TECHNICAL MANUAL

CVD DOSING SYSTEM

TRANSLATION OF THE ORIGINAL TECHNICAL MANUAL EN

TYPE

CVD1s - 60.1	CVD1 - 60.1	CVD2 - 60.1
CVD1s - 550.1	CVD1 - 550.1	CVD2 - 550.1
CVD1s - 1500.1	CVD1 - 1500.1	CVD2 - 1500.1

NOTE

Keep the operating manual for future use!

ATTENTION

Subject to technical modifications!

Technical manuals of the system subassemblies

WARNUNG

The operating instructions of the system components in the overall documentation must be observed!
The revision of the overall documentation given in these instructions must be observed!

DOWNLOAD

Download the technical manuals of the system subassemblies.

Or directly scan the QR code opposite:

REVISION 02

Quality notes

The **sera** quality management and quality assurance system is certified in accordance with DIN EN ISO 9001:2015.
The **sera** product complies with the applicable safety requirements and accident prevention regulations.

About this instructions

Special notes in these instructions are marked with text and danger symbols.

NOTE

Notes or instructions that faciliate work and ensure a safe operation.

ATTENTION

The non-observance of these safety instructions can result in malfunctions or material damages.

WARNING

The non-observance of these safety instructions can lead to material damages and personal injuries.

Note on the additional instructions „SAFETY INSTRUCTIONS SI02.

These technical manual is divided into the following main parts:

TRANSPORT & STORAGE

WARNING

Observe and follow the safety instructions by all means.
See the additional instructions „SAFETY INSTRUCTIONS".
Man, machine and environment are endangered if the safety instructions are not observed.

SI02

General

sera products are checked for perfect condition and function previous to shipment.
Check for transport damage immediately after arrival of goods. If damage is found, this is to be reported immediately to the responsible carrier and the manufacturer.

Storage

An undamaged packaging protects the unit during storage and should only be opened when the product is installed.
Proper storage increases the service life of the product and includes prevention of negative influences such as heat, moisture, dust, chemicals etc.

The following storage specifications are to be obsered:

- Storage place: cool, dry, dustfree and slightly ventilated
- Storage temperature and relative air humidity see Chapter „TECHNICAL DATA".
- The maximum storage time for the standard packaging is 12 months.

If these values are exceeded, metal products should be sealed in foil and protected from condensation water with a suitable desiccant.

Do not store solvents, fuels, lubricants, chemicals, acids, disinfectants and similar in the storage room.

Transport

The unit should only be transported using suitable lifting gears. Take into account the weight of the unit and the load-bearing capacity of the means of transport.
The transport is carried out lying down.

Example::
Lift by means of a tie-bar (not included in the scope of supply).
Lead the carrying belts through the transport holes (**1**) and lift.

ATTENTION

Be careful when lifting the system. Pay attention to the center of gravity! Fasten the system sufficiently!

ATTENTION

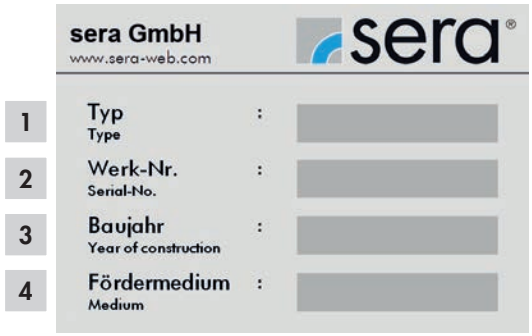
Do not place the system on the collecting basin while working!
If this note is not observed, the drain plug of the collecting basin may break off.

Type key

Construction		Number of pumps		Size	
1		2		3	
CVD		1	-	60.1	(Example)

Type plate

Each **sera** system is factory provided with a type plate. The following information can be found on this type plate.



No.	Designation
1	Type of system
2	Serial-no. of system
3	Year of construction
4	Medium

Notes attached to the product

Symbols which are directly attached to the pump, e.g. arrows for direction of rotation or symbols for fluid connections are to be observed and kept in legible condition.

Materials

The materials used are stated in the order confirmation and the product description.

Water quality

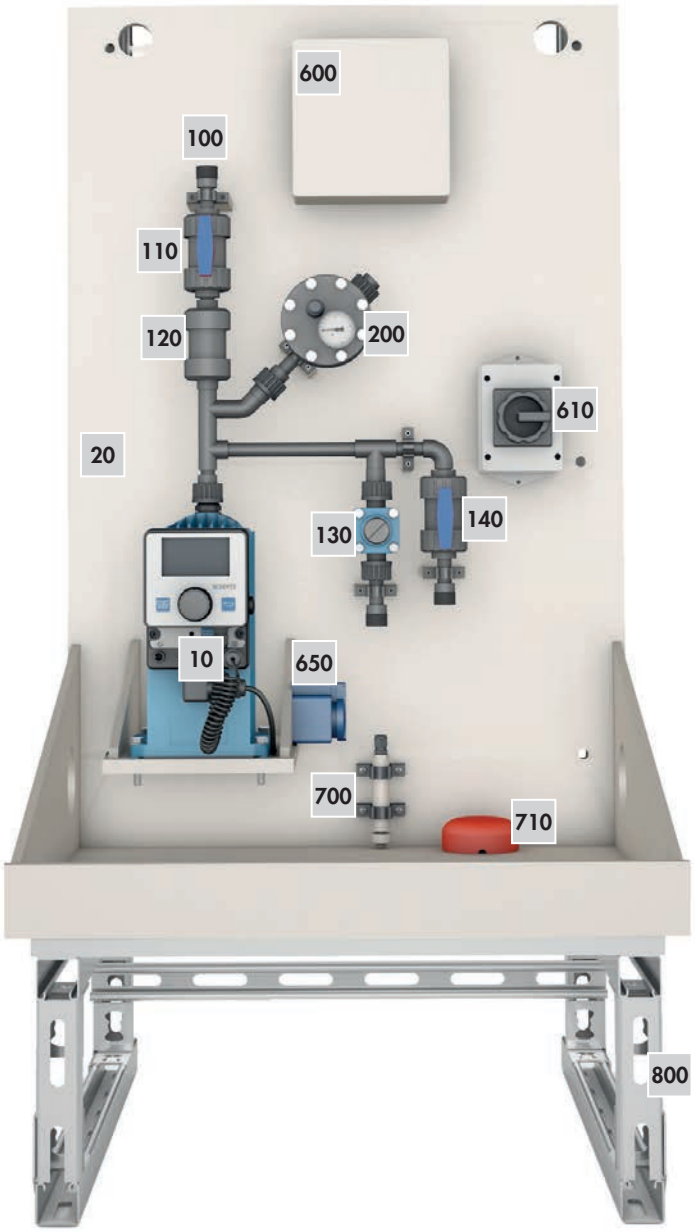
ATTENTION

Water used for start-up, maintenance and closing down must be similar to drinking water, i.e. chemically neutral, free from solid and suspended matters and disturbing ion concentrations.
Note the compatibility of the chemical with water and take appropriate measures, if necessary.
Pay attention to the safety data sheet of the medium.

