EN

Guardian 7000 Series
Hotplate-Stirrer, e-G71HSRDM
Hotplate-Stirrer, e-G71HS07C
Hotplate-Stirrer, e-G71HS10C
Instruction Manual

Table of Contents

1. INTRODUCTION

This manual contains installation, operation and maintenance instructions for the Ohaus Guardian 7000 Series. Please read the manual completely before using.

1.1. Safety Information

Safety notes are marked with signal words and warning symbols. These show safety issues and warnings. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results.

WARNING For a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.

CAUTION For a hazardous situation with low risk, resulting in damage to the device or the property or in loss of data, or minor or medium injuries if not avoided.

ATTENTION For important information about the product. May lead to equipment damage if not avoided.

NOTE For useful information about the product.

Warning Symbols


General hazard


Caution, hot surface


Electrical shock hazard

Safety Precautions


WARNING! DO NOT use the Hotplate-Stirrer in explosive atmospheres or with materials that could cause a hazardous environment from processing. Keep in mind the material flash point relative to the target temperature that has been set. Also, the user should be aware that the protection provided by the equipment may be impaired if used with accessories not provided by the manufacturer.
Always operate unit on a level surface for best performance and maximum safety.
DO NOT lift unit by the top plate.


CAUTION! To avoid electrical shock, completely cut off power to the unit by disconnecting the power cord from the wall outlet. Disconnect unit from the power supply prior to maintenance and servicing. Spills should be removed promptly after the unit has cooled down. **DO NOT** immerse the unit for cleaning. Alkalis spills, hydrofluoric acid or phosphoric acid spills may damage the unit and lead to thermal failure.


CAUTION! The top plate can reach 500°C, **DO NOT** touch the heated surface. Use caution at all times. Keep the unit away from explosive vapors and clear of papers, drapery, and other flammable materials. Keep the power cord away from the heater plate.


CAUTION! The rear panel of the 10x10-120V unit runs hot to the touch. Avoid contact during operation. Allow unit to cool before touching the rear panel.

DO NOT operate the unit at high temperatures without a vessel/sample on the top plate.

DO NOT operate the unit if it shows sign of electrical or mechanical damage.

WARNING! Units are NOT explosion proof. Use caution when heating volatile materials.


Earth Ground – Protective Conductor Terminal. Protective earthing of the equipment is achieved via connection of the provided power cord to a compatible grounded power outlet.


Alternating Current

1.2. Intended Use

The Ohaus Hotplate-Stirrers are intended for general laboratory use. Safety cannot be guaranteed if used outside of the intended use.

1.3. Package Contents

- Hotplate-Stirrer
- Power Cord (pre-attached for 10x10-120V units)
- Stir Bar (40 x 8 mm)
- 8” (20.3 cm) Stainless Steel RTD Temperature Probe
- In-Use Cover

1.4. Installation

Upon receiving the Ohaus Hotplate-Stirrer check to ensure that no damage has occurred during shipment. It is important that any damage that occurred in transport is detected at the time of unpacking. If you do find such damage, the carrier must be notified immediately.

After unpacking, place the Hotplate-Stirrer on a level bench or table, away from explosive vapors. Ensure that the surface on which the unit is placed will withstand typical heat produced by the unit and place the unit a minimum of six (6) inches from vertical surfaces. Do not position the equipment such that it is difficult to disconnect the power cord during use. Always place the unit on a sturdy work surface.

The Hotplate-Stirrer is supplied with a 3 conductor, grounded power cord that should be plugged into a matching standard grounded outlet. If the cord supplied does not meet your needs, please use an approved power cord that has ratings equal or exceeding those of the originally provided cord and that complies with the local/national regulations of the country in which the equipment is to be used. Replacement of the plug must be made by a qualified electrician.

1.5. Overview

1.5.1 Dimensions

Round Top Hotplate-Stirrer

Overall dimensions (L x W x H)	26.7 x 17.3 x 12.7 cm (10.5 x 6.8 x 5”)
Top plate dimensions:	Ø 13.5 cm (5.3”)
Top plate material:	Aluminum
Electrical (50/60 Hz):	120 volts ±10%: 8.3 amps 230 volts ±10%: 4.6 amps
Fuses:	10A time-delay, 5x20mm, 250VAC
Temperature range:	Ambient +5° to 380°C
Temperature stability of top plate[+]:	± 1% > 100°C, ± 1°C ≤ 100°C
Temperature stability with temperature probe[++]:	± 0.5% > 100°C, ± 1°C ≤ 100°C
Temperature accuracy of top plate:	± 5°C (@100°C after SPC)
Temperature accuracy with temperature probe[++]:	± 0.5°C (@100°C after SPC)
Stir capacity:	20 L
Speed range:	60 to 1600 rpm
Speed stability:	± 2%
Weight capacity:	Up to 19.9 kg (44 lbs)
Ship weight:	2.8 kg

Note: + 2” diameter center of top plate

++ 800 mL of water in 1 L flask, 38 mm stir bar, 150 rpm and 50°C, 23°C ambient, 8” (20 cm) SS probe

7×7 Hotplate-Stirrer

Overall dimensions (L x W x H)	30.7 x 22.4 x 12.2 cm (12.1 x 8.8 x 4.8”)
Top plate dimensions:	17.8 x 17.8 cm (7 x 7”)
Top plate material:	Ceramic
Electrical (50/60 Hz):	120 volts ±10%: 10.0 amps 230 volts ±10%: 6.0 amps
Fuses:	10A time-delay, 5x20mm, 250VAC
Temperature range:	Ambient +5° to 500°C
Temperature stability of top plate[+]:	± 1% > 100°C, ± 1°C ≤ 100°C
Temperature stability with temperature probe[++]:	± 0.5% > 100°C, ± 1°C ≤ 100°C
Temperature accuracy of top plate:	± 5°C (@100°C after SPC)
Temperature accuracy with temperature probe[++]:	± 0.5°C (@100°C after SPC)
Stir capacity:	15 L
Speed range:	60 to 1600 rpm
Speed stability:	± 2%
Weight capacity:	Up to 14.5 kg (32 lbs)
Ship weight:	2.8 kg

Note: + 2” diameter center of top plate

++ 800 mL of water in 1 L flask, 38 mm stir bar, 150 rpm and 50°C, 23°C ambient, 8” (20 cm) SS probe

10×10 Hotplate-Stirrer

Overall dimensions (L x W x H)	42.2 x 28.6 x 12.2 cm (16.6 x 11.25 x 4.8”)
Top plate dimensions:	25.4 x 25.4 cm (10 x 10”)
Top plate material:	Ceramic
Electrical (50/60 Hz):	120 volts ±10%: 11.2 amps 230 volts ±10%: 7.0 amps
Fuses:	120 volts: 15A quick-acting, 6.3x32mm, 125VAC 230 volts: 10A time-delay, 5x20mm, 250VAC
Temperature range:	Ambient +5° to 500°C
Temperature stability of top plate[+]:	± 1% > 100°C, ± 1°C ≤ 100°C
Temperature stability with temperature probe[++]:	± 0.5% > 100°C, ± 1°C ≤ 100°C
Temperature accuracy of top plate:	± 5°C (@100°C after SPC)
Temperature accuracy with temperature probe[++]:	± 0.5°C (@100°C after SPC)
Stir capacity:	18 L
Speed range:	60 to 1600 rpm
Speed stability:	± 2%
Weight capacity:	Up to 14.5 kg (32 lbs)
Ship weight:	5.4 kg

Note: + 2” diameter center of top plate

++ 800 mL of water in 1 L flask, 38 mm stir bar, 150 rpm and 50°C, 23°C ambient, 8” (20 cm) SS probe

