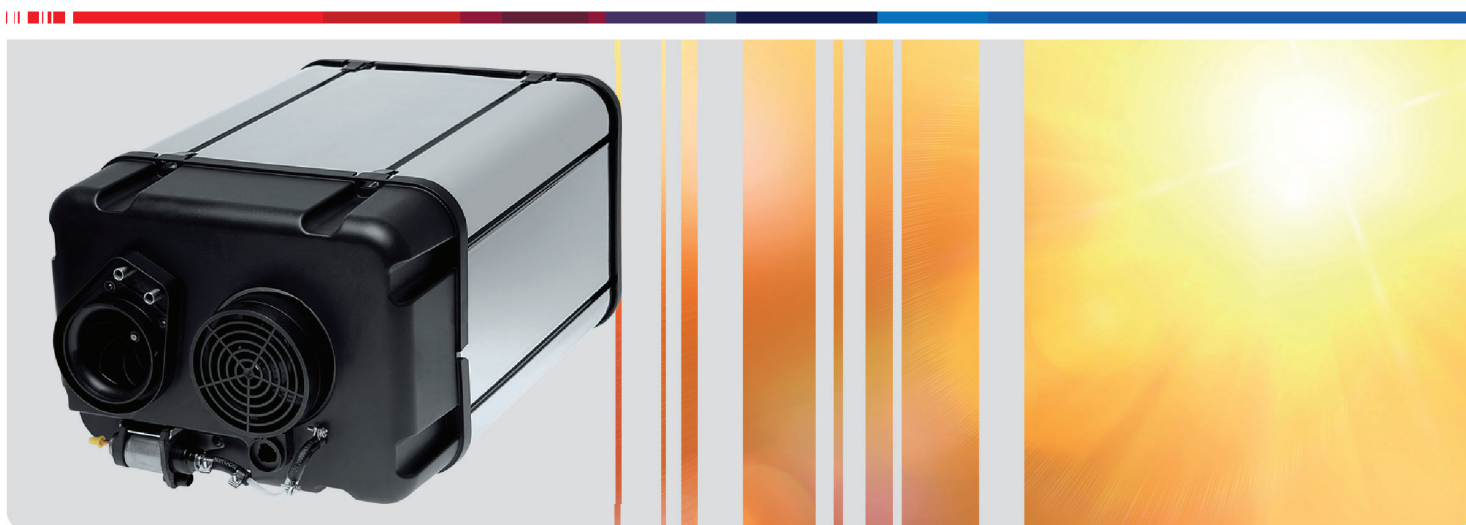


Operating Instructions

Dual Top ST 6 / 8



English



WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Table of Contents

1	General	3
1.1	Purpose of this document.....	3
1.2	Using this document.....	3
1.3	Warranty and liability.....	3
1.4	Use of symbols	3
2	Maintenance and safety information	3
3	Functional description	4
3.1	Summer mode.....	4
3.2	Winter mode (heating without hot water production)	5
3.3	Winter mode (heating with hot water production).....	5
3.4	Advanced functions	5
4	Operating instructions	5
4.1	General.....	5
4.2	Manual control panel Dual Top ST 6	7
4.3	Programmable control panel Dual Top ST 6 and 8	8
4.4	Settings setup	11
4.5	Programming timer	11
4.6	Remote control.....	13
4.7	Frost	13
5	Filling the boiler.....	15
6	Maintenance.....	16
6.1	Disinfection	16
6.2	Descaling	17
7	Troubleshooting	17
7.1	Fault Message output	17
7.2	Fuses	17
8	Disposal	17
9	Warranty and customer service	17
10	Declarations.....	18
10.1	Drinking water conformity	18

1 General

1.1 Purpose of this document

The Operating Instructions are an integral part of the product and provide the information required to ensure correct and safe operation.



NOTE

The availability of functions depends on the installed heater.

To access further documents, visit our technical website: www.techwebasto.com.

1.2 Using this document

- Read these Operating Instructions (OI) carefully before operating the unit.

The Operation instructions are available in several other languages on the Dealer Portal. To access documents in your language, see: chapter 1.1, "Purpose of this document" on page 3.

- Please pass this document on to the next owner or user of the unit.

1.3 Warranty and liability

Webasto shall not assume liability for defects or damages that are the result of disregarding the installation and operating instructions. This liability exclusion particularly applies to:

- Installation by untrained personnel.
- Improper use.
- Repairs not carried out by a Webasto service workshop.
- Use of non-genuine parts.
- Conversion of the unit without permission from Webasto.
- Mechanical damage to the equipment.
- Non-compliance with inspection and maintenance instructions.

1.4 Use of symbols



DANGER

This signal word denotes a hazard with a high degree of risk which, if not avoided, may lead to death or serious injury.



WARNING

This signal word denotes a hazard with a moderate degree of risk which, if not avoided, may lead to minor or moderate injury.



CAUTION

This signal word denotes a hazard with a low degree of risk which, if not avoided, may lead to minor or moderate injury.



NOTE

This symbol denotes a special technical feature, or (if not observed) potential damage to the product.



This symbol refers to separate documents which may be enclosed or can be requested from Webasto.

2 Maintenance and safety information

The year in which the heater was first used must be permanently displayed on the identification plate by deleting the non-applicable years from the plate.

The heater is not designed for heating hazardous substance transport compartments.

The heater/boiler is designed to heat air and water.



CAUTION

Make sure to use fresh drinking water when filling the water tank of the vehicle / boiler.

The heater complies with drinking water regulations. (see chapter 10.2, "Drinking water conformity" on page 18).

In the following text, the term 'water' is used.



CAUTION

To prevent any harm, follow the instructions in chapter 6, "Maintenance" on page 16.

- If no water has been taken from the water supply system for a week or more, then drain the entire system and rinse it thoroughly before refilling it. See chapter 6, "Maintenance" on page 16.
- To avoid micro-organisms, water must not stay in the boiler longer than two weeks.
- You must clean the boiler properly if the boiler contained the same water for over two weeks.
- You must make sure that no dirt or soiling can get into the water circuit. In order not to affect the water quality and the heater efficiency, regular descaling is advisable, depending on the degree of hardness of the water used. See chapter 6, "Maintenance" on page 16.

Webasto allows the operation of the Dual Top ST up to an altitude of 7,217 ft (2,200 m).

If the Dual Top ST has to be operated above this altitude, consult your Webasto Service Center.

If the vehicle in which the Dual Top ST was installed becomes involved in an accident, or if the Dual Top ST is dropped, you must return it to an authorized Webasto Service Centre for safety inspection and repair.

Warranty claims can only be made if it can be verified that the claimant has complied with the servicing and safety instructions.

**DANGER**

Do not operate the heater in enclosed spaces (such as garages) due to the risk of poisoning and asphyxiation.

**CAUTION**

- ▶ For safe use the heater must be inspected every new season, especially if used for extended periods and/or in extreme environments.
- ▶ Use the Dual Top ST heater at least every 4 weeks, to prevent locking of mechanical parts.
- ▶ In the event of persistent heavy smoke development, unusual combustion noises, a smell of fuel, or if the heater suffers continuous fault cut-outs accompanied with fault messages, you must take the heater out of service by removing the 15 A fuse (red cable) (see chapter 7, "Troubleshooting" on page 17) and must not be reused until it has been inspected by an authorized Webasto Service Centre.

**DANGER****Danger of explosion!**

- ▶ The heater may not be operated at locations at which highly flammable gases or dust can form, or at locations at which highly flammable liquids or solid materials are stored; near fuel, coal and wood dust, grain warehouses, dry grass and leaves, cardboard, paper, etc.

**DANGER**

Always switch off the heater before refuelling.

The heat exchanger on Dual Top ST heaters is exposed to very high thermal stress and must be replaced by genuine Webasto spare parts ten years after it was used for the first time.

You must use the diesel fuel specified by the vehicle manufacturer for the Dual Top ST heater.

Do **not** use Class EL heating oil, L heating oil or PME (bio-diesel).