PRODUCT DESCRIPTION

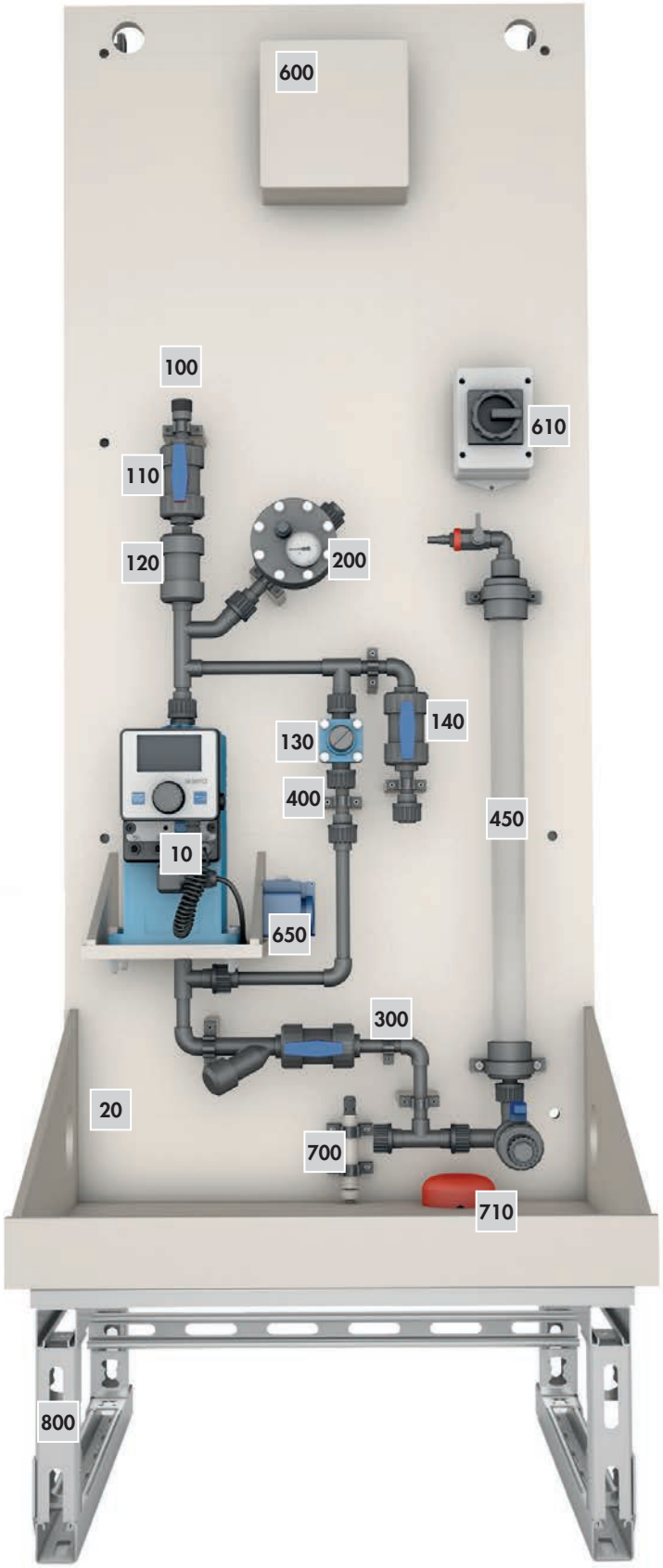
The chemical is dosed by diaphragm pump(s). The conveying capacity of the pump can be set at the manual stroke length adjustment. Depending on the design of the dosing pump, an additional automatic dosing is possible via pulse or analogue signals. The piping on the pressure side consists of a taper seat non-return valve and a ball valve as end connection. The pump is protected against overpressure by an overflow valve. A drain ball valve for evacuation/pressure relief is fitted in the pressure pipe. The pump and the corresponding fittings are mounted on a wall mounting plate with collecting basin.

CVD1s



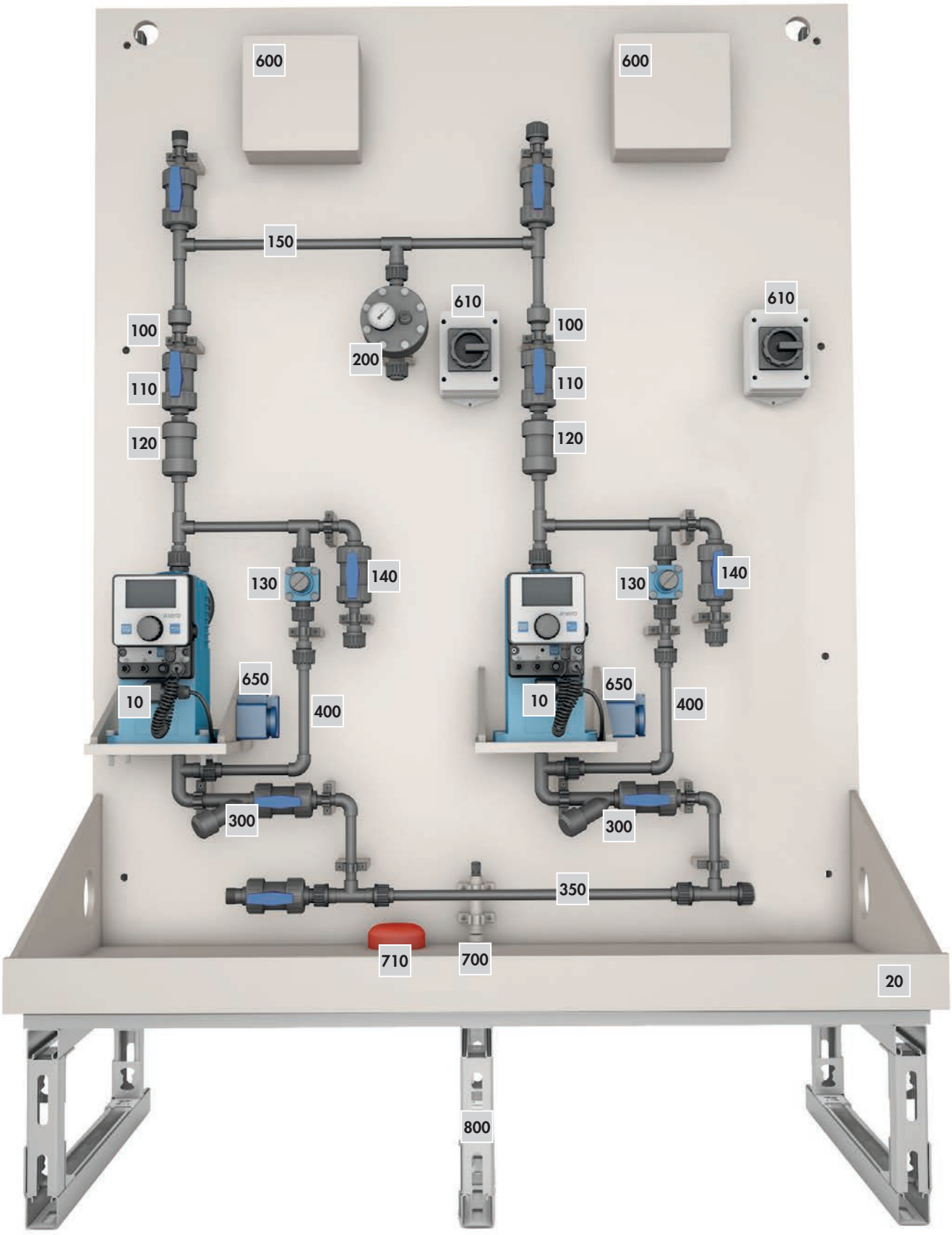
No.	Designation	Remark
10	Pump	
20	Wall mounting plate of PP (with integrated collecting basin and drain plug)	
100	Piping of PVC-U or PP on the pressure side end connection male thread	
110	Two-way ball valves (shut-off valve)	
120	Check valve	
130	Diaphragm relief valve	
140	Two-way ball valves (discharge valve)	
200	Diaphragm pulsation damper	option
500 without pic.	Detachable splash guard	option
600	Terminal box	option
610	Main switch of pump	option
650	Socket	option
700	Leakage sensor without WHG approval	option
710	Leakage sensor with WHG approval	option
800	Stand for floor mounting (steel (galvanized) or GFK)	option
without pic.	Protective cabinet with cabinet heating and/or cabinet lighting	option
without pic.	Protective roof for drive motor	option

