

# UNIVERSAL GAS VALVES

## VE SERIES

### CLASS "A" GAS VALVES

#### PRODUCT HANDBOOK



#### APPLICATION

These series class A gas valves are used for control and regulation of gaseous fluids in gas power burners, atmospheric gas boilers, melting furnaces, incinerators and other gas consuming appliances.

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## DESCRIPTION

The VE series gas valves offer a series of functionalities:

- Gas valves, Normally Closed, consisting of a direct ON/OFF operator for opening/closing of the valve.
- Gas valves for use with Honeywell V4055, V4062 and V9055 fluid power actuators.
- Relief valves with or without position indication switch, Normally Open, consisting of direct electric ON/OFF operator for opening/closing of the valve.

The VE series gas valves are suitable for the control of gaseous fluids in gas consuming appliances according to international standards.

The VE series gas valves meet the class A specification according to EN 161.

The VE series gas valves cover a wide range of pipe sizes from  $\frac{3}{8}$ " (DN 10) up to and including 3" (DN 80).

The VE series gas valves have threaded connections from  $\frac{3}{8}$ " (DN 10) up to and including  $2\frac{1}{2}$ " (DN 65).

The VE series gas valves with pipe sizes  $2\frac{1}{2}$ " (DN 65) and 3" (DN 80) have flange connection.

The VE series gas valves  $\frac{3}{8}$ " (DN 10) and  $\frac{1}{2}$ " (DN 15) have an maximum supply pressure of 350 mbar.

The VE series gas valves  $\frac{3}{4}$ " (DN 20) up to and including 3" (DN 80) have an maximum supply pressure of 200 mbar.

The VE series gas valves have test points for inlet and outlet gas pressure.

The VE series gas valves have an inlet screen for protecting the valve against ingress of dirt.

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## FEATURES

- Class A valve for control of gas consuming appliances.
- The VE....X series gas valves except VE....S series have a spring loaded valve disc, closed when de-energized.
- The VE....S series gas valves have a spring loaded valve disc, opened when de-energized.
- Incorporating time proven design concepts assuring reliability.
- All VE.... series gas valves have an internal fine mesh screen.
- Two R<sup>1</sup>/<sub>4</sub>" connections for inlet pressure at each side of the electro magnetic gas valve.
- The VE....X 1... series gas valves have a wrench boss as well on inlet side as on outlet side for pipe fitting incorporated in the valve housing.
- The VE.... series gas valves may be assembled on the pipe line with in plus or minus 90 degrees of the vertical axel.
- The VE....X 3... series gas valves (flange connection) have two (1/4") inlet pressure taps and two (1/4") outlet pressure taps at either side.
- The VE....X 3... and VE5...X 3... series gas valves have at inlet side two 1" ISO 7-1 connection taps.
- The VE....X 3... and VE5...X 3... series gas valves are equipped at both sides with mounting holes to adapt a pilot solenoid valve combination, to allow either internal or external pilot gas. Furthermore these valves are equipped with two M6 mounting holes to adapt an A4020A electronic leak test controller (see dimensional drawing page 11).
- The VE ....B series gas valves have an adjustable flow rate regulator on top of the coil.
- The VE series gas valves have a field replaceable coil.
- The VE series gas valves have a field replaceable rectifier board.
- The VE ....C series gas valves have adjustment for:  
step pressure  
flow rate and  
opening speed on top of the coil.
- The VE....S series gas valves normally open relief valves are equipped with or without a position indication switch.
- The VE5...X 3... series gas valves can be equipped with a wide range of Honeywell fluid power actuators. These fluid power actuators are field replaceable.
- The VE series solenoid gas valves have electrical connection by terminal block with incorporated rectifier board.
- The VE series solenoid gas valves have coils turnable over 360°.
- Cable strain relief can be achieved by PG 11 cable gland.
- The VE series gas valves cover a wide range of pipe sizes from DN 10 up to and including DN 80.

### Electrical connection

- Supply voltages 24, 110, 220 and 240V 50/60 Hz.
- Electrical enclosure according to IP 54 unless other specification.
- Electrical enclosure VE....S 1... series gas valves with switch according to IP 50

## MODEL CHART

| Options                                                                                                                                                                                          | 1000 series<br>(internal threaded)                                                      | 3000 series<br>(flange connection)                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------|
| Range: DN 10 $\frac{3}{8}$ "<br>DN 15 $\frac{1}{2}$ "<br>DN 20 $\frac{3}{4}$ "<br>DN 25 1"<br>DN 32 $1\frac{1}{4}$ "<br>DN 40 $1\frac{1}{2}$ "<br>DN 50 2"<br>DN 65 $2\frac{1}{2}$ "<br>DN 80 3" | VE..10<br>VE..15<br>VE..20<br>VE..25<br>VE..32<br>VE..40<br>VE..050<br>VE..65<br>VE..80 | -<br>-<br>-<br>-<br>-<br>-<br>-<br>VE..65<br>VE..80 |
| Non regulated ON/OFF (VE....A xxxx)                                                                                                                                                              | Standard                                                                                | Not available                                       |
| Flow regulator (VE....B xxxx)                                                                                                                                                                    | Optional                                                                                | Standard                                            |
| Adjustable opening and flow regulator (VE....C xxxx)                                                                                                                                             | Optional <sup>1)</sup>                                                                  | Not available                                       |
| Motorised opening: ON/OFF (VE5...A xxxx)                                                                                                                                                         | Not available                                                                           | VE5065A 3xxx<br>VE5085A 3xxx                        |
| Motorised opening: characterized (VE5...C xxxx)                                                                                                                                                  | Not available                                                                           | VE5065C 3xxx<br>VE5085C 3xxx                        |
| Safety relief valve, ON/OFF, Normally Open, with or without position indication switch (VE....S xxxx)                                                                                            | Optional for:<br>VE..20<br>VE..25                                                       | Not available                                       |

<sup>1)</sup> Except VE..65/VE..80

# SPECIFICATIONS

## Models

The VE series consists of solenoid gas valves series and gas valves suitable for combining with Honeywell V4055, V4062 and V9055 fluid power actuators.

## VE series solenoid gas valves

VE..10 (DN 10)  
VE..15 (DN 15)  
VE..20 (DN 20)  
VE..25 (DN 25)  
VE..32 (DN 32)  
VE..40 (DN 40)  
VE..50 (DN 50)  
VE..65 (DN 65)  
VE..80 (DN 80)

## VE series suitable for fluid power actuators

VE5065 (DN 65)  
VE5080 (DN 80)

## Pipe sizes 1000 series

Inlet and outlet  $\frac{3}{8}$ " up to  $2\frac{1}{2}$ " internal parallel pipe thread according to ISO 7-1

## Pipe sizes 3000 series

Flanged connection DN 65 and DN 80

according to DN16 UNI 2223.

## Torsion and bending stress

Pipe connections meet Group 2 according EN 161 requirements.

