



**BECOME A
WATER
EXPERT!**

Systems

Catalogue 2023

grünbeck

Available
from Monday to Thursday
7:00 am - 6:00 pm
on Friday
7:00 am - 4:00 pm

International Sales
☎ +49 9074 41-145
systeme@gruenbeck.de

Technical Service
☎ +49 9074 41-333
service@gruenbeck.de

Grünbeck
Wasseraufbereitung
GmbH
Josef-Grünbeck-Str. 1
89420 Hoechstädt
GERMANY

☎ +49 9074 41-0
☎ +49 9074 41-100

info@gruenbeck.com
www.gruenbeck.com

Our General Terms and Conditions:



www.gruenbeck.com/general-terms-and-conditions

Grünbeck water treatment – more than 70 years of experience



For more than 70 years now, Grünbeck Wasseraufbereitung has been one of the most renowned companies for water treatment in household, trade and industry in Europe. All around the globe, our customers trust in our expertise when it comes to ideal water qualities. The company's headquarters are located in the Bavarian city of Hoechstädt/Donau, approximately 100 km west of Munich, where all of Grünbeck's products are manufactured – high-class German workmanship with high standards of quality. We have a tight net of sales and service locations in Europe and thus not only ensure the proximity to our customers, but also have quick response times.

Grünbeck offers the entire spectrum of water treatment for drinking water installations and industrial applications. Our product range covers filtration, softening and corrosion protection up to disinfection and pure water generation. Furthermore, Grünbeck also is in the position to offer an ideal solution for the treatment of heating water.



Grünbeck Forum
at headquarters in Hoechstädt, Germany

Catalogue 2023 | Systems - Edition 1.0

Valid from January 1, 2023. The information in this catalogue supersedes all previous information. For our additional product range, please refer to our separate catalogues. All sales are always subject to the currently valid Standard Terms of Sale and Delivery of the country in which the respective order is placed and processed (as per order confirmation). For these Standard Terms of Sale and Delivery, go to www.gruenbeck.com. As product availability varies from country to country, please address your Grünbeck representative for respective details, if required. Descriptions and illustrations in this catalogue are approximate and non-binding. Photographs may show products with special features or accessories that are not included in the standard product version. Grünbeck reserves the right to modify the products and deviate from the descriptions to the extent to which such modifications are reasonable and do not change the value of the product. The regulations and directives indicated in this catalogue refer to either European or German standards.

Subject to modifications and errors.

Field of application

Fine Filters, Backwash Filters
Softening Trade/Industry

Product

Parallel piping
Water softeners **Delta-p/Delta-p-I** "industrial version"
Parallel piping, cascade connection for parallel piping
Water softeners **Delta-p** and **Delta-p-I** mounted on pedestal
Warm water softeners **GENO-mat**
Water softeners **GENO-mat ZF/WF**
Water softeners **GENO-mat duo WE-X** and accessories for softening
Water softeners **softliQ:XLA**
Brine bins, brine dosing tanks
Water softener **softliQ:MD12**
GENO-activated carbon filter AKF
Reverse osmosis systems **GENO-OSMO RO 125K/AVRO 125**
Reverse osmosis system **GENO-OSMO AVRO 125 RU**
Mobile reverse osmosis system **AVRO-flex 400**
Reverse osmosis systems **GENO-OSMO-X/HLX**
Reverse osmosis systems **osmoliQ:LB**
Reverse osmosis systems **GENO-RK-X**
Accessories for reverse osmosis systems, blending units, emergency bypass
Hardness stabilisation, pretreatment of raw water
GENO-OSMO-X permeate stage
Electrodeionisation systems **GENO-EDI-X**
GENO-membrane degassing system/NaOH dosing upstream of **GENO-OSMO-X** and **osmoliQ:LB** systems
Compressor
Sterile water filters and add-on parts for loop
Ion selector NANO-X
Pure water tanks
Pressure booster systems
System configuration of rack-mounted modular systems/add-on systems
Flexible rack-mounted modular system **GENO-SKID**
Mixed bed cartridges **desaliQ:BA** and **desaliQ:PA**, accessories for mixed bed cartridges **desaliQ**
GENO-UV systems
Dosing systems **GENODOS DM-T**
Dosing systems **GENO-Baktox** and **GENODOS DM-B**
Dosing systems **GENODOS DM-BO** with online measurement and disinfectants
Chlorine dioxide generation systems **GENO-Baktox MRX/RX/X** and accessories
Ultrafiltration systems **ultraliQ:SB/MA**
Filter systems **filtraliQ**
Oxidation filter systems **fermaliQ:MA**
Automatic salt reduction systems **GENO-KWA**
Filter systems **GENO-mat F**
UV disinfection **GENO-UV KWA**
Compact air washer system **GENO-LUWADES₂**
Dosing systems **GENODOS DM/BZ**
Cooling water dosing agents
Partial flow filter **GENO-VARIO 3000**, dosing agents
Dosing pumps **GENODOS GP**, deacidification dosing for modular systems **neutra**
Contact water meters
Suction lances/Dosing tanks/Chemical spill trays
Hardness control measuring device **softwatch** and residual hardness monitoring system **GENO-control**
Corrosion measuring section and water test kits
Water test kits, water sample coolers and analysis cases
Reverse osmosis system **GENO-OSMO-X**, reverse osmosis system **osmoliQ:LB**, water softener **Delta-p-I**
Water softener **Delta-p 2"**
Reverse osmosis system **GENO-OSMO-RO 2250**
Reverse osmosis system **RKF-X 3000** on mobile system rack
Mobile system for residual softening
Reverse osmosis system **GENO-OSMO-RO 18000**

Membrane Technology

Hygiene and Disinfection

Water Supply

Cooling Water

Heating Water Dosing Technology

Water Monitoring

Systems for Rental Purchase

Systems for Rent

Commissioning and Maintenance Index

Page

4
5 – 6
7
8
9
10 – 11
12 – 14
15 – 17
18
19 – 20
21
22
23
24
25 – 27
28 – 29
30
31 – 32
33
34
35
36
37
38
39
40 – 44
45 – 46
47
48
49 – 50
51 – 54
55
56
57
58 – 59
60 – 61
62 – 63
64 – 65
66 – 67
68
69
70
71
72 – 73
74 – 76
77
78
79
80
81
82
83
84 – 85
86
87
88
89
90
91 – 92
93 – 100

Fine Filters
Backwash Filters

Softening
Trade/Industry

Membrane Technology

Hygiene and Disinfection

Water Supply

Cooling Water

Heating Water

Dosing Technology

Water Monitoring

Systems for Rental Purchase

Systems for Rent

Commissioning and
Maintenance

Index
Systems



Piping for fine filters



Piping for fine filters

Parallel piping

For pureIQ fine filters, BOXER X and GENO-backwash filters MX/MXA

Brass piping with 4 manual shut-off valves, starting with a T-manifold (inlet) and ending with a T-manifold (outlet). Either completely pre-assembled or delivered as individual components without pre-assembly, fine filter/backwash filter **not included**.

Technical specifications

- Max. temperature 20 °C
- Max. operating pressure 10 bar

Brass piping		Order no.	Order no.
Main pipe [DN]	Filter connection [R]	incl. pre-assembly	without pre-assembly
Brass piping with brass valves			
40	1"	552 005	552 030
50	1¼"	552 010	552 035
50	1½"	552 015	552 040
80 ¹	2"	552 020	552 045

¹ Piping made of PVC, valves made of brass

Parallel piping

For GENO-fine filters FME/FM and GENO-backwash filters MX/MXA

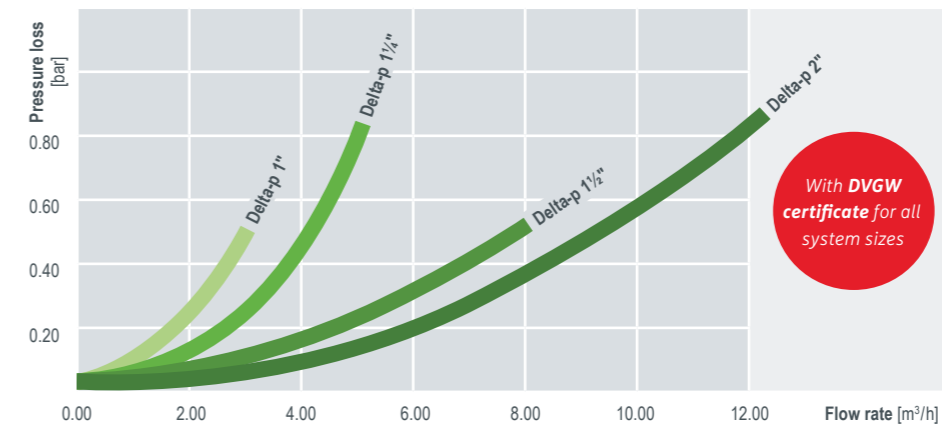
PVC piping with 4 manual shut-off valves as intermediate flaps with locking lever, starting with a T-manifold (inlet) and ending with a T-manifold (outlet). Either completely pre-assembled or delivered as individual components without pre-assembly, fine filter/backwash filter **not included**. For piping material made of PE or PP, please inquire.

Technical specifications

- Max. temperature 20 °C
- Max. operating pressure 10 bar

PVC piping		Order no.	Order no.
Main pipe [DN]	Filter connection [DN]	incl. pre-assembly	without pre-assembly
PVC piping with intermediate flaps			
80	50	552 200	552 230
100	65	552 201	552 231
100	80	552 205	552 235
125	80	552 210	552 240
150	100	552 215	552 245
200	150	552 220	552 250

Water softeners for trade and industry



Triple water softeners Delta-p

Water softeners based on the ion exchange principle have been regarded as the tried and tested standard for many years now and have essentially been used to date in large residential buildings, building complexes and industrial applications which consume large volumes of water. Pressure losses caused by the softening and the extremely costly and time-consuming installation and dimensioning of the systems, however, always proved to be disadvantageous. With the triple water softener **Delta-p**, Grünbeck Wasseraufbereitung GmbH has developed a completely innovative solution to these problems. The patented control valve of the triple water softener **Delta-p** guarantees the interruption-free supply of soft water with only a minimum loss of pressure.

Triple softening

Thanks to the outstanding advantages it offers, the **Delta-p** series impresses dealers, trade and builders alike. As a triple water softener, it continuously provides soft water and also sets new standards with its low pressure loss and extremely economic level of resource consumption. The fresh water

guarantee whereby the tank content is automatically rinsed before activation of the exchanger tank which is on standby ensures hygienic operation. The selection of the system size is based on the dimension of the pipes laid in the building, therefore extensive calculations of capacity and peak volume flows become superfluous. Illustrated instructions facilitate assembly. Thanks to the electronically controlled blending unit, setting the required residual hardness becomes child's play.

The **Delta-p** is available in the sizes 1", 1¼", 1½" and 2", for either drinking water or industrial applications. A pre-alarm salt supply can additionally be connected to prompt users to refill the salt dissolving tank in good time. Apart from the standard salt dissolving tanks with a regeneration salt supply of max. 65 or 180 kg, larger salt dissolving tanks are also available. Connection kits with shut-off valves, overflow valve and flexible connection hoses are available for convenient connection to the drinking water installation. All connection hoses are suitable for drinking water and are approved in accordance with KTW category A and W270.



Water softeners Delta-p

Fully automatic triple water softeners based on the ion exchange principle for the generation of fully/partially softened water, with volume-controlled regeneration

3 exchanger tanks made of pressure-resistant plastic with a filling of ion exchanger material, distribution system and adjustable height adapters, central control valve made of dezincification-free brass for hard, soft and regeneration water, microprocessor controller with simple 3-key operation and voltage-free signal contact and additional fault signal contact, 5 contact water meters (the industrial version only has 4) to transmit the water flow rates to the controller, electronically-controlled blending unit, disinfection unit for automatic disinfection according to the electrolysis principle, PE salt dissolving tank with lid, sieve bottom and special brine valve, including operation manual.

Water softeners Delta-p-I “industrial version”

As above, without the blending unit, however, for the generation of fully softened water < 0.1 °dH (< 0.02 mmol/l), intrinsically safe system (may be connected directly to the drinking water installation).

Technical specifications

- Max. water temperature 30 °C
- Power supply 230 V, 50/60 Hz
- Nominal pressure PN 10
- Operating pressure min. 2 bar/max. 10 bar
- Operating voltage 24 V

Delta-p/Delta-p-I	1"	1¼"	1½"	2"
Nominal connection diameter [DN]	25	32	40	50
Nominal flow [m³/h] ¹	3	5	8	12
Nominal flow blending water [m³/h] ²	5	8.3	13.3	20
Pressure loss at nominal flow [bar]	0.5	0.8	0.5	0.8
Capacity per kg of regeneration salt [mol/kg]	5.7	5.7	5.7	5.7
Regeneration salt supply [kg] ³	65	65	180	180
Salt consumption per regeneration approx. [kg]	1.5	2.5	5.2	7.2
Order no. Delta-p	185 100	185 110	185 120	185 130
Order no. Delta-p-I	185 200	185 210	185 220	185 230

¹ The maximum flow decreases in case of high raw water hardness (> 20 °dH (> 3.5 mmol/l)).

² In case of a raw water hardness of 20 °dH (3.5 mmol/l) and a blending hardness of 8 °dH (1.4 mmol/l) (not Delta-p-I).

³ For larger salt dissolving tanks, please refer to page 8 (accessories).



Parallel piping and cascade connection of Delta-p (quadruple)

Softening
Trade/Industry

Parallel piping

For Delta-p/Delta-p-I

Parallel piping (Tichelmann piping) of two or several triple water softeners, including all the necessary connection pieces and connection kits.

Technical specifications

- Max. water temperature 30 °C
- Nominal pressure PN 10

Delta-p/Delta-p-I	2 x 1"	2 x 1¼"	2 x 1½"	2 x 2"	3 x 2"	4 x 2"
Nominal connection diameter [DN]	40	50	65	80	100	125
Nominal flow ¹ version "I" [m³/h]	2 x 3 = 6	2 x 5 = 10	2 x 8 = 16	2 x 12 = 24	3 x 12 = 36	4 x 12 = 48
Nominal flow ² version with overflow valve [m³/h]	2 x 5 = 10	2 x 8.3 = 16.6	2 x 13.3 = 26.6	2 x 20 = 40	3 x 20 = 60	4 x 20 = 80
Weight of stainless steel piping approx. [kg]	20	21	58	63	110	162
Weight of PVC piping approx. [kg]	17	18	51	55	96	145

Parallel PVC piping

Order no. Delta-p	185 450	185 455	185 460	185 465	185 470	185 475
Order no. Delta-p-I	185 450.10	185 455.10	185 460.10	185 465.10	185 470.10	185 475.10

Parallel stainless steel piping

Order no. Delta-p	185 400	185 405	185 410	185 415	185 420	185 425
Order no. Delta-p-I	185 400.10	185 405.10	185 410.10	185 415.10	185 420.10	185 425.10

¹ The maximum flow decreases in case of high raw water hardness (> 20 °dH (> 3.5 mmol/l)).

² In case of a raw water hardness of 20 °dH (3.5 mmol/l) and a blending hardness of 8 °dH (1.4 mmol/l).

Cascade connection for parallel piping Delta-p

When using several Delta-p water softeners in parallel, shortfalls in the soft water withdrawal due to the consumption behaviour on site cannot be excluded.

The controllers of the water softeners feature a flow detection. Thus, additional water softeners can be switched on or off via a dynamic control circuit in case of increasing or decreasing flow rates. The master system is changed after each regeneration.

Cascade connection for Delta-p	2 x 1"	2 x 1¼"	2 x 1½"	2 x 2"	3 x 2"	4 x 2"
Order no.	185 360	185 360	185 365	185 365	185 370	185 375

Water softeners and parallel piping are not included in the price.



Delta-p 2" on pedestal



Connection kit Delta-p 1 1/2" - 2", installation length 260 mm

Water softeners Delta-p/Delta-p-l

Mounted on pedestal and ready for connection

Triple water softeners as described on pages 5, 6 and 7 – mounted on pedestal, incl. connection kit.

Delta-p/Delta-p-l	1"	1 1/4"	1 1/2"	2"
Dimensions (w x h x d) [mm] ¹	770 x 1,500 x 770	770 x 1,500 x 770	960 x 1,840 x 880	960 x 1,960 x 880
Diameter of salt dissolving tank [mm] ²	410	410	570	570
Height of salt dissolving tank [mm] ²	670	670	860	860
Regeneration salt supply [kg] ³	65	65	180	180
Order no. Delta-p	185 105	185 115	185 125	185 135
Order no. Delta-p-l	185 205	185 215	185 225	185 235

¹ Dimensions without salt dissolving tank.

² Salt dissolving tank not mounted on pedestal.

³ For larger salt dissolving tanks, please refer to accessories below.

Accessories Delta-p	Order no.
Connection kit Delta-p 1" - 1 1/4" installation length 190 mm ¹	185 807
Connection kit Delta-p 1 1/2" - 2" installation length 260 mm ¹	185 823
Connection kit Delta-p-l 1" - 1 1/4" installation length 190 mm ¹	185 808
Connection kit Delta-p-l 1 1/2" - 2" installation length 260 mm ¹	185 824
Pedestal Delta-p 1" - 1 1/4" (also for Delta-p-l)	185 820
Pedestal Delta-p 1 1/2" - 2" (also for Delta-p-l)	185 825
Mechanical blending for Delta-p 1" - 1 1/4"	185 385
Mechanical blending for Delta-p 1 1/2" - 2"	185 395
Upgrade kit quality-controlled blending unit	
For the generation of a defined residual soft water hardness in case of fluctuating raw water hardness, only applicable for Delta-p water softeners	
Upgrade kit 1" - 1 1/4"	189 511
Upgrade kit 1 1/2" - 2"	189 512
Pre-alarm salt supply (infrared light sensor for GENO-mat duo WE-X and Delta-p series)	185 335
Communication module DE200 Profibus	185 890
Drain connection DN 50 according to DIN EN 1717 including siphon for Delta-p ²	185 775
Surcharge for 210 l salt dissolving tank (1" + 1 1/4")	185 875
Surcharge for 750 l salt dissolving tank (Delta-p 1 1/2" + 2")	185 880

¹ Screw connection not included.

² Can be used for all sizes.

Note: For additional accessories, please refer to pages 13 and 14.



Water softener GENO-mat ZFW



Water softener GENO-mat duo WEW-X

Softening
Trade/Industry

Warm water softeners GENO-mat

Fully automatic water softeners working according to the principle of ion exchange

ZFW – Single system with timer-controlled regeneration

WFW – Single system with volume-controlled regeneration

duo WEW-X – Twin system with central control valve and volume-controlled regeneration

Consisting of: Salt dissolving tank made of PE with lid and sieve bottom, special brine valve with connecting line – enables maximum continuous flows, warm water-resistant, stainless steel exchanger tank, ion exchanger filling and distribution system, control valve made of red brass, warm water-resistant contact water meter (only for WFW and duo WEW-X).

Technical specifications

- Full salting for residual hardness of ≤ 0.1 °dH (≤ 0.02 mmol/l)
- Max. water temperature 80 °C
- Nominal pressure PN 10
- Power supply 230 V, 50/60 Hz
- Operating pressure min. 2 bar/max. 8 bar
- Operating voltage 24 V

GENO-mat	ZFW 65	ZFW 150	WFW 65	WFW 150	duo WEW-X 65	duo WEW-X 150
Nominal connection diameter [DN]	25 male	25 male	25 male	25 male	25 female	25 female
Peak flow [m ³ /h]	2.0	3.0	2.0	3.0	2.0	3.0
K _V valve $\Delta p = 1.0$ bar [m ³ /h]	2.8	2.9	2.7	2.8	2.6	2.7
Nominal capacity [mol]	12.0	26.6	12.0	26.6	12.0	26.6
Regeneration salt supply [kg]	130	190	130	190	130	190
Salt consumption/regeneration [kg]	4.1	8.2	3.6	8.0	3.6	8.0
Order no.	181 120	181 170	182 110	182 130	184000010000	184000020000



Water softener GENO-mat ZF

Water softeners GENO-mat ZF

Fully automatic single water softener working according to the principle of ion exchange, with timer-controlled regeneration

Consisting of: PE salt dissolving tank with lid and sieve bottom, special brine valve with connecting line – enables maximum continuous flows, exchanger tank made of pressure-resistant plastic with ion exchanger filling and distribution system, control valve made of red brass.

Technical specifications

- Full salting for residual hardness ≤ 0.1 °dH (≤ 0.02 mmol/l)
- Water temperature 30 °C
- Nominal pressure PN 10
- Power supply 230 V, 50 Hz
- Operating pressure min. 2 bar/max. 8 bar
- Operating voltage 24 V

GENO-mat ZF	65	150	300	450	750
Nominal connection diameter [DN]	25 male	25 male	25 male	40 female	40 female
Peak flow [m ³ /h]	2.0	3.0	5.0	6.0	9.5
K _V value $\Delta p = 1.0$ bar [m ³ /h]	2.8	2.9	3.5	5.0	6.8
Nominal capacity [mol]	12.0	26.6	53.9	80.2	133.2
Regeneration salt supply [kg]	130	190	285	485	760
Salt consumption/regeneration [kg]	4.1	8.2	16.3	27.3	42.2
Order no.	181 100	181 150	181 200	181 250	181 300



Water softener GENO-mat WF

Technical specifications

- Full salting for residual hardness ≤ 0.1 °dH (≤ 0.02 mmol/l) (GENO-mat WF 65, 150, 300, 450, 750)
- Economy salting for residual hardness ≥ 2.0 °dH (≥ 0.35 mmol/l) (GENO-mat WF 50, 130, 230, 330, 530)
- Nominal pressure PN 10
- Operating pressure min. 2 bar/max. 8 bar
- Water temperature 30 °C
- Power supply 230 V, 50/60 Hz
- Operating voltage 24 V

Softening
Trade/Industry

Water softeners GENO-mat WF

Fully automatic single water softener working according to the principle of ion exchange, for the generation of fully softened water, with volume-controlled regeneration

Consisting of: PE salt dissolving tank with lid and sieve bottom, special brine valve with connecting line – enables maximum continuous flows, exchanger tank made of pressure-resistant plastic with ion exchanger filling and distribution system, control valve made of red brass, microprocessor controller with simple 3-key operation with voltage-free fault signal contact, contact water meter with water meter screw connections.

GENO-mat WF (full salting)	65	150	300	450	750
Nominal connection diameter [DN]	25 male	25 male	25 male	40 female	40 female
Peak flow [m ³ /h]	2.0	3.0	5.0	6.0	9.5
K _V value $\Delta p = 1.0$ bar [m ³ /h]	2.7	2.8	3.3	4.9	6.4
Nominal capacity [mol]	12.0	26.6	53.9	80.2	133.2
Regeneration salt supply [kg]	130	190	285	485	760
Salt consumption/regeneration [kg]	3.6	8.0	16.2	25.3	40.0
Order no.	182 100	182 120	182 140	182 160	182 180

Fully automatic single water softener working according to the principle of ion exchange, particularly suited for the generation of partially softened water, with blending valve (option), with volume-controlled regeneration, economy salting for residual hardness of ≥ 2.0 °dH (≥ 0.35 mmol/l), with integrated disinfection device working according to the electrolysis principle.

GENO-mat WF (economy salting)	50	130	230	330	530
Nominal connection diameter [DN]	25 male	25 male	25 male	40 female	40 female
Peak flow [m ³ /h] ¹	3.3	5.0	8.3	10.0	15.8
K _V value $\Delta p = 1.0$ bar [m ³ /h] ¹	4.5	4.7	5.5	8.2	10.7
Nominal capacity [mol]	9.5	20.9	42.3	60.0	95.2
Regeneration salt supply [kg]	65	130	190	285	285
Salt consumption/regeneration [kg]	1.8	4.0	8.1	11.5	16.0
Order no.	182 200	182 220	182 240	182 260	182 280

¹ In case of a raw water hardness of 20 °dH (3.5 mmol/l) and a blending hardness of 8 °dH (1.4 mmol/l).

Accessories

Circulation device	Order no.
To reduce the counter-ion effect in case of longer periods of standstill	181 850

Technical specifications

- Full salting for residual hardness of < 0.1 °dH (< 0.02 mmol/l) (GENO-mat duo WE-X 65, 150, 300, 450, 750)
- Economy salting for residual hardness ≥ 2.0 °dH (≥ 0.35 mmol/l) (GENO-mat duo WE-X 50, 130, 230, 330, 530)
- Nominal pressure PN 10
- Operating pressure min. 2 bar/max. 8 bar
- Water temperature 30 °C
- Power supply 85 - 250 V, 50/60 Hz
- Operating voltage 24 V DC



Water softener GENO-mat duo WE-X

Water softeners GENO-mat duo WE-X

Fully automatic twin water softener working according to the principle of ion exchange, for the generation of fully softened water, with volume-controlled regeneration

Consisting of: PE salt dissolving tank with lid and sieve bottom, special brine valve with connecting line – enables maximum continuous flows, exchanger tank made of pressure-resistant plastic with filling of ion exchange resin and distribution system, a central control valve made of red brass, microprocessor controller with simple 3-key operation and voltage-free signal/fault signal contact as well as programmable input. Controller with LCD graphics display (backlit), integrated SD card to register the operating data, contact water meter with water meter screw connections.

