Malfunction Analysis

truma
More comfort on the move

Malfunction analysis

General safety instructions

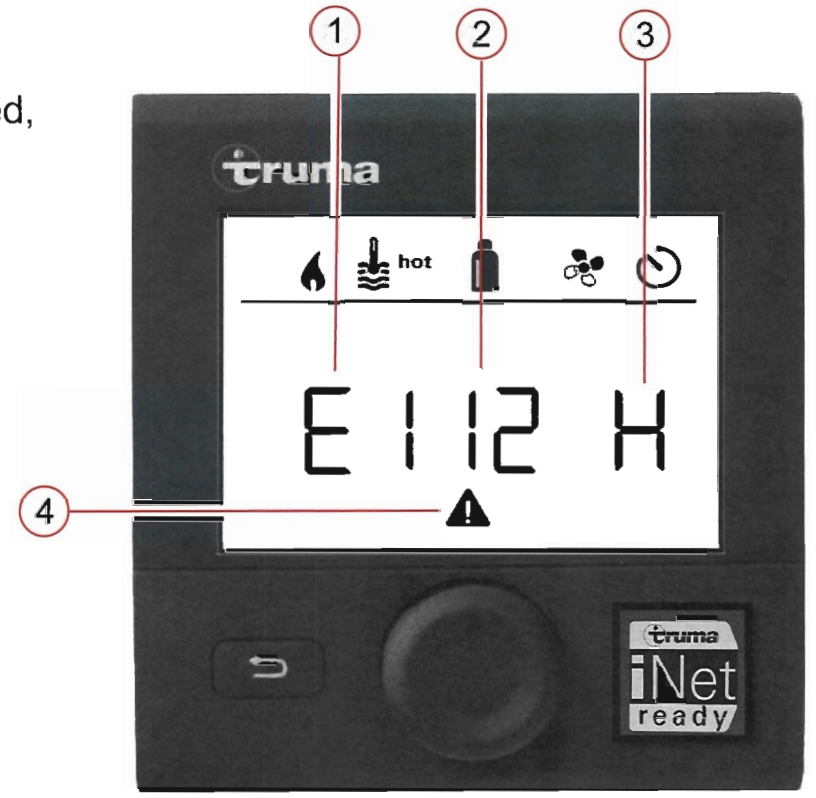
- When working on electrical systems, comply with the latest versions of the applicable safety instructions and regulations.
- Only certified electricians should work on electrical systems.
- The appliance and electronics can be damaged by static electricity. Pay attention to the handling regulations for components at risk of being damaged by static electricity.

Malfunction analysis

Error message on the control panel screen

- The current malfunction is shown on the screen of the CP plus control panel as a decimal number.
- When the cause of the malfunction has been remedied, the malfunction can be reset by pressing the rotary push button. This may take a few minutes due to internal time lags of connected appliances.
- If the cause was not remedied, the malfunction will occur again and the control panel will again go to the "Malfunction" menu level.

(1) Malfunction
(2) Error code
(3) Appliance
(4) Warning symbol



Malfunction analysis

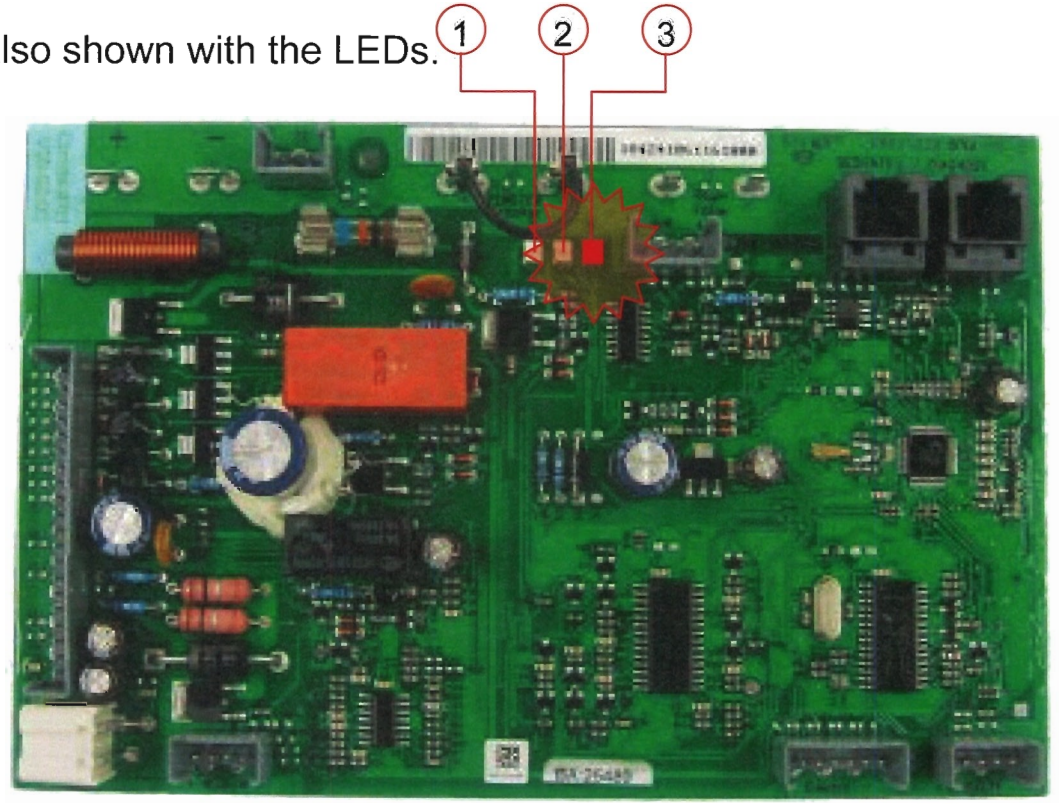
Error message on the electronics

- The current error is displayed by means of an LED in the form of a binary code and can be evaluated with the help of the flashing code list.
- The current status of the appliance is also shown with the LEDs.

