

Operating manual

English

diamond premium sous vide collection



fusionchefTM
by **Julabo**

fusionchef

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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 device.
- 3. Cooking** Fill the bath tank with hot water and use your **Diamond** 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 Diamond



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 switch. Switching off this safety device (by blocking the float) can result in a hazardous situation.
 - ❑ Always inspect the low bath fluid 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.
-

Safety

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)).

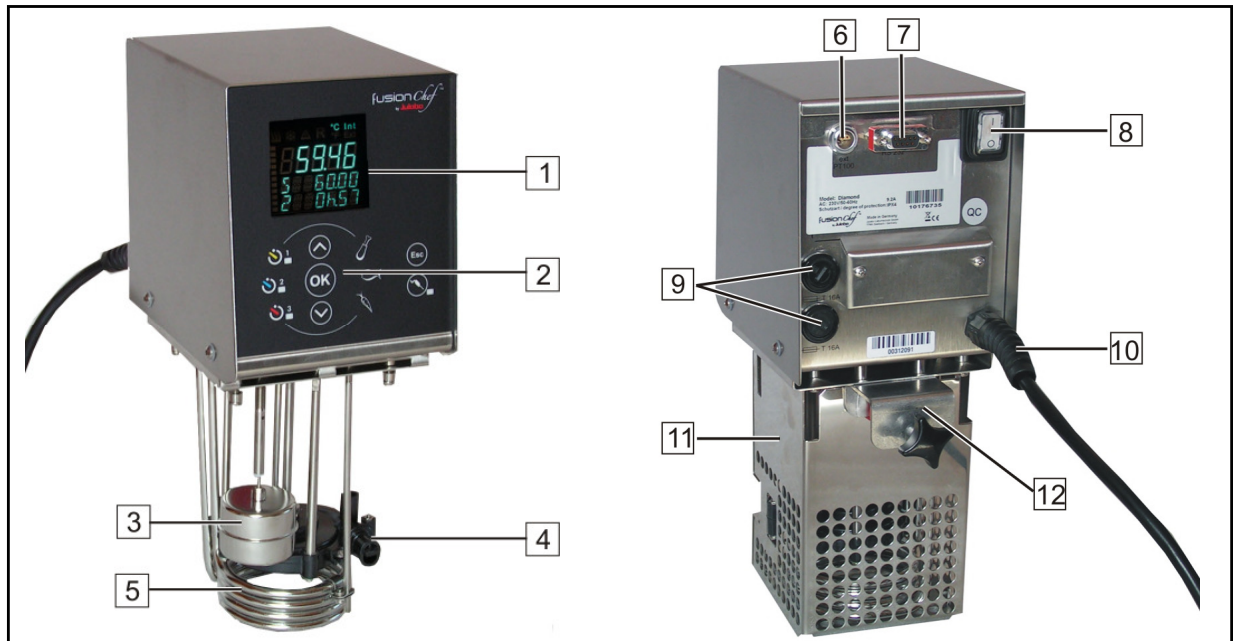
Check core temperature

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 Diamond

Front and rear views

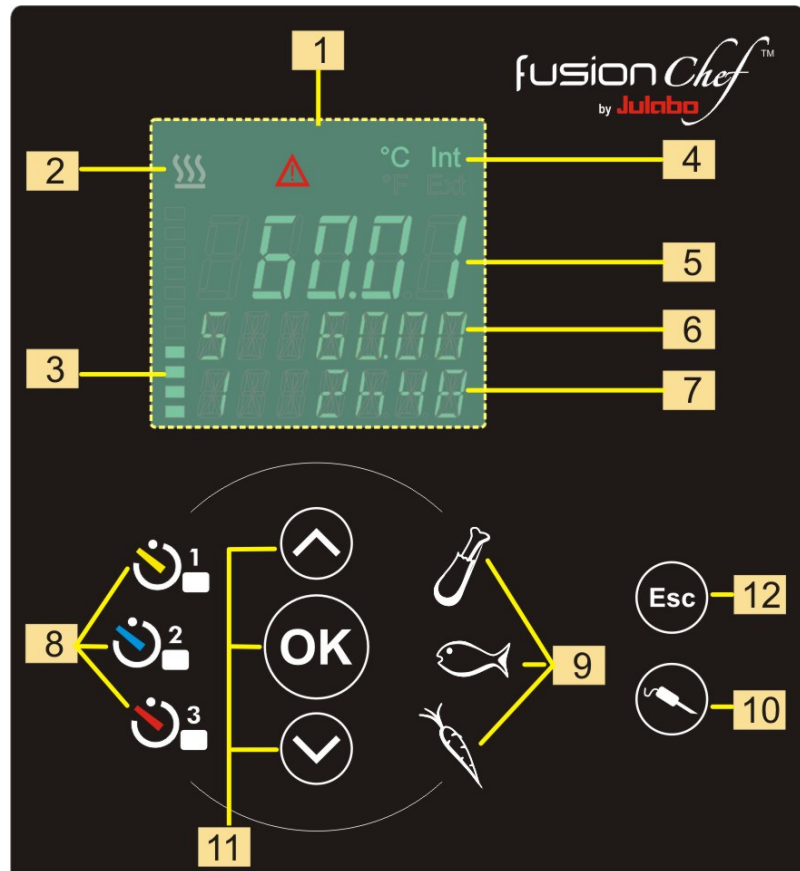




Front without protection grid

Rear with protection grid

1	VFD display (see next page)	7	RS232 interface for computer connection
2	Keypad (see next page)	8	Mains switch, illuminated
3	Safety float switch	9	Micro fuses
4	Pump discharge	10	Power cord with plug
5	Heating coil	11	Protection grid
6	Pt100 connection socket for core temperature sensor	12	Bath attachment clamp

