Selcoperm SES 125-2000

Safe and simple production of sodium hypochlorite solution

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1. General information

Fundamentals of disinfection

Drinking water can transmit diseases. Among these diseases are typhus, paratyphoid, cholera and diarrhoea with vomiting, as well as viral infections such as hepatitis and poliomyelitis. Legionella in shower or bathing water can provoke pulmonary diseases.

Compared to the chemical contamination of water, where toxicity values are attained only slowly in general, in a drinking water epidemic infections spread dramatically in the whole supply area. The best prevention of epidemics is to use microbiologically clean non polluted water, preferably deep ground water as drinking water. Unfortunately, in some regions this is not possible for hydrogeological or quantitative reasons. In these regions, surface water is used, which often has to be purified. Pathogens that are possibly encountered, can be removed from the water or killed by adding certain substances to the water, i.e. by disinfecting the water.

Disinfection with chlorine

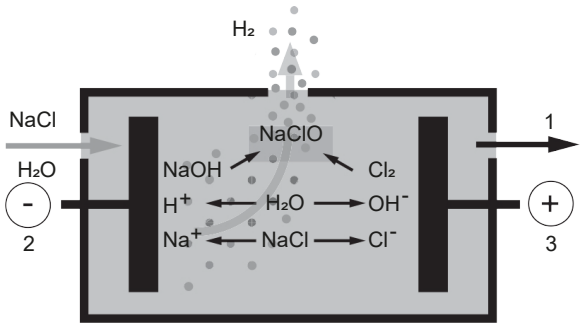
The most widespread disinfectant used in the treatment of drinking water is chlorine, which can be applied in a variety of ways. History has taught us that, in bacteriological terms, chlorinating water is a quite safe way of disinfecting drinking water. After all, more than 100 years have passed since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

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

The third method in particular offers a number of advantages, which are incorporated in the Selcoperm chlorine electrolysis systems.

The Selcoperm electrolysis principle

With electrolysis, sodium hypochlorite is produced directly from a solution of common salt using electricity.



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Selcoperm electrolysis principle

Legend

Pos.	Description
1	NaClO solution
2	Cathode
3	Anode

The following reactions take place in the electrolysis cell:

$2NaCl + 2H_2O \rightarrow 2NaOH + Cl_2 + H_2$

The chlorine (Cl2) produced reacts immediately with the caustic soda solution (NaOH) also formed, resulting in a sodium hypochlorite solution (NaClO):

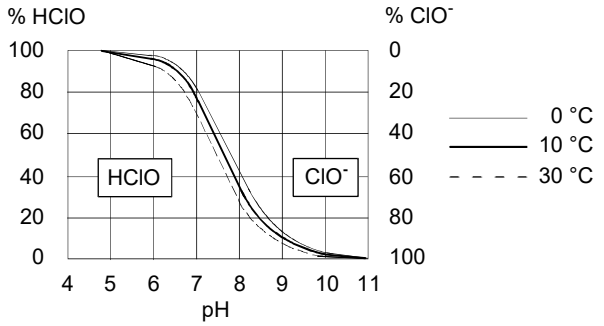
$Cl_2 + 2NaOH \leftrightarrow NaCl + NaClO + H_2O$

The sodium hypochlorite solution, which is the disinfectant, has a pH value between 8.5 and 9.5, and a chlorine concentration of 5 - 6.5 g/l. It has a half-life of several months, which makes it ideal for storage in a buffer tank.

After dosing the solution into the water flow, no pH value correction is necessary, as it is often required e.g. in electrolysis according to the membrane principle. The sodium hypochlorite solution reacts in a balance reaction, resulting in hypochlorous acid (HClO), the effective disinfectant: $NaClO + H_2O \leftrightarrow NaOH + HClO$

The resulting hypochlorous acid is the actually effective compound for disinfection of the water. The dissociation of acid to anions is primarily according to an equilibrium dependent on the pH value according to the equation:

$HClO + H_2O \leftrightarrow H_3O^+ + ClO^-$



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Dissociation of hypochlorous acid in dependence of the water pH value

The dosing quantity depends on the application as well as the local regulations. In general, the concentration after the injection unit is 0.3 to 2 ppm chlorine equivalent.

Benefits of the electrolysis with Selcoperm

- Safe and reliable method of producing sodium hypochlorite on site
- Common salt is the base material - it is non-toxic, easy to store and easy to handle
- Only water, common salt and electricity are needed for the electrolysis - low operating costs, world-wide use
- Fresh sodium hypochlorite is always on hand and does not dissociate like commercial sodium hypochlorite solutions
- Low formation of chlorate as a by-product
- Less safety requirements than chlorine-gas-based systems
- Lower pH value than commercial sodium hypochlorite reduces scaling of injection units and other components in hard-water areas
- Robust design for easy installation and maintenance
- Long service life, compared with membrane-cell electrolysis

