

### WINNI-mat® VGX 9, VGX 14, VGX 19, VGX 14-H

Fig. 1: WINNI-mat® VGX

#### Designated application

The WINNI-mat® VGX water softeners are designed for the softening respectively partial softening of drinking and process water. They protect the water pipes and the connected water carrying system components (fittings, devices, operating equipment, boiler plants, boilers, production lines, etc.) from malfunctions and damage due to scale deposits.

#### Function

The systems work according to the ion exchange process.

All operating steps are controlled fully automatically by a modern micro-processor controller and a 6 cycle control valve made of glass fibre reinforced high-performance plastic.

#### Softening

Via the connection block installed in the pipe and a connection hose, the raw water flows into the raw water inlet and then continues to the ion exchanger in operation and flows from top to bottom through the resin contained in the tank which is loaded with sodium ions. During this process, the hardness generators contained in the water - such as calcium and magnesium ions - are exchanged for sodium ions (the so-called ion exchange principle). The resulting soft water flows through the lower filter nozzle and the riser pipe to the soft water outlet. The soft water volume is registered in the soft water outlet by means of an integrated pulser. Then the soft water flows back to the connection block via the second connection hose. Hard water is then added via the blending valve integrated in the connection block in order to achieve the desired soft water hardness. Afterwards, the partially softened water is returned to the pipe network.

#### Regeneration

In case the ion exchanger ion's absorptive capacity for calcium and magnesium ions is exhausted, regeneration has to take place in order to "reload" it with sodium ions. This process is triggered automatically

- after the consumption of the available soft water volume (depending on the inlet hardness set),
- after the manual release of a regeneration (manual regeneration),
- at the latest after expiry of the set regeneration interval of 96 hours (time priority switching according to DIN 19636-100).

The regeneration itself covers 6 operating steps (backwash – salting and disinfection – slow rinsing – filling of brine tank – washing out).

#### Backwash

In the backwash process the resin bed is loosened up from bottom to top and thus prepared for an optimum salting process.

#### Salting and disinfection

In the salting step, the brine required for the regeneration is sucked from the salt dissolving cabinet via the brine valve and the brine line and directed through the resin bed from the bottom to the top.

The hardness generators (calcium and magnesium ions) taken up during the softening phase are now exchanged for sodium ions and afterwards are directed to the drain by means of the rinsing water connection.

During each salting process, a certain amount of chlorine which is determined by the system size is generated according to the electrolysis process and distributed evenly in the resin bed. The reliable flushing of the chlorine is effected during the slow rinsing and

washing out process before the exchanger tank returns into operating position.

#### Slow rinsing

During the slow rinsing, regeneration residue and chlorine are removed from the resin bed. The rinsing water is directed through the resin bed from the bottom to the top and then discharged to the drain by means of the rinsing water connection.

#### Filling of brine tank

In this step, the water volume required for the brine generation is fed into the brine tank. The make-up water feed is done by means of stainless steel electrodes at the suction lance - independent of the pressure.

#### Washing out

The washing out is a forceful flushing of the ion exchanger resin from top to bottom in order to reliably flush out even the last remaining brine and chlorine residue. The water flowing through is drained via the rinsing water connection.

During the regeneration, the water supply is maintained by means of a built-in raw water bypass. In case of unfavourable flow conditions / installation situations, flow noises may result.

#### Control unit

The water softener is volume-controlled by means of a pulser integrated in the control valve as well as timer-controlled. An extensive information and signal system indicates all operating modes in the LCD display.

In order to operate the system by means of volume-control, the inlet hardness on site has to be set in the controller. On this basis, the electronics independently determine the soft water volume available between 2 regenerations.

Every water withdrawal is registered by the pulser and transmitted to the electronics by means of a pulse cable. In a subtractive process, the electronics then determines the remaining soft water volume. In case the remaining supply is depleted prior to the set regeneration interval, the control unit releases regeneration. However, in case the soft water supply is not consumed, a forced regeneration takes place after the expiry of the regeneration interval for hygienic reasons. The regeneration interval (time interval between two regenerations) is factory-set to 96 hours.

In case of a power failure, the program is maintained for approximately 300 hours by means of a Gold Cap.

### Design

Control unit featuring LCD information display and a transparent cover for splash water protection.

