Webasto
Feel the Drive

Air Top Operations Manual

Air Top 2000 STC
Air Top EVO 40
Air Top EVO 55

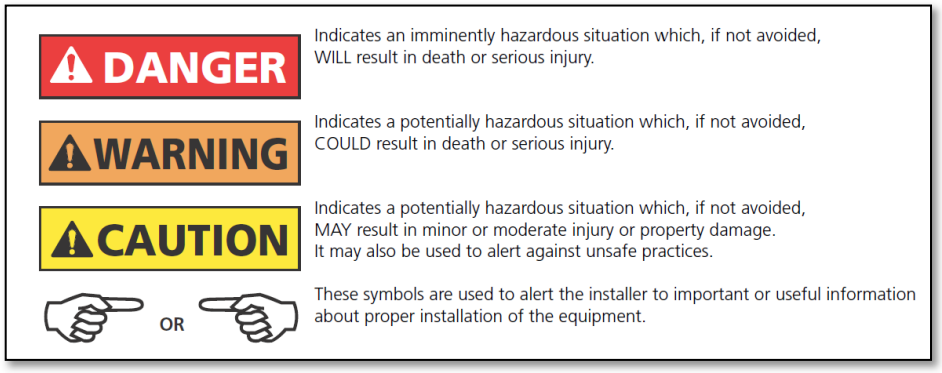
Webasto Air Top Operations Manual

General Information

Webasto Thermo & Comfort Australia Pty Ltd is pleased to provide this operations manual for the Air Top heating system. When used according to the guidelines stated in this booklet, you should expect many years of trouble-free, enjoyable operation.

This manual represents our latest effort to produce the best technical documentation possible. In our efforts toward continuous, ongoing product improvement, we also encourage our customers to provide feedback concerning this manual and the Air Top heating system.

Visit our website for technical documents: www.webasto.com



This Webasto Diesel Heater comes with a 2 year warranty.

Failure to follow these installation instructions and the notes contained therein will lead to all warranty being refused by Webasto Thermo & Comfort Australia Ltd Pty . The same applies if the repairs are carried out incorrectly or with use of parts other than genuine Webasto service parts. This will result in the voiding of all warranty. All service and repairs have to be carried out by authorised Webasto service dealers.

Note: In case of warranty situations, the serial number will be requested by Webasto or an authorised dealer to validate.

Purpose of the Air Top Heater

The Webasto Air Top heaters are designed to heat the cabins of boats, trucks, minibus', vans, motorhomes, caravans and camper trailers.

The air heaters operate independently of the engine and are connected to either the vehicle's own fuel tank or via a separate fuel tank and the electrical system of the vehicle.

They are not designed to heat hazardous substances.

Webasto Air Top Operations Manual

1 Starting the Heater for the First Time

1) Ensure all ducting is connected and secured.
2) Ensure all fuel connections and clamps are connected and secured.
3) Ensure sufficient fuel is available from your fuel source.
4) Ensure that the battery connections are connected and secured.
5) Ensure the supplied fuse has been installed. (Check amperage).
6) Turn the heater to 100% or MAX.
7) Ensure you bleed the fuel system. (See Fuel line bleeding tip).
8) It will take at least 5 mins before you will experience hot air out of the hot air vents.
9) Leave the heater running for at least an hour.

1.1 Start-up Sequence

The glow plug and the combustion air fan start the operation and combustion process (audible combustion sound of the combustion air fan and the ticking of the fuel pump will be noticeable). The fuel will be delivered and the combustion air fan speed will accelerate and provide hot air.

1.2 Switching Off

When heating is no longer required, switch the heater off by the means of the controller on the heater. Never turn the heater off by the main power supply.

The combustion will be extinguished, followed by a shutdown cooling cycle.

1.3 Fuel Line Bleeding Tip

Turn the heater on with the start-up sequence and the process of the fuel pump will operate. During this operation fuel will be delivered to the heater. Depending on the length of the fuel line this may take a few attempts.
During the process the heater will try to start twice and if the fuel has not been delivered, it will show a fault code of F01 - No start (after 2 attempts to start).

You will need to reset the heater by following the reset procedure – see below.