Applications

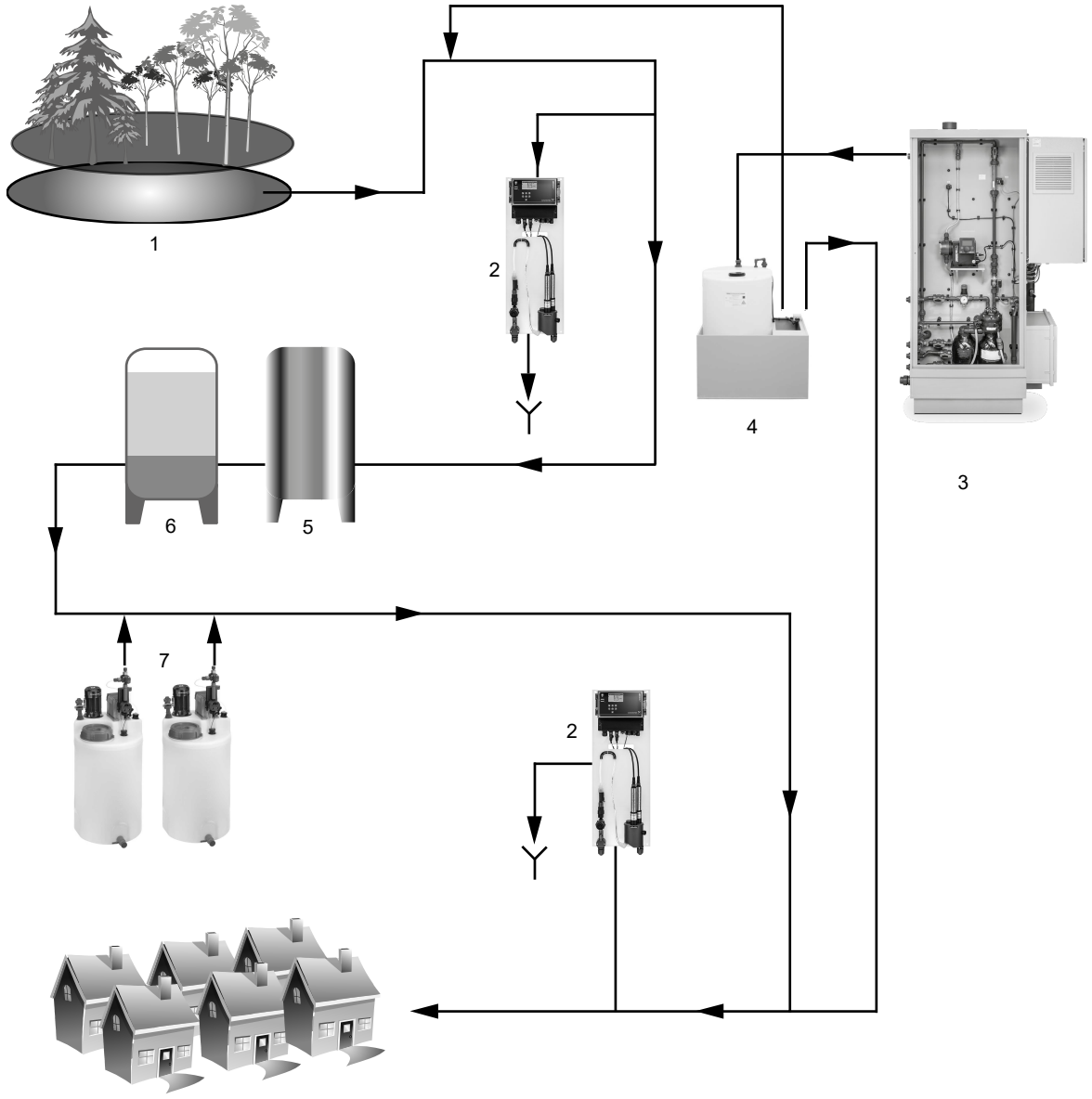
Selcoperm electrolysis systems are typically used for disinfection in the following application fields:

- Drinking water treatment
- Swimming pool water treatment
- Water treatment for industrial processes and cooling towers.

Selcoperm electrolysis systems are an excellent alternative to chlorine gas or commercial sodium hypochlorite applications.

Remark: Legislation on the use of disinfectants in water treatment applications is country-specific. Please contact your local Grundfos sales office for further details on the use of our products in your application and area.

Drinking water treatment



Scheme: Drinking water treatment with Selcoperm

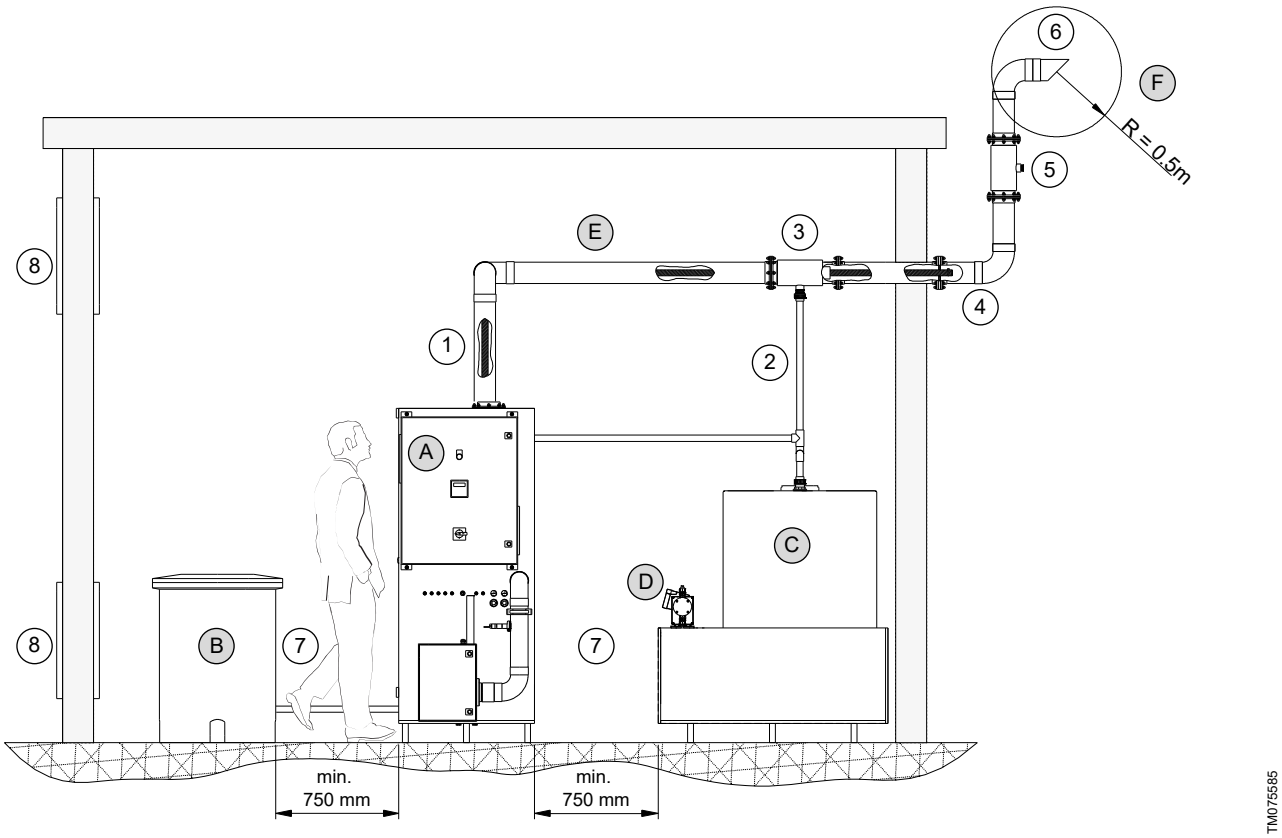
Pos.	Description	Pos.	Description
1	Groundwater	5	Oxidation
2	Measuring system	6	Filtration
3	Selcoperm electrolysis system	7	Chemical conditioning
4	Chemical tank		

2. Selcoperm SES 125-2000 electrolysis system

The Selcoperm SES 125-2000 electrolysis system consists of the Selcoperm electrolyser, a brine tank, a tank for storing the generated sodium hypochlorite (NaClO) solution and ventilation pipework.

The Selcoperm electrolyser is equipped with an internal brine dosing pump, an electrolysis cell, a degassing column for removing hydrogen, an exhaust-air fan with quantitative airflow sensor, a water softening system, a power supply and a control cabinet.