1.5.2 Device Setup

Round Top, 7×7, 10×10-230V

A. Display Screen

B. Standby Indicator

C. Left Knob: Controls temperature and settings menu

D. Right Knob: Controls speed and timer

E. USB Port

F. External RTD Probe Port

G. Fuse

H. Power Entry Module (PEM)

I. Threaded Knob for Accessory Rod

J. Standby Switch

K. Feet: Not adjustable

10×10-120V

A. Display Screen

B. Standby Indicator

C. Left Knob: Controls temperature and settings menu

D. Right Knob: Controls speed and timer

E. USB Port

F. External RTD Probe Port

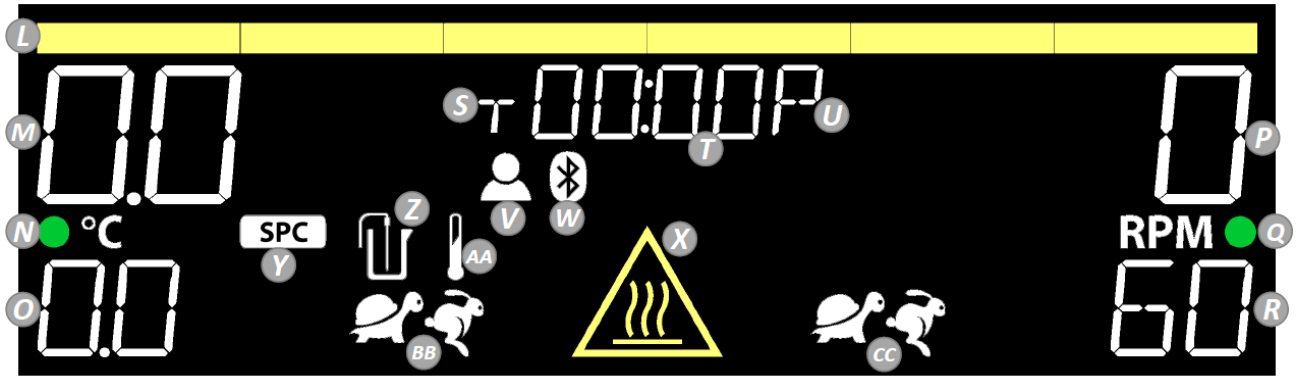
H. Power Cord

I. Threaded Knob for Accessory Rod

J. Standby Switch

K. Feet: Not adjustable

1.5.3 Display (All Units)



L. Heater Indicator Bar: Illuminates when the heater is ≥ 40°C.

M. Heater Temperature: Switches to external probe temperature when the probe is plugged in and Z is illuminated.

N. Heater Indicator: Illuminates when heater is running

O. Heat Setting

P. Stir Speed

Q. Stirrer Indicator: Illuminates when stirrer is running

R. Speed Setting

S. Temperature Priority Icon

T. Timer: Hours : Minutes / Minutes : Seconds

U. Program Icon: Illuminates when a program is running.

V. SmartPresence™ Icon

W. Bluetooth® Icon: Illuminates when *SmartLink*™ is enabled.

X. Hot Top Caution Indicator: Illuminates when the heater is ≥ 40°C.

Y. Single Point Calibration Icon

Z. External Probe Icon

AA. SmartHeat™ Icon

BB. SmartRate™ Heater Icons:

- Turtle –slower ramp rate (more precise)
- Rabbit –faster ramp rate

CC. SmartRate™ Stirrer Icons:

- Turtle –slower ramp rate (more precise)
- Rabbit –faster ramp rate

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2 OPERATION

2.1 Getting Ready

To get ready:

1. Plug the female end of the provided power cord into PEM (H) on the rear side of the unit.

   Note: For the 10x10-120V unit, this end of the power cord is fixed to the rear side of the unit.

2. Plug the male end of the power cord into a matching standard grounded outlet.

3. The unit will beep once and the screen will illuminate with three displays:

   a) The first will display the unit type (left) and the software version (right).

   b) The second will display the unit's electrical power (left) and frequency (right).

   c) The third will be the unit's main operating screen.

   Note: If the third screen is blank and the red standby indicator (B) to the left of the screen is illuminated, the unit is in standby mode.

2.2 Standby Mode

1. The rocker switch (J) on the right side of the unit controls standby mode.

2. When the unit is switched off:

   a) All heating, stirring, and timing functions will turn off.

   b) The screen will be blank and the red standby indicator (B) to the left of the screen will be illuminated.

   If the heater temperature is above 40°C, the hot top caution indicator will remain illuminated as well as the current top plate temperature and "HOT".

3. When the unit is switched on:

   a) All heating, stirring, and timing functions will remain off.

   b) The main operating screen will return.

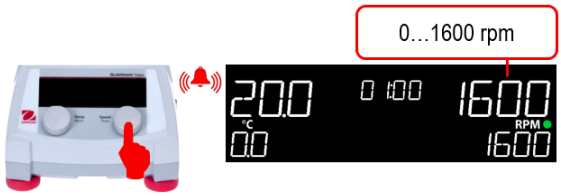
   Previous heating, stirring, and timing settings will be displayed.

   c) The unit is ready for normal use.

2.3 Controlling the Stirrer

1. Rotate the right knob (D) to control the speed setting (R).
   a) Clockwise rotation will increase the speed setting (R).
   b) Counterclockwise rotation will decrease the speed setting (R).

2. To turn on the stirrer, press and hold the right knob (D) until the unit beeps and the stirrer indicator (Q) illuminates.
   a) The unit will beep once to confirm the stirrer has been turned on.
   b) The stirrer indicator (Q) will illuminate next to the “RPM” symbol to indicate that the stirrer is running.
   c) The timer (T) will begin counting up from 00:00, or down from a set time.
   d) The actual stir speed (P) will be displayed in the top right region of the screen.

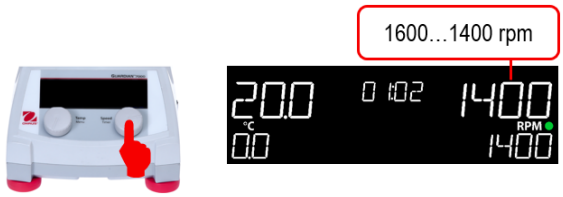


3. To change the speed setting while the stirrer is on:
   a) Rotate the right knob (D) to the new speed setting.

      The speed setting (R) will blink to indicate that the speed setting is not confirmed.

   b) Briefly press the right knob (D) to confirm the new speed setting.

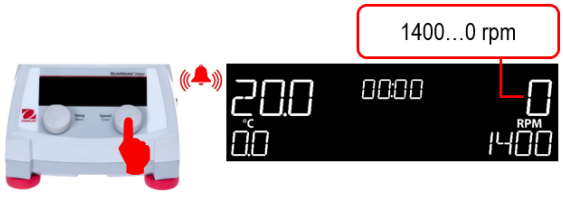
      The speed setting (R) will stop blinking once the new setting is confirmed.



   Note: If the speed setting (R) remains idle without confirmation for 4 seconds, it will reset to the current setting

4. To turn off the stirrer, press and hold the right knob (D) until the unit beeps and the stirrer indicator (Q) disappears.
   a) The unit will beep once to confirm the stirrer has been turned off.
   b) The stirrer indicator (Q) next to the “RPM” symbol will disappear to indicate that the stirrer is off.
   c) The timer (T) will reset back to 00:00 or the previous timer setting.

      If the heater is still running, then the timer will continue to count.



STIRRING OPERATING TIPS

The stirrer increases speed at a steady rate until the setpoint is reached. If the stirrer is not reaching its setpoint: 1) the stir bar may be too large, 2) the liquid may be too viscous, 3) the setpoint speed may need to be reduced. Additionally, the magnetic strength of stir bars reduce over time and may need to be replaced.

When heating and stirring a reaction vessel within an oil bath or similar set-up, the stirring function will stir up to approximately one inch (2.5 cm) from the top plate. The stirring speed will vary according to liquid viscosity, spin bar length, and distance from top plate. Adjust one or all of these to achieve the desired stirring speed. For example: the closer the reaction vessel is to the top plate, the strong the magnetic connection between the unit and the stir bar.

2.4 Controlling the Top Plate Heater

1. Rotate the left knob (C) to control the heat setting (O).
   a) Clockwise rotation will increase the heat setting (O).
   b) Counterclockwise rotation will decrease the heat setting (O).
2. To turn on the heater, press and hold the left knob (C) until the unit beeps and the heater indicator (N) illuminates.
   a) The unit will beep once to confirm the heater has been turned on.
   b) The heater indicator (N) will illuminate next to the "°C" symbol to indicate that the heater is running.
   c) The timer (T) will begin counting up from 00:00, or down from a set time.
   d) The current heater temperature (M) will be displayed in the top left region of the screen.
   e) When the heater temperature (M) is above 40°C, the hot top caution indicator (X) and the heater indicator bar (L) will be illuminated.
   f) The heater indicator bar (L) will incrementally illuminate as the heater progresses to the set temperature.
3. To change the heat setting (O) while the heater is on.
   a) Rotate the left knob (C) to the new heat setting.

