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Technical Troubleshooting

Steca UGP 5.9

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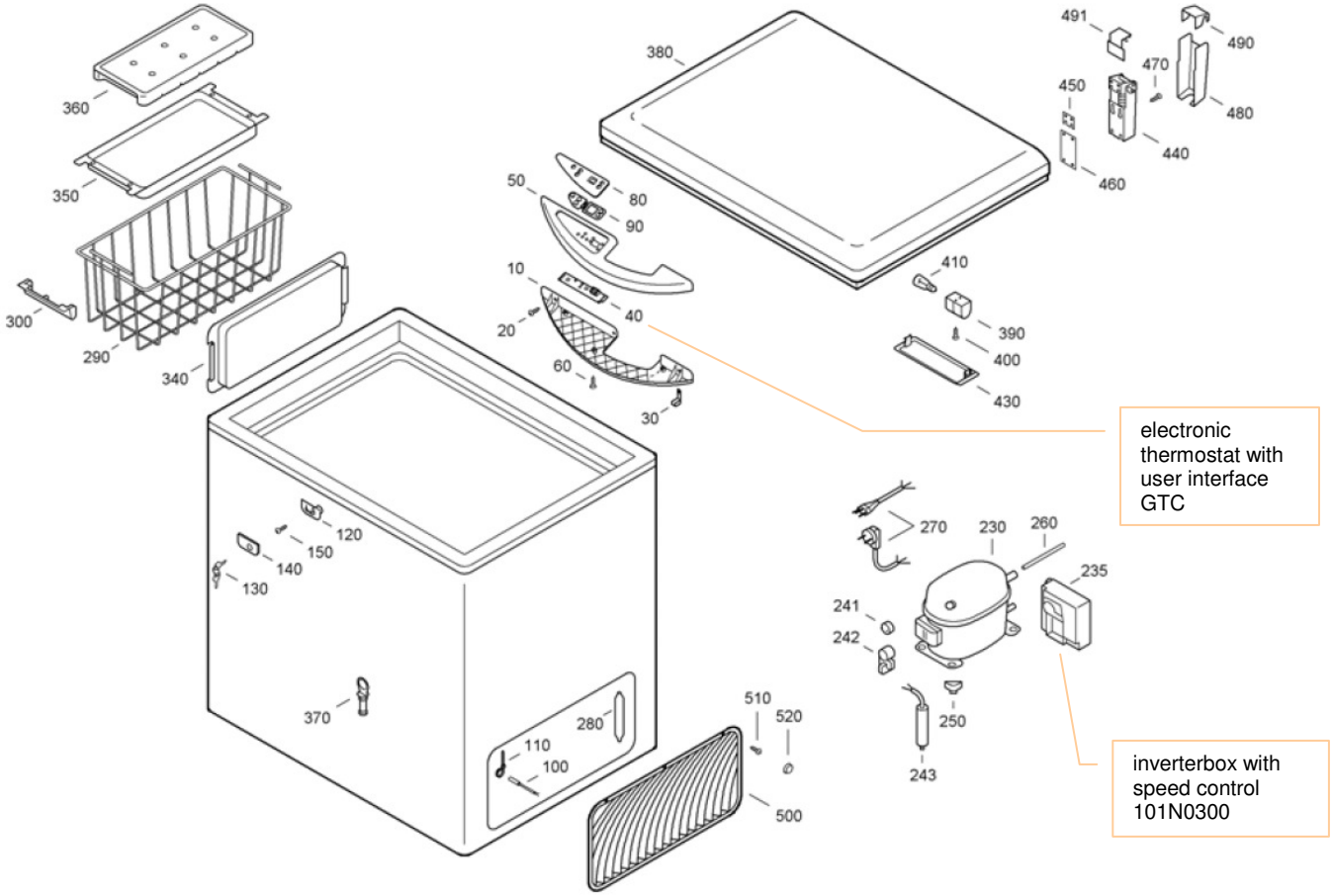
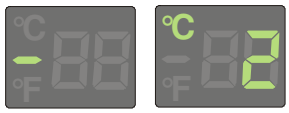
The PF166 is running with extra low voltage. There is no risk during maintenance and testing by high voltage. Nevertheless use isolated tools and a fuse in the battery cable to protect a short circuit of the battery. Please prevent as well ESD.



