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1. General information

Fundamentals of disinfection

Drinking water can transmit diseases. Among these diseases are typhus, paratyphoid, cholera and diarrhoea with vomiting, as well as viral infections such as hepatitis and poliomyelitis. Legionella in shower or bathing water can provoke pulmonary diseases. Compared to the chemical contamination of water, where toxicity values are attained only slowly in general, in a drinking water epidemic infections spread dramatically in the whole supply area. The best prevention of epidemics is to use microbiologically clean non-polluted water, preferably deep ground water as drinking water. Unfortunately, in some regions this is not possible for hydrogeological or quantitative reasons. In these regions, surface water is used, which often has to be purified. Pathogens that are possibly encountered, can be removed from the water or killed by adding certain substances to the water, i.e. by disinfecting the water.

Disinfection with chlorine

The most widespread disinfectant used in the treatment of drinking water is chlorine, which can be applied in a variety of ways. History has taught us that, in bacteriological terms, chlorinating water is a quite safe way of disinfecting drinking water. After all, more than 100 years have passed since chlorine was used to disinfect drinking water for the first time. Many years of experience have shown that acute toxicity can be excluded, when chlorination is executed correctly.

Generally, three methods are used for the chlorination of drinking water and also process water:

- Chlorine gas dosing
- Dosing of commercial sodium hypochlorite solution or calcium hypochlorite solution
- Electrolytic sodium hypochlorite generation on site

Chlorine gas dosing offers a number of advantages, which are combined in the Vaccuperm product range.

Principle of a Vaccuperm chlorine gas dosing system

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

Vacuum chlorine gas dosing systems operate according to the vacuum principle and are composed of three basic components:

- Chlorine container (cylinder or drum) (A)
- Vacuum regulator (B)
- Dosing regulator (C)
- Injector (D)

Chlorine container (A)

Chlorine containers are not completely filled with liquid chlorine. Above the liquid chlorine (A2) there is chlorine gas (A1), which has evaporated from the liquid chlorine. About 1% of the maximum content of a chlorine container can be extracted continuously per hour, otherwise the container will freeze (e.g. 650 g/h can be extracted from a cylinder with 65 kg). If a larger quantity is required, it can be extracted from several containers (cylinders or drums) in parallel. As a rule, liquid chlorine is extracted when more than 40 kg/h is required. According to the ambient temperature, the chlorine storage room must be heated, so that the surface temperature of the chlorine container doesn't fall below 15 °C.

Vacuum regulator (B)

The vacuum regulator is a pressure reducing valve, which reduces pressure from the chlorine tank side to the negative pressure on the vacuum side. The valve opens, when sufficient vacuum is present on the outlet side. The vacuum regulator regulates the vacuum to a constant level over the whole range.

Pressure relief function (F)

In case of a small internal leakage, for example due to a dirty inlet-valve seat, the internal pressure relief function protects the vacuum system from inadmissible pressure on the vacuum side. The chlorine gas flows over the vent outlet to the chlorine adsorption filter.

Prevention of air entering the system (E)

If the chlorine cylinder is empty and there is no pressure in it, the vacuum in the system increases, which causes the diaphragm to close. This prevents air from entering the vacuum regulator during a cylinder change (only while the injector is in operation). If the chlorine cylinder is full, a sufficient inlet pressure opens the vacuum regulator automatically.

Dosing regulator (C)

The chlorine gas volume flow is adjusted by the dosing regulator. This can be done manually or automatically via motor control. A differential pressure regulator reduces and regulates the injector vacuum to a constant level to secure a constant and linear gas flow.

VGA-113-311, VGA-113-391 and VGS dosing regulators operate with a differential pressure regulator, which is included in the same housing.

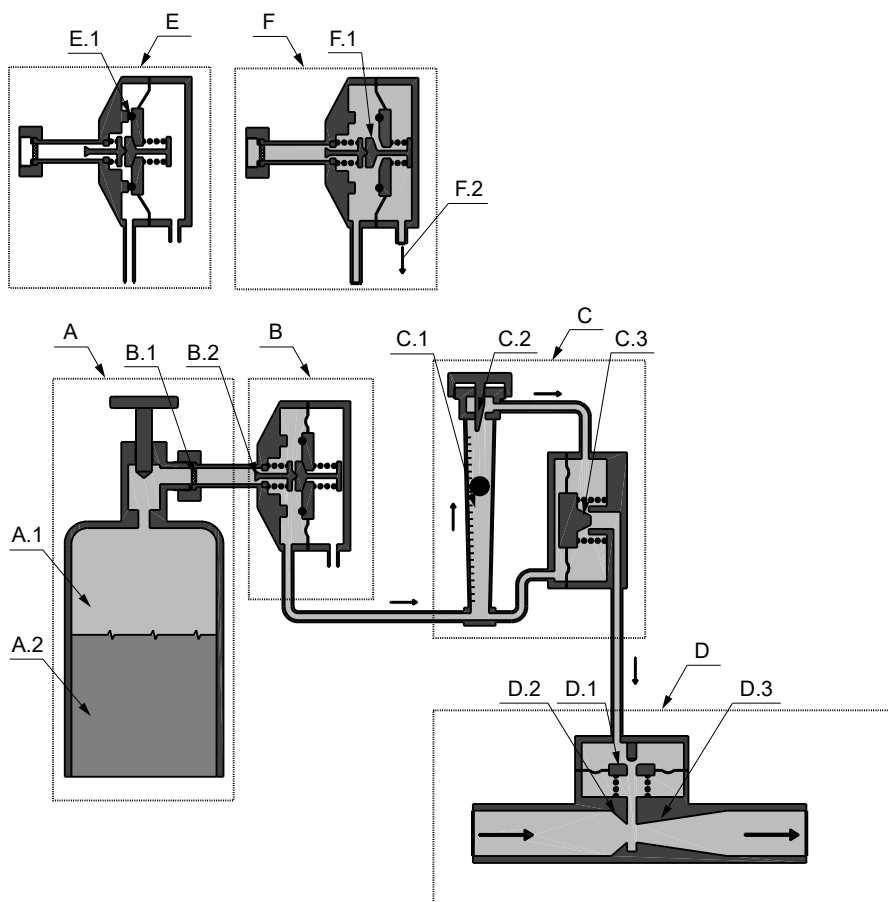
VGB-103, VGA-113-110, VGA-117-110 and VGA-117-190 dosing regulators operate without a differential pressure regulator. A constant and linear chlorine gas flow is achieved under sonic flow conditions.

Dosing regulators without a differential pressure regulator operate with VGB injectors. VGB injectors have a higher performance but require larger motive water flow and higher motive water pressure. Dosing regulators without a differential pressure regulator do not comply with DIN 19606.

Injector (D)

Injectors have the task to bring chlorine gas into the water flow. They operate according to the principle of a water jet pump.

The injector body comprises a nozzle followed by a diffusor. Between the nozzle and the diffusor, there is a narrow ring-shaped gap, where the chlorine gas is sucked out of the dosing line through the injector head into the water flow. A diaphragm non-return valve at the dosing line prevents the ingress of water into the dosing line after shutting down the water flow.



Schematic diagram of a chlorine gas dosing system

Pos.	Component	Pos.	Component
A	Chlorine cylinder	D	Injector
A.1	Chlorine gas	D.1	Diaphragm non-return valve
A.2	Chlorine liquid	D.2	Nozzle
B	Vacuum regulator	D.3	Diffusor

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Pos.	Component	Pos.	Component
B.1	Inlet filter	E	Vacuum regulator with empty chlorine cylinder
B.2	Inlet valve	E.1	Vacuum seal
C	Dosing regulator	F	Vacuum regulator with open pressure relief valve
C.1	Flowmeter	F.1	Pressure relief valve
C.2	Rate valve	F.2	Vent outlet
C.3	Differential pressure regulator		

Benefits and applications

Benefits

- Safe system using the vacuum principle
- Most economical way of disinfection
- Manufacturer has over 50 years of experience in disinfection with chlorine gas

Applications

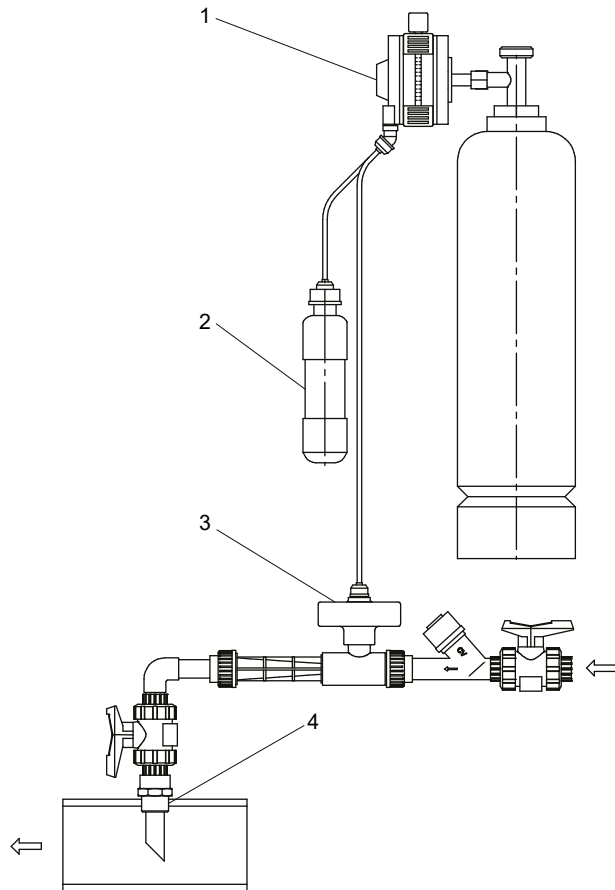
- Drinking water treatment
- Waste water treatment
- Industrial water treatment
- Cooling towers
- Swimming pools

2. Application overviews

Vaccuperm chlorine gas dosing systems up to 4 kg/h

Low-budget chlorine extraction from one cylinder

Vaccuperm chlorine gas dosing systems with VGB-103 compact unit.

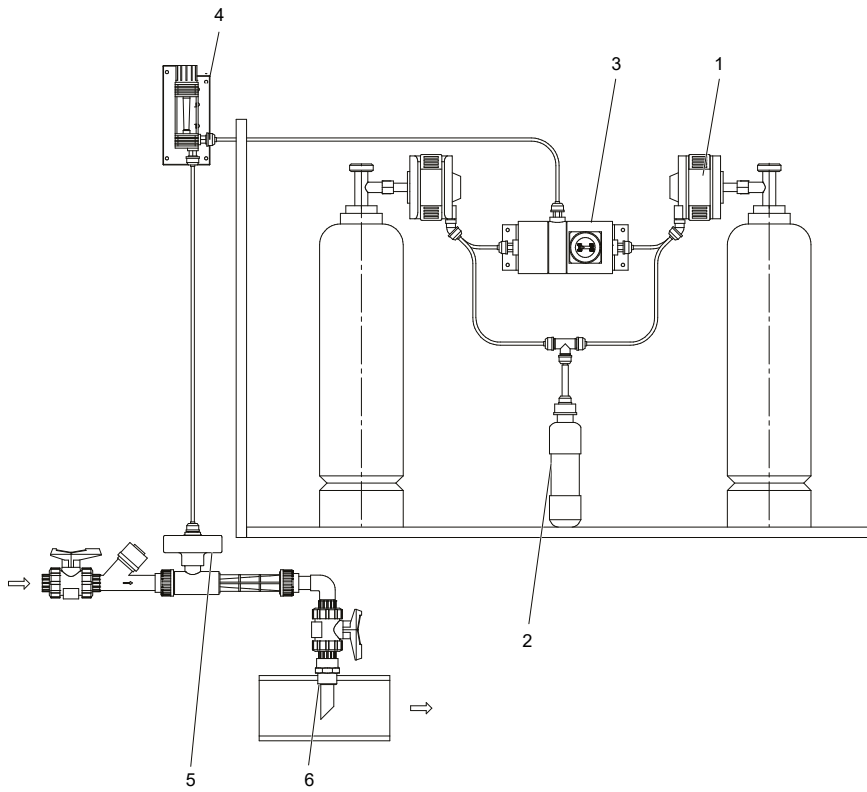


TM075195

Pos.	Component
1	VGB-103 compact unit
2	Chlorine gas adsorption filter
3	VGB injector
4	Injection unit

Low-budget manual chlorine extraction from one or more cylinders

Vaccuperm manual chlorine gas dosing systems with VGA-111 vacuum regulators and a VGA-113-110 dosing regulator.

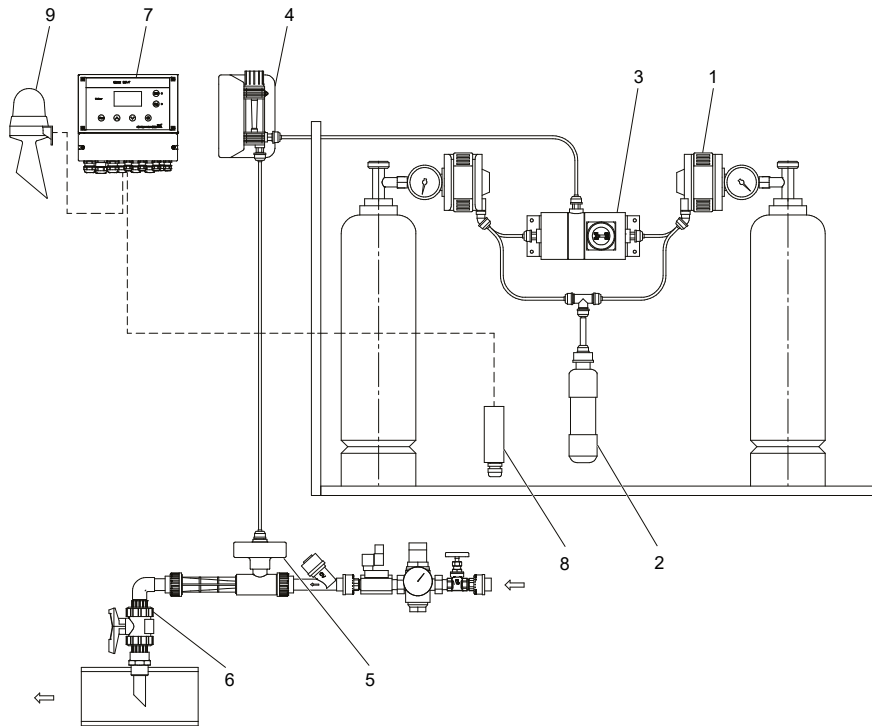


TM075191

Pos.	Component
1	VGA-111 vacuum regulator
2	Chlorine gas adsorption filter
3	189 change-over device
4	VGA-113-110 dosing regulator
5	VGB injector
6	Injection unit

Manual or automatic chlorine extraction from one or more cylinders

Vaccuperm manual or automatic chlorine gas dosing systems with VGA-111 vacuum regulators and a VGA-113-311 manual dosing regulator or a VGA-113-391 automatic dosing regulator.

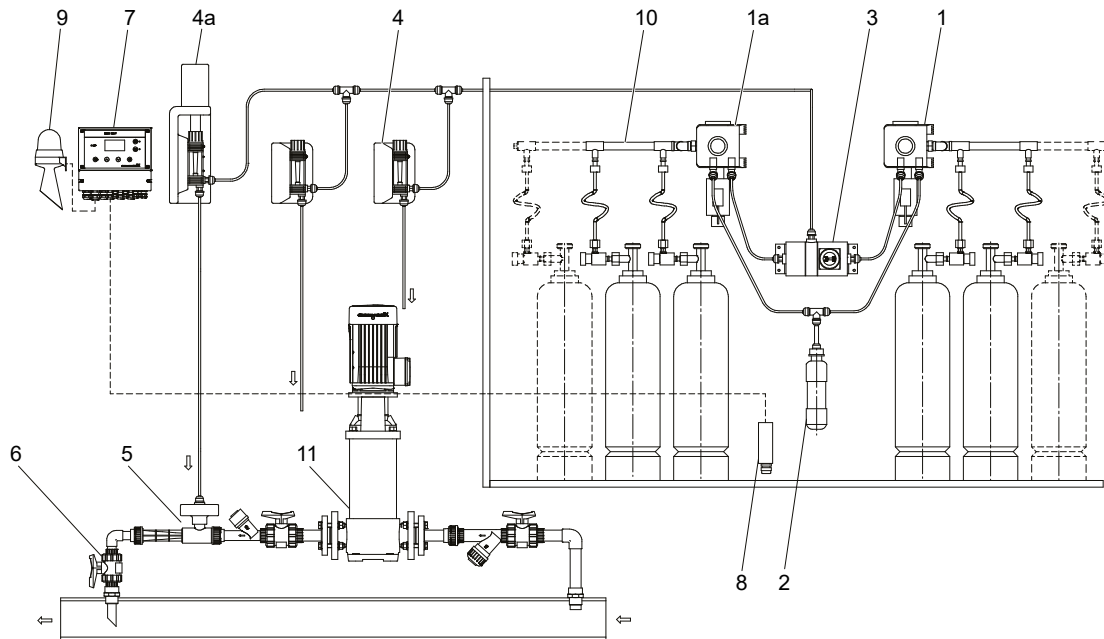


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Pos.	Component
1	VGA-111 vacuum regulator
2	Chlorine gas adsorption filter
3	189 change-over device
4	VGA-113-311 manual dosing regulator or VGA-113-391 automatic dosing regulator
5	VGA injector
6	Injection unit
7	Conex DIA-G gas warning system
8	Gas sensor
9	Horn and flashlight

Manual or automatic chlorine extraction from two banks of cylinders

Vaccuperm manual or automatic chlorine gas dosing systems with VGA-111 vacuum regulators and a VGA-113-311 manual dosing regulator or a VGA-113-391 automatic dosing regulator.



TM075190

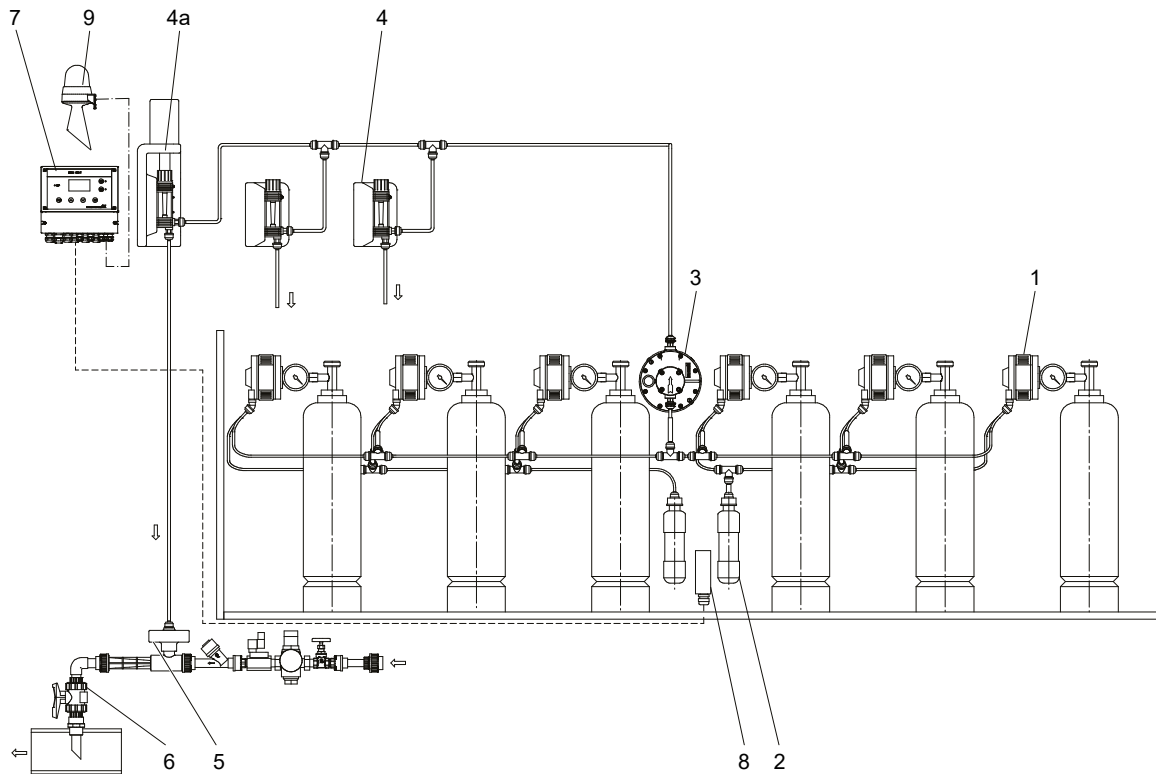
Pos.	Component
1	VGA-111 vacuum regulator with heated liquid trap (pressure inlet right)
1a	VGA-111 vacuum regulator with heated liquid trap (pressure inlet left)
2	Chlorine gas adsorption filter
3	189 change-over device
4	VGA-113-311 manual dosing regulator
4a	VGA-113-391 automatic dosing regulator
5	VGA injector
6	Injection unit
7	Conex DIA-G gas warning system
8	Gas sensor
9	Horn and flashlight
10	Header line for chlorine cylinders
11	CR booster pump

Manual or automatic chlorine extraction from several cylinders according to DIN 19606 (full-vacuum system)

Vaccuperm chlorine gas dosing systems with VGA-111 vacuum regulators and a VGA-113-311 manual dosing regulator or a VGA-113-391 automatic dosing regulator.

Chlorine gas dosing according to DIN 19606 eliminates the risk of a chlorine leakage at the header line. This application type is also called "full vacuum system". Instead of using a pressurised header line, the vacuum regulators are connected directly to the chlorine cylinders. The vacuum regulators are directly connected to a vacuum header line. To prevent freezing of the cylinders, a vacuum regulator with flow limiting nozzle must be selected, which limits the extraction capacity to 650 g/h. In most cases, a change-over device is not used, as cylinder exchange is performed while the system is in operation.

A safety valve is needed if the injector is located outside the chlorination room. This protects the vacuum line to the injector in case of overpressure.



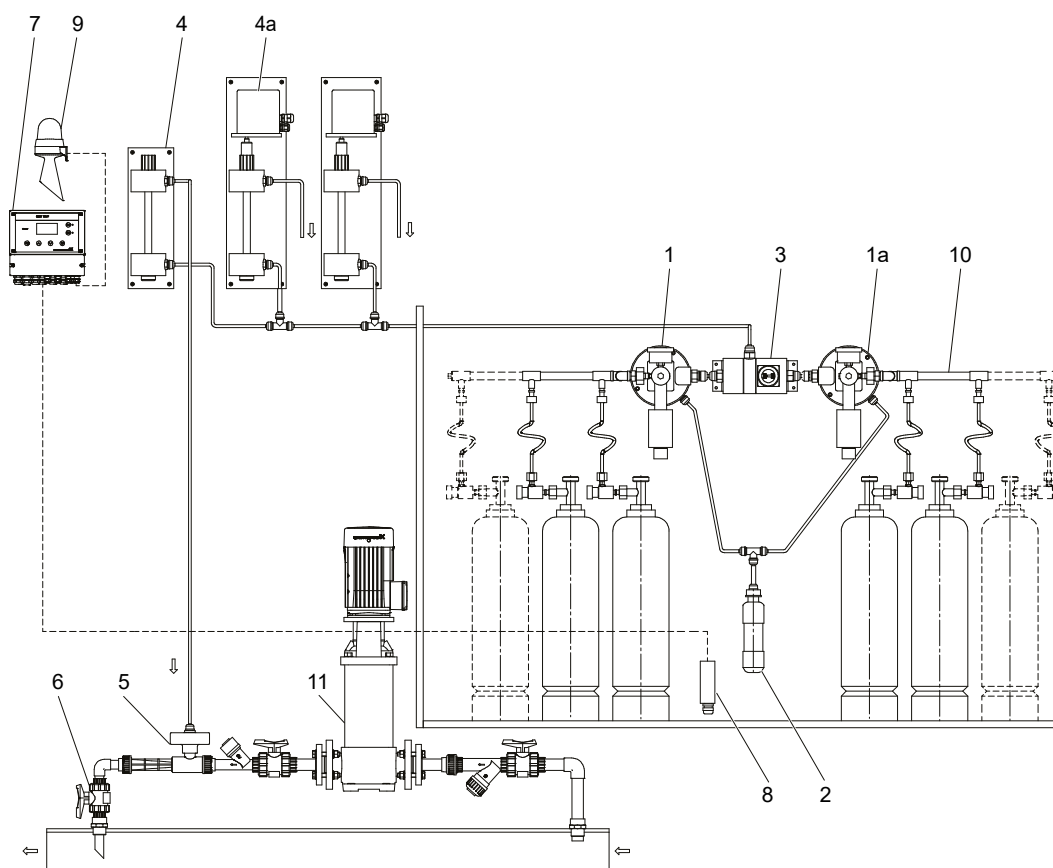
TM07/5189

Pos.	Component
1	VGA-111 vacuum regulator with flow-limiting nozzle
2	Chlorine gas adsorption filter
3	543 safety valve
4	VGA-113-311 manual dosing regulator
4a	VGA-113-391 automatic dosing regulator
5	VGA injector
6	Injection unit
7	Conex DIA-G gas warning system
8	Gas sensor
9	Horn and flashlight

Vaccuperm chlorine gas dosing systems up to 10 kg/h

Manual or automatic chlorine extraction from two banks of cylinders

Vaccuperm manual or automatic chlorine gas dosing systems with VGA-146 vacuum regulators and a VGA-117-110 manual dosing regulator or a VGA-117-190 automatic dosing regulator.

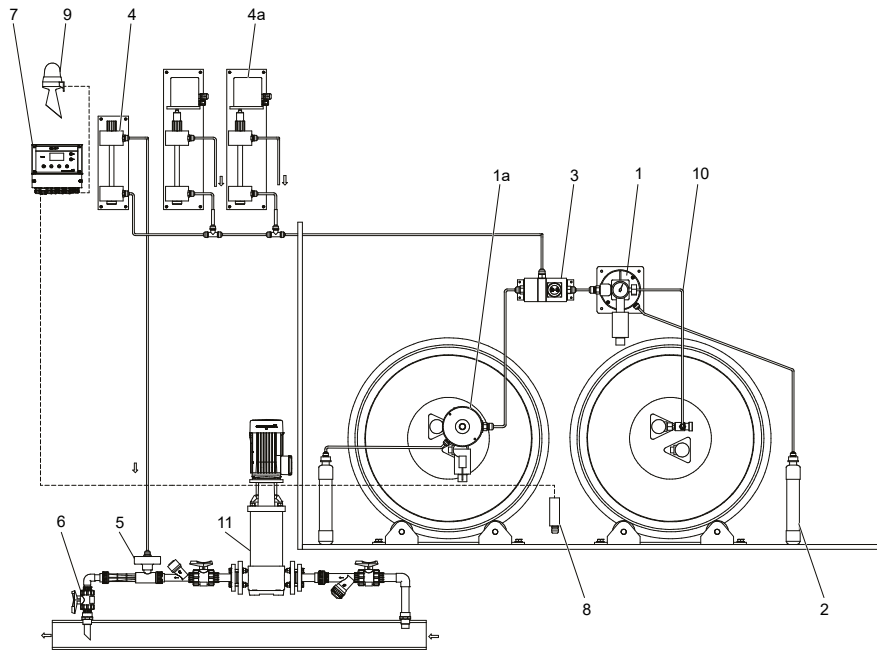


TM075 193

Pos.	Component
1	VGA-146 vacuum regulator with heated liquid trap (pressure inlet right)
1a	VGA-146 vacuum regulator with heated liquid trap (pressure inlet left)
2	Chlorine gas adsorption filter
3	189 change-over device
4	VGA-117-110 manual dosing regulator
4a	VGA-117-190 automatic dosing regulator
5	VGB injector
6	Injection unit
7	Conex DIA-G gas warning system
8	Gas sensor
9	Horn and flashlight
10	Header line for chlorine cylinders
11	CR booster pump

Manual or automatic chlorine extraction from one or two drums

Vaccuperm manual or automatic chlorine gas dosing systems with VGA-146 vacuum regulators and a VGA-117-110 manual dosing regulator or a VGA-117-190 automatic dosing regulator.



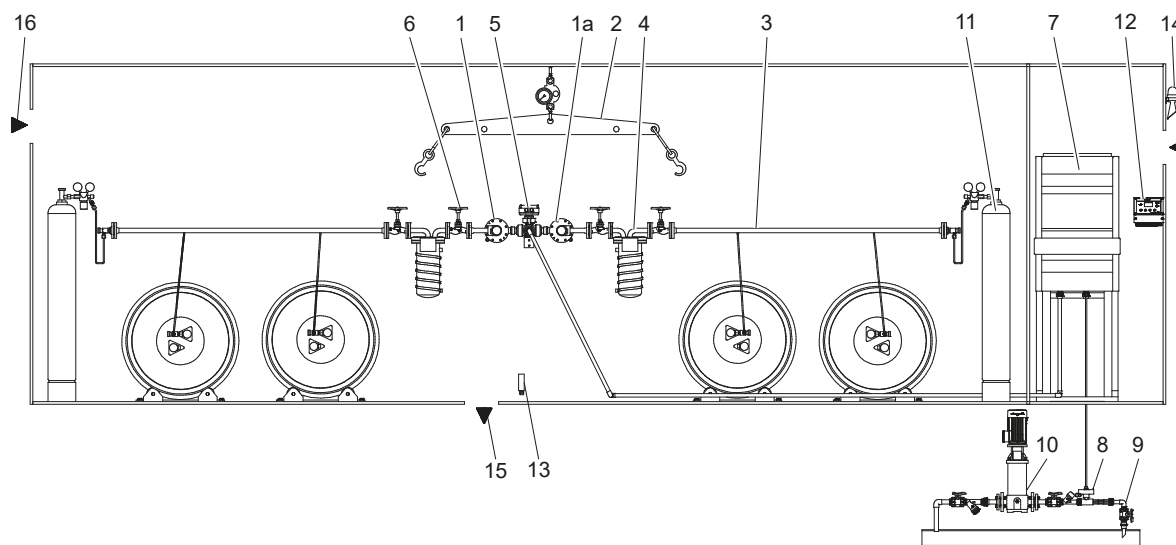
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Pos.	Component
1	VGA-146 vacuum regulator with heated liquid trap (wall-mounted)
1a	VGA-146 vacuum regulator with heated liquid trap (drum-mounted)
2	Chlorine gas adsorption filter
3	189 change-over device
4	VGA-117-110 manual dosing regulator
4a	VGA-117-190 automatic dosing regulator
5	VGB injector
6	Injection unit
7	Conex DIA-G gas warning system
8	Gas sensor
9	Horn and flashlight
10	Header line for chlorine drum
11	CR booster pump

Vaccuperm chlorine gas dosing systems up to 40 kg/h

Manual or automatic chlorine extraction from two banks of drums without evaporator

Vaccuperm manual or automatic chlorine gas dosing systems with VGS-147 vacuum regulators and a VGS 143 gas dosing system.

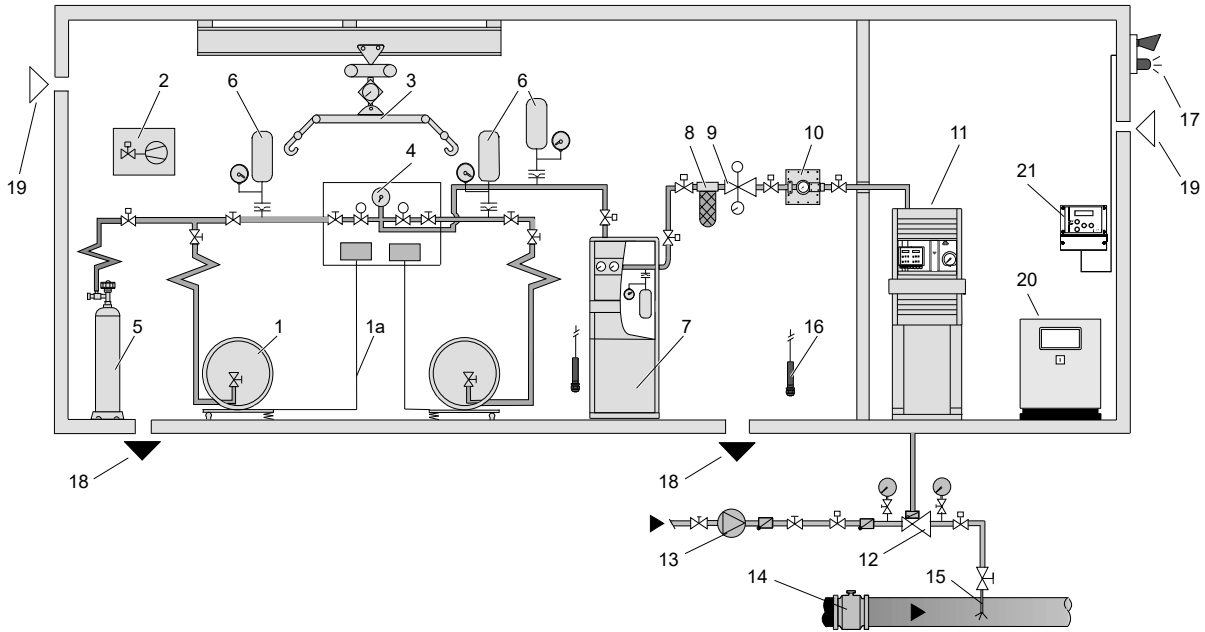


TM075255

Pos.	Component
1	VGS-147 vacuum regulator with heated liquid trap (pressure inlet right)
1a	VGS-147 vacuum regulator with heated liquid trap (pressure inlet left)
2	Chlorine drum lifting device
3	Header line for chlorine drums
4	LiquFilt 524 heated liquid chlorine trap with filter
5	186 change-over device
6	Shut-off valve
7	VGS-143 chlorine gas dosing system
8	VGS injector
9	Injection unit
10	CR booster pump
11	Nitrogen rinsing device
12	Conex DIA-G gas warning system
13	Gas sensor
14	Horn and flashlight
15	Vent to a Grundfos chlorine gas neutralisation system
16	Ventilation of the building

Vaccuperm chlorine gas dosing systems from 70 to 200 kg/h

Manual or automatic chlorine extraction from two banks of drums with evaporator



TM075188

Pos.	Component
1	Chlorine drum
1a	Chlorine drum scale
2	Controller for the pneumatic shut-off valve
3	Chlorine drum lifting device
4	185 change over device
5	Nitrogen rinsing device
6	Expansion tank with bursting disc
7	RV171(W) evaporator
8	LiquFilt 524 heated liquid chlorine trap with filter
9	544 pressure reducing valve
10	VGA-148 vacuum regulator
11	VGS-145 chlorine gas dosing system
12	VGS injector
13	CR booster pump
14	Flowmeter with 4-20 mA signal
15	Injection unit
16	Gas sensor
17	Horn and flashlight
18	Vent to a Grundfos chlorine gas neutralisation system
19	Ventilation of the building
20	Central control panel (SCADA)
21	Conex DIA-G gas warning system

3. Compact unit and set

Vaccuperm VGB-103 up to 4 kg/h

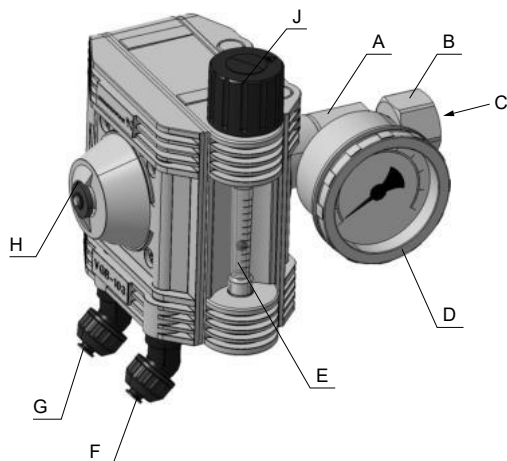
Vaccuperm VGB-103 compact unit

The convenient VGB-103 compact unit combines a vacuum regulator and a dosing regulator in one housing for direct mounting on a chlorine gas cylinder or header line. The VGB-103 operates under sonic flow conditions without a differential pressure regulator. A VGB injector is required.