(1) Appliance operation signal
(Lamp signal green)

(2) Burner activation signal
(Lamp signal yellow)

(3) Flame detection signal
(Lamp signal red)
and
Error message output
(Flashing signal red)

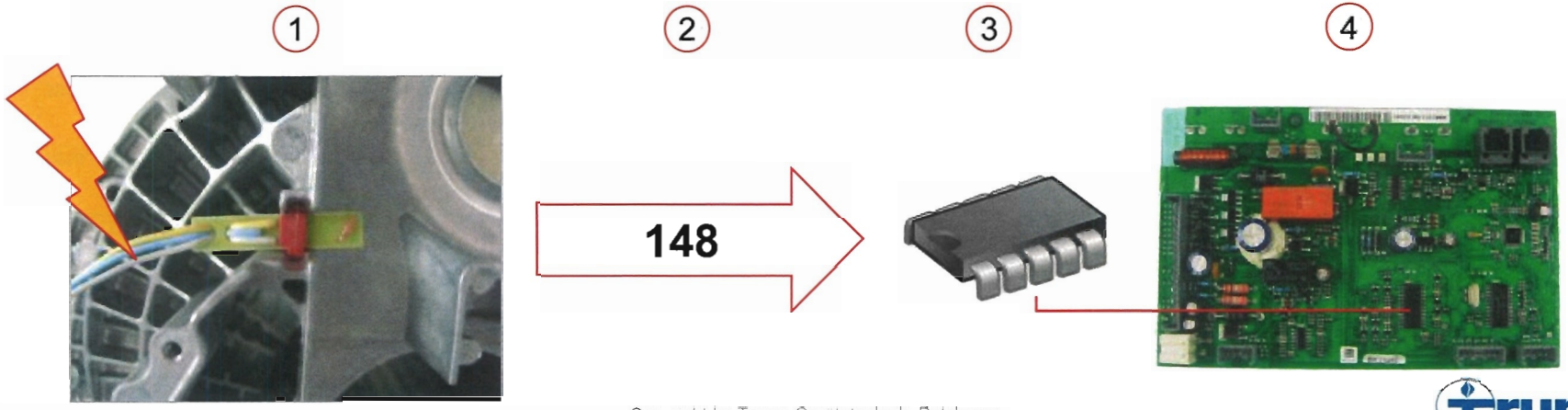


Malfunction analysis

Using the flashing code list

- All appliance malfunctions that can be determined by the electronics are numbered and listed (flashing code list). If a malfunction occurs in the appliance (1), the corresponding number (2) is written in the error memory (3) on the appliance electronics (4).

Number	Malfunction	Malfunction description	Measures
148	Combustion air temperature sensor Excess temperature	Electronics blocked: - Since the combustion air temperature sensor became too hot due to overheating during operation - Short circuit of the combustion air temperature sensor	



Common Error Codes

#	Flashcode	Error	Error Info	1st action	2nd action
4	ssss, slss	Current for combustion air motor too high	Combustion air motor or cable harness defective	Check/replace combustion air motor	Check/replace cable harness
5	ssss, slsl	Current for combustion air motor too low	Combustion air motor or cable harness defective	Check/replace combustion air motor	Check/replace cable harness
6	ssss, slls	Current for combustion air motor too high	Combustion air motor or cable harness defective	Check/replace combustion air motor	Check/replace cable harness
8	ssss, lsss	Recheck flash code	Electronic fault, Failure in electronic PCB	Restart heater	Check exhaust gas system, spark plug set, solenoid valve, replace electronics
18		Yellow indicator light flashes 9 times	Warm air outlets blocked. Circulated air intake blocked.	Check the individual outlet aperatures. Remove the circulated air intake blockage	
24	sssl, lsss	Current for circulating air motor too high	Circulating air motor defective	Check (apply 12vdc)/replace circulating air motor	Check the exhaust gas system, spark plug set, solenoid valve, replace electronics
25	sssl, lssl	Current for circulating air motor too low	Circulating air motor or connection plug failure	Check/replace circulating air motor	Check the exhaust gas system, spark plug set, solenoid valve, replace electronics
26	sssl, lsls	Current for circulating air motor too high	Circulating air motor defective	Check (apply 12vdc)/replace circulating air motor	If the SW index is lower than V03.00.04, replace electronics
45	ssls, llsl	No 120 V supply to Combi	120 V power supply failure	Check 120 V voltage	Water temperature switch reset
69	slss, slsl	Current monitoring for circulating air motor - with CP Plus - software error	Circulating air motor defective - CP Plus software earlier than C01.04.01 - electronics defective	Check/replace circulating air motor	Check/replace CP Plus Software - Replace electronics

