

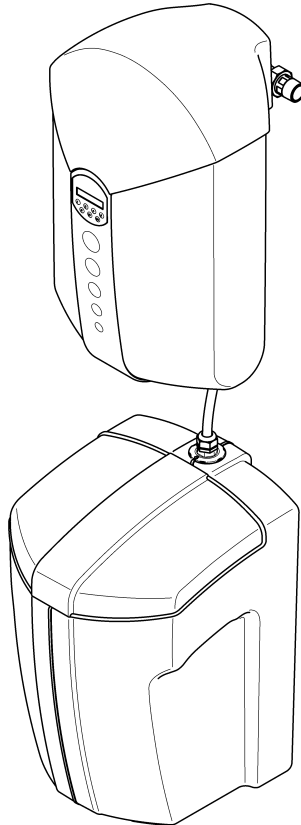
Installation and operating instructions

JUDO i-soft TGA 2

Fully automatic water softening system

Valid for: EU countries and Switzerland

Language: English



Read before use and store!



Inquiries, orders, customer support

JUDO Wasseraufbereitung GmbH
P.O. Box 380
71351 Winnenden
Germany
e-mail: info@judo.eu
judo.eu

Address

JUDO Wasseraufbereitung GmbH
Hohreuschstraße 39 - 41
71364 Winnenden
Germany

Dear customer,

Thank you for the confidence you have shown in us by purchasing this device. In purchasing this fully automatic water softening system you have procured a state of the art device.

This device is suitable for use in cold drinking water up to a maximum water and ambient temperature of 30 °C.



The remote control of the i-soft TGA 2 via mobile phones and tablets using the connectivity module (accessory) and the JU Control App requires a stable internet connection at the place of installation of the i-soft TGA 2.

The JU Control App is available for iOS- and Android.

Every device has been carefully checked prior to supply. Nevertheless, if difficulties occur, please contact your responsible customer service representative (see back page).

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EC Conformity Declaration

Document no. 268/08.17

Manufacturer: JUDO Wasseraufbereitung GmbH

Address: Hohreuschstr. 39 - 41
D-71364 Winnenden

**Product description: JUDO i-soft TGA 2
Fully automatic water softener**

- EC Directive: Electromagnetic compatibility (EMC) 2014/30/EU
- Harmonized Standards: Electromagnetic compatibility, generic standards for radiated interference and interference immunity EN 61000-6-2
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.

- Harmonized Standard: Safety of power transformers, power supply units and similar EN 60950-1
- EC Directive: Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) 2011/65/EU

Issuer: JUDO Wasseraufbereitung GmbH

Place and date: Winnenden, August 23rd 2017

Legally binding
signature:



.....
JUDO Wasseraufbereitung GmbH

This declaration certifies that the product is in accordance with all the stated directives; it is however not an assurance of its characteristics.

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1 About these operating instructions

These operating instructions must always be available at the place of use of the water softening system.

These operating instructions should simplify getting to know your water softening system and inform you of its intended applications.

The operating instructions contain important information pertaining to safe, proper and efficient operation of the water softening system. They contain basic information that must be observed during installation, operation and maintenance. Observance of this information will help to avoid dangers, reduce repair costs and increase the reliability and service life of the water softening system.

The operating instructions must be read by each person charged with working on the water softening system, e.g. for:

- **Installation**
- **Operation**
- **Maintenance**
(service, inspection, repair)

Installation and maintenance must only be performed by personnel who have been authorised by the manufacturer to do so, i.e. who are able to fulfil the instructions referred to in the installation and operating instructions as well as country-specific regulations.






Alongside the operating instructions and the legal regulations applicable in the country and place of use in respect of accident prevention, the recognised technical regulations for safe and professional work must be observed.

Therefore, these operating instructions must be read by the installer and the responsible technical personnel/operators prior to installation, commissioning and maintenance.

Not only must the general safety instructions listed in chapter “Intended use” be observed, but also the specific safety instructions that are included under the other main points.

1.1 Symbols used

The safety instructions contained in these operating instructions are labelled with the following symbols:

- | | | | |
|---|------------------|---|---------------------------------------|
|  | ATTENTION |  | Indication of existing dangers |
|  | | | Warning of electric voltage |
|  | | | Torques specified by the manufacturer |
|  | | | User tips and other information |

Instructions attached directly to the rotary flange fitting or the water softening system, such as:

- Direction of flow (see fig. 1)
- Type label
- Cleaning information

must be observed without fail and maintained so that they are always legible.

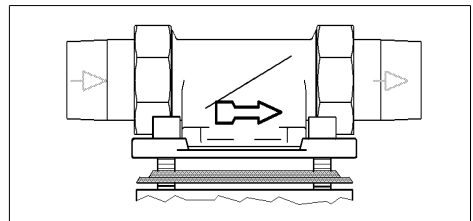


Fig. 1: Rotary flange fitting

1.2 Safety instructions and dangers due to non-observation

In particular, non-observation of the general danger symbols is associated with the following typical hazards:

- Failure of important water softening system functions.
- Endangering of persons due to electrical and mechanical effects.
- Endangering of persons and the environment due to leaks.

Any working methods that might endanger safety must be avoided.

Non-observation of these operating instructions and the safety instructions herein may endanger persons, as well as the environment and the device itself.

1.3 Units used

The following units which do not form part of the SI (Système International d'Unités) system are used:

Quantity	Unit	Conversion
Nominal diameter	1"	corresponds to DN 25
Pressure	bar	1 bar = 100000 Pa = 0.1 N/mm ² ≈ 14.5 psi
Temperature	°F	°F = °C · 1.8 + 32
Water hardness	°e	1 °e = 0.142 mmol/l Alkaline earth ions (hardness producing ions) = 14.2 ppm CaCO ₃

2 Intended use

Both installation and use of the water softening system are subject to the applicable national regulations.

Alongside the operating instructions, the legal regulations applicable in the country and place of use in respect of accident prevention, the recognised technical regulations for safe and professional work must be observed.

The water to be softened must comply with the European Drinking Water Directive!

The manufacturer/supplier must be consulted before using water of a different quality or water with additional additives!

The water softening system is suitable for use in cold drinking water up to a maximum ambient temperature of 30 °C.

It is manufactured according to the state of the art and recognised German safety regulations.

The water softening system may only be used as described in the operating instructions. Any other use or use beyond the specified use is considered to represent incorrect use.

Additional dangers exist in the event of incorrect use and in the event of non-observation of the danger symbols and safety instructions. The manufacturer/supplier shall not be responsible for any resulting damage. All risks are borne solely by the user.

Intended use includes observance of the operating instructions.

The manufacturer/supplier must be consulted before using the water softening system outside the limits of use described in these operating instructions.

The water softening system must only be used as intended in a technically fault-free state, while maintaining safety and hazard awareness, and in compliance with the operating instructions.

Ensure that malfunctions are rectified immediately!

So that the waste water can be safely drained away both during operation and also in the event of a possible system defect, the specifications given in chapter 4.1.1 "Requirements for the place of installation" must be closely observed!



(see chapter 1.2 "Safety instructions and dangers due to non-observation")

The spent regenerating salt is removed from the water softening columns together with waste water. Therefore it must not be used for irrigation or similar purposes.

The application range is specified in DIN EN 806-2 and DIN 1988-200 for DVGW approved water softening systems. In accordance with the standard, there are no limitations in respect of the area of use for this water softening system. The designed capacity of the water softening system is such that it is capable of partially softening the entire water requirement for a single or multiple family dwelling as well as corresponding partial water quantities for hot water, swimming pool, washing machine and dishwasher.

2.1 Water pressure

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

The water pressure must not exceed 2 bar as otherwise the function can be impaired! If the water softening system is not regularly serviced, the softening function can be impaired.



(see chapter 1.2 "Safety instructions and dangers due to non-observation")

Where the **water pressure is greater than 7 bar**, a pressure reducer must be installed **upstream** of the water softening system (see fig. 2). If the operating pressure is greater than 7 bar, malfunctions can occur.

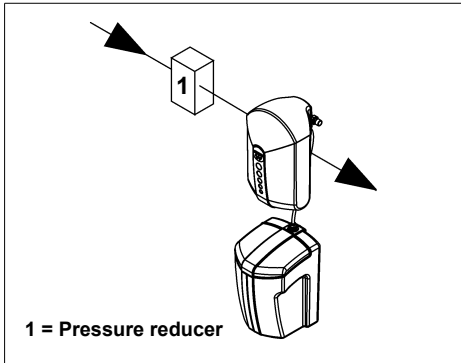



Fig. 2: Pressure reducer upstream of the system

i We recommend installation of a pressure reducer for **water pressures between 5 and 7 bar**.

The optimum operating pressure for the water softening system is between 3 bar and 5 bar. This is where it operates most economically.

2.2 Indication of particular dangers

2.2.1 Electrical devices/installations

 No electrical cables and equipment may be located below or in the immediate vicinity of the water softening system!

Electrical devices/installations that are not splash-proof and are located in the vicinity of the water softening system may be damaged by water that escapes during installation or in the event of incorrect use of the water softening system. If the electrical devices/installations are connected to the power supply, it is also possible that a short-circuit could occur. Should this occur there is a risk

of electric shocks to people. Therefore electrical devices/furnishings and equipment in the vicinity must be splashproof and/or comply with the legal regulations for wet areas.



In the power supply unit the mains voltage is reduced to a safe low voltage of 24 V which is then used to operate the system electronics. No other power supply units must be used.



ATTENTION



(see chapter 1.2 “Safety instructions and dangers due to non-observation”)

Caution when touching without the cover! During operation, electronic components can become hot. Also there is a danger due to moving parts.

Potential-free output



Only low voltages can be used for the remote transmission of the fault indication via the potential-free output!

