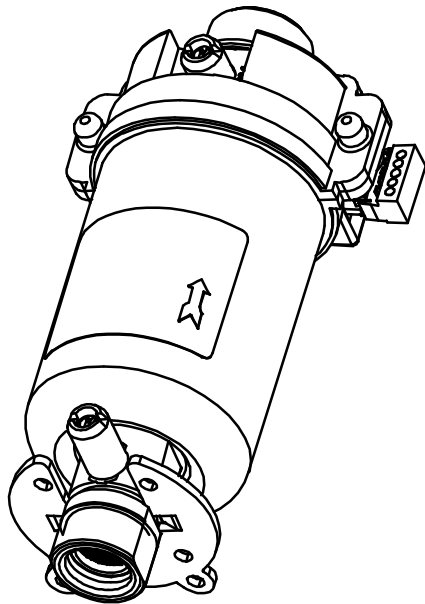
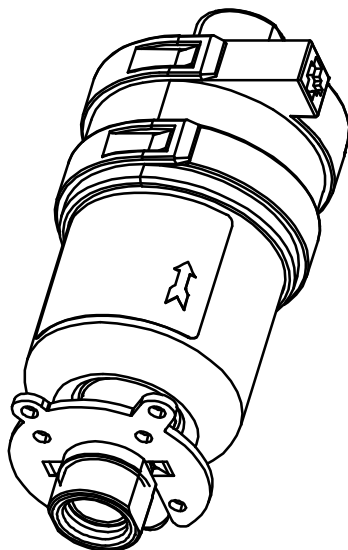


**FLOW ADJUSTMENT AND
SAFETY SHUT-OFF
MODULATING SOLENOID
VALVE**

**VCM01*S, VCM02*S
VCM03*S, VCM04*S series**



**VCM01, VCM02
VCM03, VCM04 series**



INTRODUCTION

The Brahma VCM0X series gas solenoid valve has been designed with the purpose of simplifying as far as possible both its installation and the min. and max. gas flow rate adjustment in the boiler. Compared to other valves, in fact, it does not need any mechanical adjustment, as it receives all valve control parameters from the Brahma electronic board supplied with the valve itself (software parameters are pre-loaded in the board microcontroller memory in order to already have correct valve settings at the first boiler start-up.

Note: *Parameter values are decided by the boiler manufacturer during product development).*

GENERAL DESCRIPTION

Another distinguishing feature of the VCM0X solenoid valve is the simplicity of construction of its main parts: mechanical and electronic:

• **DESCRIPTION OF THE MECHANICAL PART**

The solenoid valve consists of two shut-off means actuated by one solenoid. The first one is a class “J” quick opening shut-off, while the second one is a class “B” modulating shut-off. The valve inlet is protected by a 0.015 mm mesh filter in compliance with EN161.

The system is patented in:

America (registration no. US 6725877)

Europe (registration no. EP 1186816)

Italy (registration no. IT RM000484)

The solenoid valves of this series are approved according to the European Gas Appliance Directive 90/396/EEC and the following amendment 93/68/EEC (CE PIN 0063BQ1976), as well as to the European standard EN161.

• **DESCRIPTION OF THE ELECTRONIC PART**

In both versions (VCM0X*S and VCM0X) power supply is provided by a PWM signal control.

Only in the version with pressure sensor (VCM0X*S) an electronic circuit is mounted in the two plastic casings; this circuit houses the pressure sensor, which provides the microcontroller of the adjustment board with the gas pressure value.

TECHNICAL FEATURES

- Class:	J+B
- Group:	1
- Type of gas:	1 st family, 2 nd family, 3 rd family
- Supply voltage:	24 Vdc 110 Vdc 230 Vdc
- Max. consumption:	350 mA (24 Vdc) 55 mA (110 Vdc) 26 mA (230 Vdc)
- Max. power:	32Kw (VCM01)
- Min. adjustable power:	>= 1Kw (VCM04)
- Flow rate:	(ΔP=2.5mbar) (Dr 0.5545kg/dm3)
	2.30m3/h (VCM01) 1.50m3/h (VCM02) 0.70m3/h (VCM03) 0.35m3/h (VCM04)
- Pressure range:	0 ÷60 mbar
- Operating temperature:	-10 °C / +60 °C
- Shut-off time:	≤1 s
- Mounting position:	vertical with flow direction from bottom to top
- Connections:	UNI ISO 228/1 G1/2
- Max. tightening torque:	50 Nm
- IP rating:	IP40
- Filter:	inlet, in compliance with EN161
- Electrical supply:	see terminal board wiring diagram
- Weight:	700 g approx.

