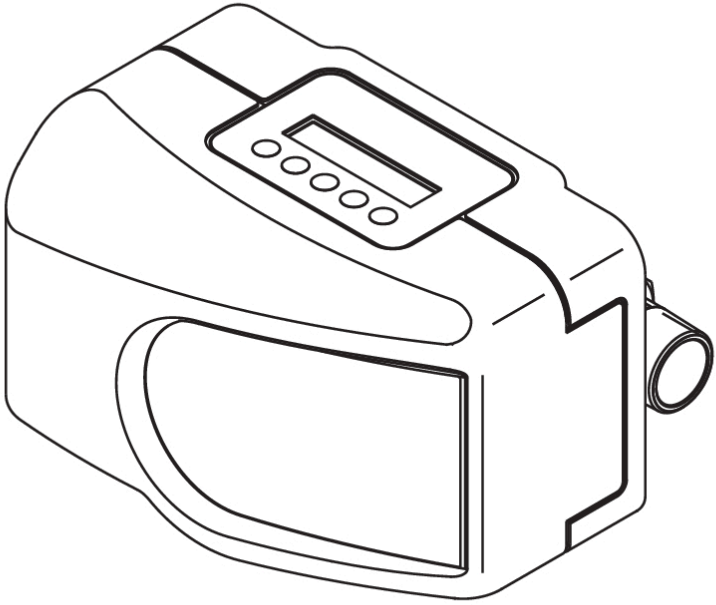
Installation and operating instructions

JUDO PIPE-CARE SYSTEM

Micro leakage protection system ¾" - 1¼"
Valid for: EU-countries and Switzerland
Language: English



Read before use and store!

CE

Queries, orders, customer service

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Dear customers,

Thank you for the confidence you have shown in us by purchasing this product. You have purchased a state-of-the-art device. It has been carefully checked prior to delivery. Nevertheless, if difficulties occur, please contact the closest customer service (see chapter Customer service).

These installation and operating instructions are intended for both installers, who are in charge of installing, maintaining or repairing the device, and for the operators of the device.

Contents

1 Safety

These operating instructions must always be available at the place of use of the device.

1.1 Intended use

The device is intended to shut off the water supply to drinking water systems, upon exceeding of the settable values for

- maximum withdrawal time
- maximum water quantity
- maximum water volume flow

for protection against water damage, water loss and unwanted water consumption.

It can be installed in all commercially available drinking water pipes. Installation and use are subject to the applicable national conditions.

1.2 Application limits

1.2.1 Water quality

The water must comply with the European Drinking Water Directive (98/83/EC). Before using the device with water that does not comply with this Directive, it is essential to consult the manufacturer.

1.2.2 Water pressure

CAUTION
The water pressure must not exceed 16 bar input pressure. The device must not be installed if the mains pressure is above 16 bar (even for a short time)!

Nominal pressure	PN 16

1.2.3 Water and ambient temperature

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

1.3 Safety instructions

DANGER

The device could reduce or cut water supply for equipment downstream requiring constant readiness for water withdrawal (e.g. thermal flow protection, sprinkler system).
This could result in fires or explosions.
If there are downstream safety devices and the water supply line to these devices does not branch off upstream of the device, then the device must not be installed!

DANGER

The motorised ball valve is installed on the rear side of the device. When the device is not installed, the ball valve can be reached with the finger through the opening on the rear.
If the device is commissioned or connected to the mains without being installed, there is a risk of crushing due to rotating parts.
Never operate the device or connect it to the electrical mains if it is not fully installed!

Never put your finger in the opening on the rear side of the device!

1.3.1 Electrical danger

Risk of electric shock

Only the supplied power supply unit may be used to connect the unit to the power supply. This reduces the mains voltage for operating the electronics to a harmless low voltage of 24 V.

A splash-proof socket above the device, at a distance of no more than 1.5 m, is required for connection to the mains, in accordance with the legal regulations for wet rooms.

The power supply unit must be disconnected to make the electrical installation.

1.3.2 Warning of property damage

WARNING
Risk of water damage or damage to property

The device may only be installed by qualified technical personnel.

The installation room must be dry and free from frost.

The ambient temperature must not exceed 30 °C! In higher temperatures or direct sunlight, material damage may occur up to and including breakage of device parts.

The pipe must be able to safely support the device (weight: see chapter 8). If necessary, the pipes must be provided with additional fastenings or support.

If no bypass valve is installed, a shut-off valve must be installed upstream and downstream of the device in order to interrupt the water supply during installation, maintenance, repair or malfunction of the device.

For the installation of the device in domestic water piping, only use the supplied built-in rotary flange (see chapter(siehe Kapitel 3.2).

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 to the pipe or the rotary flange fitting up to and including breaks can result.

For proper sealing the profile of the profile flange seal must point towards the rotary flange fitting (siehe Figure 4).

Only operate the device in a technically faultless condition:

- **Check for damage prior to installation.**
- **Immediately have any malfunctions in operation rectified by qualified technical personnel.**

The appliance must not be exposed to strong vibrations.

The mains voltage must not be interrupted (e.g. via a light switch). If the device is not permanently supplied with power,

- **a possible leakage cannot be detected.**
- **the leakage protection cannot close in the event of a leakage.**

Persons who, due to their physical, sensory or mental abilities or their inexperience or lack of knowledge, are unable to operate the device safely may not operate it without supervision or instruction from a responsible person.

After the leakage protection has closed due to a limit being exceeded, first check whether there is a leak before opening the leakage protection again.

If there is a device for hot water preparation (in particular a gas or electrically operated instantaneous water heater or a heating boiler), the manufacturer's instructions for the water heater must

be observed before opening the leakage protection (instructions for venting).

Do not use household cleaning agents to clean the outside of the device, but only use clear water to avoid embrittlement of the plastic.

The device may only be repaired by qualified technical personnel.

Only use original spare parts for repairs.

Before performing work on the device that goes beyond pure operational use, the device must be depressurised! If this is ignored, the result may be uncontrolled escape of water resulting in water damage to the building/home.

If the device is removed due to an interruption of operation:

- **Protect the flange surfaces against damage to ensure proper sealing.**
- **Protect the device from dirt so as not to impair drinking water hygiene.**
- **Store the device in a frost-free place to prevent damage caused by freezing water and leakage.**

Unauthorised conversions and changes are forbidden for safety reasons. These can impair the functioning of the device, leading to leaks and, in the worse case scenario, to bursting of the device.