## Ambient temperature

-15 °C ... 60 °C

## Supply voltage

24 V, 50/60 Hz

110 V, 50/60 Hz

220 V, 50/60 Hz

240 V, 50/60 Hz

The applicable voltage is led to the solenoid coil via a rectified circuit.

## Dimensions

1000 series: See page 10

3000 series: See page 11

## Electrical connection

Wiring on terminal block on box

Cable entry Pg 11.

## Coil insulation solenoid valves

Insulation material according class F

## Enclosure

IP 54 unless otherwise specified

IP 50 for VE4...S 1... series with position indication switch

## Capacity

See page 8 and 9

## Maximum operating pressure

| Model  | Maximum operating pressure (mbar) |
|--------|-----------------------------------|
| VE..10 | 350                               |
| VE..15 | 350                               |
| VE..20 | 200                               |
| VE..25 | 200                               |
| VE..32 | 200                               |
| VE..40 | 200                               |
| VE..50 | 200                               |
| VE..65 | 200                               |
| VE..80 | 200                               |
| VE..65 | 200                               |
| VE..80 | 200                               |

## Power Consumption (W) solenoid valves A version

| Model number | 24 Volt, 50/60 Hz  |                            | 110 Volt, 50/60 Hz |                            | 220 Volt, 50/60 Hz |                            | 240 Volt, 50/60 Hz |                            |
|--------------|--------------------|----------------------------|--------------------|----------------------------|--------------------|----------------------------|--------------------|----------------------------|
|              | At nominal voltage | At 110% of nominal voltage | At nominal voltage | At 110% of nominal voltage | At nominal voltage | At 110% of nominal voltage | At nominal voltage | At 110% of nominal voltage |
| VE..10A      | 14                 | 17                         | 14                 | 17                         | 16                 | 20                         | 16                 | 20                         |
| VE..15A      | 14                 | 17                         | 14                 | 17                         | 16                 | 20                         | 16                 | 20                         |
| VE..20A      | 21                 | 25                         | 18                 | 22                         | 20                 | 24                         | 21                 | 25                         |
| VE..25A      | 21                 | 25                         | 18                 | 22                         | 20                 | 24                         | 21                 | 25                         |
| VE..32A      | 41                 | 51                         | 41                 | 50                         | 40                 | 49                         | 46                 | 56                         |
| VE..40A      | 41                 | 51                         | 41                 | 50                         | 40                 | 49                         | 46                 | 56                         |
| VE..50A      | 41                 | 51                         | 41                 | 50                         | 40                 | 49                         | 46                 | 56                         |
| VE..65A      | n.a.               | n.a.                       | 69                 | 83                         | 68                 | 81                         | 72                 | 87                         |

**Power Consumption (W) solenoid valves B, C and S version**

| Model number | 24 Volt, 50/60 Hz  |                            | 110 Volt, 50/60 Hz |                            | 220 Volt, 50/60 Hz |                            | 240 Volt, 50/60 Hz |                            |
|--------------|--------------------|----------------------------|--------------------|----------------------------|--------------------|----------------------------|--------------------|----------------------------|
|              | At nominal voltage | At 110% of nominal voltage | At nominal voltage | At 110% of nominal voltage | At nominal voltage | At 110% of nominal voltage | At nominal voltage | At 110% of nominal voltage |
| VE..10B,C    | 14                 | 17                         | 14                 | 17                         | 16                 | 20                         | 16                 | 20                         |
| VE..15B,C    | 14                 | 17                         | 14                 | 17                         | 16                 | 20                         | 16                 | 20                         |
| VE..20B,C    | 21                 | 25                         | 18                 | 22                         | 20                 | 24                         | 21                 | 26                         |
| VE..20S      | 14                 | 17                         | 14                 | 17                         | 16                 | 20                         | 16                 | 20                         |
| VE..25B,C    | 21                 | 25                         | 18                 | 22                         | 20                 | 24                         | 21                 | 26                         |
| VE..25S      | 14                 | 17                         | 14                 | 17                         | 16                 | 20                         | 16                 | 20                         |
| VE..32B,C    | 43                 | 52                         | 47                 | 57                         | 43                 | 53                         | 45                 | 54                         |
| VE..40B,C    | 43                 | 52                         | 47                 | 57                         | 43                 | 53                         | 45                 | 54                         |
| VE..50B,C    | 48                 | 58                         | 48                 | 58                         | 51                 | 62                         | 54                 | 65                         |
| VE..65B      | n.a.               | n.a.                       | 60                 | 72                         | 60                 | 70                         | 65                 | 78                         |
| VE..80B      | n.a.               | n.a.                       | 125                | 150                        | 120                | 140                        | 115                | 138                        |

# PERFORMANCE CHARACTERISTICS

## Maximum allowable leakage

| Valve size | Test pressure 1<br>(mbar) | Test pressure 2<br>(mbar) | Maximum allowable leakage rate           |                                          |
|------------|---------------------------|---------------------------|------------------------------------------|------------------------------------------|
|            |                           |                           | Internal leakage<br>(cm <sup>3</sup> /h) | External leakage<br>(cm <sup>3</sup> /h) |
| DN 10      | 6                         | 525                       | 40                                       | 40                                       |
| DN 15      | 6                         | 525                       | 40                                       | 40                                       |
| DN 20      | 6                         | 300                       | 40                                       | 40                                       |
| DN 25      | 6                         | 300                       | 60                                       | 60                                       |
| DN 32      | 6                         | 300                       | 60                                       | 60                                       |
| DN 40      | 6                         | 300                       | 60                                       | 60                                       |
| DN 50      | 6                         | 300                       | 60                                       | 60                                       |
| DN 65      | 6                         | 300                       | 60                                       | 60                                       |
| DN 80      | 6                         | 300                       | 60                                       | 60                                       |

## Opening time (except VE5... series)

A,B,S version: less than 1 second

C version: adjustable from 1 up to 30 seconds at rated capacity

The opening characteristic is factory set at approx 6 seconds at the following conditions:

- measured at 80 % of rated capacity

- 30 mbar supply pressure
- nominal voltage
- 20 °C
- 2,5 mbar pressure drop
- no step pressure

Due to the influence of ambient temperature (-15 ... 60 °C) the adjusted opening time of 6 seconds measured at 80% of adjusted flow rate can vary  $\pm$  4 seconds.

D,E version: 5 or 30 seconds (depending of actuator)

## Closing time VE....A,B, C and S series (except VE5... series)

Less than 1 second

## Maximum working frequency

A,B,S version: 20 cycles per minute

C version: 1 cycle per minute

VE5... series: 1 cycle per 2 minutes

## Duty cycle

Coil suitable for permanent energization

## Operational voltage range

The gas valve will function satisfactory between 85% and 110% of the rated voltage.

