

SCANIA

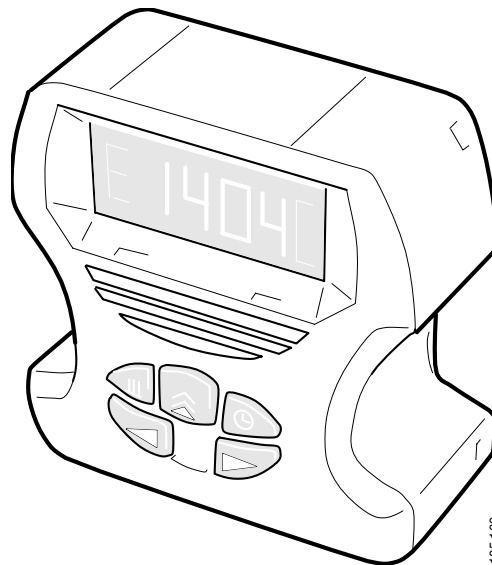
18:05-04

Issue 1 en

Auxiliary heater Operation unit CTT

D1LC and D1LCC

Function description and fault code list



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Function description

CTT stands for **C**lock **T**imer **T**hermostat.

The heater can be started directly using the CTT unit. It is also possible to program 3 different starting times for every 24-hour period and a maximum of 21 starts per week. Operating time can be selected from 30 minutes to 8 hours. The operating time is divided into steps of 30 minutes.

The cab temperature can be set using the thermostat integrated in the CTT unit.

The set time and day of the week are shown in the display. There is also an integrated wake-up function with two wake-up times every 24-hours. The wake-up can be either by a buzzer or by the vehicle radio and buzzer together.

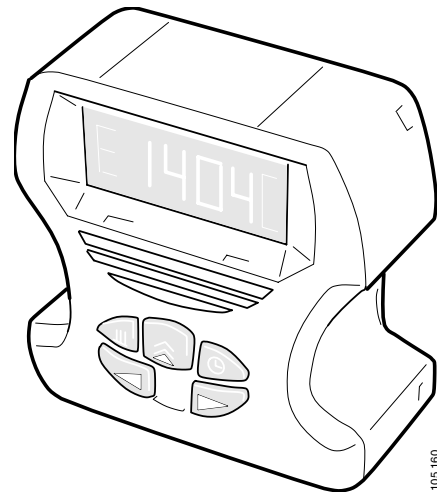
Automatic "sleep-in" will turn the radio off after 30 minutes.

When the CTT unit is not connected to the vehicle, it is driven by a 9 V battery. It is located behind a cover on the back.

Thanks to the internal battery, the CTT unit can be used as a conventional alarm clock even when it has been disconnected from the vehicle. The heater functions can also be pre-programmed.

The messages BAT and then E BAT will be shown in the display to indicate a flat battery. E BAT stands for empty battery.

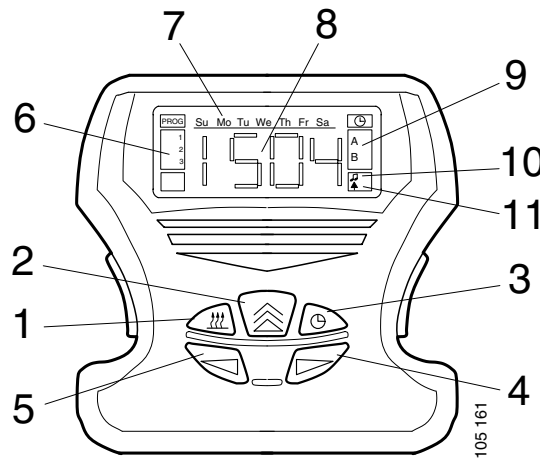
Topline includes two docking panels for the CTT. Only one CTT unit can be connected at any one time but and either position can be chosen.



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Overview

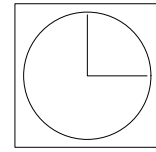
- 1 Heater function
- 2 Function selector
- 3 Time function
- 4 Step forward
- 5 Step back
- 6 Heater starting times (1, 2 and 3)
- 7 Day of week
- 8 Display showing current time or ON/OFF and HEAT respectively
- 9 Wake-up times (A or B)
- 10 Wake-up with radio and buzzer
- 11 Wake-up with buzzer.