If required, the installation can be rounded off with a measuring and control unit for the dosing of chlorine. The Selcoperm SES 125-2000 electrolysis system is supplied as a turn-key solution, only the water connection, the connections for the brine and NaClO solution storage tanks and the ventilation pipework must be installed.



Pos.	Component	Description
A	Selcoperm electrolyser	The Selcoperm electrolyser comprises: • electrolysis cell • hydrogen degassing column • ventilation system • hydraulic chamber • water softener • brine dosing pump • control cabinet
B	Brine tank	In the brine tank, the brine is prepared and stored. The brine tank has a floater valve for soft-water intake. The size of the brine tank depends on the space available and the salt refilling intervals.
C	NaClO solution storage tank	The NaClO solution storage tank serves as a buffer for maximum loads. The NaClO solution level in the tank is monitored by a level sensor. The tank size depends on the space available and the amount of NaClO solution required as a buffer.
D	Dosing pumps	The dosing pumps dose the NaClO solution to the point of application.
E	Ventilation pipework	The ventilation pipework contains the hydrogen hose that leads the hydrogen to a safe discharge point. The pipework must be adequately supported and without dips. Minimum pipe diameter (OD): 110 mm. Maximum length: 30 m (10 m inside and up to 20 m outside the building). Maximum number of bends: 10.
1	Hydrogen hose	The hydrogen hose is enclosed in the ventilation pipework to ensure the safe removal of hydrogen from the electrolyser up to the centering piece (4) outside the building.
2	Tank degassing line	The tank degassing line is installed above the NaClO solution tank, and guided upwards until the Venturi tee. It must have a minimum diameter of 32 mm (OD).
3	Venturi tee	The Venturi tee, included in the standard delivery, is installed as close as possible to the safe discharge point.

Pos.	Component	Description
4	Centering piece	The centering piece fixes the hydrogen hose in the middle of the ventilation pipework. The centering piece is installed directly outside the building.
5	Airflow measuring piece	The airflow measuring piece is installed outside the building after the centering piece. For regular checking and adjusting the air flow, a handheld airflow measuring device is required.
6	Ventilation pipework outlet	The end of the ventilation pipework must be fitted with a bend or a tee to ensure free air flow. Radius of zone 2 at the discharge point: R = 0.5 m. The ventilation pipework outlet must be installed in a way that the exhaust air cannot accumulate.
7	Free space	Around the Selcoperm electrolyser, enough space should be left free for operation and maintenance work. An on-site drain for the regeneration water of the water softener is required.
8	Building ventilation	Natural ventilation is required at a high and a low level in the room where the electrolyser is installed.

Functioning and control

When the Selcoperm electrolyser (A) is connected to the mains-water supply and the electrical supply, the Selcoperm electrolysis system prepares the sodium hypochlorite (NaClO) solution in a simple batch process. The process is initiated by the level sensor in the NaClO solution storage tank (C).

The mains water flows through the water softener, which is integrated in the Selcoperm electrolyser (A). The softened water is led into the brine tank (B) to produce a saturated brine. The saturated brine is dosed by the internal brine dosing pump and mixed with softened water in a specified proportion. The diluted brine is led into the electrolysis cell inside the Selcoperm electrolyser (A), where it is converted into sodium hypochlorite (NaClO) and hydrogen (H2) by means of direct current from the internal rectifier. The resulting mixture is led through a pipe into the NaClO storage tank (C).

When the sodium hypochlorite solution is generated, hydrogen is produced as a by-product. The Selcoperm electrolyser (A) removes the hydrogen from the sodium hypochlorite solution and leads it safely through the seamless dual ventilation pipework (E) to a safe discharge point outside the building.

The sodium hypochlorite solution can be dosed by dosing pumps (D) directly from the NaClO storage tank (C) to the point of application. It is also possible to pump the sodium hypochlorite solution from the tank (C) into separate storage tanks.

The display on the control cabinet shows faults and their causes, and triggers an alarm via a potential-free contact.

Safety concept

A reliable safety concept for the operation of the whole system is mandatory, because hydrogen is produced as a by-product in the electrolysis cell. Before even entering the internal degassing column (A), most of the hydrogen is led through the hydrogen hose (1) to the outside of the building where it is released into the atmosphere. In the degassing column, the residual hydrogen is separated and led away into the atmosphere as well. An air-dilution fan is fitted to dilute the hydrogen gas to a maximum dilution of 25 % of the LEL (Lower Explosive Limit). The air is blown continually through the electrolysis and degassing chamber and through the dual-contained pipework (E) to prevent local accumulation of hydrogen. An airflow sensor is fitted to shut down the electrolyser in case of a blockage or restriction in the ventilation pipework, or if the sealing cover of the electrolysis and degassing chamber is removed.

The whole Selcoperm SES 125-2000 electrolysis system is monitored permanently. Several sensors ensure a safety shutdown of the whole system in the event of a failure. The safety concept is evaluated with technical report by a third-party expert from TÜV SÜD Product Service GmbH. It ensures safe operation without any additional explosion protection at the installation location.

Unique selling points

- Unique safety concept, evaluated with technical report by a third-party expert from TÜV SÜD Product Service GmbH
- Quantitative airflow: Air is continuously blown through the electrolysis and degassing chamber, which is monitored by a quantitative airflow sensor.
- The electrodes and the hydrogen degassing column are dual-contained to make sure that no hydrogen leaks into the installation room.
- No explosion-proof area is required inside the building.
- Digital dosing pump for precise brine concentration
- Standardised modular system
- Easy maintenance, customised installation and safe operation
- Chemically resistant housing material
- High quality standard: Every Selcoperm electrolyser is checked for 100 % performance and tightness at the factory.
- Optimised degassing column
- NaClO solution with 5 - 6.5 g/l chlorine concentration can be stored for several weeks with minimal degradation.

3. Design and technical data

Selcoperm SES 125-2000 electrolysis system

The following data apply to the overall Selcoperm SES 125-2000 electrolysis system and cover all capacity levels.

Water quality specification

The quality of the supplied water must comply with the values listed below. Ask your local water supplier for the specific values.

Parameter	Value (maximum unless stated otherwise)
Colour	20 mg/l Pt/Co
pH value	6.5 - 10.0
Iron (Fe)	200 µg/l
Manganese (Mn)	20 µg/l
Fluoride (F)	2 mg/l
Turbidity	4 NTU
Max. particle size	100 µm

Salt specification

The quality of the salt must comply with the values listed below. Use food-grade granular or pellet salt (98.5 % NaCl) according to EN 14805 (type 2).

