

Magnetic relief valve VAN

TECHNICAL INFORMATION

- Open when de-energized
- Connection flanges for pipes up to DN 50
- Suitable for a maximum inlet pressure of 500 mbar (7 psig)
- Space-saving installation thanks to compact dimensions
- Quick closing, quick opening
- Check indication by blue LED
- Closed position indicator
- Suitable for hydrogen



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1 Application



VAN

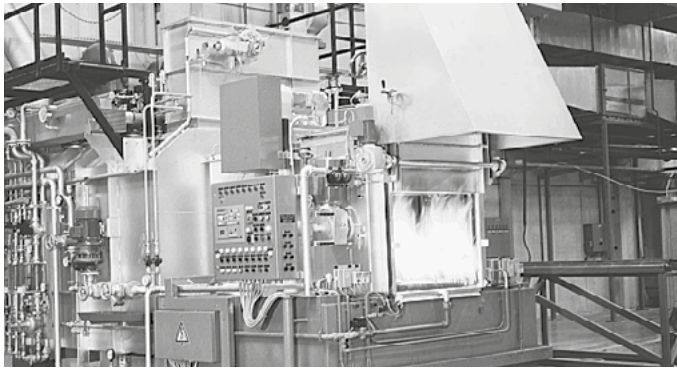
The magnetic relief valve VAN is designed to monitor gas valves for tightness used in conjunction with a visual discharge unit. It enables the purging of excess or leakage gas. The magnetic relief valve VAN is open when it is de-energized.



VAN..S, VAN..G

The VAN..S, VAN..G is fitted with a closed position indicator. It is indicated whether the magnetic relief valve is open or closed.

1 Application



Forging furnace



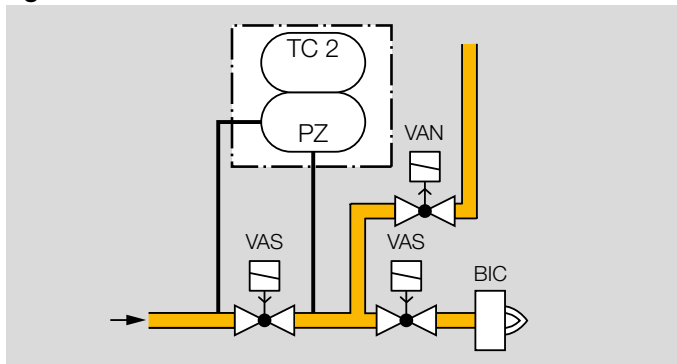
Magnetic relief valve VAN on the double solenoid valve VCS



Roller hearth kiln

1.1 Application examples

1.1.1 Relief valve with two gas solenoid valves and tightness control

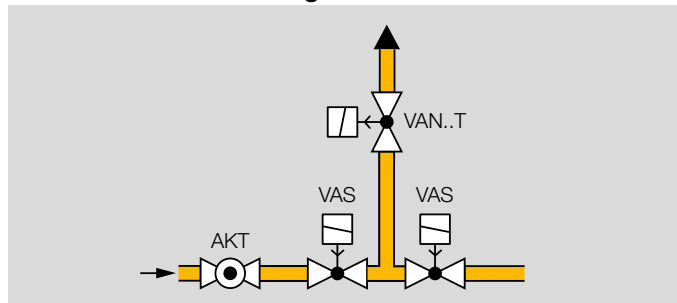


Tightness control TC 2 checks the gas solenoid valves VAS and the magnetic relief valve VAN for tightness.

If the gas solenoid valves and the magnetic relief valve are tight, the tightness control forwards an enable signal to the automatic burner control unit. The pilot valve output of the automatic burner control unit opens the gas solenoid valves VAS simultaneously. The burner starts.

In accordance with the Russian safety regulations PB 12-529-03, installations with a capacity of ≥ 1.2 MW must be fitted with a relief valve and tightness control.

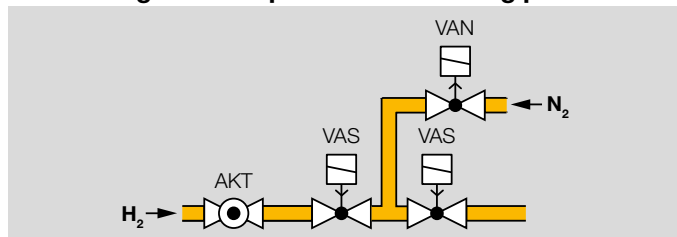
1.1.2 Relief valve with 2 gas solenoid valves



A valve, open when de-energized, is designed to purge gas to a safe venting point.

For the NAFTA market, this applies for capacities of ≥ 117 kW (400,000 BTU/h), see page 15 (6.4 Relief line for the NAFTA market).

1.1.3 Inert gas atmosphere for annealing processes



Whenever no hydrogen is needed for the annealing process (e.g. in the case of an annealing bell), the gas solenoid valves VAS and the magnetic relief valve VAN are disconnected from the electrical power supply. The VAN opens. Under high pressure, nitrogen can now get between the two gas solenoid valves VAS. This prevents hydrogen from flowing into the furnace.

2 Certification

2.1 Certificate download

Certificates – see www.docuthek.com

2.2 Declaration of conformity



We, the manufacturer, hereby declare that the products VAN with product ID No. CE-0063BU1564 comply with the requirements of the listed Directives and Standards.

