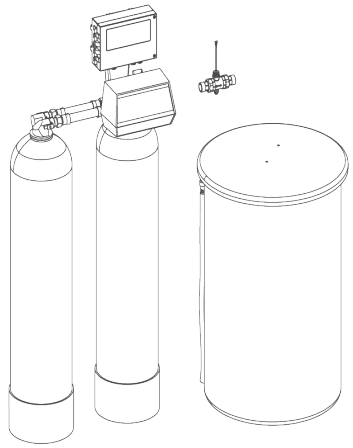
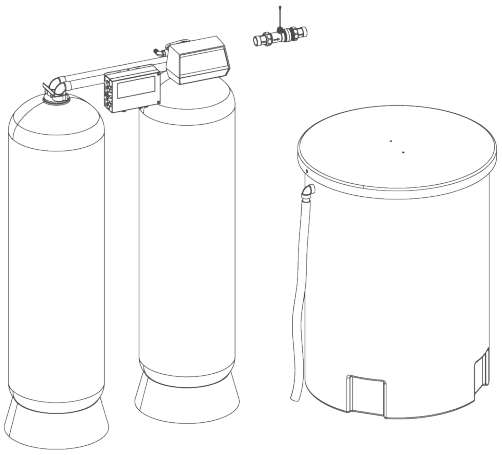
DN 25 (1")



DN 40 (1½")



Water softener GENO-mat duo WE-X

Intended use

The water softeners GENO-mat duo WE-X are designed 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 the following kinds of water
  - Well water
  - Process water
  - Boiler feed water
  - Cooling water
  - Air-conditioning water
  - Cold drinking water
  - Industrial water

The GENO-mat duo WE-X is available in 2 designs:

- Full salting
- Economy salting

Only systems with full salting are suitable for softening to less than 0.1 °dH.

Application limits

Please refer to tables “Performance data” and “General data”.
Country-specific requirements for application in the drinking water section

- **Czech Republic:**
  According to the czech decree no. 252/2004 softened drinking water should not fall below a soft water hardness of 2 mmol/l (approx. 11°dH)
- **Austria:**
  In Austria, softened drinking water must have a soft water hardness of at least 8.4 °dH.

Function

The water softeners GENO-mat duo WE-X are twin systems for the continuous supply of soft water according to the ion exchange principle.

Physical

The water softeners feature a central control valve for both exchangers and are volume-controlled.

The regeneration is triggered when the pre-set water volume in an exchanger has been softened.

The water softener regenerates with soft water.

Chemical

The exchangers contain ion exchange resin in the form of small resin beads to which sodium ions adhere. Hard water with a large proportion of calcium and magnesium ions flows through the exchanger.

The ion exchange 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 exchange resin is exhausted.

The exchange can be reversed by adding sodium ions.The exchanger is flushed with brine. The water containing calcium and magnesium ions is then discharged to the drain. The initial condition is restored.

