

Truma Combi Service Handbook



Before Working on a Truma...

Warranty Period and Registration:

Truma systems are covered through Truma's Manufacturer Limited Warranty as defined at www.truma.net and the Truma Terms & Conditions of sale.

Truma systems come with a 12 months (parts and labor) Limited Manufacturer Warranty and can be extended to 24 months (parts and labor) upon Warranty Registration within 60 days of purchase.

Warranty Registration can be handled via the warranty post card enclosed in the manuals supplied with the Truma system, or at www.truma.net.

Service and Warranty Claims:

Before working on a Truma system: All service and warranty related inquiries, including troubleshooting, involving Truma systems must be directed to the Truma Service Department at: service@trumacorp.com or by calling **855-558-7862 ext. 1**.
***** Please include the model and serial number of the Truma system in question with all inquiries.**

If the Truma Service Representative is unable to support in finding a resolution to the issue, they will provide you a **Warranty Claim Number** if the unit is within the Warranty Claim period and the following steps must be followed:

- Please send an order to orders@trumacorp.com referencing the warranty claim number. Truma will send you an order confirmation.
- The Truma Service Representative will send you the **Warranty Claim Form (WCF)** and a **Returned Material Authorization (RMA)** if parts need to be returned.
- Complete the **Warranty Claim Form** as per the instructions.
- The Warranty Claim Form is to be placed with the returned components.
- To ensure that the end user bought the Truma system at a certified Truma Service Partner within the warranty time frame, a copy of the purchase receipt must be included with the returned components. If the Truma appliance was sold with the RV, a copy of the first registration is required.
- All returned components are to be returned in their original packaging to avoid further damage.
- Returned components are to be shipped to the destination indicated on the RMA or as instructed by the Truma Service Representative.
- The RMA is to be affixed to the outside of the packaging for all returns.
- If the Truma Claims process determines product is defective, reasonable shipping charges will be reimbursed. Components need to be received within 45 days to allow for processing of the Warranty claim and issuance of credit.
- WCF will be evaluated by the Truma Service Department and disposition raised for credit.

Sales Return:

- If you have ordered the wrong product(s) or the wrong quantity and you want to return it to Truma, please **contact your Account Manager or email info@trumacorp.com to ask for an RMA.**
- All returned components are to be returned in their original packaging to avoid further damage.
- Returns are subject to the Truma Terms and Conditions of sale.
- Returned components are to be shipped to the destination indicated on the RMA or as instructed by the Truma Representative.
- The RMA is to be affixed to the outside of the packaging for all returns.
- Please use one RMA for each carton and place in a visible location.
- Please note that the returned products will only be accepted by Truma if such returned item is in its original packaging, is a Product of a current product line and both packaging and product are undamaged. Damaged packaging or product will get deducted to the credit note by the amount of additional labor and spare parts costs to replace it. Any returned and accepted product will be subject to a re-stocking fee as outlined in the Truma Terms and Conditions.

Category III / Catégorie III		min.	max.	
Type: FSP Direct vent forced air furnace	Duct static pressure	0.00	0.65	w.c.
Type of fuel: Propane	Inlet pressure	11	13	w.c.
Input Rate: 1st: 7500 BTU/h 2nd: 14300 BTU/h	Manifold pressure	10		w.c.
	12 VDC		6.1	Amp.
	120 VAC	7.1	14.2	Amp.

Label Example: Combi

Description & Technical Data

With more than 20 years of reliable service in Europe and Australia, Truma Combi furnaces are the most energy-efficient and lightest heating systems on the market. Truma Combi heaters combine two functions in one appliance. They warm the living area and heat water in the integrated stainless steel tank. Depending on the model, Truma Combi heaters can be used in gas, electric, or mixed mode.

Fuel:	LP gas (propane only)
Inlet pressure:	11-13"WC. (27.4-32.4mBar)
Manifold pressure:	10"WC (24.9mBar)
Duct static pressure:	minimum of 0.00"WC (0.0mBar) maximum of 0.65"WC (1.6mBar)
Temperature rise:	<150°F (83°C)

Energy Input Rate / Gas Consumption

LP gas mode	Operating Level 1	Operating Level 2	Operating Level 3
Combi eco	7,500BTU/hr (2.2kW)	14,300BTU/hr (4.2kW)	--
Combi eco plus	5.3oz/h (150g/h)	10oz/h (290g/h)	
Combi comfort	7,500BTU/hr (2.2kW)	14,300BTU/hr (4.2kW)	20,400BTU/hr (6kW)
Combi comfort plus	5.3oz/h (150g/h)	10oz/h (290g/h)	14oz/hr (410g/h)
Electric mode			
Combi eco plus	850W	1,700W	--
Combi comfort plus			
Mixed mode			
	LP gas	+	electric
Combi eco plus (max)	7,500 BTU/h (2.2kW)	+	1,700W
Combi comfort plus (max)	14,300 BTU/h (4.2kW)	+	1,700W

Power Supply

Power consumption at 12VDC (DC < 1Vpp)

Combi eco	transient: max. 6.1A (average power consumption: approx. 1.6A)
Combi eco plus	transient: max. 6.1A (average power consumption: approx. 1.6A)
Combi comfort	transient: max. 6.1A (average power consumption: approx. 1.8A)
Combi comfort plus	transient: max. 6.1A (average power consumption: approx. 1.8A)

Power consumption at 120VAC/60HZ (line connection or sine wave generator)

	Operating Level 1	Operating Level 2	Operating Level 3
Combi eco plus	7.1A	14.2A	--
Combi comfort plus			

Hot Water System

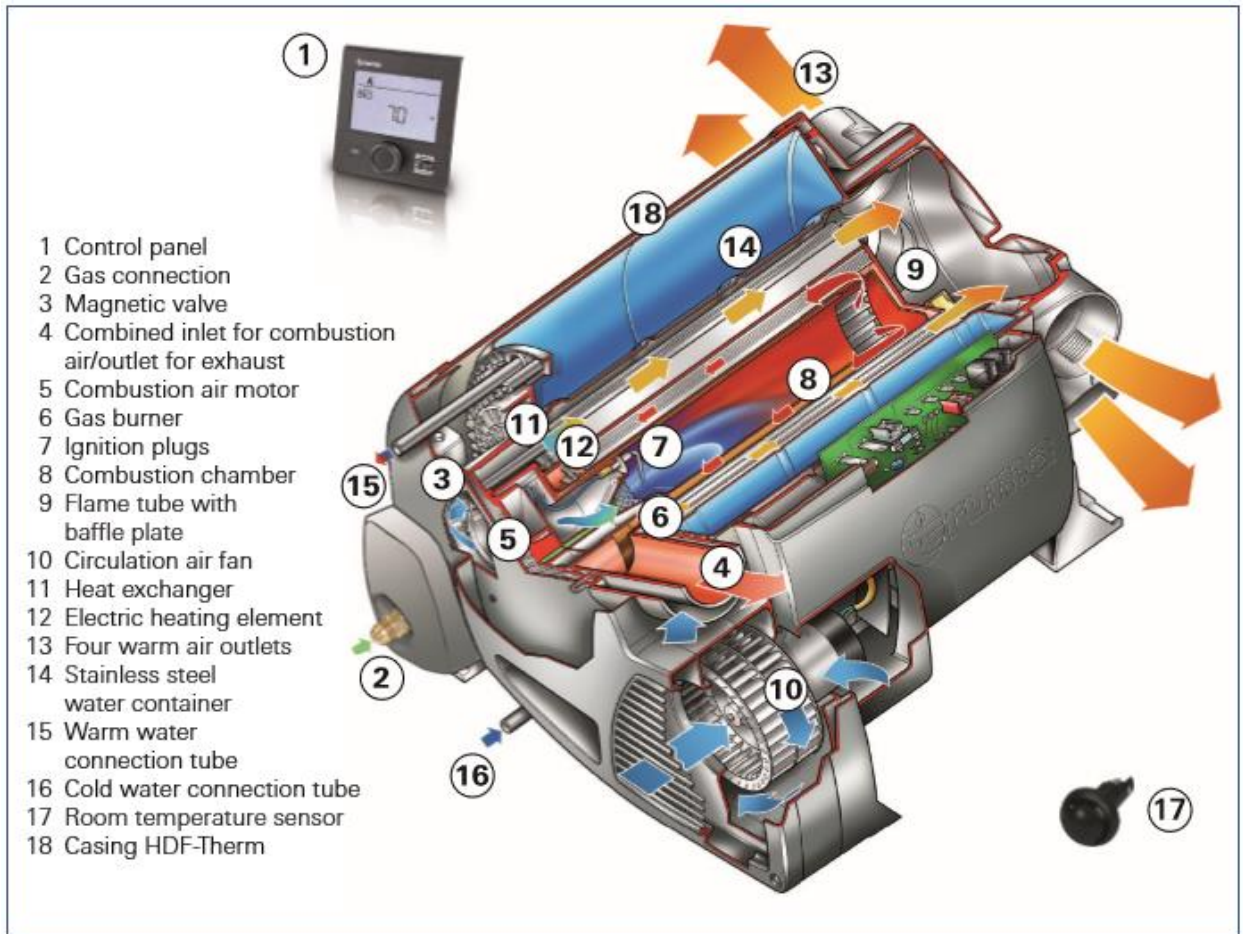
Capacity of water container:	2.64gal (10 liters)
Water heating time from 59°F (15°C) to 140°F (60°C):	approx. 23 minutes in hot water mode (measured according to (EN 15033)
Water inlet pressure:	max. 40.6psi (2.8bar)
System operating pressure:	max. 65.25psi (4.5bar)

