BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
1.1	On	Vehicle speed sensor - not plausible or absent signal	Speed indication on speedometer may be failing. Light defect with high speeds.	Road test with IWT-IT2000 Read parameters Check wiring, connections and involved components	If the speed value read on IWT -IT2000 is fixed although the vehicle speed is varying, there is a communication fault between sensor and ECU. Should signal be missing, Cruise Control can be activated also at low speeds (operation according to PTO parameters) since the ECU does not detect that the speed threshold discriminating between PTO and Cruise Control modes have been exceeded.
1.1	On	Vehicle speed signal (section between speedometer and ECU) shorted to positive orto ground	Faulty CRUISE CONTROL/ PTO Light defect with high speeds.	Road test with IWT-IT2000 Check plausibility between speedometer indication and speed read by IWT-IT2000 Check wiring, connections between speedometer and ECU and involved components	If the speed value read on IWT -IT2000 is fixed although the vehicle speed is varying, there is a communication fault between speedometer and ECU.
1.3	Off	Non-plausibility of CRUISE CONTROL/PTO push buttons	Faulty CRUISE CONTROL/ PTO	Read parameters with IWT-IT2000to detect the faulty push button Check wiring between steering column stalk and ECU, connections and control push button	
1.4	Blinking	Accelerator pedal potentiometer shorted to positive or to ground, or excessive accelerator pedal voltage or potentiometer failure.	Power reduction. 1500 rpm accelerated idling	Read parameters with IWT-IT2000. Check wiring, connections and components	Should it be impossible to accelerate using the pedal, drive using the Cruise Control push button after disconnecting the speed sensor.

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1.5	Off	Clutch switch: not plausible or absent signal.	Faulty CRUISE CONTROL/ PTO Or, when depressing the clutch pedal with CRUISE CONTROL/PTO on, engine comes up to peak rpm Light defect at gear shifting.	Depress completely the pedal clutch and read state parameters on IWT-IT2000. If failure persists, check wiring, connections and proper switch assembling	If check is OK, failure could be due to poor clutch activation (it is possible to shift gears without activating the switch) If the clutch signal is absent, Engine test cannot be performed.
1.6	On	Brake switches: not plausible signals between primary and secondary	Possible stop light malfunctioning. Faulty CRUISE CONTROL/ PTO	State parameters Wiring, connections, switches	Check proper pedal switch assembling (they must activate at the same time)
1.7	Off	Brake/accelerator pedal plausibility: brake and accelerator activated at the same time	Engine speed comes down to idling	Read parameters on Modus IWT-IT2000, check whether accelerator pedal potentiometer signal sets to zero when releasing, otherwise it is possible that the driver has depressed brake and accelerator at the same time.	If the brake is activated with the accelerator depressed, engine runs idle until releasing the brake to enable vehicle stop even if the accelerator pedal is locked in intermediate position. It is however possible to accelerate although the brake pedal is depressed without activating safety strategies.
1.8	Off	EDC lamp shorted or with open circuit	The EDC indicator light fails to come on when turning the key ON, or it always stays on even with the key turned OFF	Check component wiring connections	The functionality of the indicator light is of vital importance for the system's operation and integrity. Sensitize the user to verify that the indicator light works properly with every ignition (if there are no faults in memory, it has to turn on for 2 sec. and then go out).