GENO-mat duo WE-X (full salting)	65	150	300	450	750
Nominal connection diameter [DN]	25 female	25 female	25 female	40 female	40 female
Max. continuous flow [m³/h]	2.0	3.0	5.0	6.0	9.5
K _v value Δp = 1.0 bar [m³/h]	2.6	2.7	3.1	4.5	5.6
Nominal capacity [mol]	12.0	26.6	53.9	80.2	133.2
Regeneration salt supply [kg]	130	190	285	485	760
Salt consumption/regeneration [kg]	3.6	8.0	16.2	25.3	40.0
Order no.	186 100	186 110	186 120	186 130	186 140

Fully automatic twin water softener working according to the principle of ion exchange, with volume-controlled regeneration, particularly suited for the generation of partially softened water, with integrated blending valve up to type 230, starting from type 330 available as an option, economy salting for residual hardness ≥ 2.0 °dH (≥ 0.35 mmol/l).

GENO-mat duo WE-X (economy salting)	50	130	230	330	530
Nominal connection diameter [DN]	25 female	25 female	25 female	40 female	40 female
Max. continuous flow [m³/h] ¹	3.3	5.0	8.3	10.0	15.8
K _v value Δp = 1.0 bar [m³/h] ¹	4.3	4.5	5.2	7.5	9.3
Nominal capacity [mol]	9.5	20.9	42.3	60.0	95.2
Regeneration salt supply [kg]	65	130	190	285	285
Salt consumption/regeneration [kg]	1.8	4.0	8.1	11.5	16.0
Order no.	186 200	186 210	186 220	186 230	186 240

¹ In case of a raw water hardness of 20 °dH (3.5 mmol/l) and a blending hardness of 8 °dH (1.4 mmol/l).



Connection kit 1/4"



Contact water meter

Softening
Trade/Industry

Connection kits for water softeners 1", 1/4" and 1/2"

Connection kits 1", 1/4" and 1/2"

Consisting of:

- Connection fitting 1", 1/4" and 1/2" with sampling valves
- Installation length 190 mm without screw connection
- Inlet strainer and non-return valve in water inlet
- Shut-off valves system inlet/system outlet
- Integrated overflow valve for emergency operation/peak withdrawal
- Water meter screw connections incl. seals
- Flexible connection hoses with transition fitting

Connection kits 1"-I, 1/4"-I and 1/2"-I

Consisting of:

- Connection fitting 1"-I, 1/4"-I and 1/2"-I with sampling valves
- Otherwise identical to connection kits 1", 1/4" and 1/2", without overflow valve, however

Connection kits	Connection thread of insert	System capacity [m³ x °dH]	System capacity [m³ x °dH]										Order no.		
			50	130	230	330	530	65	150	300	450	750			
Connection kit 1"	R 1"		•	-	-	-	-	-	-	-	-	-	-	-	185 515
Connection kit 1/4"	R 1/4"		-	•	•	-	-	-	-	-	-	-	-	-	185 530
Connection kit 1/2"	R 1/2"		-	-	-	•	•	-	-	-	-	-	-	-	185 545
Connection kit 1"-I	R 1"		-	-	-	-	-	•	•	-	-	-	-	-	185 505
Connection kit 1/4"-I	R 1/4"		-	-	-	-	-	-	-	•	•	-	-	-	185 520
Connection kit 1/2"-I	R 1/2"		-	-	-	-	-	-	-	-	-	•	•	-	185 540

Contact water meter	Order no.
With roller type counter, to read off the volume of soft water flown through	
Contact water meter with roller-type counter R 1"	163 080
Contact water meter with roller-type counter R 1/2"	163 085
Contact water meter with roller-type counter R 2"	119 793

Safety device protectliQ:A ¹	20	25	32	40
Connection diameter	3/4"	1"	1 1/4"	1 1/2"
Order no.	126 400	126 405	126 410	126 415

¹ For reliable protection against water damage in case there is no drain connection in the floor.

Softening
Trade/Industry



Electronic blending unit 1" - single

Mechanical blending valve 1 1/4"



Water softener softliQ:XLA, single system

Accessories	Order no.
Blending valves for the automatic addition of raw water to generate any residual soft water hardness ¹	
Mechanical blending valve R 1"	126 001
Mechanical blending valve R 1 1/4"	126 003
Mechanical blending valve R 2"	126 002
Electronic blending units for the generation of a defined residual hardness in the soft water. In case of single blending, one residual hardness can be set, in case of double blending, two different values for the residual hardness may be entered. ²	
Electronic blending unit 1" single	185 850
Electronic blending unit 1" double	185 855
Electronic blending unit 1 1/2" single	185 860
Electronic blending unit 1 1/2" double	185 865
Quality-controlled blending unit to generate a defined residual soft water hardness in case of fluctuating raw water hardness	
Quality-controlled blending unit 1"	185 570
Quality-controlled blending unit 2"	185 575
Voltage-free signal to transmit the operating state to the building management system	
Voltage-free signal for ZF; WF	126 885
Voltage-free signal for duo WE-X	126 890
Automatic empty signal for salt dissolving tank (pre-alarm system) for all GENO-mat water softeners	
Low-salt alarm (empty signal for WE-X series, WF series, Delta-p series)	181 880
Pre-alarm salt supply (infrared light sensor for GENO-mat duo WE-X and Delta-p series)	185 335
Boiler feed water shut-off valve for single water softeners GENO-mat WF (refer to page 11), consisting of a solenoid valve with control cable to shut off the soft water pipe during regeneration	
Hard water stop R 1"	182 810
Disinfection unit GENO-mat duo WE-X for automatic disinfection by means of NaCl electrolysis after every regeneration process	
Disinfection unit duo WE-X 50 - 450	182 505
Disinfection unit duo WE-X 530 - 750	182 515

¹ Not suitable in combination with Delta-p. For mechanical blending for Delta-p, please refer to page 8 - Electronic blending unit as an alternative.

² For electronic blending unit to be used with permeate, please refer to page 31.

Water softeners softliQ:XLA

Fully automatic, water meter controlled ion exchanger with salt dissolving tank

Exchanger tank made of pressure-resistant plastic. Front piping of the filter made of PP with pneumatic fittings, pilot valves and fitting group, preassembled on a system rack made of anodised aluminium with levelling feet, salt dissolving tank made of plastic (PE) with light sensor as pre-alarm, including regeneration rack with all the required components such as a precision injector. Also available with brine silo or brine bin. S7 controller with 7" touchscreen for fully automatic operation of the water softener.

Technical specifications

- Power supply 230 V, 50/60 Hz
- Operating voltage 24 V, 50/60 Hz
- Required water pressure 2.5 barg
- Admissible water pressure PN 10
- Admissible water temperature 30 °C

Single systems in sizes 20000 to 70000

softliQ:XLA	20000	30000	40000	50000	70000
Nominal flow [m³/h] at a residual hardness < 0.1 °dH	20	30	40	50	70
Nominal capacity [mol/m³ x °dH]	321/1,800	429/2,400	576/3,225	777/4,350	1,045/5,850
Nominal connection diameter [DN]	65	80	100	100	125
Diameter of exchanger tank [mm]	770	927	1,074	1,226	1,429
Total height [mm]	2,670	2,750	2,830	2,850	3,200
Required room height [mm]	3,000	3,050	3,150	3,150	3,500
Diameter of salt dissolving tank [mm]	1,250	1,250	1,250	1,700	1,700
Total height of salt dissolving tank [mm]	1,500	1,500	1,500	1,500	1,500
Capacity per kg of regeneration salt [mol/kg]	5.4	5.4	5.4	5.4	5.4
Salt consumption/reg. [kg]	60	80	108	145	195
Regeneration salt supply [kg]	1,650	1,650	1,650	3,100	3,100
Order no.	506010000000	506011000000	506012000000	506013000000	506014000000



Water softener softliQ:XLA-2, twin system

Water softeners softliQ:XLA-2

Fully automatic, water meter controlled ion exchanger with salt dissolving tank

Exchanger tanks made of pressure-resistant plastic. Front piping of the filter made of PP with pneumatic fittings, pilot valves and fitting group, preassembled on a system rack made of anodised aluminium with levelling feet, including connecting pipes made of PP. Salt dissolving tank made of plastic (PE) with light sensor as pre-alarm, including regeneration rack with all the required components such as a precision injector. Also available with brine silo or brine bin. S7 controller with 7" touchscreen for fully automatic operation of the water softener. For **technical specifications**, please refer to page 15.

Twin systems in sizes 20000 to 70000

softliQ:XLA-2	20000	30000	40000	50000	70000
Nominal flow [m³/h] at a residual hardness < 0.1 °dH (< 0.02 mmol/l)	20	30	40	50	70
Nominal capacity [mol/m³ x °dH]	2 x 321/1,800	2 x 429/2,400	2 x 576/3,225	2 x 777/4,350	2 x 1,045/5,850
Nominal connection diameter [DN]	65	80	100	100	125
Diameter of exchanger tank [mm]	770	927	1,074	1,226	1,429
Total height [mm]	2,670	2,750	2,830	2,850	3,200
Required room height [mm]	3,000	3,050	3,150	3,150	3,500
Diameter of salt dissolving tank [mm]	1,250	1,250	1,250	1,700	1,700
Total height of salt dissolving tank [mm]	1,500	1,500	1,500	1,500	1,500
Capacity per kg of regeneration salt [mol/kg]	5.4	5.4	5.4	5.4	5.4
Salt consumption/reg. [kg]	60	80	108	145	195
Regeneration salt supply [kg]	1,650	1,650	1,650	3,100	3,100
Order no.	506020000000	506021000000	506022000000	506023000000	506024000000



Water softener softliQ:XLA-3, triple system

Water softeners softliQ:XLA-3

Fully automatic, water meter controlled ion exchanger with salt dissolving tank

Exchanger tanks made of pressure-resistant plastic. Front piping of the filter made of PP with pneumatic fittings, pilot valves and fitting group, preassembled on a system rack made of anodised aluminium with levelling feet, including connecting pipes made of PP. Salt dissolving tank made of plastic (PE) with light sensor as pre-alarm, including regeneration rack with all the required components such as a precision injector. Also available with brine silo or brine bin. S7 controller with 7" touchscreen for fully automatic operation of the water softener. For **technical specifications**, please refer to page 15.

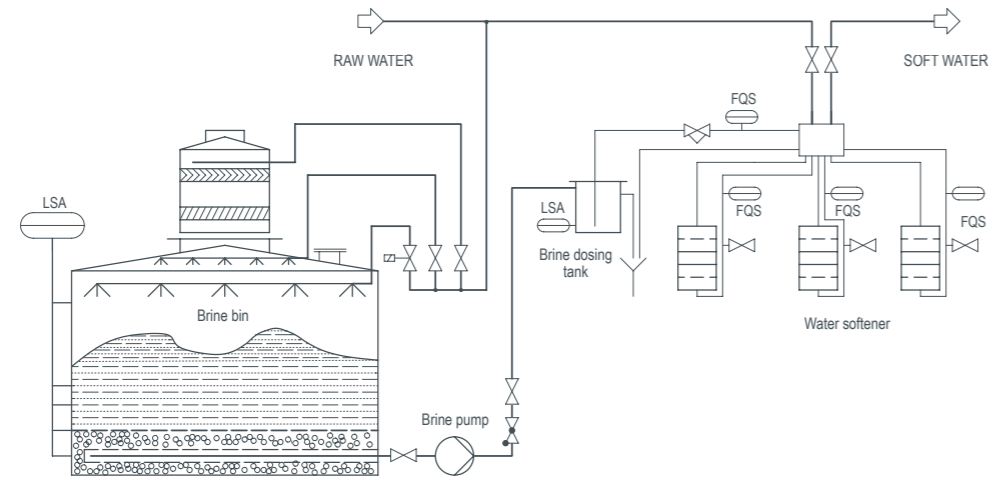
Triple systems in sizes 40000 to 140000

softliQ:XLA-3	40000	60000	80000	100000	140000
Nominal flow [m³/h] at a residual hardness < 0.1 °dH (< 0.02 mmol/l)	40	60	80	100	140
Nominal capacity [mol/m³ x °dH]	3 x 321/1,800	3 x 429/2,400	3 x 576/3,225	3 x 777/4,350	3 x 1,045/5,850
Nominal connection diameter [DN]	100	125	150	150	150
Diameter of exchanger tank [mm]	770	927	1,074	1,226	1,429
Total height [mm]	2,670	2,750	2,830	2,850	3,200
Required room height [mm]	3,000	3,050	3,150	3,150	3,500
Diameter of salt dissolving tank [mm]	1,250	1,250	1,250	1,700	1,700
Total height of salt dissolving tank [mm]	1,500	1,500	1,500	1,500	1,500
Capacity per kg of regeneration salt [mol/kg]	5.4	5.4	5.4	5.4	5.4
Salt consumption/reg. [kg]	60	80	108	145	195
Regeneration salt supply [kg]	1,650	1,650	1,650	3,100	3,100
Order no.	506030000000	506031000000	506032000000	506033000000	506034000000

Softening
Trade/Industry

Accessories

	Order no.
Circulation device per exchanger	506252000000
Disinfection unit for softliQ:XLA	505 275
Compressor for pneumatic valves	246 503
Surcharge for 3,100 kg salt dissolving tank	506253000000
S7 Communication module Profibus	506000010000
S7 Communication module BACnet IP	506000020000
S7 Communication module Profinet	506000030000
S7 Communication module Modbus TCP/IP	506000040000



Brine bin installation example

Brine bin

For the central generation of regeneration brine from fine salt which is delivered by means of silo trucks

Round, black PE tank, brine withdrawal by means of a drainage system (aligned in a loop) including quartz sand layer as support layer, external level control, spray jet system (aligned in a loop), discharge tower for salt dust, stainless steel salt injection pipe (VA 1.4571) with connecting hose coupling, set of fittings with shut-off and solenoid valves, pre-assembled on PP plate. Including a weather protection hood if set up outdoors.

Accessories required: Brine pump, brine dosing tank with external level control (replaces salt dissolving tank of the water softener) as well as electrical switch box.

Technical specifications

- Salt capacity 25 tons
- Diameter (interior) 2,800 mm
- Diameter (bottom) 2,970 mm
- Total height 6,500 mm
- Max. water temperature 30 °C

Brine bin	Order no.
For indoor use	503 880
For outdoor use	503 885

Brine dosing tank

To provide the exact amount of brine required for one regeneration of the water softener. Selection is based on the salt requirements of the water softener

PE brine dosing tank with lid, including brine suction valve and external level control.

Brine dosing tank	80	210	500 ²	750 ²	1000 ²	1500 ²
For salt required per regeneration up to [kg]	16,2	40	108	144	216	312
Diameter [mm]	410	570	780	900	1,000	1,250
Height [mm]	670	880	1,100	1,250	1,330	1,300
Order no.	185 550	185 560	503 400	503 410	503 430	503 440

Accessories	Order no.
Electrical switch box to control the filling of a brine dosing tank ¹	503 875
Brine pump with PVC piping and shut-off valves, mounted on a plate, capacity 4.8 m ³ /h at 19 mWC, 400 V, 0.75 kW	503 840
PVC motor ball valve DN 25 for brine make-up feed per water softener	503 845
Tank ascent with operator platform for brine bin	503 895

¹ For electrical switchbox for simultaneous filling control of several brine dosing tanks, please inquire.

² Brine dosing tank without foot valve suitable for softiQ:XLA only.

Membrane technology



- ① Salt dissolving tank
- ② Fine filter
- ③ Euro system separator
- ④ Water softener Delta-p "I"
- ⑤ Option: Activated carbon filter for chlorine removal
- ⑥ softwatch
- ⑦ Reverse osmosis system GENO-OSMO-X
- ⑧ Pressure booster system FU-X
- ⑨ Basic pure water tank GT-X

Standard system configuration GENO-OSMO-X with water softener for pretreatment and activated carbon filter for chlorine removal

The process

Membrane separation processes use a membrane in order to separate solutions, ions, molecules and particles in the submicron range. Conventional separation processes such as filtration only achieve a cut-off of approx. 40 µm (gravel filter) to approx. 0.2 µm. The membrane processes outlined here are pressure-driven processes, i.e., pressure must be applied to the liquid for the transport of the medium through the membrane.

Reverse osmosis

Reverse osmosis (e.g. GENO-OSMO-X) retains all substances contained in the water except for a residual salt content of approx. 1 % to 5 % in the permeate. With a mixed bed exchanger (e.g. mixed bed cartridge **desaliQ:BA** or **desaliQ:PA**) as the final stage, the residual conductivity can be reduced to < 1 µS/cm. The concentrate of all the separated substances can be discharged to the drain as waste water without any further treatment.

Specifications

- Dimensions (w x h x d)
525 x 912 x 580 mm
- Max. water/ambient temperature 30/40 °C
- Power supply 100 - 250 V, 50/60 Hz
- Nominal pressure PN 10
- Operating pressure min. 2.0 bar/max. 8.0 bar



Water softener softliQ:MD12i

Water softener softliQ:MD12i

Fully softened water < 0.1 °dH (< 0.02 mmol/l) for trade and industry.

Compact twin water softener with two separate control heads in alternating operation and full salting for permanent soft water < 0.1 °dH (< 0.02 mmol/l). A complete regeneration takes place as soon as the exchanger in operation is exhausted. The second exchanger continues to ensure flawless operation. The water softener softliQ:MD12i works with a constant capacity figure. The nominal flow rate (1.2 m³/h up to a raw water hardness of 15 °dH (5.4 mmol/l) must not be exceeded under any circumstances. For use in the commercial and industrial sector only. Water demand, for instance for reverse osmosis systems, air conditioning systems, heating systems, laboratories, restaurants and catering and many more.

The intelligent control unit and the 4.3" touch display enable easy and intuitive start-up and operation of the system. The detachable brine tank simplifies hygienically clean maintenance. Via LAN and Wi-Fi, the system can easily be connected to Grünbeck's myProduct app. Furthermore, the system features a lid with Soft-Close function, a water test kit for hardness determination, an audio signal as well as flexible connection hoses. The connection block R 1" with water meter screw connections has an installation length of 190 mm without the screw connection and 271 mm with the screw connection. Integrated in the connection block are: a non-return valve, two shut-off valves, two sampling valves for untreated and treated water as well as a dosing point for the optional connection of dosing systems.

Additional features of the softliQ:MD12i:

- Disinfection unit
- Programmable output, e.g. as connection for delivery pump for regeneration water or regeneration signal to further systems
- Illuminated LED ring as a visual signal and illumination of the brine tank's interior
- Salt supply indicator for continuous monitoring and early notification
- Water sensor to indicate uncontrolled water leaks
- 2 x iQ Comfort connections for easy connection of Grünbeck systems (e.g. exaliQ:KC6e/SC6e)
- Fault signal contact (collective fault signal)
- Drain connection DN 50 with siphon according to DIN EN 1717 included in the scope of supply

Water softener	softliQ:MD12i
Nominal flow (0 °dH, 0 °f, 0 mol/m³) [m³/h] ¹	1.2
Pressure loss at nominal flow [bar]	0.5
Nominal capacity (exchangers in alternating operation) [m³ x °dH mol]	2 x 15 2 x 2.7
Regeneration salt supply [kg]	95
Dimension of connection block ["]	1
Order no.	187 140

¹ The max. continuous flow decreases in case of raw water hardnesses of > 15 °dH (> 5.4 mmol/l).



Your advantage:
Extension of warranty
by 12 months when you
register your product



GENO-activated carbon filter AKF (stainless steel)



GENO-activated carbon filter AKF (plastic)

Membrane Technology

GENO-activated carbon filter AKF

For the dechlorination of drinking water

The GENO-activated carbon filter AKF is designed for the dechlorination of water with a chlorine concentration of less than 0.2 mg/l upstream of reverse osmosis systems. The water has to be free of mechanical impurities.

Note: If inhouse chlorine dioxide dosing takes place upstream of the reverse osmosis system, additional SW 2000 dosing is required in order to reduce the chlorine dioxide (refer to page 33).

Consisting of: Filter tank, filter elements filled with ultra-finely pressed activated carbon and final filter with a pore size of 5 µm, complete with brass screw connections and piping.

GENO-activated carbon filter AKF	300	600	1100 ¹
Max. flow rate [l/h]	300	600	1,100
for GENO-OSMO-X/HLX at a recovery of 75 to 80 %	125K/200	400	800
Material of housing	plastic	plastic	plastic
Connection [R]	¾"	¾"	2 x ¾"
Order no.	109 150	109 160	109 170

GENO-activated carbon filter AKF	1600	3000	4500	6000	9000 ¹	12000 ¹
Max. flow rate [l/h]	1,600	3,000	4,500	6,000	9,000	12,000
for GENO-OSMO-X/HLX at a recovery of 75 to 80 %	1200	1600/2200	3000			
Material of housing	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel
Connection [R]	1½"	2"	2"	2"	2 x 2"	2 x 2"
Order no.	109 460	109 240	109 250	109 260	109 016	109 021

Consumables ²	Order no.
Activated carbon filter element 250-M (1 pc)	109 615

¹ Including parallel piping.

² Replacement of filter elements after 3 months at the latest or earlier, in case of chlorine breaking through or a max. differential pressure ≥ 2.5 bar.



- Compact system TS with integrated permeate tank and pressure booster system
- Microprocessor controller with LCD screen
- Little space required
- Fine filter incl. pressure reducer in soft water inlet
- Compact system TL can optionally be combined with basic pure water tank and pressure booster system (refer to pages 40 and 45)
- Optional blending unit

GENO-OSMO RO 125K



If > 22 °dH (> 3.9 mmol), consultation with Grünbeck – Water analysis required

Reverse osmosis system AVRO 125

Reverse osmosis systems GENO-OSMO RO 125K

Technical specifications

- Total salt content (NaCl) of feed water max. 1,000 ppm
- Salt rejection > 95 %
- Inlet flow pressure of feed water min. 2.5 bar
- Temperature of feed water min. 10 °C, max. 20 °C
- Protection IP 54
- Power supply 230 V, 50 Hz

Reverse osmosis systems AVRO 125

In the AVRO module, the water flowing onto the membrane is treated with a low direct current and from the calcium and hydrogen carbonate ions contained in the water, calcium carbonate seed crystals are formed at the specially developed cathode. These crystals are washed out and consequently the membrane is reliably protected from scaling. Thus, the AVRO 125 does not need any pretreatment in the form of a water softener or an antiscalant dosing system.

Reverse osmosis system GENO-OSMO RO	125K-TS	125K-TL
Permeate capacity at 15 °C [l/h]	125	125
Permeate supply [l]	38	–
Permeate output capacity at 3.5 bar [l/h]	300	–
at 1.0 bar [l/h]	1,200	–
Connected load approx. [kW]	0.85	0.5
Dimensions (w x h x d) [mm]	450 x 1,130 x 600	450 x 1,130 x 600
Operating weight approx. [kg]	75	30
Order no.	752 100	752 110

Reverse osmosis system AVRO	125 TS	125 TL
Order no.	752 105	752 115

Accessories	Order no.
Connection kit for RO 125K/AVRO 125	752 830
Connection block for RO 125K/AVRO 125 ¹	752 840
Conductivity meter for RO 125K/AVRO 125 ²	752 820
Solenoid valve/forced withdrawal for RO 125K/AVRO 125 ³	752 810
Blending unit for RO 125K ²	752 800
Blending unit for AVRO 125 ²	752 815

¹ Only in combination with connection kit for RO 125K/AVRO 125 (order no. 752 830).

² Combination of blending unit/conductivity meter only possible up to a conductivity < 99 µS/cm.

³ Only possible with TS.



- Compact undersink system requiring only little space
- Flushing solenoid valve for efficient discharge of the concentrate (at high flow velocity)
- Online operation (optional)
- Spill tray (optional)
- protectiQ:A25 (optional)
- Conductivity meter (optional)
- With AVRO, the recovery of the reverse osmosis system is 50 - 75 %.

If > 22 °dH (> 3.9 mmol), consultation with Grünbeck – Water analysis required

Installation example for reverse osmosis system GENO-OSMO AVRO 125 RU

Reverse osmosis system GENO-OSMO AVRO 125 RU

For the demineralisation of raw water whose composition complies with the requirements of the German Drinking Water Ordinance (TrinkwV)

Compact system, ready-for-connection, fully mounted on a system rack made of anodised aluminium profile.

Consisting of: Reverse osmosis membrane installed in a pressure pipe made of high-strength PE. Hydro-block with built-in flow sensors for permeate and concentrate, manual control valve for concentrate and fine filter with pressure reducer. High-pressure pump with regulating valve for operating pressure and pressure gauge. Microprocessor controller with LCD display screen and three-key operation for adjustment to requirements on site and voltage-free collective fault signal. The AVRO treatment module for pretreatment can do without softening or hardness stabilisation. Scaling can thus be prevented reliably.

Technical specifications

- Total salt content (NaCl) of feed water max. 1,000 ppm
- Salt rejection 95 - 99 %
- Inlet flow pressure of feed water min. 2.5 bar
- Temperature of feed water min. 10 °C, max. 20 °C
- Protection class I
- Protection IP 54
- Power supply 230 V, 50 Hz
- Nominal pressure PN 16

GENO-OSMO AVRO 125 RU	
Permeate capacity at 15 °C [l/h]	125
Connected load approx. [kW]	0.7
Dimensions (w x h x d) [mm]	900 x 600 x 500
Operating weight approx. [kg]	50
Nominal connection diameter	DN 15 (½" male thread)
Order no.	750 570

Accessories	Order no.
Connection kit	752 830
Connection block	752 840
Conductivity meter	752 820
Euro system separator GENO-DK 2-Mini	133 100
Activated carbon filter AKF 300	109 150
Online-skid (up to 4 bar)	750 575
Safety device protectiQ:A25 ¹	126 405
Spill tray	750 580
Blending unit RO 125K ²	752 800

¹ If the safety device protectiQ:A25 is used, the spill tray, order no. 750 580, is required.

