

Vaccuperm GS 140

High-performance disinfection systems

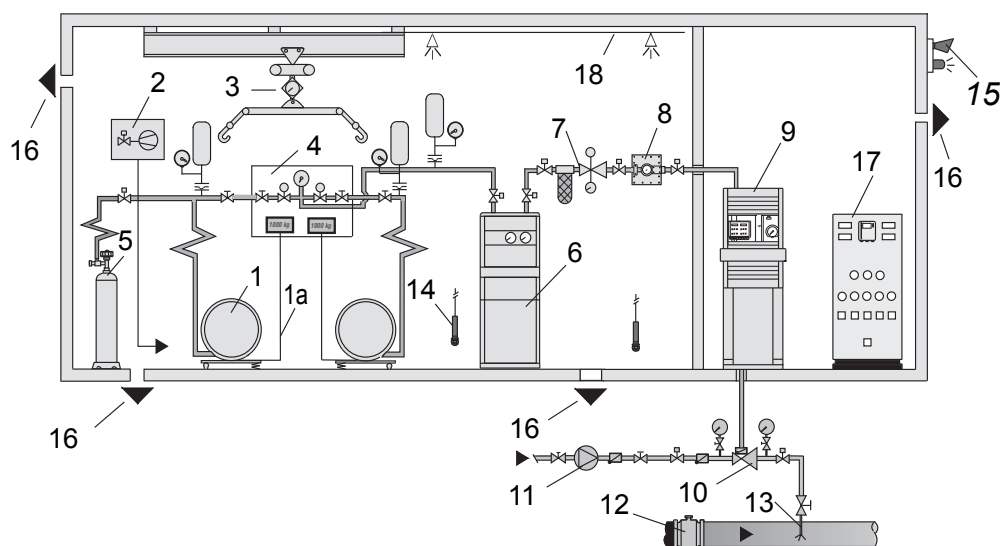


Contents	Page
Vaccuperm GS 140	2-3
GS 141-145 gas dosing systems	4-5
GS 146-148 vacuum regulators	5-6
Components:	
545 high-capacity injectors	7
LiquiFilt 524 liquid trap and gas filter	8
RV 171W liquid gas evaporator	9
542 header lines and accessories	10-11
U 185 change-over device	12-13
U 186-120 vacuum change-over device	14
544 pressure reducing valves	15
522 injection units	16
Safety devices and accessories	17
Accessories for chlorine rooms	18
Accessories for transport and storage of chlorine containers	19

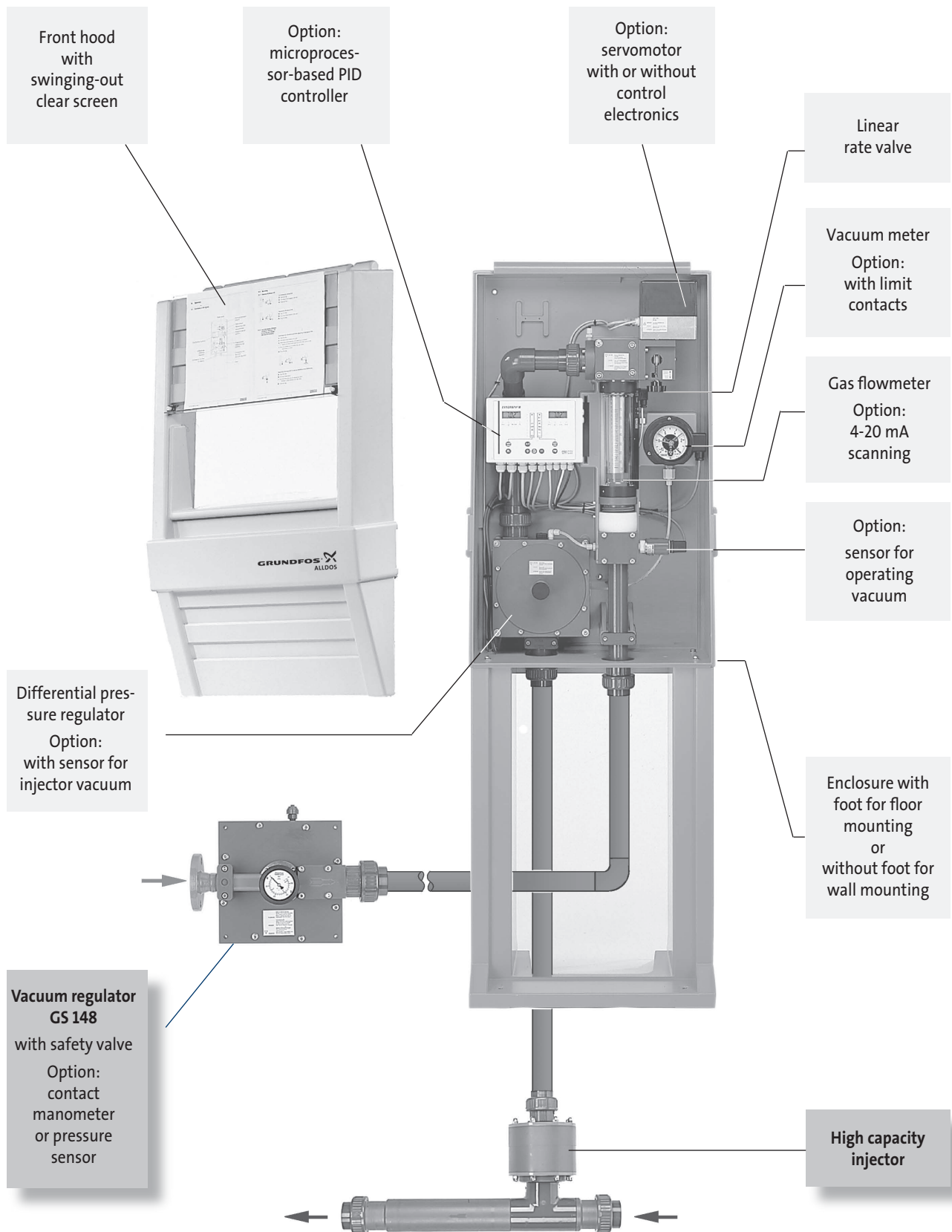
Disinfection systems Vaccuperm GS 140

- **Pressure sensors for more safety:** optional pressure sensors for injector vacuum and operating vacuum allow the early detection of disturbances such as insufficient injector vacuum or vacuum regulator faults.
- **Precise scan system for the flowmeter:** the inductive sensor is insensitive to soiling and does not get into contact with the aggressive gas to be dosed. The resolution of the signal is about 2% of the limit value of the measuring range.
- **Systems with direct proportional control:** the servomotor of the rate valve can optionally be equipped with electronics (4-20 mA input) for direct proportional control without additional control electronics.
- **Automation of the dosing process:** optionally a microprocessor-based controller can be integrated for PID control or for compound loop control.
- **Ergonomic and service-friendly design:** all control elements and displays are installed at eye-level for easy handling. Easy change-over from automatic to manual operation. All assembly and service work can be executed with a few standard tools.

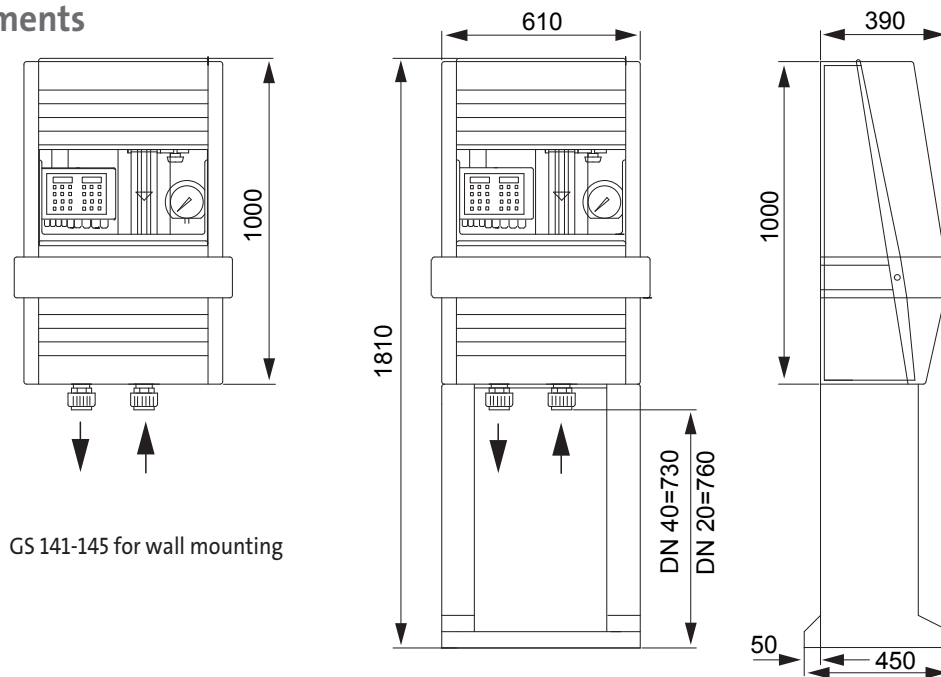
Complete installation for drinking water disinfection with chlorine gas