1.4 Symbols used

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

	Indication of existing dangers
	Warning of electric voltage
	User tips and other information

Instructions attached directly to the device, e.g.:

- Direction of flow (arrow)
- Type label
- Cleaning information

must be observed and maintained in legible condition.

1.5 Units used

Unit	Conversion
bar	1 bar = 10^5 Pa = 0.1 N/mm^2
¾"	DN 20
1"	DN 25
1¼"	DN 32

1.6 Normative basics

This device has been designed and manufactured according to

- DIN 3553 (Leakage protection systems with sensors and automated shut-off devices, requirements and tests)

2 Product information

2.1 Scope of supply

- Micro leakage protection system, pre-assembled
- Installation and operating instructions

2.2 Function description

The device measures the water flow and monitors the set limit values for water withdrawal. Water flow is shut off if limit values are exceeded.

Monitored limit values:

- maximum water quantity in litres
- maximum water flow in litres per hour
- maximum water withdrawal time in minutes

These limit values

- are automatically determined and set in a learning mode phase during the flow of the first 10 m³ of water.
- can also be modified via the menu.

The teach-in mode can be restarted at any moment when requested.

To ensure fault-free operation, the leakage protection system is equipped with automatic mechanisms that prevent faults.

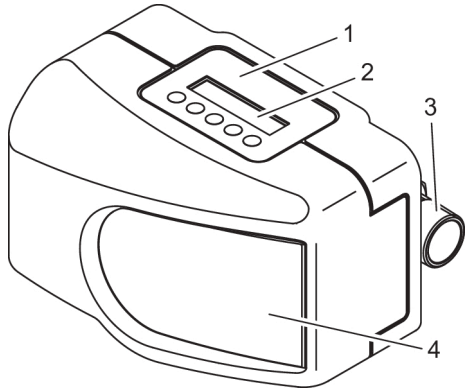


Fig. 1: Function description

1 Control panel
2 Display
3 Rotary flange fitting
4 Nameplate with instructions for emergency open function

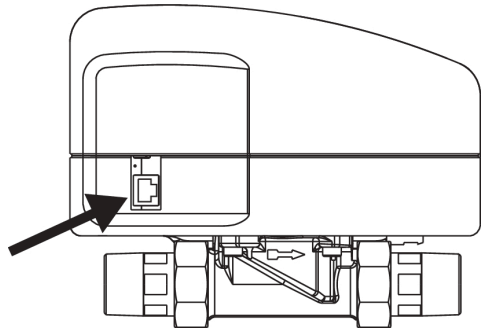


Fig. 2: View from below: LAN cable connection

The LAN connection is available if the connectivity module (available as an accessory) has been installed.

2.2.1 Control panel

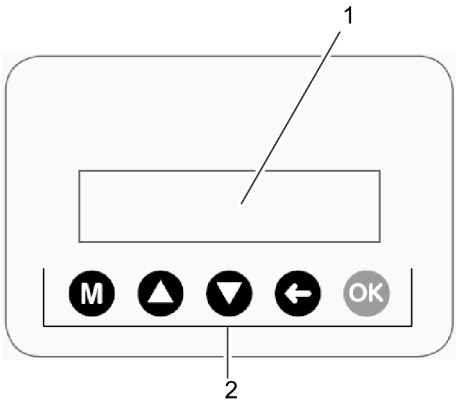


Fig. 3: Leakage protection control panel

1 Two line display
2 Keyboard

The leakage protection unit is operated via the keyboard.

Functions of the individual keys:

M	***Menu* key** - Access to the *Setting* menu
▲	**Arrow key** - Scroll up in the menu - Increase value
▼	**Arrow key** - Scroll down in the menu - Reduce value
←	***Back* key** - Jump one menu level back without saving
OK	**OK key** - Access to the sub-menu - Accept value and save, then jump one menu level back - Acknowledge message

Meaning of the display's background lighting:

None:	Operating state without water flow
Blue flashing light:	Operating state with water flow
White:	upon pressing of a key
Yellow:	for warning messages
Red:	for fault indications

2.2.2 Sleep mode

Limit value monitoring can be deactivated during a pre-set time to allow transport of large water volumes (for garden irrigation, filling pools etc.).

2.2.3 Vacation mode

During longer absences, the limit values can be easily reduced or the water supply can be completely shut off.

2.2.4 Micro leakage testing

Micro leakage testing can be performed to detect leaks in the water pipe system even if they are very small.

2.2.5 Emergency-open function

In case of emergency (e.g. power failure during a building fire), the leakage protection shut-off valve can be opened and shut without power supply (see 2.2.5).

2.2.6 Remote monitoring and control

The device can be integrated in building control systems (see chapter 5).

2.3 Materials used

The materials and substances used are resistant to the physical, chemical and cor-

rosive loads expected to be encountered in drinking water.

The materials and substances in contact with drinking water fulfill the requirements of §17 of the German Drinking Water Ordinance, which are available in concretised form in the current assessment bases and guidelines of the Umweltbundesamt (German Federal Environment Agency).

3 Installation

CAUTION
The device may only be installed by qualified technical personnel.

Installation of the device upstream of the domestic water meter is forbidden.

3.1 Conditions

CAUTION
Risk of property damage or water damage!

The pipe must be able to safely support the device (weight: see chapter 8). If necessary, the pipes must be provided with additional fastenings or support.

3.1.1 Requirements for the place of installation

CAUTION
The installation room must be dry and free from frost.

The ambient temperature must not exceed 30 °C! In higher temperatures or direct sunlight, material damage may occur up to and including breakage of device parts.

If no bypass valve is installed, a shut-off valve must be installed upstream and downstream of the device in order to interrupt the water supply during installation, maintenance, repair or malfunction of the device.

A splash-proof socket above the device, at a distance of no more than 1.5 m, is required for connection to the mains, in accordance with the legal regulations for wet rooms.

The appliance must not be exposed to strong vibrations.

In general the device is installed upstream of the protective filter.

3.2 Installation of the rotary flange fitting

CAUTION
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 to the pipe or the rotary flange fitting up to and including breaks can result.

The built-in rotary flange serves as a connecting element between the domestic water installation and the device. It is suitable both for horizontal and vertical pipes.

It consists of:

- rotary flange fitting
- profile flange seal
- two union nuts
- two pipe sockets
- two flat seals.

Attention: Install the built-in rotary flange in the flow direction! This is indicated by an arrow integral with the casting.

If the installation is twisted, a functioning of the device is not possible.