CVD 1



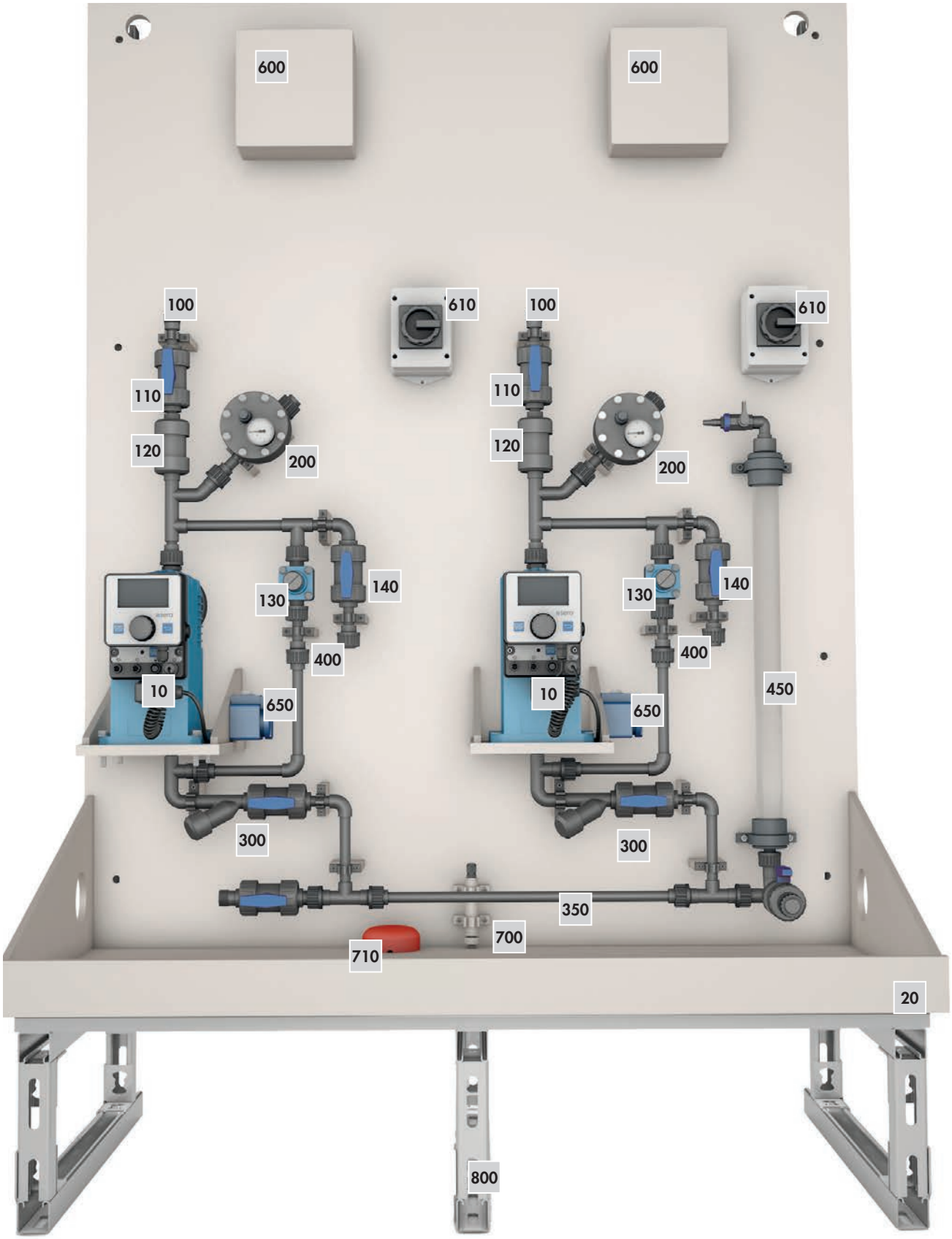
No.	Designation	Remark
10	Pump	
20	Wall mounting plate of PP (with integrated collecting basin and drain plug)	
100	Piping of PVC-U or PP on the pressure side end connection male thread	
110	Two-way ball valves (shut-off valve)	
120	Check valve	
130	Diaphragm relief valve	
140	Two-way ball valves (discharge valve)	
200	Diaphragm pulsation damper	option
300	Piping on the suction side (with dirt trap and 2/2 way ball cock)	option
400	Piping overflow valve back into the suction pipe (only in connection with piping on the suction si)	option
450	Multifunction device	option
500 without pic.	Detachable splash guard	option
600	Terminal box	option
610	Main switch of pump	option
650	Socket	option
700	Leakage sensor without WHG approval	option
710	Leakage sensor with WHG approval	option
800	Stand for floor mounting (steel (galvanized) or GFK)	option
without pic.	Protective cabinet with cabinet heating and/or cabinet lighting	option
without pic.	Protective roof for drive motor	option

CVD2 „Standby-Installation“



No.	Designation	Remark
10	Pump	
20	Wall mounting plate of PP (with integrated collecting basin and drain plug)	
100	Piping of PVC-U or PP on the pressure side end connection male thread	
110	Two-way ball valves (shut-off valve)	
120	Check valve	
130	Diaphragm relief valve	
140	Two-way ball valves (discharge valve)	
150	Connecting line pressure-side (between pump 1and pump 2)	option
200	Diaphragm pulsation damper	option
300	Piping on the suction side (with dirt trap and 2/2 way ball cock)	option
350	Connecting conduit on the suction side (between pump 1 and pump 2)	option
400	Piping overflow valve back into the suction pipe (only in connection with piping on the suction si)	option
500 without pic.	Detachable splash guard	option
600	Terminal box	option
610	Main switch of pump	option
650	Socket	option
700	Leakage sensor without WHG approval	option
710	Leakage sensor with WHG approval	option
800	Stand for floor mounting (steel (galvanized) or GFK)	option
without pic.	Protective cabinet with cabinet heating and/or cabinet lighting	option
without pic.	Protective roof for drive motor	option

CVD2 „2x100%-Installation“



No.	Designation	Remark
10	Pump	
20	Wall mounting plate of PP(with integrated collecting basin and drain plug)	
100	Piping of PVC-U or PP on the pressure side end connection male thread	
110	Two-way ball valves (shut-off valve)	
120	Check valve	
130	Diaphragm relief valve	
140	Two-way ball valves (discharge valve)	
200	Diaphragm pulsation damper	
300	Piping on the suction side (with dirt trap and 2/2 way ball cock)	option
350	Verbindungsleitung Saugseite (zw. Pumpe 1 und Pumpe 2)	option
400	Piping overflow valve back into the suction pipe (only in connection with piping on the suction si)	option
450	Multifunction device	option
500 without pic.	Detachable splash guard	option
600	Terminal box	option
610	Main switch of pump	option
650	Socket	option
700	Leakage sensor without WHG approval	option
710	Leakage sensor with WHG approval	option
800	Stand for floor mounting (steel (galvanized) or GFK)	option
without pic.	Protective cabinet with cabinet heating and/or cabinet lighting	option
without pic.	Protective roof for drive motor	option

Diaphragm pulsation damper (pos. 200)

The chemical is dosed by means of an oscillating positive dis-placement pump. A pulsation damper can be integrated in the pressure pipe for smoothing the pulsating flow of the pump.