Shipping weight (without water and without peripheral equipment)

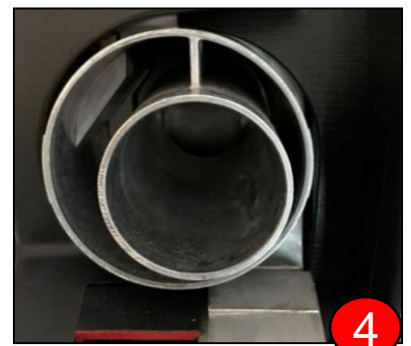
Combi eco	35.1lbs (15.9kg)
Combi comfort	
Combi eco plus	37.0lbs (16.8kg)
Combi comfort plus	



Component Glossary



1. **CP Plus Control Panel** : Operation and programming of the Truma Combi is controlled by the CP Plus Control Panel. Powered by a separate 12VDC source from the Combi and protected with a 1A in-line fuse. Connected to the Truma Combi PCB by a data cable. A **W 255 H** error code will be displayed on the CP Plus in the event of a connectivity issue with the Combi PCB.
2. **Gas Connection** : 5/8" flared male inlet gas supply connection. Operating inlet pressure: 11-13" WC (27.4-32.4 mBar).
3. **Magnetic Gas Valve** : Supply gas pressure to the combustion chamber is controlled and regulated by the magnetic gas valve. Depending on the level of combustion required, the (2) magnetic gas valve solenoids will open or close to provide 7,500 BTU, 14,300 BTU, or 20,400 BTU (Comfort models only) of propane to the combustion chamber. Includes a test nozzle for obtaining manifold pressure: 9.5-11" WC (23.7-27.4mBar).
4. **Combined Inlet for Combustion Air/Outlet for Exhaust** : Connection for Combustion Air Inlet tube (80mm) and Exhaust Outlet tube (55mm). Both tubes terminate on the sidewall of the RV through the Wall Cowl. Combustion air is pulled into the Combi and exhaust air is pushed out by the Combustion Air Motor. A damaged or compromised Exhaust Outlet tube may result in exhaust air mixing with fresh combustion air, leading to combustion failures.



Component Glossary



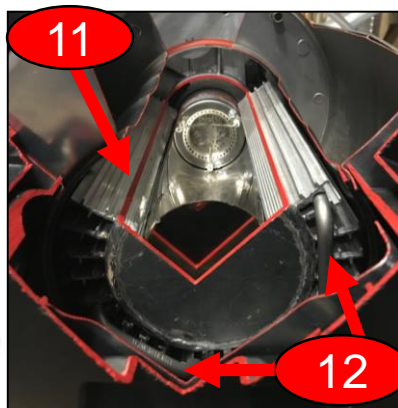
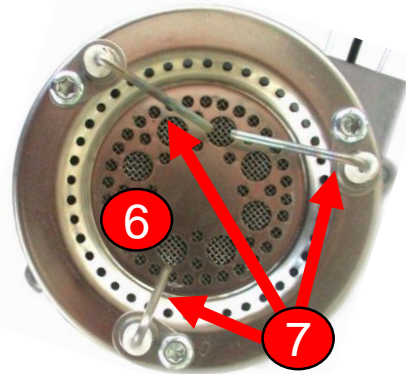
5. **Combustion Air Motor** : A variable speed fan motor tasked with providing one of the key ingredients for combustion: Air. The Combustion Air Motor pulls in fresh combustion air from outside through the Wall Cowl and Combustion Air Inlet tube and pushes exhaust air out of the Exhaust Outlet tube and Wall Cowl. It will change speeds to match the combustion needs of the Combi.

6. **Gas Burner** : Part of the Flame Tube, located in the Combustion Chamber in the center of the Combi and surrounded by the Air Heat Exchanger and Water Container, the Gas Burner is where flame is created when heating in Gas mode. The Gas Burner heats both air for warming the indoor living space as well as domestic water.

7. **Ignition Plugs** : Unlike a “standing pilot” ignition system, the Combi utilizes a Direct Spark Ignitor (DSI) ignition system, which contains (2) metal rods that create a spark when voltage is applied. A third metal rod is the Flame Rectifier, which confirms the presence of flame when a flame is created. The Ignitors and Rectifier are attached to the Gas Burner.

8. **Combustion Chamber** : The Combustion Chamber is where the (3) ingredients for combustion (air, fuel, and spark) are introduced to each other to create a flame at the Gas Burner.

9. **Flame Tube with Baffle Plate** : A tube that surrounds the flame created by the Gas Burner. The Baffle Plate assists with redirecting exhaust air back into the Exhaust Outlet.



10. **Circulation Air Fan** : A 10 speed fan motor that draws air from within the living space into the Air Heat Exchanger where it absorbs heat from the flame of the Gas Burner before being distributed throughout the indoor living space via duct work. The Circulation Air Fan typically won't run when the Combi's primary focus is to just heat water and not air to warm the living space. However, it also operates as a cooling device in the event of excessive air and/or water temperatures.

11. **Air Heat Exchanger** : Surrounding the Combustion Chamber and housing the Electric Heating Elements (Plus models only), the Air Heat Exchanger is where heat from the Gas Burner or Electric Heating Elements is absorbed by the passing air being moved by the Circulation Air Fan before entering the duct system for distribution within the living space.

12. **120VAC Electric Heating Elements (Plus models only)** : Imbedded in the Air Heat Exchanger are (2) 120VAC 850W Electric Heating Elements. Whether in EL1/MIX1 (850W) or EL2/MIX2 (1700W), both Electric Heating Elements are energized. In addition to 120VAC Electric Heating Elements, Combi Plus models will also feature a 120VAC PCB and a NEMA 5-20P outlet plug.

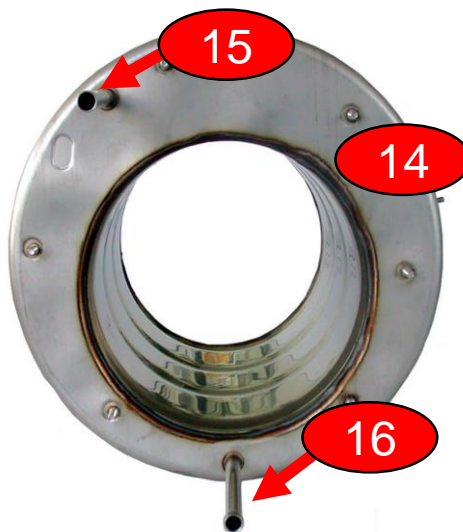
13. **Warm Air Outlets** : Duct work (65mm) connections to the Combi. (4) Warm Air Outlets altogether, though Combi Eco models may only utilize (3), with one of the bottom outlets blocked off with a blank cover (34310-02).

Component Glossary

14. **Stainless Steel Water Container** : 2.64gal (10 liter) water container made of V4A stainless steel. The Water Container surrounds the Air Heat Exchanger and absorbs heat from the Gas Burner or Electric Heating Elements (Plus models only) to heat the water for the domestic water supply. The Combi does **NOT** feature instant or on demand water heating technology and thus has a recovery time, like a traditional water heater, to reach the desired water temperature setpoint.

