

# VR8104, VR8204, and VR8304 Intermittent Pilot Combination Gas Controls

## INSTALLATION INSTRUCTIONS

### APPLICATION

These intermittent pilot gas controls are used in gas-fired appliances with up to 415 ft<sup>3</sup>/hr capacity at 1 in. wc pressure drop (8.5 m<sup>3</sup>/hr at 0.25 kPa) on natural gas. They include safety shutoff, a manual valve, two automatic operators, a pressure regulator and a pilot adjustment.

These gas controls are available in a range of valve capacities, see Table 1. (Table 2 provides gas capacity conversion factors.) The suffix letter indicates temperature range and regulator type, see Table 3.

For CE-approved models, the relevant sections of these instructions and Table 4 are applicable.

Table 1. Valve Capacity<sup>a</sup>

Model	Size Inlet-Outlet (in.)	AGA Certified Capacity for Natural Gas		AGA Certified Minimum Regulation for Natural Gas		AGA Certified Maximum Regulation for Natural Gas	
		ft <sup>3</sup> /hr	m <sup>3</sup> /hr	ft <sup>3</sup> /hr	m <sup>3</sup> /hr	ft <sup>3</sup> /hr	m <sup>3</sup> /hr
VR8104	1/2 x 1/2	85	2.3	10 <sup>d</sup>	0.4	120	3.4
VR8204		150	4.2	20 <sup>e</sup>	0.6	200	5.7
VR8304 <sup>b,c</sup>		240	6.8	30 <sup>f</sup>	0.8	340	9.6
VR8304 <sup>b,c</sup>	1/2 x 3/4	270	7.6			370	1.05
VR8304 <sup>b,c</sup>	3/4 x 3/4	300	8.5			415	11.8

<sup>a</sup> Capacity based on 1000 Btu/ft<sup>3</sup>, 0.64 sp gr natural gas at 1 in. wc pressure drop (37.3 MJ/m<sup>3</sup>, 0.64 sp gr natural gas at 0.25 kPa pressure drop).

<sup>b</sup> Capacity is reduced by 5 percent when using an outlet screen.

<sup>c</sup> Valves are guaranteed at only 77 percent of the rating.

<sup>d</sup> Minimum regulation for LP gas is 15,000 Btuh.

<sup>e</sup> Minimum regulation for LP gas is 40,000 Btuh.

<sup>f</sup> Minimum regulation for LP gas is 50,000 Btuh.

Table 2. Gas Capacity Conversion Factor.

Gas	Specific Gravity	Multiply Listed Capacity By
Manufactured	0.60	0.516
Mixed	0.70	0.765
Propane	1.53	1.62

### CE-Only Models

These gas controls are used in appliances up to 121kW or 415 KBTUH on natural gas and approved on EN126, which consists of one automatic safety shutoff valve, Class B or C, one servo-operated shutoff valve, Class D, pressure governor, Class C, manually-operated valve, with or without pilot outlet. Only the A, H and U models are available CE-approved.

Table 4 shows the additional specifications for the CE-only models.



**Table 3. Model Number Suffix Letter Designation.**

Model No. Suffix Letter	Ambient Temperature Range	Pressure Regulator Type
A	0°F to 175°F (-18°C to +79°C)	Standard
C		Step-opening
H		Slow-opening
U <sup>a</sup>		Nonregulating (on-off)
K	-40°F to +175°F (-40°C to +79°C)	Slow-opening
M		Standard
P		Step-opening
Q		Two-Stage
R		Convertible

<sup>a</sup> Available only on CE VR8204 models.

**Table 4. VR8204A,H/VR8304A,H,U CE.**

Specifications	VR8204A,H (CE Model Only)	VR8304A,H (CE Model Only)
Main valve connections (If NPT, the valves must be serviced by the appliance manufacturer.	1/2 in. ISO, 7/1 internal thread (BSP, NPT.	1/2 in., 3/4 in. ISO, 7/1 internal thread (BSP, PL) or 1/2 in., 3/4 in. NPT.
Valve Classification	B + D	C + D
Capacity (1kW = 3.41BTUH)	29 kW at 2.5 mBar 43 kW at 5.0 mBar	for 1/2 in., 70 kW at 2.5 mBar 99 kW at 5.0 mBar. For 3/4 in., 87 kW at 2.5 mBar: 121 kW at 5.0 mBar.
Supply Voltage	24 Vac, 50/60 Hz.	
Flanges	None.	
Closing time	Less than 1 second.	
Opening Time	Standard opening (A): less than 2 seconds. Slow opening (H): less than 6 seconds. Special fast opening (U): less than 1 second.	
Suited for gas families	2H, 2L, and 3.	
Outlet Press Range (Except unregulated models)	Natural gas: 7.5 to 12.5 mBar (3 to 5 in. wc). Natural gas: 12.5 to 17.5 mBar (5 to 7 in. wc). LP gas: 20 to 30 mBar (8 to 12 in. wc).	
Manually operated valve operations	10,000 cycles for manual valves; 200,000 cycles for automatic valves.	
Ambient temperature range	-20°C to +70°C (-4°F to +158°F).	
Maximum inlet pressure	60 mBar (24 in. wc).	
Screen	Fine mesh on inlet.	
Pilot connection <sup>a</sup>	M11 x 1 for 6 mm outside diameter tube.	
Ground terminal <sup>a</sup>	6.3 mm.	
Pressure taps <sup>a</sup>	9 mm OD for both inlet and outlet.	
Approval	CE-0063AU1215.	