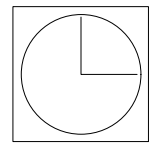
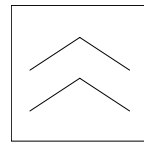
Summary

The buttons used to select various functions are shown on the right. See also back of CTT unit.

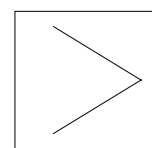
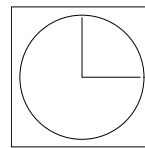
- Set clock.



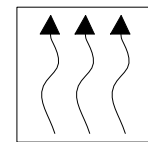
- Set alarm time.



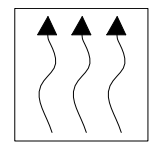
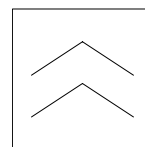
- Automatic "sleep in"



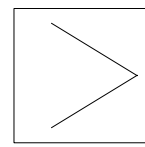
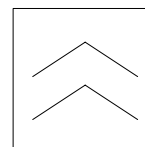
- Direct start of heater.



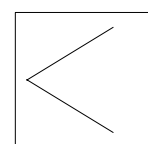
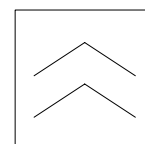
- Heater starting time(s)



- Heater operating time adjustment.



- Thermostat adjustment.

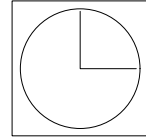


Lighting on/off

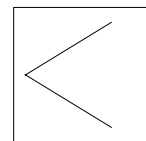
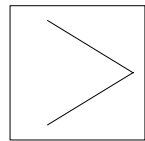
Press any button to turn on the light in the display. The light will go off after 5 seconds.

Setting the time

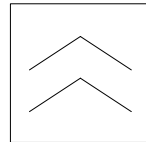
- 1 Press the time button for at least 5 seconds. The numbers in the display will start to flash.



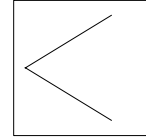
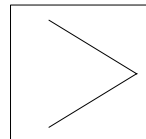
- 2 Select the desired time by stepping backward/forward with the relevant button.



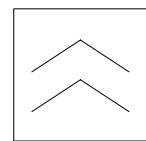
- 3 Confirm with the function selector to continue with setting the day of the week.



- 4 Select the desired day by stepping backward/forward with the relevant button.



- 5 You can return to normal mode in two ways.
 - Automatically by not pressing any buttons for 2 minutes.
 - By pressing the function selector for at least 2 seconds.

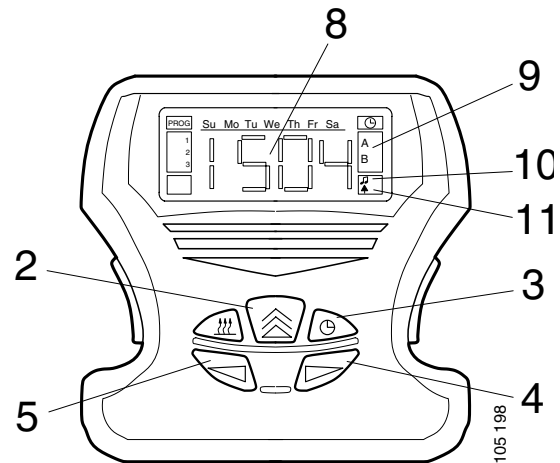


Setting wake-up time

Two wake-up times every 24-hours can be set using the CTT. Programming will be made easier if the CTT unit is detached from the panel.

Set as follows:

- 1 Press (2) and (3) simultaneously for at least 2 seconds.
- 2 The current wake-up time, A or B, is marked with a flashing dot in the display. Either of them can be selected by pressing (4) or (5). Press (2).
- 3 Set the desired wake-up time with (4) or (5). Press (2).
- 4 Set ON/OFF with (4) or (5). Press (2).
- 5 Select whether to activate the radio alarm combined with a buzzer tone (10) or just the buzzer tone (11). The selected function will be marked with a flashing dot. Press (2). Remember that the radio must be turned on to work if you have selected wake-up by radio. This means that you should only turn the starter key to locked position to turn off the radio. Do not turn it off with the button on the radio set.
- 6 You return to the starting point. Go back to step 2 if you want to set another wake-up time.
- 7 You can return to normal mode in two ways.
 - Automatically by not pressing any buttons for 2 minutes.
 - By pressing (2) for at least 2 seconds.