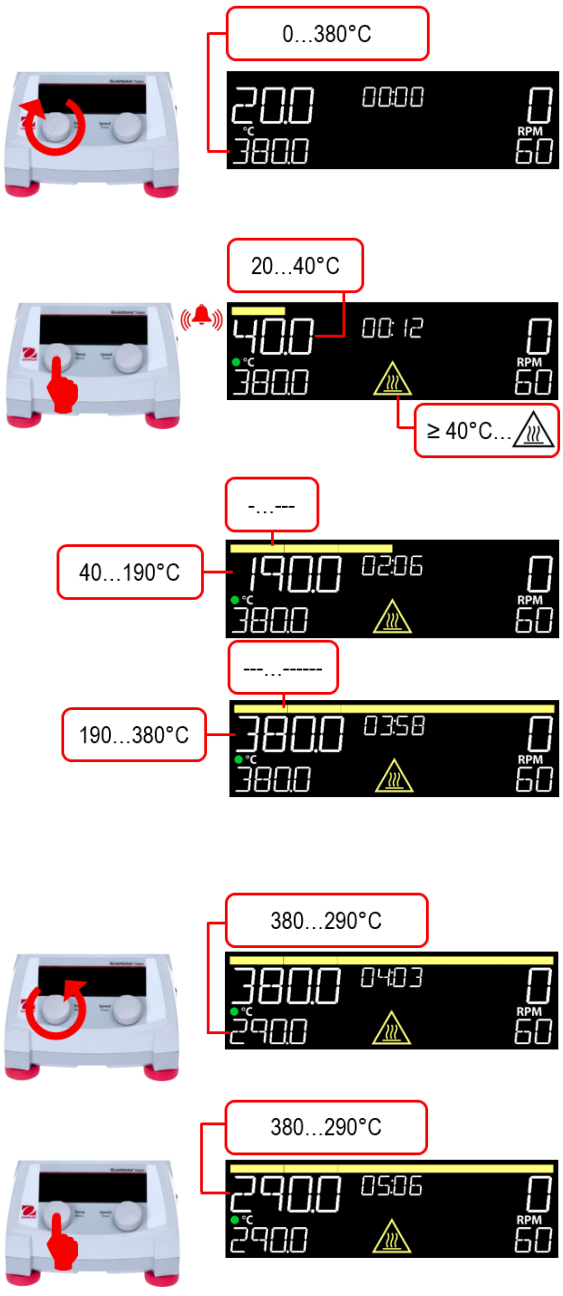
      The heat setting (O) will blink to indicate that the heat setting is not confirmed.
   b) Briefly press the left knob (C) to confirm the new heat setting.

      The heat setting (O) will stop blinking once the new setting is confirmed.

   Note:

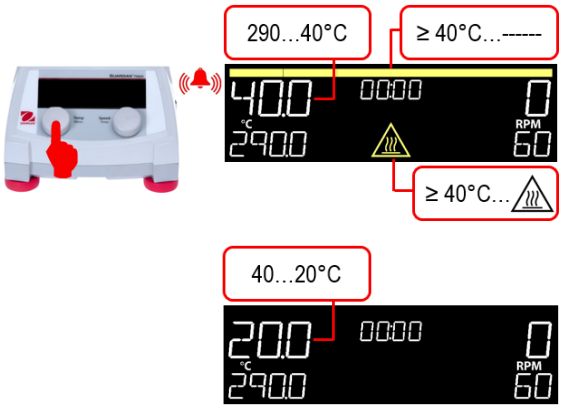
   If the heat setting (O) remains idle without confirmation for 4 seconds, it will reset to the current setting.

   The heater indicator bar (L) will remain fully illuminated if the heater temperature (M) is greater than or equal to the temperature setting (O).



4. To turn off the heater, press and hold the left knob (C) until the unit beeps and the heater indicator (N) disappears.
   a) The unit will beep once to confirm the heater has been turned off.
   b) The heater indicator (N) next to the "°C" symbol will disappear to indicate that the heater is off.

      CAUTION: This does not mean that the top plate is safe to touch.
   c) The timer (T) will reset back to 00:00 or the previous timer setting.
   d) Once the heater temperature (M) cools below 40°C, the hot top caution indicator (X) and heater indicator bar (L) will disappear.



HEATING OPERATING TIPS

Overshoot:

The unit may overshoot the temperature up to 10°C before stabilizing at the setpoint. The three methods to minimize overshoot are:

1. Use the SmartRate™ Feature.
2. Metal containers minimize overshoot. **CAUTION! When heating metal containers on a ceramic top plate, it is recommended to use the lowest temperature setting possible to limit thermal stress to the ceramic top plate.**
3. If a glass vessel is used, anticipate overshoot. Start with a temperature setpoint 5 to 10°C below the desired temperature. When the temperature stabilizes at this lower setting, increase the heater to the final temperature. Overshoot is then reduced to about 1°C.

The temperature display on the units show the actual temperature of the heater, not the top plate or the sample. The vessel's contents being heated may be at a lower temperature depending on the size and thermal conductivity of the vessel. It may be beneficial to monitor the temperature of the vessel's contents and adjust the setpoint temperature accordingly. If you need precise control, use the Ohaus External Temperature Probe.

Typical Time to Boil Water

The chart below is an example of an approximate time to boil for the specified amount of water in a specific vessel. These values are only approximate and can vary from unit to unit. Values are based on 23°C water in an ambient environment of 23°C.

Unit Size	Heater Temp. Limit	Volume of Water	Typical Time to Boil
Round Top	380°C	1L in 2L Beaker	≈ 24 min
7×7	500°C	1L in 2L Beaker	≈ 21 min
10×10	500°C	1L in 2L Beaker	≈ 25 min

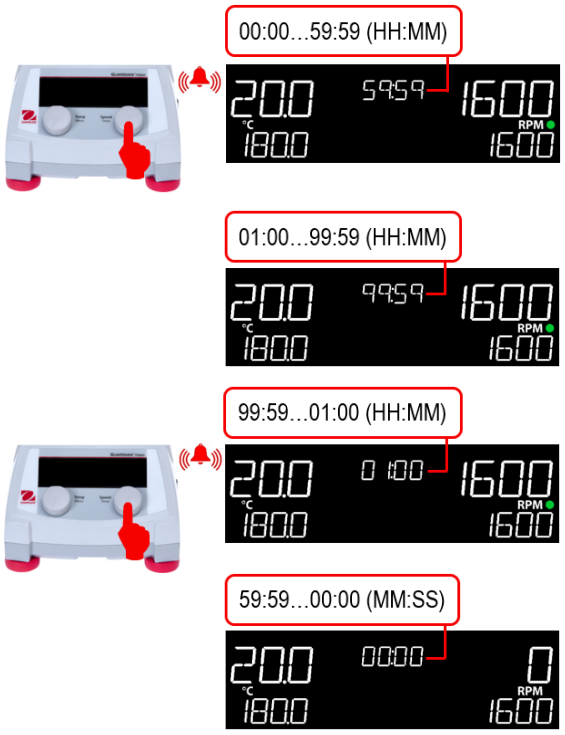
2.5 Controlling the Timer

1. By default the timer (T) will be set to 00:00 and count upwards when the heating or stirring functions are turned on.
   a) The timer (T) begins in MM:SS mode.
   b) Once the timer reaches 59:59, it will automatically switch to HH:MM mode at 01:00.
2. When the timer (T) is set to any time between 00:01 and 99:59, the timer (T) will count downwards from the set time once the heating or stirring functions are turned on.
   a) The timer (T) can only be set in HH:MM mode.
   b) Once the timer (T) reaches 01:00 in HH:MM mode, it will automatically switch to MM:SS mode at 59:59.
   c) Once the timer (T) reaches 00:00 in the countdown mode:

      All heating and stirring functions will shut off.

      The unit will beep 3 times.
3. To change the timer setting (T), press and hold the right knob (D) until the timer setting (T) displays 'HH:MM'.
   a) Continue to press the right knob (D) after the unit beeps and the stirrer indicator (Q) illuminates.

      The stirrer will not turn on unless the right knob (D) is released before 'HH:MM' appears.
   b) The timer setting (T) cannot be changed while the heater or the stirrer are running.
   c) The timer setting (T) will return to the previous timer setting and the minutes setting will begin to blink to indicate that it can be modified.
   d) The timer can only be set in HH:MM mode.
4. Rotate the right knob (D) to adjust the minutes setting.
   a) Clockwise rotation will increase the time.
   b) Counterclockwise rotation will decrease the time.
   c) The minutes setting will continue to blink to indicate the new timer setting is not confirmed.
   d) If the timer setting (T) remains idle without confirmation for 4 seconds, the timer will remain at the current setting and the unit will exit the timer setting control.



5. Briefly press the right knob (D) to confirm the minutes setting and begin changing the hours setting.

   The minutes setting will stop blinking and the hours setting will begin to blink to indicate that it can be modified.

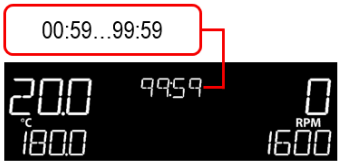
6. Rotate the right knob (D) to adjust the hours setting.

   a) Clockwise rotation will increase the time.

   b) Counterclockwise rotation will decrease the time.

   c) The hours setting will continue to blink to indicate the new timer setting is not confirmed.

   d) If the timer setting (T) remains idle without confirmation for 4 seconds, the timer will remain at the current setting and the unit will exit the timer setting control.



7. Briefly press the right knob (D) to confirm the hours setting and exit the timer settings.

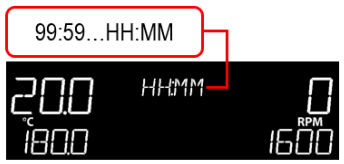
   a) The hours setting will stop blinking.

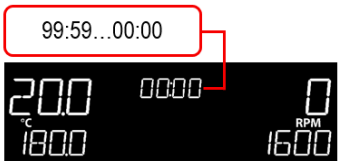
   b) The unit will be ready for normal use.

8. To clear the timer (T) to 00:00, press and hold the right knob (D) to enter the timer setting, then press and hold the right knob (D) again until the timer (T) resets to 00:00.

   a) This can only be performed while changing the timer in the minutes or hours setting.

   b) The unit will exit the timer setting control and be ready for normal use.





