

# Product Information

## Vacuum gas dosing systems 117 / 146

for functional, variable and precise dosing  
of chlorine gas, ammonia, sulphur dioxide and carbon dioxide



### Dosing unit 117 for chlorine gas quantities up to 10 kg/h

reliable gas dosing following the indirect principle according to DIN 19606

### Vacuum regulator 146 for direct mounting on a gas container

with gas inlet valve, filter and safety overpressure valve

### High operating convenience

ergonomic design, easy flow adjustment and easily readable indication

### Modular design for a variety of component combinations

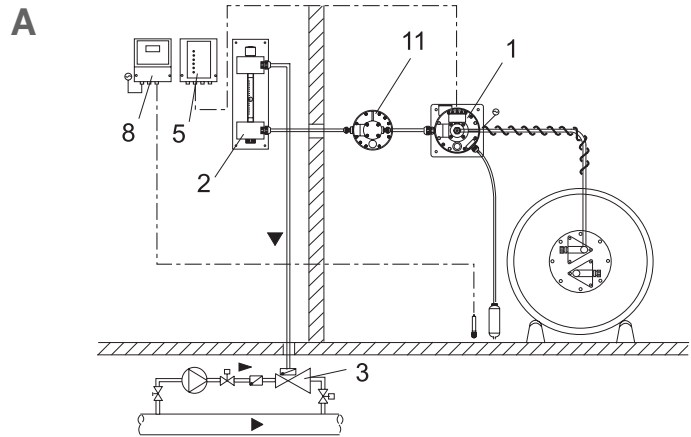
combination of two vacuum regulators and a vacuum change-over device  
to provide a continuous dosing process

combination of several dosing units for the simultaneous supply  
of several water cycles

## Different versions for various applications

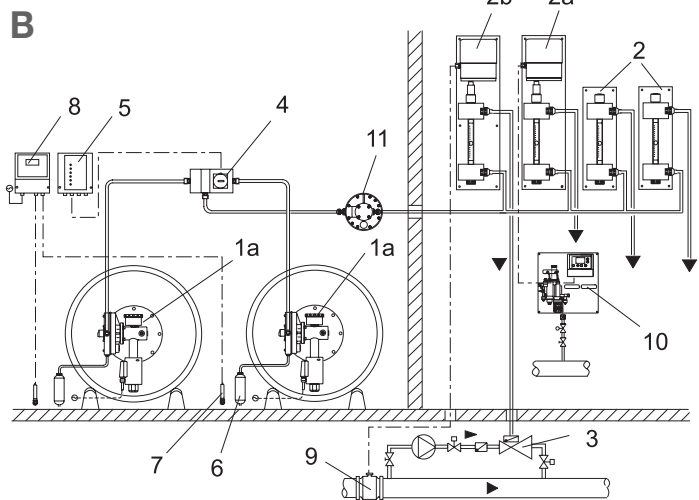
### A Modular system

- 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



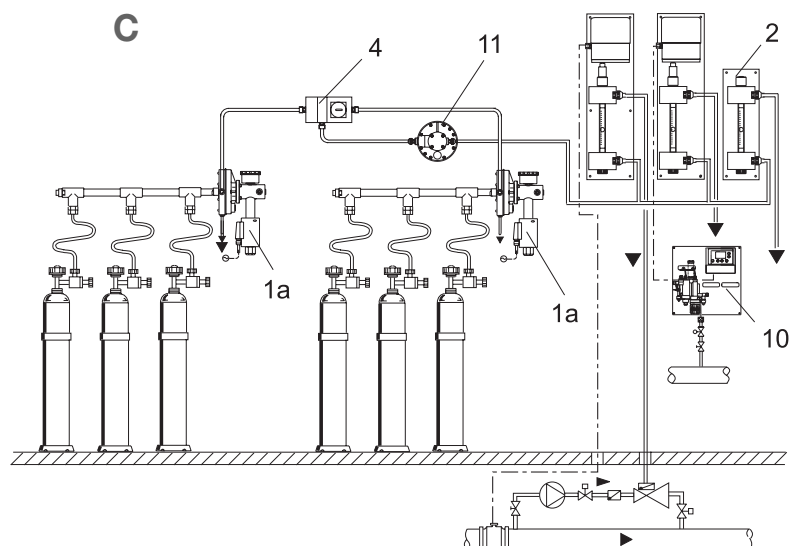
### B Dosing station with vacuum change-over device