- | | | |
|--|--------------------------------------|---|
| 1 Chlorine drum | 5 Nitrogen rinsing device | 13 Injection unit |
| 1a Chlorine drum balance | 6 Chlorine evaporator | 14 Chlorine gas sensor |
| 2 Control for the pneumatic chlorine drum quick-action stop valves | 7 Pressure reducing valve and filter | 15 Optical and acoustic alarm devices |
| 3 Chlorine drum lifting device | 8 GS 141-148 vacuum regulator | 16 Suction nozzle to the chlorine gas neutralization system |
| 3a Lifting beam | 9 GS 141-145 gas dosing system | 17 Central control panel with computer interface |
| 3b Spring balance for cranes | 10 High-capacity injector | 18 Sprinkling system |
| 3c Chain hoist | 11 Motive water booster pump | |
| 4 Automatic change-over device | 12 Flowmeter with 4-20 mA output | |



Measurements



GS 141-145 for wall mounting

GS 141-145 with foot for floor mounting

Measurements in mm

Types

- Vacuum dosing system with rate valve
- Gas flowmeter according to floater principle
- Vacuum meter NG 100 mm
- manual adjustment of the dosing flow
- Differential pressure regulator
- Floor mounting unit, covered

Chlorine gas			Ammonia			Sulphur dioxide		
Dosing quantity	Vacuum connections	Order No	Dosing quantity	Vacuum connections	Order No	Dosing quantity	Vacuum connections	Order No
10 - 200 g/h 25 - 500 g/h 50 - 1000 g/h 100 - 2000 g/h 200 - 4000 g/h 400 - 8000 g/h 0.5 - 10 kg/h	PE hose 10/14	141-010	5 - 100 g/h 15 - 250 g/h 25 - 500 g/h 50 - 1000 g/h 100 - 2000 g/h 200 - 4000 g/h 250 - 5000 g/h	PE hose 10/14	141-005N	10 - 190 g/h 25 - 475 g/h 50 - 950 g/h 100 - 1900 g/h 200 - 3800 g/h 400 - 7600 g/h 500 - 9500 g/h	PE hose 10/14	141-009S
1 - 20 kg/h 2 - 40 kg/h	PVC pipe 20/25	143-040	0.5 - 10 kg/h 1 - 20 kg/h	PVC pipe 20/25	143-020N	1 - 19 kg/h 2 - 38 kg/h	PVC pipe 20/25	143-038S
3.5 - 70 kg/h 6 - 120 kg/h 10 - 200 kg/h	PVC pipe 40/50	145-200	2 - 35 kg/h 3 - 60 kg/h 5 - 100 kg/h	PVC pipe 40/50	145-100N	3.5 - 65 kg/h 6 - 115 kg/h 10 - 190 kg/h	PVC pipe 40/50	145-190S

Technical data

Dosing media	Chlorine gas, ammonia, sulphur dioxide (dosing systems in different materials)
Material	Polyurethane (enclosure), PVC, PTFE, Viton, silver-coated Hastelloy C
optional vacuum connections (only GS 141)	for PE hose 8/11, PE hose 12/16, PE hose ½", PVC pipe 12/16, PVC pipe 15/20

Selection GS 141-145

Option: motor

Synchronous motor 3VA, IP 55, actuating time 0-100%: 90s at 50 Hz, 75 s at 60 Hz, installed on the rate valve

- 230 V (50/60 Hz) with feedback potentiometer
- 115 V (50/60 Hz) with feedback potentiometer
- 230 V (50/60 Hz), input/output 4-20 mA
- 115 V (50/60 Hz), input/output 4-20 mA

Magnetic inductive gas flow sensor

- precise scanning for all measuring tubes from 2 to 200 kg/h

Vacuum meter for injector vacuum

- NG 100 with 2 limit contact outputs
- without vacuum meter

Pressure sensors

- for injector vacuum
- for operating vacuum
- for injector and operating vacuum, signal evaluation via external PLC, required control voltage 24V

Enclosure versions

- floor mounting unit with hood, open foot
- wall mounting unit with hood

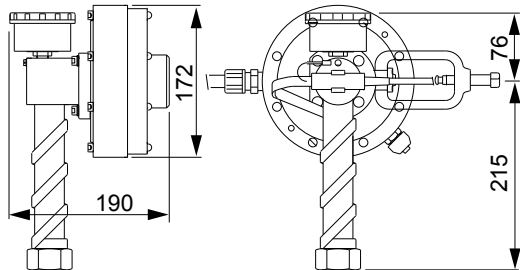
Spare parts sets for GS 141-145

Dosing medium	for dosing unit	Order No
Chlorine gas	141-010 - up to 500 g/h	553-1076.1
Chlorine gas	141-010 - 1000 g/h up to 10 kg/h	553-1077.1
Ammonia	141-005N - up to 250 g/h	553-1276.1
Sulphur dioxide	141-005S - up to 475 g/h	
Ammonia	141-005N - 500 g/h up to 5 kg/h	553-1277.1
Sulphur dioxide	141-009S - 950 g/h up to 9.5 kg/h	
Chlorine gas	143-040	553-1078.1
Chlorine gas	141-020N	553-1278.1
Sulphur dioxide	143-038S	
Chlorine gas	145-200	553-1079.1
Ammonia	145-100N	553-1279.1
Sulphur dioxide	145-190S	

GS 146 vacuum regulator

- for installation on the header line (cylinders)
- with integrated safety valve

Measurements GS 146 with liquid trap



Measurements in mm

Order data GS 146

Vacuum regulator	Order No
for chlorine gas Cl ₂ up to max. 10 kg/h	146-010
for ammonia NH ₃ up to max. 5 kg/h	146-005N
for sulphur dioxide SO ₂ up to max. 9.5 kg/h	146-009S

Spare parts sets for GS 146

Description	Order No
for 146-010 without liquid trap	553-1074
for 146-005N, 146-009S without liquid trap	553-1274
for 146-010 with liquid trap	553-1075
for 146-005N, 146-009S with liquid trap	553-1275

Selection GS 146

Manometer

- for Cl₂, 0-16 bar, NG 63, optionally with MIN contact (N.O./N.C.)
- for NH₃, 0-16 bar, optionally with MIN contact (N.O.)
- for SO₂, 0-10 bar, optionally with MIN contact (N.O.)
- without manometer, optionally prepared for pressure sensor

Pressure connection

- G 3/4" with union nut
- G 5/8" with union nut
- 1.03" - 14 with union nut
- 1 1/4" with union nut
- Pipe 6/8 (copper for Cl₂, stainless steel for NH₃, SO₂)
- With USA yoke

Vacuum connection

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

Liquid trap

- Liquid trap, heated, 230 V, 1.5 m of cable with plug
- Liquid trap, heated, 115 V, 1.5 m of cable with USA plug

Plate for wall mounting

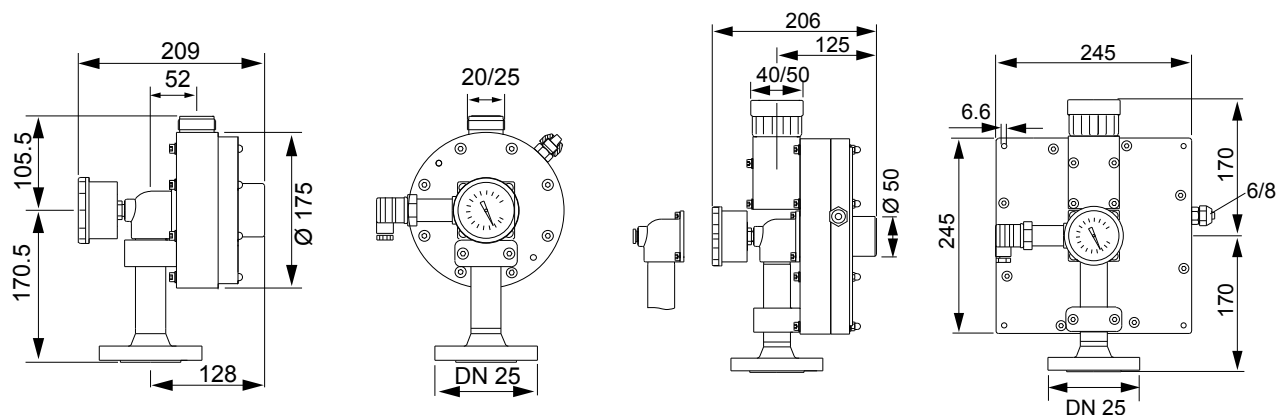
- Plate for wall mounting (only for connection pipe 6/8)