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

Design

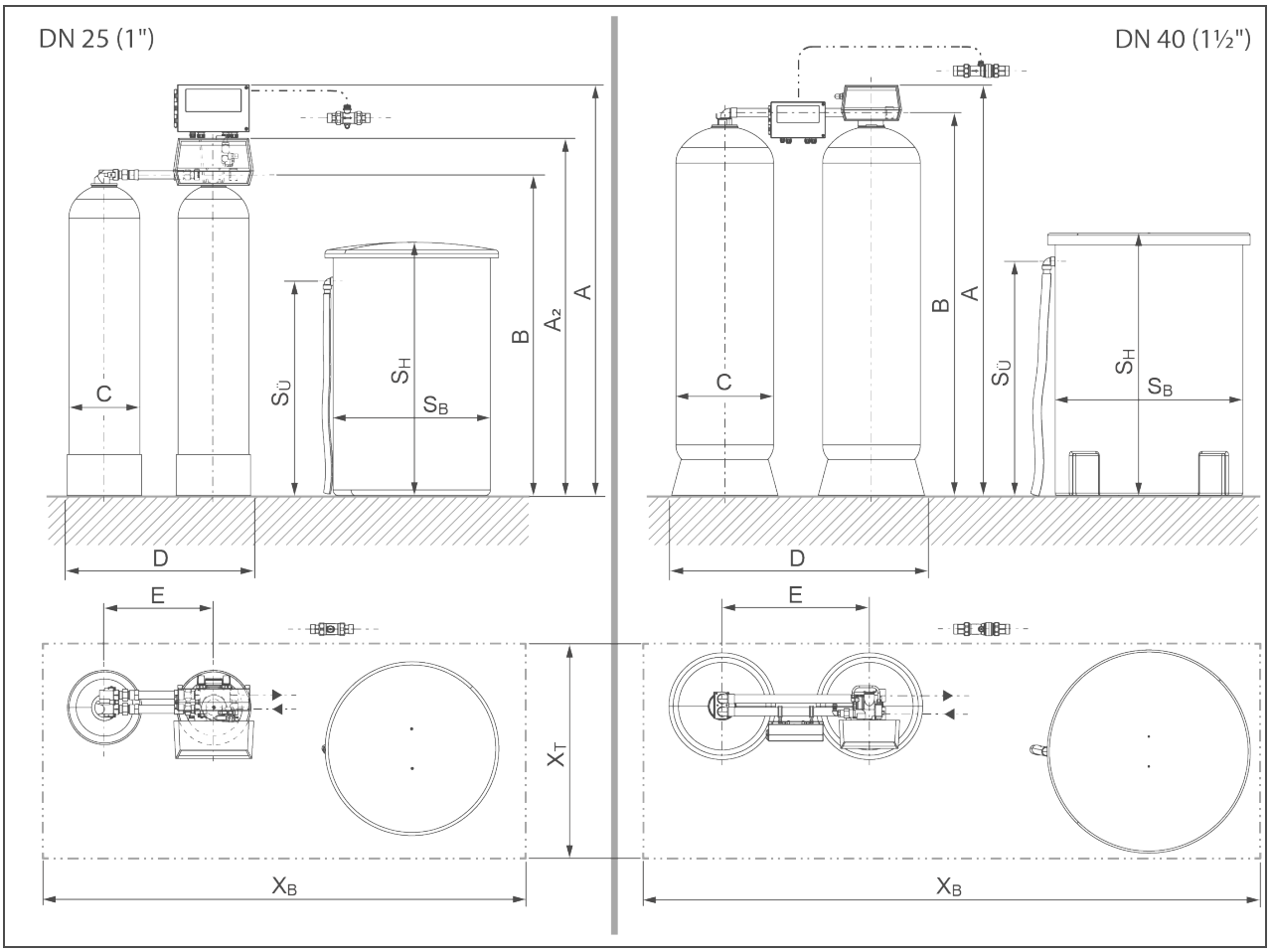
- Two exchanger tanks
- A central control valve made of red brass
- Signal/fault signal contact
- Salt dissolving tank made of PE incl. sieve bottom
- Microprocessor controller with LCD graphic display
- Power supply by Schuko plug with a mains cable of 1.5 m
- Turbine water meter (TWZ) to register the soft water volume

The systems are interference-free and comply with the EMC guidelines.

Scope of supply

- Water softener complete
- Salt dissolving tank
- Water test kit "Total hardness“
- Operation manual

Technical specifications I (GENO-mat duo WE-X with full salting)



Dimensions and weights		GENO-mat duo WE-X (full salting)				
		65	150	300	450	750
		DN 25 (1")			DN 40 (1½")	
A System height	mm	1310	1530	1790	1840	1970
A_2 System height (without control unit)	mm	1080	1300	1560	--	--
B Connection height of control valve	mm	940	1160	1420	1710	1830
C Ø Exchanger	mm	208	257	334	369	469
D System width	mm	640	665	735	1070	1210
E Distance between centres of exchangers	mm	400			700	
S_B Ø Salt dissolving tank (standard)	mm	500	570	700	780	900
S_H Height of salt dissolving tank < (standard)	mm	810	880	870	1100	1250
$S_Ü$ Height of safety overflow	mm	700	780	770	980	1120
X_T Depth of foundation	mm	≥ 600	≥ 700	≥ 800	≥ 900	≥ 1000
X_B Length of foundation	mm	≥ 1460	≥ 1500	≥ 1700	≥ 2100	≥ 2400
Operating weight, approx.	kg	285	435	730	1110	1745

