

Installation and Operating Instructions

JUDO BIOQUELL-SOFT

Softener

Valid for: EU countries and Switzerland

Language: English

Attention:

Carefully read through the installation and operating instructions and safety information before installing and putting the unit into service.

These must always be issued to the owner/user.

Extended warranty period if a service agreement is concluded!

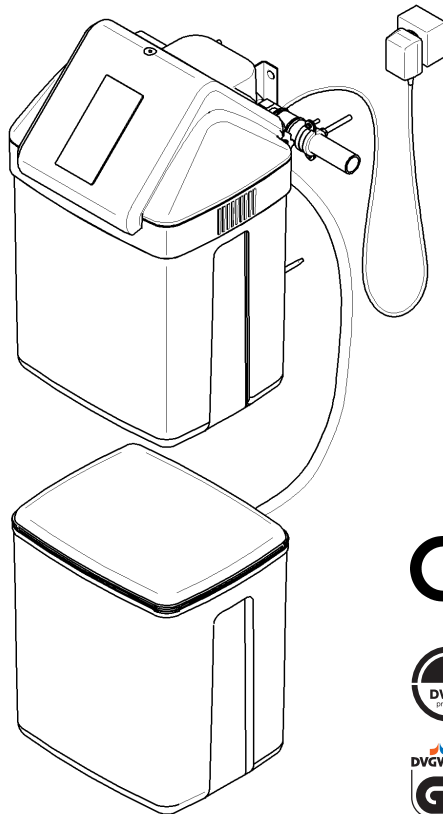


Fig.: JBQ-S



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Dear Customer,

Thank you for the confidence you have shown in us by purchasing this unit. With this Softener you have purchased a state of the art unit.

This Softener is suitable for use in cold drinking water up to a maximum ambient temperature of 30°C (86°F).

Each unit is thoroughly checked before delivery. Should difficulties occur, please contact the responsible customer service. See back page.

Manufacturer: JUDO Wasseraufbereitung GmbH

Address: Hohreuschstr. 39 - 41
71364 WINNENDEN
DEUTSCHLAND

Product Description: Softener JUDO BIOQUELL-SOFT

EC-Directive: Electromagnetic Compatibility (EMC) 89/336/EC

Harmonized Standard: Electromagnetic Compatibility, Generic Standards EN 61000-6-2
for Radiated Interference and Interference Immunity. EN 61000-6-3

The observance of all points of the EMC requirements (EC conformity) for the use of the device in household / commercial areas and industrial areas is hereby confirmed in each above mentioned detail.

Harmonized Standard: Safety of power transformers, power supply units and similar. EN 61558-2-6

Issuer: JUDO Wasseraufbereitung GmbH

Place and Date: Winnenden, 6th June, 2005

Legally binding
signature:


.....
JUDO Wasseraufbereitung GmbH

This declaration certifies that the product is in accordance with all the stated directives, it isn't, however, an assurance of its characteristics.

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1. About this Operating Instructions



(see chapter on “Safety information and dangers due to non-compliance”)

The instruction manual must be permanently available at the place in which the Softener is used.

This instruction manual is intended to make it easier to familiarize yourself with the Softener and its possible intended uses.

The instruction manual contains important information in order to safely, properly and economically run the Softener.

It contains fundamental information, which must be observed during installation, operation and maintenance. Observance of this information helps to avoid dangers, reduce repair costs and increase the reliability and service life of the Softener.

The instruction manual must be read and used by each person entrusted with carrying out work on the Softener, for example:

- **installation**
- **Operation**
- **Maintenance** (servicing, inspection, repair)

Installation and maintenance may only be carried out by personnel authorized by the manufacturer, who are capable of fulfilling the instructions given in the installation and operating instructions and the country-specific regulations.

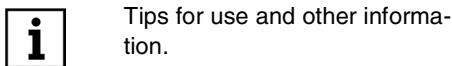
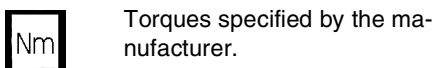
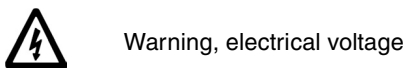
Apart from the instruction manual and the legally binding accident prevention provisions applicable in the country and place of use, the recognized technical regulations for safe and proper work must also be observed.

Therefore, this instruction manual must always be read by the fitter and responsible skilled personnel/owner or operator before installation, commissioning and maintenance.

Not only the general safety notes given in the chapter on “Intended Use” are to be observed, but also the special safety notes inserted under the other main items.

1.1 Symbols used

The safety notes contained in this instruction manual are labelled with the following symbols:



Notes directly attached to the Softener, e.g.

- Direction of flow (see Fig. 1)
- Rating plate
- Cleaning information

must always be observed and kept in a fully legible condition.

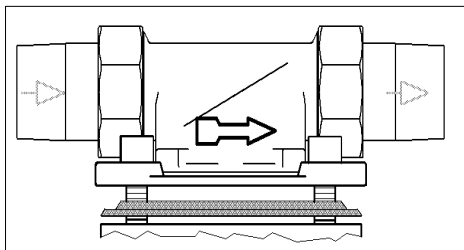


Fig. 1: Built-in rotary flange

1.2 Safety information and dangers due to non-compliance

In detail, failure to observe the general danger symbols can result, for example, in the following risks:

- Failure of important functions of the Softener.
- Danger to persons due to electrical and mechanical effects.
- Danger to persons and the environment due to leaks.

Refrain from any unsafe working methods.

Failure to comply with this instruction manual and the safety information can not only result in dangers for people but can also harm the environment and the unit.

1.3 Units used

In derogation of the International System of Units (SI = System International), the following units are used:

Units	Conversion
°F	°F = 9/5°C + 32
bar	1 bar = 10 ⁵ Pa = 0,1 N/mm ²
¾"	DN 20
1"	DN 25
1¼"	DN 32
1½"	DN 40
2"	DN 50
°e	°e = 0,142 mmol/l alkaline earth ions

2. Intended Use

Installation and use of the Softener are each subject to the applicable national regulations.

Apart from the instruction manual and the legally binding accident prevention provisions applicable in the country and place of use, the recognized technical regulations for safe and proper work must also be observed.

The water to be softened must conform to the European Drinking Water Regulations!

Always contact the manufacturer/supplier before using water with a different quality or with additives!

This Softener is suitable for use in cold drinking water up to maximum ambient temperature of 30°C (86°F).

It is produced to state of the art standards and the generally accepted safety regulations in Germany.

The Softener may only be used as described in the instruction manual. Any other or further use is deemed not to be intended use.

Additional dangers exist in case of non-intended use and failure to observe the danger symbols and safety information. The manufacturer/supplier are not liable for any losses or damage resulting from this. The risk is solely borne by the user.

Intended use also includes observing the instruction manual.

The manufacturer/supplier must always be consulted before using the Softener outside the use limitations given in the instruction manual.

The Softeners are only to be used in a technically perfect condition, for their intended use, safely and aware of the dangers and with full observance of the instruction manual!

Have any malfunctions corrected immediately!

In order to be able to safely discharge the wastewater in operation and in case of any defect in the system, precise compliance with the details given in the chapter on "Requirements for the place of installation" is necessary!



(See chapter on "Safety information and dangers due to non-compliance")

The used regenerating salt is removed from the Softener columns with the wastewater.

Therefore, it may not be used to water plants or for similar purposes.

Take extra care if the cover has been removed as moving parts are a potential danger!

The range of use for DVGW-tested Softeners is specified in DIN 1988 Part 2 Para. 8.3.2. According to this standard, there are no restrictions regarding the range of use for these Softeners. The capacity of the Softener is designed so that it can be used to partly soften all the water for a detached or multiple dwellings, as well as corresponding part water quantities for hot water, swimming pools, washing machines and dishwashers.

2.1 Water pressure

The water pressure must be between 2 bars and 7 bars.

The water pressure must not fall below 2 bars, as otherwise the function can be impaired! If the Softener is not regularly regenerated, this can result in a pressure loss and impairment of the softening function.



ATTENTION

(see chapter on “Safety information and dangers due to non-compliance”)

If the **water pressure is over 7 bars** a pressure reducer must be installed **upstream** of the Softener (see Fig. 2). An operating pressure of over 7 bars can lead to malfunction and failure.