Switching voltage..... maximum 24 V
Current..... maximum 1 A

(see chapter 5.8 “Potential-free signal relay”)

3 Product information

3.1 Application

The water softening system is suitable for use with cold drinking water having a maximum water temperature of up to 30 °C.



ATTENTION

(see chapter 1.2 “Safety instructions and dangers due to non-observation”)

Usage limitations see chapter 2 “Intended use”.

This water softening system is for protection of water pipes and the water heater against limescale deposits.

With partially softened water, devices and fittings are preserved and the consumption of washing and cleaning agents reduced.



Limescale deposits block the water supply and therefore can result in increased energy consumption.

3.2 Approval marks

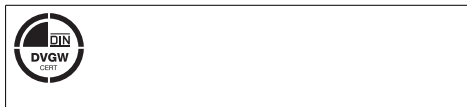


Fig. 3: DIN-DVGW mark

The devices comply with the technical regulations for drinking water installation according to DIN EN 806 ff. and the national supplement DIN 1988 ff. as well as DIN EN 1717. They have been tested and approved by the DVGW (German Technical and Scientific Association for Gas and Water) according to the requirements of DIN EN 14743 and DIN 19636-100 for water softening systems (cation exchangers) and can thus bear the DIN-DVGW mark.

3.3 Materials used

The materials used are resistant to the physical, chemical and corrosive loads expected to be encountered in drinking water and fulfil

the specifications required by DIN EN 14743 and DIN 19636-100 (“Water softening systems (cation exchangers) in drinking water installations”). All materials are hygienically and physiologically harmless. Plastics fulfil the KTW Guideline (Guideline for the Hygienic Assessment of Organic Materials in Contact with Drinking water) of the German Federal Environmental Agency (UBA). Metallic materials fulfil the requirements of DIN 50930-6 (Effect of metallic materials on the quality of drinking water).

4 Installation

4.1 General



ATTENTION

(see chapter 1.2 “Safety instructions and dangers due to non-observation”)

Installation must only be performed by suitably qualified technical personnel.

The chapter 2 “Intended use” must be observed without fail!

The pipe must be able to safely support the water softening system.

Otherwise mechanical damage to the pipe up to and including breakage can result. This can result in severe water damage. Should such an event occur, persons in the vicinity of the water softening system are exposed to a risk of injury or harm because of the large water volumes that could escape. For this reason pipes must, where necessary, be provided with additional fastenings or support.

To ensure convenient operation and maintenance always adhere to the specified dimensions and distances.

At least 300 mm clearance is required above the water softening system, so that all maintenance work can be properly performed.

4.1.1 Requirements for the place of installation

The installation room must be dry and free from frost!

Unauthorised persons must not be able to access the water softening system.



(see chapter 1.2 “Safety instructions and dangers due to non-observation”)

- The ambient temperature must not exceed 30 °C!
- So that it is possible to safely drain the waste water (regeneration) during operation and also in the event that a system defect occurs, the specifications given in chapter 4 “Installation” must be precisely followed!
If the waste water cannot be safely and completely drained, it is possible that property damage to the home and furnishings may be caused by the water.
- A shut-off valve must be installed upstream of the water softening system if no bypass valve (JQX) is fitted. This allows the water supply to be disconnected for water softening system maintenance, repairs or in case of malfunction.
- The device can be installed in all commercially available drinking water pipes.
- Installation of the water softening system **upstream of the water meter** is forbidden!



A permanent power connection (230 V, 50 Hz) must be available.

4.1.2 Installation position



(see chapter 1.2 “Safety instructions and dangers due to non-observation”)

Always install the water softening system in an upright position ($\pm 5^\circ$)!

If this is not observed, incorrect functioning may result.

4.1.3 Power supply



A splash-proof socket, complying with the legal regulations for wet areas, is required for the power supply unit.



(see chapter 1.2 “Safety instructions and dangers due to non-observation”)

The mains voltage must not be interrupted (e.g. via a light switch). If the water softening system does not have a permanent power connection,

- Regeneration will not take place,
- No fault warnings will be output.
- Water leakage or even water damage may occur during a regeneration as a result of a loss of power.

4.2 Installation of the rotary flange fitting

The rotary flange fitting serves as a connecting piece between the pipe and the water softening system.

It is suitable both for horizontal and vertical pipes.

The installation height depends on the pipe course. The minimum installation height measured from the ground to the middle of the pipe is 52 cm.

The rotary flange fitting must be installed in the direction of flow. This is indicated by an arrow integral with the casting (see fig. 4).

If this requirement is ignored, the water softening system will not work.



ATTENTION

(see chapter 1.2 “Safety instructions and dangers due to non-observation”)

The flange surface of the rotary flange fitting must be upright! The rotary flange fitting must be fitted so that it is free from mechanical stress or strain. Otherwise mechanical

damage of the rotary flange fitting may result. This can result in severe water damage.

Therefore when installing, ensure that no large forces act on the pipe, rotary flange fitting or water softening system.

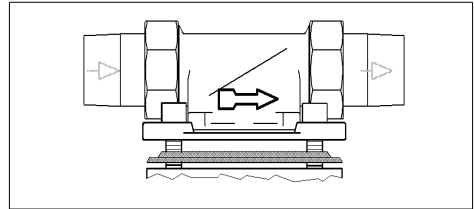


Fig. 4: Rotary flange fitting

4.3 Installing the wall support components

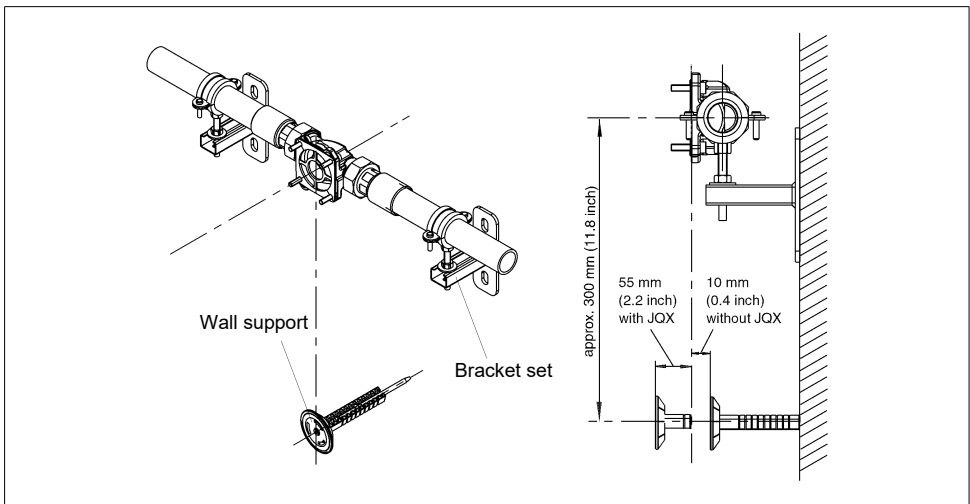


Fig. 5: Wall support components

The wall support ensures safe support of the device and in this way prevents rotation of the device around the pipe. The mounting of the wall support (order no. 2201397) is described in more detail in the corresponding installation instructions.

The bracket set (order no. 2201396) is primarily for relieving and securing the pipe.

4.4 Installation of the water softening system without a bypass valve

- First flush the pipe with the newly installed rotary flange fitting JQE. The rotary flange fitting is still sealed by the black mounting cover.

- Then shut-off the water again (at the stopcock or shut-off valve) and remove the mounting cover of the rotary flange fitting.

The connection flange of the water softening system is covered by a white protective cap. This protective cap is secured using four hexagon socket head screws M6×130.



After removing the white protective cap do not reach into the device connection flange (risk of crushing)!

- Loosen all four hexagon socket head screws M6×130, but do not screw out completely (bayonet connection)!
- Remove the white protective cap.

The profile of the profile flange seal must point towards the rotary flange fitting (see fig. 6). If this is not observed, water leaks may occur. This can result in water damage to the building, furnishings and equipment.

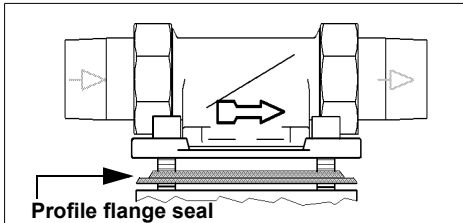


Fig. 6: Rotary flange fitting

- Raise the water softening system and swivel approximately 30° in an anti-clockwise direction.
- Place on the rotary flange fitting so that the screw heads project through the bayonet holes (see fig. 7 I).
- Swivel the water softening system back approximately 30° in a clockwise direction.

- Fully tighten the four M6×130 hexagon socket head screws (see fig. 7 II).



Select the tightening torque (about 4 Nm) so that the seal is effective and the water softening system is not damaged or strained!

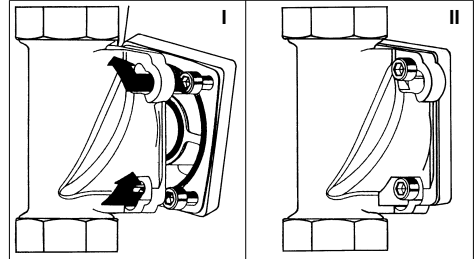


Fig. 7: Rotary flange fitting with bayonet

After installation of the water softening system, screw out the wall support until it touches the cladding of the water softening system and the device hangs vertically on the wall.

4.5 Installation of the bypass valve (accessory)

If a bypass valve is used between the rotary flange fitting and the water softening system it will remain possible to continue to draw a supply of untreated drinking water during possible maintenance on the system.