15. **Warm Water Connection Tube** : 12mm connection for Warm Water Connection with Aeration Valve (34020-00178) to hot water outlet. Aeration Valve features a gravity fed check valve before the connection of a clear air tube, with the purpose of ensuring all 2.64 gal (10 liters) are drained from the Water Container when the Drain Valve is opened. Warm Water Connection with Aeration Valve must be installed so that the hot water plumbing flows in a vertical direction while the Aeration Valve is positioned in a horizontal configuration (see component "K")

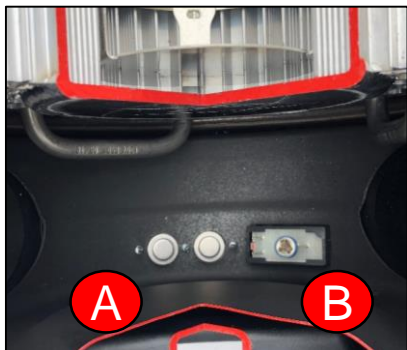
16. **Cold Water Connection Tube** : 12mm connection for cold water inlet



17. **Room Air Temperature Sensor** : NTC thermistor that tells the Combi the ambient temperature within the living space by converting temperature to resistance Ω . Connected to the Combi PCB by a wiring harness. At 77°F (25°C), the Room Air Temperature Sensor should register approximately 10K Ω . X10 and X11 wire harness connection points at Combi PCB from RTS are not polarity sensitive.

18. **Casing HDF-Therm** : Insulation jacket of the Truma Combi

Additional Components

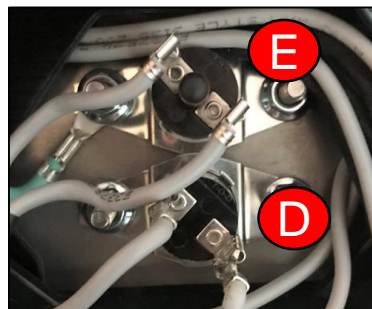


- A. **Air Temperature Switch(es)** : N.C safety switch located in the Air Distribution Chamber that opens it's contacts to end the ignition sequence if it senses temperatures above 374°F (190°C).
- B. **Air Temperature Sensor** : NTC thermistor that informs the PCB of the temperature within the Air Distribution Chamber by converting temperature to resistance.
- C. **Combustion Air Temperature Sensor (Not pictured)** : NTC thermistor that informs the PCB of the temperature within the Combustion Chamber by converting temperature to resistance.

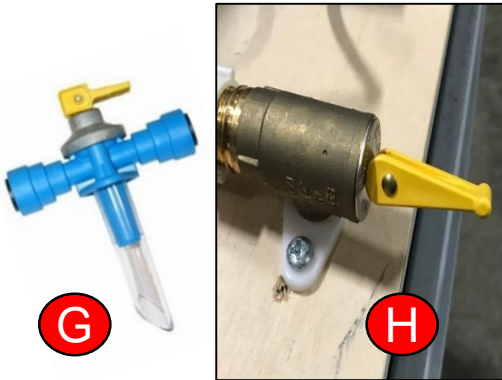
D. **Water Temperature Switch (All models)** : N.C. thermal safety switch that opens it's contacts to end the ignition sequence if it senses temperatures above 185°F (85°C).

E. **Water Temperature Switch (Plus models only)** : N.C. manually resettable safety switch that opens it's contacts to end the ignition sequence if it senses temperatures above 185°F (85°C).

F. **Water Temperature Sensor(s) (Not pictured)** : NTC thermistors that informs the PCB of the temperature within the Water Container by converting temperature to resistance.

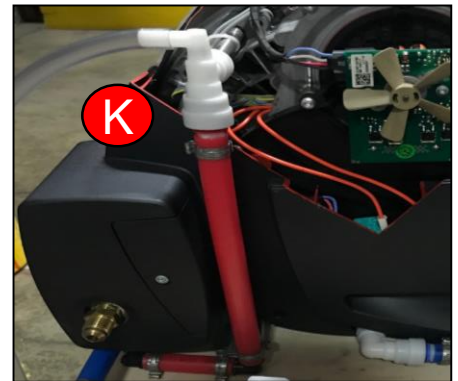


Additional Components



- G. Drain Valve (Previous version) :** Shown in the “closed” position, the drain valve is installed on the cold water inlet of the Combi and is used to drain the Water Container when placed in the “open” position. In addition to a manual drain, it also automatically opens when pressure above 51psi are present.
- H. Drain Valve (Current version) :** Shown in the “open” position, the current drain valve model replaced the previous version in 2017. In addition to a manual drain, the Drain Valve also features an automatic pressure relief safety that activates when pressures above 66.25psi are present.

- I. Wall Cowl (Not pictured) :** A concentric vent located on the sidewall of the RV, the Wall Cowl is the entry point for fresh combustion air into the Combustion Air Inlet Tube, and the exit for exhaust air through the Exhaust Outlet Tube.
- J. Gas Shutoff Switch (Not pictured) :** The Gas Shutoff Switch, located above the 12VDC PCB, controls 12VDC power to the Gas Valve. Turning the Gas Shutoff Switch to the “OFF” position will deenergize the Gas Valve and result in one of the following fault codes when the Combi goes to fire: E 112 H, E 121 H, E 122 H, E 202 H, E 211 H, and/or E 212 H. See “Fault Codes: Further Details”.
- K. Warm Water Connection with Aeration Valve :** The hot water plumbing connection to the Warm Water Outlet of the Combi. Elbow fitting consists of an Aeration Valve with a gravity-fed check valve to ensure that all 2.64gal (10 liter) of water is drained from the Water Container when the Drain Valve is opened. Must be installed so that hot water plumbing line flows in a vertical direction (see picture K for proper install). A Combi that doesn't completely drain could be evidence of an Aeration Valve issue.



Sequence of Operations

Step 1.

Once the Combi receives a call for heat from the CP Plus, a Green LED will illuminate on the PCB. The Combustion Air Motor and the Circulation Air Fan* will run for 30 seconds to purge the system. The Combustion Air Motor and Circulation Air Fan* will ramp up to operating level 2 (14,300BTU) fan speeds right before the start of Step 2.

Step 2.

Once the Combustion Air Motor and Circulation Air Fan* has reached operating level 2 speeds, a yellow LED will illuminate on the PCB. The Magnetic Gas Valve will open at the same time that the Direct Spark Ignitor is energized and begins sparking.

Step 3.

After the three ingredients for combustion (air, fuel, and spark) have been introduced to the Combustion Chamber, the burner flame will activate. Once the flame presence has been proven by the Flame Sensor, a red LED will illuminate on the PCB. Heat from the Gas Burner will then make its way into the Water Container and/or be distributed throughout the RV via the duct work by the Circulation Air Fan*.

* If the Combi is strictly in water heating mode and not furnace mode, the Circulation Air Fan will not operate. The purpose of the Circulation Air Fan is to operate while the Combi is in furnace mode to distribute hot air throughout the RV via the ducting system. However, it'll also act as a cooling device for the Combi in the event of an overheat situation in any operational mode.

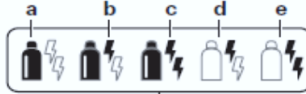
CP Plus - Functions



Adjust room temperature - Range: 40-86°F (5-30°C)



Select energy mode



- a) LP gas
- b) MIX 1* - Electricity 850W + Gas
- c) MIX 2* - Electricity 1700W + Gas
- d) EL 1* - Electricity 850W
- e) EL 2* - Electricity 1700W

*Truma Combi eco plus and comfort plus only



Set clock to current time



Set time switch
Set a start and end time for room temperature, water temperature, energy mode, and fan speed set points.

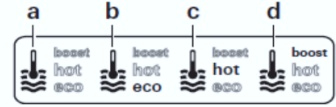


Settings

- Index** - Show version number of connected device
- Bright** - Adjust backlighting
- Lang** - Adjust language
- 12-24h** - 12/24 hour mode
- Temp** - °F or °C
- Offset** - Calibrate temp offset
- Pr set** - Factory reset



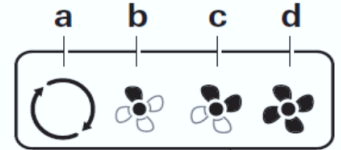
Adjust water temperature



- a) **Boiler** - Hot water generator is on. Icon flashes until desired temperature is reached.
- b) **eco** - Water temperature is 104°F (40°C)
- c) **hot** - Water temperature is 140°F (60°C)
- d) **boost** - Boiler content is heated quickly (boiler priority) for up to 40 minutes. The water temperature is then kept at the higher level (about 144°F (62°C) for two subsequent heating cycles. When the water temperature is reached, the room is heated again.