Common Error Codes

#	Flashcode	Error	Error Info	1st action	2nd action
112	sIII, ssss	1) Flame not detected 2) Bad earth or battery earth 3) Gas regulation system defective 4) Electronics defective	1) Flame has gone out or is not detected 2) Earth connection of power supply is poor or missing 3) Gas cylinder is closed, switch for gas shut-off valve open, overheating protection has responded	1) Check gas supply 2) Check earth connection of power supply 3) Check solenoid valve 4) Switch off warm-air heater and allow to cool. Switch warm-air heater on again	1) Check exhaust gas system, spark plug set, solenoid valve, replace electronics 2) Switch off warm-air heater and allow to cool. Check warm air outlets and circulated air intake and remove blockages
121	sIII, lssl	Flame unstable	Flame unstable during operation.	1) Check gas supply 2) Check gas cylinder 3) Check switch for gas-shut off valve 4) Check overheating protection	1) Check flue system 2) Switch off warm-air heater and allow to cool, check warm air outlets circulated air intake for blockages
122	sIII, lsls	1) Flame not detected 2) Electronics defective	1) Gas supply interrupted 2) Error in the electronics 3) Combustion air infeed or exhaust gas outlet closed 4) Gas regulation system defective 5) Overheating protection has responded	1) Check/replace gas pressure regulation system 2) Check the power supply 3)Check for obstructions such as slush, ice or leaves and remove from openings	Check the exhaust gas system, spark plug set, solenoid valve, replace electronics
202	llss, lsls	1) Flame not detected 2) Bad earth or battery earth 3) Gas regulation system defective 4) Electronics defective	1) Flame has gone out or is not detected 2) Earth connection of power supply is poor or missing 3) Gas cylinder is closed, switch for gas shut-off valve open, overheating protection has responded	1) Check gas supply 2) Check earth connection of power supply 3) Check solenoid valve 4) Switch off warm-air heater and allow to cool. Switch warm-air heater on again	1) Check exhaust gas system, spark plug set, solenoid valve, replace electronics 2) Switch off warm-air heater and allow to cool. Check warm air outlets and circulated air intake and remove blockages

Common Error Codes

#	Flashcode	Error	Error Info	1st action	2nd action
211	llsl, ssll	Flame unstable	1) Flame unstable during operation 2) Gas cylinder closed 3) Switch for gas shut-off valve open 4) Overheating protection has responded	1) Check gas supply 2) Check gas cylinder 3) Check switch for gas-shut off valve 4) Check overheating protection	1) Check exhaust gas system, spark plug set, solenoid valve, replace electronics 2) Switch off warm-air heater and allow to cool. Check warm air outlets and circulated air intake and remove blockages
212	llsl, slss	1) Flame not detected 2) Electronics defective	1) Gas supply interrupted 2) Error in the electronics 3) Combustion air infeed or exhaust gas outlet closed 4) Gas regulation system defective 5) Overheating protection has responded	1) Check/replace gas pressure regulation system 2) Check the power supply 3)Check for obstructions such as slush, ice or leaves and remove from openings	Check the exhaust gas system, spark plug set, solenoid valve, replace electronics
255		1) No connection between heater and control panel 2) Heater has no 12V power supply 3) Control panel cable faulty		1) Make connection between heater and control panel 2) Ensure that the 12V power supply is available 3) Contact Truma Service	

Malfunction analysis
Measuring sheet, 12 V electronics

- Within the scope of troubleshooting, the following measurements and/or tests must be carried out on the electronics.

1. **Voltage measurement**
   All plugs must be connected, furnace is on.
2. **Resistance measurement**
   The plug to be tested must not be connected.
   The furnace is off and separated from the 120 V power supply.
3. **Continuity test**
   The plug to be tested must not be connected.
   The furnace is off and separated from the 120 V power supply.

Malfunction analysis

Measuring sheet I, 12 V electronics

- Continuity test

Component	Measuring points	Function / setpoint	Remark
Input fuse F1	Switch off the appliance, remove the fuse and check for continuity	Continuity (0 Ω)	Replace fuses only with similar fuses.
Air temperature switch	Pull out the X19 plug Continuity between X19-3 and X19-4 (on plug)	Continuity (0 Ω)	The switch must be closed Opens at 374°F/190°C
Water temperature switch	Pull out the X18 plug Continuity test between X18-3 and X18-4 (on plug)	Continuity (0 Ω)	The switch must be closed Opens at 185°F/85°C
Room temperature sensor cable	Detach the cable from the room temperature sensor and the electronics and check the continuity of both wires	Continuity (0 Ω)	If there is no continuity, replace the cables

Malfunction analysis

Measuring sheet II, 12 V electronics

- Resistance measurement

Component	Measuring points	Function / setpoint	Remark
Water temperature sensor	Pull out the X18 plug Resistance measurement between X18-1 and X18-2 (on plug)	68°F / 20°C = 12.5 kΩ 77°F / 25°C = 10.0 kΩ 104°F / 40°C = 5.3 kΩ 122°F / 50°C = 3.6 kΩ	Resistance value (NTC) is temperature-related
Air temperature sensor	Pull out the X19 plug Resistance measurement between X19-1 and X19-2 (on plug)	68°F / 20°C = 125 kΩ 77°F / 25°C = 100 kΩ 122°F / 50°C = 36 kΩ 176°F / 80°C = 12 kΩ	Resistance value (NTC) is temperature-related
Room temperature sensor	Pull out X10 and X11 plugs Resistance measurement between X10 and X11 (on plug)	59°F / 15°C = 15.7 kΩ 68°F / 20°C = 12.5 kΩ 77° F / 25°C = 10.0 kΩ	Resistance value (NTC) is temperature-related The furnace will not operate in case of a short circuit or interruption.