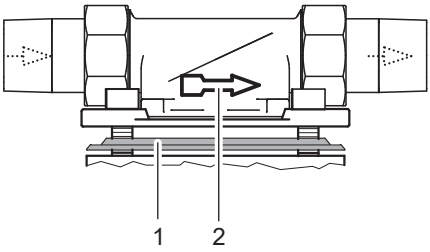


Fig. 4: Rotary flange fitting

1 Profile flange seal
2 Flow direction arrow

Procedure:

1. Loosen the two union nuts of the built-in rotary flange and remove them with the pipe sockets from the built-in rotary flange fitting.
2. Fit the two pipe sockets with union nut into the pipeline.

3.3 Installation of the device

CAUTION
For proper sealing the profile of the profile flange seal must point towards the rotary flange fitting (siehe Figure 4).

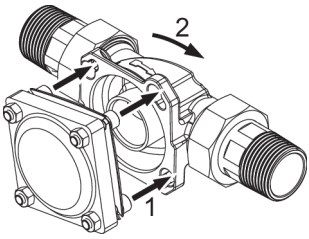


Fig. 5: Placing and engaging the device (fastening principle)

1 Feed screws through
2 Turn clockwise to engage

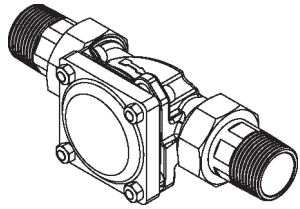


Fig. 6: Device connection engaged (fastening principle)

Initial situation:

- The rotary flange fitting is installed in the pipe and still closed with the mounting cover.

Do not undo the screws on the device!

1. Open the shut-off valve upstream of the installation location or the stopcock and flush the pipe with the newly installed rotary flange fitting by opening a downstream withdrawal point.
2. Close the withdrawal point again and shut off the water again upstream of the installation location (stopcock or shut-off valve).
3. Remove the mounting cover of the rotary flange fitting AND the respective fastening screws.
4. Insert the heads of the four flange screws of the device through the bayonet holes on the rotary flange fitting (see Figure 5).
5. Turn the device in a clockwise direction as far as it will go (see Figure 5 and Figure 6).
6. Tighten the four flange screws.

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

3.4 Commissioning

Prior to initial commissioning (or to commissioning after maintenance work) fill the installed device with water and vent:

1. Open the upstream shut-off valve to fill the device with water. The device is now under mains pressure.
2. Fully open a water tap downstream of the device. After a flushing water quantity of about 5 litres, the device is bled.
3. Plug the power supply unit in.
   The control system checks the position of the shut-off valve. If the shut-off valve is open, the display shows:

```
Initial position
leakage protect
```

→ The device is ready for operation.

4 Operation

4.1 Status display

During normal operation the status display is displayed:

```
Leakage protect
opened
```

Letter “L“ at the end of the 2nd line:

- “L”: The device is in learning mode (see chapter 4.4.3).

4.2 Possible settings

The following settings can be made via the key *Menu* (Selection *Setting*):

Submenu item	Setting
Language	German, English, French, Dutch, Italian
Leakage protection (see chapter 4.4)	Limit values Vacation mode Sleepmode time Auto. testing (micro leakage testing)
Date	Day / month / year
Time	Hours / minutes
Backlight	10 % to 100 %, in 10% steps
Contrast	10 % to 100 %, in 10% steps
Tone	Off / on / interval 6 h
Message relay	Set fault indication relay as normally closed contact / normally open contact
Factory setting	Recreate factory setting; see chapter 4.2.1)

Procedure:

1. Press *Menu* key.
2. Navigate to *Setting* using the arrow keys and confirm with the *OK* key.
3. Navigate to the desired setting (e.g. date) and confirm with the *OK* key.
4. Using the arrow keys navigate to the desired setting (e.g. set date) and confirm with the *OK* key.

4.2.1 Factory settings

The device is set as follows when delivered:

Setting for:	Set to:
Language	English
Leakage protect - limit value for maximum withdrawn time	30 min
Leakage protect - limit value for max. water flow	4000 L/h
Leakage protect - limit value for maximum water quantity	500 L
Leakage protect - vacation mode	Vacation mode on, U1
Leakage protect - Sleepmode time	6 h
Leakage protect - Auto testing (micro leakage testing)	Auto testing off
Backlight	80 %
Contrast	50%
Tone - leakage warning	on
Tone - fault	6 h
Message relay	Normally closed

Upon resetting to the factory settings, the above mentioned settings are recreated.

Resetting to factory setting

All settings that have been made can be reset to the factory setting as follows:

1. Press *MENU* key.
2. Using the arrow keys navigate to the *Setting* menu item and press OK.
3. Using the arrow keys navigate to the *Factory setting* menu item and press OK.
4. Using the arrow keys select the following setting and confirm with the OK key:

```
Factory setting
<yes>
```

→ The standard settings are recreated (see chapter4.2.1).

4.3 *Menu* key - selectable functions and settings

The following can be selected or set via the menu key:

- Close (manually close leakage protection)
- Sleep mode (pause limit value monitoring for a specified time)
- Vacation mode (limit values can be easily reduced or the water supply can be completely shut off)
- Micro leakage testing
- Learn mode (determine limit values from water flow)
- Settings (see chapter 4.2)
- Operating data
- Info

Procedure:

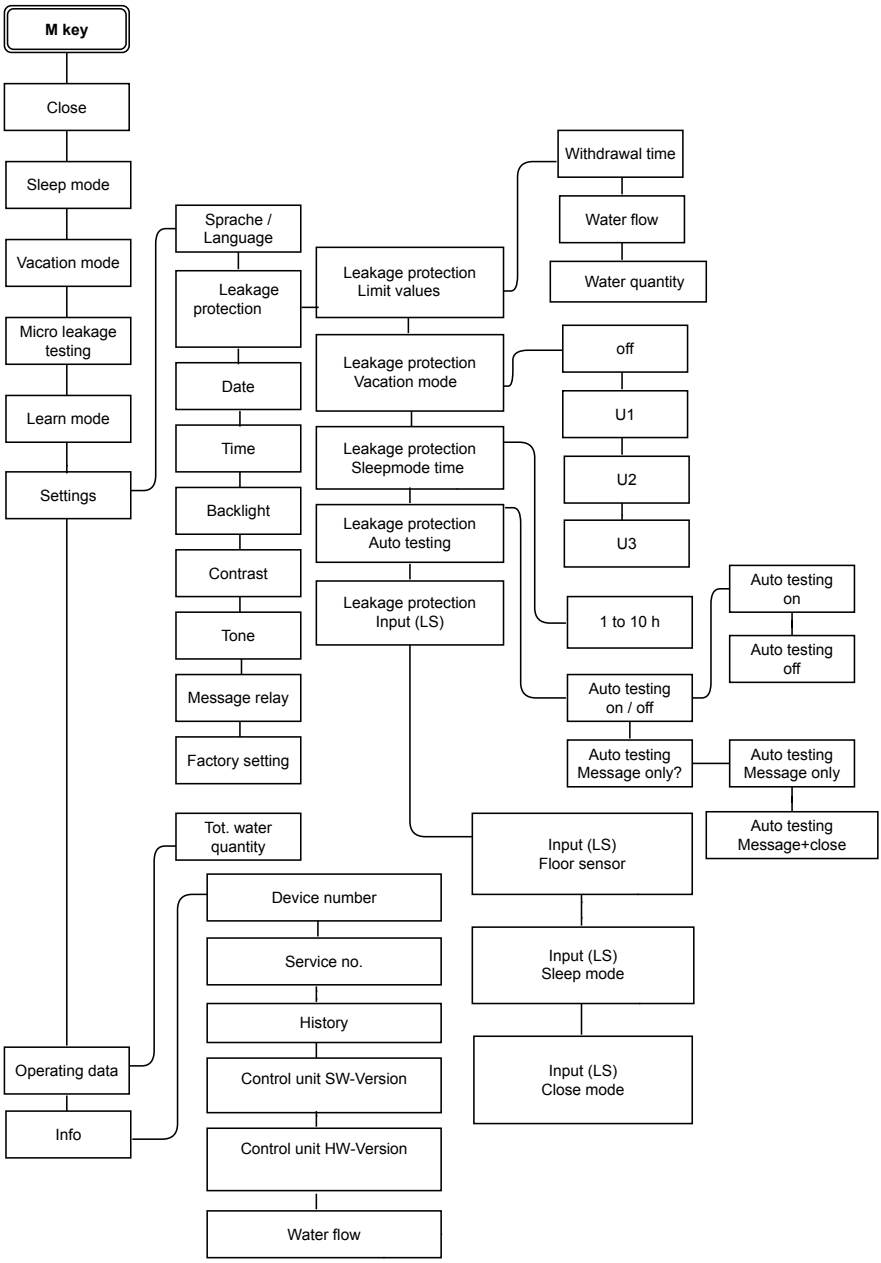
1. Press the menu key, to call the main menu.

2. Use the keys ▲ and ▼ to navigate through the sub-menu. Confirm the desired sub-menu item with the **OK** key.

3. Then use the keys ▲ or ▼ to select the desired setting and confirm with the **OK** button.

→ The desired setting is saved.

4.3.1 Menu structure



4.3.2 Manually close or open leakage protection

Close leakage protection:

1. Press *Menu* key.
2. Using the arrow keys, select menu item *Close* and press key *OK*. The following appears on the display:

```
Leakage protect
close <OK>
```

3. Press *OK* to confirm. The following appears on the display in an alternating manner (with a yellow background):

```
Leakage protect
closed
```

```
To open
press <OK>
```

→ Water supply is shut off by the leakage protection system.

The *Menu* key is deactivated in this state.

To open the leakage protection system:

▶ Press *OK* key.

→ The leakage protection system opens for water supply. The default status display appears.

4.3.3 Temporary deactivation of the leakage protection (sleep-mode)

Situations in which large water volumes are required on a one-off basis, e.g.

- Watering the garden
- Filling the swimming pool
- Filling the garden pond

may require the switching off of limit value monitoring. This is referred to as "Sleep mode".

No monitoring of water consumption takes place in sleep mode.

Activation of sleep mode:

1. Press *Menu* key.
2. Select *sleep mode* using the arrow keys and confirm with the *OK* key.
   The following appears on the display:

```
Start
sleep mode <OK>
```

3. Press *OK* to confirm.

→ Sleep mode starts. The following appears on the display in an alternating manner (with a yellow background):

```
Leakage protect.
6 hours off
```

```
To end
press <OK>
```

The countdown of the displayed sleep mode time runs. During this time, limit value monitoring is paused.

The default sleep mode time of 6 h can be changed in hour steps to another value in the range 1 to 10 h.

After the sleep mode time has elapsed, limit value monitoring starts again and the default status display appears.

The *Menu* key is deactivated in sleep mode.

Cancel sleep mode:

▶ Press *OK* key.

→ Normal limit value monitoring starts again. The default status display appears.

4.3.4 Activation of vacation mode

During longer absences, the limit values for water withdrawal can be reduced or the water supply can be completely shut off.

There are two possibilities:

- immediate manual activation
- automatic activation after approx. 72 hours without water flow

Vacation mode remains active until key *OK* is pressed (the vacation mode message then disappears).

Key *Menu* is deactivated during vacation mode.

I. Immediate activation of vacation mode (manual)

1. Press *Menu* key.

2. Select *Vacation mode* using the arrow keys and confirm with the *OK* key. The following appears on the display:

```
Vacation mode
Start <OK>
```

3. Press *OK* to confirm.

→ Vacation mode is activated. The following appears on the display in an alternating manner (with a yellow background):

```
Leakage protect.
in vacation mode
```

```
To end
press <OK>
```

II. Setting vacation mode automatic activation

There are four different settings for automatic activation:

- ° off (no automatic activation of vacation mode)
- ° U1 (= limit values 500 L/h • 50 L • 5 min)
- ° U2 (= limit values 1000 L/h • 100 L • 10 min)
- ° U3 (= shut-off valve closed - no water flow)

1. Press *Menu* key.

2. Navigate to *Setting* using the arrow keys and confirm with the *OK* key.

3. Navigate to *Leakage protection* using the arrow keys and confirm with the *OK* key.

4. Navigate to *Vacation mode Leakage protection* using the arrow keys and

confirm with the *OK* key.

5. Select die desired setting (off • U1 • U2 • U3) using the arrow keys and confirm with the *OK* key.

→ The selected vacation mode is saved.

To terminate vacation mode:

▶ Press *OK* key.

→ Vacation mode is terminated. Normal limit value monitoring starts again. The default status display appears.

4.3.5 Micro leakage testing, manual or automatic

The device also has the option of being able to promptly detect small leaks.

Micro leakage testing can be started manually at any time (see Starting micro leakage testing manually, page 19), but can also take place automatically (see Performing small leakage testing automatically, page 17).

If the leak cannot be found, even though a micro leakage is repeatedly detected, the installer or a professional company should carry out a leak detection on the installation, in order to find any possible leaks.