Select fan speed



- OFF** - Fan is switched off (If furnace mode OFF)
- a) **VENT** - Circulating air (If furnace mode OFF)
- b) **ECO** - Low fan speed
- c) **HIGH** - High fan speed
- d) **BOOST** - Fast room heating. Available if the difference between the selected and current room temperature is > 18°F (10°C)

CP Plus - Tips & Tricks

Status Line:

When the Combi is actively heating to satisfy room temperature or hot water set-points, the icon above it (flame for room temp/thermometer for water temp) will flash. Once the set point has been satisfied, the icon will remain solid. This is an easy way to tell whether a tank of hot water is available.

Settings/Time Display/Errors:

- In an idle state, this line will display the current time if it has been set.
- If the Combi experiences a malfunction or warning, a code will illuminate where:
(W) = Warning (Combi may still work)
(E) = Error (Combi will lock out)
(Numbers) = Error Code
(H) = Heater (Combi)

An error code will also be accompanied by a icon.

Warning/Error Icon:

Any time the Combi experiences a Warning or Error situation, this icon will illuminate. To reset the error, press the rotary dial to access the home screen and toggle over until this icon is flashing. Press again and the Combi will reset itself and attempt to operate again. If the cause hasn't been remedied, the Combi will issue the Warning or Error again.

Time Switch Enabled:

Time Switch (programmed by selecting identical icon in bottom left hand corner of CP Plus home screen) allows the end-user to program room temperature, hot water temperature, fuel source and fan speed at a selected Start and End time when this feature is in the **ON** position. When this icon is illuminated, the CP Plus will follow this programming every day at the selected Start and End times until this feature has been turned **OFF**.

Power Supply Display:

When a 120VAC power supply is available, this icon will be displayed. If the Combi does not detect 120VAC, this icon will not illuminate. **Combi Eco Plus and Comfort Plus only**

Rotary Dial/Select Button

Press this button to gain access to the CP Plus home screen. From there, toggle between different menu items and set points by turning clockwise and counterclockwise. To select a set point, the button must be pushed for the CP Plus to recognize the selection.



Common Error Codes

#	Flashcode	Error	Error Info	Action
4	ssss, slss	Current for combustion air motor too high	Combustion air motor, cable harness, or PCB fault	Go to Blue Pages: Check Combustion Air Motor, then PCB
5	ssss, slsl	Current for combustion air motor too low	Combustion air motor, cable harness, or PCB fault	Go to Blue Pages: Check Combustion Air Motor, then PCB
6	ssss, sls	Current for combustion air motor too high	Combustion air motor, cable harness, or PCB fault	Go to Blue Pages: Check Combustion Air Motor, then PCB
8	ssss, lsss	Recheck flash code	Electronic fault – Failure in PCB	Restart heater, replace electronics
10	ssss, lsls	Plausibility of Combustion Air Sensor	Combustion Air Sensor outside of tolerance range – sensor or harness	Go to Blue Pages: Check Combustion Air Sensor
18		Yellow indicator light flashes (9) times	Warm air outlets blocked circulated air intake blocked	Inspect individual outlet apertures, remove air intake blockage.
20	sssl, slss	Plausibility of NTC Water Temperature Sensor	Water Temperature Sensor outside tolerance range – sensor/harness, excessive temp	Allow system to cool Go to Blue Pages: Check WTS
21	sssl, slsl	Plausibility of NTC Room Temperature Sensor	Room Temperature Sensor outside tolerance range – sensor/harness, excessive temp	Allow system to cool Go to Blue Pages: Check RTS
22	sssl, sls	Plausibility of NTC Air Temperature Sensor	Air Temperature Sensor outside tolerance range – sensor/harness, excessive temp	Allow system to cool Go to Blue Pages: Check ATS
24	sssl, lsss	Current for air circulation motor too high	Air circulation motor or PCB fault	Go to Blue Pages: Check Air Circulation Motor, then PCB
25	sssl, lssl	Current for air circulation motor too low	Air circulation motor or PCB fault	Go to Blue Pages: Check Air Circulation Motor, then PCB
26	sssl, lsls	Current for air circulation motor too high	Air circulation motor or PCB fault	Go to Blue Pages: Check Air Circulation Motor, then PCB
45	ssls, llsl	No 120VAC supply to Combi	Fault in 120VAC power supply, WECO manual reset switch engaged	Verify 120VAC supply voltage/engaged GFCI, reset WECO manual reset switch
69	slss, slsl	Current monitoring for air circulation motor with CP Plus – software error	Air circulation motor, CP Plus (before C01.04.01), or PCB fault	Go to Blue Pages: Check Air Circulation Motor, check CP Plus, Check PCB
148	lssl, slss	Overtemperature of the Combustion Air Temperature Sensor	Combustion Air Sensor outside tolerance range – sensor/harness, excessive temp	Allow system to cool Go to Blue Pages: Check CATS

Common Error Codes

#	Flashcode	Error	Error Info	Action
149	lssl, slsl	Overtemperature of the Water Temperature Switch or Air Temperature Switch	Water Temperature Switch or Air Temperature Switch out of range – sensor/harness, excessive temperature	Allow system to cool Go to Blue Pages: Check WECO, Check AECO
150	lssl, slsl	Overtemperature of the Air Temperature Switch or Water Temperature Switch	Air Temperature Switch or Water Temperature Switch out of range – sensor/harness, excessive temperature	Allow system to cool Go to Blue Pages: Check AECO, Check WECO
112	slll, ssss	Combustion Failure: Flame not detected	Flame was not detected during ignition sequence – potential combustion issue (air, fuel, spark)	1) Check On/Off switch in ON position 2) Check supply gas pressure 3) Check condition of exhaust and intake - properly installed, no damage 4) Ensure proper grounding and incoming 12vdc 5) Allow system to cool and restart Go to blue pages: 6) Check ignitor 7) check gas valve 8) Check PCB
121	slll, lssl	Combustion Failure: Flame unstable	Flame unstable during operation – potential combustion issue (air, fuel, spark)	Same steps as #112
122	slll, lsll	Combustion Failure: Flame not detected	Flame was not detected during ignition sequence – potential combustion issue (air, fuel, spark)	Same steps as #112
202	llss, lsll	Combustion Failure: Flame not detected	Flame was not detected during ignition sequence – potential combustion issue (air, fuel, spark)	Same steps as #112
211	llsl, ssll	Combustion Failure: Flame unstable	Flame unstable during operation – potential combustion issue (air, fuel, spark)	Same steps as #112
212	llsl, slss	Combustion Failure: Flame not detected	Flame was not detected during ignition sequence – potential combustion issue (air, fuel, spark)	Same steps as #112
255		CP Plus – Combi communication and/or 12VDC failure	Combi 12VDC supply power inadequate or non-existent or communication failure between Combi and CP Plus	Verify 12VDC supply voltage between 11-15VDC, check CP Plus, Data Cable, CP Plus 1A Fuse

The Blue Pages: 12VDC

Continuity

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

Resistance

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.
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