- First flush the pipe with the newly installed rotary flange fitting JQE. The rotary flange fitting is still sealed by the black mounting cover.
- Then shut-off the water again (at the stopcock or shut-off valve) and remove the mounting cover of the rotary flange fitting.
- Connect the bypass valve with the rotary flange fitting, by engaging the bayonet, on the flange side with the cast-in letter "R" (R=Rohr [pipe]) (see fig. 8).

- Fully tighten the four M6×25 hexagon socket head screws.

Nm Select the tightening torque (about 4 Nm) so that the seal works effectively!

The hand wheel of the bypass valve can either project vertically upwards or to the side. Installation should be performed so that, dependent on the local circumstances, the hand wheel can be easily accessed.

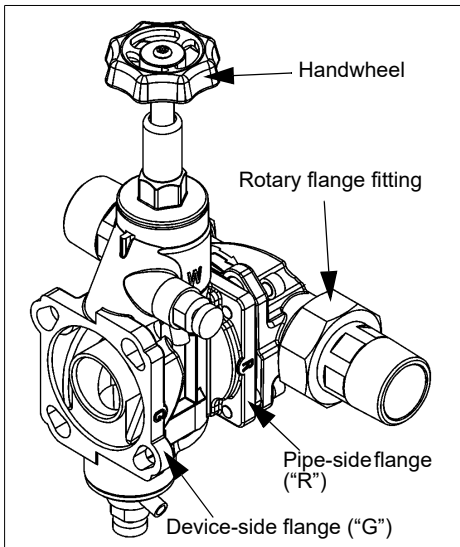


Abb. 8: Bypass valve (JQX)

4.6 Water softening system installation at the already installed bypass valve

The connection flange of the water softening system is covered by a white protective cap. This protective cap is secured using four hexagon socket head screws M6×130.



ATTENTION

After removing the white protective cap do not reach into the device connection flange (risk of crushing)!

- Loosen all four hexagon socket head screws M6×130, but do not screw out completely (bayonet connection)!
- Remove the white protective cap.

The profile of the profile flange seal must point towards the bypass valve. If this is not observed, water leaks may occur. This can result in water damage to the building, furnishings and equipment.

- Raise the water softening system and swivel approximately 30° in an anti-clockwise direction.
- Position the water softening system on the "G"-labelled flange of the bypass valve so that the screw heads project through the bayonet holes (see fig. 7 I).
- Swivel the water softening system back approximately 30° in a clockwise direction.
- Fully tighten the four M6×130 hexagon socket head screws (see fig. 7 II).

Nm Select the tightening torque (about 4 Nm) so that the seal is effective and the water softening system is not damaged or strained!

After installation of the water softening system, screw out the wall support until it touches the cladding of the water softening system and the device hangs vertically on the wall.

4.7 Connection of the water softener with the salt reservoir

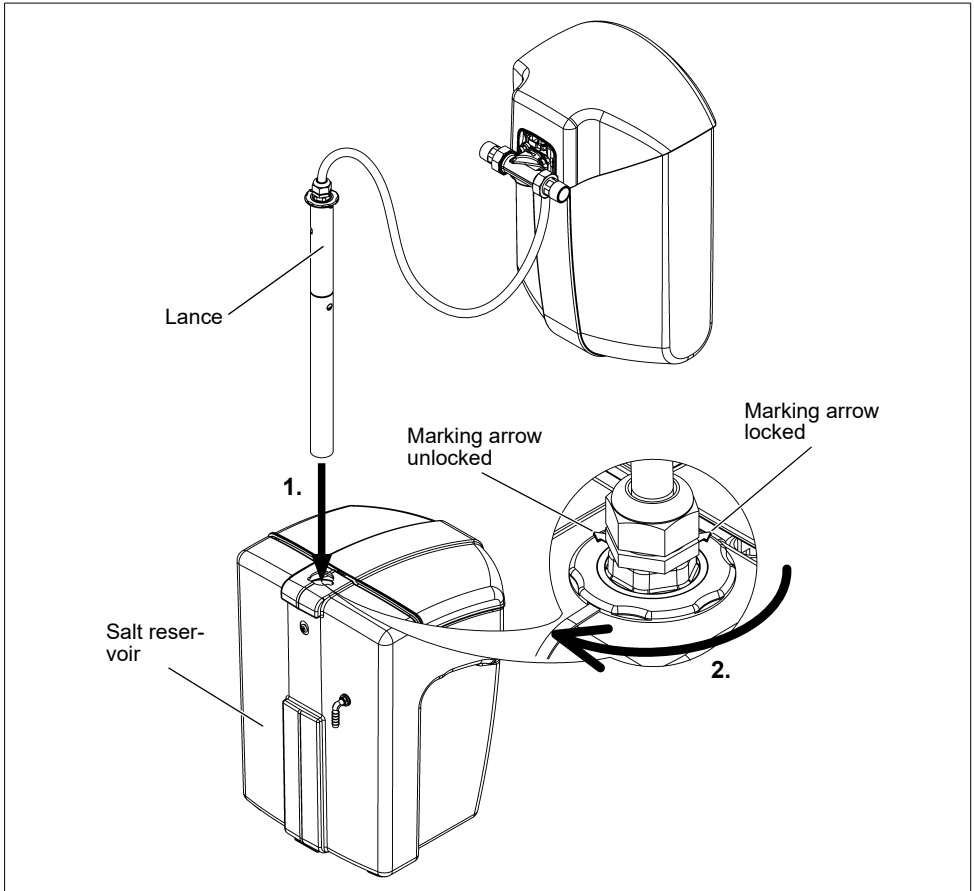


Fig. 9: Connection of the water softening system with the salt reservoir

Procedure (see fig. 9):

1. Push the lance up to the stop in the salt reservoir.

The salt reservoir can be placed below the water softener or next to it on the floor.



Note the marking arrow:
In doing so the arrow must point to the side (see fig. 9)!

2. To lock, turn the lance through 90° in the clockwise direction (up to the stop).



Note the marking arrow:
The arrow must now point to the front side of the salt reservoir (see fig. 9)!

4.8 Waste water connection and safety overflow hose

The hoses for the regeneration waste water and the safety overflow must both be routed kink-free to the water trap (in the scope of supply). The water trap ensures a free discharge in accordance with DIN EN 1717 (see fig. 10).

The waste water hose with 11 mm outside diameter must not be routed any higher than the control head. The hose length must not exceed 3 m.

The safety overflow hose with 19 mm outside diameter must be routed with a steady drop to the water trap.

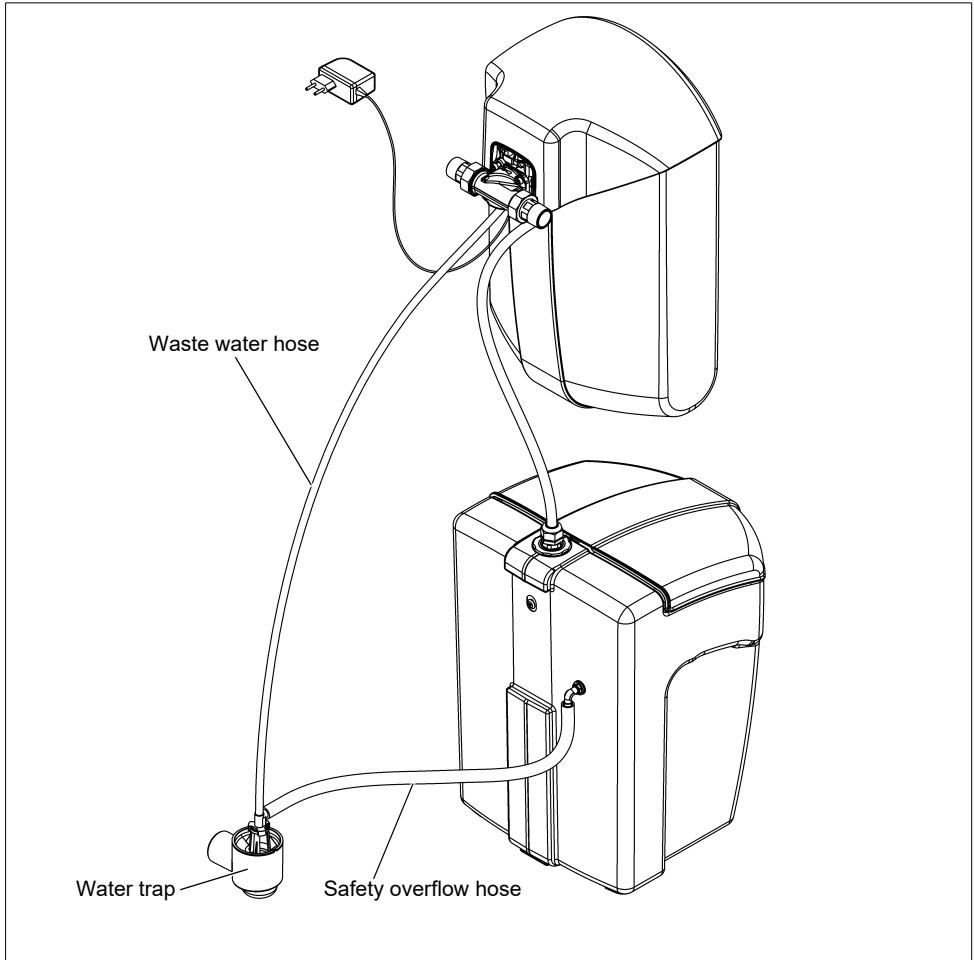


Fig. 10: Connection to the water trap

If, for on-site reasons, a steady slope to the water trap can not be realized, then a pumping equipment, which is resistant to saltwater, must be installed to pump up the regeneration waste water.