2 Reset Procedures

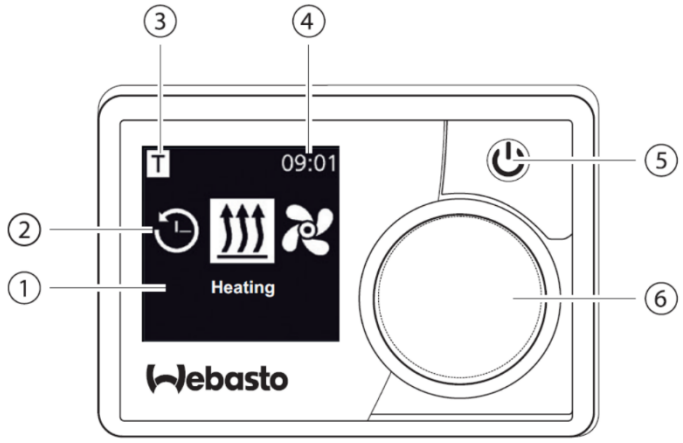
Rotary Control *(for multi-control please refer to error code H07)*

When the controller starts to flash, disconnect the power supply to the heater by:

1) Whilst the controller is in the on position & code flashing, remove the fuse (15A) or disconnect power to the heater
2) Turn the dial switch to off
3) Wait for a few minutes
4) Re-install the fuse
5) Restart the heater

3 Multi-Control Set-Up & Operations Guide

3.1 Set-Up



1	Menu Name
2	Menu Symbols
3	Time Setting Activated
4	Time
5	On / Off Button
6	Control Knob


Timer


Heating


Ventilation


Settings

Initial Start-Up

When the Control unit is connected for the first time, a message about the Setting/Configuration of the heater is displayed.

Press the control knob and the On/Off Button simultaneously for 3 seconds

Select your Heater (Note: Air Top Evo 40/55 is displayed as AT 40/55)

Press the Control Knob

Select the current Day

Press the Control Knob

Select the current Time - turn the Control Knob clockwise to select Hour, press the Control Knob to confirm, then turn the Control Knob clockwise again to select the Minutes, press the Control Knob to set.

Press the Control Knob

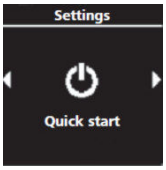
Webasto Air Top Operations Manual

If your heater was not selected correctly at Initial Start-Up a Manual Reset is required.

Press the On/Off Button to go to the Main Menu Screen and follow the following steps.

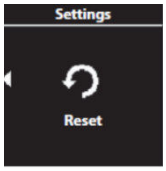
Select the symbol “Settings”

Press the Control Knob



The “Quick Start” menu is displayed

Turn the Control Knob clockwise 10 times until “Reset” is displayed



Select “Reset” by pressing the Control Knob

Press the Control Knob to confirm.

The Control Knob is now restarted

During the restart of the Control Knob, an Hourglass will quickly appear
Press the Control Knob and the On/Off Button simultaneously for 3 seconds
The Control is now ready for use.

Select your Heater (Note: Air Top Evo 40/55 is displayed as AT 40/55)

Press the Control Knob

3.2 Timer Set-Up

It is possible to program the Timer Setting 7 days in advance. The heater switches on automatically at the programmed time. Up to 3 time settings per day can be set, with a total of 21 time settings for the week.

Before the timer can be activated, make sure that the:

· Time and current day of the week are set,

· Heater is switched off

· “Timer” symbol has been selected in the main menu 

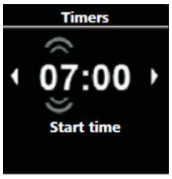
Press the Control Knob

“Add Timer” screen is displayed

Press the Control Knob in order to add a new timer

Turn the Control Knob to select chosen “Day”

Press the Control Knob to confirm selection

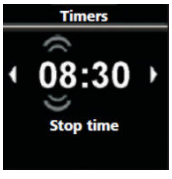


Turn the Control Knob to choose the desired Switch On time (Hour)

Press the Control Knob to confirm

Turn the Control Knob again to choose the Minutes

Press the Control Knob to confirm

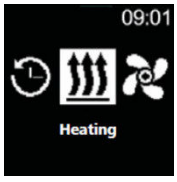


Turn the Control Knob to choose the desired Switch OFF time (Hour)

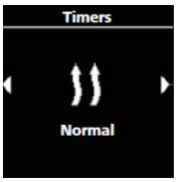
Press the Control Knob to confirm

Turn the Control Knob again to choose the Minutes

Press the Control Knob to confirm



Select the “Heating” operation mode from the Main Menu screen

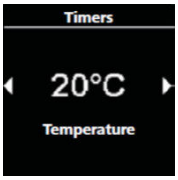


Turn the Control Knob to choose the desired heating mode

Options available: Eco (Power Saving Mode); Normal (Comfort Heating); Boost (Rapid Heat)