The VGB-103 compact unit is available with the following features:

- Manual chlorine capacity adjustment
- Integrated flowmeter (floater principle)
- Various capacities
- Vacuum connections for 8/11 PE hose
- Visual indication of an empty chlorine cylinder
- Integrated pressure-relief valve
- Chlorine-resistant metal inlet valve with PTFE filter for easy maintenance
- 5 gaskets for pressure-side connections

The VGB-103 compact unit is not usable with change-over device or servomotor.



TM075042

Pos.	Component
A	Inlet valve
B	Inlet, pressure connection
C	Filter
D	Pressure gauge
E	Flowmeter
F	Outlet, vacuum connection (to injector)
G	Outlet, vent connection
H	Visual indication of empty chlorine cylinder
J	Manual chlorine capacity adjustment

VGB-103 set

The VGB-103 set is a combination of the following components ready to use:

- VGB-103 compact unit
- Pre-selected VGB injector
- Vacuum hose 8/11, 10 m



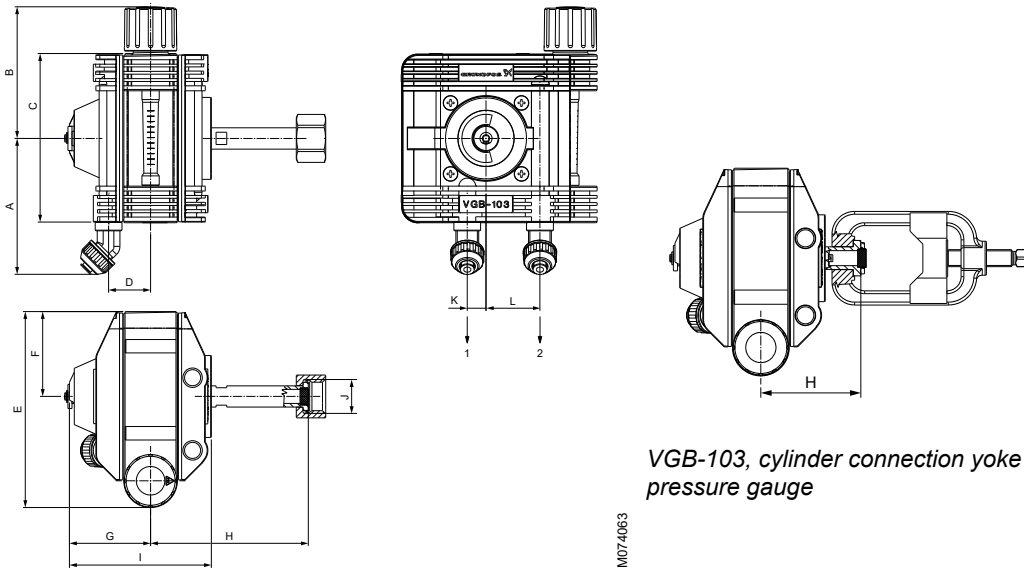
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Technical data VGB-103

VGB-103 compact unit	
Medium	Chlorine gas
Capacity ranges	5-100 g/h, 10-250 g/h, 50-1000 g/h, 100-2000 g/h, 150-3000 g/h, 200-4000 g/h
Adjustment ratio	1:20
Accuracy	± 4 %
Measuring device	According to the floater principle, measuring tube 70 mm
Empty indication	Visual indication of lack of chlorine
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Inlet valve: silver/PTFE, special alloy • Springs: alloy C-4, coated • Diaphragm: FEP • Filter: PTFE • Rate valve: PVC • O rings: FKM
Connections	Pressure connection inlet: <ul style="list-style-type: none"> • Union nut 1", G 3/4 • Yoke USA Vacuum connection outlet: <ul style="list-style-type: none"> • PE hose 8/11 Vent connection outlet: <ul style="list-style-type: none"> • PE hose 8/11
Pressure gauge	Pressure range: 0 to 16 bar
Weight	1.3 to 2 kg
Injector	
Material	<ul style="list-style-type: none"> • Housing: PVC • Spring: alloy C-4, PTFE coated • Diaphragm: FEP
Ambient temperature	+5 °C to +40 °C
Motive water temperature	+5 °C to +30 °C
Motive water pressure	see table below
Counterpressure	see table below

VGB-103 set, injector

Capacity [kg/h]	Motive water pressure [bar]	Counterpressure [bar]	Water quantity [l/h]	Water connection	Vacuum hose connection
0.5	2-16	0-7	550-1350	DN 20	
1.0	2-16	0-7	850-2200	DN 20	
2.0	2-16	0-7	1200-3300	DN 20	PE 8/11
3.0	4-15	0-7	2500-4300	DN 25	
4.0	4-8	0-3	3400-4700	DN 25	

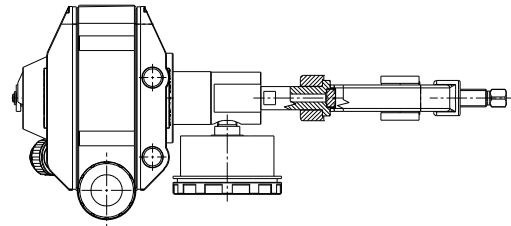
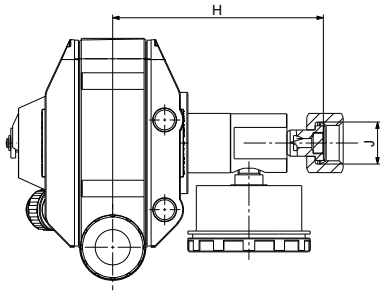
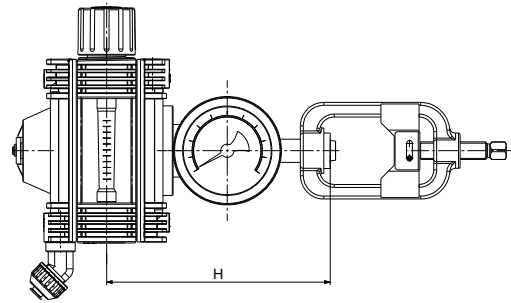
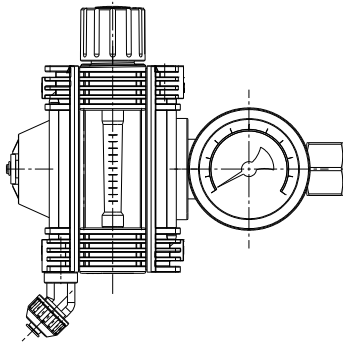
Dimensions VGB-103

VGB-103, cylinder connection yoke USA, without pressure gauge

VGB-103, cylinder connection 1", G 3/4, without pressure gauge

TM074085

TM074083



TM075043

TM075044

VGB-103, cylinder connection 1", G 3/4 with pressure gauge

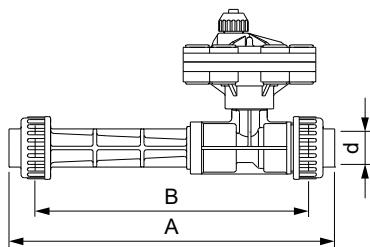
VGB-103, cylinder connection yoke USA, with pressure gauge

Dimensions in mm

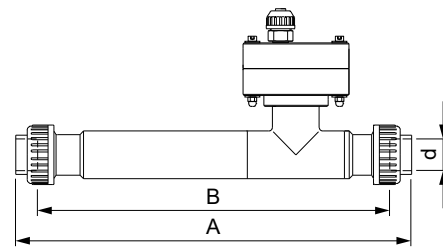
J	A	B	C	D	E	F	G	I	K	L
1"										
G 3/4	102	98	126	31.4	146	63	60.6	106	14	40
Yoke USA										

J	Without pressure gauge		With pressure gauge	
	H		H	
1"	118		127	
G 3/4	71		153	
Yoke USA	71		153	

Dimensions of injector



TM041250



TM041256

Injector DN 20

Injector DN 25

Dimensions in mm

d	A	B
DN 20	275	232
DN 25	400	350

Type key VGB-103

Type	
VGB-103 -250/1/11-S-1-O,B0/NRW8,10G,C3	
VGB-103	Vaccuperm compact unit/set
Capacity	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
100	5-100 g/h
250	10-250 g/h
500	25-500 g/h
1000	50-1000 g/h
2000	100-2000 g/h
3000	150-3000 g/h
4000	400-4000 g/h
Pressure connection, inlet	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
1	1"
2	G 3/4
3	Yoke USA
Vacuum connection, outlet	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
11	PE hose 8/11
Inlet valve	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
B	Basic, not for pressure gauge
S	Short, for pressure gauge
Pressure gauge	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
0	Without
1	Pressure gauge without contact
Filter	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
O	Filter in pressure connection
Installation type	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
B	Cylinder mounting, pressure connection frontal
Residual pressure device	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
0	Without
Injector	
VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
N	Without
NR	Injector with diaphragm non-return valve

Water connection for injector

VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
N	Without
W8	DN 20 (20/25) (4/10 kg/h)
W9	DN 25 (25/32) (10 kg/h)

Accessories

VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
0	Without
10	PE vacuum hose, 8/11, 10 m

Logo

VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
G	Grundfos

Product certificate

VGB-103-250/1/11-S-1-O,B0/NRW8,10G,C3	
C3	Certificate 3.1 (EN 10204)

Order data for VGB-103

VGB-103 compact unit without pressure gauge

Capacity [g/h]	Cylinder connection	Type designation	Product number	Product number with certificate 3.1
5-100	1"	VGB-103-100/1/11-B-0-O,B0/NN,0-G	95712114	95759542
	G 3/4	VGB-103-100/2/11-B-0-O,B0/NN,0-G	95712119	95759543
	Yoke USA	VGB-103-100/3/11-B-0-O,B0/NN,0-G	95712123	95759544
10-250	1"	VGB-103-250/1/11-B-0-O,B0/NN,0-G	95712126	95759545
	G 3/4	VGB-103-250/2/11-B-0-O,B0/NN,0-G	95712131	95759546
	Yoke USA	VGB-103-250/3/11-B-0-O,B0/NN,0-G	95712136	95759547
25-500	1"	VGB-103-500/1/11-B-0-O,B0/NN,0-G	95712139	95759548
	G 3/4	VGB-103-500/2/11-B-0-O,B0/NN,0-G	95712153	95759549
	Yoke USA	VGB-103-500/3/11-B-0-O,B0/NN,0-G	95712159	95759550
50-1000	1"	VGB-103-1000/1/11-B-0-O,B0/NN,0-G	95712162	95759551
	G 3/4	VGB-103-1000/2/11-B-0-O,B0/NN,0-G	95712167	95759552
	Yoke USA	VGB-103-1000/3/11-B-0-O,B0/NN,0-G	95712170	95759553
100-2000	1"	VGB-103-2000/1/11-B-0-O,B0/NN,0-G	95712173	95759554
	G 3/4	VGB-103-2000/2/11-B-0-O,B0/NN,0-G	95712178	95759555
	Yoke USA	VGB-103-2000/3/11-B-0-O,B0/NN,0-G	95712181	95759556
150-3000	1"	VGB-103-3000/1/11-B-0-O,B0/NN,0-G	95759557	95759558
	G 3/4	VGB-103-3000/2/11-B-0-O,B0/NN,0-G	95745942	95759559
	Yoke USA	VGB-103-3000/3/11-B-0-O,B0/NN,0-G	95748087	95759560
200-4000	1"	VGB-103-4000/1/11-B-0-O,B0/NN,0-G	95759561	95759562
	G 3/4	VGB-103-4000/2/11-B-0-O,B0/NN,0-G	95745943	95759563
	Yoke USA	VGB-103-4000/3/11-B-0-O,B0/NN,0-G	95759564	95759565

VGB-103 compact unit with pressure gauge

Capacity [g/h]	Cylinder connection	Type designation	Product number	Product number with certificate 3.1
5-100	1"	VGB-103-100/1/11-S-1-O,B0/NN,0-G	95712117	95759568
	G 3/4	VGB-103-100/2/11-S-1-O,B0/NN,0-G	95759569	95759570
	Yoke USA	VGB-103-100/3/11-S-1-O,B0/NN,0-G	95759571	95759572
10-250	1"	VGB-103-250/1/11-S-1-O,B0/NN,0-G	95712129	95759573
	G 3/4	VGB-103-250/2/11-S-1-O,B0/NN,0-G	95759574	95759575
	Yoke USA	VGB-103-250/3/11-S-1-O,B0/NN,0-G	95759576	95759577
25-500	1"	VGB-103-500/1/11-S-1-O,B0/NN,0-G	95712151	95759578
	G 3/4	VGB-103-500/2/11-S-1-O,B0/NN,0-G	95759579	95759580
	Yoke USA	VGB-103-500/3/11-S-1-O,B0/NN,0-G	95759581	95759582
50-1000	1"	VGB-103-1000/1/11-S-1-O,B0/NN,0-G	95712165	95759583
	G 3/4	VGB-103-1000/2/11-S-1-O,B0/NN,0-G	95759584	95759585
	Yoke USA	VGB-103-1000/3/11-S-1-O,B0/NN,0-G	95759586	95759587
100-2000	1"	VGB-103-2000/1/11-S-1-O,B0/NN,0-G	95712176	95759588
	G 3/4	VGB-103-2000/2/11-S-1-O,B0/NN,0-G	95759589	95759590
	Yoke USA	VGB-103-2000/3/11-S-1-O,B0/NN,0-G	95759591	95759592
150-3000	1"	VGB-103-3000/1/11-S-1-O,B0/NN,0-G	95759593	95759594
	G 3/4	VGB-103-3000/2/11-S-1-O,B0/NN,0-G	95759595	95759596
	Yoke USA	VGB-103-3000/3/11-S-1-O,B0/NN,0-G	95759597	95759598
200-4000	1"	VGB-103-4000/1/11-S-1-O,B0/NN,0-G	95759599	95759600
	G 3/4	VGB-103-4000/2/11-S-1-O,B0/NN,0-G	95759601	95759602
	Yoke USA	VGB-103-4000/3/11-S-1-O,B0/NN,0-G	95759603	95759604

VGB-103 set without pressure gauge

Capacity [g/h]	Cylinder connection	Type designation	Product number	Product number with certificate 3.1
5-100	1"	VGB-103-100/1/11-B-0-O,B0/NRW8,10-G	95759446	95759447
	G 3/4	VGB-103-100/2/11-B-0-O,B0/NRW8,10-G	95759448	95759449
	Yoke USA	VGB-103-100/3/11-B-0-O,B0/NRW8,10-G	95759450	95759451
10-250	1"	VGB-103-250/1/11-B-0-O,B0/NRW8,10-G	95759452	95759453
	G 3/4	VGB-103-250/2/11-B-0-O,B0/NRW8,10-G	95759454	95759455
	Yoke USA	VGB-103-250/3/11-B-0-O,B0/NRW8,10-G	95759456	95759457
25-500	1"	VGB-103-500/1/11-B-0-O,B0/NRW8,10-G	95759458	95759459
	G 3/4	VGB-103-500/2/11-B-0-O,B0/NRW8,10-G	95759460	95759461
	Yoke USA	VGB-103-500/3/11-B-0-O,B0/NRW8,10-G	95759462	95759463
50-1000	1"	VGB-103-1000/1/11-B-0-O,B0/NRW8,10-G	95759464	95759465
	G 3/4	VGB-103-1000/2/11-B-0-O,B0/NRW8,10-G	95759466	95759467
	Yoke USA	VGB-103-1000/3/11-B-0-O,B0/NRW8,10-G	95759468	95759469
100-2000	1"	VGB-103-2000/1/11-B-0-O,B0/NRW8,10-G	95759470	95759471
	G 3/4	VGB-103-2000/2/11-B-0-O,B0/NRW8,10-G	95759472	95759473
	Yoke	VGB-103-2000/3/11-B-0-O,B0/NRW8,10-G	95759474	95759475
150-3000	1"	VGB-103-3000/1/11-B-0-O,B0/NRW9,10-G	95759476	95759477
	G 3/4	VGB-103-3000/2/11-B-0-O,B0/NRW9,10-G	95759478	95759479
	Yoke USA	VGB-103-3000/3/11-B-0-O,B0/NRW9,10-G	95759480	95759481
200-4000	1"	VGB-103-4000/1/11-B-0-O,B0/NRW9,10-G	95759482	95759483
	G 3/4	VGB-103-4000/2/11-B-0-O,B0/NRW9,10-G	95759484	95759485
	Yoke USA	VGB-103-4000/3/11-B-0-O,B0/NRW9,10-G	95759486	95759487

VGB-103 set with pressure gauge

Capacity [g/h]	Cylinder connection	Type designation	Product number	Product number with certificate 3.1
5-100	1"	VGB-103-100/1/11-S-1-O,B0/NRW8,10-G	96680051	95759488
	G 3/4	VGB-103-100/2/11-S-1-O,B0/NRW8,10-G	95759498	95759499
	Yoke USA	VGB-103-100/3/11-S-1-O,B0/NRW8,10-G	95759500	95759501
10-250	1"	VGB-103-250/1/11-S-1-O,B0/NRW8,10-G	95759502	95759503
	G 3/4	VGB-103-250/2/11-S-1-O,B0/NRW8,10-G	95759504	95759505
	Yoke USA	VGB-103-250/3/11-S-1-O,B0/NRW8,10-G	95759507	95759508
25-500	1"	VGB-103-500/1/11-S-1-O,B0/NRW8,10-G	95759509	95759510
	G 3/4	VGB-103-500/2/11-S-1-O,B0/NRW8,10-G	95759513	95759514
	Yoke USA	VGB-103-500/3/11-S-1-O,B0/NRW8,10-G	95759515	95759516
50-1000	1"	VGB-103-1000/1/11-S-1-O,B0/NRW8,10-G	95759517	95759518
	G 3/4	VGB-103-1000/2/11-S-1-O,B0/NRW8,10-G	95759519	95759520
	Yoke USA	VGB-103-1000/3/11-S-1-O,B0/NRW8,10-G	95759521	95759522
100-2000	1"	VGB-103-2000/1/11-S-1-O,B0/NRW8,10-G	95759523	95759524
	G 3/4	VGB-103-2000/2/11-S-1-O,B0/NRW8,10-G	95759525	95759526
	Yoke USA	VGB-103-2000/3/11-S-1-O,B0/NRW8,10-G	95759527	95759528
150-3000	1"	VGB-103-3000/1/11-S-1-O,B0/NRW9,10-G	95759529	95759531
	G 3/4	VGB-103-3000/2/11-S-1-O,B0/NRW9,10-G	95759532	95759533
	Yoke USA	VGB-103-3000/3/11-S-1-O,B0/NRW9,10-G	95759534	95759535
200-4000	1"	VGB-103-4000/1/11-S-1-O,B0/NRW9,10-G	95759536	95759537
	G 3/4	VGB-103-4000/2/11-S-1-O,B0/NRW9,10-G	95759538	95759539
	Yoke USA	VGB-103-4000/3/11-S-1-O,B0/NRW9,10-G	95759540	95759541

4. Vacuum regulators

Vaccuperm VGA-111 up to 4 kg/h

The VGA-111 vacuum regulator for chlorine capacities up to 4 kg/h is intended for operation with a 189-010 change-over device and a VGA-113 or VGA-117 single or multiple dosing regulator.

The VGA-111 vacuum regulator is available with different thread sizes and yoke connection for various installation options:

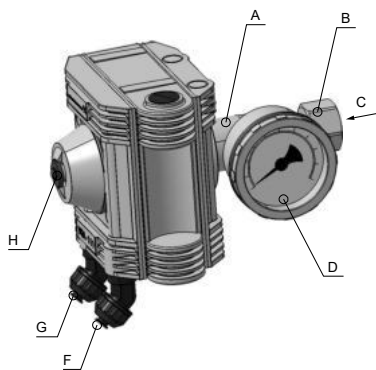
- Cylinder mounting
- Drum mounting
- Header-line mounting
- Wall mounting

The VGA-111 vacuum regulator includes:

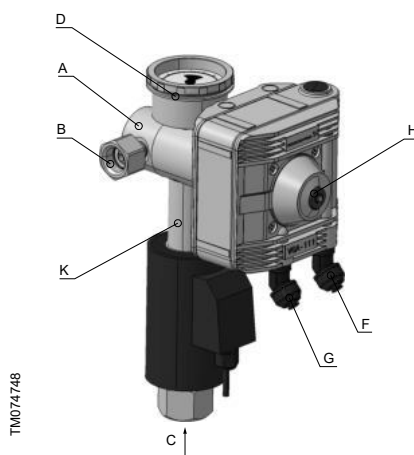
- Internal filter, easily accessible for maintenance
- Integrated pressure-relief valve
- Visual indication of empty chlorine cylinder
- 5 gaskets for pressure-side connections

Options:

- Flow-limiting nozzle for chlorine withdrawal not exceeding 650 g/h (DIN 19606)
- Residual pressure device to ensure that a chlorine cylinder is not completely emptied to prevent moisture from entering
- Chlorine-resistant pressure-gauge with or without contact for monitoring the pressure in the chlorine cylinder or drum
- Heated liquid trap to prevent liquid chlorine from entering the inlet valve (recommended for applications with chlorine drums and header lines)



VGA-111, cylinder mounting



VGA-111, header-line mounting, with heated liquid trap

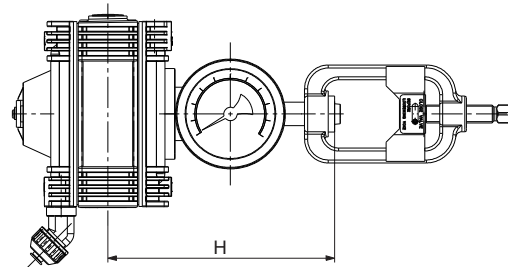
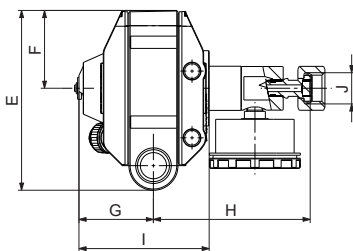
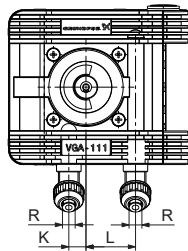
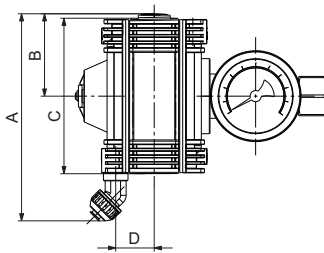
Pos.	Component	Pos.	Component
A	Inlet valve	F	Outlet, vacuum connection
B	Inlet, pressure connection	G	Outlet, vent connection
C	Filter	H	Visual indication of empty chlorine cylinder
D	Pressure gauge	K	Heated liquid trap

Technical data VGA-111

Medium	Chlorine gas
Capacity	Up to 4000 g/h
Empty indication	Visual indication of lack of chlorine
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Inlet valve: silver, PTFE, special alloy • Springs: alloy C-4, coated • Diaphragm: FEP • Filter: Ceramic • O rings: FKM
Connections	<p>Pressure connection inlet:</p> <ul style="list-style-type: none"> • Union nut 1"; G 3/4; G 5/8; 1 1/4"; G 1/2 • Yoke USA <p>Vacuum connection outlet:</p> <ul style="list-style-type: none"> • PE hose 8/11 <p>Vent connection outlet:</p> <ul style="list-style-type: none"> • PE hose 8/11
Pressure gauge	<ul style="list-style-type: none"> • Pressure range: 0 to 16 bar • Without contact or with contact • Contact (R4) closes at falling pressure • Contact (R5) opens at falling pressure • Max. 10 W, 75 VDC, 50 VAC, 0.5 A
Weight	2.4 kg; 4.4 kg (with heated liquid trap)

Dimensions VGA-111

- VGA-111 with pressure gauge, for cylinder or header-line mounting



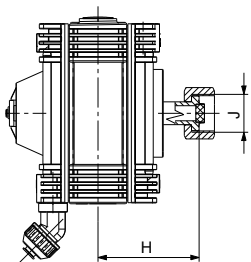
VGA-111, pressure connection yoke USA

TM074746

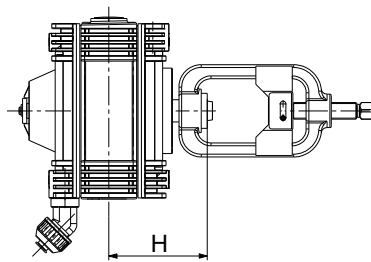
TM074743

VGA-111, pressure connection 1", G 5/8, G 3/4

- VGA-111 without pressure gauge, for cylinder or header-line mounting



TM074986

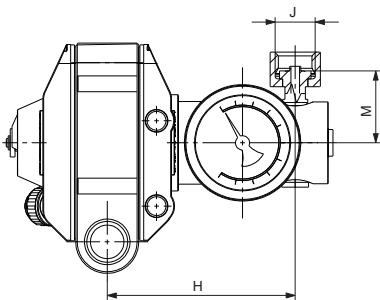


TM074987

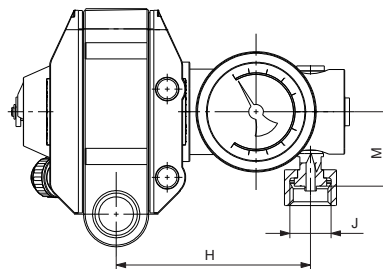
VGA-111, pressure connection 1", G 3/4

VGA-111, cylinder connection yoke USA

- VGA-111 with pressure gauge and heated liquid trap, for header-line mounting



TM074749

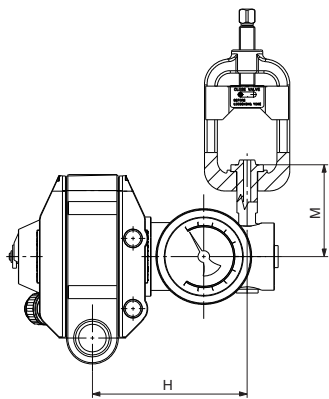


TM074754

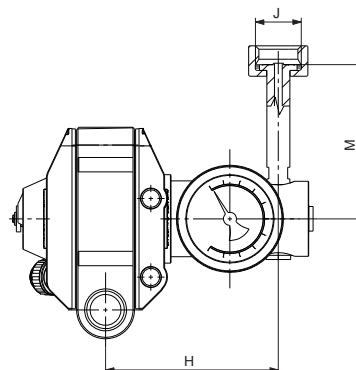
VGA-111, pressure connection 1", G 3/4, pressure inlet left

VGA-111, pressure connection 1", G 3/4, pressure inlet right

- VGA-111 with pressure gauge and heated liquid trap, for drum mounting



TM074751

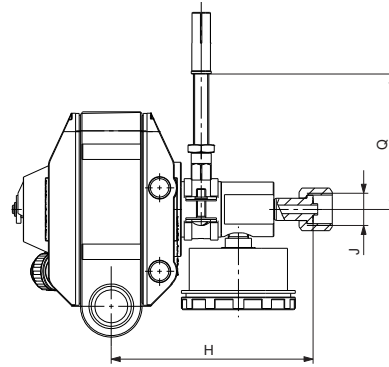
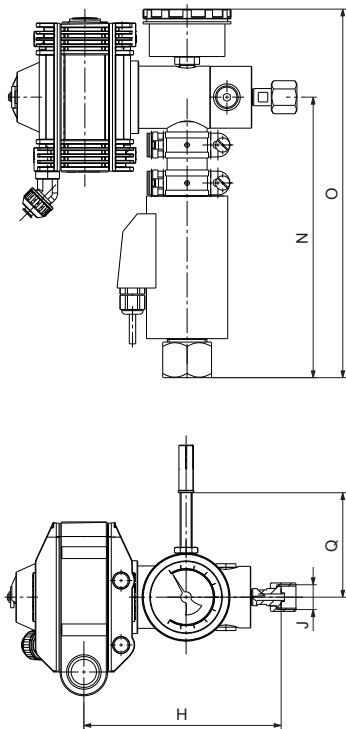


TM074752

VGA-111, pressure connection yoke USA, pressure inlet left

VGA-111, pressure connection 1 1/4", pressure inlet left

- VGA-111 for wall mounting



VGA-111, pressure connection G 1/2, without heated liquid trap

TM074747

TM074753

VGA-111, pressure connection G 1/2, with heated liquid trap

Dimensions in mm

J	A	B	C	D	E	F	G	I	K	L	Q	R
1"												
G 5/8												
G 3/4												
Yoke USA	170	67	126	31	146	63	61	106	14	40	-	8/11
1 1/4"												
G 1/2											88	

J	With pressure gauge	Without pressure gauge	With heated liquid trap and pressure gauge			
	H	H	H	M	N	O
1"	127	118	120	46	236	310
G 5/8	127	-	-	-	-	-
G 3/4	153	71	120	71	236	310
Yoke USA	153	71	120	71	236	310
1 1/4"	-	-	120	107	236	310
G 1/2	131	-	166	-	236	310

Type key VGA-111

Type	
VGA-111 -4/BC/1/11-S-1R-0-O,0F-G,C3	
VGA-111	Vacuum regulator
Capacity	
VGA-111-4/BC/1/11-S-1R-0-O,0F-G,C3	
4	4 kg/h
Installation type	
VGA-111-4/BC/1/11-S-1R-0-O,0F-G,C3	
B	Cylinder mounting, without heated liquid trap
BC	Cylinder or header line mounting, without heated liquid trap
D	Drum mounting, with heated liquid trap
W	Wall mounting, with or without heated liquid trap
C	Header-line mounting, with heated liquid trap
Pressure connection, inlet	
VGA-111-4/BC/1/11-S-1R-0-O,0F-G,C3	
1	1"
2	G 3/4
3	Yoke USA
4	G ½ copper line
9	G 5/8
14	1 ¼"
Vacuum connection, outlet	
VGA-111-4/BC/1/11-S-1R-0-O,0F-G,C3	
11	PE hose 8/11
Inlet valve	
VGA-111-4/BC/1/11-S-1R-0-O,0F-G,C3	
B	Basic, not for pressure gauge without heated liquid trap
S	Short, for pressure gauge without heated liquid trap
L	Liquid trap, 230 V, 50/60 Hz, standard connection
M	Liquid trap, 115 V, 50/60 Hz, standard connection
Pressure gauge	
VGA-111-4/BC/1/11-S-1R-0-O,0F-G,C3	
0	Without
1	Pressure gauge, without contact
2	Pressure gauge, contact (R4, closes at falling pressure)
3	Pressure gauge, contact (R5, opens at falling pressure)
Position pressure gauge	
VGA-111-4/BC/1/11-S-1R-0-O,0F-G,C3	
T	Top
R	Right
X	Basic, not for pressure gauge

Flow limiting nozzle	
VGA-111-4/BC/1/11-S-1R-0- <u>0</u> ,0F-G,C3	
0	Without
1	With flow limiting nozzle
Filter	
VGA-111-4/BC/1/11-S-1R-0- <u>0</u> ,0F-G,C3	
O	Filter in pressure connection
U	Filter in inlet valve
Residual pressure device	
VGA-111-4/BC/1/11-S-1R-0-0, <u>0</u> F-G,C3	
0	Without
1	With residual pressure device
Position pressure inlet	
VGA-111-4/BC/1/11-S-1R-0-0, <u>0</u> F-G,C3	
F	Front
L	Left
R	Right
Logo	
VGA-111-4/BC/1/11-S-1R-0-0F- <u>0</u> ,C3	
G	Grundfos
Product certificate	
VGA-111-4/BC/1/11-S-1R-0-0F-G, <u>C3</u>	
C3	Certificate 3.1 (EN 10204)