Webasto does not know of negative effects due to fuel additives.

If fuel is extracted from the vehicle's tank, follow the additive instructions issued by the vehicle manufacturer.

If you change to low-temperature fuel, you must operate the heater for approximately 15 minutes so that the fuel system is filled with the new fuel.

Operation of the Dual Top ST heater is only permitted from power supplies that are in accordance with local power supplier requirements and with guideline IEC 60364.

See also: <https://webstore.iec.ch/publication/33598>

The storage temperature must not exceed 185 °F (85 °C).

**CAUTION**

- ▶ Operation of the heater is only allowed at ambient temperatures between -22 and 122 °F (-30 and 50 °C).
- ▶ Failure to follow the installation instructions and the notes contained therein will result in all liability being refused by Webasto. The same applies if repairs are carried out incorrectly or with the use of parts other than genuine spare parts.
- ▶ The above will in turn result in the invalidation of the type approval for the heater and therefore of its homologation / ECE type license.

Keep the cold air inlet and hot air outlet free of dirt and foreign bodies. Contaminated or blocked hot air ducts may cause overheating and may result in overheating cut-out activation.

Do not stand on the heater, place any heavy items on the heater or throw items at the heater.

**CAUTION**

Do not place any items, such as clothing, textiles or similar materials over the heater, in front of the hot air inlet or the hot air ducts.

**CAUTION**

The air flow through the heater must not be restricted or blocked by highly flammable substances or materials such as rags, cleaning wool, etc.

Any repair or maintenance, which is not described in this document, must be carried out by Webasto-trained personnel that is certified for working on 230 V electric systems (ST 8 only).

The Dual Top ST heater must be directly connected to the battery.

Switching the heater on and off must only be done from the Dual Top ST control panel. Additional switches are **not** allowed.

**CAUTION**

Do not use a high-pressure cleaner to clean the heater.

Webasto advises to take good care of the vehicle by draining the content of the boiler and all water lines when there is a risk of frost and when the heater is not operating. Warranty claims for frost related damage will not be accepted!

3 Functional description

The Webasto Dual Top ST integrated heater combines the benefits of an interior heater with a water boiler and contributes to a gas-free motorhome. The Dual Top ST 6 runs with an integrated fuel operated heater. For the Dual Top ST 8 electricity can be used as additional source.

Due to its outside installation and its operation with diesel fuel, the Dual Top ST saves valuable stowage space in the cab.

The Dual Top ST steplessly and precisely modulates the temperature for a consistent feeling of comfort.

The boiler can be drained simply and directly via the control panel.

Two different frost protection functions protect the Dual Top ST and the vehicle against frost while on winter vacation.

The heater detects the difference between the set temperature and the interior temperature and automatically adjusts the required heating capacity.

The programmable control panel enables you to select from a large number of modes for your comfort (see chapter 4, "Operating Instructions").

Depending on which function you want, hot water **in summer mode**, just heat or heat and hot water **in winter mode**, several options are available.

3.1 Summer mode

The heater provides hot water. The water is heated up to, and kept at 104 °F (40 °C) or 158 °F (70 °C).

The heat is produced by a diesel powered burner (Dual Top ST 6 and 8) or an electric heater (Dual Top ST 8). If the combustion burner is selected as the heat source, the device automatically selects the burner setting. Water can also be heated by electricity, 230 V, from an external power supply (Dual Top ST 8).

Dual Top ST 8: low-power = 1,000 W*

A water temperature sensor controls the water temperature.

Due to variable operating and environmental influences, small water temperature deviations are possible.

The hot air fan for heating the interior is not activated.

* The high-power option with 2,000 W cannot be used in summer mode (Dual Top ST 8).

3.2 Winter mode (heating without hot water production)

In this mode the heater provides hot air.

Heat is produced by a diesel powered burner (Dual Top ST 6 and 8), an electric heater, or a combination of both (Dual Top ST 8).

For Dual Top ST with a manual control panel:

The desired interior temperature can be adjusted with the interior temperature selector 41 °F to 95 °F (5 to 35 °C).

For Dual Top ST with a programmable control panel:

To adjust the desired interior temperature, push button (1) or (2) 41 °F to 95 °F (5 to 35 °C). 

If the combustion burner is selected as heat source, then the device automatically selects the burner setting, modulating between 1,500 W and 6,000 W, depending on the output requirement (calculated from difference between selected temperature and current interior temperature).

The amount of heat is regulated to reach the preselected interior temperature quickly. After which only a limited amount of power is needed to maintain the interior temperature.

If electricity is used as source of energy, the electric heater heats the air and water at low or high power, depending on the selection. Electricity is taken from an external power supply.

(Dual Top ST 8).

If the burner and the electric heater provide the heat, priority is given to the electric heater. This means that the electric heater runs at low or high power (depending on the selection) and the burner provides the rest of the heat if necessary. (Dual Top ST 8).

You can heat the interior with or without water in the boiler.

3.3 Winter mode (heating with hot water production)

In this mode the heater heats the interior and produces hot water.

Heat is produced by a diesel powered burner (Dual Top ST 6 and 8), an electric heater, or a combination of both (Dual Top ST 8).

For Dual Top ST heaters with a manual control panel:

The desired interior temperature can be adjusted with the interior temperature selector (5 to 35 °C).

For Dual Top ST heaters with a programmable control panel:

To adjust the desired interior temperature, push button (1)  (2)  41 °F to 95 °F (5 to 35 °C).

If the combustion burner is selected as heat source, then the device automatically selects the burner setting, modulating between 1,500 W and 6,000 W (Dual Top ST 6) or 1,500 W and 8,000 W (Dual Top ST 8), depending on the output requirement (calculated from difference between selected temperature and current interior temperature).

The amount of heat is regulated to reach the pre-selected interior temperature quickly. After which only a limited amount of power is needed to maintain the interior temperature.

A water temperature sensor controls the water temperature, while an interior temperature sensor controls the interior temperature.

Due to variable operating and environmental influences, small water temperature deviations are possible.

Only for Dual Top ST 8: If you use electricity as source of energy, the electric heater heats the air and water at low or high power, depending on the selection. Electricity is taken from an external power supply.

If the burner and the electric heater provide the heat, priority is given to the electric heater. This means that the electric heater runs at low or high power (depending on the selection) and the burner provides the rest of the heat if necessary.

3.4 Advanced functions

- Menu driven user guidance in 6 languages.
- Programmable timer: The device has two freely programmable heating programs, 24/7. See chapter 4.5, "Programming timer" on page 11.
- Remote control by Webasto Teletstart (optional control). See chapter 4.6, "Remote control" on page 13.
- Boiler drainage: possibility to drain the boiler manually from the control panel or automatically for frost protection. See chapter 4.7, "Frost" on page 13.
- Frost protection mode: protects the boiler against frost. See chapter 4.7.4, "Frost protection" on page 15.
- Textual fault information: when a fault occurs, the control panel displays a fault message with a fault number and brief description to inform the user about the kind of fault. See chapter 7.1, "Fault Message output" on page 17.

4 Operating instructions

4.1 General

You must observe the operating instructions and chapter 2, "Maintenance and safety information" on page 3 before starting. The vehicle owner is responsible for the correct operation of the device.



CAUTION

Before first use, you must disinfect and rinse the entire water supply system with clean, fresh drinking water (see chapter 6, "Maintenance" on page 16).

If the heater is not used, always drain the water contents to avoid frost problems and to avoid contamination with micro-organisms.

Also drain the water before any repair or maintenance work on the vehicle because the electrical safety / drainage valve may open when the device is switched off!



NOTE

When the heater is new, there may be an unfamiliar smell during the first couple of operation cycles.



NOTE

During continuous operation at low output levels, Webasto recommend that the heater be operated at full load approximately once a month for 15 minutes to burn possible deposits in the burner.

4.1.1 Interior temperature sensor

To measure the room temperature, a remote interior temperature sensor is located in the vehicle. The location of the sensor is determined by the installer, and depends on the vehicle type and interior layout.