2.6 Using the External Probe

1. Connect the Ohaus External Temperature Probe to the external RTD probe port (F) on the rear panel of the unit.

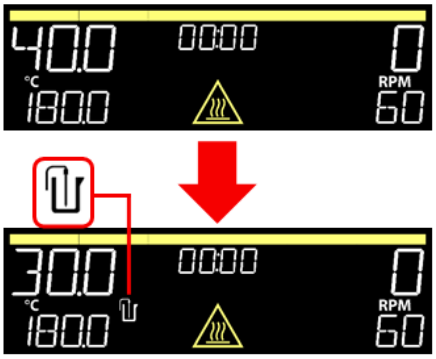
   Once the Ohaus External Temperature Probe is connected, the external probe icon (Z) will appear next to the heat setting (O).

2. The temperature display (M) will now show the temperature of the external probe instead of the heater.

   a) The hot top caution indicator (X) will still illuminate once the heater temperature reaches 40°C.

   b) The heater indicator bar (L) will incrementally illuminate as the sample progresses to the set temperature.

   Note: When using the Ohaus External Temperature Probe, the temperature setpoint should be adjusted to the desired sample temperature. If the temperature setpoint is higher than the sample can achieve, an E7 will occur. Reduce sample volume or temperature setpoint value. For Example: Water has a theoretical temperature limit of 100°C (boiling). A temperature setpoint greater than 100°C will cause an E7 error.



3. If the Ohaus External Temperature Probe is inserted into the external RTD probe port (F) while the heater is running:

   a) The heater will shut off.

   b) The unit will display an E7 error

   c) The unit will beep 10 times.

   d) All stirring functions will remain operational.

4. If the Ohaus External Temperature Probe is removed from the external RTD probe port (F) while the heater is running:

   a) The heater will shut off.

   b) The unit will display an E4 error.

   c) The unit will beep 10 times.

   d) All stirring functions will remain operational.

Note: To clear an E4 or E7 error code, flip the standby switch (J) off and back on. The unit will be ready for normal use.

2.7 The Settings Menu

2.7.1 Accessing / Exiting

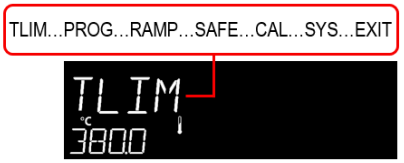
1. To access the settings menu, press and hold the left knob (C) until ‘MENU’ appears on the screen.

   a) Continue to hold the left knob (C) after the unit beeps and the heater indicator (N) illuminates.

      The heater will not turn on unless the left knob (C) is released before ‘MENU’ appears.

   b) The settings menu cannot be accessed while the heater or the stirrer is running.

   c) The “MENU” icon will appear briefly then proceed to the top level of the settings menu.



2. Rotate the left knob (C) to navigate the different menu options and briefly press the left knob (C) to select / enter / edit the displayed setting.

3. To exit the menu from the top level, rotate the left knob (C) clockwise until the “EXIT” icon is displayed and briefly press the left knob (C).

   The unit will return to the main operating screen.

   Note:

   To exit the menu at any time, flip the standby switch (J) off and back on. The unit will be ready for normal use.

   Turning off the unit will not reset / change the settings.

2.7.2 Features

The top level of the settings menu has the following features:

   a) “TLIM” - SmartHeat™

      SmartHeat™ allows the user to change the maximum temperature limit of the heater.

   b) “PROG” – Programs

      The Programs menu allows the user to load, store, delete, and run a series of heater and stirrer functions from a programmable text file on a USB storage device.

   c) “RAMP” – SmartRate™

      SmartRate™ allows the user to change the rate at which the heater and/or stirrer increases temperature or speed respectively.

d) “SAFE” – SmartPresence™ & SmartLink™

SmartPresence™ is an optional safety feature designed to automatically turn the heater off if the unit is unattended for a user-selected time limit.

SmartLink™ is an optional safety feature designed to automatically turn the heater off if the user travels out of range of the unit for a user-selected time limit.

Note: SmartLink™ requires the optional Ohaus Wireless Dongle accessory.

e) “CAL” – Single Point Calibration

Single Point Calibration (SPC) improves the accuracy of the heater at user-selected temperature points. Up to 5 points (Plate) and 5 points (Probe) can be stored.

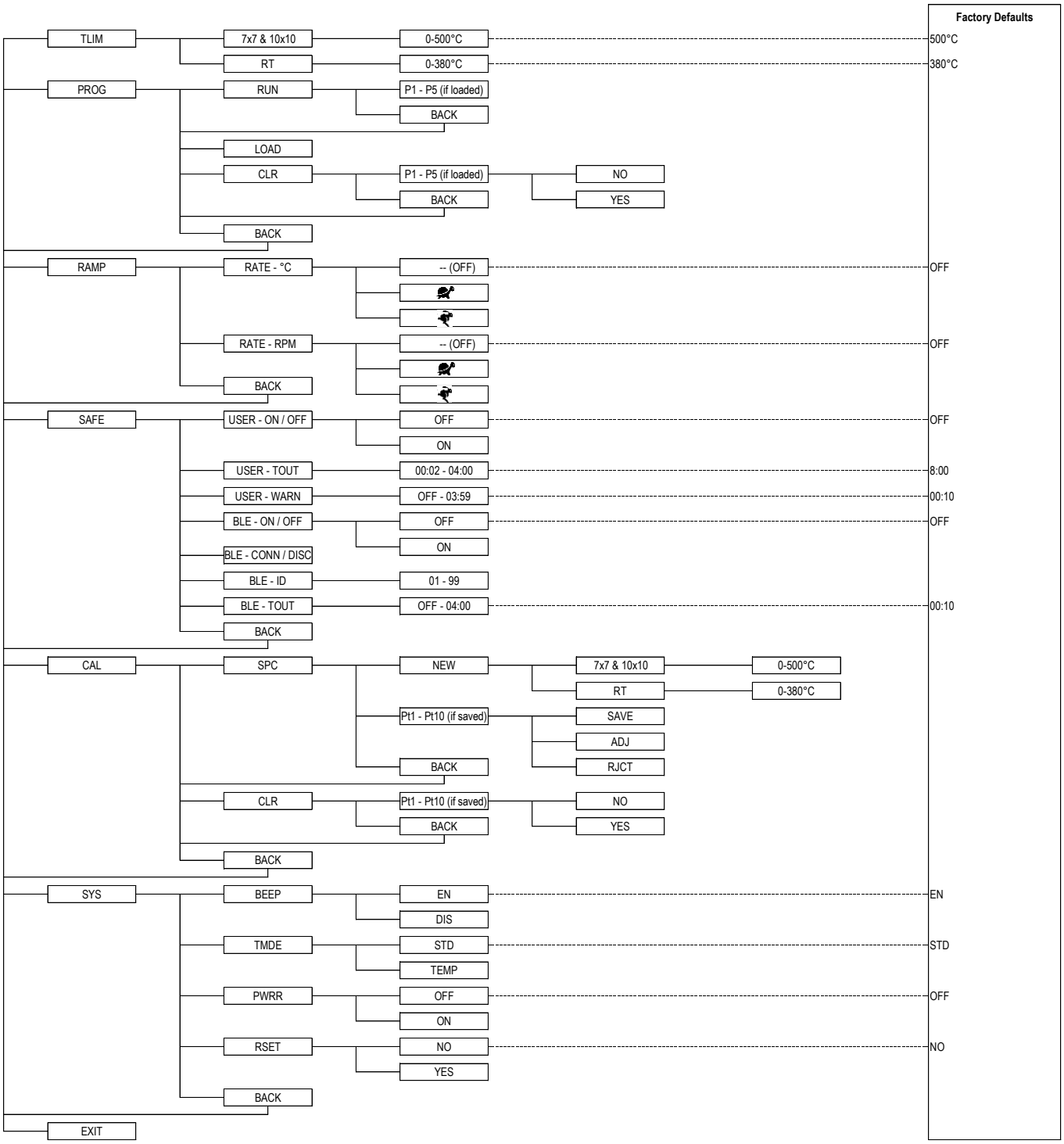
f) “SYS” – System Settings

System Settings allows the user to set additional features, such as Enabling / Disabling the Beeper, Changing the Timer Start Setting, Changing the Power Recovery Setting, and Resetting to Factory Default Settings.

g) “EXIT”

The unit will save the current settings and return to the main operating screen.

2.7.3 Structure & Defaults



2.8 Using the SmartHeat™ Feature

SmartHeat™ allows the user to change the maximum temperature limit (TLIM) of the heater.

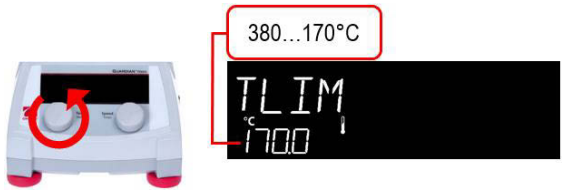
1. To control the SmartHeat™ Feature, the unit must first be in the top level of the Settings menu.