² Only possible in combination with Online-skid, order no. 750 575.



Mobile reverse osmosis system AVRO-flex 400

Mobile reverse osmosis system AVRO-flex 400

The mobile reverse osmosis system AVRO-flex 400 is designed to directly fill heating systems, district heating networks and other systems with low-salt water. Thanks to the patented AVRO process, no pretreatment by means of a water softener or anti-scaling dosing is required. Given the innovative operation mode, the membranes used nevertheless have a long service life and a highly economic recovery rate. By means of a selector switch, the system can be put into two simple operating modes. In the filling mode, the system switches off automatically once a specific counterpressure has been reached. In the unique workshop mode with regular rinsing, no costly preservation work is required during downtimes.

Technical specifications

- Total salt content (NaCl) of feed water max. 1,000 ppm
- Salt rejection 95 - 99 %
- Max. counterpressure of the system to be filled: 3.5 bar
- Inlet flow pressure of feed water min. 2.5 bar
- Temperature of feed water min. 10 °C, max. 20 °C
- Protection class I
- Protection IP 54
- Power supply 230 V, 50 Hz

Mobile reverse osmosis system AVRO-flex 400	
Permeate capacity at 15 °C [l/h]	400
Connected load approx. [kW]	1.8
Dimensions (w x h x d) [mm]	700 x 1,450 x 600
Operating weight approx. [kg]	80
Nominal connection diameter	¾" (DN 20) male thread and GEKA coupling
Order no.	752 250



Reverse osmosis system GENO-OSMO-X

- Increased recovery of up to 80 %
- Energy savings of 30 %
- Frequency-controlled high-pressure pump
- Online operation possible
- Easy operation and start-up
- Interconnection with common BUS systems
- RTU modbus included
- Web access and emailing
- Integrated data logging
- Multi-lingual touchscreen
- Automatic, self-regulating system operation
- Nominal pressure PN 16
- Power supply 400 V, 50/60 Hz

Membrane Technology

Reverse osmosis systems GENO-OSMO-X

For the demineralisation of raw water whose composition complies with the requirements of the German Drinking Water Ordinance (TrinkwV)

Consisting of: Control unit with 4.3" touchscreen to indicate the operating state and the system values. Voltage-free contacts to transfer pre-alarms and safety shutdown. Ultra-low pressure reverse osmosis membrane(s) installed in pressure pipe(s) made of high-strength PE. High-pressure centrifugal pump made of stainless steel 1.4401 with motor (premium efficiency class IE3) to supply the reverse osmosis membrane(s). Fully automatic monitoring and controlling of the system parameters, permeate conductivity with provision of threshold value in the control unit, recovery, concentrate recirculation and pump frequency. Measuring data logged on integrated SD card. Three-part hydro-block made of chemically nickel-plated red brass. Piping between pump and reverse osmosis membrane(s). High-quality anodised aluminium system rack to house all system components. Ventilation device to be installed on the concentrate pipe provided by others on site. Drinking water filter incl. pressure reducer, fully mounted in system inlet.

GENO-OSMO-X	200	400	800	1200	1600	2200	3000
Permeate capacity at 15 °C [l/h]	200	400	800	1,200	1,600	2,200	3,000
Connected load approx. [kW]	0.53	0.87	0.94	1.4	1.74	2.10	2.30
Dimensions (w x h x d) [mm]	900 x 1,700 x 675		1,035 x 1,700 x 675		1,170 x 1,700 x 675		
Operating weight approx. [kg]	122	125	147	171	186	267	319
Order no.	750 200	750 210	750 220	750 230	750 240	750 250	750 260

Surcharge for stainless steel system rack GENO-OSMO-X 200 - 3000	
Order no.	750 380

Capacity upgrade kit for GENO-OSMO-X

For the subsequent upgrade to the permeate capacity next in size

Retrofitting can be done on site. The required material to do so (e.g. high-pressure pump, frequency converter, membrane and pressure pipe as well as the small parts required) is included in the corresponding kit. Prior to retrofitting the system, however, it must be checked whether the capacity of the pretreatment (e.g. water softener, activated carbon filter) already installed on site will still be sufficient after the retrofitting. If necessary, the pretreatment must be replaced. This is not included in the retrofitting kit, however. The retrofitting may only be done by Grünbeck's authorised technical service.

Capacity upgrade kit	Order no.
GENO-OSMO-X 200 to GENO-OSMO-X 400	750 350
GENO-OSMO-X 400 to GENO-OSMO-X 800	750 355
GENO-OSMO-X 800 to GENO-OSMO-X 1200	750 360
GENO-OSMO-X 1200 to GENO-OSMO-X 1600	750 365
GENO-OSMO-X 1600 to GENO-OSMO-X 2200	750 370
GENO-OSMO-X 2200 to GENO-OSMO-X 3000	750 375



GENO-OSMO-X Online



GENO-OSMO-X AVRO

Options

For reverse osmosis systems GENO-OSMO-X

GENO-OSMO-X Online features an outlet pressure of up to 4 bar and can directly supply air humidifiers or airconditioning systems with freshly generated permeate – without the need for an intermediate storage tank or a pressure booster.

GENO-OSMO-X AVRO as pretreatment can do without softening or hardness stabilisation. Scaling can thus be prevented reliably.

	200	400	800	1200	1600	2200	3000
Online-skid¹							
Order no.	750 351	750 351	750 351	750 352	750 352	750 353	750 353

AVRO-module²							
Order no.	750 341	750 342	750 343	750 344	750 345	–	–

Discharge of first permeate/permeate relief GENO-OSMO-X/ion selector NANO-X							
Order no.	750 395						

Communication module for GENO-OSMO-X		Order no.
Communication module Profibus DP		750 160
Communication module BACnet-IP		750 170
Voltage-free signals		750 180
Analogue signals		750 185

Antiscalant dosing³ for GENO-OSMO-X or ion selector NANO-X

For dosing hardness stabilisers to prevent scaling on the membranes, dosing in proportion to quantity by means of pulse signal from control unit of membrane system

Consisting of: Diaphragm dosing pump with speed-controlled step motor for continuous, low-pulsation dosing, integrated volume flow measurement. LCD display with plain text display and 4-colour status backlighting. Chemical spill tray with holder for suction lance, suction lance with pre-alarm and empty signal, dosing line with pressure maintaining valve and dosing valve.

Order no.	750 346
------------------	---------

¹ Only for GENO-OSMO-X 200 - 3000.

² Only for GENO-OSMO-X 200 - 1600; in case of a total hardness > 22 °dH (> 3.9 mmol), consultation with Grünbeck, water analysis required.

³ Note: For dosing agents, please refer to page 33.



Reverse osmosis system GENO-OSMO-HLX

- High-pressure centrifugal pump made of stainless steel 1.4301 (V2A)
- Microprocessor controller with LCD display screen to signal functions and maintenance interval
- Recovery of up to 75 %
- Registration of the concentrate and permeate volume via flow sensors and of the system recovery via voltage-free collective fault signal
- Nominal pressure PN 16
- Power supply 400 V, 50 Hz

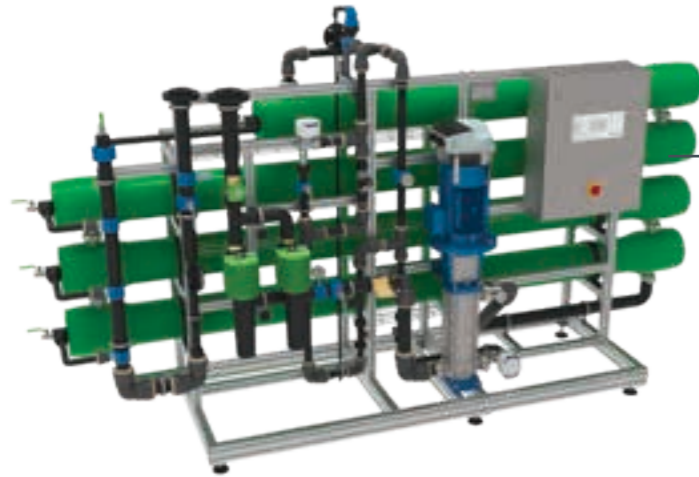
Membrane Technology

Reverse osmosis systems GENO-OSMO-HLX

For the demineralisation of raw water whose composition complies with the requirements of the German Drinking Water Ordinance (TrinkwV)

Consisting of: Microprocessor controller with LCD display screen to signal function and maintenance interval via voltage-free collective fault signal. High-pressure centrifugal pump made of stainless steel 1.4301 to supply the membrane. Ultra-low pressure reverse osmosis membrane(s) installed in pressure pipe made of high-strength PE. Three-part hydro-block made of chemically nickel-plated red brass. Piping between pump and reverse osmosis membrane(s). High-quality anodised aluminium system rack to house all system components. Ventilation device to be installed on the concentrate pipe provided by others on site. Drinking water filter incl. pressure reducer, fully mounted in system inlet.

GENO-OSMO-HLX	200	400	800	1200	1600	2200	3000
Permeate capacity at 15 °C [l/h]	200	400	800	1,200	1,600	2,200	3,000
Connected load approx. [kW]	1.5	2.2	2.2	2.2	4.0	4.0	4.0
Dimensions (w x h x d) [mm]	900 x 1,700 x 675			1,035 x 1,700 x 675		1,170 x 1,700 x 675	
Operating weight approx. [kg]	100	115	145	170	195	240	290
Order no.	750 205	750 215	750 225	750 235	750 245	750 255	750 265



Reverse osmosis system osmoliQ:LB

- Increased recovery of up to 80 %
- Energy savings of 30 %
- Frequency-controlled high-pressure pump
- Easy operation and start-up
- Interconnection with common BUS systems
- RTU modbus included
- Web access and emailing
- Integrated data logging
- Multi-lingual touchscreen
- Automatic, self-regulating system operation
- Nominal pressure PN 16
- Power supply 400 V, 50/60 Hz

Membrane Technology

Reverse osmosis systems osmoliQ:LB

Reverse osmosis systems osmoliQ:LB mounted on a system rack made of high-quality anodised aluminium, 8" pressure pipes made of GRP with built-in ultra-low-pressure reverse osmosis membranes

High-quality low-noise high-pressure pump made of stainless steel with electric motor of efficiency class IE3 and frequency converter. Fine filter with pressure gauge and sampling valve, PE piping to direct the water flow within the reverse osmosis system. Fully automatic monitoring and control of the system parameters permeate and concentrate flow. Non-contact flow measurement using ultrasound or vortex to measure the volume of the system flows permeate, concentrate-to-drain and concentrate recirculation. Quality control of permeate via temperature-compensated conductivity meter. Microprocessor controller with 4.3" touchscreen to indicate the operating state. Measuring data logged on integrated SD card. Activation of up to two dosing pumps with calculation of the range of coverage.

osmoliQ:	LB4000	LB7000	LB10000	LB12000	LB16000	LB20000	LB25000	LB30000
Permeate capacity at 15 °C [l/h]	4,000	7,000	10,000	12,000	16,000	20,000	25,000	30,000
Connected load approx. [kW]	4.2	5.3	6.7	7.1	9.4	12.0	9.6	10.1
Nominal connection diameter of feed water supply line [DN]	40	40	50	50	65	80	80	100
Dimensions (w ¹ x h x d) [m]	3.7 x 2.05 x 0.9			3.7 x 2.15 x 0.9		4.7 x 2.2 x 1.5		
Operating weight [kg]	485	600	725	830	950	1,290	1,675	2,000
Order no. (Standard)	755 500	755 510	755 520	755 530	755 540	755 550	755 560	755 570

¹ Allow for an additional 1,200 mm in width on both sides for the removal of the RO module.

Optional accessories for reverse systems	Order no.
osmoliQ:LB4000 - LB7000	
Stainless steel system rack	755 211
Stainless steel pressure pipes for LB4000	755 212
Stainless steel pressure pipes for LB7000	755 242
Stainless steel piping	755 214
Discharge of first permeate/permeate relief ²	755 217

osmoliQ:LB10000 - LB12000	
Stainless steel system rack	755 221
Stainless steel pressure pipes for LB10000	755 222
Stainless steel pressure pipes for LB12000	755 252
Stainless steel piping	755 224
Discharge of first permeate/permeate relief ²	755 227

osmoliQ:LB16000	
Stainless steel system rack	755 231
Stainless steel pressure pipes	755 232
Stainless steel piping	755 234
Discharge of first permeate/permeate relief ²	755 237

osmoliQ:LB20000	
Stainless steel system rack	755 261
Stainless steel pressure pipes	755 262
Stainless steel piping	755 264
Discharge of first permeate/permeate relief ²	755 267

osmoliQ:LB25000	
Stainless steel system rack	755 271
Stainless steel pressure pipes	755 272
Stainless steel piping	755 274
Discharge of first permeate/permeate relief ²	755 277

osmoliQ:LB30000	
Stainless steel system rack	755 281
Stainless steel pressure pipes	755 282
Stainless steel piping	755 284
Discharge of first permeate/permeate relief ²	755 287

Extra costs for reverse osmosis systems osmoliQ:LB4000 - LB 30000	
S7-1200 controller with 7" touchscreen ¹ for osmoliQ	755 202
Stainless steel cabinet for S7 controller for osmoliQ	755 201

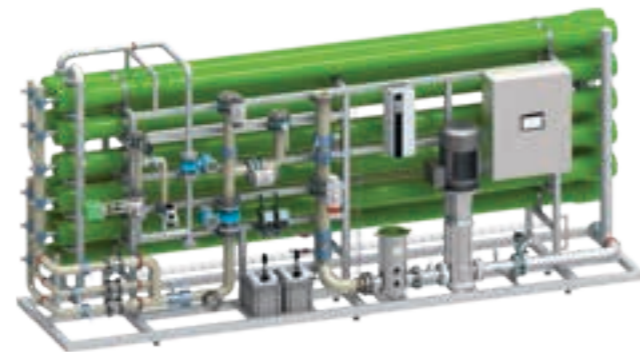
Communication modules for osmoliQ systems ³	
Communication module Profibus DP	750 160
Communication module BACnet-IP	750 170
Voltage-free signals	750 180
Analogue signals	750 185

¹ Installed in varnished switch cabinet.

² Required in case of a permeate counter-pressure > 0.7 bar (7 mWC).

³ Please inquire separately for S7-1200 controller.

- Recovery of up to 80 % (depending on the water analysis)
- Up to 100 m³/h of permeate
- Frequency-controlled, low-noise high-pressure pump of premium efficiency class IE3
- Siemens Simatic S7 controller
- The fully automatic, permeate and recovery controlled system keeps the permeate capacity steady, even in case of a fluctuating raw water temperature



Reverse osmosis system GENO-RK-X, capacity 50 m³/h

Reverse osmosis systems GENO-RK-X

For the demineralisation of raw water whose composition complies with the quality requirements of the German Drinking Water Ordinance (TrinkwV).

System rack with adjustable feet to compensate for uneven floors made of stainless steel profile which is closed all around (pickled and passivated), GRP side-port pressure pipes for optimum inflow and low pressure loss, 8" ultra-low pressure reverse osmosis membranes, stainless steel fine filter, PP piping (IR butt welded) in the low pressure range and welded stainless steel piping (1.4404, pickled and passivated) in the high-pressure range, integrated magnetic-inductive flow meters for volume measurement of the system flows permeate and concentrate, workshop tested and ready for connection. Control unit consisting of steel switch cabinet (coated) with touchscreen, reliable readability and operability thanks to high-resolution display in 16 million colours, accurate in every detail, measuring data logged on integrated SD card, release of a voltage-free collective fault signal for transmission to the central building and control system/DDC systems on site.

GENO-RK-X	40,000	50,000	75,000	100,000
Permeate capacity at 15 °C [m³/h]	40	50	75	100
Connected load approx. [kW]	24	32	39	47
Dimensions approx. (w¹ x h x d) [m]	6 x 2.7 x 1.4	6 x 2.7 x 1.4	7 x 2.9 x 2	7 x 3.5 x 2.3
Nominal connection diameter of feed water pipe (flange) [DN]	100	125	125	150
Order no.	755 430	755 440	755 450	755 460

¹ Allow for an additional 1,200 mm in width on both sides for the removal of the RO module.

Accessories for reverse osmosis systems	Order no.
Switch cabinet to control two membrane systems¹	755 820
Switch cabinet for priority circuit¹,²	755 825

Switch-over valves for pure water make-up feed into two separate tanks	
Set of automatic valves for up to 1.2 m³/h	755 805
Set of automatic valves for up to 4 m³/h	755 815
Set of automatic valves for up to 7 m³/h	755 835
Set of automatic valves for up to 15 m³/h	755 845

Electronically controlled blending units (nickel-plated)	
After increasing the permeate pressure, a defined residual conductivity can be generated by adding raw or soft water to the permeate. Admixing is carried out in proportion to the quantity withdrawn and requires that the pressure of the added water is higher than the permeate pressure downstream of the pump. The advantage being that different permeate qualities can be provided.	
Electronic blending unit 1" single	185 850.010
Electronic blending unit 1" double	185 855.010
Electronic blending unit 1½" single	185 860.010
Electronic blending unit 1½" double	185 865.010

Dosing system for hardness stabilisation/sodium bisulphite dosing (GENO-OSMO-X, osmoliQ:LB, GENO-OSMO-RK-X)	
Dosing system (with 1 dosing pump)	755 800
Dosing system (with 2 dosing pumps)⁴	755 810

Tangential mixing device for optimum mixing³	
In case of sodium hydroxide/sodium bisulphite dosing upstream of the reverse osmosis system, material: PVC	
Tangential mixing device DN 25 (for GENO-OSMO-X only)	755 850
Tangential mixing device DN 40 (osmoliQ:LB4000 - LB7000)	755 860
Tangential mixing device DN 50 (osmoliQ:LB10000 - LB12000)	755 870
Tangential mixing device DN 65 (osmoliQ:LB16000)	755 880

¹ In case the pure water tank does not have a GENO-Multi Niveau filling level indicator with level probe (measuring range up to 2.5 mWC) (order no. 712 425), this device must be quoted additionally.

² Only possible in combination with the corresponding set of automatic valves.

³ In order to achieve optimum mixing within a corresponding reaction period, a tangential mixer is required in case sodium hydroxide solution or sodium bisulphite is dosed. For additional tangential mixers, please inquire.

⁴ Quote dosing agent twice.



Blending unit



Emergency bypass

Blending unit

For GENO-OSMO-X, GENO-OSMO-HLX and osmoliQ:LB

By constant admixing via a manual adjusting valve, raw or soft water is added in the required ratio to the permeate flowing to the pure water tank. Grünbeck determines the size of the blending unit based on the required residual conductivity and the system's flow rate.

Consisting of: Solenoid valve, flow meter, regulating fitting and non-return valve

Blended water volume [l/h]	Order no. for GENO-OSMO-X/osmoliQ:LB	Order no. for GENO-OSMO-HLX
10 - 100	750 760.10	750 760
20 - 250	750 765.10	750 765
50 - 500	750 771.10	750 771
100 - 1,000	750 770.10	750 770
150 - 1,600	750 772.10	750 772
200 - 2,500	750 775.10	750 775
400 - 4,000	750 776.10	750 776
600 - 6,400	750 780.10	750 780
1,000 - 10,000	750 785.10	750 785

Emergency bypass

For GENO-OSMO-X, GENO-OSMO-HLX and osmoliQ:LB

Consisting of: Emergency bypass solenoid valve with throttle valve and hand lever, solenoid valve to drain the pipe. Emergency bypass fully mounted.

An emergency bypass for the reverse osmosis system might become necessary if the permeate supply in the pure water tank is not sufficient due to peak withdrawals. By means of a level signal in the pure water tank, the solenoid valve with throttle valve for emergency bypass is opened and the water supply ensured.

Solenoid valve with additional hand lever to manually open the make-up water feed. Solenoid discharge valve for automatic draining of the pipe to the pure water tank into the drain if the emergency bypass is not active.

Emergency bypass for reverse osmosis systems	Order no.
GENO-OSMO-X/osmoliQ:LB	
up to 3 m ³ /h	750 795.10
up to 10 m ³ /h	750 796.10
up to 15 m ³ /h	750 797.10
GENO-OSMO-HLX¹	
up to 3 m ³ /h	750 795
up to 10 m ³ /h	750 796
up to 15 m ³ /h	750 797

¹ Requirement: GENO-Multi Niveau with level probe or alternatively, an external level control with bistable changeover contacts (4 contacts) must be available on site.

Note: Combining the blending unit with the emergency bypass as well as other combinations in conjunction with the emergency bypass (rejection of first permeate, membrane degassing) is only possible with an additional switch cabinet (order no. 750 798) and a GENO-Multi Niveau.



Dosing agents



Chlorine dioxide measurement

Membrane Technology

Hardness stabilisation/pretreatment of raw water

The pretreatment of raw water is necessary in order to ensure safe and economic operation. The precipitation (scaling) of slightly soluble minerals in reverse osmosis and nanofiltration systems can negatively affect the functioning of the modules and even render them completely useless. The precipitation of such salts must thus be prevented, either by means of softening or by hardness stabilisation. From a technical and economical perspective, hardness stabilisation is used starting from a system capacity of > 200 l/h. Smaller capacities are pretreated by means of water softeners. Hardness stabilisation is achieved by dosing phosphonates and polyacrylic acids.

Accessories for reverse osmosis	Order no.
Dosing agents for membrane systems	
MT 3000 for hardness stabilisation (not suitable in case of high silicate concentrations) [23.5 kg]	160 675
MT 4000 (standard for the hardness stabilisation of drinking water) [23.5 kg] ¹	160 680
MT 4010 (standard for the hardness stabilisation of drinking water) [10 kg] ¹ (MT 4010 suitable for GENO-OSMO-X 200 up to and including GENO-OSMO-X 1200)	160 674
SW 2000 to reduce free chlorine and chlorine dioxide [20 kg]	180 405
Water test kits	
Water test kit for chlorine + pH value	170 128
Water test kit for hardness, p and m value	170 109
Sulphite reagent, small package	170 520
Chlorine dioxide test 0.02 - 0.55 ppm	170 430
Silt density measuring device (colloid index measuring device) to determine colloidal substances, e.g. in the feed water upstream of reverse osmosis systems	
Silt density measuring device incl. set of fittings and filter paper	170 080

¹ Also for ion selector NANO-X.

Note: For larger containers (MT 3000/MT 4000), please inquire.



- Recovery of up to 90 % in the second stage (depending on the water analysis)
- 2,700 l/h, only requiring the space of a Euro palette
- Frequency-controlled high-pressure pump
- Easy operation and start-up
- Interconnection with common BUS systems
- RTU modbus included
- Web access and emailing
- Integrated data logging
- High permeate quality
- Automatic, self-regulating system operation
- Nominal pressure PN 16
- Power supply 400 V, 50/60 Hz

GENO-OSMO-X permeate stage

GENO-OSMO-X permeate stage

For the demineralisation of permeate originating from the 1st stage of a reverse osmosis system GENO-OSMO-X in order to generate a high permeate quality

Consisting of: High-quality system rack made of anodised aluminium to house all system components. Concentrate recirculation into the 1st stage to increase the overall recovery. Ultra-low pressure reverse osmosis membrane(s) installed in pressure pipe(s) made of high-strength PE, frequency-controlled high-pressure centrifugal pump made of stainless steel 1.4401 with motor of premium efficiency class IE3 to supply the reverse osmosis membrane(s). Fully automatic monitoring and controlling of all system parameters, provision of threshold values in control unit GENO-OSMO-X 1st stage, recovery, concentrate recirculation, system data logged on integrated SD card of the GENO-OSMO-X, three-part hydro-block made of chemically nickel-plated red brass, piping between pump and reverse osmosis membrane(s).

GENO-OSMO-X permeate stage ¹	180	360	720	1100	1450	2000	2700
Permeate capacity at 15 °C [l/h]	180	360	720	1,100	1,450	2,000	2,700
Connected load approx. [kW]	0.45	0.4	0.4	0.5	0.6	0.8	0.9
Dimensions (w x h x d) [mm]	900 x 1,700 x 675			1,035 x 1,700 x 675		1,170 x 1,700 x 675	
Operating weight approx. [kg]	122	125	147	147	186	186	319
Order no.	751 200	751 210	751 220	751 230	751 240	751 250	751 260

Options

Discharge of first permeate GENO-OSMO-X permeate stage

Order no. 751 395

¹ For discharge of first permeate/permeate relief for GENO-OSMO-X permeate stage, please refer to page 26.

Note: The permeate stage can only be used in combination with a GENO-OSMO-X reverse osmosis system. The permeate stage must be installed in the immediate vicinity of the GENO-OSMO-X. Subsequent retrofitting of the permeate stage is not possible.



- EDI module with anion and cation selective membranes
- Chambers filled with ion exchange resin
- EDI-tronic controller with graphics display, including required inputs and outputs (additional extension stages available as an option)

Electrodeionisation system GENO-EDI-X

Electrodeionisation systems GENO-EDI-X

For the continuous, electro-chemical residual demineralisation of permeate originating from a reverse osmosis system.

System ready for connection and fully mounted on an aluminium system rack.