Directives:

- 2014/35/EU – LVD
- 2014/30/EU – EMC
- 2011/65/EU – RoHS II
- 2015/863/EU – RoHS III

Regulation:

- (EU) 2016/426 – GAR

Standards:

- EN 161:2011+A3:2013

The relevant product corresponds to the tested type sample.

The production is subject to the surveillance procedure pursuant to Regulation (EU) 2016/426 Annex III paragraph 3.

Elster GmbH

Scan of the Declaration of conformity (D, GB) – see www.docuthek.com

2.3 FM listed

Approval does not apply to 100 V AC, 200 V AC, or 12 V DC.



FM Approvals: Class 7400 Designed for applications in accordance with NFPA 85 and NFPA 86.

2.4 ANSI/CSA approved

Approval does not apply to 100 V AC, 200 V AC, or 12 V DC.



Canadian Standards Association (CSA): ANSI Z21.21 / CSA 6.5

2.5 AGA approved



Australian Gas Association, Approval No.: 2725.

2.6 Eurasian Customs Union



The products VAN meet the technical specifications of the Eurasian Customs Union.

2.7 UKCA certified



Gas Appliances (Product Safety and Metrology etc.
(Amendment etc.) (EU Exit) Regulations 2019)

BS EN 161:2011+A3:2013

2.8 REACH Regulation

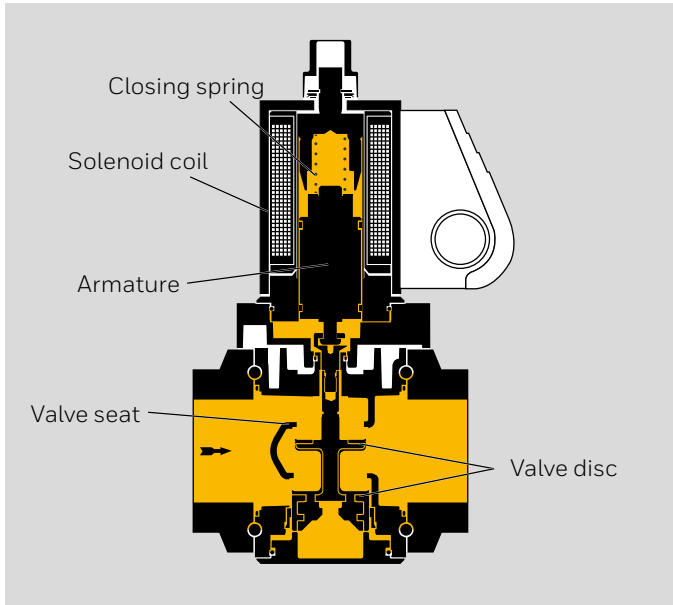
The device contains substances of very high concern which are listed in the Candidate List of the European REACH Regulation No. 1907/2006. See Reach list HTS at www.docuthek.com.

2.9 China RoHS

Directive on the restriction of the use of hazardous substances (RoHS) in China. Scan of the Disclosure Table China RoHS2, see certificates at www.docuthek.com.

3 Function

3.1 Magnetic relief valve VAN

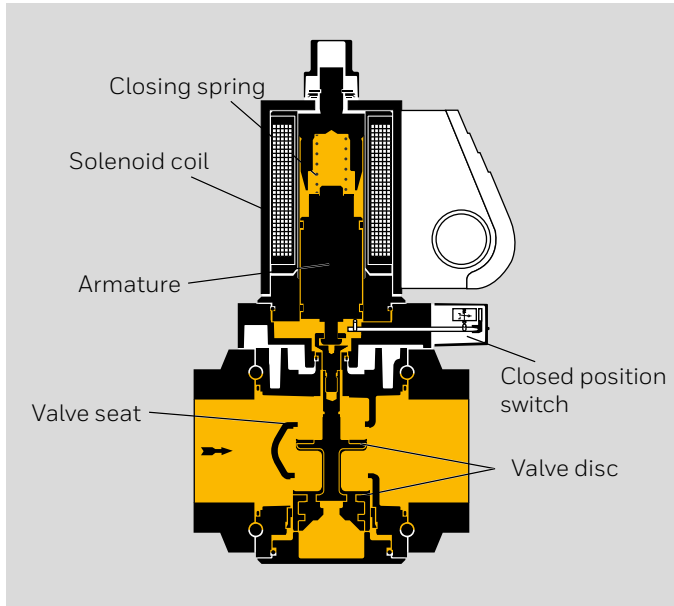


VAN

The magnetic relief valve VAN is open when it is de-energized.

Closing: connect the system to the electrical power supply (alternating voltage will be rectified). The blue LED lights up. The coil's magnetic field pulls the armature with the attached valve plates upwards. The magnetic relief valve VAN closes. The double valve seat means that the forces from the inlet pressure are divided almost equally between the two valve seats.

3.2 Magnetic relief valve VAN..S, VAN..G



VAN..S, VAN..G

The magnetic relief valve VAN..S, VAN..G is open when it is de-energized.

Closing: when the magnetic relief valve is closed, the closed position indicator switches. The visual position indicator is activated. The “closed” signal is marked in red. The double valve seat closes to shut off the volume of gas.

