

# Operating manual

*English*

## pearl

### premium sous vide collection



**fusion Chef**™  
by **Julabo**

**fusionchef**

Julabo Labortechnik GmbH  
Eisenbahnstraße 45  
77960 Seelbach / Germany

Tel. +49 (0) 7823 / 51-170  
Fax +49 (0) 7823 / 2491  
info@fusionchef.de  
www.fusionchef.de

Printed in Germany  
Changes without prior notification reserved

1.951.0545

11/10

19.11.10

## Table of contents

<b>Sous Vide basics .....</b>	<b>4</b>
<b>Safety .....</b>	<b>6</b>
<b>Proper use .....</b>	<b>6</b>
<b>Safety notices for your Pearl .....</b>	<b>6</b>
<b>Safety notices for Sous Vide cooking .....</b>	<b>10</b>
<b>Description of your Pearl.....</b>	<b>12</b>
<b>Front and rear views.....</b>	<b>12</b>
<b>Display and keypad.....</b>	<b>13</b>
<b>Accessories .....</b>	<b>14</b>
<b>Attachments.....</b>	<b>14</b>
<b>Accessories for cooking containers .....</b>	<b>14</b>
<b>Temperature sensor.....</b>	<b>15</b>
<b>Other accessories .....</b>	<b>16</b>
<b>Installation and initial operation .....</b>	<b>17</b>
<b>Unpacking and inspecting the unit .....</b>	<b>17</b>
<b>Installing your Pearl combination .....</b>	<b>17</b>
<b>Installing your Pearl .....</b>	<b>17</b>
<b>Adding water to tank .....</b>	<b>18</b>
<b>Beginning initial circulator operation .....</b>	<b>20</b>
<b>First steps .....</b>	<b>21</b>
<b>Prep work .....</b>	<b>21</b>
<b>Starting the unit .....</b>	<b>22</b>

Enjoying the first results.....	23
Improving the results.....	23
Working with your Pearl .....	25
Switching on and starting the unit .....	25
Operating the unit .....	25
Setting the desired temperature .....	25
Working with the timer .....	26
Changing settings .....	27
Care and maintenance.....	30
Changing the water .....	30
Decalcifying.....	31
Cleaning the unit .....	31
Confirming temperature accuracy .....	34
Error messages.....	37
Error messages.....	37
Information about the unit.....	39
Technical data.....	39
EC compliance .....	41
Repairs .....	41
Disposal.....	42
Warranty .....	43

# Sous Vide basics

### Important!

Always exercise the greatest possible care and maintain hygienic conditions at all times.

### 1. Preparation

Use only fresh ingredients of the highest possible quality. Prepare raw ingredients properly.

### 2. Vacuuming

Place the raw, refrigerated ingredients into special bags suitable for Sous Vide. Vacuum them with a suitable vacuum machine.

### 3. Cooking

Fill the bath tank with hot water and use your **Pearl** to heat the water to the desired temperature. When the desired temperature has been reached, place the bag with the food into the water bath. Cook gently at low temperatures but for an extended period of time. If you are unsure about the appropriate temperatures and cooking times, you must consult a Sous Vide cookbook.

### 4. Cooling

If you will not serve the cooked food immediately, you can allow the food to cool down and store it in a refrigerator.

To do this, interrupt the cooking process shortly before the normal ending time and cool the food to 3 °C (37 °F) within 90 minutes. The best way to do this is with an ice water bath or a shock freezer.

**5. Refrigerated storage**

Remove the cooled bag from the ice water and store it at 3 °C (37 °F) or colder.

**6. Regeneration**

Warm the cooled bag in a water bath shortly before serving. Complete the cooking process and serve the food. Enjoy your meal!

# Safety

## Proper use

This product is designed to control the temperature of water in a bath tank. The product is used to prepare food in this water bath according to the Sous Vide technique (low-temperature, slow cooking of food in vacuum-sealed packaging).

**This product is designed exclusively for commercial use.**

Carefully observe hygienic standards and legally stipulated minimum cooking times/minimum temperatures at all times.



---

This product is not designed for direct cooking of food (such as soups or sauces).

Direct cooking means: unprotected contact of the food with the cooking fluid (water) and parts of the device.

---

## Safety notices for your Pearl



### ***Cautions and warnings!***

---

These operating instructions contain safety notices. They are identified by the triangle with exclamation point shown here.

Carefully read and observe all instructions!

---



---

It is important that you follow all safety instructions in order to avoid personal injury and property damage.

---

This device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge unless they have been given supervision or instruction concerning the use of the device by a person responsible for their safety.

---



### **Caution!**

---

- ☐ This device may be attached only to power supplies with proper grounding and FI fuses.
- ☐ If a grounded power supply is not available, the customer is obligated to contract an authorized technician to install one.
- ☐ The power plug serves as a protective separator and must be easily accessible at all times.



### **Caution!**

---

- ☐ Parts of the bath tank and the stainless steel cover may become hot to the touch during continuous operation. Exercise caution when touching these parts! Use a hot pad or hot gloves!
- ☐ Do not drain the water while it is hot! Check the temperature of the water before draining; this may be done by briefly switching on the unit.