Order data for VGA-111

VGA-111 for cylinder or header-line mounting

- Inlet valve **without** heated liquid trap

Pressure connection	Pressure gauge	Other features	Type designation	Product number	Product number with certificate 3.1
1"	Without		VGA-111-4/BC/1/11-B-0X-0-O,0F-G	96680069	95759869
	With		VGA-111-4/BC/1/11-S-1R-0-O,0F-G	96680135	95759870
	Contact (R4)		VGA-111-4/BC/1/11-S-2R-0-O,0F-G	95723062	95759872
	Contact (R5)		VGA-111-4/BC/1/11-S-3R-0-O,0F-G	95723061	95759874
	With	Residual pressure safety device	VGA-111-4/BC/1/11-S-1R-0-O,1F-G	96680233	95759876
	Contact (R4)		VGA-111-4/BC/1/11-S-2R-0-O,1F-G	96680186	95759877
	Contact (R5)		VGA-111-4/BC/1/11-S-3R-0-O,1F-G	96680115	95759878
	With	Flow limiting nozzle, max 650 g/h	VGA-111-4/BC/1/11-S-1R-1-O,0F-G	96680159	95759880
	Contact (R4)		VGA-111-4/BC/1/11-S-2R-1-O,0F-G	95716850	95759881
	Contact (R5)		VGA-111-4/BC/1/11-S-3R-1-O,0F-G	95703019	95759882
G 3/4	Without		VGA-111-4/BC/2/11-B-0X-0-O,0F-G	96680071	95759883
	With		VGA-111-4/BC/2/11-S-1R-0-O,0F-G	95712192	95759884
	Contact (R4)		VGA-111-4/BC/2/11-S-2R-0-O,0F-G	95759885	95759886
	Contact (R5)		VGA-111-4/BC/2/11-S-3R-0-O,0F-G	95759666	95759887
Yoke USA	Without		VGA-111-4/B/3/11-B-0X-0-O,0F-G	91834644	95759888
	With		VGA-111-4/B/3/11-S-1R-0-O,0F-G	95759889	95759890
	Contact (R4)		VGA-111-4/B/3/11-S-2R-0-O,0F-G	95759891	95759892
	Contact (R5)		VGA-111-4/B/3/11-S-3R-0-O,0F-G	95759893	95759894
G 5/8	With		VGA-111-4/B/9/11-S-1R-0-O,0F-G	95759895	95759896
	Contact (R4)		VGA-111-4/B/9/11-S-2R-0-O,0F-G	95759897	95759898
	Contact (R5)		VGA-111-4/B/9/11-S-3R-0-O,0F-G	95759899	95759900

VGA-111 for drum mounting

- Inlet valve **with** heated liquid trap
- Connection left, pressure gauge top-mounted

Pressure connection	Pressure gauge	Heated liquid trap	Type designation	Product number	Product number with certificate 3.1
Yoke USA	With		VGA-111-4/D/3/11-L-1T-0-U,0L-G	96680201	95759901
	Contact (R4)	230 V, 50/60 Hz	VGA-111-4/D/3/11-L-2T-0-U,0L-G	95759902	95759903
	Contact (R5)		VGA-111-4/D/3/11-L-3T-0-U,0L-G	95759904	95759905
	With		VGA-111-4/D/3/11-M-1T-0-U,0L-G	95759906	95759907
	Contact (R4)	115 V, 50/60 Hz	VGA-111-4/D/3/11-M-2T-0-U,0L-G	95759908	95759909
	Contact (R5)		VGA-111-4/D/3/11-M-3T-0-U,0L-G	95759910	95759911
1 1/4"	With		VGA-111-4/D/14/11-L-1T-0-U,0L-G	96680121	95759912
	Contact (R4)	230 V, 50/60 Hz	VGA-111-4/D/14/11-L-2T-0-U,0L-G	96680116	95759913
	Contact (R5)		VGA-111-4/D/14/11-L-3T-0-U,0L-G	95759914	95759915

VGA-111 for header-line mounting

- Inlet valve **with** heated liquid trap
- Pressure gauge top-mounted

Pressure connection	Pressure gauge	Heated liquid trap	Pressure inlet position	Type designation	Product number	Product number with certificate 3.1
1"	With	230 V, 50/60 Hz	Left	VGA-111-4/C/1/11-L-1T-0-U,0L-G	96680132	95759917
	Contact (R4)			VGA-111-4/C/1/11-L-2T-0-U,0L-G	96680139	95759918
	Contact (R5)			VGA-111-4/C/1/11-L-3T-0-U,0L-G	95721695	95759919
	With	230 V, 50/60 Hz	Right	VGA-111-4/C/1/11-L-1T-0-U,0R-G	95717322	95759920
	Contact (R4)			VGA-111-4/C/1/11-L-2T-0-U,0R-G	95733061	95759921
	Contact (R5)			VGA-111-4/C/1/11-L-3T-0-U,0R-G	96680101	95759922
G 3/4	With	230 V, 50/60 Hz	Left	VGA-111-4/C/2/11-L-1T-0-U,0L-G	95712206	95759923
	Contact (R4)			VGA-111-4/C/2/11-L-2T-0-U,0L-G	95759924	95759925
	Contact (R5)			VGA-111-4/C/2/11-L-3T-0-U,0L-G	95745834	95759926
	With	230 V, 50/60 Hz	Right	VGA-111-4/C/2/11-L-1T-0-U,0R-G	95758862	95759927
	Contact (R4)			VGA-111-4/C/2/11-L-2T-0-U,0R-G	95759928	95759929
	Contact (R5)			VGA-111-4/C/2/11-L-3T-0-U,0R-G	95759930	95759931

VGA-111 for wall mounting

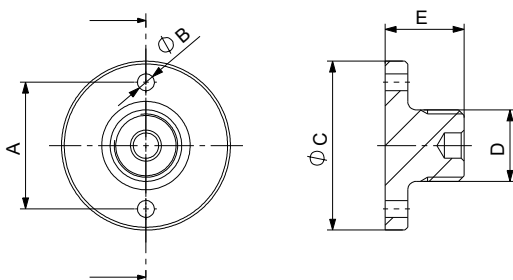
- Inlet valve **with** or **without** heated liquid trap
- Brackets for wall-mounting included

Pressure connection	Pressure gauge	Other features	Type designation	Product number	Product number with certificate 3.1
G 1/2	With	Without liquid trap	VGA-111-4/W/4/11-S-1R-0-U,0F-G	96680129	95759932
	Contact (R4)		VGA-111-4/W/4/11-S-2R-0-U,0F-G	95759379	95759933
	Contact (R5)		VGA-111-4/W/4/11-S-3R-0-U,0F-G	95719411	95759934
G 1/2	With	With heated liquid trap, 230 V, 50/60 Hz	VGA-111-4/W/4/11-L-1R-0-U,0F-G	96680091	95759935
	Contact (R4)		VGA-111-4/W/4/11-L-2R-0-U,0F-G	95718353	95759936
	Contact (R5)		VGA-111-4/W/4/11-L-3R-0-U,0F-G	95707323	95759937

Supporting plate for VGA-111 (accessory)

The supporting plate is fixed at a wall and intended to hold the VGA-111 during chlorine cylinder exchange.

Dimensions of a supporting plate for VGA-111



Dimensions in mm

D	A	øB	øC	E
1"				
G 5/8	45	6	60	28
G 3/4				

Order data for a supporting plate for VGA-111

Description	Product number
Supporting plate for VGA-111, connection 1"	96680976
Supporting plate for VGA-111, connection G 3/4	96708811
Supporting plate for VGA-111, connection G 5/8	98025824

Vaccuperm VGA-146 up to 10 kg/h

The VGA-146 vacuum regulator for chlorine capacities up to 10 kg/h is intended for operation with a 189-010 change-over device and a single or multiple VGA-113, VGA-117 or VGS-141 dosing regulator.

The VGA-146 vacuum regulator is available with different thread sizes and yoke connection for various installation options:

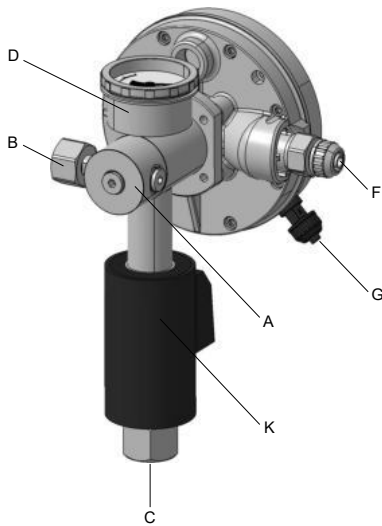
- Cylinder mounting
- Drum mounting
- Header-line mounting
- Wall mounting

The VGA-146 vacuum regulator includes:

- Internal filter, easily accessible for maintenance
- Integrated pressure relief valve
- 5 gaskets for pressure-side connection

Options:

- Chlorine-resistant pressure-gauge with or without contact for monitoring the pressure in the chlorine cylinder or drum
- Heated liquid trap to prevent liquid chlorine from entering the inlet valve (recommended for applications with chlorine drums and header lines)



TM074725

VGA-146 with heated liquid trap

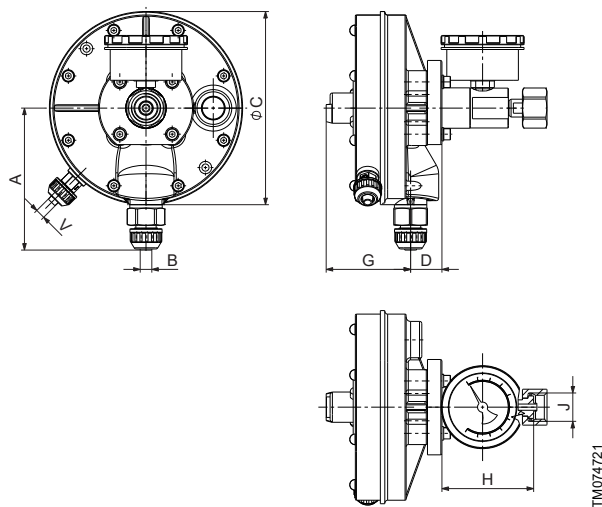
Pos.	Component
A	Inlet valve
B	Inlet, pressure connection
C	Filter
D	Pressure gauge
F	Outlet, vacuum connection
G	Outlet, vent connection
K	Heated liquid trap

Technical data VGA-146

Medium	Chlorine gas
Capacity	Up to 10 kg/h
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Inlet valve: silver/PTFE, special alloy • Springs: alloy C-4, coated • Diaphragm: FEP • Filter: ceramic • O rings: FKM
Connections	<p>Pressure connection inlet:</p> <ul style="list-style-type: none"> • Union nut 1"; G 3/4; 1 1/4"; G 1/2 • Yoke USA <p>Vacuum connection outlet:</p> <ul style="list-style-type: none"> • PE hose 10/14 • PVC pipe DN 15 (order separately) <p>Vent connection outlet:</p> <ul style="list-style-type: none"> • PE hose 8/11
Pressure gauge	<ul style="list-style-type: none"> • Pressure range: 0 to 16 bar • Without contact or with contact • Contact (R4) closes at falling pressure • Contact (R5) opens at falling pressure • Max. 10 W, 75 VDC, 50 VAC, 0.5 A
Weight	2.4 kg; 4.8 kg (with heated liquid trap)

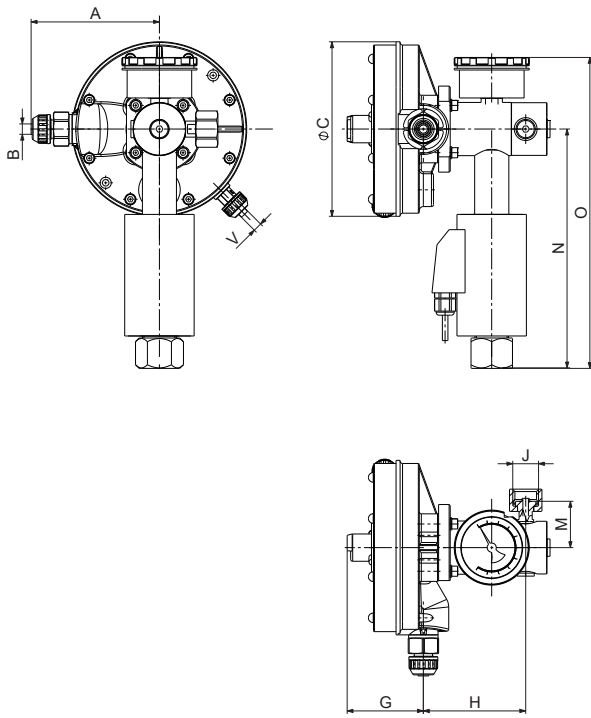
Dimensions VGA-146

- VGA-146 without heated liquid trap, for header-line mounting



Vaccuperm VGA-146, pressure connection 1", G 3/4;
pressure inlet front

- VGA-146 with heated liquid trap, for header-line mounting



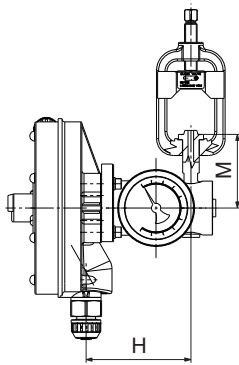
TM074726

TM074727

VGA-146, pressure connection 1", G 3/4; pressure inlet left

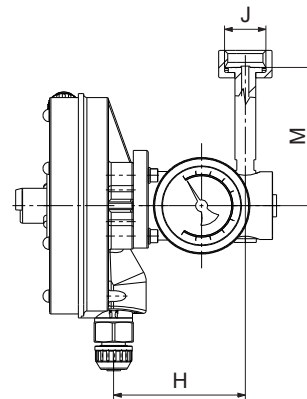
VGA-146, pressure connection 1", G 3/4; pressure inlet right

- VGA-146 with heated liquid trap, for drum mounting



TM074730

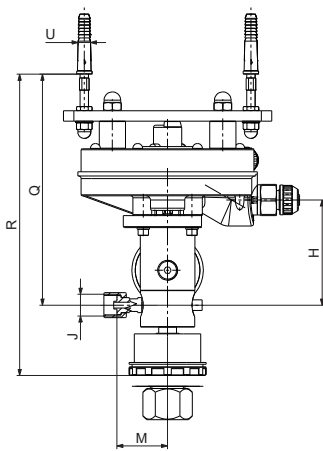
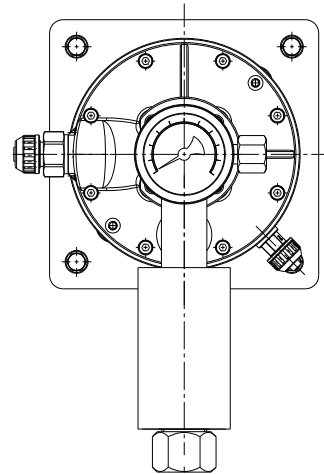
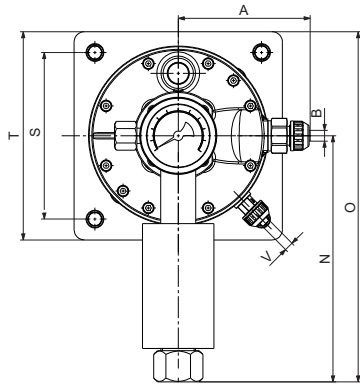
VGA-146, pressure connection yoke USA, pressure inlet left



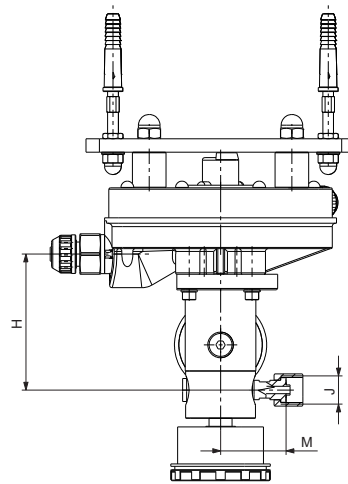
TM074731

VGA-146, pressure connection 1 1/4", pressure inlet left

- VGA-146 with heated liquid trap, for wall mounting



VGA-146, pressure connection G 1/2, pressure inlet left

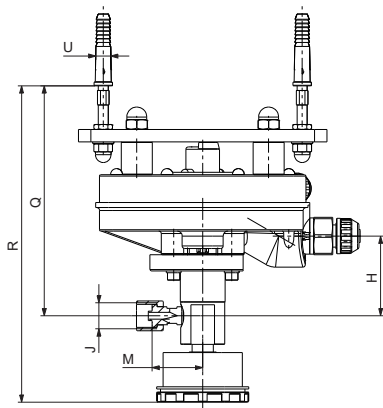


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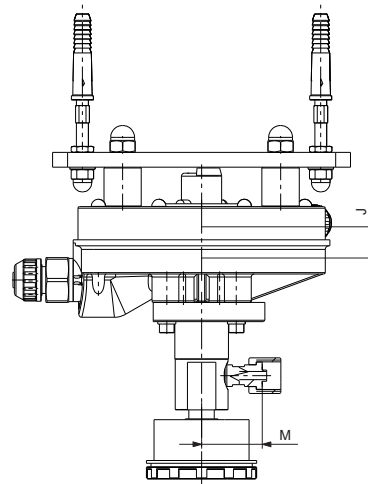
VGA-146, pressure connection G 1/2, pressure inlet right

- VGA-146 without heated liquid trap, for wall mounting



VGA-146, pressure inlet left

TM074723



VGA-146, pressure inlet right

TM074724

Dimensions in mm

J	A	B	C	D	G	V	T	S	U
1"									
G 3/4									
Yoke USA	127	PE 10/14	172	28	75	8x11	-	-	-
1 1/4"									
G 1/2							200	160	10

J	Without heated liquid trap				With heated liquid trap				
	H	M	Q	R	H	M	N	Q	R
1"	82					46			
G 3/4	106					71			
Yoke USA	-	-	-	-	101	71	236	-	-
1 1/4"	-					106			
G 1/2	64	41	185	55		49		222	290

Type key VGA-146

Type	
VGA-146	Vacuum regulator
VGA-146 -10/D/3/6-L-1T-U,0L-G,C3	
Capacity	
VGA-146-10	10 kg/h
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
Installation type	
D	Drum mounting, with heated liquid trap
DC	Drum or header-line mounting, with heated liquid trap
W	Wall mounting, with or without heated liquid trap
C	Header-line mounting, with or without heated liquid trap

Pressure connection, inlet	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
1	1"
2	G 3/4
3	Yoke USA
4	G 1/2 copper line
14	1 1/4"

Vacuum connection, outlet	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
6	PE hose 10/14

Inlet valve	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
S	Short for pressure gauge without heated liquid trap
L	Liquid trap, 230 V, 50/60 Hz, standard connection
M	Liquid trap, 115 V, 50/60 Hz, standard connection
N	Liquid trap, 230 V, 50/60 Hz, extended connection

Pressure gauge	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
0	Without
1	Pressure gauge, without contact
2	Pressure gauge, contact (R4, closes at falling pressure)
3	Pressure gauge, contact (R5, opens at falling pressure)

Position pressure gauge	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
T	Top
F	Front

Filter	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
U	Filter in inlet valve

Residual pressure device	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
0	Without

Position pressure inlet	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
F	Front
L	Left
R	Right

Logo	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
G	Grundfos

Product certificate	
VGA-146-10/D/3/6-L-1T-U,0L-G,C3	
C3	Certificate 3.1 (EN 10204)

Order data for VGA-146**VGA-146 for drum mounting**

- Inlet valve with heated liquid trap
- Connection left, pressure gauge top-mounted
- Vacuum hose connection 10/14, for vacuum pipe connection DN 15 see Pipe connection (accessory)

Pressure connection	Pressure gauge	Heated liquid trap	Type designation	Product number	Product number with certificate 3.1
Yoke USA	With	230 V, 50/60 Hz	VGA-146-10/D/3/6-L-1T-U,0L-G	96681252	95747089
	Contact (R4)		VGA-146-10/D/3/6-L-2T-U,0L-G	96709616	95759964
	Contact (R5)		VGA-146-10/D/3/6-L-3T-U,0L-G	95759965	95759966
Yoke USA	With	115 V, 50/60 Hz	VGA-146-10/D/3/6-M-1T-U,0L-G	91834760	95759967
	Contact (R4)		VGA-146-10/D/3/6-M-2T-U,0L-G	95759968	95759969
	Contact (R5)		VGA-146-10/D/3/6-M-3T-U,0L-G	95759970	95759971
1 1/4"	With	230 V, 50/60 Hz	VGA-146-10/D/14/6-N-1T-U,0L-G	95758751	95759972
	Contact (R4)		VGA-146-10/D/14/6-N-2T-U,0L-G	95759973	95759974
	Contact (R5)		VGA-146-10/D/14/6-N-3T-U,0L-G	95759975	95759976

VGA-146 for header-line mounting

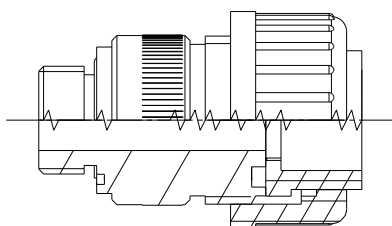
- Inlet valve with or without heated liquid trap
- Pressure inlet position front, pressure gauge top-mounted (without liquid trap)
- Pressure inlet position right or left, pressure gauge top-mounted (with liquid trap)
- Vacuum hose connection 10/14, for vacuum pipe connection DN 15 see Pipe connection (accessory)

Pressure connection	Pressure gauge	Other features	Pressure inlet position	Type designation	Product number	Product number with certificate 3.1	
1"	Without	Without liquid trap	Front	VGA-146-10/C/1/6-S-0T-U,0F-G	96709552	95759977	
	With			VGA-146-10/C/1/6-S-1T-U,0F-G	96709553	95759978	
	Contact (R4)			VGA-146-10/C/1/6-S-2T-U,0F-G	95759979	95759980	
	Contact (R5)			VGA-146-10/C/1/6-S-3T-U,0F-G	95759981	95759982	
	With	With heated liquid trap, 230 V, 50/60 Hz	Right	VGA-146-10/C/1/6-L-1T-U,0R-G	96709551	95759983	
	Contact (R4)			VGA-146-10/C/1/6-L-2T-U,0R-G	96709556	95759984	
	Contact (R5)			VGA-146-10/C/1/6-L-3T-U,0R-G	96681256	95759985	
	With	With heated liquid trap, 230 V, 50/60 Hz	Left	VGA-146-10/DC/1/6-L-1T-U,0L-G	96681247	95759987	
	Contact (R4)			VGA-146-10/DC/1/6-L-2T-U,0L-G	96709555	95759988	
	Contact (R5)			VGA-146-10/DC/1/6-L-3T-U,0L-G	96709568	95759989	
	G 3/4	Without	Without liquid trap	Front	VGA-146-10/C/2/6-S-0T-U,0F-G	96709578	95759992
		With			VGA-146-10/C/2/6-S-1T-U,0F-G	95712438	95759993
Contact (R4)		VGA-146-10/C/2/6-S-2T-U,0F-G			95759990	95759994	
Contact (R5)		VGA-146-10/C/2/6-S-3T-U,0F-G			95759991	95759995	
With		With heated liquid trap, 230 V, 50/60 Hz	Right	VGA-146-10/C/2/6-L-1T-U,0R-G	95747984	95759997	
Contact (R4)				VGA-146-10/C/2/6-L-2T-U,0R-G	95747985	95759998	
Contact (R5)				VGA-146-10/C/2/6-L-3T-U,0R-G	95759996	95759999	
With		With heated liquid trap, 230 V, 50/60 Hz	Left	VGA-146-10/DC/2/6-L-1T-U,0L-G	96709566	95759986	
Contact (R4)				VGA-146-10/DC/2/6-L-2T-U,0L-G	96709615	95760000	
Contact (R5)				VGA-146-10/DC/2/6-L-3T-U,0L-G	95725732	95760001	

VGA-146 for wall mounting

- Inlet valve with or without heated liquid trap
- Pressure inlet position right or left, pressure gauge front-mounted
- Plate for wall-mounting included
- Vacuum hose connection 10/14, for vacuum pipe DN 15 see Pipe connection (accessory)

Pressure connection	Pressure gauge	Other features	Pressure inlet position	Type designation	Product number	Product number with certificate 3.1
G 1/2	Without	Without liquid trap	Left	VGA-146-10/W/4/6-S-0F-U,0L-G	96709580	95760005
	With			VGA-146-10/W/4/6-S-1F-U,0L-G	96646927	95760002
	Contact (R4)			VGA-146-10/W/4/6-S-2F-U,0L-G	96709582	95760003
	Contact (R5)			VGA-146-10/W/4/6-S-3F-U,0L-G	95708148	95760004
	With	With heated liquid trap, 230 V, 50/60 Hz	Left	VGA-146-10/W/4/6-L-1F-U,0L-G	96681254	95760009
	Contact (R4)			VGA-146-10/W/4/6-L-2F-U,0L-G	96681258	95756967
	Contact (R5)			VGA-146-10/W/4/6-L-3F-U,0L-G	96709610	95756969
	Without			VGA-146-10/W/4/6-S-0F-U,0R-G	95716316	95760006
	With	Without liquid trap	Right	VGA-146-10/W/4/6-S-1F-U,0R-G	95703408	95760007
	Contact (R4)			VGA-146-10/W/4/6-S-2F-U,0R-G	95702441	95760008
	Contact (R5)			VGA-146-10/W/4/6-S-3F-U,0R-G	95743102	95756966
	With			With heated liquid trap, 230 V, 50/60 Hz	Right	VGA-146-10/W/4/6-L-1F-U,0R-G
Contact (R4)	VGA-146-10/W/4/6-L-2F-U,0R-G	96709571	95756968			
Contact (R5)	VGA-146-10/W/4/6-L-3F-U,0R-G	96709611	95756970			

Pipe connection (accessory)

TM075084

Description	Product number
Pipe connection, DN 15 (1 unit)	99358518

Vaccuperm VGS-147 up to 40 kg/h

The VGS-147 vacuum regulator for chlorine capacities up to 40 kg/h is intended for operation with a 186-120 change-over device and a single or multiple VGA-117 or VGS-141-145 dosing regulator.

The VGS-147 vacuum regulator is available for the mounting option:

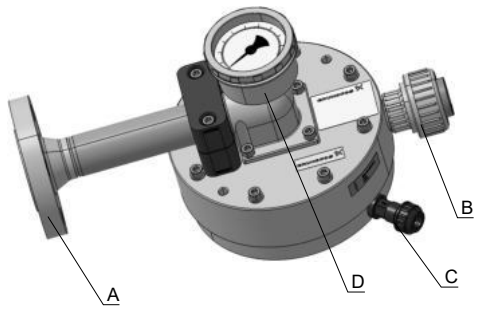
- Header-line mounting (DN 25), in combination with a LiquFilt 524 heated liquid trap

The VGS-147 vacuum regulator includes:

- Integrated pressure relief valve

Options:

- Chlorine-resistant pressure gauge with or without contact for monitoring the pressure in the header line. The R4 contact signal can also be used for triggering a 186-120 change-over device.
- Pressure inlet position left or right



TM074982



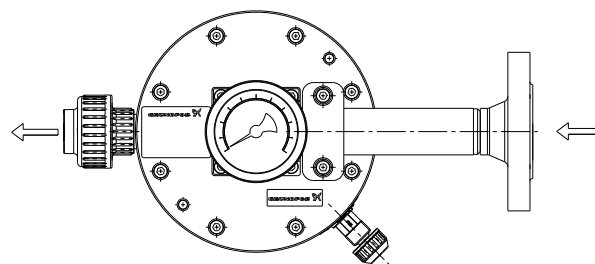
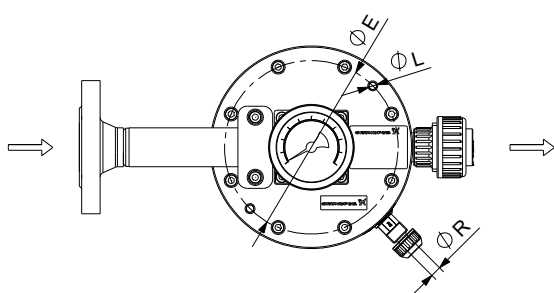
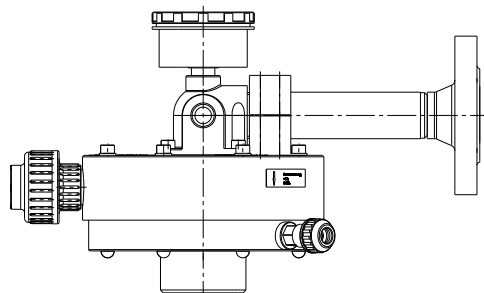
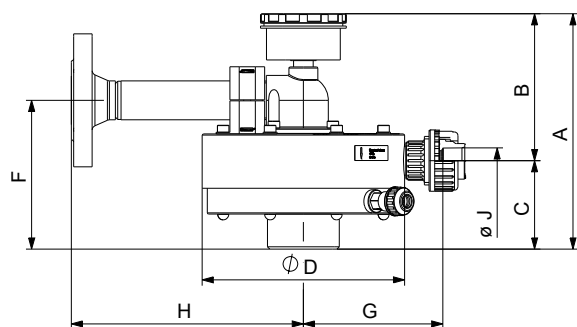
TM075177

Pos.	Component
A	Inlet, pressure connection
B	Outlet, vacuum connection
C	Outlet, vent connection
D	Pressure gauge

Technical data VGS-147

Medium	Chlorine gas
Capacity	up to 40 kg/h
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Inlet valve: silver/PTFE, special alloy • Springs: alloy C-4, coated • Diaphragm: FEP • O-rings: FKM
Connections	<ul style="list-style-type: none"> • Pressure connection inlet: groove flange DN 25, PN 40 (EN 1092-1) • Vacuum connection outlet: PVC pipe DN 20 (20/25) • Vent connection outlet: PE hose 8/11
Pressure gauge	<ul style="list-style-type: none"> • Pressure range: 0 to 16 bar • Without contact or with contact • Contact (R4) closes at falling pressure • Contact (R5) opens at falling pressure • Max. 10 W, 75 VDC, 50 VAC, 0.5 A
Weight	4.8 kg

Dimensions VGS-147



TMO74683

VGS-147, pressure inlet right

TMO74684

VGS-147, pressure inlet left

Dimensions in mm

	A	B	C	øD	øE	F	G	H	J	øL	øR
VGS-147 with pressure gauge	203.5	127	76.5	175	150	129	120.5	200.5	DN 20	6.6	8/11
VGS-147 without pressure gauge	163	86.5	78.5	175	150	129	120.5	200.5	DN 20	6.6	8/11

Type key VGS-147

Type	
VGS-147	Vacuum regulator
Capacity	
VGS-147-40/W/16/14-S-0F-L-G,C3	40 kg/h
Installation type	
VGS-147-40/W/16/14-S-0F-L-G,C3	Wall/pipe mounting
Pressure connection, inlet	
VGS-147-40/W/16/14-S-0F-L-G,C3	Groove flange DN 25 (EN 1092) without counter flange
Vacuum connection, outlet	
VGS-147-40/W/16/14-S-0F-L-G,C3	PVC pipe DN 20 (20/25)

Inlet valve	
VGS-147-40/W/16/14-S-0F-L-G,C3	
S	Short, for pressure gauge
Pressure gauge	
VGS-147-40/W/16/14-S-0F-L-G,C3	
0	Without
1	Pressure gauge, without contact
2	Pressure gauge, contact (R4, closes at falling pressure)
3	Pressure gauge, contact (R5, opens at falling pressure)
Position pressure gauge	
VGS-147-40/W/16/14-S-0F-L-G,C3	
F	Front
Position pressure inlet	
VGS-147-40/W/16/14-S-0F-L-G,C3	
L	Left
R	Right
Logo	
VGS-147-40/W/16/14-S-0F-L-G,C3	
G	Grundfos
Product certificate	
VGS-147-40/W/16/14-S-0F-L-G,C3	
C3	Certificate 3.1 (EN 10204)

Order data for VGS-147

VGS-147, up to 40 kg/h

- Pressure-side connection: groove flange DN 25 (EN 1092)
- Vacuum pipe connection: DN 20, PVC

Pressure gauge	Pressure inlet position	Type designation	Product number	Product number with certificate 3.1
Without	Left	VGS-147-40/W/16/14-S-0F-L-G	95743254	95760755
With		VGS-147-40/W/16/14-S-1F-L-G	95709573	95760756
Contact (R4)		VGS-147-40/W/16/14-S-2F-L-G	95723280	95760757
Contact (R5)		VGS-147-40/W/16/14-S-3F-L-G	95746675	95760758
Without	Right	VGS-147-40/W/16/14-S-0F-R-G	95760753	95760759
With		VGS-147-40/W/16/14-S-1F-R-G	95734852	95760760
Contact (R4)		VGS-147-40/W/16/14-S-2F-R-G	95760754	95760761
Contact (R5)		VGS-147-40/W/16/14-S-3F-R-G	95746676	95760762

Vaccuperm VGS-148 up to 200 kg/h

The VGS-148 vacuum regulator is available for 3 different chlorine capacities up to 70 kg/h, up to 120 kg/h, up to 200 kg/h and intended for operation with an evaporator, a 186-120 or 185 change-over device and a VGS-143 or VGS-145 multiple or single dosing regulator.

