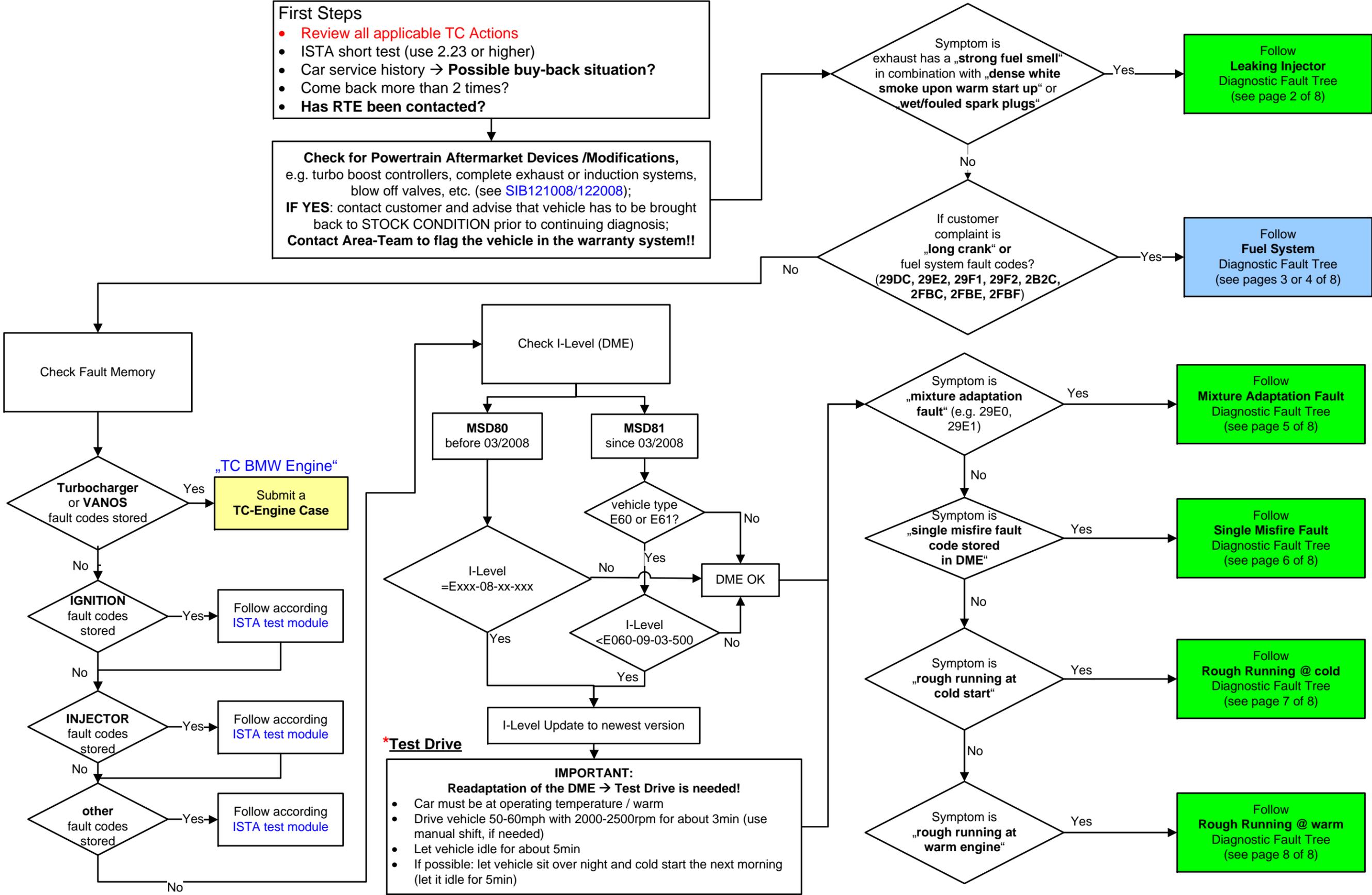


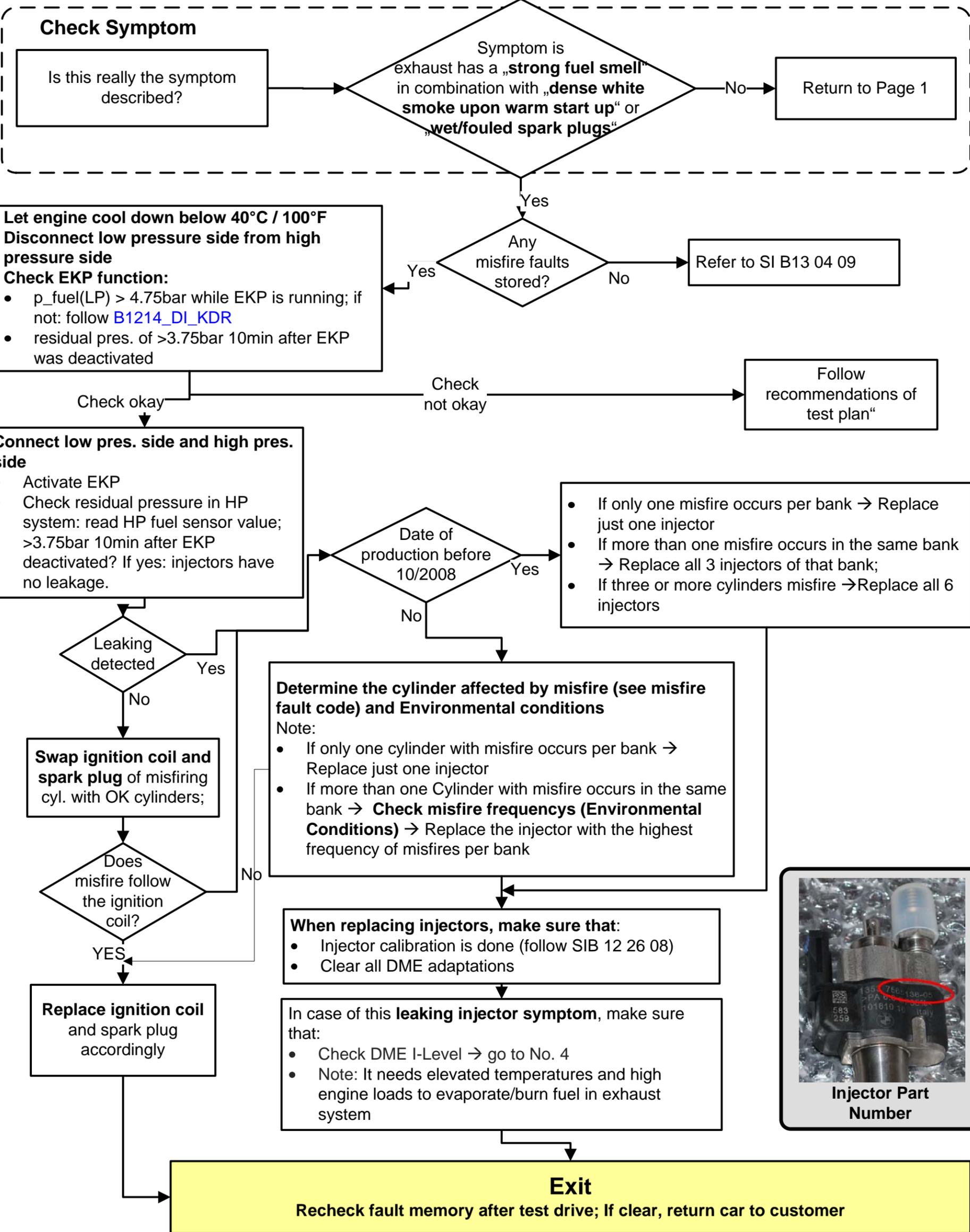
# N54 Engine Diagnostic Fault Tree Version 01\_06\_11

- First Steps**
- Review all applicable TC Actions
  - ISTA short test (use 2.23 or higher)
  - Car service history → **Possible buy-back situation?**
  - Come back more than 2 times?
  - **Has RTE been contacted?**

