Honeywell

VR400/VR800 Series
Class A servo regulated combination valves

TECHNICAL INFORMATION

- Main body with two shut-off valves with single seat for different pressure ranges
- Second valve: fast opening or opening with adjustable maximum flow rate and step pressure
- Suitable for electric modulation and for electric two-stage regulators
- Suitable for gas/air modulation
- Options for mounting flanged minimum and/or interim pressure switches
- Coils suitable for permanent energization
- Fine mesh screen (strainer) between inlet flange and main body
- Various pressure tap points
- LED visual indicator (DBI: 1 LED, IP: 2 LEDs) shows whether the valve is energized
- 24 V AC and 230 V AC models
- Wide modulation range for premix applications (14% to 100% of burner load)

CE UK CA

EN
Edition 04.24

Contents

1 Application

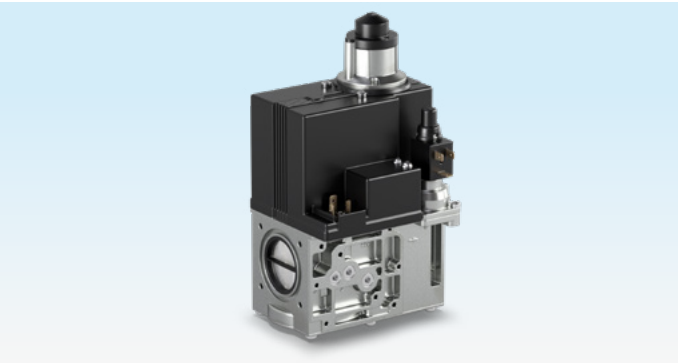
The VR400/VR800 series class A are used for control and regulation of gaseous fuels in gas-fired power burners, atmospheric gas boilers, melting furnaces, incinerators and other gas consuming appliances.

The servo regulated combination valves meet the class A + A specification according to EN 161. For applications with valves recognized by UL, see TI V4730C/V8730C/V4734C 1:1 gas/air servo regulated valves.

The VR400/VR800 series have 1/2", 3/4", 1" or 1¼" straight flanged pipe connections. The combinations are equipped with two main valves, V1 and V2, as standard. Safety valve V1 is always fast opening/closing. The second valve (V2) can be either fast (with flow regulation) or slow opening (= with flow regulation and adjustable opening). The pressure regulating valve is located between V1 and V2 internally.

V1 and V2 are fast opening/closing

The servo regulated combination valves are available for direct burner ignition (DBI), where both safety valves are operated simultaneously. And they are available for intermittent pilot (IP) applications, where both safety valves can be operated individually, for example in combination with a valve proving system.



V1 is fast opening/closing, V2 is slow opening/fast closing

On both sides of the main body, 4 flange connections are provided to mount either an inlet and/or interim pressure switch of the C60VR series. These accessories can be mounted in various positions on the main body of the VR400/VR800 series.

VR425 with an inlet pressure switch C60VR

1.1 Pressure regulator

VR..A..: the outlet pressure is held at a constant value regardless of fluctuations of the inlet pressure. The outlet pressure can be adjusted to 3–37 mbar.

1.2 Hi-Lo regulator

VR..P..: in addition to servo pressure regulation, the unit includes a high–low control. Within the ranges specified, a high and a low outlet pressure can be mechanically adjusted and electrically selected.

High outlet pressure to appliance will be established by switching control voltage to high–low coil on. By switching voltage off, the outlet pressure will drop to low pressure setting.

The high–low pressure regulator is intended to be used for manufactured, natural and LP gas.

The high–low regulator is provided with an oil-damped actuator for smooth, silent operation at AC supply voltage. The high–low regulator provides the regulating functions and will therefore replace the standard pressure regulator.

The high–low regulator provides the possibility to obtain low or high gas outlet pressure by switching OFF/ON the voltage to the low-noise actuator if the servo operator is energized. The high–low regulator controls the pressure of the gas burner. All applications that require a control unit to operate the burner at two different gas pressures can use the high–low regulator.

Features

- Direct operation from an AC supply.
- Oil-filled operator for silent operation.
- Connector: DIN 43650 Form B.

1.3 Integrated gas/air 1:1

VR..V..: the 1:1 gas/air regulator equals the gas pressure to the supplied air pressure.

VR..F..: the 1:1 gas/air regulator with an additional venturi mixing unit (VMU) and a fan is used for modulating premixing units, such as gas burners, gas boilers, roof units, fresh-air units and process applications.

2 Certification

2.1 Certificate download

Certificates – see www.docuthek.com

2.2 EU certified

CE

- 2014/35/EU (LVD), Low Voltage Directive
- 2014/30/EU (EMC), Electromagnetic Compatibility Directive
- 2011/65/EU, RoHS II
- 2015/863/EU, RoHS III
- (EU) 2016/426 (GAR), Gas Appliances Regulation
- EN 88-1:2011+A1:2016
- EN 126:2012

2.3 UKCA certified

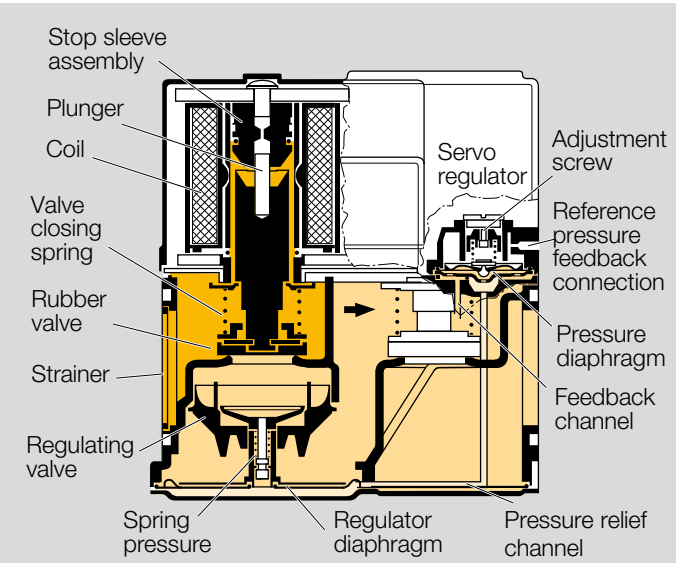
UKCA

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

BS EN 88-1:2011+A1:2016
BS EN 126:2012

3 Function

Servo pressure regulation working



V4730C/V8730C/V4734C

The servo regulated combination gas valves comprise 2 x class A fail-safe shut-off valves. The valve is opened by energizing the direct ON/OFF operators. Each operator consists of a coil and a stop sleeve assembly. Inside the stop sleeve assy is a plunger which is connected to a rubber valve and which is able to move up and down, thus opening or closing the valve. The plunger is coated with an anti-friction material. Flow regulation is achieved by adjusting the plunger stroke.

