Reverse Osmosis System GENO®-OSMO RO 125K-TS GENO®-OSMO RO 125K-TL

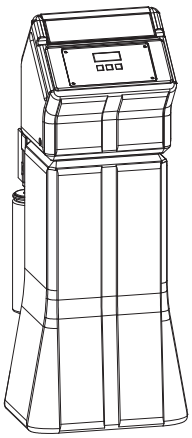


Fig. 1: GENO®-OSMO RO 125K (TS/TL)

Designated application

The reverse osmosis system GENO®-OSMO RO 125K is designed for the demineralisation of feed water whose composition meets the quality requirements of the TrinkwV (German Drinking Water Ordinance).

Process

The reverse osmosis system GENO®-OSMO RO 125K works according to the reverse osmosis principle. During the osmosis process, watery solutions of different concentrations are separated by a semi-permeable membrane. Following the law of nature, the concentrations try to equalise. On the side of the higher initial concentration, the so called "osmotic pressure" is generated. During the reverse osmosis, this "osmotic pressure" is opposed by a higher pressure and as a consequence, the process is reversed. The particular advantage of the reverse osmosis technology compared to other water treatment technologies is the fact that – apart from the removal of dissolved salts – bacteria, germs, particles and dissolved organic matter are reduced as well.

Application limits

- Total hardness < 0.1 °dH (0.178°f, 0.0178 mmol/l)
- Free chlorine: unverifiable
- Iron < 0.1 mg/l
- Manganese < 0.05 mg/l
- Silicic acid < 15 mg/l
- Chlorine dioxide: unverifiable
- Turbidity < 1 TE/F
- Colloid index < 3
- pH range 3 - 9

☞ **Note:** The permeate resulting from the reverse osmosis system is not potable but requires additional treatment (blending, salting) in order to be used as drinking water.

Installation requirements

Generally, a drinking water filter (50 or 80 µm), a system separator (DK) as well as a water softener or a dosing system to add inhibitors have to be installed upstream of the GENO®-OSMO RO 125K. If the feed water to be treated contains chlorine, it must pass through an optional activated carbon filter downstream of the softener.

Function

The water is directed to the inlet of the feed water section via a 5 µm drinking water filter. Then the water flows to the high pressure pump via the inlet solenoid valve which is followed by a low pressure switch. By means of a control valve, the pressure generated by the pump is reduced to the required operating pressure and the water is directed to the membrane. The membrane separates the water into the partial flows "permeate" and "concentrate". A partial flow of the concentrate is returned to the feed water by means of a pressure-independent control orifice and thus ensures a steady flow over the membrane and increases the economic efficiency of the reverse osmosis system. The remaining concentrate is directed to the drain by means of a control valve. After each system switch-off (tank full) or in case of disturbances, retained particles are flushed from the membrane by means of the inlet solenoid valve and a solenoid valve which is connected in parallel to the control valve "concentrate".

The hydraulic build-up of the system is designed to register the concentrate and permeate volumes by means of flow meters and to indicate the values in the control electronics. The system recovery may also be retrieved in the control electronics.

1) The permeate produced is directed to an opaque supply tank which features a level control with three switching contacts.

In order to supply the consumers with permeate, a pressure booster as centrifugal pump made of high performance plastics, incl. pressure switch and membrane expansion vessel are integrated in the system.

Scope of delivery

Basic equipment

Free-standing housing made of opaque PE to receive all aggregates and control elements. The free-standing housing also serves as supply tank (only GENO®-OSMO RO 125K-TS).

Microprocessor controller with LCD display, voltage-free collective fault alarm and voltage-free signal contact (maintenance interval, various prealarms) installed in free-standing housing.

Sliding-vane rotary pump made of corrosion-proof brass with motor as high pressure pump to supply the membrane, including control valve for operating pressure and pressure gauge.

1) External pressure booster system as centrifugal pump with integrated pressure switch and membrane expansion vessel to supply consumers downstream.

Hydro module for the water supply within the membrane system. Integrated valves and measuring instruments for easy system adjustment.

5 µm drinking water filter with integrated pressure reducer, preset to 2.5 bar.

Ultra-low pressure reverse osmosis membrane, installed in a pressure pipe made of high strength PE.

Flow sensor to measure the volume of the system flows „permeate" and „concentrate".

Operation manual.

1) only GENO®-OSMO RO 125K-TS.

Optional accessories

☞ **Note**: Existing systems may be retrofitted with optional components. For additional information, please contact your local Grünbeck representative or the Grünbeck headquarters in Hoechstaedt.

