

Operating and servicing instructions Thermo 230/300/350 Thermo 231/301



General information

Dear Webasto Customer,
We assume that the operation and function of your new heater will have been explained to you properly and to your complete satisfaction by the installing workshop / service outlet. This owner's handbook is designed to give you a brief summary of how to use the Thermo 230 / Thermo 231 / Thermo 300 / Thermo 301 / Thermo 350 heaters.

Servicing and safety instructions

Type approvals pursuant to Directive 2001/56/EC (Heating Systems) and 72/245/EEC (EMC) have been issued for the region covered by European Directive 70/156/EEC for the Thermo 230 / Thermo 231 / Thermo 300 / Thermo 301 / Thermo 350 water heaters. For heater models Thermo 230 / 300 / 350 (not Thermo 231/Thermo 301) designed for installation in rail vehicles, a design certification acc. to § 33 EBO (= Federal Railway Authority) has been issued with the following approval number: EBA 32AZ3/0141/04.

The heaters must be installed as described in the attached installation instructions.

The installation must be checked pursuant to the statutory regulations governing installation work. Further details are given in the installation instructions.

The year in which the heater is used for the first time must be permanently marked on the heater's model plate by removing the inapplicable year numbers.

Ensure that the existing shut-off devices in the fuel line return are open before the heater is used for the first time.

When the coolant used in the vehicle's engine is renewed, after bleeding the vehicle's cooling system, give careful attention to bleeding the heater.

Top up the coolant as described in the instructions supplied by the vehicle manufacturer.

Check the openings for the combustion air intake and exhaust outlet and clean them if necessary.

When the heater is operated in rail vehicles, maintenance chart / test certificate item no. 90 087 22 is to be used.

Switch off the auxiliary heating system before refuelling.

The heater must not be operated :



Risk of fire, explosion
and asphyxiation

- at filling stations or other refuelling points.
- in locations where inflammable vapours or dust may form, for example near fuel, coal, wood dust or cereal storage facilities.
- near inflammable materials such as dry grass and leaves, cartons, paper, etc.
- in enclosed areas (for example garages), not even if the timer or Telestart unit is used.

The heater must not :



- be exposed to temperatures exceeding 110°C (storage temperature). If this temperature is exceeded the electronics system may suffer permanent damage.
- be operated without at least 20% of a brand name anti-freeze in the heating system water.

The heater must :



- be operated using the fuel type shown on the model plate and the rated voltage shown on the model plate.
- be shut down by removing the fuse in the event of extensive smoke development, unusual combustion noises or fuel odours.
The heater must not be used again until personnel trained by Webasto have examined it.
- be run for 20 minutes at least once per months when the engine is cold and with the blower at its lowest setting. At the latest at the start of the cold weather the heater must be inspected by an expert.

Liability claims:

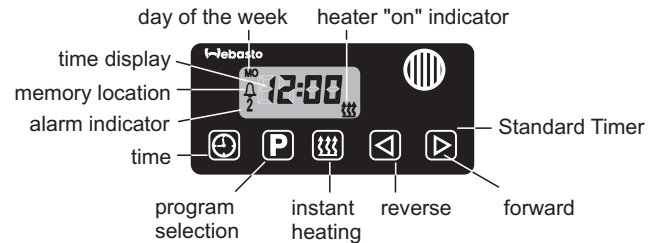


- Failure to follow the installation instructions and the notes contained therein will lead to all liability being refused by Webasto. The same applies if repairs are carried out incorrectly or with the use of parts other than genuine spare parts. This will result in the revocation of the type licence for the heater and therefore the general operating licence / EC type licence.
- Liability claims can only be made if the claimant can verify compliance with all the servicing and safety instructions.

Heater operation

The water heater can be switched on using either a switch or timer.
Before you switch on the heater set the vehicle's heating system to "Warm".

Standard Timer



General	<p>The standard digital timer enables you to preset the start of the heater operation up to 7 days in advance. It is possible to program 3 different starting times, only one of which can be activated.</p> <p>The standard digital timer features a wakeup alarm function. When the ignition switched on, the timer displays the current time and the day of the week. When the heater is switched on, the display and the buttons are illuminated.</p> <p>After the power supply has been connected, all symbols on the display will flash. The current time and weekday must be set.</p>
Operation	<p>The timer can be operated in that all flashing symbols can be adjusted by means of the and buttons. If the buttons are not pressed within 5 seconds, the time displayed will be stored. If the and buttons are pressed for more than 2 seconds, the fast time-setting mode is activated.</p> <p>If the ignition is switched off while the heater is operating in the continuous mode, the remaining operating time of 15 minutes is displayed and the heater continues to operate for this period of time.</p>