Press the Control Knob to confirm selection

NOTE: Eco and Boost modes are not available for the AT 2000 STC



Turn the Control Knob in order to choose the desired temperature

(Temperature range: 5 - 35°C)

Press the Control Knob to confirm selection

The programmed timer is saved and shown on the display

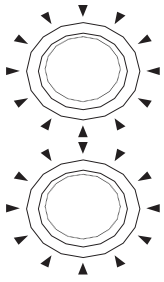
Press the Control Knob to activate the programmed time

“Activate” message will appear on the display

Repeat the process to add timers (3 timer settings per day, 21 per week)

3.3 Altitude Function Activation

Altitude function can be switched on when operating the heater at higher altitudes (>1,500m to 2,200m).

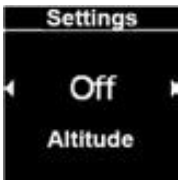


The menu element "Settings" has been chosen.

Press the control knob to select the altitude function.

‘Off’ is pre-set

Press the control knob to select the altitude function.



When altitude function is active, the altitude symbol  is shown at the top left in the main menu.

IMPORTANT! Note: The altitude function must be switched off manually when it is no longer required.

4 Preventive Maintenance

To ensure trouble-free operation of your Webasto heater, please observe the following:

1) Operate heater for at least an hour once a month, regardless of the season
2) Keep return air inlet and hot air outlet free of obstructions to prevent overheating
3) Keep combustion air inlet and exhaust outlet tube free of dirt and obstructions
4) Change fuel filter annually (depending on the usage)
5) Bio Diesel or any fuel additive is not permitted
6) 15A fuse for both 12V and 24V heaters

IMPORTANT! Note: The build-up of Carbon is not a warrantable condition.
Situations that may cause Carbon build-up in the heater are:

- Under Voltage: the system should have at least 12.5-13V;
- Low current: the system requires 7-8A for the initial start-up phase for 120 seconds and once the flame is established the glow plug goes out and heater continues running at 2-3A;
- Under size wire: where extensions are made to the battery positive & negative cables only, ensure that correct wire size is used;
- Fuel system: poor fuel quality, air pockets in the fuel line or running out of fuel;
- Combustion system: any blockage or restriction in the combustion air tube or at the silencer;
- Exhaust system: any blockage or restriction in the exhaust muffler or pipe;
- Isolation switch or circuit breaker: can prevent the heater from performing a correct shut down cycle. The battery positive & negative wire should be connected directly to the battery;
- Electrical connections: poor battery connections, poor Earth, loose fuses and improper crimping of terminals or plugs.

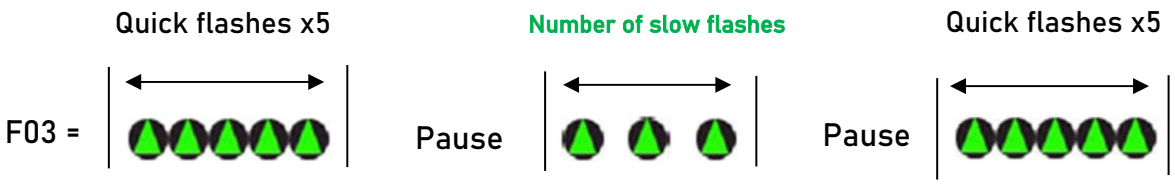
The build-up of Carbon is not a product malfunction; however, the above listed are external factors that could affect the performance of the heater.

5 Fault Code

In the event of a failure, a flash code will be generated on the indicator light of the Rotary Control (On/Off) switch. In order to make a correct analysis, it is necessary to understand the fault code. The flashing code will be visible during the cool down period of the operation.

During the flash code event you will see five quick flashes followed by a sequence of slow flashes, the sequence of slow flashes is the actual fault code. The five quick flashes are only an indication that a fault has occurred.

Count only the slow sequence of the flashes to obtain the current fault code.