INSTALLATION

- Respect the applicable national and European standards (e.g. EN 60335-1) regarding electrical safety.
- Assemble the valve to the installation so that the arrow on the valve body has the same direction as the fuel flow.
- Make sure that the max. fuel input pressure never exceeds the value appearing on the label.
- Assemble inlet and outlet threaded parts by means of wrenches only, using them on the facets of inlet and outlet threads.
- In closed-chamber boiler applications, the compensation outlet must be directly connected to the combustion chamber by means of a silicone pipe, taking care to avoid any twists that may generate condensate stagnation.
- For the connection of the valves use the following connectors:
 VCM0X*S Lumberg 5-pin connector
 type "3512 05 K19"

 VCM0X Molex 43025 series 2-pin connector
 Molex 43030 series crimping terminal

VCM0X VALVE VERSIONS

VCM0X * Y Z

Type _____

Type	Description
VCM01	Ev. VCM01 (Qmax. 32Kw)
VCM02	Ev. VCM02 (Qmax. 15Kw)
VCM03	Ev. VCM03 (Qmax. 7Kw)
VCM04	Ev. VCM04 (Qmax. 4Kw)

Pressure sensor _____

Type	Description
No letter	NO
S	YES

Supply voltage _____

Type	Description
24VDC	24 Vdc VCM0X*S, VCM0X
110VDC	110 Vdc for VCM0X only
230VDC	230 Vdc for VCM0X only

OPERATION OF THE ELECTRONIC CONTROL SYSTEM WITH PRESSURE SENSOR

The VCM0X*S series solenoid valve is equipped with a pressure sensor and operates as follows:

1. A (temperature compensated) pressure sensor sends the pressure value measured downstream of the valve to the electronic control board;
2. The electronic board processes the signal received and, through a software algorithm, adjusts the current to the valve in order to reach the pressure required for the system to provide the user with the requested temperature.

This system is therefore able to compensate any unwanted pressure variations in the gas supply network.

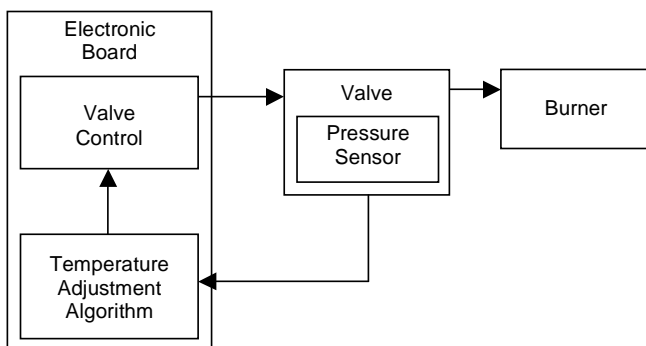
Besides, the electronic board limits the min. and max. pressure values in order to ensure the declared min. and max. power.

OPERATION OF THE ELECTRONIC CONTROL SYSTEM WITHOUT PRESSURE SENSOR

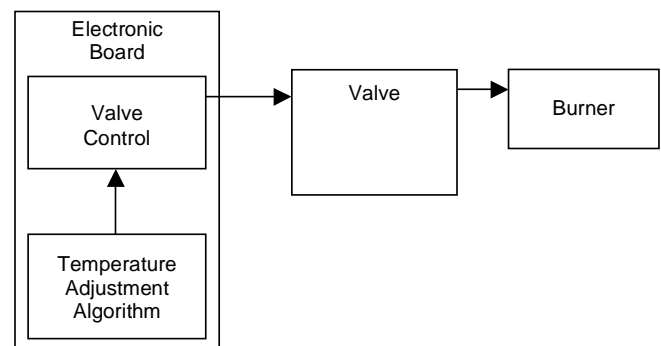
The VCM0X series is not equipped with pressure sensor, but this does not jeopardize its very high performance. In fact, through a software algorithm available in the Brahma electronic board supplied with the valve, it is possible to fix the min. pressure (min. power) to give to the nozzles and modulate the solenoid valve in order to get the highest comfort from the boiler. The lack of the sensor, however, may cause flow rate fluctuations up to $\pm 10\%$ max. of the stabilized flow rate value on pressure variation.