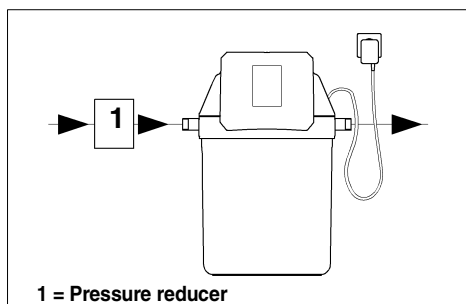


Fig. 2: Pressure reducer upstream of the unit

In modern sanitary installations (in particular where single lever mixers are used), despite normal system pressure conditions, peak pressures of up to over 30 bars frequently occur. This can cause damage to important functional interior parts of the controls. The optimum operating pressure for the Softener lies between 3 bars and 5 bars. It works most economically under these pressure conditions.



For a **water pressure of 5 bars to 7 bars** we recommend installation of a pressure reducer.

2.2 Notes on special dangers

2.2.1 Electrical equipment / installations



There must not be any electrical cables and devices underneath or in the immediate vicinity of the Softener!

Electrical devices / equipment, which are not splash proof and which are located near the Softener can be damaged by water which escapes from the Softener during regeneration or improper use. If the electrical devices / installations are connected to the power supply, a short circuit can also occur. In this case there is a risk of people suffering an electric shock. Electrical devices / equipment located near the Softener must therefore be splash proof and comply with the legal regulations for wet rooms (IP44).



In the power pack the mains voltage is reduced to a safe, extra-low voltage of 24 V, with which the system's electronics are operated. Never use any other power packs.



ATTENTION



(see chapter on “Safety information and dangers due to non-compliance”)

Caution when touching the unit when the cover is removed! The load impedances in the electrical circuit can get hot during operation.

3. Product Information

3.1 Intended purpose

This Softener is suitable for use in cold drinking water up to a maximum water temperature of 30°C (86°F).



(see chapter on “Safety information and dangers due to non-compliance”)

Please refer to the chapter on “Intended Use” for use restrictions.

This Softener is used to protect the water pipes and hot water heater against limescale deposits.

Partly softened water protects appliances and fittings and reduces consumption of detergents and cleaning agents.



Limescale deposits inhibit water flow and can therefore result in increased energy consumption.

3.2 Test marks



Fig. 3: Test marks

The units conform to the technical regulations for drinking water installations in accordance with DIN 1988. They are tested by the DVGW (Deutsche Vereinigung des Gas- und Wasserfaches e.V. technical –scientific association for the gas and water industries) in accordance with the requirements of DIN 19636 pressure class PN10 for Softeners (cation exchangers) in drinking water installations and are entitled to bear the DIN-DVGW mark and DVGW-GS mark (see Fig. 3).

3.3 Materials used

The materials used are resistant to the physical, chemical and corrosive loads to be expected in the drinking water and fulfil the requirements specified in DIN 19636 (“Softeners (Cation Exchangers) in Drinking Water Installations”). All materials are hygienically and physiologically safe. Plastics (KTW recommendations) and metallic materials fulfil the requirements of the BgVV (German Federal Institute for Consumer Health Protection and Veterinary Medicine).

4. Installation

4.1 General



(see chapter on “Safety information and dangers due to non-compliance”)

The unit may only be installed by skilled personnel.

The chapter on “Intended Use” must always be observed!

The pipes must be able to safely support the Softener.

Otherwise mechanical damage or fractures/bursts can occur in the pipes. This can result in major water damage. People close to the Softener are exposed to a health risk due to the large quantities of water released. Therefore, if necessary, the pipes must be additionally fixed or supported.

Always observe the given spacings to ensure convenient operation and servicing (see chapter on “Installed dimensions”)

A clearance of at least 300 mm is required above the Softener in order to be able to properly carry out all maintenance and servicing work.

(see chapter on “Modifications / changes / spare parts”)

4.1.1 Requirements for the place of installation

The room where the unit is installed must be dry and frost free!

Unauthorised persons must not have access to the Softener!



(see chapter on “Safety information and dangers due to non-compliance”)

- The ambient temperature must not exceed 30°C (86°F)!

- In order to be able to safely discharge the wastewater (regeneration) in operation and in case of any defects that occur in the system, precise compliance with the details given in the “Installation” chapter is necessary!
- If damage could occur at the installation location due to a leak in the system or inlet pipe (offices, doctor’s practices), it must be insured that the water and power supply are interrupted upstream of the system when personnel are absent. However, this may not occur as long as the system is in the regeneration position.
- If the wastewater cannot be safely and completely discharged, the house and installations can be damaged by water.
- A shut-off valve must be installed upstream and downstream of the Softener with a bypass to allow continued water supply when the Softener is out of service! This enables the water supply to the Softener to be interrupted during installation, servicing/maintenance, repairs and in case of malfunctions. Floods and serious water damage to house installations can therefore be avoided.
- The unit can be installed in all standard drinking water pipes.
- It is not permitted to install the Softener **upstream of the water meter!**



A power connection (230 V, 50 Hz), which is permanently live, must be available.

4.1.2 Installed position



(see chapter on “Safety information and dangers due to non-compliance”)

Always install the Softener in a vertical position ($\pm 5^\circ$)!

Failure to observe this can impair its function.

4.1.3 Power supply



A splash proof socket is required for the power pack, in accordance with the legal regulations for wet rooms.



ATTENTION



(see chapter on “Safety information and dangers due to non-compliance”)

A permanent power supply must be available. If the Softener is not permanently supplied with electricity

- No regeneration takes place.
- No alarm is given in case of faults.
- Water losses or even water damage can occur if the power supply is interrupted during regeneration.

4.1.4 Mounting the built-in rotary flange

The built-in rotary flange is used as a connecting element between the pipe and the Softener.

It is suitable for both horizontal and vertical pipes.

The installation height depends on the pipe layout. The minimum installation height from the floor to the built-in rotary flange is 45 cm.

The built-in rotary flange must be installed in the direction of flow. This is marked by a cast in arrow (see Fig. 4).

Failure to comply with this means the Softener cannot work.



ATTENTION



(see chapter on “Safety information and dangers due to non-compliance”)

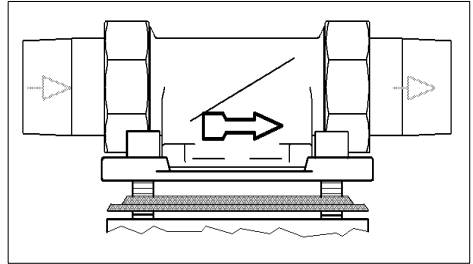


Fig. 4: Built-in rotary flange

The flange surface of the built-in rotary flange must be in a vertical position! The built-in rotary flange must be fitted so that mechanical stresses cannot occur! Otherwise mechanical damage can result in the built-in rotary flange. This can result in major water damage.

In this case, people close to the Softener are exposed to a health risk due to the large quantities of water.

Therefore, during installation, ensure that no large forces act on the pipe, built-in rotary flange and Softener.

4.1.5 Assembly of the bypass valve (accessories)

The flange (c) of the bypass valve marked with the cast in letter "R" (pipe) is screwed onto the built-in rotary flange (b). The Softener is fitted onto the flange (d) marked with the cast in letter "G" (unit). The hand lever (a) of the bypass valve can be positioned anywhere above the unit or to the side if there is a large space between the pipe and wall. The installation should be carried out, depending on the local circumstances, so that the hand lever (a) is easily accessible (see Fig. 5), Fig. 6) and Fig. 7)).

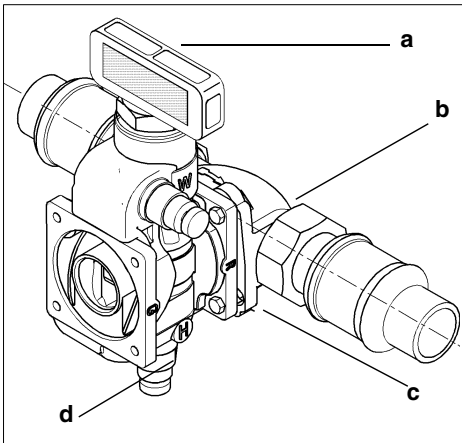


Fig. 5: bypass valve

- a Hand lever
- b Built-in rotary flange
- c „R“ pipe flange
- d „G“ unit flange

4.1.6 Installation of the wall mounting

If the distance between the Softener and the wall is larger than 150mm, the 215 mm long support must be used.

