VACCUPERM

Vacuum chlorine gas dosing systems

Vaccuperm, precise
and safe dosing.

INTRODUCTION

Vaccuperm provides a proven and reliable technology of vacuum gas dosing.

Handling, transport and storage of chlorine for water disinfection is a challenge to systems engineering. This is the reason why the vacuum principle has been used in dosing systems for a long time already. The pressure of the chlorine gas is reduced to the vacuum. This method successfully avoids chlorine gas leakage. In the event of a pipe breakage, no chlorine gas can escape, only ambient air is drawn in.

Principal components

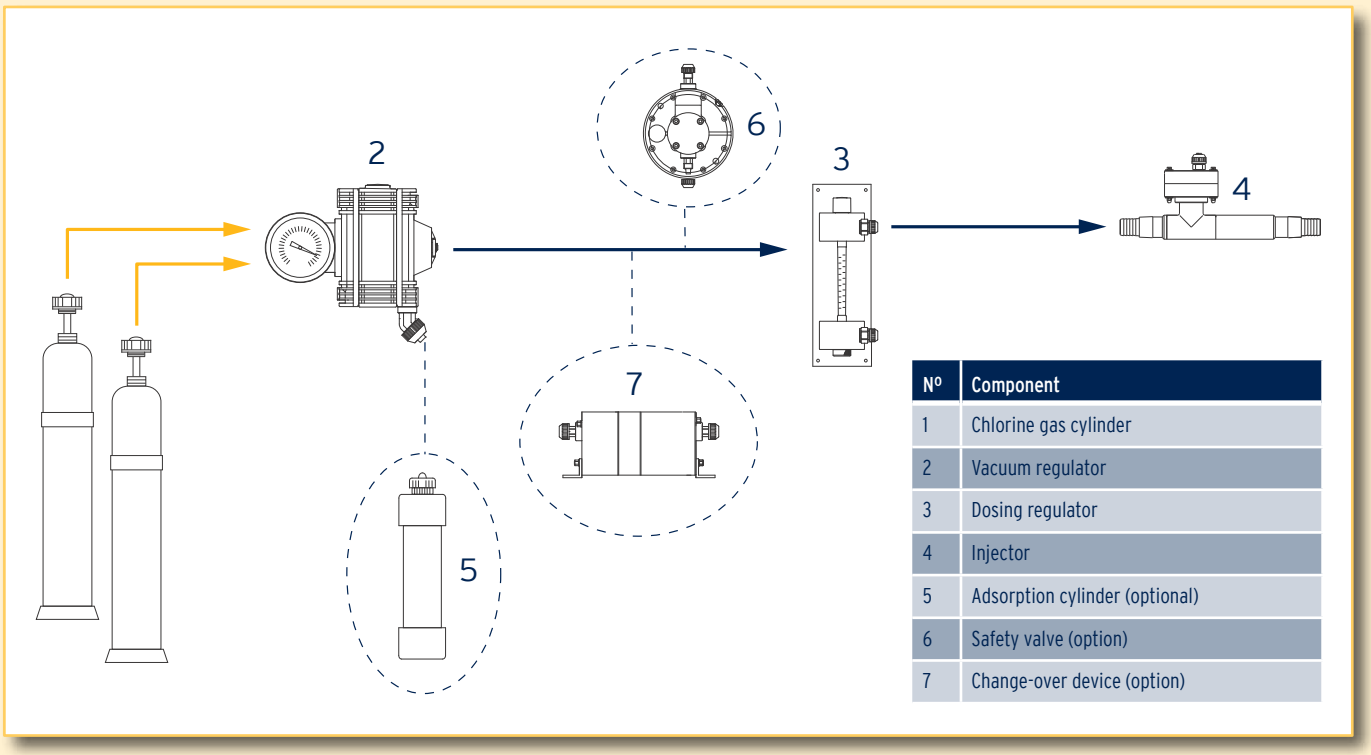
Vacuum chlorine gas dosing systems are composed of two principal components: vacuum regulator and dosing regulator.

The vacuum regulator is a pressure reducing valve that reduces the overpressure from the chlorine tank side to the negative pressure on the vacuum side.

The valve opens when a sufficient vacuum is present on the outlet side. Vacuum regulators with pressure gauge and liquid trap are available for more safety.

The second system component is rotameter that regulated the chlorine gas volume flow. This can be effected manually or automatically.

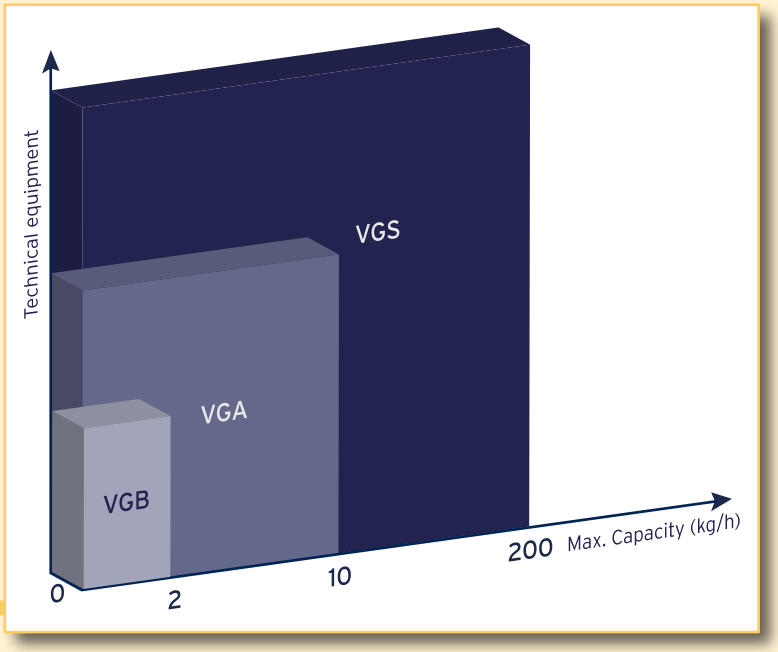
Principle of vacuum chlorine gas dosing systems