E.g. Code F03 = low or high battery voltage

5.1 Air Top 2000STC Heater Flashing Fault Code Description

FAULT CODE	DESCRIPTION	REMEDY
F00	Control Unit Malfunction	This fault will appear if the heater thinks the electronic control unit (ECU) is faulty. The flash code will consist of the 5 quick flashes, a pause and then the 5 quick flashes again. The recommended course of action would be to turn the heater off, allow it to complete a full shut down and then restart. If the fault continues you would be best advised to contact a Webasto-authorised agent as it is possible the ECU will need replacing.
F01	NO START	The heater will automatically attempt two starts of the heater, and if no flame is established then this fault appears. The most common cause of this fault is the heater is not being supplied with fuel. If correctly installed, your heater should have an independent fuel supply or vehicle pick-up, if you are low on fuel this could be the cause. Blockages in the fuel line and/or burner are also common causes. You can check for fuel delivery at the heater end during start up, and if no fuel is coming out of the pipe, your heater won't start. Other causes could be an air blockage in the exhaust or combustion air pipe. The recommended course of action would be: Check fuel level Check fuel is flowing, bleed the fuel line Check for blockages in exhaust pipe Check fuel pump is operating by feeling for pulses The next stage would normally be a service. It is worth discussing some options with an Webasto agent before purchasing parts, because this fault carries many different potential causes and you should be 100% sure that you have the correct parts.
F02	FLAME FAILURE	This fault is similar to F01 and has the same causes/resolutions. With both these faults fuel delivery is the most common cause. This could be air pockets in the fuel line, a blockage, a fuel pump or burner.
F03	UNDER/OVER VOLTAGE	The most common customer response is "It can't be the batteries, they're brand new and I have fully charged them." Obviously if your battery voltage is too high or too low then it is highly likely that your heater will show this fault. The first thing to do would be to turn your engine on or connect auxiliary power supply and try the heater again, and if the issue is solved then it is likely your batteries were a little low on power. Remember the heater will sense the voltage at the ECU and NOT at the battery. If the voltage is too high or too low at the heater, not at the batteries and not at your voltmeter, then the heater will show this fault. Causes could be: Corrosion on one of the electrical terminals on the heater wiring High resistance in a damaged cable Current drop through on-board circuit breakers A damaged fuse. If you are experiencing any faults of this nature, then do please check the potential causes thoroughly.
F04	Premature Flame Detection	This is where the flame sensor inside the heater has detected a flame in error. This may require a replacement of the flame sensor (the same part as the glowpin in some models) or a clean of the flame sensor. The heater will need to be removed and stripped down in both cases. It would be sensible to try and run the heater again before jumping in and removing the heater, just in case the heater has 'cleaned itself' during the fault run down. Check for blockage in air intake & exhaust system Check for fault in fuel system, fuel line may require bleeding

FAULT CODE	DESCRIPTION	REMEDY
F05	Defective Flame Sensor	This fault is only relevant for the petrol version of air top heaters.
F06	Defective Temperature Sensor / 620 Ohm Resistor	The internal temperature sensor within an Air Top or external temperature sensor probe on an Air Top is faulty or not plugged in correctly. This error will also occur if the 620 ohm resistor has not been plugged in to the relevant part of the harness. Please refer to section 3.2 on page 10 of this manual. Again, this error can also occur if the main wiring harness plug is not seated in position at the heater. Ensure the main plug has been pushed in and 'clicks' into position.
F07	Fuel Pump	This fault simply tells you that the fuel pump has a wiring open or short circuit, or that the pump is faulty. If you can't hear/feel the pump clicking during the attempted heater start-up, you will need to check the wires and plugs from the heater right down to the fuel pump. A break in the cables or corrosion on any terminals will be the potential cause. The next stage would be to test the pump or replace the pump.
F08	Drive Assembly/Fan	In the event of this fault, your fan could be blocked or jammed. Remove the heater fuses (to prevent accidental starting of the heater) and check for obstructions. You may need to check the wiring for any open or short circuits and you may have to replace the drive unit. Air heaters with long complex ducting runs and/or very heavy usage will be more susceptible to fan failures and replacement. It is also possible that if the fan is faulty improper burn of fuel could lead to carbon build-up and this may also require the heater to be serviced.
F09	Defective Glowpin	Common causes of this fault can include damaged internal cables. If the glowpin cables have been catching the internal fan or casing, then open or short circuit could easily occur. A check of the glow pin resistance value with a multi-meter would confirm. The solution is to remove the heater, strip it down, and replace the glowpin. The glow plug should return the following values in the test: Glow plug: 12 V (red) 24 V (green) Resistance at 25 °C: 0.263 - 0.323 ohms 1.125 - 1.375 ohms Test current: < 5 mA < 5 mA
F10	Overheating	Overheating has numerous causes. Airtop units will experience overheating if inlet or outlet ducting is squashed or blocked, the plastic casing on the heater is loose or broken, the rubber gasket on the base of the heater is missing or broken and/or there is a blockage under the plastic casing on top of the heat exchanger. Removing the inlet and outlet ducting from the heater is a good way of testing if the fault is caused by air flow around the cabin. A less common cause of overheating on the Airtop units may be that the overheat sensor on the heat exchanger is faulty, and some heaters models have an independent fault code for this problem.
F12	Heater Lock Out	This fault will occur if your heater has a had a repeated fault, depending on the fault will depend on the number of repetitions that will instigate a fault lock out. In order to clear the fault, you can do one of two things. With the heater on, remove the main fuse, switch the control panel off, re-insert fuse and switch heater on again *(refer to section 9, page 20 for more details on resetting the heater),* OR contact your local Webasto agent and they can unlock your heater with the PC diagnostics. You should always be able to unlock the heater without the need for an agent to attend. Remember the original fault that caused the lock-out will probably need correction prior to satisfactory operation of the heater.