Rated voltage:

24 V, 50/60 Hz

110 V, 50/60 Hz

220 V, 50/60 Hz

240 V, 50/60 Hz

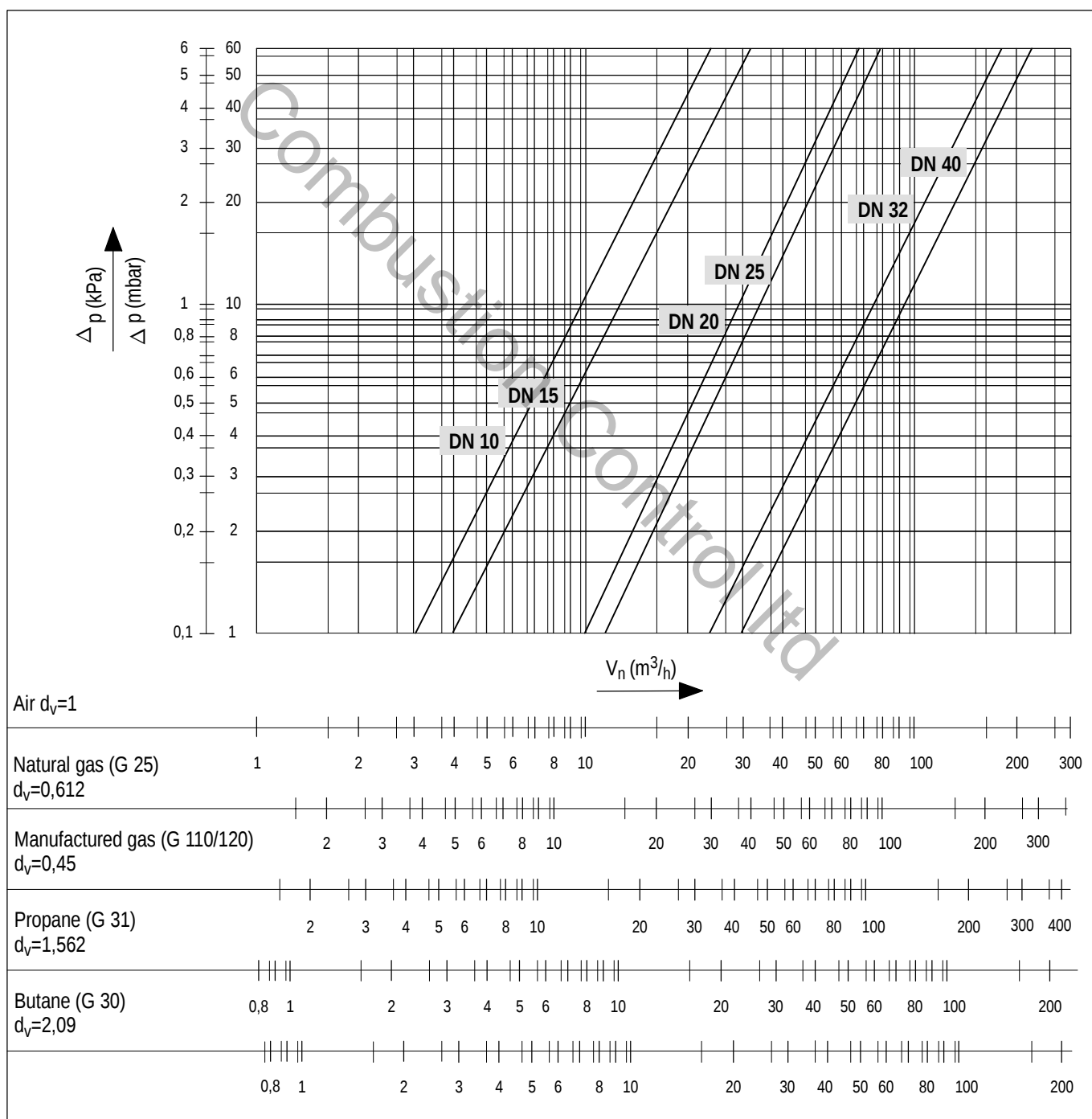
## Design life

| Model  | Number of cycles |
|--------|------------------|
| VE..10 | 200,000          |
| VE..15 | 200,000          |
| VE..20 | 200,000          |
| VE..25 | 200,000          |
| VE..32 | 100,000          |
| VE..40 | 100,000          |
| VE..50 | 100,000          |
| VE..65 | 100,000          |
| VE..80 | 100,000          |
| VE5065 | 100,000          |
| VE5080 | 100,000          |

## CAPACITY CURVE DN 10, DN15, DN 20, DN 25, DN 32 AND DN 40 (THREADED CONNECTION)

Capacity in  $\text{m}^3/\text{h}$  air at  $\Delta p = 2,5 \text{ mbar}$

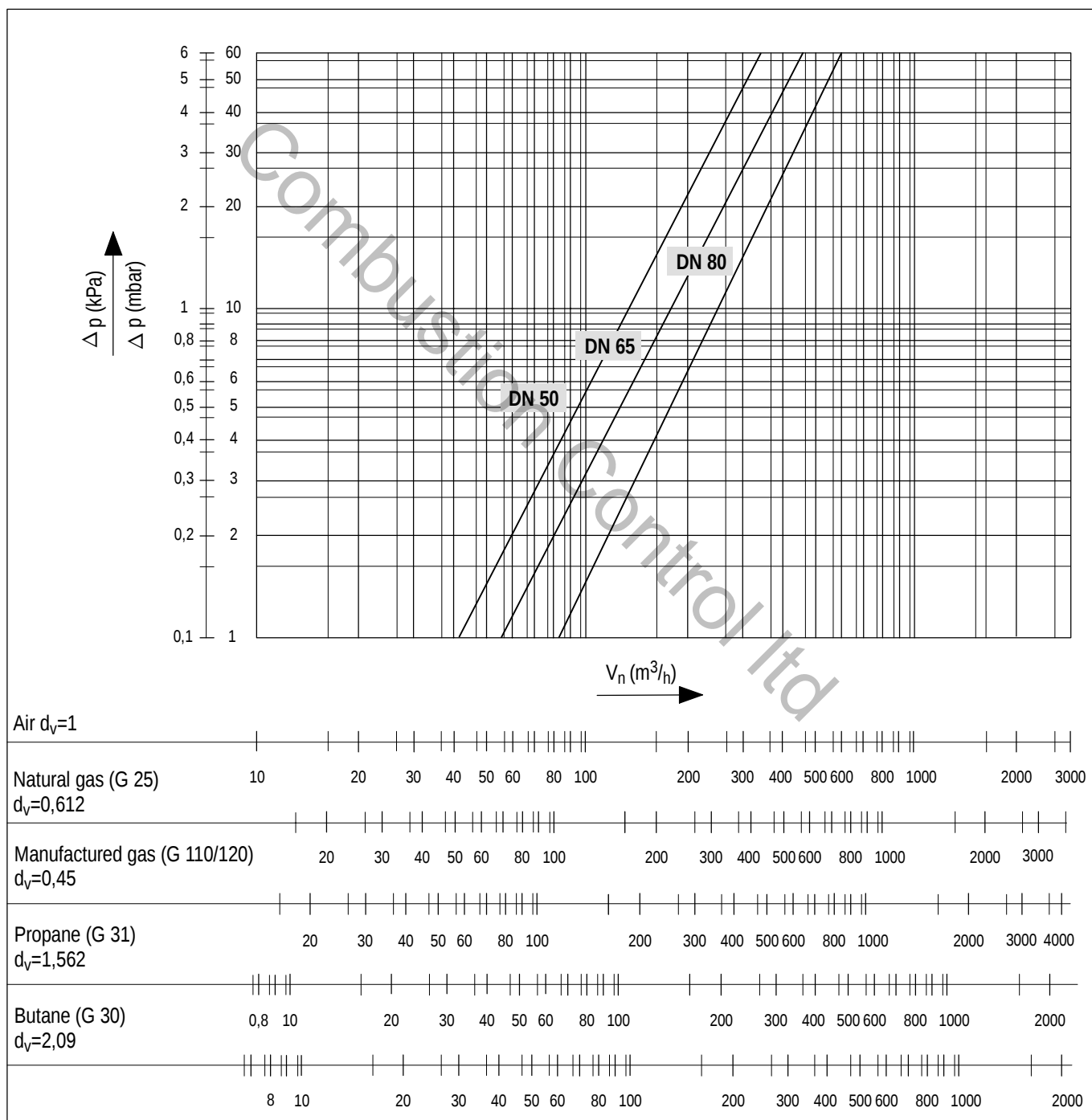
| $3/8"$ DN 10 | $1/2"$ DN 15 | $3/4"$ DN 20 | 1" DN 25 | $1 1/4"$ DN 32 | $1 1/2"$ DN 40 |
|--------------|--------------|--------------|----------|----------------|----------------|
| 5            | 6,4          | 14,8         | 16,7     | 38,5           | 47,1           |