A strainer made of AISI 303 is incorporated between inlet flange and main body. The valve closing spring is made of AISI 302. Seals and gaskets are manufactured from hydrocarbon-resistant NBR according to EN 549.

3.1 Pressure regulator

The gas valves combination features a positive servo system, i.e. the regulating valve is held by spring pressure in the normal open position. The heart of the system is the servo pressure regulator which consists of a pressure relief valve integrated in a regulator diaphragm which controls the regulating valve.

When both operators are energized, inlet gas flows through the servo orifice into the servo system and into the regulator. This servo gas moves the regulator diaphragm upwards. As soon as the regulating valve has opened, the generated outlet pressure will be sensed by the regulator diaphragm via the feedback channel.

When the force generated by the pressure is greater than that preset by the slotted head adjustment screw, the regulating valve opens relieving some of the working pressure.

This reduces the force against the regulating valve spring allowing the regulating valve to close proportionately. Thus the regulating valve limits the outlet (or burner) pressure to the preset level.

As a result, outlet pressure is continuously maintained by comparing it to the preset pressure and adjusting the position of the regulating valve accordingly. This means that a constant outlet pressure is maintained regardless of inlet pressure variations.

At shut-down, the small volume of working gas in the regulator and in the diaphragm chamber is dumped into the main outlet chamber.

A reference pressure feedback connection further regulates the outlet pressure by compensating for differences in the air pressure in the combustion chamber and at the valve.

Zero pressure control

If pressure regulation is not needed, the regulator spring can be blocked by turning the adjustment screw down until it stops or the pressure regulation is removed. In these cases, the full servo gas pressure opens the regulating valve as far as the pressure drop allows.

3.2 Hi-Lo regulator

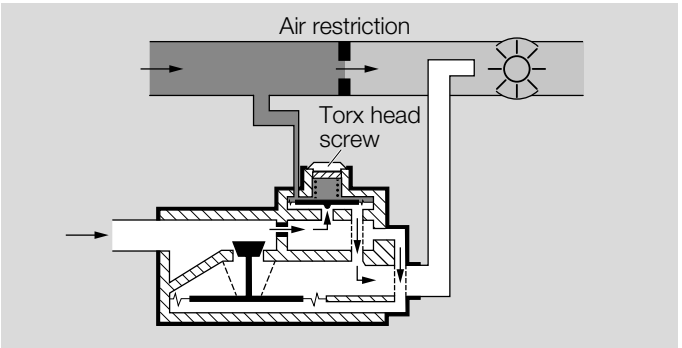
Low and high pressure settings are made using the steel and brass set screws on top of the high–low regulator. These settings can be re-adjusted in the field.

The regulator function will only be active if the electric on/off servo operator of the combination gas control is energized. It depends on the energization of the high–low coil on what level the outlet pressure will be established.

The Softlite feature of the combination gas control is unaffected by the operation of the high–low regulator.

A moveable plunger inside the coil compresses the regulator spring if the high–low coil is energized The high pressure setting is established by means of the plunger stop. The load of the regulator spring will become lower as soon as the high–low coil is de-energized. The pressure level is now defined by the stop of the low pressure adjustment screw.

3.3 Integrated gas/air 1:1



Working principle

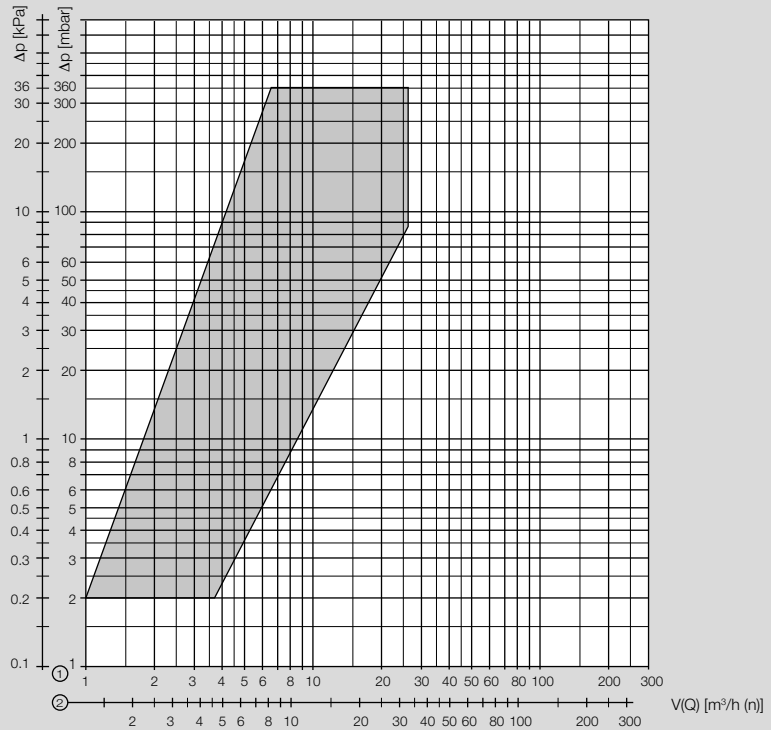
When used on the above mentioned gas controls series, the 1:1 gas/air regulator assembly provides the function of regulating/modulating the gas pressure drop equal to the air pressure drop.