ATTENTION

Whether a pulsation damper must be installed or not, de-pends on the design of the overall system and must be determined from case to case!
Decisive factors are, among others, the pump size, the pipe geometry (length and diameter), pipe losses, the geo-detic height to be negotiated and the opening pressure of injection fittings (which might be present) resulting from the spring load.

The following possibilities are given for the pump series CVD2:

- Installation of a pulsation damper in each dosing leg and thus an independent operation of the pumps for different applica-tions.
- Connection of the dosing pumps through the additional option "Connection of the pressure side of pump 1 and pump 2" and installation of a common pulsation damper.
- Connection of the dosing pumps through the additional option "Connection of the pressure side of pump 1 and pump 2" and installation of a common pulsation damper in each dosing leg. This enables a 100% standby opera-tion of the dosing pumps. (Connection of pressure side only possible on left con-nection N1).

Piping on the suction side (pos. 300, pos. 350)

The basic unit can be fitted with a piping on the suction side as option. This piping includes a ball valve as stop valve and a dirt trap.

The suction sides of each pump at CVD2 are separated from one an-other so that the medium can be taken from different barrels. The suction sides of the pumps can be connected when a fur-ther option "Connecting conduit on the suction side of pump 1 and pump 2" (**pos. 350**) is added.

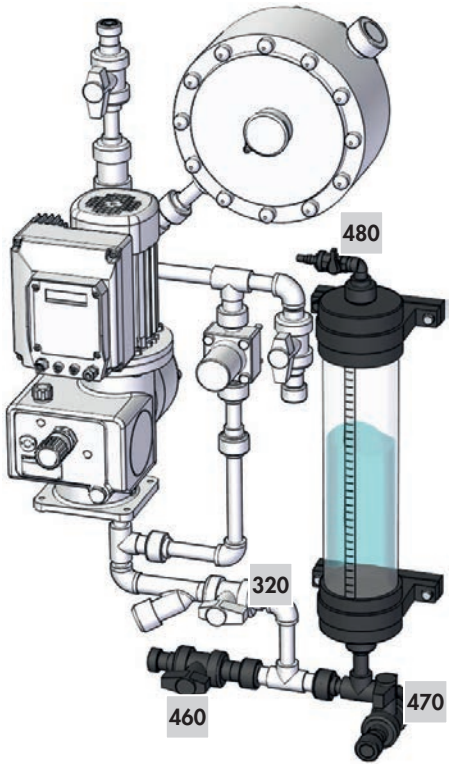
Piping overflow relief valve (pos. 400)

When the overflow valves open, the medium can be led back into the suction pipes via return pipes.

ATTENTION

This option may only be used when a multifunction device (**pos. 450**) is mounted, or when the backflow of the medium into the corresponding tank is not hindered by a foot valve or simi-lar in the suction pipe.
Inobservance of this note may result in damage to the sys-tem, the pump or adjacent system parts.

Multifunction device (pos. 450)



Pt.	Function	Position			
		480	320	460	470
1	Filling	*open*	*closed*	*open*	*closed*
2	Volumetric measurement	*open*	*open*	*closed*	*closed*
3	Priming aid / Siphon vessel	*closed*	*open*	*open*	*closed*

Volumetric measurement of dosing pump:

- Setting the ball cocks acc. **pt 1** of the table
- Fill the device either according to the principle of interconnected tanks or with the help of a hand vacuum pump.
- Setting the ball cocks acc. **pt 2** of the table.
- Volumetric measurement of pump, Read flow rate on scale, Setting the pump, repeat the process.

ATTENTION

Don't overfill device (max. up to nominal contents) as oth-erwise medium can leak in the venting ball cock (resp. in-take hose)!

Filling of multifunction device:

- Setting the ball cocks acc. **pt 1**of the table
- Fill multifunction device
- Setting the ball cocks acc. **pt 3** of the table

Operate as Priming aid / Siphon vessel:

- Setting the ball cocks acc. **pt 1** of the table
- Fill multifunction device
- Setting the ball cocks acc. **pt 3** of the table
- Operate the dosing pump

Splash guard (pos. 500)

A splash guard is available as option to protect the operating personnel against chemical splashes which may occur due to damage on the system. The splash guard consists of three parts. The side parts are fixed, the front part is removable.

Terminal box (pos. 600), socket (pos. 650 / 660) and main switch (pos. 610)

The system can be fitted with a terminal box or a socket or a main switch as transition points for power connections or a signal exchange.

Leakage sensor (pos. 700 / 710)

A magnetic float switch (**pos. 700**) or a leakage sensor (**pos. 710**) detects leakages at the system. This optional device can be integrated in the collecting basin.

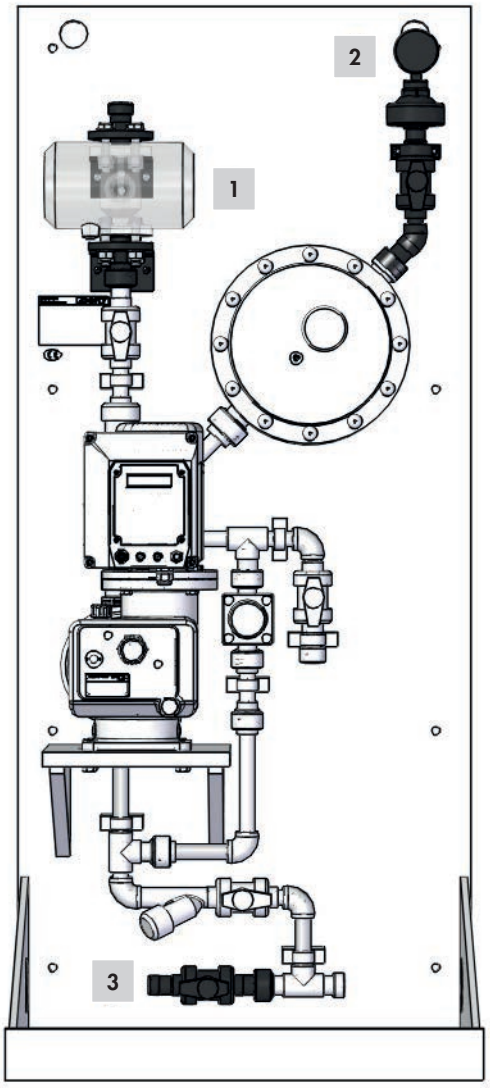
ATTENTION

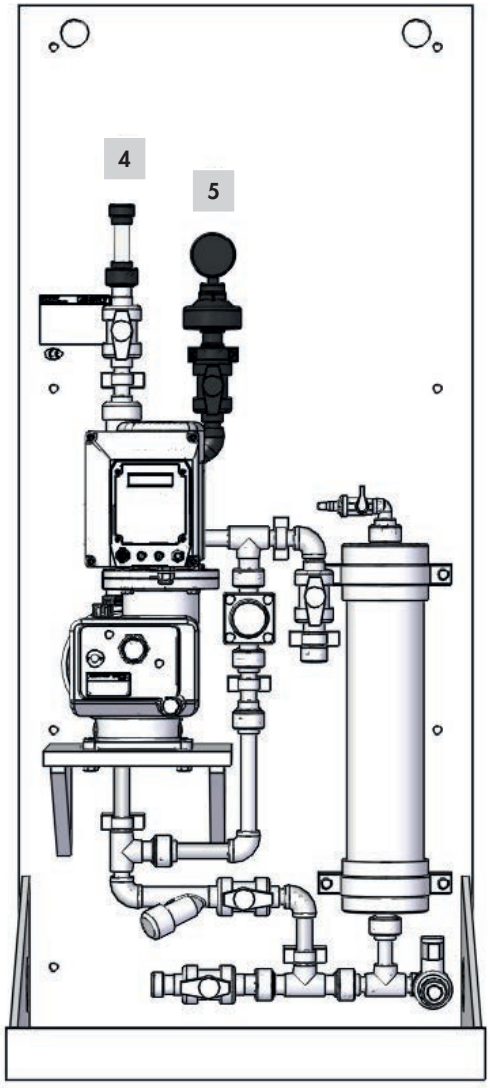
The magnetic float switch (**pos. 700**) is not approved according to WHG!