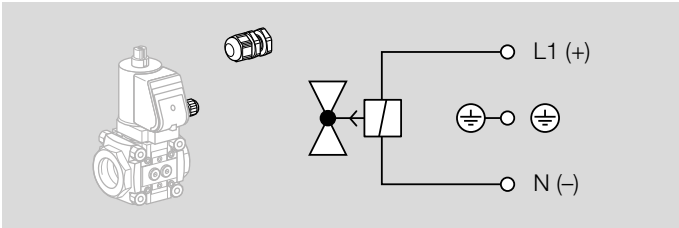
Opening: the magnetic relief valve is disconnected from the voltage supply and the opening spring forces the double valve plate open. The closed position indicator switches. The visual position indicator is white for “open”.

The actuator cannot be rotated on magnetic relief valves VAN..S, VAN..G with closed position indicator.

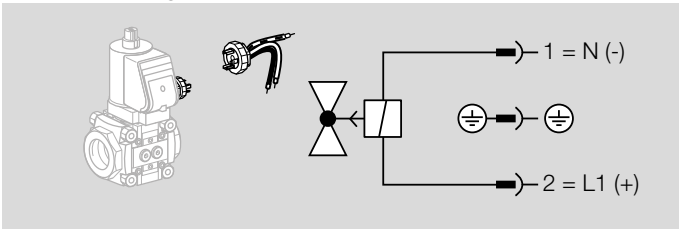
3.3 Connection diagram

Wiring to EN 60204-1.

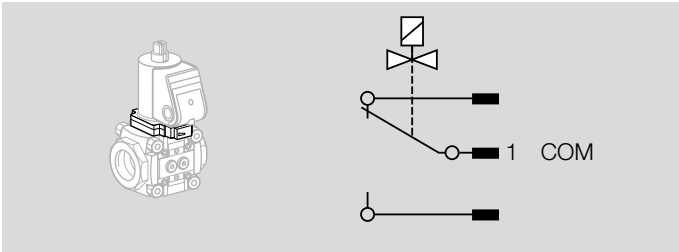
VAN with M20 cable gland



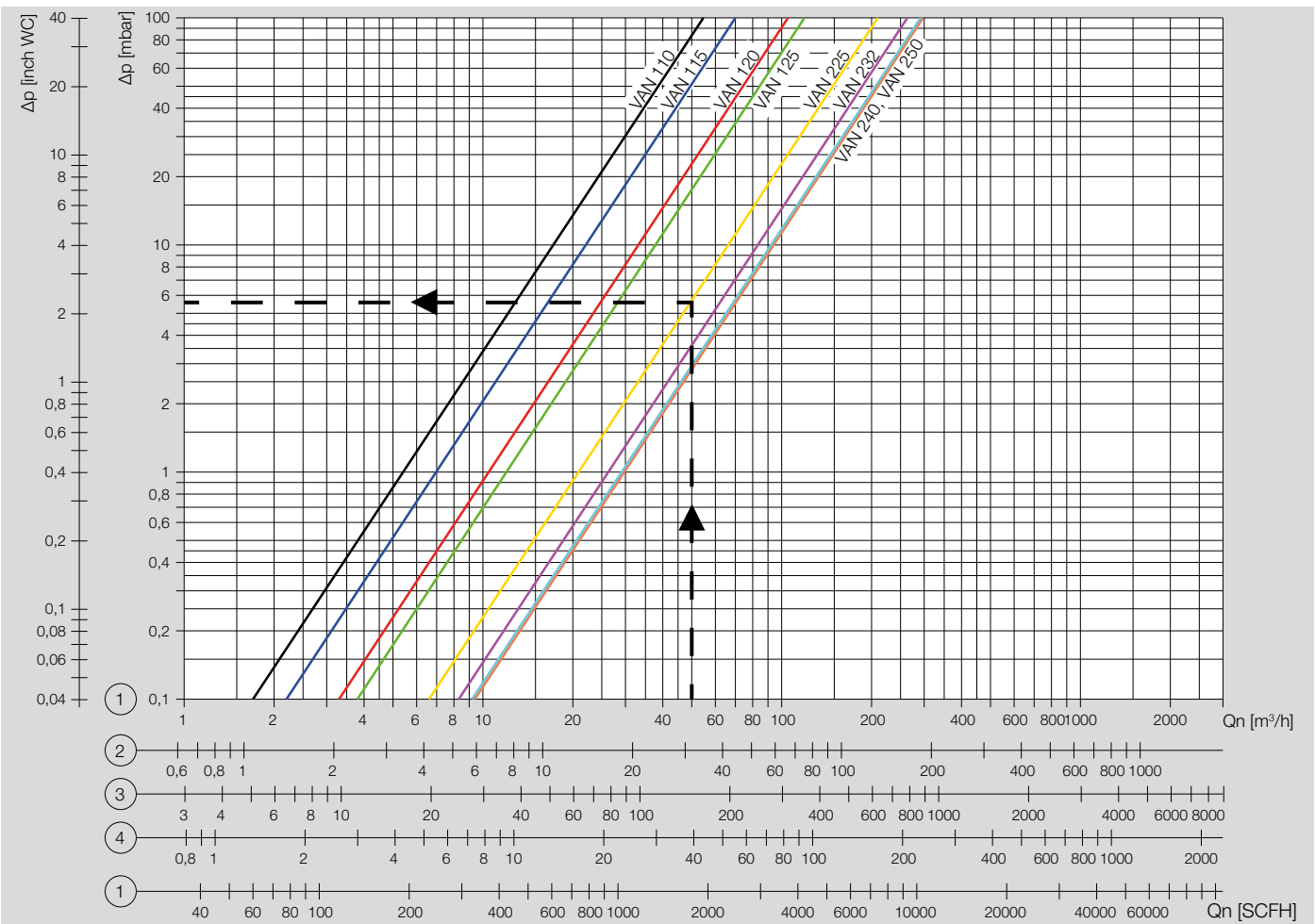
VAN with plug



VAN..S, VAN..G with closed position indicator



4 Flow rate



1 = natural gas ($\rho = 0.80 \text{ kg/m}^3$)
2 = propane ($\rho = 2.01 \text{ kg/m}^3$)
3 = hydrogen ($\rho = 0.09 \text{ kg/m}^3$)
4 = air ($\rho = 1.29 \text{ kg/m}^3$)

4 Flow rate

The characteristic flow rate curves have been measured with the specified flanges.