The regulator has an air pressure connection and a torx head offset adjustment screw. The 1:1 gas/air regulator equals the gas pressure to the supplied air pressure. The offset can be adjusted using the offset adjustment screw. (Offset = p_{gas} - p_{air})

4 Capacity curves and recommended working range for servo regulated combination gas valves

4.1 Capacity curve for VR415, VR815

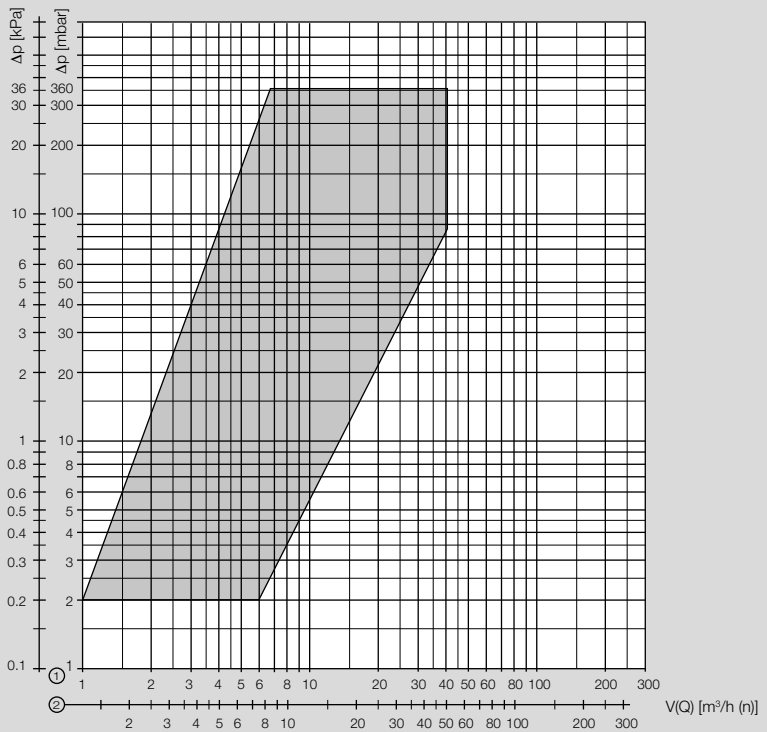
G 1/2" (DN 15)
6 m^3/h air at Δp = 5 mbar



1 = air (ρ = 1.29 kg/m³)
2 = natural gas (ρ = 0.80 kg/m³)

4.2 Capacity curve for VR420, VR820

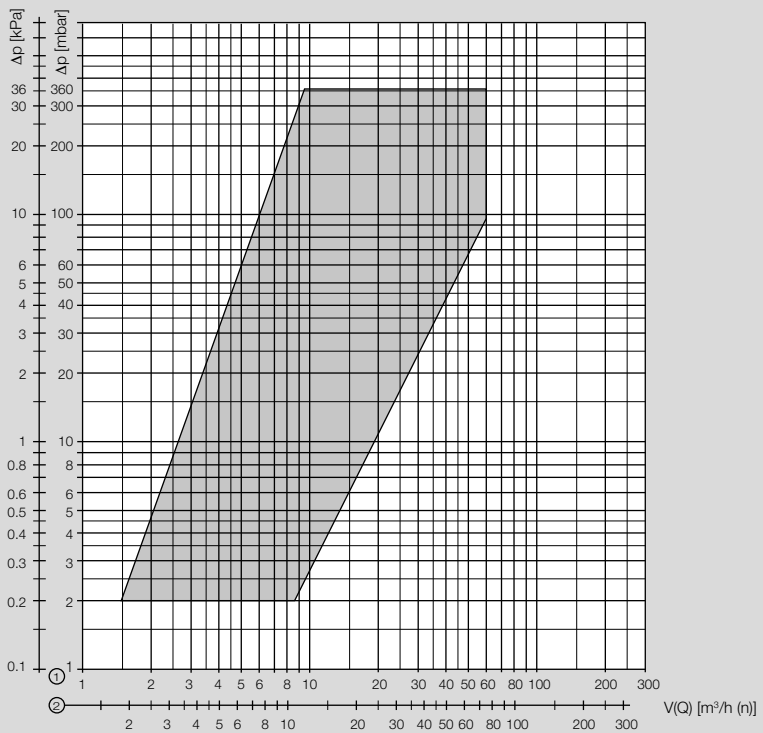
G 3/4" (DN 20)
9 m^3/h air at Δp = 5 mbar



1 = air (ρ = 1.29 kg/m³)
2 = natural gas (ρ = 0.80 kg/m³)

4.3 Capacity curve for VR425, VR825

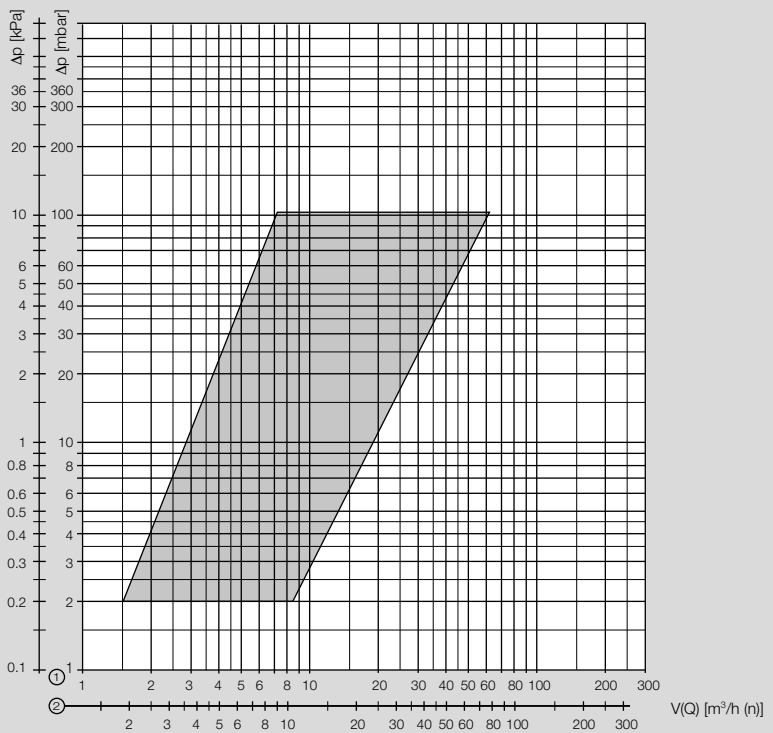
G 1" (DN 25)
13 m^3/h air at Δp = 5 mbar



1 = air (ρ = 1,.29 kg/m³)
2 = natural gas (ρ = 0.80 kg/m³)