- 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 device changes immediately over to the next vacuum regulator at the full gas drum
- The safety valve avoids excess pressure in the vacuum lines leaving the dosing system



### C Dosing station for the 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** Gas warning unit Gasetect

**9** Flowmeter with current signal output

**10** Compact measuring system Conex Compact

**11** Safety valve

## Technical data

<b>Medium</b>	Chlorine gas (Cl <sub>2</sub> ), ammonia (NH <sub>3</sub> ), sulphur dioxide (SO <sub>2</sub> ), carbon dioxide (CO <sub>2</sub> )			
<b>Capacity ranges</b>	Cl <sub>2</sub> : NH <sub>3</sub> :	up to 10 kg/h up to 5 kg/h	SO <sub>2</sub> : CO <sub>2</sub> :	up to 9.5 kg/h up to 8 kg/h
<b>Adjustment ratio</b>	1 : 20			
<b>Accuracy</b>	± 4 %			
<b>Material</b>	<b>Enclosure:</b> PVC <b>Inlet valve:</b> silver/PTFE, special alloy <b>Springs:</b> Hastelloy C coated <b>Diaphragm:</b> FEP <b>Adjustment valve:</b> PVC <b>O-rings:</b> Viton B			

<b>Measuring device</b>	According to floater principle, measuring tube 190 mm
<b>Connections</b>	<b>Pressure gas:</b> union nut 1" (Cl <sub>2</sub> ), union nut G 5/8" (SO <sub>2</sub> ), union nut W 21,80 x 1/14 (NH <sub>3</sub> ), pipe 6/8 (CO <sub>2</sub> )  <b>Vacuum safety line:</b> PE hose oder PVC pipe
<b>Weight</b>	<b>Vacuum regulator:</b> 2 kg, with liquid trap 4 kg <b>Dosing unit:</b> 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

### Oder data

Gas	Connection	Capacity	Part No.
Cl <sub>2</sub>	union nut 1"	max. 10 kg/h	146-010
NH <sub>3</sub>	union nut W 21.80 x 1/14	max. 5 kg/h	146-005N
SO <sub>2</sub>	union nut G 5/8"	max. 9.5 kg/h	146-009S
CO <sub>2</sub>	pipe 6/8	max. 8 kg/h	146-008CO

### Different cylinder connection

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

### Different vacuum connection for the dosing unit > optionally:

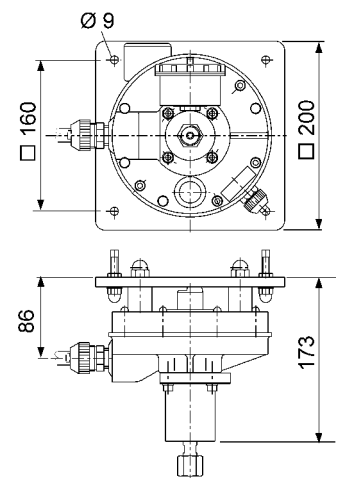
- Connection for PE hose 10/14
- Connection for PE hose 12/16
- Connection for PVC pipe 12/16
- Connection for PVC pipe 15/20

### Options for 146

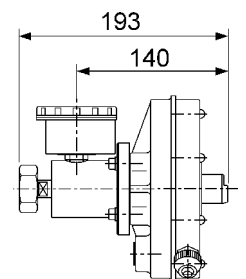
> please indicate:

Description
Plate for wall mounting, incl. fixing material
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