5 Operation

5.1 Control panel

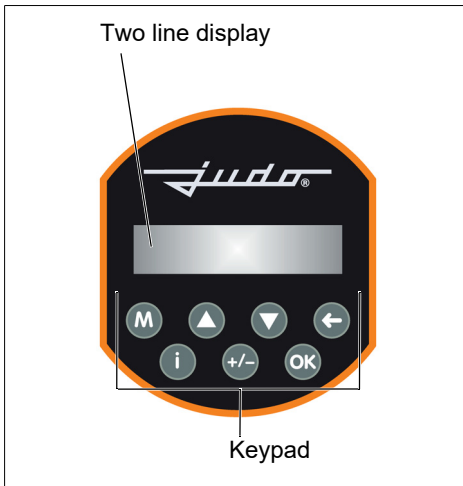


Fig. 11: Control panel of the water softening system

Operation of the water softening system takes place via the keypad and display (see fig. 11).

Key functions:



Access to the main menu (see chapter 5.2 "Menu functions")



- Scroll up in the menu
- Increase value



- Scroll down in the menu
- Reduce value



Jump one menu level back without saving



Direct access to the information menu (see section "• Info" in chapter 5.2)



Direct access to residual hardness setting (see chapter 5.3.3 "Desired water hardness setting")



- Access to the sub-menu
- Accept value and save, then jump one menu level back
- Acknowledged message

Display background lighting:

- none: normal operation
- alternating light blue/dark blue: With a water flow
- white: when pressing a key
- yellow: for warning messages
- red: for fault indications

5.2 Menu functions

Pressing the key **M** calls the main menu:

Main menu

• Regeneration

The next or previous sub-menu is displayed using keys **▲** and **▼** and called using the **OK** key.

In the sub-menu individual values are increased or decreased using keys **▲** and **▼** and then accepted using the **OK** key.

Sub-menus:

Regeneration

- manual regeneration start (see chapter 5.3.2 "Manually starting regeneration of the water softening system")

Leakage alarm

(Only visible if leakage alarm is activated. To activate see chapter 5.7.1.)

- Start sleep mode

Settings

- Language:
DE, EN, FR, NL, IT
- Desired water hardness (see chapter 5.3.3 “Desired water hardness setting”)
- Correction of the desired water hardness (see chapter 5.3.5 “Desired water hardness recalibration”)
- Salt top-up quantity, salt reserve
- Leakage alarm on/off (Limit values and sleep mode time only visible if leakage alarm is activated.)
- Water hardness unit:
°dH, °e, °f, gpg, ppm, mmol/l, mval/l
- Lighting, contrast, tone
- Functioning of the fault indication relay (see chapter 5.8 “Potential-free signal relay”)
- Factory setting (see chapter 5.14 “Resetting to factory setting”)

Operating data

- Total raw water volume since commissioning [m³]
- Total number of regenerations since commissioning
- Total number of services since commissioning

Info

Various information is displayed here such as the salt reserve and capacity, the device type, device number, customer service telephone number, history of the warning messages and fault indications, software version, hardware version, the date for the next necessary service and the current (instantaneous) water flow.

5.3 Start of operation

- To shorten commissioning, fill approximately 5 litres of water into the salt res-

ervoir (until just above the intermediate floor).

- Fill 25 - 50 kg of regenerating salt into the salt reservoir .

The regenerating salt must as a minimum comply with the requirements of DIN EN 973 and be of food-grade.

Our recommendation: Broxo or Solvay salt, either as blocks, tablets or coarse grains 7 - 15 mm. If other regenerating salts are used, then the salt reservoir must be cleaned at shorter intervals and the intake strainer replaced more frequently.

- Remove the cover.
- Enter the date of installation on the label (see fig. 12).

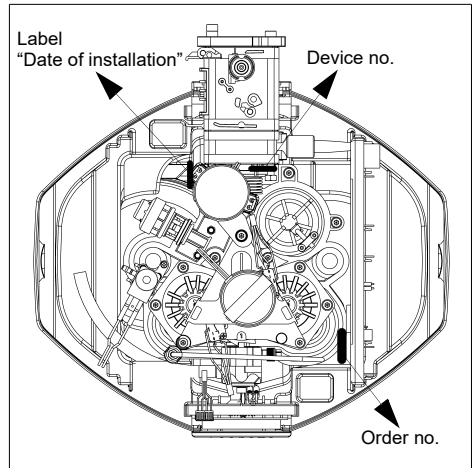


Fig. 12: Device and order no. plus label “Date of installation”

- Open the water supply (stopcock or shut-off valve).
- Ensure that the bypass valve (if installed) is set to “Operate”.



For safety reasons, the water softening system must be **flushed and regenerated for venting immediately** after water supply is opened.

See chapters 5.3.1 and 5.3.2 for this purpose!

5.3.1 Water softening system flushing

- To do so open a tap (as close as possible to the water softening system).
- After a minute's flushing (both resin containers are vented), plug the power supply unit into the socket.

After connection to the power supply, the electronics automatically perform a self-test and preconfigure the regulation system.

Status display:

After a successful conclusion, the following text is output to the display:



Fig. 13: Status display

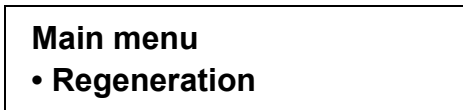
The desired water hardness is pre-set to 10 °e.

Information about setting the desired water hardness is available in chapter 5.3.3 "Desired water hardness setting".

5.3.2 Manually starting regeneration of the water softening system

To do so, the water softening system must be in an operating position. The status is shown on the display (see fig. 13).

Press key **M**. The display shows the following:



Press the <OK> key. The display shows the following:



Pressing <OK> starts regeneration.

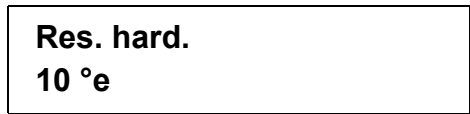
Then "Regeneration" is output to the display.

Regeneration is completed after about 20 minutes. The display shows the status again (see fig. 13).

5.3.3 Desired water hardness setting

The water softening system is pre-set to a desired water hardness of 10 °e. Another desired water hardness is set as follows:

Press key **+/-**. The display shows the following:



Use the **▼** key to reduce the desired water hardness set and the **▲** key to increase it. The step size is 1 °e.

The desired water hardness value chosen is saved by pressing <OK>.

The desired water hardness is automatically set during operation. For this to happen, approx. 10 l of water must flow through the water softening system (at a rate of approx. 500 l/h).

An optional hardness measuring instrument (see chapter 9.6 "Accessories") can be used to check the desired water hardness.

The sample water for checking the water hardness can be drawn at the bypass valve or from a water tap connection downstream of the water softening system.

It must be ensured that the mixing water quantity currently set has flown from the water softening system to the drawing point. For a correct measuring value comparison, the samples should be taken with a normal water flow (one tap fully open). During drawing, no large volume of water should be drawn at another point.

5.3.4 Desired water hardness setting limitations

The water softening system control unit checks if the desired water hardness is correctly set.

1. Limitation due to the mixing valve setting range:

The desired water hardness can be set between 1 °e and half the value of the untreated drinking water hardness +2 °e.

Example: Untreated drinking water hardness = 18 °e

Desired water hardness setting:
1 to 11 °e

The desired water hardness cannot be set to a higher value.

The maximum hardness that can be set via the menu with the ▲ key is limited to the value calculated by the control unit. Higher values are not possible.

2. Limitation due to the maximum value for sodium in the drinking water:

After the softening, the sodium concentration in the mixing water increases, dependent on the raw water hardness and the set desired water hardness.

According to current national drinking water legislation, the limit value for sodium in drinking water is 200 mg/l. Mineral and table water are not affected by this. Their limit values are much higher, partially greater than 1000 mg sodium per litre.

Calculation of the sodium content

°e	Raw water hardness (ask the water supply company or measure with hardness measuring instrument)
- °e	Residual hardness (measured value)
= °e	Difference in water hardness
×	6.4 mg Na ⁺ /l × °e Na ions exchange value
=	mg/l Increase of the sodium content by softening
+	mg/l sodium already present in the raw water (ask the water supply company)
=	mg/l Total sodium content in the mixing water

Example calculation of the sodium content

25 °e	Raw water hardness
- 10 °e	Residual hardness
= 15 °e	Difference in water hardness
× 6.4	
= 96 mg/l	Due to softening:
+ 10 mg/l	From water supply company
= 106 mg/l	In total

If the calculated total sodium content exceeds the value permitted by the drinking water legislation of 200 mg/l, then it can be corrected by increasing the desired water hardness.

Based on the raw water hardness and desired water hardness, the electronics determine the sodium content. The electronics do not take into account the sodium content of the raw water. If the limit value of the drinking water ordinance is exceeded, the following messages appear on the display:

Attention!
Sodium limit val

and after 3 seconds:

**see instruction
manual**

After 3 seconds the permissible minimum value of the desired water hardness is displayed. This may be followed by the message:

**min. permissible
Res. hard. 13 °e**

The following is shown after 3 seconds:

**Accept <OK>
or setting**

After pressing the <OK> key the desired water hardness minimum value is memorized as the new setpoint value. By pressing the keys ▼ and ▲, the desired water hardness can be set and forced with the <OK> key even if the sodium value is exceeded.

i If the sodium content is exceeded, a “2” is displayed at the end of the first line of the display.

5.3.5 Desired water hardness recalibration

Due to the different composition of the desired water, the desired water hardness may not be reached. In this case, the desired water hardness can be adapted to the water quality.