Nº	Component
1	Chlorine gas cylinder
2	Vacuum regulator
3	Dosing regulator
4	Injector
5	Adsorption cylinder (optional)
6	Safety valve (option)
7	Change-over device (option)

VGB series combines a vacuum regulator and a dosing in a compact unit. It corresponds a independent model of vacuum regulators of up to 10 kg/h.

VGS series includes regulators and dosing models of high capacity (up to 200 kg/h.



Vaccuperm provides:

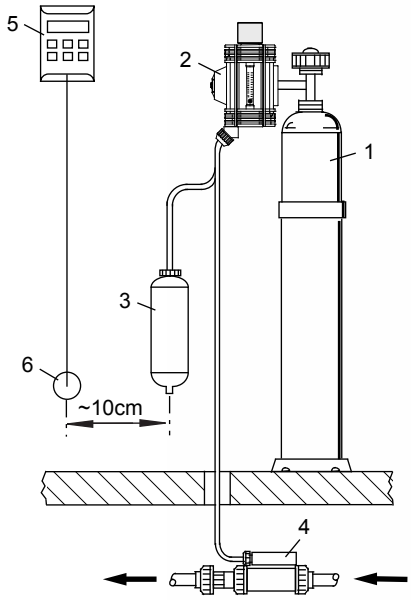
- Safe and easy use
- Precise regulation and dosing of gas (chlorine / ammonia)
- All the parts in contact with the media are made of corrosion-proof materials
- Large variety of models and extensive possibilities of combination
- Easy installation
- Low operating costs
- Approved disinfection method complying with most drinking water regulations

VGB-103

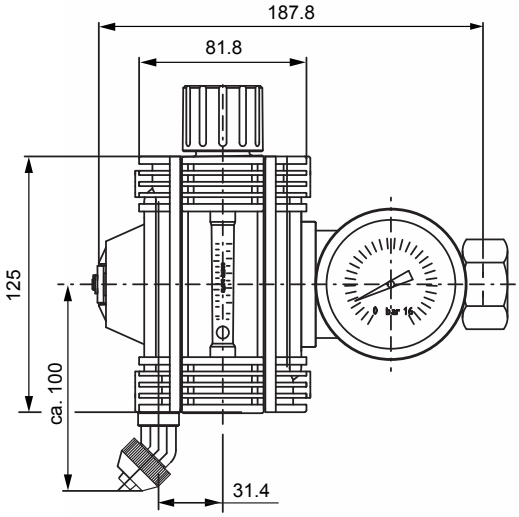
Compact dosing unit

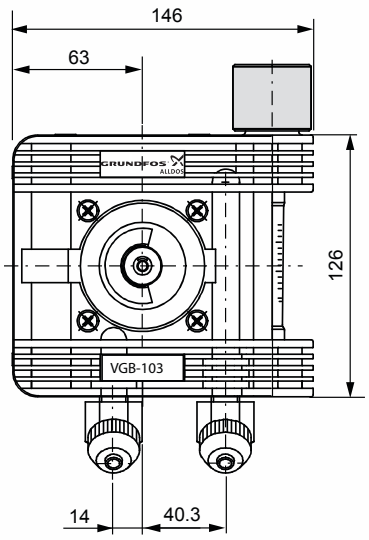
Vacuum regulator and dosing regulator in a single unit for direct mounting on a chlorine gas cylinder. Available up to a maximum volume dosage of 2000g/h.