5.2 Air Top 2000STC Heater Digital Multi Control Display Fault Code Description and Remedy

When a fault is displayed on the multi-control, the error must be acknowledged, this is done by pressing the control knob whilst the error is actively displayed on the controller.

FAULT CODE	DESCRIPTION	REMEDY
H01	Control Unit Malfunction	This fault will appear if the heater thinks the electronic control unit (ECU) is faulty. The recommended course of action would be to turn the heater off, allow it to complete a full shut down and then restart. If the fault continues you would be best advised to contact a Webasto-authorised agent as it is possible the ECU will need replacing.
H02	NO START	The heater will automatically attempt two starts of the heater, and if no flame is established then this fault appears. The most common cause of this fault is the heater is not being supplied with fuel. If correctly installed, your heater should have an independent fuel supply or vehicle pick-up, if you are low on fuel this could be the cause. Blockages in the fuel line and/or burner are also common causes. You can check for fuel delivery at the heater end during start up, and if no fuel is coming out of the pipe, your heater won't start. Other causes could be an air blockage in the exhaust or combustion air pipe. The recommended course of action would be: Check fuel level Check fuel is flowing, bleed the fuel line Check for blockages in exhaust pipe Check fuel pump is operating by feeling for pulses The next stage would normally be a service. It is worth discussing some options with an Webasto agent before purchasing parts, because this fault carries many different potential causes and you should be 100% sure that you have the correct parts.
H03/H83	FLAME FAILURE	This fault is similar to H02 and has the same causes/resolutions. With both these faults fuel delivery is the most common cause. This could be air pockets in the fuel line, a blockage, a fuel pump or burner.
H04/H84	UNDER/OVER VOLTAGE	The most common customer response is "It can't be the batteries, they're brand new and I have fully charged them." Obviously if your battery voltage is too high or too low then it is highly likely that your heater will show this fault. The first thing to do would be to turn your engine on or connect auxiliary power supply and try the heater again, and if the issue is solved then it is likely your batteries were a little low on power. Remember the heater will sense the voltage at the ECU and NOT at the battery. If the voltage is too high or too low at the heater, not at the batteries and not at your voltmeter, then the heater will show this fault. Causes could be: Corrosion on one of the electrical terminals on the heater wiring High resistance in a damaged cable Current drop through on-board circuit breakers A damaged fuse If you are experiencing any faults of this nature, then do please check the potential causes thoroughly.