Wake-up and shut-off

Wake-up function with buzzer tone

The wake-up buzzer tone can be turned off by pressing any button on the CTT unit. The buzzer tone is turned off automatically after 5 minutes if no button is pressed earlier.

Wake-up function with radio

The CTT unit starts the radio and the wake-up tone. Note that the radio must be turned on if the wake-up function with radio is to work, see step 5, page 7.

The tone can be turned off by pressing any button on the CTT unit.

The radio cannot be turned off from the CTT unit. The radio will be turned off automatically after 30 minutes. There are two ways of turning it off earlier:

- Directly on the radio set.
- Set the automatic "sleep in" function on the CTT unit. See page 9. It can be turned off by pressing any button.

If the wake-up function with radio was selected with the CTT unit disconnected from the vehicle, then the wake-up function with buzzer tone will be activated automatically.

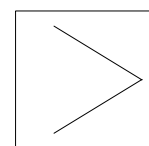
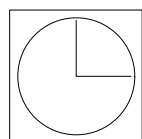
Automatic "sleep in"

The automatic "sleep in" function can be set when the CTT unit is connected to the vehicle.

The radio will be turned off automatically after 30 minutes.

Start

The "sleep in" function is started by pressing the "time" and "step forward" buttons simultaneously for 2 seconds until the radio symbol (10) appears in the display.



Remember that the radio must only be turned off by turning the starter key. It must not be turned off on the radio set.

Shut-off

The function can be turned off by pressing any button on the CTT unit.

Automatic heater start

Setting the starting times

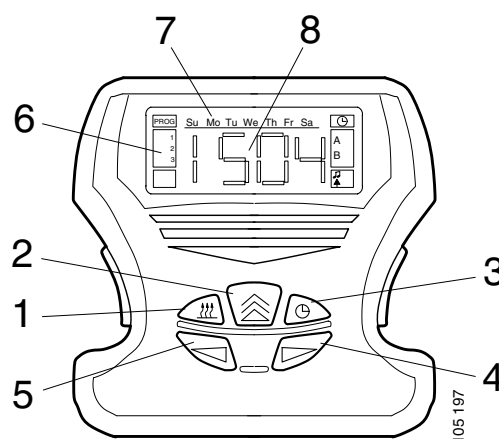
Using the CTT unit, you can pre-program the heater for 3 starting times during each 24-hour period, giving a maximum of 21 starting times for one week.

You can make these settings without having the CTT unit in place in the vehicle. The CTT unit must be connected to the vehicle before the time in question in order for the heater to be switched on. The heater will not be switched on once the time has passed.

Program starting times as follows:

- 1 Press (2) and (1) simultaneously for at least 2 seconds. The starting time and day will start to flash alternately with On/Off in the display.
- 2 Press (4) or (5) to set the desired starting time and day. The three possible settings per day are marked with 1, 2 or 3 on the left (6).
- 3 A new starting time can be programmed by pressing (3) for 2 seconds and then setting the desired time with (4) or (5). Confirm with (2).
- 4 On/Off will flash in the display. Use (1) to step to the desired setting.
- 5 Confirm once with (2) to program additional starting times.
Repeat from step 2

Normal mode will be restored automatically if no buttons are pressed for 2 minutes or if (2) is pressed for at least 2 seconds.



Adjust starting time

Proceed as follows if you do not want the heater to start at the pre-set time:

- Carry out "Setting the starting times".

Switch from On to Off using (1) in step 4.

Check starting time

- Carry out "Setting the starting times".

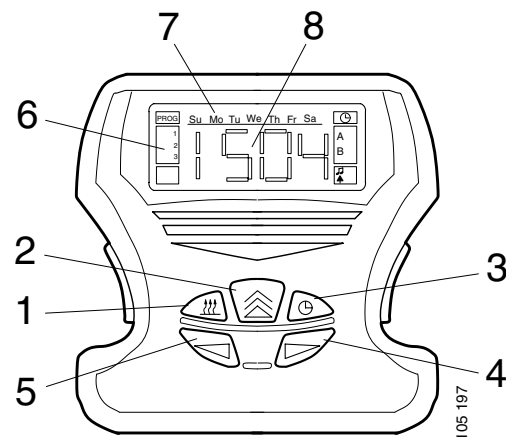
Skip step 3 if you just want to check the setting and not change it.

Starting times

When using the CTT clock function, you can read the next starting time of the heater for that day.