**NOTE**

The remote interior temperature sensor must be installed at medium height in the vehicle interior on a vertical surface.

Avoid positioning the interior temperature sensor:

- ▶ in a direct current of hot air (from the vehicle's own heating system or the hot air heater);
- ▶ close to heat sources;
- ▶ in direct sunlight (for example on the dashboard);
- ▶ inside a locker;
- ▶ behind curtains or the like.

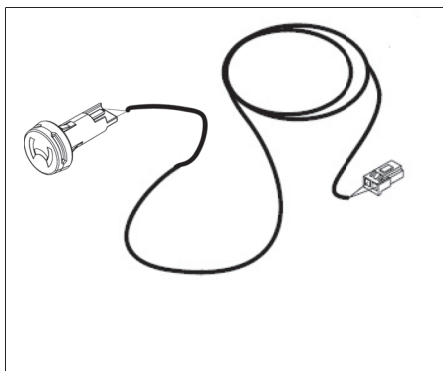


Fig. 1 Interior temperature sensor

4.1.2 Manual control panel Dual Top ST 6

Note that changes to the settings on the control panel are implemented after a short delay!

See Fig. 2.

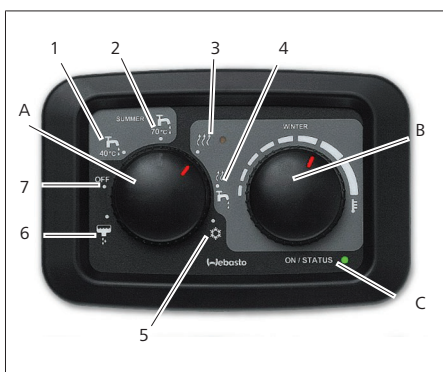


Fig. 2

Pos.	Description
A	Mode selector knob
B	Interior temperature selector knob
C	Power indicator / fault message display
1	Summer operation mode, water temp. 104 °F (40 °C)
2	Summer operation mode, water temp 158 °F (70 °C)
3	Winter operation mode, heating without hot water production
4	Winter operation mode, heating with hot water production
5	Frost protection mode
6	Drainage boiler
7	OFF

4.1.3 Programmable control panel Dual Top ST 6 and 8

Note that changes to the settings on the control panel are implemented after a short delay!

See Fig. 3.



Fig. 3

1	Up - button ▲
2	Down - button ▼
3	Start / Stop / Ok – button
4	Menu / Back / Cancel - button
5	On / Off – button
6	Power indicator / fault indicator (green / red)

During normal operation you will see the status display. See Fig. 4.

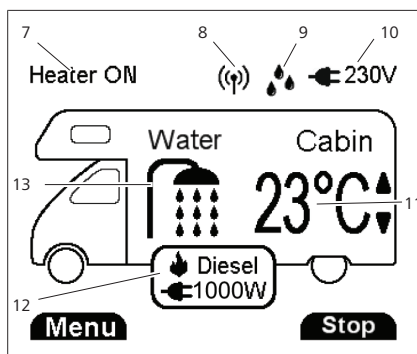


Fig. 4

7	Indicator Heater ON/Heater OFF
8*	Remote indicator (📶)
9	Drainage indicator (💧)
10*	230 V indicator ⚡ 230 V (Only Dual Top ST 8)
11	Interior heating / temperature indicator
12	Active heat source (only diesel: Dual Top ST 6 / diesel and electricity 1000 W / 2000 W: Dual Top ST 8)
13	Water heating / temperature indicator
Ad 1 and 2	Press the up button (Fig. 3, item 1) ▲ to increase and the down button (Fig. 3, item 2) ▼ to decrease the desired temperature, set the correct time and date, etc., Also use these buttons to move the cursor and to scroll through the menu.

* - Dual Top ST8 model only. Not available in North America.

Ad 6	The power indicator lights up green when the Dual Top ST is switched on and START (3) is pressed. Also "Heater ON" on display (7). The heater is operating or in the standby mode. Power indicator is off when STOP (3) is pressed or when Dual Top ST is switched off. Also "Heater OFF" on display (7). The heater is not operating or is not in the standby mode. The indicator flashing pulses red if a fault has occurred.
Ad 7	The heater is ON when the Dual Top ST is switched on and START (3) is pressed. The heater is operating or in the standby mode. The heater is OFF when STOP (3) is pressed or the Dual Top ST is switched off. The heater is not operating or is not in the standby mode.
Ad 8*	The  remote symbol is shown when the device is ready to accept signals from the remote control.
Ad 9	The  drainage symbol is shown when the electrical safety/drainage valve is opened.
Ad 10*	Dual Top ST 8: The  230 V symbol is shown when the external 230 V power supply is connected. The  230 V symbol is shown if it is not connected. Dual Top ST 6: The desired interior temperature is shown, not the actual temperature.
Ad 11	The desired interior temperature is shown, not the actual temperature.
Ad 13*	Dual Top ST 8: The desired water temperature is shown, not the actual temperature.

* - Dual Top ST8 model only. Not available in North America.



CAUTION

The absence of the " **230 V**" symbol does **not** guarantee that no 230 V supply is present!

Background lighting

The background lighting in the display comes on when you switch the Dual Top ST equipment on. It does not matter if the heater is in operation or not. The background lighting fades out after a few minutes if you do not press any buttons.

The backlight comes back on if you press  or .



NOTE

The display may become darker when the control panel temperature becomes very high or when the control panel is placed in direct sunlight. Avoid exposing the control panel to high temperatures or direct sunlight. Where these conditions cannot be avoided, adjust the display contrast in " **Setup**" (see chapter 4.4.2, "Language, temperature unit, hour format, display contrast" on page 11).

4.2 Manual control panel Dual Top ST 6

4.2.1 Summer mode (hot water only)

1. Make sure that the boiler is filled with fresh drinking water.
2. Set selector knob (A) to summer mode, water temperature 104 °F (40 °C) (1) or 158 °F (70 °C) (2) on the control panel.

The indicator (C) on the control panel lights up green when the equipment is switched on. The red indicator on the mode selector knob (A) illuminates.

When the selected water temperature is reached 104 °F (40 °C) or 158 °F (70 °C) combustion inside the heater stops. As soon as the water temperature drops below a certain value, combustion is started again.

The indicator (C) on the control panel lights up green as long as the equipment is switched on.

4.2.2 Winter mode (heating without hot water production)

1. Set the interior temperature selector (B) on the control panel to the desired thermostat setting for interior temperature.

2. Set the mode selector knob (A) on the control panel to winter mode, heating **without** hot water production (3).

The indicator (C) on the control panel lights up green when the equipment is switched on.

The red indicator on the mode selector knob (A) and on the interior temperature selector (B) both illuminate.

When the selected interior temperature is approached, the heater starts to modulate.

The power is adjusted to a level necessary to maintain a constant temperature.

In case the interior temperature exceeds the selected temperature, due to environmental influences, the combustion inside the heater stops.



NOTE

Please note that, if the boiler has been filled, the water is automatically heated as well. The water temperature may reach up to 176 °F (80 °C) depending on the power and the duration of the heating.

4.2.3 Winter mode (heating with hot water production)

1. Make sure that the boiler is filled with fresh drinking water.
2. Set the interior temperature selector (B) on the control panel to the desired thermostat setting for room temperature.

3. Set the mode selector knob (A) on the control panel to winter mode, heating **with** hot water production (4).

The indicator (C) on the control panel lights up green when the equipment is switched on.

The red indicator on the mode selector knob (A) and on the interior temperature selector (B) both illuminate.

The heater gradually reduces the power until the selected interior temperature is reached. If the interior temperature has been reached, but the water temperature is still too low, the blown air circulation fan switches off and the water continues to be heated to a temperature of 158 °F (70 °C).

The water temperature may reach up to 176 °F (80) °C depending on the heating power that is required to achieve the interior temperature.

NO WATER control

When winter mode (heating **with** hot water production) is selected, but the boiler has no water, there will be a warning on the control panel.

