

## Maintenance, Troubleshooting & Repairs

Fault Code	Fault Description	Causes / Repair
— — —	Diagnosis not possible	<ul style="list-style-type: none"> <li>• Adapter cable not connected properly.</li> <li>• Diagnostic connection damaged.</li> <li>• Test ECU. Replace if necessary.</li> </ul>
000	No faults	— —
005	Warning Short circuit in "Burglar Alarm" output	<ul style="list-style-type: none"> <li>• Check connection and / or lead for continuity, short circuit and damage.</li> </ul>
009	ADR / ADR99 shutdown	<ul style="list-style-type: none"> <li>• Switch the heater off and then on again.</li> </ul>
010	Overvoltage cutoff	<p>Overvoltage applied to control box for at least 6 seconds.</p> <ul style="list-style-type: none"> <li>• Disconnect heater / cable harness plug-in connector, start the vehicle engine, measure the voltage. Connector B2, PIN A2 and A3: <ul style="list-style-type: none"> <li>– If the voltage is &gt;15 volt or &gt;30 volt, check the generator regulator and / or the battery.</li> </ul> </li> </ul>
011	Undervoltage cutoff	<p>Undervoltage applied to control box for at least 20 seconds without interruption.</p> <ul style="list-style-type: none"> <li>• Disconnect heater / cable harness plug-in connector, start the vehicle engine, measure the voltage. Connector B2, PIN A2 and A3: <ul style="list-style-type: none"> <li>– If the voltage is &lt;10 volt or &lt;20 volt, then check the fuses, the supply cables, the negative connections and the positive support point at the battery for voltage drop (corrosion).</li> </ul> </li> </ul>
012	Overheating	<p>Overheating sensor signals temperature greater than 120°C.</p> <ul style="list-style-type: none"> <li>• Measure the resistive value of the overheating sensor, connector B1, PIN 2 and 4, for measured values. See page 44. <ul style="list-style-type: none"> <li>– If overheating sensor ok, check connection leads for continuity, short circuit and damage. Vent air from system.</li> </ul> </li> </ul>
014	Possible overheating detected (Temperature difference evaluation)	<p>Difference between measured value in overheating sensor and temperature sensor is too great.</p> <ul style="list-style-type: none"> <li>• Measure the resistive value of the temperature sensor, connector B1, PIN 2 and 4 and connector B1 PIN 1 and 2; for measured values. See page 44. <ul style="list-style-type: none"> <li>– If temperature sensor ok, check connection leads for continuity, short circuit and damage. Vent air from system.</li> </ul> </li> </ul>
015	Too many overheats, Control box is locked	<p>Control box locked due to too frequent overheating (fault code 012 or 014) in succession.</p> <ul style="list-style-type: none"> <li>• Unlock the control box by deleting the fault memory, see pages 16 and 25.</li> </ul>
017	Overheating, Sensor threshold exceeded	<p>Max. temperature exceeded at the overheating sensor (180°C).</p> <ul style="list-style-type: none"> <li>• Check overheating sensor —&gt; fault code 012.</li> <li>• Check control box.</li> </ul>
019	Glow plug 1, Ignition energy too low	<p>Glow plug 1 energy input is too low (&lt; 2000 Ws)</p> <ul style="list-style-type: none"> <li>• Check glow plug for continuity, short circuit and damage —&gt; Fault code 020.</li> <li>• Check control box.</li> </ul>



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020	Glow plug 1, interruption	<ul style="list-style-type: none"><li>• Measure cold resistance of the glow plug at approx. 20°C ambient temperature – connector B1, PIN 7 and 10.</li></ul>
021	Glow plug 1, overload / short circuit downstream of (-)	<ul style="list-style-type: none"><li>• If the values are as follows the glow plug is ok, if the values differ – replace the glow plug.</li></ul>
022	Glow plug 1, short circuit downstream of (+)	<p>Measured value:</p> <ul style="list-style-type: none"><li>• 12 volt – glow plug = 0.42 – 0.6 ohm</li><li>• 24 volt – glow plug = 1.2 – 1.9 ohm</li><li>– If the glow plug is ok, check the lead harness of the glow plug for continuity, short circuit and damage.</li></ul>
023	Glow plug 2, interruption	<ul style="list-style-type: none"><li>• Measure cold resistance of the glow plug at approx. 20°C ambient temperature – connector B1, PIN 11 and 14.</li></ul>
024	Glow plug 2, overload / short circuit downstream of ground	<ul style="list-style-type: none"><li>• If the values are as follows the glow plug is ok, if the values differ – replace the glow plug.</li></ul> <p>Measured value:</p> <ul style="list-style-type: none"><li>• 12 volt – glow plug = 0.42 – 0.6 ohm</li><li>• 24 volt – glow plug = 1.2 – 1.9 ohm</li><li>– If the glow plug is ok, check the lead harness of the glow plug for continuity, short circuit and damage.</li></ul>
025	Diagnostic line fault Heater remains ready for operation	<ul style="list-style-type: none"><li>• Check diagnostics cable for continuity, short circuit and damage – connector B2, PIN B4.</li><li>– if ok, check control box.</li></ul>
026	Glow plug 2, short circuit downstream of (+)	see fault code 023 / 024
029	Glow plug 2, Ignition energy too low	<p>Glow plug 2 energy input is too low (&lt; 2000 W)</p> <ul style="list-style-type: none"><li>• Check glow plug for continuity, short circuit and damage. —&gt; Fault code 023.</li><li>• Check control box.</li></ul>
031	Burner motor, interruption	<ul style="list-style-type: none"><li>• Check the burner motor's connection leads for continuity, short circuit and damage – connector B1, PIN 3, 6 and 9.</li></ul>
032	Burner motor, overload	<ul style="list-style-type: none"><li>• Check burner motor for easy movement by manually rotating the impeller.</li><li>– if not smooth running, remove the blockage.</li></ul>
033	Burner motor, speed error / blocked	<ul style="list-style-type: none"><li>– if ok, check control box / blower unit.</li></ul>
034	Burner motor short circuit downstream of (+) or (-)	
037	Water pump not working	<ul style="list-style-type: none"><li>• Check water pump.</li></ul> <p>Apply voltage to the water pump – connector B1, PIN 12 and 13 (power input = max. 4 A or 2 A)</p> <ul style="list-style-type: none"><li>– If water pump does not rotate, replace water pump.</li><li>– If water pump is ok —&gt; check control box / blower unit.</li></ul>
041	Water pump, interruption	<ul style="list-style-type: none"><li>• Check the water pump's connection and lead harness for continuity, short circuit and damage – connector B1, PIN 12 and 13.</li><li>– If ok, check water pump —&gt; fault code 037.</li></ul>
042	Water pump Overload short circuit	Water pump running dry.
043	Water pump Overload downstream of +	<ul style="list-style-type: none"><li>• Vent heater (water shortage), check water flow rate.</li></ul>