Malfunction analysis

Measuring sheet III, 12 V electronics

- Resistance measurement

Component	Measuring points	Function / setpoint	Remark
Solenoid coil "small" Pull-in winding	Pull out X7 plug Resistance measurement between X7-18 and X7-20 (on plug)	8-9 Ω	If the resistance value is outside, replace the coil
Solenoid coil "small" Hold-in winding	Pull out X7 plug Resistance measurement between X7-18 and X7-19 (on plug)	310-340 Ω	If the resistance value is outside, replace the coil
Solenoid coil "large" Pull-in winding	Pull out X7 plug Resistance measurement between X7-15 and X7-17 (on plug)	8-9 Ω	If the resistance value is outside, replace the coil
Solenoid coil "large" Hold-in winding	Pull out X7 plug Resistance measurement between X7-15 and X7-16 (on plug)	310-340 Ω	If the resistance value is outside, replace the coil
Combustion air temperature sensor	Pull out X7 plug Resistance measurement between X7-6 and X7-7 (on plug)	68°F / 20°C = 12.5 kΩ 77°F / 25°C = 10.0 kΩ 104°F / 40°C = 5.3 kΩ 122°F / 50°C = 3.6 kΩ	Resistance value (NTC) is temperature-related

Malfunction analysis

Measuring sheet IV, 12 V electronics

- Apply voltage

Component	Measuring points	Function /setpoint	Remark
Ignitor (step 1)	Pull out X7 plug Apply 12 V between X7-11 (+) and X7-10 or 9 (-)	Ignition spark can be heard and seen	If you cannot hear the ignitor ticking, replace the ignitor
Combustion air motor	Pull out X7 plug Apply 12 V between X7-2 (+) and X7-5 (-)	Motor runs at full speed	If you cannot hear the motor running, replace the motor
Air Circulation D.C. motor	Pull out X3 plug Apply 12 V between X3-1 (+) and X3-2 (-)	Motor runs at full speed	If you cannot hear the motor running, replace the motor
Solenoid coil "small" Pull-in winding	Pull out X7 plug Apply 12 V (< 5 sec.) between X7-18 (+) and X7-20 (-)	You hear the solenoid valve opening	If you cannot hear the solenoid valve opening, replace the coil
Solenoid coil "large" Pull-in winding	Pull out X7 plug Apply 12 V (< 5 sec.) between X7-15 (+) and X7-17 (-)	You hear the solenoid valve opening	If you cannot hear the solenoid valve opening, replace the coil

Malfunction analysis
Measuring sheet V, 12 V electronics

- Voltage measurement

Component	Measuring points	Function /setpoint	Remark
Ignitor (step 2)	Switch on the furnace Voltage measurement between X7-10 or 9 and X7-11	Minimum voltage 10 V	If no voltage is measured when the solenoid valve has opened or if it is less than 10 V: - detach the plus or minus cable from the ignitor (ignitor short circuit input side) or - replace the electronics
Air Circulation D.C. motor	Switch on the furnace (ΔT > 2° C), voltage measurement between X3-1 and X3-2	4.5-12 V (speed is controlled by LTF)	If the voltage is less than 4.5 V, replace the electronics
Solenoid coil "small" Hold-in winding	Switch on the furnace (ΔT ≤ 2° C) voltage measurement between X7-18 and X7-19	Minimum voltage 10 V	After start ramp, consistent voltage If not, replace the electronics
Solenoid coil "large" Hold-in winding	Switch on the furnace (ΔT > 2° C) voltage measurement between X7-15 and X7-16	Minimum voltage 10 V	After start ramp, consistent voltage If not, replace the electronics

Malfunction analysis

Measuring sheet VI, 12 V electronics

- Voltage measurement

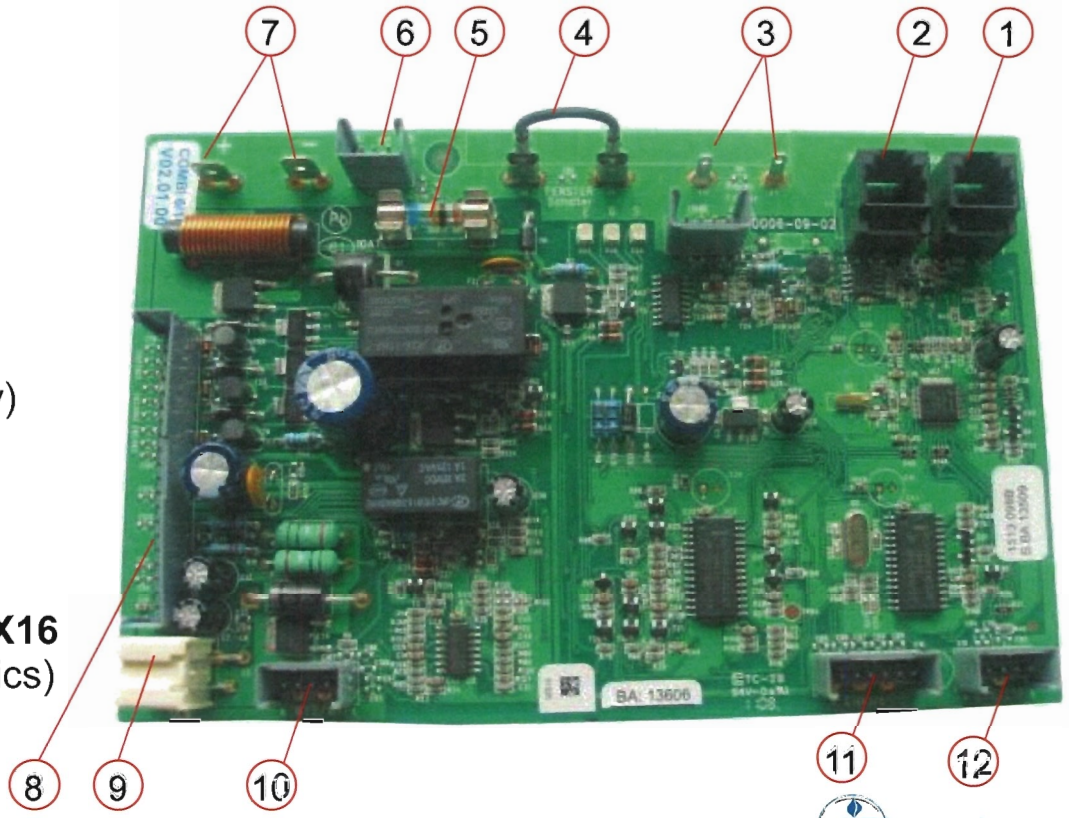
Component	Measuring points	Function /set point	Remark
CP plus digital control panel	Voltage measurement on contact pin, 12 V supply cable	Minimum voltage 8 V	If voltage measured, replace control panel If no voltage measured, replace electronics