OPERATION BLOCK DIAGRAM

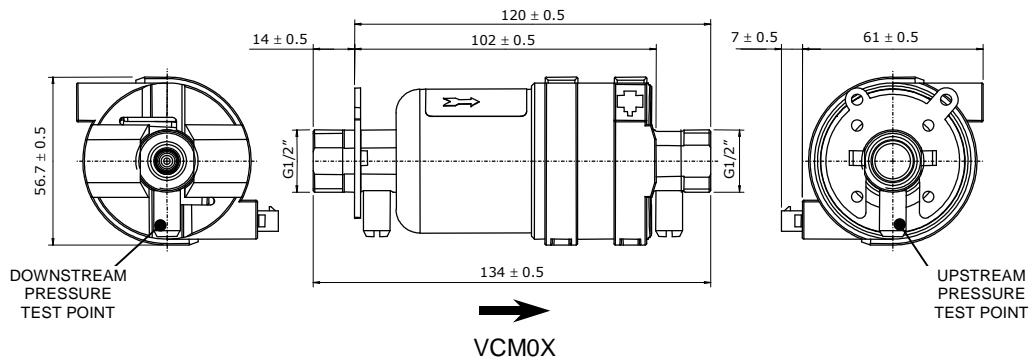
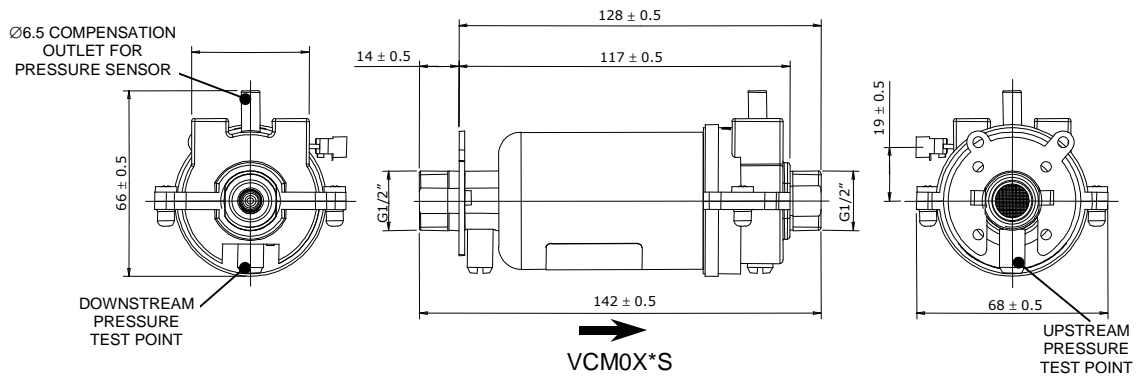
VCM0X versions **with** pressure sensor



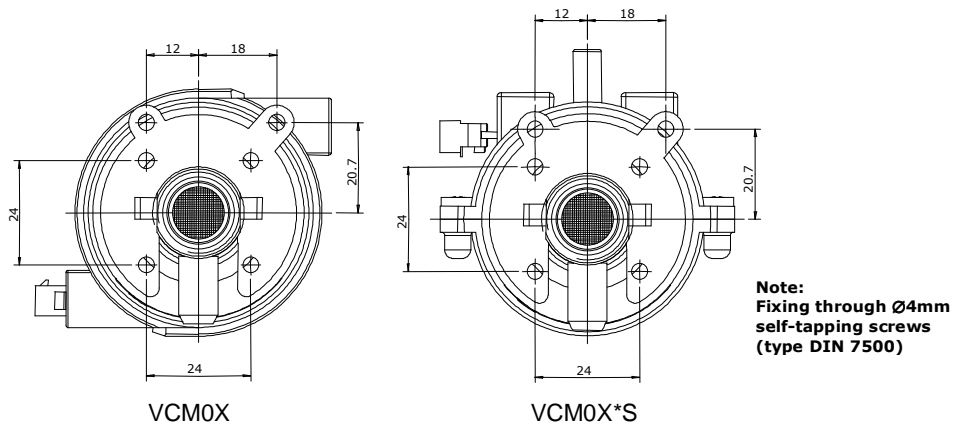
VCM0X versions **without** pressure sensor



OVERALL DIMENSIONS



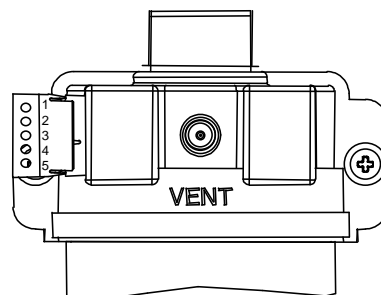
FIXING



TERMINAL BOARD WIRING DIAGRAM

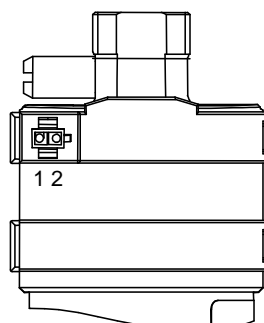
- VCM0X connections for versions **with** pressure sensor (VCM0X*S)

