

Operating and maintenance instructions

Thermo 90 S/ 90 ST



General Information

Dear Webasto Customer !

We assume that the workshop / service center that carried out the installation explained to you the operation and principle of functioning of your new heater to your complete satisfaction. This owner's handbook is designed to give you a brief summary of how to use the Thermo 90 S / Thermo 90 ST heaters.

Maintenance and Safety Information

General type approvals have been issued in the region covered by the European Directive 70/156/EEC for the Thermo 90 S and Thermo 90 ST heaters, which comply with Directives 2001/56/EC (Heating systems) and 72/245/EEC (EMC).

The installation of the units must be carried out in accordance with the enclosed installation instructions. The installation must be checked in accordance with the Legal Provisions for Installation. For details refer to the installation instructions.

The year of the initial operation must be durably marked on the heater's nameplate by removing the non-applicable years.

In addition to the Road Traffic Act, the requirements of the latest version of the ADR must also be observed for the installing the Thermo 90 S / Thermo 90 ST heater into vehicles used to transport hazardous substances.

The heater must be switched off:



Danger of explosions and asphyxiation

- at filling stations and tank farms.
- in locations where flammable vapours or dust may accumulate (e.g. in the vicinity of fuel-, coal-, sawdust or grain depots).
- in enclosed spaces (e.g. garages). This should also be considered when pre-setting heater operating times or using the Telearstart remote control.

The heater must not be



- exposed to temperatures greater than +85°C. Exposure to such temperatures may cause damage to the electronic components.
- operated without a minimum level of 20% of good quality antifreeze in the water of the heating circuit.

The heater must:



- be operated using the fuel specified on the name plate and the rated voltage specified on the name plate.
- In the case of a severe build-up of smoke, unusual combustion noises or fuel smell, the heater is to be put out of operation by removing the fuse and may only be restarted after being inspected by Webasto-trained personnel.
- be operated at least once a month for 10 minutes, with the vehicle engine cold and at the lowest fan setting. The heater should be checked annually by a qualified expert, preferably prior to the heating season commencing.

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 that he has complied with the servicing and safety instructions.

Operation

Before switching the heater on, set the vehicle heating system to the "warm" position and the vehicle heater fan to the lowest setting (less power consumption)!

For ADR vehicles only:

The Thermo 90 S and Thermo 90 ST heaters are switched on and off by hand using a switch. Automatic controllers must not be used. These heaters must not be used in FL type vehicles during loading and unloading and at loading bays. In FL type vehicles the heaters are switched off automatically and the supply of combustion air is stopped after a maximum of 40 seconds in the following circumstances:

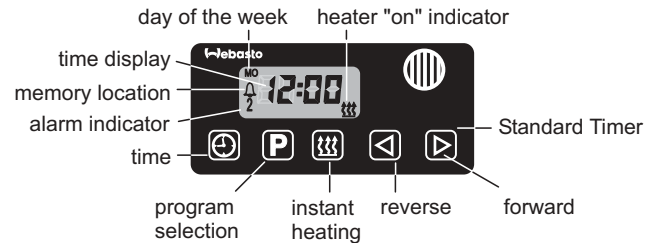
-The vehicle engine is at a standstill; in this case the heater may be switched on again by hand

-A transport device on the vehicle is started in which case the brief slow-down time is stopped after 20 seconds (Thermo 90 ST after 40 seconds).

Thereafter, the electronic control unit is in the "fault lock-out" state. Before the heater can be restarted, the On/Off switch must be set to "Off".

The disconnect switch (Emergency Stop switch) may only be actuated in an emergency situation since this will shut the heater down without any after-run being performed (danger of overheating).

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>

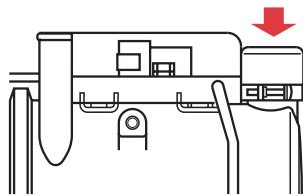
Switching the heater on	<p>Manually: by pressing the button (continuous heating mode)</p> <p>Automatically: by programming the heater starting time</p>
Switching the heater off	<p>Manually: by pressing the button </p> <p>Automatically: after the programmed operating time has elapsed</p> <p>With the heater 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

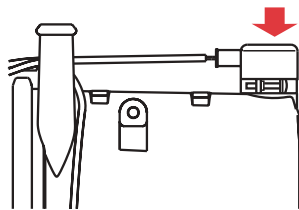
In the event of a malfunction, fuses and electrical connections should be checked for proper condition and security.
If this action does not correct the defect, consult your authorized Webasto dealer.
After the heater has been shut down due to a fault lock-out, a coded flashing signal is emitted through the operation indicator during the after-run cycle of the heater. These coded flashing signals are designed to assist the authorized Webasto dealer in isolating the fault.

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

Cause	Remedy
Combustion was not established during start-up and start-up repetition Flame goes out during operation	Switch heater off and then on again. If the heater fails to re-start consult your authorized Webasto dealer
Voltage drop for more than 20 seconds	Check fuses, electrical connections and battery
Heater overheats due to lack/loss of coolant	Top up coolant in accordance with the vehicle manufacturer's instructions



Thermo 90 S



Thermo 90 ST

Fault Code Display

After the occurrence of a malfunction, the fault is indicated on the display of the digital timer if the heater is equipped with a standard digital timer.

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

NOTE:

If the heater is activated by the switch, the types of malfunctions are indicated by coded flashing signals via the operation indicator light during the after-run period of the heater. The coded flashing signals correspond to the numbers in the table below

F 01	No start-up (after 2 start-up attempts)
F 02	Flame extinguished
F 03	Undervoltage or overvoltage
F 04	Premature flame detection
F 05	Flame detector interruption or flame detector short-circuit
F 06	Temperature sensor interruption or temperature sensor short-circuit
F 07	Metering pump interruption or metering pump short-circuit
F 08	Fan motor interruption or fan motor short-circuit or incorrect fan motor speed
F 09	Pencil-type glow plug interruption or pencil-type glow plug short-circuit
F 10	Overheating
F 11	Circulating pump interruption or circulation pump short circuit

Subject to change