Screw the support with wall mounting fixing bracket to the wall, M5 screw and nut enclosed. Fasten the wall mounting to the underside of the fitted rotary flange so that the fixing bracket is vertical. Screw the wall

mounting to the wall using the screws supplied.

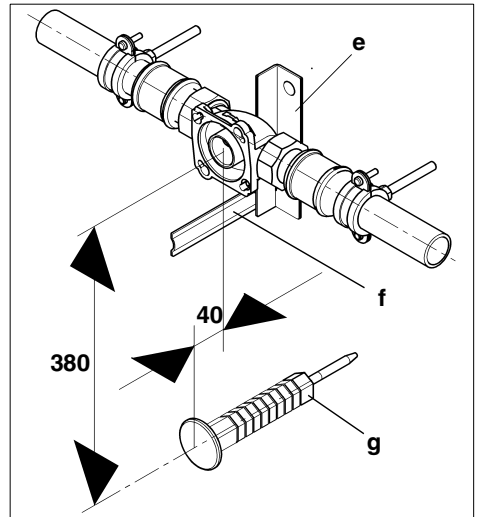


Fig. 6: wall mounting without bypass valve

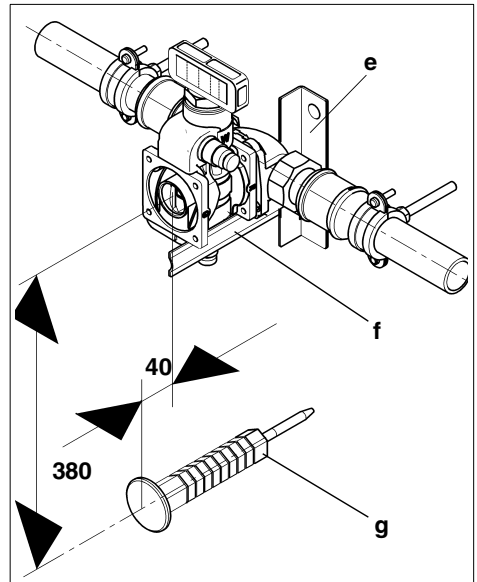


Fig. 7: wall mounting with bypass valve

- e Fixing bracket
- f support
- g wall support

4.1.7 Installing the Softener

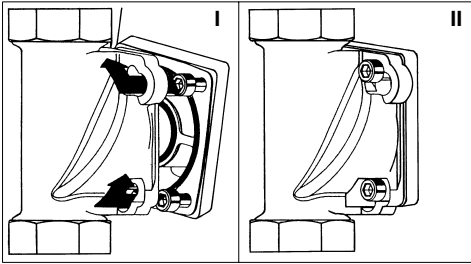


Fig. 8: Built-in rotary flange with bayonet fixture

After flushing the water pipe, remove the assembly cover of the built-in rotary flange.

Remove the white protective disc on the connecting flange of the Softener by undoing the four M6 Allen screws.

Do not completely unscrew the screws because of the bayonet connection!

Lift up the Softener and swivel it through approx. 30° in an anti-clockwise direction. Position it on the built-in rotary flange so that the screw heads pass through the bayonet fixing drill holes (see Fig. 8 I). Swivel the Softener through approx. 30° back in a clockwise direction and tighten the four Allen screws (see Fig. 8 II).

The section of the profiled flange gasket must point towards the built-in rotary flange. Failure to observe this can lead to leaks and water escaping. This can in turn cause water damage to the house and its installations (see Fig. 9).



Select the torque (approx. 4 Nm) so that the gasket closes and the Softener is not damaged or strained!

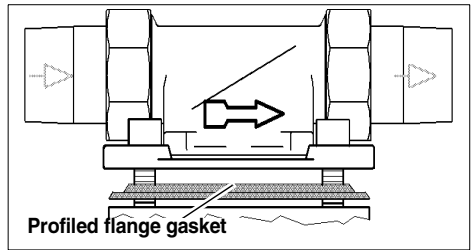


Fig. 9: Built-in rotary flange

4.1.8 Wastewater connection and back-up overflow hose

The hoses for the regeneration wastewater and the back-up overflow must both be laid up to the wastewater sewer without any kinks. Ensure free discharge above the wastewater channel or floor drain.

The wastewater hose with a 10 mm outer diameter may be laid up to 1 m above the unit. Securely fix the loose end of the hose to the pipe or similar with the adhesive tape supplied.

The back-up overflow hose with a 19 mm outer diameter must be laid with a constant fall to the wastewater sewer and free of kinks.

If the connection for the wastewater sewer is higher than this, the salt container can be installed correspondingly higher with the aid of a wall bracket (see chapter on “Accessories”).



(see chapter on “Safety information and dangers due to non-compliance”)

The wastewater connection must not be located above the Softener.

An adequately dimensioned wastewater connection (e.g. floor drain) to DIN 1986 must be available for the wastewater and the back-up overflow hose (21)(see Fig. 10).

5. Operation



(see chapter on “Safety information and dangers due to non-compliance”)

Always observe the chapter on “Intended Use”!

5.1 Commissioning

Before starting up (initial startup or starting up after maintenance work) **fill** the water softener with water and **vent!** This takes place by triggering **regeneration**.

- The Softener is connected to the water system. The bypass valve is in the “Bypass” position.
- Place regenerating salt in the salt container (2). The water dissolves the regenerating salt; saturated brine results. The regenerating salt must at least fulfil food quality standards and should fulfil the requirements according to DIN EN 973.
Our recommendation: Broxo or Solvay salt, either block, tablet or granular form 7 -15 mm. If other regenerating salts are used the brine container (3) must be cleaned at shorter intervals and the suction control sleeve with intake screen (6) must be replaced more often.
- Place approx. 5 litres of water in the salt container (2) (see Fig. 10).
- Remove the cover (17).
- Enter the installation date in the inside of the cover (17).
- Adjust the raw water hardness (°e) using the adjusting lever (12) and the scale (13) for raw water hardness. The value depends on the installation location. If the raw water hardness fluctuates the higher value should be set.

- Adjust the mixed water hardness using the setting screw of the blending (10) (see chapter on “Setting the required mixed water hardness”)
- Refit the cover.



Connect the Softener to the power supply. Insert the power pack unit in the socket.

- Open water supply. Open the bypass valve.

For safety reasons the Softener must be vented immediately after it is connected to the water system (bypass valve is open). This takes place automatically during the initial regeneration.

Trigger **regeneration** manually:

Remove cover and press the key cap switch for manual release (7). At the same time you can check whether the system is functioning correctly (see chapter on “Instandhaltung”). After the regeneration has been completed the Softener is ready for use.

5.1.1 Setting the required mixed water hardness

The mixed water hardness is set using the setting screw of the blending (10).

This setting screw of the blending (10) is set in the factory to be open by 4 turns. Therefore you must first check which mixed water hardness has already been set. The water's hardness is measured using a hardness test device (see chapter on “Accessories”).

The sample water for measuring and adjusting the water hardness can be taken at the bypass valve (see chapter on “Accessories”) or at a water tap downstream of the softener.

Ensure that the newly set mixed water has reached the extraction point from the Softener. For correct measured value comparison, the samples should be taken from a normal water flow (1 tap fully opened).

During the sampling large quantities should not be extracted at another point.

If the required mixed water hardness has not yet been reached, it can be achieved by rotating the setting screw of the blending (10). We recommend approx. 10°e.

Softer mixed water	=	Rotate in clockwise direction
Harder mixed water	=	Rotate in anti-clockwise direction

On medium raw water hardness one turn approximately corresponds to a modification of 1.25 °e on mixed water hardness.

The setting may have to be changed and re-measured several times before the required value is reached.

The softening increases the sodium concentration in the mixed water, depending on the raw water hardness and the mixed water hardness set.

In accordance with the Drinking Water Regulations of 1.1.2003 the limit value for sodium in drinking water is 200 mg/l. This does not apply to mineral and table water. Their limit values are considerably higher, some have values above 1000 mg of sodium per litre.