The Blue Pages: 12VDC

Voltage: Applied

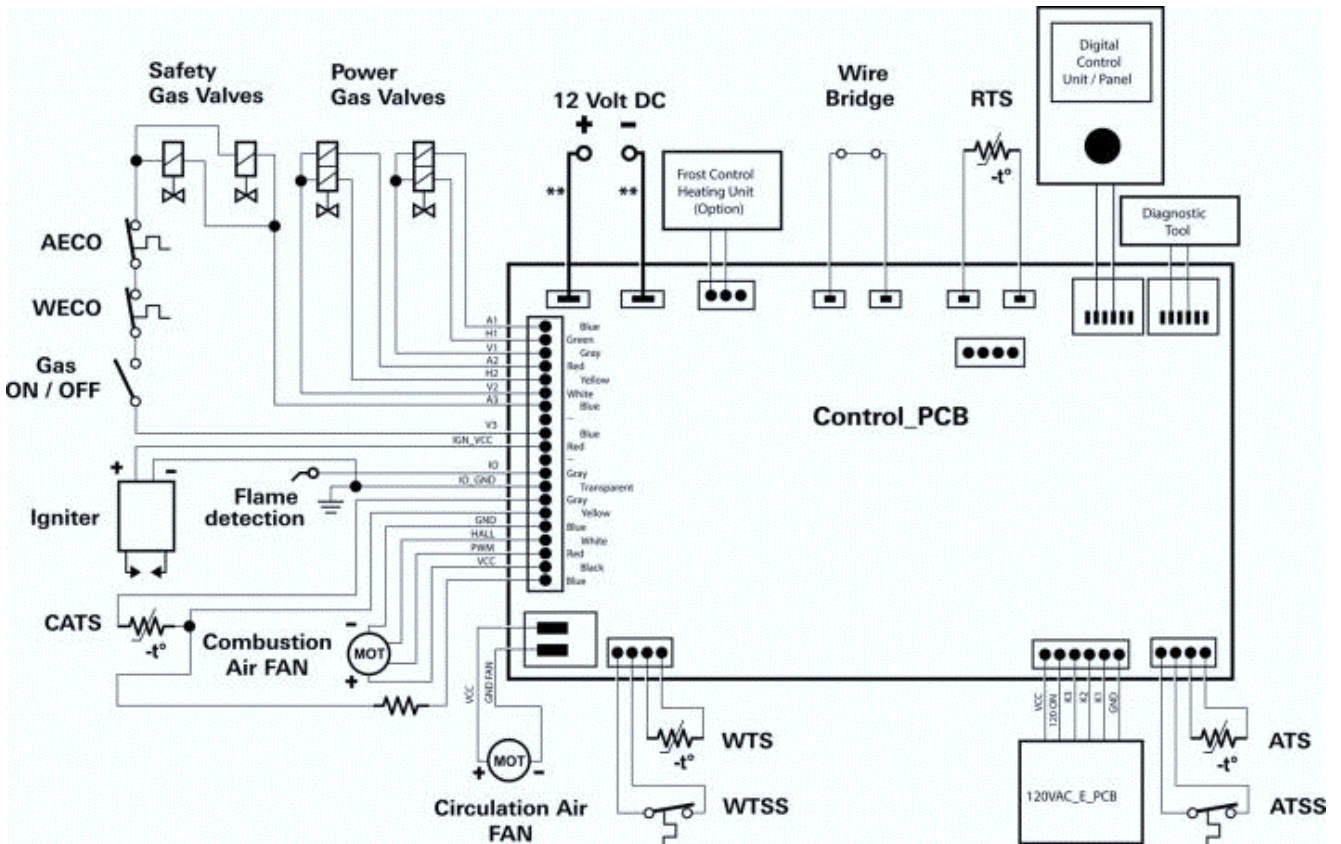
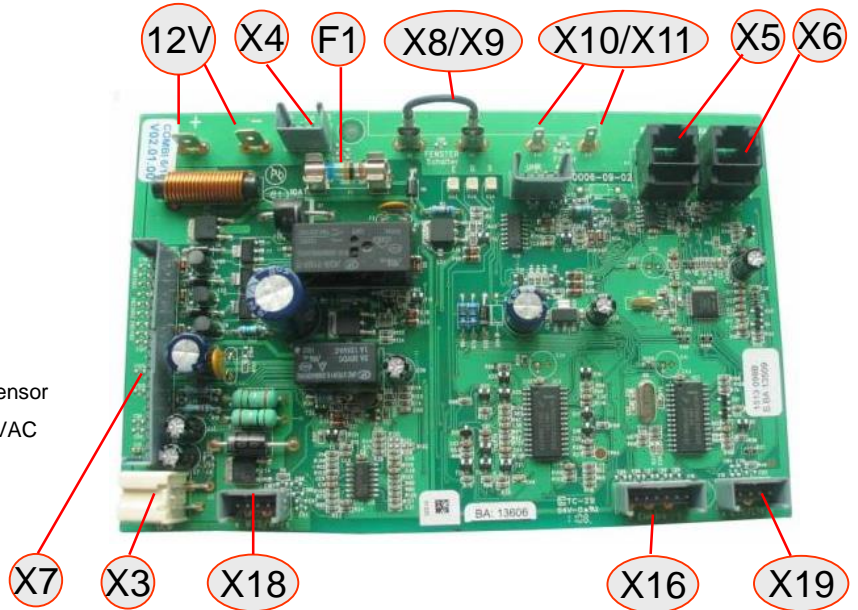
Component	Measuring points	Function/Setpoint	Remark
Ignitor (step 1)	Pull out X7 plug Apply 12 V between X7-11 (+) and X7-10 or 9 (-)	Ignition spark can be heard and seen	If you cannot hear the ignitor ticking, replace the ignitor
Combustion air motor	Pull out X7 plug Apply 12 V between X7-2 (+) and 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

Voltage: Measured

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 ($\Delta T > 2^\circ \text{C}$), 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 ($\Delta T \leq 2^\circ \text{C}$) 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 ($\Delta T > 2^\circ \text{C}$) voltage measurement between X7-15 and X7-16	Minimum voltage 10 V	After start ramp, consistent voltage If not, replace the electronics
CP Plus digital control panel	Voltage measurement on contact pin, 12 VDC supply cable	Minimum voltage 8 VDC	If voltage present, replace control panel. If no voltage measured, replace electronics

12VDC PCB

- **F1:** Input fuse 10 AT
- **12V:** Contact pins, supply cable
- **X3:** D.C. motor connector
- **X4:** FrostControl connector (Euro only)
- **X5:** Control panel connector
- **X6:** Diagnostics device connector
- **X7:** Cable harness connector, 12VDC
- **X8/X9:** Contact pins, cable bridge
- **X10/X11:** Contact pins, room temperature sensor
- **X16:** Cable harness connector, 12VDC/120VAC (Connection for 120VAC electronics)
- **X18:** Water system sensor connector
- **X19:** Air system sensor connector



The Blue Pages: 120VAC

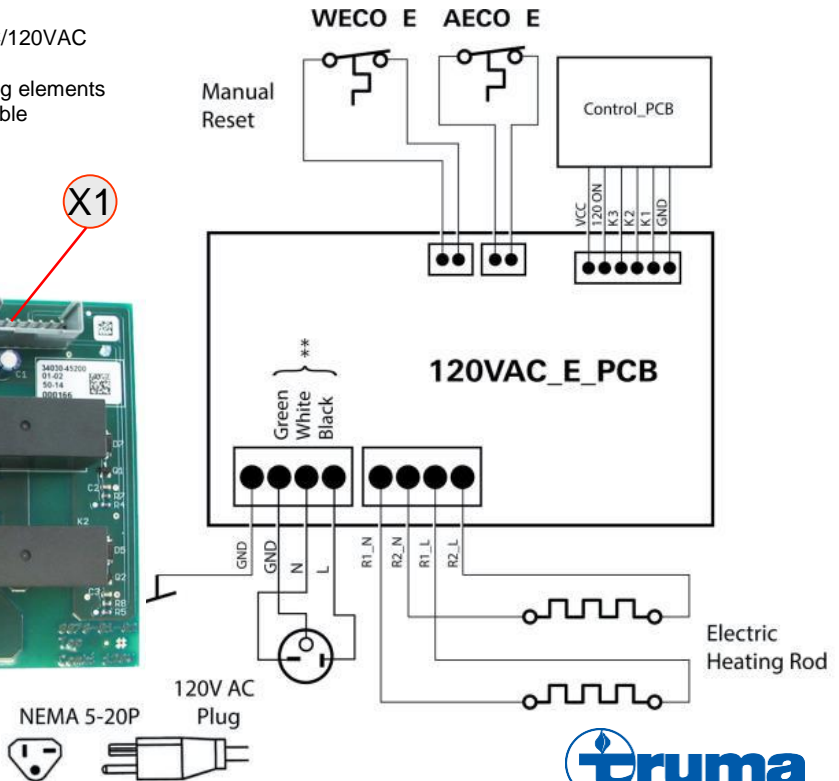
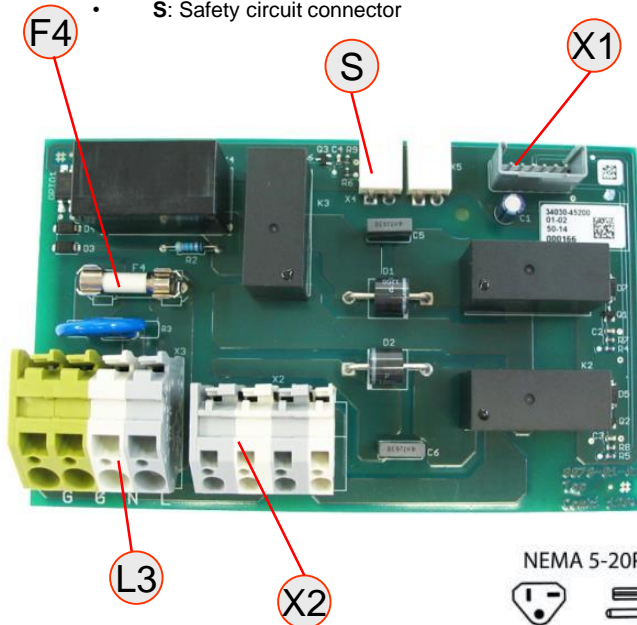
Continuity

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

Voltage: Measured

Component	Measuring points	Function/Setpoint	Remark
120 V supply cable L3	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

- X1: Cable harness connector 12VDC/120VAC (Connection to 12VDC electronics)
- X2: Cable Harness connector, heating elements
- L3: Connector for 120VAC supply cable
- F4: Input fuse, 10AT
- S: Safety circuit connector



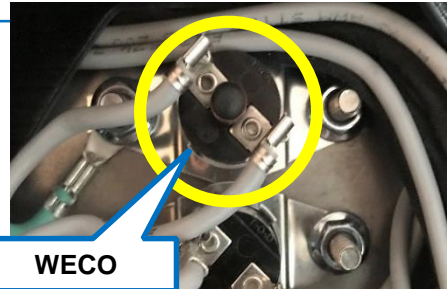
Fault Codes: Further Details

W 45 H

The W 45 H warning code signifies a disruption in 120VAC to the 120VAC PCB on Combi Plus models.

