 | | | 50 | | 73 | 74 | 50 | |
| Ambient temperature °C | -20 to +60 (no freezing) | | | | | | | | |
| Opening time s | Approx. 10 | | | | | | | | |
| Closing time s | 1.0 or less | | | | | | | | |
| Frequency cycles/min | 1 or less | | | | | | | | |
| Flow rate adjustment % | 20 to 100 | | | | | | | | |
| Start gas adjustment % | 0 to 70 | | | | | | | | |
| Re-energizing intermission time s | 5.0 or more | | | | | | | | |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal | | | | | | | | |
| Connection | Screw-in (Rp) | | | | | | | | |
| Port size | 1/2 | 3/4 | 1 | 1 ¹ / ₄ | 1 ¹ / ₂ | 2 | 2 ¹ / ₂ | 1 ¹ / ₄ | 1 ¹ / ₂ |
| Weight kg | 1.9 | 2.7 | 2.6 | 4.2 | 4.1 | 8.9 | 15.2 | 4.0 | 4.0 |
| Proof pressure MPa | 0.1 | | | | | | | | |
| Degree of protection | IPX4 | | | | | | | | |

* 1: Only the option for hydrogen gas as the working fluid can be used.

Flow characteristics

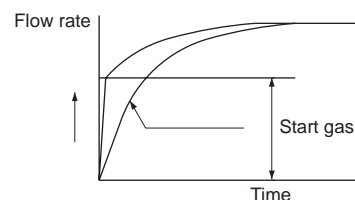


Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

Opening operation characteristics



How to order

VLA - 40 - D P H2 - AC100V

Model No.

1 Port size

2 Capacity

*2

3 Other options

*3

*4

*5



*6

4 Hydrogen compatible option

5 Voltage

*7

| Model No. | | | | | | | |
|-----------|--------|--------|--------|--------|--------|--------|--|
| VLA-15 | VLA-20 | VLA-25 | VLA-32 | VLA-40 | VLA-50 | VLA-65 | |

| Code | Description | VLA-15 | VLA-20 | VLA-25 | VLA-32 | VLA-40 | VLA-50 | VLA-65 |
|-------------------------------------|---------------------------------|--|--------|--------|--------|--------|--------|---|
| 1 Port size | | | | | | | | |
| 15 | Rp1/2 | ● | | | | | | |
| 20 | Rp3/4 | | ● | | | | | |
| 25 | Rp1 | | | ● | | | | |
| 32 | Rp1 ¹ / ₄ | | | | ● | | | |
| 40 | Rp1 ¹ / ₂ | | | | | ● | | |
| 50 | Rp2 | | | | | | ● | |
| 65 | Rp2 ¹ / ₂ | | | | | | | ● |
| 2 Capacity | | | | | | | | |
| Blank | Standard | ● | ● | ● | ● | ● | ● | ● |
| D | Large flow rate specifications | | | | ● | ● | | |
| 3 Other options | | | | | | | | |
| Blank | Standard | None | | | | | | |
| E | Option | With operation confirmation micro switch | | | | | | |
| L | Option | With power indicator lamp | | | | | | |
| P | Option | With pressure detection port | | | | | | |
| ZZ | Option | Outdoor type | | | | | | |
| 4 Hydrogen compatible option | | | | | | | | |
| Blank | Standard | | | | | | |  |
| H2 | Working fluid: Hydrogen gas | | | | | | |  |
| 5 Voltage | | | | | | | | |
| AC100V | Standard | 100 VAC 50/60 Hz | | | | | | |
| AC200V | Standard | 200 VAC 50/60 Hz | | | | | | |
| AC110V | Option | 110 VAC 50/60 Hz | | | | | | |
| AC220V | Option | 220 VAC 50/60 Hz | | | | | | |
| DC24V | Option | 24 VDC | | | | | | |
| DC100V | Option | 100 VDC | | | | | | |

* 1: The combinations indicated with ● above are available.

* 2: For large flow rate specifications (2 Capacity "D"), flow rate adjustment is not available.

* 3: For models with operation confirmation micro switch (3 Other option "E"), a pressure detection port is provided as standard. Flow rate adjustment is not available. Combination with the outdoor specification (3 Other option "ZZ") is not available.

* 4: Combination with power indicator lamp (3 Other option "L") is not available for outdoor specification (3 Other option "ZZ").

* 5: Combinations of the outdoor specification (3 Other option "ZZ") with micro switch for operation check (3 Other option "E") and with power indicator lamp (3 Other option "L") are not available.

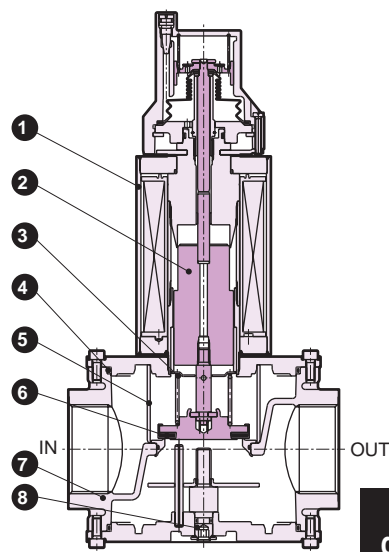
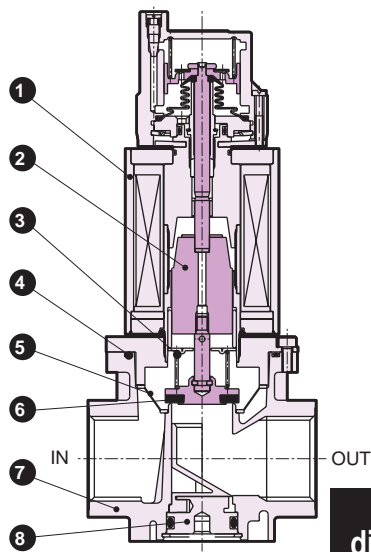
* 6: 3 For combinations of other optional specifications other than above, contact CKD.

* 7: For voltages other than above, contact CKD.

Internal structure/material

● VLA-15 to 40

● VLA-50 to 65

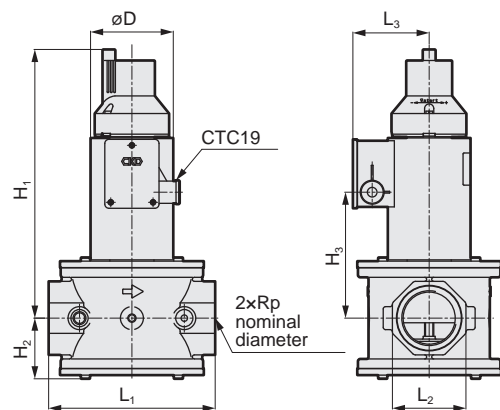
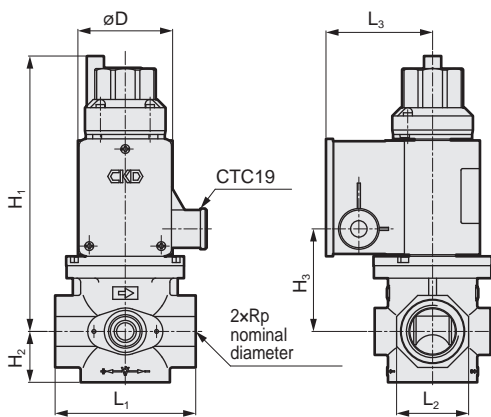


| Part No. | Part name | Material | Part No. | Part name | Material |
|----------|-----------|----------------------|----------|---------------------------|--|
| 1 | Bonnet | Steel | 5 | Strainer | Resin (15 to 50)/stainless steel wire (65) |
| 2 | Plunger | Stainless steel | 6 | Valve disc | Nitrile rubber |
| 3 | Spring | Stainless steel wire | 7 | Body | Aluminum |
| 4 | O-ring | Nitrile rubber | 8 | Flow rate adjusting screw | Aluminum (15 to 40)/steel (50 to 65) |

Dimensions

● VLA-15 to 40

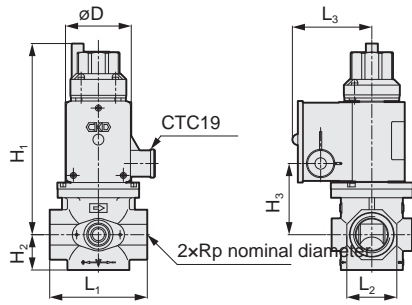
● VLA-50 to 65



| Code | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|----------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VLA-15 | 1/2 | 161.5 | 24.5 | 51 | 69 | 32 | 63 | 50 |
| VLA-20 | 3/4 | 176 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VLA-25 | 1 | 176 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VLA-32 | 1 1/4 | 195 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VLA-40 | 1 1/2 | 195 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VLA-50 | 2 | 292.5 | 66.5 | 137 | 180 | 80 | 83 | 90 |
| VLA-65 | 2 1/2 | 303.5 | 77.5 | 148 | 218 | 95 | 101 | 127 |
| VLA-32-D | 1 1/4 | 203.5 | 35 | 93 | 128 | 70 | 73 | 70 |
| VLA-40-D | 1 1/2 | 203.5 | 35 | 93 | 128 | 70 | 73 | 70 |

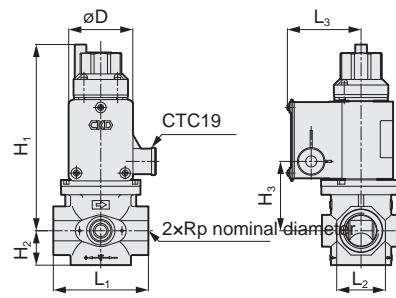
Optional dimensions

- With power indicator lamp
VLA-15 to 65-L



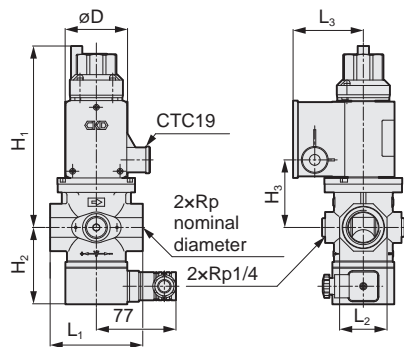
| Code Model No. | Connection Bore size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VLA-15-L | 1/2 | 161.5 | 24.5 | 51 | 69 | 32 | 68 | 50 |
| VLA-20-L | 3/4 | 176 | 33 | 65.5 | 89 | 46 | 73 | 60.5 |
| VLA-25-L | 1 | 176 | 33 | 65.5 | 89 | 46 | 73 | 60.5 |
| VLA-32-L | 1 1/4 | 195 | 39.5 | 84.5 | 128 | 65 | 78 | 70 |
| VLA-40-L | 1 1/2 | 195 | 39.5 | 84.5 | 128 | 65 | 78 | 70 |
| VLA-50-L | 2 | 292.5 | 66.5 | 137 | 180 | 80 | 88 | 90 |
| VLA-65-L | 2 1/2 | 303.5 | 77.5 | 148 | 218 | 95 | 106 | 127 |

- Outdoor type
VLA-15 to 65-ZZ



| Code Model No. | Connection Bore size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VLA-15-ZZ | 1/2 | 161.5 | 24.5 | 51 | 69 | 32 | 63 | 50 |
| VLA-20-ZZ | 3/4 | 176 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VLA-25-ZZ | 1 | 176 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VLA-32-ZZ | 1 1/4 | 195 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VLA-40-ZZ | 1 1/2 | 195 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VLA-50-ZZ | 2 | 292.5 | 66.5 | 137 | 180 | 80 | 83 | 90 |
| VLA-65-ZZ | 2 1/2 | 303.5 | 77.5 | 148 | 218 | 95 | 101 | 127 |

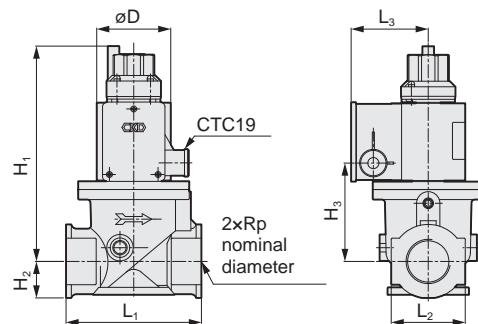
- With operation confirmation micro switch
VLA-15 to 65-E



* Pressure detection port is provided as standard. Flow rate adjustment is not available.

| Code Model No. | Connection Bore size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VLA-15-E | 1/2 | 161.5 | 69.5 | 51 | 69 | 32 | 63 | 50 |
| VLA-20-E | 3/4 | 176 | 75 | 65.5 | 89 | 46 | 68 | 60.5 |
| VLA-25-E | 1 | 176 | 75 | 65.5 | 89 | 46 | 68 | 60.5 |
| VLA-32-E | 1 1/4 | 195 | 81.5 | 84.5 | 128 | 65 | 73 | 70 |
| VLA-40-E | 1 1/2 | 195 | 81.5 | 84.5 | 128 | 65 | 73 | 70 |
| VLA-50-E | 2 | 292.5 | 104.5 | 137 | 180 | 80 | 83 | 90 |
| VLA-65-E | 2 1/2 | 303.5 | 115.5 | 148 | 218 | 95 | 101 | 127 |

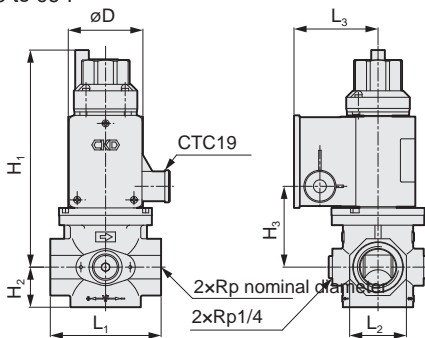
- Large flow rate specifications
VLA-32/40-D



* Flow rate adjustment is not available.

| Code Model No. | Connection Bore size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----|
| VLA-32-D | 1 1/4 | 203.5 | 35 | 93 | 128 | 70 | 73 | 70 |
| VLA-40-D | 1 1/2 | 203.5 | 35 | 93 | 128 | 70 | 73 | 70 |

- With pressure detection port
VLA-15 to 65-P



* The pressure detection port is connected to the IN side.

| Code Model No. | Connection Bore size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VLA-15-P | 1/2 | 161.5 | 24.5 | 51 | 69 | 32 | 63 | 50 |
| VLA-20-P | 3/4 | 176 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VLA-25-P | 1 | 176 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VLA-32-P | 1 1/4 | 195 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VLA-40-P | 1 1/2 | 195 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VLA-50-P | 2 | 292.5 | 66.5 | 137 | 180 | 80 | 83 | 90 |
| VLA-65-P | 2 1/2 | 303.5 | 77.5 | 148 | 218 | 95 | 101 | 127 |



Gas solenoid valve equipped with main & bypass flow rate adjustment mechanism, switchable between low and high gas combustion.