- ☐ It is essential that you read the operating instructions **before** initial operation.
-



- ☐ Install the stainless steel bath tank indoors only and on a level, noncombustible surface.
  - ☐ Do not use this unit outdoors!
  - ☐ Never operate the unit without water! Depending on the hardness of the water, we recommend the use of soft/decalcified water. Change the water every day. Other fluids may become combustible, flammable, or explosive when vaporizing. Use water only!
- 



- ☐ Completely drain the stainless steel bath tank before moving the unit. Transport the unit carefully! Shaking or dropping may damage the inside of the unit.
- 



### **Warning!**

---

- ☐ Do not touch the power plug or power cord with wet hands!
- ☐ Switch off the unit at the mains switch and pull out the power plug
  - **before** performing cleaning tasks.
  - **before** moving the unit.
- ☐ Never operate a damaged or leaking unit!
- ☐ Do not attempt to use the unit if the power cord is damaged! For safety reasons a damaged power cord may only be replaced by the manufacturer, a ***fusionchef*** by Julabo service representative or a similarly qualified person.





- ❑ Allow only authorized technicians to perform service and repair tasks.
- 

### **Low bath fluid safety float**

- ❑ This unit includes a low bath fluid safety float. Switching off this safety device (by blocking the float) can result in a hazardous situation.
  - ❑ Always inspect the low bath fluids safety float before using the unit. You can check the functionality of the float by manually holding down the unit's float switch with a tool.
-

### Safety notices for Sous Vide cooking

Only trained experts should attempt the Sous Vide cooking technique. It is important to follow precise and uniform work steps and maintain a hygienic environment in order to ensure adequate safety during food preparation.

It is critically important to follow procedures that minimize the risk of the growth of anaerobic bacteria, such as *Clostridium botulinum*.

Make sure that you are using Sous Vide techniques from a trained expert or from a technical culinary manual.



---

#### **Notice**

##### **Please remember to observe the following**

- ☐ Use high-quality ingredients from reputable manufacturers only.
  - ☐ Separate the areas for raw and cooked food.
  - ☐ Observe the appropriate minimum temperature when cooking food.
  - ☐ Observe the maximum storage temperatures and storage times recommended by experts or technical journals.
  - ☐ Label food with the date of cooking and the date of expiration.
  - ☐ Always work in a sterile environment and use sterile gloves when filling the Sous Vide bags.
  - ☐ Use separate devices for vacuuming raw and cooked food.
-

**Observe HACCP regulations**

It is also important that kitchen personnel employ an appropriate HACCP (Hazards Analysis and Critical Control Points) system in order to monitor and document every step the food takes from delivery to serving.

**Monitor water quality**

Monitor the quality of the water in the Sous Vide bath and change it regularly. Depending on the hardness of the water, we recommend decalcifying the unit regularly. To do this, use a food-compatible decalcifier.

**Ensure a proper cold chain**

Be aware of potential breaks in the cold chain or unnecessary food storage time. Also make sure that the cooked food cools down within the proper time before placing it into storage (maximum temperature 3 °C (37 °F)).

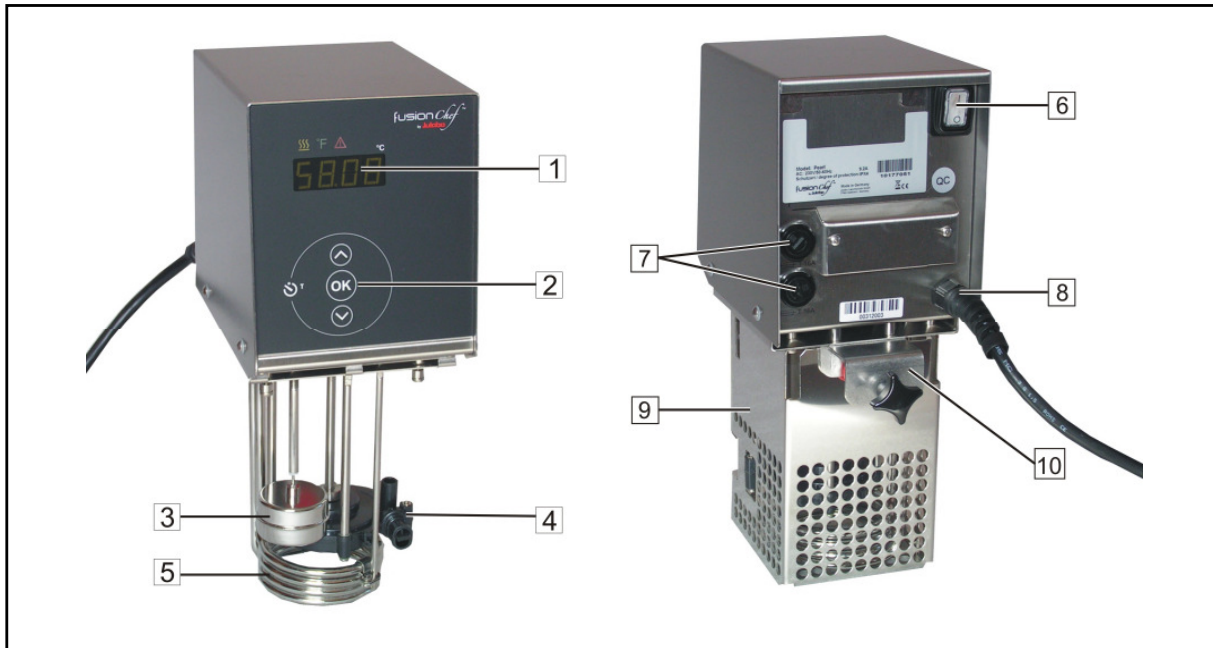
**Check core temperature**

To achieve pasteurization, food cooked according to the Sous Vide process must reach a core temperature of at least 65 °C (149 °F). It is advisable to use a temperature sensor or other thermometer to check the core temperature.

In all cases, you are responsible for following Sous Vide regulations enacted by your local health agency as well as all food safety directives that apply to your area of responsibility.