Consisting of: Microprocessor controller with LCD graphics display (70 x 38 mm, backlit), display of the EDI system flow chart, supply tank incl. level control, pressure booster system as well as indication of flow rates, pressure, conductivity. Plastic foil keyboard with 12 keys and serial interface RS 232, piping within the electrodeionisation system equipped with pressure sensors, regulating respectively solenoid valves and sampling valves, quality control of diluate via temperature-compensated conductivity meter, digital indication in the display of the control electronics, piping within the system completely made of high-pressure resistant PE plastic pipes, high-quality system rack made of anodised aluminium.

Technical specifications

- Feed water limit values:
 - Conductivity (FCE) max. 40 µS/cm
- Power supply 230 V, 50 Hz
- Protection IP54
- Feed water temperature min. 10 °C/max. 25 °C
- Ambient temperature min. 5 °C/max. 35 °C
- Inlet flow pressure of permeate min. 2.5 bar/max. 5 bar
- Outlet pressure of diluate approx. 0.5/1.5 bar
- Dimensions (w x h x d) 900 x 1,700 x 675 mm
- Conductivity < 0.2 µS/cm
- SiO₂ reduction 90 - 99 %

GENO-EDI-X	100	180	360	720	1100	1450	2000	2700
Diluate capacity at 15 °C [l/h]	100	180	360	720	1,100	1,450	2,000	2,700
Connected load approx. [kW]	0.5	1.0	1.5	1.0	1.0	1.5	1.5	1.5
Dimensions (w x h x d) [mm]	900 x 1,700 x 675							
Operating weight approx. [kg]	95	105	115	170	170	190	190	215
Order no.	770 300	770 310	770 320	770 330	770 340	770 350	770 360	770 370

Accessories	Order no.
For system types 100 to 360	
Quality-controlled discharge of permeate	770 800
Conductivity & temperature measurement in EDI concentrate	770 805
Discharge of EDI diluate	770 815
Profibus DP (cannot be combined with single fault signals)	770 860
Single fault signals (cannot be combined with Profibus DP)	770 855
For system types 720 to 2700	
Quality-controlled discharge of permeate	770 800
Conductivity & temperature measurement in EDI concentrate	770 870
Discharge of EDI diluate	770 875
Profibus DP (cannot be combined with single fault signals)	770 860
Single fault signals (cannot be combined with Profibus DP)	770 855

Membrane Technology

- Easy installation
- Low pressure loss
- No chemicals required
- Less regeneration agents required in ion exchangers installed downstream
- Better deionate quality in electrodeionisation systems (EDI) installed downstream compared to NaOH dosing
- Compact design
- Incredibly easy set-up and hygienic operation



GENO-membrane degassing system MEC 500-1

- To reduce CO₂ contained in the softened raw water which negatively affects the technical process
- For pH-dependent dosing of sodium hydroxide solution



NaOH dosing

GENO-membrane degassing system

To be used in the permeate downstream of a reverse osmosis system to remove CO₂ negatively affecting the process to the greatest extent possible. Hydrophobic porous membranes are used for membrane degassing as these are impervious to water but allow gases to pass through. In most cases, hollow fibre modules which have a high packing density are used. The water to be degassed is passed along the fibres. The gas diffuses through the membranes due to the partial pressure gradient. The water, however, is retained by the membrane. In order to generate the necessary partial pressure gradient, stripping gas (oil-free compressed air) is used which is continuously passed along the membrane and thus sweeps away the removed gas. On-site requirement to be provided by others: Stripping gas supply as oil-free and aerosol-free compressed air 3 - 10 bar.

GENO-membrane degassing system	MEC 500-1	MEC 500-2	MEC 2200-1	MEC 2200-2	MEC 5000-1	MEC 8000-1
For a permeate capacity of up to [l/h]	500	500	2,200	2,200	5,000	8,000
Removal of CO ₂ up to approx. [%]	75 - 80	90	75 - 80	90	75 - 80	75 - 80
Dimensions (w x h x d) [mm] ¹	400 x 600 x 200		600 x 1,000 x 250		400 x 1,000 x 300	
Operating weight approx. [kg]	12	15	20	26	35	35
Required amount of compressed air to be provided on site by client, approx. [Nm ³ /h] (oil-free compressed air)	0.2 - 1.8	0.4 - 3.6	0.8 - 5.1	1.6 - 10.2	14	21
Order no.	770 200	770 205	770 210	770 215	770 250	770 280

¹ In combination with RO/EDI, possible dimensional deviations due to rack assembly have to be taken into account.

Note: In case of subsequent application, technical clarification with Grünbeck required.

For the compressed air, we recommend an oil content higher than class 2 (0.1 mg/m³), according to ISA 8573.1 Quality 1.4.2.

NaOH dosing upstream of GENO-OSMO-X and osmoliQ:LB

Consisting of: Self-priming dosing pump with fault signal output and visual indication of operation, empty signal, motor: 230 V, 50 Hz, protection: IP 54, level control for empty signal installed in the tank, dosing group with shut-off valve, 5 m of PTFE dosing hose, combined pH measuring electrode incl. installation fitting, pH measuring transducer installed in panel housing or in a central switch cabinet.

	Order no.
NaOH dosing upstream of GENO-OSMO-X and osmoliQ:LB ¹	750 750
Accessories	
Neutralisation agent FNK, 20 kg (sodium hydroxide solution 10 %)	180 300

¹ For osmoliQ:LB systems only with additional tangential mixer - refer to page 31.



- Oil-free compressing
- Built-in automatic discharge of condensate

Compressor size II

Compressor

To supply membrane degassing systems with oil-free compressed air

Technical specifications

- Ambient temperature 5 - 35 °C
- Max. supply pressure 10 bar

Compressor for compressed air supply	Size I ¹	Size II ²	Size III ³
Suction capacity [l/min.]	110	230	420
Volume flow at 6 bar [l/min.]	59	152	252
Compressed air tank, volume [l]	24	40	90
Connected load [V/Hz/kW]	230/50/0.75	400/50/2.2	400/50/2.2
Noise level [dB (A)]	72	73	75
Dimensions (w x h x d) [mm]	640 x 680 x 290	820 x 740 x 475	1,080 x 840 x 570
Order no.	770 836	770 837	770 838

¹ Suitable for membrane degassing system type MEC 500-1

² Suitable for membrane degassing systems type MEC 500-2, MEC 2200-1

³ Suitable for membrane degassing systems type MEC 2200-2, MEC 5000-1, MEC 8000-1

Accessories ⁴	Order no.
Sound-insulating cover for compressor size I	770 840
Sound-insulating cover for compressor size II	770 841
Sound-insulating cover for compressor size III	770 842

⁴ Always quote the sound-insulating cover as well.



Sterile water filter W 6000 MV



Add-on parts for loop

Sterile water filters

For ultra-fine filtration of permeate/diluate in pure water (loop) systems for the retention of bacteria (rejection rate 99.9 %)

Consisting of: Sterile filter housing with matching sterile filter element 0.2 µm incl. connection piping, without shut-off valves (type OV) or, alternatively, with shut-off valves (type MV), nominal connection diameter R 1".

Sterile filters	W 3000 OV	W 3000 MV	W 6000 OV	W 6000 MV
For a permeate/diluate capacity of up to [l/h]	3,000	3,000	6,000	6,000
Number of filter elements [quantity]	1	1	2	2
Order no.	770 400	770 405	770 410	770 415

Accessories	Order no.
Filter element, retention capacity 0.2 µm	770 450
Pressure gauge add-on kit (per filter housing)	770 455

Add-on parts for loop

To regulate the demi water capacity in a loop

A loop is the main supply pipe for water and branches out in an annular way from the feeding point. The loop comprises all branch-offs and withdrawal points. Loops ensure hygienically safe conditions on a permanent basis and prevent possible hygienic risks due to stagnation by means of regular circulation of the water. The add-on parts are designed for the adjustment of the demi water capacity in a loop provided by others on site. For easy implementation, the add-on parts are already pre-assembled on a mounting plate.

Consisting of: Pressure maintaining valve, membrane valve (PN 10), flow meter, pressure gauge 0 - 6 bar

Flow range [l/h]	Add-on parts for loop	Material	Order no.
150 - 1,600	DN 15	PVC	750 789
150 - 1,600	DN 15	PP	750 789.10
200 - 2,500	DN 25	PVC	750 790
200 - 2,500	DN 25	PP	750 790.10
400 - 4,000	DN 32	PVC	750 791
400 - 4,000	DN 32	PP	750 791.10
1,000 - 10,000	DN 40	PVC	750 792
1,000 - 10,000	DN 40	PP	750 792.10

Note: For stainless steel version, please inquire.



Ion selector NANO-X

- Recovery of up to 80 % (depending on the water analysis)
- 2,400 l/h, only requiring the space of a Euro palette
- Frequency-controlled high-pressure pump
- Easy operation and start-up
- Interconnection with common BUS systems
- RTU modbus included
- Web access and emailing
- Integrated data logging
- Multi-lingual touchscreen
- Automatic, self-regulating system operation
- Nominal pressure PN 16
- Power supply 400 V, 50/60 Hz

Ion selector NANO-X

For the partial demineralisation or partial softening of raw water whose composition complies with the quality requirements of the German Drinking Water Ordinance (TrinkwV)

Nanofiltration is a pressure-driven membrane process that retains dissolved molecules, ions and other small particles. Compared to the reverse osmosis process, nanofiltration uses lower operating pressures. A hardness stabilisation (by means of MT 4000/MT 4100) or a water softener has to be installed as pretreatment upstream of the ion selector NANO-X.

Consisting of: Control unit with 4.3" touchscreen to indicate the operating state and system values. Voltage-free contacts to relay pre-alarms and safety shutdowns. Ultra-low pressure nanofiltration membrane(s) installed in pressure pipe(s) made of high-strength PE. High-pressure centrifugal pump made of stainless steel 1.4401, frequency-controlled to make use of the primary feed water pressure, with motors of premium efficiency class IE3 to supply the nanofiltration membrane(s). Fully automatic monitoring and controlling of all system parameters, provision of threshold values in the control unit, recovery, concentrate recirculation and system data logged on integrated SD card. Three-part hydro-block made of chemically nickel-plated red brass. Piping between pump and nanofiltration membrane(s). High-quality system rack made of anodised aluminium to house all system components. Ventilation device to be installed on the concentrate pipe provided by others on site. Drinking water filter incl. pressure reducer, fully mounted in system inlet.

Ionselector-NANO-X ^{1,2}	300	600	900	1200	1800	2400
Permeate capacity at 15 °C [l/h]	300	600	900	1,200	1,800	2,400
Connected load approx. [kW]	0.87	0.94	1.4	1.74	2.1	2.3
Dimensions (w x h x d) [mm]	900 x 1,700 x 675		1,035 x 1,700 x 675		1,170 x 1,700 x 675	
Operating weight approx. [kg]	115	145	170	195	240	290
Order no.	142 400	142 410	142 420	142 430	142 440	142 450

¹ For antiscalant dosing for ion selector NANO-X, please refer to page 26.

² For discharge of first permeate for ion selector NANO-X, please refer to page 26.



Basic pure water tank GT 1000 with sterile air filter

Basic pure water tank GT 1000

For unpressurised storage and intermediate storage of pure water or permeate

Unpressurised tank made of opaque, black PE approved for drinking water, with inlet connection, connection for tank overflow, connection for aeration and ventilation, withdrawal connection, connection for level control with level probe to record the filling level of the tank by means of control electronics **GENO-Multi Niveau** as level measuring device with digital display, four programmable switching points for make-up feed ON/OFF, "tank empty" signal as dry-run protection for the pressure booster system and release of dry-run protection. Additional tank without level control and overflow siphon. In case of the version with sterile air filter, aeration and ventilation is carried out via a 0.2 µm sterile air filter, the overflow is designed as a siphon.

Technical specifications

- Volume 1 m³
- Dimensions of basic tank (w x h x d) 960 x 2,200 x 860 mm

Pure water tanks		Order no.
Basic pure water tank GT 1000	without sterile air filter ¹	712000010000
Additional tank GT 1000	without sterile air filter ²	712000050000
Basic pure water tank GT 1000	with sterile air filter ¹	712000020000
Additional tank GT 1000	with sterile air filter ²	712000060000

¹ Max. inlet and withdrawal flow rate 5 m³/h.

² A maximum of 3 additional tanks is possible.

Note: These pure water tanks are used for e.g. **GENO-OSMO RO 125 K**, **AVRO 125**, **GENO-OSMO-HLX**, **GENO-EDI-X** and **ultraIQ:SB/MA**.

Filling level indicator GENO-Multi Niveau

Digital filling level indicator with pressure transducer to record tank filling levels and four programmable switching points. By means of the level probe at the bottom of tank, the pressure generated by the water column is registered as analogue signal (4 - 20 mA). The **GENO-Multi Niveau** determines the filling height (cm), the filling level (%) or the filling volume (m³). Four connection terminals to read the filling heights of the tank.

Technical specifications

- Power supply 230 V, 50 Hz/max. 25 VA
- Protection IP 55
- Dimensions (w x h x d) 120 x 300 x 71 mm
- Solenoid valve connection 24 V AC/13 VA

Filling level indicator	Order no.
Filling level indicator GENO-Multi Niveau with level probe (measuring range up to 2.5 mWC) ³	712 425
Filling level indicator GENO-Multi Niveau with level probe (measuring range up to 4 mWC)	712 465

³ Included in the scope of supply of basic tank GT.



Basic pure water tank GT-X 1000 without sterile air filter

Basic pure water tank GT-X 1000

For GENO-OSMO-X for intermediate storage of permeate flowing off unpressurised

Unpressurised tank made of opaque, black PE approved for drinking water, with inlet connection, connection for tank overflow, connection for aeration and ventilation, withdrawal connection, connection for level control with level probe including 10 m connection cable for connection to the **GENO-OSMO-X** controller, four programmable switching contacts for make-up feed ON/OFF, "tank empty" signal as dry-run protection for the pressure booster system and release of dry-run protection. Additional tank without level control and overflow siphon. In case of the version with sterile air filter, aeration and ventilation is carried out via a 0.2 µm sterile air filter, the overflow is designed as a siphon.

Technical specifications

- Volume approx. 1 m³
- Dimensions of basic tank (w x h x d): 960 x 2,200 x 860 mm

Pure water tanks		Order no.
Basic pure water tank GT-X 1000	without sterile air filter ¹	712000030000
Additional tank GT 1000	without sterile air filter ²	712000050000
Basic pure water tank GT-X	with sterile air filter ¹	712000040000
Additional tank GT 1000	with sterile air filter ²	712000060000

¹ Max. inlet and withdrawal flow rate 5 m³/h.

² A maximum of 3 additional tanks is possible.

Note: The basic pure water tanks of the X series are only used for reverse osmosis system **GENO-OSMO-X** and ion selector **NANO-X**.

Accessories

	Order no.
Connecting line GT DN 50-PE ³	712000070000
Extension for connecting line GT DN 50-PE ⁴	712000080000
Tank connection made of stainless steel G1" (inlet)	712000090000
Tank connection made of stainless steel G2" (withdrawal)	712000100000

³ Required for a communicating connection of a basic tank and an additional tank.

⁴ Required once each with every further additional tank.



Basic pure water tank K-X with level probe



Basic pure water tank K-X with optional GENO-Multi Niveau

Basic pure water tank K-X

For intermediate storage of media flowing unpressurised from treatment systems

Black PE tank, pre-assembled with overflow and connections for inlet, aeration and deaeration as well as pressure booster system, inspection opening with screw lid, level probe (in tank) with 10 m connection cable. Four programmable switching contacts for make-up water feed ON/OFF and "tank empty" signal for dry-run protection and release of dry-run protection. Additional tank without level probe and overflow.

Basic pure water tank K-X	1100	1500	2000	2500	3000	4000
Volume [l]	1,100	1,500	2,000	2,500	3,000	4,000
Length [mm]	1,400	1,550	2,070	1,870	2,230	2,430
Width [mm]	720	720	720	995	995	995
Total height [mm]	1,600	1,850	1,900	1,900	1,900	2,200
Order no.	712 500	712 505	712 510	712 515	712 520	712 525

Additional tank K ¹	1100	1500	2000	2500	3000	4000
Volume [l]	1,100	1,500	2,000	2,500	3,000	4,000
Length [mm]	1,400	1,550	2,070	1,870	2,230	2,430
Width [mm]	720	720	720	995	995	1,000
Total height [mm]	1,340	1,600	1,600	1,600	1,600	1,900
Order no.	712 340	712 345	712 350	712 355	712 360	712 365

¹ When using additional tank(s), a connection kit is compulsory; please refer to page 43.

Option

Filling level indicator GENO-Multi Niveau without level probe	
Order no.	712 420

Note: The above mentioned option GENO-Multi Niveau is compulsory when using reverse osmosis systems GENO-OSMO RO 125K, parallel switching of GENO-OSMO-X or osmoliQ:LB, GENO-OSMO HLX, GENO-EDI-X, GENO-Ultrafil and ultraIq:SB/MA or other applications without the aforementioned systems.



Sterile air filter with CO₂-trap

Accessories for basic tanks K/K-X	Order no.
PVC overflow siphon to add onto the tank	
Capacity up to 5.0 m ³ /h DN 50	712 054
Capacity up to 10.0 m ³ /h DN 80	712 069
Capacity up to 15.0 m ³ /h DN 100	712 088
Sterile filter add-on kit (with overflow siphon only)	
Ventilation capacity up to 7.5 m ³ /h	712 390
CO₂-trap (with overflow siphon only)	
Ventilation capacity up to 5.0 m ³ /h	712 800
Ventilation capacity up to 15.0 m ³ /h	712 810
Combined unit of sterile air filter with CO₂-trap (with overflow siphon only)	
Ventilation capacity up to 5.0 m ³ /h	712 820

Interconnection kit for basic/additional tanks K/K-X	Order no.
For 1 basic and the first additional tank K/K-X 1100 - 4000	
DN 50 PVC for connection to the tank, withdrawal volume up to 8 m ³ /h	712 702
DN 65 PVC for connection to the tank, withdrawal volume up to 16 m ³ /h	712 704
DN 80 PVC for connection to the tank, withdrawal volume up to 22 m ³ /h	712 706
DN 100 PVC for connection to the tank, withdrawal volume up to 33 m ³ /h	712 708

Interconnection kit for further additional tanks	Order no.
For every further additional tank K/K-X 1100 - 4000	
DN 50 PVC for connection to the tank, withdrawal volume up to 8 m ³ /h	712 712
DN 65 PVC for connection to the tank, withdrawal volume up to 16 m ³ /h	712 714
DN 80 PVC for connection to the tank, withdrawal volume up to 22 m ³ /h	712 716
DN 100 PVC for connection to the tank, withdrawal volume up to 33 m ³ /h	712 718

Fresh water make-up feed for GENO-Multi Niveau ¹	Order no.
For level-dependent make-up water feed into storage tanks installed downstream; only in combination with make-up water feed control GENO-Multi-Niveau; consisting of a solenoid valve with shut-off valve as pre-assembled unit ready for connection	
Connection 1/2", up to 3 m ³ /h	382 250.20
Connection 3/4", up to 5 m ³ /h	382 255.20
Connection 1", up to 8 m ³ /h	382 260.20
Connection 1 1/4", up to 12 m ³ /h	382 265.20
Connection 1 1/2", up to 16 m ³ /h	382 270.20
Connection 2", up to 22 m ³ /h	382 275.20

¹ For permeate-resistant version, please inquire.

Membrane Technology



Basic pure water tank KR (round)

- Operating temperature: approx. +10 to +30 °C
- Ambient temperature: approx. +10 to +30 °C
- Placing: indoors, on a level surface
- Operating pressure: unpressurised



Permeate tank

Basic pure water tank RB/KR (round)

Pure water tank made of black PE including the following accessories: Connections for inlet, tank overflow, tank draining, level control, pressure booster system, manhole (handhole for RB/RB-X 300 and 500).

In case of the pure water tank with sterile air filter (KR), said tank features an overflow siphon and a safety device against positive and negative pressure.

Basic pure water tank (round)	300	300	500	500	1000	1100	2000
	Standard	Sterile	Standard	Sterile	KR	KR	KR
Volume [l]	300	300	500	500	1,000	1,100	2,000
Diameter [mm]	675	675	840	840	1,000	1,250	1,650
Total height [mm]	1,075	1,120	1,265	1,310	1,650	1,165	1,215
Order no. RB	711000010000	711000020000	711000050000	711000060000			
Order no. RB-X	711000030000	711000040000	711000070000	711000080000			
Order no. (standard)					711 300	711 310	711 320
Order no. (with sterile air filter)					711 500	711 510	711 520

Basic pure water tank (round)	2200 B	2200 H	3000 B	3000 H	4000	4200
	KR	KR	KR	KR	KR	KR
Volume [l]	2,200	2,200	3,000	3,000	4,000	4,200
Diameter [mm]	1,450	1,260	1,660	1,460	1,670	1,970
Total height [mm]	1,690	2,165	1,715	2,190	2,215	1,755
Order no. (standard)	711 330	711 340	711 350	711 360	711 370	711 380
Order no. (with sterile air filter)	711 530	711 540	711 550	711 560	711 570	711 580

Basic pure water tank (round)	5000	7000	7200	10600	10800	15000
	KR	KR	KR	KR	KR	KR
Volume [l]	5,000	7,000	7,200	10,600	10,800	15,000
Diameter [mm]	1,670	1,980	2,220	2,680	2,240	2,890
Total height [mm]	2,715	2,755	2,290	2,350	3,290	2,875
Order no. (standard)	711 390	711 400	711 410	711 420	711 430	711 440
Order no. (with sterile air filter)	711 590	711 600	711 610	711 620	711 630	711 640

Note: For other sizes, please inquire. Various variants are possible, e.g. level measurement with GENO-Multi-Niveau or external level



Pressure booster system GENO-FU-X N/NE (single system)

Technical specifications

- Power supply 230 V, 50 Hz
- Protection IP 55
- Medium/ambient temperature 5 - 40 °C



Pressure booster system GENO-HR-X (twin system)

Membrane Technology

Pressure booster systems GENO-HR-X and GENO-FU-X N/NE

Pressure booster systems GENO-HR-X/FU-X N to supply water distribution networks in buildings with raw water, softened water and partially demineralised water (permeate) or, in case of GENO-FU-X NE, to supply distribution networks with diluate originating from EDI-X systems or 2-stage reverse osmosis systems. The systems are also suitable for continuous operation. Multi-stage, horizontal centrifugal pump(s) with standard suction, mounted on an aluminium system rack with adjustable feet to compensate for uneven floors, built-on pump controller with power switching, operating switch, graphics display, operation log via SD card, voltage-free signal/collective fault signal contact, two inputs for release of the pump, can be interconnected with bus-compatible GENO-OSMO-X/osmoliQ:LB controller, pressure gauge, non-return valve, shut-off valves on suction and pressure side, contact water meter to indicate the flow rate, system piping made of stainless steel/PP/PE. Approved for drinking water and in addition equipped with a diaphragm expansion tank and a draining valve. In case of twin pressure booster aggregates, an adjustable cascade connection is possible.

The pressure booster systems GENO-HR-X are automatically controlled via pressure and flow controllers. Start and stop functions of the pump are controlled based on the actual water withdrawal. A low-on water protection is integrated. The pressure booster systems GENO-FU-X are speed-controlled by means of pressure sensor and frequency converter and therefore are highly energy saving. Smooth start and stop of the pump prevents water hammer. The controller keeps the set pressure (adjustable by means of +/- button) constant. The adapted rotation speed results in a material-friendly operation of the pump and of the peripheral devices installed downstream.

GENO-HR-X	2/40-1N	4/40-1N	2/40-2N	4/40-2N
	Single system		Twin system	
Connected load [kW]	1.1	1.4	2.1	2.7
Nominal diameter on suction side [DN]	25	32	25	32
on pressure side [DN]	25	25	25	25
Delivery rate GENO-HR-X				
[m³/h]/at ... mWC	1.0/54.0	2.4/50.0	2 x 1.0/54.0	2 x 2.4/50.0
[m³/h]/at ... mWC	4.2/24.0	7.2/16.0	2 x 4.2/24.0	2 x 7.2/16.0
Order no.	730 460	730 462	730 461	730 463

GENO-FU-X N/NE	2/40-1N/NE	4/40-1N/NE	2/40-2N/NE	4/40-2N/NE
	Single system		Twin system	
Connected load [kW]	0.7	1.4	1.4	2.7
Delivery rate GENO-FU-X				
[m³/h]/at ... mWC	1.0/56.0	2.0/66.0	2 x 1.0/56.0	2 x 2.0/66.0
[m³/h]/at ... mWC	4.2/25.0	8.5/29.0	2 x 4.2/25.0	2 x 8.5/29.0
Order no. GENO-FU-X N	730 640	730 642	730 641	730 643
Order no. GENO-FU-X NE	730 790	730 792	730 791	730 793

Note: The pressure booster systems GENO-HR-X/FU-X are suitable for use with GENO-OSMO-X/HLX, GENO-OSMO RO 125 K, GENO-OSMO AVRO 125, osmoliQ:LB, ion selector NANO-X or ultraIiQ:SB/MA.

The pressure booster systems GENO-FU-X NE are required for use with GENO-EDI-X as well as downstream of 2-stage reverse osmosis systems.