4.4 Capacity curve for VR432, VR832

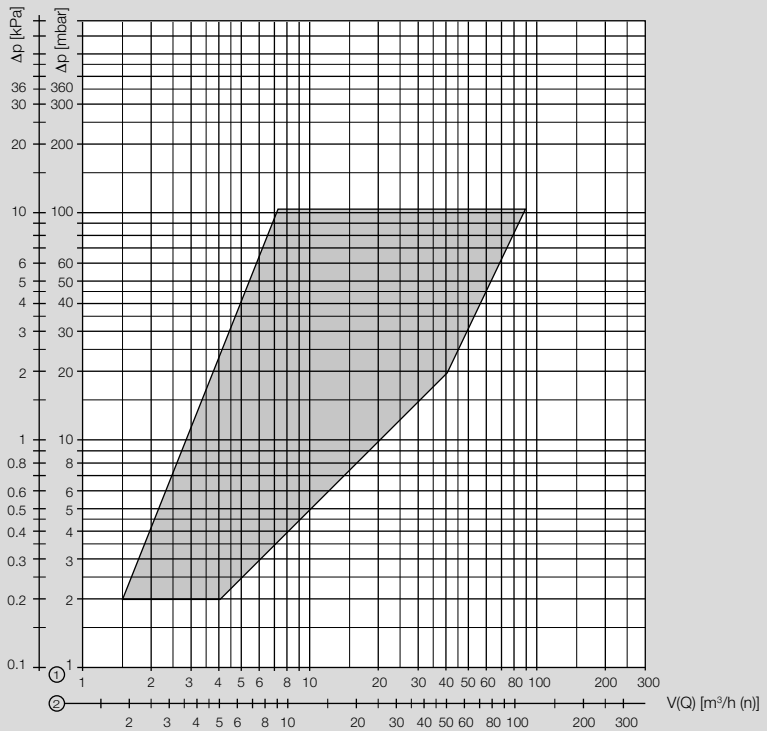
G 1 1/4" (DN 32)
14.5 m^3/h air at Δp = 5 mbar



1 = air (ρ = 1.29 kg/m^3)
2 = natural gas (ρ = 0.80 kg/m^3)

4.5 Capacity curve for VR434

G 1 1/4" (DN 32)
38 m^3/h air at Δp = 5 mbar



1 = air (ρ = 1.29 kg/m^3)
2 = natural gas (ρ = 0.80 kg/m^3)

5 Selection

5.1 Selection table

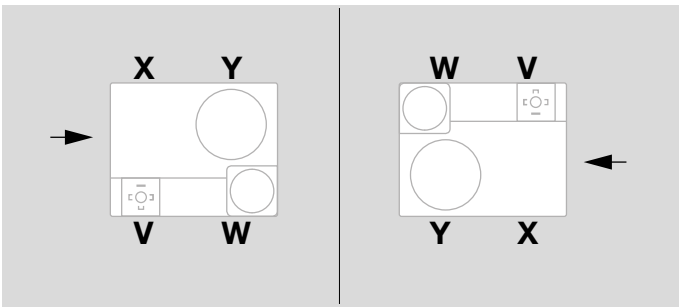
Description	Code	VR..A	VR..F	VR..P	VR..V	Condition
Class A combination gas valve	**VR**	•	•	•	•	
Voltage						
Line voltage	**4**	•	•	•	•	
Low voltage	**8**	•	•	•	•	Not for VR..34.
Nominal size of valve seat (pipe size)						
Small body size model	**15–32**	15 (1/2"), 20 (3/4"), 25 (1"), 32 (1 1/4")	15 (1/2"), 20 (3/4"), 25 (1"), 32 (1 1/4")	15 (1/2"), 20 (3/4"), 25 (1"), 32 (1 1/4")	15 (1/2"), 20 (3/4"), 25 (1"), 32 (1 1/4")	Flange to be ordered separately, see page 19 (7.1 Flange kit).
Large body size model	**34**	34 (1 1/4")	34 (1 1/4")	34 (1 1/4")	34 (1 1/4")	Needs DN 32 flange.
Type of pressure regulator						
Pressure regulator	**A**	•				
Integrated gas/air 1:1 with venturi mixing unit	**F**		•			
Hi-Lo	**P**			•		
Gas/air 1:1	**V**				•	
Characteristics of 2nd valve						
Second valve fast opening, valves opened simultaneously	**A**	•	•	•	•	
Characterized opening, valves opened simultaneously	**B**	•		•		
Second valve fast opening, valves opened independently	**E**	•	•	•	•	
Characterized opening, valves opened independently	**F**	•		•		
Specification numbers						
Internal specification	**XXXX**	•	•	•	•	Not selectable.
Position specification	**1–2**	•	•	•	•	Order examples with accessories, see page 15 (5.2 Selecting positions for accessories). If “none”, this specification is omitted.

Order example

VR425AB-XXXX-0000 (no accessories)

5.2 Selecting positions for accessories

Flange connections are provided on the main body to mount either pressure switches or a pilot valve. These additional options can be mounted in various positions on the main body.



Mounting positions for accessories

Use the 4 digits after the specification number to specify which option you need in which position.

Observe the direction of the gas flow!

Type	Code	Position			
		V	W	X	Y
C60VR40017 (0.2–1.7 kPa)	1	•	•	•	•
C60VR40040 (0.5–4 kPa)	1	•	•	•	•
C60VR40110 (3–11 kPa)	2	•	•	•	•

Examples:

With C60VR40040 in position V, the full order number will be VR425ABXXXX-1000.

With C60VR40040 in position X and C60VR40110 in position W, the full order number will be VR425ABXXXX-0210.

With C60VR40040 in position V and C60VR40040 in position W, the full order number will be VR425ABXXXX-1100.

With C60VR40017 in position X and C60VR40040 in position Y, the full order number will be VR425ABXXXX-0011.

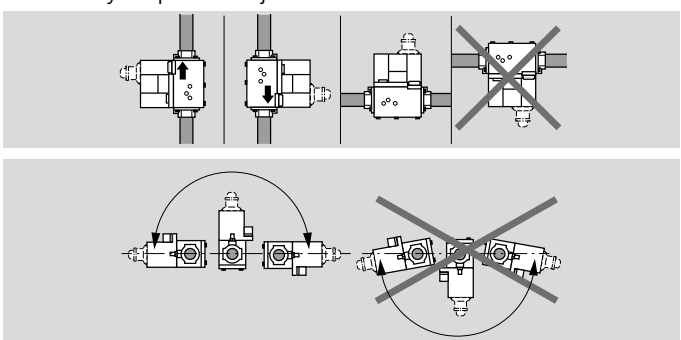
If you do not want any additional option, the order number will be VR425ABXXXX-0000.

6 Project planning information

6.1 Installation position

Solenoid actuator in the vertical upright position or tilted up to the horizontal, not upside down.