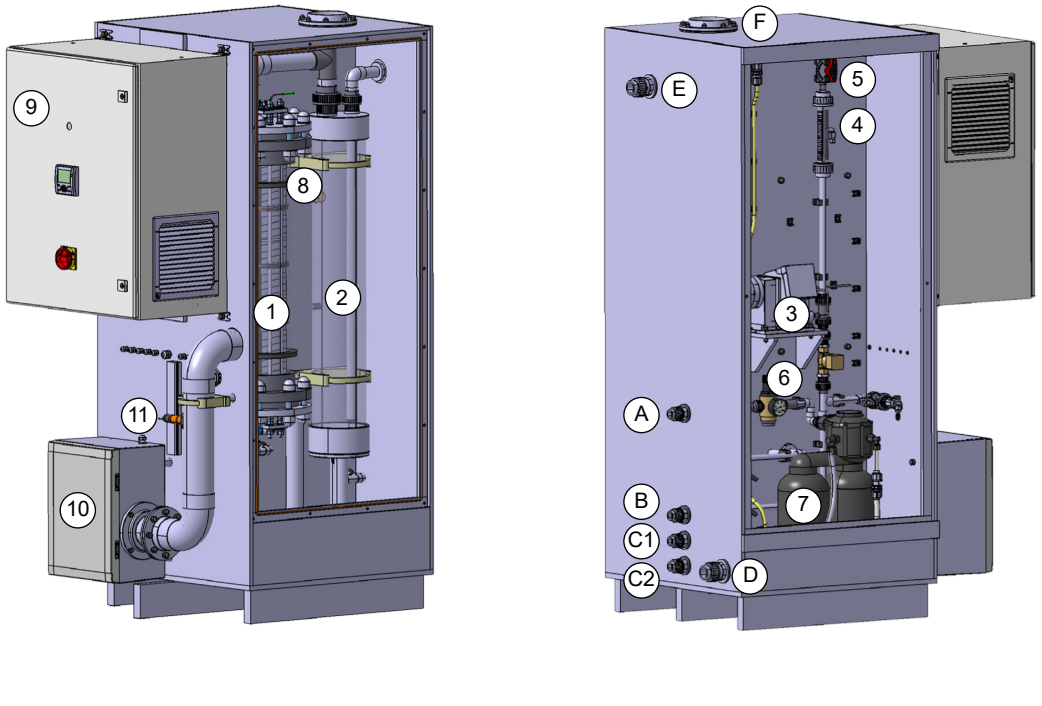
Parameter	Max. mass fraction [mg/kg]
Iron (Fe)	10.0
Manganese (Mn)	10.0
Bromide (Br)	100.0
Calcium (Ca)	100.0
Magnesium (Mg)	100.0

Ambient conditions

Permissible ambient temperatures (min./max)	
Transport *	-10 / +50 °C
Storage *	+0 / +40 °C
Operation	+5 / +40 °C
Max. relative humidity (non-condensing)	80 %
Max. altitude above sea level	2000 m

* System must be drained. For storage temperatures below +5 °C, the whole system including water softener, lines and external components must not contain any water.

Selcoperm electrolyser with control cabinet



Constructional scheme of a Selcoperm electrolyser: front side and back side

Pos.	Component	Description
1	Electrolysis cell	Installed in a separate chamber with air ventilation • Electrolysis cell in a vertical transparent PVC pipe for easy process monitoring and visual electrode check • Electrodes made of titanium carrier material with a very durable catalytic metallic-oxide coating
2	Hydrogen degassing column	The hydrogen degassing column removes the hydrogen via the hydrogen gas outlet, so it cannot get into the NaClO solution storage tank.
3	Brine dosing pump	Digital brine dosing pump with a wide adjustment range for precise dosing of the brine
4	Flowmeter	Flowmeter with switch for process interruption, if the value falls below its critical minimum
5	Water-flow adjustment valve	Water-flow adjustment valve for the reproducible adjustment of the dilution water
6	Pressure reducing valve	Adjustable pressure reducing valve with pressure reading for the water supply
7	Water softener	Continuously operating water softener system for the reduction of the water hardness to below 17.8 mg/l ($CaCO_3$)
8	Level sensor (hydrogen degassing column)	The level sensor makes sure that the electrolysis cell is completely filled with liquid before the process starts.
9	Control cabinet with display	Lockable control cabinet (IP54) with integrated cooling for the high-performance electronics • Display showing system status, amperage, voltage, service hours and airflow rate • Functions: automatic tank refilling, manual system shutdown or remote Off • Error messages: low voltage, high voltage, overtemperature of electrolysis cell, leakage, overtemperature of electronics, ventilation error, water flow error • Potential-free alarm contact
10	Air dilution fan	Forced ventilation in the electrolysis chamber. The produced hydrogen is diluted with air outside the building and sent to a safe discharge point.
11	Airflow sensor	Monitors the air flow required for the dilution of the hydrogen. If the air flow is too small or too big, the integrated sensor stops the Selcoperm system.
A	Mains water inlet	DN 15 (∅20 mm)
B	Soft water outlet	DN 15 (∅20 mm)
C1	Brine inlet for water softener	DN 15 (∅20 mm)
C2	Brine inlet for dosing pump	DN 15 (∅20 mm)
D	Regeneration water outlet	DN 25 (∅32 mm)
E	NaClO solution outlet	DN 25 (∅32 mm)
F	Hydrogen gas outlet	∅110 mm

