# FAILURE ANALYSIS GUIDE

| | Cause | Remedy |
|---|---|---|
| **Probe surface melting**  | Premature start of the injection cycle.<br>Injector-nozzles with coke deposits, or well, injector-nozzles wear. Engine damage (after break of valves, piston seizure...). The injector-nozzles drip. Piston rings are seized. Piston rings that allow oil flow to the combustion chamber.<br><br>The end of heating element is too hot and melts or breaks. | Check the injection system and set the injection point correctly. |
| **Cut off or blown Probe**  | Oil flows to the combustion chamber.<br>Defective calibrating or premature injection cycle.<br><br>The end of heating element is too hot.<br>Possible break or melting. | Check oil consumption. Check engine piston sealing (piston rings...). Check the control unit. Check the injection system. Set correctly the injection cycle. |
| **Probe surface melting and breaking of heating coil**  | Operation with excessively high voltage (e.g. in starting assistance). The voltage is applied during long time (failure of pre-heating relay). The post-heating glow is not admissible with engine running. Glow plug with no post-heating has been fitted. Increased alternator voltage.<br><br>Break of the heating wire (heating filament). | In starting assistance use 12V vehicle electrical system only. Check the pre-heating glow plug system. Replace the pre-heating relay time. Check alternator. |
| **Swollen Tip**  | Defective glow plugs. The tube may swell, burst or even explode due to the incorrect filling or poor drying of insulating powder before filling.<br><br>Short-circuit caused by the overheating. The incandescence tube may burst or explode. | Only use the type of glow plugs recommended by the engine manufacturer. |
| **Plug body showing carbon**  | Defective injection system. Incorrect measurement. Premature start of the injection cycle.<br><br>The tip end of the heating element is too hot. Becomes brittle and breaks. | Check the injection system. Set the injection point exactly. |
| **Carbon deposit filling gap at base of probe**  | Excess fuel or oil getting past the valve stem or piston rings.<br><br>Poor Quality of fuel used. | Replace and repair where necessary. Check the quality of fuel. |
| **Plug showing ridge on probe**  | Excess fuel or oil entering the combustion area. | Check injection system and timing. |
| **Plug terminal snapped**  | Excessive terminal-nut and/or connector tightening torque. Due to the use of incorrect tools.<br><br>Terminal stud shears off, damage to hexagon nut, short circuit. | Use the appropriate torque wrench. Comply exactly with specified tightening torque. |