**Check for Powertrain Aftermarket Devices /Modifications,**  
 e.g. turbo boost controllers, complete exhaust or induction systems,  
 blow off valves, etc. (see [SIB121008/122008](#));  
**IF YES:** contact customer and advise that vehicle has to be brought  
 back to STOCK CONDITION prior to continuing diagnosis;  
**Contact Area-Team to flag the vehicle in the warranty system!!**



# DFT – Leaking Injector



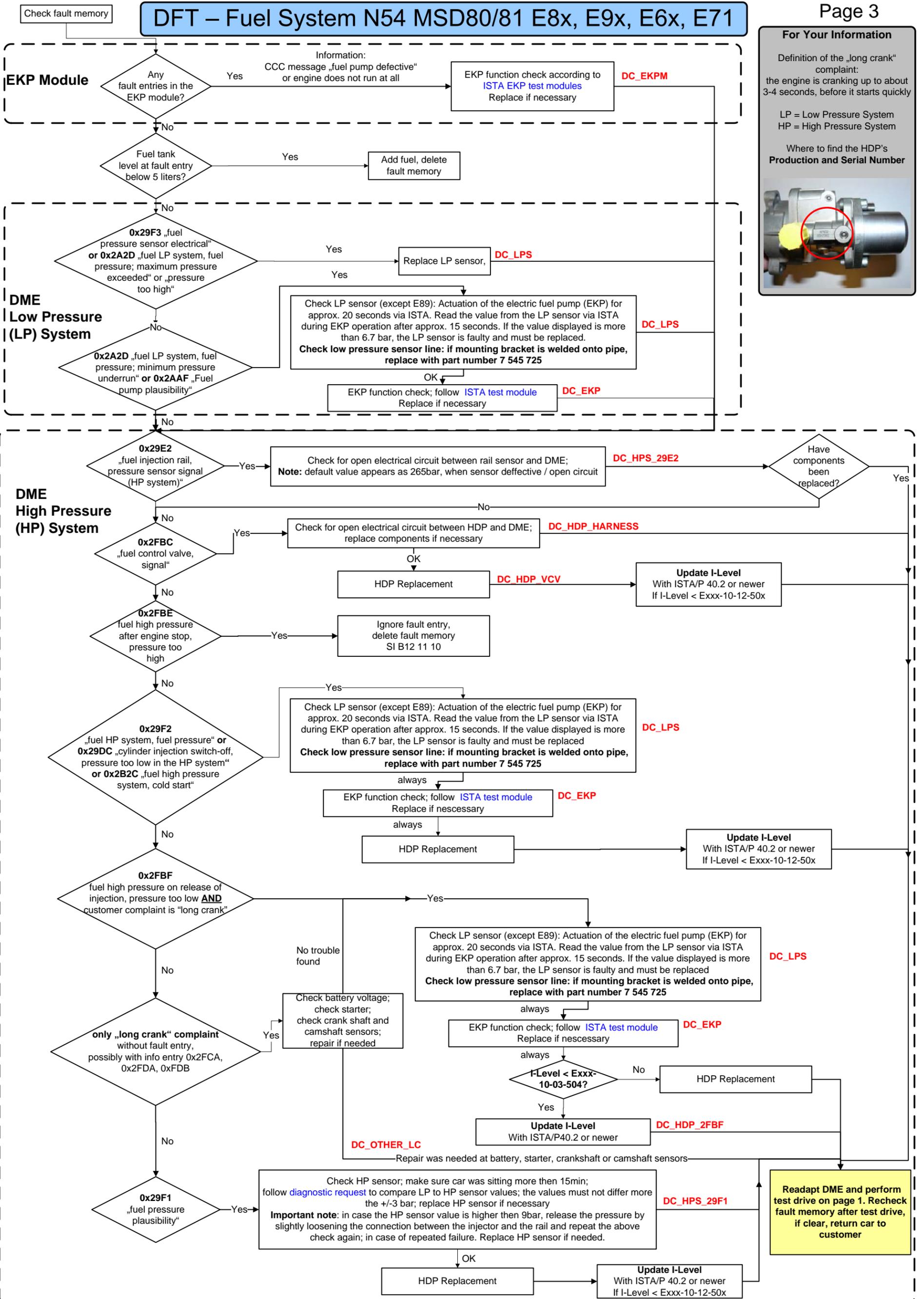
# DFT – Fuel System N54 MSD80/81 E8x, E9x, E6x, E71

