General information

Dear Webasto user

We presume that the principle and mode of operation of your new heater has been explained to your complete satisfaction by the workshop / service centre which installed the heater. This manual summarizes the main points of importance for using the heaters Thermo Top C and Thermo Top Z, as well as the handheld transmitter Telestart T70/T80.

Maintenance and safety instructions

The water heaters Thermo Top C and Thermo Top Z have been type-tested and approved in accordance with Directives 2001/56/EC (heaters) and 72/245/EEC (EMC) within the territory governed by European Directive 70/156/EEC.

The units must be installed in accordance with the enclosed installation instructions.

The heater must not be operated:

- In filling stations and tank farms.
- In places where explosive vapours or dust may build up (e.g. near fuel, coal, wood dust or cereal stores).
- In enclosed rooms (e.g. garages), not even via the timer or Telestart.

The heater must not:

- be exposed to temperatures of more than 120 °C (storage temperature), otherwise the electronics may suffer permanent damage.
- be operated without at least 20% brandname anti-freeze in the water of the heating circuit.

Control Variants

- Engine is running (signal from alternator, terminal 61)
- Water circuit temperature below operating threshold value
- Engine is running (signal from alternator, terminal 61)
- Water circuit temperature below operating threshold value
- Outside temperature below operating threshold value
- Engine temperature below operating threshold value
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Troubleshooting

In the event of a malfunction, fuses and electrical connections should be checked for condition and security.

If the supplementary heating device fails to switch on when the engine is cold, the control unit may be in its fault lock-out state. Any electronic fault lock-out condition is not displayed.

Following a fault lock-out situation, the fuse for the supplementary heating device must be removed and subsequently be re-installed after approx. 10 seconds. Removing the fuse causes any electronic fault lock-out to be deactivated again. The fuse must be removed with the engine running or within 60 seconds after the engine has been shut down.

If the above measure fails to correct the malfunction, or if a heat deficit exists in the interior of the vehicle at outside temperatures below 5 °C, please consult your authorised Webasto dealer.

The following faults can be remedied directly by the user:

<table>
<thead>
<tr>
<th>Fault description</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater switches off automatically (= fault lock-out).</td>
<td>No combustion after starting and restarting. Flame goes out during operation.</td>
<td>Switch off heater and switch on again (not more than twice).</td>
</tr>
<tr>
<td>Heater does not switch on.</td>
<td>Heater is without electric power.</td>
<td>Check power supply to heater and ground connections.</td>
</tr>
<tr>
<td>Heater switches off during operation (= fault lock-out).</td>
<td>Heater has overheated due to lack of coolant.</td>
<td>Refill coolant as directed by manufacturer.</td>
</tr>
</tbody>
</table>

Fault description Possible cause Remedy

Heater switches off automatically (= fault lock-out). No combustion after starting and restarting. Flame goes out during operation. Switch off heater and switch on again (not more than twice).

Heater does not switch on. Heater is without electric power. Check power supply to heater and ground connections.

Heater switches off during operation (= fault lock-out). Heater has overheated due to lack of coolant. Refill coolant as directed by manufacturer.

Control Variants

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Operating and maintenance instructions

Thermo Top C
Thermo Top Z
Telestart

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5. Troubleshooting

5.1 General Fault Symptoms

The following table (Fig. 501) lists possible fault symptoms of general nature for heaters in installed condition.

**CAUTION**

Troubleshooting requires profound knowledge about components and their theory of operation and may only be performed by trained personnel.

In case of doubt functional interrelations may be derived from Sections 2 and 3.

Troubleshooting is normally limited to the isolation of defective components and provides information on defective wiring and connections. The following possible causes for trouble have not been taken into consideration and must always be excluded as a possible cause for malfunctions:

- corrosion on connectors
- loose contacts on connectors
- wrong crimping on connectors
- corrosion on wiring and fuses
- corrosion on battery terminals

After any fault correction a functional checkout in the vehicle has to be performed (see 6.2).

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smell of fuel</td>
<td>Check heater system integration in vehicle's fuel system. Check fuel lines for leakage, kinks or obstructions. If o.k. there is a heater internal leak. Remove heater and perform troubleshooting on repair shop level.</td>
</tr>
<tr>
<td>Heater does not achieve full load operation</td>
<td>Remove heater and perform troubleshooting on repair shop level.</td>
</tr>
<tr>
<td>Continuous white smoke during combustion operation</td>
<td>Remove heater and perform troubleshooting on repair shop level.</td>
</tr>
<tr>
<td>Heater cannot be switched off</td>
<td>Perform functional test of Timer (see 6.2.2) or of Telestart device (see 6.2.3). Replace or repair defective component.</td>
</tr>
<tr>
<td>Loss of coolant (dripping); heater develops smoke during combustion operation; smell of exhaust fumes extremely sweet</td>
<td>Inspect coolant hoses for leakage, kinks, loose hose clamps, etc. If o.k. there is a heater internal leak. Remove heater and perform troubleshooting on repair shop level.</td>
</tr>
<tr>
<td>Loss of fuel (dripping)</td>
<td>Check heater system integration in vehicle's fuel system. Check fuel line connections for leakage. If o.k. there is a heater internal leak. Remove heater and perform troubleshooting on repair shop level.</td>
</tr>
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</table>

Fig. 501 Fault Symptoms
5 Troubleshooting

5.2 Malfunctions

5.2.1 Error Lockout by Malfunction of Heater

In case of a "no flame-up" condition fuel is delivered for a maximum of 180 seconds.

In the event of overheating (temperature limiter responds) fuel delivery is stopped immediately.

In all cases of malfunction (except for a defect on the combustion air fan) there will be an error lockout with a subsequent run-down. Dependent on the software variant implemented there might be deviations from the run-down times specified.

NOTE
An error lockout due to overheating does not display an indication.

5.2.2 Error Lockout due to Low or High Voltage

A low voltage level of 10.5 ± 0.3 V (measured at the wiring harness input) over a period of 20 seconds will cause an error lockout with a run-down of 120 seconds.

A high voltage level of 15.5 ± 0.5 V (measured at the heater) over a period of more than 6 seconds will also cause an error lockout with a run-down of 120 seconds.

Error Lockout Reset Thermo Top C with "Timer"

After correction of the malfunction the error lockout is reset by switching the heater off and on again. In case of overheating an error lockout reset is achieved by removing fuse F1, 20A for at least 10 seconds. The fuse is not blown in case of an overheat condition.

Error Lockout Reset Thermo Top C with "Telestart"

After correction of the malfunction the error lockout is reset by switching the heater off and on again. In case of overheating an error lockout reset is achieved by removing fuse F1, 20A for at least 10 seconds. The fuse is not blown in case of an overheat condition.

Error Lockout Reset Thermo Top Z

A malfunction will cause an error lockout within the control unit. The error lockout condition may only be reset by disconnection of electrical power to the control unit (e.g. by removing fuse F1 for at least 10 seconds). The fuse must be removed with the engine running or within 60 seconds after turning the engine off.