Gas valves with integrated gas/air 1:1: the factory settings are made in a horizontal installation position. Vertical installation may require readjustments.



The distance between the gas valve and the wall/ground must be at least 12 inch/30 cm.

» The valve can be mounted up to ±90 degrees from this position without affecting the fuel/air metering at medium and high firing rates (3000 to 5000 rpm of the blower), but at lower firing rates (1000 rpm), the fuel might be reduced up to 10% when the valve is not mounted in a horizontal position. To counter this, the low fire gas flow may be carefully field adjusted for non-horizontal mounting as described below.

6.2 Specifying application parameters (gas/air 1:1)

Define the maximum allowable deviation on Δp_{gas} at minimum Δp_{air} in new appliances for reliability reasons.

The application parameters can affect the offset adjustment accuracy during cycling and the life cycle of the control system.

These parameters are (in sequence of importance):

- Start pressure (the lower, the better)
- Ambient temperature (the lower, the better)

It is therefore advisable to verify the offset adjustment at service intervals by CO_2 measurement or Δp_{gas} (burner orifice pressure drop) at minimum Δp_{air} (pressure drop over air restriction).

Δp_{gas} measured on the pressure tap of the combination gas control (highest pressure) can deviate from the real Δp (burner orifice pressure drop) due to gas turbulence and/or restrictions in the application. The deviation should be defined and documented. The measurement accuracy should be +/- 1 Pa.

6.3 Connections

There are G 1/8" pressure taps on the flanges.

On the main body, flange connections (G 1/8") are provided on the main body to mount:

- pressure switches (min. or max.) or
- two connections for an intermittent pilot (valves opened independently).

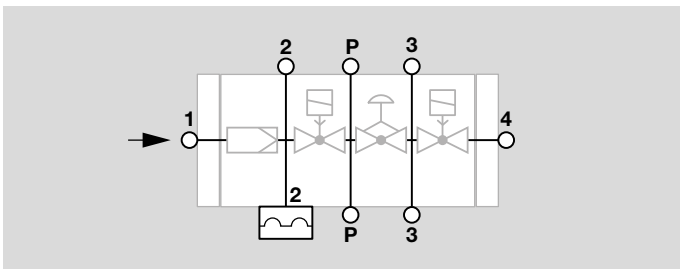
6.3.1 Pressure tap points

The following pressures can be measured:

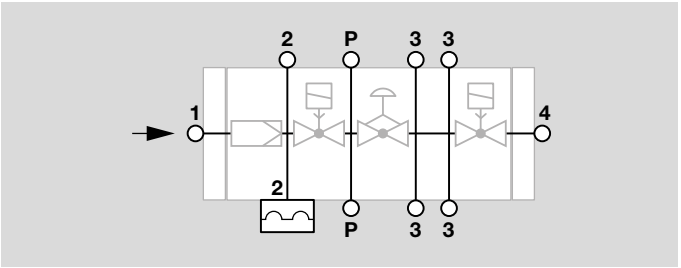
1 Inlet pressure
2 Inlet pressure
3 Interim pressure – unregulated (pressure between the two shut-off valves)
4 Outlet pressure – regulated
P Pilot gas pressure

» The corresponding numbers can be found on the sides of the valve. Pressure taps 1 and 4 are located on top of the flanges.

» A pressure switch can be mounted to 2, P or 3. (2 and 3 only)

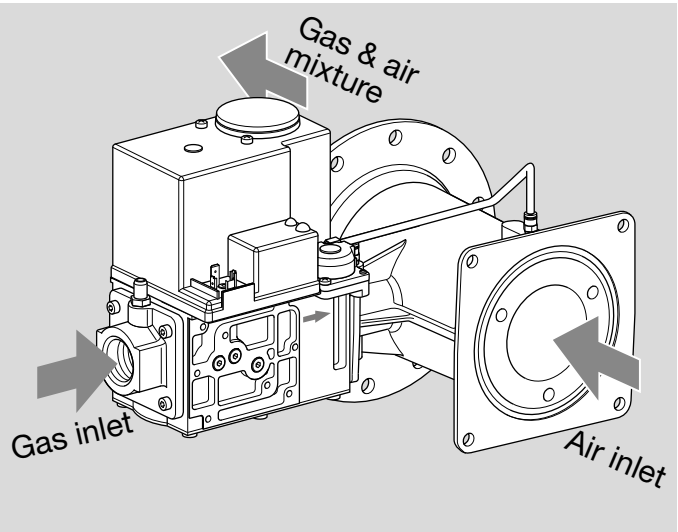


Pressure tap points for small body size models



Pressure tap points for large body size models

6.4 Venturi mixing unit VMU



The venturi mixing unit VMU allows modulation of a premix burner with constant gas/air ratio down to 17% of maximum load. It is to be used in combination with a fan and a Honeywell 1:1 regulation gas valve. Modulation is accomplished by changing the fan speed.

The combination gas valve can be fitted directly on the venturi mixing unit in up to 3 positions. All regulation adjustments are made on the gas valve.

The venturi mixing unit is designed to be fitted in up to 12 positions on an EC (electronically commutated) fan.

To ensure a constant gas/air ratio and safe function under all circumstances, a connection tube between the inlet of the venturi mixing unit and the gas pressure regulator is provided.

Accessories for VMU and sensing tube, see page 19 (7.2 Venturi mixing unit VMU).

7 Accessories

7.1 Flange kit

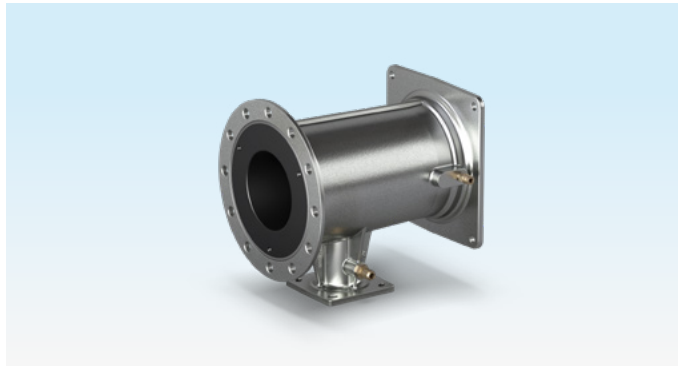
Inlet flanges and outlet flanges are available as accessories.