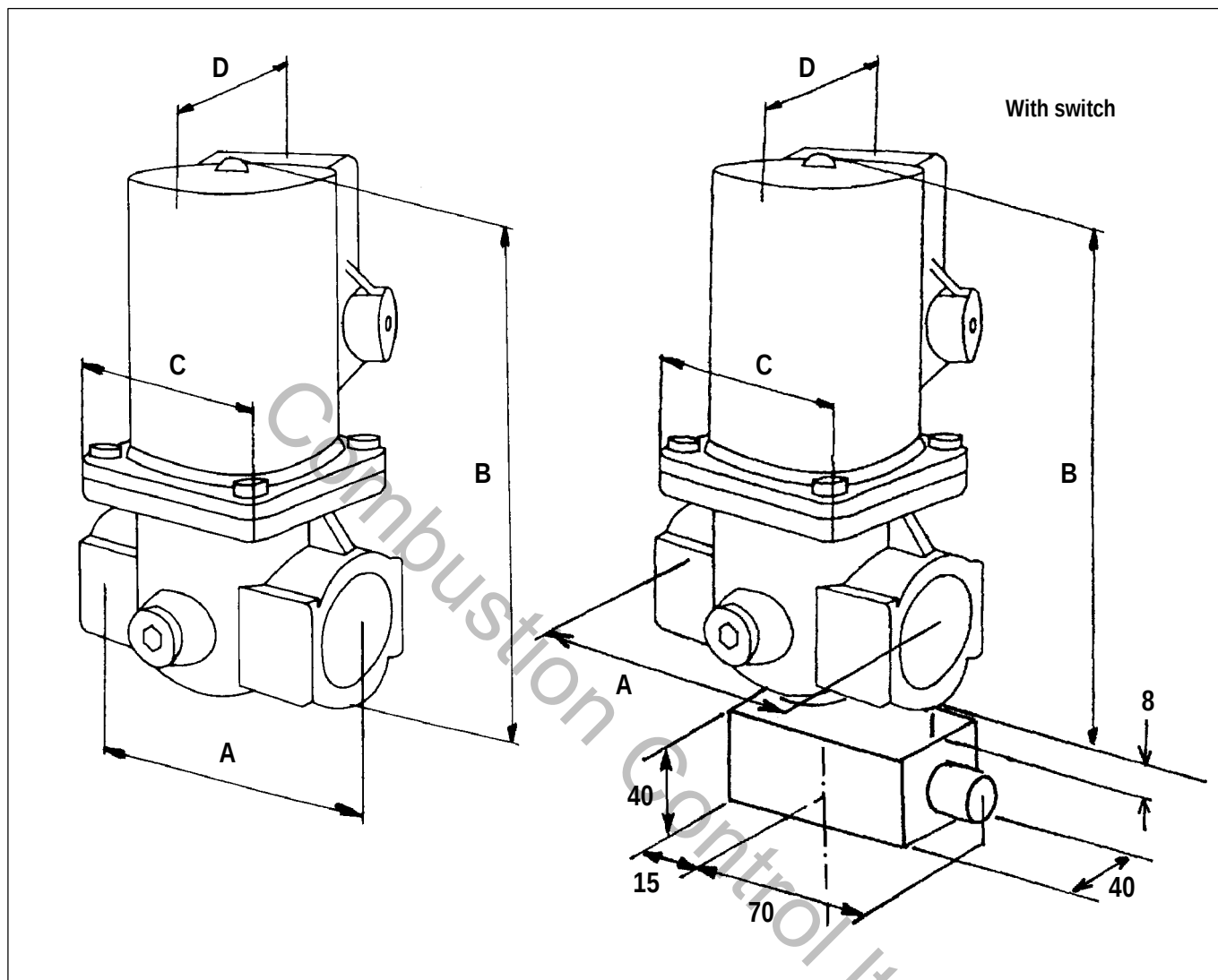
## CAPACITY CURVE DN 50, DN 65 AND DN 80 (TREADED AND FLANGED CONNECTION)

Capacity in  $\text{m}^3/\text{h}$  air at  $\Delta p = 2,5 \text{ mbar}$

| 2" DN 50 | 2 $\frac{1}{2}$ " DN 65 | 3" DN 80 |
|----------|-------------------------|----------|
| 66,7     | 94,2                    | 131      |

