

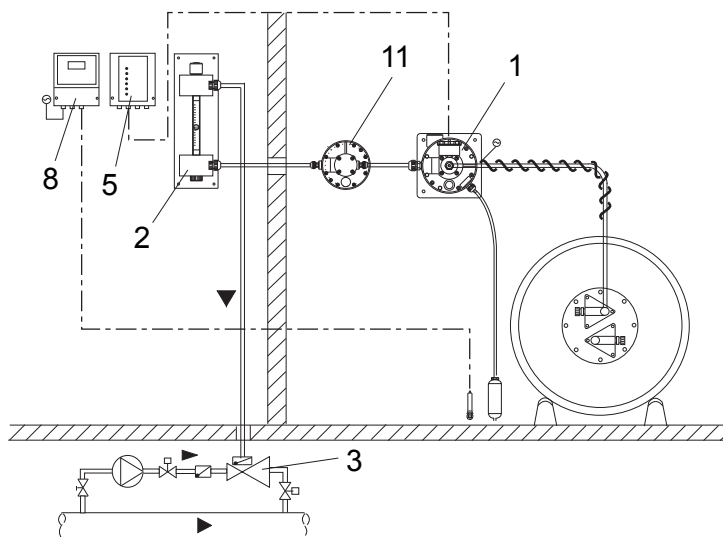
Vaccuperm 117 / 146

Vacuum gas dosing systems
for chlorine gas, ammonia, sulphur dioxide and carbon dioxide



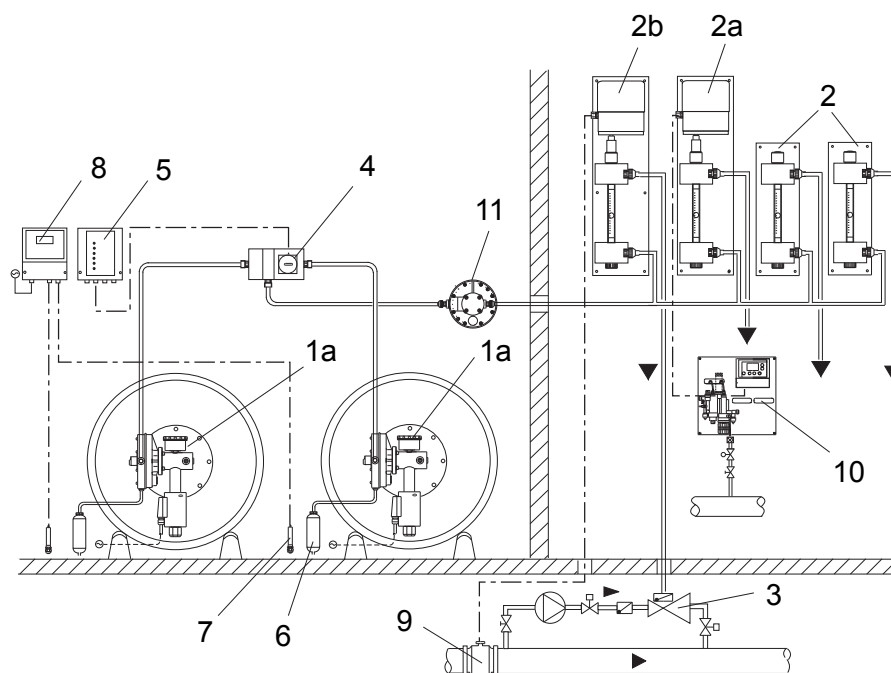
Modular system

- Vacuum regulator for wall mounting (in the container room)
- Dosing unit for separate wall mounting
- It is recommended to wrap a heater band around the copper line between the container and the vacuum regulator