Starting alternative 1, 2 or 3 is marked with a dot on the left (6). Once this time has passed, the next starting time for that day will be marked with a dot and so on.

The mark is only visible if the starting time is active, i.e. On.



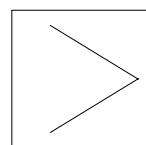
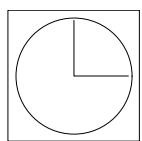
Operating time

Adjusting operating time

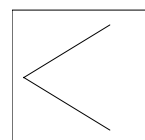
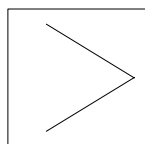
The operating time can be set for between 30 minutes and 8 hours when starting the heater with the timer. Each interval is 30 minutes. The recommended operating time is 2 hours. The operating time setting is applied to all the set starting times.

Adjust the operating time as follows:

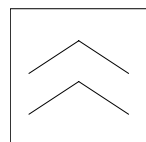
- 1 Press the function selector and the forward button simultaneously for at least 2 seconds. The previous time setting is shown in the display.



- 2 Change the operating time by stepping forward or backward with the relevant button.



- 3 Confirm with the function selector for at least 2 seconds to exit the function.

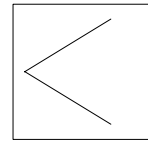
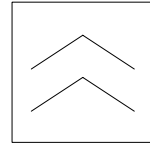


Temperature control

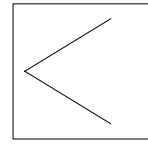
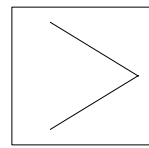
The CTT unit must be connected to the vehicle when direct starting the heater.

The temperature scale is graduated in 15 steps. The normal setting is step 6.

- 1 Press the function selector and back button simultaneously to adjust the temperature.



- 2 Change the temperature by stepping forward or backward with the relevant button.

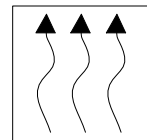


Manual heater start

The CTT unit must be connected to the vehicle when directly starting the heater.

Note: Remember that the operating time is unlimited when starting manually, i.e. the heater will be operational until switched off.

- 1 Start the heater manually by pressing the heat button. The "heat" symbol will appear in the display and the English word HEAT will flash.
- 2 The "heat" symbol will appear in the display and the English word HEAT will flash.
- 3 Turn off the heater by pressing the heat button for at least 2 seconds.



Troubleshooting

Preparations

See also the wiring diagram in:

D1LC

- 16:04-16 Eberspächer cab heater.
- 16:14-16 CTT with Eberspächer.
- 18:05-02 Eberspächer D1LC auxiliary heater.

D1LCC

- 16:24-16 Eberspächer D1LCC auxiliary heater.
- 18:05-03 Eberspächer D1LCC auxiliary heater

There are some simple checks that should be carried out before troubleshooting the heater itself.

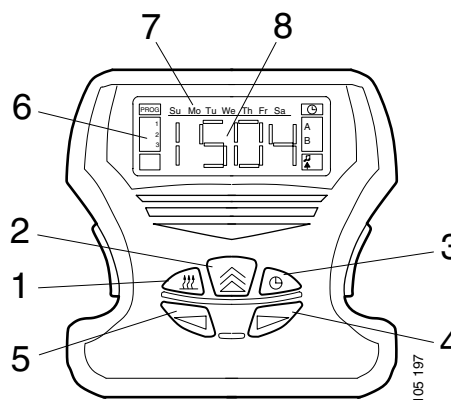


WARNING!

The heater must not be used with the vehicle in confined spaces, e.g. a garage, unless its exhaust system is connected to an extractor.

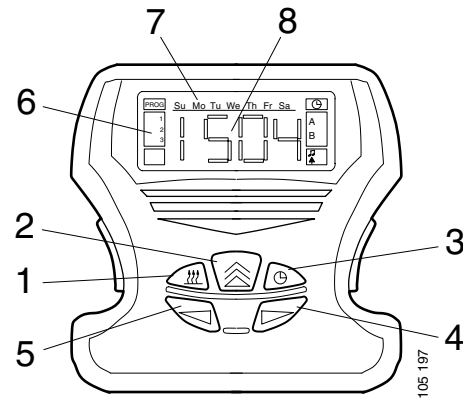
D1LC

- 1 Inspect the heater fuse 34 and the CTT unit fuse 41 to ensure that they are not blown.
- 2 Check the earth connection to control unit connection A4 and connector C 254, pin 2.
- 3 Press the CTT unit button 1 to direct start the heater. Check that voltage from the CTT unit is reaching the control unit connection B9.