The VGS-148 vacuum regulator is available for the mounting option:

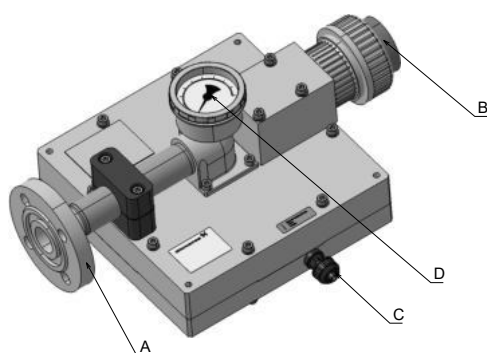
- Mounting on DN 25 piping, in combination with a LiquiFilt 524 heated liquid trap and a 544 pressure reducing valve

The VGS-148 vacuum regulator includes:

- Integrated pressure relief valve

Options:

- Chlorine resistant pressure gauge with or without contact for monitoring the pressure in the header line. The R4 contact signal must be used for triggering a 186-120 change-over device.
- Pressure inlet position left or right



TIM074879



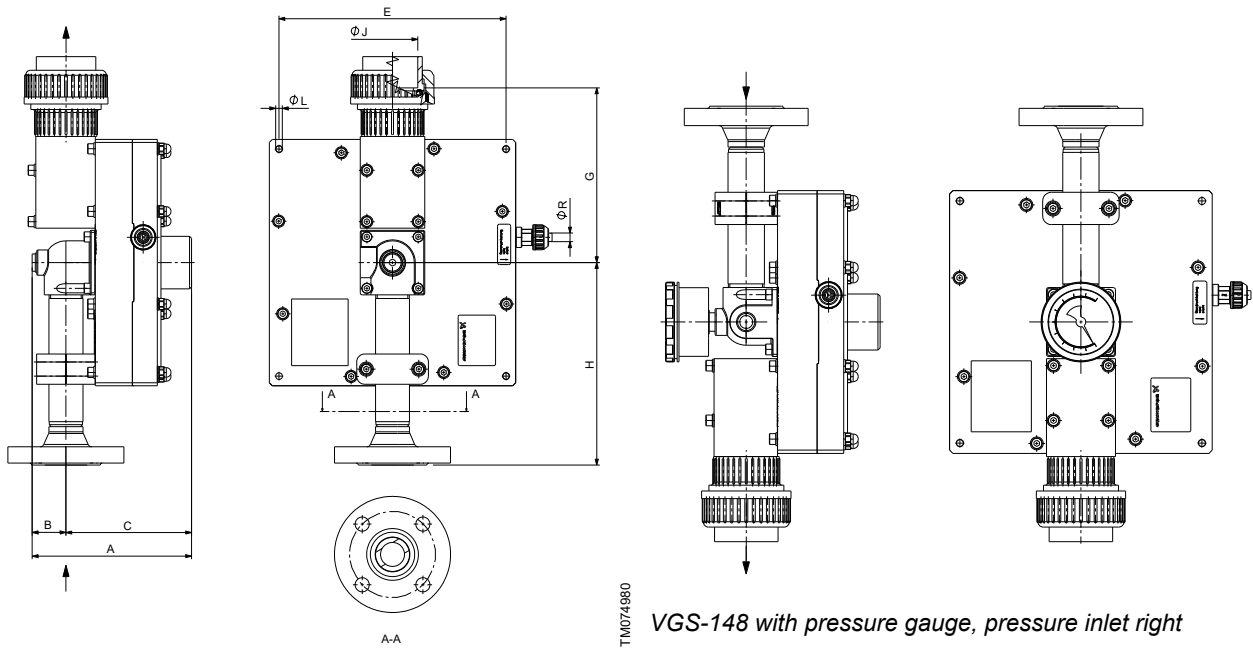
TIM075178

Pos.	Component
A	Inlet, pressure connection
B	Outlet, vacuum connection
C	Outlet, vent connection
D	Pressure gauge

Technical data VGS-148

Medium	Chlorine gas
Capacity	70 kg/h, 120 kg/h, 200 kg/h
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Inlet valve: silver/PTFE, special alloy • Springs: alloy C-4, coated • Diaphragm: FEP • O-rings: FKM
Connections	<ul style="list-style-type: none"> • Pressure connection inlet: groove flange DN 25, PN 40 (EN 1092-1) • Vacuum connection outlet: PVC pipe DN 40 (40/50) • Vent connection outlet: PE hose 8/11
Pressure gauge	<ul style="list-style-type: none"> • Pressure range: 0 to 16 bar • Without contact or with contact • Contact (R4) closes at falling pressure • Contact (R5) opens at falling pressure • Max. 10 W, 75 VDC, 50 VAC, 0.5 A
Weight	8.0 kg

Dimensions VGS-148



VGS-148 without pressure gauge, pressure inlet left

VGS-148 with pressure gauge, pressure inlet right

Dimensions in mm

	A	B	C	D	E	G	H	øJ	øL	øR
VGS-148 with pressure gauge	200	75	125	244	244.9	173	200	DN 40	6.6	8/11
VGS-148 without pressure gauge	159	34	125	244	244.9	173	200	DN40	6.6	8/11

Type key VGS-148

Type	
VGS-148 -70/W/16/17-S-0F-L-G,C3	
VGA-148	Vacuum regulator
Capacity	
VGS-148-70/W/16/17-S-0F-L-G,C3	
70	70 kg/h
120	120 kg/h
200	200 kg/h
Installation type	
VGS-148-70/W/16/17-S-0F-L-G,C3	
W	Wall/pipe mounting
Pressure connection, inlet	
VGS-148-70/W/16/17-S-0F-L-G,C3	
16	Groove flange DN 25 (EN 1092) without counter flange
Vacuum connection, outlet	
VGS-148-70/W/16/17-S-0F-L-G,C3	
17	PVC pipe DN 40 (40/50)

Inlet valve	
VGS-148-70/W/16/17-S-0F-L-G,C3	
S	Short, for pressure gauge
Pressure gauge	
VGS-148-70/W/16/17-S-0F-L-G,C3	
0	Without
1	Pressure gauge, without contact
2	Pressure gauge, contact (R4, closes at falling pressure)
3	Pressure gauge, contact (R5, opens at falling pressure)
Position pressure gauge	
VGS-148-70/W/16/17-S-0F-L-G,C3	
F	Front
Position pressure inlet	
VGS-148-70/W/16/17-S-0F-L-G,C3	
L	Left
R	Right
Logo	
VGS-148-70/W/16/17-S-0F-L-G,C3	
G	Grundfos
Product certificate	
VGS-148-70/W/16/17-S-0F-L-G,C3	
C3	Certificate 3.1 (EN 10204)

Order data for VGS-148**VGS-148, up to 70 kg/h**

- Pressure-side connection: groove flange DN 25 (EN 1092)
- Vacuum pipe connection: DN 40, PVC

Pressure gauge	Pressure inlet position	Type designation	Product number	Product number with certificate 3.1
Without	Left	VGS-148-70/W/16/17-S-0F-L-G	95760764	95760770
With		VGS-148-70/W/16/17-S-1F-L-G	95754129	95760771
Contact (R4)		VGS-148-70/W/16/17-S-2F-L-G	95727617	95760772
Contact (R5)		VGS-148-70/W/16/17-S-3F-L-G	95760765	95760773
Without	Right	VGS-148-70/W/16/17-S-0F-R-G	95760766	95760774
With		VGS-148-70/W/16/17-S-1F-R-G	95760767	95760775
Contact (R4)		VGS-148-70/W/16/17-S-2F-R-G	95760768	95760776
Contact (R5)		VGS-148-70/W/16/17-S-3F-R-G	95760769	95760777

VGS-148, up to 120 kg/h

- Pressure side connection: groove flange DN 25 (EN 1092)
- Vacuum pipe connection: DN 40, PVC

Pressure gauge	Pressure inlet position	Type designation	Product number	Product number with certificate 3.1
Without	Left	VGS-148-120/W/16/17-S-0F-L-G	95760778	95760786
With		VGS-148-120/W/16/17-S-1F-L-G	95760779	95760787
Contact (R4)		VGS-148-120/W/16/17-S-2F-L-G	95760780	95760788
Contact (R5)		VGS-148-120/W/16/17-S-3F-L-G	95760781	95760789
Without	Right	VGS-148-120/W/16/17-S-0F-R-G	95760782	95760790
With		VGS-148-120/W/16/17-S-1F-R-G	95760783	95760791
Contact (R4)		VGS-148-120/W/16/17-S-2F-R-G	95760784	95760792
Contact (R5)		VGS-148-120/W/16/17-S-3F-R-G	95760785	95760793

VGS-148, up to 200 kg/h

- Pressure side connection: groove flange DN 25 (EN 1092)
- Vacuum pipe connection: DN 40, PVC

Pressure gauge	Pressure inlet position	Type designation	Product number	Product number with certificate 3.1
Without	Left	VGS-148-200/W/16/17-S-0F-L-G	95760794	95760802
With		VGS-148-200/W/16/17-S-1F-L-G	95760795	95760803
Contact (R4)		VGS-148-200/W/16/17-S-2F-L-G	95760796	95760804
Contact (R5)		VGS-148-200/W/16/17-S-3F-L-G	95760797	95760805
Without	Right	VGS-148-200/W/16/17-S-0F-R-G	95760798	95760806
With		VGS-148-200/W/16/17-S-1F-R-G	95760799	95760807
Contact (R4)		VGS-148-200/W/16/17-S-2F-R-G	95760800	95760808
Contact (R5)		VGS-148-200/W/16/17-S-3F-R-G	95760801	95760809

5. Dosing regulators

Vaccuperm VGA-113 up to 4 kg/h

VGA-113-110

The VGA 113-110 dosing regulator is used to adjust the chlorine dosing capacity manually. The dosed quantity can be read at the integrated flowmeter. The VGA-113-110 operates under sonic flow conditions without a differential pressure regulator. A VGB injector is required.

The VGA-113-110 dosing regulator is available with the following features:

- Manual capacity adjustment
- Integrated flowmeter (floater principle)
- Various capacities
- Vacuum connections for 8/11 PE hose
- Wall-mounting
- For operation with VGA-111 vacuum regulator



TM075172

VGA-113-311

The VGA-113-311 dosing regulator is used to adjust the chlorine dosing capacity manually. The dosed quantity can be read at the integrated flowmeter. The VGA-113-311 operates with a differential pressure regulator to control the vacuum for a high dosing accuracy. A VGA injector is required.

The VGA-113-311 dosing regulator is available with the following features:

- Manual capacity adjustment
- Integrated flowmeter (floater principle)
- Various capacities
- Vacuum connections for 8/11 PE hose
- Wall-mounting
- For operation with VGA-111 vacuum regulator



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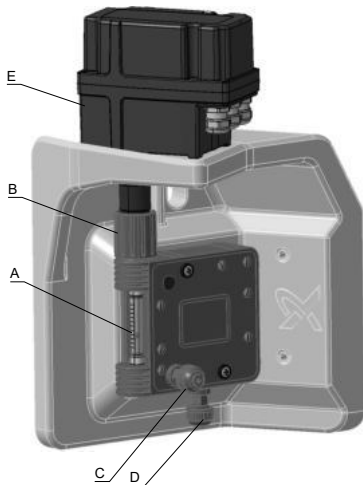
VGA-113-311, manual capacity adjustment

VGA-113-391

The VGA-113-391 dosing regulator is used to adjust the chlorine dosing capacity via servomotor. The dosed quantity can be read at the integrated flowmeter. The VGA-113-391 operates with a differential pressure regulator to control the vacuum for a high dosing accuracy. A VGA injector is required.

The VGA-113-391 dosing regulator is available with the following features:

- Manual or automatic capacity adjustment via servomotor
- Integrated flowmeter (floater principle)
- Various capacities
- Vacuum connections for 8/11 PE hose
- Wall-mounting
- For operation with VGA-111 vacuum regulator



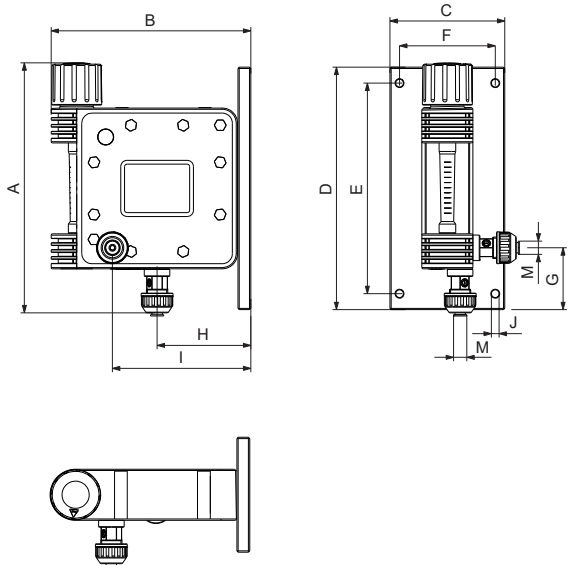
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Pos.	Component
A	Flowmeter
B	Adjustment knob
C	Inlet, vacuum connection
D	Outlet, vacuum connection to injector
E	Servomotor

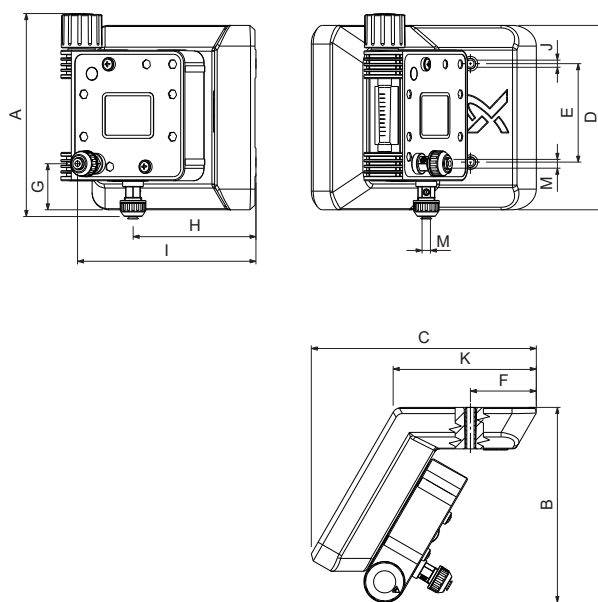
Technical data VGA-113

Medium	Chlorine gas
Capacity	Up to 4000 g/h
Adjustment ratio	1:20
Accuracy	± 4 %
Measuring device	According to the floater principle, measuring tube 70 mm
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Springs: alloy C-4, silver-coated • Diaphragm: FEP • Rate valve: PVC • O rings: FKM
Connections	Vacuum connection: PE hose 8/11 mm
Weight	0.9 kg; 3.1 kg (with servomotor)
Servomotor	<ul style="list-style-type: none"> • Supply voltage: 110-240 V 50/60 Hz or 24 VDC • Input/output signal: 4-20 mA • Enclosure: IP65 • Actuating time (1-100 %): 90 s • Power consumption: 15 VA • Fault relay: potential-free, NC

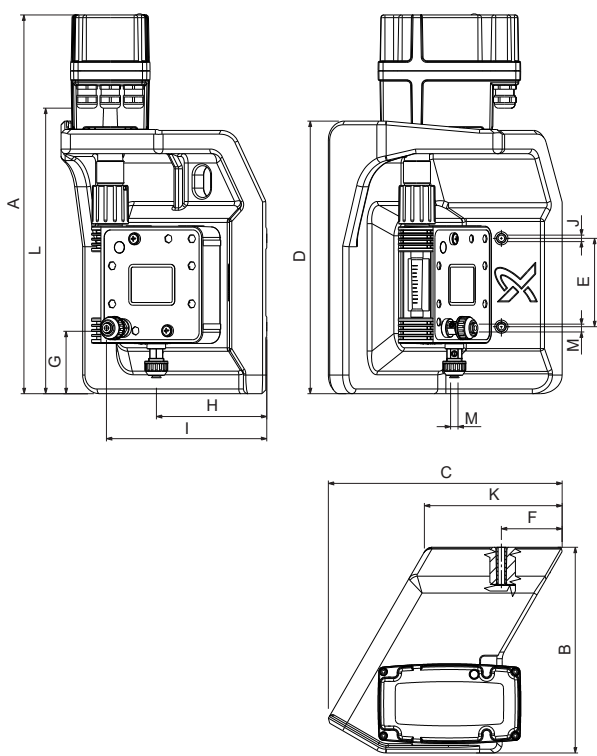
Dimensions of VGA-113



VGA-113-110, manual version



VGA-113-311, manual version



VGA-113-391, automatic version with servomotor

Dimensions in mm

	A	B	C	D	E	F	G	H	I	J	K	L	M
VGA-113--110	196	156	90	190	165	75	48.5	73	108	6	-	-	8x11
VGA-113--311	196	188	217	178	95	64	44	119	172	7	138	-	8x11
VGA-113--391	407	221	251	293	95	65	70.5	119	172	7	148	307	8x11

Type key VGA-113

Type	
<u>VGA-113</u> -25/11-M0,Y-G,C3	
VGA-113	Dosing regulator
Capacity	
VGA-113- <u>25</u> /11-M0,Y-G,C3	
25	1-25 g/h
40	2-40 g/h
100	5-100 g/h
250	10-250 g/h
500	25-500 g/h
1000	50-1000 g/h
2000	100-2000 g/h
3000	150-3000 g/h
4000	400-4000 g/h
Vacuum connection, inlet/outlet	
VGA-113-25/ <u>11</u> -M0,Y-G,C3	
11	PE hose 8/11
Adjustment	
VGA-113-25/11- <u>M0</u> ,Y-G,C3	
M0	Manual
D3	Automatic, 110-240 V, 50/60 Hz, 4-20 mA
D4	Automatic, 24 VDC, 50/60 Hz, 4-20 mA
Differential pressure regulator	
VGA-113-25/11-M0, <u>Y</u> -G,C3	
N	Without
Y	With
Logo	
VGA-113-25/11-M0,Y- <u>G</u> ,C3	
G	Grundfos
Product certificate	
VGA-113-25/11-M0,Y-G, <u>C3</u>	
C3	Certificate 3.1 (EN 10204)

Order data for VGA-113**VGA-113-110, manual capacity adjustment**

Capacity [g/h]	Type designation	Product number	Product number with certificate 3.1
5-100	VGA-113-100/11-M0,N-G	96680284	95758143
10-250	VGA-113-250/11-M0,N-G	96680286	95759948
25-500	VGA-113-500/11-M0,N-G	96680276	95759949
50-1000	VGA-113-1000/11-M0,N-G	96680275	95759950
100-2000	VGA-113-2000/11-M0,N-G	96680283	95759951
150-3000	VGA-113-3000/11-M0,N-G	96680287	95759952
400-4000	VGA-113-4000/11-M0,N-G	96680281	95759953

VGA-113-311, manual capacity adjustment

Capacity [g/h]	Type designation	Product number	Product number with certificate 3.1
1-25	VGA-113-25/11-M0,Y-G	95722277	95759940
2-40	VGA-113-40/11-M0,Y-G	95722278	95759941
5-100	VGA-113-100/11-M0,Y-G	95722279	95759942
10-250	VGA-113-250/11-M0,Y-G	95722280	95759943
25-500	VGA-113-500/11-M0,Y-G	95722281	95754102
50-1000	VGA-113-1000/11-M0,Y-G	95722282	95759944
100-2000	VGA-113-2000/11-M0,Y-G	95722283	95759945
150-3000	VGA-113-3000/11-M0,Y-G	95722284	95759946
400-4000	VGA-113-4000/11-M0,Y-G	95722285	95759947

VGA-113-391, automatic capacity adjustment

Supply voltage servomotor: 110-240 V, 50/60 Hz

Capacity [g/h]	Type designation	Product number	Product number with certificate 3.1
2-40	VGA-113-40/11-D3,Y-G	95722288	95759938
5-100	VGA-113-100/11-D3,Y-G	95722290	95751801
10-250	VGA-113-250/11-D3,Y-G	95722292	95754454
25-500	VGA-113-500/11-D3,Y-G	95722294	95749040
50-1000	VGA-113-1000/11-D3,Y-G	95722296	95749041
100-2000	VGA-113-2000/11-D3,Y-G	95722298	95749038
150-3000	VGA-113-3000/11-D3,Y-G	95722300	95759939
400-4000	VGA-113-4000/11-D3,Y-G	95722302	95749023

VGA-113-391, automatic capacity adjustment

Supply voltage servomotor: 24 VDC

Capacity [g/h]	Type designation	Product number	Product number with certificate 3.1
2-40	VGA-113-40/11-D4,Y-G	95760293	95760301
5-100	VGA-113-100/11-D4,Y-G	95760294	95760302
10-250	VGA-113-250/11-D4,Y-G	95760295	95760303
25-500	VGA-113-500/11-D4,Y-G	95760296	95760304
50-1000	VGA-113-1000/11-D4,Y-G	95760297	95760305
100-2000	VGA-113-2000/11-D4,Y-G	95760298	95760306
150-3000	VGA-113-3000/11-D4,Y-G	95760299	95760307
400-4000	VGA-113-4000/11-D4,Y-G	95760300	95760308

Vaccuperm VGA-117 up to 10 kg/h

VGA-117-110

The VGA-117-110 dosing regulator is used to adjust the chlorine dosing capacity manually. The dosed quantity can be read at the integrated flowmeter. The VGA-117-110 operates under sonic flow conditions without a differential pressure regulator. A VGB injector is required.

The VGA-117-110 dosing regulator is available with the following features:

- Manual capacity adjustment
- Integrated flowmeter (floater principle)
- Various capacities
- Vacuum connections for 10/14 PE hose
- Wall-mounting
- For operation with VGA-146 vacuum regulator

Option:

- For DN 15 vacuum pipe connections, see Order data for pipe connection (accessory).

VGA-117-190

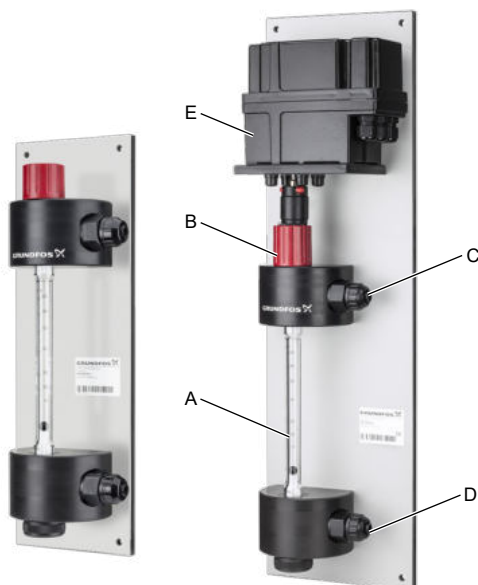
The VGA-117-190 dosing regulator is used to adjust the chlorine dosing capacity via servomotor. The dosed quantity can be read at the integrated flowmeter. The VGA-117-190 operates under sonic flow conditions without a differential pressure regulator. A VGB injector is required.

The VGA-113-190 dosing regulator is available with the following features:

- Manual or automatic capacity adjustment via servomotor
- Integrated flowmeter (floater principle)
- Various capacities
- Vacuum connections for 10/14 PE hose
- Wall-mounting
- For operation with VGA-146 vacuum regulator

Option:

- For DN 15 vacuum pipe connections, see Order data for pipe connection (accessory).



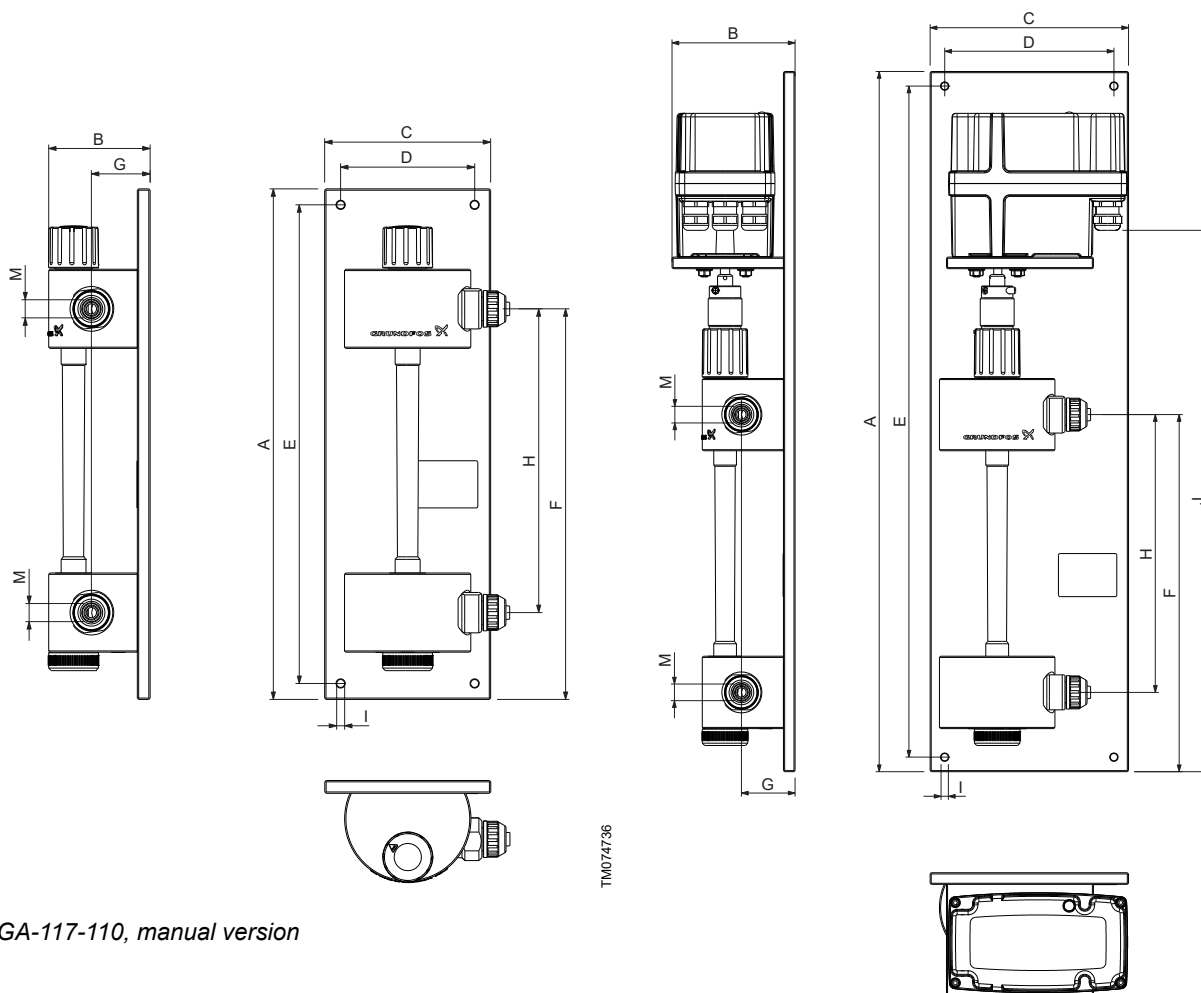
VGA-117-110, manual capacity adjustment (left); VGA-117-190 with servomotor (right)

Pos.	Component	Pos.	Component
A	Measuring tube	D	Outlet, vacuum connection to injector
B	Adjustment knob	E	Servomotor
C	Inlet, vacuum connection		

Technical data VGA-117

Medium	Chlorine gas
Capacity range	Up to 10 kg/h
Adjustment ratio	1:20
Accuracy	± 4 %
Measuring device	According to the floater principle, measuring tube 110 mm
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Rate valve: PVC • O rings: FKM
Connections	Vacuum connection: PE hose 10/14
Weight	1.9 kg; 4.1 kg (with servomotor)
Servomotor	<ul style="list-style-type: none"> • Supply voltage: 110-240 V 50/60 Hz or 24 VDC • Input / output signal: 4-20 mA • Enclosure: IP65 • Actuating time (1-100 %): 90 s • Power consumption: 15 VA • Fault relay: potential-free NC

Dimensions of VGA-117



VGA-117-110, manual version

VGA-117-190, automatic version with servomotor

Dimensions in mm

	A	B	C	D	E	F	G	H	I	J	M
VGA-117-110	400	79.5	130	105	375	306	48	238	6.2	-	10/14
VGA-117-190	600	105.5	170	145	575	306	46	238	6.2	464	10/14

Type key VGA-117

Type	
VGA-117 -500/6-M0,N-G,C3	
VGA-117	Dosing regulator
Dosing capacity	
VGA-117- 500 /6-M0,N-G,C3	
500	25-500 g/h
1000	50-1000 g/h
2000	100-2000 g/h
4000	400-4000 g/h
6000	300-6000 g/h
8000	400-8000 g/h
10000	500-10000 g/h
Vacuum connection, inlet/outlet	
VGA-117-500/ 6 -M0,N-G,C3	
6	PE hose 10/14
Adjustment	
VGA-117-500/6- M0 ,N-G,C3	
MO	Manual
D3	Automatic, 110-240 V, 50/60 Hz, 4-20 mA
D4	Automatic, 24 VDC, 50/60 Hz, 4-20 mA
Differential pressure regulator	
VGA-117-500/6-M0, N -G,C3	
N	Without
Logo	
VGA-117-500/6-M0,N- G ,C3	
G	Grundfos
Product certificate	
VGA-117-500/6-M0,N-G, C3	
C3	Certificate 3.1 (EN 10204)

Order data for VGA-117

VGA-117-110, manual capacity adjustment

Capacity [g/h]	Type designation	Product number	Product number with certificate 3.1
25-500	VGA-117-500/6-M0,N-G	91834652	95760013
50-1000	VGA-117-1000/6-M0,N-G	91834655	95760014
100-2000	VGA-117-2000/6-M0,N-G	91834654	95760015
400-4000	VGA-117-4000/6-M0,N-G	91834651	95755818
300-6000	VGA-117-6000/6-M0,N-G	96680442	95760016
400-8000	VGA-117-8000/6-M0,N-G	95703355	95760017
500-10000	VGA-117-10000/6-M0,N-G	96680440	95758579

VGA-117-190, automatic capacity adjustment

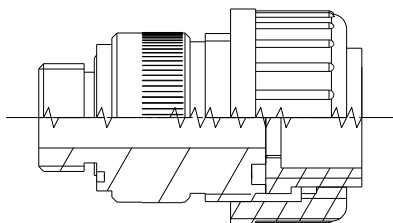
- Supply voltage: 110 - 240 V, 50/60 Hz

Capacity [g/h]	Type designation	Product number	Product number with certificate 3.1
25-500	VGA-117-500/6-D3,N-G	96680467	95760024
50-1000	VGA-117-1000/6-D3,N-G	96680468	95760025
100-2000	VGA-117-2000/6-D3,N-G	96680469	95760026
400-4000	VGA-117-4000/6-D3,N-G	96680470	95747091
300-6000	VGA-117-6000/6-D3,N-G	96680471	95756528
400-8000	VGA-117-8000/6-D3,N-G	96680464	95760027
500-10000	VGA-117-10000/6-D3,N-G	96680465	95760028

- Supply voltage: 24 VDC

Capacity [g/h]	Type designation	Product number	Product number with certificate 3.1
25-500	VGA-117-500/6-D4,N-G	95760310	95760317
50-1000	VGA-117-1000/6-D4,N-G	95760311	95760318
100-2000	VGA-117-2000/6-D4,N-G	95760312	95760319
400-4000	VGA-117-4000/6-D4,N-G	95760313	95760320
300-6000	VGA-117-6000/6-D4,N-G	95760314	95760321
400-8000	VGA-117-8000/6-D4,N-G	95760315	95760322
500-10000	VGA-117-10000/6-D4,N-G	95760316	95760323

Pipe connection (accessory)



TM075084

Description	Product number
Pipe connection, DN 15 (1 unit)	99358518

Vaccuperm VGS-141, VGS-143, VGS-145 chlorine gas dosing systems up to 200 kg/h

Vaccuperm VGS-141, VGS-143 and VGS-145 chlorine gas dosing systems are used for accurate adjustment of the chlorine gas dosing flow.

The VGS systems are available in the following capacity ranges:

- VGS-141: up to 10 kg/h
- VGS-143: up to 40 kg/h
- VGS-145: up to 200 kg/h

All VGS systems operate with a differential pressure regulator to control the vacuum for a high dosing accuracy. A VGA or VGS injector is required.

