

45.900.450-010/-020/-030

VENTURI MEDIUM SIZED (VMS)

PRODUCT HANDBOOK



APPLICATION

The venturi manifold combined with the VR46..V(B)/VR86..V(B) or VR4..V/VR8..V gas controls and a specific DC-fan has been specially developed for modulating fully premix appliances.

Note:

The information of this handbook supplements those of the Product Handbook:

- EN2R-9033 (for use with VR4..V(B)/VR8..V(B) series gas valve)
- EN2R-9003 (for use with VR46..V/VR86..V series gas valve)
- EN2R-9017 of the V5306V integrated 1:1 gas/air regulator

The information of this handbook specifies the today supplementary features and data but also limitations on models and specifications of the VR46..V(B)/VR86..V(B) or VR4..V/VR8..V Control with the 45.900.450- venturi manifold.

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DESCRIPTION

The venturi manifold is a gas/air mixing unit that allows modulation of a premix burner with constant gas/air ratio down to 20% of maximum load. It is to be used in combination with a fan and a Honeywell 1:1 regulating gas valve.

The modulation is accomplished by changing the fan speed.

The outlet pressure of the gas valve is regulated to ambient pressure by the gas valve.

The venturi generates a negative pressure against ambient by which the gas is drawn through the gas valve outlet.

The venturi manifold system is designed to be fitted in up to 6 - 9 positions on a standard DC fan, using the supplied screws.

(O-ring seal should come with fan_)

The gas valve can be fitted directly on the manifold assembly in horizontal and vertical position with the outlet.

FEATURES

General

- Wide modulation band (1:5 ratio) or lower fan speed at normal modulation band (1:3 ratio) are possible.
- Capacity range 85..165kW
- Flexible mounting positions of gas control to venturi housing and venturi housing to fan.
- Special orifices available for different gas types
- Gas valves from VR46../VR86.. -series available with built in throttle function
- Gas valve VR4../VR8.. series are standard equipped with throttle function
- Special mounting connection for silencers ducts

SPECIFICATIONS

Table 1. Venturi Model:

code	use with gas valve	use with fan
010	VR46..V(VB)/VR86..V(B)	G1G144 or RG148 or equivalent
020	VR46..V(B)/VR86..V(B) or VR4..V/VR8..V	G1G144 or RG148 or equivalent
030	VR46..V(B)/VR86..V(B) or VR4..V/VR8..V	G1G170 or RG175

Dimensions

Code 010 : See page 5

Code 020, 030 : See page 6

Ambient temperature

0 ... 70°C

Table 2. Connection (supplied parts)

venturi model	for mounting on gas valve	for mounting on fan
010	O-Ring 4 x M5 screws	3 x M6 screws included. O-Ring delivered with fan!
020	for VR46..V(B)/VR86..V(B) : O-Ring + 4x M5 screws	3 x M6 screws included. O-Ring delivered with fan!
	for VR4..V/VR8..V : Special gasket + 4 x M5 screws	
030	for VR46..V(B)/VR86..V(B) : O-Ring + 4x M5 screws	6 x M8 screws included. O-Ring delivered with fan !
	for VR4..V/VR8..V : Special gasket + 4 x M5 screws	

Minimum load

The minimum load for which the unit can be used is 20% of the reference load, which equals a minimum pressure differential of 50 Pa of the 1:1 gas control.

5% with internal injection orifice.

Material

Housing: ZnAl4Cu1 (Z410, Zamac Z5)
 Venturi: statically dissipative POM
 Seals: rubber (NBR)
 Insert*: polypropylene (PP)
 *) optional, see accessories for details

Pressure drop

200 Pa (ΔP) maximum at 85kW (gross) load.

For detailed information see fig 1

800 Pa (ΔP) maximum at 165kW (gross) load.

For detailed information see fig 2

(Overall pressure drop of the venturi)

Venturi pressure

1250 Pa minimum at reference load. (The venturi pressure is the determination of the effective gas pressure)

Tracking inaccuracy

The tracking inaccuracy is the deviation from a constant gas/air ratio over the modulation band 20 ... 100%

Typical: 10% without internal injection orifice.