D1LCC

- 1 Inspect the heater fuse 34 and the CTT unit fuse 41 to ensure that they are not blown.
- 2 Check the earth connection to connector C 255, pin 2.
- 3 Press the CTT unit button 1 to direct start the heater. Check that current from the CTT unit is reaching the control unit connection 14.



Reading fault codes

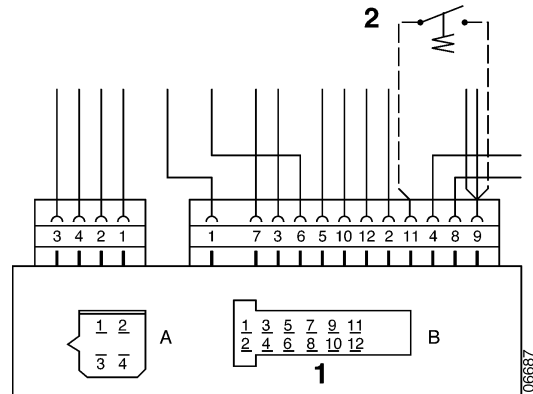
D1LC

Under normal operation the display will switch between HEAT and showing the time. If a fault should occur, the fault code is not displayed automatically.

- 1 Connect a spring-loaded switch to control unit connection B, between pins 9 and 11.
- 2 The control unit is located by the heater under the centre panel at the rear wall.
- 3 Close the switch for at least 2 seconds and then release it.
- 4 Read the fault code from the operation unit display.

Up to 5 fault codes can be registered and stored but only one can be displayed at a time.

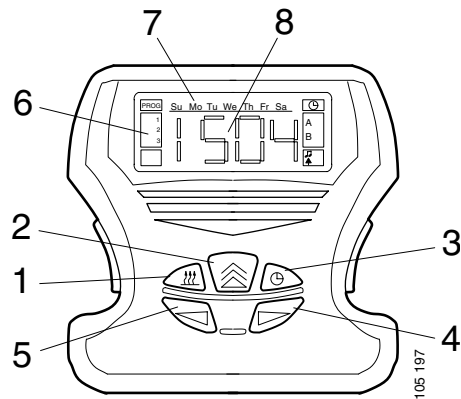
If multiple fault codes should arise, the first fault code must be rectified before the next is displayed.



- 1 Connection B.
- 2 Switch

Erasing fault codes

Press the CTT unit button 2.



D1LCC

Under normal operation the display will switch between HEAT and showing the time.

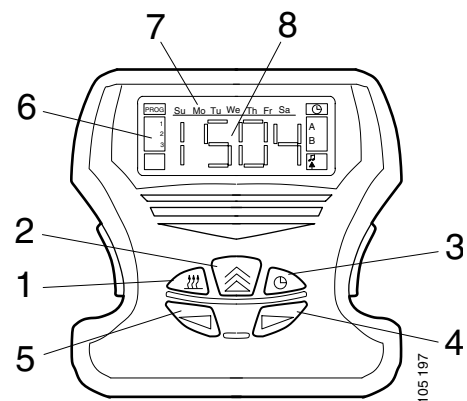
If a fault should arise, a fault code will be shown on the operation unit display.

Up to 5 fault codes can be registered but only one can be displayed at a time.

If multiple fault codes should arise, the first fault code must be rectified before the next is displayed.

Erasing fault codes

Press the CTT unit button 2.



Reading fault codes

Fault code: bAT

Fault:

Operation unit battery voltage is low.

Cause:

Battery voltage is below 6.2 V.

Remarks:

The unit has an internal battery to provide power when removed from the vehicle. The display will go out when the battery is flat.

IMPORTANT! This fault code has been discontinued on later versions of the operation unit.

Action:

Renew battery in timer.

Fault code: EbAT

Fault:

Operation unit battery voltage is low.

Cause:

Battery voltage is below 6.1 V.

Remarks:

The unit has an internal battery to provide power when removed from the vehicle. The display will go out when the battery is flat.

Action:

Renew battery in timer.

Fault code: E 05**Fault:**

Incorrect voltage on diagnostic input.