**For Your Information**

Definition of the „long crank“ complaint:  
the engine is cranking up to about 3-4 seconds, before it starts quickly

LP = Low Pressure System  
HP = High Pressure System

Where to find the HDP's Production and Serial Number

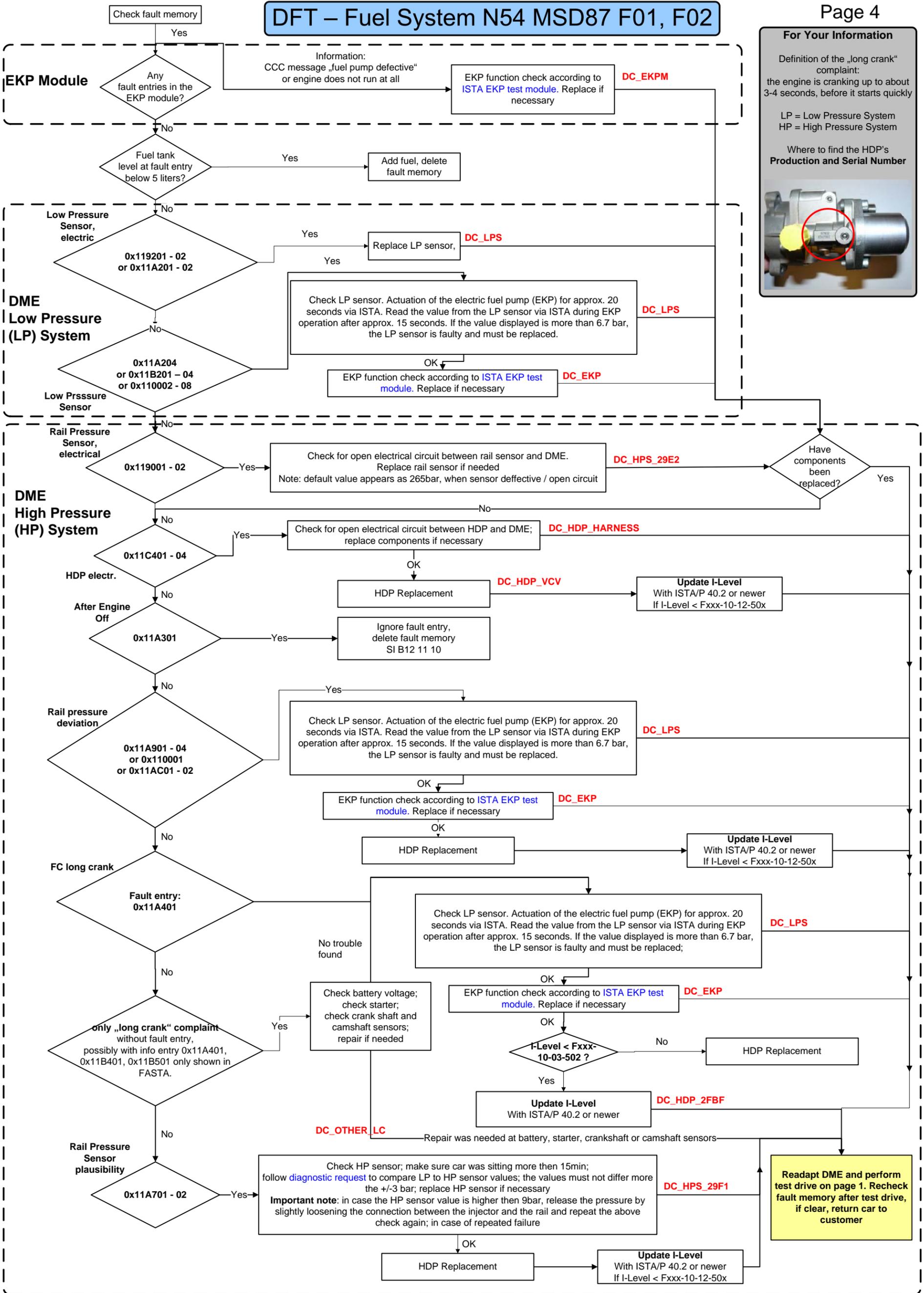
# DFT – Fuel System N54 MSD87 F01, F02

### For Your Information

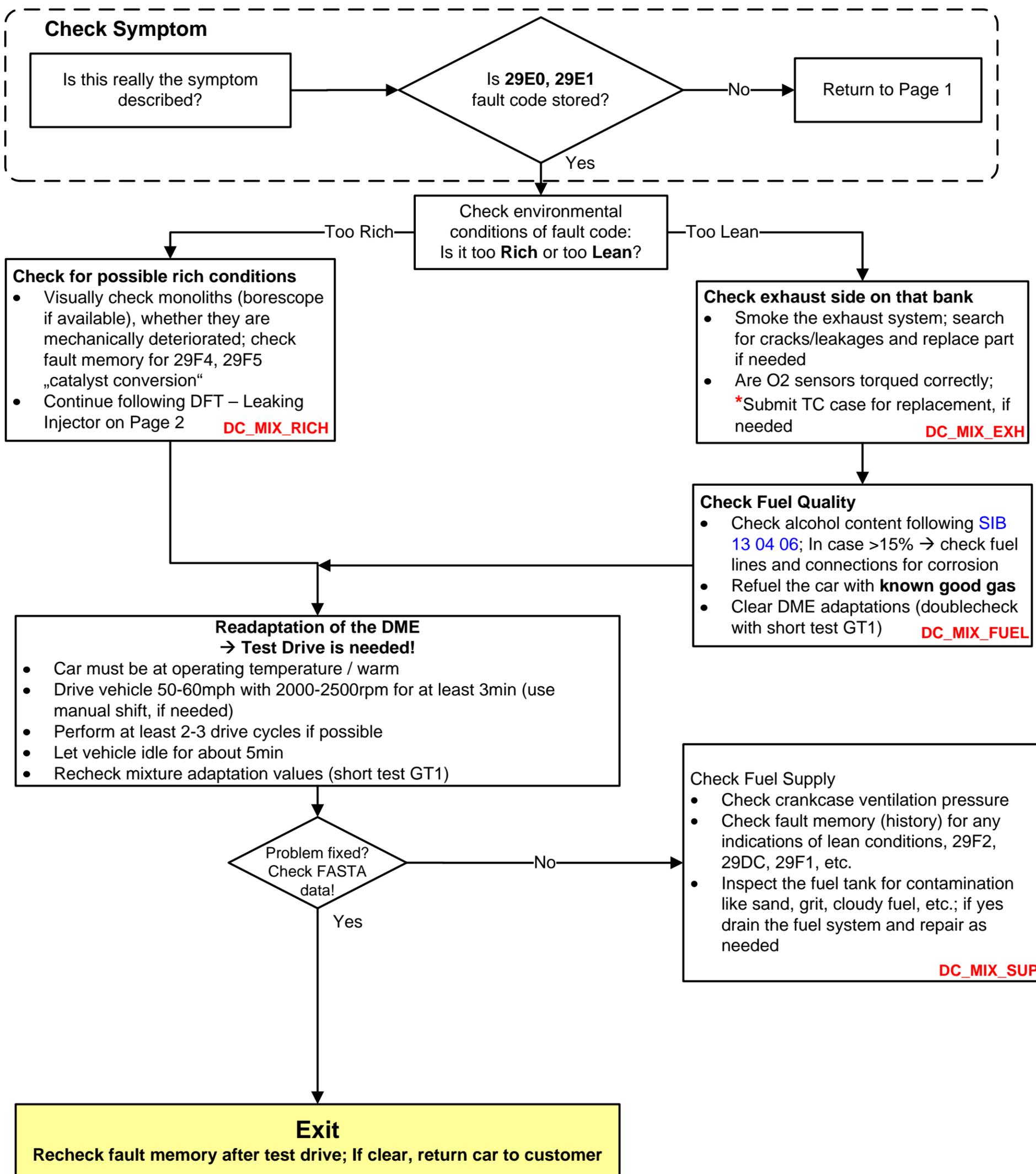
Definition of the „long crank“ complaint:  
the engine is cranking up to about 3-4 seconds, before it starts quickly