Malfunction analysis

12V electronics Combi / Combi plus

- The electronics cannot be repaired and are replaced completely in case of damage. Only the input fuse can be replaced.

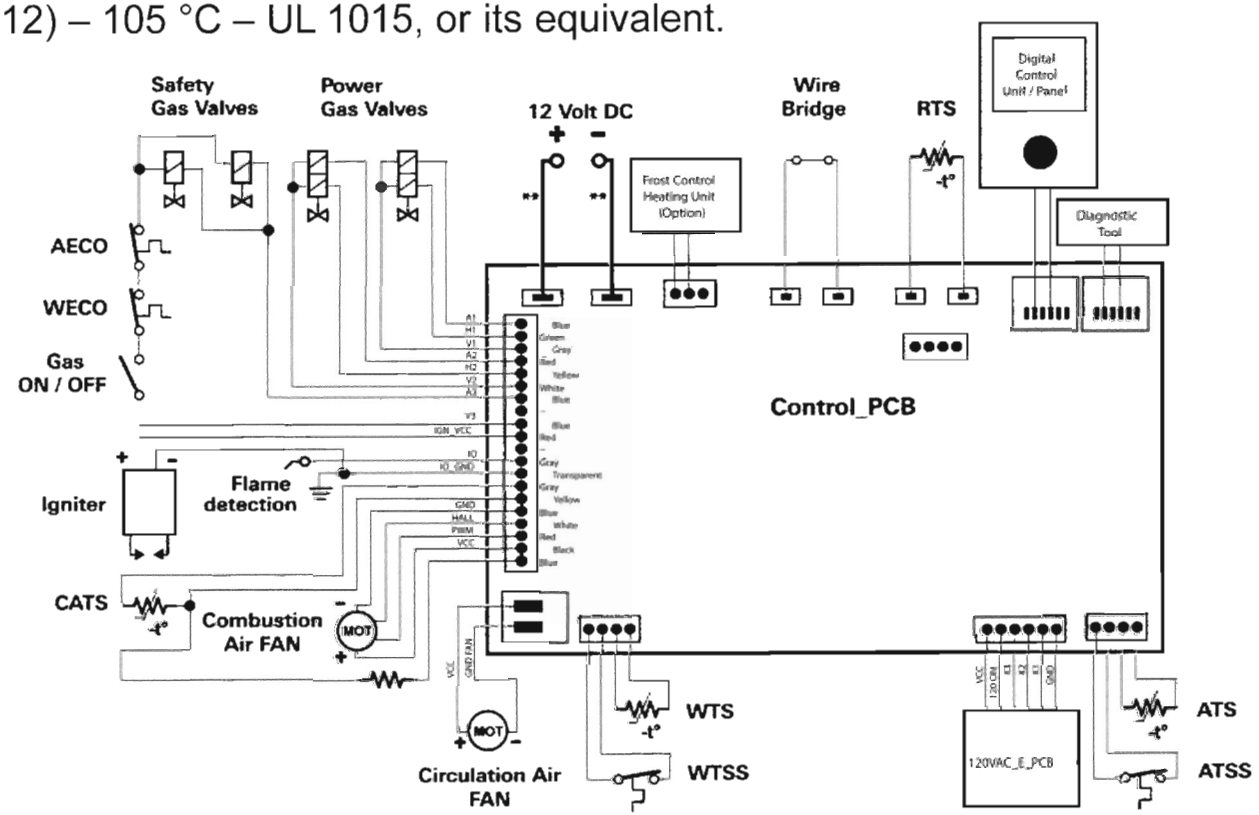
(1) Diagnostics device connector **X6**
(2) Control panel connector **X5**
(3) Contact pins
room temperature sensor **X10 / 11**
(4) Contact pins cable bridge **X8 / 9**
(5) Input fuse **F1** 10 AT
(6) FrostControl connector **X4** (Euro only)
(7) Contact pin, 12 V supply cable
(8) Cable harness connector, 12 V **X7**
(9) D.C. motor connector **X3**
(10) Water system sensor connector **X18**
(11) Cable harness connector 12 / 120 V **X16**
(Connection for 120 V power electronics)
(12) Air system sensor connector **X19**



Malfunction analysis

Connector layout for 12V electronics Combi / Combi plus

- If any of the original wire as supplied with the furnace must be replaced, it must be replaced with wire AWG# 18 (**AWG# 12) – 105 °C – UL 1015, or its equivalent.