Cause:

The voltage level from the heater is between 1.5 and 2.5 V.

Remarks:

The voltage to the diagnostic input should be below 1.5 V or above 2.5 V. This fault code is displayed only when the voltage is between these two values. The function is not affected.

IMPORTANT! This fault code has been discontinued on later versions of the operation unit.

Fault code: E 10

Fault:

Faulty connection.

Cause:

Pins 8 and 6 are connected at the same time.

Remarks:

Pins 3, 6 and 8 are code pins that provide information to the operation unit on the type of heater that is connected.

IMPORTANT! The fault must be active for at least 10 seconds before the fault code is displayed.

IMPORTANT! Earlier versions of the operation unit turn off the heater and the radio when this fault code is displayed.

Action:

Pin 8 must be connected. Applies to D1LC and D1LCC heaters.

Pins 3, 6 and 8 are wired in connectors C402 and C187 for the relevant heater type.

See also the wiring diagram.

Fault code: E11**Fault:**

Faulty connection.

Cause:

Pins 3 and 8 are connected at the same time.

Remarks:

Pins 3, 6 and 8 are code pins that provide information to the operation unit on the type of heater that is connected.

IMPORTANT! The fault must be active for at least 10 seconds before the fault code is displayed.

IMPORTANT! Earlier versions of the operation unit turn off the heater and the radio when this fault code is displayed.

Action:

Check that only pin 8 is connected.

Refer to fault code E 10 for checking the connection.

Fault code: E12

Fault:

Faulty connection.

Cause:

Pins 3 and 6 are connected at the same time.

Remarks:

Pins 3, 6 and 8 are code pins that provide information to the operation unit on the type of heater that is connected.

IMPORTANT! The fault must be active for at least 10 seconds before the fault code is displayed.

IMPORTANT! Earlier versions of the operation unit turn off the heater and the radio when this fault code is displayed.

Action:

Check that neither pin 3 nor pin 6 is connected.

Refer to fault code E 10 for checking the connection.

Fault code: E 13**Fault:**

Faulty connection.

Cause:

Pins 3, 6 and 8 are connected at the same time.

Remarks:

Pins 3, 6 and 8 are code pins that provide information to the operation unit on the type of heater that is connected.

IMPORTANT! The fault must be active for at least 10 seconds before the fault code is displayed.

IMPORTANT! Earlier versions of the operation unit turn off the heater and the radio when this fault code is displayed.

Action:

Check that only pin 8 is connected.

Refer to fault code E 10 for checking the connection.

Fault code: E 14

Fault:

Faulty connection.

Cause:

Pin 7 is connected but not pin 3, 6 or 8.

Remarks:

Pins 3, 6 and 8 are code pins that provide information to the operation unit on the type of heater that is connected. Pin 7 is +24 V.

IMPORTANT! The fault must be active for at least 10 seconds before the fault code is displayed.

IMPORTANT! Earlier versions of the operation unit turn off the heater and radio when this fault code is displayed.

Action:

Check that only pin 8 is connected.

Refer to fault code E 10 for checking the connection.

Fault code: E 30**Fault:**

Incorrect confirmation of flame.

Action:

Delete the fault code and restart the heater.

Fault code: E 31**Fault:**

Flame failure in "low" or "medium" setting.

Cause:

Incorrect fuel volume or incorrect heater fan speed.

Remarks:

The heater is turned off as soon as there is a combustion problem.

Action:

Check the fuel volume and fan speed.

Fault code: E 32

Fault:

Flame disruption in "high" setting.

Cause:

Incorrect fuel volume or incorrect heater fan speed.

Remarks:

The heater is turned off as soon as there is a combustion problem.

Action:

Check the fuel volume and fan speed.

Fault code: E 33

Fault:

Glow plug, open circuit.

Cause:

- Fault in glow plug.
- Fault in glow plug resistor (D1LC).
- Fault in glow plug relay (D1LC).
- Fault in cables or connections.

Remarks:

Glow plug malfunctioning.

Action:

- Renew glow plug or glow plug resistor.
- Renew glow plug relay.
- Check cables and connections.

Fault code: E 34**Fault:**

Fault in burner motor or fan speed control.

Cause:

- Faulty motor or blocked fan.
- Faulty fan speed control.

Remarks:

Speed deviation greater than 10%.