Calculating the sodium content

°e	Raw water hardness (ask the waterworks or measure with a hardness test device)
- °e	Mixed water hardness (measured value)
= °e	Water hardness
x	6.4 mg Na ⁺ /l x °e Na-Ionen-exchange value
= mg/l	Na ion exchange value Increase in sodium content due to softening.
+ 10mg/l	Sodium already in the raw water (ask the waterworks)
= mg/l	Total sodium content in mixed water

Tab. 1: Calculating the sodium content

Example calculation of the sodium content

25 °e	Raw water hardness
- 10 °e	Mixed water hardness
= 15 °e	Water hardness
x 6.4	
= 96 mg/l	Due to softening
+ 10 mg/l	From waterworks
= 106 mg/l	Total

Tab. 2: Example calculation of the sodium content

If the calculated total sodium content exceeds the value permitted under the Drinking Water Regulations of 200 mg/l, it can be corrected by increasing the mixed water hardness accordingly. The sodium content must be recalculated.

5.2 Functional description

The Softener is in a pendulum system and consists of two filter tank (1) of the same type. While one of the filter tanks is being regenerated the other filter tank is used for softening.

The consumer therefore always receives softened water, even during the regeneration of an exhausted filter tank. The regeneration is carried out with economic salt use; therefore the Softener runs economically and environmentally friendly.

If no or only a little softened water is drawn off the Softener automatically performs a regeneration every 4 days or so for hygiene reasons, in accordance with the requirements of DIN 19636 (DVGW test guidelines).

The regeneration is automatically carried out through 13 control valves and 4 main valves. The regeneration program is permanently set in a program roller. If there is a power failure or the mains plug is disconnected the regeneration program is retained and does not have to be reprogrammed.

The filter tank (1) are filled with ion exchange resin, which replaces the calcium ions with sodium ions. Hard water results due to a large proportion of calcium ions. The replacement of calcium ions with sodium ions softens the water. However, the ion exchange resin only absorbs a limited quantity of hardness constituents.

If the corresponding water volume has passed through the ion exchange resin regeneration is automatically trigger.

First the container in the waiting position is rinsed from below upwards. At the same time, water is filled into the brine container. Then the filter tank (1) is flowed through in the reversed direction during rinsing (initial filtrate).

After the initial filtrate the main valves of the freshly regenerated container open, which therefore connects it to the water system. Then the main valves of the exhausted filter tank close. Salt is now added to this tank and afterwards it is washed out. You can see whether brine is being extracted at the suction control sleeve (6) with intake screen and the suction hose from the brine container. If the suction indicator pin is at a standstill at the bottom no suction is taking place. If it is located above the flattened vacuum area, brine is being sucked out or washed out.

While the brine is being sucked out the two electrodes in the brine container generate a small quantity of chlorine. This protects the whole Softener against germs. The chlorine not used is discharged from the Softener via the wastewater outlet (18) together with the used regenerating agent during the rinsing processes.

The water is completely softened in the filter tanks. Therefore, an appropriate quantity of untreated raw water is mixed with this soft water via the setting screw of the blending (10) in the control head, in order to maintain the required mixed water hardness (see chapter on "Setting the required mixed water hardness").

See Fig. 10), Fig. 11) und Fig. 12).



Water supply with softened water continues during regeneration.