Display and keypad



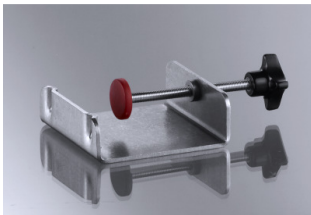
1	VFD display
2	Status icons: Heating/Alarm  
3	Datalogger activation indicator
4	Temperature unit display (°C or °F) and temperature sensor for current temperature: Int for temperature sensor in water bath Ext for attached core temperature sensor
5	Main display for current temperature value

6	Display line 1 for set point value
7	Display line 2 for time value
8	Timer buttons 1-3
9	Quick keys for MEAT, FISH, VEG
10	Core temperature sensor button
11	Keypad: Arrow keys to set temperature and timer OK key to confirm the values
12	Key to correct settings, stop functions or enter a menu (press together with key 10)

Accessories

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

Attachments



Bath attachment clamp

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

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

Accessories for cooking containers



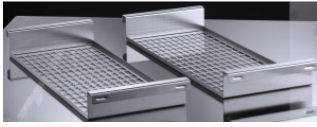
Separation grid

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

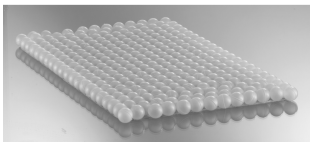
Retaining grids



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

Core temperature sensor



Use the core temperature sensor to achieve optimal results when cooking meat or fish. Refer to the chapter **A closer look** starting on

page 37 for more details on how to use the Diamond with the core temperature sensor.

	Order No.
Core temperature sensor Pt100	9FX1150



Notice

The food that is cooked with the inserted temperature sensor may serve **only** as a reference or retention sample. It is not advisable to consume the food once the vacuum bag has been penetrated.

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.

	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 **Diamond** and accessories.

Travel case

Order No.

9FX1190

Timer tape

Place timer tape of a particular color on the vacuum bags that are being monitored by the timer of the same color.

When the red timer triggers, for example, you will know that all vacuum bags with red timer tape are finished.

Timer tape, red, 5 m

Order No.

9FX1145

Timer tape, blue, 5 m

9FX1146

Timer tape, yellow, 5 m

9FX1147

Easy *fusionchef* software

The Easy *fusionchef* software records data and visualizes cooking processes.

Easy *fusionchef* software

Order No.

9FX1160

RS232 interface cable

Use the RS232 interface to connect the **Diamond** to a computer.

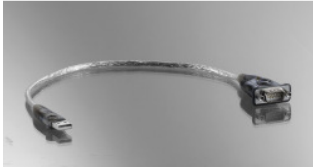


RS232 interface cable

Order No.

9FX1162

USB adapter cable



Use the USB adapter to connect the **Diamond** to a computer.

USB adapter cable

Order No.

9FX1161

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 shipping provider, 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 Diamond combination

Install your **Diamond Edition S, M, L, or XL** combi unit on an even, noncombustible surface.

Install drain tap on combination 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 Diamond

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

Prepare the cooking container

Place a suitable cooking 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 a service technician to inspect the unit before using it again.
-

Properly fasten the unit with the included bracket:

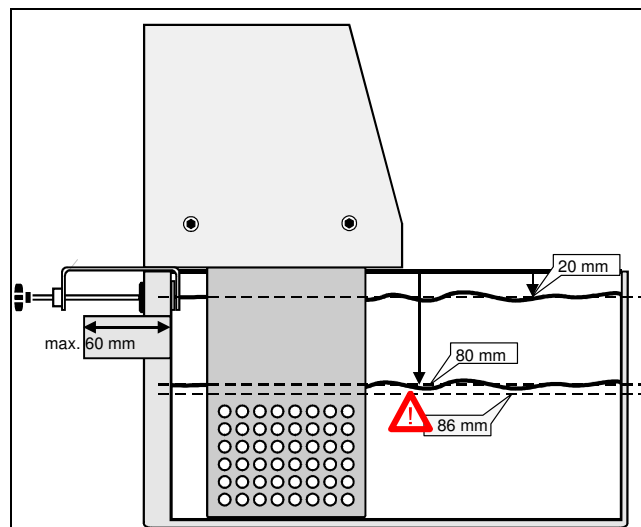
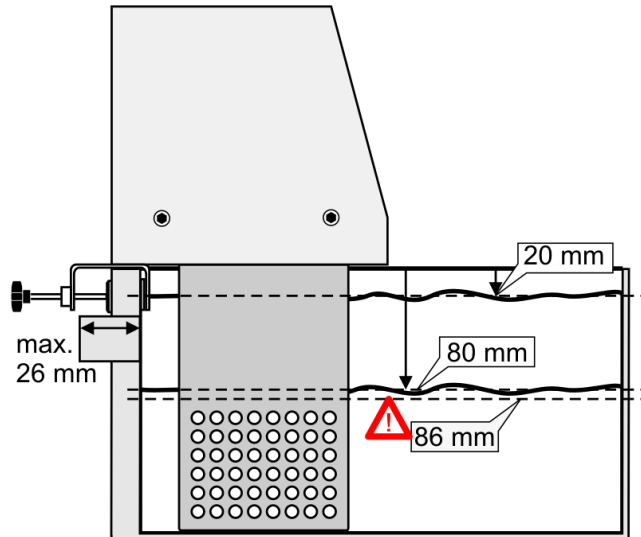
- Use the bath attachment clamp to fasten the immersion circulator to a suitable bath tank (maximum wall thickness of bath tank is 60 mm (~ 2 ³/₈ inches)).

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.

Beginning initial circulator operation



Optionally:

Bath attachment clamp for wall thickness to 60 mm (~ 2 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 grounding contact!

Installation and initial operation

- ❑ The power 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 and continue with page 30 „**Working with your Diamond**“.

Prep work

After installing, connecting, and turning on your **Diamond**, 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.