Stand for floor mounting (pos. 800)

The system is installed on a mounting plate for wall mounting as standard. A stand for floor mounting is available as option if there are no possibilities for wall mounting at the installation site.

Accessories





1	MID Mounting for flow meter	**4**	Inspection glas
2	Manometer	**5**	Manometer
3	Rinsing ball cock		

TECHNICAL DATA

UNIT DATA		CVD1(s)-60.1	CVD1(s)-550.1	CVD1(s)-1500.1
Flow capacity	l/h	0 - 60	0 - 550	0 - 1500
Permissible counter pressure	bar (max)	10	8	5
Permissible suction head	mWC (max)	3	3	3
Number of pumps	Quantity	1	1	1

UNIT DATA		CVD2-60.1	CVD2-550.1	CVD2-1500.1
Flow capacity	l/h	2x 0 - 60	2x 0 - 550	2x 0 - 1500
Permissible counter pressure	bar (max)	10	8	5
Permissible suction head	mWC (max)	3	3	3
Number of pumps	Quantity	2	2	2

PUMP ASSIGNMENT			CVD1(s) - 60.1	CVD1(s) - 550.1	CVD1(s) - 1500.1	CVD2 - 60.1	CVD2 - 550.1	CDV2 - 1500.1
R/C204.1 - 2,4e	...	R/C204.1 - 35e	■			■		
iSTEP S 20	...	iSTEP S 50	■			■		
RF409.2 - 2,4e	...	RF409.2 - 50e	■			■		
C409.2 - 25e	...	C409.2 - 50e...	■			■		
RF410.2 - 11 ML	...	RF410.2 - 45 ML	■			■		
C410.2 - 11 ML	...	C410.2 - 45 ML	■			■		
RF409.2 - 75e	...	RF409.2 - 350e		■			■	
C409.2 - 75e	...	C409.2 - 350e		■			■	
RF410.2 - 280e	...	RF410.2 - 570e		■			■	
C410.2 - 280e	...	C410.2 - 570e		■			■	
RF410.2 - 110 ML	...	RF410.2 - 500 ML		■			■	
C410.2 - 110 ML	...	C410.2 - 500 ML		■			■	
RF410.2 - 570e	...	RF410.2 - 1450e			■			■
C410.2 - 570e	...	C410.2 - 1450e			■			■
RF410.2 - 1200 ML					■			■
C410.2 - 1200 ML					■			■

NOTE

The performance and design data can be taken from the product description in the order confirmation.

NOISE MEASUREMENT	
Max. sound pressure at max. burden	50 - 65 dB(A)

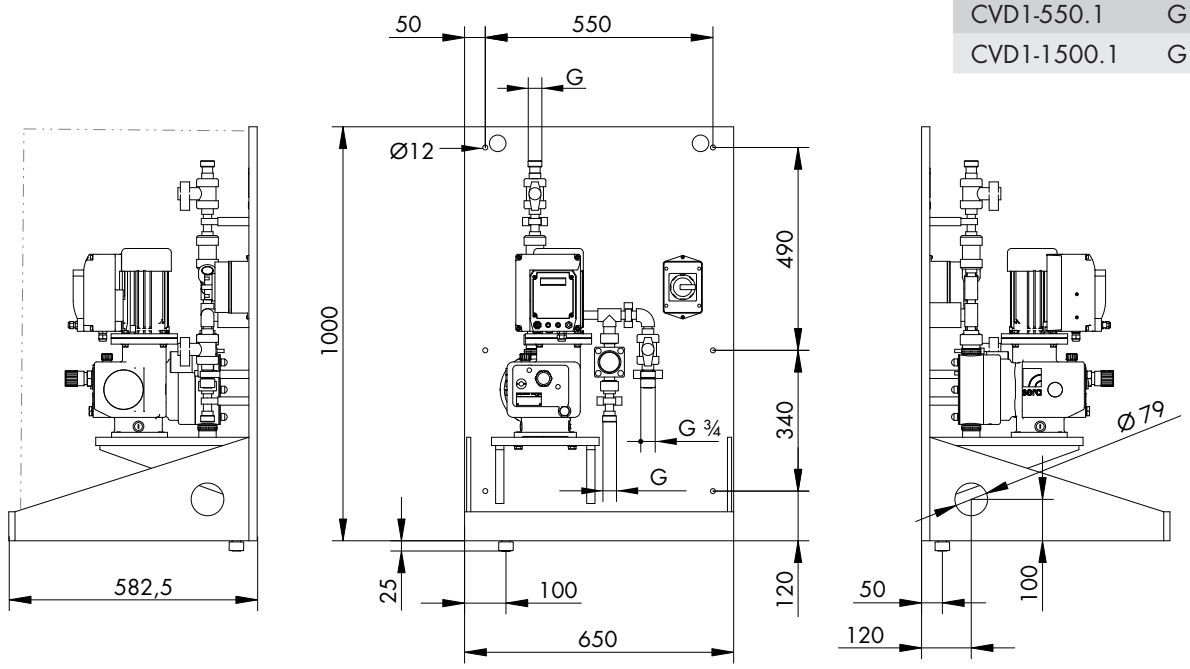
TEMPERATURE DATA	
Max. operating temperature	40 °C
Min. operating temperature	0 °C
Max. storage temperature	40 °C
Min. storage temperature	0 °C

AMBIENT CONDITIONS	
Max. installation altitude above sea level	1000 m
Max. relative air humidity	< 90%
Max. relative air humidity during storage	< 50%