Option for VGS-141:

- For DN 15 vacuum pipe connection, see order data (accessory)

All VGS gas dosing systems are available in the following versions:

VGS-14X, manual

- Manual capacity adjustment
- Vacuum meter for monitoring the injector vacuum
- In an enclosure for floor or wall mounting

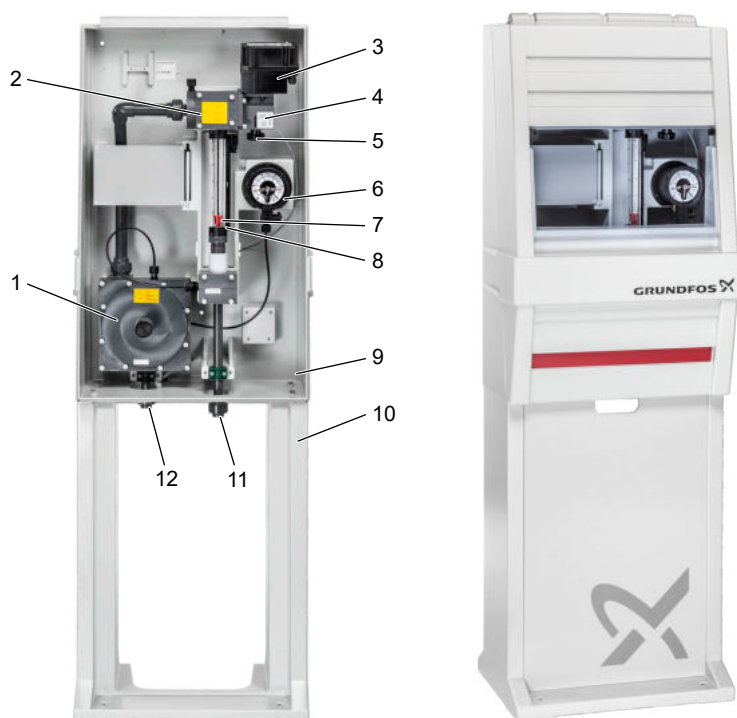
VGS-14X, automatic

- Manual or automatic capacity adjustment with servomotor
- Vacuum meter with contact for monitoring the injector vacuum
- Manual/automatic indication of the position of the rate-valve adjusting spindle
- In an enclosure for floor or wall mounting

VGS-14X, advanced

- Automatic or manual capacity adjustment with servomotor
- Vacuum meter with contact for monitoring the injector vacuum
- Manual/automatic indication of the position of the rate-valve adjusting spindle
- Flow meter scanning with 4-20 mA output
- In an enclosure for floor or wall mounting

Overview of a Vaccuperm gas dosing system



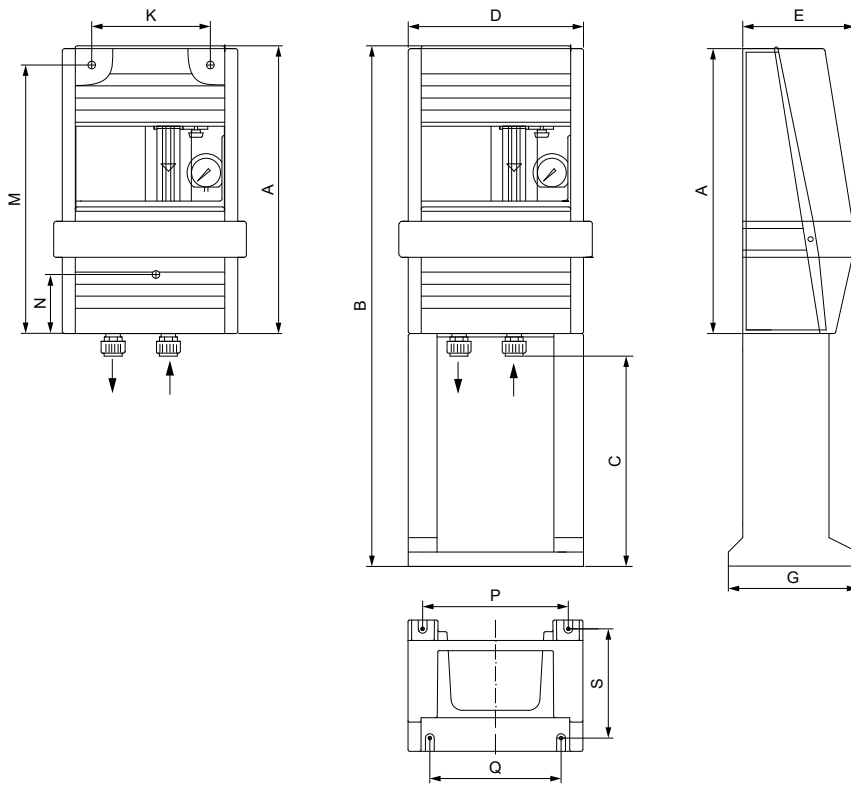
TMD075295

Pos.	Component
1	Differential pressure regulator
2	Linear rate valve
3	Servomotor
4	Sensor for manual or automatic indication of the position of the rate-valve adjusting spindle
5	Manual capacity adjusting knob
6	Vacuum meter for injector vacuum with or without limit contacts
7	Flowmeter according to floater principle
8	Flowmeter scanning with 4-20 mA output
9	Enclosure for wall or floor mounting
10	Foot for floor mounting
11	Inlet, vacuum connection
12	Outlet, vacuum connection to the injector

Technical data VGS-141, VGS-143, VGS-145

Medium	Chlorine gas
Capacity	<ul style="list-style-type: none"> VGS-141: up to 10 kg/h VGS-143: up to 40 kg/h VGS-145: up to 200 kg/h
Adjustment ratio	1:20
Accuracy	± 4 %
Measuring device	According to the floater principle, measuring tube 300 mm
Material	<ul style="list-style-type: none"> Enclosure: Polyurethane Chlorine-carrying pipes: PVC Springs: alloy C-4, silver-coated Diaphragm: FEP Rate valve: PVC/PTFE O-ring: FKM
Connections	<ul style="list-style-type: none"> VGS-141: PE tube 10/14, optional connection DN 15 VGS-143: PVC pipe DN 20 VGS-145: PVC pipe DN 40
Weight	Approx. 45 kg
Servomotor	<ul style="list-style-type: none"> Supply voltage: 110-240 V 50/60 Hz or 24 VDC Input/output signal: 4-20 mA Enclosure: IP65 Actuating time (1-100 %): 90 s Power consumption: 15 VA Fault relay: potential-free, NC
Flow meter scanning	4-20 mA output signal (measuring range 1:10)
Contact vacuummeter	Two contacts with max. signal
Manual/automatic remote indication of the position of the rate valve adjusting spindle	Max. 10 W, max 0.5 A, max. 180 VDC, contact closed in servomotor position

Dimensions VGS-141, VGS-143, VGS-145



TN075074

Dimensions in mm

	A	B	C	D	E	G	K	M	N	P	Q	S
VGS-141			810									
VGS-143	1000	1810	DN 20: 760	610	390	450	505	940	200	500	450	375
VGS-145			DN 40: 730									

Type key VGS-141, VGS-143, VGS-145

Type	
VGS-141 -2/6-M0,V-0,FL,N-0-G,C3	
VGS-141	
VGS-143	Gas dosing system
VGS-145	
Dosing capacity	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
2	0.1-2.0 kg/h
4	0.2-4.0 kg/h
8	0.4-8.0 kg/h
10	0.5-10.0 kg/h
20	1.0-20.0 kg/h
40	2.0-40.0 kg/h
70	3.5-70.0 kg/h
120	6.0-120.0 kg/h
200	10.0-200.0 kg/h
Vacuum connection, inlet/outlet	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
6	PE hose 10/14
14	PVC pipe DN 20 (20/25)
17	PVC pipe DN 40 (40/50)
Adjustment	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
MO	Manual
D3	Automatic, 110-240 V, 50/60 Hz, 4-20 mA
D4	Automatic, 24 VDC, 50/60 Hz, 4-20 mA
Vacuum meter	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
V	Vacuum meter
W	Contact vacuum meter
Flow meter scanning	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
0	Without
1	With
Enclosure version	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
FL	Floor mounting
WA	Wall mounting
Vacuum sensor	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
N	Without

Manual/automatic remote indication	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
0	Without
1	With
Logo	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
G	Grundfos
Product certificate	
VGS-141-2/6-M0,V-0,FL,N-0-G,C3	
C3	Certificate 3.1 (EN 10204)

Order data for VGS-141, VGS-143, VGS-145

VGS-141, manual

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
0.1-2	Floor-mounting	VGS-141-2/6-M0,V-0,FL,N-0-G	96709305	95760060
0.2-4		VGS-141-4/6-M0,V-0,FL,N-0-G	96709306	95760061
0.4-8		VGS-141-8/6-M0,V-0,FL,N-0-G	96681186	95759511
0.5-10		VGS-141-10/6-M0,V-0,FL,N-0-G	96681187	95760062
0.1-2	Wall-mounting	VGS-141-2/6-M0,V-0,WA,N-0-G	95715809	95760063
0.2-4		VGS-141-4/6-M0,V-0,WA,N-0-G	95724261	95760064
0.2-4		VGS-141-8/6-M0,V-0,WA,N-0-G	95760059	95760065
0.5-10		VGS-141-10/6-M0,V-0,WA,N-0-G	96709291	95760066

VGS-141, automatic

- Supply voltage: 110-240 V, 50/60 Hz, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
0.1-2	Floor-mounting	VGS-141-2/6-D3,W-0,FL,N-1-G	95760056	95760068
0.2-4		VGS-141-4/6-D3,W-0,FL,N-1-G	95729646	95760070
0.4-8		VGS-141-8/6-D3,W-0,FL,N-1-G	95733739	95760071
0.5-10		VGS-141-10/6-D3,W-0,FL,N-1-G	95711066	95760072
0.1-2	Wall-mounting	VGS-141-2/6-D3,W-0,WA,N-1-G	95752899	95760069
0.2-4		VGS-141-4/6-D3,W-0,WA,N-1-G	95760067	95760073
0.4-8		VGS-141-8/6-D3,W-0,WA,N-1-G	95746812	95760074
0.5-10		VGS-141-10/6-D3,W-0,WA,N-1-G	96709393	95760075

- Supply voltage: 24 VDC, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
0.1-2	Floor-mounting	VGS-141-2/6-D4,W-0,FL,N-1-G	95760365	95760369
0.2-4		VGS-141-4/6-D4,W-0,FL,N-1-G	95760366	95760370
0.4-8		VGS-141-8/6-D4,W-0,FL,N-1-G	95760367	95760371
0.5-10		VGS-141-10/6-D4,W-0,FL,N-1-G	95760368	95760372
0.1-2	Wall-mounting	VGS-141-2/6-D4,W-0,WA,N-1-G	95760373	95760377
0.2-4		VGS-141-4/6-D4,W-0,WA,N-1-G	95760374	95760378
0.4-8		VGS-141-8/6-D4,W-0,WA,N-1-G	95760375	95760379
0.5-10		VGS-141-10/6-D4,W-0,WA,N-1-G	95760376	95760380

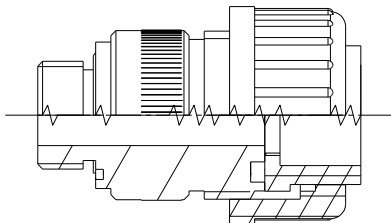
VGS-141, advanced

- Supply voltage: 110-240 V, 50/60 Hz, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
0.1-2	Floor-mounting	VGS-141-2/6-D3,W-1,FL,N-1-G	95760057	95760077
0.2-4		VGS-141-4/6-D3,W-1,FL,N-1-G	95741637	95760078
0.4-8		VGS-141-8/6-D3,W-1,FL,N-1-G	95709540	95760079
0.5-10		VGS-141-10/6-D3,W-1,FL,N-1-G	95711067	95760080
0.1-2	Wall-mounting	VGS-141-2/6-D3,W-1,WA,N-1-G	95760058	95760081
0.2-4		VGS-141-4/6-D3,W-1,WA,N-1-G	95760076	95760082
0.4-8		VGS-141-8/6-D3,W-1,WA,N-1-G	95709539	95760083
0.5-10		VGS-141-10/6-D3,W-1,WA,N-1-G	95711068	95760084

- Supply voltage: 24 VDC, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
0.1-2	Floor-mounting	VGS-141-2/6-D4,W-1,FL,N-1-G	95760386	95760390
0.2-4		VGS-141-4/6-D4,W-1,FL,N-1-G	95760387	95760391
0.4-8		VGS-141-8/6-D4,W-1,FL,N-1-G	95760388	95760392
0.5-10		VGS-141-10/6-D4,W-1,FL,N-1-G	95760389	95760393
0.1-2	Wall-mounting	VGS-141-2/6-D4,W-1,WA,N-1-G	95760394	95760398
0.2-4		VGS-141-4/6-D4,W-1,WA,N-1-G	95760395	95760399
0.4-8		VGS-141-8/6-D4,W-1,WA,N-1-G	95760396	95760400
0.5-10		VGS-141-10/6-D4,W-1,WA,N-1-G	95760397	95760401

Pipe connection (accessory for VGS-141)

TM075084

Description	Product number
Pipe connection, DN 15 (1 unit)	99358518

VGS-143, manual

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
1-20	Floor-mounting	VGS-143-20/14-M0,V-0,FL,N-0-G	96681214	95756422
2-40		VGS-143-40/14-M0,V-0,FL,N-0-G	96681216	95760085
1-20	Wall-mounting	VGS-143-20/14-M0,V-0,WA,N-0-G	96681219	95760086
2-40		VGS-143-40/14-M0,V-0,WA,N-0-G	96709434	95760087

VGS-143, automatic

- Supply voltage: 110-240 V, 50/60 Hz, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
1-20	Floor-mounting	VGS-143-20/14-D3,W-0,FL,N-1-G	96681226	95751530
2-40		VGS-143-40/14-D3,W-0,FL,N-1-G	96681234	95753982
1-20	Wall-mounting	VGS-143-20/14-D3,W-0,WA,N-1-G	95719782	95751948
2-40		VGS-143-40/14-D3,W-0,WA,N-1-G	95719784	95760088

- Supply voltage: 24V DC, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
1-20	Floor-mounting	VGS-143-20/14-D4,W-0,FL,N-1-G	95760402	95760404
2-40		VGS-143-40/14-D4,W-0,FL,N-1-G	95760403	95760405
1-20	Wall-mounting	VGS-143-20/14-D4,W-0,WA,N-1-G	95760406	95760408
2-40		VGS-143-40/14-D4,W-0,WA,N-1-G	95760407	95760409

VGS-143, advanced

- Supply voltage: 110-240 V, 50/60 Hz, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
1-20	Floor-mounting	VGS-143-20/14-D3,W-1,FL,N-1-G	95707854	95752307
2-40		VGS-143-40/14-D3,W-1,FL,N-1-G	95703238	95760094
1-20	Wall-mounting	VGS-143-20/14-D3,W-1,WA,N-1-G	95709541	95760095
2-40		VGS-143-40/14-D3,W-1,WA,N-1-G	95711065	95760096

- Supply voltage: 24 VDC, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
1-20	Floor-mounting	VGS-143-20/14-D4,W-1,FL,N-1-G	95760410	95760412
2-40		VGS-143-40/14-D4,W-1,FL,N-1-G	95760411	95760413
1-20	Wall-mounting	VGS-143-20/14-D4,W-1,WA,N-1-G	95760414	95760416
2-40		VGS-143-40/14-D4,W-1,WA,N-1-G	95760415	95760417

VGS-145, manual

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
3.5-70	Floor-mounting	VGS-145-70/17-M0,V-0,FL,N-0-G	96681239	95760098
6-120		VGS-145-120/17-M0,V-0,FL,N-0-G	96681240	95756296
10-200		VGS-145-200/17-M0,V-0,FL,N-0-G	96681237	95757438
3.5-70	Wall-mounting	VGS-145-70/17-M0,V-0,WA,N-0-G	96709487	95760099
6-120		VGS-145-120/17-M0,V-0,WA,N-0-G	95725675	95760100
10-200		VGS-145-200/17-M0,V-0,WA,N-0-G	95717098	95760101

VGS-145, automatic

- Supply voltage: 110-240 V, 50/60 Hz, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
3.5-70	Floor-mounting	VGS-145-70/17-D3,W-0,FL,N-1-G	95730259	95752299
6-120		VGS-145-120/17-D3,W-0,FL,N-1-G	95705594	95752496
10-200		VGS-145-200/17-D3,W-0,FL,N-1-G	96681243	95752191
3.5-70	Wall-mounting	VGS-145-70/17-D3,W-0,WA,N-1-G	95737515	95760102
6-120		VGS-145-120/17-D3,W-0,WA,N-1-G	95742149	95760103
10-200		VGS-145-200/17-D3,W-0,WA,N-1-G	95739681	95760104

- Supply voltage: 24 VDC, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
3.5-70	Floor-mounting	VGS-145-70/17-D4,W-0,FL,N-1-G	95760418	95760421
6-120		VGS-145-120/17-D4,W-0,FL,N-1-G	95760419	95760422
10-200		VGS-145-200/17-D4,W-0,FL,N-1-G	95760420	95760423
3.5-70	Wall-mounting	VGS-145-70/17-D4,W-0,WA,N-1-G	95760424	95760427
6-120		VGS-145-120/17-D4,W-0,WA,N-1-G	95760425	95760428
10-200		VGS-145-200/17-D4,W-0,WA,N-1-G	95760426	95760429

VGS-145, advanced

- Supply voltage: 110-240 V, 50/60 Hz, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
3.5-70	Floor-mounting	VGS-145-70/17-D3,W-1,FL,N-1-G	96709538	95752306
6-120		VGS-145-120/17-D3,W-1,FL,N-1-G	95715329	95760108
10-200		VGS-145-200/17-D3,W-1,FL,N-1-G	96681238	95752197
3.5-70	Wall-mounting	VGS-145-70/17-D3,W-1,WA,N-1-G	95760109	95760111
6-120		VGS-145-120/17-D3,W-1,WA,N-1-G	98028124	95760112
10-200		VGS-145-200/17-D3,W-1,WA,N-1-G	95760110	95760113

- Supply voltage: 24 VDC, 4-20 mA

Capacity [kg/h]	Enclosure version	Type designation	Product number	Product number with certificate 3.1
3.5-70	Floor-mounting	VGS-145-70/17-D4,W-1,FL,N-1-G	95760430	95760433
6-120		VGS-145-120/17-D4,W-1,FL,N-1-G	95760431	95760434
10-200		VGS-145-200/17-D4,W-1,FL,N-1-G	95760432	95760435
3.5-70	Wall-mounting	VGS-145-70/17-D4,W-1,WA,N-1-G	95760436	95760439
6-120		VGS-145-120/17-D4,W-1,WA,N-1-G	95760437	95760440
10-200		VGS-145-200/17-D4,W-1,WA,N-1-G	95760438	95760441

6. Evaporators

The RV 171(W) automatic chlorine evaporator is specifically designed for use in large-scale chlorine dosing plants in water treatment facilities, for example 70 kg/h up to 200 kg/h. The heat transfer medium is either water containing anticorrosive and antifreeze agents (RV 171W) or oil (RV 171). Liquid chlorine is fed from storage containers into the heat exchanger of the evaporator. There it is heated up and transformed into a dry saturated gas. The evaporator is designed to minimise the possibility of recondensing.

A reliable safety concept protects the evaporator from exceeding safe operating pressure and prevents a possible chlorine emission to the atmosphere.

- A pressure gauge with two limit contacts and a thermometer with a limit contact switch off the evaporator in case of overpressure and overheating.
- A bursting disc connected to an expansion tank ensures that the highest admissible operating pressure is not exceeded. The expansion tank is dimensioned in a way to transform the overpressure gas after the bursting of the bursting disc into an uncritical pressure. No chlorine gas escapes to the atmosphere. A contact manometer indicates the bursting.

The evaporator is available in the following versions and with the following features:

- RV 171: with oil as the transfer medium
- RV 171W: with water as the transfer medium
- Two capacities: 100 kg/h and 200 kg/h
- Different voltages
- Included shut-off valves and DN 25 welding-neck flanges
- With cable-labelling
- With control panel
- Output signal for the shut-off function of the 544 pressure reducing valve
- Alarm signal relay

Benefits:

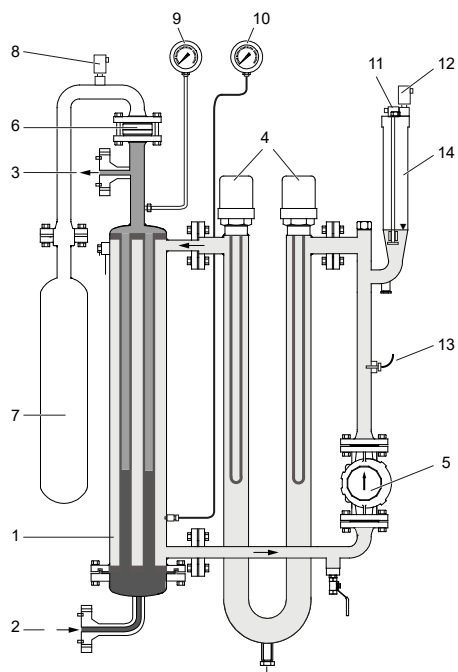
- Reliable and redundant safety concept
- Pressure gauge with two limit switches
- Thermometer with two limit switches
- Bursting disc with pressure-monitored expansion tank
- Heat exchanger designed for dry saturated gas
- 100% pressure-tested



Left: RV 171 evaporator; right: RV 171W evaporator

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Functional principle RV 171W

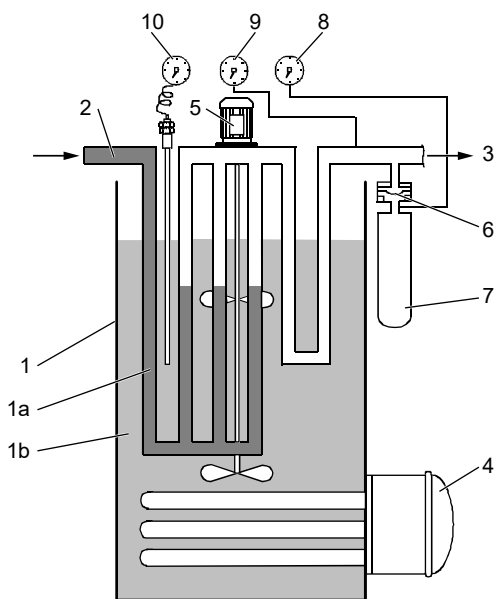


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Schematic drawing of a water-bath evaporator

Pos.	Component	Pos.	Component
1	Heat exchanger	8	Pressure switch (chlorine)
2	Liquid gas connection (inlet)	9	Contact manometer
3	Gas connection (outlet)	10	Contact thermometer
4	Electric heater with safety thermo switch	11	Water level switch
5	Circulator pump	12	Pressure switch (water)
6	Bursting disc safety device	13	Temperature sensor
7	Expansion tank	14	Expansion tank heating circuit

Functional principle RV 171



TMO75106

Schematic drawing of an oil-bath evaporator

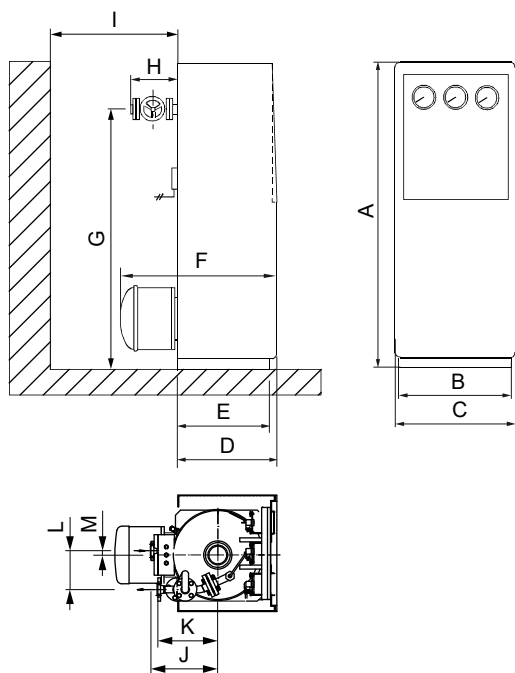
Pos.	Component	Pos.	Component
1	Oil tank	5	Stirrer
1a	Tubular bundle	6	Bursting disc safety device
1b	Heat transfer oil	7	Gas expansion tank
2	Liquid gas connection (inlet)	8	Contact manometer behind the bursting disc
3	Gas connection (outlet)	9	Contact manometer (operation manometer)
4	Electric heater	10	Contact thermometer

Technical data RV 171 and RV 171W

Medium	Chlorine	Chlorine
Heat transfer medium	Oil	Water
Type	RV 171-100 RV 171-200	RV 171W-100 RV 171W-200
Capacity	RV 171-100: 100 kg/h RV 171-200: 200 kg/h	RV 171W-100: 100 kg/h RV 171W-200: 200 kg/h
Heat transfer medium quantity	100 l	12 l
Max. operating pressure	12.5 bar	12.5 bar
Bursting pressure (on bursting disc)	16 bar	16 bar
Ambient temperature	0 to +40 °C	0 to +40 °C
Supply voltage	400/230 V, 50/60 Hz 415/240 V, 50/60 Hz	380/220 V, 50/60 Hz 400/230 V, 50/60 Hz 415/240 V, 50/60 Hz
Power consumption	RV 171-100: 10 kW RV 171-200: 20 kW	RV 171W-100: 9 kW RV 171W-200: 18 kW
Enclosure class evaporator	IP65	IP65
Enclosure class control cabinet	IP65	IP65

Liquid chlorine inlet connection	Groove flange DN 25, PN 40 (EN 1092-1)	
Chlorine gas outlet connection	Tongue flange DN 25, PN 40 (EN 1092-1)	
Material	<ul style="list-style-type: none"> Parts in contact with chlorine: low-carbon steel, copper, brass, bronze, alloy C4, silver, PTFE, FKM Gasket: IT asbestos-free Housing: painted steel, GFK 	
Weight	Evaporator incl. oil: 270 kg Control cabinet: 40 kg	Evaporator incl. control cabinet: 210 kg

Dimensions RV 171 and RV 171W

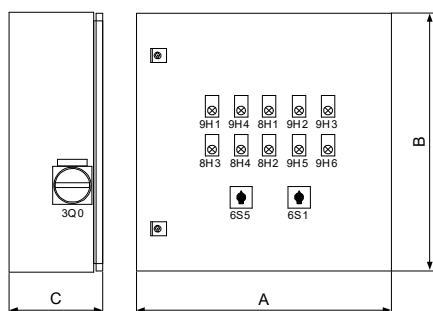


TM075117

Evaporator RV 171

Dimensions in mm

A	B	C	D	E	F	G	H	I	J	K	L	M
1460	545	575	490	450	920	1214	300	700	331	297	191	21

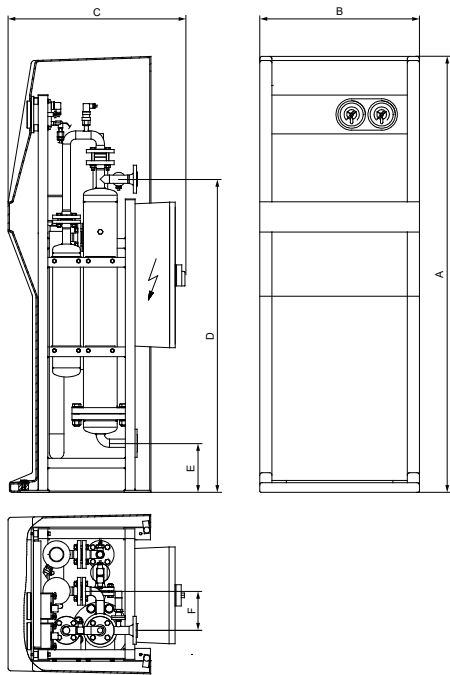


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Control cabinet, load unit RV 171

Dimensions in mm

A	B	C
600	600	250

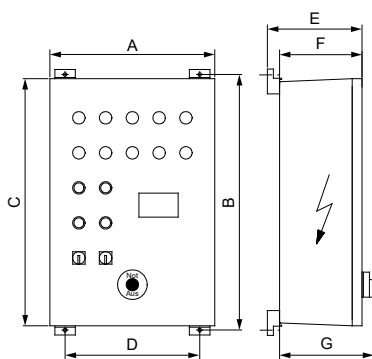


TM075119

Evaporator RV 171W

Dimensions in mm

A	B	C	D	E	F
1805	670	730	1293	203	150



TM075120

Control cabinet, control unit RV 171W

Dimensions in mm

A	B	C	D	F	G
400	620	600	327	200	230

Type key RV 171 and RV 171W

Type	
RV171 -C-100/G21/1/EN-1-Y,0/Y,0-G,C3	
RV171	Evaporator, oil bath
RV 171W	Evaporator, water bath
Medium	
RV171- C -100/G21/1/EN-1-Y,0/Y,0-G,C3	
C	Chlorine

Capacity	
RV171-C- <u>100</u> /G21/1/EN-1-Y,0/Y,0-G,C3	
100	100 kg/h
200	200 kg/h
Supply voltage	
RV171-C-100/ <u>G21</u> /1/EN-1-Y,0/Y,0-G,C3	
G11	380 V, 50 Hz
G12	380 V, 60 Hz
G21	400 V, 50 Hz
G22	400 V, 60 Hz
G31	415 V, 50 Hz
G32	415 V, 60 Hz
Control cabinet	
RV171-C-100/G21/1/ <u>1</u> /EN-1-Y,0/Y,38-G,C3	
1	With
Control cabinet labelling	
RV171-C-100/G21/1/ <u>EN</u> -1-Y,0/Y,38-G,C3	
EN	English
FR	French
RU	Russian
ES	Spanish
Control cabinet version	
RV171-C-100/G21/1/EN- <u>1</u> -Y,0/Y,38-G,C3	
1	With cable labelling
Control cabinet output option	
RV171-C-100/G21/1/EN-1- <u>Y</u> ,0/Y,38-G,C3	
Y	Output for pressure reducing valve
Display	
RV171-C-100/G21/1/EN-1-Y, <u>0</u> /Y,38-G,C3	
0	Without
Heat transfer medium	
RV171-C-100/G21/1/EN-1-Y,0/ <u>Y</u> ,38-G,C3	
Y	With oil
W	Water
Accessories	
RV171-C-100/G21/1/EN-1-Y,0/Y, <u>38</u> -G,C3	
38	Welding neck flange DN 25, shut-off valve
Logo	
RV171-C-100/G21/1/EN-1-Y,0/Y,38- <u>G</u> ,C3	
G	Grundfos
Product certificate	
RV171-C-100/G21/1/EN-1-Y,0/Y,38-G, <u>C3</u>	
C3	Certificate 3.1 (EN 10204)

Order data for RV 171

- Type RV 171-100
- Power: 9 KW

Supply voltage	Language	Type designation	Product number	Product number with certificate 3.1
400 V, 50/60 Hz	English	RV171-C-100/G21/1/EN-1-Y,0/Y,38-G	99612774	99612860
	French	RV171-C-100/G21/1/FR-1-Y,0/Y,38-G	99612780	99612864
	Russian	RV171-C-100/G21/1/RU-1-Y,0/Y,38-G	99612794	99612867
	Spanish	RV171-C-100/G21/1/ES-1-Y,0/Y,38-G	99612797	99612869
415 V, 50/60 Hz	English	RV171-C-100/G31/1/EN-1-Y,0/Y,38-G	99612824	99612870
	French	RV171-C-100/G31/1/FR-1-Y,0/Y,38-G	99612828	99612872
	Russian	RV171-C-100/G31/1/RU-1-Y,0/Y,38-G	99612830	99612874
	Spanish	RV171-C-100/G31/1/ES-1-Y,0/Y,38-G	99612833	99612875

- Type RV 171-200
- Power: 18 KW

Supply voltage	Language	Type designation	Product number	Product number with certificate 3.1
400 V, 50/60 Hz	English	RV171-C-200/G21/1/EN-1-Y,0/Y,38-G	99613101	99613201
	French	RV171-C-200/G21/1/FR-1-Y,0/Y,38-G	99613102	99613234
	Russian	RV171-C-200/G21/1/RU-1-Y,0/Y,38-G	99613113	99613238
	Spanish	RV171-C-200/G21/1/ES-1-Y,0/Y,38-G	99613116	99613242
415 V, 50/60 Hz	English	RV171-C-200/G31/1/EN-1-Y,0/Y,38-G	99613120	99613267
	French	RV171-C-200/G31/1/FR-1-Y,0/Y,38-G	99613137	99613268
	Russian	RV171-C-200/G31/1/RU-1-Y,0/Y,38-G	99613142	99613271
	Spanish	RV171-C-200/G31/1/ES-1-Y,0/Y,38-G	99613154	99613294

Order data for RV 171W

- Type RV 171W-100
- Power: 9 KW

Supply voltage	Language	Type designation	Product number	Product number with certificate 3.1
380/220 V, 50 Hz	English	RV171W-C-100/G11/1/EN-1-Y,0/W,38-G	95760116	95760117
380/220 V, 60 Hz		RV171W-C-100/G12/1/EN-1-Y,0/W,38-G	95756023	95760118
400/230 V, 50 Hz		RV171W-C-100/G21/1/EN-1-Y,0/W,38-G	95731304	95760119
400/230 V, 60 Hz		RV171W-C-100/G22/1/EN-1-Y,0/W,38-G	95731435	95760120
415/240 V, 50 Hz		RV171W-C-100/G31/1/EN-1-Y,0/W,38-G	95728360	95760122
415/240 V, 60 Hz		RV171W-C-100/G32/1/EN-1-Y,0/W,38-G	95760121	95760123
380/220 V, 50 Hz	French	RV171W-C-100/G11/1/FR-1-Y,0/W,38-G	95760124	95760126
380/220 V, 60 Hz		RV171W-C-100/G12/1/FR-1-Y,0/W,38-G	95760125	95760127
400/230 V, 50 Hz		RV171W-C-100/G21/1/FR-1-Y,0/W,38-G	95760128	95760130
400/230 V, 60 Hz		RV171W-C-100/G22/1/FR-1-Y,0/W,38-G	95760129	95760131
415/240 V, 50 Hz		RV171W-C-100/G31/1/FR-1-Y,0/W,38-G	95760132	95760134
415/240 V, 60 Hz		RV171W-C-100/G32/1/FR-1-Y,0/W,38-G	95760133	95760135

- Type RV 171W-200
- Power: 18 KW

Supply voltage	Language	Type designation	Product number	Product number with certificate 3.1
380/220 V, 50 Hz	English	RV171W-C-200/G11/1/EN-1-Y,0/W,38-G	95760136	95760138
380/220 V, 60 Hz		RV171W-C-200/G12/1/EN-1-Y,0/W,38-G	95760140	95760141
400/230 V, 50 Hz		RV171W-C-200/G21/1/EN-1-Y,0/W,38-G	95760154	95760156
400/230 V, 60 Hz		RV171W-C-200/G22/1/EN-1-Y,0/W,38-G	95760155	95760157
415/240 V, 50 Hz		RV171W-C-200/G31/1/EN-1-Y,0/W,38-G	95760158	95760160
415/240 V, 60 Hz		RV171W-C-200/G32/1/EN-1-Y,0/W,38-G	95760159	95760161
380/220 V, 50 Hz	French	RV171W-C-200/G11/1/FR-1-Y,0/W,38-G	95760142	95760143
380/220 V, 60 Hz		RV171W-C-200/G12/1/FR-1-Y,0/W,38-G	95760137	95760139
400/230 V, 50 Hz		RV171W-C-200/G21/1/FR-1-Y,0/W,38-G	95760144	95760145
400/230 V, 60 Hz		RV171W-C-200/G22/1/FR-1-Y,0/W,38-G	95760146	95760147
415/240 V, 50 Hz		RV171W-C-200/G31/1/FR-1-Y,0/W,38-G	95760148	95760149
415/240 V, 60 Hz		RV171W-C-200/G32/1/FR-1-Y,0/W,38-G	95760150	95760151

7. Change-over devices

Change-over devices ensure a continuous supply of a chlorine gas dosing system by changing over from the empty bank of cylinders or drums to the standby bank.

Two types of change over device are available:

- vacuum change-over devices
- pressure change-over devices

Vacuum change-over devices are installed on the vacuum side of a chlorine gas dosing system and are available in 2 options:

- 186: electrically powered
- 189: without electrical power

Pressure change-over devices are installed on the pressure side of a chlorine gas dosing system:

- 185: electrically powered

189 vacuum change-over device

The 189 vacuum change-over device is available for 4 kg/h and 10 kg/h. The 189 vacuum change-over device operates without electrical power. It is a diaphragm-operated system that is triggered by a rising vacuum created by an empty cylinder or drum. The bank of cylinders or drums in duty is indicated visually, optionally this indication can be remotely indicated via 2 reed contacts. The 189 change-over device can be used in connection with VGA-111, VGA-146 and VGS-141 vacuum regulators.

The 189 vacuum change-over device includes:

- Visual indication or visual indication with contact for remote indication
- Mounting bracket
- Vacuum connections for PE hose 8/11 (4 kg/h) or PE hose 10/14 (10 kg/h)

Option:

Connections for DN 15 vacuum pipe can be ordered separately (3 per device).