Retrieving stored temperature values

1. Make sure that the cooking container is properly filled and the **Diamond** is correctly installed and connected.
2. Switch on the **Diamond** at the rear of the unit. The unit will go into standby.
During standby mode, two temperatures are displayed: The top line shows the selected target temperature (S); the bottom line shows the temperature (I) currently measured in the water bath.
3. Use the arrow keys to set the target temperature. First set the whole number digit. Confirm your selection with **OK**. Then set the decimal places. Confirm again with **OK** and the entered value will be used as the target temperature. Pressing the **Esc** key will take you one step back into the main view.
4. You may also use one of the preset values to obtain an adequate temperature for your beef. To do this, press the "Meat" temperature symbol. The word **MEAT** will appear on the display; below that you will see preset temperature value 1. Five different values are stored under each quick key. Each time you press the quick key it will advance to the next value.
5. When you have found the desired temperature, press **OK** in order to adopt it as the target temperature. We recommend starting at a temperature of 62 °C (144 °F), but you can also select your own

values. The following table provides a few guidelines.

Temperature guidelines for beef	
English	56- 58 °C (132.8-136.4°F)
Medium	58-60 °C (136.4...140 °F)
Medium well	60-62°C (140...143,6 °F)
Well done	> 62 °C (143.6 °F)

Starting the unit



- To start the unit, press and hold the **OK** key for about 2 sec. The Diamond 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: In the center you will see the current temperature of the water bath in large digits; the line below this displays the selected target temperature.

Enjoying the first results...

- After the **Diamond** has heated the water bath to the desired temperature, place the meat into the cooking container.
- Using the timer function cook the meat for at least 60 minutes.
Use the timer function: Press one of the timer keys, use the arrow keys to select the desired time, and confirm with **OK**.
- After the time has elapsed, remove the meat from the cooking container.
- Open the vacuum package, remove and dry the meat somewhat allowing 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 many 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 successfully reproduce dishes and avoid making the same mistakes twice.

How can I influence the results?

Now that you know how to use your **Diamond**, 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.

If you wish to precisely monitor the cooking process and your results, try using a core temperature sensor. This is described in more detail in the chapter titled **A closer look** starting on page 37.

Working with your Diamond

Gaining experience

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 begin operating in the mode it was in before being switched off: Standby or regular operation. If the unit had been inoperating mode prior to being switched off, it will begin to heat up to the most recently selected target temperature.

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, your **Diamond** will return to Standby mode.

As soon as you have started your unit, it will begin heating up to the target temperature.

Operating the unit

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

- Use the **arrow keys** to adjust the settings or select the desired setting from a list.

- ❑ Confirm your selection by pressing **OK**.
- ❑ Press the **Esc** key to go back one step in order to correct the previous entry or to cancel the function.

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. The whole digits will change first. Confirm your selection by pressing **OK**.
2. Then adjust the decimal points. Confirm your selection by pressing **OK**.

This temperature will now be adopted as the new set point.

Using the quick keys

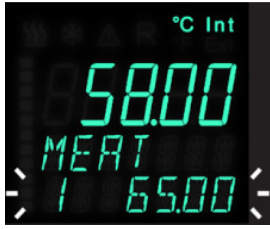


The unit has a total of 15 quick keys that are programmed temperature values. The stored temperature values can be retrieved via the three quick keys for **meat**, **fish**, and **vegetables**. Each of the three keys stores five values.

	45°	52°	54°	56°	65°
Fish	113°	125.6°	129.2°	132.8°	149°
	58°	60°	62°	66°	80°
Meat	136.4°	140°	143.6°	150.8°	176°
	80°	82°	85°	92°	95°
Vegetables	176°	179.6°	185°	197.6°	203°

The values in the second line are in °F.

You can retrieve the stored temperatures and use them as the new target value.



1. Press the desired quick key briefly in order to retrieve the stored temperatures. The first stored value will start blinking.
2. Continue pressing the quick key or use the arrow buttons to scroll through the temperature values stored under that quick key.
3. When you reach the desired temperature, press **OK**.

This displayed temperature will be adopted as the new set point.

Changing the stored temperatures

After you have more experience, you may wish to store your own temperature values. You can do this in two ways:

- Retrieve the stored values and adjust them or
- Store the current target value in the desired location, thereby overwriting the old value.

Adjusting stored temperature values

Adjust a stored temperature value as follows:

1. Press the quick key under which you wish to store a value.
2. Select the desired location by repeatedly pressing the quick key or by pressing the arrow keys.
3. Press and hold **OK** for at least two seconds to confirm the selection.
4. Use the arrow keys to select the desired temperature value and adopt that value by pressing **OK**.

1 63.50

The new value will be stored at the selected location. Doing this will not change the current set point.

Storing the current set point

If your current set point is the optimal temperature, you can easily store this temperature so it can be retrieved later.

Assume, for example, that you have determined that a temperature of 59.6 °C (139.3 °F) is the perfect temperature for your beef filet and you wish to store this temperature in the unit's memory. The temperature is still selected as the set point.

1. While in the main view, press and hold the desired quick key for at least two seconds (in this example: the Meat key).

1 59.60

Quick key 1 will be displayed; only the number will blink.

2. Use the arrow keys to select the desired storage space and then press **OK**.

The current temperature set point will be stored at the selected location.

Working with the timer

The **Diamond** has three timers that operate completely independently of each other. If a timer is active, the corresponding key will illuminate. All timers continue to run even when the unit is in standby mode until the audible signal is triggered or until the timer is canceled. As soon as a timer alarm triggers, an audible signal will be emitted and the corresponding timer key will blink until the signal is canceled by pressing **OK**.

Setting the timers

Proceed as follows to set one of the timer:

1. Press and hold the timer key for at least two seconds.

The timer view will appear and the most recently set timer value will blink on the bottom line. The timer's value is always preset with the most recently used time. A timer with no preset temperature will display bars.

2. Use the arrow keys to set the number of hours and confirm with **OK**.
3. Use the arrow keys to set the number of minutes.

The timer's upper limit is 99 hours 59 minutes.

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

The timer will be activated with the selected time. The timer key's LED will be illuminated whenever the timer is active.



Displaying the timer

While the unit is in operation, the active timer will be shown in the main view underneath the target temperature (with timer number and remaining time).