Flow rate switching solenoid valve (quick open) **VNA-R/RH Series**

- City gas/LPG
- Port size: Rp3/4, Rp1, Rp1¹/₄, Rp1¹/₂



Features

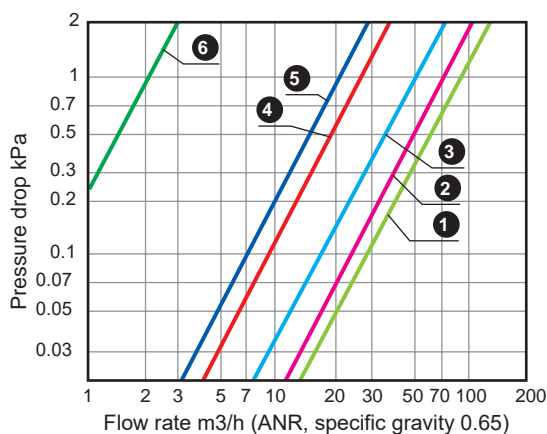
- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.
- Equipped with main and bypass flow rate adjustment mechanism as well as locking mechanism.
- High combustion gas rate supplied when energized and low combustion gas rate supplied when not energized (there is no closing function).
- Amount of gas can be arbitrarily adjusted with flow rate adjustment mechanism.
- Switching among three levels (low/medium/high combustion) can be done by using two units.
- Conventional bypass circuit (orifice plate) unnecessary, piping work-hours, cost, installation space and maintenance cost reduced.
- With power indicator lamp.
- Hydrogen-related equipment (only hydrogen gas option is used as the working fluid).

Specifications

| Item | VNA-20-R | VNA-25-R | VNA-32-R | VNA-40-R | VNA-20-RH | VNA-25-RH | VNA-32-RH | VNA-40-RH | |
|---|--|-----------|---------------------------------------|-------------------------------|---------------------------------------|-----------|-------------------------------|-------------------------------|-----|
| Working fluid | City gas/LPG (hydrogen gas *1) | | | | City gas/LPG | | | | |
| Working pressure MPa | 0 to 0.055△when P=0.035 or less | | | | 0 to 0.1 | | | | |
| Flow rate m ³ /h(ANR) <small>Specific gravity of city gas 0.65 △P=0.25kPa</small> | Main + Bypass | 19 | 23 | 42 | 45 | 19 | 23 | 42 | 45 |
| | Bypass only | 7.4 | 6.4 | 9.3 | 9.1 | 7.4 | 6.4 | 9.3 | 9.1 |
| Cv | 12.8 | 15.5 | 28.3 | 30.3 | 12.8 | 15.5 | 28.3 | 30.3 | |
| Rated voltage | V | | 100AC ^{+10%} _{-15%} | | 200AC ^{+10%} _{-15%} | | | | |
| Frequency | Hz | | Common to 50 and 60 | | | | | | |
| Power consumption (apparent power) VA | 31 | | 50 | | | | 82 | | |
| Ambient temperature °C | -20 to +60 (no freezing) | | | | | | | | |
| Opening time | s | | 0.5 or less | | | | | | |
| Closing time | s | | 1.0 or less | | | | | | |
| Frequency | cycles/min | | 30 or less | | | | | | |
| Flow rate adjustment % | Main flow rate | 50 to 100 | | | | | | | |
| | Bypass flow rate | 10 to 100 | | | | | | | |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal | | | | | | | | |
| Connection | Screw-in (Rp) | | | | | | | | |
| Port size | 3/4 | 1 | 1 ¹ / ₄ | 1 ¹ / ₂ | 3/4 | 1 | 1 ¹ / ₄ | 1 ¹ / ₂ | |
| Weight | kg | 2.6 | 2.5 | 4.1 | 4.0 | 3.0 | 2.9 | 5.1 | 5.0 |
| Proof pressure | MPa | 0.1 | | | | 0.3 | | | |
| Degree of protection | IPX4 | | | | | | | | |

* Cv value is the value at main fully open (+), bypass fully open (H).
* 1: Only the option for hydrogen gas as the working fluid can be used.

Flow characteristics (typical: VNA-40-R, VNA-40-RH)



| No. | Main | Bypass |
|-----|--------------------|----------------|
| ① | Fully open (+) | Fully open (H) |
| ② | Fully open (+) | Fully open (L) |
| ③ | Fully open (-) | Fully open (H) |
| ④ | Fully open (-) | Fully open (L) |
| ⑤ | Solenoid valve OFF | Fully open (H) |
| ⑥ | Solenoid valve OFF | Fully open (L) |

Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

How to order

VNA - 20 - R H2 - AC100V

Model No.



① Port size

② Working pressure

③ Hydrogen compatible option

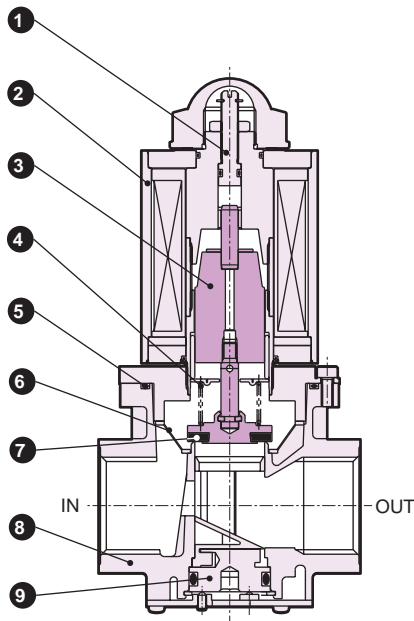
④ Voltage

*1

| Code | Description | |
|-------------------------------------|---------------------------------|---|
| ① Port size | | |
| 20 | Rp3/4 | |
| 25 | Rp1 | |
| 32 | Rp1 ¹ / ₄ | |
| 40 | Rp1 ¹ / ₂ | |
| ② Working pressure | | |
| Blank | 0 to 0.055 MPa | |
| H | 0 to 0.1 MPa | |
| ③ Hydrogen compatible option | | |
| Blank | Standard |  |
| H2 | Working fluid: Hydrogen gas |  |
| ④ Voltage | | |
| AC100V | Standard | 100 VAC 50/60 Hz |
| AC200V | | 200 VAC 50/60 Hz |
| AC110V | Option | 110 VAC 50/60 Hz |
| AC220V | | 220 VAC 50/60 Hz |
| DC24V | | 24 VDC |
| DC100V | | 100 VDC |

*1: For voltages other than above, contact CKD.

Internal structure/material

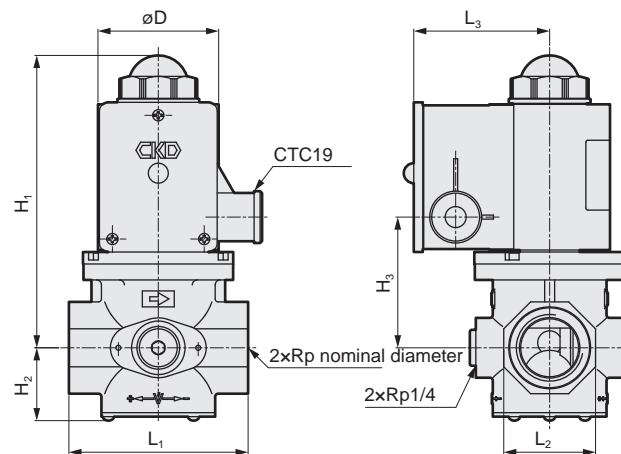


Cannot be disassembled

| Part No. | Part name | Material |
|----------|----------------------------|--|
| 1 | Adjusting screw | Stainless steel |
| 2 | Bonnet | Steel |
| 3 | Plunger | Stainless steel |
| 4 | Spring | Stainless steel wire |
| 5 | O-ring | Nitrile rubber |
| 6 | Strainer | Resin |
| 7 | Valve disc | Nitrile rubber (R), urethane rubber (RH) |
| 8 | Body | Aluminum die-casting |
| 9 | Flow rate adjustment screw | Aluminum |

Dimensions

● VNA-20 to 40-R/RH



| Code | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-----------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNA-20-R | 3/4 | 147 | 37 | 65.5 | 89 | 46 | 73 | 60.5 |
| VNA-25-R | 1 | 147 | 37 | 65.5 | 89 | 46 | 73 | 60.5 |
| VNA-32-R | 1¼ | 166 | 45 | 84.5 | 128 | 65 | 78 | 70 |
| VNA-40-R | 1½ | 166 | 45 | 84.5 | 128 | 65 | 78 | 70 |
| VNA-20-RH | 3/4 | 147 | 37 | 65.5 | 89 | 46 | 78 | 70 |
| VNA-25-RH | 1 | 147 | 37 | 65.5 | 89 | 46 | 78 | 70 |
| VNA-32-RH | 1¼ | 193 | 45 | 111.5 | 128 | 65 | 88 | 90 |
| VNA-40-RH | 1½ | 193 | 45 | 111.5 | 128 | 65 | 88 | 90 |



NO ideal for gas relief line of industrial combustion equipment

Solenoid relief valve **VNR Series**

- NO (when energized Closed) type
- City gas/LPG
- Port size: Rp1/2, Rp3/4, Rp1, Rp1¼, Rp1½



Features

- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.
- Equipped with a robust dedicated terminal box with JIS standard conduit thread, making electrical wiring easy too.

Applications

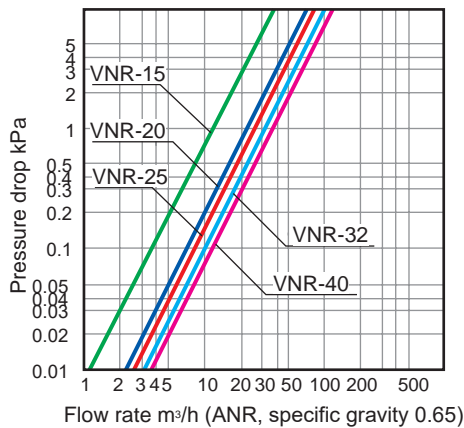
- Industrial furnaces
- Drying furnaces
- Hydrogen-related devices (only hydrogen gas option is used as the working fluid)

Specifications

| Item | VNR-15 | VNR-20 | VNR-25 | VNR-32 | VNR-40 |
|--|--|--------|--|--------|--------|
| Working fluid | City gas/LPG (hydrogen gas *1) | | | | |
| Working pressure kPa | 0 to 20 | | | | |
| Flow rate ^{Specific gravity of city gas 0.65} _{ΔP=0.29Pa} m³/h (ANR) | 5.8 | 11.7 | 12.7 | 16.6 | 17.2 |
| Cv | 3.8 | 7.8 | 8.4 | 11.0 | 11.4 |
| Rated voltage V | 100 AC ^{+10%} _{-15%} | | 200 AC ^{+10%} _{-15%} | | |
| Frequency Hz | Common to 50 and 60 | | | | |
| Power consumption (apparent power) VA | 31 | | 50 | | |
| Ambient temperature °C | -20 to +60 (no freezing) | | | | |
| Closing time s | 1.0 or less | | | | |
| Opening time s | Approx. 0.5 | | | | |
| Frequency cycles/min | 30 or less | | | | |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal | | | | |
| Connection | Screw-in (Rp) | | | | |
| Port size | 1/2 | 3/4 | 1 | 1¼ | 1½ |
| Weight kg | 1.6 | 2.3 | 2.2 | 3.4 | 3.3 |
| Proof pressure MPa | 0.1 | | | | |
| Degree of protection | IPX4 | | | | |

* 1: Only the option for hydrogen gas as the working fluid can be used.

Flow characteristics



How to order



VNR - 15 - H2 - AC100V

Model No.

① Port size

② Hydrogen compatible Option

③ Voltage

| Code | Description |
|-------------------------------------|---|
| ① Port size | |
| 15 | Rp1/2 |
| 20 | Rp3/4 |
| 25 | Rp1 |
| 32 | Rp1¼ |
| 40 | Rp1½ |
| ② Hydrogen compatible option | |
| Blank | Standard  |
| H2 | Working fluid: Hydrogen gas  |
| ③ Voltage | |
| AC100V | 100 VAC 50/60 Hz |
| AC200V | 200 VAC 50/60 Hz |

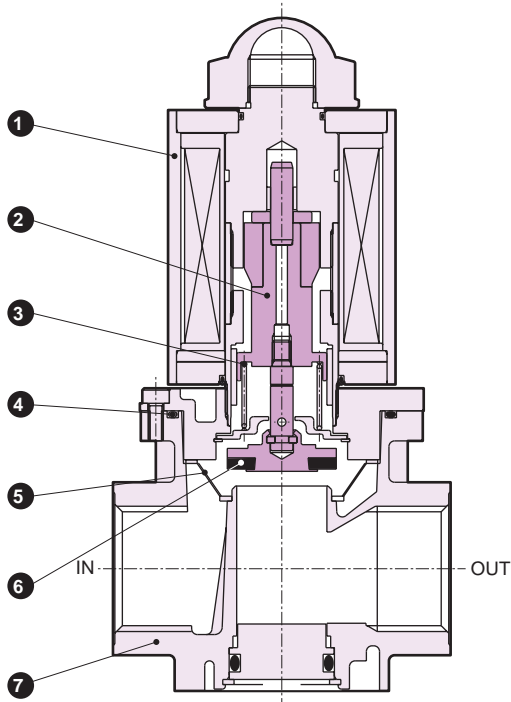
For voltages other than above, contact CKD.

Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

Internal structure/material

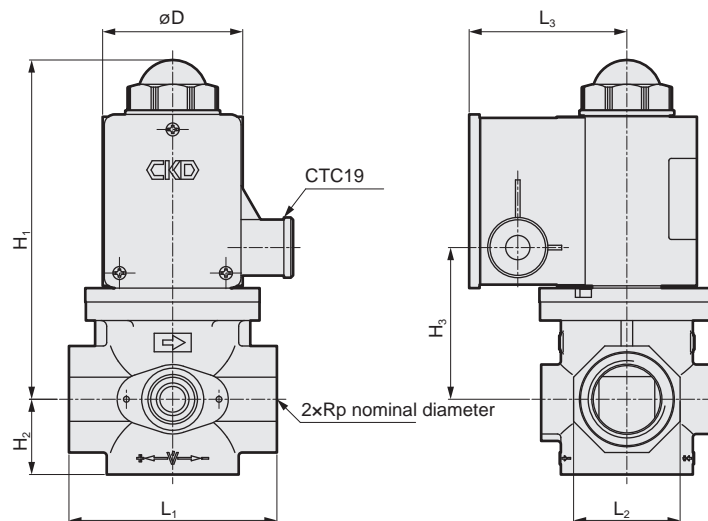


Cannot be disassembled

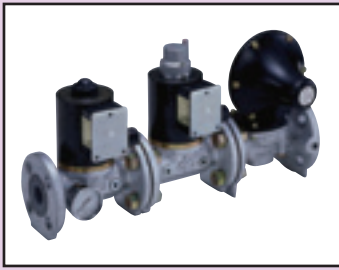
| Part No. | Part name | Material |
|----------|------------|----------------------|
| 1 | Bonnet | Steel |
| 2 | Plunger | Stainless steel |
| 3 | Spring | Stainless steel wire |
| 4 | O-ring | Nitrile rubber |
| 5 | Strainer | Resin |
| 6 | Valve disc | Fluoro rubber |
| 7 | Body | Aluminum die-casting |

Dimensions

● VNR-15 to 40



| Code Model No. | Port size | H ₁ | H ₂ | H ₃ | L ₁ | L ₂ | L ₃ | øD |
|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|------|
| VNR-15 | 1/2 | 132.5 | 24.5 | 51 | 69 | 32 | 63 | 50 |
| VNR-20 | 3/4 | 147 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNR-25 | 1 | 147 | 33 | 65.5 | 89 | 46 | 68 | 60.5 |
| VNR-32 | 1 1/4 | 166 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |
| VNR-40 | 1 1/2 | 166 | 39.5 | 84.5 | 128 | 65 | 73 | 70 |



Complex integration of cutoff valve/governor/pressure gauge. Highly reliable and economical, ideal for medium pressure gas combustion equipment.

Medium pressure gas safety shutoff control system **TAC-25 Series**

- NC (when energized Open) type
- City gas/LPG
- Port size: Inlet side 25A (JIS flange), outlet side 40A (JIS flange)



Features

- Multifunctional systematization
Double cutoff function, governor function, pressure gauge and pressure detection port, as required for medium pressure gas specification combustion equipment, are efficiently combined and systematized.
- Solenoid valve drive method
Solenoid valve structure is adopted for the gas cutoff valve. The DC driven actuator with rectifier has eliminated noise and coil burnout for safety, improving maintainability as well.
- Highly economical
All system components have a compact, space-saving design. No more complicated piping work as cutoff valve is delivered connected.

Applications

- Gas boilers (up to 2 t/h)
- Gas engines
- Gas absorption water coolers/heaters (up to 1,400 kW)
- Industrial furnaces

When placing an order

The medium pressure gas safety cutoff control system is adjusted and shipped with a selection of parts used according to the primary pressure/secondary pressure/flow rate. When ordering, fill in a separate sheet medium pressure gas safety cutoff control system specifications check sheet (page 33). How to order differs depending on the specifications.

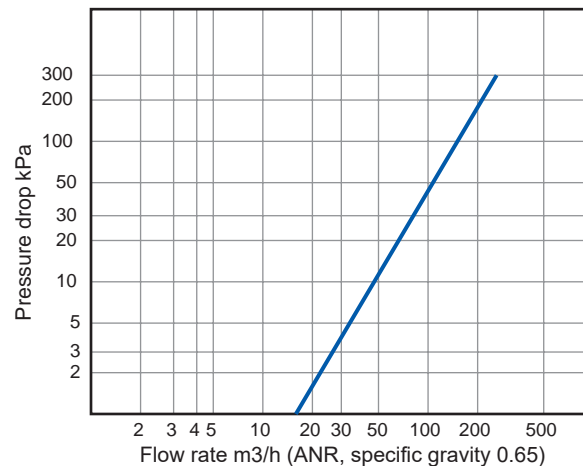
Specifications

| Item | TAC-25 | |
|--|--|------------|
| Working fluid | City gas/LPG | |
| Working pressure MPa | 0.1 to 0.2 | 0.1 to 0.3 |
| Secondary pressure kPa | 1.5 to 5 | 5 to 60 |
| Flow rate ^{Specific gravity of city gas 0.65} m ³ /h (ANR) | 2 to 40 | 10 to 120 |
| Rated voltage V | 100 AC ±10% 200 AC ±10% | |
| Frequency Hz | Common to 50 and 60 | |
| Power consumption (apparent power) VA | 82 x 2 | |
| Ambient temperature °C | -20 to +60 (no freezing) | |
| Opening time s | Approx. 10.0 (adjustable) | |
| Closing time s | 1.0 or less | |
| Frequency cycles/min | 1 or less | |
| Start gas adjustment % | 0 to 50 | |
| Re-energizing intermission time s | 5.0 or more | |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal | |
| Connection | Flange (JIS10KRF) | |
| Port size | Inlet side | 25A |
| | Outlet side | 40A |
| Weight kg | 23.0 | |
| Degree of protection | IPX4 | |

* The above specifications are a combination of VNM⊕VLM⊕C25N-B.

* The secondary pressure range indicates the range that can be set by changing parts such as pressure control springs. Contact CKD when considering the use of a primary pressure of less than 0.1 MPa or a flow rate of more than 120 m³/h.

Flow characteristics



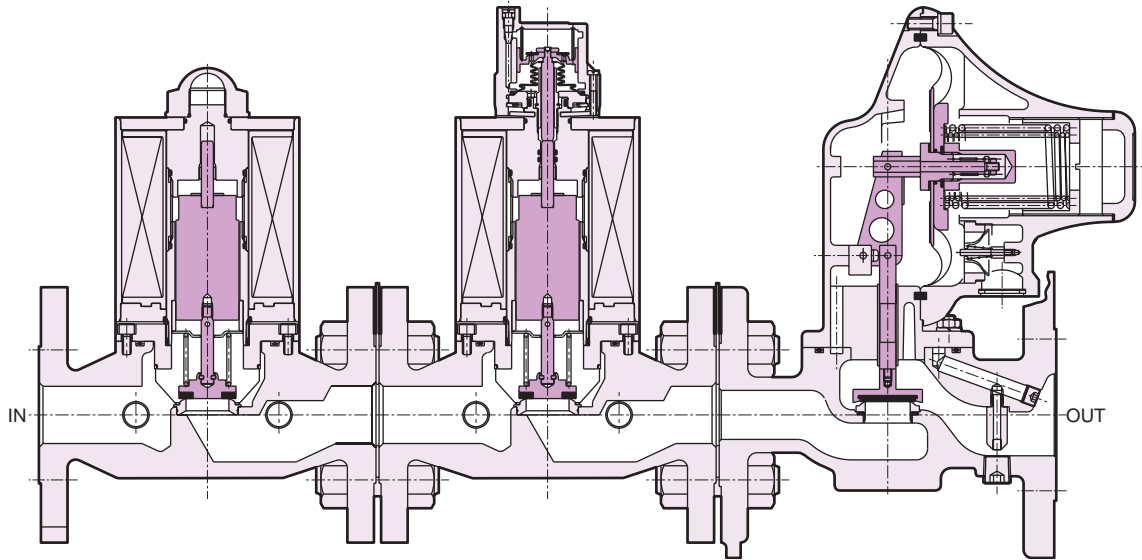
Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane |
|----------------------------|----------------|---------|--------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 |
| Coefficient | 1.0 | 0.63 | 0.57 |

⚠ When opening and closing the TAC-25 downstream cutoff valve, be sure to interlink it with the TAC-25 medium pressure gas cutoff valve. (If the downstream valve is the flow rate switching solenoid valve, interlinking with the medium pressure gas cutoff valve is not required.)

Internal structure

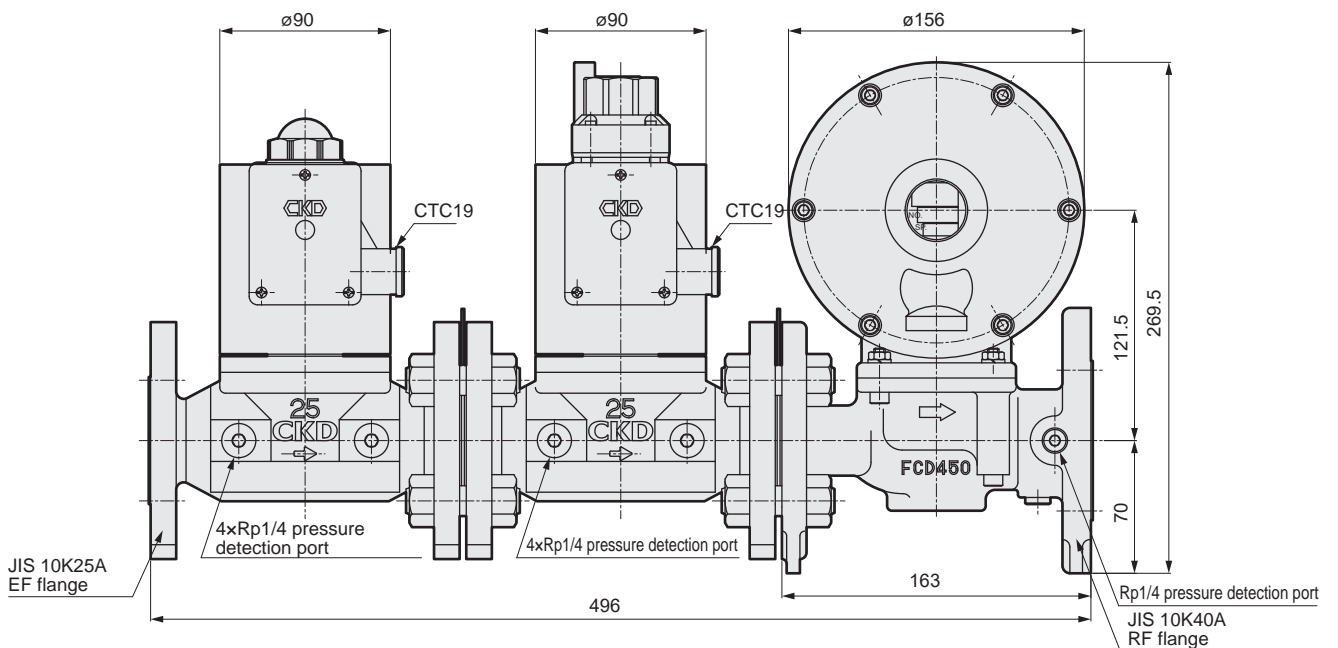


● Parts are the same as the single unit.

Refer to pages 35 to 40 for details.

Dimensions

● TAC-25



Medium pressure gas safety cutoff control system specifications check sheet

■ Company _____ / /

■ User name _____

■ Quantity _____

■ Delivery _____

■ Contact _____

■ Device used _____

Contact _____

● Common items

| | |
|------------------|--|
| Fluid name | |
| Specific gravity | |

● Cutoff valve item

| | |
|---------|--|
| Voltage | |
|---------|--|

● Governor items

| | | | |
|-----------------------------------|--|-------------|-------------|
| Primary pressure MPa | Min. | Regular use | Max. |
| Secondary pressure kPa | *1 (Set flow rate: m ³ /h (ANR)) | | |
| Flow rate m ³ /h (ANR) | Min. | Max. | |
| Mounting direction | Position of the upper cap viewed from the IN side flange | | |
| | 1 | right side | 2 left side |
| | 3 | OUT side | 4 IN side |

● Pressure gauge items

| | |
|------------------|---------|
| Pressure display | 0.4 MPa |
|------------------|---------|

● Remarks

*1: If setting flow rate is not designated due to secondary pressure adjustment, it is adjusted to the maximum flow rate.



Lightweight, compact and reliable safety shut-off valve that uses a solenoid valve drive method.

Medium pressure gas cutoff valve (quick open) **VNM Series**

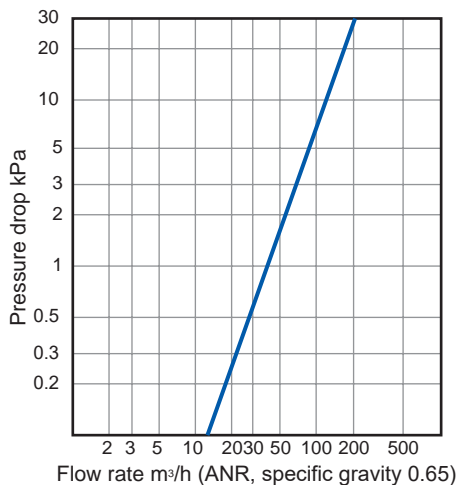
- NC (normally closed)
- City gas/LPG
- Port size: 25A (JIS flange)



Features

- Equipped with a robust dedicated terminal box with JIS standard conduit thread, making electrical wiring easy too.
- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.
- Equipped with a pressure switch/pressure gauge mountable connection port on the body.
- With power indicator lamp.