Technical specifications

- Media/ambient temperature 5 - 35 °C/5 - 40 °C
- Protection IP 55
- Power supply 400 V, 50 Hz

Pressure booster system GENO-FU (twin system)

Pressure booster systems GENO-FU (400 V, 50 Hz)

Speed-controlled, vertical, low-noise, high-pressure centrifugal pump(s) with standard suction, made of stainless steel, with electric motor and frequency converter of efficiency class IE3, for raw water, soft water or permeate. Electronic pump control by means of frequency converter, integrated control unit with microprocessor controller, time changeover and peak load activation, prevention of water hammer thanks to smooth start

and stop of the pump, flown-through diaphragm expansion tank to reduce the switch-on frequency of the pump. Fully mounted on an aluminium system rack with adjustable feet to compensate for uneven floors, switch box with power unit(s), pressure gauge, non-return valve, shut-off valves on suction and on pressure side, draining valve for maintenance purposes, PVC piping.

Type N/NE	5/60-1	10/40-1	10/60-1	16/40-1	16/70-1	22/40-1	22/70-1	33/40-1	33/70-1
Single systems									
Connected load [kW]	1.5	2.2	3.0	4.0	5.5	4.0	7.5	5.5	11.0
Nominal diameter									
on suction side [DN]	40	50	50	65	65	80	80	100	100
on pressure side [DN]	32	40	40	50	50	65	65	80	80
Delivery rate [m³/h]	2.4	5.0	5.0	8.0	8.0	11.0	11.0	15.0	15.0
at ... mWC	72.0	56.1	78.3	54.7	81.5	56.8	88.8	55.2	85.0
Delivery rate [m³/h]	8.5	14.0	14.0	24.0	24.0	29.0	29.0	40.0	40.0
at ... mWC	33.0	29.0	39.8	28.7	44.2	23.0	42.6	29.6	55.1
Order no. Type N	730 570	730 581	730 580	730 586	730 590	730 591	730 592	730 598 ¹	730 600 ¹
Order no. Type NE	730 734	730 729	730 737	730 740	730 742	730 744	730 787	730 748	730 751

Type N/NE	5/60-2	10/40-2	10/60-2	16/40-2	16/70-2	22/40-2	22/70-2	33/40-2	33/70-2
Twin systems									
Connected load [kW]	3.0	4.4	6.0	8.0	11.0	8.0	15.0	11.0	22.0
Nominal diameter									
on suction side [DN]	40	50	50	65	65	80	80	100	100
on pressure side [DN]	40	50	50	65	65	80	80	100	100
Delivery rate [m³/h]	2.4	5.0	5.0	8.0	8.0	11.0	11.0	15.0	15.0
(per pump) at ... mWC	72.0	56.1	78.3	54.7	81.5	56.8	88.8	55.2	85.0
Delivery rate [m³/h]	8.5	14.0	14.0	24.0	24.0	29.0	29.0	40.0	40.0
(per pump) at ... mWC	33.0	29.0	39.8	28.7	44.2	23.0	42.6	29.6	55.1
Order no. Type N	730 575	730 582	730 585	730 587	730 595	730 607	730 612	730 617 ¹	730 620 ¹
Order no. Type N	730 767	730 769	730 771	730 774	730 776	730 778	730 788	730 782	730 785

¹ In case the pressure booster system GENO-FU is installed in pressure pipes (e.g. in the city water networks to increase the supply pressure), an external pressure switch (order no. 899 49051) is required for dry-run protection.

¹ Systems are not resistant to permeate. In case of these system sizes, please use type NE!

Note: Type NE is required for ultra-pure water such as the diluate downstream of GENO-EDI-X systems or 2-stage reverse osmosis systems.



Rack-mounted modular system GENO-OSMO-X p

Membrane Technology

Configuration of rack-mounted modular systems

Rack-mounted modular systems for the pre-assembled delivery of complete system configurations

System rack made of anodised aluminium profile to house and fasten the individual system components, adjustable feet to compensate for uneven floors, entire PP/PE piping between the system components, including filling of exchanger tanks, wiring and workshop testing.

Rack-mounted modular system GENO-OSMO-X p

Aluminium rack, fine filter **BOXER KDX 1"** (starting from size 2200: **BOXER KDX 1 1/4"**), system separator **GENO-DK 2 1"** (starting from size 2200: **DK 2 1 1/4"**), water softener **Delta-p-I 1"** (starting from size 2200: **Delta-p-I 1 1/4"**), monitoring of limit value for soft water hardness **softwatch**, reverse osmosis system **GENO-OSMO-X** according to type designation and corresponding activated carbon filter AKF.

	200	400	800	1200	1600	2200	3000
Permeate capacity at 15 °C [l/h]	200	400	800	1,200	1,600	2,200	3,000
Dimensions (w x h x d) [mm] ¹	2,150 x 1,700 x 900			2,285 x 1,700 x 900		2,420 x 1,700 x 900	
Order no.	751 500	751 510	751 520	751 530	751 540	751 550	751 560

Rack-mounted modular system GENO-OSMO-X WE

Aluminium rack, fine filter **BOXER KDX 1"** (starting from size 2200: **BOXER KDX 1 1/4"**), system separator **GENO-DK 2 1"** (starting from size 2200: **DK 2 1 1/4"**), water softener duo **WE-X 65** (starting from size 1200: duo **WE-X 150**, starting from size 2200: duo **WE-X 300**), monitoring of limit value for soft water hardness **softwatch**, reverse osmosis system **GENO-OSMO-X** according to type designation and corresponding activated carbon filter AKF.

	200	400	800	1200	1600	2200	3000
Permeate capacity at 15 °C [l/h]	200	400	800	1,200	1,600	2,200	3,000
Dimensions (w x h x d) [mm] ¹	2,150 x 1,700 x 900			2,285 x 1,700 x 900		2,420 x 1,925 x 900	
Order no.	751 600	751 610	751 620	751 630	751 640	751 650	751 660

¹ Dimensions without salt dissolving tank.

Add-on system GENO-GT-X

Basic pure water tank **GENO-GT-X** with sterile air filter and pressure booster system for placement on the floor at the side of a rack-mounted modular system, connecting piping included.

Add-on system	GT-X-HR-X 2/40-1	GT-X-HR-X 4/40-1	GT-X-HR-X 2/40-2	GT-X-HR-X 4/40-2
Type	Single system		Twin system	
Delivery rate [m³/h]	1.0 - 4.2	2.4 - 7.2	2 x 1.0 - 4.2	2 x 2.4 - 7.2
at ... mWC	54.0 - 24.0	50.0 - 16.0	54.0 - 24.0	50.0 - 16.0
Order no.	751 700	751 730	751 705	751 735

Add-on system	GT-X-FU-X 2/40-1	GT-X-FU-X 4/40-1	GT-X-FU-X 2/40-2	GT-X-FU-X 4/40-2
Type	Single system		Twin system	
Delivery rate [m³/h]	1.0 - 4.4	2.0 - 8.5	2 x 1.0 - 4.4	2 x 2.0 - 8.5
at ... mWC	56.0 - 25.0	66.0 - 29.0	56.0 - 25.0	66.0 - 29.0
Order no.	751 710	751 740	751 720	751 745



Flexible rack-mounted modular system GENO-SKID

Flexible rack-mounted modular system GENO-SKID

Aluminium rack including assembly, PP/PE piping, wiring and workshop testing of various system components yet to be defined and not included in the price.

	Description	Order no.
GENO-SKID 65 - 300/1"	Possible set-ups: Fine filter, Euro system separator, water softener Delta-p 1" or duo WE-X 65 up to 300, monitoring of limit value for soft water hardness	750 592
GENO-SKID 450/1¼"	Possible set-ups: Fine filter, Euro system separator, water softener Delta-p 1¼" or duo WE-X 450, monitoring of limit value for soft water hardness	750 593
GENO-SKID 750/1½"	Possible set-ups: Fine filter, Euro system separator, water softener Delta-p 1½" or duo WE-X 750, monitoring of limit value for soft water hardness	750 594
GENO-SKID 1000/2"	Possible set-ups: Fine filter, Euro system separator, water softener Delta-p 2", monitoring of limit value for soft water hardness	750 595

Flexible rack-mounted modular system GENO-SKID

Aluminium rack including assembly, PP/PE piping, wiring and workshop testing of various system components yet to be defined and not included in the price such as filter systems (MN-Z, AK-Z etc.), basic pure water tanks with pressure booster systems, mixed bed cartridges, GENO-EDI-X, etc. Please take dimensions into consideration.

	Dimensions (w x d) [mm]	Order no.
GENO-SKID 1/1000	1,000 x 1,000	750 596
GENO-SKID 2/1500	1,500 x 1,000	750 597
GENO-SKID 3/2000	2,000 x 1,000	750 598



Mixed bed cartridge desaliQ:BA6

Mixed bed cartridges desaliQ:BA

Compact mixed bed ion exchanger system for full demineralisation of water of drinking water quality or residual demineralisation of partially demineralised water. For instance for the initial filling or make-up water feed of heating systems. Stainless steel cartridge with high-quality mixed bed resin, interior distribution system, plastic ring with handles, plastic base, oval clip-type lid for easy replacement of the resin, flow stabiliser, vent valve, connection diameter ¾", nominal pressure PN 10, max. water temperature 80 °C.

desaliQ:BA ¹	6	12	13	16	20
Nominal connection diameter	¾"	¾"	¾"	¾"	¾"
Capacity < 10 µS/cm [µS/cm x m³]	215	460	1,040	1,560	2,080
Capacity < 50 µS/cm [µS/cm x m³]	340	800	1,650	2,475	3,300
Nominal flow [m³/h]	0.6	1.2	1.3	1.6	2.0
Weight upon delivery [kg]	12	23	48	68	89
Dimensions, approx. (Ø/h) [mm]	240/400	240/755	410/605	410/820	410/1,065
Order no.	707 450	707 460	707 470	707 480	707 490

¹ For connection to the fitting, the desaliQ hose kit is required.

Accessories	Order no.
desaliQ hose kit	707 850

Calculation example

- Conductivity of raw water: 500 µS/cm
- Cartridge used: desaliQ:BA6
- 215/500 = 0.43 m³ (corresponds to 430 litres at 10 µS/cm)
- 340/500 = 0.68 m³ (corresponds to 680 litres at 50 µS/cm)

Mixed bed cartridges desaliQ:PA

Technical specifications identical to desaliQ:BA, but system filled with ultra-pure water resin and resistant to temperatures of maximum 30 °C. The mixed bed ion exchangers with ultra-pure water resin produce fully demineralised water of the highest quality and purity (< 0.1 µS/cm). The ultra-pure water resin (disposable resin) cannot be regenerated when exhausted.

desaliQ:PA	6	12	13	16	20
Nominal connection diameter	¾"	¾"	¾"	¾"	¾"
Nominal flow [m³/h]	0.6	1.2	1.3	1.6	2.0
Weight upon delivery [kg]	12	23	48	68	89
Dimensions, approx. (Ø/h) [mm]	240/400	240/755	410/605	410/820	410/1,065
Order no.	703 655	703 665	703 675	703 685	703 695

Membrane Technology



Conductivity meter D 100 AN

Accessories for mixed bed cartridges desaliQ

The measuring range of the conductivity meters is 0 - 10/100 µS/cm. Voltage supply 10 - 25 V DC by means of the power supply plug included in the scope of supply, connection 3/4". For the connection of the mixed bed cartridges including the conductivity meter, a separate connection kit (including adapter, EPDM hose with stainless steel braiding and flat seals) is available.

Accessories	Order no.
Conductivity meter D 100 LED (0 - 100 µS/cm)	703 530
Conductivity meter D 10 AN (0 - 10 µS/cm)	703 545
Conductivity meter D 100 AN (0 - 100 µS/cm)	703 535
Conductivity meter D 10 ANR (0 - 10 µS/cm) ¹	703 555
Conductivity meter D 100 ANR (0 - 100 µS/cm) ¹	703 540
desaliQ connection kit ²	703 575

Regeneration for mixed bed cartridges	Order no.
Regeneration of high-quality mixed bed resin for desaliQ:BA6	707 450ak
Regeneration of high-quality mixed bed resin for desaliQ:BA12	707 460ak
Regeneration of high-quality mixed bed resin for desaliQ:BA13	707 470ak
Regeneration of high-quality mixed bed resin for desaliQ:BA16	707 480ak
Regeneration of high-quality mixed bed resin for desaliQ:BA20	707 490ak
New filling of ultra-pure water resin for desaliQ:PA6	703 655ak
New filling of ultra-pure water resin for desaliQ:PA12	703 665ak
New filling of ultra-pure water resin for desaliQ:PA13	703 675ak
New filling of ultra-pure water resin for desaliQ:PA16	703 685ak
New filling of ultra-pure water resin for desaliQ:PA20	703 695ak

¹ With voltage-free relay output.

² One connection kit required per mixed bed cartridge. Absolutely necessary when using an LED, AN or ANR conductivity meter.

Hygiene and Disinfection

Reasons for disinfection

The aim of water disinfection is to render any pathogens contained therein, e.g. viruses and bacteria, harmless. This can be achieved either with chemicals (e.g. chlorine or chlorine dioxide) or by treatment with UV-C light or by using an adsorption system. Disinfection processes form the final stage and are located downstream of water treatment systems. The limit and guideline values for the microbiological constituents of water are regulated by statutory provisions (e.g. the German Drinking Water Ordinance (TrinkwV)) and technical rules (e.g. VDI 6022) depending on the requirements and intended application.

UV light

The disinfecting effect of the UV light (**violIQ:UV systems**) is due to the application of a special kind of lamp whose light – similar to sunlight – acts as a disinfectant.

- **violIQ:UV systems** (household/industry)
- Elimination of legionellae
- Combined process of disinfection by means of air washers (**GENO-LUWADES₂**)

Dosing of disinfectants

In principle, pathogens are killed by dosing liquid disinfectants via volume-controlled dosing pumps. A distinction is made between adding ready-made dosing solutions (**GENO-Chlor A**) or dosing solutions prepared on site (**GENO-Bakttox**) as well as continuously generated disinfection solutions (**chlorine dioxide**).

- Dosing of **GENO-Chlor A (GENODOS DM-T)**
- Dosing of **GENO-Bakttox (GENODOS DM-B/BO)**
- Generation and dosing of chlorine dioxide (**GENO-Bakttox MRX/RX/X**)

Technical specifications

- Service life of lamps up to 16,000 h
- Spectral attenuation coefficient₂₅₄ max. 3.2 m⁻¹
- Max. operating pressure 10 bar
- Power supply 230 V, 50 Hz



Disinfection system violiQ:UV

Sales only after consultation with Grünbeck – Water analysis required



Disinfection systems “drinking water version”

For the disinfection of clear drinking water which is free of turbidities, iron and manganese and only slightly microbiologically loaded, for use in the HVACR sector and for private water supplies. These systems are DVGW-certified in accordance with DIN 19294-1 which is applicable in this sector.

Scope of supply: Stainless steel reactor with high-intensity UV lamps 2 flushing/drainage valves, 2 water meter screw connections, flow limiter, safety valve included in the scope of supply, calibrated UV-C system sensor as per W 294-3, protective quartz pipe, control unit violiQ:UV with operating hour meter and switch-on counter, display of the irradiation intensity in W/m² as well as power output for connection of an optional temperature-controlled flushing device.

Disinfection system	violiQ:UV20	violiQ:UV66	violiQ:UV85
Nominal connection diameter [R]	1"	1½"	2"
Installation position	horizontal, outlet at the top, self-venting		
Max. flow at 5 - 30 °C [m³/h]	2.0	6.6	8.5
Inlet water temperature [°C]	5 - 70	5 - 70	5 - 70
Ambient temperature [°C]	5 - 40	5 - 40	5 - 40
Connected load [VA]	75	145	215
Total length incl. screw connection [mm]	795	1,185	1,430
Order no.	523000010000	523000030000	523000040000

Accessories	Order no.
Temperature-controlled flushing for violiQ:UV	523 825
Temperature-controlled flushing for violiQ:UVi-comfort	523 825.10
Temperature-controlled flushing for violiQ:UVi	523 820.10
UV safety goggles	522 810
Stainless steel connection kit 1" for UV systems	520 070
Stainless steel connection kit 2" for UV systems	520 075
Wall bracket for UV systems (violiQ:UV, GENO-UV, KWA)	523 800
Floor rack for violiQ:UV20, UV33 DVGW//KWA	523 815
Floor rack for violiQ:UV66, UV80 DVGW//KWA	523 805
Floor rack for violiQ:UV85, UV120 DVGW//KWA	523 810
USB data logger for violiQ:UV	523830010000
Flushing kit for cleaning UV systems with GENO-clean CP	520 020
Cleaning agent GENO-clean CP (10 x 1 litre)	170 022

Please inquire about **additional UV systems** for special applications – **ex works and ready for connection!**

- Hydraulic part with tested flow capacity
- Use of special long-life lamps with a service life of up to 16,000 h
- Power supply 230 V, 50 Hz
- Protection IP 54
- Max. operating pressure 10 bar



violiQ:UV80i

Sales only after consultation with Grünbeck – Water analysis required

violiQ:UV systems “industrial version”

For the disinfection of process and swimming pool water which is essentially free of turbidities and only slightly contaminated

Fully permeate-resistant systems consisting of electro-polished stainless steel pipe with centred high-intensity UV lamp, 2 flushing/drainage valves for system cleaning, 2 water meter screw connections, protective quartz pipe which can be removed, flow distribution device, control unit with operating hour meter and ballast, voltage-free relay contact.

violiQ:UV	33i	80i	120i
Nominal connection diameter [R]	1"	1½"	2"
Nominal flow [m³/h] ¹	3.3	8.0	12.0
Water/ambient temperature inlet [°C] ²	5 - 70/5 - 40	5 - 70/5 - 40	5 - 70/5 - 40
Connected load [VA]	75	145	215
Installation length with screw connection [mm]	560	960	1,212
Order no.	523210000000	523220000000	523230000000

¹ Nominal flow at a guaranteed room irradiation of 400 J/m² and a spectral absorption coefficient (254 nm) of 2.7 m⁻¹.
² In case the violiQ:UV 80i is used for swimming pool water, the application limit is Tmax = 40 °C.

violiQ:UV systems "industrial version comfort"

For disinfection of mostly turbidity-free process and swimming pool water with irradiance monitoring

Fully permeate-resistant systems consisting of electro-polished stainless steel pipe with centred high-intensity UV lamp, 2 flushing/drainage valves for system cleaning, 2 water meter screw connections, protective quartz pipe which can be removed, flow distribution device, control unit violiQ:UV with operating hour meter and switch-on counter, indication of the irradiation intensity in W/m².

violiQ:UV	33i-comfort	80i-comfort	120i-comfort
Nominal connection diameter [R]	1"	1½"	2"
Nominal flow [m³/h]	3.3	8.0	12.0
Water/ambient temperature inlet [°C]	5 - 70/5 - 40	5 - 70/5 - 40	5 - 70/5 - 40
Connected load [VA]	75	145	215
Installation length with screw connection [mm]	795	1,185	1,430
Order no.	523000050000	523000060000	523000070000

Hygiene and Disinfection

Sales only after consultation with Grünbeck – Water analysis required



GENO-UV-M system M4/200 S

GENO-UV-M system “industrial version”

For the disinfection of process and swimming pool water which is essentially free of turbidities and only slightly contaminated (UV system)

Consisting of: GENO-UV-M (2 - 5)/200 S fully mounted on a stainless steel rack with electro-polished pressure pipes, 2 connection flanges, 2 flushing valves for system cleaning, UV system sensor, sensor shell, protective quartz pipes, UV lamps, ballasts, control unit GENO-UV-tronic₂, temperature sensor, electric lines, power cable and operation manual.

Technical specifications

- Max. nominal pressure PN 10
- Min. drain connection DN 50
- Protection IP 54
- Pressure loss at max. flow < 0.2 bar
- Power supply 230 V, 50 Hz
- Inlet water temperature 8 - 40 °C
- Max. ambient temperature 40 °C
- Service life of lamps up to 16,000 h

GENO-UV-	M2/200 S	M3/200 S	M4/200 S	M5/200 S
Nominal connection diameter [DN]	80	80	100	100
Nominal flow [m ³ /h] ¹	28	47	71	98
Connected load [W]	620	735	850	965
Number of lamps	2	3	4	5
Order no.	522 320	522 325	522 330	522 335

¹ Nominal flow at a guaranteed room irradiation of 400 J/m² and a spectral absorption coefficient₂₅₄ value of 2.7 m⁻¹.

Accessories	Order no.
Flow sensor for UV system M2/M3 with connection line	522 265
Flow sensor for UV system M4/M5 with connection line	522 275
Flushing valve for temperature-controlled flushing	522 800
Flushing kit for UV system “industrial version”	520 025
Cleaning agent GENO-clean CP	170 022

Sales only after consultation with Grünbeck – Water analysis required



GENODOS DM-T 6



GENODOS DM-T 20

Dosing systems GENODOS DM-T

For the flow-dependent dosing of GENO-Chlor A from transportation canisters or dosing tanks for the disinfection of drinking and industrial water

Low-noise dosing pump 1/40 4G, self-priming and automatically deaerating against pressure, continuously adjustable diaphragm pump with pump head made of chemical-resistant plastic, synchronous motor, with fastening bracket for wall or floor mounting, with connection options for external pulse control, empty signal with pre-alarm, indicator for membrane breakage, including voltage-free fault signal output, contact water meter with pulse cable to the pump electronics, including water meter screw connections or flanges, PVC dosing group 2.70 with non-return valve, pressure maintaining valve DHV 4, factory-set to 4 bar, dosing line made of PTFE.

- Suction lance for transportation canister made of PVC (DM-T 6 and DM-T 10)
- 60 l dosing tank (black) with suction lance (DM-T 20 and DM-T 30)
- 200 l dosing tank (black) with suction lance (DM-T 80 and DM-T 100)

Technical specifications

- Nominal pressure PN 10
- Temperature min. 5 °C - max. 30 °C
- Power supply 230 V, 50/60 Hz, 18/21 W

GENODOS dosing system	DM-T 6	DM-T 10	DM-T 20	DM-T 30	DM-T 80	DM-T 100
Water meter ¹	R 1"	R 1¼"	R 1½"	R 2"	DN 80	DN 100
Max. operating range [m ³ /h]	6	10	20	30	80	100
Pressure loss at max. flow [bar]	0.5	0.5	0.8	0.8	0.6	0.8
Tank volume [litres]	20	20	60	60	200	200
Order no.	163 140	163 150	163 160	163 170	163 180	163 190

¹ With submerged-type contact mechanism.

Disinfectant	Order no.
GENO-Chlor A (25 kg) for all pipes, except for stainless steel pipes ²	210 012

Accessories	Order no.
PVC dosing group 2.72 with non-return valve and ball valve	163 220
Water test kit for chlorine and pH value (measuring range chlorine: 0.1 - 2.0 mg/l; pH: 6.9 - 8.2)	170 128
Chemical spill tray for 20 l canisters	210 560
Chemical spill tray for 60/100 l dosing tanks	163 805

² Sufficient for the treatment of approximately 3,000 m³ of water (dosing volume 1.0 mg/l)



Hygiene and Disinfection

Dosing systems GENO-Baktox

For temporary continuous disinfection of drinking and industrial water by means of chlorine dioxide
Continuously adjustable, self-priming diaphragm dosing pump, automatically deaerating against pressure, with synchronous motor, connection options for empty signal, external control and voltage-free fault signal output, pump factory-set and under seal, contact water meter with pulse cable and pulse division for **GENODOS-pump** and dosing valve, gas-tight suction lance with integrated pre-alarm and empty signal, pressure maintaining valve.

Dosing systems GENODOS DM-B

Dosing system DM-B 6 pre-assembled on mounting plate, dosing systems DM-B 10 - 30 consisting of individual components

Specifications

- Power supply 230 V, 50/60 Hz
- Water temperature 5 - 30 °C
- Ambient temperature 5 - 20 °C
(in case of ambient temperatures of > 20 °C, the service life of the disinfectant is considerably shorter)
- Nominal pressure PN 8
- Factory setting of pressure maintaining valve: 4 bar

Dosing system	GENODOS DM-B ¹			
	6 ²	10	20	30
Nominal connection diameter [R]	1"	1¼"	1½"	2"
Nominal flow Q _N [m³/h]	3	5	10	15
Flow Q _{max} [m³/h]	6	10	20	30
Pressure loss at Q _{max} [bar]	0.5	0.5	0.7	0.8
Order no.	163 820	163 825	163 830	163 835

¹ GENO-Baktox as well as the water test kit are not included in the system's scope of supply.

Accessories	Order no. (RG-B)
Chlorine dioxide test 0.02 - 0.55 mg/l	170 430
Chemical spill tray for 20 l canisters	210 560
M-Bus measuring transducer D-DAM, complete	115 850
Data logging for DM-BO ³	569 885
Set of safety stickers GENO-Baktox	569 810

¹ For disinfectants, please refer to page 57.

² For dosing system GENODOS type DM-B 6 (order number 163 820) only 3-litre canisters are suitable.

³ For new systems only. Regarding the retrofitting of existing systems, please inquire.

Dosing systems GENODOS DM-BO with online measurement

For temporary continuous disinfection of drinking and industrial water
"Plug and play" dosing system, completely pre-assembled on aluminium rack, self-priming and continuously adjustable diaphragm dosing pump, automatically deaerating against pressure, with synchronous motor, pump factory-set and under seal, contact water meter with pulse cable and pulse division for **GENODOS-pump**, online chlorine dioxide measurement, blending module with integrated dosing valve, gas-tight suction lance with integrated pre-alarm and empty signal, pressure maintaining valve.

