

## Water softener Delta-p

### Intended use

The water softeners Delta-p are have been developed for the continuous production of softened and partially softened water and can be used in these areas:

- Continuous soft water supply
- Softening and partial softening of
  - Well water
  - Process water
  - Boiler feed water
  - Cooling water
  - Air-conditioning water
  - Cold drinking water
  - Industrial water

The water softeners Delta-p **cannot** be used in these areas:

- Slow removal of water
- Widely diverging performance
- Load above nominal flow

Please also observe the information in the technical specifications.

### Application limits

Refer to the table of performance data and the continuous flow curve.

### Function

The water softeners Delta-p are triple systems for the continuous supply of soft water according to ion exchange technology.

### Physical

The water softeners Delta-p are equipped with a central control valve for the three exchangers and are controlled depending on the quantity.

Regeneration is triggered when the next exchanger to be regenerated is exhausted or 50 % of the next but one exchanger to be regenerated is exhausted.

The water softener regenerates with raw water.

### Chemical

The exchanger contains ion exchanger resin in the form of small resin beads. Sodium ions adhere to each resin bead. Hard water with a large proportion of calcium and magnesium ions flows through the exchanger.

The ion exchanger resin absorbs calcium and magnesium ions from the water in exchange for sodium ions. This reaction is called ion exchange. The calcium and magnesium ions are retained in the exchanger. Soft water without calcium and magnesium ions, but containing sodium ions, leaves the exchanger.

This process continues until no more sodium ions are available. The ion exchanger resin is exhausted.

The exchange can be reversed if a large amount of sodium ions is added.

The exchanger is rinsed with brine, water containing salt.

By their sheer number, sodium ions displace calcium and magnesium ions on the ion exchanger resin. This water containing calcium and magnesium ions is discharged to the drain. The initial condition is restored.

The ion exchanger resin is regenerated, and thus ready for operation.

### Design

- Three exchanger tanks
- Electronically controlled transfer, regeneration and blending valve
- Signalling and fault signal contact
- Brine tank made of PE incl. sieve bottom