# Description of your Pearl

## Front and rear views

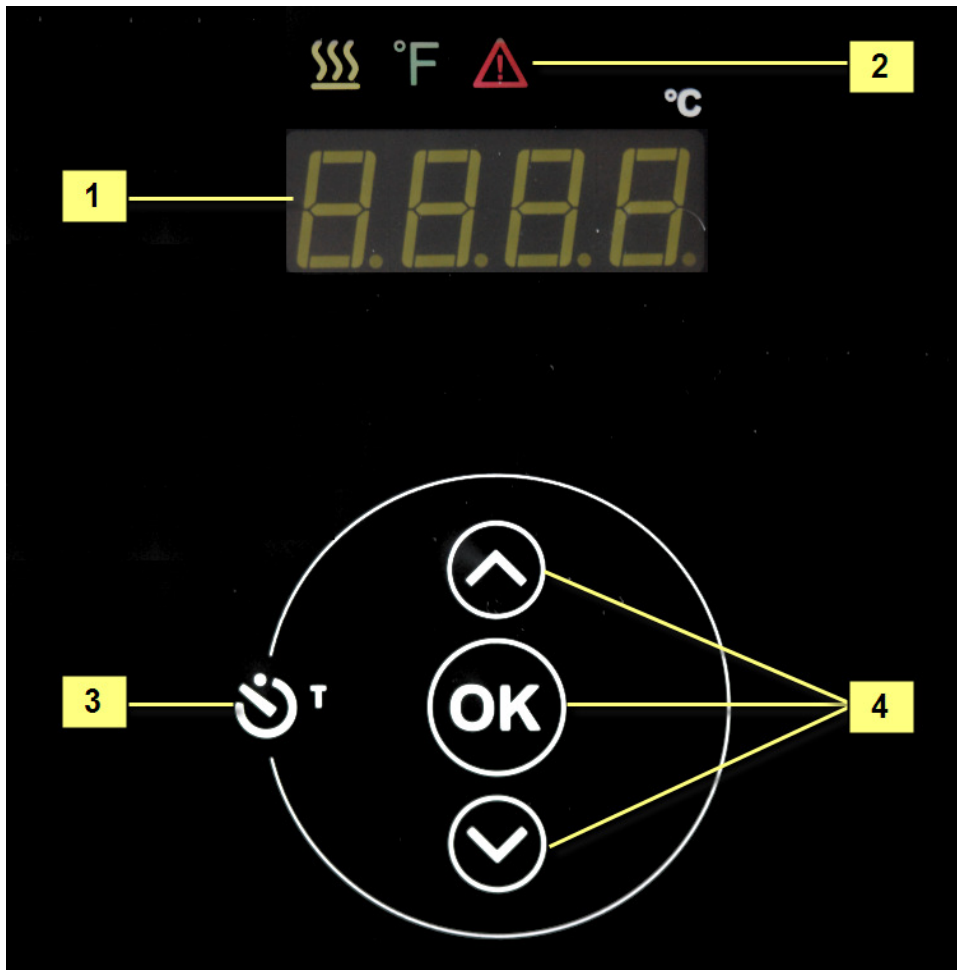




Front without protection grid

Rear with protection grid

1	LED display (see next page)	6	Mains switch, illuminated
2	Keypad (see next page)	7	Micro fuses
3	Safety float switch	8	Power cord with plug
4	Pump discharge	9	Protection grid
5	Heating coil	10	Attachment clamp

## Display and keypad



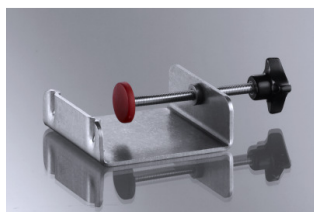
1	LED display for temperature and timer
2	Control displays: <div> <div>  Heating </div> <div>  Alarm </div> <div> °F Temperature units Fahrenheit </div> <div> °C Temperature units Celsius </div> </div>
3	Timer key
4	Keypad: Arrow keys for setting the temperature and timer OK key for entering values

## Accessories

The following accessories are available for your **Pearl**.

### Attachments

#### Bath attachment clamp



Use the bath attachment clamp to secure the **Pearl** to the wall of a cooking container.

	Max. wall thickness	Order No.
Attach. clamp	60 mm	9FX1119

### Accessories for cooking containers

#### Separation grid

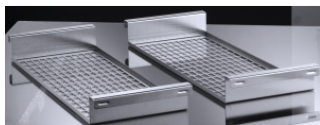


The separation grid is used to divide bath tanks into smaller compartments in order to keep food items apart. They are particularly useful when cooking a variety of items that must be removed from the container at different times.

Separation grids are available for bath tanks of all sizes.

	Order No.
Separation grid for bath tank S	9FX1121
Separation grid for bath tank M	9FX1122
Separation grid for bath tank L	9FX1123
Separation grid for bath tank XL	9FX1124

### Retaining grids



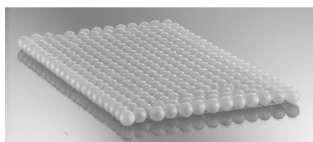
Retaining grids are inserted into the bath tank from above and are used to keep vacuum bags underwater. They help ensure that the food is cooked evenly from all sides.

Order No.

2 retaining grids for baths S, M 9FX1125

2 retaining grids for baths L, XL 9FX1126

### Steam trapping balls



To maximize insulation of the water bath, use these steam trapping balls. Distribute these balls on the surface of the water to minimize the amount of heat that is lost.

Order No.