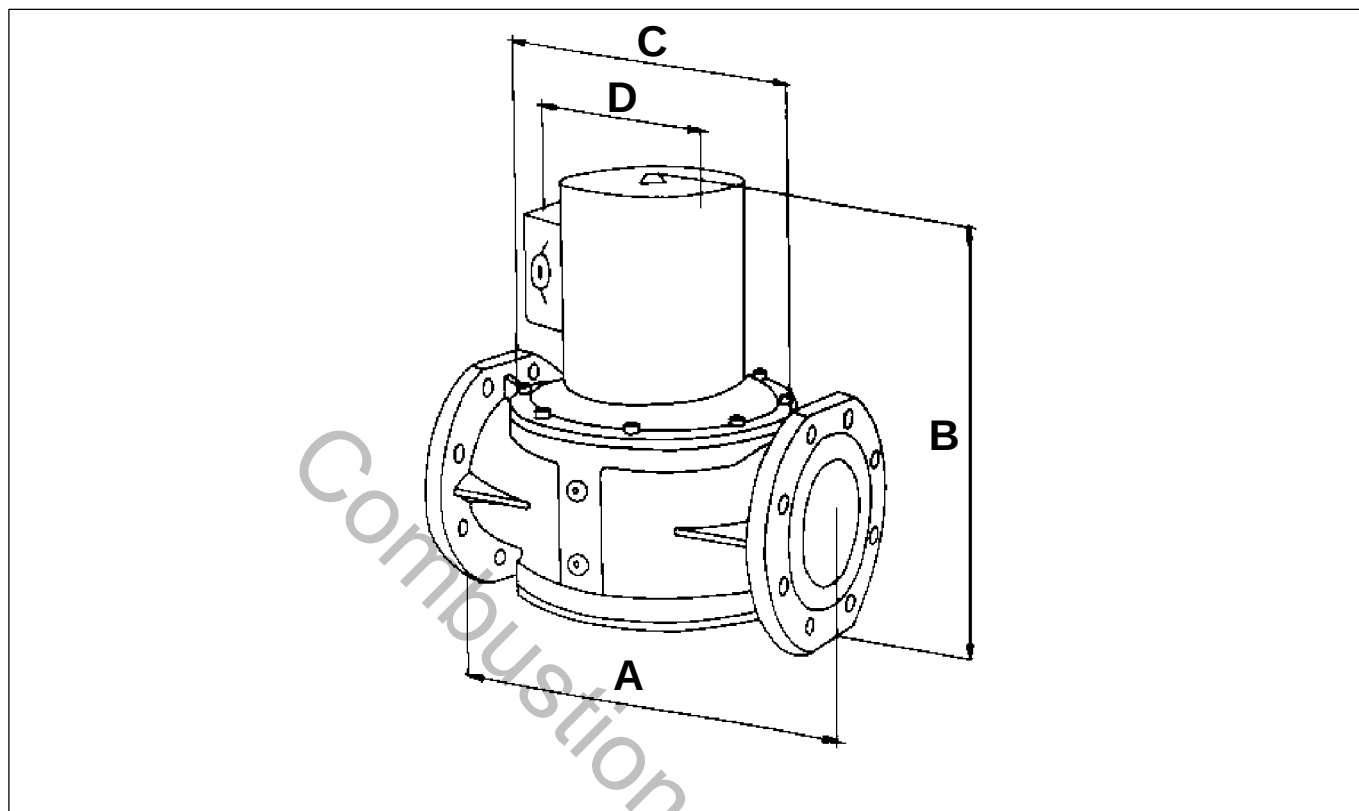


## DIMENSIONAL DRAWING 1000 SERIES

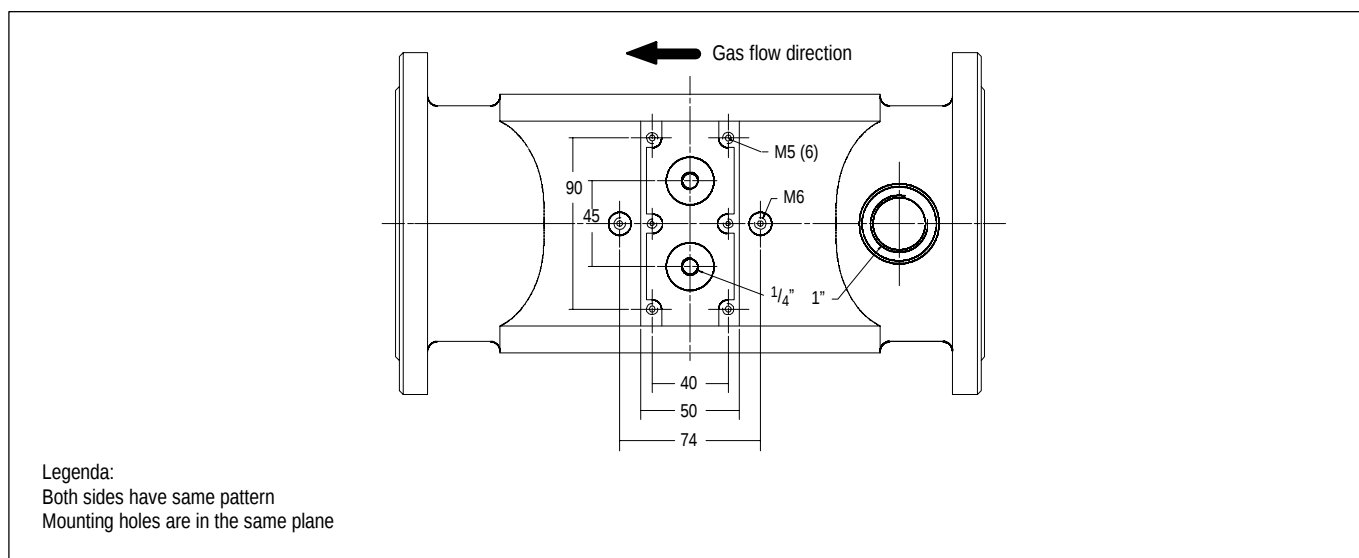


| Model  | Conne-<br>ction       | Dimensions (mm) |             |                        |                            |     |     | Weight (kg) |                   |                       |
|--------|-----------------------|-----------------|-------------|------------------------|----------------------------|-----|-----|-------------|-------------------|-----------------------|
|        |                       | A               | B<br>ON/OFF | B<br>Flow<br>regulated | B<br>Adjustable<br>opening | C   | D   | ON/OFF      | Flow<br>regulated | Adjustable<br>opening |
| VE..10 | R <sub>p</sub> 3/8"   | 72              | 125         | 148                    | -                          | 52  | 85  | 1.1         | 1.1               | 1.2                   |
| VE..15 | R <sub>p</sub> 1/2"   | 72              | 125         | 148                    | -                          | 52  | 85  | 1.1         | 1.1               | 1.2                   |
| VE..20 | R <sub>p</sub> 3/4"   | 86              | 145         | 168                    | 200                        | 70  | 87  | 1.9         | 1.9               | 2.3                   |
| VE..25 | R <sub>p</sub> 1"     | 100             | 145         | 168                    | 200                        | 75  | 87  | 2.0         | 2.0               | 2.4                   |
| VE..32 | R <sub>p</sub> 1 1/4" | 150             | 225         | 248                    | 275                        | 110 | 123 | 5.8         | 5.8               | 6.1                   |
| VE..40 | R <sub>p</sub> 1 1/2" | 150             | 225         | 248                    | 275                        | 110 | 123 | 5.8         | 5.8               | 6.1                   |
| VE..50 | R <sub>p</sub> 2"     | 170             | 240         | 263                    | 290                        | 135 | 123 | 6.4         | 6.4               | 6.7                   |
| VE..65 | R <sub>p</sub> 2 1/2" | 225             | 290         | 313                    | -                          | 170 | 145 | 13          | -                 | -                     |

## DIMENSIONAL DRAWING 3000 SERIES



| Model          | Flanged connection              | Dimensions (mm) |     |     |     | Weight (kg) |
|----------------|---------------------------------|-----------------|-----|-----|-----|-------------|
|                |                                 | A               | B   | C   | D   |             |
| VE5065A,C 3xxx | 2 <sup>1</sup> / <sub>2</sub> " | 310             | 205 | 200 | -   | 10          |
| VE5080A,C 3xxx | 3"                              | 310             | 205 | 200 | -   | 10          |
| VE..65B 3xxx   | 2 <sup>1</sup> / <sub>2</sub> " | 310             | 343 | 200 | 148 | 15          |
| VE..80B 3xxx   | 3"                              | 310             | 343 | 200 | 148 | 15          |



# INSTALLATION

## Warning

- Take care that installer is a trained experienced service man.
- Turn off gas supply before starting installation.
- Disconnect power supply to prevent electrical shock and/or equipment damage.