Testing agents

- Bottle with ammonia for tightness check (Cl₂, SO₂)
- Sulphur strips for tightness check (NH₃)

GS 147 and GS 148 vacuum regulators

Measurements



GS 147

GS 148

Measurements in mm

Technical data / Order data GS 147 and 148

- for line installation, with integrated safety valve, with grooved flange DN 25 (G 1") without liquid trap

Chlorine gas			Ammonia			Sulphur dioxide		
Flow rate	Vacuum connection	Order No	Flow rate	Vacuum connection	Order No	Flow rate	Vacuum connection	Order No
max. 40 kg/h	PVC pipe 20/25	147-040	max. 20 kg/h	PVC pipe 20/25	147-020N	max. 38 kg/h	PVC pipe 20/25	147-038S
max. 70 kg/h	PVC pipe 40/50	148-070	max. 35 kg/h	PVC pipe 40/50	148-035N	max. 65 kg/h	PVC pipe 40/50	148-065S
max. 120 kg/h	PVC pipe 40/50	148-120	max. 60 kg/h	PVC pipe 40/50	148-060N	max. 115 kg/h	PVC pipe 40/50	148-115S
max. 200 kg/h	PVC pipe 40/50	148-200	max. 100 kg/h	PVC pipe 40/50	148-100N	max. 190 kg/h	PVC pipe 40/50	148-190S

Equipment GS 147 and 148

Manometer

- for Cl_2 , 0-16 bar, NG 63, optionally with MIN contact (N.O./N.C.)
- for NH_3 , 0-16 bar, optionally with MIN contact (N.O.)
- for SO_2 , 0-10 bar, optionally with MIN contact (N.O.)
- without manometer, optionally prepared for pressure sensor

Testing agents

- Bottle with ammonia for tightness check (Cl_2 , SO_2)
- Sulphur strips for tightness check (NH_3)

Spare parts sets for GS 147 and 148

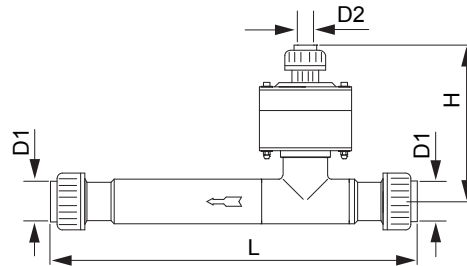
Description	Order No
for 147-040	553-1082
for 148-070	553-1083
for 148-120	553-1084
for 148-200	553-1085
for 147-020N, 147-038S	553-1282
for 148-035N, 148-065S	553-1283
for 148-060N, 148-115S	553-1284
for 148-100N, 148-090S	553-1285

High-capacity injectors 545

- The PVC injectors create the vacuum necessary for the operation of the gas dosing system.
- The chlorine gas drawn into the injector is homogenously mixed with the motive water.
- The diaphragm non-return valve protects the dosing unit from the penetration of water or chlorine solution.

Components / Measurements

- Nozzle with motive water connection
- Body with diaphragm non-return valve
- Diffuser with cylindrical mixing neck.



Measurements in mm

Technical data / Order data for Cl₂

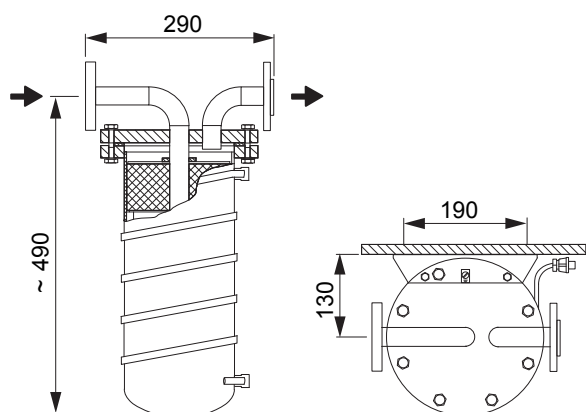
- max. operating pressure 6 bars *injectors for NH₃ and SO₂ on request!*

Dosing capacity Cl ₂	Backpressure bar	Length L (mm)	Height H (mm)	Motive water connection D1	Vacuum connection D2	Chlorine solution connection D1	Order No
10 kg/h	0.5 - 3	400	155	PVC pipe 25/32	PE hose 10/14	PVC pipe 25/32	545-0518
10 kg/h	0.5 - 3	400	155	Hose NPT 1 1/4"	PE hose 1/2"	Hose NPT 1 1/4"	545-1519
10 kg/h	3 - 7	400	155	PVC pipe 25/32	PE hose 10/14	PVC pipe 25/32	545-3518
10 kg/h	3 - 7	400	155	Hose NPT 1 1/4"	PE hose 1/2"	Hose NPT 1 1/4"	545-4519
20 kg/h	0.5 - 3	480	190	PVC pipe 32/40	PVC pipe 20/25	PVC pipe 32/40	545-0615
20 kg/h	3 - 7	480	190	PVC pipe 32/40	PVC pipe 20/25	PVC pipe 32/40	545-3615
40 kg/h	0.5 - 3	710	310	PVC pipe 50/63	PVC pipe 20/25	PVC pipe 50/63	545-0715
40 kg/h	3 - 7	710	310	PVC pipe 50/63	PVC pipe 20/25	PVC pipe 50/63	545-3715
70 kg/h	0.5 - 3	650	325	PVC pipe 65/75	PVC pipe 40/50	PVC pipe 65/75	545-2816
70 kg/h	3 - 7	650	325	PVC pipe 65/75	PVC pipe 40/50	PVC pipe 65/75	545-5816
120 kg/h	0.5 - 3	720	325	PVC pipe 80/90	PVC pipe 40/50	PVC pipe 80/90	545-2916
120 kg/h	3 - 7	720	325	PVC pipe 80/90	PVC pipe 40/50	PVC pipe 80/90	545-5916
200 kg/h	0.5 - 3	825	370	PVC pipe 90/110	PVC pipe 40/50	PVC pipe 90/110	545-2016
200 kg/h	3 - 7	825	370	PVC pipe 90/110	PVC pipe 40/50	PVC pipe 90/110	545-5016

Combined liquid chlorine trap and chlorine gas filter LiquFilt 524

- separates the liquid chlorine parts from the chlorine gas flow and cleans the gas from impurities.

Measurements



Measurements in mm

Technical data

Max. flow	200 kg/h Cl ₂ (gaseous)
Nominal pressure	16 bars
Test pressure	23 bars
Material	high-grade seamless steel, Rockwool gasket material asbestoe-free
Input	groove flange DN 25 (G 1"), DIN 2527/2512
Output	tongue flange DN 25 (G 1"), DIN 2527/2512
Weight	22 kg

Order data

Beschreibung	Bestell-Nr.
LiquFilt trap and filter heater strip 115 V or 230 V (50/60 Hz)	524-205

Accessories

Description	Order No
Spare filter for LiquFilt 524-205	553-205
Steel pipe, G ½", DIN 2441	526-061
Steel pipe, G 1", DIN 2441	526-062
Pair of welding neck flanges DN 25, PN 16, groove and tongue, DIN 2633/2512	529-24
Pair of threaded flanges G 1", PN 16, groove and tongue, DIN 2566/2512	529-14
Reducing part G 1" to G ½"	529-121

RV 171W liquid gas evaporator

The automatic evaporator transforms the liquid gas taken from the storage tank by heating. Water (containing anticorrosive and anti-freezer) is used as heat transfer medium.

- The compact and maintenance-free multitubular heat exchanger is designed for the evaporation of liquid chlorine yet also suitable for ammonia and sulphur dioxide.
- Chlorine quantities of up to 200 kg/h can be evaporated at low temperatures (50 to 60°C).
- Protection from overheating and overpressure
- High operational safety due to the use of proven materials resistant against the dosing media.