The green LED with the winter mode icon, heating **without** hot water production (3), will flash.

In this case, the operating mode selector knob (A) on the control panel must be set to the winter mode, heating **without** hot water production (3) and the boiler filled with water as required.

If you leave the mode selector knob (A) in the position winter mode, heating **with** hot water production (4), but fill the boiler with water, this may lead to automatic drainage of the boiler at temperatures lower than 43 °F (6 °C).



Fig. 5 No water signal

L	LED
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4.2.4 Heating while driving

Heating the cabin and/or water while driving the vehicle is possible and allowed.

Attention when driving in cold conditions:

Run the Dual Top ST in winter mode (heating **with** hot water production) to protect the water pipes outside the vehicle against frost.

4.2.5 Switching off

Move mode selector knob (A) to "OFF" (7) to switch off.

The fan can continue to run after switching off in order to cool down the heater.

After this, the green indicator (C) goes off.

4.3 Programmable control panel Dual Top ST 6 and 8

4.3.1 Before you start

After connecting the device to the 12 V DC power supply, language, day, date and time must be set.

1. Press **▲** and **▼** as required to select the preferred language:

Selection	Language
Deutsch	German
English	English
Español	Spanish
Français	French
Italiano	Italian
Svenska	Swedish

1. Press **OK**.
2. Press **▲** and **▼** as required to select the day and date.
3. Press **OK**.
4. Press **▲** and **▼** as required to set the time.
5. Press **OK**.

Hour format	24 h
Interior temperature units	°C
Interior temperature default	21 °C
Remote control	Disabled
Timer programs	OFF for all 7 days
	lower interior temperature T1 = 15 °C
	higher interior temperature T2 = 21 °C

4.3.2 Device is switched off

When the device is switched off, the display shows:

- **"Webasto Dual Top"**
- the actual time, day and date.

One hour after switching off and touching buttons for the last time, the display goes into "sleep" mode and becomes dark.

Touch any button to return to the previous display for at least 1 hour.

4.3.3 Switching on the heater

1. Press the **On/Off** button to switch on the Dual Top ST. The display shows the last used heating mode.*
2. Press **START**. The heater starts up in the indicated operating mode.
3. The Power indicator (6) lights up green and the display shows **"Heater ON"** (7).

* Exception:

If the last used heating mode was initiated by remote control (Telestart), the last non-remote control heating mode is shown instead.

4.3.4 Switching off the heater

To completely switch off the Dual Top ST press the **On/Off** button.

If there is a risk of frost, make sure to always drain the boiler first! See also chapter 4.7, "Frost" on page 13.

The heater stops heating. The fan may continue to run after switching off the heater in order to cool it down.

The display shows: **"Shutting down..."**.

1. The cooling fan switches off after the cooling phase.
2. The display shows: **"Webasto Dual Top"** and the actual time, day and date for one hour.

Stopping the heating operation to select another mode:

1. Press **STOP**. The heater stops heating. The fan may continue to run after switching off the heater in order to cool it down. The display shows "Stopped heating mode".* Power indicator (6) is turned off and **"Heater OFF"** (7) on the display.
2. Use the menu to select another mode. After the cooling phase the fan switches off. If you do not touch a button for a few minutes, the display shows: **"Webasto Dual Top"** and the actual time, day and date.

* Exception:

If the last used heating mode was initiated by remote control (Telestart), the last non-remote control heating mode is shown instead.

4.3.5 Setting desired interior temperature

You can set the desired interior temperature when the device is switched on (see chapter 4.3.3, "Switching on the heater" on page 8) and the status display is visible.*

The status display shows the motorhome and the current heating program. See Fig. 4.

Press **▲** to increase or **▼** to decrease the desired temperature.



NOTE

The display shows the **desired temperature**, not the actual interior temperature.

You can change the selected interior temperature, no matter if the heater is ON or OFF. As soon as heater is switched on (manually, by remote control or by timer) in cabin heating mode, the device will heat interior and keep it at this temperature.

** If the actual heating mode is initiated by remote control, the desired interior temperature cannot be adjusted. The Dual Top ST will heat up interior and keep the temperature at the preset value selected when using the Telestart to set this.*

4.3.6 Summer mode (hot water only)

Make sure that the boiler is filled with fresh drinking water.

For Dual Top ST 8: If you want the electric heater to provide hot water, make sure to connect the external power supply (230 VAC): **☛ 230 V** (10) on the display.

Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select "☛ hot water".
3. Press **OK**.
4. Press **▲** and **▼** to select "☛ Eco 40°C" or "☛ Comfort 70°C".
5. Press **OK**. For Dual Top ST 6: The display shows "Selection completed".
6. For Dual Top ST 8: Press **▲** and **▼** to select the desired source:

Dual Top ST 8
"Diesel powered"
"1000 W ~ 230 V"*

*Options: "...W ~ 230 V" shown only if external 230 V power supply is connected.

8. Press **OK**. The display shows "Selection completed".

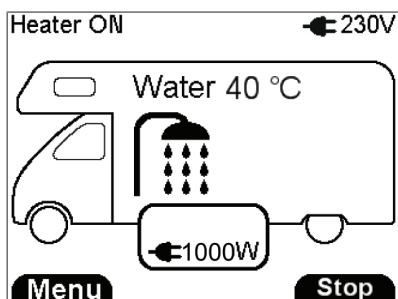


NOTE

When the heater is already "ON", the text "**Selection completed, press OK to change operation mode**" is displayed.

► Press **OK**.

After 3 seconds the power indicator (6) lights up in green and the display changes to:



☛ 230 V and **☛ ... W**: only Dual Top ST 8.

For Dual Top ST 6: **☛**

- "Heater ON"
- "☛ water 40°C" or "☛ water 70°C"
- (depending on the selected water temperature)
- "☛ diesel" or "☛ 1000 W", (depending on the heater type and selected heat source).

The power indicator (6) lights green as long as there is a demand for hot water. To end this press **STOP**.

4.3.7 Winter mode (heating without hot water production)

For Dual Top ST 8: If you want the electric heater to provide hot air, make sure to connect the external power supply (230 VAC): **☛ 230 V** (10) on display.

Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select "☛ Heating Cabin".
3. Press **OK**. For Dual Top ST 6: The display shows "Selection completed".
4. For Dual Top ST 8: Press **▲** and **▼** to select the desired heat source:

Dual Top ST 8
"Diesel powered"
"1000 W ~ 230 V" *
"2000 W ~ 230 V" *
"Diesel + 1000 W ~ 230 V" *
"Diesel + 2000 W ~ 230 V" *

* Options: "...W ~ 230 V" shown only if external 230 V power supply is connected.

5. Press **OK**. The display shows "Selection completed".

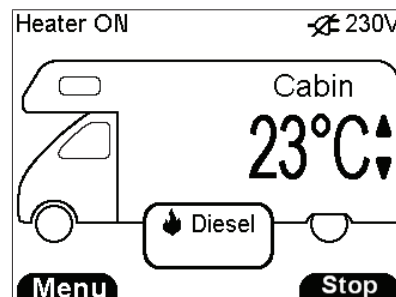


NOTE

When the heater is already "ON", the text "**Selection completed, press OK to change operation mode**" is displayed.

► Press **OK**.

After 3 seconds the power indicator (6) lights up in green and the display changes to:



☛: only Dual Top ST 8

- "Heater ON"
- "Cabin", "... °C"
- (the value depends on the selected interior temperature; °C or °F depends on setting)
- "☛ diesel", "☛ 1000 W", "☛ 2000 W" (depending on the heater type and on selected heat source).

Press **▲** or **▼** to adjust desired interior temperature.

**NOTE**

Please note that, if the boiler has been filled, the water is automatically heated as well. The water temperature may reach up to 80 °C depending on the power and the duration of the heating.

**NOTE**

For Dual Top ST 8: If a combination of the burner and the electric heater provides the heat and the 230 V connection is disconnected, the device automatically switches to diesel powered heating only.

The warning "**Mode changed 230 V not connected!**" blinks in a popup message.