## Mounting position

The gas valve can be mounted plus or minus 90 degrees from the vertical.

## Mounting location

The distance between the gas valve and the wall/ground, must be at least 30 cm.

## Warning

- The outlet of a pressure relief valve (VE4000S series) must always be connected to open atmosphere.

## Main gas connection threaded valves

- Take care that dirt cannot enter the gas valve during handling.
- Ensure the gas flows in the same direction as the arrow on the housing of the gas valve.
- Use a sound taper fitting with thread according to ISO 7-1(BS 21, DIN

2999) or a piece of new, properly reamed pipe, free from swarf.

- Do not thread or tighten the pipe or pipe fitting too far. Otherwise valve distortion and malfunction could result.
- Apply a moderate amount of good quality thread compound to the pipe or fitting only, leaving the two end threads bare. PTFE tape may be used as an alternative.
- In order to tighten the pipe in the valve, do not use the actuator as a lever but use a suitable wrench operating on the wrench bosses.

## Main gas connection flanged valves

- Take care that dirt cannot enter the gas valve during handling.
- Ensure the gas flows in the same direction as the arrow on the housing of the gas valve.
- Ensure that inlet and outlet flanges are in line and separated from each other enough to allow the valve to be mounted between them without damaging the gasket.
- Place gasket. If necessary grease it slightly to keep it in place.
- Mount gas valve between flanges using the bolts for each flange.

## Warning

### Tightness test after installation

- Paint all pipe connections and gaskets with a strong soap and water solution.
- Start the appliance and check for bubbles. If a leak is found in a pipe connection, remake the joint. A gasket leak can usually be stopped by tightening the mounting screws. Otherwise, replace the gas valve.

## Electrical connection

### Caution

- Switch off power supply before making electrical connections.
- Take care that wiring is in accordance with local regulations.

Use lead wire which can withstand 105 °C ambient.

The electric on/off operator is provided with a terminal block for electrical connections.

### Wiring

Follow the instructions supplied by the appliance manufacturer.

## ADJUSTMENTS AND FINAL CHECKOUT

### Warning

Adjustments must be made by qualified persons only.

### Caution

To ensure a safe closing of the valves, it is essential that voltage over the terminals of operators is reduced to 0 Volt.

### VE.... B series (see fig 1.)

#### Flow rate adjustment

- Remove the cap screw from top of the coil.
- Place a socket head wrench into the adjustment nut.
- Turn wrench counter-clockwise to increase or clockwise to decrease flow rate.
- Replace cap screw.

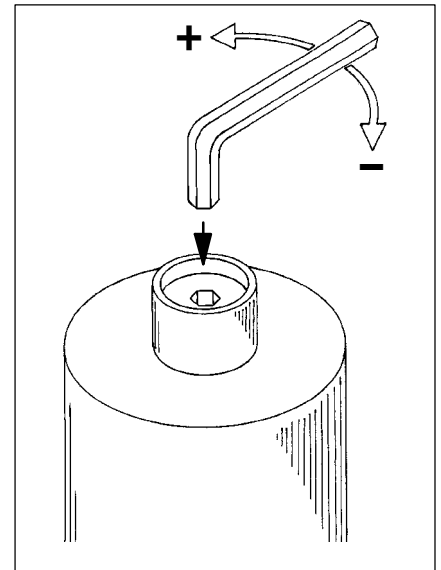


Fig. 1

### VE.... C series

(see fig. 2 and 3)

The following characteristics can be adjusted:

- flow rate
- step pressure
- opening speed

### Important

To ensure a satisfactory setting of the valve the pressure drop over the valve should be at least 10% of the supply pressure or 2,5 mbar which ever is the greatest.

#### Flow rate adjustment

- Remove the cap from top of the coil by loosening both screws.
- Place a wrench on the adjustment hexagon nut.

- Turn wrench counter-clockwise to increase or clockwise to decrease the flow rate.
- Replace cap on top of the coil.

#### Step pressure adjustment

- Remove the cap from top of the coil by loosening both screws.
- Place a screw driver in the slot of adjustment screw which is situated in center of the valve.
- Turn screw driver counter-clockwise to increase or clockwise to decrease step pressure.
- Replace cap on top of the coil.

#### Opening speed adjustment

- Remove the cap from top of the coil by loosening both screws.

- Place screw driver in the slot of adjustment screw which is of center line.
- Turn screw driver counter-clockwise to increase the opening speed and therefore the time till full opening will decrease.
- Turn screw driver clockwise to decrease the opening speed and therefore the time till full opening will increase.
- Replace cap on top of the coil.

#### Final checkout of the installation

Set appliance in operation after any adjustment and observe several complete cycles to ensure that all burner components function correctly.

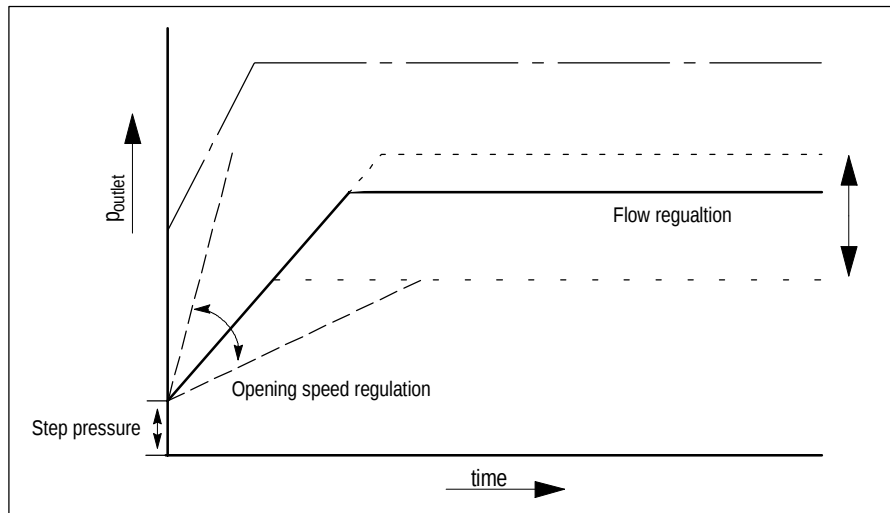


Fig. 2

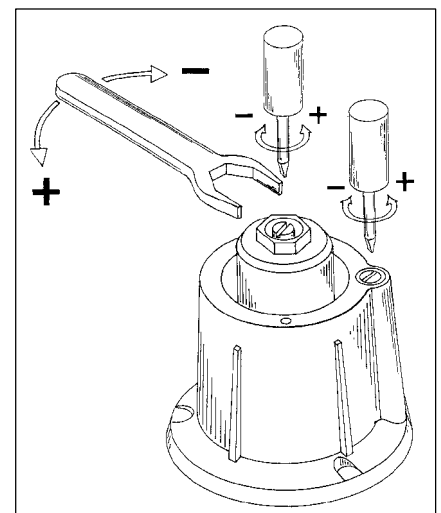


Fig. 3

## CONSTRUCTION AND WORKING PRINCIPLES

The VE Normally Closed series gas valves are Class A fail safe shut-off valves.