General data

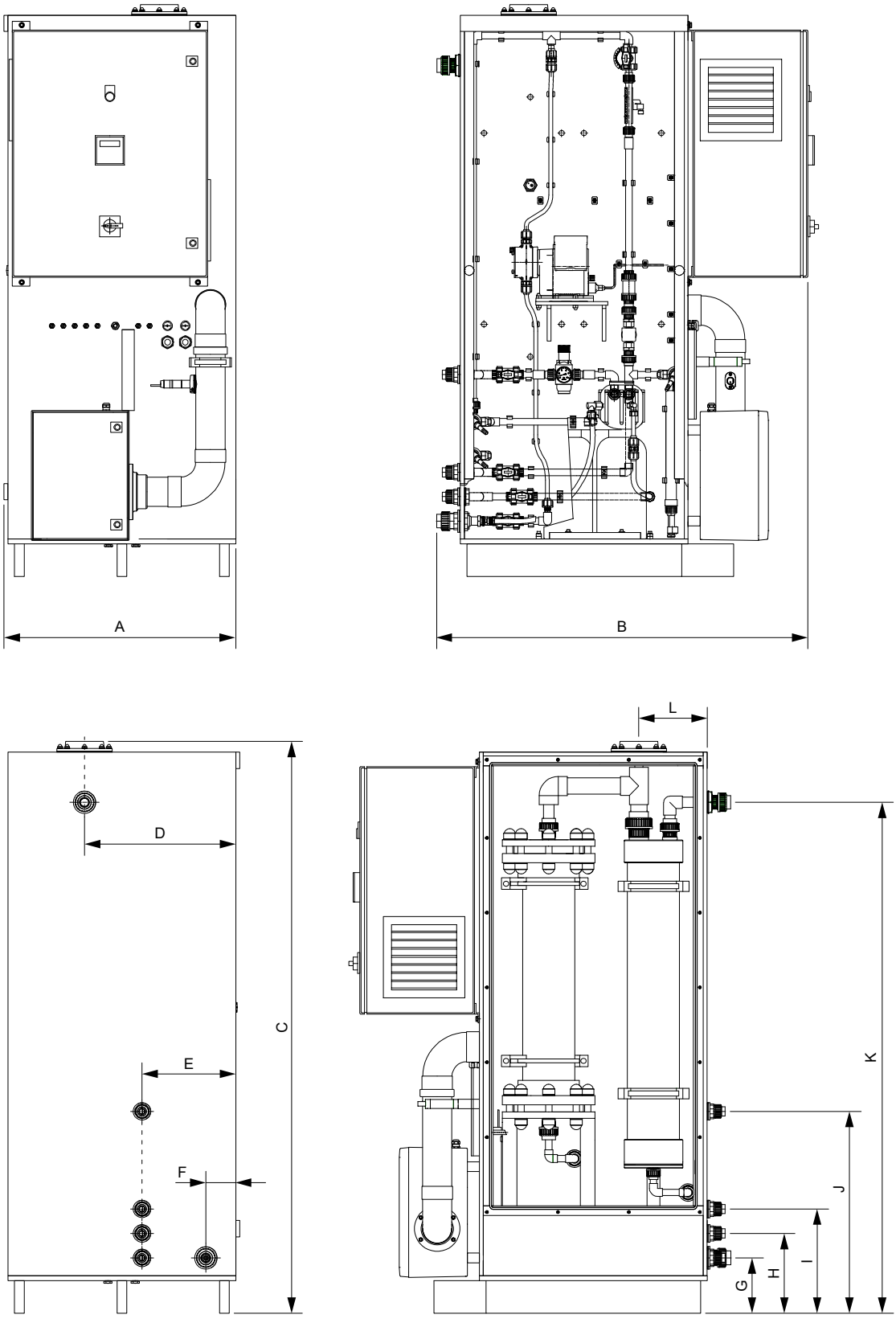
Sodium hypochlorite concentration	5 - 6.5 g/l
Salt consumption	4 - 4.5 kg NaCl per kg of Cl_2 (equivalent)
Power consumption (AC)	Approx. 5.5 - 6.5 kWh per kg of Cl_2 (equivalent)
Water consumption	140-170 litres per kg of Cl_2 (equivalent)
Water inlet pressure	3-10 bar
Water inlet temperature	10-20 °C (for higher or lower temperatures an external chiller or heater is available on request)
Soft water quality for operation	Drinking water quality, softened to 1 °dH / 17.8 ppm $CaCO_3$ and less
Max. pressure inside electrolysis cell	0.2 bar

Capacity level and data

SES type	Capacity level Cl_2 (equivalent)	Max. power consumption	Soft water flow	Brine flow*	Weight	
	[g/h]	[kW]	[l/h]	[l/h]	Empty [kg]	Filled [kg]
SES-125	110	2.2	19	1.7-2.1	206	256
SES-250	220	3.1	38	3.4-4.2	208	258
SES-500	450	4.4	75	6.8-8.2	210	260
SES-1000	900	5.8	140	12-15.5	225	285
SES-2000	1800	9.6	285	24-30	235	295

* The brine flow can be different depending on the saturated brine concentration. It is important to adjust the right salinity.

Dimensions

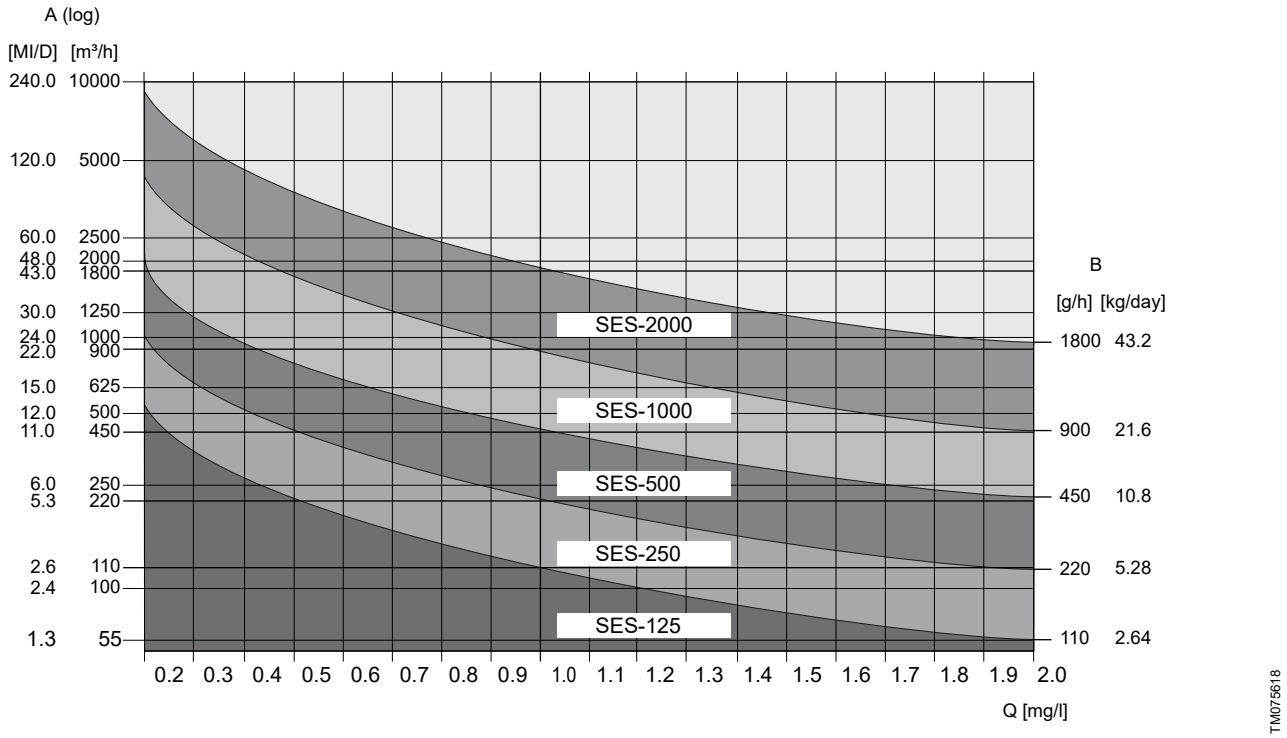


A	B	C	D	E	F	G	H	I	J	K	L
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
712	1138	1755	465	288	92	170	245	320	620	1570	207

Product selection

Product selection diagram

Standard Selcoperm systems are available in five capacity levels. The choice of the system depends on the maximum daily chlorine demand (dosing quantity multiplied by maximum daily water flow rate).