Typical installation scheme



Dimensional scheme





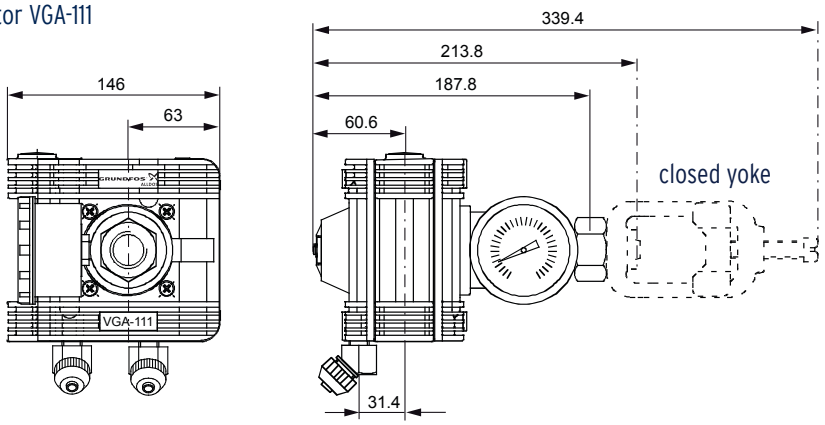
VGA-111

Vacuum regulator up to 4000 g/h

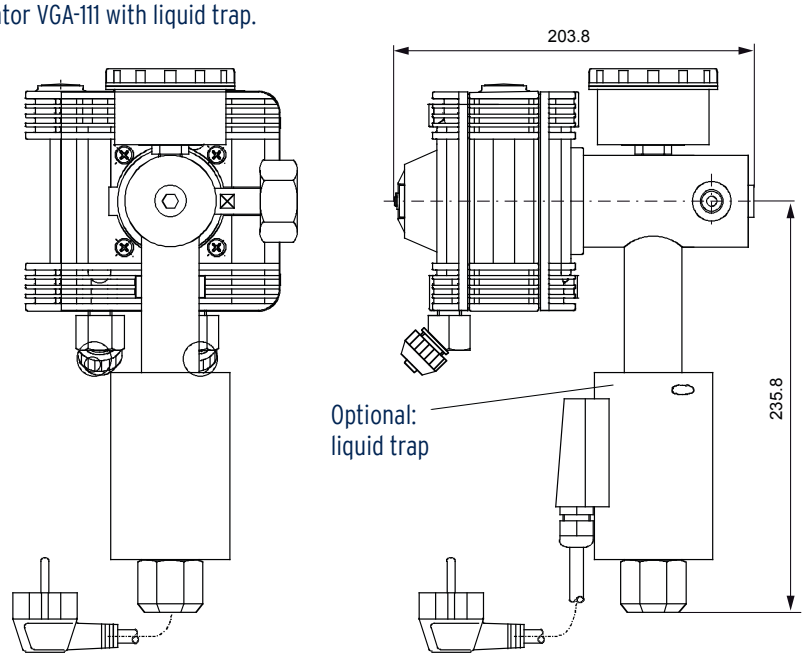
Vacuum controller that incorporates an inlet valve and a gas filter, as well as a safety valve against overpressures. It can be installed on a chlorine cylinder or a header line. It exists the option to include a pressure gauge with minimum pressure contact. For those cases which the installation has to be done on a collector, we offer a vacuum regulator that incorporates a splitter and a liquid trap.
Capacity range up to 4000 g/h.

Dimensional scheme

Vacuum regulator VGA-111



Vacuum regulator VGA-111 with liquid trap.