Scope of delivery:
1 flange with sealing plug,
1 O-ring and screws,
1 pressure tap nipple fitted.

Flange kits:

Order No.	Size (Rp)	Remarks
KTCOMB15	1/2"	G 1/8" pressure tap
KTCOMB20	3/4"	G 1/8" pressure tap
KTCOMB25	1"	G 1/8" pressure tap
KTVR32	1¼"	G 1/8" pressure tap

7.2 Venturi mixing unit VMU



Order numbers for the standard types:

Model	Reference load [kW]
VMU150A1003	150
VMU185A1009	185
VMU300A1004	300
VMU335A1000	335
VMU400A1010	400
VMU500A1009	500
VMU680A1009	680

Other versions are possible on demand.

The venturi is delivered with screws and O-ring to connect it to the gas valve as well as with the plastic tube that has to be connected between the venturi and gas valve.

The kit that contains these accessories (KTSERVF1) can also be ordered separately.

VMU150 to VMU400 fits onto the G1G170 fan and VMU500 to VMU680 fits onto the G3G250 fan of manufacturer EBM.

Sensing tube VMU

Short sensing tube for VMU150/300/335 kW venturi mixing units. Order No.: KTTBA001.

Long sensing tube for VMU500 kW venturi mixing unit. Order No.: KTTBA002.

7.3 Valve connection plug

Standard DIN plug connector (black) according to DIN 43650 (Form A). Not included in the scope of delivery.

Order No.: CO020012.

7.4 Pressure switch for gas

The pressure switch for gas monitors the inlet pressure or the interim pressure.

Scope of delivery:
1 x pressure switch for gas,
C60VRT = UL recognized,
C60VR = CE/UKCA certified,
2 x self-tapping retaining screws,
1 x sealing ring,
1 x protection cap.

7.4.1 Pressure switch connection plug

Standard DIN plug connector (grey) according to DIN 43650 (Form A). Not included in the scope of delivery.

Order No.: CO020014.

8 Technical data

The specifications described in this chapter relate to the main gas valve. The VR400/VR800 series must be used in combination with a burner programmer.

Models:

Type	Pipe sizes[1)]	
Small body size models		
VR415/VR815	DN 15	1/2"
VR420/VR820	DN 20	3/4"
VR425/VR825	DN 25	1"
VR432/VR832	DN 32	1 1/4"
Large body size models		
VR434	DN 32	1 1/4"

1) All internal pipe threads according to ISO 7-1

Minimum regulating capacity:
VR415/VR815: 1 m^3/h
VR420/VR820: 1 m^3/h
VR425/VR825: 1.5 m^3/h
VR432/VR832: 1.5 m^3/h
VR434: 1.5 m^3/h

Maximum operating pressure:
All models: 100 mbar,
except VR425/432/825/832AB/AF/PB/PF: 70 mbar (slow opening DN 25/DN 32 models with adjustable outlet pressure of 3–37 mbar).

VR434 can be used up to a maximum of 100 mbar, but needs to be adjusted to the nominal applied inlet pressure.

Torsion and bending stress:
Pipe connections meet group 2 according to EN 13611 requirements.

Valve classification:
Class A + A according to EN 161.

Regulator classification:
Class C according to EN 88-1.

Supply voltages:
Line voltage: 230 V AC, 50/60 Hz.

Low voltage: 24 V AC, 50/60 Hz.

Electrical equipment:
DC current coils with combined rectifier inside the cover.

Electrical connections:
Standard DIN plug connector according to DIN 43650.

Ambient temperature range:
-15 to +60°C (5 to 140 °F).

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

Enclosure: IP 40.

Body material: die-cast aluminum alloy.

Strainer:
Fine mesh screen (diameter 0.34 mm), AISI 303 steel, serviceable after removing the inlet flange screws.

Meets requirements for strainers according to EN 161.

Power consumption:

Type	Voltage	V1		V2	
		W	mA	W	mA
VRx15/VRx20	230	15.9	70	15.9	70
VRx15/VRx20	24	15.2	640	15.2	640
VRx25/VRx32	230	24.1	106	24.1	106
VRx25/VRx32	24	30.9	1300	30.9	1300
VR434[1)]	230	11	76	11	76
VR434[2)]	230	49	220	49	220

1) At normal operation
2) At start-up

8.1 Perfomance characteristics

Opening time:
Dead time max. 1 s.

VR434: max. dead time < 0.5 s.

The first valve (V1) opens in less than 1 second.

The second valve (V2) can be either a fast opening or slow opening valve with adjustable characteristic (VR..XB and VR..XF models).

Maximum allowable leakage:
Each VR400 combination valve has been factory tested to meet the following leakage requirements. Outer wall, safety valve and main valve = 40 cm^3/h for up to DN 25 and 50 cm^3/h for DN 32 at a test pressure of 6 mbar and 1.5 x maximum operating pressure.

High pressure test:
In the “OFF” condition, the VR400 valve will withstand 1.5 bar (air) inlet pressure without damage.

Closing time (V1, V2):
Less than 1 second for all valves.

Maximum working frequency:
1 cycle per minute.

Duty cycle:
Coil suitable for permanent energization in conjunction with an ignition controller.

Operating voltage range:
The combination gas valve will function satisfactorily between 85% and 110% of the rated voltage.

8.2 Pressure regulator

50% of the adjustable outlet pressure is reached within 0.5 seconds after start flow of a characterized opening valve which is adjustable from 1 up to 30 seconds, at rated capacity. The opening characteristic is factory set to 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 the ambient temperature (-15 to +60°C), the adjusted opening time of 6 seconds measured at 80% of adjusted flow rate can vary by ± 4 seconds.

Tap sensitivity of outlet pressure setpoint:
For all gases, the maximum deviation may be 1 mbar.

Repeatability of outlet pressure setpoint:
For all gases, the maximum deviation from setpoint is ± 0.3 mbar or + 3% of the setpoint value, whichever is the greatest.

Total setpoint shift

Pressure range (mbar)	Tolerance
3–37	6% of the setpoint value or 1 mbar, whichever is the greatest

8.3 Hi-Lo regulator

Pressure feedback connection:
High–low regulator with an M5 thread connection for pressure feedback.

Minimum regulation capacity:
0.31 m^3/h.

Maximum operating pressure:
The maximum pressure $p_{max.}$ indication on the housing of the combination gas control is the maximum pressure at which it functions safely.
However, the maximum operating pressure is limited by the pressure range of the high–low pressure regulator concerned: 50 mbar for pressure range 4–37.