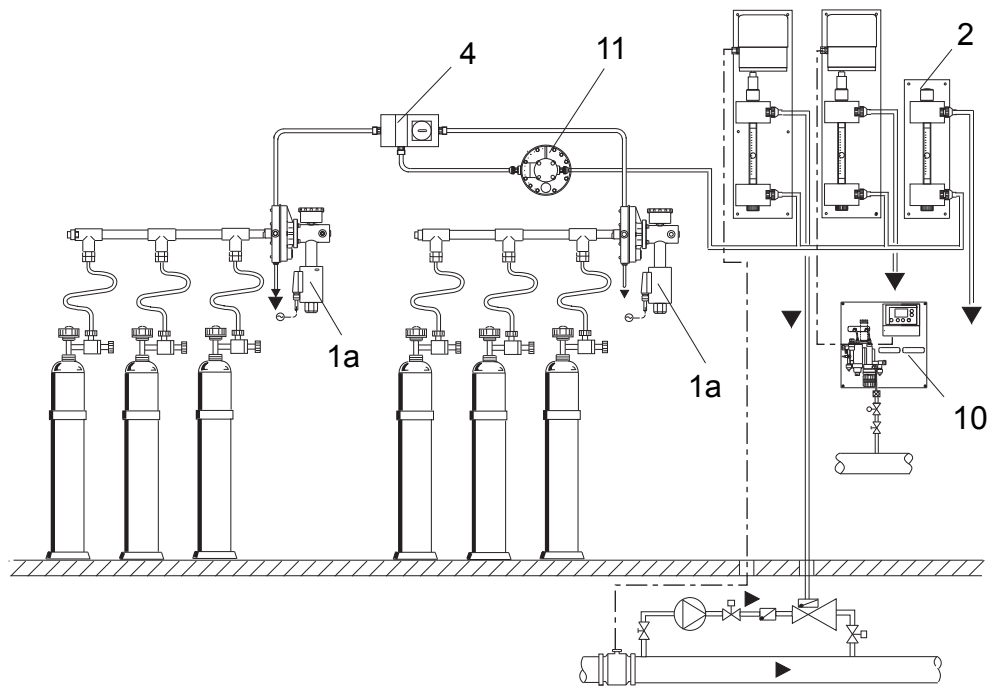
Dosing station with vacuum change-over device

- Continuous gas dosing without interrupting the process
- 2 vacuum regulators for mounting on gas drums, liquid traps avoid the penetration of liquefied gas
- Separate installation of several dosing units
- If the first drum is empty, the 189 device immediately changes over to the next vacuum regulator at the full chlorine drum
- The safety valve avoids excess pressure in the vacuum lines leaving the dosing system



Dosing station with simultaneous extraction from several cylinders

- If more gas is required, it can be extracted from several cylinders simultaneously
- Vacuum regulators for mounting on header lines
- With automatic vacuum change-over device



- 1 Vacuum regulator with contact manometer for wall mounting
 - 1a Vacuum regulator with liquid trap
- 2 Dosing unit with manual rate valve
 - 2a Dosing unit with electric servomotor
 - 2b Dosing unit with electric servomotor and current input
- 3 Injector with non-return diaphragm
- 4 Vacuum change-over device
- 5 Display unit for empty signal
- 6 Gas absorption cylinder
- 7 Gas sensor
- 8 Gasdetect gas warning unit
- 9 Flowmeter with current signal output
- 10 Conex Compact measuring system
- 11 Safety valve