1. **Check installation**



Please check if the display shows any number or if the Minus-LED is blinking *[40]*. If no display appears check battery connection:
   - polarity
   - broken fuse
   - damaged cable or connector

2. **Battery voltage**

Please check if the battery voltage is higher than the cut-off voltage of the compressor. If the battery voltage is below 10,4V or in between 17,0V and 22,8V the inverter box *[235]* is disconnecting the compressor to protect the battery against deep discharge. So voltage had to be between 10,4V and 17,0V in a 12V system or between 22,8V and 30,5V in a 24V system.

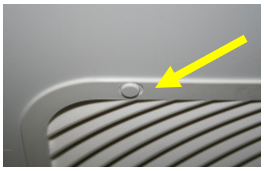
The display *[90]* is already operating if the compressor *[230]* is disconnected by the inverter box *[235]*. If the battery voltage is lower than the cut-of level, the LED connected to the inverter box (between "+" and "D", see topic 5) is flashing one time.

After recharging the battery the compressor *[230]* will start automatically after reaching the cut-in voltage.

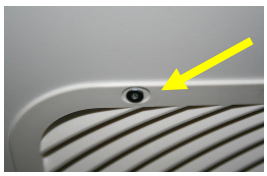
	Cut-off	Cut-in
12V battery	10,4V	11,7V
24V battery	22,8V	24,2

3. Access to inverter and compressor

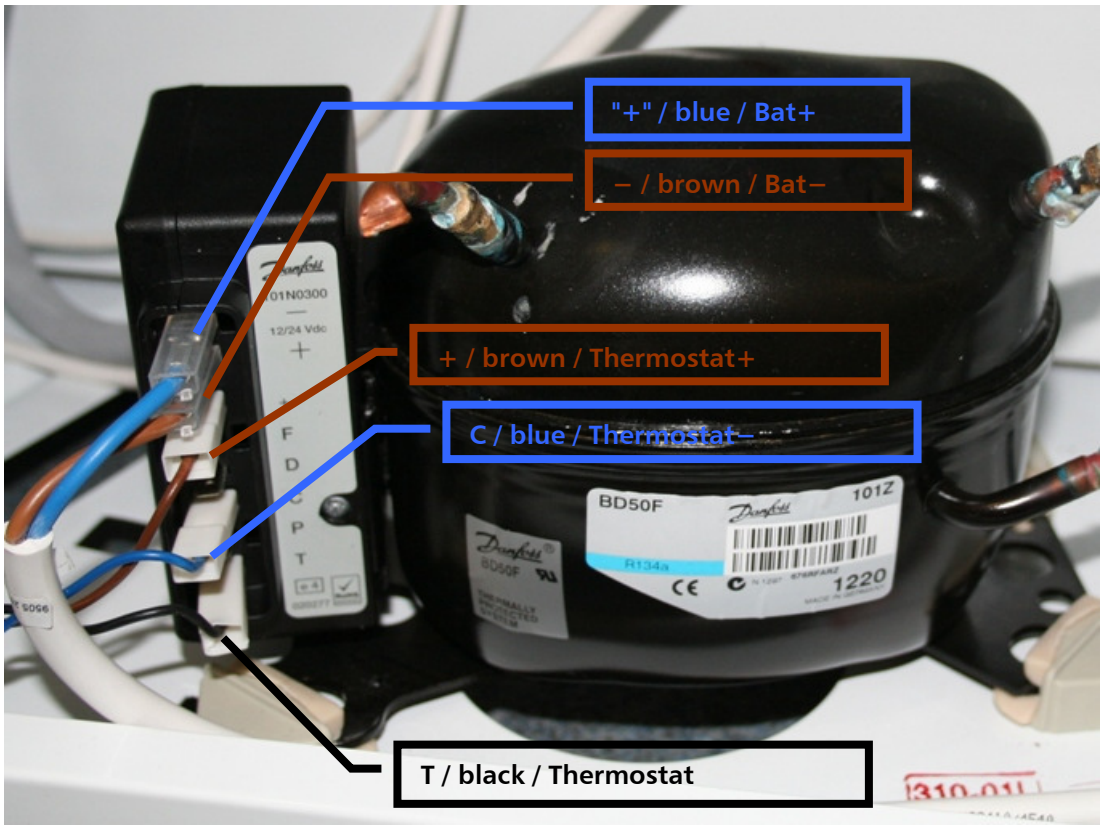
To open the ventilation grille *[500]* on the right side you had first to remove the plastic cover *[520]* from the screws *[510]*.