More times than not, the cause of the W 45 H code is a loss of 120VAC supply power to the Combi. This could be the result of a failed 20A fuse at the breaker panel or the fact that the NEMA 5-20P plug from the Combi simply is not plugged into the outlet. A tripped GFCI outlet, if the manufacturer has elected to use one, could also cause this issue.

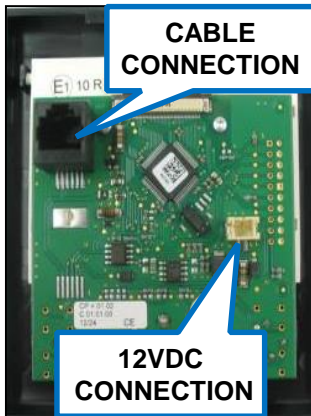
If the Water Temperature Switch (WECO) senses temperature above 185°F (85°C), the manual resettable switch (See Yellow Circle) will activate and issue a W 45 H error code. If this occurs, simply power OFF the Combi and insert a pen or thermostat screwdriver into the access hole on the left side of the PCB cover (See Red Circle). Feeling and hearing a *click* is evidence of a WECO that has been reset.



WECO

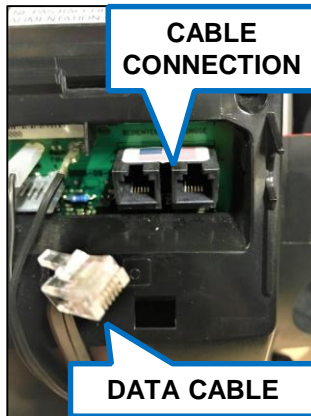


ACCESS HOLE



CABLE CONNECTION

12VDC CONNECTION



CABLE CONNECTION

DATA CABLE

W 255 H

The W 255 H warning code signifies a loss of 12VDC supply voltage to the Combi and/or a communication loss between the Combi and the CP Plus.

Although the CP Plus and Combi are both powered by 12VDC, they are powered separately and do not share the same 12VDC circuit. Communication between the CP Plus and Combi is accomplished through a 6 pin Data Cable, where the color of the wires on each plug match.

A W 255 H warning code will occur when the CP Plus loses contact with the Combi. This could occur due to a disruption in the 12VDC power supply to the Combi (must be between 11-15VDC) or a damaged/disconnected Data Cable between the CP Plus and Combi.

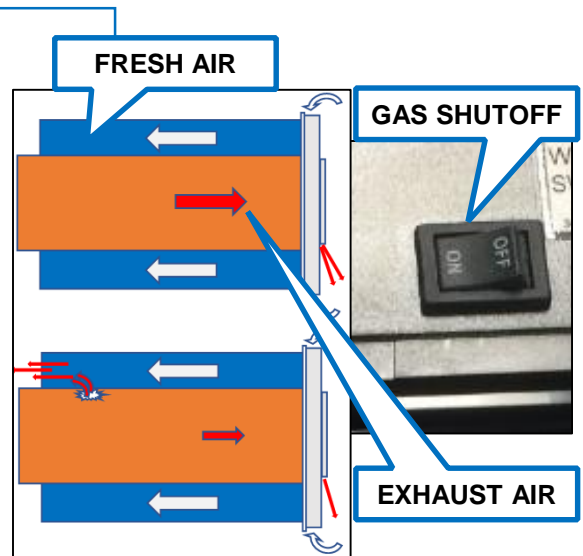
E 112 H, E 121 H, E 122 H, E 202 H, E 211 H, and/or E 212 H

All (6) of these error codes refer to either a "Flame Unstable" or "Flame Not Detected" malfunction, which essentially means that there was a problem with at least one of the three ingredients for combustion (air, fuel, spark). The three main reasons are detailed below.

The Gas Shutoff Switch is an ON/OFF switch that is wired in series between the 12VDC PCB and the Gas Valve. If it is in the OFF position, the Gas Valve will NOT open during the ignition sequence to allow gas into the combustion chamber.

The Combi utilizes a "pipe within a pipe" Exhaust/Fresh Air Intake system to keep the two separate while ensuring a balanced level of combustion. If the interior Exhaust Pipe develops a hole or becomes disconnected, the Exhaust and Intake Air will mix, leading to improper combustion and one of these error codes.

The Combi requires a dynamic supply pressure of 11-13"WC. If the gas supply is outside of this range, or not ON at all, during start up or operation the Combi will issue one of these error codes.

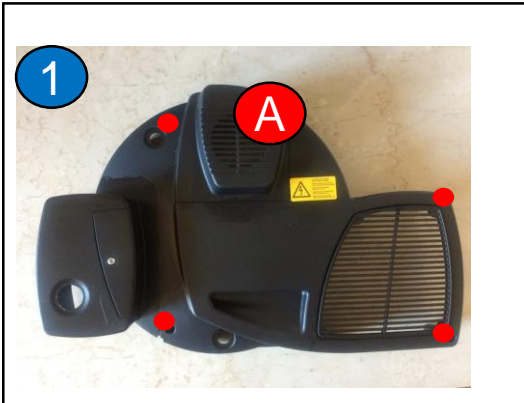


FRESH AIR

GAS SHUTOFF

EXHAUST AIR

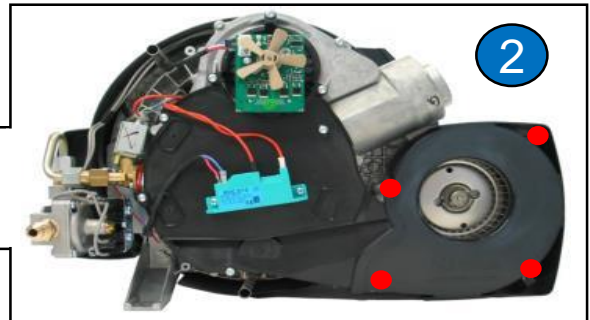
Access Instructions



If access to components such as the Circulation Air Fan must be achieved after proper troubleshooting:

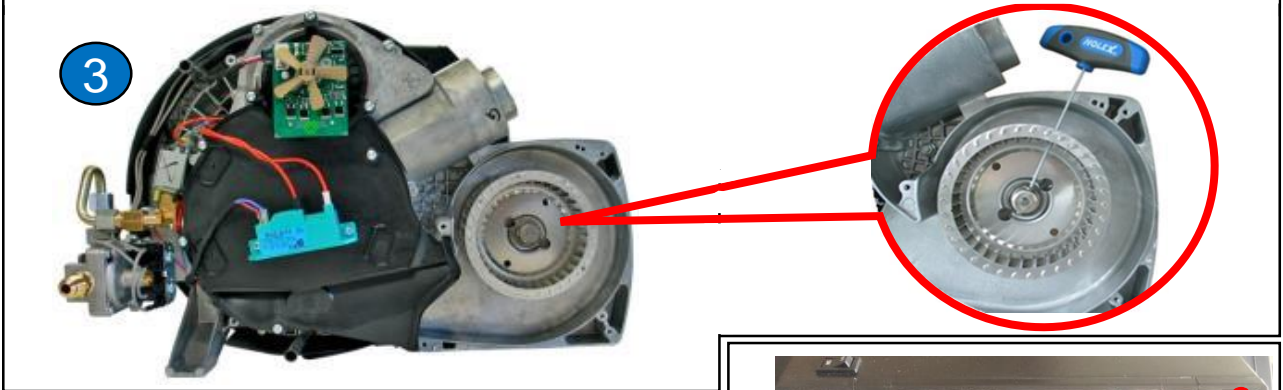
Step 1: Remove (4) labeled T20 Torx screws and remove Combi End Cover.