If, for example, the water hardness is set at 8 °e, but the residual hardness measured is 10 °e, the water hardness can be adapted as follows:

Press the **M** key 1x and then ▼ 2x. The display shows the following:

Main menu
• **Settings**

Press key <OK> 1x and then key ▼ as often as necessary, until the display indicates the following:

Setting
• **Res. hard. corr.**

Press the <OK> key. The display shows the following:

Actual hardness
10 °e

Use the ▼ key to reduce the measured residual hardness value and the ▲ key to increase it. The step size is 1 °e.

The chosen residual hardness setting is saved by pressing <OK>.

On the basis of these values the control unit generates the necessary correction value.

i The recalibration of the residual hardness is displayed by a small “1” at the end of the first line.

The recalibration of the residual hardness is reset as soon as the customer settings are reset to the factory settings (see chapter 5.14 “Resetting to factory setting”).

5.4 Menu structure

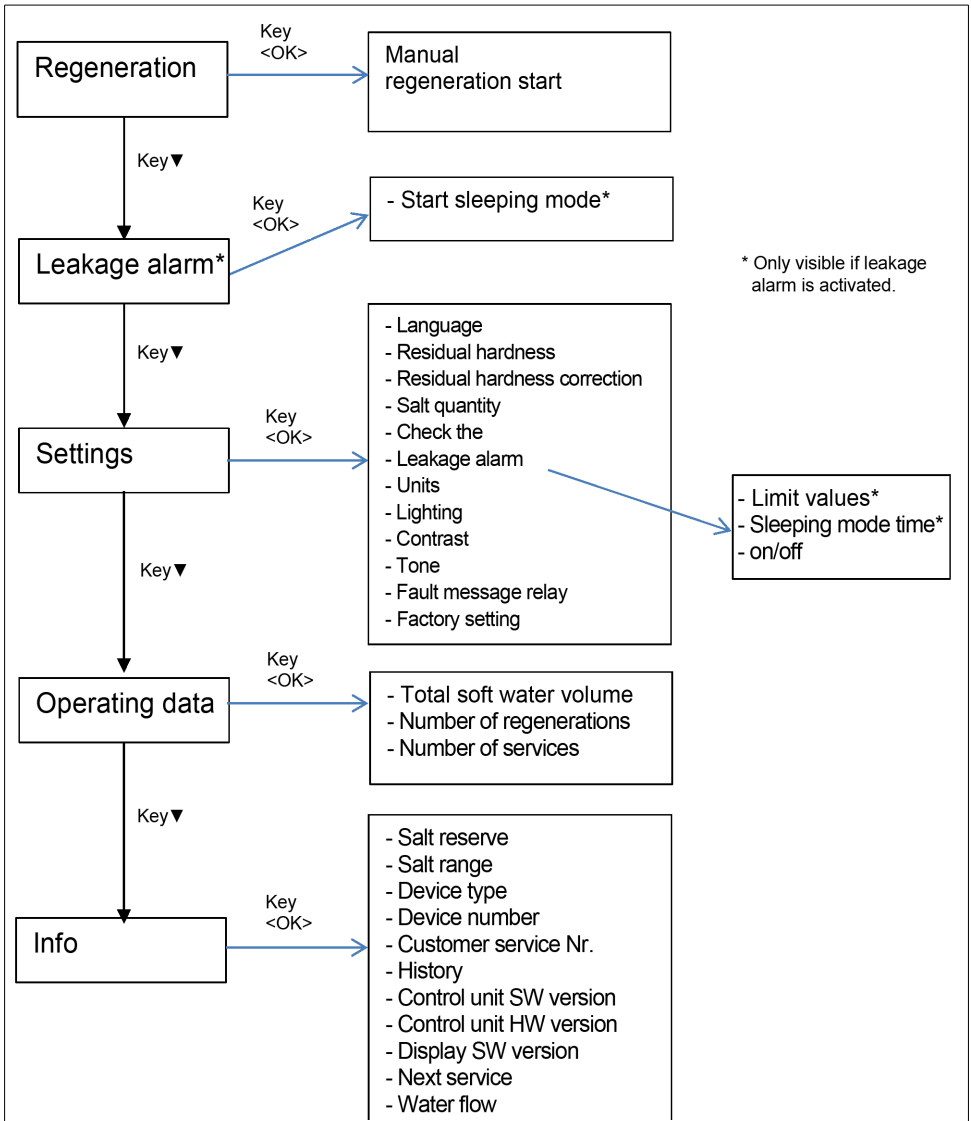


Fig. 14: Menu structure

5.5 Function description

5.5.1 Method of operation

The filter containers are filled with ion-exchange resin. This comprises small plastic resin balls on which the calcium ions, which make the water “hard”, are exchanged for sodium ions. This makes the water “soft”. In the control head an adjustable quantity of not-softened raw water is admixed to obtain the desired water hardness downstream of the system. However the ion-exchange resin only absorbs a limited quantity of these hardness components. Dependent on the water hardness and the treated water volume, sooner or later it is exhausted. The time at which it becomes exhausted is measured with the water meter and regeneration automatically triggered. To do so, diluted brine (sodium chloride) is used to remove the hardness components from the resin.

5.5.2 System design

The water softening system is designed as a parallel system that is regenerated in two stages. During regeneration, the two resin containers are alternately responsible for soft water provision. In this way soft water is always available for the consumer, even during regeneration.

5.5.3 Regeneration

With a very short regeneration period of about 10 minutes per resin container (total: 2x10 minutes) high volume continuous drawing is possible.

The soft water volume is precisely measured using a water meter in the system's soft water pipe and in this way triggering of regeneration is controlled. Regeneration is performed according to DIN EN 14743 and DIN 19636-100 using miser salting. Disinfection of the system takes place at regular intervals to prevent microbe contamination. The small quantity of chlorine required for

this is created electrolytically during regeneration from the absorbed brine.

5.5.4 Control of regeneration

Regeneration is performed automatically via wear-free ceramic disc valves. The regeneration sequence is fixed by the geometry of the discs and therefore need not be re-entered after a power failure.

5.5.5 Monitoring the raw water

A sensor (i-guard) in the inlet of the water softening system continuously monitors the raw water. Therefore, the system knows after which water volume the regeneration must be started. It is therefore not necessary to programme the raw water hardness.

5.5.6 Automatic residual hardness regulation (i-matic)

Depending on the raw water quality and desired water hardness, the internal blending unit is automatically adjusted by means of a servo motor.

5.5.7 Overflow valve

If because of very high drawing of water (e.g. by a flushing valve) the pressure loss in the water softening system is greater than 1.0 bar, than an overflow valve integrated in the control head opens so that hard water can bypass the system to limit the pressure loss. This means that the residual hardness temporarily increases in the pipe downstream of the water softening system water softening system.

5.6 Filling with salt

For each regeneration, approx. 200 g of salt is used. The control unit of the water softening system then automatically calculates the reduced salt reserve.

The regenerating salt must as a minimum comply with the requirements of DIN EN 973 and be of food-grade.

Our recommendation: Broxo or Solvay salt, either as blocks, tablets or coarse grains 7-15 mm. If other regenerating salts are used, then the salt reservoir must be cleaned at shorter intervals and the intake strainer replaced more frequently.

Message “Verify salt level”:

If the salt reserve calculated falls below 5 kg, the water softening system displays the following message:

**Salt level
verify!**

Message “Attention! Salt deficit”:

The salt concentration of the brine reservoir is automatically regularly checked. If the salt container is not topped up in time and the brine concentration is too low, the display indicates:

**Attention!
Salt deficit**

After acknowledgement of the message “Verify salt level” or “Attention! Salt deficit” with the <OK> key, the salt quantity setting menu appears.

Usually regenerating salt is used in a 25-kg container. This is why the refill quantity is preset and can be applied directly by pressing the <OK> key. The water softening system automatically calculates the new salt reserve.

The Refill Quantity menu can be accessed even if no warning message has occurred by pressing <M> and selecting Settings / Refill Quantity.

In the 'Salt Reserve' menu the set salt reserve can be corrected if necessary. This

menu can also be accessed after pressing <M> and selecting Settings / Refill Quantity.



This message can also appear if the salting process is not performed correctly during regeneration, e.g. if the waste water hose is routed at a too-high level, if the mains water pressure is too low or if the suction hose connection to the salt/brine tank is not made correctly.

If the salt is only replenished once the salt reserve is completely used up, the brine level may temporarily increase. The suction process then lasts correspondingly longer.

If there is no longer any regenerating salt available or if the regenerating salt is not replenished early enough, the water softening system switches to miser operation.

The remaining reserve is then primarily used for disinfection of the ion-exchange resin and the softening effect is reduced.

In this way, the water softening system remains in a hygienic condition for weeks after the low regenerating salt state first occurs.

5.7 Leakage alarm

When the leakage alarm is activated, various limit values are monitored when water is drawn.

In the delivery status the leakage alarm is deactivated. It can be activated in the menu “Settings / Leakage alarm”.

The instantaneous water flow is measured by a water meter, which is then used to determine the water volume consumed in an uninterrupted period and the time for which water has been drawn. The maximum permissible limits can be set.

If any of these limits are exceeded, this will be signalled on the display and via the floating relay. In addition, an audible warning will sound.

5.7.1 Enabling the leakage alarm

Press the **M** key 1x and then ▼ 2x. The display shows the following:

Main menu
• **Settings**

Press key <OK> 1x and then key ▼ as often as necessary, until the display indicates the following:

Setting
• **Leakage alarm**

Press key <OK> 1x and then key ▼ 2x. The display shows the following:

Leakage alarm
• **on/off**

Press the <OK> key again. The display shows the following:

Leakage alarm
off

Press key ▲ or ▼ to change between <on> and <off>.

The chosen setting is saved by pressing <OK>.

5.7.2 Sleep mode

Monitoring of the limit values can be temporarily switched off. This is necessary if large water volumes are required in an uninterrupted period, e.g. garden sprinkling, filling up of a swimming pool or garden pond.