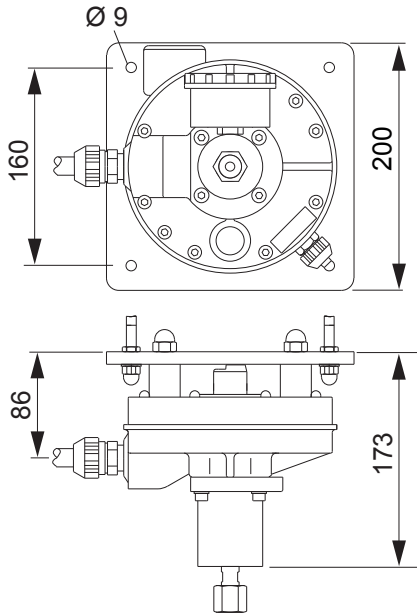
General technical data

Medium	Chlorine gas (Cl ₂), ammonia (NH ₃), sulphur dioxide (SO ₂), carbon dioxide (CO ₂)	
Capacity ranges	Cl ₂ : up to 10 kg/h; SO ₂ : up to 9.5 kg/h; NH ₃ : up to 5 kg/h; CO ₂ : up to 8 kg/h	
Adjustment ratio	1 : 20	
Accuracy	± 4 %	
Measuring device	According to floater principle, measuring tube 190 mm	
Material	Enclosure: Inlet valve: Springs: Diaphragm: Rate valve: O-rings:	PVC silver/PTFE, special alloy Hastelloy C coated FEP PVC Viton B
Connections	Pressure gas: Vacuum safety line:	union nut 1" (Cl ₂); union nut G 5/8" (SO ₂); union nut W 21,80 x 1/14 (NH ₃); pipe 6/8 (CO ₂) PE hose or PVC pipe
Weight	Vacuum regulator: Dosing unit:	2 kg, with liquid trap 4 kg 2.6 kg, with servomotor 3.1 kg

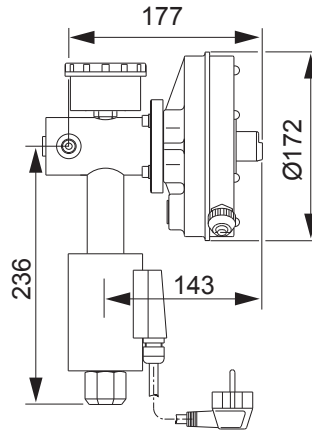
Vacuum regulator 146-.....

- With inlet valve and safety overpressure valve
- Overpressure connection for PE hose 8/11

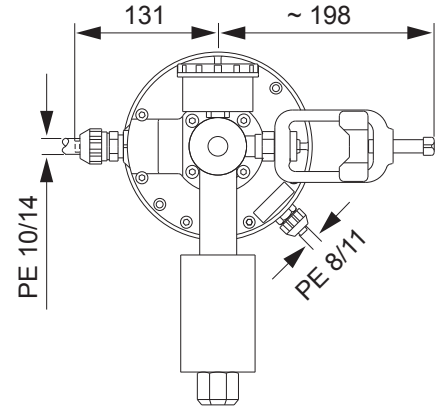
Measurements



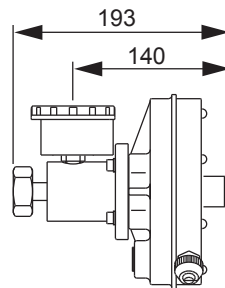
146 vacuum regulator for wall mounting



146 vacuum regulator with liquid trap and yoke connection



146 vacuum regulator with liquid trap and union nut connection



146 vacuum regulator for mounting on header lines

Technical data / types

Gas	Connection	Capacity	Part No
Cl ₂	union nut 1"	max. 10 kg/h	146-010
NH ₃	union nut W 21.80 x 1/14	max. 5 kg/h	146-005N
SO ₂	union nut G 5/8"	max. 9,5 kg/h	146-009S
CO ₂	pipe 6/8	max. 8 kg/h	146-008CO

Measurements in mm

Different cylinder connection:

- Union nut G 1"
- Union nut G 5/8"
- Union nut G 3/4"
- Union nut 1 1/4"
- Union nut 1.03"-14
- USA yoke

Different vacuum connection for the dosing unit > optionally:

- Connection for PE hose 10/14
- Connection for PE hose 12/16
- Connection for PVC pipe 12/16
- Connection for PVC pipe 15/20

Optional accessories > please indicate:

Description
Plate for wall mounting, incl. fastening
Manometer 0-16 bar , NG 63
Manometer 0-16 bar , NG 63, with Min contact output
Liquid trap, heating 230 V, cable with Euro plug
Liquid trap, heating 115 V, cable with USA plug

Dosing unit 117-110..