Steam trapping balls 9FX1142

### iSi Gourmet clamp



Use the special clamps to securely hold an iSi Gourmet Whip in the water bath. Indispensable when preparing espumas and sauces.

Order No.

iSi 0.5 l clamp 9FX1130

iSi 1.0 l clamp 9FX1131

## Temperature sensor

### Handheld core temperature sensor (external)



A handheld measurement device is useful for monitoring the core temperature of the cooked food. This device is designed to be precise and reliable.

## Accessories

	Order No.
Handheld core temperature sensor	9FX1151

### Adhesive sealing tape



Place the adhesive sealing tape onto the vacuum bag before inserting the core temperature sensor. This will help maintain much of the vacuum.

	Order No.
Adhesive sealing tape 4 m	9FX1141

## Other accessories

### Travel case



The travel case is designed to hold your **Pearl** and accessories.

	Order No.
Travel case	9FX1190

### Timer Tape

Use the various colors to identify different types of food and keep track of multiple cooking times.

	Order No.
Timer Tape, red, 5 m	9FX1145
Timer Tape, blue, 5 m	9FX1146
Timer Tape, yellow, 5 m	9FX1147



# Installation and initial operation

## Unpacking and inspecting the unit

Unpack the unit and accessories and immediately check the items for any damage that may have occurred during transport. Even if only the packing has been damaged, please notify the freight forwarder, railway company, or postal service so they can file a damage report.

Then check to see if the unit and all accessories are complete.

## Installing your Pearl combination

Install your **Pearl Edition S, M, L, or XL** combination on an even, noncombustible surface.

### Install drain tap on combi units

Proceed as follows to install the drain tap onto the cooking container:

1. Remove the drain's screw plug.
2. Screw the included tap into the drain port and use the counternut to fix the tap in place.

## Installing your Pearl

If, instead of a combination unit, you purchased a single unit, install the unit as follows:

### Prepare the cooking container

Place a suitable container onto an even, noncombustible surface.



### Fasten the unit in place

#### **Warning!**

Danger of electric shock!

Carefully fasten the unit in place!

If the unit is installed or fastened improperly, it may fall into the cooking container. If this happens:

- ☐ Pull the power plug from the power socket.
- ☐ Lift the unit from the cooking container only after pulling the plug.
- ☐ Ask an authorized service technician to inspect the unit before using it again.

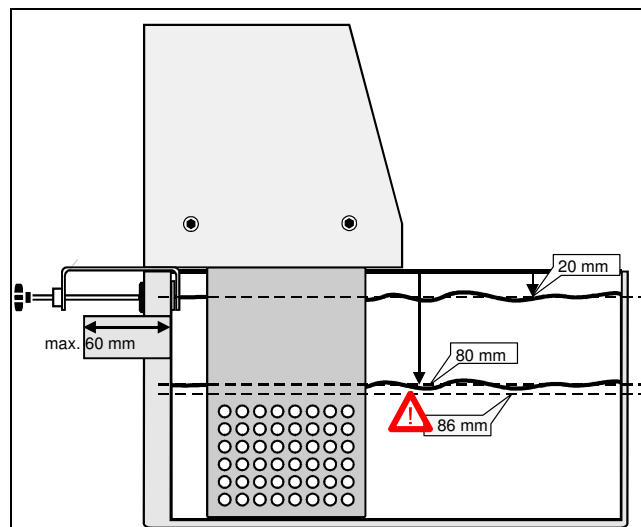
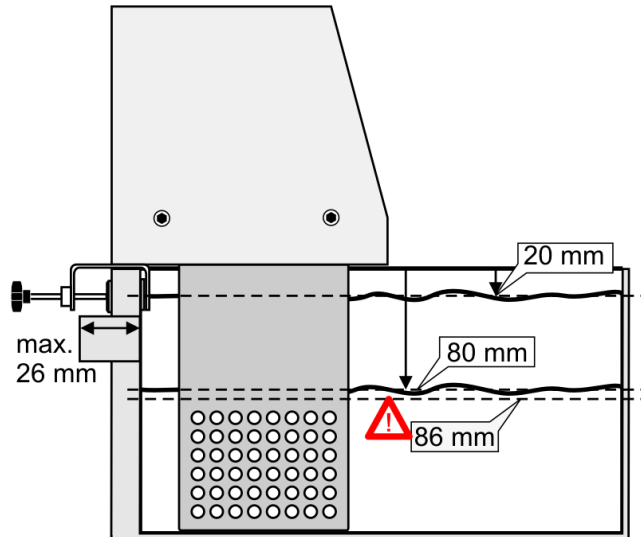
Properly fasten the unit with the included bath attachment clamp:

- ☐ Use the bath attachment clamp to fasten the immersion circulator to a suitable bath tank (maximum wall thickness of bath tank is 60 mm (~ 2 3/8 inches)).

### Adding water to tank

Fill the bath tank with softened/decalcified water. Always observe the minimum and maximum fill heights:

- Maximum fill height: 20 mm (~ 3/4 inches). below the top edge
- Minimum fill height: 86 mm (~ 3 3/8 inches). below the top edge.



Optionally:

Bath attachment clamp for wall thickness to 60 mm (~ 2  $\frac{3}{8}$  inches), Order No. 9FX119.

### Beginning initial circulator operation



#### **Caution!**

---

- ☐ Compare the available power voltage and frequency with the specifications on the type label.
  - ☐ This device may be attached only to power outlets with an earthing contact!
  - ☐ The mains plug serves as a protective separator and must be easily accessible at all times.
  - ☐ Do not touch the power plug or power cable with wet hands!
  - ☐ Never operate a damaged or leaking unit!
  - ☐ Do not attempt to use the unit if the power cable is damaged!
- 

Attach the unit and switch it on (power switch located on rear of unit).