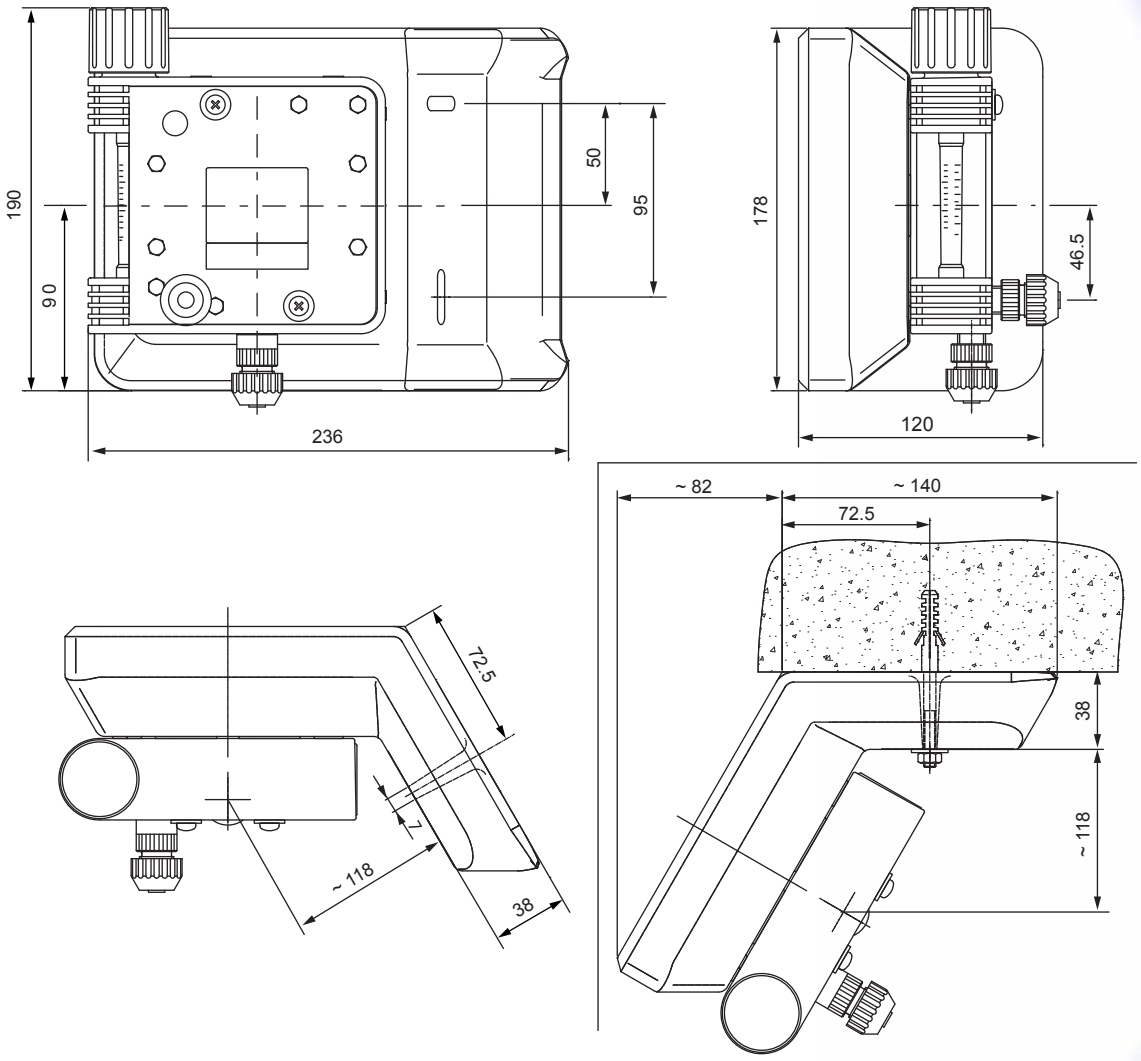


VGA-113

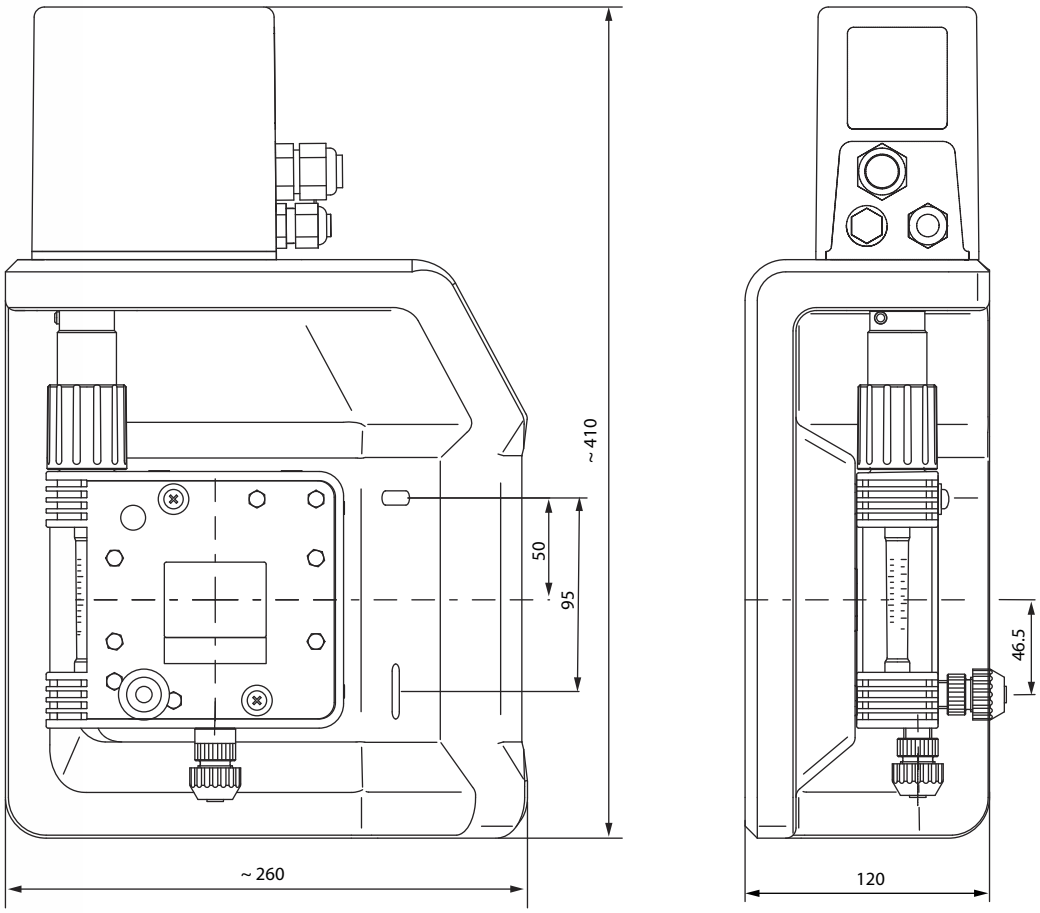
Vacuum regulator up to 4000 g/h

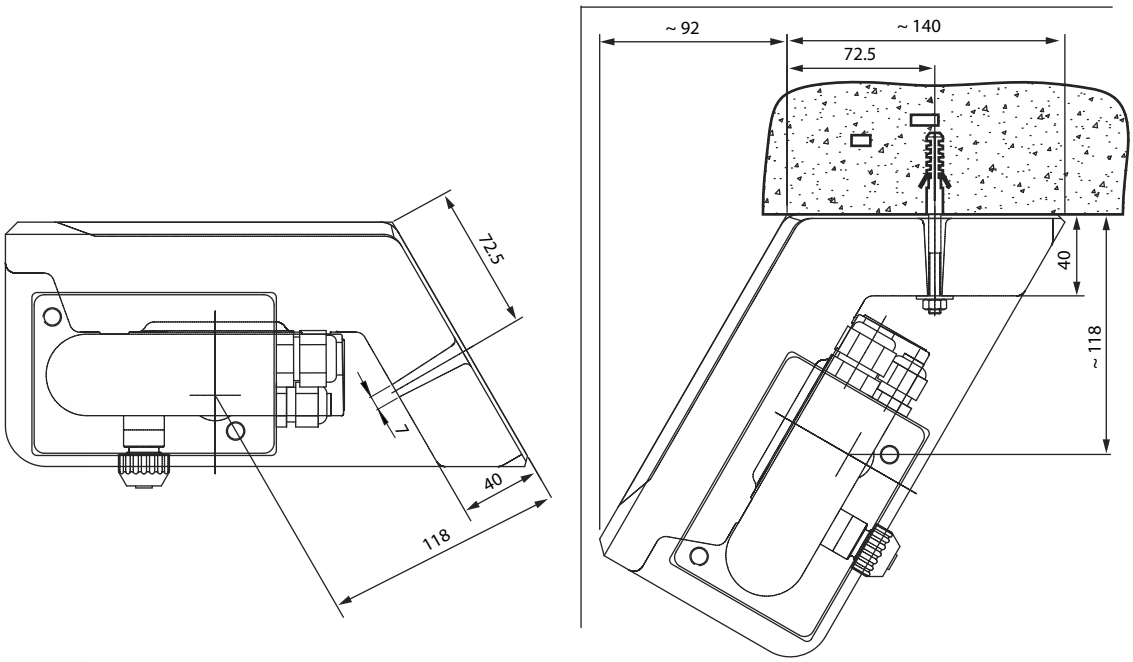
Gas dispenser for assembly to wall, incorporates a measurement device and a valve of gas flow adjustment. The dosage unit can be supplied with a servomotor for an automatic dosage adjustment. The servomotor has two options: potentiometer inverter or analogic control (4-20 mA).
The equipment is available until 4000 g/h.