Malfunction analysis

Measuring sheet, 120 V power electronics

- Within the scope of troubleshooting, the following measurements and/or tests must be carried out on the power electronics.

1. **Voltage measurement**
   All plugs must be connected, furnace is on.
2. **Resistance measurement**
   The plug to be tested must not be connected.
   The furnace is off and separated from the 120 V power supply.
3. **Continuity test**
   The plug to be tested must not be connected.
   The furnace is off and separated from the 120 V power supply.

Malfunction analysis

Measuring sheet I, 120 V power electronics

- Continuity test

Component	Measuring points	Function Setpoint	Remark
Input fuse **F4**	Continuity test on removed fuse	Continuity (0 Ω)	If no continuity, replace fuse

Malfunction analysis

Measuring sheet II, 120 V power electronics

- Voltage measurement

Component	Measuring points	Function Setpoint	Remark
120 V supply cable **X3**	Voltage measurement between N and L	120 V voltage	If no voltage is measured, check supply cable
Cable harness connector Temperature limiter **X4 (Left side)**	Voltage measurement between N and L	120 V voltage	If no voltage is measured, check fuse
Cable harness connector Temperature limiter **X4 (Right side)**	Voltage measurement between N and L	120 V voltage	If no voltage is measured, check temperature limiter
Cable harness, heating elements **X2**	Voltage measurement X2-1 and X2-3	120 V voltage or 60 V voltage (depending on power setting)	If no voltage is measured, check power electronics
Cable harness, heating elements **X2**	Voltage measurement X2-2 and X2-4	120 V voltage or 60 V voltage (depending on power setting)	If no voltage is measured, check power electronics

Malfunction analysis

Power electronics, 120 V Combi plus

- The power electronics cannot be repaired and are replaced completely in case of damage. Only the input fuse can be replaced.

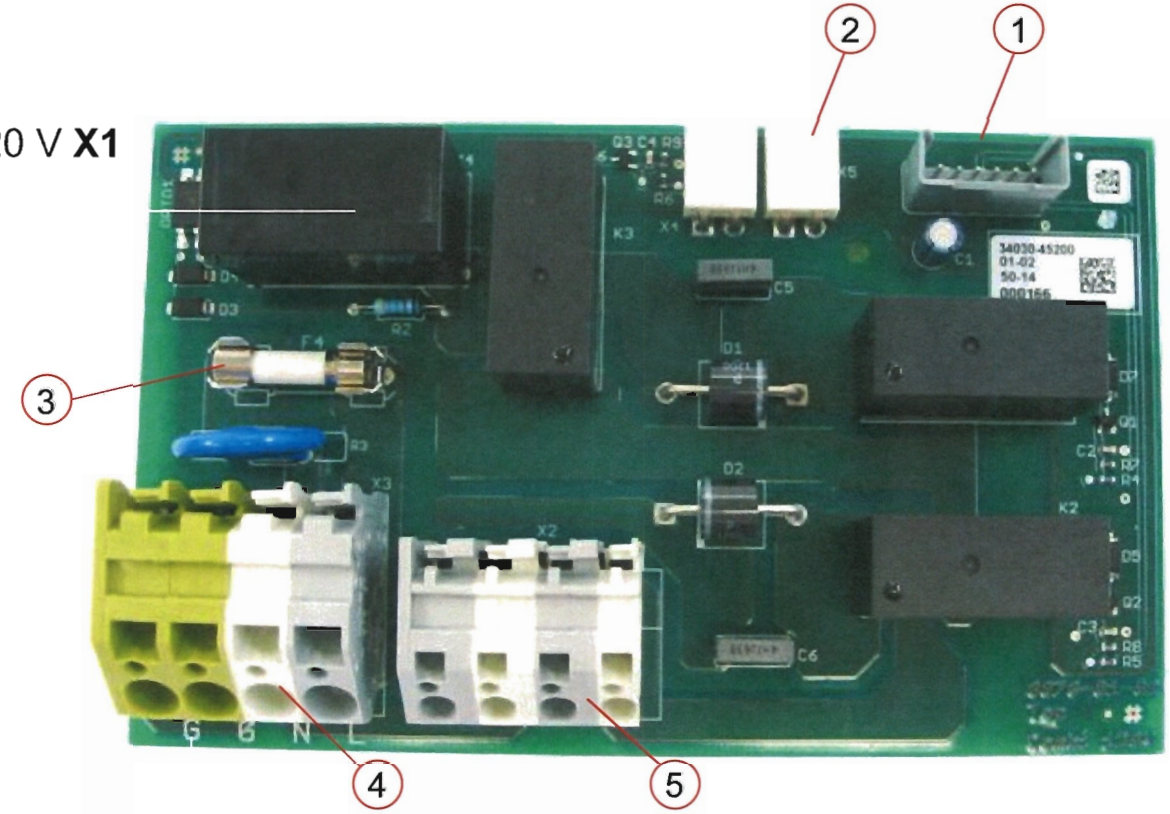
(1) Cable harness connector 12 / 120 V **X1**
(Connection to 12 V electronics)