The valve is opened by energizing the direct ON/OFF operator.

The direct ON/OFF operator consists of a coil and stop sleeve assy. Inside the top sleeve assy is a plunger which is able to move up and down and thus opening or closing the valve.

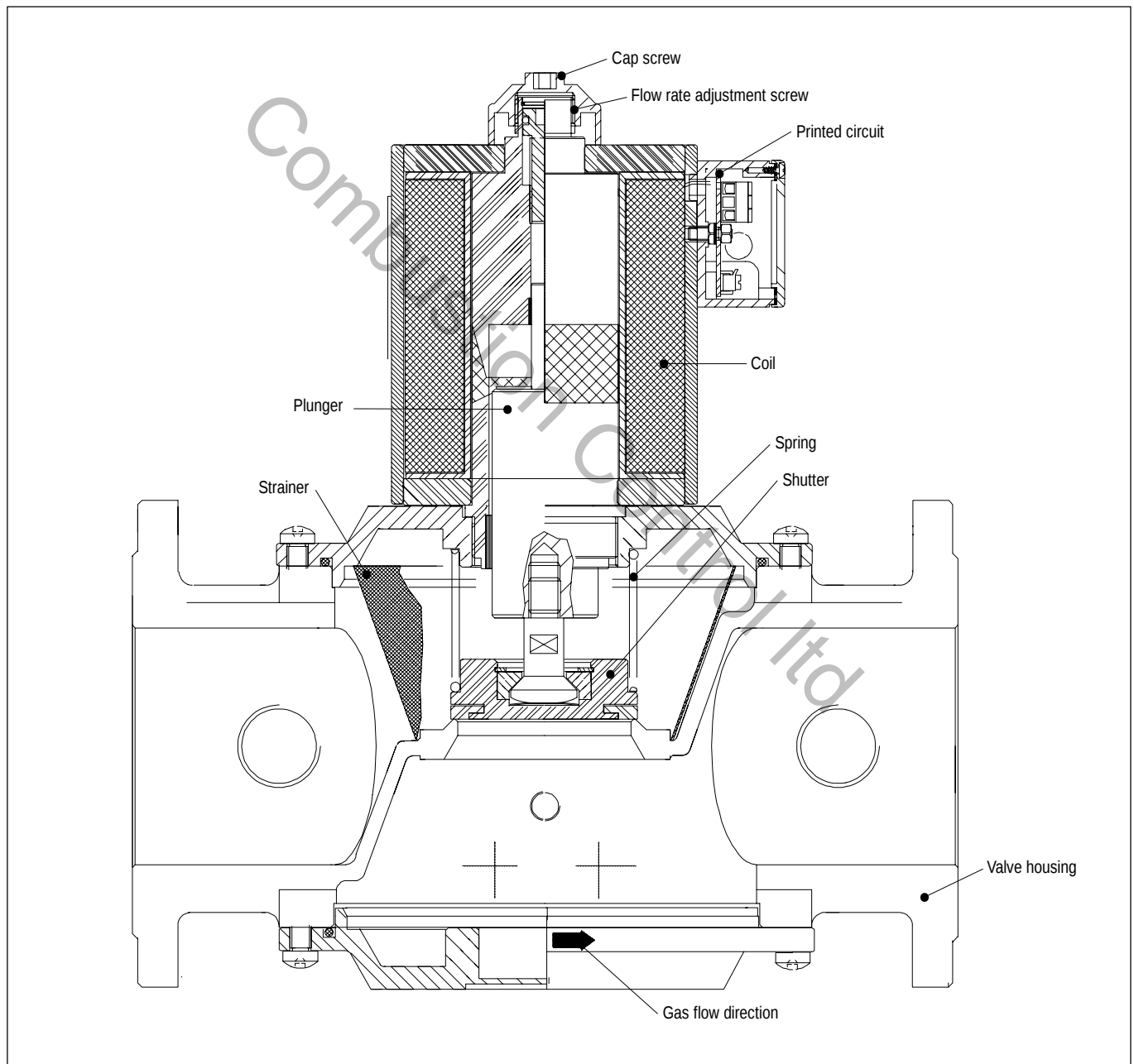
The plunger is gliding on two antifriction bearings.

Flow regulation is done by adjustable plunger stroke.

A strainer made out of steel AISI 303 is incorporated in the gas valve.

Valve closing spring is made out of steel AISI 302.

Seals and gaskets are manufactured out of hydrocarbon resistant NBR according to DIN 3535 and EN 291.



## STANDARDS AND APPROVALS

### Standards

The VE series gas valves have been designed to meet the European Standard EN 161.

The safety shut off valve meets class A requirements.

According to bending stress the gas valve meets the highest requirements.

Regarding electric safety, the VE series gas valves can be used in appliances according to European Standard for a household electrical requirements EN 60335 series and industrial applications.

The VE series gas valves also meet all Electro Magnetic Compatability standadrs for non-industrial and industrial appliances.

### Approvals

The VE series gas valves confirm with the following EC-directives:

- Gas Appliance Directive (90/396/EEC)
- Low Voltage directive (73/23/EEC)

The fact that the VE series gas valves are certified to European Standard EN

161 means that this series meets more stringent requirements than laid down in the essential requirements stated in the directives and therefore meets the requirements in all EC and EFTA countries.

Details can be found in the approvals list. In addition our controls have been certified by DIN-DVGW in Germany.

The registration number specific for each O.S. number is mentioned on the label of the control.