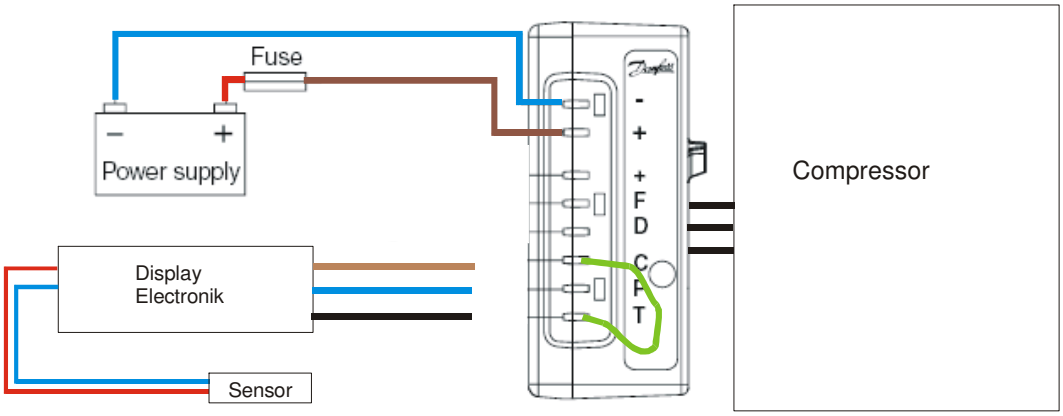
After removing the cover *[520]* you can unscrew with ✱TORX T10 the grille *[500]*



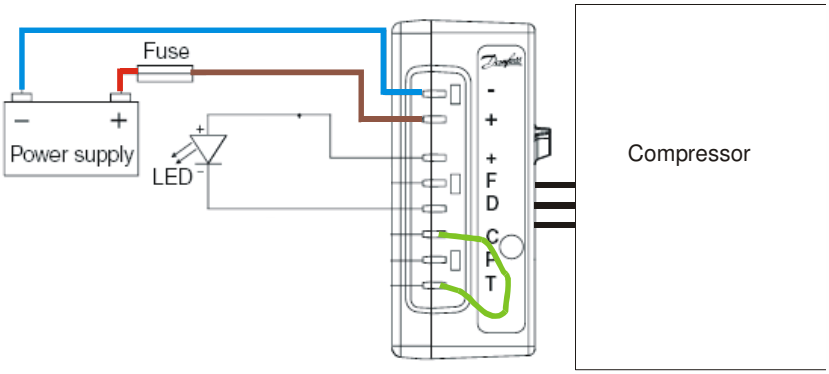
After removing the grille *[500]* you have access to the compressor *[230]* and inverter box *[235]*



4. **Check inverter box** (beside the compressor) ***[235]***
   The signal to start the compressor *[230]* will be activated by a short circuit between "C" and "T". There is no risk of high voltage, sparks or high current. You can use even a not isolated cable. If the thermostat-display-electronic *[40]* failed the compressor *[230]* could be started manually by a short circuit between "C" and "T" of the inverter box *[235]*
   Before short circuiting the terminal "C" and "T" to start the compressor *[230]* manually please disconnect all connectors coming from the display-electronic *[40]*. First brown "+" cable above "F" than the black "T" and blue "C" cable. If the inverter box *[235]* is connected to the battery and if the battery voltage is higher than the cut-off voltage the compressor *[230]* must start suddenly after disconnecting "C" and "T".
   If the compressor *[230]* do not start the inverter or the compressor *[230]* could be damaged



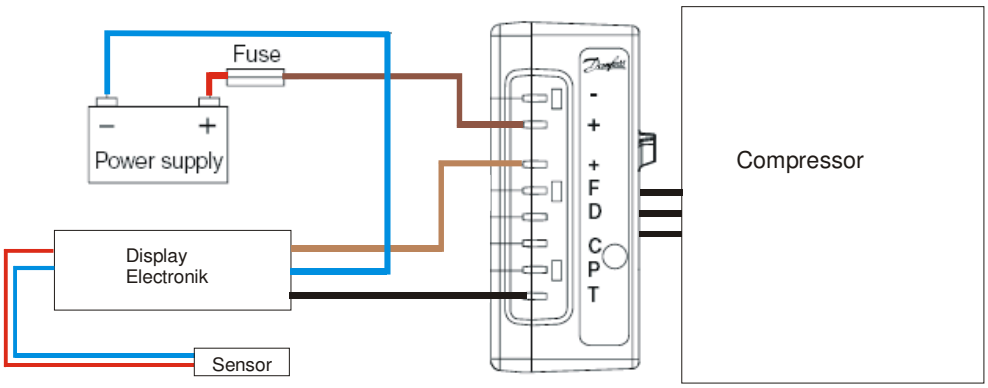
5. **Compressor *[230]***
   If you connect an LED to the "+" terminal above "F" and to the "D" terminal (see picture 2) you could have a feedback if the inverter box *[235]* is operating and some other events are responsible why the compressor *[230]* don't starts. See table.