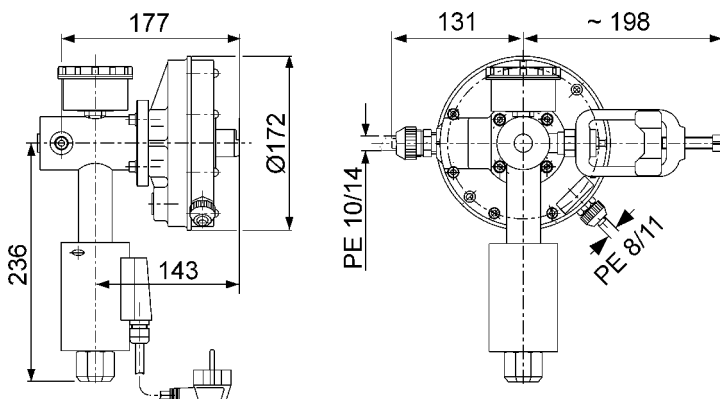
Vacuum regulator 146 for wall mounting



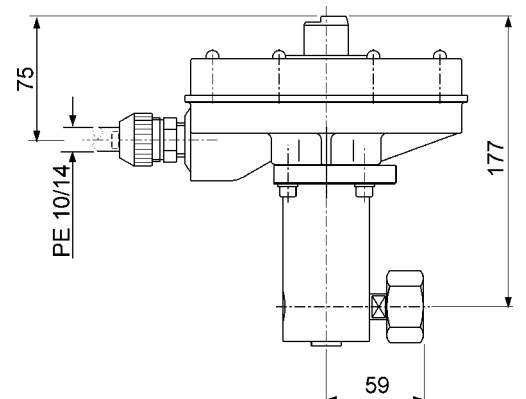
Vacuum regulator 146 for mounting on header lines



Vacuum regulator 146 with liquid trap and yoke connection



Vacuum regulator 146 with liquid trap and union nut connection



## Dosing unit 117-110.. (N/S/CO)

- For the 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

### Order data

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

Different measuring ranges (g/h) > please indicate

Cl <sub>2</sub>	NH <sub>3</sub>	SO <sub>2</sub>	CO <sub>2</sub>
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

## Dosing unit 117-190.., -195..(N/S/CO) and 117-390, -395 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**  
(please see table above)

### 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 <sub>2</sub> )	0.5 – 10	117-190
Ammonia (NH <sub>3</sub> )	0.25 – 5	117-190N
Sulphur dioxide (SO <sub>2</sub> )	0.5 – 9.5	117-190S
Carbon dioxide (CO <sub>2</sub> )	0.4 – 8	117-190CO

with differential pressure regulator and vacuummeter

Chlorine (Cl <sub>2</sub> )	0.5 – 10	117-390
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### with servomotor with potentiometer

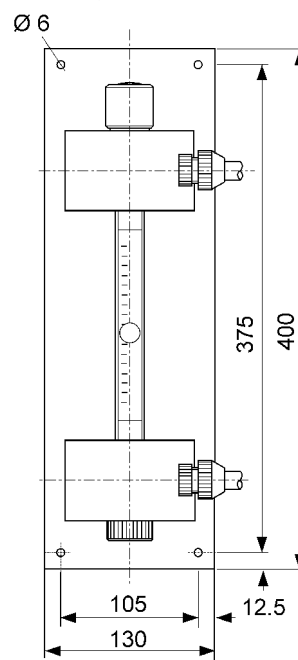
single potentiometer 1000 Ohm, automatic control on request

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

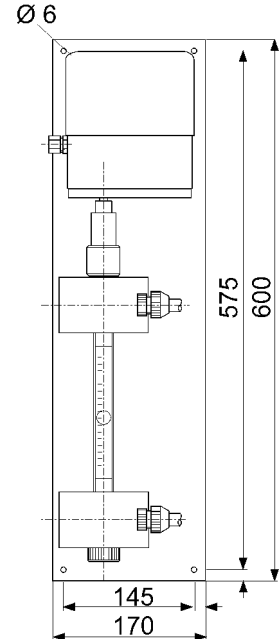
with differential pressure regulator and vacuummeter

Chlorine (Cl <sub>2</sub> )	0,5 – 10	117-395
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Dosing unit 117-110..