Technical specifications

- Power supply 230 V, 50/60 Hz
- Water temperature 5 - 30 °C
- Ambient temperature 5 - 20 °C
(In case of ambient temperatures of > 20 °C, the service life of the disinfectant is considerably shorter)
- Nominal pressure PN 8

Dosing system GENODOS DM-BO	6 ¹	10	20	30
Dimensions (w x h x d) [mm]	785 x 1,100 x 480	785 x 1,100 x 480	785 x 1,100 x 480	785 x 1,100 x 480
Nominal connection diameter [R]	1"	1¼"	1½"	2"
Nominal flow Q _N [m³/h]	3	5	10	15
Flow Q _{max} [m³/h]	6	10	20	30
Pressure loss at Q _{max} [bar]	0.5	0.5	0.7	0.8
Order no.	163 865	163 875	163 885	163 895

¹ GENO-Baktox and the water test kit are not included in the system's scope of supply.

¹ For dosing system GENODOS type DM-BO 6 (order number 163 865) only 3-litre canisters are suitable.

Note: For technical specifications and accessories, please refer to page 56.

Disinfectants

1 litre of **GENO-Baktox** is sufficient

- for a water volume of 10 m³ (dosing volume 0.2 mg/l) in case of standard dosing (DM-B, DM-BO)
- for a water volume of 1 m³ (dosing volume 2 mg/l) in case of system disinfection (MOBIdos)

Disinfectants	Order no.
GENO-Baktox (3 l)	170 450
GENO-Baktox (10 kg)	170 460
GENO-Baktox (20 kg)	170 470

Note: In order to ensure efficient disinfection, the prepared **GENO-Baktox solution** should be used up within two months.

Sales only after consultation with Grünbeck – Water analysis required



- Ready for connection
- Material-friendly concentration of chlorine dioxide preparation
- Visualisation of the system components in graphics display
- Online measurement of chlorine dioxide without loss of measuring water (type MRX)
- Gas absorption unit to neutralise gaseous ClO₂

GENO-Bakttox MRX

Chlorine dioxide generation systems GENO-Bakttox MRX/RX/X

For continuous generation and flow-controlled dosing of chlorine dioxide for the disinfection of drinking and industrial water. Generation system in plastic switch cabinet incl. control unit and touchscreen display, reaction and supply tank, two hose pumps for chemicals including suction lances, two safety collection trays, gas absorption unit, self-priming diaphragm dosing pump(s), automatically deaerating against pressure, pressure maintaining and dosing valve(s), contact water meter as pulser, in addition for type MRX: innovative blending module with integrated online measurement of chlorine dioxide, set of safety stickers **GENO-Bakttox**.

Technical specifications

- Nominal pressure PN 8
- Power supply 230 V, 50 Hz, max. 80 VA
- Water/ambient temperature max. 30/30 °C
- Generation capacity 10 g/h

Chlorine generation system GENO-Bakttox MRX	10	20	25	30	50/1	50/2
Generation system mounted on aluminium rack, with blending module and online chlorine dioxide measurement						
Number of dosing pumps	1	1	1	2	2	2
Nominal connection diameter of water meter	R 1 1/4"	R 1 1/2"	R 2"	R 2"	DN 80	DN 100
Flow Q _{max} [m ³ /h]	10	20	25	30	50	50
Pressure loss at Q _{max} [bar]	0.6	0.4	0.7	0.9	0.5	0.5
Order no.	569 310	569 325	569 340	569 355	569 370	569 385

Chlorine generation system GENO-Bakttox RX	10	20	25	30	50/1	50/2
For stand-alone placement. Generation system mounted on aluminium rack (Technical specifications as for type MRX, however, blending module and online chlorine dioxide measurement are not included.)						
Order no.	569 305	569 320	569 335	569 350	569 365	569 380

Chlorine generation system GENO-Bakttox X	10	20	25	30	50/1	50/2
For wall mounting (Technical specifications as for type MRX, however, blending module and online chlorine dioxide measurement are not included.)						
Order no.	569 300	569 315	569 330	569 345	569 360	569 375



GENO-Bakttox weiss/GENO-Bakttox blau



Personal protection kit GENO-Bakttox

Hygiene and Disinfection

Agents and accessories

For chlorine dioxide systems GENO-Bakttox MRX/RX/X

	Order no.
Agents	
GENO-Bakttox blau, 20 kg canister ¹	170 490
GENO-Bakttox weiss, 20 kg canister ¹	170 485
Gas neutralising agent (half-yearly replacement)	569 332
Accessories	
Personal protection kit GENO-Bakttox	569 815
Personal protection kit GENO-Bakttox II (incl. breathing equipment)	569 805
Chlorine dioxide test 0.02 - 0.55 ppm	170 430
Hand-held analysis device Chematest 35	203 120
Room air monitoring for chlorine dioxide, chlorine and ozone	569 880

¹ Sufficient for the treatment of approx. 3,800 m³ of water (dosing volume 0.2 mg/l).

Water treatment in water supply

Well water and spring water have high fluctuations in quality. During heavy rainfall or snowmelt, surface-influenced springs are often contaminated by turbidity and pathogens.

In low-oxygen ground water elevated concentrations of iron and manganese may occur which are – especially for technical and visual reasons - undesirable in drinking water. These water constituents may cause brown to black discolouration and stains that are difficult to remove. Microbiological loads and anthropogenic pollution result in well and spring water often containing substances such as hydrogen sulphide, ammonium or nitrate. Special geological conditions cause some types of raw water to have a low pH value and therefore to contain carbon dioxide in its free, aggressive form.

Ultrafiltration

The ultrafiltration system **ultraliQ:SB/MA** is designed for the reduction of microbiological loads (germs, bacteria, viruses, parasites) as well as for the removal of turbidity and particles contained in the drinking water. The modules installed in the ultrafiltration system **ultraliQ:SB/MA** consist of a multitude of capillary membranes with a cut-off limit of 0.02 µm, thus ensuring a reliable separation of the loaded raw water side and the pure water side. The water is prefiltered by a fine filter (e.g. **pureliQ:K**) and then directed to the raw water side of the membrane filter where it flows through the entire membrane surface from the inside out. Thus, micro-organisms, turbidity and particles are reliably retained on the membrane's surface and a high pure water quality is ensured.

Multi-layer and activated carbon filtration

Undissolved impurities are retained in the filter material, accumulated and must eventually be removed from the filter tanks by means of a backwash process. By means of combined air/water flushing, the collected impurities

are flushed from the filter in the counter-flow and directed to the drain. The backwash process is fully automatic. The filter systems **filtraliQ:LA** can either be operated in series or in parallel. For dechlorination purposes and the improvement of smell and taste, a filter filling containing activated carbon is available for the **filtraliQ:LA** system type as well.

Oxidation filtration

During the treatment by means of our oxidation filter system **fermaliQ:MA**, dissolved iron and manganese are converted into their hardly soluble forms and filtered off. Apart from iron and manganese, the oxidation filter system **fermaliQ:MA** – by way of a combination of raw water atomisation, aeration and multi-layer filtration - fully automatically reduces ammonium, solid particles and odorants contained in the raw water as well. Depending on the content of free carbon dioxide, the processes used also achieve a deacidification of the raw water.

Thanks to the combination of above-mentioned processes in one system, a high pure water quality is achieved.

NEW



Ultrafiltration system ultraliQ:SB2000 with front cover

Sales only after consultation with Grünbeck – Water analysis required



Ultrafiltration system ultraliQ:MA10000

Ultrafiltration system ultraliQ:SB/MA

Treatment system to produce clear water which is free of germs as per DIN 2001-1

Ultrafiltration membranes with a cut-off limit of 0.02 µm, sampling valves (flame-sterilisable) for quality monitoring, adjustable flushing interval and duration, scope of supply fully mounted on aluminium system rack including control unit, solenoid valves, pressure gauges, water meter to detect the current and the total system flow. Including the required connection points for CIP cleaning as well as a connection to conduct an integrity test.

Ultrafiltration system ultraliQ:	SB500	SB1000	SB1500	SB2000	MA5000	MA10000
Nominal capacity [m³/h]	0.5	1.0	1.5	2.0	5.0	10.0
Dimensions approx. (w x h x d) [mm]	750 x 1,750 x 960				1,500 x 1,805 x 860	
Min. operating pressure [bar] ¹	2.5 - 4.5					
Max. operating pressure [bar]	6.0					
Power supply [V/Hz]	230/50					
Nominal connection diameter [R]	1" male thread				2" male thread	
Order no.	535 100	535 110	535 120	535 130	535 150	535 160

Accessories for ultrafiltration system ultraliQ:SB/MA

Diaphragm expansion tanks for drinking water	Order no.
For continuous water supply during system backwash as fresh water storage tanks with approvals	
Tank volume	
100	535 135
300	535 155
500	535 165

Options:

Front cover for ultraliQ	Order no.
Front cover for ultraliQ:SB series	535 138
Front cover for ultraliQ:MA series	535 168
	Order no.
S 7-1200 controller for ultraliQ	535 060
Integrity test ultraliQ	535 145
Mobile cleaning system CIP:UF60	778 100
Diaphragm expansion tank DD 33, G 3/4 ²	890 60 304

¹ The min. inlet pressure depends on the raw water quality and the intended use as well as on the pure water pressure required.

² To prevent water hammer if a pressurised water tank provided by the client on site is used as storage tank for the filtrate.



NEW

Filter system filtraliQ:LA

Filter systems filtraliQ:LA

Fully automatic filter system to reduce undissolved impurities, with oxidation stage installed upstream also suitable for the filtration of iron and manganese. With activated carbon filling also suitable for polishing, improvement of smell or reduction of chlorine

Filter tank made of GRP, including ventilation and interior water distribution system, filter piping at the front made of PE with pneumatic fittings and pilot valves. Flow meter to adjust the filter capacity, differential pressure switch to release the backwash process. Pre-assembled on an anodised aluminium system rack with levelling feet.

Technical specifications:

- Operating pressure min. 2.5 bar, max. 8.0 bar
- Nominal pressure PN 10
- Admissible water temperature: 30 °C

Filter system filtraliQ:LA	5600	10000	16000	24000	30000	40000
Nominal flow [m³/h] at 20 m/h ¹	5.6	10.0	16.0	24.0	30.0	40.0
Diameter of filter tank [mm]	610	770	1,074	1,226	1,429	1,623
Total height [mm]	2,700	2,800	2,800	2,900	3,450	3,900
Room height required [mm]	3,000	3,050	3,050	3,100	3,650	4,100
Backwash capacity [m³/h]	8.4	15.0	24.0	36.0	48.0	60.0
Flushing water demand [m³]	1.7	3.0	4.8	7.0	9.6	12.0
Scavenging air [Nm³/h]	16.0	40.0	60.0	80.0	100.0	140.0
Drain connection required	DN 100	DN 100	DN 125	DN 150	DN 200	DN 200
Order no.	246 500	246 510	246 520	246 530	246 540	246 550

¹ Subject to the actual water quality.



NEW

Scavenging air blower for filter system filtraliQ:LA

Accessories for filter system filtraliQ:LA

Accessories for filter system filtraliQ:LA	5600	10000	16000	24000	30000	40000
Filter filling for multi-layer filter						
Order no.	246 501	246 511	246 521	246 531	246 541	246 551

Filter filling for activated carbon filter	5600	10000	16000	24000	30000	40000
Order no.	246 502	246 512	246 522	246 532	246 542	246 552

Scavenging air blower	5600	10000	16000	24000	30000	40000
Including power unit in switch cabinet, flow meter, fittings and safety loop, completely pre-assembled						
Order no.	246 505	246 515	246 525	246 535	246 545	246 555

Flushing water pump	5600	10000	16000	24000	30000	40000
Including power unit in switch cabinet, flow meter and adjusting valve						
Order no.	246 506	246 516	246 526	246 536	246 546	246 556

Compressor for pneumatic valves	5600	10000	16000	24000	30000	40000
Order no.	246 503	246 503	246 503	246 503	246 503	246 503

Fittings group for compressor	5600	10000	16000	24000	30000	40000
Order no.	246 504	246 504	246 504	246 504	246 504	246 504

Accessories	Order no.
Electrical switch cabinet	
For 1 filter system	246 560
For 2 filter systems	246 565
For 4 filter systems	246 570

Water Supply



NEW

Sales only after consultation with Grünbeck – Water analysis required

Oxidation filter system fermaliQ:MA3000

Oxidation filter system fermaliQ:MA

Multi-stage, fully automatic water treatment system for oxidation, degassing and filtration of well and spring water. By means of atomisation, aeration and subsequent filtration, an effective reduction of impurities, iron, manganese, ammonium, hydrogen sulphide and free carbon dioxide is achieved.

Filter tank made of hot-dip galvanised steel, including built-in parts, level control and conical jet, blower with air filter box¹, PE piping including all the fittings and flame-sterilisable sampling valves required, pre-assembled on an anodised aluminium rack with levelling feet, switch cabinet with control unit for fully automatic operation of the filter system.

Oxidation filter system fermaliQ:	MA2000	MA3000	MA5000	MA10000
Nominal flow [m ³ /h] ²	2.0	3.0	5.0	10.0
Daily capacity [m ³] ²	12	24	36	65
Nominal connection diameter for raw water	1" male thr.	1" male thr.	1¼ male thr.	1½" male thr.
Nominal connection diameter for filtrate	1½" male thr.	1½" male thr.	2" male thr.	2½" male thr.
Tank diameter [mm]	550	650	800	1,100
Dimensions (w x d x h) [mm] ³	880 x 1,540 x 1,730	920 x 1,630 x 1,940	1,060 x 1,800 x 1,920	1,340 x 2,430 x 2,120
Room height required [mm]	2,000	2,300	2,300	2,600
Inlet pressure	min. 2.0 bar/max. 5.0 bar			
Power supply [V/Hz]	230/50			
Pressurised water tank required [l]	500, 6 bar	750, 6 bar	1,000, 6 bar	2 x 1,000, 6 bar
Order no.	530 500	530 510	530 520	530 530

¹ For surcharge for ultra-fine dust filtration, please refer to page 65.

² Subject to the actual water quality.

³ Optional front cover not included.



NEW

Oxidation filter system fermaliQ:MA3000 including pressurised water tank and front cover

Filter fillings for fermaliQ:MA

Filter filling of quartz sand and hydro-anthracite	Order no.
To filter undissolved impurities	
fermaliQ:MA2000	530 502
fermaliQ:MA3000	530 512
fermaliQ:MA5000	530 522
fermaliQ:MA10000	530 532

Filter filling of quartz sand, hydro-anthracite and GENO-Fermanit	Order no.
To reduce iron/manganese and ammonium	
fermaliQ:MA2000	530 501
fermaliQ:MA3000	530 511
fermaliQ:MA5000	530 521
fermaliQ:MA10000	530 531

Accessories for oxidation filter system fermaliQ:MA

Pressurised water tank	Order no.
As a supplement to an existing pressure tank or for a new installation, including external sight pipe to check the filling level	
150 l	530 505
300 l	530 515
500 l	530 525
750 l	530 535
1,000 l	530 545

Front cover	Order no.
fermaliQ:MA	530 508

Ultra-fine dust filtration for blower	Order no.
Surcharge for ultra-fine dust filtration acc. to ISO 16890 ePM2.5 60 %	530800000000

Water test kits	Order no.
Water test kit for iron, 0.0 - 0.8 mg/l and 1 - 10 mg/l ¹ (30 determinations)	170 150
Water test kit for manganese, 0.03 - 0.5 mg/l ¹ (100 determinations)	170 097
Refill pack of reagents for water test kit for manganese (100 determinations)	170 193
Water test kit for pH value, 4.5 - 10 ¹ (100 test strips)	170 148

¹ Measuring range

Water Supply

Cooling water treatment

The type of water treatment used for the make-up and circulation water of cooling systems depends on the intended application, the composition of the water and the type of cooling system.



Installation example for cooling water treatment systems

Based on the specified limit values for the composition of the cooling water, the potential concentration factor of the cooling water can be calculated. The optimal water treatment system for the respective type of cooling system can then be determined by means of cost-efficiency calculations.

One option for the treatment of cooling water is to apply a purely chemical treatment, i.e., the dosing of corrosion and scale inhibitors and of biocides which prevent microbiological growth.

Another option is the use of water softeners as well as the aforementioned dosing systems. The softened water in cooling systems is normally blended to 2 to 3 °dH (0.35 mmol/l to 0.55 mmol/l) as pure water with a hardness of 0° would have an adverse effect on the formation of a protective layer in the cooling water network.

In order to achieve higher concentration factors, the salt concentration of the raw water has to be reduced. This can be done in a cost-efficient way by applying a reverse osmosis system. When using low-salt feed water, the cooling tower system is operated with a concentration factor that is 8 times higher.

An automatic salt reduction system is required to maintain the concentration factors; such a system keeps the salt concentration in the circulation water at a constant level by way of monitoring the conductivity value. When the set index value is exceeded, circulation water is discharged and replaced by treated water.

Grünbeck's automatic salt reduction system **GENO-KWA** can carry out important **measuring and control functions** as recommended by **VDI 2047-2**, such as:

- Conductivity measurement
- pH monitoring
- Monitoring of UV irradiation as per DVGW
- Preliminary salt reduction and stop of salt reduction in case of biocide dosing
- Activation of cooling water circulation pump
- Data logger with memory card

The respective process technology and system components are selected based on the the raw water analysis and system data provided.



GENO-KWA-50k



GENO-KWA-60i

Automatic salt reduction system GENO-KWA

Compact system with microprocessor control GENO-KWA-tronic₂, ready for connection

Conductive or inductive temperature and conductivity sensor, salt reduction valve closes automatically in case of power failure, designed as motor ball valve DN 25 with exchangeable flow orifice, piping with manually operated flow restrictor. All components are fully piped and wired on a mounting plate, including 3 m mains connection cable with shock-proof plug.

GENO-KWA-	50k	60i
Measuring method	conductive	inductive
Conductivity measuring range [µS/cm]	10 - 5,000	50 - 5,000
Power supply [V/Hz]	230/50	230/50
Dimensions (w x h x d) [mm]	500 x 750 x 230	500 x 750 x 230
Order no.	164 270	164 280

Automatic salt reduction system GENO-KWA-60i in weather-proof cabinet

Pre-assembled with heating module.

GENO-KWA-60i in weather-proof cabinet	
Measuring method	inductive
Power supply [V/Hz]	230/50
Dimensions (w x h x d) [mm]	1,100 x 1,200 x 600
Order no.	164 285

Automatic salt reduction system GENO-KWA-60i-BZ in weather-proof cabinet

Automatic salt reduction with biocide dosing system, pre-assembled in weather-proof cabinet.

Consisting of: Automatic salt reduction system **GENO-KWA-60i**, dosing pump **GENODOS 10/40-4G**, external control cable, suction lance B 10/20, dosing group 3.01, dosing line, weather-proof cabinet with heating module.

GENO-KWA-60i-BZ in weather-proof cabinet	
Measuring method	inductive
Power supply [V/Hz]	230/50
Dimensions (w x h x d) [mm]	1,100 x 1,200 x 600
Order no.	164 290

Accessories	Order no.
pH monitoring	164 810
Data logger with memory card	164 820

Cooling Water



Filter system GENO-mat F 500-H-KW



Filter system GENO-mat F 600-A-KW

Filter systems GENO-mat F

Filter system for the partial flow filtration of unpressurised cooling water originating from open evaporative cooling systems, completely pre-assembled on mounting plate, including AC circulation pump, for manual (H-KW series) or automatic (A-KW series) operation.

Technical specifications

- Nominal connection diameter of inlet 2" female thread
- Nominal connection diameter of recirculation DN 40
- Power supply 230 V, 50 Hz
- Max. inlet pressure 0.3 bar
- Max. nominal pressure 2 bar

GENO-mat F	500 H-KW	500 A-KW	600 H-KW	600 A-KW
Filter capacity [m³/h]	6	6	12	12
Backwash capacity [m³/h]	8	8	15	15
Delivery rate of pump [m³/h at mWC]	8.5/8.0	8.5/8.0	14.0/8.0	14.0/8.0
Connected load [kW]	0.58	0.58	0.97	0.97
Order no.	240 420.90	240 470.90	241 420.90	241 470.90

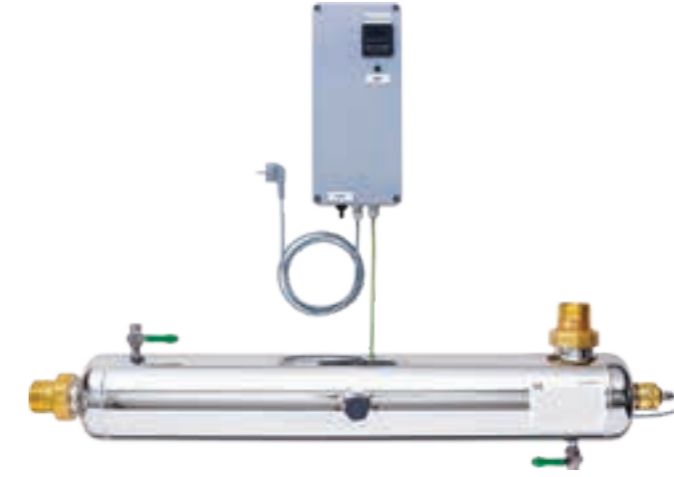
Filter filling

Filter filling for GENO-mat F	Order no.
Consisting of quartz sand	
500 H-KW/A-KW	200 840
600 H-KW/A-KW	200 560
Consisting of AFM	
500 H-KW/A-KW	240 180
600 H-KW/A-KW	241 800

Differential pressure switch

For the automatic, differential pressure controlled backwash of the GENO-mat F A-KW filter systems (in addition to time-controlled backwash)

Differential pressure switch for filter system	Order no.
GENO-mat F 500 A-KW	240 810
GENO-mat F 600 A-KW	240 820



UV disinfection GENO-UV KWA

UV disinfection GENO-UV KWA

For UV disinfection of filtered cooling water that is low in turbidities and originating from open evaporative cooling systems, with measurement of irradiation intensity according to VDI 2047-2 (signal processing by means of the KWA-tronic₂ control unit of Grünbeck's automatic salt reduction system), with centred high-performance UV lamp, control unit equipped with operating hour meter and ballast.

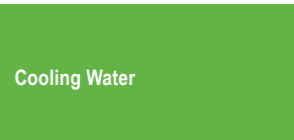
GENO-UV-	60-KWA	120-KWA	200-KWA
Nominal connection diameter [R]	1"	1½"	2"
Nominal flow [m³/h]	3.3	8.0	12.0
Water temperature [°C]	5 - 30	5 - 30	5 - 30
Ambient temperature [°C]	5 - 40	5 - 40	5 - 40
Power supply [V/Hz]	230/50	230/50	230/50
Connected load [VA]	75	145	215
Order no.	523 240	523 250	523 260

Accessories	Order no.
UV safety goggles	522 810
Stainless steel connection kit 1" for UV systems	520 070
Stainless steel connection kit 2" for UV systems	520 075
Wall bracket for UV systems (violIQ:UV, GENO-UV, KWA)	523 800
Floor rack for violIQ:UV66, UV80 DVGW//KWA	523 805
Floor rack for violIQ:UV85, UV120 DVGW//KWA	523 810
Flushing kit for cleaning UV systems with GENO-clean CP	520 020
Cleaning agent GENO-clean CP (10 x 1 litre)	170 022

Control unit GENO-KWA-tronic₂

Control unit GENO-KWA-tronic₂, if automatic salt reduction is provided by others on site, to monitor the irradiation intensity of the UV system and other functions (refer to automatic salt reduction system GENO-KWA).

GENO-KWA-tronic ₂	
Power supply [V/Hz]	230/50
Dimensions (w x h x d) [mm]	500 x 750 x 230
Order no.	164 215





Sales only after consultation with Grünbeck – Water analysis required

GENO-LUWADES₂

Compact air washer system GENO-LUWADES₂

For quality-controlled salt reduction and disinfection in air washer systems

Compact system, ready for connection, **consisting of:** Microprocessor controller GENO-KWA-tronic₂, conductive temperature and conductivity sensor, in case of a power failure self-closing salt reduction valve as a motor-driven ball valve DN 25 with exchangeable flow orifice, circulation pump with flow control, UV disinfection module GENO-UV module 40 S with monitoring of the irradiation intensity, manually operated flow restrictor, pressure gauge and coarse dirt trap. All components piped and fully wired on a mounting plate, including 2 m power supply cable with shock-proof plug.

In the LUWADES₂, the microprocessor controller GENO-KWA-tronic₂ serves as measuring, control and regulating electronics for various parameters, especially for the treatment of circulation water in air washers. Via the flow-controlled circulation pump, circulation water is continuously drawn from the basin of the air washer and returned to the basin via the UV module. The UV module and sensors are protected by a coarse dirt trap. Salt reduction may be controlled via the conductivity of the circulation water and the irradiation intensity of the UV module. At the same time, a temperature compensation of the conductivity value takes place.

There are additional control options, e.g. biocide dosing system, dosing system for make-up water conditioning, etc.