LP = Low Pressure System  
HP = High Pressure System

Where to find the HDP's  
**Production and Serial Number**

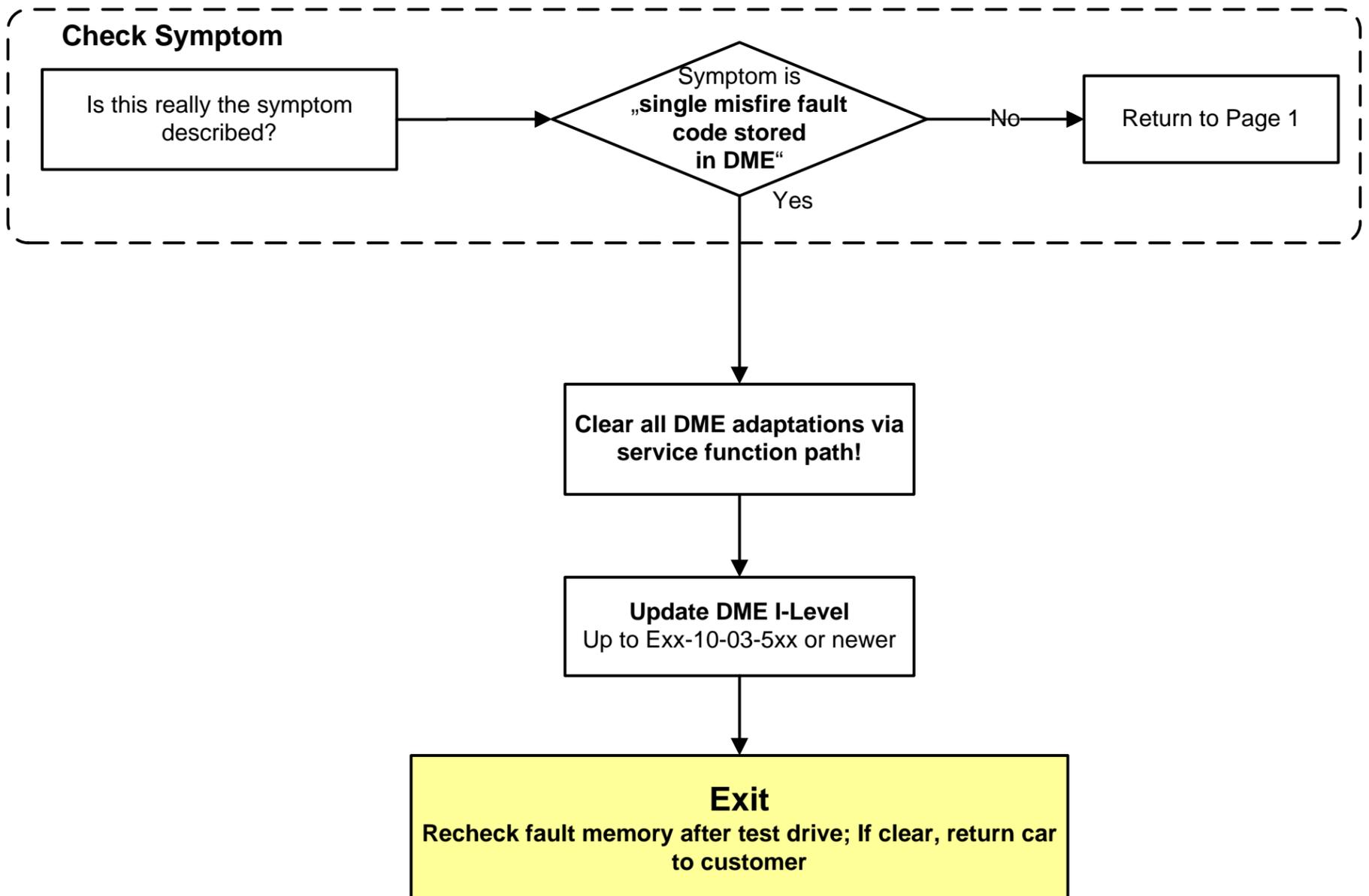


# DFT – Mixture Adaptation Fault

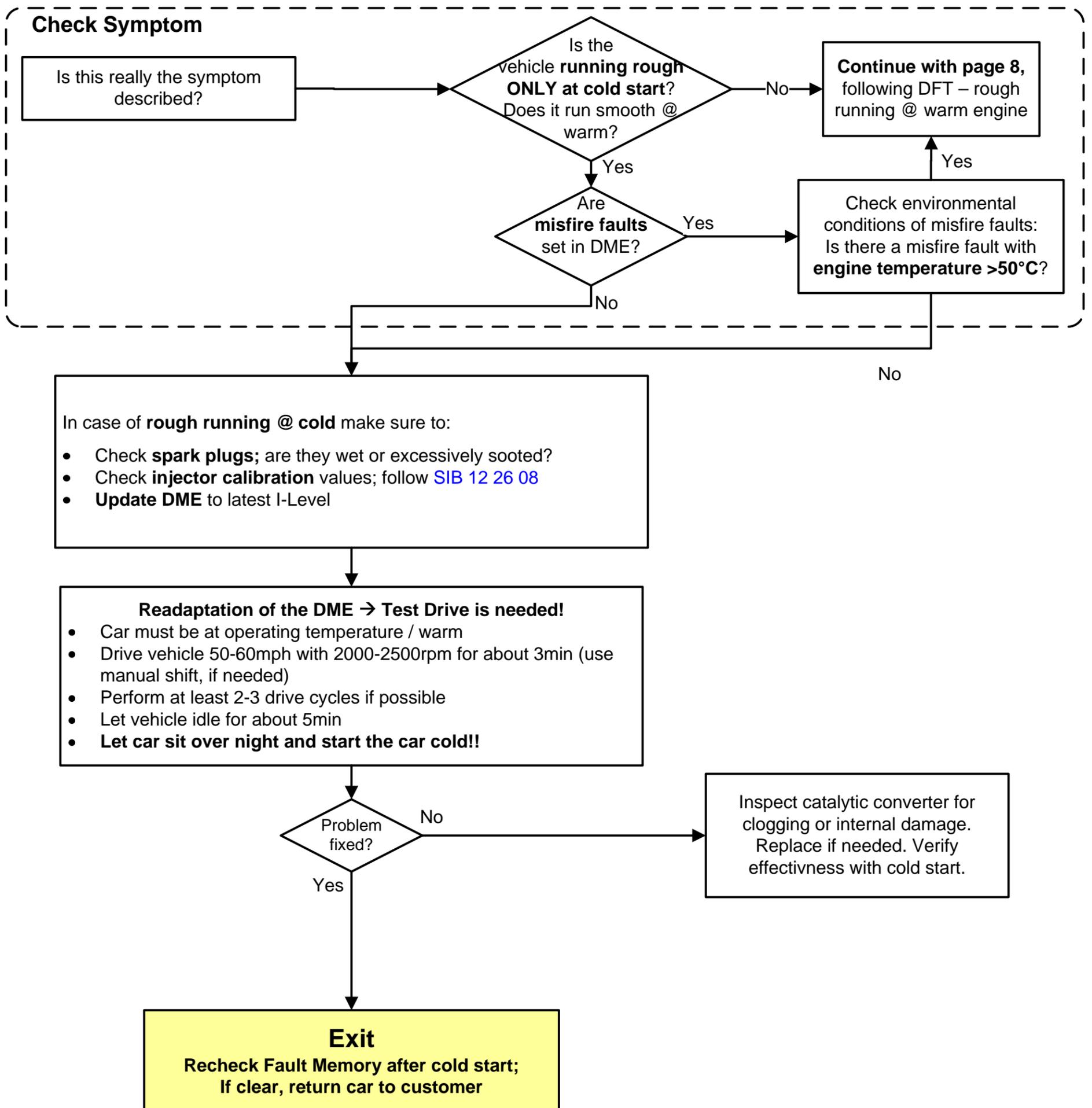


## DFT – Single Misfire Fault

Page 6



# DFT – Rough Running @ Cold Start



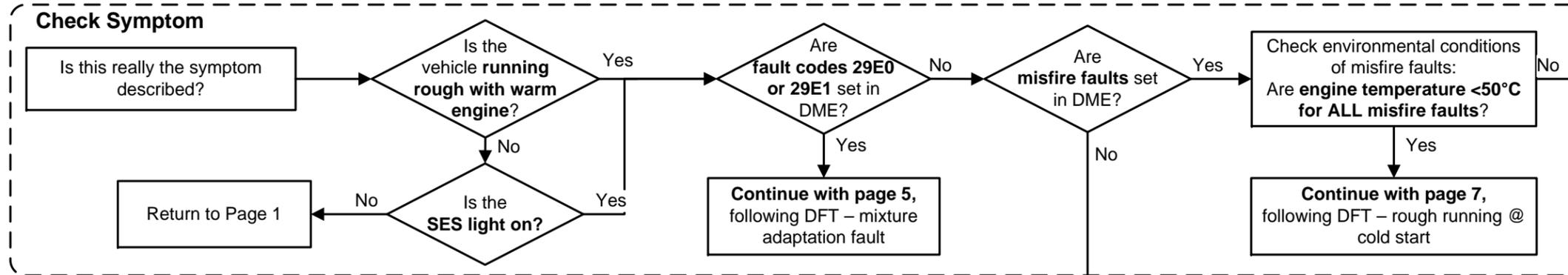
# DFT – Rough Running @ Warm Engine



**Injector Part Number**

**IMPORTANT:**

- Test Drive is needed!**
- Engine must be warm
  - Drive vehicle at different loads and speeds!



- First Check:**
- Recheck DME fault code; are there any other fault codes; if yes follow ISTA test plans
  - Recheck DME I-Level (look at page1), update if needed
  - Check **crankcase ventilation** pressure following SIB 11 03 08; crankcase ventilation pressure should be 9mbar (+/- 1mbar)
  - Check **cylinder compression / cylinder leak down at engine operating temperature with open throttle**; follow RA 11 00 039 and SIB 11 13 06; nominal values 14...16 bar, deviation