Reading instructions: when determining the pressure loss, operating cubic metres must be entered. Then the pressure loss Δp read must be multiplied by the absolute pressure in bar (positive pressure + 1) to account for the change in the medium's density.

Example

inlet pressure p_u (positive pressure) = 0.3 bar,
gas type: natural gas,
operating flow rate $Q_b = 50 \text{ m}^3/\text{h}$ (b),
 Δp from diagram = 5.5 mbar,
 $\Delta p = 5.5 \text{ mbar} \times (1 + 0.3) = 7.2 \text{ mbar}$ on the
magnetic relief valve VAN 225

4.1 Calculating the nominal size

A web app for calculating the nominal size is available at www.adlatus.org.

5 Selection

5.1 Selection table

Option	VAN 1	VAN 2
DN	10, 15, 20, 25	25, 32, 40, 50
Pipe connection	R, N	R, N
Opening properties	/N	/N
Mains voltage	W, Q, K, P, Y	W, Q, K, P, Y
Feedback	S, G	S, G
Viewing side	L, R	L, R

Order example

VAN 125R/NWS

5.2 ProFi

A web app selecting the correct product is available at www.adlatus.org.

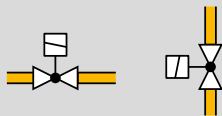
5.3 Type code

VAN	Magnetic relief valve
1–2	Sizes
10–50	Inlet and outlet flange nominal size
R	Rp internal thread
F	Flange to ISO 7005
N	NPT internal thread
/N	Quick opening, quick closing
W	Mains voltage 230 V AC, 50/60 Hz
Q	Mains voltage 120 V AC, 50/60 Hz
K	Mains voltage 24 V DC
P	Mains voltage 100 V AC, 50/60 Hz
Y	Mains voltage 200 V AC, 50/60 Hz
SR	Closed position switch with visual position indicator, right
SL	Closed position switch with visual position indicator, left
GR	Closed position switch for 24 V and visual position indicator, right
GL	Closed position switch for 24 V and visual position indicator, left

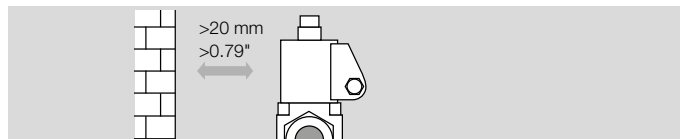
6 Project planning information

6.1 Installation

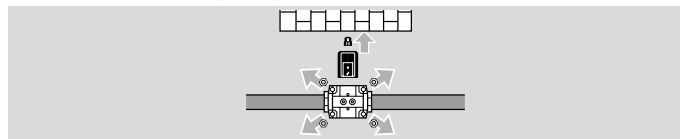
Do not store or install the unit in the open air.



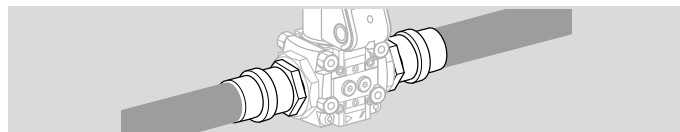
Installation position: black solenoid actuator in the vertical upright position or tilted up to the horizontal, not upside down.



The device must not be in contact with masonry. Minimum clearance 20 mm (0.79").



Ensure that there is sufficient space for installation and adjustment.



The seals in some gas compression fittings are approved for temperatures of up to 70°C (158°F). This temperature limit

will not be exceeded if the ambient temperature is no more than 40°C (104°F).

6.2 Electrical connection



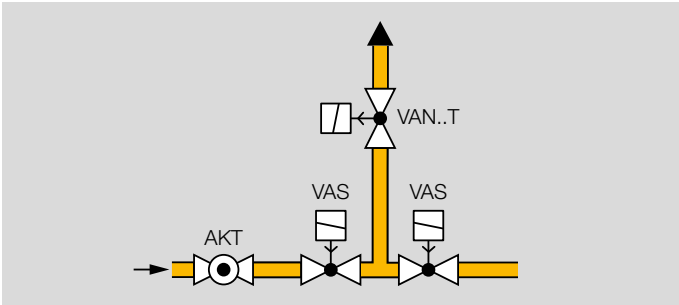
The solenoid actuator heats up during operation. Surface temperature approx. 85°C (185°F) pursuant to EN 60730-1.

6.3 Hydrogen



Other hydrogen-compatible products can be found here: [Technical Information, Products for hydrogen.](#)

6.4 Relief line for the NAFTA market



A valve, open when de-energized, is compulsory for capacities over 117 kW (400,000 BTU/h) for purging gas to a safe area.