Technical specifications II (GENO-mat duo WE-X with full salting)

Connection data		65	150	300	450	750
Nominal connection diameter		DN 25 (1" female thread)			DN 40 (1½" female thread)	
Drain connection		DN ≥ 50				
Rated voltage range	V	100 – 250				
Rated frequency	Hz	50 – 60				
Power supply for Taiwan		110 V/60 Hz or 230 V/60 Hz				
Operating voltage	V DC	24				
Power input in standby	VA	10				
Protection/protection class		IP 54/⏚				

Performance data		65	150	300	450	750
Nominal pressure	bar	PN 10				
Operating pressure	bar	2.0 – 8.0				
Continuous flow at a residual hardness < 0.1 °dH	m³/h	≤ 2.0	≤ 3.0	≤ 5.0	≤ 6.0	≤ 9.5
Pressure loss at continuous flow	bar	≥ 0.6	≥ 1.1	≥ 2.1	≥ 1.5	≥ 2.3
K_V value (at 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
	m³ x°dH	67	149	302	449	746
Capacity per kg of regeneration salt	mol/kg	3.33	3.32	3.32	3.16	3.33
Time capacity	m³ x °dH/h	72	84	145	214	269

Filling volumes and consumption data		65	150	300	450	750
Resin volume (exchanger)	l	18	40	81	115	200
Freeboard (resin in form of sodium), approx.	mm	270	230	290	390	300
Salt consumption per regeneration, approx.	kg	3.6	8.0	16.2	25.3	40.0
Flushing water volume	m³/h	≤ 0.340	≤ 0.545	≤ 0.910	≤ 1.135	≤ 1.590
Regeneration salt supply	kg	≤ 130	≤ 190	≤ 285	≤ 485	≤ 760
Total waste water volume per regeneration, approx.	l	112	211	451	693	1020
Operating water volume	l	10	22	45	70	111
Minimum filling height of salt	mm	--	--	--	--	50