Switching the heater on	<p>Manually: by pressing the button (continuous heating mode)</p> <p>Automatically: by programming the heater starting time</p>
Switching the heater off	<p>Manually: by pressing the button </p> <p>Automatically: after the programmed operating time has elapsed</p> <p>With the heater running: by programming the remaining operating time</p>
Setting time/day of the week	<p>Press the button for more than 2 seconds - time of the day is flashing - and set the clock using the and buttons. Day of the week is flashing - adjust the day of the week.</p>
Viewing the time	<p>With the ignition switched off: press the button</p>
Programming heater starting time	<p>Press the button - the memory location is flashing - using the and buttons set start of the heater operating time. Day of the week is flashing - set the day of the week. By repeatedly pressing the button, memory locations 2 and 3 can be programmed or the time display mode can be reached.</p>
Recalling/erasing preset times	<p>Repeatedly press the button until the desired memory location is displayed. To erase the preset time, press the button several times until the time of the day is displayed instead of the memory</p>
Programming duration of operating time	<p>The heater must be switched off. Press the button for 3 seconds - operating time is flashing - and set the desired operating time (10 to 120 minutes) using the and buttons.</p>
Setting the remaining operating time	<p>Set the desired remaining operating time (1 to 120 minutes) using the and buttons. The remaining operating time refers to the time the heater still continues to remain in operation. It can only be changed while the heater is in operation and the ignition switched off.</p>
Setting the wakeup time	<p>A wakeup time can only be programmed on the standard digital timer. The wakeup time is not bound to a specific day of the week.</p> <p>Repeatedly press the button until the bell symbol appears on the display. Set the desired wakeup time using the and buttons. The alarm clock turns off after 5 minutes or when one of the buttons is pressed.</p>
Recalling/erasing the wakeup time	<p>Repeatedly press the button until the bell symbol appears on the display - read off wakeup time. To erase the wakeup time: press the button until the bell symbol is no longer visible on the display.</p>
Remote control	<p>Possible by means of an optional external "instant heating" button</p>
Vehicles with ADR equipment	<p>On ADR vehicles it is not possible to program a preset starting time. The remaining time is shown on the display while the heater is in operation. The clock can be set. The alarm clock function can be programmed on the standard digital timer.</p>

Troubleshooting

In the event of a malfunction, fuses and electrical connections should be checked for condition and security.
If this action fails to correct the malfunction, please consult your authorised Webasto dealer.

Following a fault lock-out situation, coded flashing signals will be emitted - via the operation indicator light - during the after-run period of the heater, on all heaters equipped with control unit 1572D. These coded flashing signals allow your authorised Webasto dealer to identify the malfunction that has occurred.

Heater turns itself off automatically (=fault lock-out)

Cause	Remedy
Combustion was not established during start-up	Switch heater briefly off and on again one time
Flame extinguishes during operation	Switch heater briefly off and on again one time
Heater is shut down due to overheating, e.g. owing to lack/loss of coolant	Top up coolant and press the push-button on the temperature limiter NOTE: In the case of Thermo 231/301 heaters, resetting is performed automatically.
Vehicle voltage insufficient	Charge battery Switch heater briefly off and on again one time
Combustion air and/or exhaust gas ducts obstructed	Check combustion air and exhaust gas ducts for unobstructed passage

Fault Code Display

On heaters equipped with control unit 1572D and standard digital timer, a fault code appears on the display of the digital timer whenever a malfunction has occurred.

Fault Codes on the Display of the Combination or Standard Digital Timer

NOTE:

In the case of heaters operated by a switch, the particular type of malfunction that has occurred is indicated by coded flashing signals via the operation indicator light during the after-run period of the heater. After every fast pulse sequence comprising 5 signals, the long flashing signal pulses can then be counted: The coded flashing signals correspond to the numbers in the table below

F 01	No start
F 02	Flame failure *
F 03	Undervoltage or overvoltage
F 04	Stray light detection during the prestart or after-run period
F 05	Defective flame detector
F 06	Defective temperature sensor
F 07	Defective solenoid valve
F 08	Defective fan motor
F 09	unused
F 10	Defective temperature limiter/overheating
F 11	Defective ignition spark transmitter
F 12	Fault lock-out condition due to recurring malfunctions or repeated flame failure (8x no start-up or 5x flame failure)

* On the Thermo 231 and 301, if the overheating thermostat trips this is saved as a flame failure (F 02) in the control module

Deactivating the heater lock-out mode:

Deactivation of the heater lock-out mode is effected by switching the heater on and then disrupting the power supply during the start-up procedure.

Subject to change