A) – Access to the Combustion Air Fan can be achieved by lifting off cover plate labeled “A”. Combustion Air Fan is secured into place with (3) T20 Torx screws. Replacement Combustion Air Fan is one entire assembly and comes with new O-ring.

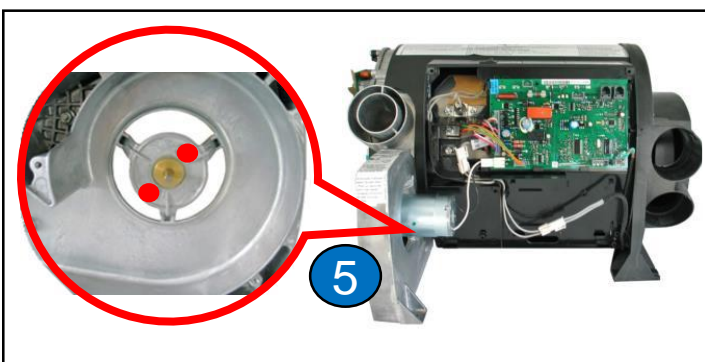


Step 2: Remove Fan Wheel Cover by removing (4) labeled T20 Torx screws.

Step 3: The Fan Wheel must be separated from the Circulation Air Fan Motor Shaft by loosening the 2mm threaded bolt which is tightened to the flat portion of the Motor Shaft. Once reassembled, the end of the Fan Wheel should be flush with the end of the Motor Shaft so that it spins freely without rubbing on the housing before being secured by the 2mm threaded bolt.



Step 4: Remove the PCB Cover by removing the (2) labeled T20 Torx screws. The Cover can then be removed by freeing the (2) clips at the bottom of the Cover by pulling down and away.



Step 5: The Circulation Air Fan Motor can now be removed from the housing by disconnecting the wiring harness to the PCB and removing the (2) labeled Phillips head screws. Replacement screws come with replacement Circulation Air Fan Motor.

Winterization

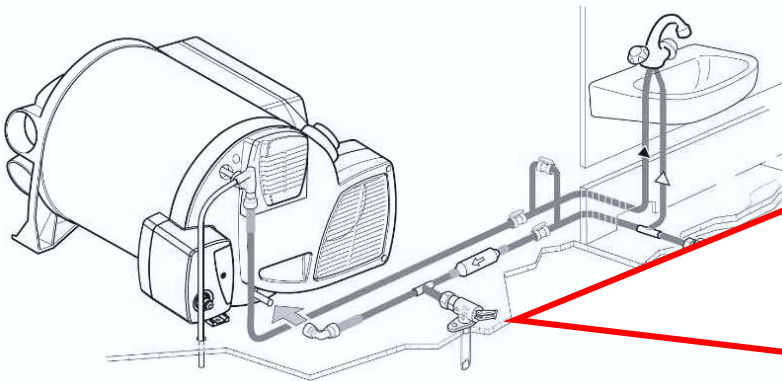
The Combi furnace does not feature a frost protection function. The water container must be drained if the RV will not be used whenever there is a risk of frost as severe damage to the plumbing components and the Combi could occur due to freezing. Damage caused by freezing or an unsuitable winterizing fluid is not covered by warranty.

To make sure that all the water drains properly from the water container, place a big enough vessel underneath the drainage socket of the pressure relief/drain valve (>2.64 gallons/10 liters).

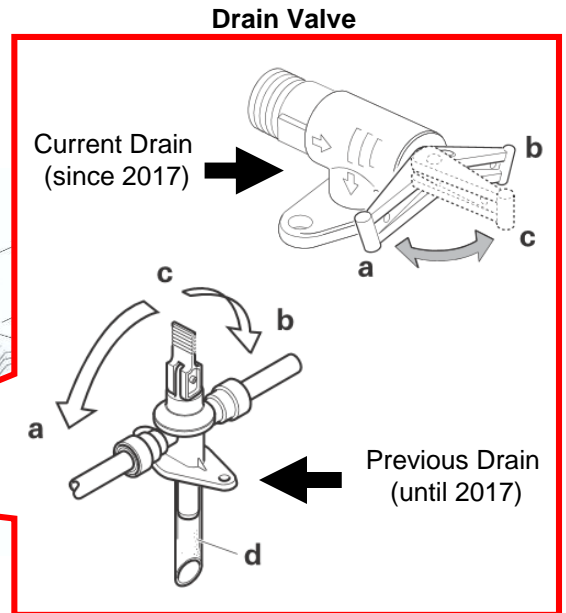
1. Use the main switch or pump switch to switch OFF the power to the water pump assembly.
2. Turn OFF or disconnect the city water connection, if present.
3. OPEN all water release points, e.g. cold and hot water faucets, etc.
4. OPEN the drain valve by moving the lever to position C (see illustration).
5. Leave the drain valve OPEN while the Combi is winterized.

Once all the water is removed, the Combi is winterized.

A Combi that does not completely drain could be evidence of an issue with the Warm Water Connection/Aeration Valve.



Winterizing the RV with Winterizing Fluid



Winterizing the RV with a winterizing fluid is only possible with an installed bypass kit (see example illustration), which is not in the scope of supply, refer to the RV manual.

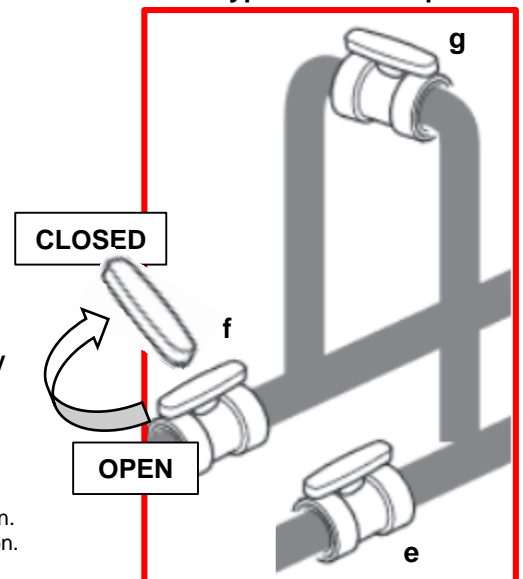
1. Drain the water container (as detailed in Winterization instructions above).
2. Turn the valves of the bypass kit according to the supplier's or RV manufacturer's guidelines.
3. Flush the water system with a suitable winterizing fluid according to the supplier's or RV manufacturer's guidelines.

Bypass Kit Example

NOTE: The illustration to the right is an example of a bypass kit. Bypass kits are not included with Truma systems and is therefore the decision of the installer as to whether a bypass kit is installed in the RV's plumbing system, as well as how it is designed and configured. Always refer to supplier's or RV manufacturer's guidelines to determine proper operation of bypass kit.

To isolate the Truma Combi from the RV plumbing system via Bypass Kit Example once drained:

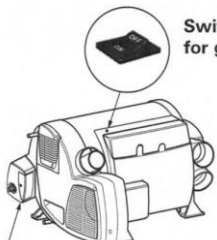
- e. CLOSE cold water inlet valve by turning valve perpendicular to piping direction.
- f. CLOSE hot water outlet valve by turning valve perpendicular to piping direction.
- g. Turn bypass valve to OPEN position.



Combi Test Procedure

Purpose:

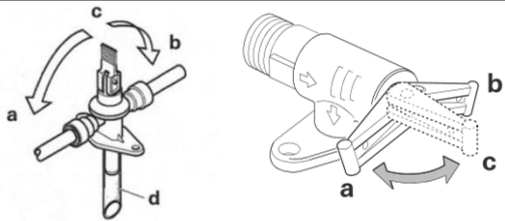
The purpose of this procedure is ensure that the Truma Combi, after being installed in accordance with the applicable manuals and standards, is functionally tested prior to delivery. This test procedure is not meant to test all functions of the system, and does not absolve the manufacturer or service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



Switch for gas shut-off valve

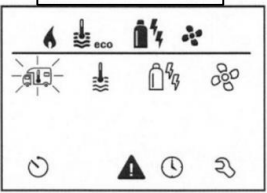
- Ensure that the Gas Shut Off Switch on the top of the Combi is set to the "ON" position.
- Ensure that the gas supply and 110VAC (if available) are both connected and turned on.
- If there is a switch for the 12VDC supply to the Truma Combi, make sure it is turned on.