Flow characteristics



Specifications

| Item | VNM-25 |
|--|--|
| Working fluid | City gas/LPG (hydrogen gas *1) |
| Working pressure MPa | 0 to 0.3 |
| Flow rate <small>Specific gravity of city gas 0.65</small> m ³ /h (ANR) | 19 |
| Cv | 12.8 |
| Rated voltage V | 100 AC ±10% 200 AC ±10% |
| Frequency Hz | Common to 50 and 60 |
| Power consumption (apparent power) VA | 82 |
| Ambient temperature °C | -20 to +60 (no freezing) |
| Opening time s | 0.5 or less |
| Closing time s | 1.0 or less |
| Frequency cycles/min | 30 or less |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal |
| Connection | Flange (JIS10KRF) |
| Port size | 25A |
| Weight kg | 7.7 |
| Proof pressure MPa | 0.5 |
| Degree of protection | IPX4 |

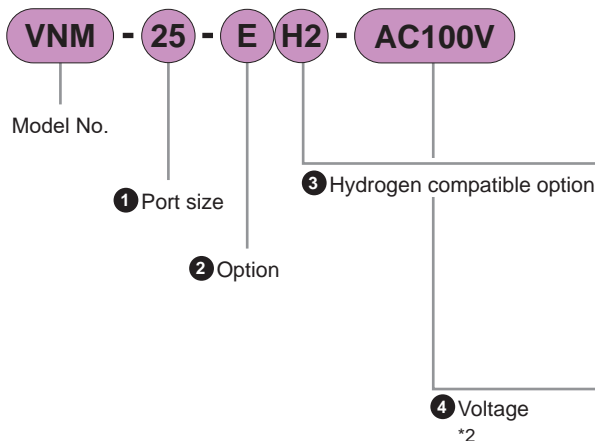
* 1: Only the option for hydrogen gas as the working fluid can be used.



Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

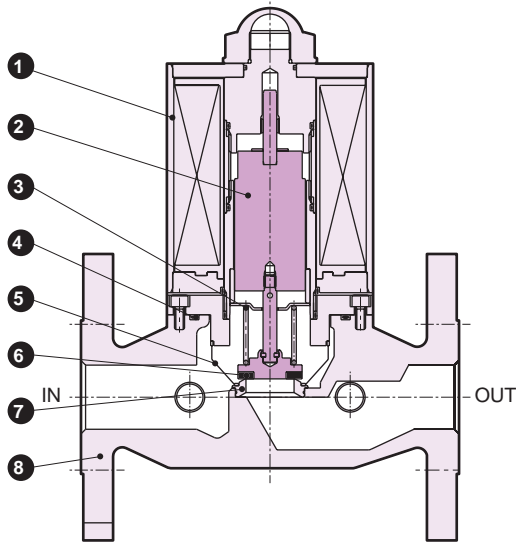
How to order



| Code | Description | |
|-------------------------------------|--|---|
| 1 Port size | | |
| 25 | JIS flange 25A | |
| 2 Option | | |
| Blank | Standard | |
| E | With operation confirmation micro switch | |
| 3 Hydrogen compatible option | | |
| Blank | Standard |  |
| H2 | Working fluid: Hydrogen gas |  |
| 4 Voltage | | |
| AC100V | Standard | 100 VAC 50/60 Hz |
| AC200V | | 200 VAC 50/60 Hz |
| AC110V | Option | 110 VAC 50/60 Hz |
| AC220V | | 220 VAC 50/60 Hz |
| DC24V | | 24 VDC |

* 2: For voltages other than above, contact CKD.

Internal structure/material

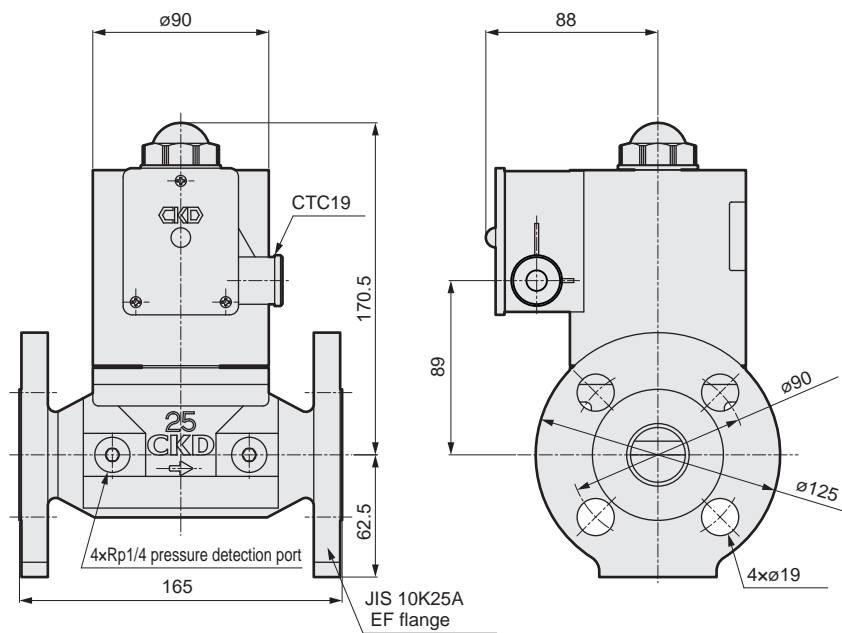


Cannot be disassembled

| Part No. | Part name | Material |
|----------|------------|----------------------|
| 1 | Bonnet | Steel |
| 2 | Plunger | Stainless steel |
| 3 | Spring | Stainless steel wire |
| 4 | O-ring | Fluoro rubber |
| 5 | Filter | Stainless steel wire |
| 6 | Valve disc | Urethane rubber |
| 7 | Valve seat | Stainless steel |
| 8 | Body | Ductile cast iron |

Dimensions

● VNM-25





Lightweight, compact and reliable safety shut-off valve that uses a solenoid valve drive method.

Medium pressure gas cutoff valve (slow open) **VLM Series**

- NC (normally closed)
- City gas/LPG
- Port size: 25A (JIS flange)



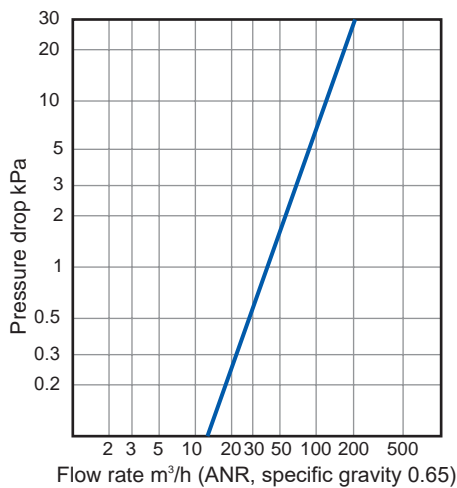
Features

- Equipped with a robust dedicated terminal box with JIS standard conduit thread, making electrical wiring easy too.
- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.
- Equipped with a pressure switch/pressure gauge mountable connection port on the body.
- With power indicator lamp.

Specifications

| Item | VLM-25 |
|---|--|
| Working fluid | City gas/LPG (hydrogen gas *1) |
| Working pressure MPa | 0 to 0.3 |
| Flow rate <small>Specific gravity of city gas 0.65 ΔP=0.25kPa</small> m ³ /h (ANR) | 19 |
| Cv | 12.8 |
| Rated voltage V | 100 AC ±10% 200 AC ±10% |
| Frequency Hz | Common to 50 and 60 |
| Power consumption (apparent power) VA | 82 |
| Ambient temperature °C | -20 to +60 (no freezing) |
| Opening time s | Approx. 10 |
| Closing time s | 1.0 or less |
| Frequency cycles/min | 1 or less |
| Start gas adjustment % | 0 to 50 |
| Re-energizing intermission time s | 5.0 or more |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal |
| Connection | Flange (JIS10KRF) |
| Port size | 25A |
| Weight kg | 7.8 |
| Proof pressure MPa | 0.5 |
| Degree of protection | IPX4 |

Flow characteristics



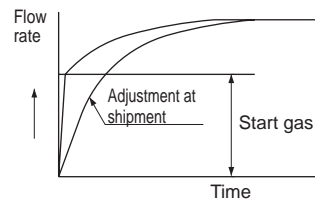
* 1: Only the option for hydrogen gas as the working fluid can be used.

Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

Opening operation characteristics





How to order

VLM - 25 - H2 - AC100V

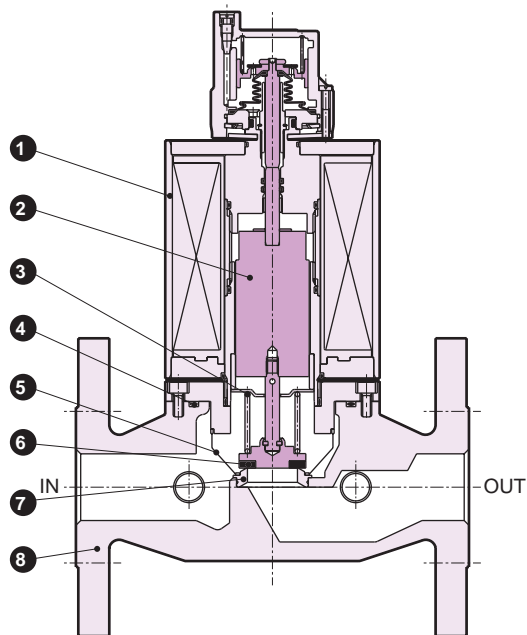
Model No. ① Port size ② Hydrogen compatible option

③ Voltage *2

| Code | Description | |
|-------------------------------------|-----------------------------|---|
| ① Port size | | |
| 25 | JIS flange 25A | |
| ② Hydrogen compatible option | | |
| Blank | Standard |  |
| H2 | Working fluid: Hydrogen gas |  |
| ③ Voltage | | |
| AC100V | Standard | 100 VAC 50/60 Hz |
| AC200V | | 200 VAC 50/60 Hz |
| AC110V | Option | 110 VAC 50/60 Hz |
| AC220V | | 220 VAC 50/60 Hz |
| DC24V | | 24 VDC |

* 2: For voltages other than above, contact CKD.

Internal structure/material

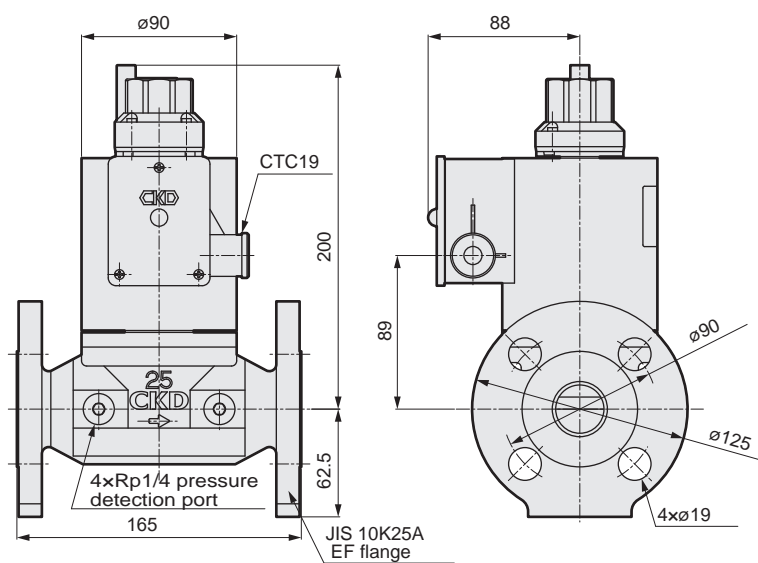


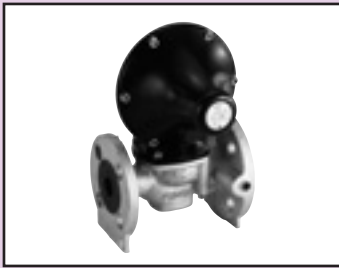
Cannot be disassembled

| Part No. | Part name | Material |
|----------|------------|----------------------|
| 1 | Bonnet | Steel |
| 2 | Plunger | Stainless steel |
| 3 | Spring | Stainless steel wire |
| 4 | O-ring | Fluoro rubber |
| 5 | Filter | Stainless steel wire |
| 6 | Valve disc | Urethane rubber |
| 7 | Valve seat | Stainless steel |
| 8 | Body | Ductile cast iron |

Dimensions

● VLM-25





Medium pressure governor realizing compactness/large flow rate with a unique structural design.

Medium pressure governor **C25N-B** Series

- City gas/LPG
- Port size: Inlet side 25A (JIS flange), outlet side 40A (JIS flange)



Features

- Compact and provides stable secondary pressure over a wide flow rate range.
- Adopts a double diaphragm structure with an eye to safety
- Innovative design.

When placing an order

The medium pressure governor is adjusted and shipped with a selection of parts used according to the primary pressure/secondary pressure/flow rate. When ordering, fill in a separate sheet medium pressure gas safety cutoff control system specifications check sheet (page 33). How to order differs depending on the specifications.

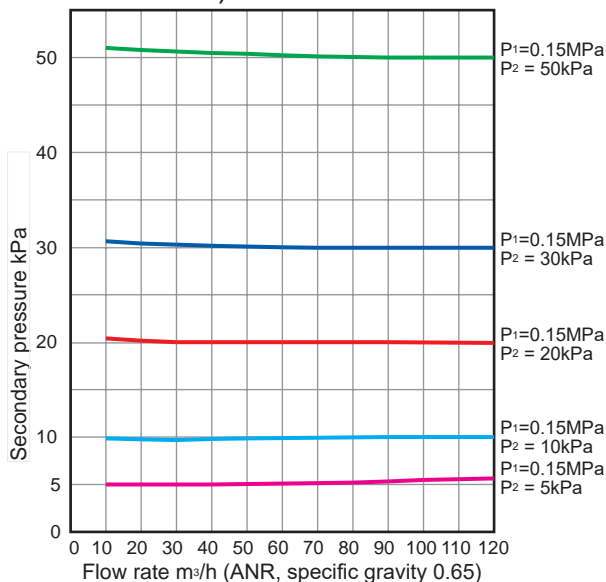
Specifications

| Item | C25N-B | |
|--|--------------------------|------------|
| Working fluid | City gas/LPG | |
| Working pressure MPa | 0.1 to 0.2 | 0.1 to 0.3 |
| Secondary pressure kPa | 1.5 to 5 | 5 to 60 |
| Secondary pressure fluctuation range % | Within 20 | |
| Flow rate <small>Specific gravity of city gas 0.65</small> m ³ /h (ANR) | 2 to 40 | 10 to 120 |
| Ambient temperature °C | -20 to +60 (no freezing) | |
| Mounting orientation | Unrestricted | |
| Connection | Flange (JIS10KRF) | |
| Port size | Inlet side | 25A |
| | Outlet side | 40A |
| Weight kg | 7.5 | |

* The secondary pressure range indicates the range that can be set by changing parts such as pressure control springs.