### Scope of supply

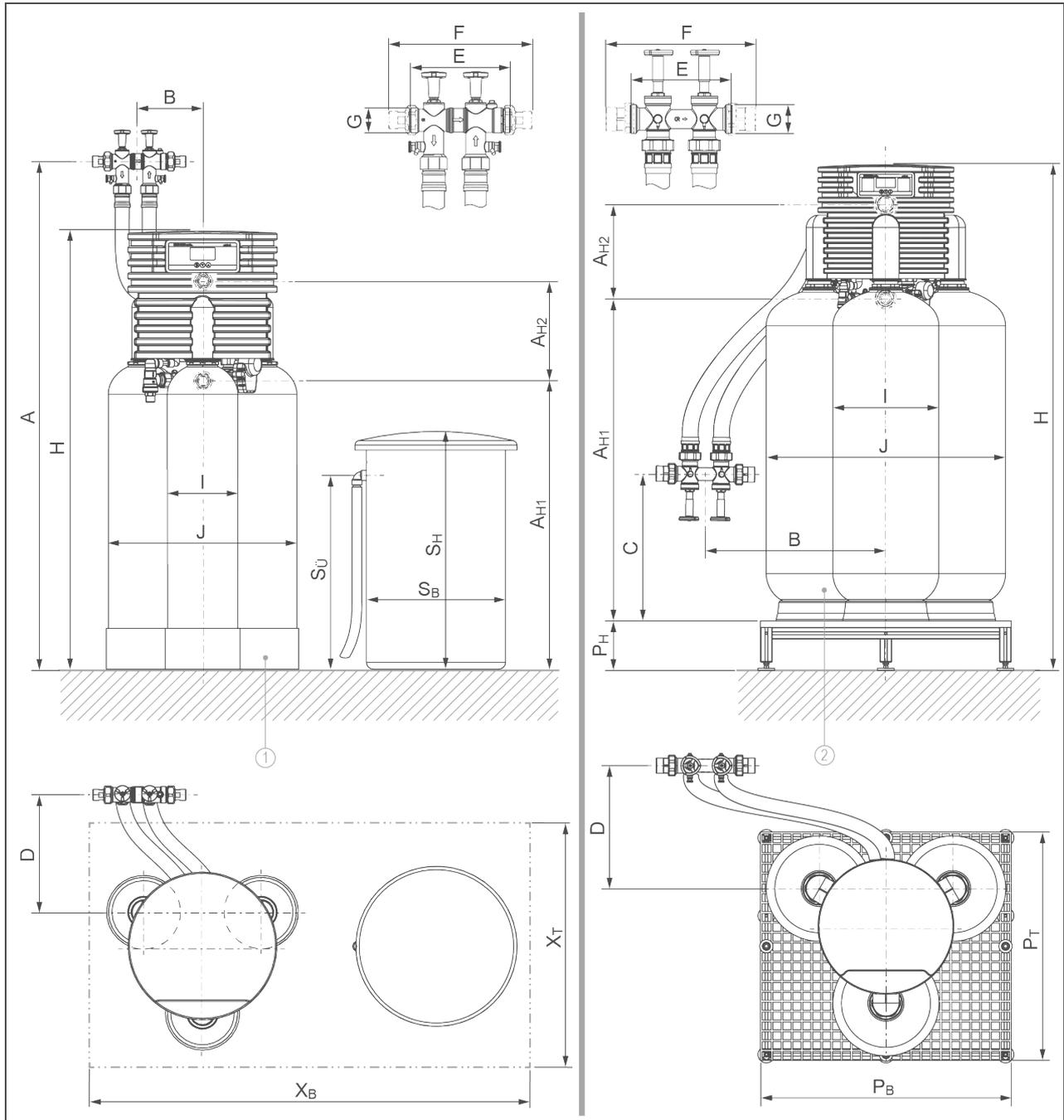
Delta-p/Delta-p-I

- Water softener in parts, complete
- Brine tank
- Water test kit "Total hardness"
- Operation manual

Delta-p/Delta-p-I with pedestal

- Water softener ready for connection mounted on a platform

### Technical specifications I



Item	Designation	Item	Designation
1	Delta-p/Delta-p-I without platform (1", 1¼")	2	Delta-p/Delta-p-I with platform (1½", 2")

## Technical specifications II

Water softener Delta-p/Delta-p-I		1"	1¼"	1½"	2"
<b>Dimensions and weights</b>					
A	Connection height (high line)	mm	1000 – 2000		1550 – 2250   1700 – 2400
B	Lateral offset	mm	350±20		600±20
C	Connection height (low line)	mm	0 – 1000		350 – 550   500 – 700
D	Distance to wall	mm	200±20		550±20
E	Installation length without screw connections	mm	190		260
F	Installation length with screw connection	mm	276		378
G	External thread		1½"		2½"
H	System height (without/with platform)	mm	1300/1500		1640/1840   1760/1960
I	Ø exchanger	mm	210	257	369   406
J	System width	mm	580	630	900   960
AH1	Connection height of control valve (raw water)	mm	860		1125   1245
AH2	Distance height control valve (soft water)	mm	290		360
SH	Salt tank height (standard/accessories)	mm	670/860 (210 l)		860/1250 (750 l)
SB	Ø salt tank (standard/accessories)	mm	410/570 (210 l)		570/900 (750 l)
SÜ	Safety overflow height (standard/accessories)	mm	575/785 (210 l)		785/1100 (750 l)
PW x PD x PH	Platform dimensions	mm	770 x 770 x 200		960 x 880 x 200
XW x XD	Foundation dimensions min. (recommended)	mm	1240 x 920	1400 x 1020	1770 x 1400   1850 x 1450
Operating weight, approx.	kg		255/ 403 (210 l)	322/ 471 (210 l)	745/ 1400 (750 l)   862/ 1270 (750 l)
<b>Connection data</b>					
Nominal connection diameter			DN 25 (1" male thread)	DN 32 (1¼" male thread)	DN 40 (1½" male thread)   DN 50 (2" male thread)
Min. drain connection.			DN 50		
Rated voltage range	V		230		
Rated frequency	Hz		50 – 60		
Max. rated load in operation	W		26		32
Power input in standby	W		19		
Protection/protection class			IP 54/⊕		
<b>Performance data</b>					
Nominal pressure			PN 10		
Min./max. operating pressure	bar		2/10		
Nominal flow (0 °dH, 0 °f, 0 mol/m³) acc. to DIN EN 14743 at a pressure loss of 1.0 bar (theoretical value)	m³/h		4.2	5.6	11.3   13.4
Nominal flow at a pressure loss of 1.0 bar acc. to DIN 19636-100 (raw water hardness 20 °dH (35.6 °f, 3.56 mol/m³), soft water hardness 8 °dH (14.2 °f, 1.42 mol/m³)) not with Delta-p-I	m³/h		5	8.3	13.3   20
Pressure loss at nominal flow	bar		0.5	0.8	0.5   0.8
Nominal flow (restricted by hard raw water from 20 °dH / 35.6 °f / 3.56 mol/m³)	m³/h		3	5	8   12