Automatic micro leakage testing is deactivated upon delivery and can be activated if desired.

If automatic micro leakage testing is activated with subsequent setting to message and closing of the water supply, it is possible that frequent shutting off of the water supply can occur because, based on experience, very small leaks are not an infrequent occurrence.

A preceding period of at least one hour without any water flow is necessary so that a micro leakage test can run.

Performing small leakage testing automatically

Micro leakage testing can also be performed automatically; in this case testing is performed daily without anything further to do.

The following setting is necessary for this:

1. Press the *menu* key.

2. Select *Setting* using the arrow keys and confirm with the *OK* key.

```
Main menue
• Setting
```

3. Select *Leakage protect* using the arrow keys and confirm with the *OK* key.

```
Setting
Leakage protect
```

4. Select *Auto. testing* using the arrow keys and confirm with the *OK* key.

```
Leakage protect
Auto. testing
```

5. Using the arrow keys select *on* or *off*, to activate or deactivate automatic micro leakage testing. Save the selected setting with the *OK* key.

```
Auto. testing
• on
```

```
Auto. testing
• off
```

→ The selected setting is saved.

Possible settings for automatic micro leakage testing

The following settings can be selected for the occurrence of a micro leakage that has been detected via automatic micro leakage testing:

- Micro leakage message on the display
- Micro leakage message on the display and additional shutting off of the water supply

1. Press the Main menue key.

2. Select *Setting* using the arrow keys and confirm with the *OK* key.

```
Main menue
• Setting
```

3. Select *Leakage protect* using the arrow keys and confirm with the *OK* key.

```
Setting
Leakage protect
```

4. Select *Auto testing* using the arrow keys and confirm with the *OK* key.

```
Leakage protect
• Auto testing
```

5. Select *Message only?* using the arrow keys and confirm with the *OK* key.

```
Auto testing
• Message only?
```

6. Select the desired setting using the arrow keys and confirm with the *OK* key:

```
Auto testing
Message only
```

```
Auto testing
Message+close
```

→ The selected setting is saved.

Starting micro leakage testing manually

Prerequisite: all water withdrawal points must be closed during micro leakage testing.

1. Press *Menu* key.
2. Select *Leakage protection* using the arrow keys and confirm with the OK key.

```
Main menue
• Leakage pro-
tect
```

3. Select *micro leakage* using the arrow keys and confirm with the OK key.

```
Leakage protect
• Micro leakage
testing
```

→ Micro leakage testing starts.

If no micro leakage has been detected, the display alternates between

```
No leakage
occurred
```

```
To acknowledge
press <OK>
```

→ The display returns to the operating display.

If no micro leakage has been detected, the display alternates between

```
Small leakage
occurred
```

```
To acknowledge
press <OK>
```

→ The display returns to the operating display.

Micro leakage testing can be started manually at any time even when a regular automatic test had been set.

Prerequisite for automatically running micro leakage testing is a period of
at least one hour, in which no water withdrawal takes place.

4.4 Setting limit values

Exceeding of the set limit values for

- maximum water quantity
- maximum water flow
- maximum water withdrawal time

leads to shutting off of the water supply.

When setting the limit values, consideration must be given to devices that depend on a sometimes very low continuous water supply over a long period of time to ensure their proper functioning (e.g. certain tumble dryers, etc.).

It is also possible to operate such devices using sleep mode of the micro leakage protection system.

4.4.1 Factory setting

The table shows the factory set limit values at which the device shuts off the water supply:

Shut-off criterion	Value / unit
Maximum water quantity (uninterrupted)	500 litres (L)
Maximum water flow (uninterrupted)	4000 litres per hour (L/h)
Maximum water withdrawal time	30 minutes (min)

Table 1: Factory-set limit values

If desired, allow adjustment of the limit values in two different manners:

- Manual (see chapter 4.4.2)
- Via learning mode (see chapter 4.4.3).

4.4.2 Changing limit values manually

Procedure:

1. Press *Menu* key.
2. Navigate to *Setting* using the arrow keys and confirm with the *OK* key.
3. Navigate to *Leakage protection* using the arrow keys and confirm with the *OK* key.
4. Navigate to *Leakage protect/limit values* using the arrow keys and confirm with the *OK* key.

   Then the individual shut-off criteria can be selected and set to the desired value inside the ranges specified in the table (select via arrow key, confirm with *OK*).

Shut-off criterion	Setting range	Step size
Max. withdrawn time	10 min to 10 h, unlimited	10 min
Max. water flow	500 to 5000 L/h, unlimited	500 L/h
Max. water quantity	100 to 3000 L, unlimited	100 L

Table 2: Adjustment ranges of the limit values

4.4.3 Determine and set limit values automatically: Learn mode

Reasonable limit value settings corresponding to the individual water consumption are calculated and saved from the factory limit settings and the water withdrawals during the first 10 m³ of water flow.

The learning mode phase is indicated by *L10* at the end of the second line of the display.

The value after the *L* indicates how many m³ water flow are still outstanding before learning mode will be complete.

Starting learning mode:

1. Press *Menu* key.
2. Navigate to *learning mode* using the arrow keys and press *OK* key.

→ Learning mode starts

During learning mode, the following are output to the display in alternation:

```
Learning mode
is terminated
```

```
New limit values
Accept <OK>
```

→ Confirm the display with *OK*, if the limit values determined in learning mode are to be applied.

```
New limit values
Ignore <OK>
```

→ Confirm the display with *OK*, if the limit values determined in learning mode are **not** to be applied. In this case, the currently set limit values are then retained.

Monitoring of the limit values also takes place during the learning mode phase, based on the limit values that are actually set.

Exceeding of the set limit value or a possibly active vacation mode has no influence on the determination of the limit values by learning mode.

Learning mode can subsequently be repeated at any time, e.g. if an exceptionally high water withdrawal has taken place during the learning phase.

4.5 Automatic operation

Water consumption is continuously monitored. If during drawing of water one of these limits is exceeded, the device shut-off valve closes.

4.6 Automatic shut-off of the water supply

CAUTION
After the leakage protection has closed due to a limit being exceeded, first check whether there is a leak before opening the leakage protection again.

If there is a device for hot water preparation (in particular a gas or electrically operated instantaneous water heater or a heating boiler), the manufacturer's instructions for the water heater must be observed before opening the leakage protection (instructions for venting).