2. Rotate the left knob (C) to scroll to the “TLIM” feature.

3. Briefly press the left knob (C) to change the temperature limit of the heater.

   The temperature will begin to blink to indicate that it can be modified.

4. Rotate the left knob (C) to the desired temperature limit of the heater.

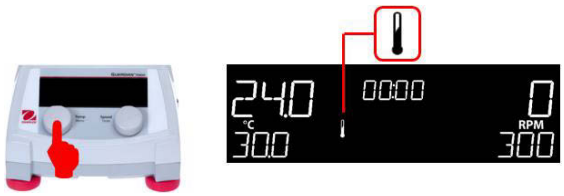


5. Briefly press the left knob (C) to confirm the setting.

   The temperature will stop blinking.

6. To exit the settings menu, rotate the left knob (C) to scroll to ‘EXIT’.

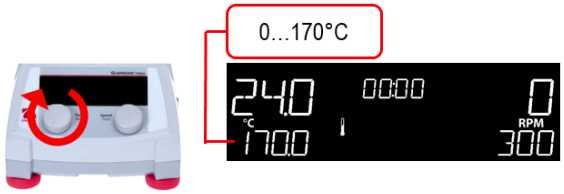
7. Briefly press the left knob (C) to return to the main operating screen.



8. The SmartHeat™ icon (AA) will be illuminated to indicate that there is a temperature limit that is less than the default setting.

   The heat setting (O) will not be able to be set above the set temperature limit.

   Note: While using the external probe, SmartHeat™ will still limit the temperature of the heater. This may cause the sample to heat at a slower rate and peak at a lower temperature than the SmartHeat™ setting.



2.9 Creating a User Program

The User Programs feature allows the user to load, store, delete, and run a series of heating and stirring functions from a programmable text file from a USB storage device.

1. To create a User Program, the user will need access to a computer and a USB storage device.
2. On the computer, create a text (.txt) file and name it “PROG.txt”.
    a) Although the unit can store up to 5 programs at a time, only 1 program can be loaded at a time.
    b) If the text file is named anything other than “PROG.txt”, the unit will not recognize it and the program will not be loaded.
3. Within the text file, the program can be up to 5 steps separated by line breaks.
4. Each step must follow the format listed below.
    a) If any digit is outside of the listed range or if any digit (including decimals and commas) is missing, then the unit will display an error message (“ERR”) during loading.

Temperature						Speed					HH			MM			SS			Timer Start
0-5	0-9	0-9	.	0-9	,	0-1	0-9	0-9	0-9	,	0-9	0-9	,	0-5	0-9	,	0-5	0-9	,	0-1

Temperature:

- The temperature must have a number in each digit as well as the decimal in between the 3rd and 4th digit.
- The temperature cannot exceed the temperature limit of the unit. (Round Top: 380°C, 7x7: 500°C, 10x10: 500°C)
- To keep the heater off during a step, input “000.0” for the temperature.

Speed:

- The speed must also have a number in each digit.
- For all units the speed must be between 0000 and 1600.

HH, MM, SS:

- Likewise the timer must have a number in each digit and must be between 00,00,01 and 99,59,59.

Timer Start:

- If 0, the timer will start to countdown at the beginning of the step.
- If 1, the timer will start to countdown as soon as the heater has reached the desired temperature setting.

EXAMPLE:

200.0,0000,00,11,30,1

230.0,1200,01,30,00,0

000.0,0800,02,00,00,0

- Step 1: The unit will heat without stirring up to 200°C. Once the heater reaches 200°C the timer will begin to countdown from 11 minutes and 30 seconds. Once the timer reaches 00:00, the unit will beep and proceed to Step 2.
- Step 2: The unit will heat up to 230°C and stir at 1200 rpm for 1 hour and 30 minutes. The timer will begin to countdown at the beginning of the step.
- Step 3: The unit will turn off the heater but continue to stir at 800 rpm for 2 hours. Once the timer reaches 00:00, the unit will turn off the stirrer.

2.10 Loading a User Program

1. Once the program is complete, save it to a USB storage device named “PROG.txt”.

2. Insert the USB storage device into the USB Port (E) on the rear panel of the unit.

3. To control the User Programs feature, the unit must first be in the top level of the settings menu.

4. Rotate the left knob (C) to scroll to the ‘PROG’ settings.

5. Briefly press the left knob (C) to enter the User Programs settings menu.

6. Rotate the left knob (C) to scroll to the LOAD icon.

7. Briefly press the left knob (C) to load the program onto the unit.

   a) The program will be loaded into the lowest empty program slot. These slots are named P1, P2, P3, P4, & P5.

   b) The unit will beep once and display the program slot name that the program was loaded into.

   c) If there is not an empty program slot for the unit to load the program to, the unit will display “ERR” and the program will not be loaded.

   d) Once the program is loaded, it is safe to remove the USB storage device from the unit.

8. To clear a program, rotate the left knob (C) to the “CLR” setting.

9. Briefly press the left knob (C) to enter the CLR settings.

10. Rotate the left knob (C) to the desired program.

11. Briefly press the left knob (C) to select the program to clear.

12. To confirm the program to clear, rotate the left knob (C) to the “YES” option.

13. Briefly press the left knob (C) to clear the selected program.

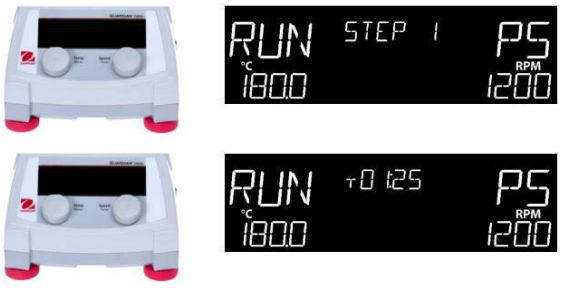
14. After a program is loaded, rotate the left knob (C) to the “RUN” setting.

15. Briefly press the left knob (C) to enter the RUN settings.

16. Rotate the left knob (C) to the desired program.

17. The unit will display each step to the highlighted program if idle for more than 2 seconds.

    The unit will first display the step number, then it will display the time, temperature, speed, and timer start settings. Then the unit will proceed to display the next step.

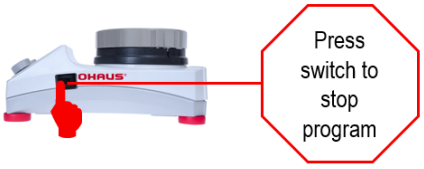


18. To run the program, press and hold the left knob (C) until the unit beeps.

    a) While the unit is running a program the program icon (U) will be illuminated next to the timer (T).

b) While the unit is running a program, the left knob (C) and the right knob (D) will be disabled.

19. **To stop a program while it is running, flip the switch (J) on the side of the unit**. Flip the switch (J) back to on and the unit will return to the main operating screen and be ready for normal use.



2.11 Using the SmartRate™ Feature

SmartRate™ allows the user to change the rate at which the heater and/or stirrer increases temperature or speed respectively.

1. Icons

   a) The turtle icon ( ) allows for a slower, more precise rate and prohibits overshoot of the target temperature or speed.

   b) The rabbit icon ( ) allows the heater and/or stirrer to reach the target temperature or speed at a quicker pace than the default setting.

   CAUTION: In this faster mode the heater or stirrer will reach temperatures or speeds greater than the setting prior to stabilization.

   c) The double dash icon (--) indicates that the SmartRate™ feature is turned off. (This will only be displayed in the SmartRate™ settings menu.)

2. To control the SmartRate™ Feature, the unit must first be in the top level of the settings menu.

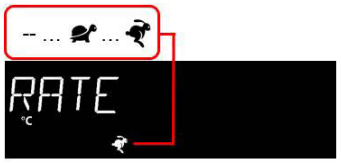
3. Rotate the left knob (C) to scroll to the “RAMP” setting.


4. Briefly press the left knob (C) to enter the SmartRate™ settings menu.


5. To change the SmartRate™ of the heater, briefly press the left knob (C).

   The icon for the current SmartRate™ setting will begin to blink.


6. Rotate the left knob (C) to scroll to the desired SmartRate™ setting for the heater.

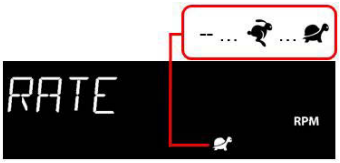
7. Briefly press the left knob (C) to confirm the SmartRate™ setting.


8. To change the SmartRate™ of the stirrer, use the left knob (C) to scroll to the 'RPM' setting.


9. Briefly press the left knob (C) to enter the stirrer's SmartRate™ setting.

   The icon for the current SmartRate™ setting will begin to blink.