FAULT CODE	DESCRIPTION	REMEDY
H05	Premature Flame Detection	This is where the flame sensor inside the heater has detected a flame in error. This may require a replacement of the flame sensor (the same part as the glowpin in some models) or a clean of the flame sensor. The heater will need to be removed and stripped down in both cases. It would be sensible to try and run the heater again before jumping in and removing the heater, just in case the heater has 'cleaned itself' during the fault run down. Check for blockage in air intake & exhaust system Check for fault in fuel system, fuel line may require bleeding
H14/H94	Defective Temperature Sensor / 620 Ohm Resistor	The internal temperature sensor within an Air Top or external temperature sensor probe on an Air Top is faulty or not plugged in correctly. This error will also occur if the 620 ohm resistor has not been plugged in to the relevant part of the harness. Again, this error can also occur if the main wiring harness plug is not seated in position at the heater. Ensure the main plug has been pushed in and 'clicks' into position.
H08/88	Fuel Pump short circuit to earth / break or short circuit	This fault simply tells you that the fuel pump has a wiring open or short circuit, or that the pump is faulty. If you can't hear/feel the pump clicking during the attempted heater start-up, you will need to check the wires and plugs from the heater right down to the fuel pump. A break in the cables or corrosion on any terminals will be the potential cause. The next stage would be to test the pump or replace the pump.
H09/H15/H89/H95	Drive Cable short circuit / Drive Assembly / Fan / break or short circuit	In the event of this fault, your fan could be blocked or jammed. Remove the heater fuses (to prevent accidental starting of the heater) and check for obstructions. You may need to check the wiring for any open or short circuits and you may have to replace the drive unit. Air heaters with long complex ducting runs and/or very heavy usage will be more susceptible to fan failures and replacement. It is also possible that if the fan is faulty improper burn of fuel could lead to carbon build-up and this may also require the heater to be serviced.
H08A/H19	Defective Glowpin or short circuit	Common causes of this fault can include damaged internal cables. If the glowpin cables have been catching the internal fan or casing, then open or short circuit could easily occur. A check of the glow pin resistance value with a multi-meter would confirm. The solution is to remove the heater, strip it down, and replace the glowpin. The glow plug should return the follow Glow plug: 12 V (red) Resistance at 25 °C: 0.263 - 0.323 ohms Test current: < 5 mA
H06/H19	Overheating	Overheating has numerous causes. Airtop units will experience overheating if inlet or outlet ducting is squashed or blocked, the plastic casing on the heater is loose or broken, the rubber gasket on the base of the heater is missing or broken and/or there is a blockage under the plastic casing on top of the heat exchanger. Removing the inlet and outlet ducting from the heater is a good way of testing if the fault is caused by air flow around the cabin. A less common cause of overheating on the Airtop units may be that the overheat sensor on the heat exchanger is faulty, and some heaters models have an independent fault code for this problem.

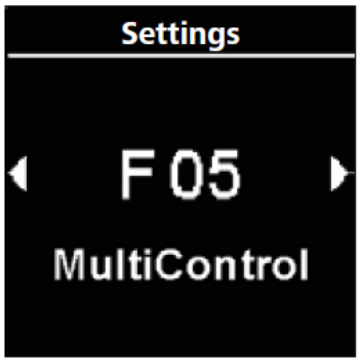
FAULT CODE	DESCRIPTION	REMEDY
H07	Heater Lock Out	This fault will occur if your heater has a had a repeated fault, depending on the fault will depend on the number of repetitions that will instigate a fault lock out. Reset Procedure: • Switch on Heater • Pull fuses F1 for minimum 30 sec • Switch of heater • Reinsert fuse F1 • Switch on the heater Remember the original fault that caused the lock-out will probably need correction prior to satisfactory operation of the heater.

5.3 Air Top 2000STC Full List of Error Codes

Fault code output: HEX	Fault message	Fault details	Recommended measures
00	No error	No error	No action necessary
01	Defective control unit	Defective control unit, wrong end-of-line programming or coolant temperatur sensor (at water heaters) failure	Replace control unit
02	No start	After start-up has been repeated, combustion still fails to occur	1) Check for fault in air intake and exhaust systems 2) Check for fault in fuel system 3) Check fuel pump 4) Electrical check of glow plug
03	Flame failure	The flame went out during operation and combustion.	See error 02
04	Supply Voltage too high	Supply voltage was too long above maximum threshold value	Check system voltage
05	Flame was detected prior to combustion	Flame detector signals flame before combustion operation	1) Check for fault in air intake, exhaust systems 2) Check for fault in fuel system 3) Check fuel pump 4) Electrical check of glow plug
06	Heating unit overheated	Overheat protection has been activated or the temperature at the heat exchanger has exceeded the upper limit	1) Check for fault in air intake/blow-out side, exhaust systems 2) Check for fault in fuel system
07	Heater lock-out	Heater interlocked	1) Reset heater lock-out and attempt restart 2) Read out further fault messages and work through instructions Reset heater lock-out: switch on heater. Pull fuse F1 for at least 10 s. Switch off heater. Reinsert fuse F1. Switch on the heater. **NOTE** Following fault occurred several times: Fault counter: > 10x False start counter: > 7x Overheating counter: > 20x
08	Fuel pump short circuit	Fuel pump has short circuit to ground	Electrical check of fuel system
09	Combustion air fan short circuit	Combustion air fan has short circuit to ground	Electrical check of combustion air fan motor
11	Wrong fuel coding	Incorrect parameter block or wrong heater (diesel/gasoline) used	Replace control unit