The unit will perform a short self-test (versions of the unit and software will be displayed). It then goes into standby mode the first time the unit is turned on. This is indicated on the display by **OFF**.

## First steps

This chapter is intended for users with little or no experience with the Sous Vide cooking technique. If you are an experienced Sous Vide cook or professional chef, you may skip this chapter and continue on page 25 „**Working with your Pearl**“.

## Prep work

After installing, connecting and turning on your Pearl, you are probably anxious to obtain your first results with the unit. The following example includes step-by-step instructions to ensure that you will be successful even if you are not yet familiar with the Sous Vide method.

1. Obtain from your butcher a piece of very high quality beef (ideally a filet).
2. Cut the filet into slices no more than 4 cm ( 1 ½ inches) in thickness and vacuum them individually.



---

**TIP**

Most butchers have professional vacuum equipment. For this reason, the easiest approach is to ask your butcher to cut and vacuum the meat for you.

---

3. Store the meat at **no higher than 3 °C (37 °F)** until you are ready to start cooking.

### Starting the unit

After all preparations have been completed, you can begin the cooking process.



**Setting the desired temp.**

1. Make sure that the cooking container is properly filled and the **Pearl** is correctly installed and connected.
2. Switch on the **Pearl** at the rear of the unit. The unit will go into Standby and display the OFF message.
3. Use the arrow keys to set the target temperature. Press **OK** to adopt the entered value as the target temperature.

We recommend starting with a temperature of 62 °C (143.6 °F). The following table provides a few guidelines.

Temperature guidelines for beef	
English	< 58 °C (<136.4 °F)
Medium	58 - 61 °C(136.4 -141.8 °F)
Well done	> 61 °C (<141.8 °F)

### Starting the unit



4. To start the unit, press and hold the **OK** key for about 2 seconds. The Pearl will start, i.e. the circulation pump and heater will function to heat the water bath to the target temperature.

The display will change while the unit is in operation: The display indicates the temperature currently measured in the water bath.

To display the target temperature, press one of the arrow keys briefly. If no further value is entered, the display will eventu-

ally return to the currently measured temperature.

### Enjoying the first results...

1. After the **Pearl** has heated the water bath to the desired temperature, place the meat into the cooking container.
2. Allow it to cook for at least 60 minutes.  
Use the timer function: Press the timer key, use the arrow keys to select the desired time, and confirm with **OK**.
3. After the time has elapsed a signal will sound. Remove the meat from the cooking container.
4. Open the vacuum package, dry the meat somewhat, and allow it to rest for a few minutes.
5. Sear the meat briefly at high temperature on both sides in order to achieve an attractive brown color. Then serve.

**Enjoy your meal!**

### Improving the results

The results of the cooking process are influenced by a large number of factors, including:

- The quality of the meat
- The cut of meat
- The thickness of the individual pieces of meat
- The precise temperature, cooking time and
- Your own preferences

**How did it taste?**

**What can I do better?**

For these reasons, it is unlikely that you will achieve optimal results the first time you use the unit. To improve the results over time, you should ask your guests for their honest opinions and request their suggestions for improvement, for example: Was the meat too rare? Was it overcooked? You will have to experiment to achieve the best possible results.

The best way to do this is to take accurate notes on your preparations and cooking conditions. This will allow you to reproduce successful dishes and avoid making the same mistakes twice.

**How can I influence the results?**

Now that you know how to use your **Pearl**, careful manipulation of two major variables can influence the cooking process:

- ☐ Cooking temperature
- ☐ Cooking time

The following chapter explains how to adjust the temperature and monitor cooking time. This information will allow you to gather a few initial experiences. We also recommend referencing a comprehensive Sous Vide cookbook in order to more fully understand the relationships between temperature, time, and results.



# Working with your Pearl

## Switching on and starting the unit



### **Caution!**

---

- ☐ Never operate a damaged or leaking unit!
  - ☐ Do not attempt to use the unit if the power cord is damaged!
- 

1. Use the power switch on the rear of the unit to turn the unit on.  
The unit will perform a self-test and then go into Standby mode.
2. To start using the unit, i.e. to heat up to the target temperature, press and hold the **OK** key for at least 2 seconds. If you press and hold **OK** again, the **Pearl** will return to Standby mode.

As soon as you have started the unit, it will begin approaching the target temperature.

## Operating the unit

Basic operation of the unit is the same for all functions:

- ☐ Use the **arrow keys** to make adjustments.
- ☐ Confirm your selection by pressing **OK**.

## Setting the desired temperature

You can change the target temperature from the main view while in standby or during regular operation.

1. Press the arrow keys in order to change the temperature.

2. Confirm by pressing **OK**.

The temperature will be adopted as the new target value and will remain in memory even after the unit is switched off.

## Working with the timer

The **Pearl** has a programmable timer. The decimal point of the display will blink whenever the timer is active. As soon as the timer alarm triggers, an audible signal will be emitted and the display blinks until the alarm is canceled.

### Setting the timers

To set the timer, proceed as follows:



1. Press the timer key.

The most recently used time is displayed.

2. Use the arrow keys to set the number of minutes.

The timer's upper limit is 9001 minutes (150 hours, 1 Min.).

3. Activate the timer by pressing **OK**.

The timer will be activated with the selected time. The decimal point of the display will blink whenever the timer is active.

### Setting the timer while in Standby mode

You can also set the timer while the unit is in Standby mode. Proceed as described above.