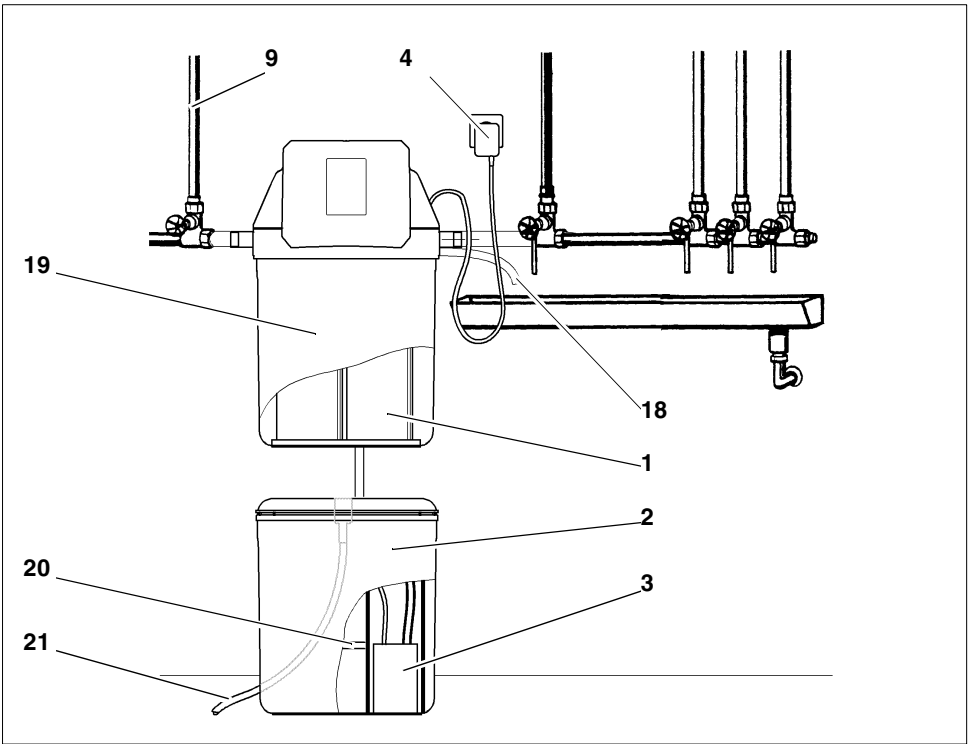


Fig. 10: Functional description

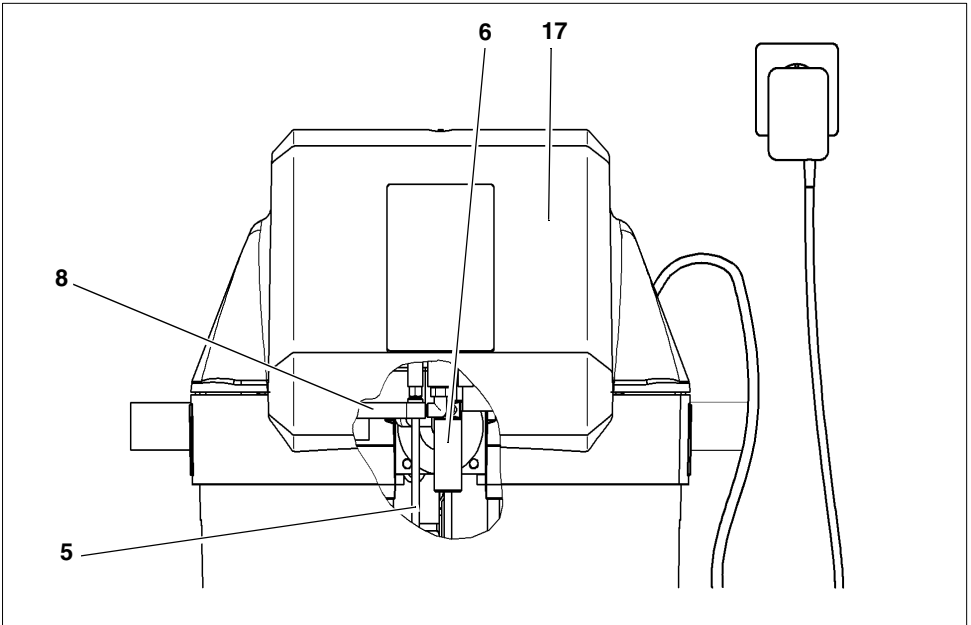


Fig. 11: Functional description

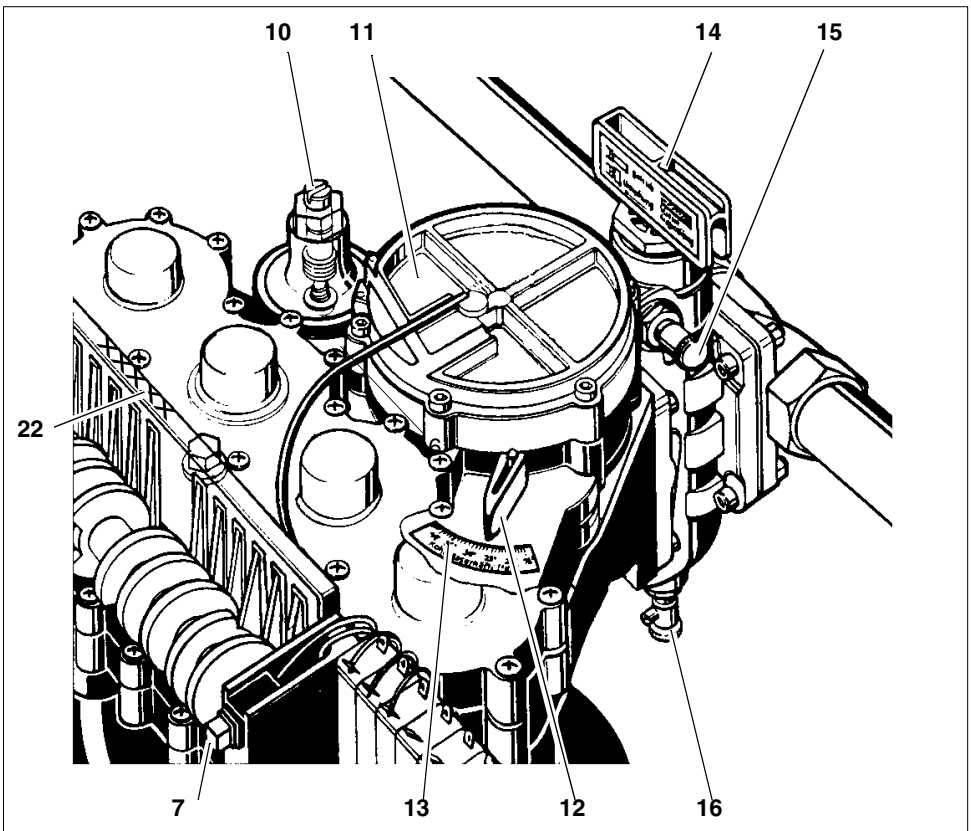


Fig. 12: Functional description

- | | |
|--|--|
| <p>1 filter tank</p> <p>2 salt container</p> <p>3 brine container</p> <p>4 transformer plug
(230V, 50Hz, primary, 24V AC secondary)</p> <p>5 filling hose to brine container</p> <p>6 suction control sleeve
with intake screen and suction hose from
brine container</p> <p>7 key cap switch for manual release</p> <p>8 hose to wastewater sewer (see chapter
on "Maintenance")</p> <p>9 garden hose
unsoftened water</p> <p>10 setting screw of the blending
(setting the mixed water hardness)</p> | <p>11 water meter</p> <p>12 adjusting lever
for raw water hardness</p> <p>13 scale
for raw water hardness</p> <p>14 bypass valve (Accessories)</p> <p>15 sampling valve (W) for testing the mixed
water hardness</p> <p>16 sampling valve (H) for testing the raw
water hardness</p> <p>17 cover</p> <p>18 wastewater outlet</p> <p>19 panelling</p> <p>20 salt shortage indicator</p> <p>21 safety overflow hose</p> <p>22 Unit-No.</p> |
|--|--|

5.3 Salt fill

As the Softener runs automatically, you merely have to top up the regenerating salt from time to time.

Regenerating salt must be added at the latest as soon as the salt shortage indicator (20) (lower edge of the sticker) becomes visible in the salt container (2).

If the container is not refilled in good time the solid regenerating salt displaces the brine. An unnecessarily large amount of brine is drawn up during the next regeneration, the intake procedure takes a correspondingly longer time.

Our recommendation: Broxo or Solvay salt, either as a block, tablets or coarse grains 7 - 15 mm.



(see chapter on “Safety information and dangers due to non-compliance”)

If there is no more regenerating salt in the container or if it is not refilled in good time, the Softener switches to economy operation:

The brine stocks still available are primarily used for disinfecting the ion exchange resin and the softening effect is reduced.

In this way, the Softener remains in a hygienically safe condition for weeks after the regenerating salt shortage occurs.

5.4 Modifications / changes / spare parts



(see chapter on “Safety information and dangers due to non-compliance”)

Only original spare parts are to be used!

Independent modifications and changes are prohibited for safety reasons! These can impair the function of the Softener. The test marks imprinted on the unit are only valid if original spare parts are used.

5.4.1 Servicing / Repair

The unit must be serviced at least once a year in accordance with the requirements of DIN 1988. A half-yearly service is required for jointly used systems.

We recommend you conclude a servicing agreement.

Check the functions:

- Pull the cover (17) off from the tops.
- Press the key cap switch for manual release (7) Regeneration is triggered. The LED in the key cap switch for manual release (7) is lit during regeneration.
- First the filter tank (1) in the waiting position is rinsed from below upwards. The rinsing water quantity at the wastewater hose can be collected in buckets with a litre scale. This means the rinsing water quantity (approx. 10 litres) can be checked. The rinsing takes approx. 3 - 7 minutes depending on the water pressure.
- At the same time water is fed into the brine container (3), in order to replace the brine used up during the last regeneration. The rinsing of the container and filling of the brine tank are coupled with each other.

- If, during startup, the salt container is not filled with water or with too little water the rinsing continues until the salt container is full. The rinsing takes longer, the rinsing water quantity increases too.
- If salt is not added until there is no more solid salt in the system, the dissolving of the salt can cause the filled level to rise. During the next regeneration the rinsing is reduced accordingly, the rinsing water quantity is also reduced.
- Then the tank is briefly rinsed from the top down (initial filtrate). The quantity of water flowing out of the wastewater hose is approx. 3 litres.
- The surplus regenerating salt and the chlorine are removed from the tanks with the wastewater from the two rinsing processes. It must therefore not be used to water plants or for similar purposes.
- Both tanks are in operation in parallel for a short time, then the main valves of the exhausted tank close.
- After a brief switchover period the salting begins with subsequent rinsing. An injector integrated in the control head sucks the brine from the storage tank and presses it through the ion exchange resin into the tank. If the quantity of brine provided has been sucked out, a valve in the brine container closes so that no more brine can be sucked out. The injector's forcing water slowly washes out the brine in the tank for a while. Depending on the water pressure, these processes take between 30 and 50 minutes. The out flowing quantity of water at the wastewater hose is 5 to 9 litres. You can tell at the suction control sleeve whether brine is being sucked out. If the suction indicator pin is at a standstill at the bottom no suction is taking place. If it is located above the flattened vacuum area, brine is being sucked out or washed out.
- While the brine is being sucked out the two electrodes in the brine container generate a small quantity of chlorine to disinfect the system. During the annual service the wearing parts must be replaced.
- The freshly regenerated tank is now in the waiting position until the tank connected to the system is exhausted and the next regeneration is triggered.
- The other tank can be checked in the same way.

Before carrying out any work on the Softener extending beyond the pure operational actions, the Softener must be depressurised! Failure to do this can lead to uncontrolled discharge of water and therefore to water damage in the building. Precisely follow the instructions given in the "Installation" and "Maintenance" chapters.



Disconnect the power pack unit from the plug!

5.5 Stoppages



ATTENTION

(see chapter on “Safety information and dangers due to non-compliance”)

The water supply to the Softener is interrupted. The main tap is closed or the bypass valve is switched over.



Disconnect the power pack from the socket! (If installed, disconnect the power pack of the downstream metering pump too!)

The Softener must be stored in a dry, frost-free place when dismantled. The connecting flange must be protected against dirt and damage.

If the Softener is refitted and put back into service, regeneration must always be carried out first (see chapter on “Commissioning”).

Help with faults:

Fault	Cause	Remedy
Discontinuous buzzing!	Brief power failure.	In this case, delete the error message, the Softener continues to work without interruption.
Renewed fault signal after deleting the fault signal 4 hours ago!		<p>With bypass facility:</p> <ul style="list-style-type: none"> – Set to bypass! – Disconnect the power pack from the socket! (If installed, disconnect the power pack of the downstream metering pump too). – Immediately notify the fitter or nearest customer service. <p>Without bypass facility:</p> <ul style="list-style-type: none"> – Disconnect the power pack from the socket! (If installed, disconnect the power pack of the downstream metering pump too). – Immediately notify the fitter or nearest customer service (see chapter on “Stoppages”).