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1.9	Off	Air-conditioning com¬ pressor control contactor coil shorted to conditioning earth or circuit open.	In case of open circuit at 8a pin, also 2.7, 2.8 and 2.9 are recorded Faulty conditioner com¬ pressor	Measurable relay parameters Check wiring, connections and relay	
2.1	Blinking	Circuit open, shorted to earth or shorted to posi¬ tive of water temperature sensor, the fuel tempera¬ ture is used instead	Difficult starting cold Engine cooling fan always on Power reduction (and noise since pre-injection is not ef¬ fected)	Reading parameters on Modus IWT-IT2000 Checking wiring and connector of watertemp. sensor, sensor replace¬ ment	The fan comes on with fuel temperature = 20 °C If the water and diesel temp. are the same, the substitution value is active.
2.1	Blinking	See 2^{s} Section: "The en¬ gine fails to start"	See 2^{s} Section: "The engine fails to start"	See 2^{s} Section: "The engine fails to start"	See 2^{s} Section: "The engine fails to start"
2.2	Off	Intake manifold air tem¬ perature sensor short to positive or to ground, or circuit open.	Light performance reduction at cold, light smoke when ac¬ celerating with warm engine, 3.9 indication at the same time and smoke at starting. Smoke at starting and when accelerating at high speed with warm engine	Read parameters on Modus IWT-IT2000. Check wiring and component.	40°C airtemperature fixed substitution value is set; glow plug control as a function of air temperature not operating. Flame start is however performed if water or fuel temperature sensors indicate < 0 °C and is deactivated when reaching 0° C
2.3	On	Fuel temperature sensor short to positive or to ground, or circuit open.	If the electric failure depends on pin 30 see also 2.1 Difficult cold starting.	Read parameters on Modus IWT-IT2000. Check wiring, connections and component.	Water temperature is adopted as substitution value. Should also this signal be missing, 40 °C fixed value is adopted.

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2.4	Blinking	Air turbo charging pressure sensor on intake manifold shorted to earth, circuit open or shorted to positive or supplied by current exceeding the minimum or maximum limit	Puff of smoke on acceleration VGT: reduced power Smoke on acceleration	Reading parameters on Modus IWT-IT2000. Checking wiring and component	
2.5	Off	ECU built-in atmospheric pressure sensor short to ground orto positive orcir-cuit open.	Black smoke on vehicles with EGR (not excluded in height)	Read parameters on Modus IWT-IT2000. Contact Help Desk and comply with its instructions to replace the ECU, if required	The pressure value being used as substitution value is the last valid value recorded by ECU
2.7	Blinking	Fuel motor pump contactor shorted to positive	Batteries discharge Early deterioration of the motor pump The fuel motor pump is always active even with the engine turned off	Active diagnosis with Modus-IWT-IT2000 Checkthe wiring, connections and component	It is possible to hear the noise of the pump turning continuously, even with the key off.
2.7	Blinking	Coil of contactor for fuel motor pump shorted to earth or with open circuit	The engine cuts out or fails to start	Active diagnosis with Modus-IWT-IT2000 Check the wiring, connections and component	

BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
2.7	Blinking	Fuel motor pump contactor shorted to positive	Early deterioration of the motor pump Battery discharges	Active diagnosis on status parameters with Modus-IWT-IT2000 Status parameters Check wiring, connections and component	It is possible to hear the noise of the pump turning continuously, even with the key off
2.8	Off	Fuel filter heater contactor shorted to positive — the heater is always on even with fuel temperature > 5°C	Battery discharges	Active diagnosis with Modus-IWT-IT2000 Check the wiring, connections and component	
2.9	On	Fan electromagnet shorted to positive	Increased fuel consumption	Active diagnosis with Modus-IWT-IT2000 Check the wiring, connections and component	The fan is always on (with engine running)
2.9	On	Contactor coil shorted to earth or circuit open	Overheating of the engine and consequent possible limitation on power Engine cooling fan doesn't work	Active diagnosis with Modus-IWT-IT2000 Check the wiring, connections and component	
2.9	On	Fan contactor coil shorted to positive	Increased fuel consumption Engine cooling fan always on even with engine cold	Active diagnosis with Modus-IWT-IT2000 Check the wiring, connections and component	

BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
3.1 or 3.2 or 3.3 or 3.4	Blinking	Injector unbalanced	Possible irregular rotation and smokiness. EDC indicator light blinking from idling to approximately 1300 rpm	Engine test with Modus-IWT-IT2000 Replacement of defective injector, if any	The control unit must modify the signal to the relevant injector (Cylinder Balancing) too far past the normally expected value
3.1 or 3.2 or 3.3 or 3.4	Blinking	If not linked to 5.1 - 5.2 - 5.3 - 5.4, flow-limiter intervention due to pressure loss downstream the rail towards the involved cylinder	Engine running with 3 cylinders	Check for leaks outside injector pipes or inside the injector	Do not switch off the engine since it will restart only after having removed the failure
3.5	Off	Battery voltage too low	Accelerated idling up to 1300 rpm with released pedal	Battery test with IWT-IT2000 Perform suitable checks on voltage regulator and batteries	
3.5	Off	Battery voltage too low	Engine switching off or not starting	Battery test. Check battery, terminals, wiring, alternator and voltage regulator	Engine off if battery voltage < 6,5V
3.6	Off	Starter heater indicator lamp shorted to positive or with open circuit	Indicator light always off. Cold starting difficult	Active diagnosis with Modus-IWT-IT2000 Check the wiring and component	The driver doesn't wait for pre-heating, even at low ambient temperatures, as there is no indication from the indicator light
3.6	Off	Starter heater indicator lamp shorted to earth	Starter heater indicator light always on	Active diagnosis with Modus-IWT-IT2000 Check the wiring, connections and component	Pre-heating works, but with cold starting there is no indication on when to start the engine because the lamp stays on.

BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
3.7	Off	Starter heater glow plug contactor shorted to earth	Possible destruction of the starter heater due to overheating because it is always supplied Battery discharges	Active diagnosis with Modus-IWT-IT2000 Check the wiring, connections and component	
3.8	Off	Starter heater solenoid valve contactor coil shorted to earth	3.9, the battery can quickly discharge. Cold starting difficult Smoke on starting	Active diagnosis with Modus-IWT-IT2000 Check the wiring, connections and component	The solenoid valve is always activated, the fuel passes continuously through the glow plug in the intake manifold
3.8	Off	Starter heater solenoid valve contactor coil shorted to positive or with open circuit	If shorted to positive 3.9, smoke 1.5 - 1.6 - 1.3 - 2.1 - 2.2 - 2.3 - 3.6 if the electric trouble is correlated to the common earth of the component involved Cold starting difficult	Active diagnosis of the contactor Check the wiring and component	
3.9	Off	Glow plug solenoid short to ground	Smoke, noise, fuel smell and faulty engine performance Fuel consumption increase	Active diagnostic Check wiring, connections and component.	Solenoid valve always open, with key to ON fuel flows continuously into intake manifold

BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
4.4	Blinking	Booster pressure too high, too low or too different from the provided value (for mechanical locking)	4.5 Possible consumption increase due to exhaust back pressure Early turbine wear Power reduction Smoke when accelerating (due to air excess or lack)	VGT test Read parameters on Modus IWT-IT2000. Check VGT mechanism movement Check VGT actuator Check wiring Check VGT pneumatic control circuit	Mechanism locked partially/completely closed or open Or VGT solenoid valve short to positive or to ground
4.5 VGT only	On	VGT actuator short to positive orto ground orcir-cuit open	4.4 and power reduction (and noise since pre-injection is not performed) Smoke when accelerating (due to air excess or lack)	VGT test Check wiring, connections and component.	If wiring to pin 8a short to positive or open, the following are also faulty: - fan control - VGT control - 3rd pumping element cut-out - pressure regulator - EGR - conditioner compressor - fuel motor pump
5.1 5.2 5.3 5.4	Blinking	Corresponding cylinder injector shorted to positive	3.1- 3.2 -3.3 -3.4 The engine runs on 2 cylinders	Engine test Wiring - connections — electrical part of relevant injector	The engine turns only with pairs of cylinders (2 and 3 or 1 and 4) After turning off and back on again the engine turns with 3
5.1 or 5.2 or 5.3 or 5.4	Blinking	Injector electrical part short to ground or circuit open	3.1 - 3.2 - 3.3 - 3.4 Engine running with 3 cylinders	Engine test. Check wiring, connections and component.	

BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
5.7 or 5.8	Blinking	Power stage of cylinders 1 and 4 or 2 and 3 (in control unit) defective	3.1 - 3.2 - 3.3 - 3.4 The engine runs on 2 cylinders	Delete fault memory and try again If the error remains, call the Help Desk and follow their instructions to replace the control unit, if necessary.	It might happen if the outer casing of the control unit has been shorted with battery + (accidentally with a spanner, etc.)
6.1	Blinking	Flywheel sensor: signal missing or not plausible	Difficult starting with warm engine, starting impossible with cold engine Power reduction (and noise since pre-injection is not performed)	Read parameters on Modus IWT-IT2000. Check wiring, connections and sensor assembling	Should flywheel signal be missing, camshaft sensor signal is adopted
6.2	Blinking	Camshaft sensor: signal missing or not plausible	Difficult starting with warm engine, starting impossible with cold engine Power reduction	Check wiring, connections and sensor assembling	Should camshaft signal be not good, flywheel sensor timing signal is adopted
6.4	Off	The engine has over revved, probably driven, or: crankshaft sensor signal (in this case, signaling error 6.1)	If the over-revving occurred when driven, no reaction perceptible by the driver (other than the indicator light blinking)	Data saved, verify the duration and frequency of the over-revving Delete the fault memory	Sensitize the driver about the correct use of the vehicle

BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
8.1	Blinking	Excessive current to regulator - injectors with blow-by at end of lifetime, leaks from pressure relief valve, regulator locked open, 3rd pumping element cut-out always powered, high pressure pump breakage, rail breakage or pipe breakage between injection pump and rail	Engine off if actual pressure is lower than a certain value with respect to target pressure. Power reduction Noise increase since pre-injection is not performed	Visually inspect absence of fuel leaks from high pressure pipes and rail. Check pressure relief valve tightness. Check wiring and regulator coil resistance. If also 8.4 is displayed or injector and pressure relief valve malfunctioning can be excluded. Check 3rd pumping element cut-out wiring and connections and replace high pressure pump if required.	If ECU detects a pressure value significantly lower than the calculated value, engine is switched off NOTE: injectors must not show blow-by with < 200.000 km covered WARNING! If failure memory is deleted, engine will not start but failure is no longer indicated For this reason, before deleting the fault memory it is advisable to print out its content.
8.1	Blinking	Pressure regulator locked closed	8.3 - 8.4 Power reduction Noise increase since pre-injection is not performed	If 8.3 blink code is not displayed, replace rail pressure sensor; otherwise check regulator resistance. Replace pump and regulator if required. If also 8.3 + 8.4 are displayed, contact Help Desk and comply with its instructions to replace the ECU, if required	
8.2	Blinking	Rail pressure sensor short to positive orto ground or circuit open	Power reduction Noise increase since pre-injection is not performed	Read parameters on Modus IWT-IT2000. Check wiring, and replace sensor	
8.3	Blinking	Pressure regulator short to ground or to positive or circuit open	8. 1 and 8.4 could be present Engine switching off or not starting	Check wiring, connections and regulator. Replace high pressure pump if 8.1 - 8.3 are displayed. Replace ECU if 8.3 - 8.4 are displayed, if required.	Restarting impossible

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8.4	Off	3rd pumping element cutout solenoid valve control short to ground or circuit open	8.1 Error in ECU memory	Active diagnostic with Engine test to check pump operation Check wiring, connections and component	3rd pumping element not cut-out when expected, pump can therefore be poor lubricated when motoring over (long downhill with warm engine and exhaust brake on over peak rpm). CAUTION NEVER RUN DOWNHILL WITH ENGINE OFF AND GEAR ENGAGED.
8.5	On	EGR monitoring: incorrect implementation of the EGR percentage calculated by the control unit	EGR is turned off Emissions not in conformity with legislation Smoke at high speed - reduced performance	Check that the EGR pneumatic valve is not jammed shut or open (or intentionally tampered with) Check that the pipe between the solenoid valve and the EGR pneumatic valve is not crushed, punctured or detached Check wiring - connectors and solenoid valve	In case of any defect with the wiring of pin 8A, the errors related to all the devices connected to this pin will be stored in memory
8.6	On	EGR solenoid valve short-circuited or with open circuit	EGR fails to work or works constantly Emissions not in conformity with legislation Smoke at high speed - reduced performance	Check the EGR solenoid valve works properly (diagnosis active with the diagnostic tool) Using a multimeter, check the integrity of the solenoid valve	In case of any defect with the wiring of the EDC connector pin 8A, the errors related to all the devices connected to this pin will be stored in memory

BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
8.7	Blinking	Debimeter or air flow- rate meter (EGR version only) shorted to +Batt., shorted to earth or with open circuit, on the supply or measuring circuit Airflow signal not plausible	EGR not working Power reduction Increase in noise since preinjection is not effected	Measurable parameters Check wiring and replace flow-meter, if required Check air circuit (loss due to too low air mass, waste-gate valve operation for too high air mass found max. power and high speed), replace flow-meter	
8.8	Off	Intake air pressure sensor for EGR shorted or with open circuit	No reaction perceivable by the driver	Check the sensor and associated wiring work properly	

BLINK CODE	EDC WARNING LIGHT	POSSIBLE CAUSE	POSSIBLE FAILURES	RECOMMENDED TESTS OR OPERATIONS	REMARKS
9.1	Blinking	ECU internal failure First switching off after replacing with new ECU not performed through key (+ 1 5), but by disconnecting the battery positive with engine on	Engine switching off or not starting. In certain cases it could not switch off and going to power reduction level	If failure persists, contact Help Desk and comply with its instructions to replace the ECU, if required	In this case ECU cannot perform switching off diagnostic and it is impossible to restart. If ECU was already being initialized, an improper engine switching off procedure (or current cut-off from alternator with engine running) results in storing of many system failures, under ambient conditions of low battery voltage and engine speed below idling. No failure could be stored, it depends on ECU damages
9.1	Blinking	ECU internal failure	Engine could switch offwith-out being possible to restart it Power reduction (and noise increase since pre-injection is not performed)	If failure persists, contact Help Desk and comply with its instructions to replace the ECU, if required	This can take place when ECU power is cut out not by the key No failure could be stored, it depends on ECU damages
9.2	On	Control unit EEPROM fault	The data are not saved on switching off the engine. The fault memory is lost, it is possible to read solely the current faults and not the intermittent ones The curb idle speed that may have been set with the Cruise Control is not saved	Delete fault memory If the error remains, call the Help Desk and follow their instructions to replace the control unit, if necessary	
9.3	Blinking	Communication problems with Immobilizer in short or circuit open to CAN line	Engine switching off or not starting.	Check wiring, connections and component Perform Immobilizer diagnostic	

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9.4	On	Main contactor fails to disconnect	3.5 battery discharges	Status parameters Check wiring, connections and component	The control unit stays supplied and the EDC indicator light on even with the key off
9.5	Off	After Run interrupted several times	Fault memory and other operational data are not correctly stored in EE-PROM	Check the control unit supply wiring to find any intermittent false contacts If the wiring is in order, change the main contact	Investigate any incorrect use of the vehicle
9.6	Blinking	Failure of the internal test procedure that takes place in the control unit each time the engine stops	The engine fails to stop in the preset time when the + 1 5 key is turned OFF	Delete the fault memory: if the error remains, in normal conditions of switching off the engine, call the Help Desk to replace the control unit, if necessary	
9.7	Blinking	ECU internal failure in sensor power circuit	1.4 - 2.4 - 8.2 and 8.7 can be displayed at the same time Power reduction (and noise increase since pre-injection is not performed)	If failure persists, contact Help Desk and comply with its instructions to replace the ECU, if required	

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9.8	Blinking	ECU software internal failure due to the attempt of tampering with ECU dataset	Engine switching off or not starting.	If failure persists, contact Help Desk and comply with its instructions to replace the ECU, if required	In certain cases engine could not be restarted now and then
9.9	Blinking	ECU software internal failure or attempt to tamper with ECU data-set	Possible short injection cut-off, indication of other failures with ambient parameters not consistent Impossible to restart engine Light defect at gear shifting	If failure persists, contact Help Desk and comply with its instructions to replace the ECU, if required	