As soon as you adopt the time by pressing **OK**, the timer will start running and the unit will start working. It starts to heat up to the currently selected target temperature.

### Displaying and correcting the timer

To display the remaining running time while the unit is in operation, press the timer key once.

The remaining time will be displayed and can be modified with the arrow keys.

If no value is entered, the display will eventually return to the measured current temperature and the previously set remaining time will be active.

### Alarm has triggered

An audible signal (loud beeping noise) is emitted when the timer has run out. The display blinks at the same time.

To switch off the signal, press **OK**.

The time covered by the timer will be stored and used as the preset value the next time the timer is activated.

### Switching off the timer

You can switch off the timer at any time while the unit is in operation by pressing and holding the timer key for at least two seconds. The signal will be triggered and must be switched off with **OK**.

However, the timer value that is in use will remain in memory and will be shown as the preset value the next time the timer is set.

### Switching off the signal

## Changing settings

You can adjust the following settings on your **Pearl**.

### Setting the temperature units

You can choose to display the temperature in either **degrees Celsius** or **degrees Fahrenheit**. Change the temperature units as follows:



1. Switch off the unit.
2. Press the up-arrow and timer keys simultaneously.
3. Switch the unit back on while holding the keys pressed.

The selected units will be displayed: **C** or **F**.  
The unit will now convert all temperatures to the desired units.

## Reset to factory settings

You can reset the unit's settings to the original factory settings. This will clear all stored values. Selected temperature units will be retained.



1. Switch off the unit.
2. Then press both arrow keys **simultaneously**.
3. Switch the unit on while holding the keys pressed.

The unit will now be reset to the factory settings. Only the temperature units will be retained.

### Care and maintenance

The circulator is designed for continuous operation under normal conditions. Regular maintenance is not required. However, you should perform the following cleaning tasks each day.

### Changing the water

The circulator is suitable only for use with softened/decalcified water. The water in the stainless steel bath should be changed regularly. Our recommendation:

#### **Change the water daily**

for the following reasons:

- Frequent refilling increases the concentration of minerals in the water, which can deposit inside the bath and on immersed parts of the circulator in the form of a crust.
- Vacuum packaging may be slightly dirty; these particles will be released into the warm water bath.

#### **Draining combination units**

To drain a **Pearl Edition S, M, L, or XL** combination unit, use the integrated drain tap.

1. Switch off the unit and pull the power plug.
2. Place the unit over a sink or a container large enough to hold all of the water.
3. Open the drain tap and allow the water to flow out.

### Draining bath tanks with single units

Single units must be disassembled before draining the bath tank.

1. Switch off the unit and pull the mains plug.
2. Unscrew the bath attachment clamp and remove the unit from the bath tank.
3. Now drain the bath tank.

## Decalcifying

Depending on the hardness of the water, we recommend decalcifying the circulator regularly. To do this, use a food-compatible decalcifier. Please refer to the manufacturer's instructions for the exact procedure.

## Cleaning the unit



**Clean the unit every day.**

### **Caution!**

- ☐ Turn off the unit at the power switch and pull the power plug.
- ☐ Never allow moisture to penetrate inside the circulator.
- ☐ **Do not wash the unit with a stream of water or immerse the unit under water.**

### **Notice**

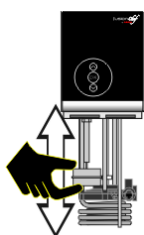
Even stainless steel can corrode. Please observe the following in order to protect your unit and bath tank from rust and corrosion:

- ☐ Do not clean the unit and bath with steel wool.
- ☐ Do not add salt to the water.

- ❑ Chlorine in drinking water can result in corrosion.
- ❑ Iron in drinking water will precipitate and result in rust formation.

1. Use water with a low surface tension (such as a soap solution) to rinse the stainless steel bath tank and immersed functional parts of the unit (circulation pump, float switch, and heater).
2. Then rinse with clear water and dry the parts with a soft towel.
3. Clean the external parts of the unit with a towel and soapy water.
4. **Check the low-level protection float switch.**

While cleaning the unit, make sure the low-level protection float switch is working. To do this, hold the unit vertically and use your finger to confirm that the float moves effortlessly.



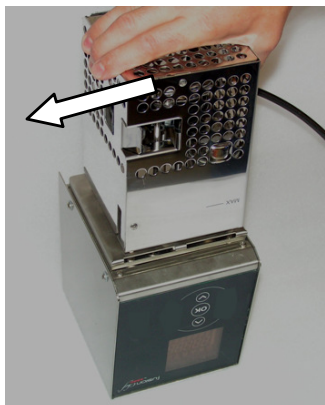
### Removing/installing the protection grid

To properly clean the unit and check the low-level protection device, it is necessary to remove the protective grid. Do this as follows:

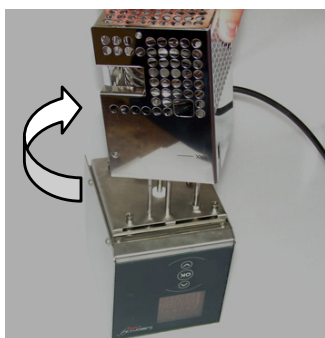
1. **Switch off the unit and pull the power plug.**
2. Remove the unit from the bath tank.
3. Turn the unit and open the four fastening screws using a cross screwdriver.