Connection block for GENO®-OSMO-RO 125 K
Connection block (installation length 180 mm). Permeate-resistant incl. two shut-off valves – suitable for connection kit
Order no. 752 840

Connection kit for GENO®-OSMO 125K
2 flexible connection hoses DN 15 L = 600 mm) for feed water and permeate, 1 drain hose for concentrate
Order no. 752 830

Conductivity measurement for GENO®-OSMO RO 125K
Circuit board to be plugged onto the control electronics. Indication at the display with limit value and delay, incl. connection line and conductivity measuring cell, installed in the combi-cap pressure pipe.
Order no. 752 820

Solenoid valve for forced withdrawal for reverse osmosis system RO 125K
Solenoid valve adaptable at permeate outlet of hydro module for forced withdrawal from GENO®-OSMO RO 125K tank in case of longer periods of standstill. Electrically triggered by control electronics of GENO®-OSMO RO 125K.
Order no. 752 810

Blending unit for GENO®-MSR system 200
Adaptable control unit at hydraulic unit of GENO®-OSMO RO 125K, consisting of: G ¾ connection for feed water, solenoid valve, needle valve, flow sensor to indicate total blending water in the GENO®-OSMO RO 125K control electronics. Possible connection for blending water in permeate tank of GENO®-OSMO RO 125K or tank provided by others on site.
Order no. 752 800

Drinking water filter BOXER® K
80 µm filter element for pre-filtration
Order no. 101 210

Euro-system separator GENO®-DK 2 Mini
To protect the drinking water from devices and systems that might endanger the drinking water according to DIN 1988 part 4 (DIN EN 1717)
GENO®-DK 2 Mini
Order no. 133 100

Water softener Weichwassermeister GSX 10 l, industrial version
Water softener with twin units for alternating operation, including connection block with flexible connection hoses.
Order no. 187 530

-For larger systems, please inquire-

GENO®-softwatch Komfort
for automatic monitoring of residual resp. total hardness of water
Order no. 172 500

GENO®-activated carbon filter AKF 250
To reduce the chorine concentration in the water
Order no. 109 010

Additional options

GENO-STOP® 1"
The new safety device GENO-STOP® provides reliable and comprehensive protection against water damage. The GENO-STOP® may be equipped with up to two wired and five wireless water sensors.
-For additional types, please inquire-.
Order no. 126 875

Pure water tank for the intermediate storage of unpressurised permeate from GENO® reverse osmosis systems
Tank features:
All tanks are pre-assembled, featuring PVC overflow pipe as well as connections for permeate inlet and suction pipe of pressure booster system. Grey PE. Hand hole with removable screw cap and external level control system GENO®-Multi Niveau (switching level).

Basic pure water tank RT „sterile" compl.
Net volume approx. 850 l / l 780 / w 990 / total height 2000 mm*.
Order no. 712 400

Additional tank RT for basic pure water tank
Net volume approx. 850 l / l 780 / w 780 / total height 2100 mm*.
Order no. 712 405

Basic pure water tank RT „Standard"
Net volume approx. 850 l / l 780 / w 1000 / total height 2050 mm**.
Order no. 712 410

*** Tank height, incl. connecting pieces For larger tanks, please inquire.**

**** Without sterile overflow as siphon – overflow as down-pipe.**
Additional tank without level control and overflow loop, incl. 2 connection lines id = 36 mm.

☞ **Note:** As a maximum, a supply battery consisting of 4 tanks may be realised.

Pressure booster system GENO® FU- X2/40-1 N
Compact, pressure-dependant, speed-controlled pump aggregate, consisting of a centrifugal pump, completely made of stainless steel, as well as a built-in pressure and contact water meter. Control electronics with power switching, back-lit graphic display. Operating switch, operating log via SD card, voltage-free signal/fault signal contact, non-return valve, shut-off valve for each pump (on suction and pressure side), membrane expansion vessel with forced flow.

Delivery rate:	max. 1.2 – 4.2 m³/h
Delivery height	max. 18.2 – 45.6 m
Power supply:	230 V / 50 Hz
Power input	1 kW
Connections:	DN 25 / DN 32
Protection:	IP 55

Order no. 730 640

Pressure booster system GENO® FU 2/40-2 N 10

Description see single pressure booster above, however, featuring the possibility for time – load switchover as well as cascade switchover
Order no. 730 641

General installation instructions

The installation site must offer adequate space. A foundation of sufficient size and load carrying capacity must be provided. The required connections must be provided prior to the installation. For a summary of dimensions and connection data, please refer to the table "Technical Specifications". The installation of a reverse osmosis system represents a major interference with the drinking water installation and therefore may only be performed by an authorised expert.

Please observe local installation directives and general guidelines.

Install a drinking water filter, e.g. BOXER® K, upstream of the system.

Install a system separator upstream of the system.
Install a water softener upstream of the system.

Install an activated carbon filter upstream of the system.