If one of the set limit values has been exceeded, the water supply is shut off and the display shows the type of the limit value overshoot:

```
Leakage protect
closed
```

```
Water quantity
exceeded
```

or

```
Water flow
exceeded
```

or

```
Withdrawal time
exceeded
```

```
To open
press <OK>
```

4.7 Emergency-open function

The leakage protection shut-off valve can be opened and shut without power supply (e.g. in case of power failure during a building fire). This is particularly important when fire-fighting water is required.

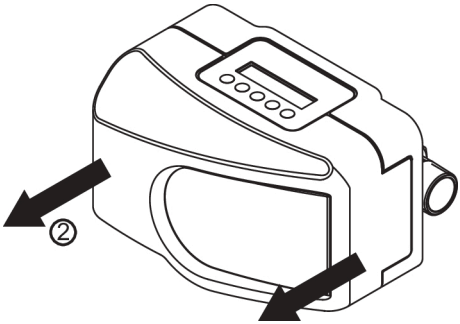


Fig. 7: Take off the casing in a forward direction

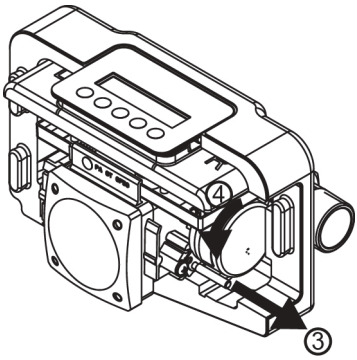


Fig. 8: Remove the red locking pin and rotate the motor

Open the shut-off valve manually as follows:

1. Unplug the power supply unit.
2. Take off the casing in a forward direction (see Figure 7).
3. Remove the red locking pin (see Figure 8).
4. Turn the motor **counter-clockwise** through approximately 90 degrees (¼ of a turn; see Figure 8). It is not necessary to release any screws to do this.

→ The shut-off valve is opened.

For recommissioning perform the reverse sequence.

4.8 Displaying operating data and information

How to display the total water volume since commissioning:

1. Press *Menu* key.
2. Navigate to *Operating data* using the arrow and confirm with the *OK* key.

   The following appears on the display:

```
Total
water volume
```

3. Press *OK* to confirm.

→ The water volume that has flowed through since commissioning is displayed.

The following information about the device can be called up via the *Menu* key and the *Info* menu item:

- Type of limit value overshoot
- Device type
- Device ID
- Software version of the device control
- Measured values (actual water flow)
- Service department telephone number (+49 7195 692-0)
- Manufacturer

- History (events with date)

4.9 Conversions, changes

WARNING
Unauthorised conversions and changes are forbidden for safety reasons. These can impair the functioning of the device, leading to leaks and, in the worse case scenario, to bursting of the device.

Only the supplied power supply unit may be used to connect the unit to the power supply. This reduces the mains voltage for operating the electronics to a harmless low voltage of 24 V.

4.10 Maintenance, repair, spare parts

CAUTION
The device may only be installed by qualified technical personnel.

Only use original spare parts for repairs.

Before performing work on the device that goes beyond pure operational use, the device must be depressurised! If this is ignored, the result may be uncontrolled escape of water resulting in water damage to the building/home.

After unscrewing the device from the built-in rotary flange for maintenance or repair, leakage might occur if not properly re-attached. For reattachment, observe the instructions for mounting the device (see 3.3).

4.11 Temporary removal of the device

WARNING
If the device is removed due to an interruption of operation:

- **Protect the flange surfaces against damage to ensure proper sealing.**
- **Protect the device from dirt so as not to impair drinking water hygiene.**
- **Store the device in a frost-free place to prevent damage caused by freezing water and leakage.**

When recommissioning the device, proceed as with a new installation.

5 Remote control and Remote transmission of messages

The device may only be installed by qualified technical personnel.

The power supply unit must be disconnected to make the electrical installation.

The leakage protection system offers the following options:

- Connection with building control systems for forwarding of status or fault indications (see chapter 5.2)

5.1 External messages

The device has a potential-free output via which leakage protection messages and fault messages can be transmitted potential-free to a peripheral device.

5.2 Integration in building control systems

The leakage protection system can be integrated into a building control system (e.g. EIB / KNX, LCN or LON) via the floating signal relay.

The potential-free relay is connected to a binary bus coupler.

In this way, fault messages can be forwarded to the building control system.

6 Warning message / fault

The display indicates the type of limit value overshoot. An audible interval tone sounds unless the setting for the tones has been changed (see chapter 4.2).

Display	Possible cause	Remedy
Alternating: `Leakage protect closed`	Limit value has been exceeded.	First check whether a leak is present. If no leak can be identified: • Delete message (OK)
`Water quantity exceeded`	Hole or crack in a pipe or hose; water valve or flushing box valve not fully closed.	
or `Water flow exceeded`	Pipe break; Several withdrawal points opened simultaneously.	
or `Withdrawal time exceeded`	Hole or crack in a pipe or hose; Water tap or flushing box valve not fully closed.	
`To open press <OK>`		

Table 3: Help for warning / fault messages

Display	Possible cause	Remedy

Alternating:
`Leakage protect closed`
`Water quantity exceeded`
or
`Water flow exceeded`
or
`Withdrawal time exceeded`
`Current limit XXXX l/h`
`To open press <OK>`
`For setting press <▲/▼>`
	During learning mode a limit value was exceeded.	First check whether a leak is present. If no leak can be identified:
		• Delete message (OK)
		• Or optionally the current setting for the limit value can be displayed and changed using the arrow keys, and saved using the *OK* key.

Table 3: Help for warning / fault messages

Display	Possible cause	Remedy

Alternating:
`Leakage protect closed`
`Leakage sensor leakage warning`
`To open press <OK>`
	The connected floor sensor (accessory) has detected a leak.	First check whether a leak is present. If no leak can be identified:
		• Acknowledge message.

Alternating:
`Leakage protect closed`
`Small leakage occurred`
`To acknowledge press <OK>`
	During micro leakage testing, a micro leak has been detected.
	
	Possible causes e.g.
	• Dripping water tap
	• Leaking filling valve of a toilet cistern
	• Leaking water pipe
		Acknowledge message. If the cause cannot be identified, but the message is still regularly displayed: Call in a plumber to investigate the cause of the leak.

`No water flow for 15 days`	No water flow has occurred for 15 days (with setting vacation mode *off*).	If message correct: Press OK to delete the display. If message incorrect: Arrange for a functional test by the installer or JUDO service.
`Attention! Fault ........`	The device has a technical defect.	Inform the installer or JUDO service.

Table 3: Help for warning / fault messages

Deleting warning messages:

- Press OK key.
  or
- Disconnect the power supply unit from the socket and plug back in after about 5 seconds.