Comprehensive information and signal system;

Display of current time as well as display of the following features in the sub-menus:

- residual capacity until next regeneration
- current flow – current operating mode.
- hours since the last regeneration.

Indication of alarm signal as collective fault signal and possible transmission of output data to a central building management system.

Central control valve made of high performance plastics with 6-cycle regeneration valve and operating valve for system switching. The regeneration valves work on low-wearing ceramic discs. The pair of disks is equipped with an electric actuator and the operating valves feature two hydraulic-controlled membrane valves.

Furthermore, the system features an exchanger with double plastic coating (interior lining PE-HD, exterior coating polyester, glass fibre-reinforced) and built-in components for water flow and resin retention.

The exchanger with central control valve is filled with resin and is installed in a special receptacle situated in the stationary tank.

The stationary PE tank is designed to house the exchanger as well as the control and display panel.

Built-in brine tank with integrated brine valve and pipes for the feed of the brine to the control valve and the make-up water feed for the brine generation. The brine valve is equipped with a safety float for protection against overflowing due to power failure. The brine valve features stainless steel electrodes to regulate the brine.

The brine valve also features a disinfection cell that disinfects the resin bed according to the electrolysis process after each regeneration.

Complete connection technology for the water softener, consisting of a connection block (made of brass) for installation in the water pipe and 2 connection hoses for the connection of the softener. Connection block with water meter screw connections R 1" and threaded connections to the inlet and outlet of the softener.

Integrated in the connection block: 2 shut-off valves, overflow valve as bypass (opening pressure 0.8 bar), coarse filter, non-return valve and blending valve (continuously adjustable) as well as a dosing point. Installation length of the connection block without screw connections: 190 mm.

The water softener is fitted with noise suppression and meets the requirements of the EMV regulations. Power supply by means of a Euro plug with 1.5 m cable. The system itself is operated by a mains transformer with a protective low voltage of 24 V.

### Scope of supply

Water softener WINNI-mat®, VGX 9, VGX 14, VGX 19, including connection technology, complete with water test kit "Total Hardness" and operation manual.

The series types of the WINNI-mat® VGX softener are equipped with an EXAcount interface. This interface permits the operation of a dosing system without additional turbine water meter to protect galvanised pipes against corrosion and to protect copper pipes by means of alkalisation. The dosing system is connected to the softener by means of the softener's electric connection cable. The dosing point is located in the connection block.

Dosing computer consisting of: volume-controlled controller, self-priming piston pump, lift for dosing container (EK) or brine valve (ES) in separate design. Pump to be fastened on the pipe or wall.

### EXADOS® dosing computer

**EK 6 – GSX / VGX**  
for connection to the WINNI-mat® VGX  
**Order no. 115 430**

### EXADOS® dosing computer

**ES 6 – GSX / VGX**  
for connection to the WINNI-mat® VGX  
**Order no. 115 440**

### Replacement water test kit

#### "Total hardness °dH"

For the quick and easy determination of the total hardness °dH of the water.

Packing unit: 1 Test kit

**Order no. 170 145**

### Replacement water test kit

#### "Total hardness °f"

For the quick and easy determination of the total hardness °f of the water

Packing unit: 1 Test kit

**Order no. 170 182**

### Regeneration salt

acc. to EN 973 type A, 25 kg bag

**Order no. 127 001**

### GENO-STOP® 1"

The new safety device GENO-STOP® offers reliable and complete protection from water damage. The GENO-STOP® can be equipped with up to 2 wired water sensors and 5 wireless water sensors – For additional models, please inquire –.

**Order no. 126 875**

### Regeneration water delivery pump

Salt water resistant delivery pump to discharge the regeneration waste water in case of drain heights of up to 2.5. m. Electrical triggering via control unit (starting from software version V1.43).

**Order no. 188 800**

### Drain connection DN 50 acc. to DIN EN 1717 for small water softeners

Connection accessory for DIN-compatible waste water connection DN 50.

**Order no. 187 840**

### M-Bus measuring transducer FM2D/K

to transmit the flow and the counter reading as well as statistical values of a water meter by means of M-Bus (IEC 870). In addition, flow-dependent pulse output, analogue output and relay contact to Grünbeck control unit. Dimensions 160 x 240 x 160 mm

**Order no. 115 850**

### Extension set for connection hose

For extending the hose to a length of 1.6 m, consisting of:  
2 couplings  
2 flexible connection hoses

**Order no. 187 860e**

### 90° connecting bracket - 1" (2 off)

The connection hoses can be run closer to the water softener in confined installation situations.