- Operation with vacuum regulator 146-...
- Mounted on a plate for wall mounting
- With manual rate valve and measuring device
- Vacuum connection for PE hose or PVC pipe

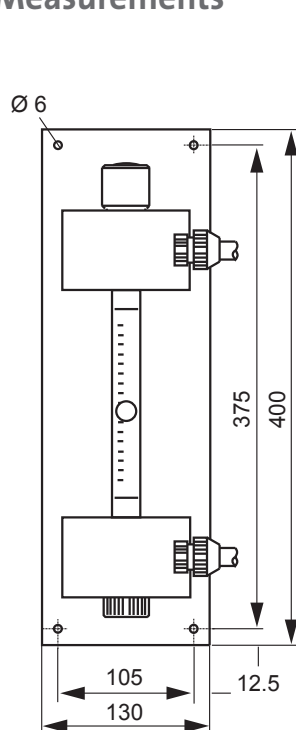
Technical data / types

Gas	Measuring range (g/h)	Part No
Chlorine (Cl ₂)	0.5 – 10	117-110
Ammonia (NH ₃)	0.25 – 5	117-110N
Sulphur dioxide (SO ₂)	0.5 – 9.5	117-110S
Carbone dioxide (CO ₂)	0.4 – 8	117-110CO

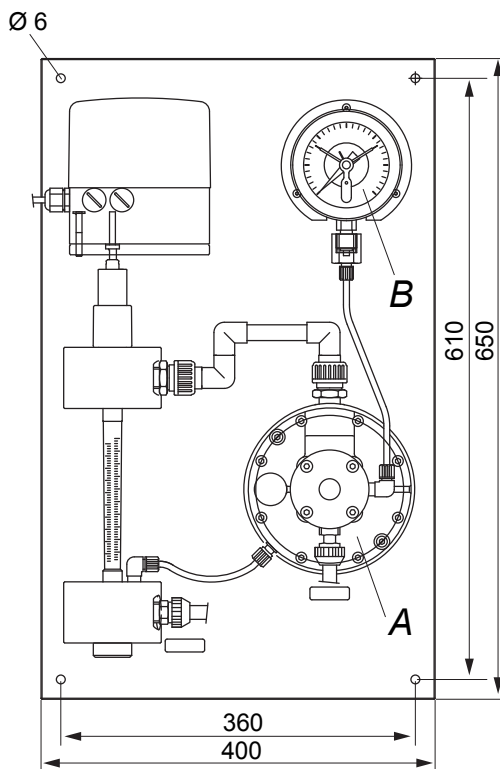
Different measuring ranges (g/h) > please indicate

Cl ₂	NH ₃	SO ₂	CO ₂
25 - 500	15 - 240	25 - 475	20 - 400
50 - 1000	30 - 480	50 - 950	40 - 800
100 - 2000	50 - 950	100 - 1900	80 - 1600
200 - 4000	100 - 2000	200 - 3800	160 - 3200
300 - 6000	150 - 3000	300 - 5700	240 - 4800
400 - 8000	200 - 4000	400 - 7600	320 - 6400

Measurements



117-110.. dosing unit



Measurements in mm

117-390/-395 dosing unit with differential pressure regulator (A) and vacuummeter (B)

Dosing unit 117-..... with servomotor

- Synchronous motor with limit switches, enclosure IP 55
- Actuating time (0-100%): 108 s at 50 Hz, 87 s at 60 Hz
- Power consumption: 3 VA
- **Standard:** mains voltage servomotor 230 V (50/60 Hz)
- **Option:** mains voltage 115 V please indicate separately
- **Option:** different measuring range

with servomotor with 4-20 mA input

- For proportional control
- Manual/automatic switch
- Trimmer for zero point/limit value
- Keys for manual open/close

Gas	Measuring range (g/h)	Part No
Chlorine (Cl ₂)	0.5 – 10	117-190
Ammonia (NH ₃)	0.25 – 5	117-190N
Sulphur dioxide (SO ₂)	0.5 – 9.5	117-190S
Carbone dioxide (CO ₂)	0.4 – 8	117-190CO

with differential pressure regulator and vacuummeter

Chlorine (Cl ₂)	0.5 – 10	117-390
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with servomotor with potentiometer

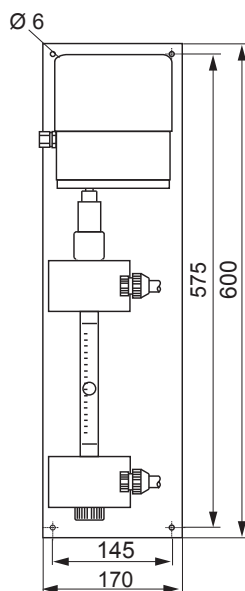
- Single potentiometer 1000 Ohm
- Automatic control on request