The downstream relief lines on the VAN may not be interconnected. They must be designed in accordance with the IRI requirements for gas burners.

IRI requirements for gas burners

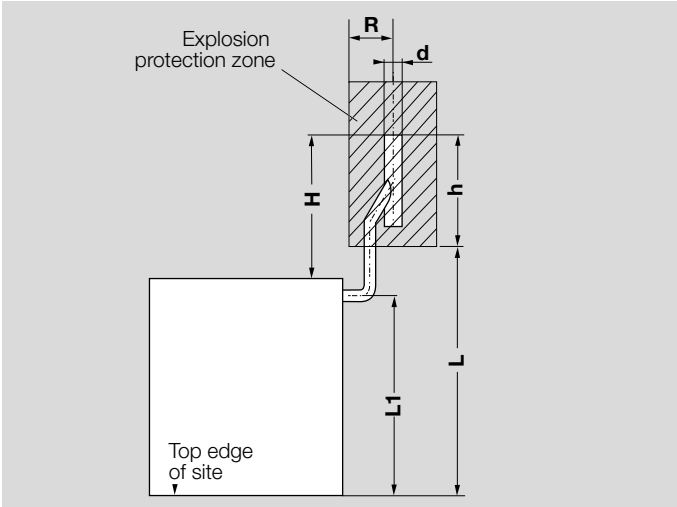
Pipe size for gas supply		Relief line size	
NPT	DN	NPT	DN
< 1½"	< 40	¾"	20
2"	50	1"	25
2½"	65	1¼"	32
3½"	80	1½"	40
4"	100	2"	50
5"	125	2½"	65

7 Accessories

7.1 Exhaust ABG

Potentially explosive areas may be created at the discharge points of relief lines. The exhaust ABG enables the vertical, upwards exhaustion of the gases over the roof edges into the atmosphere. The exhaust ABG may be connected to safety relief valves or manifold lines. It is suitable for pressures on the exhaust outlet of up to 1.5 bar (21.75 psig). The exhaust's outlet openings are fitted with anti-bird grilles.

It is the responsibility of the operator to determine the explosion-hazard areas and to specify and document these zones. Instructions for this can be found in the DVGW note G442, the rules and regulations issued by employer's liability insurance associations, the German Technical Rules for Industrial Safety and Health (TRBS), as well as further relevant publications.



Legend

- h = Explosion protection zone underneath the exhaust
- L1 = Distance between site and outlet opening of relief/manifold line
- L = Distance between site and explosion protection zone
- H = Distance between roof edge and exhaust outlet
- d = Exhaust diameter
- R = Radius of the explosion protection zone

Install the exhaust ABG so as to guarantee the free flow and jet spreading of the outflowing gas. The exhaust should clearly project out over the roof edge (**H** = 15 × **d**). The outlet openings of the relief or manifold lines should lie ≥ 1.8 m (6 ft) over the top edge of the site (**L1**). The connection pipe for the exhaust ABG can be shortened, where applicable. Here it should be noted that the explosion protection zone underneath the exhaust remains big enough (**h** = 10 × **d**) and the distance between the explosion protection zone and the site is ≥ 2 m (6.6 ft) (**L**).

7.1.1 Selection

Option	ABG 25	ABG 50
Connection pipe nominal diameter (DN)	25	50
Exhaust nominal diameter (DN)	/40	/80

Order example

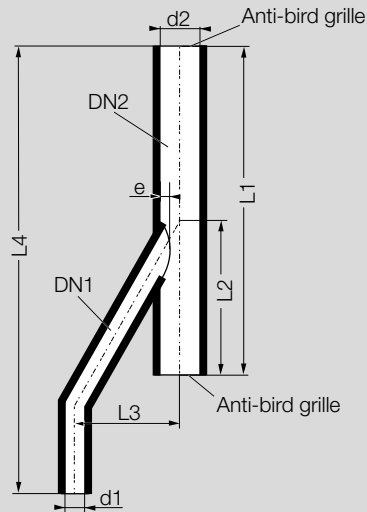
ABG 25/40

Exhaust ABG 25/40, Order No. 03165011
Exhaust ABG 50/80, Order No. 03165013

7.1.2 Type code ABG

ABG	Exhaust
25	Connection pipe nominal diameter: DN 25
50	Connection pipe nominal diameter: DN 50
/40	Exhaust nominal diameter: DN 40
/80	Exhaust nominal diameter: DN 80

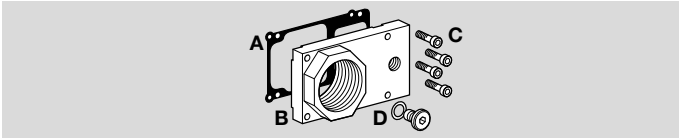
Connection pipe length: 1100 mm (43.3").



Type	Nominal size DN		Overall dimensions mm (inch)					Dimensions mm (inch)			
								DN1		DN2	
	DN1	DN2	L1	L2	L3	L4	e	d1	Wall thickness	d2	Wall thickness
ABG 25/40	25	40	350 (13.8)	160 (6.3)	130 (5.12)	1100 (43.3)	4.0 (0.16)	33.7 (1.33)	2.6 (0.1)	48.3 (1.9)	2.6 (0.1)
ABG 50/80	50	80	560 (22.05)	250 (9.84)	200 (7.87)	1100 (43.3)	8.0 (0.31)	60.3 (2.37)	2.9 (0.11)	88.9 (3.5)	3.2 (0.13)

7.2 Relief line adapter

For the connection of a relief line (1½ NPT, Rp 1), with a screw plug or pressure test nipple.
Rp 1, VAS/VCS 6–9, Order No. 74923025, 1½ NPT, VAS..T/ VCS..T 6–9, Order No. 74923024.