(2) Safety circuit connector

(3) Input fuse 10 AT H **F4**

(4) Connector for 120 V
supply cable **X3**

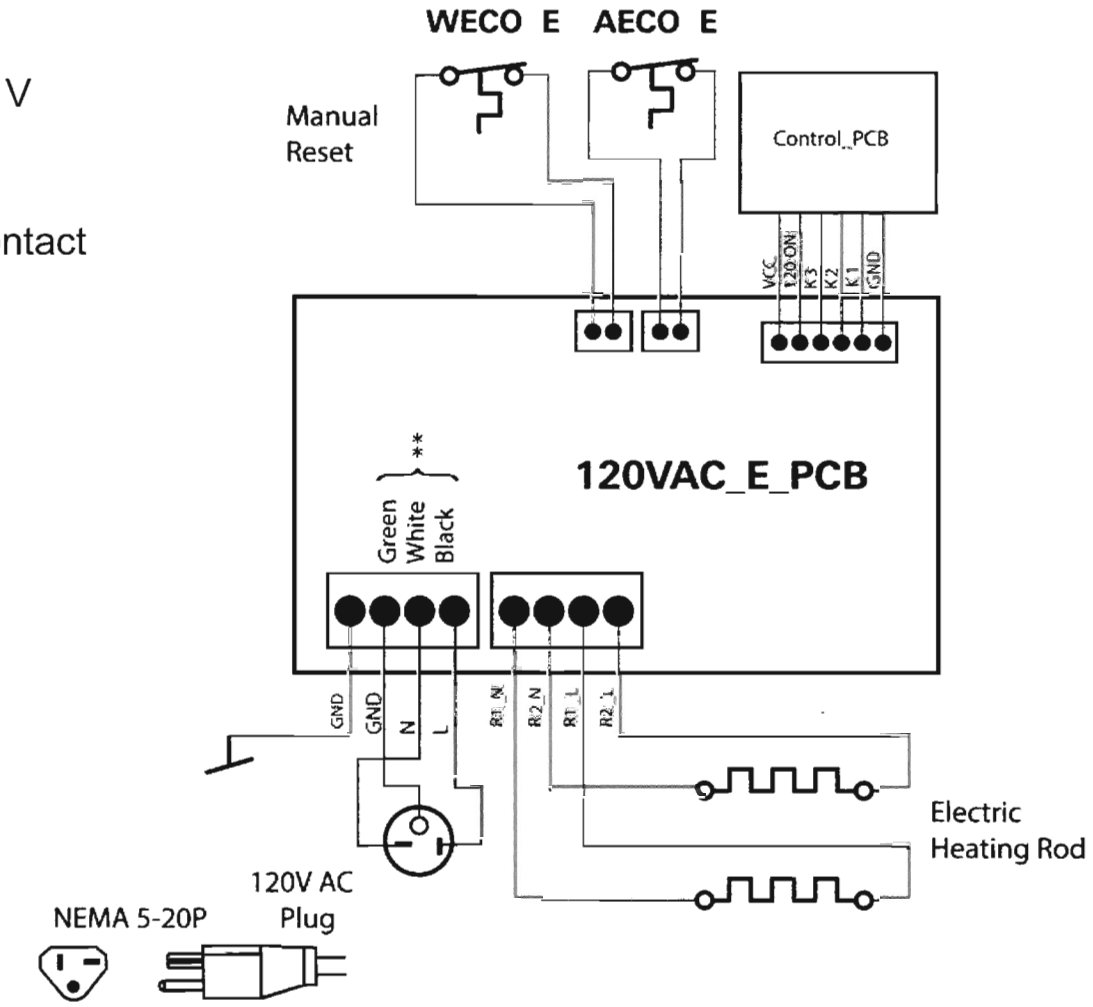
(5) Cable harness connector,
heating elements **X2**



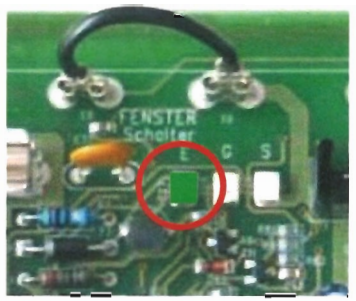
Malfunction analysis

Connector layout, power electronics, 120 V Combi plus

- If a cable has to be replaced, please contact Truma Service.



Malfunction analysis

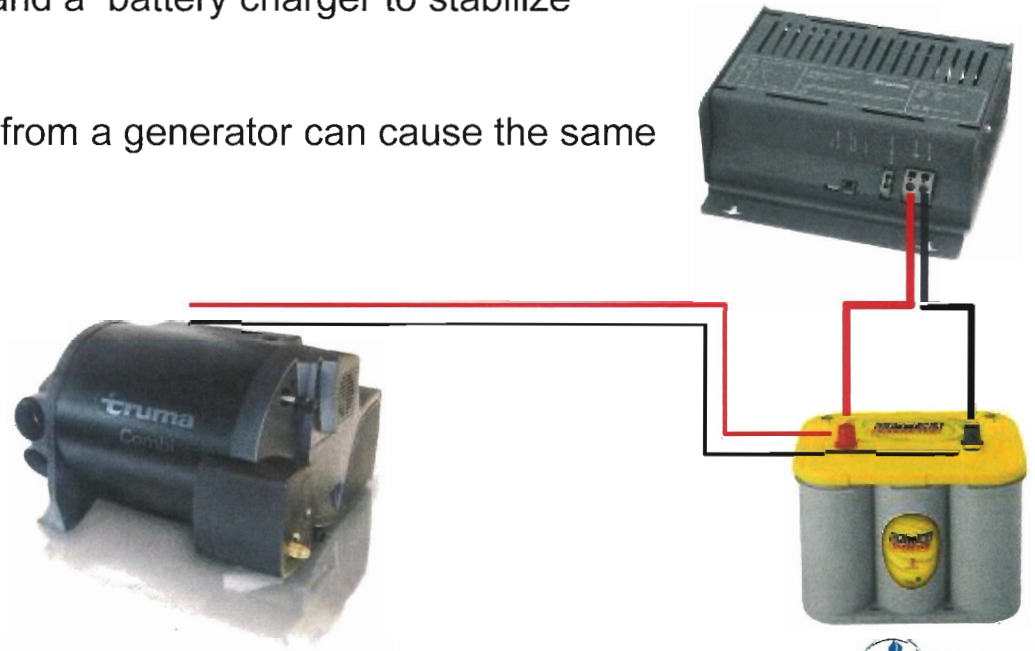


Combi switches off with a weak lit green LED or no LED at all.