10. Rotate the left knob (C) to scroll to the desired SmartRate™ setting for the stirrer.

11. Briefly press the left knob (C) to confirm the SmartRate™ setting.

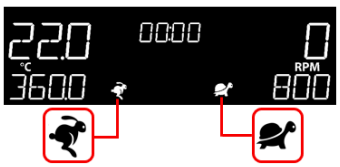

12. To exit the SmartRate™ setting, rotate the left knob (C) to scroll to the 'BACK' icon.


13. Briefly press the left knob (C) to return to the top level of the settings menu.


14. Rotate the left knob (C) to scroll to 'EXIT'.


15. Briefly press the left knob (C) to return to the main operating screen.

    Notice the rabbit icon (BB) and turtle icon (CC) are illuminated.

2.12 Using the SmartPresence™ Feature

SmartPresence™ is an optional safety feature designed to automatically turn the heater off if the unit is unattended for a user-selected time limit.

1. Underneath the unit there is a sensor that can detect the presence of a user in front of the unit. Be sure to keep the area in front of the sensor clear for the SmartPresence™ feature to work optimally.

2. To control the SmartPresence™ feature, the unit must first be in the top level of the settings menu.

3. Rotate the left knob (C) to scroll to the ‘SAFE’ setting.

4. Briefly press the left knob (C) to enter the ‘SAFE’ settings menu.

   ‘INIT’ may appear on the screen for several seconds while the sensor initializes. Then it will display the current ‘USER’ detection setting.

NOTE: If the SmartPresence™ is enabled when the unit is unplugged, it will remain enabled when power is restored to the unit. The heater will not be able to turn on until the sensor finishes initializing. To indicate that the sensor has not finished initializing, the SmartPresence™ icon will blink when the left knob (C) is pressed to turn on the heater.

5. Once the ‘OFF’ or ‘ON’ appears on the screen, briefly press the left knob (C) to change the SmartPresence™ setting.

   The setting will begin to blink to indicate that it can be modified.

6. Rotate the left knob (C) to switch between “OFF” and “ON”.

7. Briefly press the left knob (C) to confirm the desired setting.

8. Rotate the left knob (C) to the “TOUT” (Time Out) setting.

   The time out setting can only be set in HH:MM mode.

9. Briefly press the left knob (C) to change the time at which the unit will shut off the heater and sound an alarm (5 beeps).

   The minute setting will begin to blink to indicate that it can be modified.


10. Rotate the left knob (C) to the desired time.

    The setting cannot be set lower than 2 minutes (00:02) or higher than 4 hours (04:00).


11. Briefly press the left knob to confirm the desired minute setting and to change the hour setting.

    The hour setting will begin to blink to indicate that it can be modified


12. Rotate the left knob (C) to the desired time.


13. Briefly press the left knob (C) to confirm the desired hour setting.


14. Rotate the left knob (C) to the “WARN” setting.

    The warning setting can only be set in HH:MM mode.


15. Briefly press the left knob (C) to change the time at which the unit will sound a warning alarm (5 beeps).

    The minute setting will begin to blink to indicate that it can be modified.


16. Rotate the left knob (C) to the desired time.

    a) This setting cannot be set higher than or equal to the “TOUT” setting.

    b) This setting can be set to ‘OFF’ by rotating the left knob (C) to ‘00:00’.


17. Briefly press the left knob (C) to confirm the desired minute setting and to change the hour setting.

    The hour setting will begin to blink to indicate that it can be modified.


18. Rotate the left knob (C) to the desired time.

19. Briefly press the left knob (C) to confirm the desired hour setting.

20. Rotate the left knob (C) to the “BACK” icon.

21. Briefly press the left knob (C) to return to the top level of the settings menu.

22. Rotate the left knob (C) to scroll to the ‘EXIT’ icon.

23. Briefly press the left knob (C) to return to the main operating screen.

    Notice the SmartPresence™ icon (V) is illuminated.

Once the SmartPresence™ feature is turned on

1. The SmartPresence™ icon (V) will be illuminated on the main operating screen.
2. If the heater is running and the unit does not detect the user for the time set in the “WARN” setting:
   a) The unit will beep 5 times.
   b) The SmartPresence™ icon (V) will begin blinking.

A. To reset the SmartPresence™ warning timer:
   a) Create movement in front of the unit.
   b) Or rotate / press either the left (C) or the right (D) knob.

3. If the unit does not detect the user for the time set in the “TOUT” (Time Out) setting:
   a) The heater will shut off.
   b) The unit will beep 5 times.
   c) The SmartPresence™ icon (V) will continue blinking to indicate that the heater was turned off by the SmartPresence™ feature.
   d) If the unit is stirring, the stirrer will remain on and the timer (T) will continue to count.
   e) If the unit is heating only, the timer (T) will reset to 00:00 or the previous countdown timer setting.
4. To restart the heater, press and hold the left knob (C) until the heater indicator (N) illuminates.
   a) The SmartPresence™ timers will also restart.

2.13 Using the SmartLink™ Feature

SmartLink™ is an optional safety feature designed to automatically turn the heater off if the user travels out of range of the unit for a user-selected time limit.

- The SmartLink™ feature requires the use of the Ohaus Wireless Dongle (30412537). To purchase the Ohaus Wireless Dongle contact your Ohaus representative.
- The SmartLink™ feature also requires the use of a smartphone and the OHAUS SmartLink™ app. This can be downloaded from the iOS App Store and on Google Play.
- When the SmartLink™ feature is enabled, the heater cannot turn on without Bluetooth connectivity.

1. To control the SmartLink™ feature the Ohaus Wireless Dongle will need to be inserted into the unit's USB port (F).

2. The unit must first be in the top level of the settings menu.

3. Rotate the left knob (C) to scroll to the 'SAFE' icon.


4. Briefly press the left knob (C) to enter the 'SAFE' settings menu.


5. Rotate the left knob (C) to the "BLE" (Bluetooth® Low Energy) setting.


6. Briefly press the left knob (C) to change the SmartLink™ setting.


7. Rotate the left knob (C) to switch between "OFF" and "ON".


8. Briefly press the left knob (C) to confirm the desired setting.

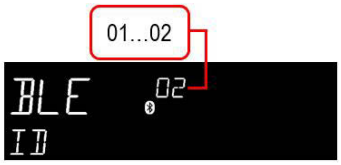

** iOS App Store is a trademark of Apple Inc., registered in the U.S. and other countries.*

** Google Play is a trademark of Google LLC.*

9. Rotate the left knob (C) to the “BLE ID” setting.


10. Briefly press the left knob (C) to change the ID number that the unit will broadcast to the OHAUS SmartLink™ app.


11. Rotate the left knob (C) to change the ID number.

12. Briefly press the left knob (C) to confirm the desired ID number.


13. Rotate the left knob (C) to the “BLE TOUT” setting.

    The BLE time out setting can only be set in HH:MM mode.


14. Briefly press the left knob (C) to change the time at which the unit will shut off the heater and sound an alarm (5 beeps).
    a) This “Time Out” timer will begin to count down once the Bluetooth connection is lost.
    b) The minute setting will begin to blink to indicate that it can be modified.


15. Rotate the left knob (C) to the desired time.
    a) The setting cannot be set higher than 4 hours (04:00).
    b) If the timer is set to 00:00 (“OFF”), the heater will turn off as soon as Bluetooth connection is lost.


16. Briefly press the left knob to confirm the desired minute setting and to change the hour setting.

    The hour setting will begin to blink to indicate that it can be modified.


17. Rotate the left knob (C) to the desired time.


18. Briefly press the left knob (C) to confirm the desired hour setting.

19. Rotate the left knob (C) to the “BLE CONN” setting.

20. Briefly press the left knob (C).
    a) This will start broadcasting the Bluetooth signal from the unit.
    b) If the Ohaus Wireless Dongle is not connected to the unit's USB port (F), then the unit will display an error message ("ERR") during Bluetooth connection.

21. Open the OHAUS SmartLink™ app on the smartphone.

    The app will automatically scan for nearby Bluetooth signals from Guardian 7000 units.

22. Briefly press the Guardian 7000 icon with the same ID as chosen in steps 9-12 to connect the app to the unit.
    a) The unit will beep once when the initial connection is made.
    b) The box next to the selected Guardian 7000 icon will be checked.
    c) The heater will now be functional until the app is disconnected from the unit or the SmartLink™ feature is turned off.

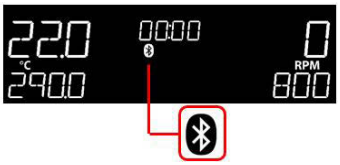
23. To disconnect the OHAUS SmartLink™ app from the unit, briefly press on the Guardian 7000 icon with the same ID.

24. Rotate the left knob (C) to the “BACK” icon.

25. Briefly press the left knob (C) to return to the top level of the settings menu.

26. Rotate the left knob (C) to scroll to ‘EXIT’.

27. Briefly press the left knob (C) to return to the main operating screen.



   a) Notice the Bluetooth icon (W) is illuminated to show that the SmartLink™ feature is enabled.

   b) When the SmartLink™ feature is enabled, the heater cannot turn on without Bluetooth connectivity.