- | | | |
|-----|--------------|-------------------------|
| 1 - | Vout | (Sensor output voltage) |
| 2 - | Vcc + 5 volt | (Sensor supply voltage) |
| 3 - | GND | (Ground) |
| 4 - | - EVG | |
| 5 - | + EVG | |



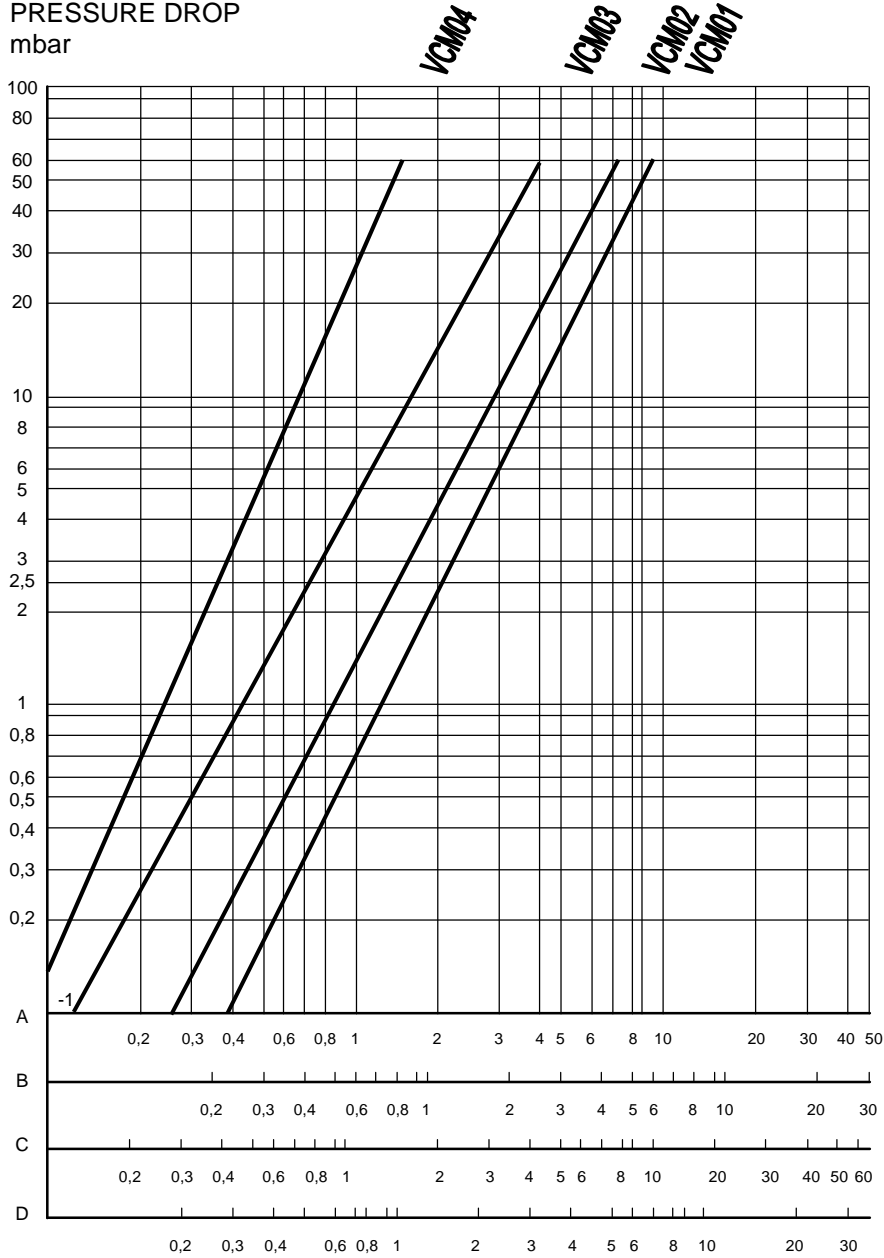
- VCM0X connections for versions **without** pressure sensor (VCM0X)

- | | |
|-----|-------|
| 1 - | - EVG |
| 2 - | + EVG |



FLOW RATE DIAGRAM

PRESSURE DROP
mbar



FLOW RATE
m³/h

- A : Standard flow rate m³/h NATURAL GAS relative density 0.554
- B : Standard flow rate m³/h LPG relative density 1.54
- C : Standard flow rate m³/h TOWN GAS relative density 0.411
- D : Standard flow rate m³/h AIR relative density 1