6. Faults

In order to ensure unit safety and leak tightness, only approved persons may open the units and replace parts subject to water pressure.

At the start of the regeneration a timing element of around 4 hours is started. If the regeneration is not completed within this time an error message is triggered. The occurrence of a fault in the unit is signalled by an intermittent buzz.

Deleting the error message:



Disconnect the power pack from the socket. Plug it back in after approx. 5 seconds!

7. Maintenance



(see chapter on “Safety information and dangers due to non-compliance”)

Always observe the chapter on “Intended Use”!

7.1 Cleaning



(see chapter on “Safety information and dangers due to non-compliance”)

Only use clear, clean drinking water to clean the housing.

Domestic all-purpose cleaners and glass cleaners can contain up to 25% solvents or alcohol (spirits).

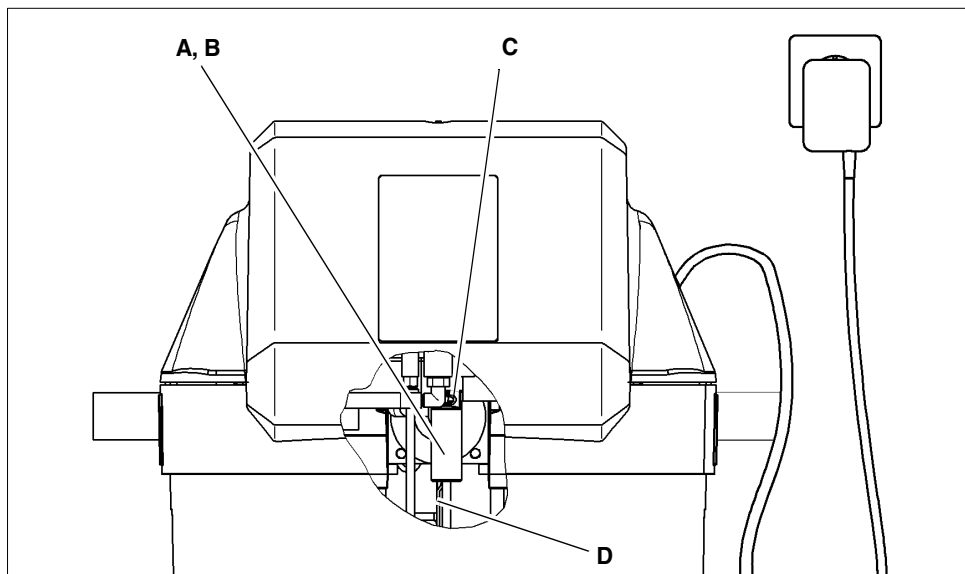
These substances can chemically attack the plastic parts, which can lead to brittleness or even fractures.

Such cleaners must therefore not be used.

7.1.1 Cleaning the intake screen



Before dismantling the suction control sleeve the water supply to the unit must be interrupted or the bypass valve must be switched over. As long as the pressure in the unit is falling residual water can escape while the suction control sleeve is being unscrewed.



- A intake screen
- B suction control sleeve
- C suction indicator pin
- D suction hose

Fig. 13: Dismantle for cleaning

The intake screen (A) in the suction control sleeve (B) is cleaned by backwashing.

- Unscrew the whole suction control sleeve (B) from the unit
- Pull off the suction hose (D)
- Remove the suction indicator pin (C)
- Let a strong jet of water flow from the top downwards through the intake screen (A) (see Fig. 13).

8. Warranty and Services

In order to comply with the legal warranty claim, according to DIN 1988, Part 8, it is necessary that the owner/user “carry out an inspection at least every 2 months.” Depending on the water volume consumed, the corresponding salt consumption must be regularly monitored. If necessary refill the regenerating salt (only use quality according to DIN EN 973). Hygienic care is required when refilling salt. For example, the salt packages should be cleaned before use so that contaminations cannot get into the salt solution container. The regenerating salt must be tipped directly from the opened package into the salt solution container.

Ensure that the salt solution container is not overfilled and that it is carefully closed again at the end of the work. Part packages are to be avoided. The salt may only be stored in clean and dry rooms. A service is to be carried out by a qualified, skilled service firm of the manufacturer ...“at least”... annually, half-yearly in jointly used installations ...”.

Regular servicing is indispensable in order to continue to achieve a successful process for many years after the unit is put into service. In the building services sector this is covered by DIN 1988, Part 8.

A servicing agreement is the best way to ensure a good operating function beyond the warranty period.

Wherever possible, the regular servicing work and supply with consumables and wearing materials, etc. should be carried out by the specialist trade or the factory’s customer service department.

9. Data Sheet

9.1 Type

JUDO BIOQUELL-SOFT Softener

Abbreviated name: JBQ-S

Order No.: 8200047

9.2 Technical specifications

- Maximum ambient temperature and water temperature: 30°C (86°F).
- **The water to be softened must conform to the European Drinking Water Regulations!**
- Threaded connection to DIN 2999.

Operating pressure	Nominal pressure
2 – 7 bar	PN 10

The nominal pressure denotes the pressure class, according to which the Softener must fulfil the requirements to DIN 19636. The maximum operating pressure is lower, in order to ensure the optimum function of the Softener.

Operating weight when filled with salt	ca. 90 kg
Shipping weight	ca. 30 kg
Nominal flow rate up to	2 m ³ /h
Flow pressure at nominal flow rate at least	2 bar
Pressure loss at nominal flow rate	0.4 bar
Short-term max. flow	3.5 m ³ /h
Pipe connection	1"
Nominal capacity	2 x 1.6 mol
Capacity per kg regenerating salt	6.7 mol
Salt container capacity	40 kg
Regenerating salt consumption per m ³ when blending from 25°e to 10°e	320 g

Continuous output when blending from 25°e to 10°e	900 l/h
Rinsing water per m ³ when blending from 25°e to 10°e	35 Liter
Electrical connection	230 V/ 50 Hz
Max. power consumption	10 W
For further information, please refer to the "Diagrams" chapter.	

9.3 Diagrams

Regenerating salt consumption and rinsing water quantity related to 1 m³ mixed water with 10 °e (1.5 mol/m³ total alkaline earths) depending on the raw water hardness.

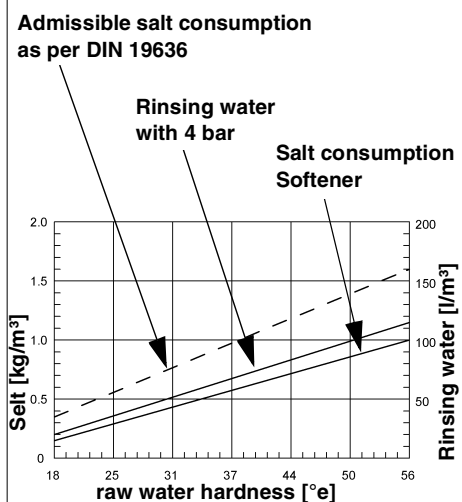


Fig. 14: Regenerating salt consumption and rinsing water quantity

Pressure loss for various raw water hardnesses and a mixed water hardness of approx. 10 °e (1.5 mol/m³ total alkaline earths). With the bypass valve JQX (see Accessories) the values increase by 0.1 bar at 2 m³/h and by 0.3 bar at 3.5 m³/h.

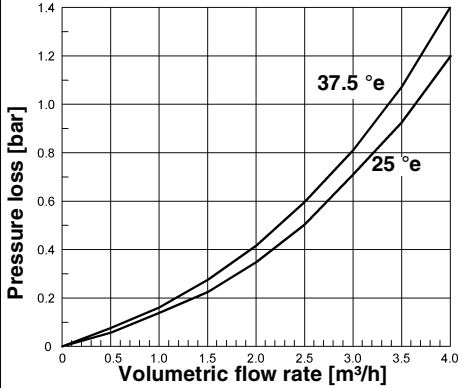


Fig. 15: Pressure loss

Max possible water extraction per day depending on the raw water hardness with a mixed water hardness of 10 °e (1.5 mol/m³ total alkaline earths) and a flow pressure of 3 to 5 bar.