Dimensional scheme without servomotor



Dimensional scheme with servomotor



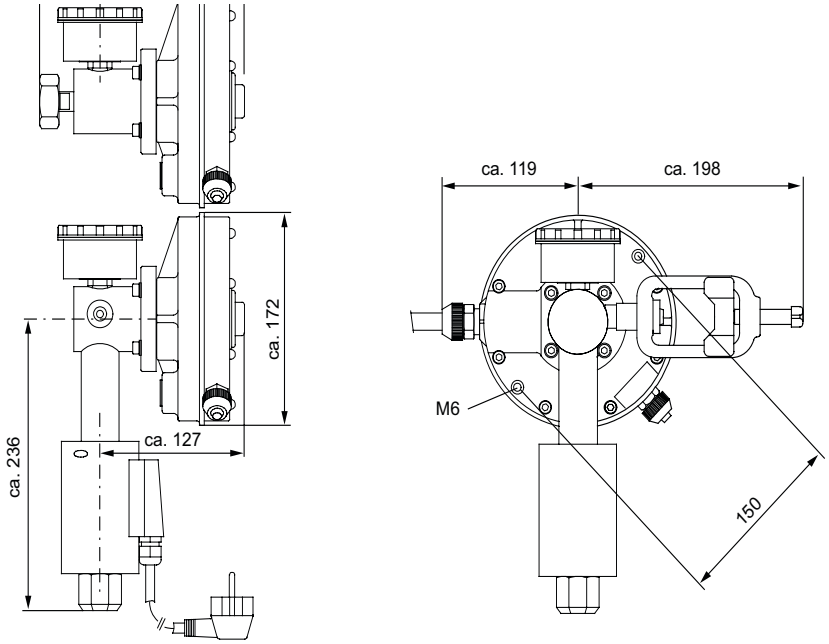


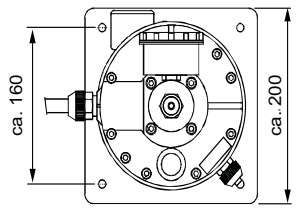
VGA-146

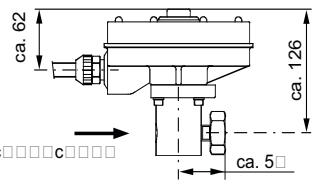
Vacuum regulator up to 10 kg/h

Vacuum regulator for assembly to wall, directly in bottle / gas cylinder or gas collectors line.
It incorporates an inlet valve and another safety valve for overpressure. Also it incorporates a pitfall of liquid and an internal filter.
Its regulation capacity it is up 10 kg/h.

Dimensional scheme







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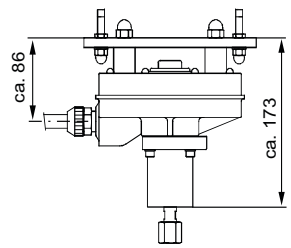
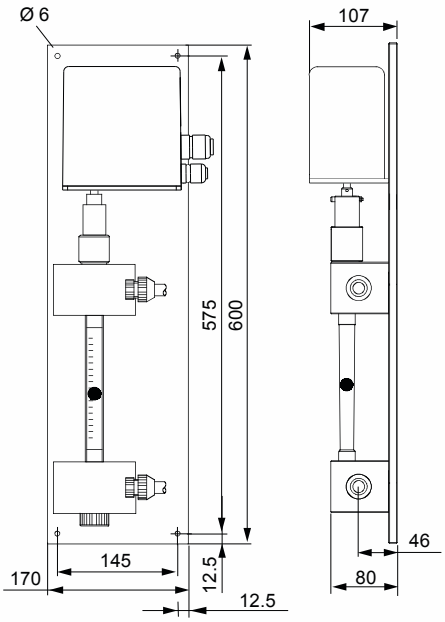


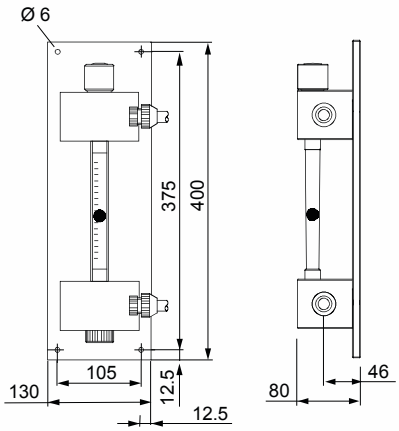
VGA-117

Dosing regulator up to 10 kg/h

Gas dispenser for assembly to wall that incorporates a device of measurement and a valve of adjustment of gas flow.
The servomotor has two options: with potentiometer inverter or analogical control (4-20 mA).
The equipment is available up to 10kg/h.