Compact air washer system	GENO-LUWADES ₂
Nominal connection diameter inlet/outlet	DN 32 (female thread 1 1/4") / DN 25 (female thread 1")
Power supply [V/Hz]	230/50
Dimensions approx. (w x h x d) [mm]	700 x 1,200 x 400
Ambient/water temperature [°C]	0 - 40/5 - 35
Order no.	521 200
Accessories	Order no.
Data logger with memory card for KWA-tronic ₂	164 820
pH monitoring for GENO-KWA	164 810
System rack for GENO-LUWADES ₂ , for stand-alone installation	521 035



Dosing system GENODOS DM

Technical specifications

- Max. suction head 1.5 mWC
- Temperature min. 5 °C - max. 30 °C
- Max. delivery pressure 8 bar up to GP 6/40 (6 bar starting from GP 10/40)
- Power supply 230 V, 50/60 Hz, 18/21 W

Dosing systems GENODOS DM

For flow-dependent dosing of active agents from transportation canisters or dosing tanks into water-carrying systems.

Consisting of GENODOS-GP-/40 and a water meter.

Dosing line, dosing group, suction lance and dosing tank need to be selected separately.

Dosing pump GENODOS GP-/40 as continuously adjustable, low-noise diaphragm pump, self-priming and automatically deaerating against pressure, with pump head made of chemical-resistant plastic, synchronous motor 230 V, 50/60 Hz, with fastening bracket for wall or floor mounting, with connection options for external pulse control, empty signal, including voltage-free fault signal output. Contact water meter with pulse cable to the pump electronics including screw connections.

Dosing system GENODOS DM	1/20 S	1/40 S	2/40 S	1/200 ST	2/200 ST
Dosing pump type	2/40	6/40	6/40	10/40	10/40
Water meter with contact mechanism	R 1"	R 1 1/2"	R 2"	DN 80	DN 100
Standard capacity of water meter [m ³ /h]	6	20	30	80	100
Pressure loss at standard capacity [bar]	0.8	0.7	0.8	0.6	0.8
Pulse sequence [I]	2.5	5	5	3.8	3.8
Order no. (without dosing tank)	163 230	163 240	163 250	163 260	163 270

Dosing systems GENODOS BZ for the addition of biocides

Consisting of: Dosing pump 10/40-4G, external control cable, suction lance B 10/20, dosing group 3.01 and dosing line 5 m; switch box "digital timer control" for timer-controlled BZ 10/40 only.

Dosing system GENODOS	BZ 10/40	BZ 10/40
	timer-controlled	KWA-tronic-controlled
Order no.	164 220	164 230

Accessories	Order no.
Suction lance for transportation canisters, length 465 mm	118 510
Dosing tank 60 l, outside diameter 450 mm, height 550 mm, with suction lance and hand mixer	163 281
Dosing tank 100 l, outside diameter 465 mm, height 780 mm, with suction lance and hand mixer	163 282
Chemical spill tray for 20 l canisters	210 560
Chemical spill tray for 35 l canisters	210 570
Chemical spill tray for 60/100 l dosing tanks	163 805
Dosing group 3.01 PVC, max. 10 bar, 35 °C	163 585
Connecting cable with plug to transmit the voltage-free fault signal to the building control system, length 3 m	116 219
PVC overflow valve to protect the dosing pump and pressure lines from inadmissible pressure increases, adjustable from 3 to 10 bar, suitable for dosing lines with inside diameter = 10 mm/ outside diameter = 16 mm	160 240

Cooling Water

Cooling water products →

	KW 5	KW 5	KW 1700	KW 1700
Closed semi-closed systems				
Chemical resistance group of GP pump	standard	standard	standard	standard
Steel corrosion protection	+++	+++	++	++
Copper/nonferrous metal corrosion protection	+++	+++	+++	+++
Aluminium corrosion protection	-	-	++	++
Hardness stabiliser	+	+	+	+
Dispersion	++	++	++	++
Biocide	-	-	-	-
pH range	7.5 - 10	7.5 - 10	7.5 - 9	7.5 - 9
Circulation concentration [g/m³]	1,000 - 2,000	1,000 - 2,000	2,000 - 5,000	2,000 - 5,000
Analytical proof via molybdenum concentration	+	+	+	+
Analytical proof via peroxide test	-	-	-	-
Analytical proof via org. Po ₄	-	-	-	-
Canister volume [kg]	20	5	20	5
Order no.	160614000000	160613000000	160 655	160 648

Cooling water products →

	KW 1510	KW 1600	KW 1820	KW 1830	KW 11
Open evaporative systems					
Chemical resistance group of GP pump	standard	standard	standard	standard	standard
Steel corrosion protection	++	++	++	++	+++
Copper/nonferrous metal corrosion protection	-	++	++	+	+
Aluminium corrosion protection	-	-	++	-	-
Hardness stabiliser	+++	+	+	+++	++
Dispersion	+++	+	++	+++	-
Biocide	-	-	-	-	-
pH range	7 - 10	7.5 - 9	6.5 - 8.5	7 - 10	6 - 8
Circulation concentration [g/m³]	5 - 30	80 - 120	30 - 50	50 - 70	20 - 35
Analytical proof via molybdenum concentration	-	-	-	-	-
Analytical proof via peroxide test	-	-	-	-	-
Analytical proof via org. Po ₄	+	+	+	+	+
Canister volume [kg]	20	20	20	20	20
Order no.	160 643	160 641	160 644	160 647	160 601

Cooling water products →

	KW 4500	KW 4800	KW 4130	KW 4130	KW 2000
Biocide					
Chemical resistance group of GP pump	4G	4G	4G	4G	4G
Steel corrosion protection	-	-	-	-	-
Copper/nonferrous metal corrosion protection	-	-	-	-	-
Aluminium corrosion protection	-	-	-	-	-
Hardness stabiliser	-	-	-	-	-
Dispersion	-	-	-	-	+++
Biocide	+++	+++	++	++	-
pH range	6 - 10	6 - 10	6 - 10	6 - 10	3 - 11
Circulation concentration [g/m³]	100 - 200	10 - 50	200 - 300	200 - 300	10 - 100
Analytical proof via molybdenum concentration	-	-	-	-	-
Analytical proof via peroxide test	-	-	+	+	-
Analytical proof via org. Po ₄	-	-	-	-	-
Canister volume [kg]	20	10	25	220	5
Order no.	160 658	160 627	160 657	160 656	160 624

+++ very well suited ++ well suited + suited - unsuitable

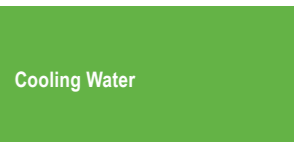
The values indicated above are guide values. You must always take into account all other water parameters as well. Please inquire about cooling water agents for special application areas! We recommend contacting Grünbeck's consultation service before making a final decision!

Airwashers →

	LW 20	GENO-perox
Airwashers		
Chemical resistance group of GP pump	standard	standard
Steel corrosion protection	+	-
Copper/nonferrous metal corrosion protection	+	-
Aluminium corrosion protection	-	-
Hardness stabiliser	+	-
Dispersion	+	-
Biocide	++	++
pH range	7.5 - 10	6 - 10
Circulation concentration [g/m³]	400 - 600	450 - 600
Analytical proof via molybdenum concentration	-	-
Analytical proof via peroxide test	-	+
Analytical proof via org. Po ₄	+	-
Canister volume [kg]	20	11
Order no.	160 608	170 335

+++ very well suited ++ well suited + suited - unsuitable

The values indicated above are guide values. You must always take into account all other water parameters as well. Please inquire about cooling water agents for special application areas! We recommend contacting Grünbeck's consultation service before making a final decision!



Heating water

Varying technical rules, modern materials, complex components and a compact design with small pipe cross-sections extremely increase the demands on the filling water. However, heating systems can only work effectively if their efficiency is not reduced by deposits. The solution is quite simple: Fully demineralised water.



- Suitable for closed heating and cooling circuits such as heating supply networks of biogas systems, combined heat and power plants and large buildings
- According to AGFW worksheet FW 510 (VdTÜV 1466) 1 - 3 % of the circulation volume have to be treated in the partial flow per day
- Fully automatic backwash and regeneration
- No replacement of filter material, hardly any maintenance effort required
- No water loss in the circuit
- Backwash and regeneration with fresh water
- Optional: Separate dosing system for selective increase of the pH value



Partial flow filter GENO-VARIO 3000

Partial flow filter GENO-VARIO 3000

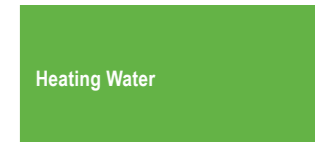
Fully automatic filter system for the treatment of partial flows in heating and cooling circuits for the generation of fully softened water, with volume-controlled regeneration

Consisting of: Bypass pump for easy integration into the return, 2 exchanger tanks made of stainless steel as sand filter and softening unit, system separator to secure the drinking water network during backwash and regeneration, fully automatic control unit to monitor the fully automatic backwash and regeneration, entire system pre-assembled on system rack made of anodised high-precision aluminium profile and ready for connection. Option: Extension module for fully automatic refill of make-up water that is treated at the same time and integrated leakage monitoring – please inquire.

GENO-VARIO 3000	Stand-alone system	Mobile system ¹
Nominal connection diameter [DN]	25 male	25 male
Nominal flow [m³/h]	2.5	2.5
Max. water/ambient temperature [°C]	80/40	80/40
Operating pressure of raw water min./max. [bar]	3/8	3/8
Operating pressure of system circuit min./max. [bar]	2/6	2/6
Nominal softening capacity [mol]	26.8	26.8
Regeneration salt supply [kg]	50	50
Order no.	707 500	707500000100

Accessories	Order no.
Dosing system to increase the pH value for GENO-VARIO 3000	707 540
GENO-SW 2010 (20 kg) liquid phosphate product	180 415
Neutralisation agent FNK, 20 kg (sodium hydroxide solution, 10 %)	180 300
Combined measuring device for pH and conductivity including accessories	170000010000
Hardness determination B to determine residual hardness in circulation water	170 149
Analysis case (pH, conductivity, determination of raw water hardness, determination of hardness B)	707 192
Water sample cooler, max. 40 bar	160 460

¹ System rack on wheels as mobile model.



Dosing agents

Product	Applications	Characteristics
GENO-safe A full heating protection	Warm water heating systems as per VDI 2035	Full heating protection for one-family and multi-family homes as well as industrial buildings. Combination product for hardness stabilisation and corrosion protection, suitable for all types of heating systems and materials. The required quantity is 1 litre for every 200 l of filling volume.
GENO-heating protection FSK	All heating system as well as cooling circuits, heat pumps and solar systems	Corrosion and anti-freeze protection as combined agent. Full corrosion and scaling protection is guaranteed if at least a minimum of 20 % of the system volume is added. The required concentration to be applied depends on the anti-freeze protection desired.
GENO-phos Nr. 1 and SW 2010	Steam boiler systems and warm water heating systems as per VDI 2035 with metal pipes and radiators	Trisodium phosphate, precipitation of residual hardness, alkalisation by means of pH increase, non-steam-volatile. In case of aluminium and aluminium components, a pH value of 8.2 - 8.5 has to be observed.
GENO-phos Nr. 2	Steam boiler systems where alkalinity is too high	Sodium dihydrogen phosphate (granulate), to reduce high alkalinity, pH reduction, precipitation of residual hardness.
Sodium sulphite and SW 2000	Steam boiler systems, warm water and hot water circuits	Oxygen binding agent, for chemical oxygen binding in water, non-steam-volatile.
GENO-amin	Steam boiler systems with corrosion in steam and condensate network caused by CO ₂	Film-forming corrosion inhibitor, alkalisng effect by binding CO ₂ , steam-volatile, amine-based.

Full heating protection	Order no.
GENO-safe A, 1 litre	180 530
GENO-safe A, box 10 x 1 litre	180 540
GENO-safe A, canister 11 kg	180 550

Full heating protection with anti-freeze protection	Order no.
GENO-heating protection FSK (20 kg)	180 230

Dosing agents to increase the pH value	Order no.
GENO-phos Nr. 1 (granulate) [500 g]	170 001
GENO-phos Nr. 1 (granulate) [3.5 kg]	170 002
GENO-phos Nr. 1 (granulate) [25 kg]	170 052
GENO-SW 2010 (liquid) [20 kg]	180 415
GENO-SW 2010 (liquid) [100 kg]	180 420
FNK (liquid) [20 kg]	180 300

Dosing agents to decrease the pH value	Order no.
GENO-phos Nr. 2 (granulate) [3.5 kg]	170 003
GENO-phos Nr. 2 (granulate) [25 kg]	170 053

Dosing agents to bind oxygen	Order no.
Sodium sulphite (granulate) [6 kg]	170 004
Sodium sulphite (granulate) [25 kg]	170 054
GENO-SW 2000 (liquid) [20 kg]	180 405

Combined product to increase the pH value and to bind oxygen	Order no.
GENO-SW 2040 (liquid) [25 kg]	180 440

Steam-volatile corrosion inhibitor for steam boilers	Order no.
GENO-amin (liquid) [20 kg]	170 008

Technical specifications

- Max. suction head 1.5 mWC
- Temperature min. 5 °C - max. 30 °C
- Delivery rate (see table)
- Power supply 230 V, 50/60 Hz, 18/21 W



Dosing pump GENODOS GP



Deacidification dosing for modular systems neutra 3000

NEW

Sales only after consultation with Grünbeck – Water analysis required

Dosing pumps GENODOS GP

As self-priming diaphragm pump, automatically deaerating against pressure, with pump head made of chemical-resistant plastic, control electronics, low-noise synchronous motor, fastening bracket for wall or floor mounting. Pump with operation indicator, continuously adjustable stroke length 30 - 100 %, shock-proof plug 230 V, 50/60 Hz, with approx. 2 m power supply cable, suitable for manual and fully automatic operation, connection option for external pulse controller (e.g. feed water pump, contact water meter) and indication for internal dosing monitoring. In case of automatic control, the dosing capacity may be adjusted by means of a frequency controller. Including voltage-free fault signal output, pulse division and multiplication, control via analogue signals is possible.

Dosing pumps GENODOS GP	-/40	-/40
Chemical resistance group ¹	Standard	4G
GENODOS GP 0/40 0.04 - 0.15 l/h at max. 10 bar	118 150	118 1504g
GENODOS GP 1/40 0.27 - 0.9 l/h at max. 10 bar	118 200	118 2004g
GENODOS GP 2/40 0.6 - 2.0 l/h at max. 10 bar	118 250	118 2504g
GENODOS GP 6/40 1.8 - 6.8 l/h at max. 8 bar	118 300	118 3004g
GENODOS GP 10/40 2.64 - 8.8 l/h at max. 6 bar	118 350	118 3504g

¹ The choice of the pump depends on the dosing agent used.

Obey the information and instructions given for the dosing agents!

Deacidification dosing for modular systems neutra 3000/neutra 10000

Dosing system with redundant pH monitoring installed downstream for deacidification of raw water for drinking water applications according to DVGW worksheets W 214-1, W 214-4 and W 626.

The alkaline dosing agent (exaliQ neutra) is dosed into the pipe at a preset dosing concentration and in proportion to the quantity of the raw water volume flow. A flow controller makes sure that dosing can only take place when water is flowing. The redundant pH monitoring installed downstream checks the pH limit value. If the pH value is outside the range of pH 6.5 to pH 9.5 applicable for drinking water, the voltage supply to the dosing pump will be interrupted and the dosing pump locked.

Deacidification dosing for modular systems	neutra 3000	neutra 10000
Raw water volume flow [m ³ /h]	0.1 - 3.0	3.0 - 10.0
Nominal connection diameter inlet/outlet	DN 25 (1" m. thread)	DN 40 (1½" m. thread)
Power supply [V]/[Hz]	230/50	230/50
Dimensions of dosing system (w x h x d) [mm]	600 x 800 x 300	600 x 800 x 300
Dimensions of pH monitoring (w x h x d) [mm]	800 x 600 x 170	900 x 600 x 170
Order no. for 60 l canisters	165100000000	165110000000
Order no. for 15 l canisters	165100000100	165110000100

NEW

Consumables	Order no.
Dosing agent pH-balance, 60 l	160000010000
Mineral solution exaliQ neutra, 15 l	114 075

NEW



Contact water meter

Switch box "digital timer control"

Contact water meters

To control dosing pumps

Connection diameter	R ¾"	R 1"	R 1¼"	R 1½"	R 2"	DN 80	DN 100
Pulse sequence [I]	0.33	0.33	0.50	0.93	1.33	3.80	3.80
Max. flow [m³/h]	4	6	10	20	30	80	100
Pressure loss at max. flow [bar]	0.3	0.5	0.5	0.8	0.8	0.6	0.8
Order no.	119 780	119 711	119 714	119 705	119 750	119 706	119 770

Accessories	Order no.
Switch box "digital timer control" for the time-dependent control of dosing systems, wall-mounted box (100 x 74 x 135 mm), 1.5 m power supply cable with shock-proof connector plug, electronic timer, precise to the minute, freely programmable, with voltage-free output and 150 hour power reserve, incl. 3 m control cable for the GENODOS-pump	163 090
Voltage-free level signal (pre-alarm) Additional controller for separate and voltage-free relay of the pre-alarm level of the suction lance, with shock-proof connector plug	163 870
M-Bus measuring transducer D-DAM receives pulses from water meters with Reed or Hall signal on the input side and forwards them to the following destinations on the output side: as Open Collector pulse signal 1:1 or, in any division desired, to Grünbeck control units; as analogue signal 4-20 mA (e.g. dosing pump GENODOS GP/40); as relay contact for evaluation by client; as M-Bus protocol to an M-BUS master according to IEC 870. Mains cable with shock-proof connector plug (l = 1,500 mm), dimensions w x h x d: 160 x 240 x 160 mm	115 850
Connecting cable with plug to relay the voltage-free fault signal to the central building control system, length 3 m	116 219
Connecting cable for external activation (red) for GENODOS-pump, length 3 m	116 094
Pressure maintaining valve DHV 3 CB18 made of PVC for dosing into unpressurised systems or tanks, adjustable from 1 to 10 bar, suitable for dosing line i.d. = 10 mm/o.d. = 16 mm	163 137
Overflow valve made of PVC, to protect the dosing pump and the pressure lines from an inadmissible pressure increase, adjustable from 3 to 10 bar, suitable for dosing line i.d. = 10 mm/o.d. = 16 mm	160 240
Document pouch to store operation manual, chemical data sheet, safety data sheet, preparation instructions, etc.	163 806
Safety package for caustic substances consting of: Acid-proof goggles, eye rinsing bottle, gloves as well as warning and instruction signs	180 810



Suction lance for transportation canister



Dosing tank with automatic agitator¹

Suction lances/Dosing tanks/Spill trays

The agents are withdrawn either by means of

- Suction lances for 10/20 kg transportation canisters or dosing tanks provided by others on site, made of PVC, with bottom filter, foot valve, 1.5 m suction and return hose as well as float switch with two switching points as pre-alarm and empty signal (dry-run protection).
- Dosing tanks with hand mixer or automatic agitator with stirring controller and shock-proof connector plug, suction lance with bottom filter, foot valve, 1.5 m suction and return hose as well as float switch with two switching points as pre-alarm and empty signal (dry-run protection).

Accessories	Order no.
Suction lances	
For transportation canisters (465 mm long)	118 510
For on-site dosing tank (750 mm long)	118 520
For disposable 100 l / 200 l barrel (with empty signal, l = 980 mm)	118 540
For 1000 l IBC container (with empty signal, l = 1,200 mm)	118 570
Dosing tanks	
60 l, outside diameter 450 mm, height 550 mm, with suction lance and hand mixer	163 281
As above, but with automatic agitator	163 291
100 l, with suction lance and hand mixer, outside diameter 460 mm, tank height 835 mm, required room height 1,400 mm	163000030000
As above, but with automatic agitator and a required room height of 940 mm	163000080000
200 l, with suction lance and hand mixer, outside diameter 600 mm, tank height 995 mm, required room height 1,700 mm	163000040000
As above, but with automatic agitator and a required room height of 1,060 mm	163000090000
300 l, with suction lance and hand mixer, outside diameter 670 mm, tank height 1,110 mm, required room height 1,950 mm	163000050000
As above, but with automatic agitator and a required room height of 1,210 mm	163000100000
500 l, outside diameter 800 mm, height 1,070 mm, with suction lance and hand mixer	163 285
As above, but with automatic agitator	163 295
Chemical spill trays	
For 20 l canisters	210 560
For 35 l canisters	210 570
For 60/100 l dosing tanks	163 805

¹ The dosing pump is not included in the scope of supply but can be ordered separately. Refer to page 77, dosing pumps GENODOS GP.



Dosing groups 2.25 + 3.01



Dosing group 2.31

Dosing groups

To inject the dosing solution into the flow pipe, including 3 m connection hose as well as the corresponding connection kit for the GENODOS-pump.

Dosing groups	Order no.
2.21 (max. 10 bar, 110 °C, 1" female thread)	163 640
2.25 (max. 10 bar, 110 °C, injection pipe made of VA 1.4571, 1" female thread)	163 645
2.55 (max. 10 bar, 110 °C, VA 1.4571) for neutralising agent FNK	163 690
KE 4/6 (max. 10 bar, 130 °C, VA 1.4571, R ½")	163 650
2.31 (max. 10 bar, 140 °C with siphon, 1" female thread)	163 680
3.01 (max. 10 bar, 35 °C, PVC, ¾" male thread)	163 585
2.60 (max. 10 bar, 35 °C, PP/PVDF, ½" male thread)	163 590
2/4 (dosing valve, 10 bar, 60 °C, FPM)	163 505
4/6 (dosing valve, 10 bar, 35 °C, FPM)	163 510

	Heating water	Steam boiler	Cooling water
2.21 (PPE/red brass/GTW/steel)	•	-	-
2.25 (PPE/red brass/GTW/steel/1.4571)	•	-	-
2.55 (1.4571/PTFE)	•	-	-
KE 4/6 (1.4571/PTFE)	-	•	-
2.31 (PPE/red brass/steel/1.4571)	-	•	-
3.01 (PVC)	-	-	•
2.60 (PP/PVDF)	-	-	•

DVGW-certified dosing groups for GENODOS DM	Order no.
2.71 (PVC/EPDM)	163 511
2.73 (PVC)	163 512
3.02 (PVC) ¹	163 513
2/4 (PPE/EPDM)	163 514
4/6 (PVC/EPDM/silicone)	163 515

¹ Connection kit already included in the scope of supply of the GENODOS-pump.

Technical specifications

- Nominal connection diameter 6/8 mm
- Dimensions (w x h x d) 350 x 250 x 140 mm
- Power supply 85 - 305 V, 47 - 440 Hz
- Operating pressure 0.5 - 5 bar



softwatch

Technical specifications

- Nominal connection diameter R ¾"- R 2"
- Power supply 230 V, 50 Hz
- Dimensions (w x h x d) 280 x 300 x 140 mm



GENO-control with differential pressure transmitter R ¾"

Hardness control measuring device softwatch

Fully automatic analysis system to monitor the residual total hardness

The limit value is determined by the selection of the indicator. The electronic control system for microprocessor-controlled analyses, with function monitoring in case of lack of indicator, automatic monitoring of measuring chamber/water shortage/turbidity, offers a large range of analysis and control options. These are visualised via a graphic display and can be stored on an SD card. The system is approved for operation without constant supervision.

Hardness control measuring device	Order no.
softwatch	172600000000

Accessories	Order no.
Pressure reducer for softwatch ¹	172 860

Indicators for softwatch ²	
Residual hardness, 500 ml, SWK [mmol/l] 0.018	172 201
Residual hardness, 500 ml, SWK [mmol/l] 0.054 ³	172 202
Residual hardness, 500 ml, SWK [mmol/l] 0.09	172 203
Residual hardness, 500 ml, SWK [mmol/l] 1.8	172 204

Indicators for GENO-control SP ²	
Residual hardness, 500 ml [mmol/l] 0.009 - 0.09	172 242
Residual hardness, 500 ml [mmol/l] 0.045 - 0.45	172 244
Residual hardness, 500 ml [mmol/l] 0.18 - 1.8	172 246

¹ In case of inlet pressures > 5 bar at the softwatch.

² Shelf life: 2 years.

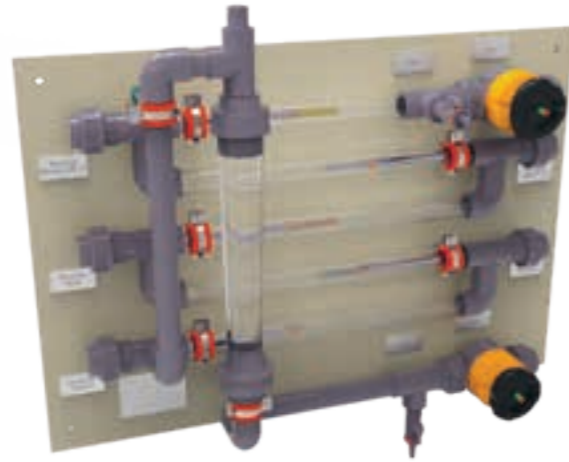
³ Recommended for use with RO systems.

Residual hardness monitoring system GENO-control

For continuous monitoring of residual hardness in soft water, compact device for connection to a differential pressure transmitter

To protect against hardness breaking through downstream of ion exchangers. Short-term, minor hardness breakthroughs (e.g., when the complete system is started) do not trigger alarms (observe application areas and application limits!). Hardness monitoring device with shut-off valves and hose connections, control unit with visual operation and hardness indication and output for visual/acoustic signals and/or shutdown function for a system downstream, measuring hose with connections, spare sensor.