Selcoperm selection diagram

Legend	
A	Water flow rate [MI/D] or [m^3/h]
B	Corresponding chlorine quantity [g/h] or [kg/day]
Q	Dosing quantity [mg/l]

Type key

Example: SES-250-M/G-GB

Type	
SES-250-M/G-GB	
SES	Selcoperm Electrolysis System

Capacity	
SES-**250**-M/G-GB	
125	110 g/h
250	220 g/h
500	450 g/h
1000	900 g/h
2000	1800 g/h

Connection	
SES-250-**M**/G-GB	
M	metric

Supply voltage	
SES-250-M/**G**-G	
G	220-240 V, 50/60 Hz
K	380-415 V, 50/60 Hz

Display language	
SES-250-M/G-**GB**	
GB	English
DE	German
FR	French
ES	Spanish
RU	Russian
PL	Polish

Order data

Generation capacity	Voltage	Frequency	Phase	Max. power consumption	Type designation	Product number
[g/h]	[V]	[Hz]		[kW]		
110	220-240	50/60	1	2.2	SES-125-M/G-DE	99787988
					SES-125-M/G-GB	99788004
					SES-125-M/G-FR	99788052
					SES-125-M/G-RU	99788053
					SES-125-M/G-ES	99788056
					SES-125-M/G-PL	99788057
220	220-240	50/60	1	3.1	SES-250-M/G-DE	99788594
					SES-250-M/G-GB	99788622
					SES-250-M/G-FR	99788635
					SES-250-M/G-RU	99788641
					SES-250-M/G-ES	99788649
					SES-250-M/G-PL	99788669
450	380-415	50/60	3	4.4	SES-500-M/K-DE	99788690
					SES-500-M/K-GB	99788698
					SES-500-M/K-FR	99788715
					SES-500-M/K-RU	99788718
					SES-500-M/K-ES	99788722
					SES-500-M/K-PL	99788724
900	380-415	50/60	3	5.8	SES-1000-M/K-DE	99788725
					SES-1000-M/K-GB	99788729

Generation capacity	Voltage	Frequency	Phase	Max. power consumption	Type designation	Product number
[g/h]	[V]	[Hz]		[kW]		
					SES-1000-M/K-FR	99788730
					SES-1000-M/K-RU	99788732
					SES-1000-M/K-ES	99788734
					SES-1000-M/K-PL	99788735
1800	380-415	50/60	3	9.6	SES-2000-M/K-DE	99788736
					SES-2000-M/K-GB	99788740
					SES-2000-M/K-FR	99788764
					SES-2000-M/K-RU	99788766
					SES-2000-M/K-ES	99788768
					SES-2000-M/K-PL	99788769

Maintenance kits for systems from week 40-2019

Description	Product number
Maintenance kit for SES 125-2000, including a double-ball brine valve for the water softener and a spring-loaded brine injection valve.	99710096
Maintenance kit for SES 125-500, including a brine pump.	97751474
Maintenance kit for SES 1000-2000, including a brine pump.	97751510
Maintenance kit for SES 125-2000, including O-rings and gaskets.	98531493

Brine tank

For production and storage of a saturated salt solution.

- Material: Polyethylene (PE-LLD)
- With floater valve at the water inlet
- With gravel bed

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Order data

Salt capacity [kg]	Diameter [mm]	Height [mm]	Weight [kg]		Connections [mm]		Product number
			Tank and gravel	Total *	Inlet	Outlets	
150	500	740	36	250	20	2 x 20	95714317
300	550	1020	73	470	20	2 x 20	95714318
500	770	1030	112	810	20	2 x 20	95714319
1000	1050	1040	231	1630	20	2 x 20	95714320

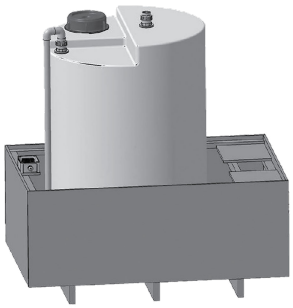
* Filled with gravel, salt and water

NaClO solution storage tank

NaClO solution storage tank with collecting tray

For storage of sodium hypochlorite solution.

- Tank material: Polyethylene (PE-LLD)
- Collecting tray material: Polypropylene
- Integrated float switch
- Electrical connection box for easy connection of level sensor and float switch with Selcoperm
- With overflow pipe
- With union nut connection for level sensor (included in Selcoperm system)



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Order data

Tank volume	Connections		Collecting tray			Total height [mm]	Weight [kg]		Product number
[l]	Inlet [mm]	Outlets [mm]	Height [mm]	Width [mm]	Depth [mm]		Empty	Filled	
300	32	2 x 25	500	1180	790	1218	60	350	98028290
500	32	2 x 25	590	1300	910	1368	81	560	95732608
1000	32	2 x 25	680	1600	1200	1448	134	1100	98028286
2 x 500	32	2 x 25	670	2150	915	1503	143	1150	98028287

Large NaClO solution storage tank without collecting tray

For storage of sodium hypochlorite solution.

- Material: Polyethylene (PE-LLD)
- With float switch
- Connection box for easy connection with Selcoperm.

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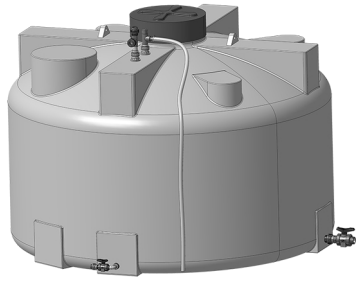
Order data

Tank volume [l]	Diameter [mm]	Height [mm]	Length [mm]	Weight (empty) [kg]	Connections		Product number
					Inlet [mm]	Outlet [mm]	
2000	1300	1400	1700	66	32	40	98028288
3000	1500	1600	1900	92	32	40	98028289

Large NaClO solution storage tank for 5000 l

For storage of sodium hypochlorite solution.

- Material: Polyethylene (PE-LLD)
- With float switch
- Connection box for easy connection with Selcoperm.