      If the left knob (C) is pressed to turn the heater on, the Bluetooth icon will blink, indicating that there is no Bluetooth connection with the OHAUS SmartLink™ app.

1. Once the *SmartLink*™ feature is turned on and the OHAUS SmartLink™ app is connected to the unit via Bluetooth®, the Bluetooth icon (W) will be illuminated on the main operating screen.
2. If the heater is running and the unit loses the Bluetooth connection with the paired phone:
   a) The unit will beep 5 times.
   b) The Bluetooth icon (W) will begin blinking.

A. To reset the *SmartLink*™ "Time Out" timer:

   a) Reestablish Bluetooth connection with the unit.

3. If the Bluetooth connection is not reestablished for the time set in the "TOUT" setting:
   a) The heater will shut off.
   b) The unit will beep 5 times.
   c) The Bluetooth icon (W) will continue blinking to indicate that the heater was turned off by the *SmartLink*™ feature.
   d) If the unit is stirring, the stirrer will remain on and the timer (T) will continue to count.
   e) If the unit is heating only, the timer (T) will reset to 00:00 or the previous countdown timer setting.

B. To restart the heater:

   a) Reestablish Bluetooth connection.
   b) Then press and hold the left knob (C) until the heater indicator (N) illuminates.

2.14 Using the Single Point Calibration Feature

Single Point Calibration (SPC) improves the accuracy of the heater at user-selected temperature points. Up to 5 points (Plate) and 5 points (Probe) can be stored at once.

1. To control the Single Point Calibration feature, the unit must first be in the top level of the settings menu.

2. Rotate the left knob (C) to scroll to the 'CAL' feature.

3. Briefly press the left knob (C) to enter the Calibration settings menu.

4. Briefly press the left knob (C) to enter SPC settings menu.


5. Briefly press the left knob (C) again to change the temperature of the SPC.

   The heat setting (O) will begin to blink to indicate that it can be modified.


6. Rotate left knob (C) to scroll to the desired temperature.


7. Press and hold the left knob (C) until the unit beeps and the heater indicator (N) illuminates to begin SPC at that temperature.

   a) The unit will begin to heat to the set temperature.

   b) The ‘SPC’ icon (Y) will blink to indicate that the SPC is running.

   c) The left (C) and right (D) knobs will be disabled until SPC is complete.

   d) If the external probe is connected, the stirrer will turn on at 300 rpm.

   e) To cancel SPC while it is running, turn off the unit with the standby switch (J) on the right side of the unit.


8. Once the unit has reached the calibration temperature, the SPC icon (Y) and the heat setting (O) will blink.

9. With a secondary temperature measurement device, measure the temperature of the top plate or the heated sample at the location of the external probe (if using probe control).

10. Rotate the left knob (C) to scroll to the measured temperature from the secondary temperature measurement device.


11. Briefly press the left knob (C) to select the new temperature calibration point.


12. The unit will begin to regulate temperature with compensated error.

    When this is complete, the ‘SAVE’ icon will appear at the heat setting (O).

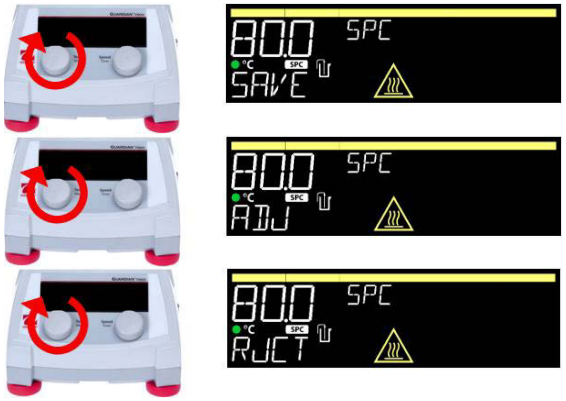
13. Measure the temperature at the same location as step 9.

14. Rotate the left knob (C) to:

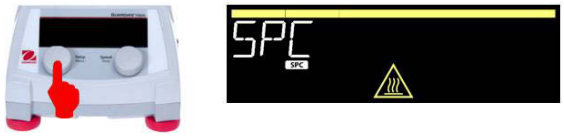
    a) ‘SAVE’ – to retain calibration (stirring will stop if using probe control).

    b) ‘ADJ’ – to prompt fine tuning of calibration (return to step 10).

    c) ‘RJCT’ – to cancel the SPC process and return to the SPC menu.



15. Briefly press left knob (C) to select the desired menu option.



16. To adjust a calibrated temperature, return to the SPC menu (steps 1-4).

17. Rotate the left knob (C) to scroll to the desired SPC point.

18. Press and hold the left knob (C) until the unit beeps to begin SPC at that temperature.

    a) If the probe is connected, the unit will not run plate SPC points. Likewise, if the probe is disconnected, the unit will not run probe SPC points.

    b) The unit will begin to heat to the set temperature.

    c) The ‘SPC’ icon (Y) will blink to indicate that the SPC is running.

    d) The left (C) and right (D) knobs will be disabled until SPC is complete.

    e) If the external probe is connected, the stirrer will turn on at 300 rpm.

    f) To cancel SPC while it is running, turn off the unit with the standby switch (J) on the right side of the unit.

19. Repeat steps 8-15.

20. To clear a calibrated temperature point, return to the Calibration settings menu. (Steps 1-3)


21. Rotate the left knob (C) to scroll to the ‘CLR’ feature.


22. Briefly press the left knob (C) to enter the Clear SPC menu.

    If there are no stored SPC points, select ‘BACK’ to return to previous screen.


23. Rotate the left knob (C) to scroll to the desired SPC point.

    SPC points are stored in ascending order by temperature.


24. Briefly press the left knob (C) to select the point to clear.

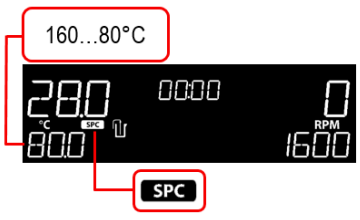

25. Rotate the left knob (C) to confirm selection:
    a) ‘YES’ – to clear the selected SPC point.
    b) ‘NO’ – to return to Calibration settings menu.


26. Briefly press the left knob (C) to confirm selection and return to the Calibration settings menu.


27. To heat to a temperature setting with SPC, return to the main operating screen.


28. Rotate the left knob (C) to scroll the heat setting (O) to the desired temperature setting with SPC.

    Notice that the ‘SPC’ icon (Y) appears.

29. Press and hold the left knob (C) until the unit beeps and the heater indicator (N) illuminates.

    The unit will heat to the adjusted temperature as set by the SPC.

2.15 Enabling / Disabling the Beeper

Disabling the Beeper Setting will prevent beeps in the following scenarios:

- Starting and Stopping the Heater
- Starting and Stopping the Stirrer
- When the heater reaches the set temperature
- When the timer reaches 00:00 in countdown mode
- Loading a program
- Running a program
- Starting Single Point Calibration (SPC)
- Turning SmartLink™ (BLE) On and Off

1. To control the Beeper Setting, the unit must first be in the top level of the settings menu.

2. Rotate the left knob (C) to scroll to the ‘SYS’ (System) setting.


3. Briefly press the left knob (C) to enter the System settings menu.


4. Briefly press the left knob (C) to change the beeper setting.


5. Rotate the left knob (C) to scroll to the desired beeper setting.

   EN for enable and DIS for disable.

6. Briefly press the left knob (C) to confirm the desired beeper setting.


7. Rotate the left knob (C) to the “BACK” icon.


8. Briefly press the left knob (C) to return to the top level of the settings menu.


9. Rotate the left knob (C) to scroll to the ‘EXIT’ icon.


10. Briefly press the left knob (C) to return to the main operating screen.

    Note: There is not an icon on the display to indicate that the beeper has been disabled.


2.16 Changing the Timer Start Setting

The Timer Start Setting controls the initiation of the timer in countdown situations. In standard mode (STD) the timer will start as soon as the heater or the stirrer turns on. In temperature dependent mode (TEMP) the timer will start once the heater temperature or probe temperature (if the external probe is connected) reaches the set temperature. In temperature dependent mode, the timer will not start in stirring only activities. By default, the unit is set to standard mode.

1. To control the Timer Start setting, the unit must first be in the top level of the settings menu.

2. Rotate the left knob (C) to scroll to the ‘SYS’ (System) setting.


3. Briefly press the left knob (C) to enter the System settings menu.


4. Rotate the left knob (C) to the “TMDE” (Timer Dependent) setting.


5. Briefly press the left knob (C) again to change the Timer Start settings.

   The current Timer Start setting will begin to blink.


6. Rotate the left knob (C) to scroll to the desired Timer Start setting.

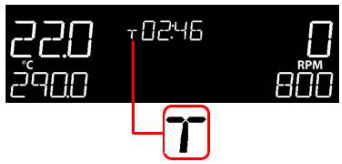

7. Briefly press the left knob (C) to confirm the Timer Start setting.


8. Rotate the left knob (C) to the “BACK” icon.


9. Briefly press the left knob (C) to return to the top level of the settings menu.


10. Rotate the left knob (C) to scroll to ‘EXIT’.


11. Briefly press the left knob (C) to return to the main operating screen.

   a) The temperature dependent icon will only be illuminated when using the timer in countdown mode.

   b) Once the heater is turned on, the temperature dependent icon will blink. Then, once the heater reaches the set temperature, the temperature dependent icon will stop blinking, and the timer will begin to countdown.