Beware of voltage fluctuation.
The supply voltage to the Combi must remain between 11 and 15v.
Voltages outside these limits will cause the Combi to fail.

The Combi should never be connected directly to a battery charger. A battery must always be used between the Combi and a battery charger to stabilize the voltage output.

Also a short term voltage spike above 17v from a generator can cause the same issue.



Work Codes: Combi

Code	Work Performed	Min.	Hour
2200	Fault finding	30	0.5
2201	Combi Unit R & R (REMOVE & REPLACE)	90	1.5
2204	Control panel replaced	10	0.17
2209	Safety drain valve replaced	20	0.33
2211	PCB Control Board replaced	10	0.17
2216	Cable harness replaced	30	0.5
2236	Warm air motor replaced	20	0.33
2238	Combustion air motor replaced	15	0.25
2243	Elbow connector replaced	5	0.08

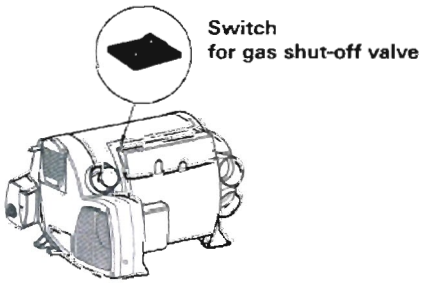
Truma Combi®

Combi Test Procedure

Purpose:
The purpose of this procedure is ensure that the Truma Combi®, after being installed in accordance with the applicable manual's and standards, is functionally tested prior to delivery. This test procedure is not meant to test all functions of the system, and does not absolve the manufacturer or service technician from their responsibilities relative to the materials delivered by Truma Gerätetechnik GmbH & Co. KG.

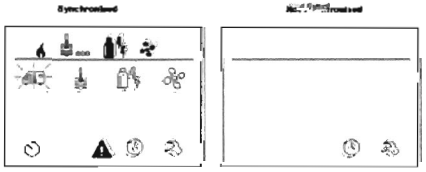
Support:
For additional service support please contact Truma Corp Service at +1-855-558-7862 ext1 or email Service@TrumaCorp.com .

- ☐ Ensure that the gas shut off switch on the top of the Combi is set to the "ON" position.

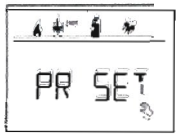


- ☐ Ensure that the Propane or liquid petroleum gas (LPG) supply and 110V supply are both connected and turned on.
- ☐ If there is a switch for the 12V supply to the Truma Combi make sure that this is turned on.
- ☐ Ensure that the drain valve is closed (in either the "a" or "b" position).

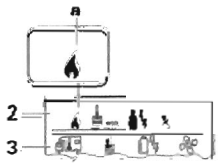
- ☐ Fill the system with water.
- ☐ Check that the Combi CP plus control panel is synchronised with the system.



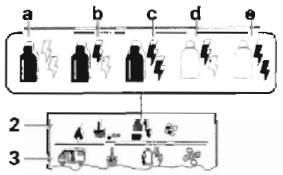
- ☐ If the Combi CP plus control panel is not synchronised, enter the settings option denoted by the wrench symbol and select the **RESET** option and then select **PR RESET**.



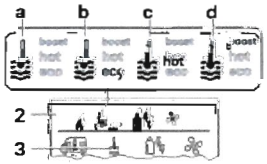
- ☐ On the Combi CP plus control panel select the heating mode and turn the knob to the desired heat setting to 86°F (30°C) to ensure that there is a demand for heat.



- ☐ Note that if the internal temperatures in the vehicle are above 86°F (30°C) the Combi will not see a demand for heating and the heating test cannot be carried out.
- ☐ Select the power source as "GAS" (LPG) (a).



- ☐ Run the Combi in the setting for a minimum of 5 **minutes** and check to see if the heating symbol is flashing which shows that the system is operating.
- ☐ Change the power source from "GAS" to "EL 1" (Electric 1) setting (d) and check that the heating symbol is still flashing.
- ☐ Change the power source from "EL 1" to "EL 2" (Electric 2) setting (e) and check that the heating symbol is still flashing.
- ☐ At this point check that warm air is coming from all of the hot air outlets.
- ☐ Select water heating mode "BOOST" (d) on the control panel and wait to see that the symbol starts to flash indicating that there is a demand for water heating.



- ☐ The function test is now complete. Turn off the water supply, LPG and mains electric.
- ☐ Ensure that the gas shut off switch remains in the "ON" position.
- ☐ Open the Combi drain valve to drain the water from the system.
- ☐ A failure to drain the system could result in frost damage which is not cover under the scope of the Truma warranty.

Warranty and Marketing

Master ppt Truma allgemein

Truma
More comfort on the move