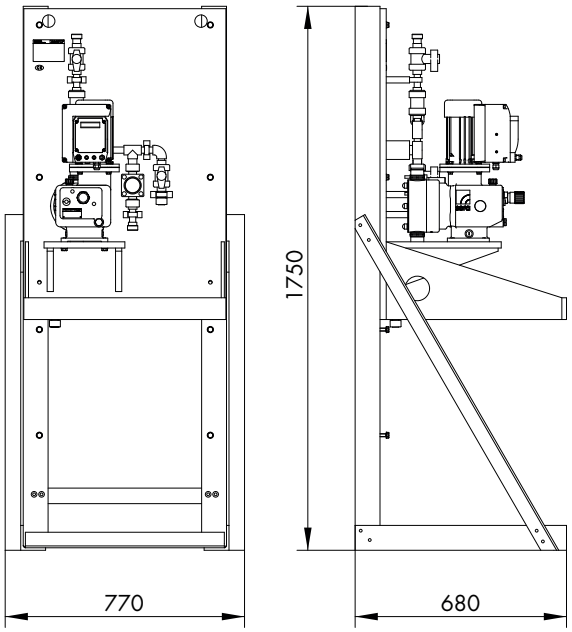
Dimensions CVD1s

CVD1s wall mounting

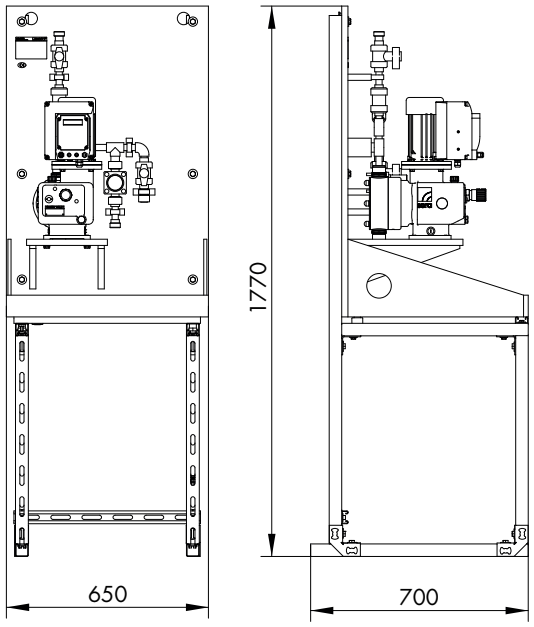
Type	G
CVD1-60.1	G ¾
CVD1-550.1	G1
CVD1-1500.1	G1½



CVD1s floor mounting, (FRP Gestell)



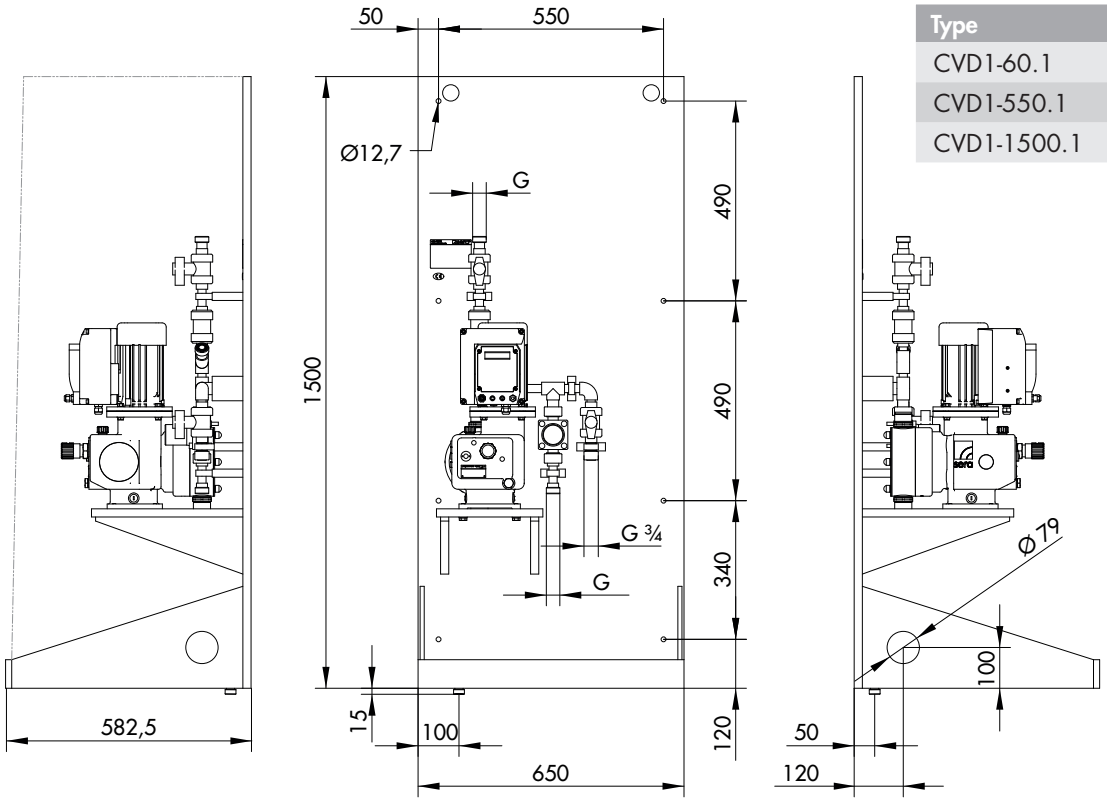
CVD1s floor mounting, (steel stand)



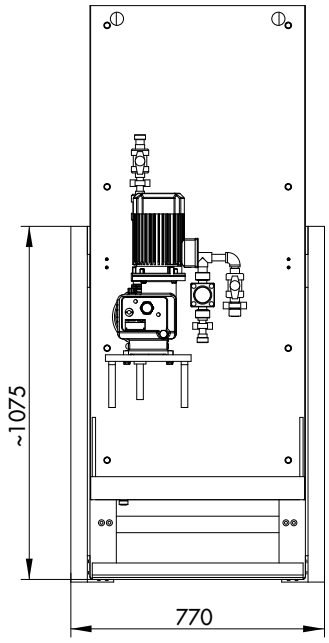
Dimensions CVD1

CVD1 wall mounting

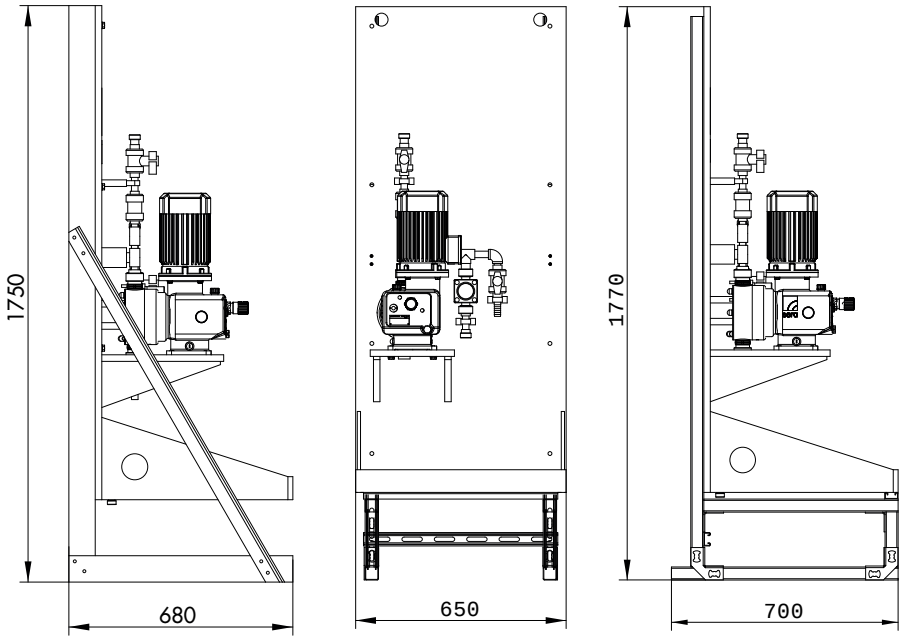
Type	G
CVD1-60.1	G ¾
CVD1-550.1	G1
CVD1-1500.1	G1½



CVD1 floor mounting, (FRP stand)