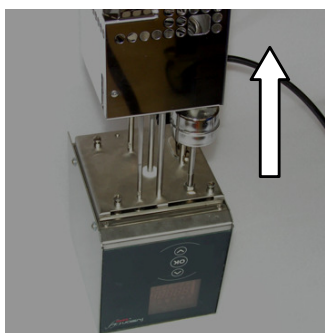




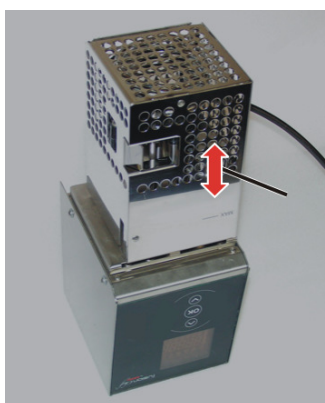
4. Move the protection grid to the left.



5. Lift the protection grid  
Draw it over the float by turning it to the right by approx. 30° and slightly tilting backwards.



6. Turn the protection grid to the left back into the initial position and remove it.  
Now you can clean the unit.



7. After having cleaned the unit install the protection grid in reverse order.  
**Then check the function of the low-level protection.** Take a thin pin to confirm that the float moves effortlessly.

### Confirming temperature accuracy

#### Checking temperature accuracy

**Fusionchef** by Julabo units are precisely calibrated and inspected before leaving our factory. The units are designed for highly precise temperature control in continuous operation. Even over long periods of time, the sensors will retain their accuracy or become only marginally inaccurate. You may notice slight deviations only after several years of use. In other words, it is normally unnecessary to perform a calibration.

Nevertheless, it is possible to recalibrate the **Pearl**. You can modify the temperature values by  $\pm 5.00\text{ }^{\circ}\text{C}$  ( $\pm 41.00\text{ }^{\circ}\text{F}$ ). If you find it necessary to recalibrate the unit, please follow the instructions below.

#### Preparing for calibration

Always calibrate the temperature sensor at the temperature value  $30\text{ }^{\circ}\text{C}$ . The temperature units must be converted to degrees Celsius before calibration.

1. Place your **Pearl** onto a bath container and fill the container with water at approximately  $20\text{ }^{\circ}\text{C}$  (room temperature,  $68\text{ }^{\circ}\text{F}$ ) up to the specified level.
2. Place a calibrated thermometer (resolution:  $0.01\text{ }^{\circ}\text{C}$ ) in the center of the bath in order to measure the actual bath temperature.
3. Make sure that the temperature units are set to degrees Celsius.

## Calibrating the unit

### Starting sensor calibration

Calibrate the **Pearl** temperature sensor as follows:



1. Switch on the circulator and start the unit.
2. Start the calibration by pressing the **timer key** and **OK** simultaneously. Hold the keys down until the display's decimal point starts blinking.

The controller will now heat up to the pre-set target temperature of 30 °C(86 °F).

The bath temperature will display on the LED screen.

3. Once the target temperature has been reached, allow the bath temperature to stabilize for approximately 3 more minutes.
4. Then read the temperature shown on the calibrated thermometer. Round off this value (for example: round 28.87 °C to 28.9 °C) and enter it into the unit.
5. To do this, press one of the arrow keys to switch the display from the actual temperature to the target temperature. Then use the arrow keys to enter the rounded value.
6. Confirm by pressing **OK**. The unit will display **CAL** to confirm that the calibration was successful.



### Notice

Calibration is possible up to  $\pm 5$  °C deviation.

### **Deleting the most recent calibration**

If you have determined that a calibration is unnecessary or faulty, you can delete it.

To do this, reset the unit to its factory condition as described on page 29.

## Error messages

The following table contains some of the possible error messages with the associated warning messages and resolutions.

All warning messages are indicated on the display and accompanied by an audible signal. To mute the audible signal, press **OK** once. The error message will still be visible.

## Error messages

When the following error messages appear, the unit (heater and circulation pump) will shut off. You must remove the cause of the problem before you can switch the unit back on.

Shown on the display	What should I do?
E 01: LOW WATER LEVEL ALARM	Not enough water in the bath tank. Switch off the unit at the power switch, add water, and switch it back on. If there is enough water in the bath tank: The float switch is defective (transport damage, etc.). Sent the unit to an authorized <b>fusionchef</b> by <b>JULABO</b> repair facility.
E 05: WORKING SENSOR ALARM	Please contact our service department. CALL SECURE
E 06: SENSOR DIFFERENCE ALARM	Please contact our service department. CALL SECURE
E 07: INTERNAL HARDWARE ERROR	Please contact our service department. CALL SECURE

## Error messages

Shown on the display	What should I do?
E 12: TEMPERATURE MEASUREMENT ALARM	Please contact our service department. CALL SECURE
E 14: EXCESS TEMPERATURE PROTECTOR ALARM	Please contact our service department. CALL SECURE
E 33: SAFETY SENSOR ALARM	Please contact our service department. CALL SECURE