2.17 Changing the Power Recovery Setting

Power Recovery is an optional feature that allows the unit to automatically restart heater and stirrer functions when power is returned to the unit after a disconnect. By default, this feature is turned off.

1. To control the Power Recovery feature, the unit must first be in the top level of the settings menu.

2. Use the left knob (C) to scroll to the ‘SYS’ (System) setting.


3. Briefly press the left knob (C) to enter the System settings menu.


4. Rotate the left knob (C) to the “PWRR” (Power Recovery) setting.


5. Briefly press the left knob (C) to change the Power Recovery settings.

   The current Power Recovery setting will begin to blink.


6. Rotate the left knob (C) to scroll to the desired Power Recovery setting.

   ‘OFF’ – heating and stirring functions will need to be manually restarted after power restoration.

   ‘ON’ – heating and stirring functions will automatically restart upon power restoration.


7. Briefly press the left knob (C) to confirm the Power Recovery setting.


8. Rotate the left knob (C) to the “BACK” icon.


9. Briefly press the left knob (C) to return to the top level of the settings menu.


10. Rotate the left knob (C) to scroll to ‘EXIT’.


11. Briefly press the left knob (C) to return to the main operating screen.

    Note: There is not an icon on the display to indicate that Power Recovery has been activated.


2.18 Reset to Factory Default Settings

Resetting the unit to Factory Default Settings will do the following:

- Clear all programs and single point calibration (SPC) temperatures.
- Return SmartHeat™ to the unit's maximum allowable temperature.
- Turn off SmartPresence™, SmartLink™, SmartRate™, Power Recovery, and the temperature dependent timer.
- Re-enable the beeper setting.

1. To reset the unit to factory default settings, the unit must first be in the top level of the settings menu.

2. Rotate the left knob (C) to scroll to the 'SYS' (System) setting.

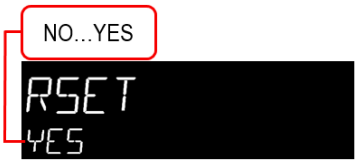

3. Briefly press the left knob (C) to enter the System settings menu.


4. Rotate the left knob (C) to the "RSET" (Reset) setting.


5. Briefly press the left knob (C) to change the Reset settings.

   The current Reset setting will begin to blink.


6. Rotate the left knob (C) to scroll to the desired Reset setting.

7. Press and hold the left knob (C) until the unit beeps to confirm the Reset setting.


8. Rotate the left knob (C) to the "BACK" icon.


9. Briefly press the left knob (C) to return to the top level of the settings menu.


10. Rotate the left knob (C) to scroll to ‘EXIT’.


11. Briefly press the left knob (C) to return to the main operating screen.

    Note: There is not an icon on the display to indicate that the unit has been reset to factory default settings.


3 MAINTENANCE

The Hotplate-Stirrer is built for long, trouble-free, dependable service. No lubrication or other technical user maintenance is required. It needs no user maintenance beyond keeping the surfaces clean. The unit should be given the care normally required for any electrical appliance. Avoid wetting or unnecessary exposure to fumes. Spills should be removed promptly after the unit has cooled down. Before using any cleaning or decontamination method except as noted in this section, users should check with the manufacturer that the proposed method will not damage the equipment. Do not use a cleaning agent or solvent on the front panel which is abrasive or harmful to glass, nor one which is flammable. Always ensure the power is disconnected from the unit prior to any cleaning. If the unit ever requires service, contact your Ohaus representative. The user is responsible for carrying out appropriate decontamination if hazardous material is spilled onto or into the equipment.

CLEANING CERAMIC TOPS:

First remove any burnt-on deposits or spills from the top plate with a scraper (similar to scraping paint off of windowpanes). For your safety, please wear an insulated mitt when using a metal scraper. When the top plate has cooled, apply a few dabs of a non-abrasive cleaner over the surface with a damp paper towel. As a final step, clean with water, and wipe surface with a clean, dry paper towel.

CLEANING ALUMINUM TOPS:

For simple dust and dirt, clean the aluminum top by using a damp cloth with soap and water. For more stubborn deposits, try using a flat edge wooden spatula to scrape off as much as possible. For more stubborn stains, try using a couple of tablespoons of white vinegar to two pints of water and mix well. Dip a clean cloth into the mixture and gently rub the exterior of the aluminum surface. Generally, it is not a good idea to use abrasive pads or cleaners on aluminum, as the metal will scratch easily. If you must use some type of abrasive, try applying baking soda to the surface and then rubbing with a moist cloth. This will work as well as most scouring pads and is less like to create deep scratches in the surface. Be careful not to use steel wool or scouring pads as they can leave the aluminum riddled with little scratches that make it harder to clean in the future. If you feel you must use steel wool, use the finest grade you can find and use as sparingly as possible with as little pressure as possible. Go with the grain rather than using circular motions.

3.1 Troubleshooting

The following table lists common problems and possible causes and remedies. If the problem persists, contact OHAUS or your authorized dealer.

Error*	**Cause of Error**	**How to Fix**
Unit fails to power on	Missing or blown fuse	Add or replace fuse as necessary.
E1	Plate RTD open	Not fixable by user, please contact Ohaus.
E2	Plate RTD short	Not fixable by user, please contact Ohaus.
E3	No stirring motion / cannot reach speed	Not fixable by user, please contact Ohaus.
E4	Probe RTD open (Removing the probe while the unit is heating)	Switch unit to standby, then return to normal operating mode.
E5	Probe RTD short (Malfunctioning probe)	Switch unit to standby, remove the probe from the unit, then return to normal operating mode.
E6	A/D lock error	Not fixable by user, please contact Ohaus.
E7	User Probe Error (Plugging the probe into the unit while it is heating)	Switch unit to standby, then return to normal operating mode.
E8	Plate over temperature	Not fixable by user, please contact Ohaus.
E9	Plate under temperature	Not fixable by user, please contact Ohaus.
E10	Triac fault	Not fixable by user, please contact Ohaus.

***Note**: Error code instances will stop equipment operation by default.

3.2 Service Information

If the troubleshooting section does not resolve or describe your problem, contact your authorized OHAUS service agent. For service assistance or technical support in the United States call toll-free 1-800-672-7722 ext. 7852 between 8:00 AM and 5:00 PM EST. An OHAUS product service specialist will be available to provide assistance. Outside the USA, please visit our website, www.ohaus.com to locate the Ohaus office nearest you.

Serial Number: _____

Date of Purchase: _____

Supplier: _____

4 TECHNICAL DATA

Operating Conditions: Indoor use only.

Temperature: 5 to 40°C (41 to 104°F)

Humidity: 20% to 80% relative humidity, non-condensing

Altitude: 0 to 2000 m (6,562 ft) above sea level

Non-Operating Storage:

Temperature: -20 to 65°C (-4 to 149°F)

Humidity: 20% to 80% relative humidity, non-condensing

Installation Category II and Pollution Degree 2 in accordance with IEC 664

5 COMPLIANCE

Compliance to the following standards is indicated by the corresponding mark on the product.

Mark	Standard
CE	OHAUS Corporation declares that the Guardian series hotplates, stirrers, and hotplate-stirrers comply with directives 2011/65/EU, (EU) 2015/863, 2014/30/EU, 2014/35/EU, and standards EN 50581, EN 61010-2-010, EN 61010-2-051, EN 61326-1. The full text of the EU declaration of conformity is available at the following internet address: www.ohaus.com/ce.
	This product complies with directive 2012/19/EU. Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. For disposal instructions in Europe, refer to www.ohaus.com/weee.
	EN 61326-1
	CAN/CSA C22 261010-1, CAN/CSA C22 261010-2-010, CAN/CSA C22 261010-2-051 UL 61010-1, UL 61010-2-010, UL 61010-2-051

Global Notice
Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Canada Notice
This Class A digital apparatus complies with Canadian ICES-003.

FCC Notice
NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Ohaus Corporation could void the user's authority to operate the equipment.

EQUIPMENT DISPOSAL

This equipment must not be disposed of with unsorted waste. It is your responsibility to correctly dispose of the equipment at life-cycle-end by handing it over to an authorized facility for separate collection and recycling. It is also your responsibility to decontaminate the equipment in case of biological, chemical, and/or radiological contamination, so as to protect the persons involved in the disposal and recycling of the equipment from health hazards.

For more information about where you can drop off you waste of equipment, please contact your local dealer from whom you originally purchased this equipment. By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

LIMITED WARRANTY

OHAUS products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period OHAUS will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to OHAUS.

This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than OHAUS. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by OHAUS Corporation. OHAUS Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact OHAUS or your local OHAUS dealer for further details.