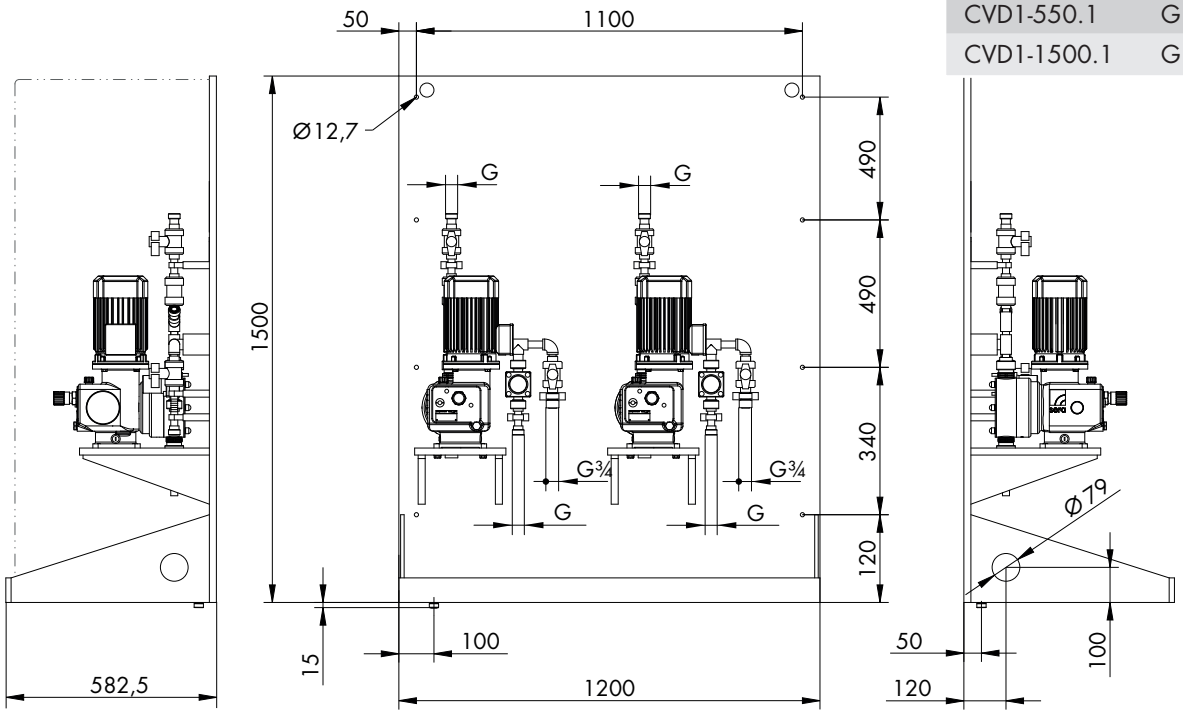
CVD1 floor mounting, (steel stand)



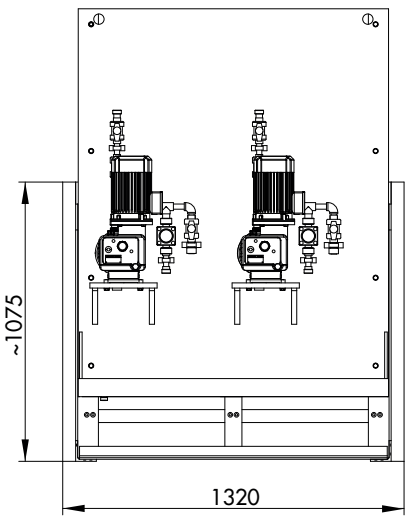
Dimensions CVD2

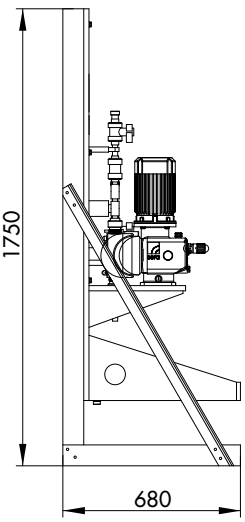
CVD2 wall mounting

Type	G
CVD1-60.1	G ¾
CVD1-550.1	G1
CVD1-1500.1	G1½

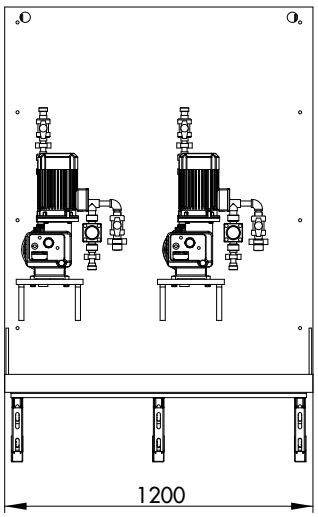


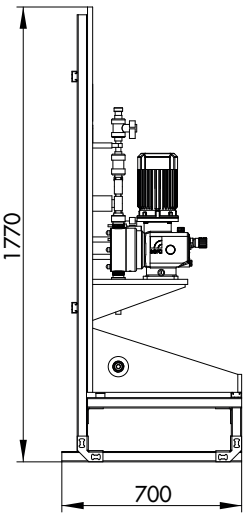
CVD2 floor mounting, (FRP stand)





CVD2 floor mounting, (steel stand)





WARNING

Observe and follow the safety instructions by all means.
See the additional instructions „SAFETY INSTRUCTIONS".
Man, machine and environment are endangered if the safety instructions are not observed.

NOTE

Design data of the system for the dosing medium and its temperature can be found in the order confirmation and/or the product description in the overall documentation.

NOTE

Operating conditions:
Ambient temperature, relative air humidity and max. installation altitude ►see chapter „Technical data".

- Check the complete dosing system for damage (e.g. transport damage).
- The system is designed for indoor installation and must be protected from direct sunlight.
- Build in the dosing system and attach it with appropriate material.
- The pipings on the suction and pressure side must be sufficiently dimensioned.
- Connect all pipes and make sure that they are tension- and vibration-free. An offset of the pipes within the area of the screwed and flanged connections must be avoided by all means.
- Connect the return pipe from the overflow valve so that a free and unhindered backflow of the medium is guaran-teed (directly into the corresponding tank or using the op-tion according to Chapter „Piping of the overflow valve").
- Replace the transport closure (oil sight glass with seal) at the oil filler cap of the pump with the attached vent screw (obser-ve the notes on the pump!).
- The electrical connections are to be made in accordance with the VDE (Association of German Electrotechnical Engineers) or the local electrical regulations applicable. See chapter „Electrical connection".

ATTENTION

If the dosing station is not fitted with a diaphragm overflow valve or a multifunction valve the owner of the system must ensure that the pump is protected against impermissible overpressure.

Place of installation

- The place of installation must be frost resisting and ven-tilated.
- An installation in an aggressive or explosion-hazardous area is not permitted.
- The installation data according to the Appendix must be regarded.
- The installation site must be equipped with proper light-ing for all works to be carried out (installation, operation, main-tenance etc.).
- Leaking chemicals must be disposed off in a safe and secure manner at the installation site.
- Protect against the direct irradiation of sun.
- Place the dosing station in such a way that operation and maintenance are possible at any time.

ATTENTION

Pay attention to the safety data sheet of the pumped me-dium! The instructions in the safety data sheet regarding handling of the medium must be observed!

ATTENTION

The fastening material is not included in the scope of supply and must be provided by the customer depending on the condition of the wall!

ATTENTION

The mounting area must be flat.
Take appropriate measures in order to compensate for height differences so that the stand can be fastened without tension.

In the case of wall mounting, attach the system to the wall at a suitable height. Select the installation height so that operation and maintenance of the system are possible at any time. The position of the bore holes is shown in dimensions.

ATTENTION

Pay attention to the carrying capacity of the wall.
The wall must be flat so that the wall mounting plate can be fixed without tension.

Electrical connection

The electrical connection of the dosing station is to be made depending on the system design (please see the product description in the Appendix) and according to the operating instructions in the complete documentation

WARNING

Do not lay electric leads near the contact area of the chemicals (e.g. on the screw cap).

WARNING

The electrical connection must only be done by qualified personnel. The local safety regulations must be observed.