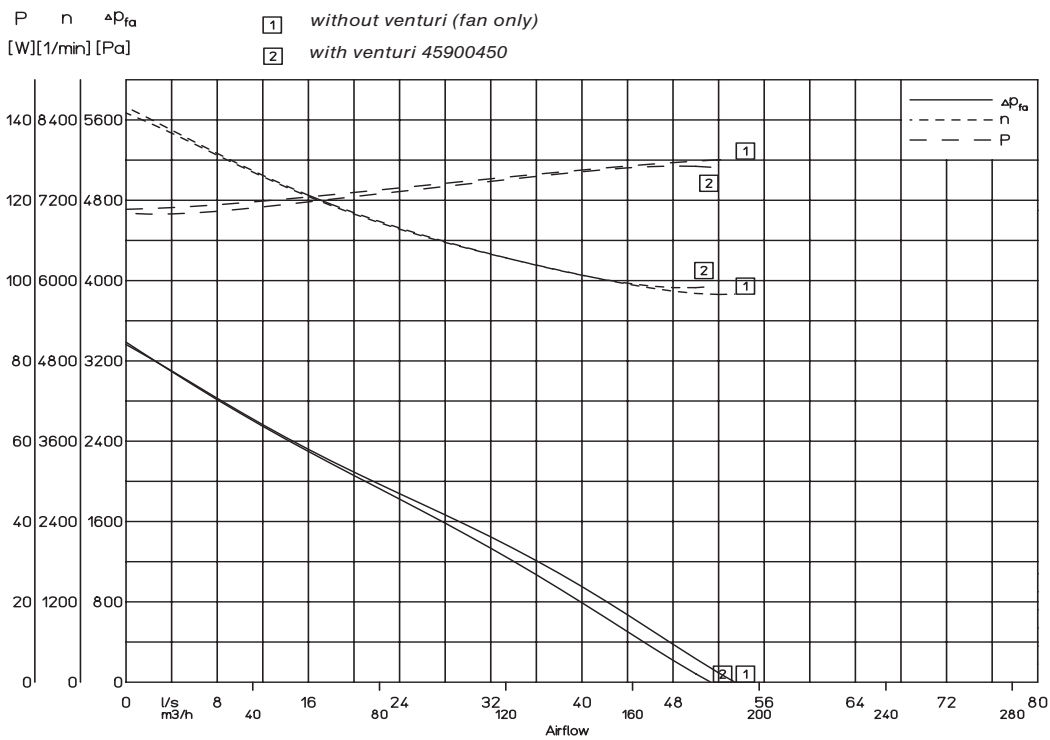


Fig. 1. Performance characteristic with RG148

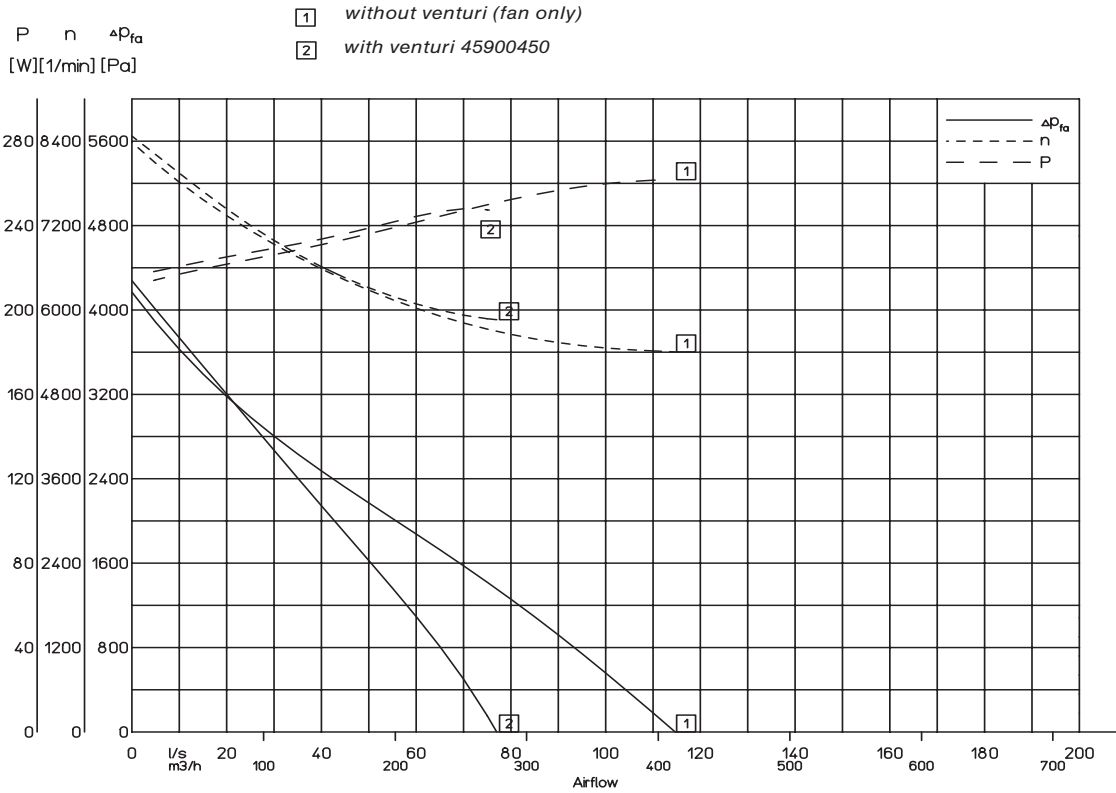


Fig. 2. Performance characteristic with RG175

INSTALLATION

Take care that installer is a trained and experienced service person.

Turn off gas supply before starting installation.

Mounting

- Turn the gas valve throttle open 50% (if applicable)
- Place gas valve on manifold, using the right connection set. (see Table 2)
- Place O-ring on fan plate
- Mount the manifold with gas valve on the fan plate, using the screws included.
- **Check if all parts are fixed well**
- Mount the fan according to the fan manufacturer's instructions.
- Apply gas and electrical connections to the gas valve according to the relevant gas valve Instruction sheet.

ADJUSTMENTS AND CHECKOUT

Adjustment

- Check gas input to the appliance using a pressure gauge (resolution of 1 Pa (0.01 mbar) or better) connected to the outlet pressure tap.
- Put CO₂ meter probe (inaccuracy < 0.1%) into exhaust gas outlet.

❶ Start appliance and run appliance at maximum load.

❷ Observe CO₂ meter.

❸ **In case of throttle application:**

Turn the throttle until the CO₂ percentage reached the nominal value.

If appliance does not start, turn the throttle a few turns either way, and repeat start procedure.

In case of fixed orifice application:

If the CO₂ percentage is too low, apply an injector with larger diameter.

If the CO₂ percentage is too high, apply an injector with smaller diameter

If appliance does not start, apply an injector with significant larger diameter and repeat starting procedure.

❹ Keep appliance running until completely stabilized, then check the CO₂ percentage.

❺ Set appliance to minimum load.

❻ Check offset pressure according to the manufacturer's instructions and adjust (if necessary) the CO₂ percentage using the offset screw on the gas valve.