If several timers are active at the same time, the timer with the least amount of remaining time will be shown.





To view a different timer, press the desired timer key once.

That timer will then be shown on the lower line. After a few moments the display will automatically switch back to the timer with the least amount of remaining time.

Adjusting a timer

You can adjust a timer at any time while the unit is in operation, even if the signal has already triggered.

1. Press the desired timer key to display the timer.
2. Use the arrow keys to add (+) or subtract (-) minutes from the timer.

The maximum adjustable time is 999 minutes. You can subtract up to the same number of minutes that are remaining on the timer.

3. Press **OK** to change the timer duration by the entered value.

The timer's new total running time will be stored; it will be displayed as the preset value the next time the timer is programmed.

Notice

There are upper and lower limits for adjusting the timer: The stored value (the timer's total running time) may not exceed the upper limit of 99 hours 59 minutes.



Switching off the timer

You can switch off a timer at any time while the unit is in operation by pressing and holding the corresponding timer key for at least two seconds.

However, the used timer value will be stored and becomes the preset value the next time the timer is set.

When the timer triggers

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

The timer will continue to run even while the signal is active and display the number of minutes that have passed since the signal was triggered as a negative number. This shows you at a glance how long beyond the selected time the food has been in the water bath.

Muting the audible signal

You can mute the audible signal by pressing **OK** once.

However, this will not switch off the signal itself. The timer button will continue to blink for as long as the signal is active and the timer continues to run. The number of minutes to pass since the signal was triggered will be displayed as a negative number.

After a set length of time (by default 5 minutes) passes, the audible signal will be reactivated.

Switching off the signal

To permanently switch off the signal, press and hold the corresponding timer key for at least 2 seconds.

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

Adjusting the timer after the signal is triggered

You can adjust the timer as described above even after the timer has run down and the signal has triggered.

For example, let us assume that your filet has not been adequately cooked after the timer has run down and you wish to keep it in the water bath for another 10 minutes.

1. Press the timer key.
2. Use the arrow key to select the value +10M and then press **OK**.

Starting at that moment, the timer will run for 10 additional minutes and reactivate the signal when that time has passed.

A closer look

Working with the core temperature sensor

To achieve the most precise results possible with the Sous Vide technique, you will need to use the optional core temperature sensor. Simply connect the core temperature sensor to the socket on the rear of your **Diamond**. Then insert the tip of the core temperature sensor into the food being cooked, so you will know the exact core temperature of the food at all times.

There are two different ways to approach this method:

1. As soon as the meat reaches your desired core temperature, you can consider it fully cooked and serve it immediately.

2. Once the core temperature has been reached, the meat must be cooked for an additional specified time in order to comply with the relevant HACCP safety regulations.

The sensor alarm monitors the core temperature for you. You should set a separate alarm for the core temperature sensor: The alarm will be activated when the desired core temperature is reached; you can then continue preparing the cooked food.

Connecting the core temperature sensor

We recommend using only the *fusionchef* by *Julabo* core temperature sensor, which has been calibrated at our factory and is designed to work with precision.

1. Plug the core temperature sensor's cable into the proper Pt100 socket on the rear of the unit.

The main view display will change as soon as the sensor is inserted:

The temperature measured by the sensor will now display instead of the temperature in the water bath. This is indicated by the **Ext** symbol on the top line.



Switching the view manually

2. To switch to the main view, press the **OK** key once. You will now see the temperature measured inside the water bath. This is indicated by the **Int** symbol on the top line.
3. Pressing **OK** once again will switch back to the core food temperature sensor **Ext**.

Inserting the core temperature sensor



Notice

Although the core temperature sensor is inserted into the vacuum bag through the special adhesive sealing tape, we cannot exclude the possibility that the food will come into contact with liquid from the water bath. For reasons of hygiene, do not serve food from the bag into which the core temperature sensor has been inserted. Instead, use this food as a reference or retention sample only for pieces of the same food of equal size.

1. Place a piece of adhesive sealing tape onto the vacuum bag.
2. Insert the sensor through the sealing tape and into the food so that the tip of the sensor is at the center of the food.

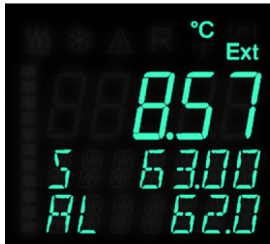
Exercise caution in order to avoid puncturing the other side of the bag.

Setting the alarm for the core temperature sensor

You can activate a temperature sensor alarm in addition to the timers. Set this alarm to the desired core temperature of the food. As soon as the sensor detects this core temperature, the alarm will trigger.

Setting and activating the alarm

1. To set the alarm, press and hold the **Core temperature sensor** key for about 2 seconds. The sensor alarm will be displayed and the alarm temperature will blink.



Display the temp. sensor alarm

Switching off the temp. sensor alarm

Muting the alarm

Switching off the alarm

Temperature sensor removed or connection separated

2. Use the **arrow keys** to set the desired core temperature. The alarm will signal when the temperature reaches 1 °C (33.8 °F) below the target temperature.
3. Press **OK** to activate the temperature sensor alarm.

As soon as the temperature sensor alarm is activated, the temperature sensor key will illuminate and the selected alarm value will be shown on the bottom line of the main display.

However, if another timer is also activated, this timer will be shown in the main view instead.

In this case, you can show the temperature sensor alarm by pressing the temperature sensor key once.

As with the timer alarm, you can also temporarily mute the temperature sensor alarm.

To do this, press **OK** once. The alarm will continue to run and the sensor key will blink. The audible signal will be reactivated after a pre-set period of time (standard setting 5 Min.). Refer to the "Alarm delay" chapter beginning on page 52 for more information on this topic.

To permanently switch off the temperature sensor alarm, press and hold the temperature sensor key for at least two seconds. The alarm is now canceled.

If the core temperature sensor's plug is accidentally pulled out or the connection separated in any other way while the temperature

sensor alarm is activated, the **Diamond** will display an alarm and error message.