ATTENTION

The fuse protection and the characteristics of the electrical components are indicated in the separate manuals.

NOTE

Have the electrical installation checked by the responsible safety officer after the work was finished. Carry out an insulation measurement if necessary!

WARNING

Observe and follow the safety instructions by all means.
See the additional instructions „SAFETY INSTRUCTIONS“.
Man, machine and environment are endangered if the safety instructions are not observed.

Carry out the following steps to start the system:

- Before commissioning check all the pipe connections, screwed and flanged connections etc. for proper fit and retighten, if necessary.
- Before switching on the system for the first time, the following points should be checked:
  - Check the electrical connections and the terminal assignment.
  - Check the electrical excess-current cut-outs for proper operation and correct setting.
  - Check whether the local supply voltage and frequency correspond with the indications on the type plates.
  - Check the function of the system components (see overall documentation).
- Carry out the first startup with water. Note the water quality according to the chapter „Water quality“.
- Open all shut-off devices that are required for operation. Close the shut-off device for emptying the tank.
- Set the stroke adjustment and the stroke frequency adjustment (only for C-pumps) to values lower than 50% and
- tart the pumps slowly.
- The integrated overflow valves and the multifunction valves are factory set to the maximum admissible operating
- pressure of the dosing pump (see product description).
- Have the pump deliver against operating pressure and check the piping for leakage.
- After startup drain the water completely from all the pipes and the pump.
- Empty the tank if necessary.
- Start the dosing system with the chemical reagent.
- Preload the pulsation damper to the pressure required for operation according to the separate technical manuel. This corresponds normally to 50% of the operating pressure.

ATTENTION

Check whether the set pressure of the overflow valves must be reduced in relation to other system parts installed which may only be submitted to a lower load. Correct the settings according to the technical manuel „Diaphragm relief valve“.

MAINTENANCE

WARNING

Observe and follow the safety instructions by all means.
See the additional instructions „SAFETY INSTRUCTIONS".
Man, machine and environment are endangered if the safety instructions are not observed.

All maintenance work is to be documented carefully.
All technical devices must be serviced in order to guarantee proper function of the system. Generally valid statements can-not be made as the maintenance schedule depends on various factors.

- Regular maintenance of the system components according to separate instructions.
- Check the piping for tightness once a week, and repair, if necessary.
- Check the screwed connections for tightness every six months or before starting the system after a longer period of stand-still.
- Check the system visually, and check the pressure every six months.
- Check proper function of the leakage sensor and solenoid float switch (according to the separate technical manuel).
- Check the wires and electrical components for visual damage (loose connections, damaged cables, damaged devices etc.) every six months.
- Check the preload pressure of the pulsation damper (option) once a week according to the separate instructions and ad-just, if necessary.

Wearing parts

sera recommends to maintain the system twice a year to en-sure proper operation.
Yearly maintenance comprises replacement of the gaskets that come into contact with the chemical, diaphragms (yearly or after 3,000 operating hours), suction and pressure valves of the dosing pumps. Please see also the separate instructions on the data carrier for maintenance of the parts.

Maintenance work which is carried out every six months comprises the checking of the complete dosing system:

- Check the overall function.
- Check the complete system for leakages.
- Check proper function of the leakage sensor (option).
- Check proper function of the pulsation damper according to the separate instructions (option).
- Check the wires and electrical components for visual damage at regular intervals (loose connections, damaged cables, damaged devices etc.).
- Check the oil filling level of the dosing pumps.

WARNING

Observe and follow the safety instructions by all means.
See the additional instructions „SAFETY INSTRUCTIONS“.
Man, machine and environment are endangered if the safety instructions are not observed.

Decommissioning

The following points must be observed when you decommis-sion the system:

- Drain the chemical from the pipes.
- Rinse the pipes with water (see Chapter „Water quality“) or a suitable medium and empty the pipes afterwards.
- Set the stroke length of the pumps to 50% to remove load from the diaphragm.
- Reduce preload pressure of the pulsation damper.
- Disconnect the system from the power supply.

Disposal

- Shut-down the system. Please see “Decommissioning”.

Disassembly and transport

- Shut-down the system. Please see “Decommissioning”.
- Remove all fluid residues, clean thoroughly, neutralize and decontaminate.
- Package the dosing system appropriately and ship.
- If the system is shipped for repair the gearing must be filled with oil.

NOTE

A clearance certificate must be filled in when systems are returned to the manufacturer.
Acceptance will be rejected if this clearance certificate is not attached.

Complete disposal

- Remove all fluid residues from unit.
- Drain off lubricants and dispose of according to regulations!
- Dismount materials and send them to a suitable waste disposal company!

CLEARANCE CERTIFICATE

NOTE

Inspection / repair of machines and machine parts is only carried out after the clearance certificate was filled in correctly and completely by authorized and qualified personnel.

NOTE

Acceptance will be refused if parts are returned to the manufacturer without a proper clearance certificate.

All industrial companies are obligated by the legal provisions for occupational health, e.g. the workplaces ordinances, the Ordinance on Hazardous Substances, the regulations for prevention of accidents and the environmental protection regulations such as the Waste Management Act and the German Household Water Act to protect their employees or man and the environment from detrimental effects when handling hazardous substances.

Should special safety precautions be necessary despite careful draining and cleaning of the product the necessary information are to be provided.

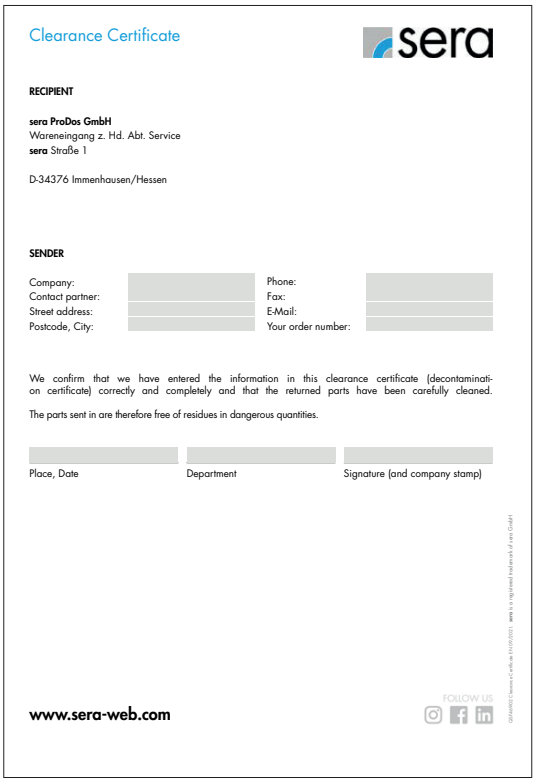
Machines which are operated with radioactive media shall only be inspected and/or repaired in the safety area of the owner by a **sera** specialized fitter.

The clearance certificate is part of the inspection-/repair order.
sera reserves the right to refuse acceptance of the order for other reasons.

DOWNLOAD

Clearance certificate

Or directly scan
the QR code opposite:



Clearance Certificate

sera

RECIPIENT

sera ProDos GmbH
Wareneingang z. Hd. Abt. Service
sera Straße 1

D-34376 Immenhausen/Hessen

SENDER

Company:		Phone:	
Contact partner:		Fax:	
Street address:		E-Mail:	
Postcode, City:		Your order number:	

We confirm that we have entered the information in this clearance certificate (decontamination certificate) correctly and completely and that the returned parts have been carefully cleaned.

The parts sent in are therefore free of residues in dangerous quantities.

Place, Date | Department | Signature (and company stamp)

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