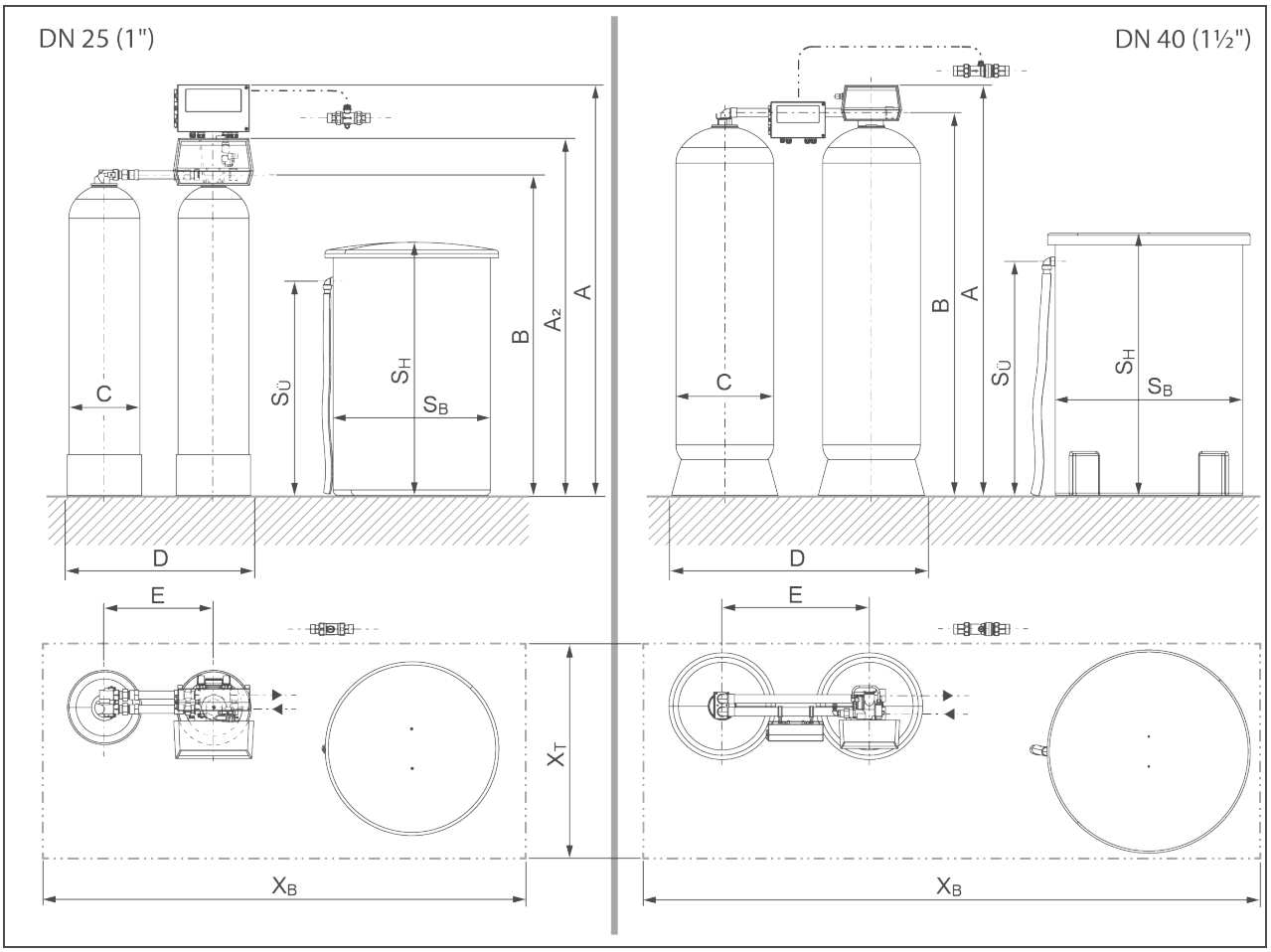
General data		65	150	300	450	750
Water temperature	°C	5 – 30				
Ambient temperature (drinking water)	°C	5 – 25				
Ambient temperature (technical application)	°C	5 – 40				
Humidity (non-condensing)	%	90				
Iron concentration in raw water	mg/l	< 0.2				
Manganese concentration in raw water	mg/l	< 0.05				
ÜA registration number *The Office of the Vienna Provincial Government – City of Vienna*		R-15.2.3-21-17496				
Order no.		**186 100**	**186 110**	**186 120**	**186 130**	**186 140**

Data refers to standard salt dissolving tanks. The waste water volume and salt consumption refer to an inlet pressure of 3 bar.

The indicated values change at different inlet pressures and only serve for rough determination.

The indicated maximum continuous flows might decrease in case of high raw water hardness (> 20 °dH).

Technical specifications I (GENO-mat duo WE-X with economy salting)



Dimensions and weights		GENO-mat duo WE-X (economy salting)				
		50	**130**	**230**	**330**	**530**
		DN 25 (1")			DN 40 (1½")	
A System height	mm	1310	1530	1790	1840	1970
A_2 System height (without control unit)	mm	1080	1300	1560	--	--
B Connection height of control valve	mm	940	1160	1420	1710	1830
C Ø Exchanger	mm	208	257	334	369	469
D System width	mm	640	665	735	1070	1210
E Distance between centres of exchangers	mm	400			700	
S_B Ø Salt dissolving tank (standard)	mm	410	500	570	700	700
S_H Height of salt dissolving tank (standard)	mm	670	810	880	870	870
$S_Ü$ Height of safety overflow	mm	570	700	780	770	770
X_T Depth of foundation	mm	≥ 500	≥ 600	≥ 700	≥ 800	≥ 800
X_B Length of foundation	mm	≥ 1300	≥ 1500	≥ 1600	≥ 2100	≥ 2200
Operating weight, approx.	kg	190	340	555	825	1080

Technical specifications II (GENO-mat duo WE-X with economy salting)