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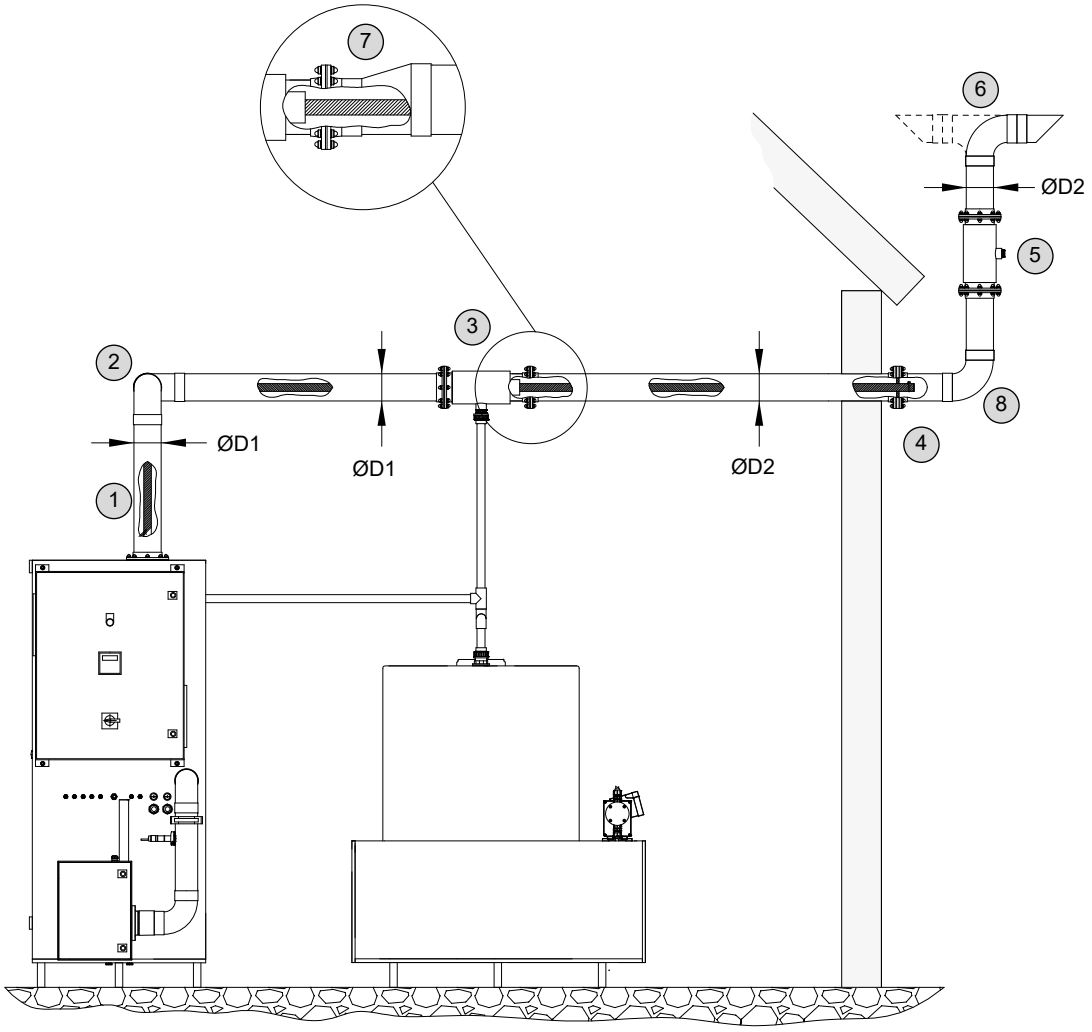
Order data

Tank volume [l]	Diameter [mm]	Height [mm]	Weight (empty) [kg]	Connections		Product number
				Inlet [mm]	Outlet [mm]	
5000	2250	1700	137	32	40	95732696

Ventilation pipework



DN 100 ventilation pipework

Dimensions D1 and D2: 110 mm outer diameter (OD)

Ventilation pipework for installation of 10 m inside and 10 m outside the building.

Pos.	Component		Dimensions	Product number
1	Hydrogen hose (ID 25 mm,PVC-U)		10 m	Included in Selcoperm system
2	Bend (90°, PVC-U)	Don't use elbows	110 mm (D1)	99944576
3	Venturi tee (PVC-U)		110 mm (D1)	Included in Selcoperm system
4	Hydrogen hose centering piece (PVC-U, PVC transparent)		110 mm (D2)	Included in Selcoperm system
5	Airflow measuring piece (PVC-U)		110 mm (D2)	Included in Selcoperm system
6	Ventilation line outlet with bird protection (PVC-U)	Bend with one outlet and bird protection	110 mm (D2)	99670704
		Tee piece with two outlets and bird protections	110 mm (D2)	99670733
8	Bend (PVC-U)	Don't use elbows	110 mm (D2)	99944576

DN 115 ventilation pipework

Dimensions: D1: 110 mm (OD); D2: 125 mm (OD)

Ventilation pipework for installation of 10 m inside and 10-20 m outside the building. For the installation of more than 10 m outside building, after the venturi tee (3) an adapter (7) and DN 115 pipes are required.

Pos.	Component		Dimensions	Product number
1	Hydrogen hose (ID 25 mm,PVC-U)		10 m	Included in Selcoperm system
2	Bend (90°, PVC-U)	Don't use elbows	110 mm (D1)	99944651
3	Venturi tee (PVC-U)		110 mm (D1)	Included in Selcoperm system
4	Hydrogen hose centering piece (PVC-U, PVC transparent)		125 mm (D2)	99689422
5	Airflow measuring piece (PVC-U)		125 mm (D2)	99688912
6	Ventilation line outlet with bird protection (PVC-U)	Bend with one outlet and bird protection	125 mm (D2)	99670712
		Tee piece with two outlets and bird protections	125 mm (D2)	99670735
7	Adapter D110/D125	Directly after the venturi tee in flow direction	110 mm (D1) 125 mm (D2)	99670739
8	Bend (PVC-U)	Don't use elbows	125 mm (D2)	99944651

Contact Grundfos for guidance regarding installations different to the above drawing.

4. Accessories

Selcoperm test kit

Test kit for Selcoperm SES, comprising:

- Measuring cylinder
- Total hardness test for determination of the water hardness
- Thermometer
- Titration set for measurement of the chlorine concentration in the sodium hypochlorite solution

TM076024

Order data

Description	Product number
Selcoperm test kit	98842487

Handheld conductivity measuring device

- Long-lasting 2-pole graphite measuring cell
- Display showing total dissolved solids (TDS), salinity and temperature alternatively
- Automatic temperature compensation
- Low current consumption
- Adjustable

TM075582

Technical data

Measuring ranges	Conductivity	0.0 to 100.0 mS/cm
	Temperature	-5.0 to +100 °C
Accuracy	Conductivity, TDS, salinity	± 0.5 % of reading, ± 0.5 % of full scale
	Temperature	± 0.3 K
Power supply	Battery (included)	9 V battery, type IEC 6F22
	Power consumption	< 1.5 mA

Order data

Description	Product number
Handheld conductivity measuring device	98842506

Acid cleaning kit

The acid cleaning kit is used for cleaning the electrolysis cell in case of deposits.