Gas	Measuring range (g/h)	Part No
Chlorine (Cl ₂)	0.5 – 10	117-195
Ammonia (NH ₃)	0.25 – 5	117-195N
Sulphur dioxide (SO ₂)	0.5 – 9.5	117-195S
Carbone dioxide (CO ₂)	0.4 – 8	117-195CO

with differential pressure regulator and vacuummeter

Chlorine (Cl ₂)	0.5 – 10	117-395
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Measurements



Measurements in mm

117-190/-195.. dosing unit
with servomotor

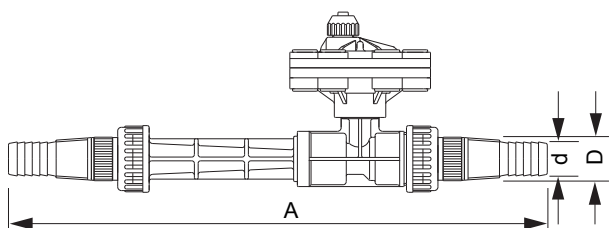
PVC injectors for gas dosing systems

- With water connection ¼", 1", 1 ¼"
- With non-return diaphragm, FEP diaphragm, PTFE piston, PTFE coated spring

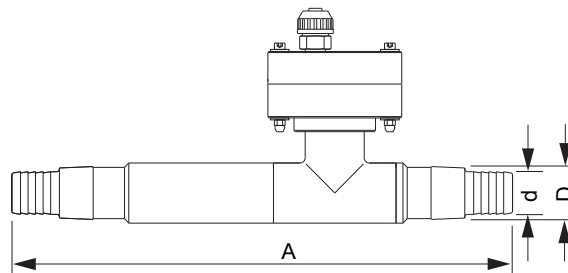
Measurements

Injectors ¾" 545-1000-2 / 545-2000-2 / 545-4000-2

Injectors 1" 545-1000-3 / 545-2000-3 / 545-4000-3



Injectors 1 ¼" 545-3030 / 545-4030



Measurements in mm

Technical data / Order data > Please indicate the admission pressure and the backpressure

Max. capacity (g/h)	Water quantity (l/h)	Adm. pressure (bar)	Backpressure (bar)	Part Number	Measurements		
					d	D	A
Water connection ¾" hose / ¾" NPT, vacuum connection 8/11							
500	550 - 1350	2 - 16	0 - 7	545-1000-2	¾" hose	¾" NPT	400
1000	850 - 2200	2 - 16	0 - 7	545-2000-2			
Water connection 1" hose / 1" NPT, vacuum connection 8/11							
500	550 - 1350	2 - 16	0 - 7	545-1000-3	1" hose	1" NPT	430
1000	850 - 2200	2 - 16	0 - 7	545-2000-3			
2000	1350 - 3300	2.5 - 16	0 - 7	545-4000-3			
Water connection 1 ¼" hose / 1 ¼" NPT, vacuum connection 8/11							
3000	2500 - 4300	4 - 15	0.5 - 6.5	545-3030	1 ¼" hose	1 ¼" NPT	400
4000	3400 - 4700	4 - 8	0.5 - 3	545-4030			
4000	3600 - 4300	9 - 15	3 - 6.5	545-3030			
6000	4600 - 6000	9 - 15	3 - 6.5	545-4030			
6000	3400 - 4500	4 - 8	0.5 - 3	545-6030			
8000	4700 - 6000	9 - 15	3 - 6.5	545-6030			
8000	4200 - 5800	4 - 8	0.5 - 3	545-8030			
10,000	6000 - 8000	9 - 15	3 - 6.5	545-8030			
10,000	5200 - 7200	4 - 8	0.5 - 3	545-10030			

Variant: different vacuum connection > please indicate:

- Connection for PE hose 10/14
- Connection for PVC pipe 12/16
- Connection for PE hose 12/16
- Connection for PVC pipe 15/20