Connection data		**50**	**130**	**230**	**330**	**530**
Nominal connection diameter		DN 25 (1" female thread)			DN 40 (1½" female thread)	
Drain connection		≥ 50				
Rated voltage range	V	100 – 250				
Rated frequency	Hz	50 – 60				
Power supply for Taiwan		110 V/60 Hz or 230 V/60 Hz				
Operating voltage	V DC	24				
Power input in standby	VA	10				
Protection/protection class		IP 54/⏚				

Performance data		**50**	**130**	**230**	**330**	**530**
Nominal pressure	bar	PN 10				
Operating pressure	bar	2.0 – 8.0				
Continuous flow at a residual hardness < 0.1 °dH	m³/h	≤ 2.0	≤ 3.0	≤ 5.0	≤ 6.0	≤ 9.5
Peak flow at blending to 8 °dH and a raw water hardness of 20 °dH	m³/h	3.3	5.0	8.3	10.0	15.8
Pressure loss at continuous flow	bar	≥ 0.6	≥ 1.1	≥ 2.1	≥ 1.5	≥ 2.3
K_V value (at Δp = 1.0 bar)	m³/h	2.6	2.7	3.1	4.5	5.6
K_V value at blending to 8 °dH and a raw water hardness of 20 °dH	m³/h	4.3	4.5	5.2	7.5	9.3
Nominal capacity	mol	9.5	20.9	42.3	60.0	95.2
	m³x°dH	53	117	237	336	533
Capacity per kg of regeneration salt	mol/kg	5.27	5.22	5.22	5.20	5.90
Time capacity	m³ x °dH/h	68	81	143	207	243

Filling volumes and consumption data		**50**	**130**	**230**	**330**	**530**
Resin volume (exchanger)	l	18	40	81	115	200
Freeboard (resin in form of sodium), approx.	mm	270	230	290	390	300
Salt consumption per regeneration, approx.	kg	1.8	4.0	8.1	11.5	16.0
Flushing water volume	m³/h	≤ 0.340	≤ 0.545	≤ 0.910	≤ 1.135	≤ 1.590
Regeneration salt supply	kg	≤ 65	≤ 130	≤ 190	≤ 285	≤ 285
Total waste water volume per regeneration, approx.	l	98	181	376	583	865
Operating water volume	l	5	11	23	32	44
Minimum filling height of salt	mm	--	--	--	--	--

General data		**50**	**130**	**230**	**330**	**530**
Water temperature	°C	5 – 30				
Ambient temperature (drinking water)	°C	5 – 25				
Ambient temperature (technical application)	°C	5 – 40				
Humidity (non-condensing)	%	90				
Iron concentration in raw water	mg/l	< 0.2				
Manganese concentration in raw water	mg/l	< 0.05				
ÜA registration number *The Office of the Vienna Provincial Government – City of Vienna*		R-15.2.3-21-17496				
Order no.		**186 200**	**186 210**	**186 220**	**186 230**	**186 240**