• **Product data sheet**  
Water softener Delta-p

Water softener Delta-p/Delta-p-I		1"	1¼"	1½"	2"
<b>Performance data</b>					
Continuous flow (Maximum value reduced by hard raw water from 20 °dH / 35.6 °f / 3.56 mol/m <sup>3</sup> )		Dependence on raw water hardness refer to continuous flow curve			
Minimum quantity of water removed for system control (raw water hardness 0 °dH (0 °f, 0 mol/m <sup>3</sup> )) Systems with a blending valve increase the minimum quantity according to the proportion of which is blended.		70		180	
		l/h			
		m <sup>3</sup> x °dH		48      79      165      229	
Nominal capacity		m <sup>3</sup> x °f		85.4      140.6      293.7      407.6	
		mol		8.2      13.2      27.8      38.6	
Capacity per kg of regeneration salt		mol/kg		5.7	
<b>Filling volumes and consumption data</b>					
Resin volume (tank)		l		21      33      75      100	
Freeboard (resin in form of sodium), approx.		mm		135      160      195      265	
Salt consumption per regeneration, approx.		kg		1.5      2.5      5.2      7.2	
Regenerating salt supply max. standard brine tank/accessories for brine tank		kg		65/180 (210 l)      180/630 (750 l)	
Salt consumption		kg/(m <sup>3</sup> x °dH)		0.03	
per m <sup>3</sup> and °dH		kg/(m <sup>3</sup> x °f)		0.018	
per m <sup>3</sup> and °f		kg/mol		0.18	
per m <sup>3</sup> and mol					
Max. rinsing water volume		m <sup>3</sup> /h		0.6      0.9      1.9      2.0	
Total waste water volume per regeneration, approx.		l		68      110      235      315	
Waste water volume		l/(m <sup>3</sup> x °dH)		1.42	
per m <sup>3</sup> and °dH		l/(m <sup>3</sup> x °f)		0.79	
per m <sup>3</sup> and °f		l/mol		7.8	
per m <sup>3</sup> and mol					
Operating water volume		l		4.2      6.9      14.4      20	
<b>General data</b>					
Water temperature		°C		5 – 30	
Ambient temperature (drinking water)		°C		5 – 25	
Ambient temperature (technical application)		°C		5 – 40	
Max. humidity of air (non-condensing)		%		90	
Iron content in the raw water max.		mg/l		0.2	
Manganese content in the raw water max.		mg/l		0.05	
DVGW-registration number (not Delta-p-I)		NW-9151BU0049			
SVGW-certificate-number (not Delta-p-I)		1305-6162			
ÜA registration number <i>The Office of the Vienna Provincial Government – City of Vienna</i>		R-15.2.3-21-17496			
Data record in the control unit		CA31		CA32      CA35      CA36	
<b>Order no. Delta-p</b>		<b>185 100</b>		<b>185 110      185 120      185 130</b>	
<b>Order no. Delta-p ready for connection on pedestal</b>		<b>185 105</b>		<b>185 115      185 125      185 135</b>	
<b>Order no. Delta-p-I</b>		<b>185 200</b>		<b>185 210      185 220      185 230</b>	
<b>Order no. Delta-p-I ready for connection on pedestal</b>		<b>185 205</b>		<b>185 215      185 225      185 235</b>	