Technical data

Power consumption	9 kW (171W-100), 18 kW (171W-200)
Voltage	230/400 V (50/60 Hz)
Weight	approx. 220 kg incl. load section and control panel
max. operating pressure	11 bar with bursting disk 14 bar 12.5 bar with bursting disk 16 bar
Testing pressure	33 bars
Admissible ambient temperature	0 - 40° C
Warming-up time	approx. 4 min.
Connection inlet	groove flange DN 25 (G 1"), DIN 2635/2512
Connection outlet	tongue flange DN 25 (G 1"), DIN 2635/2512

Types / Order data

Medium	Evaporation capacity	Order No
Cl ₂	100 kg/h	171W-100
Cl ₂	200 kg/h	171W-200

Evaporator for SO₂ and NH₃ on request.

Selection

Mains voltage heating elements

- 230/400 V (50/60 Hz)
- 240/415 V (50/60 Hz)
- 220/380 V (50/60 Hz)

Mains voltage circulation pump

- 220 - 240 V (50 Hz), IP 42/F
- 220 - 240 V (60 Hz), IP 42/F

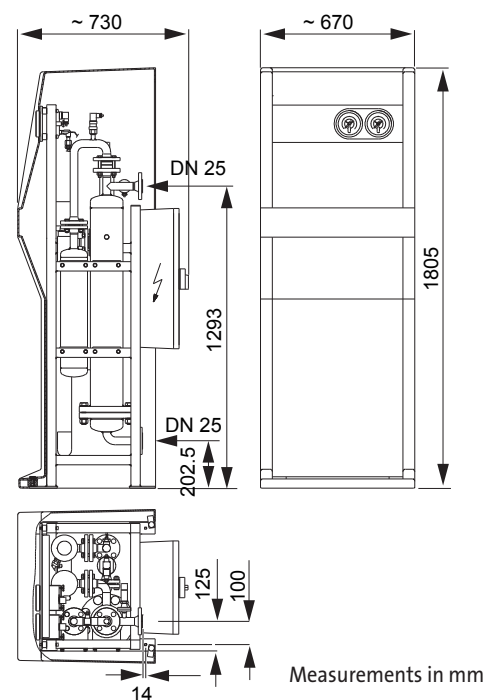
Mains voltage control panel

- Load section: 380 - 415 V (50/60 Hz),
with supply for gas pressure reducing valve
- Control section: 24 V DC
Options: Digital display unit, Profibus DP

Accessories

Description	Order No
Shut-off valve DN 25 (G 1"), inlet and outlet side	547-025
Pair of counterflanges (threaded flanges) G 1" PN 16 DIN 2566/2512	529-14
Pair of counterflanges (welding neck flanges) DN 25 PN 16 DIN 2633/2512	529-24

Measurements

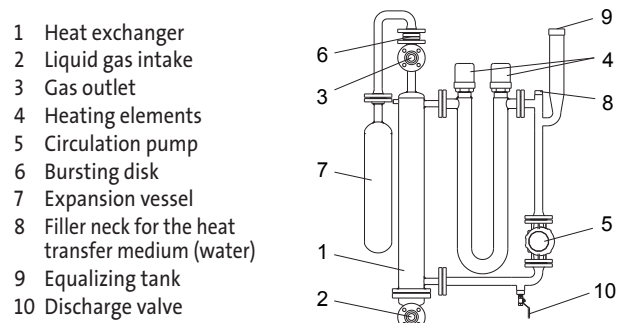


Measurements in mm

Spare parts sets

Description	Order No
Spare parts set: bursting disk 14 bars, copper line for contact manometer	553-1522
Spare parts set: bursting disk 16 bars, copper line for contact manometer	553-1522.16
Gasket set: gaskets for heating elements, flat gaskets for inlet and outlet connection, gaskets for bursting disk and pipe connections	553-1521

Functional scheme



542 header lines

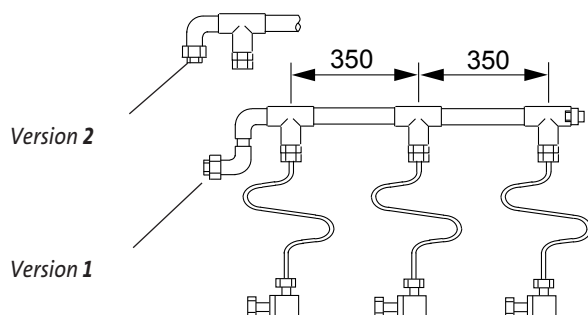
The header line connects several gas containers with the downstream components of the gas dosing system. It consists of:

- a collector pipe for the corresponding number of containers
- flexible lines for connecting the containers
- the corresponding number of connection valves

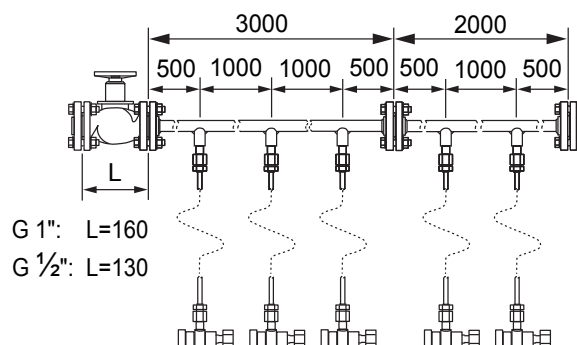
Measurements

Header lines for gas cylinders

for direct connection at the GS 146 vacuum regulator



Header lines for gas drums



Measurements in mm

Order data

Number of cyl.	Version 1		Version 2	
	Cl ₂	NH ₃ + SO ₂	Cl ₂	NH ₃ + SO ₂
1	-	-	-	-
2	542-622	542-722	542-632	542-732
3	542-623	542-723	542-633	542-733
4	542-624	542-724	542-634	542-734
5	542-625	542-725	542-635	542-735
6	542-626	542-726	542-636	542-736
7	542-627	542-727	542-637	542-737
8	542-628	542-728	542-638	542-738

- Version 1: vacuum regulator GS 146 without liquid trap
- Version 2: vacuum regulator GS 146 with liquid trap

Order data

Number of cont.	Collector pipe G 1/2"		Collector pipe G 1"	
	Cl ₂	NH ₃ + SO ₂	Cl ₂	NH ₃ + SO ₂
1	542-1*	542-701*	-	-
2	542-2	542-702	542-32	542-7032
3	542-3	542-703	542-33	542-7033
4	542-4	542-704	542-34	542-7034
5	542-5	542-705	542-35	542-7035
6	542-6	542-706	542-36	542-7036
7	542-7	542-707	542-37	542-7037
8	542-8	542-708	542-38	542-7038

*) no collector pipe, only flexible line 8x1

Technical data

Media	Cl ₂ or NH ₃ and SO ₂ (liquid and gaseous)	
Max. pressure	16 bars	
Material:	Cl ₂	NH ₃ and SO ₂
Collecting pipe	seamless drawn steel pipe to DIN 2441, nickel-plated	
Flex. lines	copper, tin-plated	stainless steel
Valve body	brass, nickel-plated	stainless steel
Valve piston	Hastelloy C	Hastelloy C
Gaskets	IT, asbestos-free	IT, asbestos-free
Packing	PTFE	PTFE
O-rings	Viton B	EPDM

Weights in kg

No of containers	Header lines for gas cylinders		Header lines for gas drums			
	Cl ₂	NH ₃ / SO ₂	G 1/2"		G 1"	
	Cl ₂	NH ₃ / SO ₂	Cl ₂	NH ₃ / SO ₂	Cl ₂	NH ₃ / SO ₂
1	1	1.1	1.3	1.4	—	—
2	3.4	3.5	11	11.5	17	17.5
3	5.1	5.2	13.8	14.3	21	21.5
4	6.8	6.9	18	18.5	27.5	28
5	8.5	8.6	21	22	31	32
6	10.2	10.4	23.5	24.5	34.5	35.5
7	11.9	12.1	28	29	41	42
8	13.6	13.8	31	32	44.5	45.5

542 header lines

Options

Connection threads

for Cl ₂	for NH ₃ and SO ₂
1" (standard "cylinders") - G 3/4" - G 5/8" 1,03"-14 - M 26x3 1 1/4" (standard "drums") - closed yoke (USA, 1,03"-14) - open yoke (France, M 26x3) 15/16"-8RH	1" - G 1/2" - G 5/8" (standard SO₂) - closed yoke (USA, 1,03"-14) 1 1/4" - open yoke (France, M 26x3) - M 26x3 - W 21.80 x 1/14 (standard NH₃) - G 3/4"