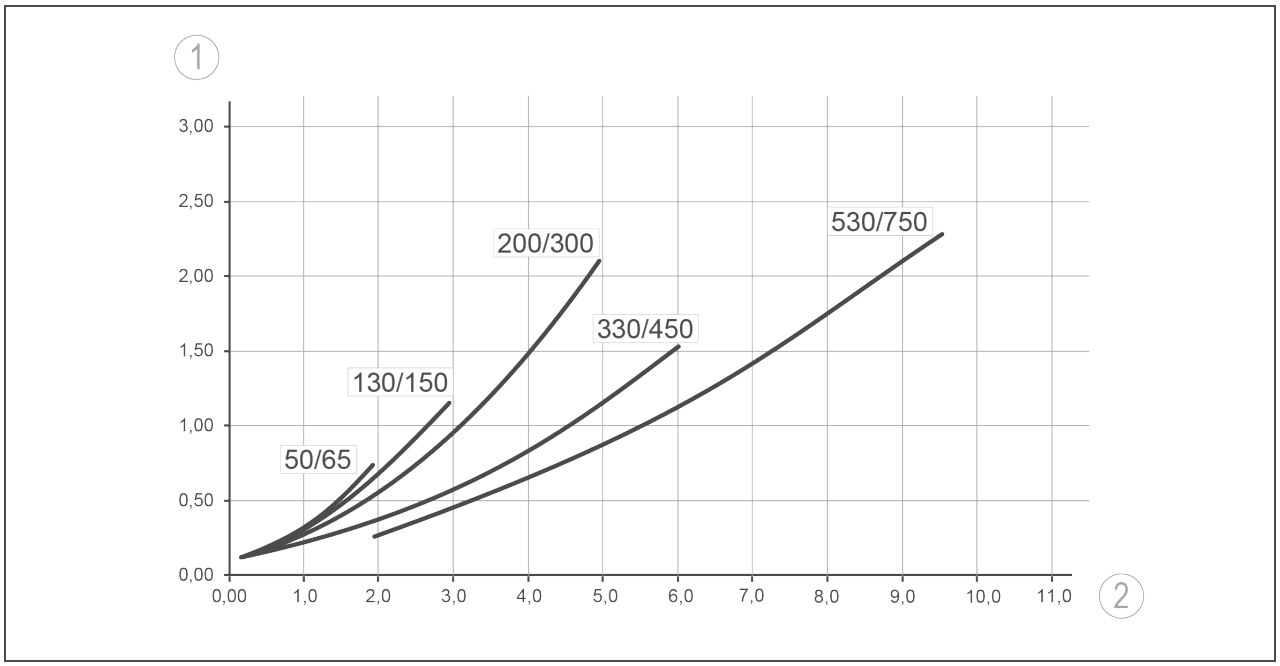
Data refers to standard salt dissolving tanks. The waste water volume and salt consumption refer to an inlet pressure of 3 bar.

The indicated values change at different inlet pressures and only serve for rough determination.

The indicated maximum continuous flows might decrease in case of high raw water hardness (> 20 °dH).