### Technical specifications III

#### Continuous flow curve Delta-p

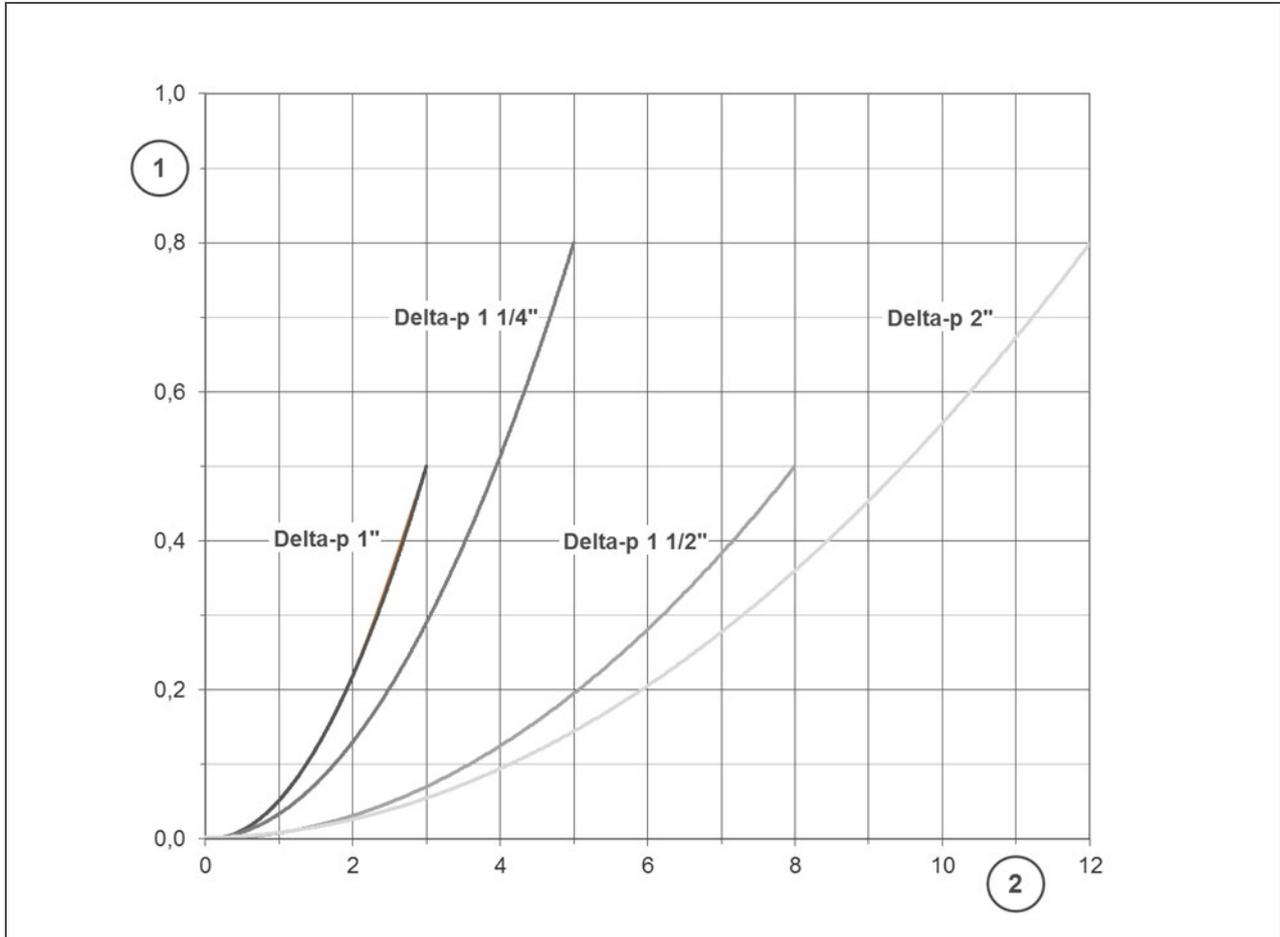


Item	Designation	Item	Designation
1	max. continuous flow in % of nominal flow rate at 0 °dH, 0 °f, 0 mol/m <sup>3</sup>	2	Raw water hardness in °dH

Conversion table											
°dH	14	16	18	20	22	24	26	28	30	32	34
°f	24.9	28.5	32.0	35.6	39.2	42.7	46.3	49.8	53.4	57.0	60.5
mol/m <sup>3</sup>	2.49	2.85	3.20	3.56	3.92	4.27	4.63	4.98	5.34	5.70	6.05