* Contact CKD when considering the use of a primary pressure of less than 0.1 MPa or a flow rate of more than 120 m³/h.

Governor characteristics (representative characteristics)



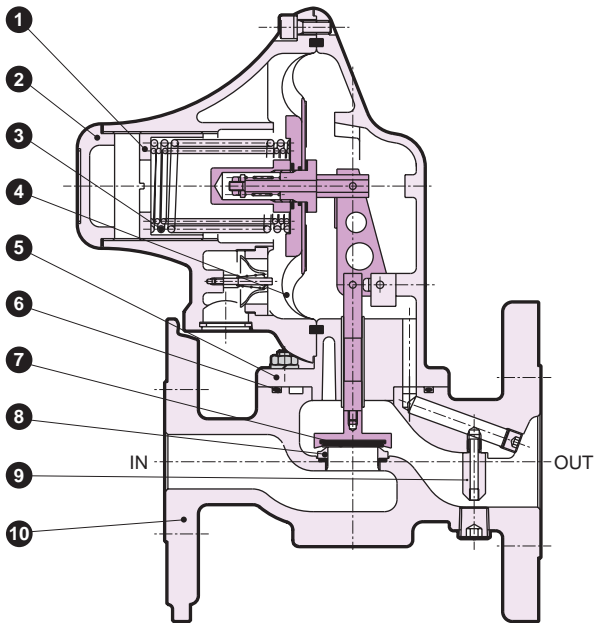
Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane |
|----------------------------|----------------|---------|--------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 |
| Coefficient | 1.0 | 0.63 | 0.57 |

⚠ Do not open and close the cutoff valve on the downstream side of C25N-B.

Internal structure/material

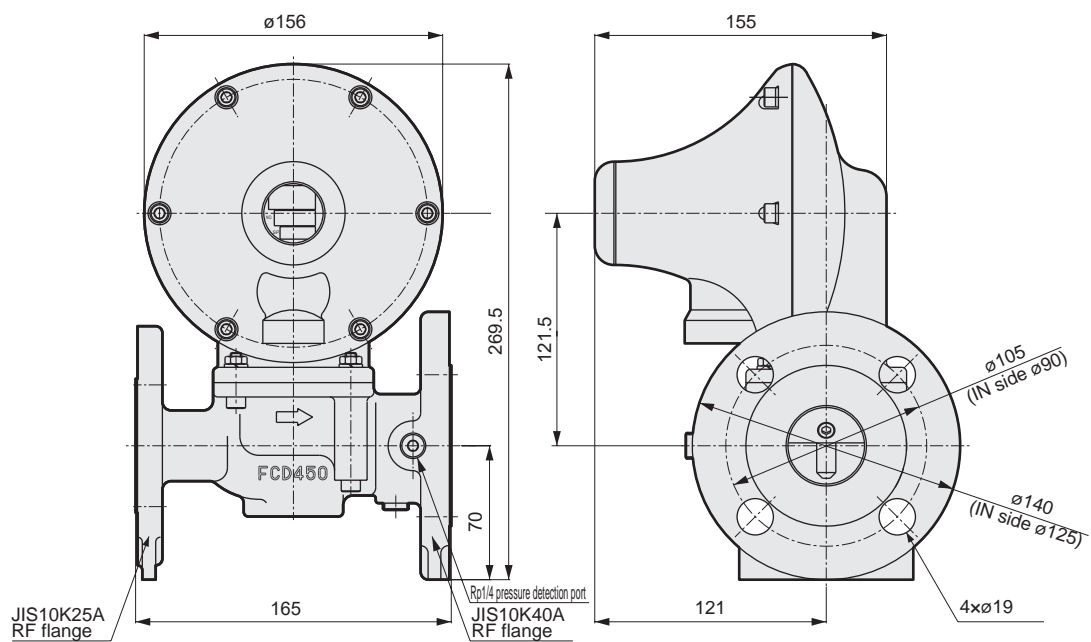


Cannot be disassembled

| Part No. | Part name | Material |
|----------|-------------------------|---|
| 1 | Adjusting nut | Brass |
| 2 | Upper cap | Zinc die-casting |
| 3 | Pressure control spring | Piano wire (stainless steel wire) |
| 4 | Diaphragm | Nitrile rubber containing ground fabric |
| 5 | Case | Aluminum die-casting |
| 6 | O-ring | Nitrile rubber |
| 7 | Valve | Fluoro rubber |
| 8 | Orifice | Brass |
| 9 | Booster pipe | Brass |
| 10 | Body | Ductile cast iron |

Dimensions

● C25N-B





* In order to prevent confusion with the standard product VNM-25, a label stating "Increased fire safety specifications" is affixed to this product.

Fire-resistant to shut off the gas without fail in case of fire accidents Safety residual pressure exhaust valve **VNM-25-K Series**

(increased fire safety specifications)

- NC (normally closed)
- City gas
- Port size: 25A (JIS flange)



Overview

Increased fire safety specifications have been jointly developed by three gas companies to ensure resistance to fire heat so that the product can endure for the time (about 30 minutes) necessary to start initial firefighting in case of fire due to an unpredictable cause. This product normally functions as a safety shut-off valve for a gas circuit double cutoff system to increase safety of automatic startup and operation. In a fire-related emergency, it endures high heat, keeping the gas cut off, and thus prevents fire from spreading.

Features

- Heat resistant structure and materials have enabled higher fire safety levels compared with conventional safety shut-off valves.
- The DC driven actuator with rectifier has eliminated noise and coil burnout for safety.
- Checking valve open/close state is easy with the valve closing confirmation switch and power indicator.

Applications

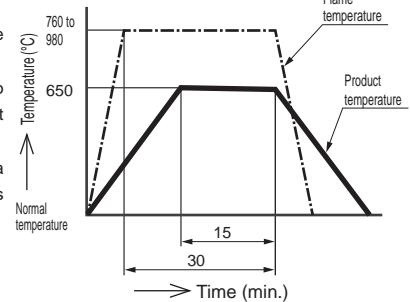
Gas combustion systems to which the "Safety Guidelines for automatic startup and operation of industrial gas combustion systems" issued by Tokyo Gas, Osaka Gas and Toho Gas are applied

Specifications

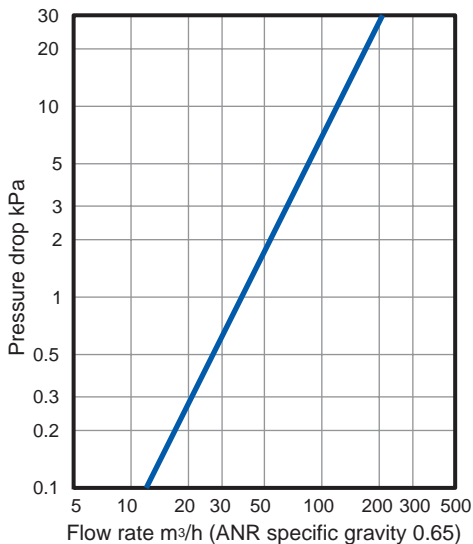
| Item | VNM-25-K | | |
|--|--|------------|------------|
| Working gas | City gas | | |
| Working pressure MPa | 0 to 0.3 | | |
| Flow rate $C_{v, \text{Specific gravity of city gas } 0.65}$ m ³ /h (ANR) | 19 | | |
| Cv | 12.8 | | |
| Rated voltage V | 100 AC±10%, 200 AC±10% | | |
| Frequency Hz | Common in 50 and 60 | | |
| Power consumption (apparent power) VA | 82 | | |
| Ambient temperature °C | -10 to +60 (no freezing) | | |
| Opening time s | 0.5 or less | | |
| Closing time s | 1.0 or less | | |
| Frequency cycles/min | 30 or less | | |
| Fire-resistance* | Refer to the descriptions below. | | |
| Mounting orientation | Vertical direction with the coil on top or horizontal direction with the coil horizontal | | |
| Connection | Flange (JIS 10K RF) | | |
| Port size | 25A | | |
| Weight kg | 10 | | |
| Proof pressure MPa | 0.5 | | |
| Valve closing confirmation switch | Load voltage V | 12, 24 DC | 100 AC |
| | Load current mA | 50 or less | 20 or less |
| Degree of protection | IPX4 | | |

* Fire safety performance

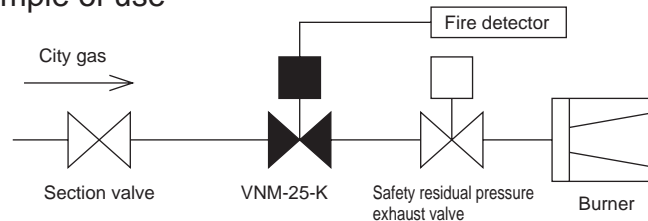
Fire safety performance of this product is based on the API607 standard (American Petroleum Institute). The product is exposed to a fire atmosphere of 760 to 980°C for 30 minutes within which the product temperature is kept at 650°C for 15 minutes. When the product is naturally cooled and 0.2MPa water pressure is applied, the internal leakage is 1.2L/h or less and external leakage is 1.5L/h or less.



Flow characteristics



Example of use



Install this product as an upstream safety shut-off valve for a double shutdown system and connect it to the fire detector so that the valve can be triggered by the fire detector to shut off the gas in case of fire, thus preventing fire spreading due to gas leakage.

Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) |
|----------------------------|----------------|
| Specific gravity (air = 1) | 0.65 |
| Coefficient | 1.0 |

VNM-25-K Series

Internal structure and dimensions

How to order

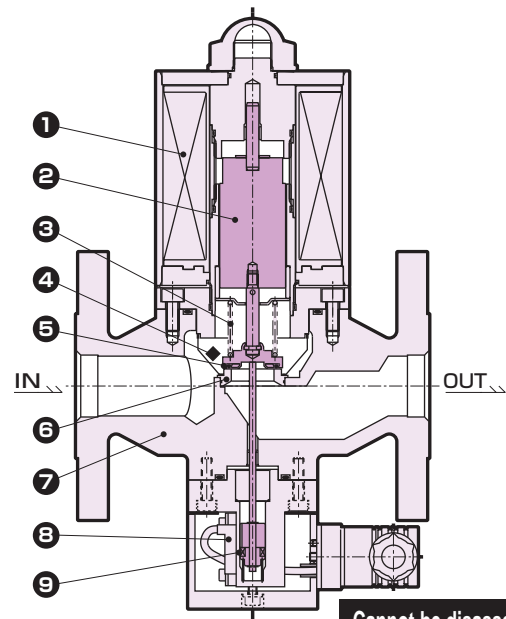
VNM - 25 - K - AC100V

Model No.

1 Voltage

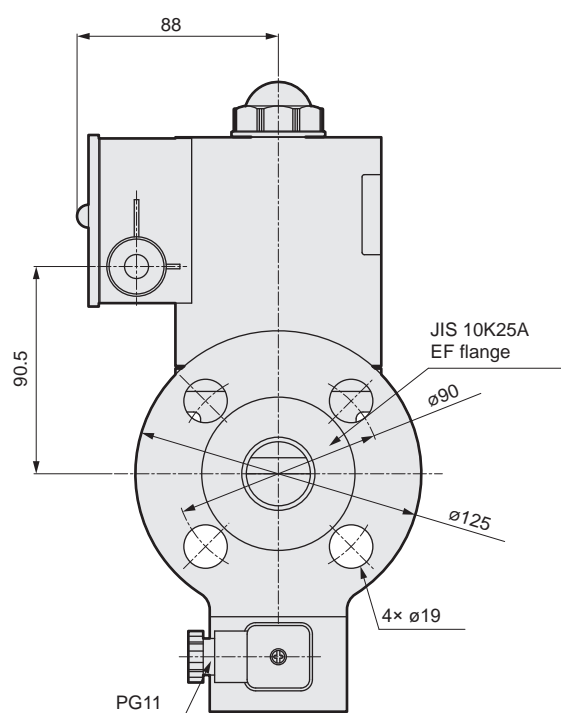
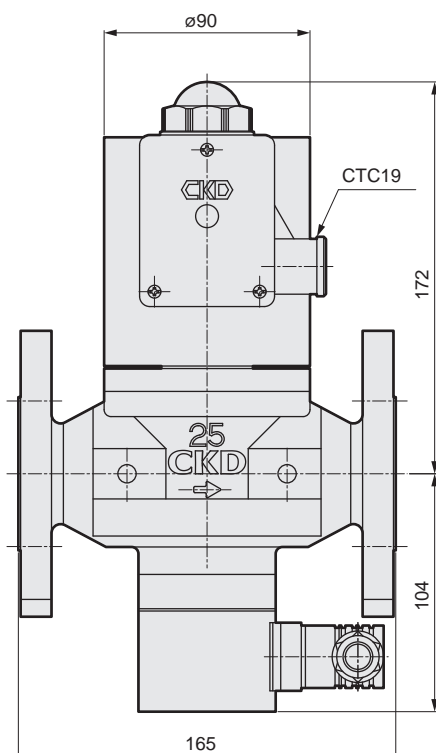
| | |
|--------|------------------|
| AC100V | 100 VAC 50/60 Hz |
| AC200V | 200 VAC 50/60 Hz |

Internal structure/material



| Part No. | Part name | Material |
|----------|--------------|----------------|
| 1 | Coil winding | EIW |
| 2 | Plunger | SUS403 |
| 3 | Spring | Inconel |
| 4 | Strainer | SUS304 |
| 5 | O-ring | U |
| 6 | Valve seat | S45C |
| 7 | Body | FCD450 |
| 8 | Reed switch | — |
| 9 | Magnet | Plastic magnet |

Dimensions





Highly reliable cutoff valve ideal for main gas lines, with integrated motor/hydraulic pump.