Technical specifications III

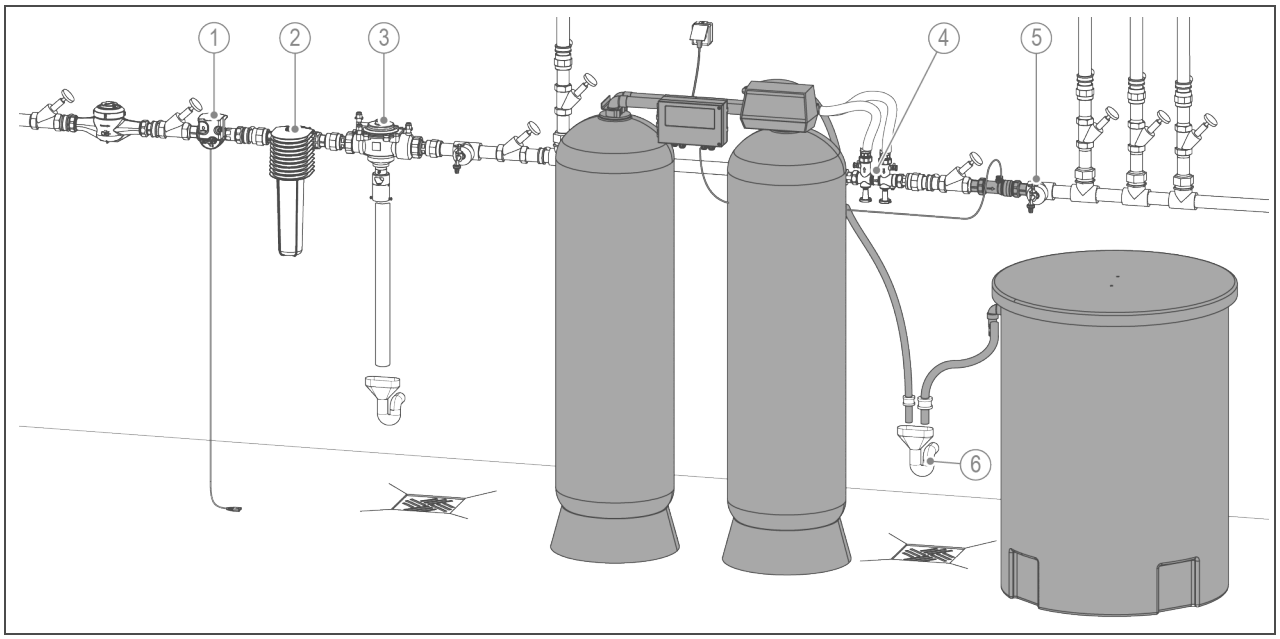
Pressure loss curve GENO-mat duo WE-X



Item	Designation	Item	Designation
1	Pressure loss in bar	2	Flow in m³/h

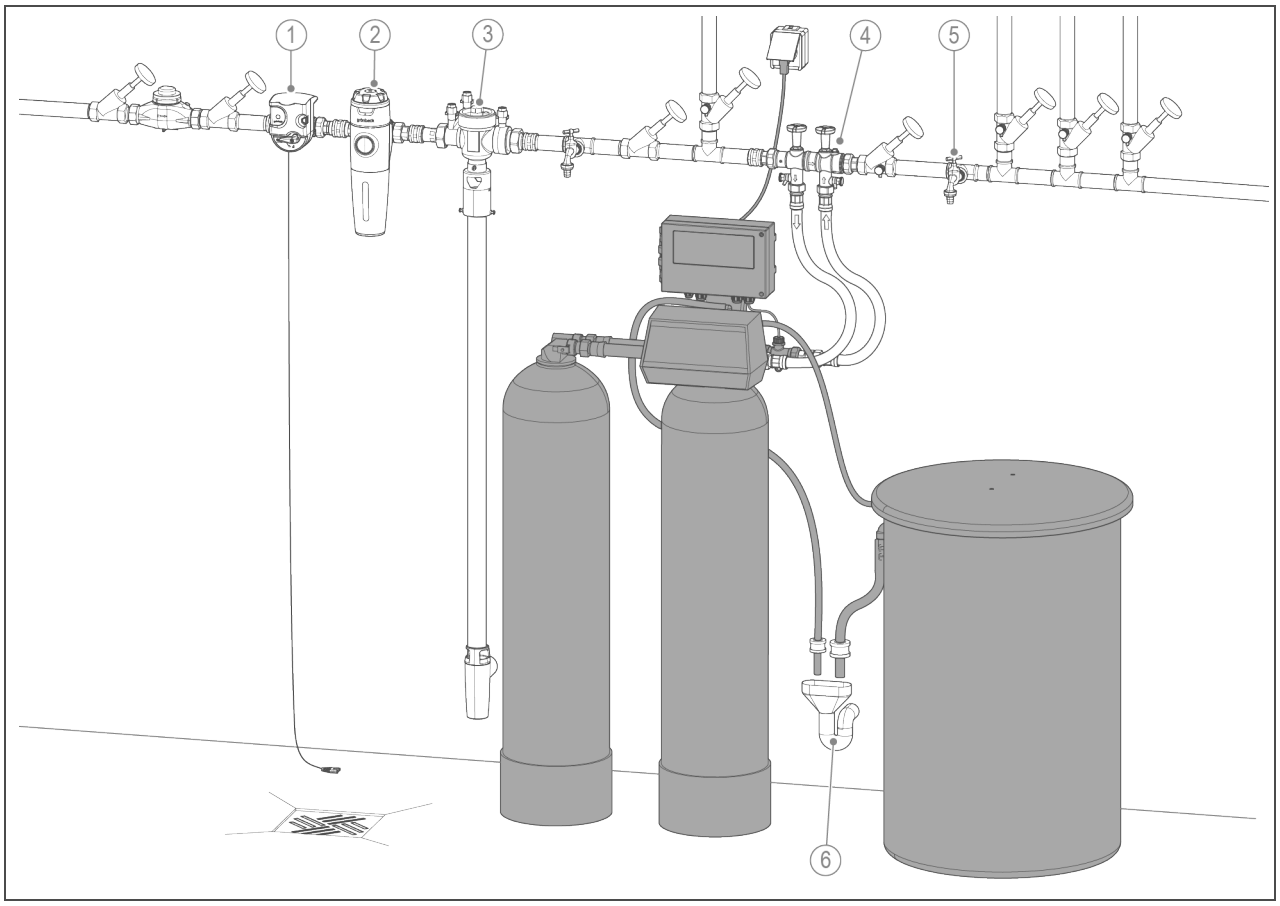
In case of systems with economy salting – indicated pressure loss without blending.