Dimensional scheme





VGS-141, VGS-143 & VGS-145

Gas dosing system up to 200 kg/h

Vaccuperm VGS incorporates the last generation sensors and electronic microprocessors to control flow dosage.
Several sensors connected to a PLC offer a big variety of control possibilities and error detection that results in safety increasing during the whole process.

Pressure sensors for more safety

We have at your disposal optional pressure sensors that allow the rapid detection of disorders such as insufficient vacuum in the ejector or errors in the vacuum regulator.

Precise measurement system for rotameter

The inductive sensor is not susceptible to fouling and never comes into contact with the gas dosed. The signal resolution is approximately 2% of the maximum value of the measuring range.

System with direct proportional control

Optionally, the valve servomotor adjustment can be equipped with electronic (4-20 mA input) for direct proportional control without additional electronic control systems.

Automation of dispensing proces

You can optionally integrate a controller with PID microprocessor control.

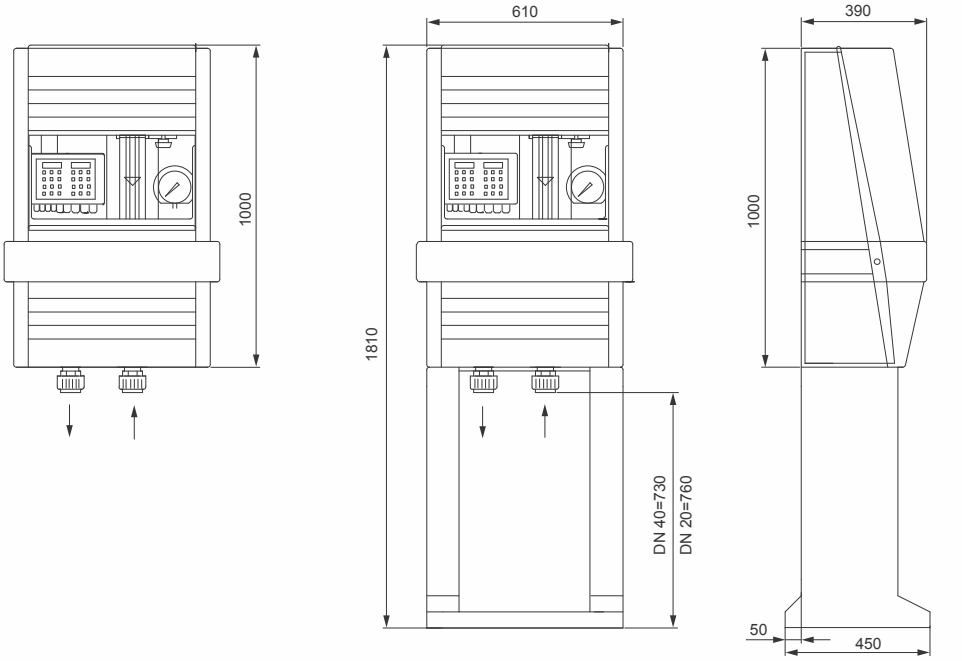
Ergonomic design for easy maintenance

All elements and control devices have been installed at the level accessible for a easy manipulation. It also has a selector shift operation manual to automatic operation. All maintenance service can be executed with a few standard tools.

Excellent precision and stability

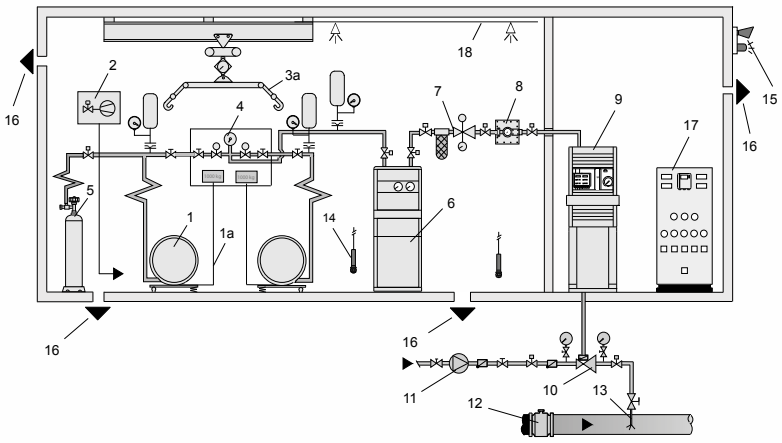
The new construction of the valve adjustment and pressure differential regulator optimized to provide computer simulation results in excellent reproducibility and stability at a time dosing.