Operational errors shown by LED (optional)

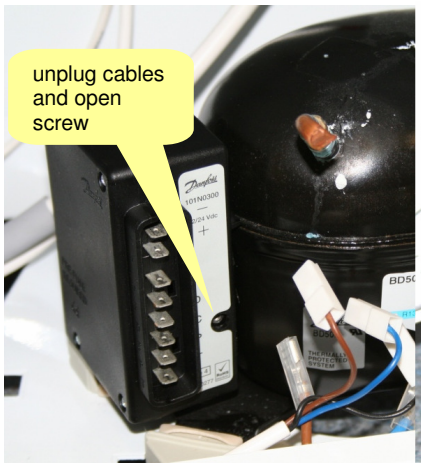
Number of flashes	Error type
5	**Thermal cut-out of electronic unit** (If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	**Minimum motor speed error** (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 1,850 rpm).
3	**Motor start error** (The rotor is blocked or the differential pressure in the refrigeration system is too high (>5 bar)).
2	**Fan over-current cut-out** (The fan loads the electronic unit with more than $1A_{peak}$).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

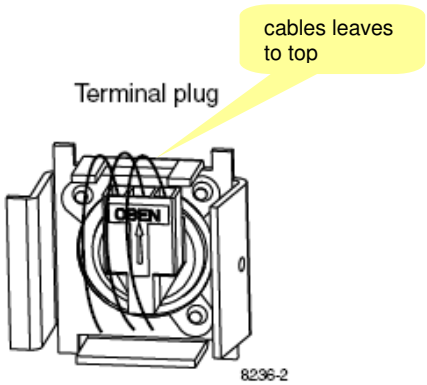
6. **Electronic thermostat with user interface (display and key board) *[40]***
   If the display *[40]* monitors no number or if the Minus-LED is not blinking please disconnect the blue cable "C" on the inverter box *[235]* as well as the other blue cable "-" and connect them together. If the display *[40]* will not show any characters or blinking Minus-LED the inverter box *[235]* is damage.



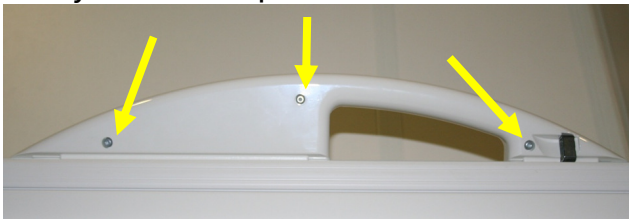
Failed Component	**Compressor [230]**	**Display-Electronic [40]** Integrated in opener	**LED between "+" and "D"** Connected to inverter box
Battery connector or fuse or broken battery cable	Is not running	Not running No blinking Minus LED No display	Off
Compressor	If the compressor doesn't start after short circuiting "C" and "T" the display-electronic is not responsible for the failure	Blinking LED or displaying character	5 thermal cut out 4 motor speed error 3 motor start error
Inverter box	Compressor is not running	Display could be out of order	5 thermal cut out
Inverter box	Compressor is not running	Electronic is connected direct to battery by connecting "C" and "-" together and display is monitoring anything	Off because inverter is not supplied with energy
Electronic	Compressor is off or runs continuously	No display even after testing step 6	
Sensor	Running in safety operation	Display "F4"	

7. **De-installation inverter box *[235]***
   If you identify that the inverter box *[235]* is damaged you can uninstall the box. Therefore please disconnect all cables and open the screw.
   Than you can remove the inverter and disconnect the connector from the compressor





8. **De-installation of display electronic *[40]***
   First you had to open the 3 screws **[60]** at the bottom of the opener. ✱ TORX T15



Than you can open the top *[50]* of the opener to get access to the display-electronic *[40]*

Disconnect the connectors of the temperature sensor on the right side and the connector on the left side and clip out the display electronic *[40]*

If necessary you can unscrew all 3 screws *[20]* of the bottom opener *[10] with* ✱TORX T25