between cylinders not more than 2bar (29psi); leak down exceeding 8% indicates problem; further determine whether it's caused by the intake, exhaust valves or piston rings
  - Check **spark plugs**
  - Check vacuum lines, waste-gate solenoid valves of the turbochargers, etc.

- Check **wiring harness** between DME and injector / ignition coil:
    - Electrical connection
    - Corrosion
    - open electrical circuit
    - higher electrical resistance
  - Check **cylinder compression / cylinder leak down at engine operating temperature with open throttle**; follow RA 11 00 039 and SIB 11 13 06; nominal values 14...16 bar, deviation between cylinders not more than 2bar (29psi); leak down exceeding 8% indicates problem; further determine whether it's caused by the intake, exhaust valves or piston rings
  - Check **spark plugs**
- Replace defective part if necessary

- Determine the cylinder affected by misfire (see misfire fault code) and Environmental conditions**
- Note:
- If only one cylinder with misfire occurs per bank → Replace just one injector
  - If more than one Cylinder with misfire occurs in the same bank → **Check misfire frequencies (Environmental Conditions)** → Replace the injector with the highest frequency of misfires per bank

- If only one misfire occurs per bank → Replace just one injector
- If more than one misfire occurs in the same bank → Replace all 3 injectors of that bank;
- If three or more cylinders misfire → Replace all 6 injectors

- When replacing injectors, make sure that:**
- Injector calibration is done (follow SIB 12 26 08)
  - Record injector part number in PUMA case
  - Clear all DME adaptations

- Readaptation of the DME → Test Drive is needed!**
- Car must be at operating temperature / warm
  - Drive vehicle 50-60mph with 2000-2500rpm for about 3min (use manual shift, if needed)
  - Perform at least 2-3 drive cycles if possible
  - Let vehicle idle for about 5min

**Exit**  
Recheck Fault Memory after test drive;  
If clear, return car to customer