Dosing unit connection (only cylinder header lines)

for Cl ₂	for NH ₃ and SO ₂
- Nipple G1" (standard) - Nipple G 3/4" (South Africa) - Nipple M 26x3 (France)	- Nipple G 1/2" - Nipple G 5/8" (standard SO₂) - Nipple W 21.80 x 1/14 (stand. NH₃)

Accessories for header lines and gas containers

Description	Order No
-------------	----------

Contact manometer 0 to 16 bar with shut-off valve and T-piece		
for Cl ₂	flange connection DN 15, 1 limit contact MIN	541-006
	flange connection DN 15, 2 limit contacts MIN/MAX	541-007
	flange connection DN 25, 1 limit contact MIN	541-008
	flange connection DN 25, 2 limit contacts MIN/MAX	541-009
for NH ₃	flange connection DN 15, 2 limit contacts MIN/MAX	541-0077
	flange connection DN 25, 1 limit contact MIN	541-0087
	flange connection DN 25, 2 limit contacts MIN/MAX	541-0097

Heater strip	
230 V, 1 phase, 50/60 Hz, 25 Watt	547-901
150 V, 1 phase, 50/60 Hz, 25 Watt	547-902
Connecting set for heater strip with cable box, screwing, slot gaskets, shrinkable sleeves and nut (for cable boxes without thread)	547-910
Confectioning of the heater strip shrinkable sleeves:	
1 for insulation of the heating element, 1 for protection of the cable ends	

Shut-off vlave for Cl ₂						
Measurements in mm					Weight in kg	
DN	Ø F	L	H	Ø A		
15	95	130	105	100	2.5	547-015
25	115	150	120	120	4.15	547-025

Copper line for Cl ₂ header lines	
Copper line 1 m	547-101
Copper line 2 m	547-102

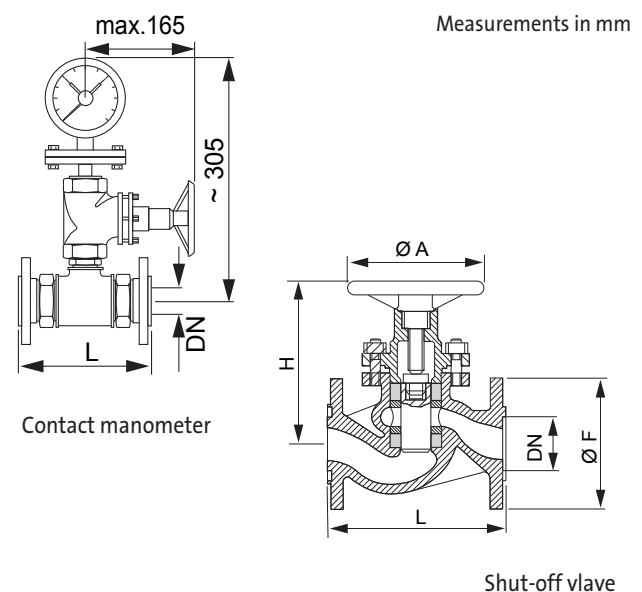
Description	Order No
-------------	----------

Connection thread	
Connection thread for Cl ₂ G 1/2"	547-103

Corner valve	
Corner valve, inlet G 1/2" (Cl ₂)	547-6802
Corner valve, inlet G 1/2" (NH ₃ , SO ₂)	547-7802

Connection valve		
Connection	Order No Cl ₂	Order No NH ₃
1"	547-6810	547-7810
G 3/4"	547-6811	547-7811
G 5/8"	547-6812	547-7812
1.03" – 14	547-6813	–
1 1/4"	547-6821	547-7821

Measurements

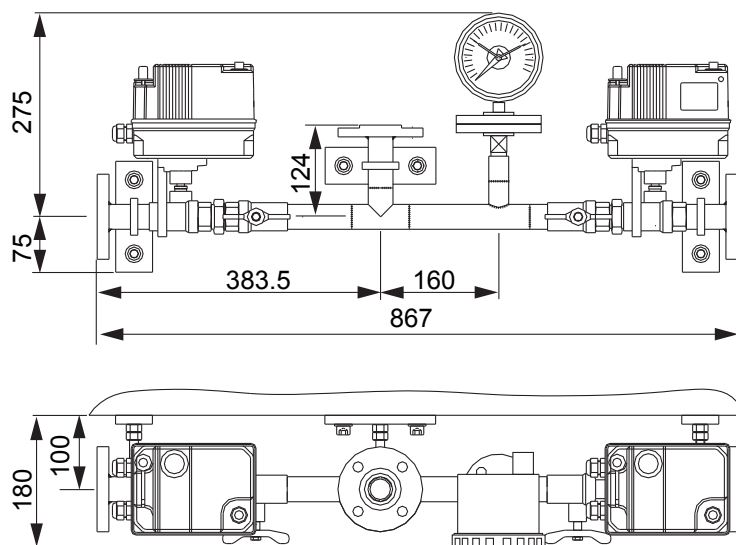


185 change-over device

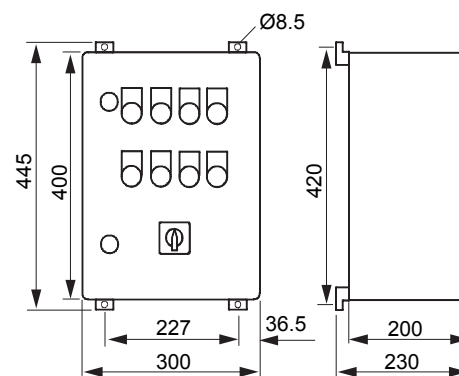
The change-over device is installed between two gas container batteries to ensure an uninterrupted gas supply. It automatically changes over from the empty battery to the full standby battery.

- Reliable change-over function due to the two independent motor valves with manual operation in case of power failure.
- Overload-proof single-phase AC motors for valve actuation.
- Practically no leakage losses thanks to the PTFE packings of the stuffing boxes.
- High functional safety and resistance to wear and tear thanks to the materials resistant against the dosing media.

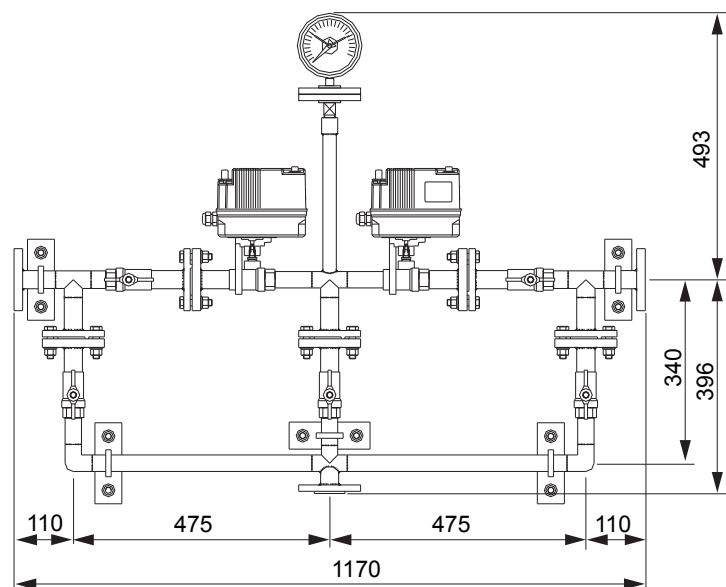
Measurements



185-1 without bypass



Control panel for 185



185-2 with bypass

Measurements in mm

185 change-over device

Technical data

Nominal pressure	16 bars
Testing pressure	23 bars
Connection inlet	groove flange DN 25 (G 1")/PN16, DIN 2527/2512
Connection outlet	tongue flange DN 25 (G 1")/PN16, DIN 2527/2512
Material	Valve body and flanges: steel Valve balls: stainless steel Gaskets: PTFE, glass-fiber reinforced Lines: seamless drawn steel tube to DIN 2448
Protection	IP 65
Actuating time 0-100%	11 sec. at 50 Hz, 9 sec. at 60 Hz
Outputs	3 potential-free outputs; max. charge: 250 V AC, 10 A / 250 V DC, 1 A
Power consumption	0.1 kW
Weight	185-1: approx. 20 kg 185-2: approx. 30 kg
Admiss. ambient temperature	0 to +40°C (Cl ₂ + NH ₃), +10 to +40°C (SO ₂)