**Order no. 187 865**

### Additional blending valve

Can be connected directly to the connection block to produce a second soft water hardness.

**Order no. 187 870**

### Additional soft water outflow

For installation in the soft water outlet between the water softener and connection block incl. sample valve and non-return valve.

**Order no. 187 875**

### Twin screw connection G1 ¼

For direct connection of drinking water filter (only 1") and connection block, incl. two flat seals.

**Order no. 151 072**

### Installation requirements

Please observe local installation directives, general guidelines and technical specifications.

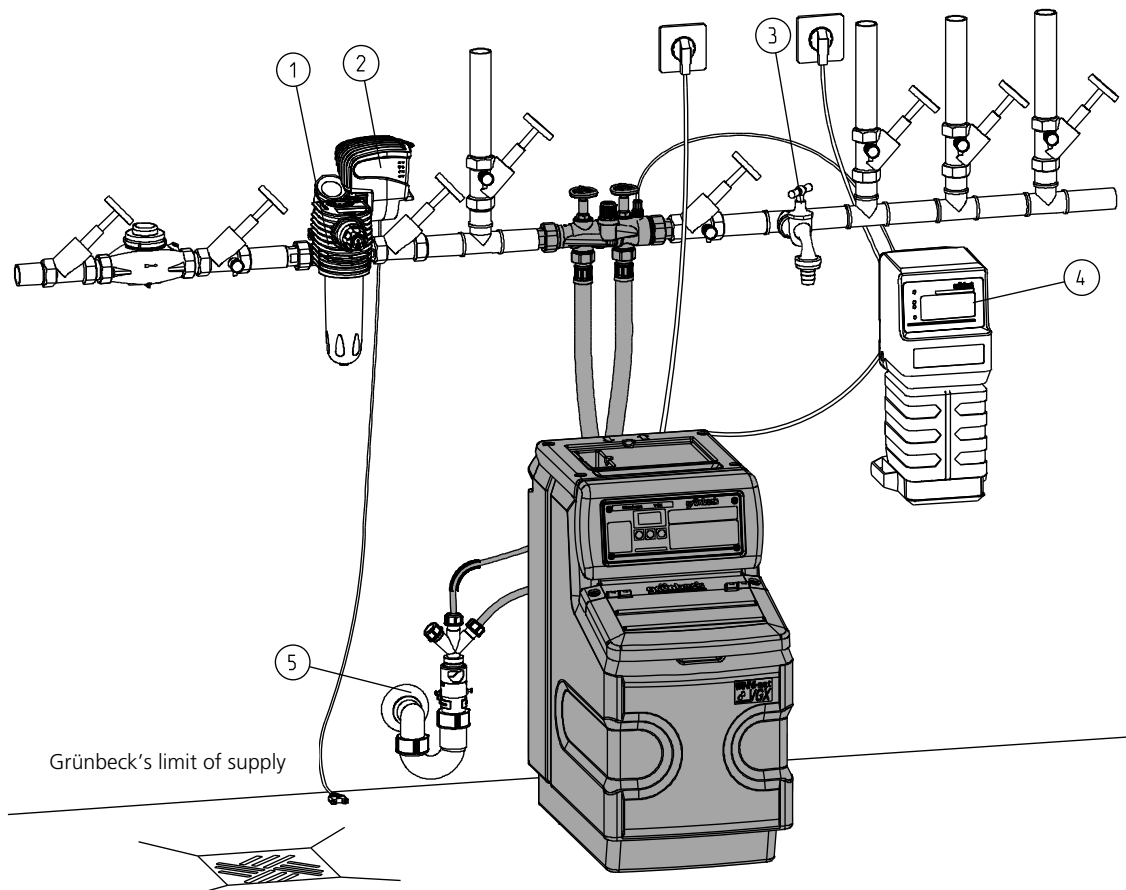
The water softener® VGX 9, VGX 14, VGX 19 is a DIN/DVGW-certified system and may be installed without additional safety device (system separator). A drinking water filter must generally be installed upstream of the system (e. g. BOXER® KD).

The installation site must be frost-proof. The system must be protected from chemicals, dyes, solvents and vapours. The ambient temperature as well as the radiation temperature next to the system must not exceed 40 °C.