The unit will beep and display CODE 15:
EXTERNAL SENSOR WARNING - CHECK EXTERNAL SENSOR

If this occurs, make sure the temperature sensor is properly inserted or check for a broken connection. Eliminate the problem.

Automating processes

Using automatic cooking time detection

If you are a professional chef and would like to achieve consistent results with the Sous Vide technique, you will benefit from cooking time detection.

Cooking time detection utilizes a temperature sensor alarm that you have recorded set. As soon as you have determined the optimal cooking time (with the aid of the core temperature sensor), you can store the required cooking time under any of the timers. This will make the time accessible whenever you use that timer.

By using this stored cooking time you will produce consistent results for that item without using the core temperature sensor. You simply use the cooking time that you stored in the timer.

Activating automatic cooking time detection

Access the configuration menu to use the automatic cooking time feature.



CONFIG

CDETECT

ON

1. To access the menu, press the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **CONFIG** menu entry and confirm with **OK**.
3. Select **CDETECT** (Cooking Time Detection) and confirm with **OK**.
4. Select **ON** and press **OK**.

Automatic cooking time detection has been activated.

Starting automatic cooking time detection

Once automatic cooking time detection has been activated in the menu, you can start using this feature by activating setting the temperature sensor alarm.

1. Activate the temperature sensor alarm as described above.
2. Press and hold the **sensor key**.
3. Use the **arrow keys** to select the desired core temperature.
4. Confirm your selection by pressing **OK**.

The temperature sensor alarm is now set and the required time will be recorded.

Storing the cooking time

As soon as the selected core temperature has been reached, the alarm will signal as usual. As soon as you switch off the alarm, you will have the option to store the required cooking time in one of the timers.



1. When the food reaches its optimal temperature, trigger the alarm by pressing and holding the temperature sensor key for at least 2 seconds.

As soon as the alarm has triggered, the unit will give you the option of storing the cooking time in whichever timer you choose. The message **STORE C-TIME** will appear on the display and all three timer keys will blink.

2. To store the cooking time, choose any of the timers and press the corresponding timer key.

The cooking time will be adopted as the new preset value of the selected timer. The next time you activate the selected timer, the most recently stored cooking time will be displayed as the preset value.



Notice

You can also store the cooking time in to a timer that is currently active. The active timer will be unaffected and will continue to run.

Not storing the cooking time

If you do not wish to store the cooking time on any of the timers, press the **Esc** key once. This will take you back to the main view without any changes.

Extending the cooking time

If the food has not reached the optimal temperature after the alarm has been triggered, you can extend the cooking time. Do this by temporarily muting the audible signal by pressing **OK** once. The time that passes until

the alarm activates again will be added to the cooking time (see below).

Retrieving the cooking time

Retrieving a stored cooking time is very easy.

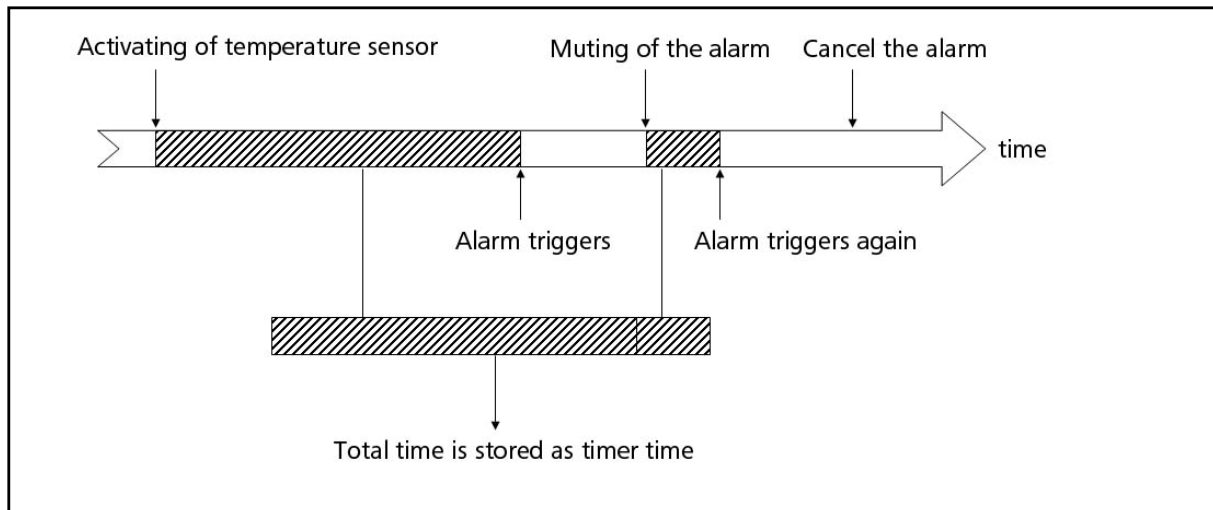
1. Press and hold the timer key with the desired time for at least two seconds. The timer view will appear and your preset cooking time will be displayed.
2. Use the arrow keys to adjust the time desired. Then press and hold **OK** for at least two seconds in order to set your new cooking time as the timer.

Your desired cooking time is now activated.

What exactly will be stored?

The time that is stored during **cooking time detection** is the sum of the following times:

- The time from activating setting of the temperature sensor until alarm is triggered.
- The time from muting of the alarm until re-activation of the alarm.



Consider the following example:

1. You activate automatic cooking time detection in the menu.
2. You set the temperature sensor alarm to the desired core temperature.
3. As soon as the core temperature is reached, the alarm activates. The time that passed between these two events is stored as your cooking time.
4. However, you decide that the meat has not been adequately cooked. Therefore, you temporarily mute the alarm.
5. After the specified time passes, the alarm activates once again. The time that passes between muting and re-activation of the alarm will also be added to the cooking time. The same applies to every subsequent muting of the alarm.
6. Cancel the alarm in order to assign the total cooking time to any of the timers.