Press key **M** 1x and then key ▼ 1x. The display shows the following:

Main menu
• **Leakage alarm**

Press the <OK> key. The display shows the following:

Leakage alarm
• **Sleep mode**

After pressing the <OK> key sleep mode starts. The display shows the following:

Leakage alarm
1...10 hours off

alternating with:

To leave
press <OK>

The time indication displays the remaining period in hours.

Pressing the <OK> key will exit the sleep mode.

Otherwise the leakage alarm will automatically switch back to normal operating mode after the residual period has elapsed.



In sleep mode no monitoring of water consumption takes place!

Setting the sleep mode time:

The sleep mode time can be set to 1...10 hours in the 'Settings / Leak Protection' menu.

5.7.3 Setting the limit values

Press the **M** key 1x and then **▼** 2x. The display shows the following:

Main menu

- **Settings**

Press key <OK> 1x and then key **▼** as often as necessary, until the display indicates the following:

Setting

- **Leakage alarm**

Press <OK> 2x. The display shows the following:

Limit values

- **Flow rate**

After selection of the desired limit value **▼** or **▲** and pressing the key <OK> the limit value can be increased or reduced with key **▼** or **▲** and then permanently saved with the <OK> key. In this context the following settings are possible:

Limit value	lowest settable value	default value (factory setting)	highest settable value	step size
max. flow	500 l/h	4000 l/h	5000 l/h, unlimited	500 l/h
max. water volume	100 l	300 l	3000 l unlimited	100 l
max. drawing time	10 min	30 min	10 h, unlimited	10 min

If you scroll beyond the lowest settable value, the indication 'unlimited' appears on the display. Note the following upon saving this setting:

If one of the limit values is deactivated (“unlimited” setting), this value is no longer monitored. If for example the maximum drawing time is deactivated, then a small leak can only be detected by the leak protection system when the maximum water volume set for another limit value is reached.

The limit values must be set according to the respective consumption habits. If under the normal consumption habits a limit value is regularly exceeded without a leak being present, the corresponding limit value can be reset to a larger value.

Typical adjustment values for a private household

Example	Single family dwelling, 2 persons, no flushing valves	Single family dwelling, 4 persons, no flushing valves	Single family dwelling, 4 persons, 2 flushing valves
Max. flow	2000 l/h	2000 l/h	5000 l/h
Max. water volume	300 l	500 l	500 l
Max. drawing time	30 min	60 min	60 min

i Drawing time is not monitored during softener regeneration.

5.7.4 Connection of a leak sensor

A leak sensor is available as an option (see chapter 9.6 “Accessories”). It comprises 2 stainless steel electrodes, that are located approximately 2 mm above the floor. Triggering takes place if the electrodes are connected by a water film. Water conductivity must exceed 100 µS/cm.

5.8 Potential-free signal relay

In the following cases a message is displayed by a potential-free signal relay:

- In the event of a water softening system fault indication
- in the event of power loss (only with setting 'NCC')
- If a low salt condition exists
- In the event of a leakage alarm



Prior to electrical installation, pull the power supply unit out of the socket!

The chapter 2.2 “Indication of particular dangers” must be observed without fail!

Adhere to the maximum switching current and maximum voltage (see chapter 2.2.1 “Electrical devices/installations”)!

The contacts of the potential-free relay are shown in the zero-current state in fig. 19.

Setting the switching function:

Press the **M** key 1x and then ▼ 2x. The display shows the following:

Main menu

- **Settings**

Press key <OK> 1x and then key ▼ as often as necessary, until the display indicates the following:

Setting

- **Fault relay**

Press the <OK> key. The display shows the following:

Fault relay

Normally closed

Press key ▲ or ▼ to change between <Normally closed> and <Normally open>.

The chosen setting is saved by pressing <OK>.



The fault signalling cable is not part of the scope of supply (see chapter 9.6 “Accessories”).

5.9 Integration of the water softening system in building control systems

The water softening system can be integrated via the potential-free relay into a building control system (e.g. EIB, LCN or LON).

For example, the potential-free relay is connected to a binary bus coupler. This allows a fault indication to be forwarded to the building control system.

5.10 Connectivity module (accessory)

A retrofittable connectivity module is used to connect the water softening system via a LAN connection to the home network and the Internet (see chapter 9.6 “Accessories”).

Using the iOS/Android app “JU-control”, worldwide access to comprehensive information, automated messages and functions of the water softening system is possible.

5.11 Conversions / changes / spare parts

Only original spare parts may be used!

Unauthorised conversions and changes are forbidden for safety reasons! They may impair the operation of the water softening system. The imprinted approval marks are only valid if original spare parts are used.

5.12 Service/repair



ATTENTION

Before performing work on the water softening system that goes beyond pure operational use, the water softening system must be depressurised!

If this is ignored, the result may be uncontrolled egress of water resulting in water damage to the building/home. Therefore the instructions given in chapter 4 "Installation" and chapter 7 "Maintenance" must be strictly observed.

5.13 Interruption of operation

The water supply to the water softening system is interrupted. The main stopcock is closed or the bypass valve is switched over.



Pull the power supply unit out of the socket! (If present, also pull out the power supply unit of the downstream dosing pump!)

- When disassembled, water softening system must be stored in a dry and frost-free location.
- The connection flange must be protected against dirt and damage.
- Once the water softening system is fitted and started again, it must be flushed and regenerated (see chapter 5.3 "Start of operation").

5.14 Resetting to factory setting

All customer settings (e.g. desired water hardness and residual hardness correction) can be reset to the factory setting in the following way:

Press the **M** key 1x and then **▼** 2x. The display shows the following:

Main menu

• **Settings**

Press key <OK> 1x and then key **▼** as often as necessary, until the display indicates the following:

Setting

• **Factory setting**

Press the <OK> key. The display shows the following:

Factory setting

<no>

Press key **▲** or **▼** to change between <yes> and <no>.

The following default values are recreated by pressing key <OK> with <yes> selected:

- Desired water hardness 10 °e
- Residual hardness correction = 0 (reset)
- Leakage alarm
 - Leakage alarm enabled
 - max. water volume: 300 l
 - max. water flow: 4000 l/h
 - max. drawing time: 30 min
- Fault indication relay: NOC function
- Lighting 80 %, contrast 50 %

5.15 Overview of display messages

Display	Description	further info
Regeneration	Message is displayed during regeneration of the resin container.	see chapter 5.5.3 "Regeneration"
Maintenance/Service	Message appears after the one-year service interval has elapsed.	see chapter 8.3.1 "Message "Maintenance/Service""
Salt level verify!	Message appears if the calculated salt reserve falls below 5 kg.	see chapter 5.6 "Filling with salt"
Attention! Salt deficit	Message appears after exceeding of the minimum chlorine flow.	see chapter 5.6 "Filling with salt"
Attention! Sodium limit val	This message appears if (due to raw water hardness and the desired water hardness setting) the sodium limit value stipulated in the drinking water ordinance is exceeded.	see chapter 5.3.4 "Desired water hardness setting limitations"
Leakage alarm 1...10 hours off	The message appears if sleep mode is enabled.	see chapter 5.7.2 "Sleep mode"

6 Fault

Opening of devices and replacement of parts subject to water pressure must only be performed by licensed persons to ensure device safety and leak-tightness.

Indication on the	Cause	Remedy
Attention! Fault Reg. Drive	Regeneration drive defective.	Notify customer service! Unplug the power supply unit! If fitted, switch the bypass valve to bypass!
Attention! Fault Salification	Salting process defective, container overfilled or leak.	Check the brine level in the salt reservoir! Reset fault indication! If the fault occurs again, notify customer service!
Attention! Fault Filling time	Replenishment timeout.	Water supply may be interrupted. If the cause cannot be found, notify customer service.

Deleting the fault indication:

- Press <OK> key.
- or
- Pull the power supply unit out of the socket and plug back in after about 5 s.

i When communicating with customer service, please always have the device number and order number available (see fig. 12).

7 Maintenance

7.1 Cleaning

Only use clear drinking water to clean the housing.

Standard all purpose cleaners and glass cleaners can contain up to 25 % solvent or alcohol (methylated spirits).

These substances can chemically attack the plastic parts resulting in embrittlement and even breakage.

Therefore do not use these types of cleaner!

8 Warranty and service

To ensure the process operates successfully for many years after first use, regular inspection and routine servicing of the system are essential. Where home automation is concerned, this is governed by DIN EN 806-5.

We recommend that you agree a service contract.

A service contract is the best way of ensuring correct operation even after the warranty period has elapsed.

It is desirable that the regular maintenance work and the supply of consumables, mineral solutions, salt or wear parts, etc. is performed by the JUDO factory customer service team or by an approved technical service provider.

8.1 Inspection by the operator every 2 months (visual inspection)

To retain your legal warranty rights, it is necessary that an inspection be performed at least every two months.

The operator checks:

- The salt filling level.
- The leak-tightness of the softening system (escaping water).
- For damage to the water softener. Defective parts must be replaced by customer service.
- Messages on the display.

Dependent on the consumed water volume, the corresponding salt consumption must be regularly monitored. If necessary, replenish the regenerating salt (only use quality according to DIN EN 973). When replenishing the salt take appropriate hygiene measures. Thus, for example, the salt packs should be cleaned before use so that no impurities can get into the salt dissolving container. The regenerating salt must be shaken into the salt dissolving container directly after undoing

the packaging. In doing so, ensure that the salt dissolving container is not overfilled and that after completing the work, it is again carefully closed and sealed. Do not use partial packs. The salt must only be stored in clean and dry rooms.