Dimensional scheme



Typical installation scheme

Nº	Description
1	Gas cylinder
1a	Scale cylinder gas
2	Emergency stop button
3	Lifting device for gas cylinders
3a	Hook lift
4	Automatic system
5	Nitrogen filling device
6	Evaporator
7	Filter and pressure reducing valve
8	Vacuum regulator VGS
9	Dosing system VGS
10	High capacity ejector
11	Water circulation pump
12	Flowmeter with outputs 4-20 mA
13	Injection point
14	Sensor gas leak
15	Optical and acoustic alarm
16	Cannula suction gas to the neutralization system
17	Central control panel with interface computer
18	Spray system

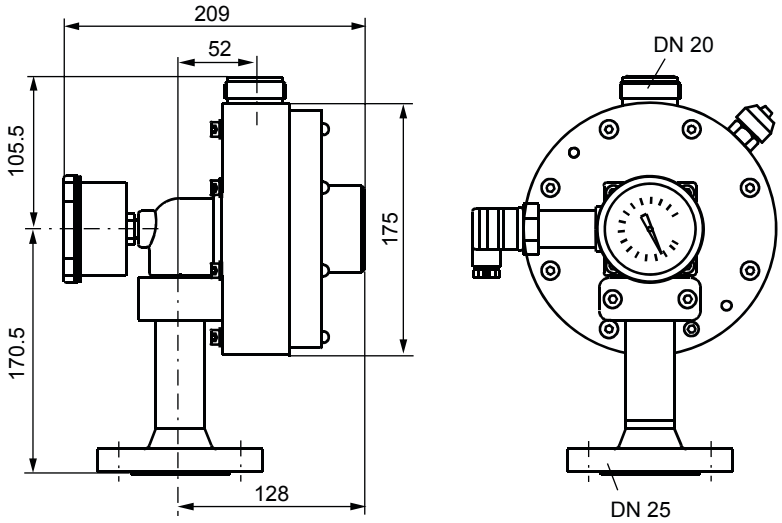


VGS-147 & VGS-148

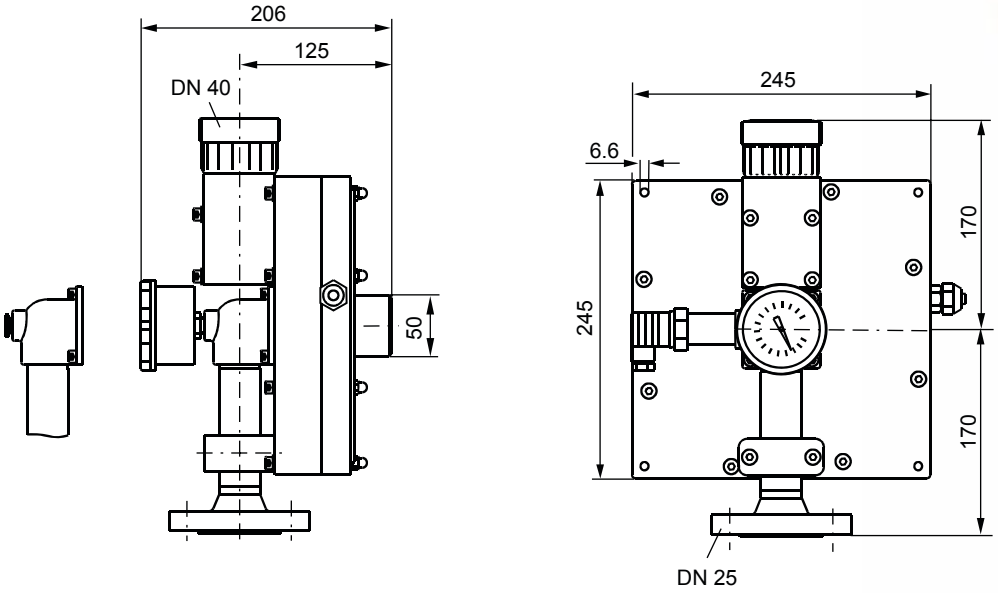
Vaccum Regulator up to 200 kg/h

Regulator vacuum gas to install on gas manifold.
Includes a safety valve and a trap of liquid.
Equipment is available up to a capacity of 200 kg/h.

Dimensional scheme VGS-147



Dimensional scheme VGS-148

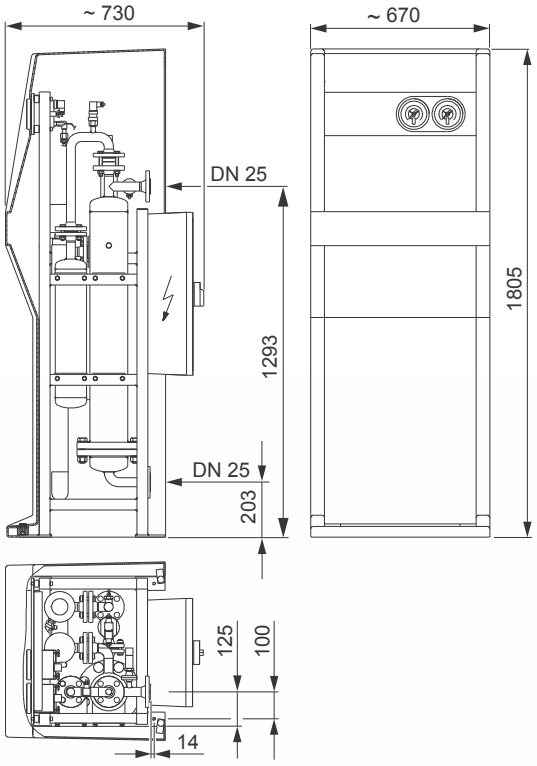


RV-171 & RV-171W

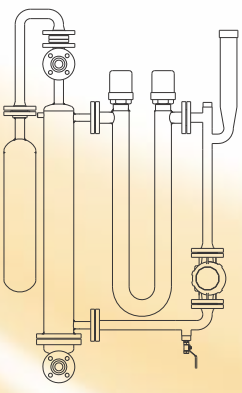
Evaporators for liquefied gases (Cl_2 / NH_3)

Automatic evaporator transforms liquefied gas taken from the storage tank by using heat exchange. The heat transfer medium can be water with anti-corrosive additives and antifreeze or oil.