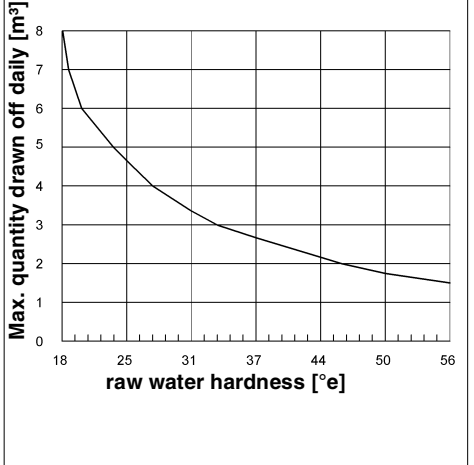


Fig. 17: Daily extraction

Max possible continuous extraction depending on the raw water hardness with a mixed water hardness of 10 °e (1.5 mol/m³ total alkaline earths) and a flow pressure of 3 to 5 bar.

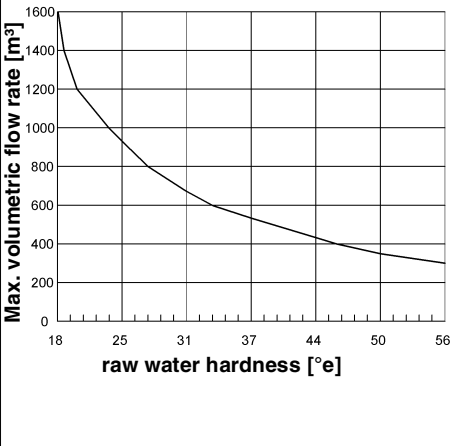


Fig. 16: Continuous extraction

9.4 Installed dimensions

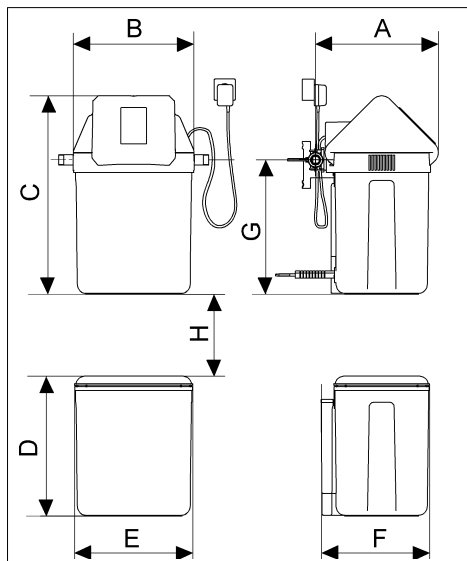


Fig. 18: Installed dimensions

All dimensions in [mm](see Fig. 18)

A	470	Installed depth with bypass valve
A	400	Installed depth without bypass valvew
B	400	Width of the control unit
C	655	Height of the control unit
D	460	Height of the Salt containers
E	390	Width of the Salt containers
F	360	Depth of the Salt containers
G	450	Height of the control unit to the pipe
H	270	Space above the salt container

9.5 Scope of supply

- Softener (control unit)
- Salt container
- Wall mounting
- Wall support
- Accessories bag
- Installation and Operating Instructions
- Built-in rotary flange JQE 1" with threaded fitting
- Backup overflow hose

9.6 Accessories

- Bypass valve JQX, Order No. 8735210.
- Hardness measuring equipment JGHP 0-37.5°e, Order No. 8742120 (is available free of charge if you return the reply postcard (see Fig. 12)),
- Extension quick set JQR for series connection of two JUDO units (e.g. filter and Softener) to a pipe connection, Order No. 8250041.
- Wall bracket for salt container Order No. 8733066.

9.6.1 Protective measures against corrosion

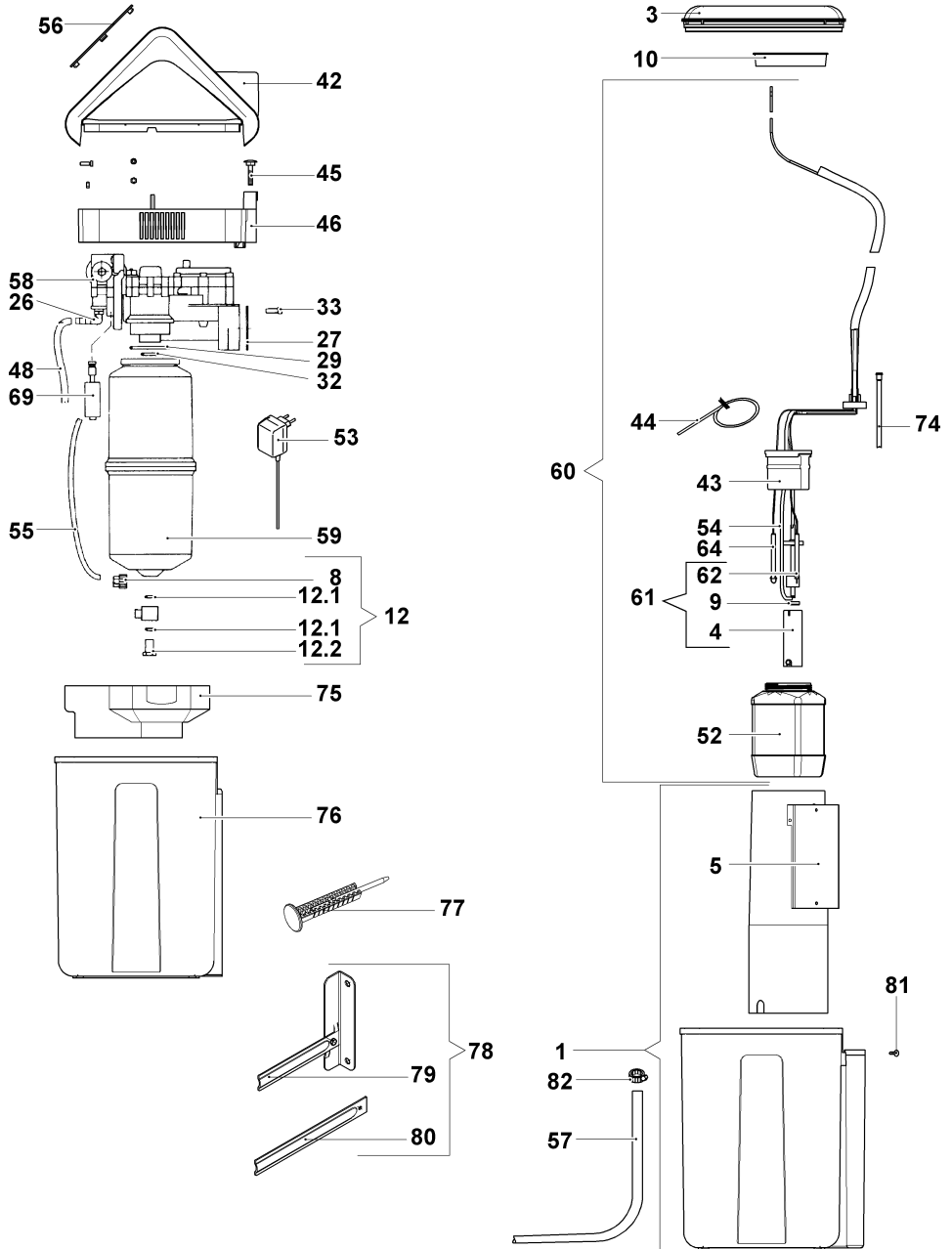
If water has a water hardness of 0°e plastic pipes or corrosion resistant pipes should be laid. In the case of water with partial softening (approx. 10°e), zinc pipes and copper pipes can be laid.