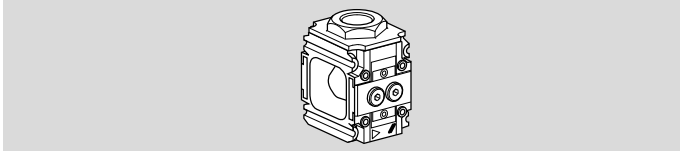


Scope of delivery:

- A 1 x seal,
- B 1 x Z flange,
- C 4 x M5 set screws,
- D 1 x screw plug with sealing ring

7.3 Intermediate elements for VCS 1–3

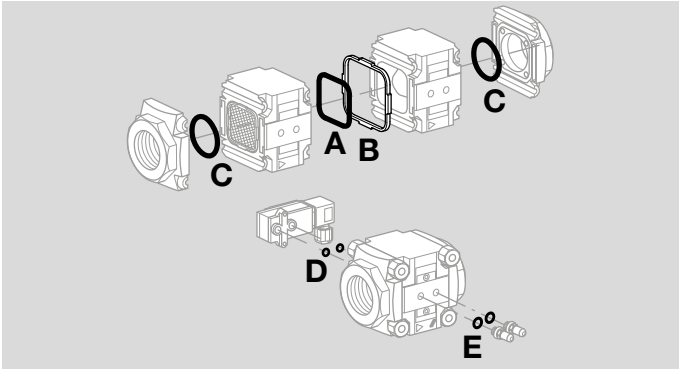
For the easy installation of the magnetic relief valve onto a double solenoid valve VCS 1 to 3 using a pipeline with an Rp or an NPT thread.



Type	Order No.
Intermediate element VA1 Rp 1/2" /B	74922374
Intermediate element VA2 Rp 3/4" /B	74922413
Intermediate element VA3 Rp 1" /B	74922414
Intermediate element VA1T 1/2" /B	74922655
Intermediate element VA2T 3/4" /B	74922656
Intermediate element VA3T 1" /B	74922657

7.4 Seal set VA 1–2

When retrofitting accessories or a second valVario control or when servicing, we recommend replacing the seals.



VA 1, Order No. 74921988,
VA 2, Order No. 74921989.

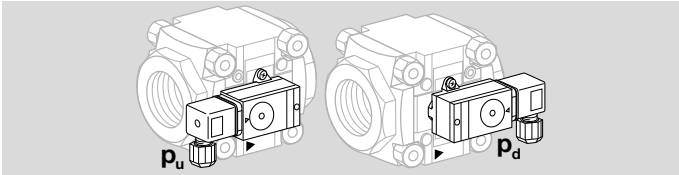
Scope of delivery:

- A 1 x double block seal,
- B 1 x retaining frame,
- C 2 x O-rings (flange),
- D 2 x O-rings (pressure switch),

for test nipple/screw plug:
E 2 x sealing rings (flat sealing),
2 x profiled sealing rings.

7.5 Pressure switch for gas DG..C

Monitoring the inlet pressure p_u : the electrical plug of the pressure switch for gas points towards the inlet flange.
Monitoring the outlet pressure p_d : the electrical plug of the pressure switch for gas points towards the outlet flange.

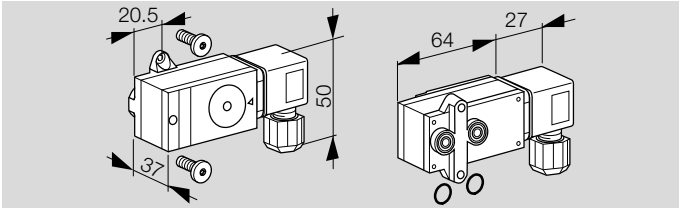


Scope of delivery:

- 1 x pressure switch for gas,
- 2 x retaining screws,
- 2 x sealing rings.

Also available with gold-plated contacts for voltages of 5 to 250 V.

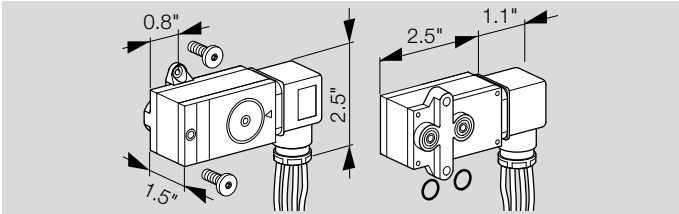
DG..VC



Type	Adjusting range [mbar]	Order No.
DG 17VC	2 to 17	75455241
DG 40VC	5 to 40	75455243
DG 45VC	10 to 45	75455244
DG 110VC	30 to 110	75455245
DG 300VC	100 to 300	75455246
With gold-plated contacts for voltages of 5 to 250 V		
DG 17VC..G	2 to 17	75455247
DG 40VC..G	5 to 40	75455249
DG 45VC..G	10 to 45	75455250
DG 110VC..G	30 to 110	75455251
DG 300VC..G	100 to 300	75455252

DG..VCT

With AWG 18 connection conductors



Type	Adjusting range [°WC]	Order No.
DG 17VCT	0,8 to 6,8	75454583
DG 40VCT	2 to 16	74214174
DG 110VCT	12 to 44	75454585
DG 300VCT	40 to 120	75454586
With gold-plated contacts for voltages of 5 to 250 V		
DG 17VCT..G	0,8 to 6,8	75454587
DG 40VCT..G	2 to 16	75454588
DG 110VCT..G	12 to 44	75454589
DG 300VCT..G	40 to 120	75454590

7.6 DG..C fastening set for VAx 1–3

Order No.: 74922376,
 scope of delivery:
 2 x retaining screws,
 2 x sealing rings.