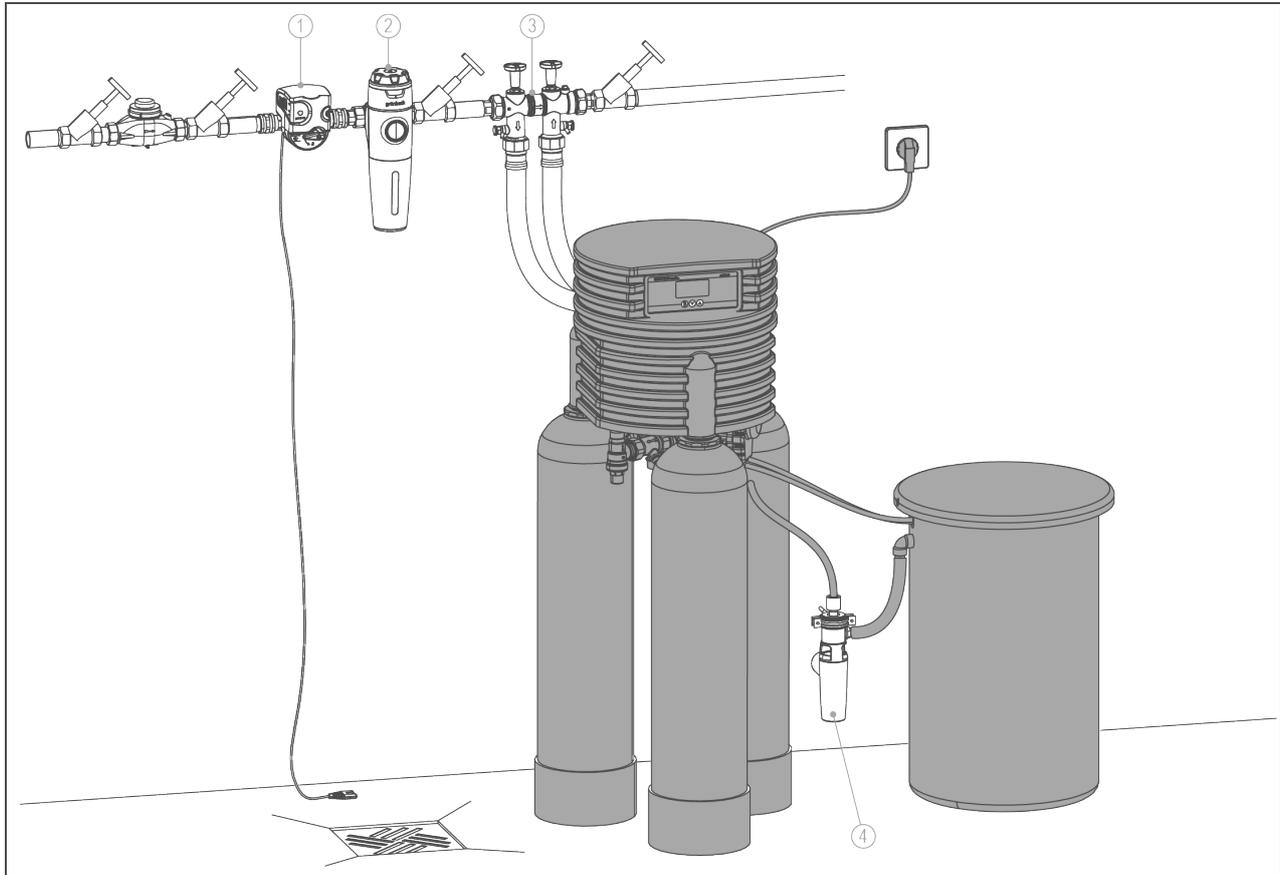
## Technical specifications IV

### Pressure loss curve Delta-p



Item	Designation	Item	Designation
1	Pressure loss in bar at 0 °dH, 0 °f, 0 mol/m³	2	Flow rate in m³/h

## Installation example



Item	Designation	Item	Designation
1	Safety device protectliQ	2	Drinking water filter pureliQ:KD
3	Connection set Delta-p/Delta-p-I	4	Drain connection Delta-p, DN 50 acc. to DIN EN 1717

## Installation requirements

Observe local installation directives, general guidelines and technical specifications. The installation site must be frost-proof and ensure the system's protection from chemicals, dyes, solvents and their vapours.

If the softened water is intended for human consumption in the sense of the German Drinking Water Ordinance, the ambient temperature must not exceed 25 °C. For applications that are purely technical, the ambient temperature must not exceed 40 °C.

Always install a drinking water filter and, if required, a pressure reducer (e.g. fine filter pureliQ:KD) upstream of the product.