When contacting JUDO service always specify the device ID (identification number) (see chapter 4.8).

7 Servicing

7.1 Cleaning

CAUTION
Do not use household cleaning agents to clean the outside of the device, but only use clear water to avoid embrittlement of the plastic.

7.2 Warranty and maintenance

To ensure the process operates successfully as long as possible, regular inspection and routine servicing of the device are essential. Where home automation is concerned, this is governed by DIN EN 806-5.

At least every 6 months

- ▶ Perform a visual inspection on the device
- ▶ Check whether a status display or a warning message is displayed
- ▶ As a test, close and reopen the leakage protection (see chapter 4.3.2)

To achieve fault-free operation, the leakage protection system performs regular automatic processes the purpose of which is to protect important functional parts.

We recommend the conclusion of a maintenance contract, which is the best way to ensure a good operating function, even beyond the warranty period. The skilled tradesmen or the factory customer service are suitable partners for regular maintenance work and the supply of consumables and wear materials as well as for possible repairs.

8 Technical data

JUDO PIPE-CARE SYSTEM	Micro leakage protection system	Pipe connection area ¾" - 1¼"

The water to be filtered must comply with the European Drinking Water Directive.

Information about:		**Value**
Maximum ambient temperature		30 °C
Maximum water temperature		30 °C
Air humidity		non condensing
Pipe connection - nominal values		¾" / 1" / 1¼"
Order no.	JPCS ¾"	8140048
	JPCS 1"	8140049
	JPCS 1¼"	8140050
Weight	JPCS ¾"	2.3 kg
	JPCS 1"	2.5 kg
	JPCS 1¼"	3 kg
Nominal pressure [1)]		PN 16
Maximum operating pressure		16 bar
Rated flow	¾"	4 m³/h
	1"	5 m³/h
	1¼"	6 m³/h
Pressure loss at nominal flow	¾"	0.4 bar
	1"	0.6 bar
	1¼"	0.7 bar
Adjustable limit values	Maximum water quantity	100 - 3000 m³
	Maximum water flow	500 - 5000 L/min
	Maximum water withdrawal time	10 min - 10 h
Power connection		230 V / 50 Hz
Power consumption in operation		1 W
Power consumption at opening / closing		10 W

Information about:	Value
Protection class	IP 22

1) Nominal pressure (= pressure level that the appliance meets)

8.1 Installation dimensions

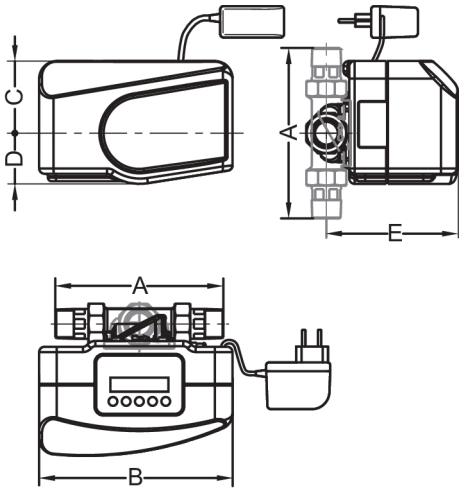


Fig. 9: Installation dimensions

	JPCS ¾"	JPCS 1"	JPCS 1¼"
A	180	195	230
B	220		
C	82		
D	58		
E	150		155

Table 4: Dimensions without unit in mm

A Installation length
B Width of the device
C Height above the pipe middle
D Height below the pipe middle
E Installation depth up to the pipe middle

8.2 Connection options

CAUTION
The device may only be installed by qualified technical personnel.

The power supply unit must be disconnected to make the electrical installation.

The micro leakage protection system can be extended by one of the following devices or functions using the leakage protection (LS) input:

- JUDO floor sensor (up to 9 pcs)

  The floor sensor triggers in the event of a water accumulation on the ground; the signal triggers the immediate shut-off of the water supply in the micro leakage protection system.

- Sleep mode

  For use with devices that depend on an uninterrupted water supply. Short-circuiting the input, e.g. by a relay contact or by a simple switch, causes the micro leakage protection system to stop monitoring the set limit values and interrupts vacation mode if it has been activated. After opening of the switch or relay contact, the originally set limit value monitoring is once again active.

- Close mode

  For use in the immediate closing of the water supply by an external switch or relay contact.

Attention!

- The operation of the leakage protection input must be set in the menu of the micro leakage protection system.

In the factory, the operating mode of the leakage protection system input is set to connection of one or more floor sensors.

Connection: see chapter 8.4

Change the type of connected device via the *M* key:

1. Press key M.
2. Select *Setting* using the arrow keys and confirm with the OK key.
3. Select *Leakage protection* and confirm.
4. Select *Leakage protection (LS) input* and confirm.
5. Select one of the following settings and confirm.

```
Input (LS)
• Floor sensor
```

or

```
Input (LS)
• Sleep mode
```

or

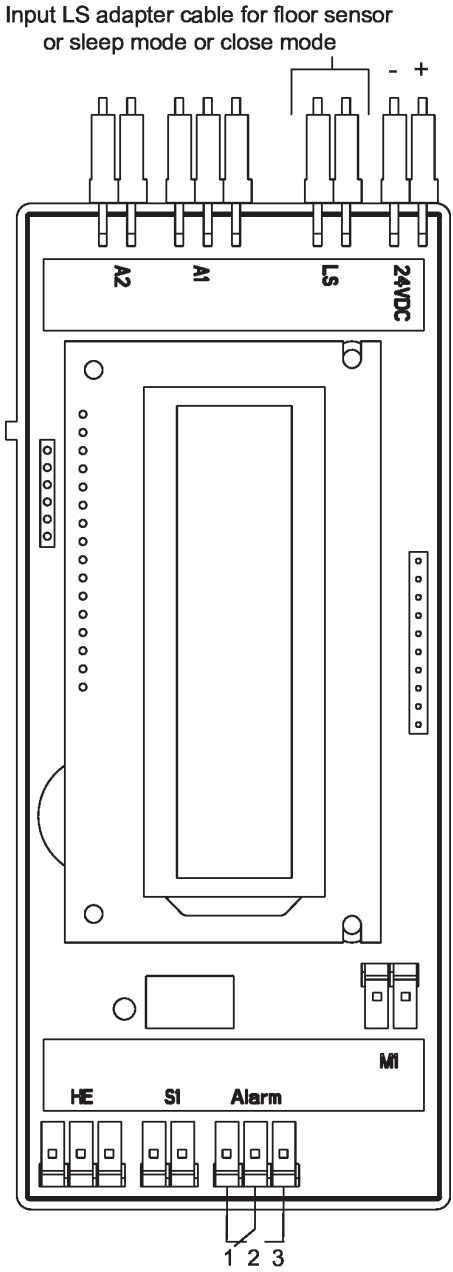
```
Input (LS)
• Close mode
```

→ The connection is set to the desired device type or the desired setup.