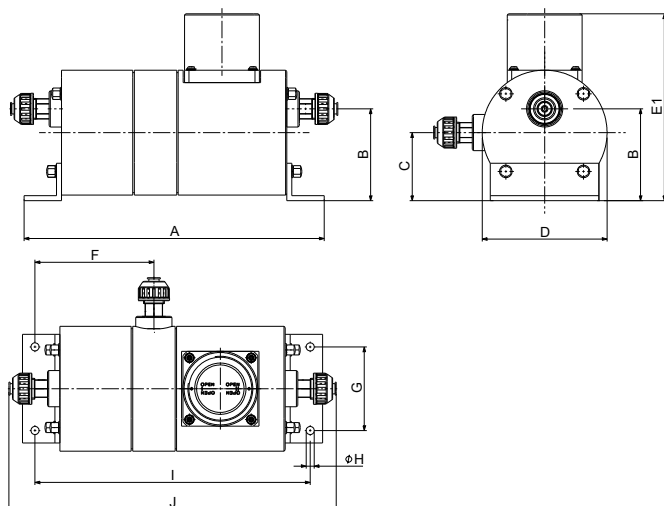


TM075121

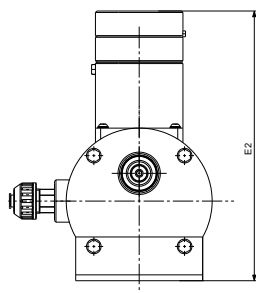
Technical data 189

Medium	Chlorine gas
Capacity	4 kg/h and 10 kg/h
Vacuum connections	<ul style="list-style-type: none"> • PE hose 8/11 (4 kg/h) • PE hose 10/14 (10 kg/h) • Optional connection for DN 15 pipe
Reed contact for remote indication	75 VDC/1 A/50 W
Material	PVC, silver, FEP, glass, silver-coated alloy C, FKM
Weight	2 kg

Dimensions 189



189 change-over device without contact to remote indicator



189 change-over device with contact to remote indicator

Dimensions in mm

A	B	C	D	E1	E2	F	G	øH	I	J
241	73	54	100	149	185	95	67	6.5	221	262

TM075040

TM075041

Type key 189

Type	
189 -C-4/11,11/N/0/X,X,0-G,C3	
189	Change-over device
Medium	
189-C-4/11,11/N/0/X,X,0-G,C3	
C	Chlorine
Capacity	
189-C-4/11,11/N/0/X,X,0-G,C3	
4	4 kg/h
10	10 kg/h
Vacuum connection, inlet	
189-C-4/11,11/N/0/X,X,0-G,C3	
6	PE hose 10/14
11	PE hose 8/11
Vacuum connection, outlet	
189-C-4/11,11/N/0/X,X,0-G,C3	
6	PE hose 10/14
11	PE hose 8/11
Contact for remote indication	
189-C-4/11,11/N/0/X,X,0-G,C3	
N	Without
Y	Contact for remote indication
Control cabinet	
189-C-4/11,11/N/0/X,X,0-G,C3	
0	Without
Supply voltage	
189-C-4/11,11/N/0/X,X,0-G,C3	
X	Not electrical
Control cabinet labelling	
189-C-4/11,11/N/0/X,X,0-G,C3	
X	Without control cabinet
Control cabinet version	
189-C-4/11,11/N/0/X,X,0-G,C3	
0	Without control cabinet
Logo	
189-C-4/11,11/N/0/X,X,0-G,C3	
G	Grundfos
Product certificate	
189-C-4/11,11/N/0/X,X,0-G,C3	
C3	Certificate 3.1 (EN 10204)

Order data for 189

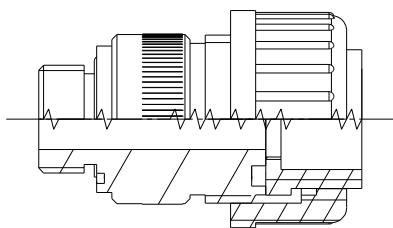
189 change-over device up to 4 kg/h

Contact for remote signal transmission	Type designation	Product number	Product number with certificate 3.1
Without	189-C-4/11,11/N/0/X,X,0-G	91834811	95749022
With	189-C-4/11,11/Y/0/X,X,0-G	96681741	95749762

189 change-over device up to 10 kg/h

Contact for remote signal transmission	Type designation	Product number	Product number with certificate 3.1
Without	189-C-10/6,6/N/0/X,X,0-G	91834812	95751794
With	189-C-10/6,6/Y/0/X,X,0-G	96681740	95750721

Pipe connection for 189 change-over device (accessory)



Description	Product number
Pipe connection, DN 15 (1 unit)	99358518

Remote indicator

The remote indicator is operated in conjunction with the 189 vacuum change-over device with contact for remote indication.

If the bank of cylinders or drums in duty is empty, the change-over device switches to the standby bank. The switching status is shown on the remote indicator. LEDs on the remote indicator show the bank of cylinders or drums in duty. Potential-free output signals for bank 1 or 2 empty and general fault are available.



TM075160

Technical data of a remote indicator

Supply voltage	230 V, 50/60 Hz; 115 V, 50/60 Hz
Enclosure	IP65
Input signal	Reed contact from change-over device
Output signal	Relay max. 250 V, 2 A, max. 250 VA

Order data for a remote indicator

Supply voltage	Product number
Remote indicator, 115 V, 50/60 Hz	95715968
Remote indicator, 230 V, 50/60 Hz	95715967

186 vacuum change-over device

The 186 vacuum change-over device can be used up to 120 kg/h. It operates with electrical power.

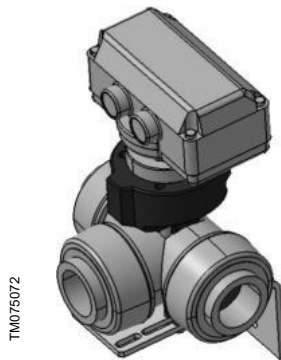
The 186 vacuum change-over device is controlled by the control panel that is triggered via contact manometers (contact R4 closes at falling pressure) on the vacuum regulator. It automatically changes over from the empty bank of cylinders or drums to the standby bank via a 3-way ball valve operated by an electric servomotor.

The 186-120 vacuum change-over device includes:

- Control cabinet
- Motorised 3-way ball valve
- Mounting bracket
- Vacuum connections DN 20, DN 32, DN 40
- Potential-free output signal: battery empty/battery duty, manual/automatic



186 change-over device, DN 20



186 change-over device, DN 32

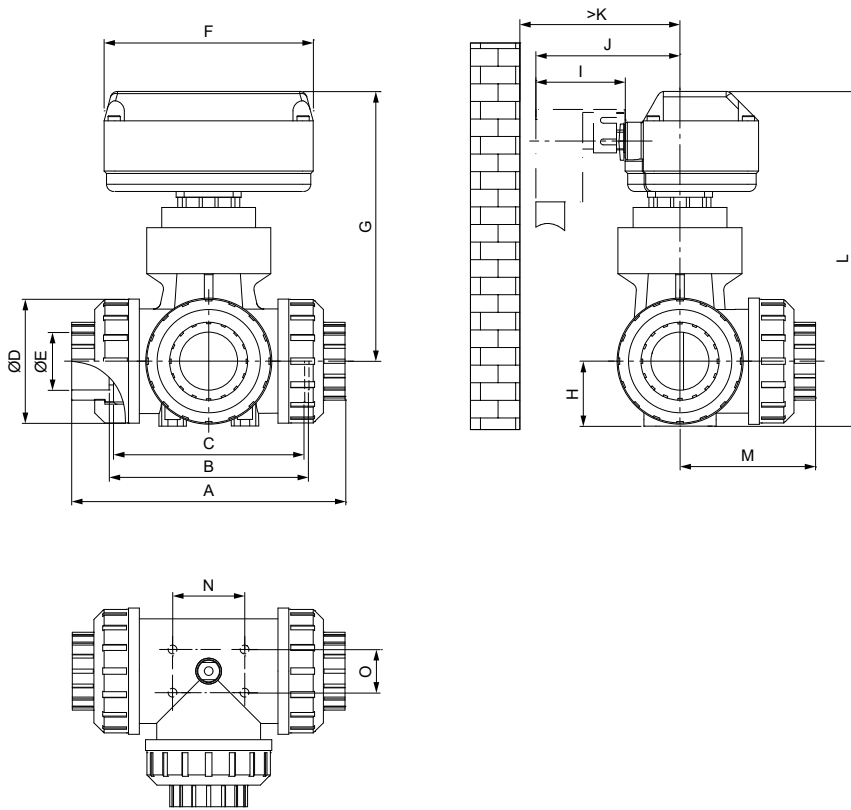


186 change-over device, DN 40

Technical data 186

Medium	Chlorine gas
Capacity range	Up to 120 kg/h
Vacuum connection	<ul style="list-style-type: none"> • DN 20, DN 32, DN 40 • Optional connection for 8/11 PE hose or 10/14 PE hose
Supply voltage control panel	115 V, 50/60 Hz or 230 V, 50/60 Hz
Enclosure class control cabinet	IP65
Actuating time 0-100%	4 seconds
Output signals	Potential free output signals, max. load 250 V 10A
Material	Parts in contact with chlorine: PVC, FKM, PTFE
Weight	<ul style="list-style-type: none"> • Change-over device: 2 kg • Control panel: 8.5 kg

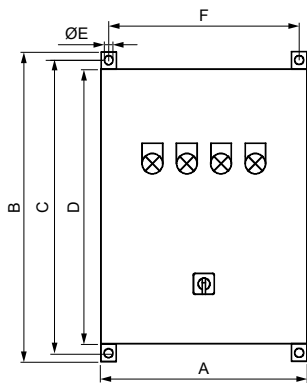
Dimensions 186



TM074715

Dimensions in mm

A	B	C	ØD	ØE	F	G	H	I	J	K	L	M	N	O
190	138	132	86	40	145	187	45	62	100	111	232	95	50	30



TM074716

Control panel for 186 change-over device

Dimensions in mm

A	B	C	D	ØE	F
300	440	420	400	8.5	227

Type key 186

Type	
186 -C-120/S15,S15/Y/1/H,EN,1W-G,C3	
186	Change-over device
Medium	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
C	Chlorine
Capacity	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
120	120 kg/h
Vacuum connection, inlet	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
S15	PVC pipe adapter set DN 25, DN 32, DN 40
Vacuum connection, outlet	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
S15	PVC pipe adapter set DN 25, DN 32, DN 40
Contact for remote indication	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
Y	Contact for remote indication
Control cabinet	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
1	With
Supply voltage	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
G	Control cabinet, 230 V, 50/60 Hz
H	Control cabinet, 115 V, 50/60 Hz
Control cabinet labelling	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
EN	English
FR	French
ES	Spanish
Control cabinet version	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
1	According to EN with cable labelling, contact input NO
Accessories	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
W	Mounting bracket
Logo	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
G	Grundfos

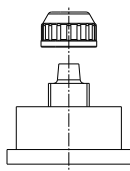
Product certificate	
186-C-120/S15,S15/Y/1/H,EN,1W-G,C3	
C3	Certificate 3.1 (EN 10204)

Order data for 186

186 vacuum change-over device

Supply voltage	Language	Type designation	Product number	Product number with certificate 3.1
115 V, 50/60 Hz	English	186-C-120/S15,S15/Y/1/H,EN,1W-G	95760221	95760222
	French	186-C-120/S15,S15/Y/1/H,FR,1W-G	95760259	95760262
	Spanish	186-C-120/S15,S15/Y/1/H,ES,1W-G	95760260	95760263
230 V, 50/60 Hz	English	186-C-120/S15,S15/Y/1/G,EN,1W-G	95728390	95760223
	French	186-C-120/S15,S15/Y/1/G,FR,1W-G	95728383	95760264
	Spanish	186-C-120/S15,S15/Y/1/G,ES,1W-G	95760261	95760265

Connection nipple set for PE hose (accessory)



TM075079

Connection nipple set for PE hose 10/14

Description	Product number
Connection nipple set for PE hose 10/14 (3 units)	99695069
Connection nipple set for PE hose 8/11 (3 units)	99695117

185 change-over device

185-1 change-over device without bypass

The 185 change-over device is installed on the pressure side between two banks of chlorine gas cylinders or drums (gaseous or liquid chlorine). It automatically changes over from the empty bank to the standby bank.

The 185 change-over device has two independent motor valves, which can also be operated manually, so the change-over function is reliable even in case of power failure. The valves are actuated by overload-proof single-phase AC motors. The change-over process is triggered by the contact manometer via the control cabinet. The respective motor valve closes the connection to the empty bank of chlorine gas cylinders or drums automatically. When the closing motor valve reaches its end position, the other motor valve opens the connection to the standby bank of chlorine gas cylinders or drums. The valve position is indicated at the control cabinet.

The 185 change-over device includes:

- Control cabinet
- Motorised ball valve
- Mounting bracket
- Potential-free output signal: battery empty/battery duty
- Contact pressure gauge



TM075168

185 change-over device without bypass

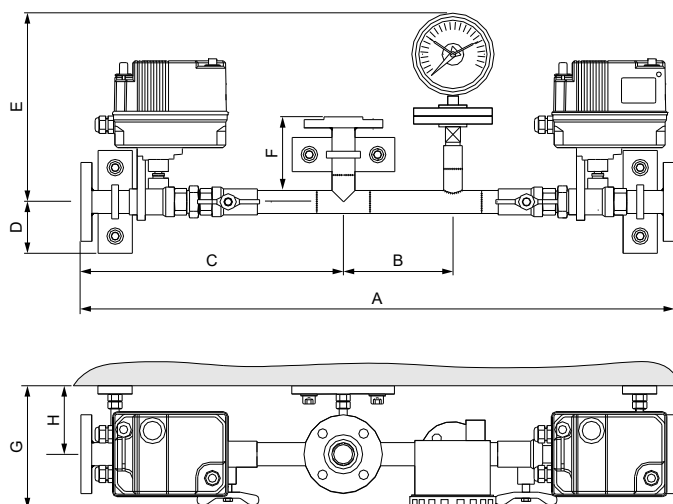
185-2 change-over device with bypass

Optionally, a bypass line can be included in the 185-2 change-over device. The bypass line allows continuous operation during maintenance of the ball valve motors. During maintenance, the motor valves are opened and closed in manual mode via buttons at the control cabinet.

Technical data 185

Medium	Chlorine gas, liquid chlorine
Capacity range	Up to 600 kg/h (liquid); up to 200 kg/h (gas)
Max. operating pressure	16 bar
Inlet connection	Groove flange DN 25, PN 40, EN1092-1
Outlet connection	Tongue flange DN 25, PN 40, EN1092-1
Supply voltage control cabinet	230 V, 50 Hz or 230 V, 60 Hz or 115 V, 50 Hz or 115 V, 60 Hz
Enclosure class control cabinet	IP65
Output signal	Potential-free output signals, max. load 250 V, 10 A
Material	<ul style="list-style-type: none"> • Pipe: low-carbon steel • Valve: steel, stainless steel, PTFE • Manometer: low-carbon steel, silver • Gasket: IT, asbestos-free
Weight	<ul style="list-style-type: none"> • 185-1: approx. 20 kg • 185-2: approx. 30 kg

Dimensions 185

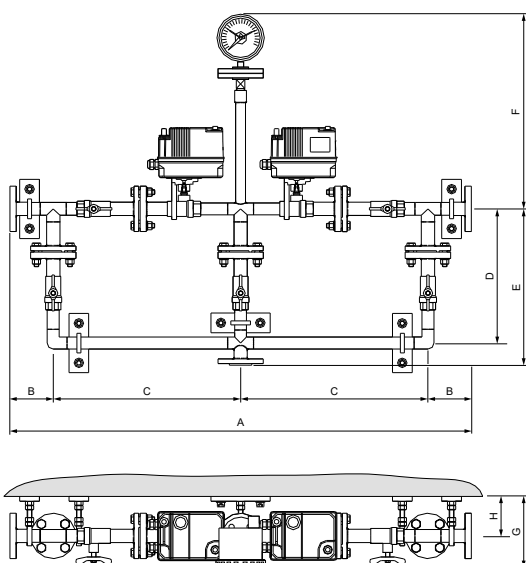


TM074718

185 change-over device without bypass

Dimensions in mm

A	B	C	D	E	F	G	H
867	160	384	75	275	124	180	80



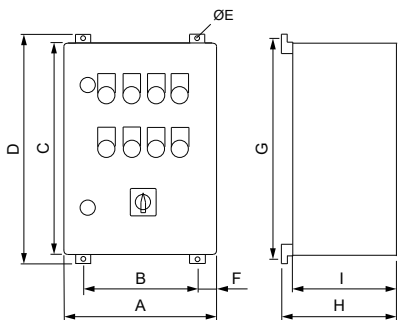
TM074719

185 change-over device with bypass

Dimensions in mm

A	B	C	D	E	F	G	H
1170	110	475	340	396	493	180	80

TM074720



Control panel for 185 change-over device

Dimensions in mm

A	B	C	D	ØE	F	G	H	I
300	227	400	445	9	37	420	230	200

Type key 185

Type	
185	-1-C-200/W15,W15/N/1/H2,EN,1-G,C3
185	Change-over device
Bypass	
1	185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3 Without
2	185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3 With
Medium	
C	185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3 Chlorine
Capacity	
200	185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3 200 kg/h chlorine gas, 600 kg/h liquid chlorine
Connection, inlet	
W15	185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3 Groove flange DN 25 (EN 1092) without counter flange
Connection, outlet	
W15	185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3 Tongue flange DN 25 (EN 1092) without counter flange
Contact for remote manual/automatic indication	
N	185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3 Without
Control cabinet	
1	185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3 With

Supply voltage	
185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3	
G1	Control cabinet, 230 V, 50/60 Hz
H2	Control cabinet, 115 V, 50/60 Hz
Control cabinet labelling	
185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3	
EN	English
FR	French
ES	Spanish
Control cabinet version	
185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3	
1	According to EN with cable labelling, contact input NO
Logo	
185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3	
G	Grundfos
Product certificate	
185-1-C-200/W15,W15/N/1/H2,EN,1-G,C3	
C3	Certificate 3.1 (EN 10204)

Order data 185

185-1 change-over device without bypass

Supply voltage	Language	Type designation	Product number	Product number with certificate 3.1
115 V, 60 Hz	English	185-1-C-200/W15,W15/N/1/H2,EN,1-G	96711163	95760268
	French	185-1-C-200/W15,W15/N/1/H2,FR,1-G	95760882	95760883
	Spanish	185-1-C-200/W15,W15/N/1/H2,ES,1-G	96711165	95760884
230 V, 50 Hz	English	185-1-C-200/W15,W15/N/1/G1,EN,1-G	96711167	95760050
	French	185-1-C-200/W15,W15/N/1/G1,FR,1-G	95714435	95760266
	Spanish	185-1-C-200/W15,W15/N/1/G1,ES,1-G	95728393	95760267

185-2 change over device with bypass

Supply voltage	Language	Type designation	Product number	Product number with certificate 3.1
115 V, 60 Hz	English	185-2-C-200/W15,W15/N/1/H2,EN,1-G	96711172	95760269
	French	185-2-C-200/W15,W15/N/1/H2,FR,1-G	95760885	95760886
	Spanish	185-2-C-200/W15,W15/N/1/H2,ES,1-G	95727385	95760887
230 V, 50 Hz	English	185-2-C-200/W15,W15/N/1/G1,EN,1-G	95715529	95760047
	French	185-2-C-200/W15,W15/N/1/G1,FR,1-G	95714434	95760271
	Spanish	185-2-C-200/W15,W15/N/1/G1,ES,1-G	95728395	95760272

Counterflange set (accessory)

Description	Product number
Set of welding-neck counterflanges DN 25, PN 40 (EN1092-1): 2 tongue flanges, 1 groove flange, screws and gaskets	99695646

8. Injectors

VGB, VGA, and VGS injectors

Injectors are needed to create the vacuum to transport the chlorine gas into the water.

To select the suitable injector, the following data are required:

- Counterpressure
- Motive water pressure
- Dosing capacity

VGA and VGS injectors are used with dosing regulators with differential pressure regulator. VGB injectors are used with dosing regulators without differential pressure regulator (VGB-103, VGA-113-110, VGA-117).

The injectors are available with the following features:

- Different sizes for the whole Vaccuperm range and counterpressure range
- Different water connections
- Reliable diaphragm non-return valve
- Optional mounting bracket set (VGS injector)

Benefits

- Low operating costs and high efficiency due to the special form of the nozzle.
- Easy selection of the operating point thanks to the optimum graduation of the product range.
- The construction according to the flow allows a reduction of the pressure losses of the non-return diaphragm valve.
- A safety non-return diaphragm valve according to the floater principle protects the dosing unit disposed upstream optimally from the entry of water or chlorine solution.
- Excellent price-performance ratio.



PVC injectors for Vaccuperm gas dosing systems

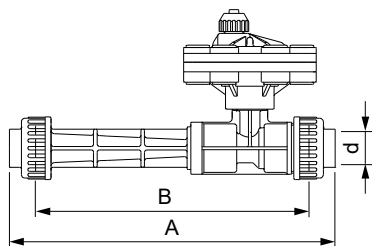
Technical data of injectors

Technical data

Motive water pressure	See tables with order data
Counterpressure	See tables with order data
Motive water temperature	+5 °C to +30 °C
Ambient temperature	+5 °C to +40 °C
Material	<ul style="list-style-type: none"> • Housing: PVC • Spring: alloy C4, PTFE coated • Diaphragm: FEP • Piston: PTFE

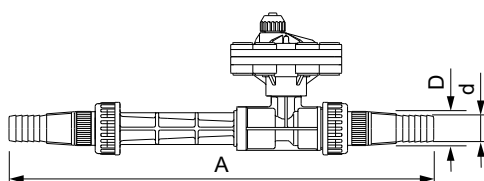
TM074873

Dimensions



TM074876

VGB injector up to 2 kg/h and VGA injector up to 4 kg/h, connection DN 20

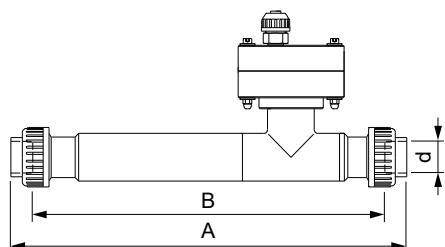


TM074872

VGB injector up to 2 kg/h and VGA injector up to 4 kg/h, connection 3/4" NPT, 1" NPT

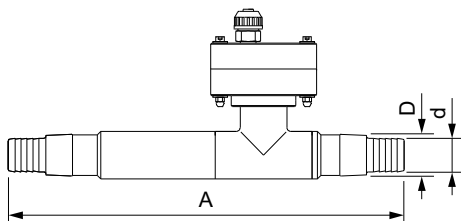
Dimensions in mm

d	D	A	B
DN 20	-	275	232
Hose 3/4"	3/4" NPT	400	-
Hose 1"	1" NPT	430	-



TM074877

VGB injector up to 10 kg/h and VGA up to 10 kg/h, connection DN 25

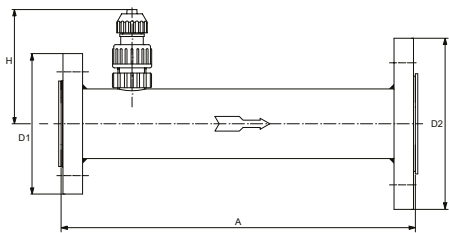


TM074875

VGB injector up to 10 kg/h and VGA injector up to 10 kg/h, connection 1 1/4"

Dimensions in mm

d	D	A	B
DN 25	-	400	350
Hose 1 1/4"	1 1/4" NPT	400	-

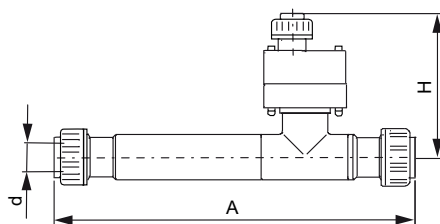


TM075187

VGA injector up to 2 kg/h, connection flange DN 25/32

Dimensions in mm

D1	D2	A	H
DN 25	DN 32	290	95

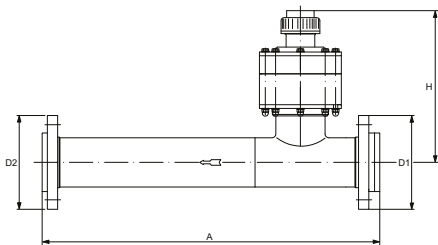


TM075037

VGS injector 20 and 40 kg/h

Dimensions in mm

Capacity [kg/h]	d	A	H
20	DN 32	480	190
40	DN 50	710	320



TM075186

VGS injector 70, 120 and 200 kg/h

Dimensions in mm

Capacity [kg/h]	D1	D2	A	H
70	DN 65	DN 65	650	325
120	DN 80	DN 80	720	325
200	DN 100	DN 100	825	370

Type key of injectors

Type			
545 -C-1/0,5-7/W1,W1-11/NR,C3			
545	Vaccuperm injector		
Medium			
545-C-1/0,5-7/W1,W1-11/NR,C3			
C	Chlorine		
Capacity			
545-C-1/0,5-7/W1,W1-11/NR,C3			
	VGA injector	VGB injector	VGS injector
0.5/0	0.5 kg/h		
1/0.5	1.0 kg/h	0.5 kg/h	
2/1	2.0 kg/h	1.0 kg/h	
4/2	4.0 kg/h	2.0 kg/h	
0/3		3.0 kg/h	
0/4		4.0 kg/h	
0/6		6.0 kg/h	
0/8		8.0 kg/h	
0/10		10.0 kg/h	
10/0			10 kg/h
20/0			20 kg/h
40/0			40 kg/h
70/0			70 kg/h
120/0			120 kg/h
200/0			200 kg/h
Counterpressure			
545-C-1/0,5-7/W1,W1-11/NR,C3			
3	0-3 bar		
6	3-7 bar		
7	0-7 bar		
16	5-16 bar		
Motive water connection, inlet			
545-C-1/0,5-7/W1,W1-11/NR,C3			
W1	¾" NPT		
W2	1" NPT		
W3	1 ¼" NPT		
W8	DN 20		
W9	DN 25		
W10	DN 32		
W11	DN 50		
W12	Flange DN 65		
W13	Flange DN 80		
W14	Flange DN 100		
W15	Flange DN 25		

Motive water connection, outlet	
545-C-1/0,5-7/W1,W1-11/NR,C3	
W1	¾" NPT
W2	1" NPT
W3	1 ¼" NPT
W8	DN 20
W9	DN 25
W10	DN 32
W11	DN 50
W12	Flange DN 65
W13	Flange DN 80
W14	Flange DN 100
W15	Flange DN 25
W16	Flange DN 32
Vacuum connection	
545-C-1/0,5-7/W1,W1-11/NR,C3	
6	PE 10/14
11	PE 8/11
14	PVC pipe DN 20
17	PVC pipe DN 40
Valve type	
545-C-1/0,5-7/W1,W1-11/NR,C3	
NR	Diaphragm non-return valve
BV	Ball non-return valve
Product certificate	
545-C-1/0,5-7/W1,W1-11/NR,C3	
C3	Certificate 3.1 (EN 10204)

Order data for injectors

VGB injectors up to 10 kg/h

- Capacity 0.5-4 kg/h: vacuum hose connection PE 8/11
- Capacity 6-10 kg/h: vacuum hose connection PE 10/14

Capacity [g/h]	Motive water pressure [bar]	Counter-pressure [bar]	Water quantity [l/h]	Water connection	Type	Type designation	Product number	Product number with certificate 3.1
0.5	2-16	0-7	550-1350	¾" hose, ¾" NPT	545-1000-2	545-C-1/0,5-7/W1,W1-11/NR	91836434	95760229
	2-16	0-7	550-1350	DN 20	545-1000-1	545-C-1/0,5-7/W8,W8-11/NR	96691986	95760230
1	2-16	0-7	850-2200	¾" hose, ¾" NPT	545-2000-2	545-C-2/1-7/W1,W1-11/NR	96729114	95760231
	2-16	0-7	850-2200	DN 20	545-2000-1	545-C-2/1-7/W8,W8-11/NR	96693040	95760232
2	2-16	0-7	1200-3300	1" hose, 1" NPT	545-4000-3	545-C-4/2-7/W2,W2-11/NR	91835792	95760233
	2-16	0-7	1200-3300	DN 20	545-4000-1	545-C-4/2-7/W8,W8-11/NR	91836390	95760234

Capacity [g/h]	Motive water pressure [bar]	Counter-pressure [bar]	Water quantity [l/h]	Water connection	Type	Type designation	Product number	Product number with certificate 3.1
3	4-15	0-7	2500-4300	1 1/4" hose, 1 1/4" NPT	545-3030-10001	545-C-0/3-7/ W3,W3-11/NR	96729145	95760225
	4-15	0-7	2500-4300	DN 25	545-3030-1-10000	545-C-0/3-7/ W9,W9-11/NR	96729148	95760226
4	4-15	3-7	3600-4300	1 1/4" hose, 1 1/4" NPT	545-3030-10001	545-C-0/3-7/ W3,W3-11/NR	96729145	95760225
	4-15	3-7	3600-4300	DN 25	545-3030-1-10000	545-C-0/3-7/ W9,W9-11/NR	96729148	95760226
	4-8	0-3	3400-4700	1 1/4" hose, 1 1/4" NPT	545-4030-10000	545-C-0/4-3/ W3,W3-11/NR	96729184	95760227
	4-8	0-3	3400-4700	DN 25	545-4030-1-10000	545-C-0/4-3/ W9,W9-11/NR	96729188	95760228
6	4-8	0-3	3400-4500	1 1/4" hose, 1 1/4" NPT	545-6030-10000	545-C-0/8-6/ W3,W3-6/NR	91835795	95760244
	4-8	0-3	3400-4500	DN 25	545-6030-1-10000	545-C-0/6-3/ W9,W9-6/NR	96732136	95760245
	9-15	3-7	4600-6000	1 1/4" hose, 1 1/4" NPT	545-4030-10001	545-C-0/4-3/ W3,W3-6/NR	91836585	95760246
	9-15	3-7	4600-6000	DN 25	545-4030-1-10001	545-C-0/6-6/ W9,W9-6/NR	95700927	95747092
8	4-8	0-3	4200-5800	1 1/4" hose, 1 1/4" NPT	545-8030-10000	545-C-0/8-3/ W3,W3-6/NR	96703794	95760256
	4-8	0-3	4200-5800	DN 25	545-8030-1-10000	545-C-0/8-3/ W9,W9-6/NR	95701067	95755276
	9-15	3-7	4700-6000	1 1/4" hose, 1 1/4" NPT	545-6030-10000	545-C-0/8-6/ W3,W3-6/NR	91835795	95760244
	9-15	3-7	4700-6000	DN 25	545-6030-1-10000	545-C-0/6-3/ W9,W9-6/NR	96732136	95760245
10	4-8	0-3	5200-7200	1 1/4" hose, 1 1/4" NPT	545-10030-10000	545-C-0/10-3/ W3,W3-6/NR	96703780	95760249
	4-8	0-3	5200-7200	DN 25	545-10030-1-10000	545-C-0/10-3/ W9,W9-6/NR	96706390	95760250
	9-15	3-7	6000-8000	1 1/4" hose, 1 1/4" NPT	545-8030-10000	545-C-0/8-3/ W3,W3-6/NR	96703794	95760256
	9-15	3-7	6000-8000	DN 25	545-8030-1-10000	545-C-0/8-3/ W9,W9-6/NR	95701067	95755276

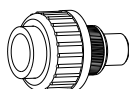
VGA injectors up to 10 kg/h

- Capacity 0.5-4 kg/h: vacuum hose connection PE 8/11
- Capacity 10 kg/h: vacuum hose connection PE 10/14

Capacity [kg/h]	Motive water pressure [bar]	Counter-pressure [bar]	Water quantity [l/h]	Water connection	Type	Type designation	Product number	Product number with certificate 3.1
0.5	2-16	0-7	300-780	3/4" hose, 3/4" NPT	545-0500-2	545-C-0,5/0-7/W1,W1-11/NR	96729053	95760235
	2-16	0-7	300-780	DN 20	545-0500-1	545-C-0,5/0-7/W8,W8-11/NR	96693039	95749042
	10-26	5-16	1100-1800	Flange DN 25/32	545-1380.1	545-C-0,5/0-16/W15,W16-11/BV	96729091	95760236
1	2-16	0-7	550-1350	3/4" hose, 3/4" NPT	545-1000-2	545-C-1/0,5-7/W1,W1-11/NR	91836434	95760237
	2-16	0-7	550-1350	DN 20	545-1000-1	545-C-1/0,5-7/W8,W8-11/NR	96691986	95749043
	10-26	5-16	1550-2500	Flange DN 25/32	545-1381.1	545-C-1/0-16/W15,W16-11/BV	96729094	95760238
2	2-16	0-7	850-2200	3/4" hose, 3/4" NPT	545-2000-2	545-C-2/1-7/W1,W1-11/NR	96729114	95760239
	2-16	0-7	850-2200	DN 20	545-2000-1	545-C-2/1-7/W8,W8-11/NR	96693040	95749039
	10-26	5-16	2800-4400	Flange DN 25/32	545-1382.1	545-C-2/0-16/W15,W16-11/BV	96729096	95760240
4	2-16	0-7	1200-3300	1" hose, 1" NPT	545-4000-3	545-C-4/2-7/W2,W2-11/NR	91835792	95760241
	2-16	0-7	1200-3300	DN 20	545-4000-1	545-C-4/2-7/W8,W8-11/NR	91836390	95749024
10	2-8	0-3	3200-5700	1 1/4" hose, 1 1/4" NPT	545-1519-10000	545-C-10/0-3/W3,W3-6/NR	95705527	95760242
	2-8	0-3	3200-5700	DN 25	545-0518-10000	545-C-10/0-3/W9,W9-6/NR	96729062	95748561
	9-16	3-7	3600-5200	1 1/4" hose, 1 1/4" NPT	545-4519-10000	545-C-10/0-6/W3,W3-6/NR	96729209	95760243
	9-16	3-7	3600-5200	DN 25	545-3518-10000	545-C-10/0-6/W9,W9-6/NR	96729174	95751050

DN 15 vacuum pipe connection (accessory)

The DN 15 vacuum pipe connection can be used for vacuum hose connections 10/14 PE.



Pipe connection DN 15

Description	Product number
Vacuum pipe connection, DN 15	99484784

TM075055

VGS injectors up to 200 kg/h

- Capacity 20-40 kg/h: vacuum pipe connection DN 20
- Capacity 70-200 kg/h: vacuum pipe connection DN 40

Capacity [kg/h]	Motive water pressure [bar]	Counter-pressure [bar]	Water quantity [m ³ /h]	Water connection	Type	Type designation	Product number	Product number with certificate 3.1
20	3-8	0.5-3	7-11	DN 32	545-0615	545-C-20/0-3/ W10,W10-14/NR	96729067	95749444
20	9-16	3.5-7	7-11	DN 32	545-3615	545-C-20/0-6/ W10,W10-14/NR	96706388	95752421
40	3-8	0.5-3	13.2-21	DN 50	545-0715	545-C-40/0-3/ W11,W11-14/NR	96729072	95753502
40	9-16	3.5-7	15-20	DN 50	545-3715	545-C-40/0-6/ W11,W11-14/NR	91836631	95754628
70	3-8	0.5-3	23-37	Flange DN 65	545-2816	545-C-70/0-3/ W12,W12-17/NR	96729139	95757503
70	9-16	3.5-7	26-35	Flange DN 65	545-5816	545-C-70/0-6/ W12,W12-17/NR	96729225	95760251
120	3-8	0.5-3	40-63	Flange DN 80	545-2916	545-C-120/0-3/ W13,W13-17/NR	96729141	95748170
120	9-16	3.5-7	45-60	Flange DN 80	545-5916	545-C-120/0-6/ W13,W13-17/NR	96729228	95753503
200	3-8	0.5-3	80-125	Flange DN 100	545-2016	545-C-200/0-3/ W14,W14-17/NR	96729122	95751859
200	9-16	3.5-7	89-125	Flange DN 100	545-5016	545-C-200/0-6/ W14,W14-17/NR	96729211	95760252

Accessories for VGS injectors**Wall mounting set for VGS injectors**

A wall mounting set for VGS injectors includes a bracket and screws.