Residual hardness monitoring system	Order no.
GENO-control, without differential pressure transmitter	172 300
Differential pressure transmitter R ¾"	172 303
Differential pressure transmitter R 1¼"	172 305
Differential pressure transmitter R 2"	172 309
Spare sensor for GENO-control	172 304



Corrosion measuring section

Corrosion measuring section¹

To check the corrosion rates of the respective metals used

There are 5 corrosion measuring points available to attach the selected corrosion coupons.

Consisting of: Corrosion measuring section, pre-assembled on PVC plate, flow meter, sampling valve, shut-off valves, 4 corrosion coupons (steel, aluminium, copper, brass, 1 as spare).

	Order no.
Corrosion measuring section with 5 measuring points ¹	553 200

¹ Including initial set of coupons (steel, Ms, Cu, Al).

Corrosion coupon ²	Order no.
For steel	553 210
For copper	553 212
For brass	553 214
For aluminium	553 216
For VA 1.4306	553 217
For VA 1.4404	553 218

² Including evaluation by Grünbeck

Water test kits

Cooling water	Order no.
Water test kit for molybdenum (5 - 250 mg/l Mo ⁶⁺)	170 140
Water test kit for molybdenum (0 - 50 mg/l Mo ⁶⁺)	170 142
Organophosphate in cooling water (2 - 15 mg/l PO ₄)	170 114
Combined measuring device for pH and conductivity including accessories	170000010000
Microbiological quick test with dip slides (10 analyses) TTC/Rose Bengal/agar, reddish colonies	170 099
Microbiological dip slides (10 analyses), CASO agar, colourless colonies, with disinhibitor ³	170 390
Small-scale incubator for incubation of dip slides	170 395

³ For the evaluation, an incubator is required.



Test kit to determine the molybdenum concentration



Water sample cooler

Water test kits

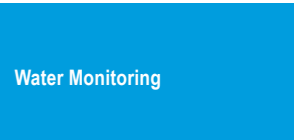
Heating water, boiler feed water	Order no.
Water test kit type CPM	170 540
Water test kit for total hardness type B (100 determinations)	170 149
Water test kit for total hardness GENO-plex B	170 121
Water test kit for orthophosphate 2 - 15 mg/l ¹ (250 determinations)	170 103
Water test kit for orthophosphate 1 - 20 mg/l ¹ (75 determinations)	170 554
Water test kit for pH value 7 - 14 ¹ (100 test strips)	170 147
Water test kit for residual oxygen 0 - 100 ppb ¹ (30 determinations)	170 144
Water test kit for sulphite 10 - 1000 mg/l ¹ (100 test strips)	170 535
Water test kit for sulphite drip test 0.5 - 20 mg/l ¹ (80 determinations)	170 107

¹ Measuring range

Spare reagents for phosphate and sulphite test kits	Order no.
Phosphate reagent I (250 ml, replacement agent for order no. 107 103)	170 501
Phosphate reagent II (250 ml, replacement agent for order no. 107 103)	170 502
Sulphite reagent 1/2/3 (large package 100/100/250 ml, replacement agent for order no. 170 107)	170 525
Sulphite reagent 1/2/3 (small package 15/15/50 ml, replacement agent for order no. 170 107)	170 520

Wall and analysis cabinets/analysis cases	w x h x d [mm]	Order no.
Wall cabinet with two doors, made of formica, with work counter, test kit not included	640 x 625 x 250	170 120
Wall cabinet with one door, test kit not included	350 x 570 x 260	170 130
Analysis case for steam boilers with test kits for hardness, p and m values, phosphate and sulphite concentration, pH value and conductivity		170 195
Heating analysis case for heating/boiler water with test kits for phosphate, sulphite, total hardness and pH value		170 192

Water sample cooler (material 1.4301)	Order no.
Version for 40 bar(g)	160 460





Reverse osmosis system GENO-OSMO-X



Reverse osmosis system osmoliQ:LB



Water softener Delta-p-I

Systems for rental purchase

Rack-mounted modular systems for pre-assembled delivery of complete system configurations.

System rack made of stainless steel or anodised aluminium profile for housing and fastening the individual system components, adjustable feet to compensate for uneven floors, entire PP/PE piping between the system components, including wiring and workshop test.

Rack-mounted modular system GENO-OSMO-X

Consisting of: Fine filter, system separator, activated carbon filter, dosing system for hardness stabilisation, reverse osmosis system OSMO-X, pre-assembled on a system rack

	GENO-OSMO-X 1200	GENO-OSMO-X 3000
Permeate capacity at 15 °C [l/h]	1,200	3,000
Dimensions (w x h x d) [mm]	1,460 x 1,770 x 910	1,660 x 1,770 x 910
Order no.	100175090000	100175100000

Rack-mounted modular system osmoliQ:LB

Consisting of: Fine filter, system separator, dosing system for binding chlorine/chlorine dioxide, dosing system for hardness stabilisation, reverse osmosis system osmoliQ:LB, pre-assembled on a system rack

	osmoliQ:LB7000	osmoliQ:LB16000
Permeate capacity at 15 °C [l/h]	7,000	16,000
Dimensions (w x h x d) [mm]	4,000 x 2,175 x 900	4,000 x 2,175 x 900
Order no.	100174240000	100174250000

Water softener Delta-p-I

In case a residual hardness of < 0.1 °dH (< 0.02 mmol/l) is required.

Fully automatic water softener based on the ion exchange principle for the generation of fully/partially softened water, with hardness control measuring device softwatch installed downstream.

The rental system features forklift pockets for transportation by forklift, is completely pre-assembled on a stainless steel system rack and electrically wired.

Delta-p-I	1"	2"
Capacity [l/h]	3,000	16,000
Dimensions (w x h x d) [mm]	1,610 x 1,965 x 980	1,610 x 1,965 x 980
Order no.	100176410000	100174070000

Technical specifications

- Max. water temperature 30 °C
- Power supply 230 V, 50/60 Hz
- Nominal pressure PN 10
- Operating pressure min. 2 bar/max. 10 bar
- Weight approx. 900 kg



Mobile water softener Delta-p 2" for rent

Water softener Delta-p 2"

Fully automatic triple water softener based on the principle of ion exchange for the generation of fully/partially softened water, with volume-controlled regeneration

3 exchanger tanks filled with ion exchange resin, central control valve, microprocessor controller, disinfection device, PE salt dissolving tank (volume 200 kg) with lid, sieve bottom and special brine valve.

Note: Regeneration salt not included in the scope of supply.

The mobile water softener is equipped with C-couplings for quick installation. Additional reinforced hoses are not included in the scope of supply. The rental system comes with forklift pockets for transportation by means of a forklift, it is fully wired and pre-assembled on a pedestal.

Water softener Delta-p	2"
Dimensions Delta-p (w x h x d) [mm]	1,100 x 1,950 x 1,800
Diameter of salt dissolving tank [mm]	570
Height of salt dissolving tank [mm]	860
Nominal connection diameter [DN]	50
Nominal flow [m ³ /h]	12.0
Nominal flow of blended water [m ³ /h] ¹	20.0

Rental costs ²	Order no.
For the first 10 working days	AG8-185130
For each additional week	AG8-185130-x

Accessories and consumables ³	
Regeneration salt 25 kg	127 001

¹ In case of a raw water hardness of 20 °dH (3,5 mmol/l) and a blending hardness of 8 °dH (1,4 mmol/l) (not for Delta-p-I).

² Upon request, start-up and briefing on site against payment of a fee.

³ Can be ordered as required from wholesalers in the sanitary and heating trade.

Note: Costs for shipment and return shipment upon proof.



Reverse osmosis system GENO-OSMO-RO 2250 Online

Reverse osmosis system GENO-OSMO-RO 2250 Online on mobile system rack

To fill heating systems/district heating networks and other systems with fully demineralised water

Compact demineralisation system based on the principle of reverse osmosis, ready for connection, fully mounted on a system rack with dosing system upstream for hardness stabilisation. The mobile reverse osmosis system is designed for the demineralisation of feed water which, in terms of its composition, complies with the quality requirements of the German Drinking Water Ordinance (TrinkwV). Depending on the requirements on the pure water, e.g. subsequent softening or a dosing system to increase the pH value might be necessary.

Technical specifications

- Capacity approx. 2,250 l/h online
- Weight approx. 420 kg
- Dimensions (w x h x d) 1,240 x 1,640 x 960 mm
- Power supply required 2.5 kW, 3 x 380 - 415 V, 50 Hz, plug 16 A
- Connection GEKA couplings
- Outlet pressure 4 bar

Rental costs	Order no.
For the first 10 working days	AG8-750898
For each additional working day	AG8-750898-x
Operating rate per m ³ of generated permeate up to 50 m ³	AG8-750898-50
Operating rate per m ³ of generated permeate up to 100 m ³	AG8-750898-100
Operating rate per m ³ of generated permeate in excess of 100 m ³	AG8-750898+100

Note: Costs for shipment and return shipment upon proof.



Reverse osmosis system RKF-X 3000

Reverse osmosis system RKF-X 3000 on mobile system rack

To fill heating water systems/district heating networks and other systems with demineralised water

Compact demineralisation system based on the principle of reverse osmosis, ready for connection, fully mounted on a system rack with dosing system upstream for hardness stabilisation. The mobile reverse osmosis system is designed for the demineralisation of feed water which, in terms of its composition, complies with the quality requirements of the German Drinking Water Ordinance (TrinkwV). Depending on the requirements on the pure water, e.g. subsequent softening or a dosing system to increase the pH value might be necessary.

Technical specifications

- Capacity approx. 3,000 l/h online
- Weight approx. 650 kg
- Dimensions (w x h x d) 1,700 x 1,950 x 800 mm
- Power supply required 3 x 380 - 415 V/50 Hz, approx. 8 kW, fuse 32 A
- Electrical connection cable with 5-pin CEE plug 3/N/PE
- Connection kit with female thread R 1½"/R 1½", GEKA couplings
- Outlet pressure of permeate 0.5 - 4 bar

Rental costs	Order no.
For the first 10 working days	AG8-S52225
For each additional working day	AG8-S52225-x
Operating rate per m ³ of permeate up to 50 m ³	AG8-S52225-50
Operating rate per m ³ of permeate up to 100 m ³	AG8-S52225-100
Operating rate per m ³ of permeate in excess of 100 m ³	AG8-S52225+100

Note: Costs for shipment and return shipment upon proof.



Mobile system for residual softening

Mobile system for residual softening

Optional accessory for reverse osmosis systems for rent. Mobile system mounted on a trolley with pneumatic wheels for the residual softening of permeate originating from a reverse osmosis system with hardness stabilisation for rent, ready for connection

Consisting of: Trolley with two rubber wheels, softening cartridge 26.6 mol made of plastic, with ion exchanger filling, water meter as readable roller-type counter R ¾", hose kit with 2 transition pieces for GEKA couplings, all components in a permeate-resistant version.

Note: Only for use in combination with our reverse osmosis system for rent

Technical specifications

- Nominal flow 3,000 l/h
- Weight approx. 100 kg
- Nominal capacity 26.8 mol
- Operating pressure: max. 8 bar
- Operating temperature: max. 20 °C
- Power supply 230 V, 50 Hz

Rental costs	Order no.
For the first 10 working days	AG8-S53985
For each additional working day	AG8-S53985-w

Note: Costs for shipment and return shipment upon proof.



Reverse osmosis system GENO-OSMO-RO 18000 (system example)

Reverse osmosis system GENO-OSMO-RO 18000

Reverse osmosis system installed in a 20 ft container

Compact reverse osmosis systems (2 x 9 m³/h) based on the principle of reverse osmosis, ready for connection, fully mounted on a system rack with dosing system upstream for hardness stabilisation. The reverse osmosis system is designed for the demineralisation of feed water which, in terms of its composition, complies with the quality requirements of the German Drinking Water Ordinance (TrinkwV). For filling heating systems/district heating networks and other systems with fully demineralised water as well as for temporary supply during construction work. Depending on the requirements on the pure water, e.g. subsequent softening or a dosing system to increase the pH value might be necessary.

Technical specifications

- Capacity 18 m³/h
- Weight approx. 6 t
- Primary pressure required min. 3 bar
- Outlet pressure min. 3 bar
- Power supply required 25.0 kW, 63 A, 3 x 380 - 415 V, 50 Hz
- Connections
 - Raw water: Flange DN 80
 - Permeate: Flange DN 65
 - Waste water: KG sliding socket joint DN 100
- Minimum temperature in container: 8 °C
- Dimensions (w x h x d) 2,500 x 2,600 x 6,100 mm

Rental costs	Order no.
For the first 10 working days	AG8-S42004
For each additional working day	AG8-S42004-x
Operating rate per m³ of generated permeate up to 500 m³	AG8-S42004-500
Operating rate per m³ of generated permeate in excess of 500 m³	AG8-S42004+500

Note: Costs for shipment and return shipment upon proof.

Commissioning and maintenance when performed by Grünbeck's technical service

Grünbeck products are made of high-quality materials in order to ensure long and trouble-free operation. In order to guarantee the maximum process performance for many years after the start-up, maintenance of the systems is required at regular intervals. A maintenance contract ensures the functionality of your system for many years beyond the warranty period. Maintenance work and supply of consumables, chemicals, etc. should be performed by authorised experts. Please inquire about commissioning and maintenance prices.

Devices, systems, services	Commissioning Order no.	Maintenance Order no.
Dosing		
Dosing systems GENODOS DM, DME, DM-T, DM-oxi	943 161	942 161
Dosing systems GENODOS DM-B, MOBldos	943 162	942 162
Dosing systems GENODOS DM-BO	943 163	942 163
Water softeners with DVGW certification		
softiQ:MC, MD, MD12i	943 387	942 387
Twin system GSX10-I	943 187	942 187
Delta-p 1" - 1¼"	943 085	942 085
Delta-p 1½" - 2"	943 185	942 185
Disinfection Delta-p 1" - 1¼"	944 085	
Disinfection Delta-p 1½" - 2"	944 185	
Extended start-up Delta-p 1" - 1¼"	943 285	
Extended start-up Delta-p 1½" - 2"	943 385	
Water softeners without DVGW certification (incl. system separators)		
Single systems R 1"	943 122	942 122
Single systems R 1½"	943 123	942 123
Twin systems R 1"	943 125	942 125
Twin systems R 1½"	943 126	942 126
Reverse osmosis		
GENO-OSMO-RO 125 K-TS	943 703	942 703
GENO-OSMO-RO 125 K-TL	943 704	942 704
AVRO 125 TS	943 720	942 720
AVRO 125 TL, AVRO-flex	943 820	942 820
GENO-OSMO-X 200	943 751	942 751
GENO-OSMO-X 400 - 1600	943 851	942 851
GENO-OSMO-X 2200/3000	943 951	942 951
GENO-OSMO-X 200 Online, one diaphragm expansion tank	943 653	942 653
GENO-OSMO-X 400/800 Online, one diaphragm expansion tank	943 753	942 753
GENO-OSMO-X 1200/1600 Online, two diaphragm expansion tanks	943 853	942 853
GENO-OSMO-X 2200/3000 Online, three diaphragm expansion tanks	943 953	942 953
GENO-OSMO-X 200 AVRO, one module ¹	943 654	942 654
GENO-OSMO-X 400 AVRO, two modules ¹	943 754	942 754
GENO-OSMO-X 800/1200 AVRO, three modules ¹	943 854	942 854
GENO-OSMO-X 1600 AVRO, four modules ¹	943 954	942 954
Antiscalant dosing	943 550	942 550
GENO-OSMO-HLX 200/400	943 650	942 650
GENO-OSMO-HLX 800/1200	943 850	942 850
GENO-OSMO-HLX 1600 - 3000	943 950	942 950
Electrodeionisation		
GENO-EDI-X 100 - 360	943 770	942 770
GENO-EDI-X 720 - 2700	943 870	942 870
Mixed bed demineralisation		
Mixed bed cartridges desaliQ:BA, desaliQ:PA	943 702	942 702

¹ without replacement of modules.

Commissioning and Maintenance

Ord. no.	Item	Page
942569-05	Maintenance lump sum for MRX 10/20/25 ½-yearly	92
942569-10	Maintenance lump sum for MRX 10/20/25 yearly	92
942569-15	Maintenance lump sum for MRX 10/20/25 1½-yearly	92
942569-20	Maintenance lump sum for MRX 10/20/25 2-yearly	92
942621	Maintenance lump sum for UV disinfection up to 200 l	92
942650	Maintenance lump sum GENO-OSMO-HLX 200/400	91
942653	Maintenance lump sum for OSMO-X 200 Online	91
942654	Maintenance lump sum for GENO-OSMO-X 200 AVRO	91
942669-05	Maintenance lump sum for MRX 30/50,1/50,2 ½-yearly	92
942669-10	Maintenance lump sum for MRX 30/50,1/50,2 yearly	92
942669-15	Maintenance lump sum for MRX 30/50,1/50,2 1½-yearly	92
942669-20	Maintenance lump sum for MRX 30/50,1/50,2 2-yearly	92
942702	Maintenance lump sum for GENO-therm, desalQ.BA/MA	91
942703	Maintenance lump sum for GENO-OSMO RO 125 K-TS	91
942704	Maintenance lump sum for GENO-OSMO RO 125 K-TL	91
942720	Maintenance lump sum for AVRO 125 TS	91
942721	Maintenance lump sum for GENO-control	92
942723	Maintenance lump sum for GENO-softwatch	92
942751	Maintenance lump sum for GENO-OSMO-X 200	91
942753	Maintenance lump sum for OSMO-X 400/800 Online	91
942754	Maintenance lump sum for OSMO-X 400 AVRO	91
942769-05	Maintenance lump sum for X/RX 10/20/25 ½-yearly	92
942769-10	Maintenance lump sum for X/RX 10/20/25 yearly	92
942769-15	Maintenance lump sum for X/RX 10/20/25 1½-yearly	92
942769-20	Maintenance lump sum for X/RX 10/20/25 2-yearly	92
942770	Maintenance lump sum for GENO-EDI-X 100 - 360	91
942820	Maintenance lump sum for AVRO 125 TL, AVRO-flex	91
942850	Maintenance lump sum for GENO-OSMO-HLX 800/1200	91
942851	Maintenance lump sum for GENO-OSMO-X 400 - 1600	91
942853	Maintenance lump sum for OSMO-X 1200/1600 Online	91
942854	Maintenance lump sum for OSMO-X 800/1200 AVRO	91
942869-05	Maintenance lump sum for X/RX 30/50,1/50,2 ½-yearly	92
942869-10	Maintenance lump sum for X/RX 30/50,1/50,2 yearly	92
942869-15	Maintenance lump sum for X/RX 30/50,1/50,2 1½-yearly	92
942869-20	Maintenance lump sum for X/RX 30/50,1/50,2 2-yearly	92
942870	Maintenance lump sum for GENO-EDI-X 720 - 2700	91
942950	Maintenance lump sum for GENO-OSMO-HLX 1600 - 3000	91
942951	Maintenance lump sum for GENO-OSMO-X 2200/300	91
942953	Maintenance lump sum for OSMO-X 2200/3000 Online	91
942954	Maintenance lump sum for OSMO-X 1600 AVRO	91
943085	Commissioning lump sum for Delta-p 1" - 1½"	91
943122	Commissioning lump sum for single water softeners R 1"	91
943123	Commissioning lump sum for single water softeners R 1½"	91
943125	Commissioning lump sum for twin water softeners R 1"	91
943126	Commissioning lump sum for twin water softeners R 1½"	91
943161	Commissioning lump sum for GENODOS DME, DM(-T)	91
943162	Commissioning lump sum for GENODOS DM-B	91
943163	Commissioning lump sum for GENODOS DM-BO	91
943185	Commissioning lump sum for Delta-p 1½" - 2"	91
943187	Commissioning lump sum for GSX 5, 10, 10-I	91
943285	Extended start-up for Delta-p 1" - 1½"	91
943385	Extended start-up for Delta-p 1½" - 2"	91
943387	Commissioning lump sum for softIQ.MC, MD, MD12i	91
943521	Commissioning lump sum for UV disinfection up to UV-200 S, violiQ	92
943522	Commissioning lump sum for compact air washer system LUWADES	92
943524	Commissioning lump sum for automatic salt reduction system KWA-50k / 60i	92
943550	Commissioning lump sum for Antiscalant dosing	91
943569	Commissioning lump sum for MRX 10/20/25	92
943621	Commissioning lump sum for UV disinfection up to 200 l	92
943650	Commissioning lump sum for GENO-OSMO-HLX 200/400	91
943653	Commissioning lump sum for OSMO-X 200 Online	91
943654	Commissioning lump sum for GENO-OSMO-X 200 AVRO	91
943669	Commissioning lump sum for MRX 30/50,1/50,2	92
943702	Commissioning lump sum for GENO-therm, desalQ.BA/MA	91
943703	Commissioning lump sum for GENO-OSMO RO 125 K-TS	91
943704	Commissioning lump sum for GENO-OSMO RO 125 K-TL	91

Ord. no.	Item	Page
943707	Commissioning lump sum for GENO-VARIO 3000	92
943720	Commissioning lump sum for AVRO 125 TS	91
943721	Commissioning lump sum for GENO-control	92
943723	Commissioning lump sum for GENO-softwatch	92
943751	Commissioning lump sum for GENO-OSMO-X 200	91
943753	Commissioning lump sum for OSMO-X 400/800 Online	91
943754	Commissioning lump sum for OSMO-X 400 AVRO	91
943769	Commissioning lump sum for X/RX 10/20/25	92
943770	Commissioning lump sum for GENO-EDI-X 100 - 360	91
943820	Commissioning lump sum for AVRO 125 TL, AVRO flex	91
943850	Commissioning lump sum for GENO-OSMO-HLX 800/1200	91
943851	Commissioning lump sum for GENO-OSMO-X 400 - 1600	91
943853	Commissioning lump sum for OSMO-X 1200/1600 Online	91
943854	Commissioning lump sum for OSMO-X 800/1200 AVRO	91
943869	Commissioning lump sum for X/RX 30/50,1/50,2	92
943870	Commissioning lump sum for GENO-EDI-X 720 - 2700	91
943911	Analysis package for public water supply	92
943912	Analysis package for well water	92
943913	Analysis package for swimming pool water	92
943914	Analysis package for dimensioning of osmosis	92
943915	Analysis package for heating water	92
943916	Analysis package for local/district heating, biogas systems	92
943917	Analysis package for cooling water, open	92
943918	Analysis package for cooling water, closed/semi-closed	92
943920	Assessment of deposits	92
943950	Commissioning lump sum for GENO-OSMO-HLX 1600 - 3000	91
943951	Commissioning lump sum for GENO-OSMO-X 2200/3000	91
943953	Commissioning lump sum for OSMO-X 2200/3000 Online	91
943954	Commissioning lump sum for OSMO-X 1600 AVRO	91
944085	Disinfection Delta-p 1" - 1½"	91
944185	Disinfection Delta-p 1½" - 2"	91
AG8-185130	Rental costs for water softener Delta-p 2"	86
AG8-185130-x	Rental costs for water softener Delta-p 2"	86
AG8-750898	Rental costs for GENO-OSMO-RO 2250 Online	87
AG8-750898+100	Operating rate per m³ of generated permeate in excess of 100 m³	87
AG8-750898-100	Operating rate per m³ of generated permeate up to 100 m³	87
AG8-750898-50	Operating rate per m³ of generated permeate up to 50 m³	87
AG8-750898-x	Rental costs for GENO-OSMO-RO 2250 Online +T	87
AG8-943185	Commissioning lump sum for Delta-p 1½" - 2"	86
AG8-943905	Lump sum for travel costs for rental systems	86
AG8-S42004	Rental costs for GENO-OSMO-RO 18.000	90
AG8-S42004+500	Operating rate per m³ of generated permeate in excess of 500 m³	90
AG8-S42004-500	Operating rate per m³ of generated permeate up to 500 m³	90
AG8-S42004-x	Rental costs for GENO-OSMO-RO 18.000 +T	90
AG8-S52225	Rental costs for RKF-X 3000	88
AG8-S52225+100	Operating rate per m³ of generated permeate in excess of 100 m³	88
AG8-S52225-100	Operating rate per m³ of generated permeate up to 100 m³	88
AG8-S52225-50	Operating rate per m³ of generated permeate up to 50 m³	88
AG8-S52225-x	Rental costs for RKF-X 3000 + T	88
AG8-S53985	Rental costs for mobile system for residual softening	89
AG8-S53985-w	Mobile system for residual softening +W	89



Company profile

Grünbeck Wasseraufbereitung GmbH
 Josef-Grünbeck-Str. 1
 89420 Hoehstaedt
 GERMANY

General manager
 Dr. Günter Stoll

Staff
 700

Sales organisation
 Subsidiaries and authorised representations in Germany, representations in all EU member countries as well as associated partners world-wide

Certifications
 DIN EN ISO 9001, DIN EN ISO 14001, SCC* by TÜV Management Service, OHRIS

Product certifications
 DVGW, SVGW, ACS, EAC

Approvals
 for welding, specialised welding company according to DIN EN ISO 3834-3. Manufacturing of pressure equipment according to the Pressure Equipment Directive 2014/68/EU as per AD 2000 data sheet HP0 and DIN EN 13480. Manufacturer of steel constructions according to DIN EN 1090. WEEE reg. no.: DE 77585882



Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1
89420 Hoehstaedt
GERMANY

+49 9074 41-0
+49 9074 41-100

info@gruenbeck.com
www.gruenbeck.com



More information at
www.gruenbeck.com



A company certified by TÜV SÜD
in accordance with DIN EN ISO 9001,
DIN EN ISO 14001 and SCC[®]
www.tuvsud.com/ms-cert