Reconnect the external 230 V power supply to return to a combination of the burner and the electric heater. Alternatively, press STOP to end current mode.

**NOTE**

At ambient temperatures below 0 °C select the heat source "**Diesel powered**" or "**Diesel + (selected wattage) W ~ 230 V**" to make sure that the desired interior temperature will be reached.

4.3.8 Winter mode (heating with hot water production)

For Dual Top ST 8: If you want the electric heater to provide hot air and hot water, make sure to connect the external power supply (230 V AC): "**230 V**" (10) on display.

Make sure the device is switched on and that the boiler is filled with fresh drinking water.

1. Press **MENU**.
2. Press **▲** and **▼** to select " **Heating Cabin + Hot Water**".
3. Press **OK**. For Dual Top ST 6, the selection is completed.
4. For Dual Top ST 8: Press **▲** and **▼** to select the desired heat source:

Dual Top ST 8
"Diesel powered"
"1000 W ~ 230 V" *
"2000 W ~ 230 V" *
"Diesel + 1000 W ~ 230 V" *
"Diesel + 2000 W ~ 230 V" *

* Options "...W ~ 230 V" shown only when external 230 V power supply is connected.

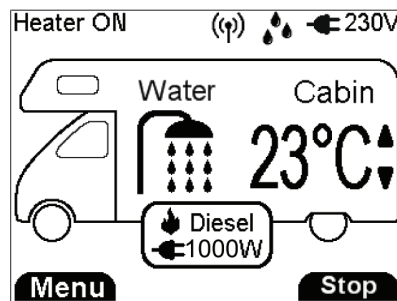
5. Press **OK**. The display shows "Selection completed".

**NOTE**

When the heater is already "ON", the text "**Selection completed, press OK to change operation mode**" is displayed.

► Press **OK**.

After 3 seconds the power indicator (6) lights up in green and the display changes to:



230 V and ... W: Only Dual Top ST 8

- "**Heater ON**"
- "**Water 70°C**"
- "**Cabin**", "... °C"
(the value depends on the selected interior temperature; °C or °F depends on setting)
- " **diesel**", " **1000 W**", " **2000 W**" (depending on heater type and selected heat source).

1. Press **▲** or **▼** to adjust desired interior temperature. The heater gradually reduces the power until the selected interior temperature is reached. If the interior temperature has been reached, but the water temperature is still too low, the blown air circulation fan switches off and the water continues to be heated to a temperature of 158 °F (70 °C). The water temperature may reach up to 176 °F (80 °C) depending on the heating power that is required to achieve the interior temperature.

NO WATER control

When winter mode (heating **with** hot water production) is selected, but the boiler is without water, there will be a warning on the control panel.

Message "**Mode changed Low level sanitary water!**" blinks in a pop-up display.

The device automatically changes to winter mode, heating **without** hot water production.

Choose one of the following options:

- Press **STOP** to end current mode and select winter mode, heating **without** hot water production. See chapter 4.3.7, "Winter mode (heating without hot water production)" on page 9
- Fill the boiler with fresh drinking water after changing to winter mode, heating **with** hot water production.

**NOTE**

For Dual Top ST 8: If a combination of the burner and the electric heater provides the heat and the 230 V connection is disconnected, the device automatically switches to diesel powered heating only.

The warning "**Mode changed 230 V not connected!**" blinks in a popup message.

Reconnect the external 230 V power supply to return to a combination of the burner and the electric heater.

Alternatively, press STOP to end current mode.



NOTE At ambient temperatures below 32 °F (0 °C) select the heat source "**Diesel powered**" or "**Diesel + (selected wattage) W ~ 230 V**" to make sure that the desired interior temperature will be reached.

4.3.9 Heating while driving

Heating the cabin and/or water while driving the vehicle is possible and allowed.

Attention when driving in cold conditions:

Run the Dual Top ST in winter mode (heating **with** hot water production) to protect the water pipes outside the vehicle against frost.

4.4 Settings setup

This chapter describes how to setup your favourite Dual Top ST system settings of day, date, time, language, temperature unit, hour format and display contrast correctly.

4.4.1 Day, date, time

Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select "**Setup**".
3. Press **OK**.
4. Press **▲** and **▼** to select "**Set Date + Day**" or "**Set Time**".
5. Press **OK**. Day and date or time (depends on selection) on display. Active field blinks.
6. Press **▲** and **▼** to adjust the value of the flashing field.
7. Press **OK**.
8. Now, the next field blinks. Repeat steps 7 and 8 until setting is correct.
9. Press **BACK** to return to main menu, or continue with another setting as described from step 4 to 9.

4.4.2 Language, temperature unit, hour format, display contrast

Select your favourite settings:

Language	Deutsch / English / Español / Français / Italiano / Svenska
Temperature unit	°C / °F
Hour format	12 h / 24 h
Display contrast	... %

Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select "**Setup**".
3. Press **OK**.
4. Press **▲** and **▼** to select "**Set Language**", "**Set Temperature Unit**", "**Hour Format**" or "**Set Contrast**".
5. Press **OK**.
6. Press **▲** and **▼** to select the desired **language**, **temperature unit**, **hour format** or **display contrast**.
7. Press **OK**.
8. Press **BACK** to return to main menu, or continue with another setting as described from step 4 to 7.

4.5 Programming timer

The programmable timer enables you to operate the system 24/7. The timer has two programs which enable you to fully control the interior heating (off, lower temperature, higher temperature) and hot water 18 °F (70 °C) supply (available or not).

4.5.1 Program setting

Temperature setting

1. Make sure the device is switched on.
 2. Press **MENU**.
 3. Press **▲** and **▼** to select "**⌚ Programming Timer**".
 4. Press **OK**.
 5. Press **▲** and **▼** to select "**🔌 Timer Program 1**" or "**🔌 Timer Program 2**" (values T₁ and T₂ depend on program settings).
 6. Press **OK**.
 7. Press **▲** and **▼** to select "**🌡️ Set Cabin Temperatures**".
 8. Press **OK**.
 9. Press **▲** and **▼** to set desired T₁ (low interior temperature).
 10. Press **OK**.
 11. Press **▲** and **▼** to set desired T₂ (high interior temperature).
- T2 has to be higher than T1.**
12. Press **OK**.
 13. Press **BACK** to return to main menu or continue with chapter , "Program setting" on page 11, step 6.



NOTE

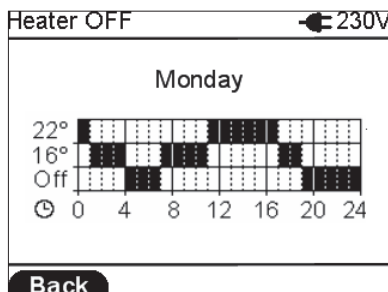
You can set temperatures T1 and T2 to different values in Timer Program 1 and Timer Program 2.

Day setting

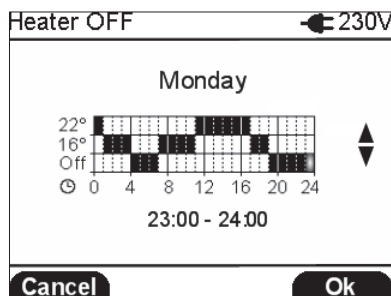
If you want to set the days after setting temperatures T1 and T2, continue with step 6.

Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select "**⌚ Programming Timer**".
3. Press **OK**.
4. Press **▲** and **▼** to select "**🔌 Timer Program 1**" or "**🔌 Timer Program 2**" (values T1 and T2 depend on program settings).
5. Press **OK**.
6. Press **▲** and **▼** to select "**Set Monday**", "**Set Tuesday**", "**Set Wednesday**" etc..
7. Press **OK**.
8. Press **▲** and **▼** to select "**Show 24 h Program**". Matrix with day, programmed hours and interior temperatures T1 and T2 appears.
9. Press **BACK** to return to main menu, or select "Modify 24 h Program".



10. Press **OK**. Selected day and hour appear on display. Matrix with programmable hours and interior temperatures T1 and T2 appears. Field of actual time and temperature blinks.