Special functions

Automatic temperature monitoring

Using automatic temperature monitoring

Our units are designed to achieve a precise target temperature in the water bath. Temperature changes, like those caused by the addition of refrigerated food, are quickly compensated for. However, certain conditions such as the adding cold water to the water bath may result in larger temperature fluctuations.

Automatic temperature monitoring gives you the ability to precisely monitor the target temperature and stay informed of any temperature deviations. An alarm will activate when the temperature in the water bath deviates from the target temperature by a specified amount.



CONFIG

TEMPMON

Setting temperature limits

1. To access the menu, press the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **CONFIG** menu entry and confirm with **OK**.
3. Select **TEMPMON** and confirm with **OK**.
4. Instead of the **OFF** entry, select the specified number of degrees.

The number of degrees indicates the range in which the water temperature may fluctuate above and below the pre-set value before triggering an alarm. For example, if the target temperature is 60 °C (140 °F) and the range is set at

0.5 °C (33 °F), then the temperature may fluctuate from 59.5 °C to 60.5 °C (139.1 to 140.9 °F).

5. Use the arrow keys to set the appropriate temperature limits. Then confirm your selection by pressing **OK**.

Temperature monitoring is now activated.



Notice

Guidelines for temperature limits:

- If using a larger cooking container, set the limit from 0.5 °C to 1 °C (33 °F to 34 °F); in smaller containers, choose a larger range.

Activating temperature monitoring

Temperature monitoring is switched on as soon as you set the temperature limits in the menu. However, it is fully activated only once the specified target temperature has been reached. Temperature monitoring is deactivated while the unit is heating up (or cooling down).

This applies also when the target temperature is changed:

If a new target value is entered, temperature monitoring will be deactivated until the new target temperature has been reached.

Temperature monitoring triggers

Once the target temperature has been reached with the temperature monitoring activated an audible signal and alarm message will display every time the temperature exceeds the specified range.

- CODE 03:** EXCESS WATER TEMPERATURE WARNING -
- CODE 04:** LOW WATER TEMPERATURE WARNING -
- You may also mute this alarm. Do this the same way you mute other alarms - by pressing **OK** once. The alarm message will still be visible.
- The alarm will switch off automatically as soon as the current temperature is back within the tolerance range.

Recording and exporting data

The **Diamond** contains an integrated datalogger that allows you to record temperature values from the core temperature sensor. This facilitates documenting all cooking processes in compliance with HACCP guidelines. You can define the intervals at which measurements will be taken. You can export the data to a PC for archiving or further processing.



Notice

The datalogger can record temperatures only when the core temperature sensor is attached.

Setting the date and time

You must set the date and time in order for the datalogger to record the correct data.



CONFIG

TIME/DT

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **CONFIG** menu entry and confirm with **OK**.
3. Select **TIME/DT** and confirm with **OK**.
4. Set the time, date, and year and confirm with **OK**.

Activating the datalogger

The datalogger has three different recording modes. You select the desired recording mode when activating the datalogger.



LOGGER

MODE

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **LOGGER** menu entry and confirm with **OK**.
3. Select **MODE** and confirm with **OK**.
4. Select the desired recording mode and confirm with **OK**.



The datalogger is now activated and will store data as specified in its settings.

The **Ext** symbol blinks while the datalogger is active. The amount of memory space used is indicated by the bars on the left side.

Internal datalogger modes

OFF	Datalogger is switched off
ALWAYS	The datalogger will record at all times. When the memory is full, the oldest data will be overwritten. The memory space will not be displayed and the memory will not be deleted when the data is exported.
MEMFULL	The datalogger will record whenever a temperature sensor is attached. This mode will record only until the memory is full. The bars on the left side of the display indicate how much memory has been used. When the memory is full, an error message will display. You must then export or delete the contents of the memory in order to continue recording.
S-ALARM	The datalogger will record only while the core temperature sensor is activated. In this mode, the amount as well, the amount of used memory is displayed and an error message will tell you when the memory is full. However, the memory will be automatically deleted whenever the temperature sensor alarm is reprogrammed.

Adjusting the recording interval

The datalogger records data at specified time intervals. This ensures that important data will be recorded without unnecessarily filling up the memory. The factory default recording interval is five minute.

You can adjust this interval if you require shorter recording intervals or if the memory fills up too fast.



LOGGER

RANGE

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **LOGGER** menu entry and confirm with **OK**.
3. Select **RANGE** and confirm with **OK**.
4. Set the desired recording interval between 1 and 240 minutes and confirm with **OK**.

The datalogger will now record at the specified intervals.

Deleting the memory

When the **Diamond** is operated in the **MEM-FUL** or **S-ALARM** modes and the data memory becomes full, it will emit the following error message:

DATALOGGER MEMORY FULL - CLEAR OR
READOUT DATALOGGER

In order for the datalogger to continue recording, you must either export or manually delete the data.

Delete the contents of the memory as follows:



LOGGER

CLR MEM

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **LOGGER** menu entry and confirm with **OK**.
3. Select **CLR MEM** and confirm with **OK**.

The internal data memory will now be deleted.

Exporting data from memory

The Easy *fusionchef* software (Order No. 9FX1160) makes it effortless to export the contents of the internal memory.

Additional menu settings

You can adjust additional settings in the **Diamond** configuration menu.

Setting the alarm delay

If you mute a timer alarm or a temperature sensor alarm, it will automatically reactivate after a specified length of time. This time delay is set at the factory to 10 minutes (600 seconds), but you can adjust the time as required.

Adjust the alarm activation delay as follows:



CONFIG

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **CONFIG** menu entry and confirm with **OK**.

ALDELAY

3. Select **ALDELAY** and confirm with **OK**.
4. Set the desired alarm delay in seconds (10 to 999) and confirm with **OK**.

The time delay that you set will now be adopted.

Switching key tones on and off

If desired, the unit will emit a short beep every time you press a key. You can select whether the unit will emit a beep every time you press a key or only for confirmations, such as temperature entries.