Order data

Description	Order No
Change-over device without bypass, 2 motor valves, contact manometer, control panel 230 V (50 Hz)	185-1
Change-over device with bypass with shut-off valves, 2 motor valves, contact manometer, control panel 230 V (50 Hz)	185-2

Options

Flow / Medium

- up to 200 kg/h Cl₂ (gas), up to 600 kg/h Cl₂ (liquid)
- up to 60 kg/h NH₃ (gas), up to 260 kg/h NH₃ (liquid)
- up to 190 kg/h SO₂ (gas), up to 560 kg/h SO₂ (liquid)

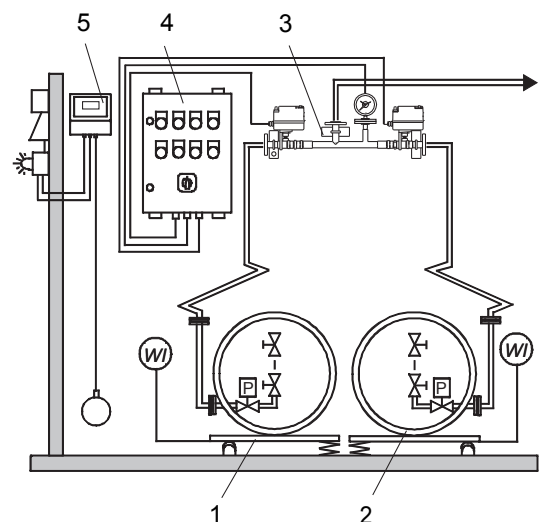
Different voltages

- control panel and motor valves 230 V (50 Hz), IP 65
- control panel and motor valves 230 V (60 Hz), IP 65
- control panel and motor valves 115 V (60 Hz), IP 65
- control panel and motor valves 115 V (50 Hz), IP 65
- without control panel, motor valves 230 V (50/60 Hz)
- without control panel, motor valves 115 V (60 Hz)

Accessories

Description	Order No
Set of threaded flanges DN 25 (G 1")/PN16, DIN 2566/2512	529-185
Gaskets for groove-and-tongue flanges	553-185

Functional scheme 185



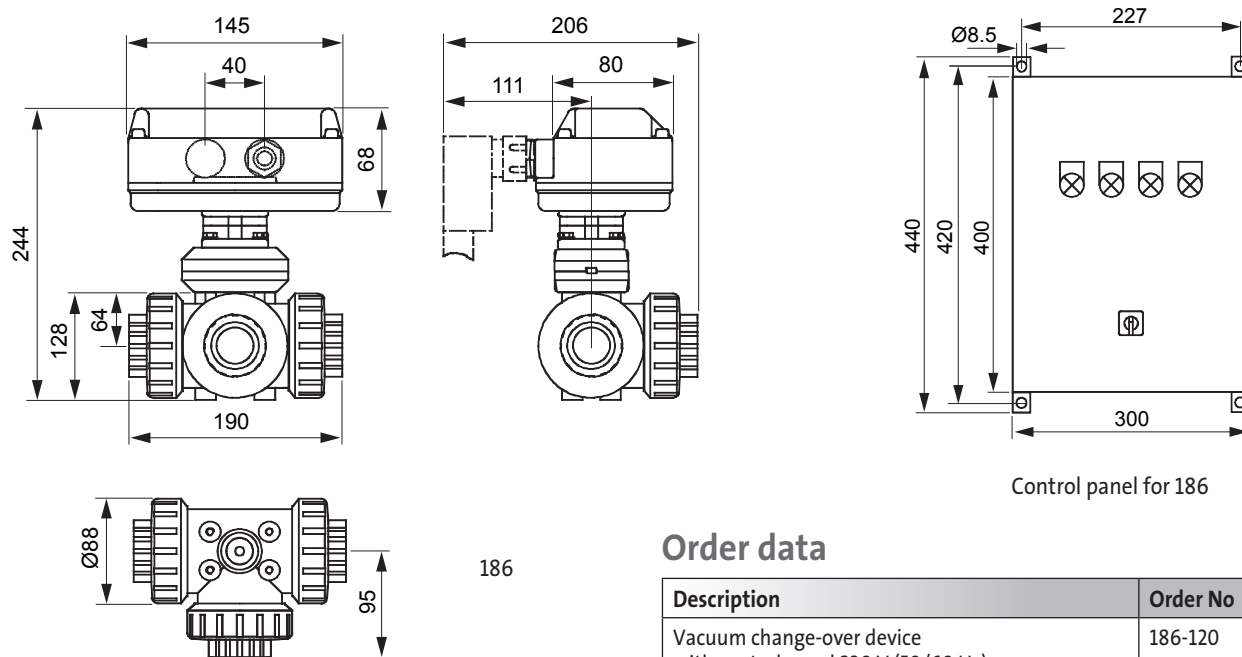
- | | | |
|-----------------|-----------------|---------------|
| 1 Drum balance | 3 185 | 5 CONEX DIS-G |
| 2 Chlorine drum | 4 Control panel | |

186 vacuum change-over device

The vacuum change-over device is controlled via the control panel by two contact manometers and automatically changes over from the empty battery to the full standby battery.

- The change-over device consists of a 3-way ball valve, an electric servomotor and a control panel.
- At the inlet side, it is connected to two vacuum regulators; at the outlet side it is connected to a dosing unit.
- Both contact manometers are mounted either directly at the vacuum regulators or at the end of the header line before the vacuum regulators.

Measurements



Control panel for 186

Order data

Description	Order No
Vacuum change-over device with control panel 230 V (50/60 Hz)	186-120

Spare parts sets

Description	Order No
Spare ball valve for 186-120 (Cl ₂)	553-187.11
Gasket set for 186-120 (NH ₃ , SO ₂)	553-187.2

Technical data

Connection	PVC pipe 32/40
Maximum flow	up to 120 kg/h for Cl ₂ up to 60 kg/h for NH ₃ up to 115 kg/h for SO ₂
Servomotor	protection: IP 65 actuating time 0 - 100%: 4 seconds adm. ambient temperature: 0 to +40°C adm. storage temperature: -10 to +50°C weight: 2 kg
Control panel	protection: IP 54 weight: 8.5 kg

Options

Connections

- PVC pipe 32/40
- PVC pipe 40/50, extensions
- PVC pipe 20/25, reductions

Mains voltage

- control panel 115 V or 230 V (50/60 Hz)

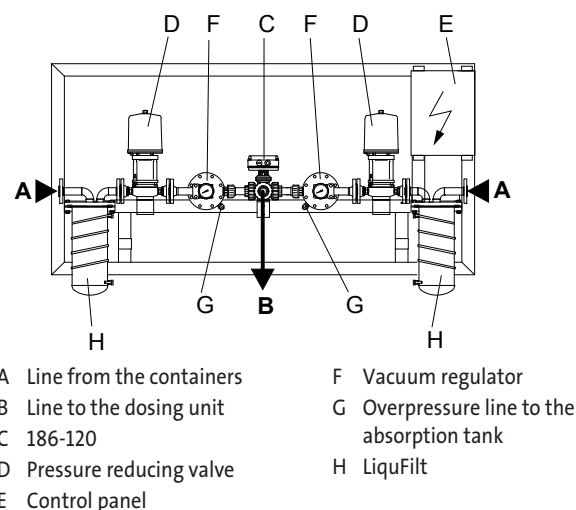
Fastening material

- for wall mounting

Labelling of the control panel

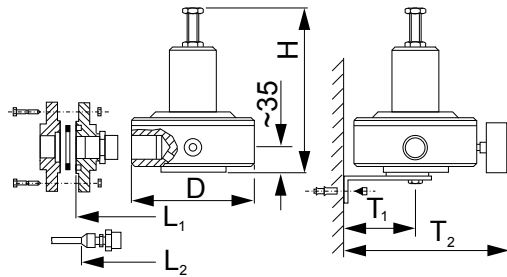
- German or English or French or Spanish

Functional scheme 186

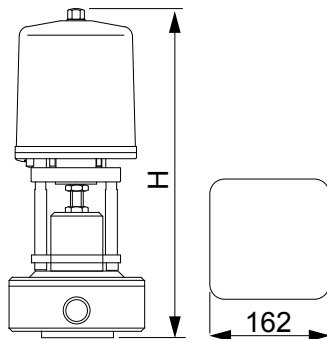


544 pressure reducing valves

Measurements



with servomotor



Measurements in mm

Conn.	H	D	L1	L2	T1	T2	for Order No
G ½"	200	120	198	240	128	240	544-101, -1017
G 1"	220	150	240	-	128	255	544-102, -1027
G ½"	425	120	198	240	128	240	544-210, -2107
G 1"	435	150	240	-	128	255	544-220, -2207