8.2 Six-monthly service by the operator

In addition to the checks of the 2-month inspection, the operator must also check the following every six months:

- Leak-tightness of the softener to waste water connection.
No water must flow out of the waste water hose (see fig. 9, pos. 6) in the operating position.
- Soft water hardness.
Checking is performed with a hardness measuring instrument (see chapter 9.6 “Accessories”).

8.3 Annual service by customer service

Once yearly, a service must be performed by a licensed technical service provider or the JUDO factory customer service team.

8.3.1 Message “Maintenance/Service”

After an operating period of one year, the water softening system signals the required service. The following message is shown on the display:

**Maintenance/
Service**

After performance of the service, the message is reset by pressing the <OK> key for at least 5 s.

9 Data sheet

9.1 Type

JUDO i-soft TGA 2

Fully automatic water softening system

Order no.: 8203043

9.2 Technical data

- Maximum ambient temperature and water temperature 30 °C
- **The water to be softened must comply with the European Drinking Water Directive!**

Operating pressure	Rated pressure
2 - 7 bar	PN 10

The rated pressure refers to the pressure range that the water softening system meets. The maximum operating pressure is lower to ensure the optimum function of the water softening system.

Operating weight with full salt charge	approx. 75 kg
Shipping weight	approx. 28 kg
Rated flow	1.8 m ³ /h
Flow pressure at min. rated flow	2 bar
Pressure loss at rated flow	1 bar
Temporary max. flow	3.5 m ³ /h
Pipe connection	1"
Rated capacity	1.2 mol
Capacity per kg regenerating salt	6 mol
Volume of the salt reservoir	50 kg
Volume of the exchanger resin	6 l
Water consumption per regeneration	approx. 25 l
Electrical connection	230 V/ 50 Hz
Power consumption: Operation Regeneration	3 W max. 20 W
Adjustment range of desired water hardness	min. 1 °e max. half value of the untreated drinking water hardness + 2 °e
Max. raw water hardness	63 °e

Further information is available in chapter 9.3 "Graphs".

9.3 Graphs

Pressure loss in normal operating position (pos. 1) with a raw water hardness of 25 °e and a mixed water hardness of 10 °e depending on the volumetric flow rate.

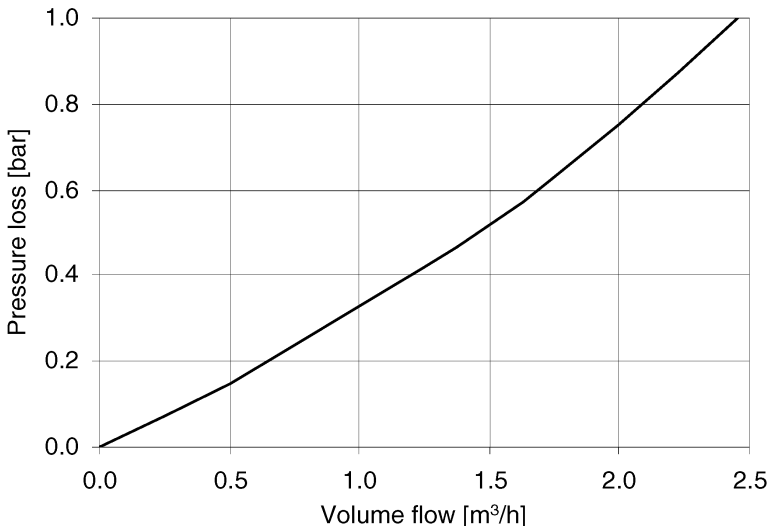


Fig. 15: Pressure loss in normal operating position

Waste water quantity related to 1 m³ of mixed water with 10 °e depending on the raw water hardness.

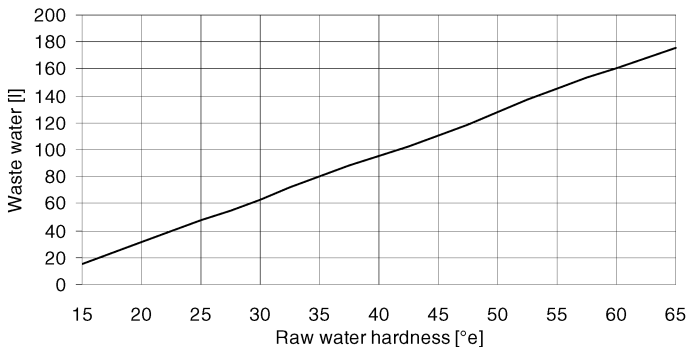


Fig. 16: Wastewater quantity

Salt consumption related to 1 m³ of mixed water with 10 °e depending on the raw water hardness.

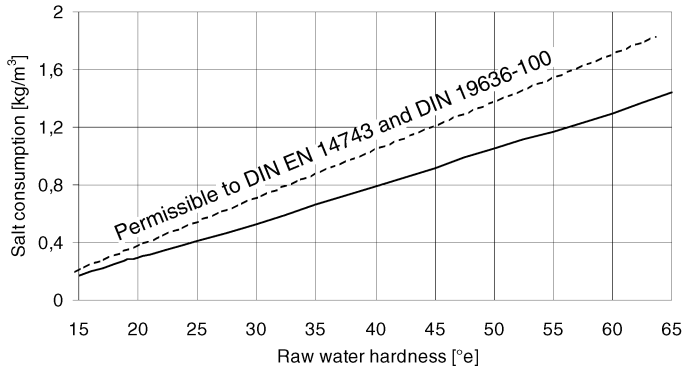


Fig. 17: Salt consumption

9.4 Installation dimensions

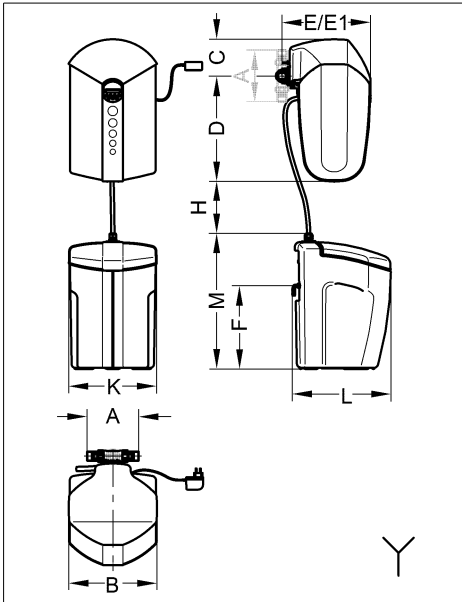


Fig. 18: Installation dimensions

A	195	Installation length (rotary flange)
B	390	Device width
C	165	Height above the pipe middle
D	465	Height below the pipe middle
E	385	Installation depth up to the pipe middle
E1	450	Installation depth up to the pipe middle with JQX
F	370	Height of the overflow connection
H	240	Maximum distance between water softener and salt reservoir
K	390	Width of the salt reservoir
L	435	Depth of salt reservoir with overflow
M	600	Height of the salt reservoir
Y		Sewer connection necessary

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

9.5 Scope of supply

- Water softener (incl. i-guard and i-matic)
- Salt reservoir
- Installation and operating instructions

- Rotary flange fitting JQE 1" with compression fitting
- Safety overflow hose and waste water hose
- Water trap
- Wall support

9.6 Accessories

- Bypass valve JQX (order no. 8735210)
- Hardness measuring instruments JGHP 0 - 37.5 °e (order no. 8742120)
- Connecting cable to ZEWA water stop (order no. 2201239)
- Leak sensor (order no. 8203554)
- Fault signalling cable (order no. 2200717)
- Connectivity module (order no. 8235010)

9.6.1 Protective measures to prevent corrosion

For water with water hardness 0 °e, plastic pipes or corrosion-resistant pipes should be laid.

For water with partial softening (about 10 °e), galvanised pipes and copper pipes can be laid.

Our recommendation:

Installation of a JUDO JULIA dosing pump in the mixing water pipe downstream of the water softening system, so that the water can be admixed proportionally with a JUL mineral solution.

The JUL mineral solutions contain substance components that stabilise the remaining carbonate hardening components and create the conditions for formation of a homogeneous protective layer in the downstream pipe system. These substance components correspond in the prescribed type, quality and quantity to section 11 of the current German Drinking Water Act ("Treatment substances and disinfection processes").