8 Technical data

8.1 Ambient conditions

Icing, condensation and dew in and on the unit are not permitted.

Avoid direct sunlight or radiation from red-hot surfaces on the unit. Note the maximum medium and ambient temperatures!

Avoid corrosive influences, e.g. salty ambient air or SO₂.

The unit may only be stored/installed in enclosed rooms/buildings.

The unit is suitable for a maximum installation height of 2000 m AMSL.

Ambient temperature: -20 to +50°C (-4 to +122°F), no condensation permitted.

Long-term use in the upper ambient temperature range accelerates the ageing of the elastomer materials and reduces the service life (please contact manufacturer).

Storage temperature = transport temperature: -20 to +40°C (-4 to +104°F).

Enclosure: IP 65.

This unit is not suitable for cleaning with a high-pressure cleaner and/or cleaning products.

8.2 Mechanical data

Gas types: natural gas, LPG (gaseous), biogas (max. 0.1 %-by-vol. H₂S), hydrogen or clean air; other types of gas on request. The gas must be clean and dry in all temperature conditions and must not contain condensate.

Medium temperature = ambient temperature.

Max. inlet pressure p_U: 500 mbar (7.25 psig).

ANSI/CSA approved: 350 mbar (5 psig).

Leakage rate: ≤ 200 cm³/h (0.05 gal/h).

Closing time: quick closing: < 1 s.

Switching frequency: max. 15 x per minute.

Cable gland: M20 x 1.5.

Electrical connection: cable with max. 2.5 mm² (AWG 12) or plug with socket to EN 175301-803.

Duty cycle: 100%.

Power factor of the solenoid coil: cos φ = 0.9.

Safety valve:

Class A, Group 2 pursuant to EN 13611 and EN 161.

Versions with 120 V AC and 24 V DC: FM Approvals: Class 7400

Canadian Standards Association (CSA): ANSI Z21.21 / CSA 6.5

Valve housing: aluminium, valve seal: NBR.

Connection flanges with internal thread:

Rp to ISO 7-1, NPT to ANSI/ASME.

8.3 Electrical data

Mains voltage:
230 V AC, +10/-15%, 50/60 Hz,
200 V AC, +10/-15%, 50/60 Hz,
120 V AC, +10/-15%, 50/60 Hz,
100 V AC, +10/-15%, 50/60 Hz,
24 V DC, ±20%.

Power consumption:

Type	Voltage	Power
VAN 1	24 V DC	25 W
VAN 1	100 V AC	25 W (26 VA)
VAN 1	120 V AC	25 W (26 VA)
VAN 1	200 V AC	25 W (26 VA)
VAN 1	230 V AC	25 W (26 VA)
VAN 2	24 V DC	36 W
VAN 2	100 V AC	36 W (40 VA)
VAN 2	120 V AC	40 W (44 VA)
VAN 2	200 V AC	40 W (44 VA)
VAN 2	230 V AC	40 W (44 VA)

Contact rating of closed position indicator:

Type	Voltage	Current (resistive load)	
		min.	max.
VAN..S	12–250 V AC, 50/60 Hz	100 mA	3 A
VAN..G	12–30 V DC	2 mA	0.1 A

Switching frequency of closed position indicator: max. 5 x per minute.

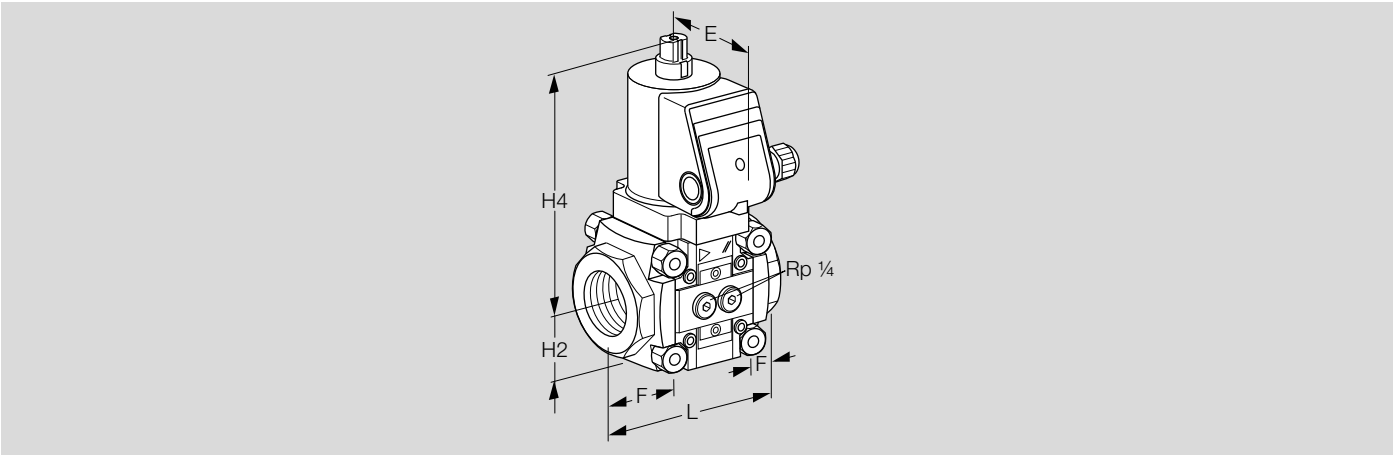
Switching current	Switching cycles*	
	cos φ = 1	cos φ = 0.6
0.1	500,000	500,000
0.5	300,000	250,000
1	200,000	100,000