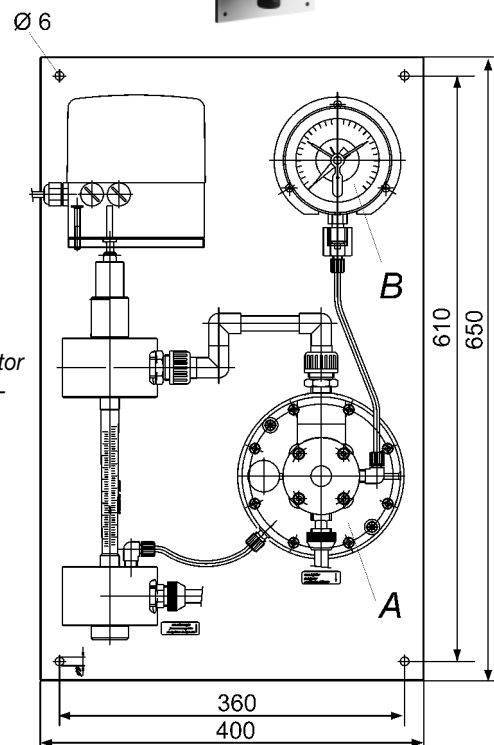
Dosing unit 117-190.. / -195.. with servomotor



117-110..



117-190../-195..



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

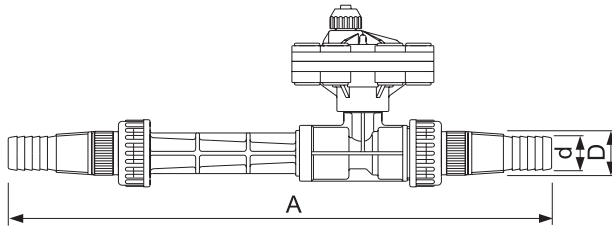
Measurements in mm

## PVC injectors for gas dosing systems 117/146 with water connection 3/4", 1", 1 1/4"

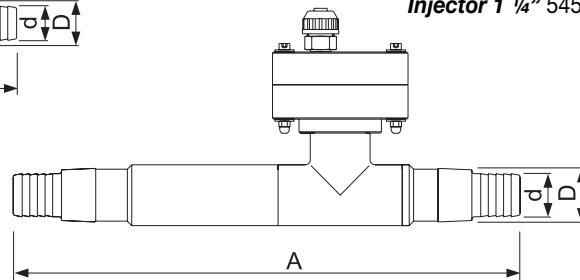
With non-return diaphragm, FEP diaphragm, PTFE piston, PTFE coated spring

**Injector 3/4"** 545-1000-2 / 545-2000-2 / 545-4000-2

**Injector 1"** 545-1000-3 / 545-2000-3 / 545-4000-3



**Injector 1 1/4"** 545-3030 / 545-4030



### 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
<b>Water connections 3/4" hose / 3/4" NPT, vacuum connection 8/11</b>							
500	550 - 1350	2 - 16	0 - 7	545-1000-2	3/4" hose	3/4" NPT	400
1000	850 - 2200	2 - 16	0 - 7	545-2000-2			
<b>Water connections 1" hose / 1" NPT, vacuum connection 8/11</b>							
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			
<b>Water connections 1 1/4" hose / 1 1/4" NPT, vacuum connection 8/11</b>							
3000	2500 - 4300	4 - 15	0.5 - 6.5	545-3030	1 1/4" hose	1 1/4" 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 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

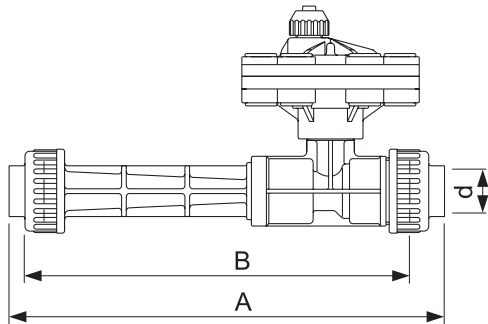
for injectors	Order No.
545-1000-2 / -2000-2 / -4000-2: 545-1000-3 / -2000-3 / -4000-3:	553-1050

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

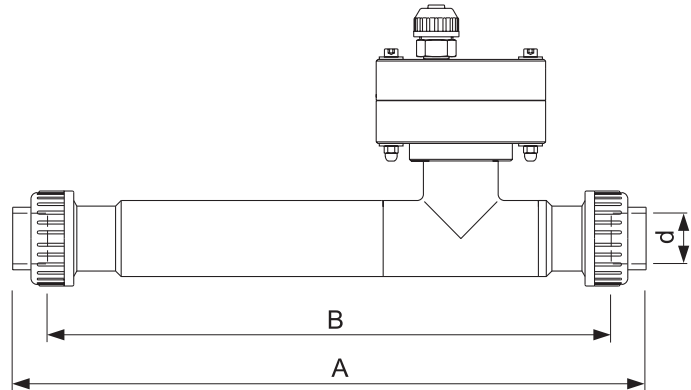
## PVC injectors for gas dosing systems 117/146 with water connection DN 20 / DN 25