**CONFIG****KEYSNDS**

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **CONFIG** menu entry and confirm with **OK**.
3. Select **KEYSNDS** and confirm with **OK**.
4. Select whether and when a key tone will be emitted:

NEVER	No key tones will be emitted.
CONFIRM	Key tones will be emitted for confirmations.
ALWAYS	A tone will be emitted every time you press a key.

5. Confirm your selection by pressing **OK**.
The key tones will be switched on or off according to your selections.

Setting the temperature units

You can choose to display the temperature in either **degrees Celsius** or **degrees Fahrenheit**.

Change the temperature units as follows:



CONFIG

UNIT

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **CONFIG** menu entry and confirm with **OK**.
3. Select **UNIT** and confirm with **OK**.
4. Select the desired temperature unit **°C** or **°F** and confirm with **OK**.

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 cause you to lose all of your stored values. However, the datalogger memory and the selected temperature units will remain intact.



RESET

1. Put the unit into standby mode by pressing and holding **OK** for at least 2 seconds.
2. Then access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
3. Use the arrow keys to select the **RESET** menu entry and confirm with **OK**.

The unit will now be reset to the factory settings. Only the data memory and 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 form a crusty deposit inside the bath and on immersed parts of the circulator.
- Dirty vacuum packaging can release particles into the warm bath water.

Draining combi units

Use the integrated drain tap to empty a **Diamond S, M, L, or XL** combi unit.

1. Switch off the unit and pull the mains 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 power 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!



- Switch 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.**

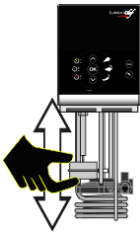
Notice

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. Use 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 well with water and dry the parts with a soft towel.
3. Clean the external parts of the unit with a towel and soapy water.



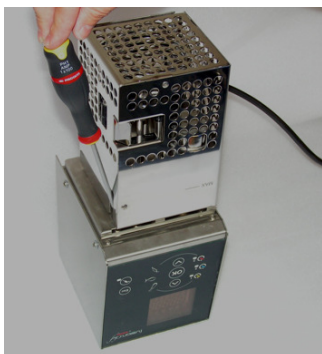
4. **Check the low-level protection float switch**

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

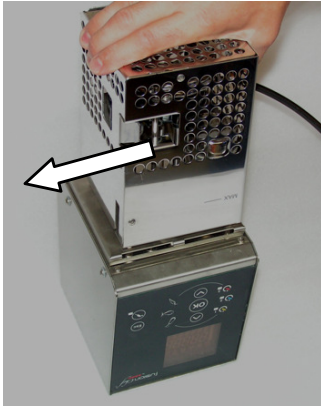
Removing/installing the protection grid

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

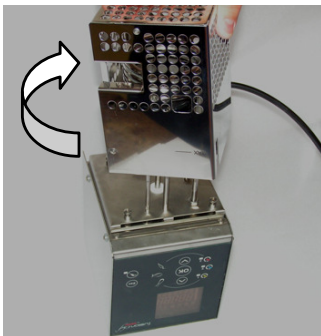
1. **Switch off the unit and pull the power plug.**
2. Remove the unit from the bath tank.
3. Turn the unit and open the four fastening screws using a cross screwdriver.



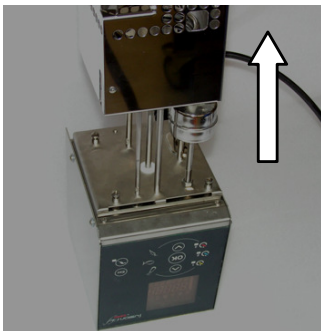
Care and maintenance



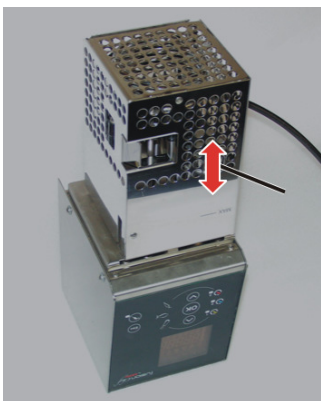
4. Move the protection grid to the left.



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.

Calibrating Diamond in ice water bath

Nevertheless, it is possible to recalibrate the **Diamond**. In the unlikely event that it is necessary to recalibrate the unit, you can calibrate it as follows in an ice water bath.

Calibrating the external sensor

Like the unit itself, the core temperature sensors are calibrated precisely before delivery. However, if after long periods of use you notice imprecise or improbable values, you can check its accuracy. To do this, place the sensor into a water bath and compare the internal and external temperatures. If the two temperatures deviate from each other, calibrate the external sensor as described below.

Calibrating the external sensor

Starting sensor calibration

1. Make sure that the unit is running and that the temperature has stabilized for at least three minutes.
2. Place the external sensor near the pump discharge and fix it in place.



SENSCAL

EXECUTE

3. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
4. Use the arrow keys to select the **SENSCAL** menu entry and confirm with **OK**.
5. Select **EXECUTE** and confirm with **OK**.

Sensor calibration will now start. The necessary steps will be shown on the display. Please follow these instructions.

Performing sensor calibration

All safety functions will remain operational. The procedure can be interrupted at any time by pressing the **Esc** key.

1. If you have not done so already, position the external sensor in the bath. Wait until **OK** appears.

Calibration will now perform automatically. The bath temperature is used as the reference value for calibrating the external sensor.

2. As soon as the unit indicates that calibration had completed, press **OK**.

The values for calibrating the temperature sensor will now be saved.

Deleting the most recent calibration

If you have determined that a calibration is unnecessary or faulty, you can delete the most recent calibration.

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **SENSCAL** menu entry and confirm with **OK**.
3. Select **ERASE** and confirm with **OK**.



SENSCAL

ERASE

The most recent calibration of the temperature sensor will be deleted.

Calibrating the unit in an ice water bath



Notice

Perform calibration only if absolutely necessary or if multiple external control measurements have confirmed that the unit's measurements are inaccurate.