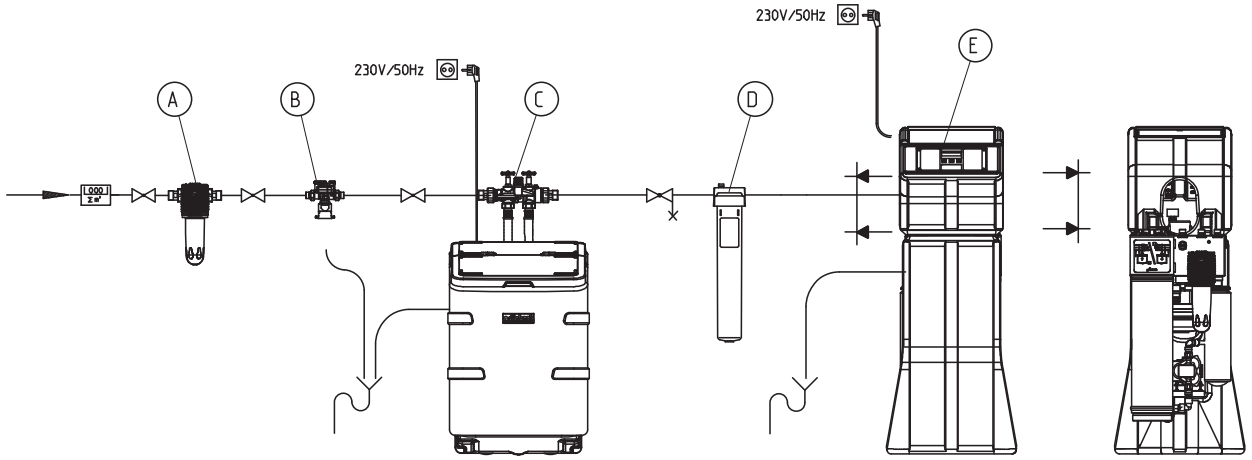
Provide a drain connection (at least DN 50) to discharge the concentrate.

For the power supply, others on site must provide an electrical supply line to the system according to the wiring diagram. This line must be dimensioned according to the system type.

The installation site must have a floor drain. If there is no floor drain, an appropriate safety device must be installed.

Floor drains leading towards a lifting system do not work in case of a power failure.

Technical specifications		**Reverse osmosis system**	
		GENO®-OSMO RO 125K-TS	**GENO®-OSMO RO 125K-TL**
Connection data			
Nominal connection diameter for feed water inlet		½" (DN 15) male thread	
Nominal connection diameter for permeate outlet		½" (DN 15) male thread	
Nominal connection diameter for concentrate outlet		½" (DN 15) male thread	
Required drain connection min.	[DN]	50	
Connected electrical load, approx.	[kW]	0.85	0.5
Power supply	[V/Hz]	230 V / 50 Hz	
Protection/Protection class		IP 54/I	
Performance data			
Permeate volume at a feed water temperature of 10° C / 15 °C	[l/h]	105/125	
Electrical pump capacity at operating pressure	[kW]	0.37	
Daily permeate volume (max. 24 h) approx. max./min.	[m³/d]	2.5/3.0	
Inlet flow pressure of feed water, min./max.	[bar]	2.5	
Permeate supply, approx.	[l]	38	-
Hydraulic capacity of pressure booster system, max.	[l/h/bar]	900/3.8	-
Pump characteristics	[l/h/bar]	170/4.0 – 250/3.7	-
Nominal pressure		PN 16	
Salt rejection		95 - 99%	
Total salt concentration in feed water as NaCl max.	[ppm]	1000	
Concentrate volume flow, min./max. (at 15 °C)	[l/h]	40/125	
Feed water volume flow (fresh water 15 °C) at a recovery rate of 75 %, max.	[l/h]	160	
Recovery min./max.	[%]	50-75 (adjustable)	
Dimensions and weights			
Dimensions w x d x h	[mm]	450 x 600 x 1130	
Empty weight, approx.	[kg]	37	30
Operating weight, approx.	[kg]	75	30
Ambient data			
Feed water temperature, min./max.	[°C]	10/30	
Ambient temperature, min./max.	[°C]	5/35	
Order no.		**752 100**	**752 110**



Ⓐ Drinking water filter BOXER®-K
Ⓑ Euro system separator DK-2 Mini
Ⓒ Water softener Weichwassermeister 2 GSX I
Ⓓ Activated carbon filter AKF
Ⓔ Reverse osmosis system GENO®-OSMO RO 125K-TS

Fig. 2: Installation drawing

☞ **Note:** In the concentrate and permeate pipe provided by others on site, a feature for the separation of the pipe must be available (e. g. screw connection).