Fluid operated 2-position cutoff valve **HK1 Series**

- NC (normally closed)
- City gas/LPG
- Port size: Rp1¹/₂, Rp2, Rp2¹/₂
40A to 80A (JIS flange)/100A to 200A (DIN flange)



Features

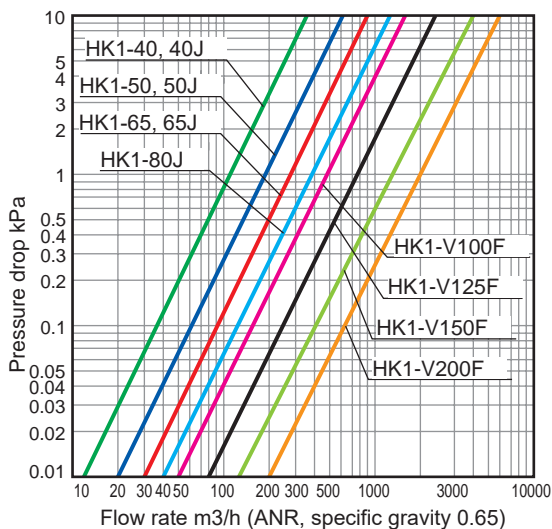
- 2-position shutdown valve with integrated motor and hydraulic pump
- Excellent performance in safe gas cutoff
- Reliable and long service-life actuator
- Indicator for checking valve open/close state
- Integrated strainer prevents foreign matter from being caught in pipes.
- With flow rate controller. For easy adjustment of calorie of gas (excluding bore sizes 125 A to 200 A)
- Pressure detection port on the body enables easy installation of the pressure switch and reduces cost for piping.
- Supplied terminal box makes wiring easier.

Specifications

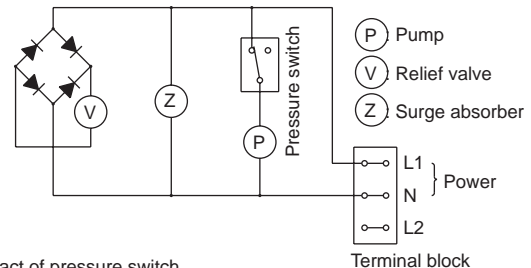
| Item | HK1-40 | HK1-40J | HK1-50 | HK1-50J | HK1-65 | HK1-65J | HK1-80J | HK1-V100F | HK1-V125F | HK1-V150F | HK1-V200F | |
|--|---|-------------------|---------------|-------------------|---------------|-------------------|------------------|--------------|------------------------------|-----------|------------|--|
| Working fluid | City gas/LPG (hydrogen gas *1) | | | | | | | City gas/LPG | | | | |
| Working pressure MPa | 0 to 0.4 | | 0 to 0.25 | | 0 to 0.2 | | 0 to 0.14 | 0 to 0.1 | 0 to 0.06 | 0 to 0.04 | 0 to 0.023 | |
| Flow rate <small>Specific gravity of city gas 0.65 △Pa=25Pa</small> m ³ /h(ANR) | 59 | | 96 | | 145 | | 196 | 287 | 399 | 601 | 950 | |
| Cv | 39 | | 64 | | 97 | | 132 | 191 | 265 | 399 | 631 | |
| Rated voltage V | 100 AC ±10% 200 AC ±10% | | | | | | | | | | | |
| Frequency Hz | Common in 50 and 60 | | | | | | | | | | | |
| Power consumption (apparent power)VA | When valve is opening | | | | | | | | | | | |
| | When valve is held open | | | | | | | | | | | |
| Ambient temperature °C | -15 to +60 (no freezing) | | | | | | | | | | | |
| Opening time s | 30 or less (ambient temperature 0 to 60°C with rated voltage) | | | | | | | | | | | |
| Closing time s | 1.0 or less | | | | | | | | | | | |
| Frequency cycles/min | 4 or less | | | | | | | | | | | |
| Flow rate adjustment % | 0 to 100 | | | | | | | | Without flow rate controller | | | |
| Mounting orientation | Vertical direction with the actuator up or horizontal direction with the terminal box side of actuator up | | | | | | | | | | | |
| Connection | Screw-in (Rp) | Flange (JIS10KRF) | Screw-in (Rp) | Flange (JIS10KRF) | Screw-in (Rp) | Flange (JIS10KRF) | Flange (DINPN16) | | | | | |
| Port size | 1 1/2 | 40A | 2 | 50A | 2 1/2 | 65A | 80A | 100A | 125A | 150A | 200A | |
| Weight kg | 9 | 21.5 | 9.2 | 10.7 | 12.7 | 14.3 | 15.3 | 19 | 24 | 32 | 52 | |
| Proof pressure MPa | 0.6 | | | | | | 0.2 | 0.12 | 0.08 | 0.05 | | |
| Degree of protection | IP54 (IP21 or equivalent with HP terminal box) | | | | | | | | | | | |

* 1: Only the option for hydrogen gas as the working fluid can be used.
* 2: DIN flange Connection includes companion flange and gasket.

Flow characteristics



Electric circuit Fig.



Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

How to order



Model No.

① Model

② Port size
*1

③ Terminal box
*2

④ Micro switch

⑤ Outdoor type
*2

⑥ Working fluid
*1

⑦ Voltage

| Code | Description |
|----------------|---|
| ① Model | |
| 1 | ON/OFF 2-position control |
| 1E | ON/OFF 2-position control with micro switch |

| ② Port size | |
|--------------------|--|
| 40 | Screw-in Rp1 ¹ / ₂ |
| 50 | Screw-in Rp2 |
| 65 | Screw-in Rp2 ¹ / ₂ |
| 40J | JIS Flange 40A |
| 50J | JIS Flange 50A |
| 65J | JIS Flange 65A |
| 80J | JIS Flange 80A |
| V100F | DIN Flange 100A |
| V125F | DIN Flange 125A |
| V150F | DIN Flange 150A |
| V200F | DIN Flange 200A |

| ③ Terminal box | |
|-----------------------|------------------------|
| Blank | None |
| 3M | HP terminal box (G1/2) |

| ④ Micro switch | | |
|-----------------------|-----------------|--|
| Blank | ① When it is 1 | Without micro switch |
| | ① When it is 1E | With valve opening confirmation micro switch |
| S | ① When it is 1E | With valve closing confirmation micro switch |
| ES | only | With valve opening/closing confirmation micro switch |

| ⑤ Outdoor type | |
|-----------------------|--------------|
| Blank | Standard |
| ZZ | Outdoor type |

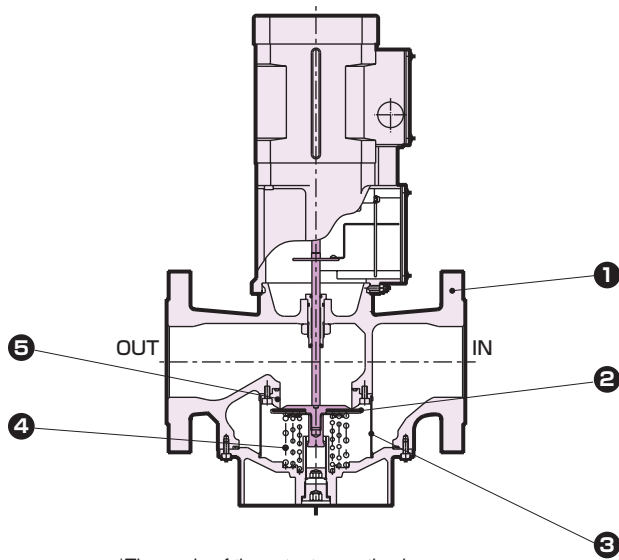
| ⑥ Working fluid | |
|------------------------|---|
| Blank | Standard |
| H2 | Working fluid: With hydrogen gas/hydrogen nameplate |

| ⑦ Voltage | |
|------------------|------------------|
| AC100V | 100 VAC 50/60 Hz |
| AC200V | 200 VAC 50/60 Hz |

*1: When "V100F", "V125F", "V150F", or "V200F" is selected for the ② port size, ⑥ "H2" cannot be selected for the working fluid.

*2: When "ZZ" is selected for ⑤ Outdoor type specifications, a round terminal box is automatically included and "3M" is not available for the ③ terminal box.

Internal structure/material



*The angle of the actuator section is changed by 90°.

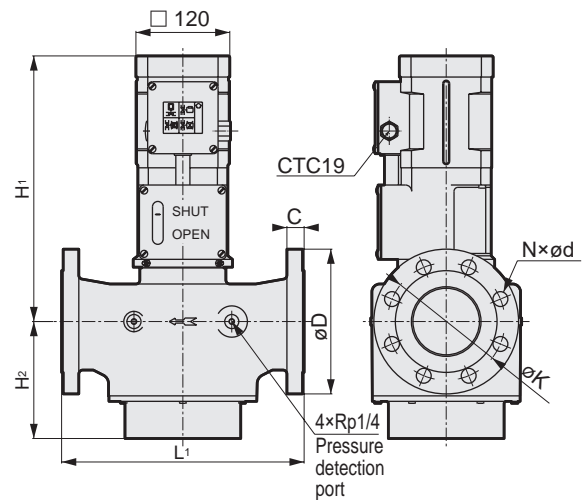
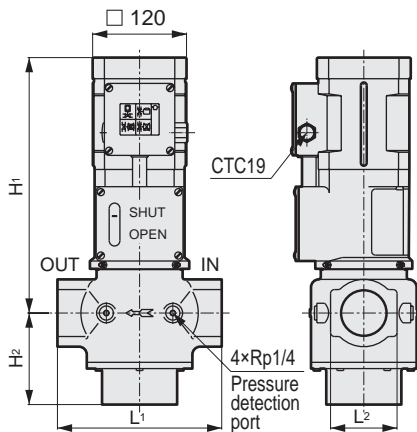
Cannot be disassembled

| Part No. | Part name | Material |
|----------|------------|---------------------------------|
| 1 | Body | Aluminum (except for 40J) |
| | | Cast iron (40J) |
| 2 | Valve disc | Urethane rubber (40 to 80J) |
| | | Nitrile rubber (V100F to V200F) |
| 3 | Filter | Stainless steel wire |
| 4 | Spring | Stainless steel wire |
| 5 | Valve seat | Aluminum |

Dimensions

● HK1-40/50/65

● HK1-40J to 80J, V100F to V200F



| Code | Connection | H ₁ | H ₂ | L ₁ | L ₂ | C | øD | øK | N-ød |
|-----------|-----------------------|----------------|----------------|----------------|----------------|----|-----|-----|-------|
| HK1-40 | Thread connection | 324 | 114 | 210 | 70 | - | - | - | - |
| HK1-50 | | 327 | 117 | 210 | 85 | - | - | - | - |
| HK1-65 | | 337 | 140 | 310 | 100 | - | - | - | - |
| HK1-40J | JIS flange connection | 324 | 114 | 230 | - | 20 | 140 | 105 | 4x19 |
| HK1-50J | | 327 | 117 | 230 | - | 20 | 155 | 120 | 4x19 |
| HK1-65J | | 337 | 140 | 290 | - | 22 | 175 | 140 | 4x19 |
| HK1-80J | | 340 | 150 | 310 | - | 22 | 185 | 150 | 8x19 |
| HK1-V100F | DIN flange connection | 400 | 163 | 350 | - | 24 | 229 | 180 | 8x18 |
| HK1-V125F | | 450 | 158 | 400 | - | 26 | 250 | 210 | 8x18 |
| HK1-V150F | | 445 | 173 | 480 | - | 26 | 285 | 240 | 8x23 |
| HK1-V200F | | 475 | 218 | 600 | - | 30 | 340 | 295 | 12x23 |



Highly reliable shutdown valve with integrated motor/hydraulic pump and large flow rate even with low pressure (202 to 449m³/h (ANR))

Fluid operated 2-position cutoff valve **HS Series**

- NC (normally closed)
- City gas/LPG
- Port size: 50A (JIS flange)/80A (JIS flange)



Features

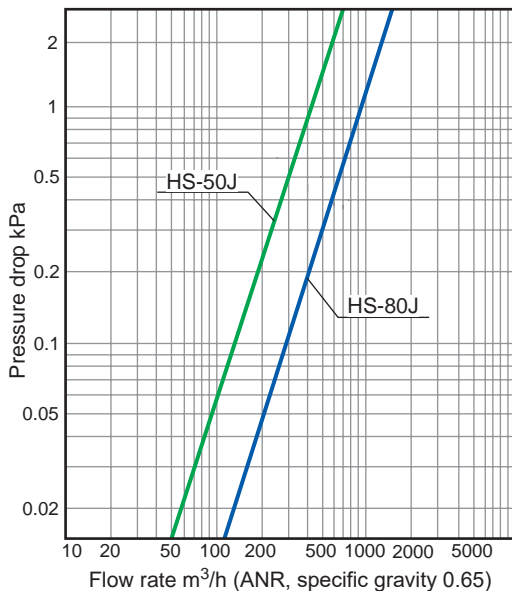
- Reliable and long service-life actuator with integrated motor and hydraulic pump
- Excellent performance in safe gas cutoff
- Indicator for checking valve open/close state
- Lightweight aluminum body
- Supplied terminal box makes wiring easier.

Specifications

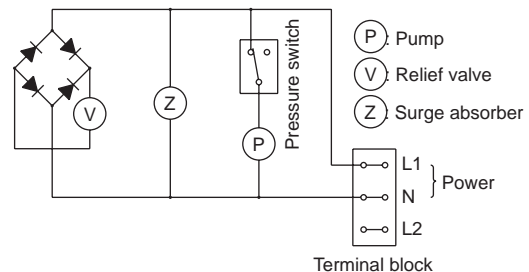
| Item | HS-50J | HS-80J |
|---|---|-----------|
| Working fluid | City gas/LPG (hydrogen gas *1) | |
| Working pressure MPa | 0 to 0.18 | 0 to 0.06 |
| Flow rate <small>Specific gravity of city gas 0.65 ΔP=0.25MPa</small> m ³ /h (ANR) | 202 | 449 |
| Cv | 135 | 300 |
| Rated voltage V | 100 AC ±10% 200 AC ±10% | |
| Frequency Hz | Common in 50 and 60 | |
| Power consumption (apparent power)VA | 120 (100 VAC), 115 (200 VAC) | |
| | 12 | |
| Ambient temperature °C | -15 to +60 (no freezing) | |
| Opening time s | 30 or less (ambient temperature 0 to 60°C with rated voltage) | |
| Closing time s | 1.0 or less | |
| Frequency cycles/min | 4 or less | |
| Mounting orientation | Vertical direction with the actuator up or horizontal direction with the terminal box side of actuator up | |
| Connection | Flange (JIS10KRF) | |
| Port size | 50A | 80A |
| Weight kg | 13 | 17 |
| Proof pressure MPa | 0.6 | |
| Degree of protection | IP54 (IP21 or equivalent with HP terminal box) | |

* 1: Only the option for hydrogen gas as the working fluid can be used.