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047	Metering pump Overload short circuit	<ul style="list-style-type: none"> <li>• Check the metering pump's connection and lead harness for continuity, short circuit and damage – connector B2, PIN A1. <ul style="list-style-type: none"> <li>– If ok, check the resistance of metering pump – setpoint value approx. 20 ohm.</li> </ul> </li> </ul>
048	Metering pump interruption	
049	Metering pump Overload downstream of +Ub	
050	Too many attempted starts Control box is locked	<p>Control box locked due to repeated switching on in succession without flame detection (fault code 052).</p> <ul style="list-style-type: none"> <li>• Check fuel supply, exhaust and combustion air system.</li> <li>• Check glow plug → see fault code 019 to 024 / 026 / 029.</li> <li>• Check flame sensor → fault code 064 / 065.</li> <li>• Unlock the control box by deleting the fault memory.</li> </ul>
052	Exceeding of safety time	<p>No flame detected within the start phase. Flame sensor value &lt; 80°C, therefore automatic shutdown because safety time exceeded.</p> <ul style="list-style-type: none"> <li>• Check fuel supply, exhaust and combustion air system.</li> <li>• Check glow plug → see fault code 019 to 024 / 026 / 029.</li> <li>• Check flame sensor → fault code 064 / 065.</li> </ul>
053	Flame cutout in "POWER" control stage	<p>Heater ignited (flame detected) and signals flame cutout during a power stage.</p> <ul style="list-style-type: none"> <li>• Check fuel quantity, blower speed, fuel supply, exhaust and combustion air system.</li> </ul>
054	Flame cutout in "HIGH" control stage	<ul style="list-style-type: none"> <li>• Check flame sensor → fault code 064 / 065.</li> </ul>
055	Flame cutout in "Medium" control stage (D 8 W / D 10 W) "Medium1" control stage (D 12 W)	
056	Flame cutout in "Medium 2" control stage (D 12 W)	
057	Flame cutout in "Medium 3" control stage (D 12 W)	
058	Flame cutout in "LOW" control stage	
059	Too rapid rise in water temperature	<ul style="list-style-type: none"> <li>• Vent air from system, check water flow rate.</li> <li>• Check temperature sensor → fault code 060 / 061</li> </ul>
060	Temperature sensor interruption	Temperature sensor signals temperature value outside the measuring range.
061	Temperature sensor short circuit	<ul style="list-style-type: none"> <li>• Measure the resistive value of the temperature sensor, Connector B1, PIN 1 and 2; for measured values. See page 44. <ul style="list-style-type: none"> <li>– If temperature sensor ok, check connection leads for continuity, short circuit and damage.</li> </ul> </li> </ul>
064	Flame sensor interruption	Flame sensor signals temperature value outside the measuring range.
065	Flame sensor short circuit	<ul style="list-style-type: none"> <li>• Measure the resistive value of the flame sensor – connector B1, PIN 5 and 8; for measured values. See page 45. <ul style="list-style-type: none"> <li>– If flame sensor ok, check connection leads for continuity, short circuit and damage.</li> </ul> </li> </ul>



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071	Overheating sensor interruption	Overheating sensor signals temperature value outside the measuring range. <ul style="list-style-type: none"><li>• Check overheating sensor -&gt; fault code 012.</li></ul>
072	Overheating sensor short circuit	
074	Overheating detection hardware is defective, operating lock-out	<ul style="list-style-type: none"><li>• Control box is defective. Replace control box / blower unit.</li></ul>
090	External reset	<ul style="list-style-type: none"><li>• Control box reset by external interference voltage. Check voltage supply, e.g. battery, leads, generator, fuses.</li></ul>
091	Internal reset	<ul style="list-style-type: none"><li>• Internal control box fault, replace control box / blower unit.</li></ul>
092	ROM error	
093	RAM error, at least one RAM cell is not working	
094	EEPROM error, checksum error within the area of the operating data, diagnostic parameters or calibration values	
095	Invalid data record, checksum error	
096	Internal temperature sensor is defective / ECU too hot	
097	Internal device error	
098	Main relay is faulty	
099	Too many resets, operating lock-out	