11. Press **▲** or **▼** to adjust desired temperature for selected day and hour: **OFF**, T1 or T2.
12. Press **OK**.
13. Repeat step 11 and 12 until all 24 hours are programmed. (The hour period is shown at the bottom of the display.)
14. Three seconds after you see "Programming successful" on the display you can select another day as described in step 6, and continue to program remaining days. You can also copy programmed values from one day to another. See **Daycopying**, step 6.

When you have programmed all days, press **BACK** to return to main menu.

Day copying

Instead of programming each day individually, you can copy programmed values from one day to another.

After copying you can keep the identical values or make adjustments (see **Day setting**, step 6).

If you copy days after setting temperatures T₁ and T₂, or programming and setting a day, then start at step 6.

Make sure the device is switched on.

- Press **MENU**.
- Press **▲** and **▼** to select "**⌚ Programming Timer**".
- Press **OK**.
- Press **▲** and **▼** to select "**⌚ Timer Program 1**" or "**⌚ Timer Program 2**" (values T₁ and T₂ depend on program settings).
- Press **OK**.
- Press **▲** and **▼** to select "**Set Monday**", "**Set Tuesday**", "**Set Wednesday**" etc...
- Press **OK**.
- Press **▲** and **▼** to select "**Copy Tuesday**", "**Copy Wednesday**" etc...
- Press **OK**.
- The display shows: "**Copy of 24 h program successful**".
- After 3 seconds, select another day as described in step 6 and continue to program remaining days.
- When you have finished programming all days, then press **BACK** to return to main menu.

4.5.2 Heating by timer

This paragraph describes how to select a program to heat the interior and to provide hot water.

You can choose from 2 programs that define 7 days, 24 hours interior and water heating.

To change the programs see chapter 4.5.1, "Program setting" on page 11.

If you want the electric heater to provide hot air or hot water, make sure you connect the external power supply (230 V AC): "**230 V**" (10) on display.

Make sure the device is switched on.

- Press **MENU**.
- Press **▲** and **▼** to select "**⌚ Heating by Timer**".
- Press **OK**.
- Press **▲** and **▼** to select "**⌚ Timer Program 1**" or "**⌚ Timer Program 2**" (values T1 and T2 depend on program settings).
- Press **OK**.
- Press **▲** and **▼** to select "**🚐 Heating Cabin**" or "**🚐 Heating Cabin + Hot Water**".
- Press **OK**.
- Press **▲** and **▼** to select the desired heat source:

Dual Top ST 8
"Diesel powered"
"1,000 W ~ 230 V" *
"2,000 W ~ 230 V" *

* Options "...W ~ 230 V" shown only when external 230 V power supply is connected.

9. Press **OK**. The display shows "Selection completed".

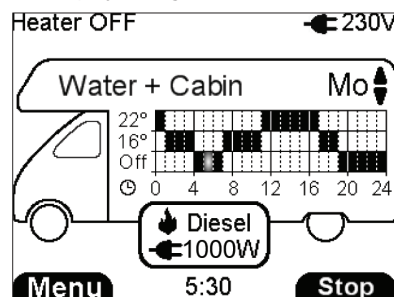


NOTE

When the heater is already "ON", the text "**Selection completed, press OK to change operation mode**" is displayed.

► Press **OK**.

After 3 seconds the power indicator (6) lights up in green and the display changes to:



230 V and ... W: Only Dual Top ST 8

- "Heater ON"
- "Water" (if "Hot Water" is selected)
- "Cabin"
- "🔥 diesel", "1000 W", "2000 W" (depending on heater type and selected heat source).
- Day
- Time
- Matrix with programmed hours and interior temperatures. The actual time and temperature blink.



NOTE

Press **▲** and **▼** to view program settings of another day.

4.6 Remote control

The heater can be operated by the Webasto Teletstart remote control device. This is optional.

If the remote control is enabled, the remote control commands overrule the control panel.

4.6.1 Show actual mode

Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select “ Setting Teletstart”.
3. Press **OK**.
4. Press **▲** and **▼** to select “**Show actual mode**”.
5. Press **OK**.
6. One of the following messages is shown, depending on the remote control function being disabled or enabled:
 - Disabled: “**Teletstart disabled**”.
 - Enabled: “**Teletstart enabled. Receiving a signal from Teletstart system heats up cabin to ... °C and provides hot water**”.



NOTE

The temperature unit (... °C or ... °F) and values depend on settings and the interior temperature.



NOTE

“and provides hot water” only appears when you select the “Heating Cabin + Hot Water” function.

Press **BACK** to return to the main menu.

4.6.2 Enabling and setting Teletstart

For Dual Top ST 8: If you want the electric heater to provide hot air and hot water, make sure to connect the external power supply (230 V AC): “**230 V**” (10) on display.

Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select “ Setting Teletstart”.
3. Press **OK**.
4. Press **▲** and **▼** to select “**Teletstart enabling and setting**”.



NOTE

If text “Teletstart not connected Visit www.webasto-dualtop.com” appears, remote control device is not connected.
► Press **BACK** to return to main menu.

5. Press **OK**.
6. Press **▲** and **▼** to select “**Heating Cabin**” or “**Heating Cabin + Hot Water**”.
7. Press **OK**. For Dual Top ST 6: continue at step 10.
8. For Dual Top ST 8: press **▲** and **▼** to select the desired heat source:

Dual Top ST 8
“Diesel powered”
“1000 W ~ 230 V” *
“2000 W ~ 230 V” *
“Diesel + 1000 W ~ 230 V” *
“Diesel + 2000 W ~ 230 V” *

* Options “...W ~ 230 V” shown only when external 230 V power supply is connected

9. Press **OK**.

10. Press **▲** and **▼** to select the desired interior temperature.

11. Press **OK**. The display shows: “**Enabling Teletstart successful**”.

After 3 seconds the display shows the actual status of the appliance at the time: “ (8)”.

4.6.3 Disabling Teletstart

Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select “ Setting Teletstart”.
3. Press **OK**.
4. Press **▲** and **▼** to select “**Teletstart disabling**”.
5. Press **OK**.

The display shows “**Disabling Teletstart**”. The Teletstart remote control option disappears after 3 seconds. The display now shows the actual status and time. The “ (8)” icon no longer appears.

4.6.4 Start and stop heater operation using Teletstart

To start and stop the heater operation using the Teletstart, Teletstart must be available and activated. This can be recognised from an indicated symbol “ (8)”.

Starting heater operation:

1. Press the ON button of Teletstart. LED of Teletstart lights green, showing that signal was transferred successfully.
2. The heater starts running in the (in chapter 4.6.2, “Enabling and setting Teletstart” on page 13) selected mode, independent from the actual heater status (heater off, heater on, drainage, ...).

Stopping heating operation:

1. Press the OFF button of Teletstart. LED of Teletstart lights red, showing that signal was transferred successfully.
2. The heater stops any heating operation and switches off, independent from the actual heater status.

Exception: running drainage will be continued.



NOTE

If the Teletstart LED blinks red after pressing the ON or OFF button of the Teletstart, the signal was not transferred successfully.

4.7 Frost

There are several features that protect the water supply system against frost.

- Drain water contents manually when there is risk of frost and when storing the vehicle for a longer period. See chapter 4.7.1, “Draining the boiler manually” on page 14.
- The boiler is drained automatically in case you forget to drain manually. See chapter 4.7.3, “Draining the boiler automatically” on page 14.
- If you do not want to drain the water supply system and you do not heat the interior of the vehicle, you can select the frost protection mode. See chapter 4.7.4, “Frost protection” on page 15.

4.7.1 Draining the boiler manually

Drain water contents manually when there is risk of frost and when storing the vehicle for a longer period.

Both manual and programmable control panel:

1. Interrupt power for vehicle system water pump (main switch or pump switch, depending on instructions of the vehicle manufacturer).
2. Open hot water taps in kitchen, bathroom, shower, etc. (set preselecting mixing taps or single-lever valves to "hot").