Spare parts sets for PVC injectors

Comprising: O-rings, flat gasket, PTFE piston, valve seat and diaphragm

for injectors	Order No
545-1000-2 / -2000-2 / -4000-2: 545-1000-3 / -2000-3 / -4000-3:	553-1050

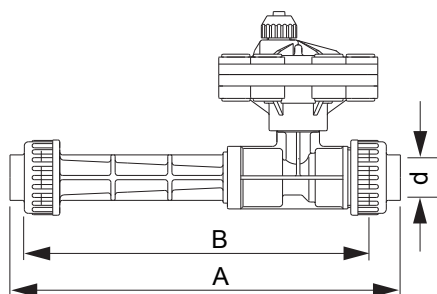
for injectors	Order No
545-3030 / -4030 :	553-1295
545-6030 / -8030 / -10030:	553-1296

PVC injectors for gas dosing systems

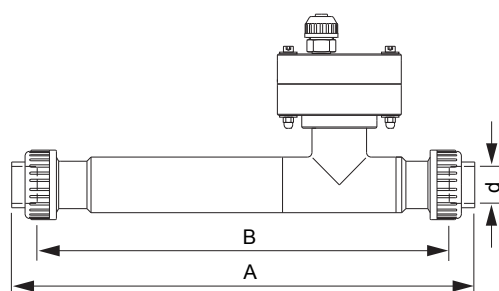
- With water connection DN 20 / DN 25
- With non-return diaphragm, FEP diaphragm, PTFE piston, PTFE coated spring

Measurements

Injectors DN 20 545-1000-1 / 545-2000-1 / 545-4000-1



Injectors DN 25 545-3030-1 / 545-4040-1



Measurements in mm

Technical data / Order data

Max. capacity (g/h)	Water quantity (l/h)	Adm. pressure (bar)	Backpressure (bar)	Part Number	Measurements			
					d	D	A	B
Water connections DN 20/ pipe diameter 25 mm, vacuum connection 8/11								
500	550 - 1350	2 - 16	0 - 7	545-1000-1	DN 20	–	275	237
1000	850 - 2200	2 - 16	0 - 7	545-2000-1				
2000	1350 - 3300	2 - 16	0 - 7	545-4000-1				
Water connections DN 25/ pipe diameter 32 mm, vacuum connection 8/11								
3000	2500 - 4300	4 - 15	0.5 - 6.5	545-3030-1	DN 25	–	400	356
4000	3400 - 4700	4 - 8	0.5 - 3	545-4030-1				
4000	3600 - 4300	9 - 15	3 - 6.5	545-3030-1				
6000	4600 - 6000	9 - 15	3 - 6.5	545-4030-1				
6000	3400 - 4500	4 - 8	0.5 - 3	545-6030-1				
8000	4700 - 6000	9 - 15	3 - 6.5	545-6030-1				
8000	4200 - 5800	4 - 8	0.5 - 3	545-8030-1				
10,000	6000 - 8000	9 - 15	3 - 6.5	545-8030-1				
10,000	5200 - 7200	4 - 8	0.5 - 3	545-10030-1				

Variant: different vacuum connection > please indicate:

- Connection for PE hose 10/14
- Connection for PE hose 12/16
- Connection for PVC pipe 12/16
- Connection for PVC pipe 15/20

Spare parts sets for PVC injectors

Comprising: O-rings, flat gasket, PTFE piston, valve seat and diaphragm

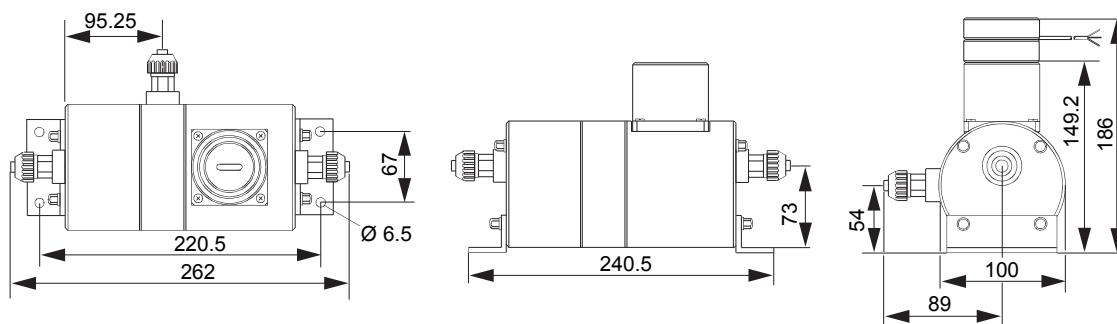
for injectors	Order No
545-1000-1 / -2000-1 / -4000-1:	553-1050

for injectors	Order No
545-3030-1 / -4030-1 :	553-1295
545-6030-1 / -8030-1 / -10030-1:	553-1296