a The VR8204U uses standard U.S. construction. Inlet and outlet ports are 1/2 in. NPT, and the pilot connection is the standard 7/16 in. thread for a 1/4 in. pilot tube. European-style inlet and outlet pressure taps are available.

**⚠ CAUTION**

**Equipment Damage Hazard.**  
**Improper use can damage equipment.**

Read the instructions before use. This control must be installed in accordance with the rules in force.

## SPECIFICATIONS

**Body Pattern:** Straight through; see Table 1 for inlet and outlet size.

**Electrical Ratings:**

Voltage and Frequency: 24 Vac, 60 Hz.  
Current Draw: 0.5A with both operators energized.

**Capacity:** See Table 1.

**Conversion:** Use conversion factors in Table 2 to convert capacities for other gases.

**Regulation Range:** See Table 1.

**Natural-LP Gas Conversion Kits:** See Table 5.

**Table 5. Natural-LP Gas Conversion Kits.**

Model No. Suffix Letter	Kit to Convert Natural Gas to LP	Kit to Convert LP to Natural Gas
H, K, M	393691	394588
P	Not field convertible.	Not field convertible.
Q	396021	396025
R	Not required, convertible valve.	Not required, convertible valve.

**Pipe Adapters:**

Angle and straight adapters available for 3/8-, 1/2- and 3/4-in. pipe. See Table 6. Flange kits include one flange with attached O-ring, four mounting screws, a 9/64 in. hex wrench and instructions.

**Approvals:**

American Gas Association Design Certificate: L2025006.  
Canadian Gas Association Design Certificate: L2025006.  
Australian Gas Association Design Certificate: 4214.  
Approved for Delta C applications.  
European Community (CE) Certificate: Pending.

## PLANNING THE INSTALLATION

### WARNING

**Fire or Explosion Hazard.**  
Can cause property damage, severe injury, or death.

- Follow these warnings exactly:
1. Plan the installation as outlined below.
  2. Plan for frequent maintenance as described in the Maintenance section.

**Table 6. Flange Adapter Part Numbers.**

Inlet/Outlet Pipe Size (in. NPT)	Flange Type	Part Number <sup>a,b</sup>	
		Without Hex Wrench	With Hex Wrench
3/8	Straight	393690-1	393690-11
3/8	Elbow	393690-2	393690-12
1/2	Straight	393690-6	393690-16
1/2	Elbow	393690-3	393690-13
3/4	Straight	393690-4	393690-14
3/4	Elbow	393690-5	393690-15

<sup>a</sup> Flange kits include one flange, one O-ring and four mounting screws.

<sup>b</sup> Do not use flanges on control models with 3/4 in. inlet and 3/4 in. outlet. On models with 1/2 in. inlet and 3/4 in. outlet, use flanges only on the 1/2 in. inlet side.

Heavy demands are made on the controls when intermittent pilot systems are used on central heating equipment in barns, greenhouses, and commercial properties and on heating appliances such as commercial cookers, agricultural equipment, industrial heating equipment and pool heaters.

Special steps may be required to prevent nuisance shutdowns and control failure due to frequent cycling, severe environmental conditions related to moisture, corrosive chemicals, dust or excessive heat. These applications require Honeywell Home and Building Control Engineering review; contact your Honeywell Sales Representative for assistance.

Review the following conditions that can apply to your specific installation and follow the precautions suggested.

### Frequent Cycling

This control is designed for use on appliances that typically cycle three to four times an hour only during the heating season. In year-around applications with greater cycling rates, the control can wear out more quickly. Perform a monthly checkout.

### Water or Steam Cleaning

If a control gets wet, replace it. If the appliance is likely to be cleaned with water or steam, protect (cover) the control and wiring from water or steam flow. Mount the control high enough above the bottom of the cabinet so it does not get wet during normal cleaning procedures.

### High Humidity or Dripping Water

Dripping water can cause the control to fail. Never install an appliance where water can drip on the control. In addition, high ambient humidity can cause the control to corrode and fail. If the appliance is in a humid atmosphere, make sure air circulation around the control is adequate to prevent condensation. Also, regularly check out the system.