Installation example I (GENO-mat duo WE-X in DN 40 version)



Item	Designation	Item	Designation
1	Safety device protectliQ	2	Drinking water filter BOXER
3	Euro system separator GENO-DK 2	4	Connection kit 1½"
5	Water withdrawal point	6	Drain connection DN 50 acc. to DIN EN 1717

Installation example II (GENO-mat duo WE-X in DN 25 version)



Item	Designation	Item	Designation
1	Safety device protectliQ	2	Drinking water filter pureliQ
3	Euro system separator GENO-DK 2	4	Connection kit 1"
5	Water withdrawal point	6	Drain connection DN 50 acc. to DIN EN 1717

Requirements for the installation site

Obey the local installation directives, general guidelines and technical specifications.

- Protection from frost, severe heat exposure and direct sunlight
- Protection from chemicals, dyes, solvents and their vapours
- Ambient temperature and radiation temperature in the immediate vicinity
  - ≤ 25 °C for applications in the drinking water sector
  - ≤ 40 °C for purely technical applications
- Protection from heat sources (e.g. heating systems, boilers and hot water pipes)
- Access for maintenance work (take note of space required)
- Sufficiently illuminated as well as aerated and ventilated
- Horizontal installation surface with sufficient load-bearing capacity to support the operating weight of the product

Water installation

- Drinking water filter installed upstream and pressure reducer, if necessary (e.g. fine filter pureliQ:KD or BOXER KDX)
- Euro system separator (e.g. GENO-DK 2) upstream of the product
- Floor drain or corresponding safety device with water stop function (e.g. safety device protectliQ)
- Salt water resistant lifting system in case the drain connection is located at a higher level
- Drain connection ≥ DN 50
- Shut-off valves and possibility of sampling upstream and downstream of the product

Electrical installation

- Schuko socket with continuous power supply (max. approx. 1.2 m from the control unit)

Accessories

Blending valve 1"
with DVGW blending
Order no.: 125 809

Adapter connection with integrated blending unit R 1"

- Included in the scope of supply of GENO-mat duo WE-X 50/130/230 with economy salting
- Available as an option for GENO-mat duo WE-X 65/150/300 with full salting

Mechanical blending valve
1" Order no. 126 010

To set a constant residual hardness by blending raw water, irrespective of withdrawal volumes and pressure fluctuations.

- 2 Shut-off valves for raw water inlet and blended water outlet
- For connection with flexible connection hoses
- With water meter screw connections

1¼" Order no. 126 015

- Without shut-off valves

Connection kit

Size	Order no.
1"	**185 515**
1¼"	**185 530**
1½"	**185 848**
Industrial version	
1"	**185 505**
1¼"	**185 520**
1½"	**185 848**

For quick connection of water softeners of the GENO-mat duo-WE-X series free of mechanical stress.

- Connection block with overflow valve (industrial version without overflow valve)
- 2 Shut-off valves for raw and soft water
- 2 Sampling valves for raw and soft water
- 2 Flexible stainless steel braided hoses

Pre-alarm salt supply
Order no. 185 335

For monitoring the salt supply by means of a light sensor.

If the salt level in the salt dissolving tank falls below the minimum height, a signal is sent to the water softener and a voltage-free fault signal is triggered.

Voltage-free signal
Order no. 126 890

To relay the operating states below to the building management system or systems installed downstream:

- Operation Exchanger 1
- Operation Exchanger 2
- Regeneration
- Operation

Disinfection unit

duo WE-X 50 – 450 V2
Order no. 182 505
duo WE-X 530 – 750 V2
Order no. 182 515

For automatic disinfection (chlorine flushing) during each regeneration process according to the NaCl electrolysis principle.

- With external power supply unit in the switch box for wiring with control unit GENO-IONO-matic WE
- Suitable for GENO-mat duo WE-X systems with economy salting

Consumables

Regeneration salt (25 kg)
Order no. 127 001

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

Water test kit "Total hardness"
°dH and °f
1 pc Order no. 170 187
10 pcs Order no. 170 100

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