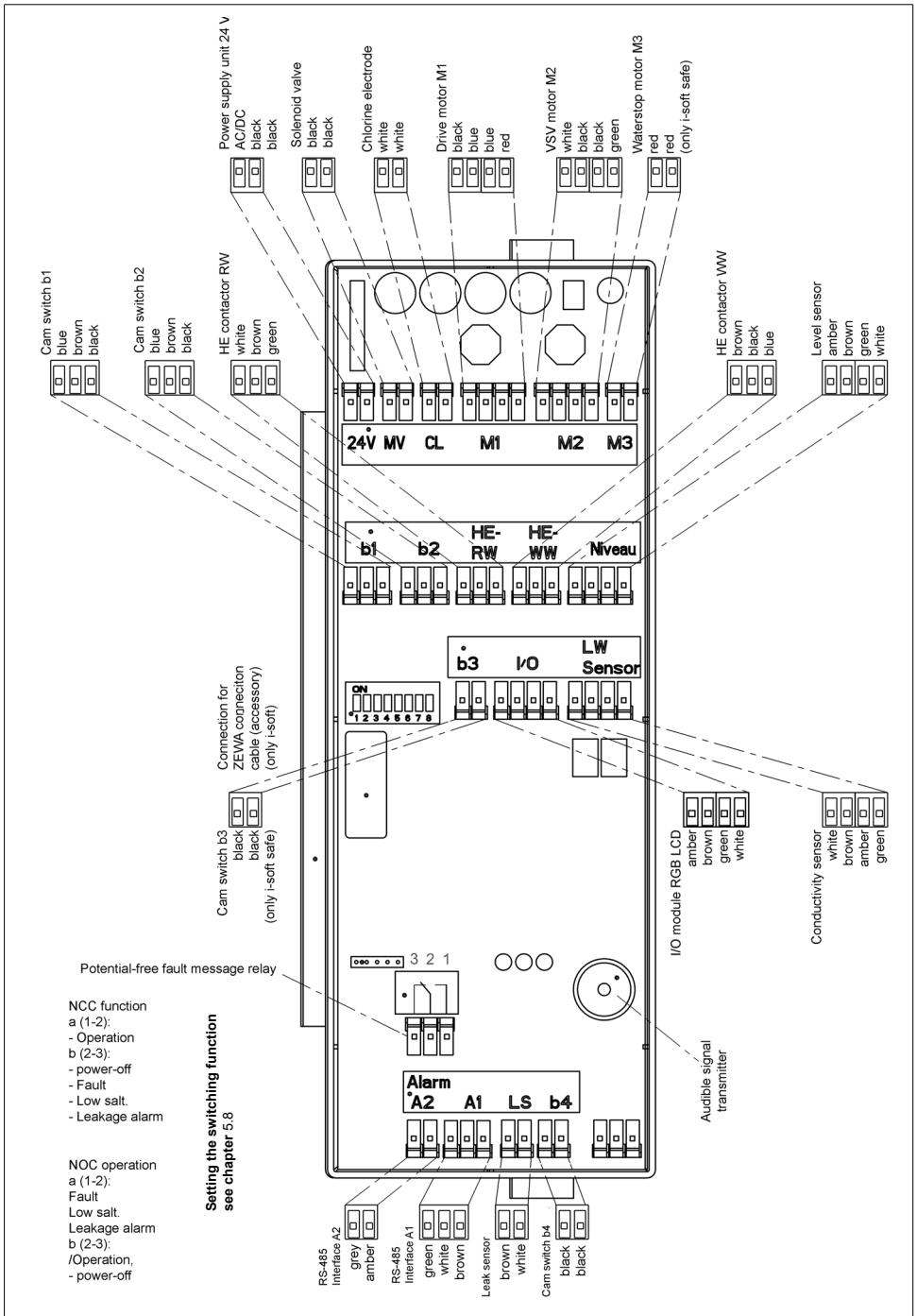


Fig. 19: Electronic control unit with fault message relay

10 Spare parts

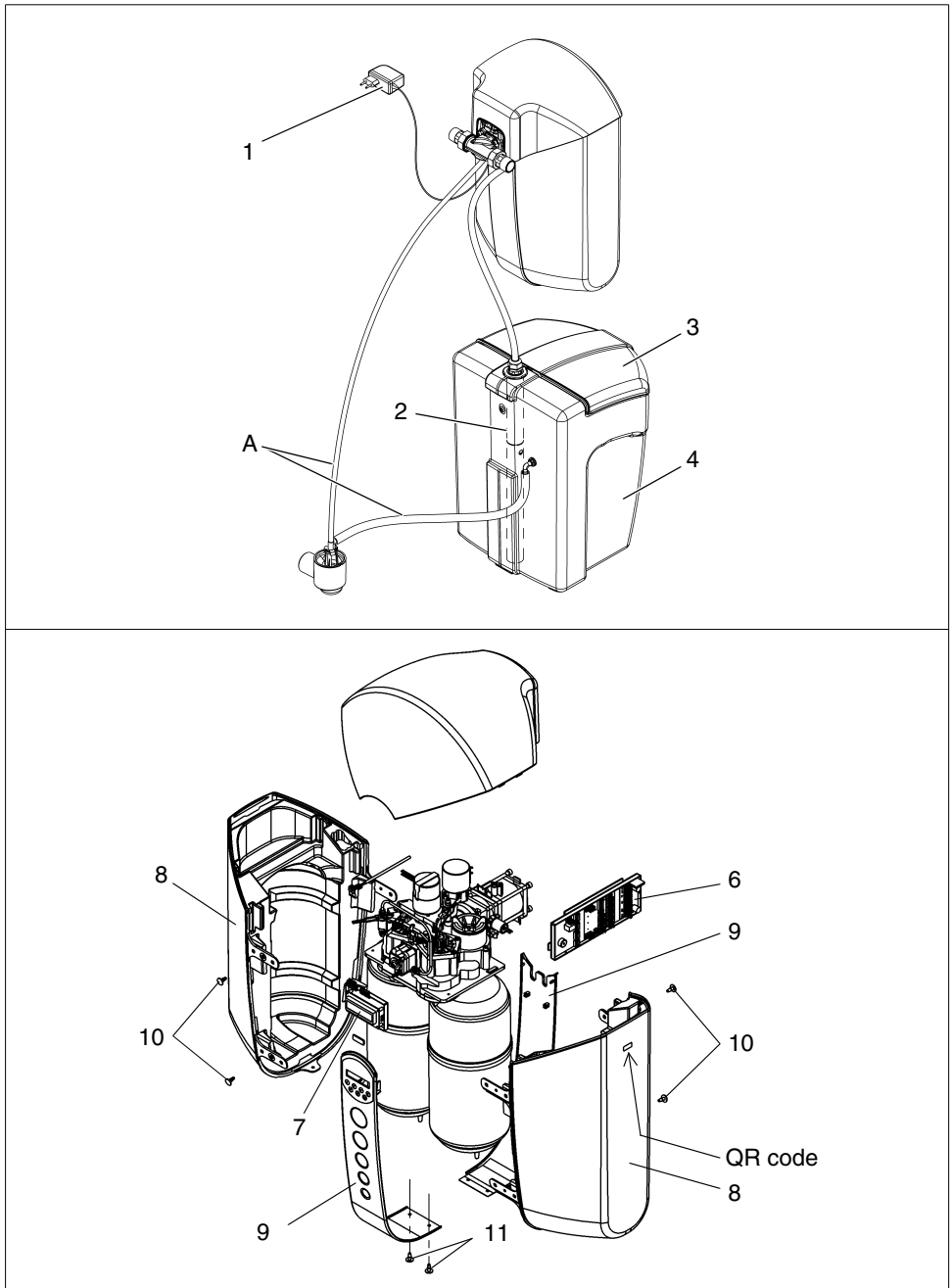


Fig. 20: Spare parts JUDO i-soft TGA 2

Spare parts list i-soft TGA 2

Item	Designation (recommended average replacement interval for wear part [*])	Pcs	Art. no.	AU ¹⁾
	Wear part set "Conductivity sensor and intake strainer" **	1	2201382	82
	Wear part set "Pressure regulator" ****	1	2200582	88
	Spare part set "Injector"	1	2201470	78
	Spare part set "Hoses, complete"	1	2200012	25
1	Power supply unit 24 V DC export	1	2210560	65
2	Lance	1	2202006	190
3	Cover of salt reservoir	1	2201480	35
4	Salt reservoir	1	2201986	AU ²⁾
6	Electronic control unit	1	2201875	315
7	I/O module 2x16 RGB LCD	1	2201847	149
8	Cover panel (including 4 snap rivets item 10)	1	2201487	398
9	Middle faceplate (including 2 screw rivets item 11 and membrane keyboard)	1	2201885	184
10	Snap rivet (set with 6 pieces)	1	2210546	7
11	Screw rivet (set with 2 pieces)	1	2202045	9

1) AU = accounting unit

2) Accounting unit not specified at the time of going to press.

Replacement interval: ** = 2 years, **** = 4 years

11 Disposal

Packaging waste is to be sent to the local recycling system.

To protect environment, old appliances and used batteries must not be disposed of with household waste. Instead, use the local collection and return points, which are committed to free and environmentally sound disposal.



12 Customer service



JUDO Wasseraufbereitung GmbH

Postfach 380 • D-71351 Winnenden

Tel. +49 (0)7195 / 692-0

e-mail: info@judo.eu • judo.eu



JUDO Wasseraufbereitung GmbH • Niederlassung Österreich

Josef-Sandhofer-Straße 15 • A-2000 Stockerau

Tel. +43 (0)22 66 / 6 40 78 • Fax +43 (0)22 66 / 6 40 79

e-mail: info@judo-online.at • judo-online.at



JUDO Wasseraufbereitung AG

Industriestrasse 15 • CH-4410 Liestal

Tel. +41 (0)61 906 40 50 • Fax +41 (0)61 906 40 59

e-mail: info@judo-online.ch • judo-online.ch



JUDO Wasseraufbereitung GmbH • Filiaal - Filiale BeNeLux

Laarbeeklaan - Av. du Laerbeek, 72 A1 • B-1090 Brussel - Bruxelles

Tel./Tél. +32 (0)24 60 12 88 • Fax +32 (0)24 61 18 85

e-mail: info.benelux@judo.eu • judo.eu



JUDO France S.à.r.L

76 Rue de la Plaine des Bouchers (Technosud) • F-67100 Strasbourg

Tel. +33 (0)3 88 65 93 94 • Fax +33 (0)3 88 65 98 49

e-mail : info@judo.fr • judo.fr

Installed by:

JUDO ECO-SAFE The leakage protection to be combined with the backwash protective filters of the filter range EC.	JUDO JULIA Metering pump for JUL mineral solution against corrosion (brown water) and lime deposits.	JUDO HEIFI-TOP Backwash protective filter to be used in the heating-circuit in a one-family or multi-family dwelling. Removes sludge and enclosed gases.
JUDO SPEEDYMAT-LongLife Automatic backwash protective filter in the long-life class with patented ceramic flushing valve backwashing technique.		JUDO JUKOMAT-LongLife Automatic domestic water station in the long-life class with patented ceramic flushing valve backwashing technique.

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