Flow characteristics



Electric circuit Fig.



* The contact of pressure switch indicates that the valve is closed.

Reference: Conversion coefficient

Converted flow rate = (flow rate in table) x (coefficient)

| Gas | City gas (13A) | Propane | Butane | Hydrogen gas *1 |
|----------------------------|----------------|---------|--------|-----------------|
| Specific gravity (air = 1) | 0.65 | 1.6 | 2.0 | 0.07 |
| Coefficient | 1.0 | 0.63 | 0.57 | 3.04 |

How to order

Model No. **HS - 50J - E ZZ H2 - AC100V**

Model No.

① Port size

② Terminal box
*1

③ Micro switch

④ Outdoor type
*1

⑤ Working fluid

⑥ Voltage

| Code | Description |
|--------------------|----------------|
| ① Port size | |
| 50J | JIS Flange 50A |
| 80J | JIS Flange 80A |

| | |
|-----------------------|------------------------|
| ② Terminal box | |
| Blank | None |
| 3M | HP terminal box (G1/2) |

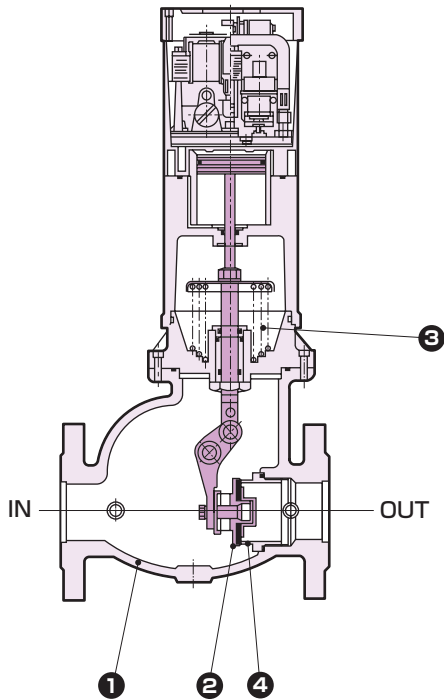
| | |
|-----------------------|--|
| ③ Micro switch | |
| Blank | Without micro switch |
| E | With valve closing confirmation micro switch |

| | |
|-----------------------|--------------|
| ④ Outdoor type | |
| Blank | Standard |
| ZZ | Outdoor type |

| | |
|------------------------|---|
| ⑤ Working fluid | |
| Blank | Standard |
| H2 | Working fluid: With hydrogen gas/hydrogen nameplate |

| | |
|------------------|------------------|
| ⑥ Voltage | |
| AC100V | 100 VAC 50/60 Hz |
| AC200V | 200 VAC 50/60 Hz |

*1: When "ZZ" is selected for ④ Outdoor type specifications, a round terminal box is automatically included and "3M" is not available for the ② terminal box.

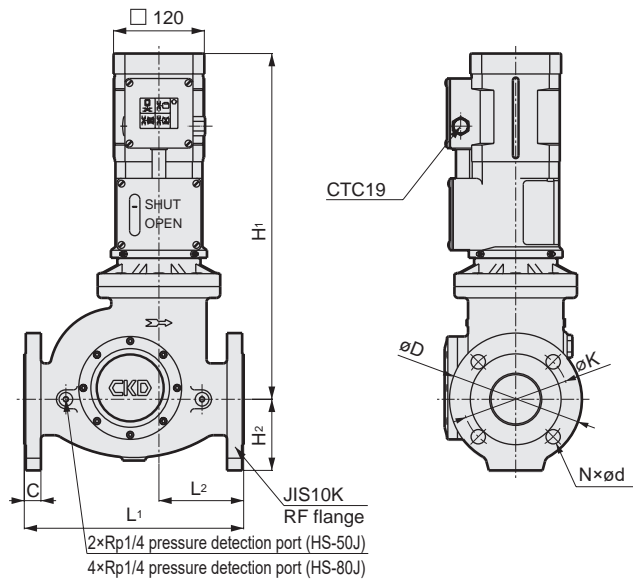


Cannot be disassembled

| Part No. | Part name | Material |
|----------|------------|----------------|
| 1 | Body | Aluminum |
| 2 | Valve disc | Nitrile rubber |
| 3 | Spring | Piano wire |
| 4 | Valve seat | Aluminum |

Dimensions

● HS-50J/80J



| Code Model No. | H ₁ | H ₂ | L ₁ | L ₂ | C | øD | øK | N-ød |
|-------------------|----------------|----------------|----------------|----------------|----|-----|-----|------|
| HS-50J | 434 | 82 | 230 | 83 | 20 | 155 | 120 | 4x19 |
| HS-80J | 465 | 100 | 310 | 112 | 22 | 185 | 150 | 8x19 |

DIN standards

DIN Standard

Safety

DIN standards have been developed to achieve the overall safety of combustion systems by implementing regulations to obtain the highest level of system safety and reliability. They also apply to individual system components in terms of the safety and reliability of their characteristics and structure.

● Solenoid valve/shutdown valve (applicable standards: DIN3394, DIN3391)

1. Leakage.....Internal leakage and external leakage measured after the specified number of ON/OFF operations (25A or less: 200,000 times, up to 50A: 150,000 times, up to 80A: 100,000 times, up to 150A: 50,000 times, and larger: 20,000 times) are strictly specified in the table below.
2. Leakage test.....Pressure is applied from the direction in which the valve easily opens to perform leakage test.
3. Valve shut-off force.....The spring must endure 10 million cycles of ON/OFF operations to ensure reliability of valve closing operation.
4. Integrated strainer...The strainer must be integrated to prevent dust and foreign matter from adhering to the valve seat.

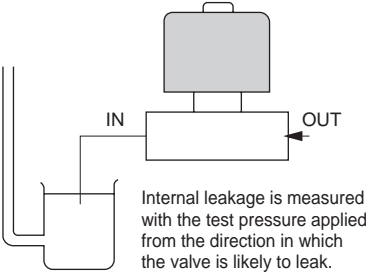
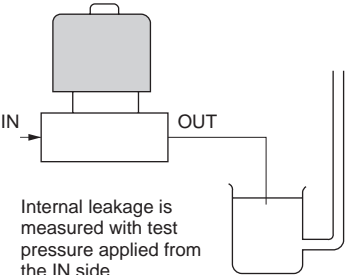
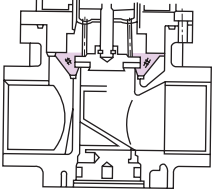
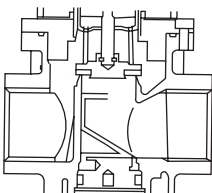
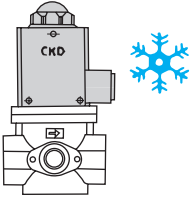
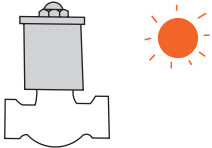
Allowable leakage (internal and external, sourced from DIN3394)

| Group | Max. working pressure P_e , zul kPa | Internal leakage | | External leakage | |
|-------|--|---|--|---------------------------------|--|
| | | Test pressure kPa | * Max. allowable pressure rise kPa | Test pressure kPa | * Max. allowable pressure drop kPa |
| A | From 5 to 15 or less | 15 | 0.03 | 1.5× P_e , zul at least 15 | 0.06 |
| | >15 | $1.1P_e, \text{zul} \times d - 0.4$ at least $8.12 \sqrt{P_e}$, zul and ≥ 15 and max. 500 | | | |
| B | ≥ 5 | 5 | 0.06 | | |
| C | ≥ 5 | 1 | 0.06 | | |

* Fluctuations in pressure during pressure rise and pressure drop are tested for 5 minutes.

*d = valve seat size (mm)

Comparison of standards of solenoid valves for gas

| | DIN3391/DIN3394 | Other standards | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|-----|------|--|------|----|----|----|--|----|------|------|------|--|------|--|-----|-----|--|-----|------------------------|------------------|--|--|
| Internal leakage measuring method |  <p>Internal leakage is measured with the test pressure applied from the direction in which the valve is likely to leak.</p> |  <p>Internal leakage is measured with test pressure applied from the IN side.</p> | | | | | | | | | | | | | | | | | | | | | | | |
| Allowable leakage | <p>Internal leakage mL/h External leakage mL/h</p> <table border="0"> <tr> <td>7.5</td> <td>7.5</td> <td>15.0</td> <td></td> <td>13.3</td> </tr> <tr> <td>to</td> <td>to</td> <td>to</td> <td></td> <td>to</td> </tr> <tr> <td>12.4</td> <td>12.4</td> <td>25.0</td> <td></td> <td>33.4</td> </tr> </table> <p>Group A B C Group A/B/C</p> <p>(15A to 65A) (15A to 65A)</p> | 7.5 | 7.5 | 15.0 | | 13.3 | to | to | to | | to | 12.4 | 12.4 | 25.0 | | 33.4 | <p>Internal leakage mL/h External leakage mL/h</p> <table border="0"> <tr> <td>650</td> <td>800</td> <td></td> <td>200</td> </tr> <tr> <td>up to 1^{1/2}</td> <td>2^{1/2}</td> <td></td> <td></td> </tr> </table> | 650 | 800 | | 200 | up to 1 ^{1/2} | 2 ^{1/2} | | |
| 7.5 | 7.5 | 15.0 | | 13.3 | | | | | | | | | | | | | | | | | | | | | |
| to | to | to | | to | | | | | | | | | | | | | | | | | | | | | |
| 12.4 | 12.4 | 25.0 | | 33.4 | | | | | | | | | | | | | | | | | | | | | |
| 650 | 800 | | 200 | | | | | | | | | | | | | | | | | | | | | | |
| up to 1 ^{1/2} | 2 ^{1/2} | | | | | | | | | | | | | | | | | | | | | | | | |
| Installation of strainer |  <p>Integration of strainer is specified.</p> |  <p>Integration of strainer is not specified.</p> | | | | | | | | | | | | | | | | | | | | | | | |
| Allowable min. temperature of solenoid valve |  <p>Operation at -15°C must be guaranteed.</p> |  <p>Operation at 0°C must be guaranteed.</p> | | | | | | | | | | | | | | | | | | | | | | | |



Safety Precautions

Be sure to read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.

It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.


Observe warnings and precautions to ensure device safety.


Check that device safety is ensured, and manufacture a safe device.




WARNING

- 1** This product is designed and manufactured as a general industrial machine part. It must be handled by an operator having sufficient knowledge and experience.
 - 2** Use this product in accordance with specifications.
This product must be used within its stated specifications. In addition, never modify or additionally machine this product. This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments. (Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)
 - 1** Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
 - 2** Use for applications where life or assets could be significantly affected, and special safety measures are required.
 - 3** Observe organization standards and regulations, etc., related to the safety of device design and control, etc. ISO4414, JIS B 8370 (Pneumatics fluid power - General rules and safety requirements for systems and their components) JFPS2008 (Principles for pneumatic cylinder selection and use) Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.
 - 4** Do not handle, pipe, or remove devices before confirming safety.
 - 1** Inspect and service the machine and devices after confirming safety of all systems related to this product.
 - 2** Note that there may be hot or charged sections even after operation is stopped.
 - 3** When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility. Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
 - 4** When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.
 - 5** Observe warnings and cautions in the following pages to prevent accidents.
- The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

 **DANGER:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning.

 **WARNING:** If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.

 **CAUTION:** When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation. Every item provides important information and must be observed.

Warranty

- 1** **Warranty period**
The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.
- 2** **Warranty coverage**
If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge. However, following failures are excluded from this warranty:
 - 1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
 - 2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
 - 3) Failure not caused by the product.
 - 4) Failure caused by use not intended for the product.
 - 5) Failure caused by modifications/alterations or repairs not carried out by CKD.
 - 6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
 - 7) Failure caused by acts of nature and disasters beyond control of CKD.The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
Note: For details on the durability and consumable parts, contact your nearest CKD sales office.
- 3** **Compatibility check**
The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.



Safety precautions

Gas combustion systems: Warnings and Cautions

Be sure to read this section before use.

Gas combustion systems

When designing and manufacturing equipment using CKD products, the manufacturer is obligated to ensure that the safety of the mechanism, gas/pneumatic control circuit and/or water control circuit and the system that runs the electrical controls are secured.

It is important to select, use, handle and maintain CKD products appropriately to ensure their safe usage.

Observe warnings and precautions to ensure device safety.

Check that device safety is ensured, and manufacture a safe device.

WARNING

- 1 This product is designed and manufactured as a general gas combustion system control component. It must be handled by an operator having sufficient knowledge and experience.
- 2 Observe organization standards and regulations, etc., related to the safety of the device design and control, etc.
JIS B 8415 (General safety code for industrial combustion furnaces)
The Japan Gas Association (Technical Safety Guidelines for Industrial Gas Combustion Systems)
Japan Boilers Association (Technical Safety Standards for Gas Boiler Combustion Systems)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.
- 3 Do not handle, pipe, or remove devices before confirming safety.
 - ① Inspect and service the machine and devices after confirming safety of the entire system related to this product.
 - ② Note that there may be hot or charged sections even after operation is stopped.
 - ③ When inspecting or servicing the component, shut OFF the gas supply and power to the facility. Pay attention to possible leakage of electricity and leakage of electricity.

Design/Selection

1. Safety design

WARNING

- Take measures to prevent physical harm or property damage in the event of failure of this product.

CAUTION

- Vibration
Install this product in a place not subject to vibration.

