

### VENTURI MEDIUM SIZED WITH OR WITHOUT ADJUSTABLE THROTTLE

#### INSTRUCTION SHEET



### SPECIFICATIONS

Table 1. Venturi Model:

code	use with gas valve	use with fan
010	VR46..V(VB)/VR86..V(B) VK44..V-VK84..V	EBM NRG 137 or FIME PX148 or equivalent
020	VR46..V(VB)/VR86..V(B) VK44..V-VK84..V	EBM NRG 137 or FIME PX148 or equivalent
030	VR46..V(VB)/VR86..V(B) VK44..V-VK84..V	EBM G1G170 or RG175 or equivalent

**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	O-Ring 4x M5 screws	3 x M6 screws included. O-Ring delivered with fan!
030	O-Ring 4x M5 screws	6 x M8 screws included. O-Ring delivered with fan!

#### Minimum load

The minimum load is determined by the minimum allowable pressure differential of the 1:1 gas control, which is recommended to be > 40 Pa. In case the venturi is used without inlet suction pipe, this is equal to 20% of reference load.

#### Material

Housing: ZnAl4Cu1 (Z410, Zamac Z5)  
Venturi: statically dissipative POM  
Seals: rubber (NBR)  
Insert: polypropylene (PP)  
Throttle: POM, ABS, rubber (NBR), stainless steel

### APPLICATION

The venturi manifold combined with the VR46..V(B)/VR86..V(B) or VK44..V/VK84..V gas controls and a specific DC- fan has been specially developed for modulating fully premix appliances.

### DESCRIPTION

The venturi manifold is a gas/air mixing unit that allows modulation of a premix burner with constant gas/air. It is to be used in combination with a fan and a Resideo 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 9 positions on a standard DC fans, 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.

Note: for more information see the Resideo Product Handbook EN2R9069

### Pressure drop

200 Pa dP maximum at 85kW (gross) load.  
800 Pa dP maximum at 165kW (gross) load.  
(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)

## INSTALLATION

*Take care that installer is a trained 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.
1. Start appliance and run appliance at maximum load.
  2. Observe CO2 meter.
  3. 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.

### 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.  
5% with internal injection orifice.

4. 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.
5. Keep appliance running until completely stabilized, then check the CO2 percentage.
6. Set appliance to minimum load.
7. Check offset pressure according to the manufacturer's instructions and adjust (if necessary) the CO2 percentage using the offset screw on the gas valve.
8. 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.

## ACCESSORIES

Orifices for venturi on request

To be ordered separately.

Insert for LPG appliances on request.

Insert cannot be ordered separately.

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