Accessories for pressure reducing valves

Beschreibung	Order No
Manometer 0 to 16 bar, G ½" (for Cl ₂)	541-010
Manometer 0 to 16 bar, G ½" (for NH ₃)	541-0107
Wall mounting bracket, steel	539-011
Connection set for copper pipe 6/8 (only G 1½" Cl ₂)	529-11
Connection set for stainless steel pipe 6/8 (only G 1½" NH ₃)	529-1017
Pair of threaded flanges (connection flange), groove and tongue, DN 15	529-112
Pair of threaded flanges (counterflange), groove and tongue, DN 15	529-12
Pair of threaded flanges (connection flange), groove and tongue, DN 25	529-113
Pair of threaded flanges (counterflange), groove and tongue, DN 25	529-14

Technical data

Nom. pressure	16 bars	
Backpressure	adjustable at 2-3 bars (Cl ₂); 3-4 bars (NH ₃)	
Weight	6 kg (G ½“, without servomotor) 12.5 kg (G 1“, without servomotor) 9.5 kg (G ½“, with servomotor) 16 kg (G 1“, with servomotor)	
Material	diaphragm valve cone valve seat spring O-rings enclosure	Cl ₂ : silver; NH ₃ : stainless steel Tantal Cl ₂ : PVDF; NH ₃ : TFM Hastelloy C, silver-plated Cl ₂ : Viton; NH ₃ : EPDM Cl ₂ : brass; NH ₃ : stainless steel

Order data

Max. flow/ Medium	Nominal diam.	Connec- tions	Servo- motor	Order No
40 kg/h Cl ₂	DN 15	G ½"	—	544-101
20 kg/h NH ₃	DN 15	G ½"	—	544-1017
200 kg/h Cl ₂	DN 25	G 1"	—	544-102
100 kg/h NH ₃	DN 25	G 1"	—	544-1027
40 kg/h Cl ₂	DN 15	G ½"	X	544-210
20 kg/h NH ₃	DN 15	G ½"	X	544-2107
200 kg/h Cl ₂	DN 25	G 1"	X	544-220
100 kg/h NH ₃	DN 25	G 1"	X	544-2207

Options pressure reducing valves with servomotor

Servomotor: Linear-attached actuator with no-voltage readjusting device, closing time approx. 5.5 s (at maximum stroke), setting time 100%, admissible ambient temperature 0 to +50°C, protection IP 54

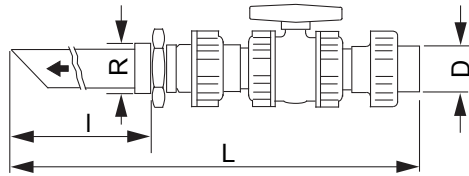
- 230 V, 50 Hz, 22 mA, 20 W
- 115 V, 60 Hz, 60 mA, 21.6 W

Spare parts sets

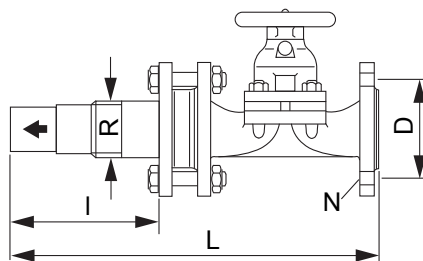
Description	Order No
Spare parts set for 544-101, -210 (Cl ₂)	553-181
Spare parts set for 544-1017, -2107 (NH ₃)	553-1817
Spare parts set for 544-102, -220 (Cl ₂)	553-182
Spare parts set for 544-1027, -2207 (NH ₃)	553-1827

Injection units

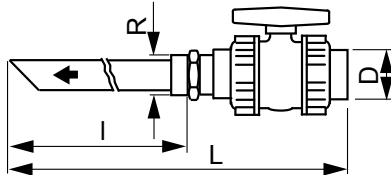
Measurements



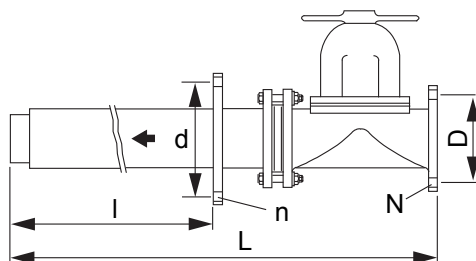
522-242 / -252



522-302 / -312



522-232



522-254 / -312 / -274 / -284 / -294

Table of measurements

R	I	L	Ø d	n	Ø D	N	Order No
G 1"	155	298	—	—	25	—	522-232
G 1 1/4"	155	371	—	—	32	—	522-242
G 2"	155	414	—	—	40	—	522-252
G 1 1/2"	90	310	—	—	85	4xØ12	522-302
G 1 1/2"	90	330	—	—	100	4xØ16	522-312
—	450	860	160	8xØ18	125	4xØ18	522-264
—	650	1120	180	8xØ18	145	4xØ18	522-274
—	750	1240	210	8xØ18	160	8xØ18	522-254
—	900	1435	240	8xØ22	180	8xØ18	522-294
—	1150	1745	295	12xØ22	210	8xØ18	522-284

Technical data / Order data

Material / Shut-off valve	Connection chlorine solution line	Installation connection	Weight (kg)	Order No
PVC / ball valve	PVC pipe 20/25	G 1"	0.3	522-232
	PVC pipe 25/32	G 1 1/4"	0.5	522-242
	PVC pipe 32/40	G 2"	1.5	522-252
Steel / diaphragm valve	Flange DN 25	G 1 1/2"	7.0	522-302
	Flange DN 32	G 1 1/2"	8.5	522-312
	Flange DN 50	Flange DN 80	21.0	522-264
	Flange DN 65	Flange DN 100	39.0	522-274
	Flange DN 80	Flange DN 125	46.0	522-254
	Flange DN 100	Flange DN 150	74.0	522-294
	Flange DN 125	Flange DN 200	102.0	522-284

Connections / Counterflanges

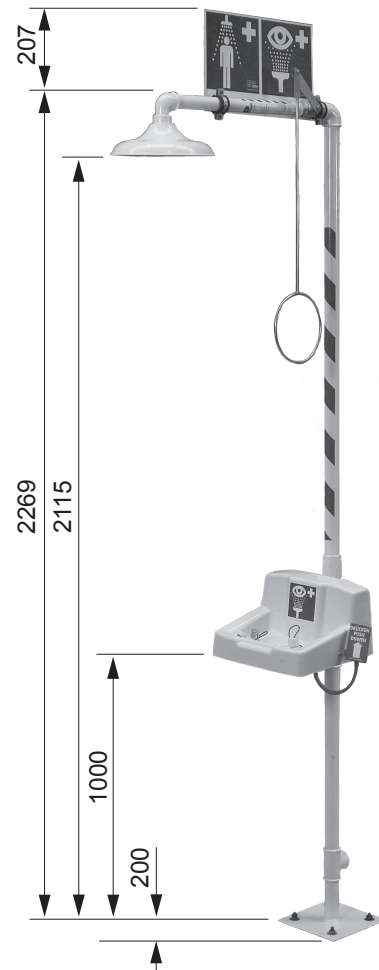
for chlorine solution inlet connection, comprising a set of PVC counterflanges with screws and nuts

for	Order No	for	Order No
for 522-302	529-302	for 522-274	529-274
for 522-252	529-252	for 522-254	529-254
for 522-312	529-312	for 522-294	529-294
for 522-264	529-264	for 522-284	529-284

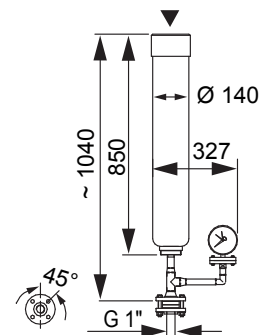
Measurements in mm

Safety accessories

Description	Order No
Chlorine gas absorption tank	524-311
3 kg refilling for absorption tank	553-225
Sprinkling system with solenoid valve 230 V, 50 Hz	
with 1 nozzle	515-321
with 2 nozzles	515-322
with 3 nozzles	515-323
with 4 nozzles	515-324
with 5 nozzles	515-325
with 6 nozzles	515-326
Flow controller for sprinkling system	515-3200
Compressed air respirator with 6 l cylinder, 300 bars, supporting frame, automatic lung and panorama mask	515-21
Spare cylinder for compressed air respirator	515-22
Protective PVC suit with vulcanized boots and gloves	515-623
Gas mask with threaded filter to DIN 3181, type 900 St B 2-P2	515-401
Spare threaded filter for gas mask	515-402
Storage box for gas mask and breathing filter, with shoulder strap	515-403
Rubber gloves	515-410
Rubber apron	515-420
Safety glasses	515-430
Body and eye shower	515-640.1
Nitrogen rinsing device 40 l nitrogen cylinder (empty), pressure reducing valve, 2 m copper line, corner valve, tongue flange and flange gasket	
for connection at G ½" header lines	505-532
for connection at G 1" header lines	505-533
Warning signs	
Set in German, for chlorine gas system	515-600
Set in English, for chlorine gas system	515-601
Set in French, for chlorine gas system	515-602
Emergency equipment for leakages in containers	515-645
Expansion tank with bursting dike and contact manometer, bursting pressure 14 bars, connection threaded flange G 1"	600-0002