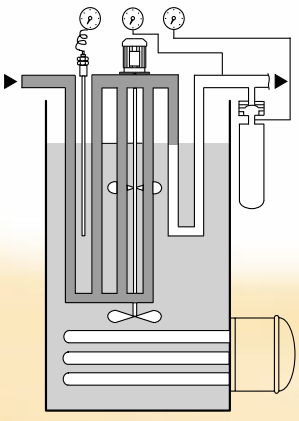
Dimensional scheme RV171



Dimensional scheme RV-171W & RV-171



RV-171W



RV-171

TECHNICAL DATA VGB & VGA

	VGB-103 compact unit	VGA-111 vacuum regulator	VGA-113 dosing regulator	VGA-146 vacuum regulator	VGA-117 dosing regulator
Capacity range	5 - 100 g/h 25 - 500 g/h 100 - 2.000 g/h	up to 4.000 g/h	10 - 250 g/h 50 - 1.000 g/h 400 - 4.000 g/h	up to 10 kg/h	50 - 1.000 g/h 200 - 4.000 g/h 500 - 10.000 g/h
Adjustment ratio	1:20		1:20		1:20
Accuracy	± 4%		± 4%		± 4%
Measuring device	According to the floater principle, measuring tube 70 mm		According to the floater principle, measuring tube 70 mm		According to the floater principle, measuring tube 190 mm
Empty indication	Visible automatical signal for lack of chlorine	Visible automatical signal for lack of chlorine			
Materials	• **Enclosure:** PVC • **Inlet valve:** Silver / PTFE / special alloy • **Springs:** Coated with nickel-chrome alloy • **Diaphragm:** FEP • **Rate valve:** PVC • **O-rings:** FKM				
Connections	**Pressure side chlorine:** Union nut G 1" **Vacuum line:** PE hose 8/11 mm **Vacuum safety line:** PE hose 8/11 mm	**Pressure side chlorine:** Union nut G 1" **Vacuum line:** PE hose 8/11 mm **Vacuum safety line:** PE hose 8/11 mm	**Vacuum safety line:** PE hose 8/11 mm	**Pressure side chlorine:** Union nut 1", G 3/4, **Vacuum safety line:** PE hose 10/14 mm o PVC pipe DN 15 (external diameter 20 mm)	**Vacuum line:** PE hose 8/11 mm or 10/14 mm or PVC pipe DN15 **Vacuum safety line:** PE hose 8/11 mm
Options	• Manometer: 0 to 16 bar • External filter	• Manometer: 0 to 16 bar • External filter • Liquid trap	• Automatic control with servomotor (4-20 mA or direct control)		• Automatic control with servomotor (4-20 mA or direct control)
Servomotor power consumption			approx. 3 VA		approx. 3 VA
Variant with servomotor			• Potentiometer or opening/closing signal (servomotor with potentiometer) • Analogue regulation 4-20 mA or input/ output (servomotor with analog control)		• Potentiometer or opening/closing signal (servomotor with potentiometer) • Analogue regulation 4-20 mA or input/ output (servomotor with analog control)
Weight	1.3 to 2.0 kg	2.3 kg	0.9 kg; 3.1 kg with servomotor	2 kg; 4 kg with heater anti liquefying	2.6 kg; 4.8kg with servomotor

VGB-103

VGB-111

VGB-113

VGB-146

VGB-117

TECHNICAL DATA VGS & RV-171

	VGS-141-010 Gas dosing system	VGS-143-040 Gas dosing system	VGS-145-200 Gas dosing system	VGS-147-040 Vacuum regulator	VGS-148-070 Vacuum regulator	VGS-148-120 Vacuum regulator	VGS-148-200 Vacuum regulator
Dosing quantity	500 - 10.000 g/h 50-1.000 g/h (NH_3) 250 - 5.000 g/h (NH_3)	1 - 20 kg/h 2 - 40 kg/h 0.5 - 10 kg/h (NH_3) 1 - 20 kg/h (NH_3)	3.5 - 70 kg/h 6.0 - 120 kg/h 10.0 - 200 kg/h	max. 40 kg/h	max. 70 kg/h	max. 120 kg/h	max. 200 kg/h
Ratio adjustment	1:20						
Precision	± 4%						
Minium pressure admission				2 bar			
High pressure admission				11 bar			
Connections	**PVC pipe DN15**	PVC pipe 20/25	PVC pipe 40/50	PVC pipe 20/25	PVC pipe 40/50		
Options				• Support plate for wall subject during container change • Installation material in three lenghts			

	RV 171W-100	RV 171W-200	RV 171-100	RV 171-200	RV 171-170	RV 171-270
Gas	Cl_2	Cl_2	Cl_2	Cl_2	NH_3	NH_3
Heating medium	Water	Water	Oil	Oil	Oil	Oil
Capacity	100 kg/h	200 kg/h	100 kg/h	200 kg/h	21 kg/h	42 kg/h
Power	9 kW	18 kW	9 kW	18 kW	9 kW	18 kW
Heating time	approx. 4 minutes	approx. 4 minutes	approx. 5-7 minutes	approx. 5-7 minutes	approx. 5-7 minutes	approx. 5-7 minutes
Maximum working pressure	12 bar, with rupture disc to 16 bar					
Max. space temperature	0 - 40 °C					
Input/Output connections	DN25 (G 1")					

VGS-141/143/145

VGS-147/148

RV171

GRUNDFOS