2. Working fluid

WARNING

■ Working fluids

- ① Do not use any fluid other than the working fluids specified in the catalog.
- ② If used with compressed air or blown air, foreign matter, moisture, oil, etc., in the air will lead to operation faults or leaks.
- ③ If used for fluids other than city gas or LPG, foreign matter, moisture, oil, corrosive elements, etc., in the fluid will lead to operation faults or leaks.
- ④ Depending on the model, internal parts may wear when the valve operates. Caution is required because wear chips could enter the secondary side of the valve.

■ Fluid quality

Iron rust and debris in the fluid can cause operation faults or leaks and deteriorate product performance. Provide

measures to remove foreign matter.

- When using this product with LPG (propane gas or butane gas), depending on the gas quality, a viscous substance may be generated that can cause operation failure or deterioration of rubber sealing material thanks to its oil, which can further result in internal or external leakage. Conduct a periodic inspection at least once a year to ensure correct operation and that there are no leaks.
- When used with hydrogen gas
 - Do not feed gas within the combustion range.
 - Purge the inside of the piping with inert gas such as nitrogen or argon before use.
 - If flame flows back into the valve, the valving element, strainer, etc., could be damaged, and the product function could be damaged. Take measures to prevent backfire.
 - Use hydrogen gas with grade 4 or more defined in JIS K 0512.
 - If condensation adheres inside the valve, corrosion may damage the product's functions.
 - When used in a molecular flow, hydrogen gas produces a flow rate approximately 3.8 times larger than that of air. Design the system with the premise that the gas is likely to leak, and take additional safety measures, such as a gas leakage detector, as necessary.

Design/Selection

3. Working environment

⚠ WARNING

- Do not use this product near a heat generating source or in a location where it may be exposed to radiant heat.
- Use this product within the specified ambient temperature range.
- Take appropriate safeguards according to the degree of protection listed in the catalog specifications. Consult with CKD when using outdoors.
- This product should not be used in any conditions where exposure to corrosive gas, solvents, water, or vapor may occur, or in any other atmospheric conditions that may deteriorate or damage the component materials. Ensure that the product is free of water droplets, oil, and metal chips.
- Dust-proofing and drip-proofing
The performance of the dust- and drip-proof structure of this product is subject to change with working environments and aging, and therefore is not guaranteed. Install in a place where the product is not exposed to rain, water, direct sunlight, or dust.

- This product cannot be used in an explosive atmosphere. This gas combustion system component does not have an explosion-proof structure, and cannot be used in an explosive atmosphere. Take special care to ensure that the working environment does not create a dangerous atmosphere.

Table 1 Explosive limit of flammable gas

| Gas | Explosion limit (air) [vol%] | |
|----------------|------------------------------|-------------|
| | Lower limit | Upper limit |
| City gas (13A) | 4.6 | 14.6 |
| Propane | 2.2 | 9.5 |
| Butane | 1.9 | 8.5 |
| Hydrogen | 4.0 | 75.0 |

4. Securing of space

⚠ CAUTION

- Securing maintenance space
Secure sufficient space for maintenance and inspection.

Mounting, Installation and Adjustment

1. Installation

⚠ CAUTION

- Be sure to read the instruction manual thoroughly before installing the product.
- In the case of models with solenoid valves, do not apply external force to the coil during installation.
- After installation, check for leaks from pipes, for proper wire connections and that the product is installed correctly.
- While some shutoff valves are equipped with a simple filter or a strainer, always install a filter or strainer that enables element cleaning and replacement in front of the cutoff valve for the removal of foreign materials and foreign matter.

2. Piping

⚠ CAUTION

- Observe the effective thread length for the piping threads. Chamfer the end of the thread section by approx. a half-pitch.
- If excessive sealant (sealing tape, gel-type sealant) is applied when piping, it could enter the product and cause malfunctions.
- When applying or wrapping sealant on the piping material, apply or wind it from the pipe end along the thread section, and leave 1.5 to 2 threads uncovered.

3. Wiring

⚠ WARNING

- Ensure that the operation power supply for the safety shut-off valve is correctly connected.

● Example of faulty operation power supply connection

This is an informative actual case where an explosion occurred in the combustion system. The cause is the incorrect connection of the operation power supply as shown in Fig.1. (When the high potential side H and ground side G connections were reversed, the line between the monitoring relay and the shutoff valve happened to be grounded.) As a result, when the power is turned ON, the ground current flows to the safety shutoff valve, the valve opens, and a large amount of unburned gas flows out from the burner, which mixes with the pre-purge air to form an explosive mixture, which explodes at ignition.

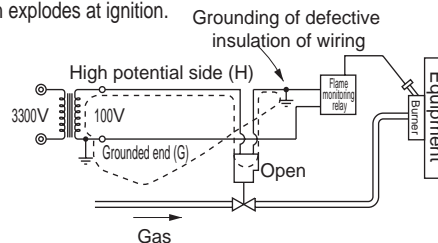


Fig.1 Example of faulty operation power supply connection

● Correct connection of operation power supply

Connecting the operation power supply's high potential side H and ground side G correctly as shown in Fig.2 can prevent ground current from flowing into the safety shut-off valve even when there is an insulation failure. This prevents the valve from opening, and therefore there is no risk of gas outflow.

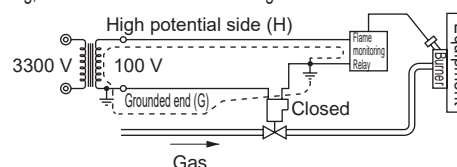


Fig.2 Correct connection of operation power supply

Excerpt from Volume 27 of the Journal of the Society of High Pressure Gas Industry



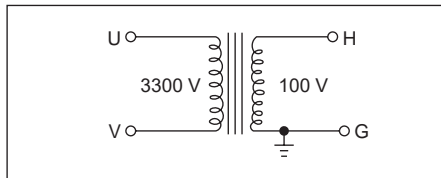
Safety precautions

Gas combustion systems: Warnings and Cautions

Be sure to read this section before use.

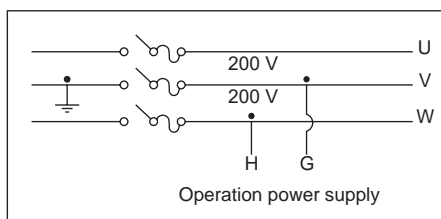
Mounting, Installation and Adjustment

● Single-phase 100 V

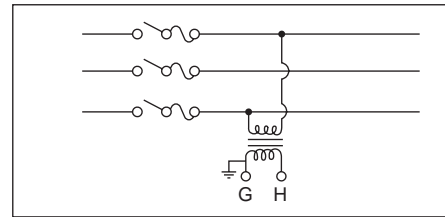


The secondary side of the transformer is always grounded on one side, and the high potential side (H) and ground side (G) are identified. In this case, correctly connect both the (H) and (G) sides.

● Three-phase 200 V



- ① When one of the three lines on the secondary side is grounded To select this kind of three-phase power cable as the operation power supply, be sure to select the ground line (V), that is, (G) side, and either of the remaining lines as the (H) side.



- ② When none of the three lines on the secondary side are grounded For the operation power supply, install a transformer dedicated for safety operation circuits and ground one side of the lines.

- The wiring of the operation power supply is JIS B 9960-1 Safety of Machinery - Electrical Equipment of Machinery - Part 1: In accordance with general requirements, install an overcurrent protector (a circuit protector or a shutoff mechanism for wiring) for the operation power supply.

⚠ CAUTION

- Use within the working pressure range.

The equipment may be damaged if a pressure that exceeds the proof pressure range is applied.

- Provide a circuit breaker, such as a fuse, on the control circuit to protect electrical equipment.

- Use of a switching circuit which does not generate contact chattering will increase the durability of the solenoid valves and motorized valves.

Use/Maintenance

1. Maintenance and inspection

⚠ WARNING

- Conduct periodic inspections to check for any gas leakage from the safety shut-off valve.

Even a safety shut-off valve with the most powerful spring cannot close completely if there is any foreign matter left in the valve seat; such a condition can cause gas leaks into the furnace. Considering that such gas leaks do actually occur frequently, be sure to conduct periodic inspections.

● Periodic inspection

Close valve (1) and connect a rubber hose to the tip of test valve (3). Immerse the tip of the rubber hose in a container filled with water about 10 mm deep. Check for any bubbles when the test valve (3) is opened. If bubbles continue to occur, the safety shut-off valve has leaked. Please repair or replace it. For an accurate measurement of leakage, collect the gas in a measuring cylinder filled with water. (Refer to Fig. 3) (Follow the periodic inspection guide provided in the equipment's technical safety guidelines.)

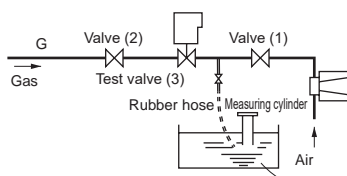


Fig. 3 Test method for the safety shut-off valve

⚠ CAUTION

- Do not use valves as a footing or place any heavy objects on top of the valves.

- If the product has been out of use for 1 month or more, perform a test run before starting the actual operation.

- Read the instruction manual thoroughly before starting maintenance to ensure correct operation.

- Always turn the power OFF and release any fluids or pressure before starting maintenance.

- Pay attention to clogging of the strainer and filter.

2. Assembly/Disassembly

⚠ WARNING

- Do not disassemble the inside of the valve.

Product-specific cautions

Design/Selection

WARNING

Solenoid valve

- Solenoid valves are not designed to function as a safety valve, such as an emergency residual pressure exhaust valve. When using in such a system, always take separate measures that will ensure safety.

Motorized valves and ball valves

- Motorized valves and ball valves are not designed to function as a safety valve, such as an emergency shut-off valve. When using in such a system, always take separate measures that will ensure safety.

CAUTION

Solenoid valve

- Make sure that the secondary pressure does not exceed the primary pressure of the solenoid valve.

Motorized valves and ball valves

- The inside of the actuator of a motorized valve or a ball valve is filled with operating fluid. The viscosity of this fluid changes with temperature, which means that the valve opening operation time is dependent on ambient temperature. The operating fluid is more viscous particularly in lower temperatures. Note that in lower temperatures, the valve opening operation time can be longer compared to that in normal temperatures.

Ball valves

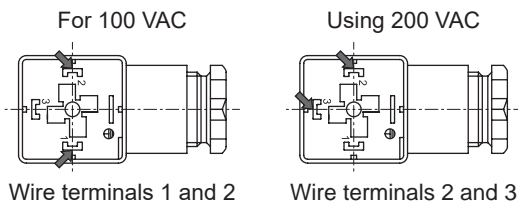
- Ball valve actuator has a built-in half wave rectifier circuit and cannot be used with an uninterruptible power supply (UPS).

Mounting, Installation, and Adjustment

CAUTION

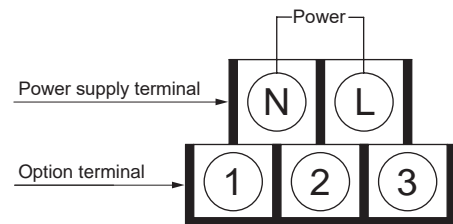
GHV

- When carrying this product, hold the body of the product.
- After connecting the pipes, always check for any leakage in all connected parts.
- Wire the power supply as follows by removing the terminal box. There is no polarity.



GRV

- Wire the power supply as follows by removing the terminal box lid. There is no polarity.
- Introduce pressure from secondary side piping to the secondary pressure inlet port. (Pressure reduction control type)



Use/Maintenance

WARNING

Solenoid valve

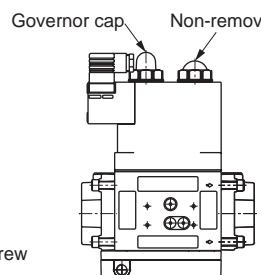
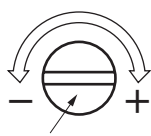
- Note that the surface of the solenoid valve can be hot thanks to the temperature increase in the coil. (Approx. 90°C) (Performance is not affected by higher surface temperatures.)
- There is a risk of electric shock due to touching the electric wiring connections (bare live parts). Always turn the power OFF before inspection. Never touch the live parts with wet hands.

CAUTION

GHV

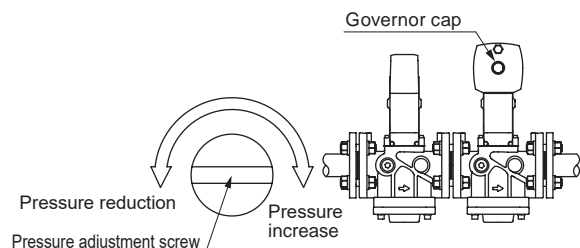
- To adjust the pressure, loosen the governor cap to remove it, and turn the pressure adjustment screw using a flathead screwdriver. Install a pressure gauge on the secondary side and adjust the pressure while checking the actual pressure. A stopper is triggered when the upper or lower limit of the adjustable pressure range is reached, preventing further turning. Forcibly turning the screw can damage the adjustment screw, creating a risk of gas leakage.

Pressure rises when the screw is turned clockwise and drops when the screw is turned counterclockwise.



GRV

- To adjust the pressure, loosen the governor cap to remove it, and turn the pressure adjustment screw using a flathead screwdriver. Install a pressure gauge and adjust the pressure while checking the actual pressure. A stopper is triggered when the upper limit of the adjustable pressure range is reached, preventing further turning. If forcibly rotated further, parts will be damaged, leading to malfunctions. Pressure rises when the screw is turned clockwise and drops when the screw is turned counterclockwise.



Related products

Compact gas double cutoff valve AB4X-850 Series

- Two solenoid valves connected in series and integrated
Risk of exterior leaks in the piping connections can be reduced
- With detection port

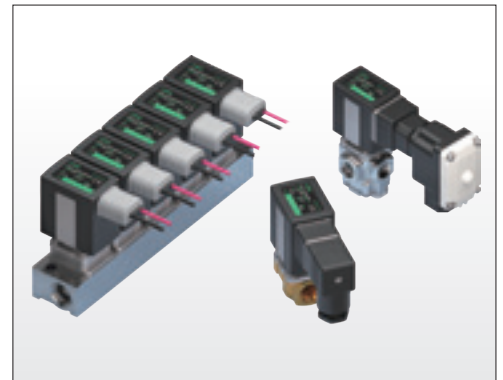
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