# Information about the unit

## Technical data

Unit type	Pearl	Pearl Z	Pearl S
Order No.	9FT1000	9FT1113	9FT1B20
Working temperature range	20 °C...95 °C (68 °F ...203 °F)		
Operating temperature range	0 °C...95 °C (32 °F ...203 °F)		
Temperature stability	+/- 0,03 K (+/- 0.05 °F)		
Temperature adjustment	digital		
Temperature display	LED-Display		
Display resolution	0.1 °C (0.1 °F)		
Temperature control	PID		
<b>Circulating pump</b>			
Flow rate at 0 bar	14 l/min (3.7 gal/min)		
Pressure at 0 liter	0.3 bar (4.267 psi)		
Overall dimensions (WxDxH) mm	133x212x330	339(688)x190x330	332x577x374
Overall dims. (WxDxH) inches	5.23x8.34x13	13.3(27.1)x7.5x13	13.3x22.7x14.7
(Empty) weight in kg	4,5 (11 lbs)	6 (11 lbs)	14 (30.86 lbs)
Filling volume	-	-	19 l (5 gal)
Usable bath opening/depth mm	-	-	366x292x132
Usable bath opening/depth inches	-	-	14.4x11.5x5.2
Standards	CE compliant, RoHs compliant		
<b>Warning and safety features</b>			
High temperature cut-off	fixed at 105 °C (221 °F)		
Low fluid protection	float switch		
Monitoring of the working temp. sensor	Plausibility control		
Temperature differential monitoring working/safety temp. sensors	Difference > 35K		
Error message	visical and audible		
Permissible ambient temperature	+ 5 °C...+ 40 °C (+41 °F...104 °F)		
<b>Mains connection</b>	<b>Available for all unit types</b>		
Mains connection	115 V /60 Hz	200 V/ 50-60 Hz	230 V/ 50-60 Hz
Current consumption	11.1 A	8.0 A	9.2 A
Heating capacity	1.2 kW	1.5 kW	2.0 kW

## Information about the unit

All data assume rated voltage and rated frequency  
 Operating temperature: 70 °C (158 °F), ambient temperature:  
 20 °C (68 °F) heat transfer fluid: water. Information subject to  
 technical changes.

Unit type	Pearl M	Pearl L	Pearl XL
Order No.	<b>9FT1B27.33</b>	<b>9FT1B44.33</b>	<b>9FT1B58.33</b>
Working temperature range	20 °C...95 °C (68 °F ...203 °F)		
Operating temperature range	0 °C...95 °C (32 °F ...203 °F)		
Temperature stability	+/- 0,03 K(+/- 0.05 °F)		
Temperature setting	digital		
Temperature display	LED-Display		
Display resolution	0.1 °C (0.1 °F)		
Temperature control	PID		
<b>Circulating pump</b>			
Flow rate at 0 bar	14 l/min (3.7 gal/min)		
Pressure at 0 liter	0.3 bar (4.267 psi)		
Overall dimensions (WxDxH) mm	332x577x424	537x697x374	537x697x424
Overall dim. (WxDxH) inches	13x22.7x16.7	21.1x27.4x14.7	21.1x27.4x16.7
(Empty) weight in kg	15 (33.1 lbs)	21 (46.3 lbs)	22 (49.6 lbs)
Filling volume	27 l (7.1 gal)	44 l (11.6 gal)	58 l (15.32 gal)
Usable bath opening/depth mm	366x292x182	486x492x132	486x492x182
Usable bath opening/depth inches	14.4x11.5x7.1	19.1x19.3x5.2	19.1x19.3x7.1
Standards	CE compliant RoHs compliant		
<b>Warning and safety equipment</b>			
High temperature cut-off	fixed at 105 °C (221 °F)		
Low fluid protection	float switch		
Monitoring of the working temp. sensor	Plausibility control		
Temperature differential monitoring working/safety temp. sensors	Difference > 35 K		
Error message	visible and audible		
Permissible ambient temperature	+ 5 °C...+ 40 °C (+41 °F...104 °F)		
<b>Mains connection</b>	<b>Available for all unit types</b>		
Mains connection	115 V /60 Hz	200 V/ 50-60 Hz	230 V/ 50-60 Hz
Current consumption	11.1 A	8.0 A	9.2 A
Heating capacity	1.2 kW	1.5 kW	2.0 kW



## EC compliance



The products named in the operating instructions comply with the regulations of the following European directives:

- ☐ Low-voltage directive for harmonizing the legal regulations of the member states in terms of electrical equipment for use within certain voltage limitations.
- ☐ EMC directive for harmonizing the legal regulations of the member states regarding electromagnetic compatibility.

## Repairs

***fusionchef* by Julabo  
Technical Service**

We recommend that you speak with our technical service department before requesting a service technician or sending a ***fusionchef* by Julabo** device in for repair.

Telephone: 07823 / 51-170

Fax: 07823 / 2491

E-mail: [service@fusionchef.de](mailto:service@fusionchef.de)

If sending a product to ***fusionchef* by Julabo**:

- ☐ Please clean the device in order to avoid endangering the service personnel.
- ☐ Prepare the device for shipment with careful and proper packaging.
- ☐ Always include a brief description of the problem.

If you must send your ***fusionchef* by Julabo** product back to us, please include a Service Return Note, which you can download at our website [www.fusionchef.de](http://www.fusionchef.de). Please fill out this form and include it with the device or fax or e-mail it to us in advance.

***fusionchef*** by Julabo will not be liable for any damage caused by improper packaging.



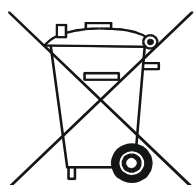
### **Notice**

---

During the repair process ***fusionchef*** by Julabo reserves the right to perform any technical changes necessary to ensure flawless operation of the device.

---

## Disposal



A European Community directive stipulates that electrical and electronic devices must be disposed in an environmentally friendly manner via a separate collection.

Please contact an authorized disposal company in your country. It is not permissible to dispose of the unit in regular (unsorted) garbage or similar facilities intended for collecting household waste!

## Warranty

***fusionchef*** by *Julabo* warrants flawless functionality of this unit, assuming it has been installed and used properly and in accordance with the directives contained in these operating instructions.

**The warranty time period is two years.**

The warranty is limited to our choice of improvement, no-charge repair, or replacement in response to customer complaint. Defective parts will be replaced or repaired at no charge to the extent that a disturbance or imperfection is demonstrably due to a material or manufacturing error.

More extensive claims for damages are excluded!