TM075581

Order data

Description	Product number
Acid cleaning kit comprising a manual acid cleaning pump with hose	95702377

DIT-L compact photometer

- For quick determination of the concentration of chlorine, chlorine dioxide or ozone as well as the pH in water
- See the DIT-L data booklet for more details.

TM075518

Technical data

Parameter	Measuring range
Chlorine	0.01 - 6 mg/l
Chlorine dioxide	0.02 - 11 mg/l
Ozone	0.02 - 2 mg/l
pH value	6.5 - 8.4 pH

Order data

Description	Product number
DIT-L compact photometer	95727743

Gas warning system

A gas warning system is required for special installations or in case of local requirements at the installation site. Special installations are installations with longer ventilation lines than specified, for example.

For standard installations, a gas warning system for hydrogen gas is not required.

If a gas warning system is required, it must be self-contained and have at least one sensor for each Selcoperm electrolyser. It must provide two potential-free output contacts to shut down the power supply in case of a gas leakage. The contact type must be NC (normally closed) to ensure the shutdown even in case of wire breakage.

Grundfos provides a suitable gas warning system meeting all these requirements:

- Comprehensive display providing the required information at a glance, LEDs showing the status with different colours
- Standalone operation or in interface with alarm devices and control systems using several outputs
- Wall-mounted IP65 control panel with display for up to four gas sensors; ambient temperature up to 55 °C
- Hydrogen sensors for direct calibration on the sensor or by a remote calibration module
- Output connection for one or two audible or visual alarms, 5 A, 24 VDC
- Potential-free contacts, 5 A, 250 VAC (non-inductive) for alarm 1, alarm 2 and fault
- 8 output relays, configurable to different alarms
- Optionally extendable with further relay modules
- Operates with 24 VDC external power supply as a standard. Optionally, a version including an internal power module for 230 VAC power supply internal power module for 110-240 VAC, 50/60 Hz, 2 A can be supplied. A local UPS (uninterruptible power supply) is recommended.
- Multi-language PC software to set parameters

TM077254

Gaswarning system and sensors

Order data

Description	Product number
Gas warning controller 4-channel 24 V DC	99393814
Gas warning controller 4-channel 230 V AC	99923303
Hydrogen sensor for local calibration, range 0-100 % LEL	98865626
Hydrogen sensor for remote calibration with additional module, range 0-100 % LEL	98865627
Calibration gas 2 % necessary for commissioning, bottle with regulating valve (local legislation may restrict shipping)	98865629
Combined audible and visual alarm, 24 VDC	98037506

5. Service

Grundfos offers the following additional services:

Order data

Description	Product number
Installation of Selcoperm SES 125-2000	99708386
Installation supervision of Selcoperm SES 125-2000	99708388
Pre-commissioning check of Selcoperm SES 125-2000	99708389
Commissioning of Selcoperm SES 125-2000	99708391
Regular maintenance of Selcoperm SES 125-2000	99708396
Inspection of Selcoperm SES 125-2000	99708400
Training for Selcoperm SES 125-2000	99708399

For the full range of service kits and spare parts, see the service kit catalogue: • http://net.grundfos.com/qr/i/96488862_23

6. Grundfos Product Center

Online search and sizing tool to help you make the right choice.
http://product-selection.grundfos.com

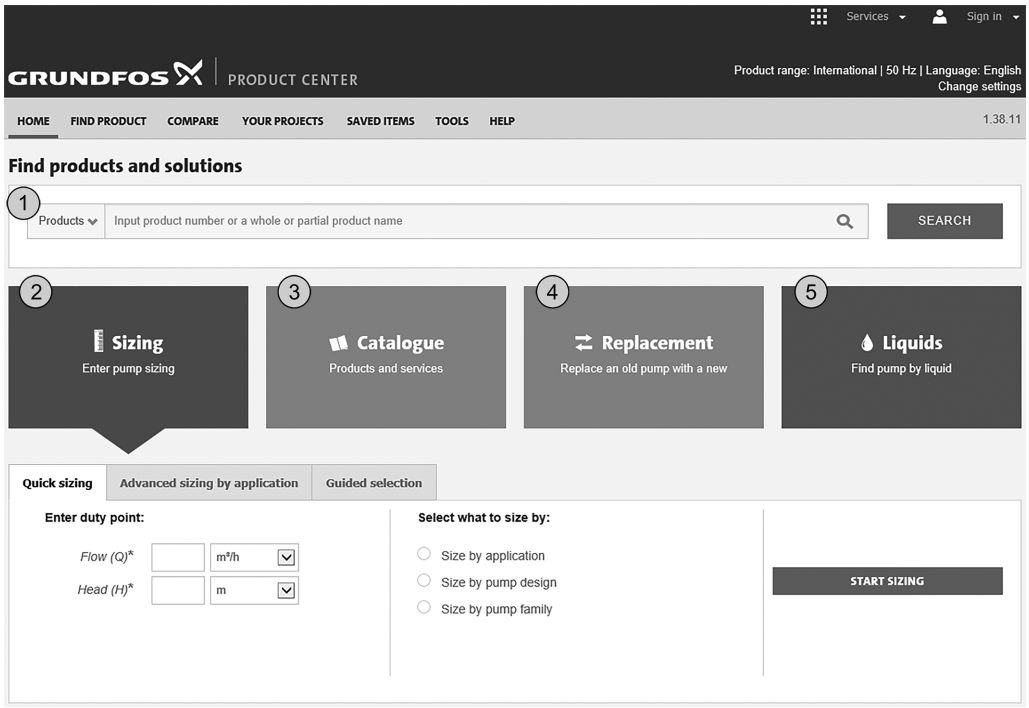
All the information you need in one place

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

Downloads

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

TM070461



TM070462-1

Pos.	Description
1	This drop-down menu enables you to set the search function to "Products" or "Literature".
2	**SIZING** enables you to size a pump based on entered data and selection choices.
3	**CATALOGUE** gives you access to the Grundfos product catalogue.
4	**REPLACEMENT** enables you to find a replacement product. Search results will include information on • the lowest purchase price • the lowest energy consumption • the lowest total life-cycle cost.
5	**LIQUIDS** enables you to find pumps designed for aggressive, flammable or other special liquids.

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