Switching current	Switching cycles*	
	cos φ = 1	cos φ = 0.6
3	100,000	–

* Limited to max. 200,000 cycles for heating systems.

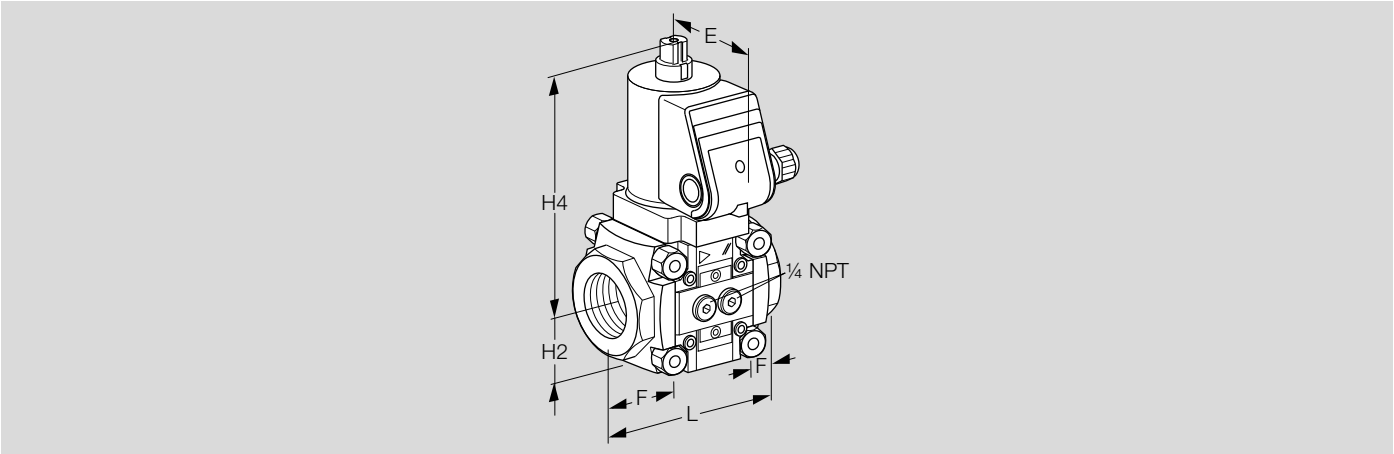
9 Dimensions

9.1 VAN 1–3 with Rp internal thread [mm]



Type	Connection		Dimensions [mm]					Q _{air} for Δp = 1 mbar [m³/h]	k _v max. [m³/h]	Weight [kg]
	Rp	DN	L	E	F	H2	H4			
VAN 110	3/8	10	75	75	15	34	161	4.4	5.0	1.4
VAN 115	1/2	15	75	75	15	34	161	5.5	6.4	1.4
VAN 120	3/4	20	91	75	23	34	161	8.3	9.6	1.5
VAN 125	1	25	91	75	23	34	161	10.0	10.9	1.4
VAN 225	1	25	128	88	29	52	183	15.5	19.2	3.8
VAN 232	1 1/4	32	128	88	29	52	183	19.5	24.1	3.8
VAN 240	1 1/2	40	128	88	29	52	183	21.0	26.9	3.8
VAN 250	2	50	128	88	29	52	183	22.5	26.9	3.6

9.2 VAN 1–3 with NPT internal thread [inch]



Type	Connection		Dimensions [inch]					Q _{air} for Δp = 0.4 "WC [SCFH]	C _v max. [gal/ min]	Weight [lbs]
	NPT	DN	L	E	F	H2	H4			
VAN 110	3/8	10	2.95	2.95	0.59	1.34	6.34	155.36	5.81	3.08
VAN 115	1/2	15	2.95	2.95	0.59	1.34	6.34	194.23	7.44	3.08
VAN 120	3/4	20	3.58	2.95	0.91	1.34	6.34	300.17	11.16	3.30
VAN 125	1	25	3.58	2.95	0.91	1.34	6.34	374.34	12.67	3.08
VAN 225	1	25	5.04	3.32	1.14	2.05	7.20	618.01	22.32	8.36
VAN 232	1 1/4	32	5.04	3.32	1.14	2.05	7.20	759.27	28.02	8.36
VAN 240	1 1/2	40	5.04	3.32	1.14	2.05	7.20	829.89	31.27	8.36
VAN 250	2	50	5.04	3.32	1.14	2.05	7.20	868.74	31.27	7.92

10 Converting units

See www.adlatus.org

11 Maintenance cycles

At least once a year, at least twice a year in the case of biologically produced methane.

For more information

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschroder and Maxon. To learn more about our products, visit ThermalSolutions.honeywell.com or contact your Honeywell Sales Engineer.

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