❼ Check again the CO₂ percentages at maximum and minimum load, and adjust if necessary.

After adjustments are made, stop appliance, disconnect pressure gauge and CO₂ meter and tighten outlet pressure tap.

Final checkout of the installation

After any adjustment, set appliance in operation. Observe several complete cycles to ensure that all burner components function correctly.

STANDARDS AND APPROVALS

The venturi manifold is not certified separately.
It will be certified as part of the appliance.

APPLICATION NOTES

- Make sure the venturi inlet is not obstructed. This will influence the air factor. If the distance from another boiler component to the venturi inlet is more than 50 mm, air factor and boiler load are not influenced.
- There is a strong interaction between the venturi, gas control and burner. For this reason it is important to fit the characteristics of these components to each other. If not matched well, for instance acoustic problems could be generated.

It is recommended to test the appliance at both cold start and hot start conditions with high and low caloric test gases

ORDERING INFORMATION

When ordering specify:

O.S. number:

O.S. number	Reference load	Connection Gas valve	Connection fan
45.900.450-010	--	VR46..V(B)/VR86..V(B)	G1G144 / RG148
45.900-450-020	--	VR46..V(B)/VR86..V(B) VR4..V/VR8..V	G1G144 / RG148
45.900-450-030	--	VR46..V/VR86..V VR4..V/VR8..V	G1G170 / RG175

- The fan could be obtained from the fan manufacturer:
G1G144 and G1G170 - EBM
RG148 and RG175 - MVC

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

ACCESSORIES

Orifices for venturi on request

To be ordered separately.

Insert for LPG appliances on request.

Insert can not be ordered separately.

Honeywell

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