Body and eye shower 515-640-1



Expansion tank 600-0002

Measurements in mm

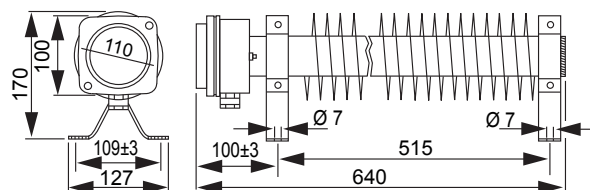
Accessories for chlorine rooms

Ribbed radiator	Order No
stainless steel, 230/400 V, IP 67, 1000 W	515-1
temperature controller (frost protector) for 515-1, 230 V, 50/60 Hz, IP 65, wall mounting	515-2

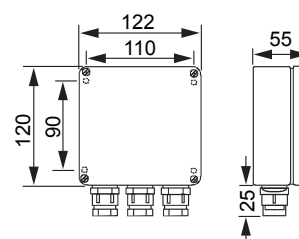
Exhauster fan 400 V, 3-phase, 50 Hz, IP55							Order No
Measruements in mm						Description	
A	B	C	D	E	F		
216.7	345	305	8.5	44.5	193	1150 m³/h, 120 W, 0.22 A	515-15
431	580	520	11	100	166	2800 m³/h, 130 W, 0.30 A	515-16
543	700	640	11	137	132	5700 m³/h, 275 W, 0.75 A	515-17

Drum support		Order No
set of two units for storage of one drum		
material:	mounting plate: steel, lacquered rollers, axles: steel, nickel-plated	505-632
drum size:	min. 0.7 m, max. 1.06 m	
load:	max. 2000 kg	
weight:	2 x 23 kg	
accessories:	fastening screws, heavy-load dowels	

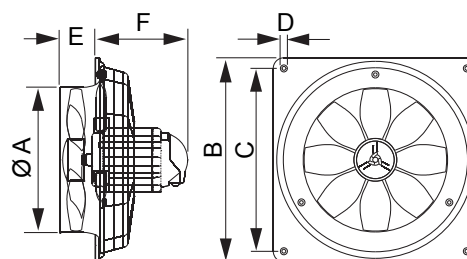
Chlorine cylinder balance	Order No 1 cylinder	Order No 2 cylinders
without empty indication	505-624	505-625
with Reed contact for empty indication	505-624-2	505-625-2
with output signal 4-20 mA	505-624-4	505-625-4



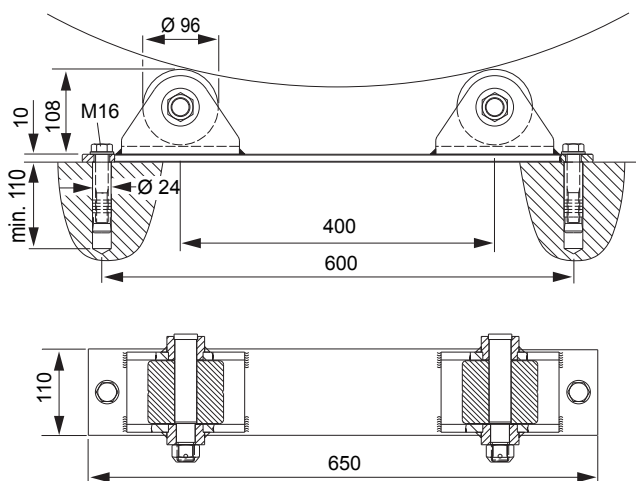
Ribbed radiator 515-1



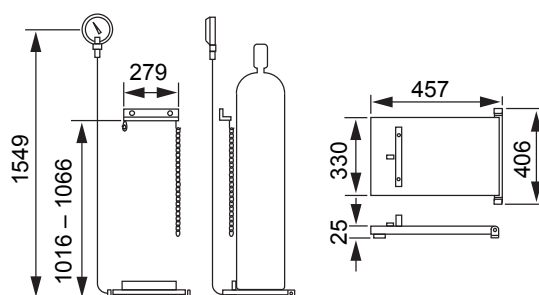
Temperature controller 515-2



Exhauster fan 515-15 / -16 / -17



Drum support 505-632

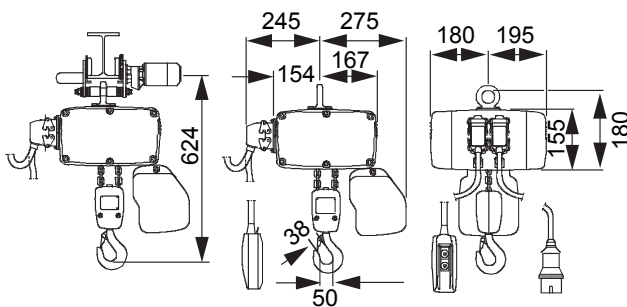


Chlorine cylinder balance 515-625

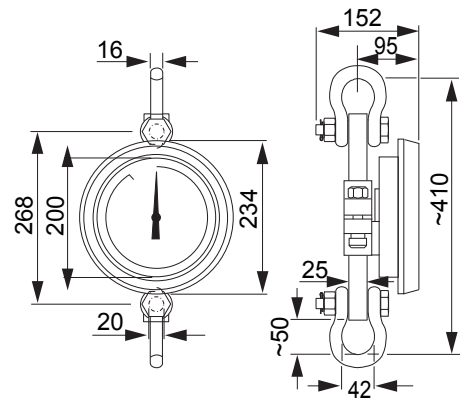
Measurements in mm

Accessories for transport and storage of chlorine containers

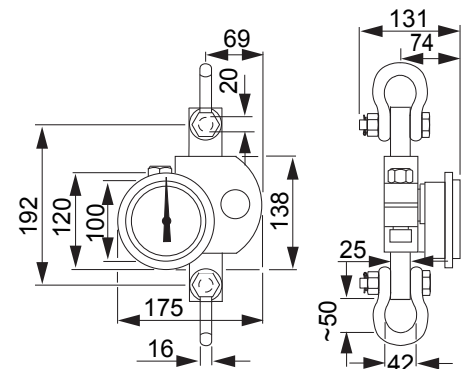
Description	Order No
Spring balance for cranes capacity 2000 kg	
accuracy $\pm 1\%$ of full scale value	505-027
accuracy $\pm 1\%$ of full scale value, with extra-large scale	505-027-3
Lifting beam	
suitable for chlorine drums of 400 l and 800 l lifting capacity 2000 kg, weight 40 kg	505-031
Chain hoist with electric trolley lifting range 6 m, 380-415 V, 50 Hz	
capacity 2000 kg power consumption 2.2 kW	Order No
for flanges of 141 to 200 mm width	505-028
for flanges of 82 to 125 mm width	505-0281
for flanges of 201 to 300 mm width	505-0282
capacity 3200 kg , power consumption 2.0 kW	Order No
for flanges of 137 to 215 mm width	505-028.3
for flanges of 82 to 155 mm width	505-028.31
for flanges of 220 to 300 mm width	505-028.32
Drag line for chain hoists	
per meter	505-0288
connection set	505-0287



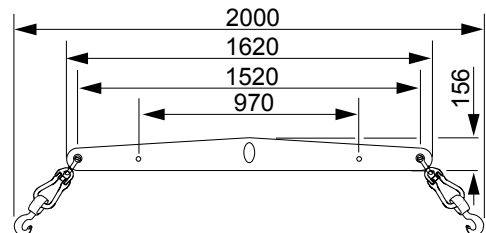
Chain hoists



Crane spring balance 505-027-3



Crane spring balance 505-027



Lifting beam 505-031

Measurements in mm

96735222 0707	EN
15.810013 V5.0	

Subject to change!