With non-return diaphragm, FEP diaphragm, PTFE piston, PTFE coated spring

**Injector DN 20** 545-1000-1 / 545-2000-1 / 545-4000-1



**Injector DN 25** 545-3030-1 / 545-4040-1



### Technical data / Order data

Max. capacity (g/h)	Water quantity (l/h)	Adm. pressure (bar)	Backpressure (bar)	Part Number	Measurements			
					d	D	A	B
<b>Water connections DN 20/ pipe diameter 25 mm, vacuum connection 8/11</b>								
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				
<b>Water connections DN 25/ pipe diameter 32 mm, vacuum connection 8/11</b>								
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 U 189

For combining 2 vacuum regulators with a dosing unit, vacuum connection for PE hose 10/14

### 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

### Accessories empty signal

Description	Order No.
Display unit for empty signal, 115 V	332-2012
Display unit for empty signal, 230 V	332-2015
Wall mounting enclosure for display unit	300-210

## Chlorine gas absorption cylinder

PVC, connection for PE hose 8/11, content 5 l, filled with 4 kg absorbent, absorption capacity 450 g Cl<sub>2</sub>, incl. fixing accessories

### Order data

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

## Chlorine cylinder header line

For direct installation of the vacuum regulator 146, lacquered steel header tube acc. to DIN 2441, flexible copper lines and connection valves

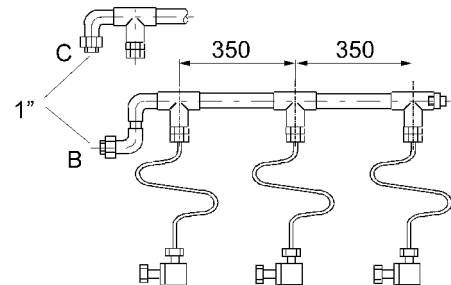
### Order data

Number of cylinders	Part Number	
	B: for 146 without liquid trap	C: for 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

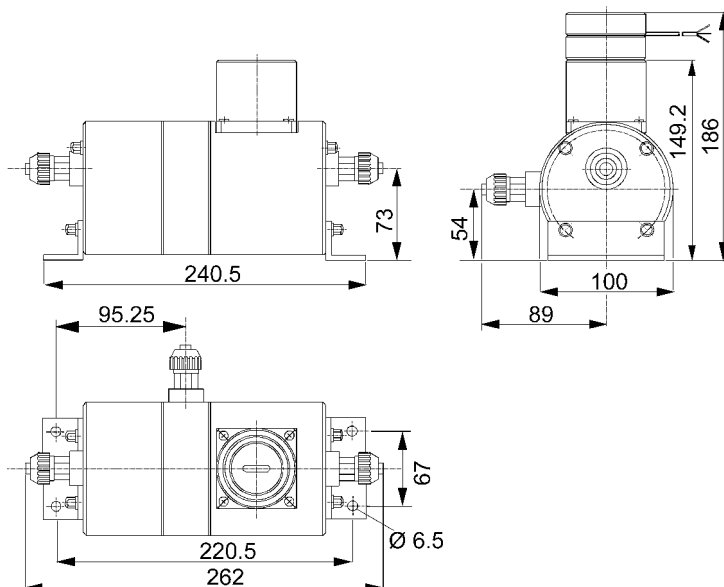
**Please indicate, if you require other cylinder connection valve threads:**

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

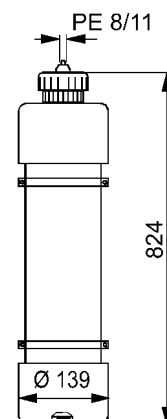
Header line 542



Vacuum change-over device U 189



Chlorine gas absorption cylinder 524



Measurements in mm

## Safety valve

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

## Installation accessories

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

## Spare parts sets

### for chlorine

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

### for NH<sub>3</sub>, SO<sub>2</sub>, CO<sub>2</sub>

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



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Subject to change!

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