Injector capacity [kg/h]	Product number
20 or 40	96729319
70	96688744
120	96688746
200	96729323

Connection flange set for VGS injectors

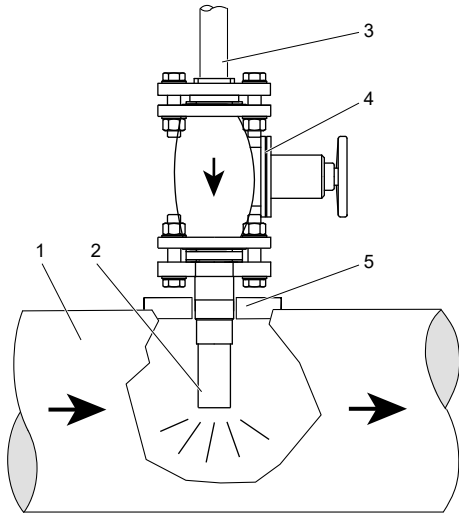
A connection flange set includes 2 sets of lapped flanges, stub flanges, gaskets, washers, screws and nuts.

Injector capacity [kg/h]	Flange size	Product number
70	DN 65	96727591
120	DN 80	96727592
200	DN 100	96727593

9. Injection units

Injection units are used in connection with chlorine gas dosing systems for injecting the chlorine solution into the water flow to be treated. They consist of a shut-off valve with a connection for the chlorine solution coming from the injector and an injection pipe with connection thread or flange for installation in the water pipe.

Injection units are available in PVC or steel with different connection sizes. PVC injection units have a PVC shut-off ball valve. Steel injection units are equipped with a shut-off diaphragm valve.



TN075292

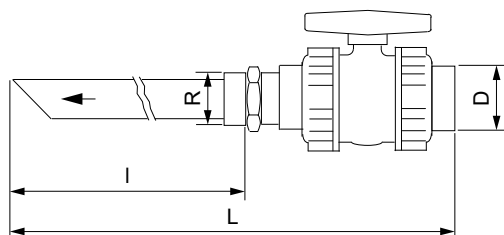
Installation example of a steel injection unit

Pos.	Component
1	Water line
2	Injection pipe
3	Chlorine solution line
4	Shut-off valve
5	Water line installation thread

Technical data of injection units

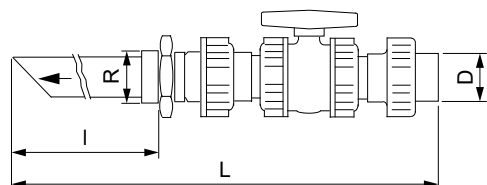
Medium	Chlorine-water solution		
Type	PVC ball valve DN 20 - DN 32	Steel diaphragm valve DN 25 - DN 32	Steel diaphragm valve DN 50 / DN 65 / DN 80
Maximum chlorine solution pressure	10 bar	16 bar	10 bar
Water temperature	5-35 °C	5-35 °C	5-35 °C
Ambient temperature	0-45 °C	0-45 °C	0-45 °C
Material	<ul style="list-style-type: none"> Valve body: PVC Gaskets: FKM Valve ball: PVC Connection: PVC Injection pipe: PVC 	<ul style="list-style-type: none"> Valve body: steel, lined with rubber Gaskets: PVC Diaphragm: EPDM/PTFE Connection: steel, lined with rubber Injection pipe: steel, lined with PVC 	<ul style="list-style-type: none"> Valve body: steel, lined with rubber Gaskets: PVC Diaphragm: EPDM/PTFE Connection: steel, lined with rubber Injection pipe: steel, lined with PVC
Weight	0.5 - 1 kg	6.5 - 10 kg	22 kg / 33.5 kg / 43.5 kg

Dimensions of injection units



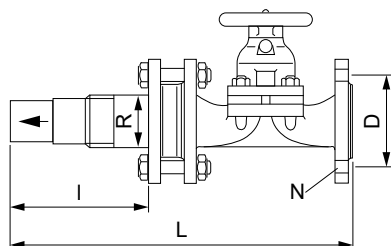
TM074759

PVC injection unit with ball valve; installation connection G 1



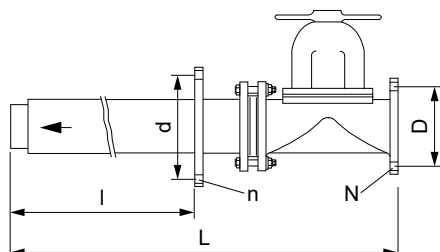
TM074760

PVC injection unit with ball valve; installation connection G 1/4 and G 2



TM074761

Steel injection unit with diaphragm valve; installation connection G 1 1/2



TM074762

Steel injection unit with diaphragm valve; flange installation connection

Dimensions in mm

Installation connection (R or d)	D	I	L	n	N
DN 20 / G 1	25	155	298	-	-
DN 25 / G 1 1/4	32	155	371	-	-
DN 32 / G 2	40	155	414	-	-
Flange DN 25 / G 1 1/2	85	90	310	-	4 x 12
Flange DN 32 / G 1 1/2	100	90	310	-	4 x 16
Flange DN 50 / Flange DN 80	125	450	860	8 x 18	4 x 18
Flange DN 65 / Flange DN 100	145	650	1120	8 x 18	4 x 18
Flange DN 80 / Flange DN 125	160	750	1240	8 x 18	8 x 18

Order data for injection units

Type	Material	Connection chlorine solution line	Installation connection (R or d)	Weight [kg]	Product number
Ball valve	PVC	PVC pipe DN 20	G 1	0.3	96696417
		PVC pipe DN 25	G 1 1/4	0.5	96617120
		PVC pipe DN 32	G 2	1.5	96705808
Diaphragm valve	Steel	Flange DN 25	G 1 1/2	7.0	96727321
		Flange DN 32	G 1 1/2	8.5	96727322
		Flange DN 50	Flange DN 80	21.0	96727319
		Flange DN 65	Flange DN 100	39.0	96727320
		Flange DN 80	Flange DN 125	46.0	96727318

Connection sets for steel injection units

Connection set	for injection unit	Product number
PVC flange DN 25, gasket, stub flange, nuts and bolts, washers	96727321	96727583
PVC flange DN 32, gasket, stub flange, nuts and bolts, washers	96727322	96727584
PVC flange DN 50, gasket, stub flange, nuts and bolts, washers	96727319	96727581
PVC flange DN 65, gasket, stub flange, nuts and bolts, washers	96727320	96727582
PVC flange DN 80, gasket, stub flange, nuts and bolts, washers	96727318	96727580

10. Pressure-side accessories

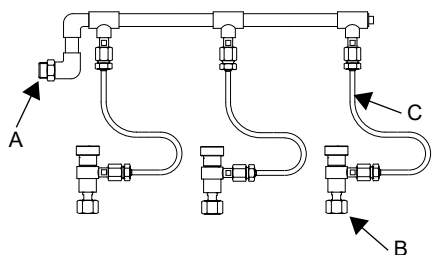
Header lines

Header lines connect several chlorine cylinders or drums with the downstream components of the gas dosing system. Header lines include the following:

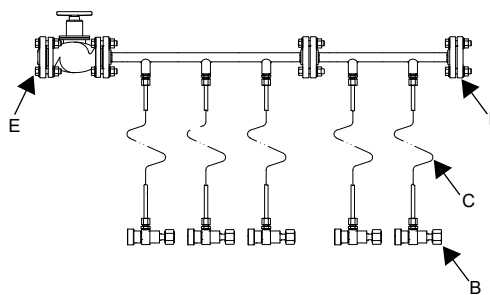
- a collector pipe for the corresponding number of cylinders or drums
- flexible lines for connecting the cylinders or drums
- the corresponding number of connection valves

Selection of the suitable header line

It is possible to extract 1 % per hour of the content of a chlorine cylinder or drum by weight. The needed number of cylinders or drums can be calculated based on the required total dosing quantity.



Header line for chlorine cylinders



TM075122

Header line for 5 drums

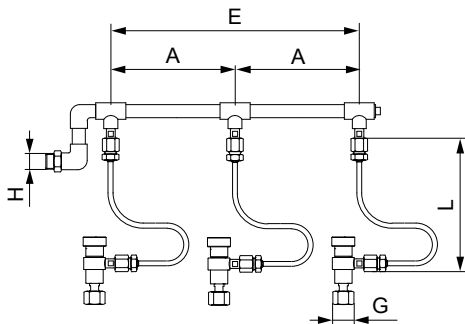
TM075123

Pos.	Component
A	Connection vacuum regulator
B	Connection cylinder or drum
C	Flexible copper line
D	Connection for nitrogen rinsing device
E	Connection for LiquFilt 524 or 185 change-over device

Technical data of header lines

Medium	Liquid or gaseous chlorine
Max. pressure	16 bar
Material	<ul style="list-style-type: none"> • Pipe: low-carbon steel • Copper line: tin-plated copper • Connection valve: nickel-plated brass, alloy C4, PTFE, FKM

Dimensions of header lines

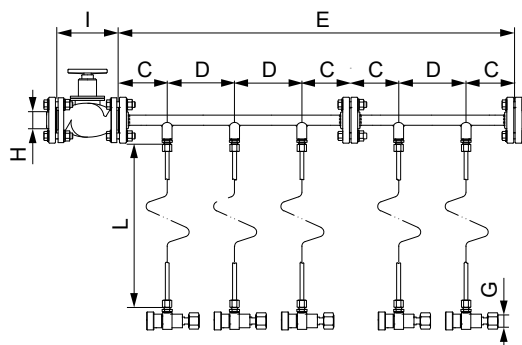
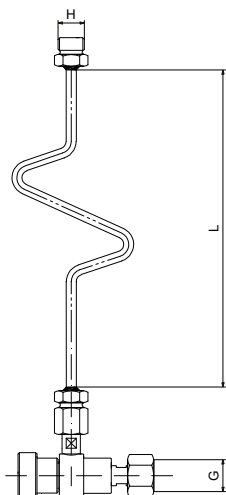


TM074880

Header line for cylinders

Dimensions in mm

Cylinder	A	E	G	H	L
2		700			
3	350	1050	1" Yoke USA	1"	1000
4		1400			



TM075050

Header line for 5 drums

TM075124

Valve connection with copper line for one drum or cylinder

Dimensions in mm

Drums	C	D	E	G	H	I	L
1	-	-	-		G 1/2	-	
2			2000				
3			3000	1"			
4	500	1000	4000	Yoke USA 1 1/4"	Welding neck flange DN 25	160	2000
5			5000				
6			6000				

Type key of header lines

Type	
542 -C-2/1,1-N	
542	Header line

Container type

542-C-2/1,1-N	
C	Cylinder
D	Drum

Number

542-C-2/1,1-N	
1	1
2	2
3	3
4	4
5	5
6	6

Connection container

542-C-2/1,1-N	
1	1"
3	Yoke USA
14	1 ¼"

Connection vacuum regulator

542-C-2/1,1-N	
1	1"
4	G 1/2
18	Welding neck flange DN 25

Angle valve

542-C-2/1,1-N	
N	Without

Order data for header lines for cylinders

Number of cylinders	Cylinder connection 1"		Cylinder connection yoke USA	
	Type designation	Product number	Type designation	Product number
2	542-C-2/1,1-N	96698876	542-C-2/3,1-N	95704437
3	542-C-3/1,1-N	96698877	542-C-3/3,1-N	95715079
4	542-C-4/1,1-N	96698878	542-C-4/3,1-N	95760985

Order data for header lines for drums

Number of drums	Connection 1"		Connection yoke USA		Connection 1 ¼"	
	Type designation	Product number	Type designation	Product number	Type designation	Product number
1	542-D-1/1,4-N	96728935	542-D-1/3,4-N	95700445	542-D-1/14,4-N	96728936
2	542-D-2/1,18-N	95760905	542-D-2/3,18-N	95760896	542-D-2/14,18-N	95752980
3	542-D-3/1,18-N	95760906	542-D-3/3,18-N	95760897	542-D-3/14,18-N	95760902
4	542-D-4/1,18-N	95760907	542-D-4/3,18-N	95760898	542-D-4/14,18-N	95760903
5	542-D-5/1,18-N	95760908	542-D-5/3,18-N	95760899	542-D-5/14,18-N	95760904
6	542-D-6/1,18-N	95760909	542-D-6/3,18-N	96760900	542-D-6/14,18-N	95760901

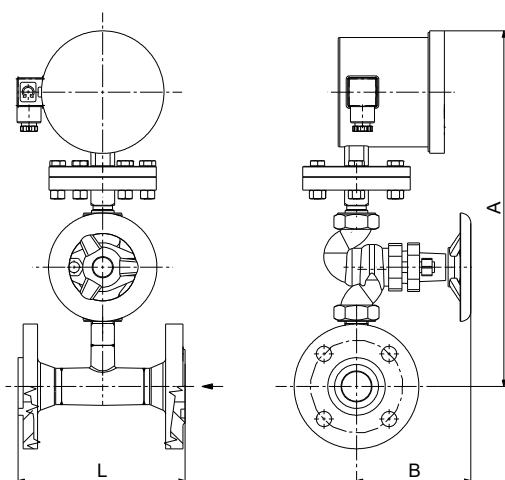
Contact manometer with shut-off valve and T-piece

The contact manometer monitors the pressure in the pressure line. If the pressure is too high, the contact manometer gives a contact signal for an alarm before the bursting disc breaks.

Technical data of a contact manometer with shut-off valve and T-piece

Max. pressure	16 bar
Inlet connection	Groove flange DN 25, PN40, EN 1092-1
Outlet connection	Tongue flange DN 25, PN40, EN 1092-1
Contact manometer	2 limit contacts NO/NC
Material	<ul style="list-style-type: none"> • Pipe: steel • Valve: steel, alloy C4, PTFE • Manometer: steel, silver • Gasket: IT, asbestos-free
Weight	6.4 kg

Dimensions of a contact manometer with shut-off valve and T-piece



TM07 5075

Dimensions in mm

D	A	B	L
DN 25	330	105	154

Order data for a contact manometer with shut-off valve and T-piece

Description	Product number
Contact manometer with shut-off valve and T-piece, DN 25	96728924

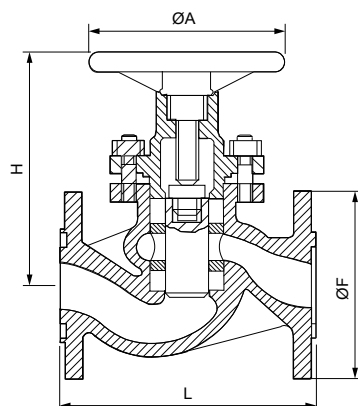
Shut-off valve

The shut-off valve is used for pressurised liquid or gaseous chlorine.

Technical data of a shut-off valve

Max. pressure	16 bar
Inlet connection	Groove flange DN 25, PN40, EN 1092-1
Outlet connection	Tongue flange DN 25, PN40, EN 1092-1
Material	<ul style="list-style-type: none"> • Housing: cast iron • Piston: alloy C4 • Sealing: PTFE • Gasket: IT, asbestos-free

Dimensions of a shut-off valve



Dimensions in mm

ØA	ØF	H	L
140	115	139	160

Order data for a shut-off valve

Description	Product number
Shut-off valve DN 25	96706446

Heater strip

The heater strip is wrapped around the pressure line and heats it up to prevent pressurised chlorine gas from reliquefaction.

- Length 1 m
- Temperature-regulated

Order data for a heater strip

Description	Product number
Heater strip, 115 V, 1-phase, 50/60 Hz, 25 W	96729274
Heater strip, 230 V, 1-phase, 50/60 Hz, 25 W	96729273

Connection set for heater strip

Connection set for heater strip with cable box, screwing, slot gaskets, shrinkable sleeves and nut (for cable boxes without thread).

Order data for a connection set for heater strip

Description	Product number
Connection set for heater strip	96729275

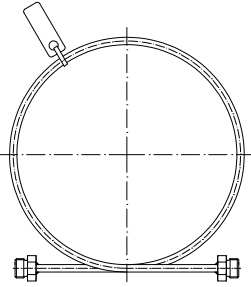
TM074697

Copper line

The copper line connects the chlorine container with the header line or vacuum regulator. A connection valve is required between the chlorine container and the copper line.

Technical data of a copper line

Medium	Chlorine
Max. pressure	16 bar
Material	Copper, tin-plated Brass, tin-plated



TM075133

Order data for a copper line

Description	Product number
1 metre of copper line with G 1/2 connectors	99356968
2 metres of copper line with G 1/2 connectors	99356984
5 metres of copper line with G 1/2 connectors	96680970

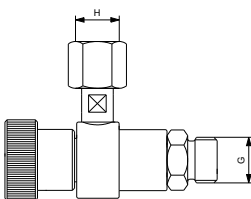
Corner valve for header line

The corner valve is used as a shut-off valve between the copper line and the header line.

Technical data of a corner valve

Medium	Chlorine (liquid or gas)
Max. pressure	16 bar
Material	<ul style="list-style-type: none"> Valve body: brass, nickel-plated Valve piston: nickel-chrome alloy Gaskets: IT, asbestos-free Packing: PTFE O-ring: FKM

Dimensions of a corner valve



TM075046

G (inlet)	H (outlet)
G 1/2	G 1/2

Order data for a corner valve

Description	Product number
Corner valve	96729263

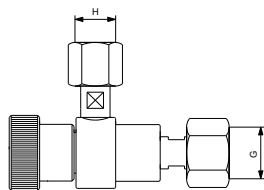
Connection valve for cylinder and drum

The connection valve is used as a shut-off valve between the chlorine cylinder or drum and the copper line.

Technical data of a connection valve

Medium	Chlorine (liquid or gas)
Max. pressure	16 bar
Material	<ul style="list-style-type: none"> Valve body: brass, nickel-plated Valve piston: nickel-chrome alloy Gasket: IT, asbestos-free Packing: PTFE O-ring: FKM

Dimensions of a connection valve



TM075047

Description	G (inlet)	H (outlet)
Connection valve 1"	1"	G 1/2
Connection valve G 3/4	G 3/4	G 1/2
Connection valve 1 1/4"	1 1/4"	G 1/2

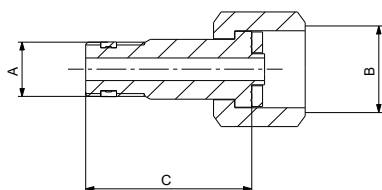
Order data for a connection valve

Description	Product number
Connection valve 1"	96690367
Connection valve G 3/4	96688687
Connection valve 1 1/4"	96690368

Connection screwing for connection valve

The connection screwing is used to adapt the connection valve to different connection sizes of chlorine containers.

Dimensions of a connection screwing for connection valve



TM075053

Dimensions in mm

A	B	C
G 1/4	G 1/2	39
	1"	36
	G 3/4	61
	1 1/4"	49

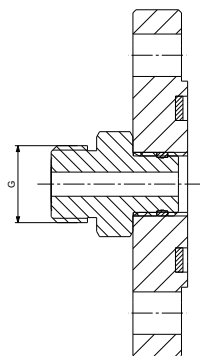
Order data for a connection screwing for connection valve

Description	Product number
Connection screwing G 1/2	96729262
Connection screwing 1"	99707722
Connection screwing G 3/4	99709506
Connection screwing 1 1/4"	99707747

Adapter flange for VGA-146 vacuum regulator

The adapter flange connects the VGA-146 vacuum regulator with the header line for chlorine drums.

Dimensions of an adapter flange for VGA-146



TM075083

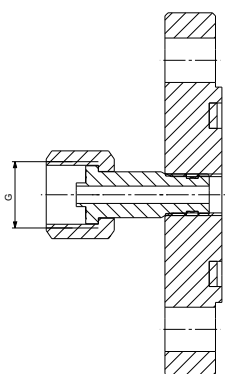
Description	G
Adapter flange (groove flange), DN 25	1"

Order data for an adapter flange for VGA-146

Description	Product number
Adapter flange (groove flange), DN 25 (EN 1092-1), with 1" connection and flat gasket	99656316

Adapter flange for copper line

The adapter flange connects the copper line with the header line for chlorine drums.



TM075080

Description	G
Adapter flange (groove flange) DN 25	G 1/2

Order data for an adapter flange for copper line

Description	Product number
Adapter flange (groove flange) DN 25, PN40 (EN 1092-1) with G 1/2 connection and flat gasket	99656301

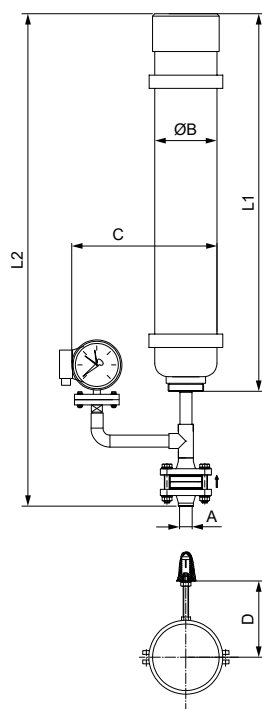
Expansion tank

The expansion tank protects the pipework containing liquid chlorine from bursting in case of overpressure. The bursting disc before the expansion tank breaks when the pressure exceeds 16 bar. The liquid chlorine enters the expansion tank which reduces the pressure in the pipework. The contact manometer with potential-free contact NC gives a signal when the bursting disc is broken.

Technical data of an expansion tank

Medium	Liquid or gaseous chlorine
Volume	10 l
Max. operating pressure	12.5 bar
Rupture pressure (on rupture disc)	16 bar
Connection	Welding neck flange DN 25
Contact manometer	1 limit contact NC
Material	<ul style="list-style-type: none"> • Pipe, cylinder: Low-carbon steel, • Rupture disc: stainless steel, copper-nickel alloy • Manometer: steel, silver • Gasket: IT asbestos-free
Weight	23 kg

Dimensions of an expansion tank



TM075018

Expansion tank with bursting disc and contact manometer

Dimensions in mm

A	øB	C	D	L1	L2
DN 25	140	327	100-170	850	1110

Order data for an expansion tank

Description	Product number
Expansion tank with contact manometer	96706391

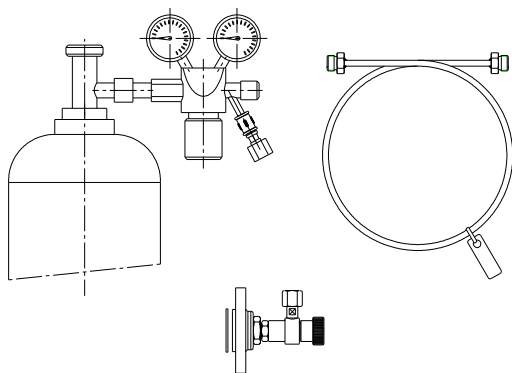
Nitrogen rinsing device

Order data for a nitrogen rinsing device

The nitrogen rinsing device is used to flush the chlorine gas dosing system with nitrogen for removing the chlorine gas before working on the system. With the tongue flange the nitrogen rinsing device is connected to the header line for chlorine drums.

The nitrogen rinsing device is available with:

- 40-litre nitrogen cylinder (empty)
- Pressure reducing valve
- 2 metres of copper line
- Corner valve
- DN 25 tongue flange and flange gasket



TM075184

Description	Product number
Nitrogen rinsing device for connection to DN 25 header lines for chlorine drums	96726855

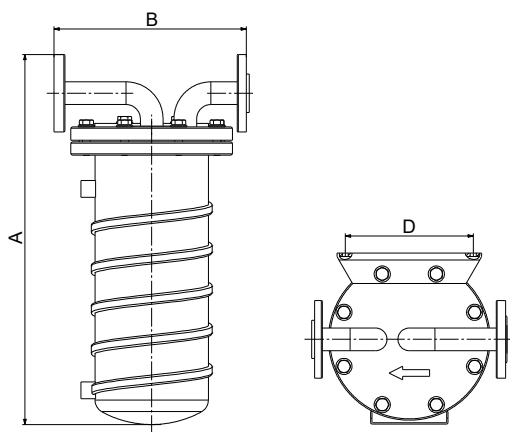
LiquFilt 524

The LiquFilt 524 is a heated liquid trap with integrated filter for high-capacity chlorine gas dosing systems up to 200 kg/h. It is installed before the VGS-147 or VGS-148 vacuum regulator to separate the impurities in the chlorine gas and catch and evaporate any liquid chlorine drops. The LiquFilt 524 protects the downstream dosing units from damage by liquid chlorine and prevents the obstruction of nozzles and valve seats.

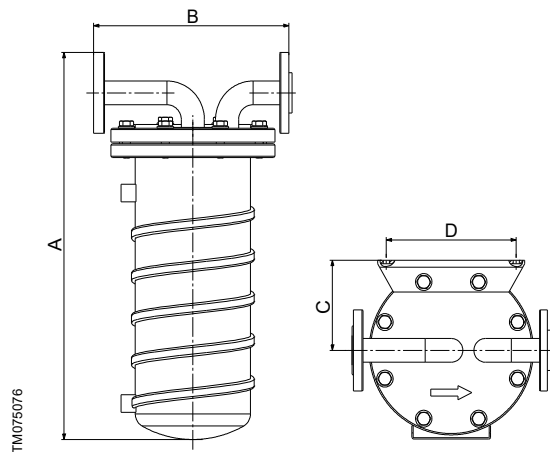
Technical data of LiquFilt 524

Medium	Chlorine gas
Max. capacity	200 kg/h
Max. operating pressure	16 bar
Inlet connection	Groove flange DN 25, PN40, EN 1092-1
Outlet connection	Tongue flange DN 25, PN40, EN 1092-1
Heating capacity	80 W at 10 °C
Material	<ul style="list-style-type: none"> • Body, pipes and flanges: low-carbon steel • Filter: Rockwool • Gaskets: IT, asbestos-free
Weight	22 kg

Dimensions of LiquFilt 524



LiquFilt 524 inlet right, outlet left



LiquFilt 524 inlet left, outlet right

Dimensions in mm

A	B	C	D
549.5	185.5	128	190

Type key of LiquFilt 524

Type	
524 Liquifilt -200/G/L-R,G,C3	
524 LiquFilt	524 LiquFilt
Capacity	
524 LiquFilt-200/G/L-R,G,C3	
200	200 kg/h
Supply voltage	
524 LiquFilt-200/G/L-R,G,C3	
G	230 V, 50/60 Hz
H	115 V, 50/60 Hz
Flow direction	
524 LiquFilt-200/G/L-R,G,C3	
L-R	Left to right
R-L	Right to left
Logo	
524 LiquFilt-200/G/L-R,G,C3	
G	Grundfos
Product certificate	
524 LiquFilt-200/G/L-R,G,C3	
C3	Certificate 3.1 (EN 10204)

Order data for LiquFilt 524

- Inlet left, outlet right

Supply voltage	Type designation	Product number	Product number with certificate 3.1
230 V, 50/60 Hz	524 LiquFilt-200/G/L-R,G	96696435	95749445
115 V, 50/60 Hz	524 LiquFilt-200/H/L-R,G	96727353	95758350

- Inlet right, outlet left

Supply voltage	Type designation	Product number	Product number with certificate 3.1
230 V, 50/60 Hz	524 LiquFilt-200/G/R-L,G	96696436	95751129
115 V, 50/60 Hz	524 LiquFilt-200/H/R-L,G	96727354	95758351

544 pressure reducing valve

The 544 pressure reducing valve reduces the unregulated gas pressure of the gas containers to a constant operation pressure. It ensures the precise and pressure-independent functioning of the inlet valve of the vacuum regulator and prevents reliquefaction of the gas. If the reducing valve is additionally equipped with a servomotor, it protects the dosing unit against the penetration of liquefied gas by its immediate shut-off function in case of malfunctions of the system. If the operating pressure exceeds the setpoint value, the spring-cone-diaphragm system causes the valve to close. If the 544 pressure reducing valve is connected to a Conex DIA-G or DIS-G gas warning system, the valve is immediately closed in case of a gas breakout.

A wall bracket and a manometer must be ordered separately (see accessories).

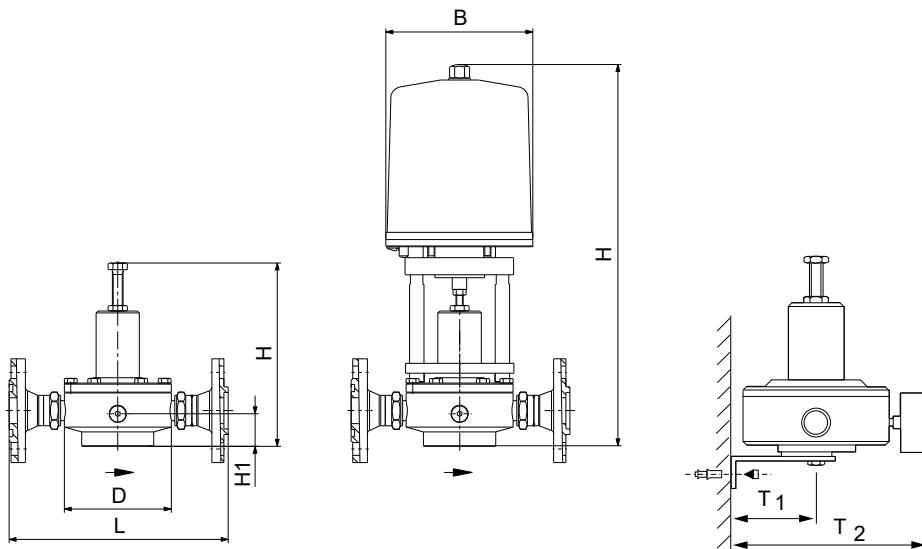


TM075 169

Technical data 544

Medium	Chlorine gas
Max. capacity	40 kg/h, 200 kg/h
Max. operating pressure	16 bar
Counterpressure	Adjustable 2 to 3 bar
Inlet connection	Groove flange DN 25, PN40, EN 1092-1
Outlet connection	Tongue flange DN 25, PN40, EN 1092-1
Material	<ul style="list-style-type: none"> • Diaphragm: fine silver • Valve cone: silver • Valve seat: PTFE • Spring: Nickel-chrome alloy, silver plated • O-ring: FKM • Enclosure: Brass
Weight	40 kg/h without servomotor: 6 kg
	200 kg/h without servomotor: 12.5 kg
	40 kg/h with servomotor: 9.5 kg
	200 kg/h with servomotor: 16 kg
Servomotor	Voltage: 230 V, 115 V, 60 Hz
	Power consumption: 20 W
	Enclosure: IP54
	Safety function: servomotor closes in case of power failure

Dimensions 544



TM075052

544 pressure reducing valve

Dimensions in mm

Capacity [kg/h]	Manual/Automatic	H	H1	D	B	L	T1	T2
40	manual	200	36	120	-	243	128	240
200	manual	220	36	150	-	270	128	255
40	with servomotor	425	36	120	162	243	128	240
200	with servomotor	435	36	150	160	270	128	255

Type key 544

Type	
544	Pressure reducing valve
544 - C-40-M/18,X-G,C3	
Medium	
C	Chlorine
544-C-40-M/18,X-G,C3	
Capacity	
40	40 kg/h
200	200 kg/h
544-C-40-M/18,X-G,C3	
Adjustment	
M	Manual
G	Automatic, 230 V 50/60 Hz
H	Automatic, 115 V 50/60 Hz
544-C-40-M/18,X-G,C3	
Connection	
18	Groove and tongue flange DN 25 (EN 1092)
544-C-40-M/18,X-G,C3	

Counterflange	
544-C-40-M/18,X-G,C3	
X	Without counterflange
Logo	
544-C-40-M/18,X-G,C3	
G	Grundfos
Product certificate	
544-C-40-M/18,X-G,C3	
C3	Certificate 3.1 (EN 10204)

Order data 544

Capacity [kg/h]	Connection	Manual/Automatic	Type designation	Product number	Product number with certificate 3.1
40	Flange DN 25	manual	544-C-40-M/18,X-G	95761046	95761047
	Flange DN 25	with servomotor 230 V, 50/60 Hz	544-C-40-G/18,X-G	95761090	95761092
	Flange DN 25	with servomotor 115 V, 50/60 Hz	544-C-40-H/18,X-G	95761091	95761093
200	Flange DN 25	manual	544-C-200-M/18,X-G	96729021	95761043
	Flange DN 25	with servomotor 230 V, 50/60 Hz	544-C-200-G/18,X-G	91835788	95750634
	Flange DN 25	with servomotor 115 V, 50/60 Hz	544-C-200-H/18,X-G	91835789	95761044

Order data for accessories for 544

Description	Product number
Manometer, 0-16 bar, G 1/4	96688685
Wall-mounting bracket with fastening material	96728842

Counterflanges

Order data for counterflanges

Description	Product number
Flange set: pair of welding neck flanges, tongue and groove, DN 25 PN40 (EN1092-1), including screws and gaskets	96698366
Flange set: pair of threaded counter flanges, tongue and groove, R1, DN 25 PN40 (EN 1092-1), including screws and gaskets	96727563
10 gaskets for flanges DN 25 (EN 1092-1)	96688979

Ammonia for tightness check

Order data for ammonia

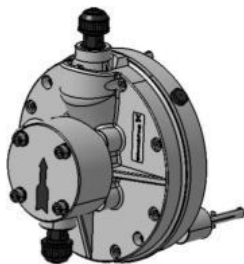
Description	Product number
Liquid ammonia (25 %) for tightness check, 75 ml (not for airfreight transport, for airfreight transport use local supplier)	98025681

11. Vacuum-side accessories

Safety valve

The safety valve is required according to DIN 19606 to prevent a gas leakage in the vacuum piping system. The safety valve can only be used together with the Grundfos vacuum regulator with integrated pressure relief valve. The safety valve is installed in the vacuum line as a flow-through valve in the chlorine gas storage room.