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## ORDERING INFORMATION

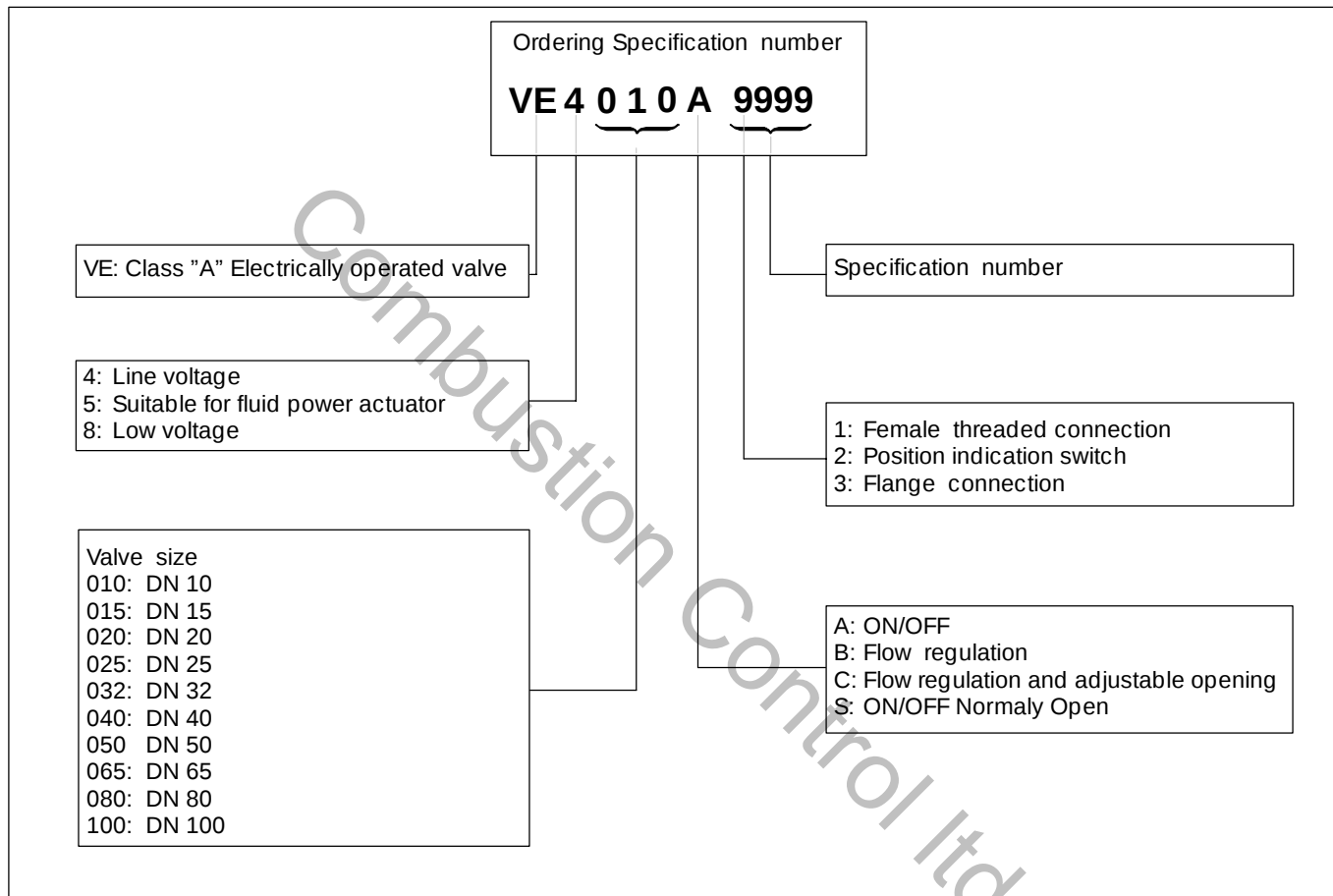
### When ordering specify:

- Model number of VE series gas valve required: see model number chart below.

- Order numbers of replacement parts and accessories required, i.e. flanges, compression fittings: see replacement parts/accessories.

### Note

Most models of valves, replacement parts and accessories will be available under "TRADELINE" label. Ask your wholesaler for details.



Model number chart

## REPLACEMENT PARTS AND ACCESSORIES

### Warning

Take care that only qualified persons carry out the installation of parts, accessories, and add on components.

Follow the installation instructions included in the package.

Check that the selected part, accessory or add on component is the correct one for the application in question.  
Specification of data is given in the instruction leaflet in the package.

Replace the old gaskets with the new ones supplied in the package and check for leakage when the supply is switched on again.

After installation and/or replacement has been completed, a gas leak test must be carried out.

Also check the gas valve for satisfactory operation after fitting accessories

### Coils

#### Important

When ordering replacement coils include the complete valve O.S. number, in order to provide the coil with proper product identification sticker.

| Description                                                                                                   | Order number                                 | Packing quantity |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------|
| <b>Coil for VE..10/..15A:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz      | BB052401<br>BB051101<br>BB052201<br>BB054201 | 1<br>1<br>1<br>1 |
| <b>Coil for VE..20/..25A:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz      | BB052425<br>BB051125<br>BB052225<br>BB054225 | 1<br>1<br>1<br>1 |
| <b>Coil for VE..32/..40/..50A:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz | BB052403<br>BB051103<br>BB052203<br>BB054203 | 1<br>1<br>1<br>1 |
| <b>Coil for VE..65A:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz           | BB-----<br>BB051165<br>BB052265<br>BB054265  | 1<br>1<br>1<br>1 |
| <b>Coil for VE..10/..15B/C:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz    | BB152401<br>BB151101<br>BB152201<br>BB154201 | 1<br>1<br>1<br>1 |
| <b>Coil for VE..20/..25B/C:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz    | BB152425<br>BB151125<br>BB152225<br>BB154225 | 1<br>1<br>1<br>1 |
| <b>Coil for VE..10/..15S:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz      | BB152401<br>BB151101<br>BB152201<br>BB154201 | 1<br>1<br>1<br>1 |

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|                                                                                                               |                                              |                  |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------|
| <b>Coil for VE..32/..40B/C:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz    | BB152440<br>BB151140<br>BB152240<br>BB154240 | 1<br>1<br>1<br>1 |
| <b>Coil for VE..50B/C:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz         | BB152403<br>BB151103<br>BB152203<br>BB154203 | 1<br>1<br>1<br>1 |
| <b>Coil for VE..65B 1.../3...:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz | -----<br>BB151165<br>BB152265<br>BB154265    | 1<br>1<br>1<br>1 |
| <b>Coil for VE..80B 1.../3...:</b><br>24 V, 50/60 Hz<br>110 V, 50/60 Hz<br>220 V, 50/60 Hz<br>240 V, 50/60 Hz | -----<br>BB151180<br>BB152280<br>BB154280    | 1<br>1<br>1<br>1 |

### Characterized opening mechanism

|                                                                                                  |                        |        |
|--------------------------------------------------------------------------------------------------|------------------------|--------|
| <b>Charaterized opening mechanism for model:</b><br>VE...10/..15/..20/..25C<br>VE..32/..40/..50C | GF0500001<br>GF0500002 | 1<br>1 |
|--------------------------------------------------------------------------------------------------|------------------------|--------|

### Rectifier boards

|                                                                                                                         |          |    |
|-------------------------------------------------------------------------------------------------------------------------|----------|----|
| <b>Rectifier board for 24 V, 50/60 Hz model:</b><br>VE8010/8015/8020A/B/C/S                                             | CS020012 | 10 |
| <b>Rectifier board for 110/220/240 V, 50/60 Hz model:</b><br>VE4010/4015/4020A/B/C/S<br>VE4032/4040/4050<br>VE4065/4080 | CS020065 | 10 |