- Ensure that the Drain Valve is closed (in either the "a" or "b" position).
- Fill the system with water.



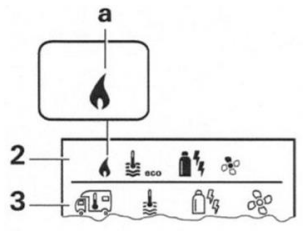
Synchronized

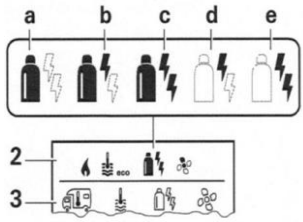
Not Synchronized



- Check that the CP Plus control panel is synchronized with the system.
- If the CP Plus is not synchronized, enter the "Settings" option denoted by the wrench symbol and select the "RESET" option and then select "PR RESET".

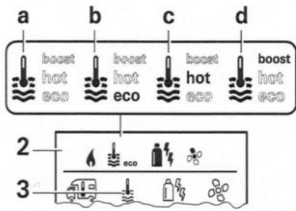
- Select the "Heating Mode" on the CP Plus control panel and turn the knob to the desired heating setting to 86°F (30°C) to ensure that there is a demand for heat.
- Note that if the internal temperatures in the vehicle are above 86°F (30°C) the Combi will not see a demand for heating and the heating test cannot be carried out.



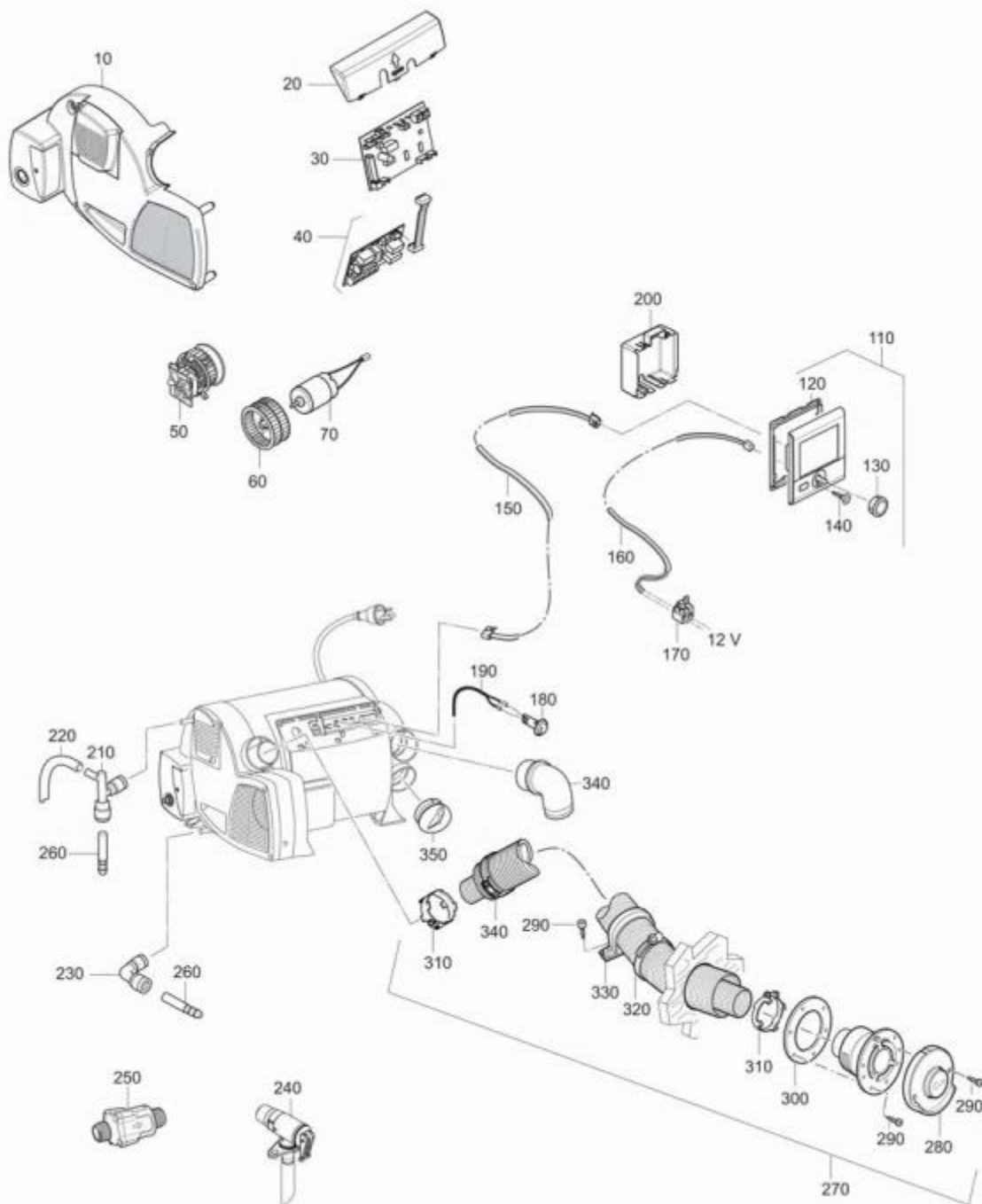


- Select the Power Source as "GAS".
- Run the Combi in this setting for a minimum of 5 minutes and check to see if the flame icon is flashing, indicating that the system is running.
- Change the Power Source from "GAS" to "EL1" (Electric 1) setting "d" and check that the flame icon is still flashing.
- Change the Power Source from "EL 1" to "EL 2" (Electric 2) setting "e" and check that the flame icon is still flashing.
- At this point, check that warm air is coming out of all Warm Air Outlets.

- Select Water Heating Mode "BOOST" (d) on the CP Plus and wait to see that the symbol starts to flashing, indicating that there is a demand for water heating.
- The function test is now complete. Turn off the water supply, LPG, and 110VAC.
- Ensure that the Gas Shut Off Switch remains in the "ON" position.
- Open the Drain Valve (to the "c" position) to drain water from the system.
- A failure to drain the system could result in frost damage, which is not covered under the scope of Truma's Manufacturer Limited Warranty.



Spare Parts & Accessories



Spare Parts & Accessories

Pos. no.	Part number	Description	Information
10	34020-00059	Cover	incl. grill
20	34020-06500	Truma Combi connection cover	
30	34020-00058	PCB Truma Combi comfort/comfort plus	
30	34020-00057	PCB Truma Combi eco/eco plus	
40	34020-00060	Power PCB, 120V	with cable
50	34020-00078	Combustion Air Motor	with round cord seal, screws
60	34000-04700	Fan Wheel – air	incl. threaded bolt
70	34020-61300	Air Circulation Motor DC	
110	47000-00056	Truma CP plus US	
120	34030-28500	CP plus mounting frame	
130	34030-28600	Truma CP plus control knob	
140	10010-41900	CS screw TP 3x6-A2K-H1	
150	36110-03	Control panel cable, 29.5ft (9m)	
160	34030-28700	Connecting cable CP plus	
170	50020-27800	Fuse holder	with fuse 1A
180	34020-00263	Room Temperature Sensor	
190	34000-71900	Cable for Room Temperature Sensor, 13.1ft (4m)	
200	34030-35600	CP plus cover	
210	34020-00178	Elbow fitting with Aeration Valve	for rigid piping Ø 12mm
220	34000-17700	Condensation tube	3ft (0.9m) long
230	34020-00177	Elbow fitting	for rigid piping Ø 12mm
240	70143-18	Pressure Relief Valve kit US	
250	36503-01	Water Pressure Regulator	
260	34030-72600	Adapter Ø 12mm to 1/2in. CTS kit	
270	36230-04	Wall cowl kit CW black	3.3ft (1m) long
270	36230-02	Wall cowl kit CW pure white	3.3ft (1m) long
280	34020-00181	Cowl outer part black	
280	34020-00180	Cowl outer part pure white	
280	34020-00638	Cowl outer part anthracite (dark gray)	
290	34020-00088	Screw / Nut set	
300	34000-10700	Seal set	
310	34020-14200	Exhaust duct clip	
320	39010-61800	Hose clip 70-90	
330	39590-00	Clamp ZRS, Ø 80mm	
340	34091-02	Elbow BGC	
350	34310-02	Blank cover VD-Combi	to close one of the lower warm air outlets of the eco (plus)
Y	34030-25600	Seal set	not illustrated