Electrical connection:

The high–low coil is provided with an earth terminal.

The high–low coil is provided with quick connect terminals suitable for 6.3 mm.

Connector: DIN 43650 Form B.

Regulator outlet pressure range:

Pressure range (mbar)	Setting	
	low	high
4–37	4 - $p_{max.}$ ($p_{max.} < p_{high}$)	12–37

Electrical data:

Supply voltage	Coil colour	Current (mA)	Power consumption
220/240 V AC, 50 Hz	black	17.4/19	3/3.2

8.3.1 Performance of the hi-lo regulator

Maximum allowable leakage:
Each hi-lo regulator has been factory tested to meet the following leakage requirements.

- Outer wall: 24 cm^3/h at a test pressure of 150 mbar.
- Seat leakage: 110 cm^3/h at a test pressure of 9 mbar.
- Pressure feedback leakage: 650 cm^3/h at a test pressure of 8 mbar.

Total setpoint shift:
The total setpoint shift of the low and high outlet pressure caused by repeatability, tapping (tapping impact 2 Ncm) and life cycle shall not exceed:

Pressure range (mbar)	Min. low setting (mbar)	Max high setting (mbar)
4–37	-2.5/+2.5	-4.0/+3.0

Repeatability:
Repeatability should be checked after five power interruptions, maximum deviation in outlet pressure may not exceed the values indicated below.

Pressure range (mbar)	At min. setpoint (mbar)	At max. setpoint (mbar)
4–37	0.5	1

Tap test:
After tapping the control (tapping impact max. 2 Ncm), the deviation of the outlet pressure may be max. 1 mbar.

Hysteresis:
The deviation in the outlet pressure at minimum setting if the hi-lo regulator is switched ON and OFF must not exceed 0.5 mbar for 4–37 mbar range.

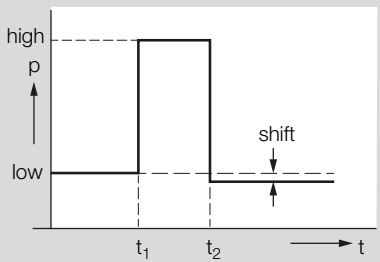
Shift on mechanical setpoint after life cycle:
The setpoint shift after life cycle (with a switching speed of

max. 40 cycles per minute at ambient temperature) without re-adjustment of the high or low setting must not exceed:

Pressure range (mbar)	At min. setpoint (mbar)	At max. setpoint (mbar)
4–37	+1.2/-0.8	+0.7/-1.8

Drift on mechanical setpoint during ambient temperature cycle:
The variation in outlet pressure caused by changes in the ambient temperature between 0 and 70°C may be max. 1 mbar.

Outlet pressure characteristic



Operating voltage range:
The hi-lo regulator will function satisfactorily between 85% and 110% of the rated voltage.

Rated voltage	Operating voltage
220/240 V, 50 Hz	187–264 V

Pressure feedback:
Within the limits of the capacity of the combination gas control, a pressure deviation on the pressure feedback connection must result in an outlet pressure deviation of the same value with an accuracy of Δp 5% of the adjusted outlet pressure or 0.4 mbar, whichever is the greatest.

8.4 Integrated gas/air 1:1

The 1:1 gas/air regulators are rated for 2nd and 3rd family gases (G20, G25, G30 and G31).

Opening time:
Time until $p_{outlet} \geq 100$ Pa = < 2 s (conditions: p_{inlet} = 3000 Pa).

Pressure regulation function:
Class B according to EN 88.

Seat with throughput opening Ø 1 mm.

Air pressure connection:
The servo pressure regulator has an M5 threaded hole to make connection between regulator and appliance.

Outlet pressure:
Outlet pressure is the pressure drop across the main burner orifice.

Maximum inlet pressure:
100 mbar.

Minimum regulation capacity:
1 m^3/h air at Δp = 0.5 mbar across main burner orifice at max. 30 mbar operating pressure.

Minimum operating gas pressure:
15 mbar.

Maximum operating gas pressure:
The $p_{max.}$ 100 mbar indication on the housing is the maximum inlet pressure at which the gas control functions safely.

Offset range:
-0.4 mbar to +0.2 mbar (with coils sidewards),
-0.24 mbar to +0.36 mbar (with coils on top).

Maximum air pressure:
8 mbar without outlet gas pressure (before ignition),
40 mbar with outlet gas pressure present (after ignition).

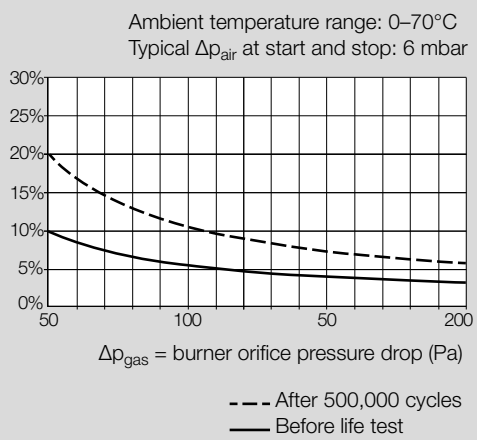
Oscillation:
For all versions except gas/air 1:1: maximum oscillation under all circumstances 0.5 mbar.

Accuracy:

$$\text{Typical accurancy} = \left(\frac{\Delta p_{gas} - \Delta p_{air}}{\Delta p_{air}}\right) \cdot 100\ \%$$

Δp_{air} = pressure drop across air restriction
Δp_{gas} = burner orifice pressure drop

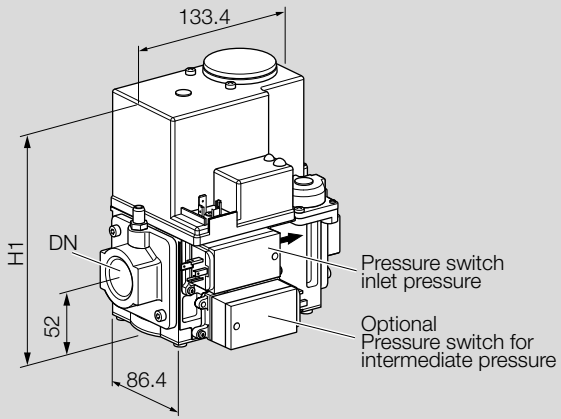
Accuracy includes tap sensitivity, repeatability, inlet pressure dependency, hysteresis and temperature influence and is shown below.