Vacuum change-over device

- For combining 2 vacuum regulators with a dosing unit
- Vacuum connection PE hose 10/14

Measurements



Measurements in mm

Order data

Description	Part No
with optical indication of the position, battery I or battery II (<i>please indicate</i>)	189-010

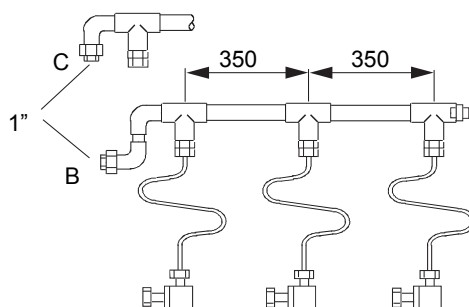
Option > please indicate:

- Additionally with 2 Reed contacts for remote transmission of the empty signal, max. 50 V/1 A/50 W

Chlorine cylinder header line

- Lacquered steel header tube according to DIN 2441
- Flexible copper lines and connection valves

Measurements



Measurements in mm

Order data

Number of bottles	Part Number	
	B:	C:
	146 without liquid trap	146 with liquid trap
2	542-622	542-632
3	542-623	542-633
4	542-624	542-634
5	542-625	542-635
6	542-626	542-636
7	542-627	542-637
8	542-628	542-638

Please indicate, if you require other cylinder connection valve threads:

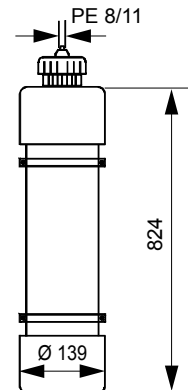
- 1"
- G 3/4"
- G 5/8"
- 1.03"-14
- 1 1/4"
- Connection USA yoke

Chlorine gas absorption cylinder

- PVC
- Connection for PE hose 8/11
- Content 5 l
- Filled with 4 kg absorbent
- Absorption capacity 450 g Cl₂
- incl. fastening

Order data

Description	Order No
Absorption cylinder, filled	524-311
4 kg of granulate filling	553-225



Measurements in mm

Safety valve

Description	Order No
Safety valve for up to max. 10 kg dosing quantity	543-010

Spare parts sets for chlorine

Spare parts sets for vacuum regulator 146-010	Order No
without liquid trap: O-rings, filter, valve seat, pressure spring and protection ring	553-1074
with liquid trap: O-rings, filter, valve seat, pressure spring and protection ring	553-1075
Spare parts sets for dosing unit 117-1...	
O-rings, valve seat and protection ring	553-604
Spare parts sets for dosing unit 117-39.	
O-rings, flat gasket, valve seat and protection ring	553-617.1

for NH₃, SO₂, CO₂

Spare parts sets for vacuum regulators 146-005N / -009S / -008CO	Order No
without liquid trap: O-rings, filter, valve seat, pressure spring and protection ring	553-1274
with liquid trap: O-rings, filter, valve seat, pressure spring and protection ring	553-1275
Spare parts sets for dosing unit 117-...N / -...S / -...CO	
O-rings, flat gasket, valve seat and protection ring	553-607

Installations accessories

Description	Order No
Chlorine cylinder holding clip for cylinder ø of about 270 mm	505-018
PE hose 10/14 (please indicate the required length in meters)	526-137/xx
PE hose 8/11 for safety line (please indicate the required length in meters)	526-131/xx
T piece with union nuts for PE hose 10/14	526-139
Coupling with 2 union nuts for PE hose 10/14	526-138

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Subject to change.