A separate socket (230 V / 50 Hz) is required within a range of approx. 1.2 m of the system.

A drain connection for the discharge of the residual water (min. DN 50) must be available. In case the residual water is directed to a lifting system, this has to be salt-water-proof. The installation room must have a floor drain. If no floor drain is available, a corresponding safety device has to be installed.

In case of a power failure, floor drains with discharge to a lifting system will be out of operation.



- |  |  |
|--|--|
| ① Drinking water filter (e. g. BOXER® KD incl. pressure reducer) | ④ Dosing computer EXADOS®  |
| ② GENO-STOP®   | ⑤ Drain connection DN 50 acc. to DIN EN 1717 for small water softeners |
| ③ Water tap  |  |

Fig. 2: Installation example of water softener WINNI-mat® VGX

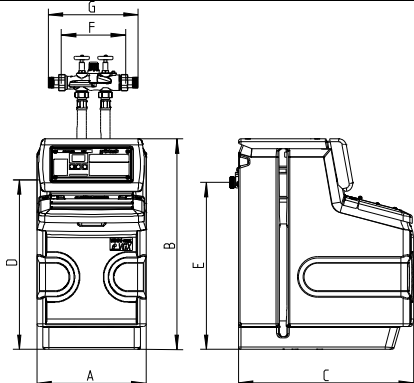
Technical specifications	Water softener WINNI-mat® VGX			
	9	14	19	14-H
<b>Connection data</b>				
Nominal connection diameter	DN 25 (1" male thread)			
Min. drain connection	DN 50			
Power supply [V]/[Hz]	230/50-60 (system operation by means of protective low voltage 24/50-60)			
Connected load; operation = max./standby VA	17 / 13			
Protection/protection class	IP 54/I			
<b>Performance data</b>				
Nominal pressure	PN 10			
Operating pressure min./max. (recommended) [bar]	2.0/8.0 , (4.0)			
Nominal flow at a pressure loss of 0.8 bar (raw water hardness 20 °dH (35.6 °f, 3.56 mmol/l) and soft water hardness to 8 °dH (14.2 °f, 1.42 mmol/l)) [m³/h]	1.7	2.1	2.1	-
Nominal flow 0 °dH (0 °f, 0 mmol/l) [m³/h]	1.3	1.4	1.4	0.5
Nominal flow acc. to DIN-EN 14743 (Pressure loss 1 bar $\triangleq$ K <sub>v</sub> -value) [m³/h]	1.6	1.7	1.7	-
Nominal capacity [mol]	1.6	2.4	3.2	2.4
Capacity per kg of regeneration salt [mol/kg]	4.5	4.5	4.3	2.9
Regeneration time [min]	50	60	70	68
<b>Dimensions and weights <sup>1)</sup></b>				
A System width [mm]	330			
B System height [mm]	640			
C System depth [mm]	530			
D Height of safety overflow of brine tank [mm]	315			
E Connection height of control valve [mm]	507			
F Installation length without screw connection [mm]	190			-
G Installation length with screw connection [mm]	271			-
Operating weight, approx. [kg]	60	73	75	73
Shipping weight, approx. [kg]	25	28	30	28
<b>Filling volumes and consumption data</b>				
Resin filling volume [l]	4	6	7.5	6
Salt consumption per regeneration approx. * [g]	350	530	750	850
Max. capacity of brine tank [kg]	38			
Total waste water volume per regen., approx. * [l]	30	40	50	53
<b>General</b>				
Suitable for homes of ... families (up to ... persons) <sup>2)</sup>	1-2 (5)	3-5 (12)	6-8 (20)	-
DVGW registration number	NW-9151BP5635			
SVGW certification no.	certification pending			
Max. water/ambient temperature <sup>3)</sup> [°C]	30/40			
<b>Order no.</b>	<b>188 100</b>	<b>188 200</b>	<b>188 300</b>	<b>188 250</b>
* 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 as a means for a rough determination. <sup>1)</sup> All indications are approximate. <sup>2)</sup> Recommendation for installation in Switzerland: VGX 9 for one-family homes, VGX 14 for 2-family homes, VGX 19 for 3-family homes <sup>3)</sup> Refer to installation requirements!				

Fig. 3: Dimensional drawing of water softener WINNI-mat® VGX