Fault code output: HEX	Fault message	Fault details	Recommended measures
12	W-bus communication failure	W-Bus communication failure	1) Check for fault in area of W-bus communication/W-bus control element/W-bus Telestart 2) Replace control unit
14	Temperature sensor short circuit (internal, external)	Temperature sensor has short circuit to ground	Electrical check of external/internal temperature sensor
15	Combustion air fan blocked	Combustion air fan is blocked	1) Check for fault in fan motor 2) Heating air intake fan wheel snagging or jammed 3) Combustion air intake fan wheel snagging or jammed
17	Gradient exceedance overheat protection	The temperature rise at the heat exchanger has exceeded the upper limit.	Check for fault in air intake/blow-out side, exhaust systems
18	Communication failure on customer specific bus	Communication failure on customer specific bus	-
19	Glow plug / flame monitor short circuit	Glow plug / electronic ignition unit has short circuit to ground	Electrical check of glow plug
81	EOL checksum error	Checksum of EOL dataset is wrong	Replace control unit
82	No start during test-run	No start during test-run	See error 02
83	Flame failure	Flame interruption during combustion operation, more than FAZ (EEPROM) times.	See error 02
84	Operating voltage too low	Supply voltage was too long below maximum threshold value	Check system voltage
88	Fuel pump interruption	Fuel pump interrupted or short circuit to supply voltage UB	Electrical check of fuel system
89	Combustion air fan interruption	Combustion air fan interrupted or short circuit to supply voltage UB	Electrical check of fan motor
91	Wrong control unit coding	Control unit locked or coded as neutral	Replace control unit
92	Command refresh failure	Command refresh failure	Check for fault in area of W-bus communication/W-bus control element/W-bus Telestart
94	Temperature sensor interruption (internal, external)	Temperature sensor interrupted or short circuit to supply voltage UB	Electrical check of external/internal temperature sensor
97	Gradient undershooting during start	Overheat sensor position wrong (temperatur gradient too low)	1) Check position of overheating sensor 2) Check fuel supply system
99	Glow plug / electronic ignition unit interruption	Glow plug / electronic ignition unit interrupted or short circuit to supply voltage UB	Electrical check of glow plug
0 A	Glow plug / flame monitor short circuit	Glow plug/Flame monitor circuit has short circuit to ground	Electrical check of glow plug
1 A	Flame sensor short circuit	Flame sensor has short circuit to ground	Electrical check of flame monitor

Fault code output: HEX	Fault message	Fault details	Recommended measures
1B	Overheat sensor short circuit	The overheat sensor has a short circuit to ground	Electrical check of overheating sensor
8 A	Glow plug / electronic ignition unit interruption	Glow plug/Flame monitor interrupted or short circuit to supply voltage UB	Electrical check of glow plug
9 A	Flame sensor interruption	Flame sensor interrupted or short circuit to supply voltage UB	Electrical check of flame monitor
9B	Setpoint potentiometer interruption	Setpoint potentiometer interrupted or short circuit to supply voltage UB	Electrical check of setpoint sensor
AB	Overheat sensor interruption	Overheat sensor interrupted or short circuit to supply voltage UB	Electrical check of overheating sensor



5.4 EVO 40 / 55 Error Code Table

Fault code	Fault (group)	Additional information during PC diagnostic	Troubleshooting
F 00	Control unit defective/ heater lock-out/ internal room temperature sensor defective	**01** Control unit error **81** EOL checksum error **11** Incorrectly coded control unit or incorrect heater (fuel type) installed (the heater will not work if this error occurs) **91** Neutrally coded or disabled control unit (the heater will not work if this error occurs) **92** Maintain command failed (no operation if fault occurs) **18** Customer bus defective **07** Heater lock-out active	Replace control unit Delete heater lock-out: Switch on unit and remove fuse. Reinstall fuse after more than 2 s and switch on unit again
F 01	No start/no flame formation	**02** Even after the restart, no flame has formed **82** No start in test **83** Maximum feed rate exceeded	Check fuel supply (tank empty, lines blocked). Check exhaust temperature sensor for deposits from outside through exhaust fitting and clean carefully if necessary. Check evaporator mount and replace if necessary.
F 02	Flame abort	**03** The flame has gone out during operation and has not reformed after a restart attempt	Check fuel supply (tank empty, lines blocked). Check exhaust temperature sensor for deposits from outside through exhaust fitting and clean carefully if necessary. Check evaporator mount and replace if necessary.
F 03	Undervoltage or overvoltage	**84** The voltage was less than 10.5 V or 20.5 V for longer than 20 seconds **04** The voltage was more than 16 V or 32 V for longer than 6 seconds	
F 04	Premature flame detection	**05** The exhaust temperature sensor recognised a flame before combustion had started	Check exhaust temperature sensor and replace if necessary.