- Capacity: up to 10 kg/h
- For direct wall mounting

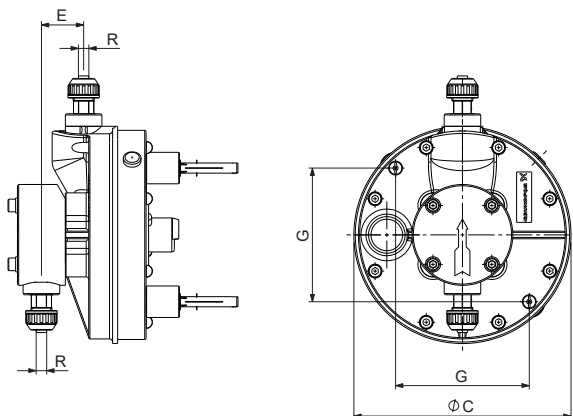


TM074758

Technical data of a safety valve

Medium	Chlorine gas
Capacity	Up to 10 kg/h
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Spring: alloy C4 silver coated • Diaphragm: FEP • O-ring: Viton
Vacuum connections	<ul style="list-style-type: none"> • Up to 4 kg/h: PE hose 8/11 • Up to 10 kg/h: PE hose 10/14
Weight	1 kg

Dimensions of a safety valve



TM074757

Safety valve

Dimensions in mm

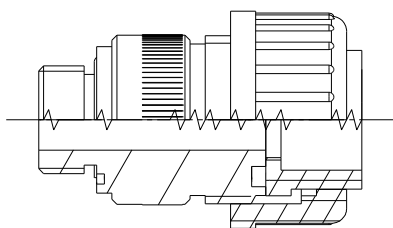
øC	E	G	R
172	33.5	106	8/11, 10/14

Type key of a safety valve

Type	
543 -11-11/W-G,C3	
543	Safety valve
Inlet	
543- <u>11</u> -11/W-G,C3	
6	PE 10/14
11	PE 8/11
Outlet	
543-11- <u>11</u> /W-G,C3	
6	PE 10/14
11	PE 8/11
Installation type	
543-11-11/ <u>W</u> -G,C3	
W	Wall-mounting
Logo	
543-11-11/W- <u>G</u> ,C3	
G	Grundfos
Product certificate	
543-11-11/W-G, <u>C3</u>	
C3	Certificate 3.1 (EN 10204)

Order data for a safety valve

Connector inlet/outlet	Type designation	Product number	Product number with certificate 3.1
PE 8/11	543-11-11/W-G	96698000	95760039
PE 10/14	543-6-6/W-G	96698015	95747090

Order data for pipe connection (accessory)

TM075084

Description	Product number
Pipe connection, DN 15 (1 unit)	99358518

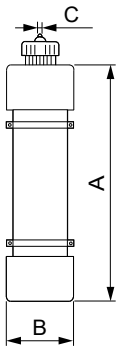
Chlorine gas adsorption filter

Technical data of a chlorine gas adsorption filter

The chlorine gas adsorption filter is installed at the vent outlet of the vacuum regulator. In case of a malfunction of the vacuum regulator, the adsorption filter neutralises the chlorine gas.

Medium	Chlorine gas
Adsorption capacity	Approximately 450 g Cl ₂
Inner filter volume	5 l
Material	<ul style="list-style-type: none"> • Enclosure: PVC • Adsorbent: aluminium oxide
Connections	PE hose 8/11
Filling weight	4 kg

Dimensions of a chlorine gas adsorption filter



TM074620

Dimensions in mm

A	B	C
824	139	8/11

Order data for a chlorine gas adsorption filter

Description	Product number
Chlorine gas adsorption cylinder, filled	96696580
Refilling (4 kg adsorbent)	96688989

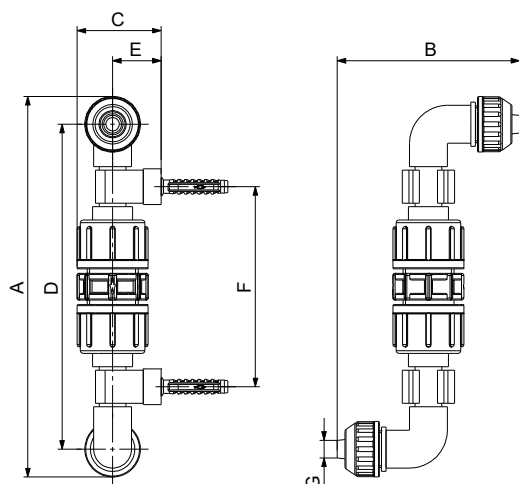
Vacuum non-return valve

The vacuum non-return valve prevents water backflow from the injector to the dosing regulator.

Technical data of a vacuum non-return valve

Medium	Chlorine gas
Capacity	up to 4 kg/h
Material	<ul style="list-style-type: none"> • Valve body: PVC • Spring: Tantal • Ball: glass • O-ring: FKM
Vacuum connections	PE hose 8/11
Opening pressure	0.05 bar

Dimensions of a vacuum non-return valve



TM075049

Dimensions in mm

A	B	C	D	E	F	G
171	82	38	146	22	90+2	8

Order data for a vacuum non-return valve

Description	Product number
Vacuum non-return valve	95704851

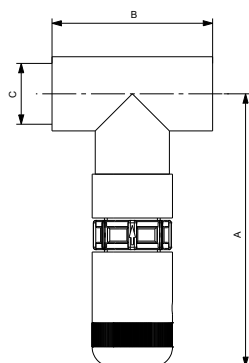
Anti-syphoning valve

The anti-syphoning valve is installed between the booster pump and the injector. If the injection point is lower than the water unit, the anti-syphoning valve prevents syphoning when the chlorine gas dosing system is stopped.

Technical data of an anti-syphoning valve

Medium	Water
Material	<ul style="list-style-type: none"> Housing: PVC Spring: Tantal Ball: glass O-ring: FKM
Connection	Piping DN 20
Opening pressure	0.05 bar

Dimensions of an anti-syphoning valve



TM075048

Dimensions in mm

A	B	C
112	66	25

Order data for an anti-syphoning valve

Description	Product number
Anti-syphoning valve	96701817

PE hose

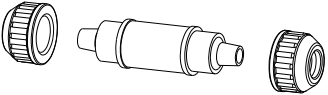
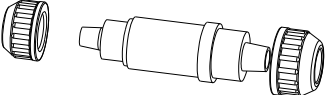
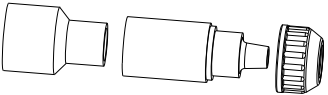
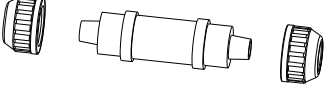
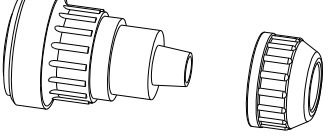
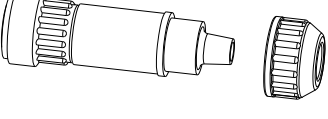
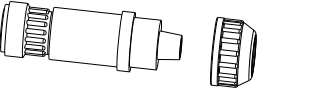
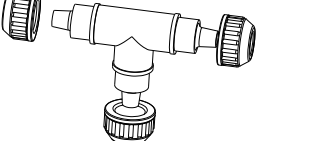
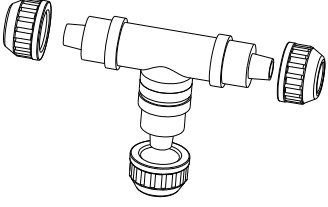
PE hoses are installed at the vacuum side of chlorine gas dosing systems up to 10 kg/h. They are available in different lengths and in sizes.

Order data for PE hose

Description	Product number
8/11 mm PE hose, 10 m	96701705
8/11 mm PE hose, 25 m	96695982
8/11 mm PE hose, 50 m	96727461
10/14 mm PE hose, 10 m	91836646
10/14 mm PE hose, 25 m	96727466
10/14 mm PE hose, 50 m	96697538

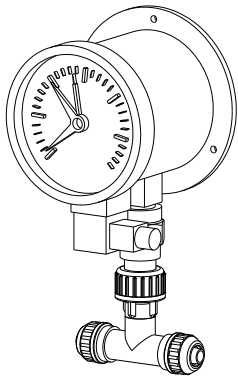
Connectors

With these connectors, PE hoses or PVC pipes of different sizes can be connected. The threaded side includes a gasket.

Type	Connection	Material		Product number
		Body and connection	Gasket	
	PE hose 8/11 - PE hose 8/11 TM074970	PVC	-	99615613
	PE hose 8/11 - PE hose 10/14 TM074971	PVC	-	99618453
	PE hose 8/11 - PVC pipe DN 10 or DN 15 TM074972	PVC	-	96727463
	PE hose 10/14 - PE hose 10/14 TM074973	PVC	-	99618472
	PE hose 10/14 - G 1 TM074976	PVC	FKM	99628317
	PE hose 8/11 - G 5/8 TM074977	PVC	FKM	99627276
	PE hose 10/14 - G 5/8 TM074978	PVC	FKM	99626713
	T-piece for PE hoses 8/11 TM074974	PVC	-	96695978
	T-piece for PE hoses 10/14 TM074975	PVC	-	91835711

Contact vacuum meter with PE hose connector

The contact vacuum meter indicates the injector vacuum. The min/max contact can be used for an alarm. The contact vacuum meter is supplied with wall fixing material.



TM075054

Technical data contact vacuum meter

Medium	Chlorine gas
Material	<ul style="list-style-type: none"> • Body and connection: PVC, brass • Gasket: FKM
Vacuum connections	PE hose 10/14
Contacts	Min./Max.

Order data for contact vacuum meter

Description	Product number
Contact vacuum meter, 2 connections for PE hose 10/14, 2 contacts (min/max)	96728932

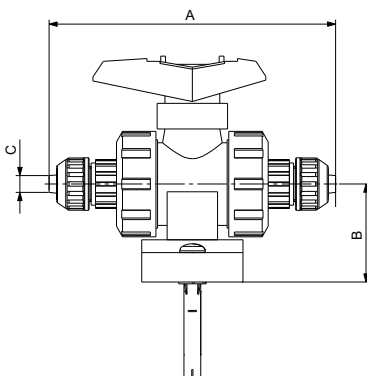
Ball valve

The ball valve is used to shut-off the vacuum line. The ball valve is supplied with wall fixing material.

Technical data of a ball valve

Medium	Chlorine gas
Capacity	Up to 10 kg/h
Vacuum connection	PE hose: 8/11 or 10/14
Material	<ul style="list-style-type: none"> • Body and connection: PVC • Gaskets: FKM

Dimensions of a ball valve



TM075078

Dimensions in mm

Connection	A	B	C
PE hose 8/11	136	46.5	8
PE hose 10/14	147	46.5	10

Order data for a ball valve

Description	Product number
Ball valve for PE hose 8/11	96727449
Ball valve for PE hose 10/14	96727450

12. General accessories

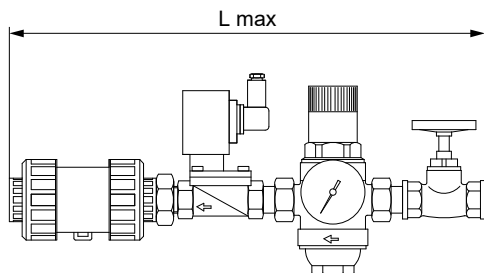
Water unit

The water unit is a device for the regulation or control of the motive water pressure at the injector. The water unit is installed in the motive water line before the injector and must only be used with the VGA-113 dosing regulator.

Technical data of a water unit

Max. pressure	10 bar
Material	Brass, NBR, FKM, PVC

Dimensions of a water unit



TM074634

Water unit with shut-off valve, solenoid valve, pressure reducing valve, strainer, pressure gauge and non-return valve

Inlet connection	Outlet connection	L _{max} [mm]
G 1/2	PVC pipe 20/25	375
G 1	PVC pipe 25/32	470

Type key of a water unit

Type	
556 -SVPRNV-G1/2-PVC, DN20, 230V50Hz, C3	
556	Water unit
Version	
556- SVPRNV -G1/2-PVC, DN20, 230V50Hz, C3	
SVPRNV	Solenoid valve, pressure reducing valve, non-return valve
Water connection, inlet	
556-SVPRNV- G1/2 -PVC, DN20, 230V50Hz, C3	
G 1/2	G 1/2
G 1	G 1
Water connection, outlet	
556-SVPRNV-G1/2- PVC, DN20 , 230V50Hz, C3	
PVC, DN 20	PVC pipe DN 20 (20/25)
PVC DN 25	PVC pipe DN 25 (25/32)
Supply voltage	
556-SVPRNV-G1/2-PVC, DN20, 230V50Hz , C3	
230 V 50 Hz	230 V, 50 Hz
24 VDC	24 VDC
Product certificate	
556-SVPRNV-G1/2-PVC, DN20, 230V50Hz, C3	
C3	Certificate 3.1 (EN 10204)

Order data for a water unit

Connection, inlet	Voltage	Type designation	Product number	Product number with certificate
G 1/2	230 V, 50 Hz	556-SVPRNV-G1/2-PVC, DN20, 230V50Hz	95703314	95760360
	24 VDC	556-SVPRNV-G1/2-PVC, DN20, 24VDC	95721164	95760361
G 1	230 V, 50 Hz	556-SVPRNV-G1-PVC, DN25, 230V50Hz	95704696	95760362
	24 VDC	556-SVPRNV-G1-PVC, DN25, 24VDC	95745342	95760363

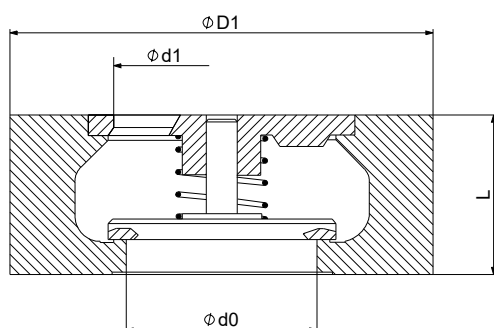
Non-return valve for high-pressure injector

The non-return valve for high-pressure injector is installed between the flanges of the injector and the motive water pump to prevent the backflow of chlorine solution to the motive water pump.

Technical data of a non-return valve

Max. pressure	40 bar
Material	Alloy C-4

Dimensions of a non-return valve



TM075082

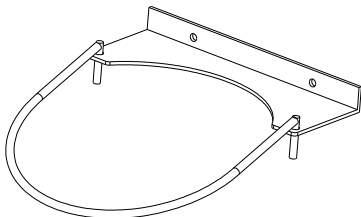
Connection size	L	ød1	øD1	ød0
	[mm]	[mm]	[mm]	[mm]
DN 25	35.5	30	71	25

Order data for a non-return valve

Description	Product number
Spring-loaded non-return valve DN 25, PN 40, alloy C-4	95717963

Chlorine cylinder holding clip

The chlorine cylinder holding clip is intended for chlorine cylinders with a diameter of 270 mm. It is mounted on the wall and holds the chlorine cylinder safely in its position in the chlorine room.



TM075179

Technical data of a chlorine cylinder holding clip

Chlorine cylinder diameter size	270 mm
Material	Painted steel

Order data for a chlorine cylinder holding clip

Description	Product number
Chlorine cylinder holding clip	96726838

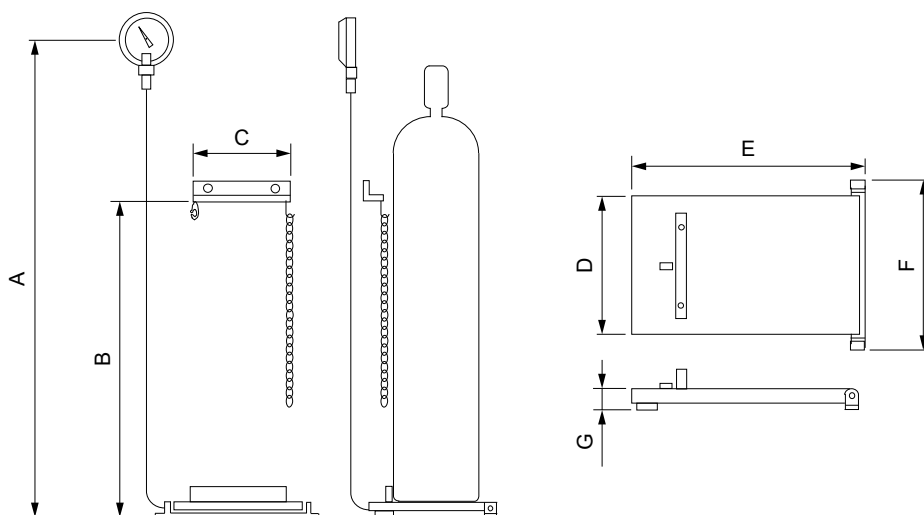
Chlorine cylinder scale

The chlorine cylinder scale monitors the weight of the chlorine cylinder and displays the result locally or remotely.

Technical data of a chlorine cylinder scale

Chlorine cylinder size	Diameter 270 mm, max. 100 kg
Output signal	4-20 mA
Power supply	24 VDC

Dimensions of a chlorine cylinder scale



TM074636

Dimensions in mm

A	B	C	D	E	F	G
1549	1016-1066	279	330	457	406	25

Order data for a chlorine cylinder scale

Description	Product number
Chlorine cylinder scale for one cylinder up to 100 kg, with signal output 4-20 mA	96726859
Chlorine cylinder scale (2 scales) for two cylinders up to 100 kg each, with signal output 4-20 mA	96726862

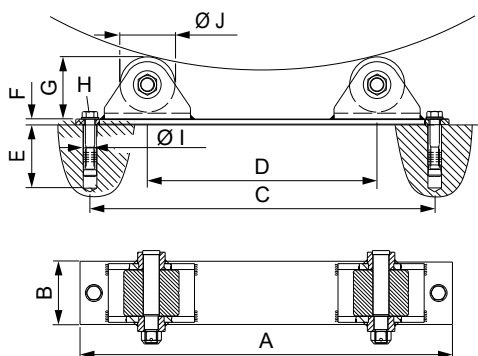
Drum support

The drum support is used for the safe storage of a chlorine drum in the chlorine room. It is supplied in a set of two units with floor-fixing material.

Technical data of a drum support

Drum support	
Drum diameter	Min. 0.7 m, max. 1.96 m
Load	Max. 2000 kg
Material	<ul style="list-style-type: none"> • Mounting plate: painted steel • Rollers and axles: nickel-plated steel
Weight	2 x 23 kg

Dimensions of a drum support



TM074870

Dimensions in mm

A	B	C	D	E _[min]	F	G	H	øI	øJ
650	110	600	400	110	10	108	M16	24	96

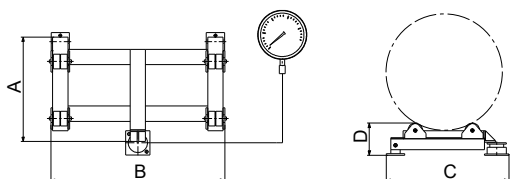
Order data of a drum support

Description	Product number
Drum support	96726869

Chlorine drum scale

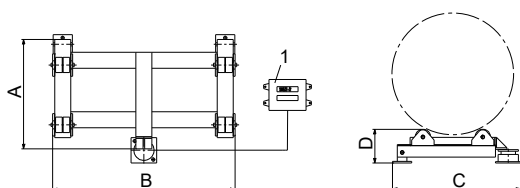
The chlorine drum scale monitors the weight of the chlorine drum and displays the result locally or remotely. The electronic indicator (1) must be ordered separately.

Dimensions of a chlorine drum scale



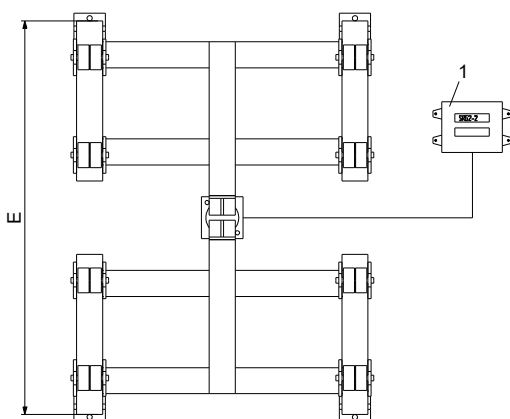
TM075180

Chlorine drum scale for one drum with mechanical indicator



TM075181

Chlorine drum scale for one drum with electronic indicator (1)



TM075182

Chlorine drum scale for two drums with electronic indicator (1)

Dimensions in mm

A	B	C	D	E
710	1120	780	203	1570

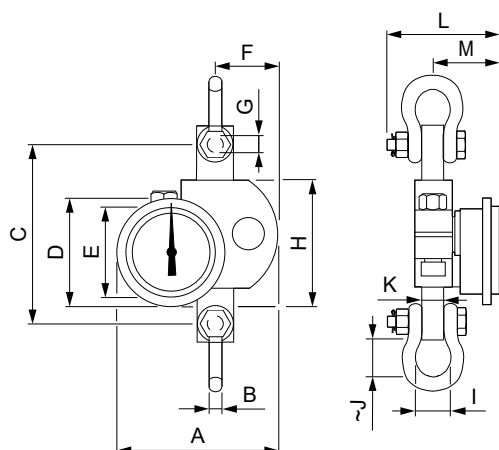
Order data for a chlorine drum scale

Description	Product number
Chlorine drum scale for one drum up to 2000 kg, with mechanical indicator	95705334
Chlorine drum scale for one drum up to 2000 kg, for electronic indicator (96182511)	98037162
Chlorine drum scale for two drums up to 2000 kg each, for electronic indicator (96182511)	99502434
Electronic indicator for two input signals (up to two scales) and two adjustable 4-20 mA output signals, supply voltage 110-250 VAC, IP65	96182511

Spring balance for cranes

The spring balance for cranes monitors the weight of the chlorine drum while it is lifted by a crane, and displays the result.

Dimensions of a spring balance



TM074825

Dimensions in mm

A	B	C	D	E	F	G	H	I	J	K	L	M
175	16	192	120	100	69	20	138	42	50	25	131	74

Order data for a spring balance

Description	Product number
Spring balance for cranes, maximum capacity 2000 kg	96726840

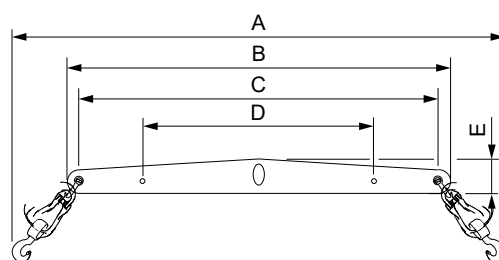
Lifting beam

The lifting beam is used for safe clamping of the chlorine drum during lifting.

Technical data of a lifting beam

Max. lifting capacity	2000 kg
Drum size	400 l or 800 l
Weight	40 kg

Dimensions of a lifting beam



TM074871

Dimensions in mm

A	B	C	D	E
2000	1620	1520	970	156

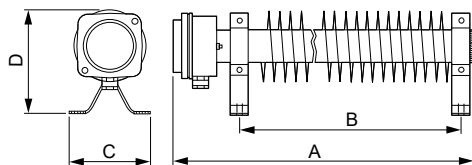
Order data for a lifting beam

Description	Product number
Lifting beam	96726853

Ribbed radiator

Dimensions of a ribbed radiator

The ribbed radiator is intended for heating the chlorine cylinder storage room.



TMO75283

Dimensions in mm

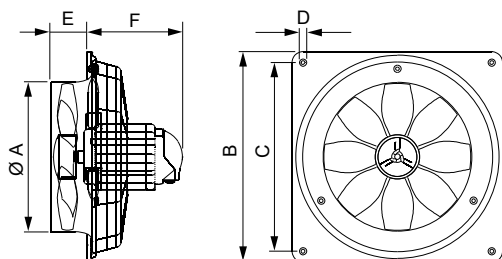
A	B	C	D
640	515	127	170

Order data for a ribbed radiator

Description	Product number
Ribbed radiator, stainless steel, 230/400 V, IP66 / IP67, 1000 W	96726993
Temperature controller (frost protector) for ribbed radiator, 230 V, 50 Hz, wall mounting	96727000

Exhauster fan

Dimensions of an exhauster fan



TMO75293

Dimensions in mm

Description	A	B	C	D	E	F
Exhauster fan 1150 m ³ /h	217	345	305	8.5	44.5	193
Exhauster fan 2500 m ³ /h	431	580	520	11	100	166
Exhauster fan 5700 m ³ /h	543	700	640	11	137	192

Order data for an exhauster fan

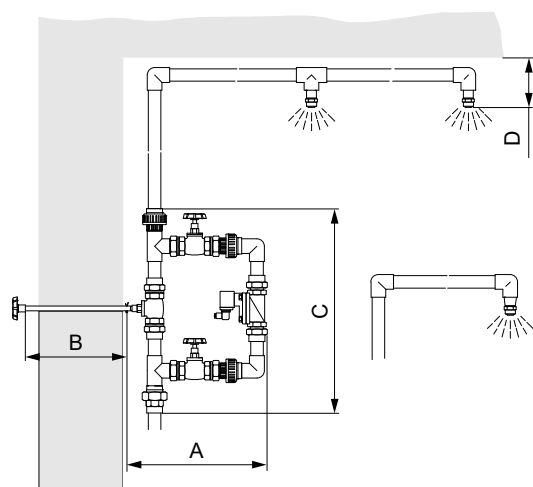
- 3-phase, 400 V, 50 Hz, IP55, with cover

Description	Product number
Exhauster fan 1150 m ³ /h, 65 W, 0.17 A	96726997
Exhauster fan 2500 m ³ /h, 110 W, 0.30 A	96726998
Exhauster fan 5700 m ³ /h, 210 W, 0.65 A	96726999

Sprinkling system

The sprinkling system is installed in the chlorine storage room. In case of a chlorine gas leakage, the chlorine is precipitated with water.

Dimensions of a sprinkling system



Sprinkling system

Dimensions in mm

A	B	C	D
min. 361	min. 325	min. 508	min. 115

Order data of a sprinkling system

- With solenoid valve 230 V, 50 Hz

Description	Product number
Sprinkling system with 1 nozzle	96699653
Sprinkling system with 2 nozzles	96699654
Sprinkling system with 3 nozzles	96699696
Sprinkling system with 4 nozzles	96699698
Sprinkling system with 5 nozzles	96699700
Sprinkling system with 6 nozzles	96699699

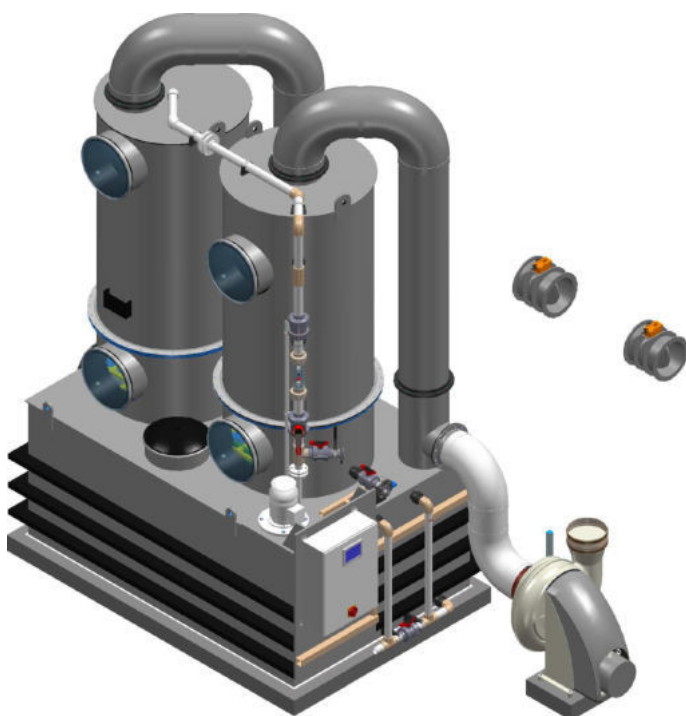
TM074874

Chlorine gas neutralisation system (scrubber)

The gas neutralisation system is exclusively intended for neutralisation of chlorine gas in case of a chlorine leakage in the chlorine storage room. The chlorine gas neutralisation system is designed for operation during an emergency case only. An external gas warning device is connected to gas sensors. If the measured gas concentration is higher than the acceptable limit, the gas warning system sends a signal to start the neutralisation system. The contaminated air is sucked through the towers from the bottom to the top. Caustic soda is pumped and sprayed through the towers from the top to the bottom.

The chlorine gas neutralisation system consists of:

- 2 towers filled with Raflux rings
- NaOH storage tank
- NaOH recirculation
- extraction fan
- piping, fittings and valves for a scrubber



TM075308

Order data for a chlorine gas neutralisation system (scrubber)

Description	Product number
Chlorine gas neutralisation system (scrubber) for cylinder up to 200 kg	on request
Chlorine gas neutralisation system (scrubber) for 1 drum, max. 1000 kg	on request

Compressed-air respirator

Order data for a compressed-air respirator

Description	Product number
Compressed-air respirator with automatic lung and panorama mask, 6-litre cylinder, 300 bars, with supporting frame	96727001
Spare cylinder	96727002

Protective PVC suit

Order data for a protective PVC suit

Description	Product number
Protective PVC suit with vulcanized boots and gloves	96727018

Gas mask

Order data for a gas mask

Description	Product number
Gas mask with threaded filter, type 900 St B 2-P2 (DIN 3181)	96727010
Spare filter for gas mask	96688099
Storage box for gas mask and filter, with shoulder strap	96727011

Rubber gloves

Order data for rubber gloves

Description	Product number
Rubber gloves	96727012

Rubber apron

Order data for a rubber apron

Description	Product number
Rubber apron	96727013

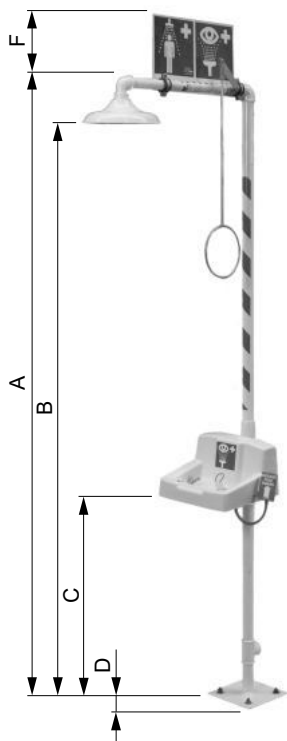
Protective goggles

Order data for protective goggles

Description	Product number
Protective goggles	96727014

Body and eye shower

Dimensions of a body and eye shower



TM075161

Dimensions in mm

A	B	C	D	E
2269	2115	1000	200	207

Order data for a body and eye shower

Description	Product number
Body and eye shower	96727019

Warning signs**Order data for warning signs**

Description	Product number
Set of warning signs for a chlorine gas plant in German	96699631
Set of warning signs for a chlorine gas plant in English	96727016

Conex DIA-G gas warning system

The Conex DIA-G gas warning system monitors chlorine gas dosing systems and chlorine storage rooms with up to two potentiostatic sensors.

- Two output signals 4-20 mA
- Two relays (limit values) per sensor
- One alarm relay
- Sensor recognition and autocalibration



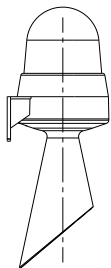
TM075162

Order data for Conex DIA-G

Type designation		Voltage	Product number
Conex DIA-G-P. CLP-X-X.W-J	1 sensor	110/240 V, 50/60 Hz	95700080
Conex DIA-G-P. CLP-CLP-X.W-J	2 sensors	110/240 V, 50/60 Hz	95700483

For more detailed information on Conex DIA-G see the data booklet Conex DIA-G, DIS-G.

Battery backup, horn and flashlight



TM075183

Order data for battery backup, horn and flashlight

Designation	Description	Product number
Battery backup	<ul style="list-style-type: none"> • Integrated battery charging unit with I/U charging characteristic • Battery management with micro controller • Temperature regulation of charging voltage by sensor module • Input voltage of the battery controller 115/230 V (50/60 Hz) • Input current, 0.84 A/115 V to 0.42 A/230 V • Max. switch-on current, 2 A/2 ms • Maintenance-free lead-acid battery, 24 V/7 Ah • Buffer time for operation with two sensor interfaces: >1 h 	96725709
Red flashlight with horn	24 VDC, 320 mA, IP33, 92 dB	98037506
Red flashlight with horn	230 V, 50/60 Hz, 50 mA, IP33, 92 dB	96730197

13. Grundfos Product Center

Online search and sizing tool to help you make the right choice.

<http://product-selection.grundfos.com>

All the information you need in one place

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

Downloads

On the product pages, you can download installation and operating instructions, data booklets, service instructions, etc. in PDF format.



TM070461

The screenshot shows the Grundfos Product Center website. At the top, there is a navigation bar with 'HOME', 'FIND PRODUCT', 'COMPARE', 'YOUR PROJECTS', 'SAVED ITEMS', 'TOOLS', and 'HELP'. A search bar is located below the navigation bar, labeled 'Find products and solutions'. Below the search bar are four main navigation buttons: 'Sizing' (Enter pump sizing), 'Catalogue' (Products and services), 'Replacement' (Replace an old pump with a new), and 'Liquids' (Find pump by liquid). Below these buttons is a 'Quick sizing' section with input fields for 'Flow (Q)*' and 'Head (H)*', and radio buttons for 'Select what to size by' (Size by application, Size by pump design, Size by pump family). A 'START SIZING' button is located to the right of the selection options.

TM070462-1

Pos.	Description
1	This drop-down menu enables you to set the search function to "Products" or "Literature".
2	SIZING enables you to size a pump based on entered data and selection choices.
3	CATALOGUE gives you access to the Grundfos product catalogue.
4	REPLACEMENT enables you to find a replacement product. Search results will include information on <ul style="list-style-type: none"> the lowest purchase price the lowest energy consumption the lowest total life cycle cost.
5	LIQUIDS enables you to find pumps designed for aggressive, flammable or other special liquids.

Your distribution partner:



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+49 160 990 547 01
info@sdd-pumpen.de



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ECM: 1282064