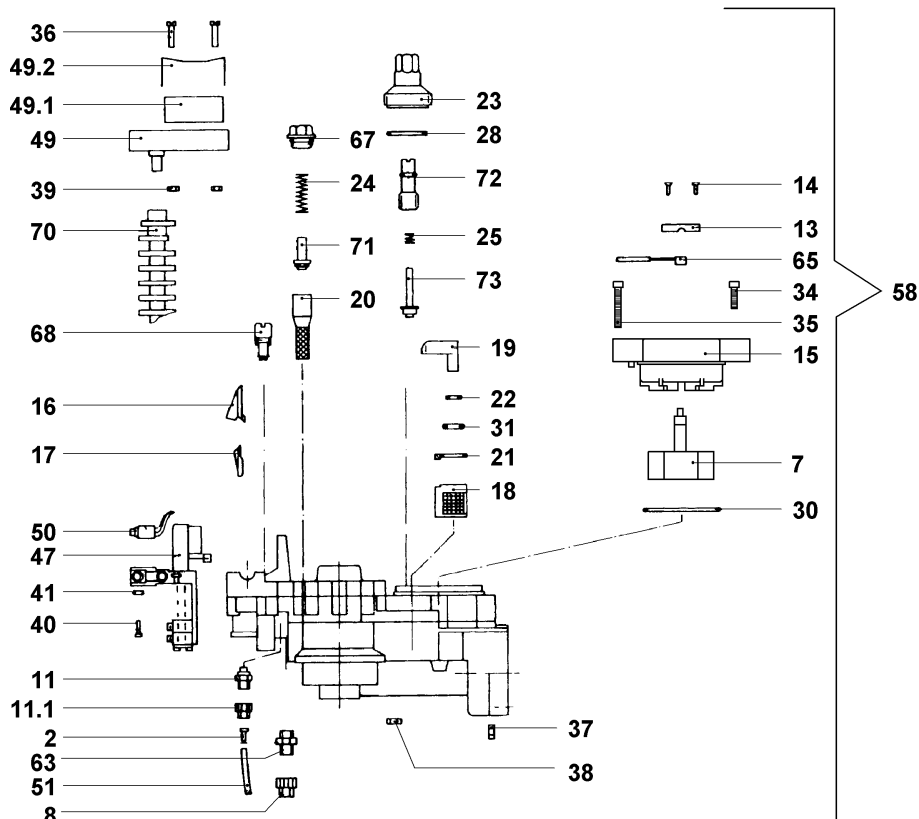
Our recommendation:

Install a JUDO JULIA metering pump in the mixed water pipe downstream of the Softener, in order to proportionately enrich the water with a JUL mineral solution.

The JUL mineral solutions contain active components, which stabilise the residual carbonate constituents and create the prerequisites for developing a homogeneous protective layer in downstream pipe systems. These active ingredient components correspond to the prescribed type, quality and quantity in Art 11 TrinkwV 2001 treatment substances and disinfection methods.

10. Spare parts JBQ-S





Item	Name (Recommended average replacement interval for worn part [*])	No.	Order No.	AU ¹⁾ /each
1	Salt/brine container	1	2200757	362
2	Filling nozzle, red	**	1120017	5
3	Salt tank cover	1	1120386	58
4	Protective pipe	**	1120084	14
5	Complete brine standpipe	1	1150097	122
7	Impeller	1	2200512	33
8	Clamping union nut D6	4	1140046	5
9	Float valve seal	*	1200011	8
10	Brine standpipe cover	1	1140099	7
11	Hose connection \varnothing 4M 5	1	1440018	19
11.1	Clamping union nut D4	1	1140011	5
12	Bottom hose connection	2	2200193	15
12.1	O-Ring 14.5x2.5	4	1200231	2
12.2	Hollow screw	2	1650217	9

Spare parts JBQ-S

Item	Name (Recommended average replacement interval for worn part [*])	No.	Order No.	AU ¹⁾ /each
13	Pressure relieving bracket	1	1609114	2
14	Self-tapping screw B 2.9x13	2	1609172	1
15	WZ-cover *****	1	2200816	14
16	Toggle – top section	13	1633010	2
17	Toggle – bottom section	13	1633011	2
18	Rotary valve	1	1633012	8
19	Adjusting lever ****	1	1633013	5
20	RV screen insert *	1	1633015	8
21	Spacer disc	1	1633021	3
22	Spacer ring	1	1633022	2
23	Blending valve sleeve ***	1	1633030	10
24	RV-spring	1	1633038	3
25	VSV-spring	1	1633040	3
26	Angle bracket screwed sockets R ¼	1	1633092	11
27	Profiled flange seal *	1	1200218	5
28	O-Ring 32x1.5 ***	1	1633114	5
29	O-Ring 61x4.0	2	1633115	7
30	O-Ring 60x3.0 ***	1	1200312	6
31	O-Ring 11x3.0	1	1633117	3
32	O-Ring 26x4.0	2	1200301	5
33	Cheese head screw M6x25	4	1633140	2
34	Cheese head screw M5x35	5	1633141	2
35	Cheese head screw M5x70	1	1633142	3
36	Cheese head screw M4x20	2	1633144	1
37	Hexagonal nut M6	4	1633145	1
38	Hexagonal nut M5	1	1633147	1
39	Hexagonal nut M4	2	1609370	1
40	Cheese head screw M2x12	1	1633151	1
41	Hexagonal nut M2	1	1633152	1
42	Cover - white	1	1120567	68
43	Brine tank cover	1	1120572	7
44	Cable tie	1	1633220	2
45	Notched screw 2.9x25	4	1633345	1
46	Middle ring	1	1120568	29
47	Electrical block TCRH	1	2200829	376
48	Wastewater hose ø 1 1/8x3.000	1	2633112	9
49	Gear unit	1	1633086	133
49.1	Motor 24 V/50 Hz	1	2200814	68
49.2	Snap clamp	1	1500064	8
50	Key cap switch for manual release	1	2200848	38
51	Filling hose	1	2200306	8

Item	Name (Recommended average replacement interval for worn part [*])	No.	Order No.	AU ¹⁾ /each
52	Brine container	1	2200784	21
53	Power pack unit 24 V AC	1	2200815	92
54	Suction hose ***	1	2200163	12
55	Rinsing hose *****	2	2200122	6
56	Rating plate	1	2200769	27
57	Overflow hose ø19/13x1,850	1	2633342	17
58	Complete control head	1	2200844	2050
59	Complete filter tank	2	2200117	463
60	Complete sleeve hose	1	2200858	300
61	Complete float switch ****	1	2200859	133
63	Rinsing hose connection ø 6/4 R W	2	2200151	20
64	CL- electrode ***	2	2200860	52
65	HE- contactor	1	2200715	51
67	Complete RV plugs **	1	2200109	7
68	Yellow injector insert with seal ***	1	2200126	9
69	Complete suction control sleeve *	1	2200088	43
70	Camshaft	1	2633008	36
71	Complete R valve *	1	2633031	5
72	Complete blending valve screw	1	2200196	10
73	Blending valve cone	1	2633033	11
74	Cable tie	1	1500001	2
75	Support insert	1	1140097	10
76	Sleeve	1	2200737	180
77	Complete wall support	1	2200500	11
78	Complete wall mounting	1	2200771	34
79	Support 155	1	1400100	10
80	Support 215	1	1400101	11
81	Split rivet	2	1120580	2
82	Torro hose clip	1	1633344	7

1) AU = Accounting unit

Replacement interval

* = 1 year, ** = 2 years, *** = 3 years, **** = 4 years, ***** = 5 years

Extended warranty period if a service agreement is concluded!

11. Service Record Sheet

Date installed:				System pressure:		
Date:						
Raw water hardness Measured [°e]:						
Set [°e]:						
Mixed water hardness measured [°e]:						
External water meter [m ³]:						
Backwashed quantity (approx 10 litres)						
Backwashing duration (3 to 7 minutes)						
Initial filtrate (2.5 to 4 litres)						
Suction period (30 to 50 minutes)						
Wastewater produced (5 to 9 litres)						
Salt added						

Notice: _____

12. Customer Support



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Installed by:

<p>JUDO HEIFI-KOM Combination of the heating backwashing filter and automatic heating feed station for fulfilment of DIN EN 1717.</p>	<p>JUDO ZEWA-WATER-STOP Central water safety fitting. Stops water flow in the event of water pipe bursts and detects leaks.</p>	<p>JUDO Domestic Water JUKOMAT-LongLife Automatic domestic water in the long-life class with patented ceramic flushing valve backwashing technique.</p>
<p>JUDO Domestic Water PROMI Backwashing protective filter with JUDO PROFI-PLUS technology, pressure reducer and backflow preventer.</p>	<p>JUDO JULIA Metering pump for JUL mineral solution against corrosion (brown water) and limescale deposits.</p>	<p>JUDO PROFI-PLUS Backwashing protective fitter in the germ protection class with silver plated strainer and point rotation system for optimum cleaning of the strainer.</p>

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