If you have manual control panel, then continue with following steps:

1. The electrical safety/drain valve is opened by turning and holding the mode selector knob (A) against the spring force in the position drain boiler (6) for at least 5 seconds.
2. Then, release the knob. The electrical safety/drainage valve will be open for approx. 90 minutes.
3. During drainage, all green icons on the control panel, as well as the red indicator on the mode selector knob (A), are blinking.

The boiler content is now discharged to the outside through the electrical safety/drainage valve.

Place a container beneath the outlet to check whether the water in the boiler has completely drained away (approx. 9 litres!).

If you have programmable control panel, then continue with the following steps:

1. Make sure the device is switched on.
2. Press **MENU**.
3. Press  and  to select "♠ Draining Boiler".
4. Press **OK**. The display shows: "Press OK to confirm boiler drainage"
5. Press **OK**. The display shows: "Draining... Press MENU to select heating operation" and "Press STOP to abort drainage" "♠" (9)



NOTE

Any kind of heater operation will be stopped when manually starting boiler drainage.



NOTE

To stop drainage see chapter 4.7.2, "How to stop draining the boiler" on page 14.

- ▶ The boiler content is now discharged to the outside through the electrical safety/ drainage valve.
- ▶ Place a container beneath the outlet to check whether the water in the boiler has completely drained away (approx. 9 litres!).
- ▶ After approx. 90 min, the message "Drainage completed" is shown.

1. Press **OK** to end manual drainage.



NOTE

Any kind of water from the vehicle has to be discharged at an appropriate disposal facility.



NOTE

Avoid the formation of micro-organisms in the lines and in the boiler during storage and make sure that the water supply system is completely drained. To do this, open all water valves, connect an air pressure of approx. 2 bar to the hot water line and leave it connected until the residual water is completely drained off.

4.7.2 How to stop draining the boiler

For heaters with a manual control panel, you can stop drainage by moving mode selector knob (A) to drainage mode (6) for at least 5 seconds and then releasing the knob.

In case of a programmable control panel, you can stop boiler drainage, if needed.

1. Make sure the device is switched on.
2. Press **MENU**.
3. Press  and  to select "♠ Draining Boiler".
4. Press **OK**.
5. The display shows "Press OK to confirm boiler drainage". Press **OK**.
The display shows:
"Drainage... Press MENU to select heating operation"
"Press STOP to abort drainage" "♠" (9).
6. Press **STOP**.
The display shows: "Drainage aborted".
7. Press **OK**.

4.7.3 Draining the boiler automatically

The electrical safety/drainage valve is opened electrically.

If the water temperature at the electrical safety/drainage valve is less than 43 °F (6 °C) for 30 minutes, the boiler water contents may drain automatically.

This function is active when:

- the device is switched "OFF";
- in winter mode (heating **without** hot water production) during a period when there is no heating action in the heater (e.g.: selected interior temperature is reached, low outside temperature);
- if battery power is too low (below 10V for 30 minutes);
- there is a failure!



NOTE

Note that the electrical safety/drainage valve only works when a 12 V power supply is available!

With a manual control panel, during drainage, all green icons, as well as the red indicator on the mode selector knob (A), are blinking.

With a programmable control panel, during drainage "♠" (9) appears on display.

After approx. 90 min, the electrical safety/drainage valve will be closed again.

The drainage outlet of the electrical safety/drainage valve must always be kept clear (free from dirt, ice, leaves etc.)!

To avoid water loss and to protect the heater and boiler against frost, select the frost protection mode (see chapter 4.7.4, "Frost protection" on page 15).

**NOTE**

Draining the boiler as well as the frost protection mode protect the heater and boiler against frost. Not all water lines in the vehicle can be protected against freezing due to installation variations.

When storing the vehicle, either choose a place that is well protected against low temperatures or drain the whole water system, including all lines and tubes (e.g. with air pressure, see note in chapter 4.7.1, "Draining the boiler manually" on page 14).

Warranty claims for damage caused by frost will not be honoured!

4.7.4 Frost protection

The frost protection mode is a safety feature for the heater only. It does not prevent the water circuits inside and outside the vehicle from freezing.

Store the vehicle at a place that is well protected against frost or drain water contents if there is a risk of frost!

For Dual Top ST with a manual control panel: To avoid freezing of the tubes and the boiler move mode selector knob (A) to frost protection mode (5).

The indicator (C) on the control panel lights green when the equipment is switched on. The red indicator on the mode selector knob (A) illuminates.

The heater functions as in the wintermode, heating with hot water production, but with lower values for air and water temperatures.

For Dual Top ST with a programmable control panel: Make sure the device is switched on.

1. Press **MENU**.
2. Press **▲** and **▼** to select "**Frost Protection**".
3. Press **OK**. For Dual Top ST 6: The display shows: "Selection completed".
4. For Dual Top ST 8: Press **▲** and **▼** to select the desired heat source:

Dual Top ST 8
"Diesel powered"
"1,000 W ~ 230 V" *
"2,000 W ~ 230 V" *

* Options "...W ~ 230 V" shown only when external 230 V power supply is connected.

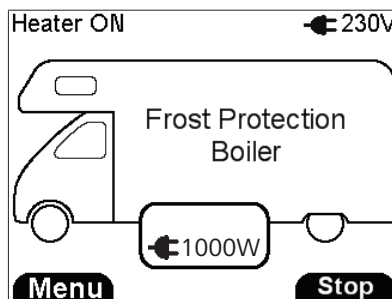
5. Press **OK**. The display shows: "Selection completed".

**NOTE**

When the heater is already "ON", the text "**Selection completed, press OK to change operation mode**" is displayed.

► Press **OK**.

After 3 seconds the power indicator (6) lights up in green and the display changes to:



230V und ... W: Only Dual Top ST 8

- "Heater ON"
- "**Frost Protection Boiler**"
- "diesel", "1000 W" or "2000 W" (depending on heater type and selected heat source).

The heater functions as in the winter mode, heating **with** hot water production, but with lower values for air and water temperatures.

**NOTE**

When the frost protection mode is selected in dependence on the selected heat source, diesel and electrical power are used. Therefore, it should be ensured that the battery is charged and there is enough diesel in the tank when "**Diesel mode**" is selected. Check this frequently.



NOTE When ambient temperatures below -4 °F (-20 °C) are expected, select heat source "**Diesel powered**" for 100% frost-protection of the system.

**NOTE**

Make sure that the boiler is filled with water when choosing frost protection mode.

**NOTE**

The frost protection mode enables the user to park the vehicle for a short time without being observed and without having to worry about frost and frost damage. During winter storage or when parking the unused vehicle for a longer time, the entire water system should be drained and the heater disconnected from the battery to avoid unnecessary battery discharging or possible frost damage.

5 Filling the boiler

Fill the vehicle fresh drinking water tank with your own hose, which is kept and stored clean.

Before filling the tank rinse the hose thoroughly (approx. 30 seconds).

**CAUTION**

Always fill the tank with fresh drinking water only and prevent dirt from getting into the entire water supply system.

1. Fill the boiler with fresh drinking water at an ambient temperature of at least 6 °C, or select:
 - summer mode 104 °F (40°C) or 158 °F (70°C), see chapter 4.2.1, "Summer mode (hot water only)" on page 7 or chapter 4.3.6, "Summer mode (hot water only)" on page 9,
 - winter mode (heating **with** hot water production), see chapter 4.3.8, "Winter mode (heating with hot water production)" on page 10 or chapter 4.2.3, "Winter mode (heating with hot water production)" on page 7, to make sure the electrical safety/drainage valve does not open!

2. Make sure that the boiler is filled with fresh drinking water.
3. Open hot water taps in kitchen, bathroom, shower, etc. (set pre-selecting mixing taps or single-lever valves to "hot"). Leave water taps open until water flows out of taps. The air is pressed out of the boiler in the process and it fills with water.

If just the cold water supply system is being operated, without using the boiler, the latter also fills up with water. In order to avoid damage by frost, the water contents must be drained by operating the electrical safety/drainage valve (see chapter 4.7.1, "Draining the boiler manually" on page 14), also when the boiler has not been used.