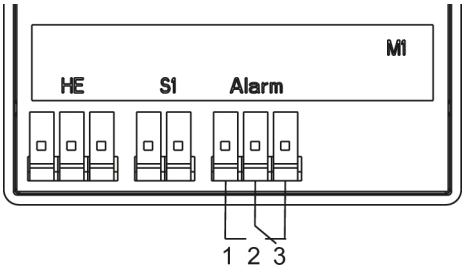
8.3 Accessories

- JUDO floor sensor incl. connection cable, 2 metres, order No. 8203554
- Each additional floor sensor (max. 9 pieces): JUDO floor sensor incl. connection cable, 2 metres, and branch connector, order No. 8103556
- JUDO extension cable for floor sensor, 2 metres, order No. 8203551
- JUDO extension cable for floor sensor, 5 metres, order No. 8203552
- JUDO extension cable for floor sensor, 10 metres, order No. 8203553
- JUDO cable for external fault signal, 10 metres, order No. 2200717
- JUDO Connectivity-Module, for connecting the appliance to a home network and the Internet via LAN connection (WLAN connection through optional WLAN-Repeater), order No. 8235010
- JUDO WLAN-Repeater, for connecting the JUDO Connectivity-Module to a WLAN home network (2,4 GHz) via LAN connection, order No. 2202228

8.4 Electronic control unit



8.4.1 Connection potential-free message



Function: Normally Closed Contact

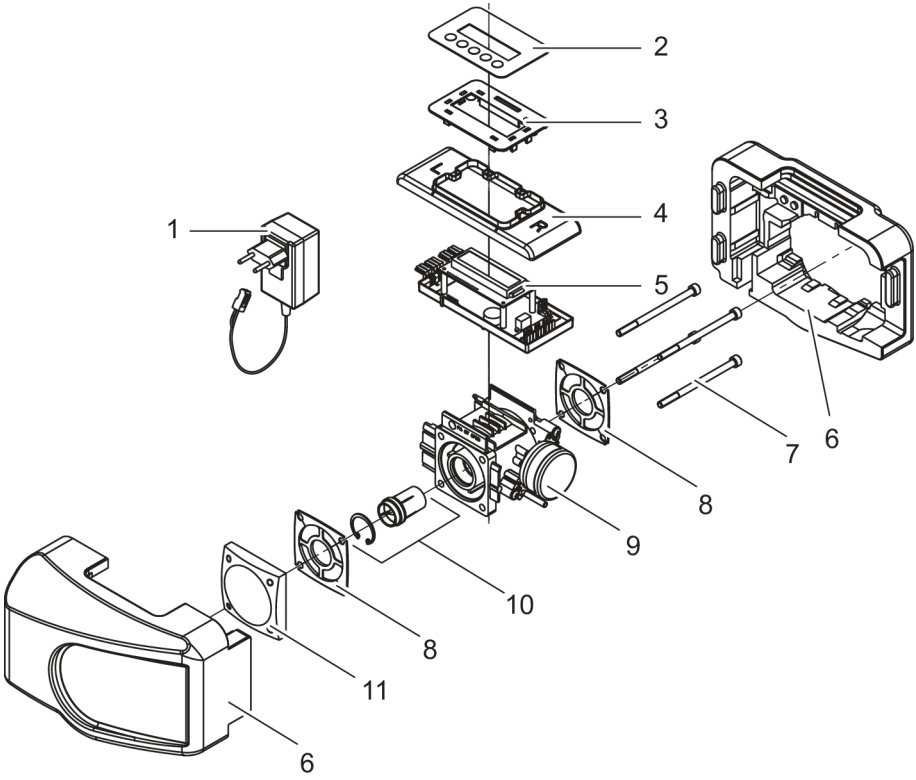
- 1-2: operating
- 2-3: zero-current / fault / leakage alarm

Function: Normally Open Contact

- 1-2: zero-current / fault / leakage alarm
- 2-3: operating

8.5 Spare parts

JUDO PIPE-CARE SYSTEM ¾" - 1¼"



Item	Designation	Pcs	Order No.	AU[1] / piece
1	Power supply unit Exp. (24V DC)	1	2210560	65
2	Membane keypad	1	2201863	83
3	Support plate	1		
4	Protective film	1		
5	Electronic control	1	2140163	AU[2]
6	Insulating shell set	1		
7	Cylinder screw M6×95	4		
8	Profile flange gasket	2	2250219	6
9	Housing	1		
10	Turbine + circlip	1	2140117	45
11	Mounting cover	1		

Table 5: List of spare parts

1) AU = Accounting unit (items without AU are only available in a set)
2) AU not yet specified at the time of going to press

9 Disposal

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

To protect environment, old appliances 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.

10 EC Conformity Declaration

judo Wasser-Aufbereitung	**EC Conformity Declaration**	Document no. 484 / 10.22

Manufacturer:	JUDO Wasseraufbereitung GmbH
Address:	Hohreuschstraße 39 - 41, D-71364 Winnenden

Product description:	JUDO PIPE-CARE SYSTEM ¾" - 1¼" Micro leakage protection system

• EC Directive:	Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)	2011/65/EU
• EC Directive:	Elektromagnetic 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
• Harmonized Standards:	Safety of power transformers, power supplies, reactors and similar products	EN 61558-1

The observance of the mentioned directives and EMC requirements for the use of the device in household, commercial and industrial areas as well as the application of the indicated standards are hereby confirmed.

Issuer:	JUDO Wasseraufbereitung GmbH
Place and date:	Winnenden, October 17, 2022
Legally binding signature:	 JUDO Wasseraufbereitung GmbH

The sole responsibility for issuing this Declaration of Conformity lies with the manufacturer. This declaration certifies that the product is in accordance with all the stated directives; it is however not an assurance of its characteristics.

11 Maintenance log

Product designation:

Order number: Serial number:

Date	Work activities performed	Company / Signature

12 Customer service

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Installed by / on:

All pictorial, dimensional and implementation information correspond to the date of going to press. We reserve the right to make changes due to technical progress and continuing development. Model and product claims cannot be lodged.