Fault code	Fault (group)	Additional information during PC diagnostic	Troubleshooting
F 05	Not available		
F 06	Not available		
F 07	Fuel pump defective	**88** Open circuit in fuel pump **08** Short circuit in fuel pump	Check electrical wiring and fuel pump and replace if necessary
F 08	Open circuit/short circuit/ overloading/blockage in drive motor	**09** Short circuit in drive motor **89** Open circuit in drive motor **15** Blocking guard in drive motor **95** Overload protection in drive motor	Eliminate cause of blockage/sluggishness Check magnets of heating air fan and replace drive unit (drive motor with combustion and heating air fan) if necessary
F 09	Glow plug defective	**19** Short circuit in glow plug **99** Open circuit in glow plug	Check glow plug and replace if necessary.
F 10	Overheating	**06** Heater overheated - blow-out temperature sensor **5B** Heater overheated - PCBs - temperature sensor **17** Temperature gradient exceeded - blow-out temperature sensor **5C** Temperature gradient exceeded - PCBs - temperature sensor	Find and eliminate cause of overheating in hot air guide. Possible causes: Pressure loss too high, line kinked, air outlet closed, soiling of blow-out temperature sensor
F 11	Not available		
F 12	Not available		
F 13	Not available		
F 14	Blow-out temperature sensor defective	**1B** Short circuit in blow-out temperature sensor **AB** Open circuit in blow-out temperature sensor	Check blow-out temperature sensor and replace if necessary.
F 15	Not available		
F 16	Exhaust temperature exceeded	**4F** Upper limit of exhaust temperature exceeded	Check free through-flow of combustion air and exhaust system, check CO_2 setting, clean soot from heat exchanger if necessary
F 17	Exhaust gas temperature sensor defective	**1A** Short circuit to ground in exhaust temperature sensor **9A** Open circuit in exhaust temperature sensor	Replace exhaust temperature sensor
F 18	Setpoint generator defective	**9B** Open circuit or short circuit to +Ub in setpoint generator	Check wiring and replace control element if necessary
F 19	Plausibility of sensors incorrect	**93** Plausibility check not passed	Check exhaust temperature sensor/blow-out temperature sensor for plausibility and replace defective sensor

5.5 Digital Multi Controller error table

Error code	Fault	Fault description	Fault remedy
Ted	Overvoltage	Supply voltage is above 36 V.	Check vehicle electrical installation.
Te3	Display background lighting defective		Contact Technical Support/Customer Service.
Te4	Status LED defective		Contact Technical Support/Customer Service.
Te5	Temperature sensor fault	Temperature sensor of the MultiControl/SmartControl defective.	Contact Technical Support/Customer Service.
Te6	W bus temperature sensor fault	Temperature from the external sensor (W bus) cannot be read correctly.	Check installation. Replace the sensor, if necessary.
T5d	UniBox temperature sensor fault	Temperature from the external sensor connected to the UniBox cannot be read correctly.	Check installation. Replace the sensor, if necessary.
T12	Communication fault on the W bus		Check installation.
Te7/Te8	Flash	Reading/writing from/to the internal memory has failed.	Contact Technical Support/Customer Service.
Tea	Faulty feedback signal from the heater (ST)		Check installation.
Tec	Jamming control knob	A control knob is pressed for longer than 10 seconds.	Contact Technical Support/Customer Service.
T46	Overcurrent/short-circuit at switching output SAU1	Current is higher than 500 mA.	Check installation. Ensure that the consumer at switching output SAU1 does not draw a higher current than 500 mA.
T49	Overcurrent/short-circuit at switching output SAU2	Current is higher than 20mA.	Check installation. Ensure that this switching output is only connected to the corresponding heater.
Te0	Reduced voltage	Supply voltage is below the value set by the technician.	Recharge the battery and check the vehicle's electrical installation
T84	Low voltage	Supply voltage is below 8V.	Recharge the battery and check the vehicle's electrical installation
Te1	Ambient temperature too low/high	Ambient temperature is outside the working range of -20°C to +70°C.	The fault disappears automatically when the ambient temperature returns to the working range of -20°C to +70°C.
Teb	RTC error	The internal clock chip of the MultiControl/SmartControl has lost its setting.	In the event of interruptions in the power supply of more than 8 minutes: Enter the date and time again. If the error occurs without an interruption in the power supply: Contact Technical Support/Customer Service.
Tee	Defective switching transistor in the MultiControl/SmartControl		Contact Technical Support/Customer Service.
	Attention: If this fault occurs, the heater can no longer be switched off. Please remove the fuse immediately and drive to a workshop.		

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