D1LC**Output setting Fan speed, nominal values**

Low 3000 rpm

High 4500 rpm

D1LCC**Output setting Fan speed, nominal values**

Low 2300 rpm

Medium 3000 rpm

High 4400 rpm

Power 5500 rpm

Action:

- Make sure the fan is not blocked by foreign objects.
- Check the voltage to the fan.
- Renew the fan.
- Renew faulty control unit.

Fault code: E 35

Fault:

Undervoltage tripping.

Cause:

The heater is turned off if the voltage drops below the following values:

D1LC

- 19.8 V when starting with glow plug active
- 21.8 V in operation.

D1LCC

- 19 V when starting with glow plug active
- 21 V in operation.

Action:

Check the condition of the battery and the alternator charging voltage.
Check the heater connection with wiring diagrams 16:04-16, 16:14-16
and 16:24-16.

Fault code: E 36**Fault:**

Overvoltage tripping.

Remarks:

The heater is turned off if the voltage rises above the following values:

D1LC

- 27.2 V when starting with glow plug active.
- 28.6 V in operation.

D1LCC

- 30.4 V when starting with glow plug active.
- 32 V in operation.

Action:

Check the condition of the battery and the alternator charging voltage.
Check the heater connection with wiring diagrams 16:04-16, 16:14-16
and 16:24-16.

Fault code: E 37

Fault:

The heater has not started within the prescribed time. Fails to start.

Cause:

- Faulty fuel supply.
- Faulty glow plug.
- Fault in air supply or exhaust system.
- Check combustion air and exhaust line.

Remarks:

This fault code is generated if the heater does not start within 2 x 90 seconds fuel supply = 2 start attempts.

Action:

- Check the dosage pump and lines as well as the pump cables.
- Check and renew faulty glow plug.

Fault code: E 38

Fault:

Open circuit or short in glow plug relay control circuit.

Cause:

- Faulty glow plug relay control coil.
- Fault in cables or connections.

Action:

- Renew glow plug relay.
- Check cables and connections.

Fault code: E 39**Fault:**

Heater temperature sensor or operation unit temperature control is faulty.

Cause:

- Poor heater circuit board/control unit connection.
- Faulty circuit board/control unit or temperature sensor.
- Poor operation unit connection.
- Faulty cable harness.

Action:

- Make sure the circuit board makes good contact.
- Check the circuit board and temperature sensor with a test adapter.
- Check the operation unit connections.
- Check cables and connections with wiring diagram.

Fault code: E 40**Fault:**

Short circuit in dosage pump.

Action:

Check the dosage pump.

Renew faulty pump.

Fault code: E 41

Fault:

Faulty flame monitor.

Cause:

- The flame monitor or its connections are faulty.
- Circuit board/control unit faulty.

Remarks:

The flame monitor is not functioning correctly.

Action:

- Renew faulty flame monitor.
- Renew circuit board/control unit.

Fault code: E 42**Fault:**

Disengagement due to external electrical interference.

Cause:

The heater is being affected by temporary electrical interference. This can have the following causes:

a) Vehicle with engine stationary:

- connected battery charger.
- connected auxiliary starting device.
- bodywork equipment.

b) Vehicle with engine running:

- vehicle electrical system (e.g. battery), loose cable harness and charging voltage.
- bodywork equipment.

Action:

- Disconnect any external auxiliary systems.
- Check bodywork equipment.
- Check vehicle electrical system, e.g. battery status, cable harnesses and charging voltage.

Fault code: E 43

Fault:

Faulty heater control unit.

Action:

Renew the control unit.

Fault code: E44

Fault:

Overheating.

Cause:

- Blocked air ducts.
- Electrical fault.
- Faulty overheat protection.

Action:

- Check and clean blocked warm-air lines and inlet/outlet.
- Check wiring and dosage pump connections.
- Check overheat protection with test adapter.

Fault code: E 45

Fault:

Over- or under voltage warning.

Cause:

Battery fault or incorrect charging.

Remarks:

The supply voltage is beginning to be too high or too low.

Action:

Check battery and alternator charging voltage.

Unknown fault codes

Fault code: E 46,
E 47, E48

Fault:

Unknown fault codes.

Remarks:

Fault codes that have no function or significance.

Action:

Erase the fault code and restart the heater.

Production codes

Fault codes: OIA6,
E91, E 92, E 93

Fault:

Production codes for manufacturer's use.

Action:

Erase the code and restart the heater. Renew the operation unit if the fault persists.