A shock-proof socket is required within a distance of approx. 1.2 m of the system. The socket requires a permanent power supply and must not be connected to light switches, emergency heating switches or similar devices.

A drain connection (DN 50) must be available to discharge the regeneration water.

The installation location must be provided with a floor drain. If this is not available, an appropriate safety device protectliQ or a protection device with water stop of the same quality must be installed to prevent water damage.

Ensure that lifting systems are resistant to salt water.

There must be a water withdrawal point near the product.

## Accessories

### Pedestal Delta-p

Size	Order no.
1" - 1¼"	
<b>770x770x200 mm</b>	<b>185 820</b>
1½" - 2"	
<b>960x880x200 mm</b>	<b>185 825</b>

Frame made of aluminium sections with adjustable feet and grating.

### Pre-alarm salt supply

**Order-no. 185 335**

For monitoring the salt supply by means of light sensor on the brine tank cover.

### Connection set

Size	Order no.
1" - 1¼"	<b>185 807</b>
1" - 1¼" - I	<b>185 808</b>
1½" - 2"	<b>185 823</b>
1½" - 2" - I	<b>185 824</b>

Compact valve block, built-in overflow valve (not with Delta-p I version), shut-off valves for hard and soft water, sample valves for raw and soft water (only with 1"-1¼"), 2 flexible, pressure-resistant connection hoses. (For Switzerland, connection hoses are not included in the scope of delivery. Install the fixed pipework on site.)

### Connection screw fitting

Size	Order no.
1"	<b>185 846</b>
1¼"	<b>185 847</b>
1½"	<b>185 848</b>
2"	<b>185 849</b>

Water meter screw connections with seals for pre-installation of the connection block.

### Brine tank

Size	Order no.
<b>210 litres</b>	<b>185 510</b>
<b>750 litres</b>	<b>185 525</b>

### Disinfection set

Size	Order no.
1" - 1¼"	<b>185 830</b>
1½" - 2"	<b>185 835</b>

Disinfection of the water softener, e.g. after extremely long periods of stagnation or contamination. With GENO-perox, canister and personal protective equipment.

### Parallel piping

Size	Order no.
2x 1" PVC	<b>185 450</b>
2x 1¼" PVC	<b>185 455</b>
2x 1½" PVC	<b>185 460</b>
2x 2" PVC	<b>185 465</b>
3x 2" PVC	<b>185 470</b>

2x 1" VA	<b>185 400</b>
2x 1¼" VA	<b>185 405</b>
2x 1½" VA	<b>185 410</b>
2x 2" VA	<b>185 415</b>
3x 2" VA	<b>185 420</b>

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

### Cascade connection

Size	Order no.
1" - 1¼" – 2-fold	<b>185 360</b>
1½" - 2" – 2-fold	<b>185 365</b>
2" – 3-fold	<b>185 370</b>
2" – 4-fold	<b>185 375</b>

Cascade control for parallel-piped water softeners Delta-p. The cascade connection is required in connection with water softeners Delta-p in parallel connection.

### M-bus measuring transducer

#### D-DAM, complete

**Order no. 115 850**

To transmit the flow rate and the meter reading as well as statistical values of the water meter by means of M-Bus (IEC 870).

Flow-dependent pulse output, analogue output and relay contact to Grünbeck control unit.

### Communication module

#### DE200 Profibus

**Order no. 185 890**

### Drain connection DN 50

**Order no. 185 775**

acc. to DIN EN 1717 including siphon for Delta-p.

## Dosing system GENODOS

### DME Delta-p

**Order no. 163000010000**

For addition of mineral-based exaliQ solutions into the drinking water in proportion to quantity. The water softener Delta-p sends the dosing signal.

### Optional insert with injection

**point G¼"** for the soft water outlet of the Delta-p

Size	Order no.
Delta-p 1"	<b>185000010000</b>
Delta-p 1¼"	<b>185000020000</b>
Delta-p 1½"	<b>185000030000</b>
Delta-p 2"	<b>185000040000</b>

## Consumables

### Regenerating salt 25 kg

**Order no. 127 001**

Regenerating salt in tablet form acc. to EN 973 Type A for the regeneration of ion exchangers.

### Water test kit for total hardness °dH and °f

1x	<b>Order no. 170187000000</b>
10x	<b>Order no. 170 100</b>

## Contact

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