As an alternative, two shut-off valves, resistant to hot water, can be fitted in front of the cold and hot water connection. When connecting to a central water supply (rural or city mains) or if using a more powerful water pump, a pressure reduction valve must always be installed to prevent a pressure above 2.5 bar developing in the boiler.

**NOTE**

Due to pressure differences in the system which result during filling or operation, small water quantities (approximately 30 ml / 24 h) can be drained out of the boiler, however there is no need to be concerned about complete draining.

6 Maintenance

Correct maintenance of Webasto Dual Top ST integrated heaters is important to ensure years of trouble-free, safe use and enjoyment.

Take your vehicle to an authorized Webasto dealer for periodic service and inspection.

It is vital that your Webasto dealer carries out any repair or maintenance, which is not described in this document. Consult your dealer for assistance in determining your maintenance needs.

How much of your vehicle's service and maintenance you can do yourself, depends on your skill and experience, and whether you have the special tools required. If you want to learn how to work on your heater, then ask your Webasto dealer for advice.

**CAUTION**

Many heater service and repair tasks require special knowledge and tools. Improper adjustment or service may result in damage to the heater, or in an accident, which can cause serious injury.

- For best performance, your authorised Webasto dealer must inspect and service your heating system at least every 2 years, independent of usage.
- DO NOT use high-pressure washer or compressed air to clean the heater. This can force dirt into areas that may cause damage.
- The heater must be switched "OFF" before cleaning.
- Always disconnect 230 V power supply before any cleaning, maintenance or repair.
- Drain the water system when the vehicle is stored for a longer period.
- Use commercial descaling agents for descaling the boiler, this being introduced into the appliance via the water supply. See chapter 6.2, "Descaling" on page 17.
- Regularly check all components of the water supply system.

6.1 Disinfection

- In case no water has been taken from the water supply system for a period of a week or more, drain the whole water system and rinse it thoroughly before refilling it.
- To avoid micro-organisms, water should not stay longer than a fortnight in the boiler. Disinfect the water supply system if water was more than a fortnight in the boiler.
- To prevent any harm, operate the heater full power every four weeks (diesel powered operation, not the electric heater):
 - for at least 20 minutes continuously, winter mode, heating cabin **without** hot water production. This prevents mechanical parts from seizing.
 - followed by operation for at least 30 minutes continuously, "Summer mode 70°C", hot water production only. Water supply systems below 140 °F (60 °C) may breed microorganisms.
- Clean and disinfect the water supply system immediately before rental or lending of the vehicle.
- Clean and disinfect the water supply system at least one time per year.

**NOTE**

Before winter storage, it is advisable to completely drain the water supply system with compressed air of 2 bar. To do this, open all taps, connect the compressed air to the hot water line and wait until the water has completely drained off.

A water supply system with a suspected contamination with micro-organisms has to be disinfected.

1. Clean and disinfect the water supply system according to all local regulations such as the DVGW W 291 in Germany.
2. Use a solution of Sodium Hypochlorite (NaOCl) in water as disinfectant. Carefully follow the instructions of the manufacturer. Other products may harm your health and/or the Dual Top ST .
 - Carefully follow all instructions of the NaOCl supplier.
 - Carefully follow all instructions of the vehicle manufacturer.
3. Drain all water contents. See chapter 4.7.1, "Draining the boiler manually" on page 14 .
4. Close all water taps.
5. Fill entire water supply system with NaOCl solution.
6. Select "Summer mode 40°C" to make sure the electrical safety/drainage valve does not open.
7. Make sure that the boiler is filled with NaOCl solution.
8. Open water taps in kitchen, bathroom, shower, etc. (set pre-selecting mixing taps or single-lever valves to "hot"). Leave the taps open until the air has been completely forced out of the Dual Top ST , it is filled with NaOCl solution and NaOCl solution flows out of the taps. Then close the taps. Open the taps one by one, not all at the same time.
9. Leave it on for 1 to 2 hours.
10. Drain all NaOCl solution contents.
11. Repeat the described procedure (step 1 to 8) with fresh drinking water. Flush the water supply system thoroughly with fresh drinking water until fully clean and odorless. No need to leave it on for 1 to 2 hours.

12. Drain all water contents.
13. Fill entire water supply system with fresh drinking water.
See chapter 5, "Filling the boiler" on page 15 .

6.2 Descaling

Depending on the hardness of the water, used for heating in the Dual Top ST, scaling and lime deposits can form in the coolant hoses and the boiler. In order not to restrict the water quality and the heater efficiency, it is advisable to conduct descaling regularly depending on the water quality.

Use commercial descaling agents, such as citric acid-water mixture or a wine vinegar-water mixture. Look in the manufacturer's instructions for mixing ratios. Other products can harm your health and/or the Dual Top ST.

1. Drain all water contents. See chapter 4.7.1, "Draining the boiler manually" on page 14".
2. Close all water taps.
3. Fill the entire water supply system with descaling agent.
4. Select **Summer mode 40 °C** to make sure the electrical safety/drainage valve does not open.
5. Make sure that the boiler contains the mixture.
6. Open water taps in kitchen, bathroom, shower, etc. (set preselecting mixing taps or single-lever valves to **hot**). Open the taps one by one, not all at the same time.
7. Leave the water taps open until the Dual Top ST has been vented of all air, the system is filled with descaling agent to the point it is flowing out of the water taps. Then close the taps.
8. Leave the Dual Top ST on for 1 to 2 hours and wait for the reaction phase.
9. Verify whether the scale deposits have completely dissolved in the descaling agent. If not, then run the heater for another 30 minutes and then completely drain off the mixture of descaling agent and water.
10. Flush the water supply system thoroughly with fresh drinking water until fully clean and odorless.
11. Finally, fill the boiler with fresh drinking water again. See chapter 5, "Filling the boiler" on page 15.

7 Troubleshooting

7.1 Fault Message output

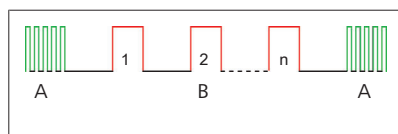
When a fault occurs, power indicator/fault indicator

(Dual Top ST 6: C/ Dual Top ST 8: 6) blinks RED.

Next to that, a fault message is shown on the display of the control panel.

The meaning of the messages is shown in the table in chapter 7, "Troubleshooting" on page 17 .

Depending on the type of fault, you may need to visit a Webasto Service Centre.



A	5 x green
B	"n" x red

Fig. 6 Example fault message

7.2 Fuses

The Dual Top ST is equipped with 3 fuses: 5 A, 15 A and 15 A. Each fuse must be connected to the corresponding cable (observe colour).

5 A: red-and-blue cable

15 A: red-and-black cable

15 A: red cable



NOTE

Make sure that the Dual Top ST heater is switched off before you replace a fuse.

8 Disposal

The Dual Top ST must not be disposed of in domestic waste. Observe the regional regulations for disposal of electronic products.

9 Warranty and customer service

1. Online registration of the product:
<https://dealers.webasto.com>
2. Provide the registration documentation to the next owner or user of the heater.

Do you have any technical questions or problem with the device?

National phone numbers of our representatives are provided on: www.techwebasto.com

10 Declarations

10.1 Drinking water conformity

- DIRECTIVE 98/83/EC on the quality of water intended for human consumption
- Trinkwasserverordnung – TrinkwV 2018 regulation on the quality of water for consumption.
- UBA KTW Leitlinie - Guideline for the hygienic assessment of organic materials in contact with drinking water

These are the original instructions. The English language is binding.
You can request your language if it is missing. The telephone number of each country can be found in the Webasto service centre leaflet or the website of the respective Webasto representative of your country.



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Fenton, MI 48430

Technical Assistance Hotline

USA: (800) 860-7866

Canada: (800) 67-8900

www.webasto.us

www.techwebasto.com

Org. 04/2021

Rev. N/A

P/N 9026389C