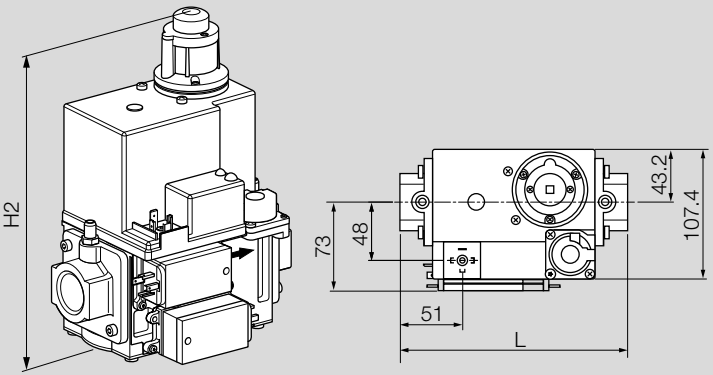
Typical accuracy

9 Dimensions

9.1 VR415–VR432, VR815–VR832



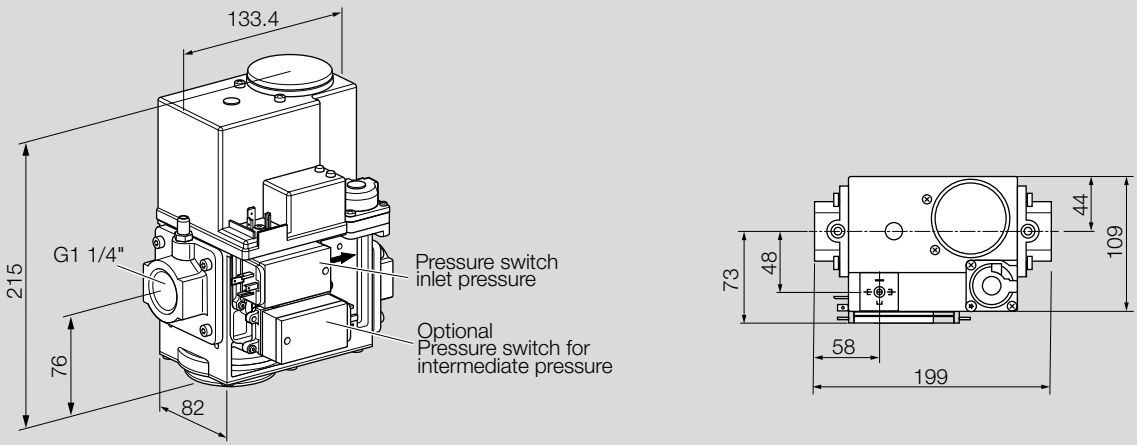
VR15–32A/E or
VR415A/E to VR432A/E and VR815A/E to VR832A/E



VR15–32B/F or
VR415B/F to VR432B/F and VR815B/F to VR832B/F

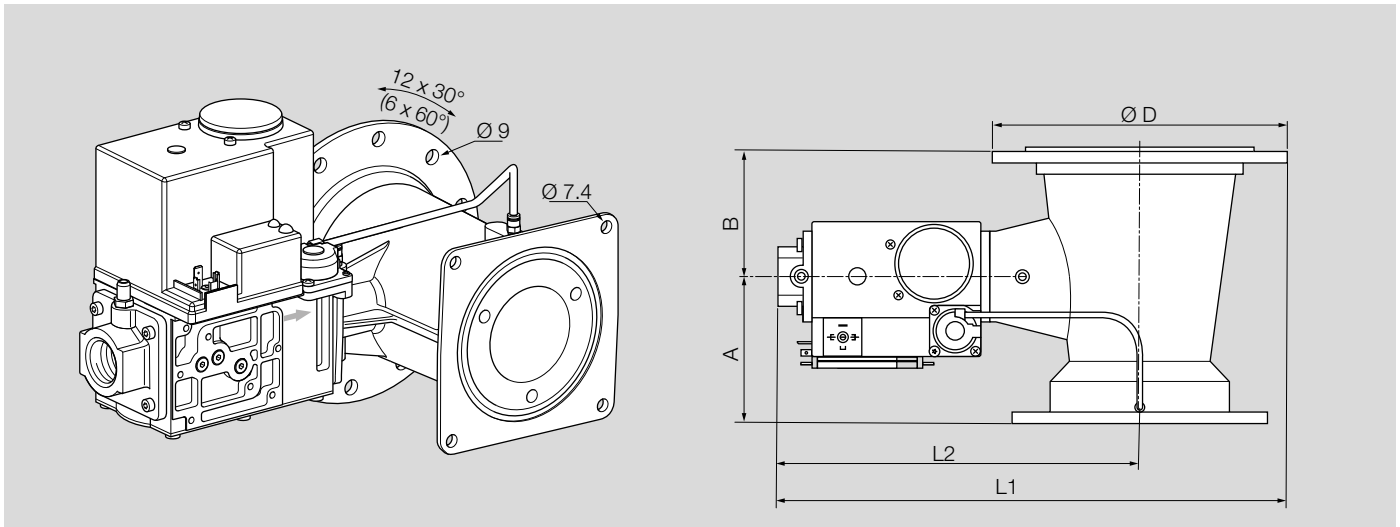
Type	DN		H1	H2	L
VR415, VR815	DN 15	G 1/2"	165.5	215.5	185
VR420, VR820	DN 20	G 3/4"	165.5	215.5	185
VR425, VR825	DN 25	G 1"	185.5	239	185
VR432, VR832	DN 32	G 1 1/4"	185.5	239	199

9.2 VR434


133.4
215
G1 1/4"
76
82
Pressure switch
inlet pressure
Optional
Pressure switch for
intermediate pressure
73
48
44
109
58
199

9.3 VR400/VR800 + VMU

Gas valve VR400/VR800 with installed venturi mixing unit VMU.



VMU Type	A	B	L1	L2	Ø D
VMU150–VMU400	105	74	341	262	Ø 159
VMU500–VMU680	118	100	405	287	Ø 236

10 Converting units

See www.adlatus.org

11 Maintenance

It is recommended to check the settings annually and re-adjust them if necessary.

For more information

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

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Honeywell Thermal Solutions (HTS)
2101 CityWest Blvd
Houston, TX 77042
United States
ThermalSolutions.honeywell.com

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