Check for proper conditions

The bath temperature must not be too high when calibrating the unit. Therefore, make sure that the temperature of the water bath is not above 20 °C (68 °F)

You will need large quantities of ice for calibration. Make sure you have plenty of ice cubes available.

The unit must be in standby mode.

Note that ice-water calibration requires approximately 30 minutes.

Starting calibration

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **AUTOCAL** menu entry and confirm with **OK**.
3. Select **EXECUTE** and confirm with **OK**.

Calibration will now start. During calibration, all functions will be blocked and the warning symbol will illuminate.



AUTOCAL

EXECUTE

Performing calibration

The necessary steps will be shown on the display. Please follow these instructions.

1. Drain water from the bath tank until OK starts blinking (fluid level sensor = low-level warning). Confirm by pressing **OK**.
2. Fill the bath tank with ice water up to the maximum level and confirm with **OK**.

The pump will start operating and circulate the bath water after you confirm with OK. This will melt the ice and the bath temperature will slowly drop to 0 °C.

When the temperature in the bath stabilizes, 0 °C (32 °F) has been reached. This serves as the reference value for calibration.

3. As soon as the reference value is reached, **OK** will blink in the display. Confirm this message. Calibration is now complete.
4. Switch off the unit. Wait at least ten seconds before switching the unit back on.

Calibration has been completed successfully. If an error message appears, follow the instructions on the display.

Deleting the most recent calibration

If you have determined that a calibration is unnecessary or faulty, you can delete the most recent calibration.

1. Access the menu by pressing the **Esc** and **sensor** keys **simultaneously**.
2. Use the arrow keys to select the **AUTOCAL** menu entry and confirm with **OK**.



AUTOCAL

ERASE

3. Select **ERASE** and confirm with **OK**.

The unit's most recent calibration will be deleted and the original factory settings will be restored.

Error messages

The following table contains some of the possible error messages with the associated warnings 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.

Basic troubleshooting

You may encounter the following situations, but these are usually quickly resolved.

Shown on the display	What should I do?
DATALOGGER MEMORY FULL	The datalogger's memory is full. Export the contents of the memory to a PC or delete the data via the menu.
CODE 15: EXTERNAL SENSOR WARNING	The connection to the external temperature sensor has been interrupted. Check the connection: Insert the sensor back into the socket or return it if the cable is defective.
CODE 03: EXCESS WATER TEMPERATURE WARNING CODE 04: LOW WATER TEMPERATURE WARNING	The bath temperature is either above or below the selected temperature limits. Check the temperature limit values. Wait until the bath temperature is within the limits or turn temperature monitoring off.
CODE 40: LOW WATER LEVEL WARNING	The level of the water in the bath is too low. Add additional water.

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?
CODE 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 not enough water in the bath tank: The float switch is defective (transport damage, etc.). Sent the unit to an authorized fusionchef by JULABO repair facility.
CODE 05: WORKING SENSOR ALARM	Please contact our service department.
CODE 06: SENSOR DIFFERENCE ALARM	Please contact our service department.
CODE 07: INTERNAL HARDWARE ERROR	Please contact our service department.
CODE 12: TEMPERATURE MEASUREMENT ALARM	Please contact our service department.
CODE 14: EXCESS TEMPERATURE PROTECTOR ALARM	Please contact our service department.
CODE 33: SAFETY SENSOR ALARM	Please contact our service department.

Information about the unit

Technical data

Unit type	Diamond	Diamond Z	Diamond S
Order No.	9FT2000	9FT2113	9FT2B20
Working temperature range	20 °C...95 °C (68 °F ...203 °F)		
Operating temperature range	0 °C...95 °C (32 °F ...203 °F)		
Temperature stability	+/- 0.01K		
Temperature setting	digital		
Temperature display	VFD display		
Display resolution	0.01 °C (0.01 °F)		
Temperature control	PID		
Connections			
Computer interface	RS232		
Internal temperature sensor	Pt100		
Circulating pump			
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 dimens. (WxDxH) inches	5.23x8.34x13	13.3(27.1)x7.5x13	13.3x22.7x14.7
Immersion depth	8...15 cm (3.15...5.9 inches)		-
(Empty) weight in kg	5 (11 lbs)	6.5 (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		
Warning and safety equipment			
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	optical and audible		
Permissible ambient temperature	+ 5 °C...+ 40 °C (41...104 °F)		
Mains connection	Available for all unit types		
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

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	Diamond M	Diamond L	Diamond XL
Order No.	9FT2B27	9FT2B44	9FT2B58
Working temperature range	20 °C...95 °C (68 °F ...203 °F)		
Operating temperature range	0 °C...95 °C (32 °F ...203 °F)		
Temperature stability	+/- 0.01K		
Temperature setting	Digital		
Temperature display	VFD display		
Display resolution	0.01 °C (0.01 °F)		
Temperature control	PID		
Connections			
Computer interface	RS232		
Internal temperature sensor	Pt100		
Circulating pump			
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)	22.5 (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		
Warning and safety equipment			
High temperature cut-off	fixed at 105 °C (221 °F)		
Low fluid protection	float switch		
Monitoring of the working temperature sensor	Plausibility control		
Temperature differential monitoring working/safety temp. sensors	Difference > 35K		
Error message	optical and audible		
Permissible ambient temperature	+ 5 °C...+ 40 °C (41...104 °F)		
Mains connection			
Available for all unit types			
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

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.

fusionchef by Julabo Technical Service

Telephone: 07823 / 51-170

Fax: 07823 / 2491

E-mail: 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 Request Form, which you can download at our website www.fusionchef.de. Please fill out

this form and include it with the device or fax or e-mail it to us in advance.

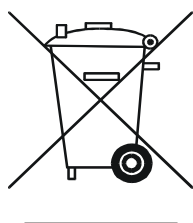
fusionchef by *Julabo* will not be liable for any damage caused by improper packaging.



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 device 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!